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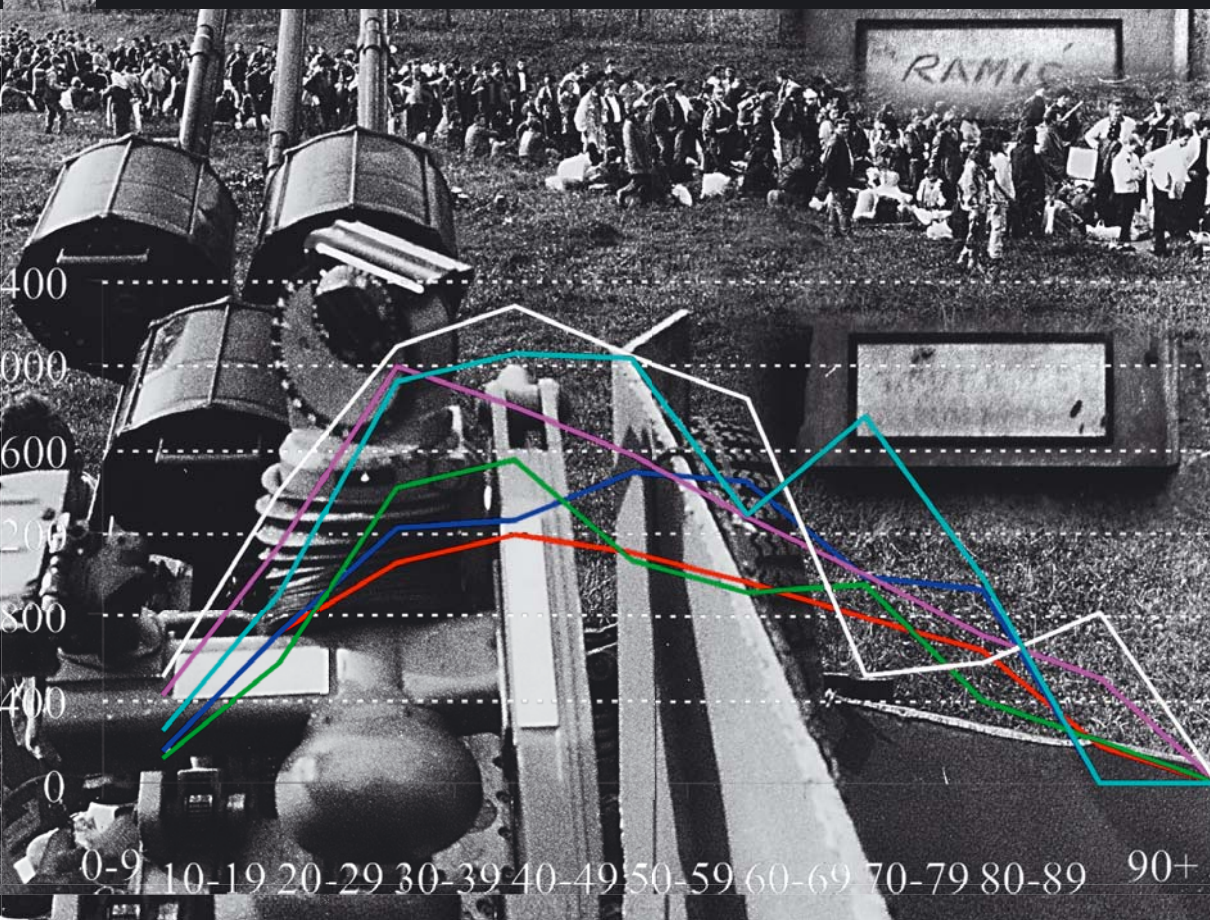
Helsinki Committee for Human Rights in Serbia

CONFLICT IN NUMBERS

Edited by

Ewa Tabeau

**Casualties of the 1990s Wars
in the Former Yugoslavia
(1991–1999)**



Conflict in Numbers

Casualties of the 1990s Wars in the Former Yugoslavia (1991–1999)

Major reports by demographic experts of
the Prosecution in the trials before
the International Criminal Tribunal for
the former Yugoslavia

Edited by
Ewa Tabeau

Conflict in Numbers: Casualties of the 1990s Wars in the Former Yugoslavia (1991–1999)

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**DEMOGRAPHIC EXPERT REPORTS
OF THE PROSECUTION IN THE ICTY
TRIALS: INTRODUCTION**

Ewa Tabeau¹

15 January 2009

¹ The views expressed in this article are of the author alone and do not necessarily express the views of the International Criminal Tribunal for the former Yugoslavia or the United Nations.

1. Initial Remarks

The chronologically earliest demographic expert report appeared in a court hearing at ICTY in June 2000. The report was related to the missing persons from the fall of Srebrenica in 1995 and presented in the General KRSTIC case (IT-98-33). It was authored by two Norwegian demographers, Helge Brunborg, a senior researcher permanently affiliated with Statistics Norway and at the time of writing of the report also a demographer in the Office of the Prosecution (OTP), ICTY, and Henrik Urdal – then an investigation assistant in the OTP, ICTY; later a researcher in the Peace Research Institute in Oslo. The report was requested from the demographers by the Prosecutor of the KRSTIC case and was meant to summarize the victimization of the fall of Srebrenica. Even though the data used for the report was exclusively on missing persons and no records of confirmed deaths from exhumations were used (as those were practically unavailable at the time of the KRSTIC trial), the report and the testimony of the OTP expert Helge Brunborg resulted in a great deal of success; several essential references were made in the judgement of the KRSTIC case to the demographic evidence from this report.

The success of the first Srebrenica report became a springboard to several next studies and expert reports on demographics of the 1990s conflicts in the former Yugoslavia. As of 2009, such reports are still presented in the on-going ICTY trials, and will be part of the up-coming trials of the highest profile (e.g. in the KARADZIC case). The reports presented in court today are up-dated and improved versions of or are the same as those written earlier. It is therefore a right moment to collect the major reports and publish them jointly with the idea of offering the reader a comprehensive reference. This volume contains a selection of demographic expert reports presented by the Prosecution experts on demographics in ICTY trials. I made this selection with the idea to best illustrate the work on war demographics completed in relation to ICTY trials, i.e. the subject of the reports, sources and methods used, war episodes documented, and to include the latest results.

In the Introduction I discuss a number of issues which lay foundation for an improved understanding of the selected reports in this volume. The issues include the following:

- What subjects and sources are discussed in these reports;
- What is their historical value, if any;
- What legal rules made it possible to present these reports in ICTY cases;
- Why the demographic expert reports were important and attractive to the Prosecution;
- Who was invited by the Prosecution to make these reports;
- How many and what demographic expert reports were completed so far;
- What response was delivered by the defence to this work;
- How successful the Prosecution actually was in presenting of these reports;

The issue of historical value is particularly important and relates to the question how one may and should read and interpret the demographic outcomes of war revealed in the reports. At a more general level, this question tackles upon the reliability of war statistics, their coverage, limits and the room left for misinterpretation and manipulation. I find these matters of extraordinary importance in the analysis of conflict and will therefore discuss them more extensively in one of the first sections of this Introduction. The rest of the Introduction will follow the order of questions as posed above.

My discussion by no means can be seen as complete and exhaustive; each of the above issues can be dealt with in a separate article or even a report, for which I do not have room in this volume. My discussion will remain brief but hopefully comprehensive, and most importantly will efficiently take the reader through the “jungle” of often uneasy numbers, charts, maps and other results from the reports.

2. Subjects and Sources Discussed in the Demographic Expert Reports at ICTY

The main subjects of the demographic expert reports at ICTY resemble a number of Indictment charges from ICTY cases related to demographic consequences of conflict. They include killed and wounded persons, missing persons, exhumed human remains and identified individuals, expelled populations, conflict-related internally displaced (internal migration), and out-of-country migration. These subjects represent the main categories of victims. Many more categories of victims of war exist and can be mentioned: use of human shields, child soldiers, rape and other forms of sexual violence, torture, unlawful detention, execution of prisoners etc. (comp. Hicks and Spagat, 2008; p. 1660-1661). All these categories were as well observed in the Yugoslav wars of the 1990s. In several ICTY cases, individual witnesses testified about examples of these outcomes of crime. However, no expert reports were compiled by demographers in relation to these forms of victimization.

When speaking about victims of war, or more broadly demographic consequences of war, it is necessary to realize that their numbers will vary depending on the analytical perspective applied. For example, in the public health research of war consequences in the populations and in the area of demography of armed conflict in general, a little if any distinction is usually made between civilian and military victims, circumstances of death or wounding describing whether death was in combat or non-combat situations or whether it was a direct or indirect consequence of military actions, means of killing or wounding, whether it was wilful killing, execution or murder, or a collateral death, whether children, women and the elderly were in large numbers among the victims etc. (comp. Parts IV and V in Brunborg, Tabeau, Urdal (eds.) 2006). Public health researchers and war demographers are usually interested in broad pictures of victimization, such as for example overall numbers of war-related deaths, forced migration, increased maternal mortality and mortality of children under five years of age, increased levels of disease, disability and trauma in the population, overall population losses including excess deaths due to war as well as the decline in fertility and diminished life potential etc. (*ibid*). Those researchers are less inclined to be looking into the specific categories of victims.

On the other hand, specific categories of victims are explicitly defined in the International Humanitarian Law (IHL) and the Law of War (LW). These laws are available from the four

Geneva Conventions of 1949 and Additional Protocols I and II of 1977, as well as the Hague Convention IV of 1907. The categories of victims represent outcomes of the serious violations of human rights and customs and laws of war and, in particular, failure to protect the civilian populations and civilian property of the affected areas and of prisoners of war. The above-mentioned categorisation of victims is essential in legal proceedings in which those responsible for the IHL and LW violations are brought to justice, as has been the case with the perpetrators of crimes committed in the 1990s in the former Yugoslavia who have been called on trial in the ICTY.

The IHL and LW were developed “to reduce net human suffering and net damage to civilian objects in armed conflict” (comp. Fenrick, 2005; p. 179). As much as these laws were meant to protect the life of civilians and the civilian property, they could not (and did not attempt to) eliminate the casualties of armed conflict altogether, for where is war, there is death and destruction. An important aspect of the IHL and LW is its practicality; too high standards imposed in IHL/LW would likely cause more violations and more victims than the standards that are realistic. The realistic standards applied in IHL and LW lead to the unfortunate but inevitable fact that “there are both lawful and unlawful casualties in armed conflicts” (*ibid*). The so-called “collateral damage” is a term applied to describe the unavoidable and thus lawful casualties, which most unfortunately are considered a “no crime” category in legal proceedings. Collateral damage involves an assessment of the importance of military objectives attempted to achieve against the losses of the civilian population living in the areas under attack. Only if the expected losses would appear “excessive” (whatever this means), the planned attack must not be conducted, and if conducted, it results in unlawful casualties.

Demographic expert reports contained in this volume were all prepared with the purpose of being used in legal proceedings. Whenever possible, they distinguish between the various legally significant categories of victims and circumstances of their death, wounding, missing, or migration. Thus the subjects of these reports are most certainly more detailed than those of the more general reports on demographic or public health consequences of the Yugoslav wars. Importantly, demographers who worked for the Prosecution at ICTY never tried to introduce any normative marking of victims, such as into “lawful” and “unlawful” victims.

A second important feature of the demographic expert reports at ICTY is that they often show the minimum numbers of victims (or the so-called “at least” figures), characterized by the coverage that is obviously incomplete. If more complete statistics are presented, they must be seen as conservative, meaning relatively low, i.e. undersized. Very often instead of a single number, an interval of values is given, its lower end being the minimum number and the upper end as estimated from data. Thus, the lower end is an unquestionable “at least” value and the upper end is a less definite value which involves some uncertainty that might be quantified statistically by showing an error of estimation. Statistics from the ICTY expert reports must be read with a good understanding of the above-mentioned facts. The reasons for making the statistics in the conservative way are numerous. On the first place they include the specificity of the court analysis. Strategically, it is important for the Prosecution to be able to present a number which can be well documented, by for example attaching a list of victim names and death details that can be linked through crime base witnesses with the incident in question. The lower numbers are usually of this kind. On the other hand, it would not be wise to produce a high number of which only a part can be proven by additional information about victims and the remaining part would be a guess; a very good one but still a guess. So, it is often so that from contextual and secondary sources we know the number of

victims was higher but we go to court with a lower figure which we believe we are able to strongly and convincingly defend.

Other reasons include for example the nature of sources; how incomplete they are in terms of coverage and missing values, errors in data, boundaries for error correction, hidden biases of sources etc. Less reliable or incomplete records were excluded from analysis and this is yet one more explanation why our numbers are relatively low.

Finally, there exist as well methodological limitations in court analysis. Observed counts are the most favourable type of statistics; demographic rates, ratios, probabilities and other relative measures of intensity of death or missing or migration will already be questioned, and complex statistical estimates and results of statistical modelling and extrapolation are always strongly challenged or totally neglected. As Trial Chambers are not experts in the statistical methodology and explaining difficult methods does not work well in court rooms, the result of presenting complicated calculations as part of expert reports and testimonies usually is less successful than simple results obtained from reliable and well documented sources. And when it comes to presenting counts, minimum numbers are the most easily accepted ones in court and thus it remains the best what we as experts should remain offering.

Sources used for the demographic expert reports have always been far more critically reviewed than the sources used in the non-legal research. In all demographic expert reports individual level data was analysed. Summary sources played a complementary and not the leading role.

Speaking of sources, it is useful to note that in any conflict of the world it is very hard and often impossible, to collect sources that would be reliable, unbiased, complete, exhaustive and extensive. Conflict brings rapid developments affecting large populations at the same time, it creates chaos and destruction, disturbs continuity, weakens professionalism, reduces resources, creates changing priorities, involves political propaganda, manipulation with numbers, and other disturbing factors that all seriously affect the availability of good (and sometimes any) data on conflict victims.

Thanks to the existence of ICTY, enormous efforts of the OTP staff and the cooperation of authorities from the newly created post-conflict countries in the region, sources on victims of the Yugoslav wars are extensive, although not always reliable and never complete.

The list of sources from which victim names are derived at the OTP, or which are used to confirm the alleged circumstances of death, is long and complex but it certainly includes the following major types of sources:

- witness statements and survivors recollections,
- known public and/or classified documents, such as camp records, police and intelligence files, court files, prisoner exchange records, military records,
- lists of the killed and wounded compiled by international and/or state commissions, institutes for war crimes or statistical authorities, and intergovernmental or non-governmental organizations (IGOs or NGOs),
- missing persons lists/reports, (predominantly of ICRC and locally compiled and published books of missing from particular areas),
- exhumation, forensic, medical, autopsy reports, death certificates,

- records of identification of the exhumed persons, including both the classical and DNA method,
- official records of registered internally displaced persons, refugees and returnees in the countries of the former Yugoslavia (the joint UNHCR and governments registers of IDPs and refugees)
- border guards' records on the out-going populations during the conflict in Kosovo,
- records of refugees from collective centres in destination countries in the Balkans and Western Europe

The above list, although not exhaustive, properly reflects the key sources used at the OTP to create lists of victims. Except for witness statements, many of the above sources have been used in the demographic expert reports presented at ICTY trials. Witness statements were not studied by the experts. These statements are mainly used for indictment schedules and for later testimonies in court proceedings. They largely corroborate the victim records available from other sources.

All in all, the victims of the 1990s conflicts in the former Yugoslavia are relatively well documented compared with other conflicts. But as I already noted earlier the sources have their problems. I invite the readers to learn more about both the strengths and weaknesses of the sources from the reports contained in this volume.

3. Historical Value of the Demographic Expert Reports at ICTY

The question of whether or not courts may and should engage in writing historical accounts of mass human rights violations has a long history in socio-legal scholarship (Wilson, 2005; p. 909). Several influential streams of thinking developed after the Second World War, in the 1960s and more recently in the 1990s. For a long time the prevailing view was that courts are not the right place for writing history. First of all, courts should not even engage in doing this as their role is to administer justice to individuals held responsible for these violations and only this. Thus, the belief was that it was not the courts' responsibility to write or interpret the history. However, if courts decided to do so anyway, then they could not produce reliable accounts of history. Several reasons were given why, such as for example (Wilson, 2005; p. 912-916:

- Incompatibility: law and history involve different modes of thinking:
 - legal thinking is logical and consequent, mass violence is irrational and logic is not the priority rule when writing history
 - Anglo-American law is adversarial, historical analysis proceeds through discussion and cooperation of scholars
 - courts ultimately must go for one account and exclude all alternative accounts; historians often accept competing accounts
- Limited balance:² legal conventions, rules, categorisations etc. often create limitations for revealing a balanced and accurate approach to the actual historical events in question. Court accounts can therefore lead to unintended consequences and even absurd positions on historical events.
- Partiality: courts are selective and limited in scope, thus cannot reveal the whole story whereas historians are interested in as complete pictures as possible.

² Wilson calls this reason "Law is an Ass" (p. 913).

- **Boring history:** Law is excessively technical and detailed which implies that history according to law is simply overly complex (yet often incomplete and fragmentary) and therefore boring.

It is important to note that the above considerations were put forward in the context of several post-Nuremberg trials of Nazi perpetrators and collaborators, which were all conducted in domestic courts mainly in Israel and France. Wilson (2005; p. 909-912) summarizes a number of articles and reports related to these trials; most importantly he looks at the work of Hannah Arendt (1964) on the trial of Adolph Eichman, a Nazi bureaucrat indicted for crimes against Jewish people in a trial meant to contribute to nation building of the Israeli state. At the trial, as Wilson noted after Arendt, the Holocaust was placed within two thousands years of Jewish suffering and became an example of subordinating justice to the nationalistic mythologizing. Moreover, the collective guilt of all Germans was signified. Similar situations were discussed by Wilson using several examples of Holocaust trials in France, such as those of Klaus Barbie, Paul Touvier, Maurice Papon (Wilson 2005; comp. footnote 15, p.911).

All in all, national jurisdictions were seen as not necessarily best suited to take history as part of court proceedings. The results of this had not always been exemplary pictures of historical realities.

However, there is an optimistic view in Wilson's article expressed as well (p.920-922). He believes that the above-mentioned pessimistic perspective has come to an end in recent years. Based on Douglas' (2001) re-examination of Nuremberg trial, Wilson concludes that "law's twin duty to both judge and represent mass atrocities are not irreconcilable" (p. 917) and "the need to reach a verdict incites and drives forward collective historical inquiry". Further on, Wilson specifies numerous reasons why the above is true:

- law and history often share the same methods and aims
- both weigh evidence and assess its factual value
- both utilize eye witness testimony
- both search for corroborating evidence
- both explore details of the particular while keeping their eye on the broader context
- finally, law always expresses facts in a chronological and narrative form, and history does this as well.

The crucial part of Wilson's article is related to his analysis of ICTY trials, predominantly TADIC (p. 924-934) and KRSTIC (p. 934-939), and occasionally also SLOBODAN MILOSEVIC (p. 918). His concludes: "whereas extensive narrative and the law have been held to be incompatible, international criminal law now appears to rely upon historical considerations and contextualization to secure convictions" (p. 940).

The explanation of this fact is simple: because of its international character, ICTY is liberated from nationalist mythologies. Secondly, and perhaps more importantly, probative standards at ICTY in relation to genocide and other crimes against humanity have been high. These crimes are not random events; there was a collective policy of extermination behind them. The systematic and planned nature of the crimes requires that proving them must be based on presenting documentation and analysis that go far beyond the crime itself. Showing the broader context and longer duration than in conventional cases is "a must" at the Tribunals, such as ICTY.

The demographic expert reports at ICTY do not only present statistics on victims whose death, disappearance or migration resulted from the concrete incidents included in the Indictments; they usually also present “the broader context and longer duration”, timing and intensity of events. Occasionally, they show long-term demographic consequences (such as e.g. conflict-related internal and external migration), that lasted beyond the conflict period. Like it or not, the demographic expert reports from ICTY trials did contribute to the writing of historical accounts of the 1990s Yugoslav wars.

Is it a bad or good history? As a matter of fact it is the best that exists in terms of sources, methods, and transparency. It is most certainly not yet complete and sometimes approximated by using estimates or informed guesses and cross-referencing of related materials, sometimes only assumed as based on good reasons. But nobody with some knowledge of the 1990s Yugoslav conflicts would dare to reject these reports altogether. The reports are more than just a beginning: they already offer a great historical contribution for further studies of demographic consequences of the 1990s wars in Yugoslavia; and a first serious step towards writing an even better history of these wars.

4. Legal Rules for Presenting the Reports in ICTY Cases

The basic document regulating the functioning of the Tribunal and the preparation and conduct of ICTY trials are “The Rules of Procedure and Evidence” (hereafter: the Rules). The Rules have been written by the ICTY judges and are systematically amended, (the latest amendment being from 4 November 2008), in order to meet the challenges of trials and make it possible for the Tribunal to fulfil its mandate efficiently and timely. The Rules are composed of ten parts:

PART ONE:	GENERAL PROVISIONS
PART TWO:	PRIMACY OF THE TRIBUNAL
PART THREE:	ORGANIZATION OF THE TRIBUNAL
PART FOUR:	INVESTIGATIONS AND RIGHTS OF SUSPECTS
PART FIVE:	PRE-TRIAL PROCEEDINGS
<u>PART SIX:</u>	<u>PROCEEDINGS BEFORE TRIAL CHAMBERS</u>
PART SEVEN:	APPELLATE PROCEEDINGS
PART EIGHT:	REVIEW PROCEEDINGS
PART NINE:	PARDON AND COMMUTATION OF SENTENCE
PART TEN:	TIME

Nominally, there are in total 127 rules; some of them have the same number and are distinguished from other rules with this number by a suffix “*bis*” “*ter*” or “*quarter*”. E.g. there exists Rule 92, Rule 92 *bis*, Rule 92 *ter*, and Rule 92 *quarter*. Thus, efficiently, the number of rules is higher than 127.

In the current version of the Rules, Rule 94 *bis* “Testimony of Expert Witnesses” in Part Six explicitly relates to expert witness reports and testimonies (for the full text of Rule 94 *bis*, see Annex I). Rule 94 *bis* simply states:

“The full statement and/or report of any expert witness to be called by a party shall be disclosed within the time-limit prescribed by the Trial Chamber or by the pre-trial Judge.”

The opposing party has to in turn react to the disclosed material within 30 days from the date of receiving it by letting the parties know whether it accepts the report/statement, wishes to cross-examine or challenges the qualification of the expert. In case the opposing party accepts the statement and/or the expert report, they are all admitted into evidence without calling the expert to appear in court.

Note that both parties, the Prosecution and the Defence have the right to call their experts and submit written statements and/or expert reports.

There exist three other rules (the 92 Rules) that regulate the admission of written statements, reports and previous transcripts from ICTY proceedings *without* calling a witness for a testimony in person. Also these three rules are attached in whole in Annex I to Introduction where their wording is exactly the same as in the current 4 November 2008 version of the Rules.

The admission of written materials in lieu of oral testimony is called the “affidavit” testimony. Rules 92 *bis*, 92 *ter*, and 92 *quarter* (all in Part Six) regulate this issue. Each of them relates to different aspects of the affidavit testimony:

- Rule 92 *bis*: “Admission of Written Statements and Transcripts in Lieu of Oral Testimony”
 Rule 92 *ter*: “Other Admission of Written Statements and Transcripts”
 Rule 92 *quarter*: “Unavailable Persons”

Rule 92 *bis* is meant for matters that are different than “the acts and conduct of the accused as charged in the indictment”. Rule 92 *ter* relates to matters that “may include evidence that goes to proof of the acts and conduct of the accused”. Finally, Rule 92 *quarter* covers situations in which a person who provided a written statement/transcript is dead or unavailable for other good reasons and therefore unable to testify in person. Note that under Rules 92 *bis* and 92 *ter*, the Trial Chamber may decide that the witness needs to appear for the cross-examination.

No one of the 92 Rules specifies whether the affidavit testimony is of an expert witness or other witnesses. From the viewpoint of population statistics as those usually presented in the demographic expert reports, out of the three, Rule 92 *bis* can and was indeed occasionally used at ICTY trials for expert reports and statements.

Rule 92 *bis* clarifies in what situations the Trial Chamber may favour the written statements, reports or transcripts above live testimonies. Several situations are mentioned; and specifically, if the evidence in question (among other things) is:

- of a cumulative nature, in that other witnesses will give or have given oral testimony of similar facts;
- relates to relevant historical, political or military background;
- consists of a general or statistical analysis of the ethnic composition of the population in the places to which the indictment relates;
- concerns the impact of crimes upon victims;

The above-mentioned guidelines from Rule 92 *bis* straightforwardly encourage the affidavit testimony of experts and obviously offer yet another option to admit expert reports/statements and their previous testimonies into evidence.

Summing up, as of today's practice at ICTY, there are well defined possibilities to present expert reports, statements and testimonies in court proceedings and these possibilities have been obviously frequently used by the Prosecution and several times by the defence.

5. Reasons for Admitting Demographic and Other Expert Reports by the Prosecution

In order to better understand the broader context of presenting demographic expert reports in ICTY trials, it is useful to refer to an article of a former ICTY judge Patricia Wald (2001). In her article Wald reviews the development of the ICTY Rules related to written statements and testimonies of witnesses since the establishment of the Tribunal until April 2001. She stresses that the original Rules of Procedure and Evidence adopted by ICTY in 1994 had a strong tendency to favour using live rather than written witness testimonies. This was quite opposite to the practice of the Nuremberg Tribunal where only ninety-four live witnesses eventually testified for the Prosecution and additionally nineteen for the defendants. The Prosecutors of the Nuremberg Tribunal had practically unlimited access to incriminating Nazi orders and other written information documenting their leaders' plans and actions. Keeping perfect records was indeed a typically German thing to do and the Allies benefited of it greatly, also in Nuremberg.

Although ICTY could never complain about the lack of written materials from the former Yugoslavia, the early ICTY Rules favoured live testimonies. Things changed in the late 1990s and in particular around 2000 at which time as Wald puts it: "The ICTY (and ICTR) have proceeded at an agonizingly slow pace" (p.552). And further:

"Most ICTY trials (...) have been intolerably long, ranging from 10 to 224 days, but averaging 107 working days. The extended length of trials has many causes. Sometimes several defendants are tried together and sometimes events in many villages or occurring at disparate times are grouped together in a single indictment, requiring an extensive parade of witnesses. Some trials have featured over 200 witnesses, and seven of the ten trials completed thus far have had over 100 live witnesses." (Wald, 2001, p. 535)

Obviously, things needed to speed up. In 1999, a UN Expert Group came up with their recommendations of procedural improvements³ for the two Tribunals, most of which were immediately adopted but according to Wald did not have a dramatic impact on the pace of the Tribunals' work. Thus, further improvements were sought in among other things reducing the live witnesses' testimonies and more intensively using the affidavit, and as a matter of fact giving more room to expert witness testimonies. The demographic expert reports used in ICTY trials are just one group of many others, examples of which include historical, military, property and cultural destruction and other reports.

³ In these guidelines emphasis was put on improving the pre-trial management by a single pre-trial judge. The role of the judge was to narrow issues, and whenever possible to cut down the number of live witness and their testimonies.

The necessity of shortening ICTY trials was a major challenge to all professional groups involved in trial preparation and trial itself, but in particular to the Prosecutors, that have the obligation to present the proof of crimes; proof which goes beyond reasonable doubt and thus cannot be questioned. Wald explains the challenges of ICTY trials as summarized below:

“Prosecuting war crimes does present unique problems. It is often necessary to present evidence on the events leading up to the outbreak of hostilities to set the stage for the particular incidents that gave rise to the alleged war crimes. The definition of a war crime, a crime against humanity, or genocide itself requires proof of predicare conditions, such as the existence of an international armed conflict, a nexus between the illegal acts alleged and an armed conflict, the occurrence of a systematic and widespread campaign against civilians of which the alleged acts are a part of, or an intent to destroy a religious, ethnic or racial group, in whole or in a part. A trial at ICTY is usually more akin to documenting an episode or even an era of national or ethnic conflicts rather than proving a single discrete incident.”(Wald, 2001, p. 537)

Expert reports of historians, military analysts, demographers, and/or other social scientists can be extremely helpful in successfully meeting these challenges. The Prosecution can more easily achieve their goals by employing high-level professionals for efficiently introducing in court large quantities of often complex specialized materials. The role of experts and their reports might indeed become invaluable.

There exist of course several other reasons for using experts in ICTY, including personal interest of prosecutors in certain types of specialized areas, individual experience with experts versus other witnesses, specificity of the case, limited versus considerable experience with prosecuting of war crimes etc. All in all, it seems that the following list can be given as a summary of all these reasons and as reasons for demographic expert reports in particular:

- the size and complexity of ICTY cases
- need to set “the stage” for particular incidents from indictments
- need to prove the widespread and systematic character of crimes
- need to show a broader context of the crimes from the indictment
- need to document the suffering of individuals and groups
- need to support and expand individuals testimonies of crime base witnesses
- need to link several types of evidence with each other, e.g. evidence on missing persons with that on exhumed human remains and identified individuals
- need to support on a general level the theory of the case
- necessity of keeping ICTY trials as short as possible
- individual experience of prosecutors with experts
- individual interest of prosecutors in particular areas of expertise
- availability of experts
- suitability of experts

It looks to me on the general level there exist more than enough reasons to use experts in court proceeding for prosecuting war criminals.

6. The Profile of Demographic Experts for the Prosecution in ICTY Cases

I will begin this section by referring to a short fragment from my recent testimony in the SESELJ case. This particular selection comes from the cross-examination by Mr. Seselj:

6 *Q. However, you do your work as you consider that the Prosecution*
 7 *would like to see you do it, because had you not done it that way, they*
 8 *wouldn't have had you there for eight years, but you would have been*
 9 *dismissed earlier on. So you cannot be an unbiased and international*
 10 *person in the scientific and professional sense; isn't that right?*

11 *A. I don't think it is right. Your comment goes very far. You are*
 12 *saying the Prosecution is telling me what kind of results I'm supposed to*
 13 *produce. I just said I'm independent in my work, and nobody's telling me*
 14 *how to do my work and what kind of results to obtain. The results are*
 15 *obtained from studying the sources, and from data processing, and from*
 16 *studying related materials. This is how we do it. Why do they keep me*
 17 *eight years? You have to ask them that. That is another question.*

Source: SESELJ case, Transcript 21 Oct 2008, p. 10906; expert witness Ewa Tabeau ("A"), cross-examination by Mr. Seselj ("Q").

Mr Seselj implied that throughout the years I have been employed at ICTY, the Prosecution has given me directions in order to produce results that suit them in their proving the guilt. My answer was of course that not.

I would be naïve and wrong to believe that the types of outcomes produced by experts are the reason for the Prosecution to employ certain individuals as experts to work for them. On the other hand, I am aware of a number of self-proclaimed or officially-declared "experts" that would be never called by the Prosecution as their experts on a case. This group would comprise nationalists of any ethnicity who insist on the exclusive existence of a single "truth"; the truth which suits their views and perspectives.

My experience from ICTY tells me the following are generally the reasons for selecting experts by the Prosecution:

- outstanding record of professionalism
- high level of professional seniority
- excellent record of international publishing
- proven participation in the work of recognized professional bodies at both national and international levels
- demonstrated record of high-level advisory activities of an expert
- being unbiased towards parties to conflict (such as e.g. ethnic groups)
- preferably being external in relation to the Office of the Prosecutor
- ability to present research results following the rules of court reporting
- brief and comprehensive way of expressing views during proofing and in court testimonies
- ease of communication including setting up deadlines for expert reports, proofing sessions, testimonies and travelling schedules
- personality

The last feature, personality, occasionally might have a lot of impact on employing an expert. For example, doubtful and introvert persons, although possibly excellent professionals are unlikely to appear as convincing in court as the expert witness testimony requires them to be. Moreover, this personality type is not helpful in demanding and complex situations which the expert might have to face when preparing the expert report and testimony.

In ICTY cases the internal and external, as well as the international and national experts were called by the Prosecution to act as demographic expert witnesses. As I mentioned in the beginning of this article, among the international experts Helge Brunborg, PhD, was the first one to testify at ICTY. He is a demographer and economist. He has been with Statistics Norway since 1974 with several periods of leave for external projects in the Netherlands (ICTY), and several other countries, such as Botswana, Zambia, Zimbabwe, Namibia, Mozambique, Palestinian territories, Bosnia and Herzegovina and Albania. His first testimony was in KRSTIC (IT-98-33), later he testified in BLAGOJEVIC ET AL. (IT-02-60), SLOBODAN MILOSEVIC (IT-02-54), POPOVIC AT EL. (IT-05-88), MILUTINOVIC ET AL. (IT-05-87), and recently in PERISIC (IT-04-81). Brunborg has been the Prosecution expert on the 1995 fall of Srebrenica and on the Kosovo population at the time of the 1999 Kosovo conflict. He is partly an external and partly internal expert. During the preparation of his first 2000 report on Srebrenica (for KRSTIC) he worked at the Office of the Prosecution of ICTY in The Hague; during writing of all other reports Brunborg was employed at Statistics Norway in Oslo. In case of all Srebrenica reports later than the 2000 report, he cooperated with the Demographic Unit, Office of the Prosecutor, at ICTY.

Patrick Ball, PhD, has been an external international expert. At present he is affiliated with the Benetech which is a non-governmental organization promoting innovative technical advancement in solving social needs. Benetech is in California in the United States of America. Ball leads there the Benetech Human Rights Program (HRP) and the Data and Analysis Group (HRDAG). In the past (until 2003), he worked at the American Association for the Advancement of Science in the Science and Human Rights Program. His most recent work is an estimate of the total deaths in Peru, 1980-2000, conducted on behalf of the Peruvian Truth and Reconciliation Commission. Ball is also involved in HRDAG projects in Sierra Leone, Chad, Sri Lanka, East Timor, Colombia, and others.

A ICTY the expertise of Patrick Ball is in the 1999 Kosovo conflict, specifically in killed persons and conflict-related forced migration. Ball as well tested a number of hypotheses explaining the population movements during the 1999 conflict and tried to link these explanations with charges in the Indictment. He testified in SLOBODAN MILOSEVIC (IT-02-54) and MILUTINOVIC ET AL. (IT-05-87) trials.

Ewa Tabeau, PhD, is the next international expert witness for the Prosecution in ICTY trials. My background is in statistics and econometrics, and mathematical demography. I come from Poland where I initially worked as an academic teacher at the Economic University of Poland in Warsaw. Later on, I moved to the Netherlands where at first, for about 9 years, I was a researcher in the Netherlands Interdisciplinary Demographic Institute (NIDI) in The Hague. Statistical modelling and prediction of mortality, especially by cause of death, and of longevity and health processes in the Netherlands and other Western and Central European countries were my major research domains. Since 2000, I have been the head of Demographic Unit in the Office of the Prosecutor ICTY. I am an OTP internal expert.

The list of cases in which I testified is extensive: SESELJ (IT-03-67), LUKIC AND LUKIC (IT-98-32/1), POPOVIC ET AL. (IT-05-88), PRLIC ET AL. (IT-04-74-PT), DRAGOMIR MILOSEVIC (IT-98-29/1), SLOBODAN MILOSEVIC (IT-02-54), STAKIC (IT-97-24), GALIC (IT-98-29-I), SIMIC et al. (IT-95-9), and VASILJEVIC (IT-98-32-1). My expertise is the siege of Sarajevo, 1992-95; the fall of Srebrenica, 1995; conflicts in Bosnian Krajina and at the Eastern border of BH with Serbia, 1992; the Herceg-Bosna conflict and the siege of Mostar, 1993-1994; Kosovo conflict, 1999; Vojvodina (Serbia) conflict, 1992; and finally population displacement and forced migration in the entire country of Bosnia and Herzegovina, 1991-97, and in the region of the former Yugoslavia.

I would like to stress that all three of us, the OTP demographic experts in ICTY trials, prepared our reports with assistance of several other persons, outstanding young researchers, demographers or other social scientists, and native BCS speakers, whom I want to thank here for their contributions and help. As a matter of fact, the group of people behind the Prosecution demographic expert reports is far larger than three experts that appear in court.

I must also address the fact that unlike any other existing Tribunal, the Office of the Prosecutor at ICTY has in its structure a Demographic Unit, which although small (only 4 persons at present) has played an important role in the preparation of cases and in trials. Writing expert reports was our first and foremost responsibility, but next to it much other useful work has been done as well, including for example collection of sources, establishing and maintaining information systems for use in data analysis and trials, an in-depth investigation of demographic consequences of Yugoslav conflicts based on both primary and secondary data and on contextual sources, and developing methods and procedures for cross-referencing sources through *individual matching*.

We worked on projects related to quantification of demographic consequences of the 1990s conflicts in the former Yugoslavia, mainly in Bosnia and Herzegovina, and on assessment of sources on victimization of the conflicts, including both the quantitative sources, e.g. censuses, other population surveys, registers of IDPs and refugees, exhumation records, forensic reports etc., and the qualitative sources such witness statements, reports by international observers and others. The subjects of our research included measuring and estimating internally displaced persons (IDPs) and refugees, as well as war-related casualties, i.e. killed, wounded, missing, exhumed, (DNA) identified etc. and timing, location and causes of events. Expert reports we produced were successfully admitted into evidence in many ICTY trials. Like it or not, it has been a remarkable achievement of this small group to make this kind of contribution to the field of demography of war in general and to the ICTY expert testimonies on demographics in particular.

Last but not least, I would like to mention that some national experts were called by the Prosecution as well, mainly to testify on issues related to the war in Croatia. Colonel Ivan Grujic from the Office for the Detained and Missing Persons of the Government of Croatia was called to testify in the SLOBODAN MILOSEVIC (IT-02-54), MILAN MARTIC (IT-95-11), and MILE MRKSIC (IT-95-13) trials. More recently Anna-Maria Radic and Vesna Bilic testified as Prosecution expert witnesses in the SESELJ trial (IT-03-67). All these three experts are well educated, experienced, have impressive careers; they are all high-level officials of the government of Croatia; however, they are not demographers and not researchers. In their expert reports and statements they presented statistics based on data from official sources of the government of Croatia. The sources include both the Croatian registration of internally displaced persons and refugees and official records of missing, exhumed, killed and detained persons. The quality of these sources is

very good, and the data is thus reliable, but its ethnic balance can be questioned. The sources mainly represent the Croat perspective on the victims of the war in Croatia; in particular those from the first years of the war. Statistics on Croatian Serb victims are not easily available but can be found in non-government sources, such as in the archives and publications of the Helsinki Committee for Human Rights in Zagreb, for example in the 2001 report on the “Military Operation Storm and its Aftermath”.

Many more national and international experts provided their expert reports and/or statements and testified in ICTY cases. Next to the experts on demographics, the most significant category of experts, partly related to demographics, would be those presenting the work on exhumations and identification of victims. The issue of exhumations is complex and extremely extensive, however; it most certainly requires another report; this volume is meant for exclusively demographics.

7. Concluding Remarks

In “Concluding Remarks” I briefly touch upon the three last issues I addressed in the beginning of the Introduction, namely: How many and what demographic expert reports were completed so far? How successful the Prosecution actually was in presenting of these reports? What response was delivered by the defence to this work?

In Annex II to this Introduction I attached a more complete list of ICTY expert reports on demographics. The list comprises the Prosecution reports. It is more extensive than the contents of this volume but still incomplete. Only main reports are included; many of them have several attachments and annexes which are not listed, except for Srebrenica reports where the lists are an integral part of the output. In addition to the attachments, there exist related materials discussed in court during the testimonies and cross-examinations of the experts. All these materials are not included either. Therefore Annex II should be merely seen as a guideline to the archive on demographics available at ICTY; an archive that cannot be presented in one volume. As a matter of fact the list of main reports is just a list of ICTY cases in which this type of expert evidence was presented. Readers interested in particular cases should refer to the testimonies of particular experts, check the transcripts of relevant court hearings and find (or not) what they will be looking for.

In total more than 30 reports are available from Annex II. I arranged them according to the episodes of the Yugoslav wars; in this way it is easier to see their historical coverage. The 1992-95 war in Bosnia and Herzegovina (BH) is most frequently the subject of the ICTY reports. Several of episodes are documented; firstly, on the 1992 events in the Bosnian Krajina, at the Eastern border of Bosnia with Serbia, and in Bosanska Posavina. Further, the reader can see three reports on the conflict in Herceg-Bosna in 1993-94, including the siege of Mostar. Another tragic siege documented in ICTY reports is that of Sarajevo in 1992-95. Next we see a number of reports on the fall of Srebrenica in 1995. Finally, several reports summarize changes in the ethnic composition and statistics on IDPs and refugees in Bosnia and Herzegovina, including the report on 47 municipalities made for the SLOBODAN MILOSEVIC case. Noteworthy, all reports on the BH ethnic composition, and IDPs and refugees were made in the framework of one the same project run at the OTP between 1998 and 2003. The project was meant for use in the SLOBODAN MILOSEVIC trial but we made all calculations for all municipalities in the country; we even wrote a computer programme that automatically generated the text explaining statistics. So, it was possible to re-run our calculations and to make identical reports for any area in Bosnia and Herzegovina. In this

way several reports were presented in a number of cases. The defence occasionally complained about us repeating our approach. However, we made it our principle to keep things unchanged in all projects on IDPs, refugees and ethnic composition as we believe the incredible effort we made to complete this work was worth it.

One more episode documented in an ICTY demographic expert report relates to a small incident in the village of Hrtkovci in Vojvodina in 1992. Although the population impact of this incident cannot be seen as comparable with large incidents in Bosnia or Kosovo, the report on Hrtkovci is important. First of all, because it indirectly addresses the existence of a broader political and historical context of conflict incidents; the context, in which all human actions take place. Secondly, because it tells us that conflicts are not random events; they are planned, prepared and publicized. Victims are the direct or indirect result of the actions of those playing the game.

A number of expert reports were also made in relation to the 1999 Kosovo conflict. Both killings and population displacements (both internal and external) are covered. One report has nothing to do with victims; it is the report on the population size and its ethnic composition. Its relevance is related to the fact that the 1991 Population Census was boycotted by the Albanian population of Kosovo and the Trial Chamber of SLOBADAN MILOSEVIC case needed an expert assessment of the issue.

Finally, the expert reports of the Croatian authorities summarize the victims of the war in Croatia.

I want to add that the historical coverage represented by the reports should not necessarily be seen as resembling the priorities of the prosecutors of ICTY. As a matter of fact, when we were invited to work on the reports there were no priorities at all; not historical, or political, policy-based or any other. The Prosecutors' demand for these reports was always high at ICTY. We were making the reports following the time lines of ICTY trials; so any order at all should be sought in the logic of ICTY as a whole.

The defence response to the expert reports on demographics has not been negligible, although the beginning in 2000 was not impressive at all. In the KRSTIC and VASILJEVIC cases, that is in the cases where the first Prosecution reports were presented, practically there was no opposition at all. It might be so that at that time the defence was unable to anticipate the consequences of admitting these reports into evidence. And the consequences have been considerable. Whenever a demographic expert report is admitted, the likely consequence is that the report has impact on the judgement. So far, only one report has been explicitly rejected and not admitted (the Bosanska Posavina report from 2001) the reason for this being that the territory analyzed in the report and that defined in the indictment were not identical. An in-depth analysis of the impact of demographic expert reports is still to be finalized and therefore will not be discussed in detail in this volume.

As much as we have learned over the years since 2000, the defence has learned their lessons as well. Nowadays, the defence almost always employs their experts to challenge our work. So far at least six expert reports from the ICTY defence experts were presented in response to the Prosecution reports. Although a vast majority of the work of defence experts unfortunately cannot be seen as up to the international scientific standards, there were moments I enjoyed being challenged on a reasonable professional level. Most often, however, the offensive language played the role of the defence experts' main weapon.

Much could be added about our struggle with defence experts, their reports, and defence counsels, but again this volume is not the place to do so. Perhaps over some 50 years from now or so, I will make another paper in which I disclose all the more fascinating details of this struggle.

Having said this, I would like to stop my introducing the readers; they already know more than enough to start reading the actual reports. I can only hope that some will find this work worthwhile; perhaps because of methods and approaches or sources used; some others because of its impact on the judgements. But most importantly I sincerely hope that the families of the victims and the victims themselves will find these reports important and truthful. Our statistics offer them a record of their suffering. Our numbers are conservative, i.e. closer to the lower end of the real numbers, as this is a requirement of the court approach. However, we have done our utmost best to produce as good and objective history as possible. I hope we achieved this objective. I am sorry if we did not.

References:

- Arendt, H., 1964: *Eichman in Jerusalem: A Report on the Banality of Evil*. Rev. & Enlarged ed., 1964. After Wilson (2005), p.909.
- Brunborg, H., E. Tabeau and H. Urdal (eds.), 2006: *The Demography of Armed Conflict*. International Studies in Population Vol 5, Springer.
- Douglas, L., 2001: *The Memory of Judgement: Making Law and History in the Trials of Holocaust 185-96, 207-10*. After Wilson (2005), p. 911 and 917.
- Hicks, M. H-R. and M. Spagat, 2008: *The Dirty War Index: A Public Health and Human Rights Tool for Examining and Monitoring Armed Conflict Outcomes*. *PLOS Medicine*, Vol. 5, No. 12, pp. 1658-1664.
<http://medicine.plosjournals.org/perlserv/?request=get-document&doi=10.1371/journal.pmed.0050243>
- Puhovski, Z., and N. Popovic (eds.), 2001: *Military Operation Storm and its Aftermath*. Report, Croatian Helsinki Committee For Human Rights, Zagreb.
- Wald, P. 2001: *To “Establish Incredible Events by Credible Evidence”: The use of Affidavit Testimony in Yugoslavia War Crimes Tribunal Proceedings*. *Harvard International Journal*, Vol 42, No. 2, pp. 535-553.
- Wilson, R. A., 2005: *Judging History: The Historical Record of the International Criminal Tribunal for the Former Yugoslavia*. *Human Rights Quarterly* 27, pp. 908-942.

Legal Documents:

Rules of Procedure and Evidence of the International Criminal Tribunal for the former Yugoslavia. <http://www.icty.org/sections/LegalLibrary/RulesofProcedureandEvidence>
 International Humanitarian Law:

- Hague Convention IV (Laws and Customs of War on Land) of 1907
- Geneva Convention I (Wounded and Sick) of 1949
- Geneva Convention II (Maritime) of 1949
- Geneva Convention III (Prisoner of War) of 1949
- Geneva Convention IV (Civilians) of 1949
- Additional Protocol I (API) of 1977

http://www.icrc.org/Web/Eng/siteeng0.nsf/htmlall/section_ihl_treaties_and_customary_law?OpenDocument

ANNEX I

Excerpts from the ICTY Rules of Procedure and Evidence

(Version as of 4 November 2008)

Rule 92 bis

Admission of Written Statements and Transcripts in Lieu of Oral Testimony

(Adopted 1 Dec 2000 and 13 Dec 2000, amended 13 Sept 2006)

- (A) A Trial Chamber may dispense with the attendance of a witness in person, and instead admit, in whole or in part, the evidence of a witness in the form of a written statement or a transcript of evidence, which was given by a witness in proceedings before the Tribunal, in lieu of oral testimony which goes to proof of a matter other than the acts and conduct of the accused as charged in the indictment.
- (i) Factors in favour of admitting evidence in the form of a written statement or transcript include but are not limited to circumstances in which the evidence in question:
- (a) is of a cumulative nature, in that other witnesses will give or have given oral testimony of similar facts;
 - (b) relates to relevant historical, political or military background;
 - (c) consists of a general or statistical analysis of the ethnic composition of the population in the places to which the indictment relates;
 - (d) concerns the impact of crimes upon victims;
 - (e) relates to issues of the character of the accused; or
 - (f) relates to factors to be taken into account in determining sentence.
- (ii) Factors against admitting evidence in the form of a written statement or transcript include but are not limited to whether:
- (a) there is an overriding public interest in the evidence in question being presented orally;
 - (b) a party objecting can demonstrate that its nature and source renders it unreliable, or that its prejudicial effect outweighs its probative value; or
 - (c) there are any other factors which make it appropriate for the witness to attend for cross-examination.
- (B) If the Trial Chamber decides to dispense with the attendance of a witness, a written statement under this Rule shall be admissible if it attaches a declaration by the person making the written statement that the contents of the statement are true and correct to the best of that person's knowledge and belief and
- (i) the declaration is witnessed by:
- (a) a person authorised to witness such a declaration in accordance with the law and procedure of a State; or

- (b) a Presiding Officer appointed by the Registrar of the Tribunal for that purpose; and
- (ii) the person witnessing the declaration verifies in writing:
 - (a) that the person making the statement is the person identified in the said statement;
 - (b) that the person making the statement stated that the contents of the written statement are, to the best of that person's knowledge and belief, true and correct;
 - (c) that the person making the statement was informed that if the content of the written statement is not true then he or she may be subject to proceedings for giving false testimony; and
 - (d) the date and place of the declaration.

The declaration shall be attached to the written statement presented to the Trial Chamber.

- (C) The Trial Chamber shall decide, after hearing the parties, whether to require the witness to appear for cross-examination; if it does so decide, the provisions of Rule 92 *ter* shall apply.

Rule 92 *ter*

Other Admission of Written Statements and Transcripts

(Adopted 13 Sept 2006)

- (A) A Trial Chamber may admit, in whole or in part, the evidence of a witness in the form of a written statement or transcript of evidence given by a witness in proceedings before the Tribunal, under the following conditions:
 - (i) the witness is present in court;
 - (ii) the witness is available for cross-examination and any questioning by the Judges; and
 - (iii) the witness attests that the written statement or transcript accurately reflects that witness' declaration and what the witness would say if examined.
- (B) Evidence admitted under paragraph (A) may include evidence that goes to proof of the acts and conduct of the accused as charged in the indictment.

Rule 92 *quarter*

Unavailable Persons

(Adopted 13 Sept 2006)

- (A) The evidence of a person in the form of a written statement or transcript who has subsequently died, or who can no longer with reasonable diligence be traced, or who is by reason of bodily or mental condition unable to testify orally may be admitted, whether or not the written statement is in the form prescribed by Rule 92 *bis*, if the Trial Chamber:

- (i) is satisfied of the person's unavailability as set out above; and
 - (ii) finds from the circumstances in which the statement was made and recorded that it is reliable.
- (B) If the evidence goes to proof of acts and conduct of an accused as charged in the indictment, this may be a factor against the admission of such evidence, or that part of it.

Rule 94 bis
Testimony of Expert Witnesses

(Adopted 10 July 1998)

- (A) The full statement and/or report of any expert witness to be called by a party shall be disclosed within the time-limit prescribed by the Trial Chamber or by the pre-trial Judge.
(Amended 14 July 2000, amended 1 Dec 2000 and 13 Dec 2000, amended 13 Dec 2001, amended 13 Sept 2006)
- (B) Within thirty days of disclosure of the statement and/or report of the expert witness, or such other time prescribed by the Trial Chamber or pre-trial Judge, the opposing party shall file a notice indicating whether:
- (i) it accepts the expert witness statement and/or report; or (Amended 13 Sept 2006)
 - (ii) it wishes to cross-examine the expert witness; and
 - (iii) It challenges the qualifications of the witness as an expert or the relevance of all or parts of the statement and/or report and, if so, which parts.
- (Amended 12 Dec 2002, amended 13 Sept 2006) (Amended 13 Dec 2001, amended 13 Sept 2006)
- (C) If the opposing party accepts the statement and/or report of the expert witness, the statement and/or report may be admitted into evidence by the Trial Chamber without calling the witness to testify in person.
(Amended 13 Sept 2006)

ANNEX II

MAIN DEMOGRAPHIC EXPERT REPORTS PRESENTED BY THE PROSECUTION AT ICTY TRIALS

15 January 2009

BOSNIA AND HERZEGOVINA (BH)

BOSNIAN KRAJINA, 1992 (BH)

- E. Tabeau, 2002, Basic Demographic Characteristics and Socio-Economic Status of Missing and Killed Persons from the Municipality of Prijedor, 30.04-30.09.1992. Expert report for the STAKIC case (IT-97-24). 0184-6093-0184-6119. Translation ERN L008-3048-L008-3087.
- E. Tabeau and J. Bijak, 2002, Missing and Killed Persons in the Autonomous Region of Krajina in 1992: Basic Demographic Characteristics, Timing and Location of Incidents. Expert report for the BRDANIN and TALIC case (IT-99-36). 0218-6107-0218-6133. BCS 0218-6107-0218-6133.
- H. Brunborg, T. Lyngstad, and E. Tabeau, 2001, Population changes in Prijedor from 1991 to 1997. Research report for the case of KERATERM CAMP (IT-95-8). ICTY, The Hague. 0202-7470-0202-7506. Translation ERN 0190-2364-0190-2406.

EASTERN BOSNIA AND BOSANSKA POSAVINA, 1992 (BH)

- E. Tabeau, 2008: Changes in the Ethnic Composition in the Municipality of Visegrad (Bosnia and Herzegovina), 1991 and 1997. Expert report prepared for LUKIC AND LUKIC (IT-98-32/1). ENG: 0638-3185-0638-3233, BCS: 0638-3185-0638-3233.
- E. Tabeau and J. Bijak, 2001, Changes in the Ethnic Composition in the Municipality of Visegrad, 1991 and 1997. Expert report for the VASILJEVIC et al. case (IT-98-32-1). 0213-8385-0213-8433 (old), R109-7140-R109-7188 (new), BCS R109-7140-R109-7188.
- E. Tabeau and M. Żóltkowski, 2002, Demographic Consequences of the Conflict in the Municipality of Vlasenica, May-September 1992. Expert report for the NIKOLIC case (IT-94-2-PT). 0118-9480-0118-9514, Translation ERN: 0307-4685-0307-4719.
- E. Tabeau and J. Bijak, 2001, Changes in the Ethnic Composition of Bosanski Samac and Od'ak, 1991 and 1997. Expert report for the SIMIC et al. case (IT-95-9). 0208-3390-0208-3431, Translation ERN: 0301-9616-0301-9668.

HERCEG-BOSNA, 1993-1994 (BH)

- E. Tabeau and A. Hetland, 2006: Killed Persons Related to the Siege of Mostar: A Statistical Analysis of the Mostar War Hospital Books and the Mostar Death Registries. Expert report for the case of JADRANKO PRLIC ET AL. (IT-04-74-PT). 0503-4341-0503-4362.
- E. Tabeau, 2006: Wounded Persons Related to the Siege of Mostar. Expert report for the case of JADRANKO PRLIC ET AL. (IT-04-74-PT). 0503-4363-0503-4404.

E. Tabeau, M. Żótkowski, J. Bijak and A. Hetland, 2006: Ethnic Composition, Internally Displaced Persons and Refugees from Eight Municipalities of Herceg-Bosna, 1991 to 1997-98. Expert report for the case of JADRANKO PRLIC ET AL. (IT-04-74-PT). 0503-1625-0503-1730

SIEGE OF SARAJEVO, APRIL 1992 - DECEMBER 1995 (BH)

- E. Tabeau and A. Hetland, 2007: Killed and Wounded Persons from the Siege of Sarajevo: August 1994 to November 1995. Expert Report for the DRAGOMIR MILOSEVIC Case (IT-98-29/1). ERN: 0617-6372-0617-6471, Translation ERN: 0617-6372-0617-6471.
- E. Tabeau, M. Żótkowski and J. Bijak, 2002: Population Losses in the Siege of Sarajevo, 10 September 1992 to 10 August 1994. Expert report for the GALIC case (IT-98-29-I). ERN: 0219-4741-0219-4844, Translation ERN: 0303-2060-0303-2163.
- E. Tabeau, M. Żótkowski and J. Bijak, 2002: Addendum I to the GALIC report: Population Losses in the Siege of Sarajevo, 10 September 1992 to 10 August 1994. (Possible duplicates). 03 June 2002. ERN: 0139-9958-0139-9971, Translation ERN: not available (?)
- E. Tabeau, M. Żótkowski and J. Bijak, 2002, Addendum II to the GALIC report: Population Losses in the Siege of Sarajevo, 10 September 1992 to 10 August 1994. (Excluded records). 24 July 2002. ERN: 0329-6650-0329-6652, Translation ERN: not available (?)
- E. Tabeau, J. Bijak, N. Loncaric, 2003: Death Toll in the Siege of Sarajevo, April 1992 to December 1995: A Study of Mortality Based on Eight Large Data Sources. Expert report for the case of the SLOBODAN MILOSEVIC / BOSNIA (IT-02-54). ERN: 0329-6653-0329-6663, Translation ERN: 0308-9835-0308-9846.

SREBRENICA 1995 (BH)

- E. Tabeau and A. Hetland, 2008: Srebrenica Missing: The 2007 Progress Report on the DNA-Based Identification By ICMP. Expert report for the POPOVIC ET AL. case (IT-05-88). ERN: 0626-5765-0626-5781, Translation ERN: 0626-5765-0626-5781-BCST.
- The list of victims associated with the above report:
- SREBRENICA MISSING: Persons Reported Missing and Dead after the Take-Over of the Srebrenica Enclave by the Bosnian Serb Army on 11 July 1995. The 2007 Progress Report on the DNA-Based Identification by CMP. The Hague, 11 January 2008. R092-0124-R092-0322.
- Helge Brunborg, Ewa Tabeau and Arve Hetland, 2005: Missing and Dead from Srebrenica: The 2005 Report and List. Expert report for the case of VUJADIN POPOVIC et al. (IT-05-88), 16 November 2005. (ERN 0501-6180-0501-6209, Exhibit No. P02413).
- Two lists of victims associated with the above report:
- SREBRENICA MISSING: Persons Reported Missing and Dead after the Take-Over of the Srebrenica Enclave by the Bosnian Serb Army on 11 July 1995. The Hague, 16 November 2005. (ERN 0501-5985-0501-6177; Exhibit P02414).
 - SREBRENICA MISSING: Possible Survivors Excluded from Persons Reported Missing and Dead after the Take-Over of the Srebrenica Enclave by the Bosnian Serb Army on 11 July 1995. The Hague, 16 November 2005. (ERN 0501-6178-0501-6179; Exhibit P02415).

- Helge Brunborg, Ewa Tabeau and Arve Hetland, 2005: Identified Persons among the Missing and Dead from Srebrenica. An Addendum to the Expert Report: Missing and Dead from Srebrenica: The 2005 Report and List, 21 November 2005. Expert report for the case of VUJADIN POPOVIC et al. (IT-05-88). ERN R089-6474-R089-6490; Exhibit No. P02416).
- Two lists of victims associated with the above report:
- SREBRENICA IDENTIFIED: Identified Persons (ICMP) Included among Those Reported Missing and Dead after the Take-Over of the Srebrenica Enclave by the Bosnian Serb Army on 11 July 1995. The Hague, 16 November 2005. ERN R089-6406-R089-6469; Exhibit P02417).
 - SREBRENICA IDENTIFIED: Identified Persons (ICMP) not Included among Those Reported Missing and Dead after the Take-Over of the Srebrenica Enclave by the Bosnian Serb Army on 11 July 1995. The Hague, 16 November 2005. ERN R089-6470-R089-6473; Exhibit P02418).
- H. Brunborg and H. Urdal, 2000, Report on the Number of Missing and Dead from Srebrenica. Expert report for the case of KRISTIC (IT-98-33). Presented as well in SLOBODAN MILOSEVIC (IT-02-54). and BLAGOJEVIC et al. (IT-02-60). 0092-6372-0092-6384. Translation ERN 0093-9724-0093-9737.
- The list of victims associated with the above report:
- SREBRENICA MISSING: Persons Reported Missing and Dead after the Take-Over of the Srebrenica Enclave by the Bosnian Serb Army on 11 July 1995. The Hague, 2 May 2000. ERN: (unavailable), Exhibit 271 (KRSTIC).
- H. Brunborg, E. Tabeau and A. Hetland, 2004, Rebuttal report on: H. Brunborg and H. Urdal, 2000: Report on the Number of Missing and Dead from Srebrenica, from KRISTIC (IT-98-33). Rebuttal report for BLAGOJEVIC et al. (IT-02-60). Confidential.

CHANGES IN ETHNIC COMPOSITION, LARGER BH AREAS 1991-1997

- E. Tabeau, M. Żółtkowski, J. Bijak, and A. Hetland, 2003, Ethnic Composition in and Internally Displaced Persons and Refugees from 47 Municipalities of Bosnia and Herzegovina, 1991 to 1997. Expert report prepared for the MILOSEVIC case (IT-02-54). 0291-5501-0291-5738, BCS: 0308-1733-0308-1814 (report), BCS: 0308-0726-0308-0900 (annexes).
- E. Tabeau, M., Żółtkowski, 2002, Ethnic Composition and Displaced Persons and Refugees in 37 Municipalities of Bosnia and Herzegovina, 1991 and 1997. Expert report for the KRAJISNIK - PLAVSIC case (IT-00-39&40). ERN 0291-0974-0291-1047, BCS: 0308-3432-0308-3507.

CONFLICT IN VOJVODINA, 1992

- E. Tabeau, 2006: The Out-migration of Croats and Other Non-Serbs from the Village of Hrtkovci in the Autonomous Province of Vojvodina in 1992. Expert report for the case of VOJISLAV SESELJ (IT-03-67-PT). ERN 0505-2248-0505-2313, BCS 0505-2248-0505-2313. Not yet available for distribution.

KOSOVO CONFLICT, 1999:

- Patrick Ball, Wendy Betts, Fritz Scheuren, Jana Dudukovich, and Jana Asher, 2002: Killings and Refugee Flow in Kosovo, March -June 1999. An expert report presented in

- the SLOBODAN MILOSEVIC Case (IT-02-54), January 3, 2002. ERN: K021-3816-K021-3893. BCS: 0303-9164-0303-9232.
- Patrick Ball, Wendy Betts, Fritz Scheuren, Jana Dudukovich, and Jana Asher, 2002: Re-examining the killing-refugee flow correlation. An addendum to the expert report presented in the SLOBODAN MILOSEVIC Case (IT-02-54), February 19, 2002. ERN: K021-8322-K021-8328.
- Patrick Ball et al., 2002: Corrigendum to the report of Dr Patrick BALL et al.: Killings and Refugee Flow in Kosovo March-June 1999. Presented in the SLOBODAN MILOSEVIC Case (IT-02-54), 15-Nov-2002. ERN: K035-0375-K035-0389. BCS: 0307-9043-0307-9057.
- Patrick Ball, Meghan Lynch, and Amelia Hoover, 2007: Revisiting “Killings and Migration in Kosovo”: responses to additional data and analysis. January 28, 2007. Expert report presented in the MILUTINOVIC et al. Case (IT-05-87-T). ERN: K053-7582-K053-7607, BCS K053-7582-K053-7607.
- Helge Brunborg, 2002: Report on the size and ethnic composition of the population of Kosovo. Expert report presented in the SLOBODAN MILOSEVIC Case (IT-02-54), August 14, 2002. ERN: K023-1607-K0230-1624.
- Helge Brunborg, 2002: Addendum on the size and ethnic composition of the population of Kosovo, 12 September 2003. Addendum to the expert report presented in the SLOBODAN MILOSEVIC Case (IT-02-54). ERN: 0299-1393-0299-1396. (Restamped with: K037-1218-K037-1221, BCS: 0038-8839-0038-8843).

CONFLICT IN CROATIA

- Ivan Gruijc, 2006, Expert Statement of Col. Gruijc, Government of the Republic of Croatia, Office for Detained and Missing Persons, 13 March 2006. Statement presented in the MILAN MARTIC (IT-95-11-T) and MILE MRKSIC cases. ERN BCS: 0468-7742-0468-7757, Eng: 0468-7742-0468-7757.
- Ivan Gruijc, 2003, Expert Statement of Col. Gruijc, Government of the Republic of Croatia, Office for Detained and Missing Persons, 17 January 2003. Statement presented in the SLOBODAN MILOSEVIC Case (IT-02-54). ERN BCS: 0117-6613-0117-6674, Eng: 0307-2018-0307-2035.
- Ana-Maria Radic, 2008, Expert Report on the Expelled Population of the Republic of Croatia in 1991. Department for Areas of Special State Concern – former Office for Expelled Persons and Refugees. Expert report presented in the VOJISLAV SESELJ case (IT-03-67-PT). ERN: BCS 0643-1599-0643-1628, Eng 0643-1599-0643-1628.doc
- Visna Bilic, 2008, Expert Statement of Visna Bilic. Government of the Republic of Croatia, Office for Detained and Missing Persons. 1 August 2008. Presented in the VOJISLAV SESELJ case (IT-03-67-PT). ERN: BCS 0424-8924-0424-8943, Eng 0424-8924-0424-8943.



**CHANGES IN THE ETHNIC COMPOSITION
IN THE MUNICIPALITY OF VIŠEGRAD
BETWEEN 1991 AND 1997**

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September 1, 2008

**EXPERT REPORT FOR THE MILAN LUKIĆ
AND SREDOJE LUKIĆ CASE (IT-98-32/1)**

¹ This report is an updated version of the expert report: E. Tabeau and J. Bijak, 2001, Changes in the Ethnic Composition in the Municipality of Višegrad, 1991 and 1997; prepared for the VASILJEVIĆ case (IT-98-32); ERN: 0213-8385-0213-8433 (English). The 2001 report was presented to the Trial Chamber during the expert witness testimony of Ewa Tabeau on 19th September 2002.



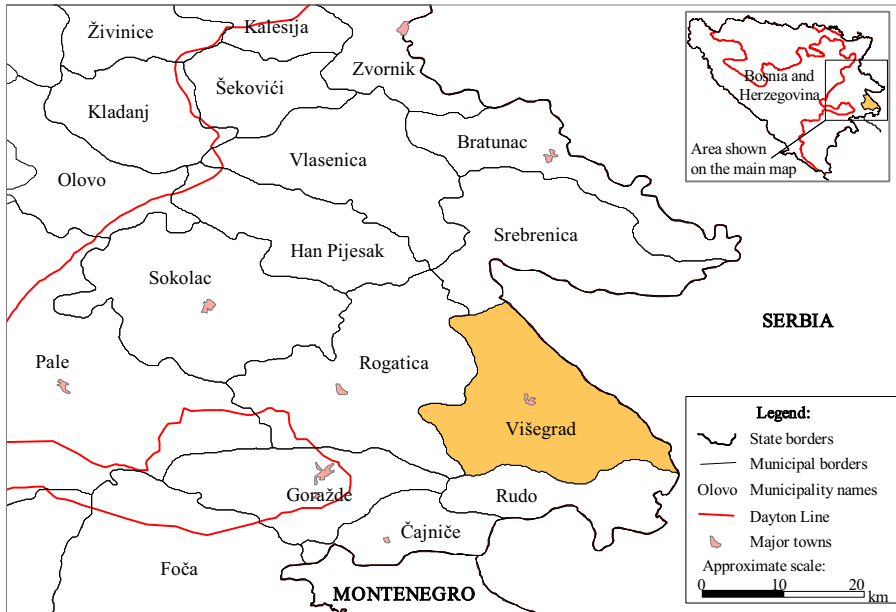
Summary of Results

This report summarises changes from 1991 to 1997 in the ethnic composition of the Višegrad municipality in the middle-east of Bosnia and Herzegovina. Its goal is to provide reliable demographic statistics that allow for an assessment of the type and scale of the changes. Secondly, I discuss basic demographic profiles of persons who went missing in the Višegrad municipality during the war. The study of missing persons aims at showing who were those who went missing and finding, whether there were any particular periods in which people disappeared. In this report I analyse three data sources: the 1991 Population Census, the 1997 Voters Register, and the ICRC list of missing persons (the 2005 edition), and use standard statistical and demographic methods.

The major findings are the following:

- In 1991 Višegrad had two main ethnic groups: Muslims (63.5%) and Serbs (31.8%). There were also Others - mainly Yugoslavs (4.5%), and Croats (0.2%), that lived there.
- The 1991 population was however unequally distributed within Višegrad: out of the total of 159 settlements within the municipality, 93 had a clear Muslim majority, 60 a clear Serb majority and only six could be considered as “mixed”, including the Višegrad town.
- The post-war ethnic structure of Višegrad was dominated by Serbs (95.9%). **During the war Muslims entirely disappeared from Višegrad.** This is reflected also at the level of settlements.
- Scale of the process of changes in the ethnic composition in Višegrad was substantially larger than in other municipalities in the surroundings (excluding Srebrenica and Bratunac).
- The vast majority of persons missing in Višegrad were Muslim men, mainly aged 15 to 44 years.
- The process of going missing was most intense in May and June 1992; over a half of the missing persons disappeared in Višegrad town.
- Number of persons missing in Višegrad in 1992 was larger than in any other municipality in the surroundings. Timing of disappearances in 1992 in Višegrad is similar to the timing in the surrounding municipalities.

The Reference Map of the Pre-war Municipality of Višegrad and its Surroundings



1. Introduction

This report summarises changes in the ethnic composition of the Višegrad municipality in the middle-east of Bosnia and Herzegovina between 1991 and 1997. Its goal is to provide reliable demographic statistics that allow for an assessment of the type and scale of the changes.

In this report I analyse three data sources: the 1991 Population Census, the 1997 Voters Register, and the ICRC list of missing persons (the mid-2005 edition). These sources are reliable and relevant to the objectives of this report. Changes in the ethnic composition are shown by comparing the 1991 Census-based statistics with statistics based on the 1997 Voters Register. The 1991 Census is the latest complete population survey conducted directly before the war and gives a very accurate perspective on the population and its ethnic composition in this period. As to the 1997 Voters Register, I realise that ideally a period closer to the early phase of the conflict should be taken for the comparison with the 1991 Census. Such sources are, however, generally unavailable and therefore cannot be analysed here. Even though the year 1997 is quite distant from the period in which the most population movements occurred, the 1997 Voters Register can be seen as a valuable source to discuss the war-related changes in the ethnic composition. Firstly, because in 1997, (as I will prove in this report), many displaced persons still lived in areas different from their place of residence in 1991. Secondly, because the returns of internally displaced persons that took place in 1996-97 were not considerable which suggests that many displaced persons resided in 1997 in temporary locations acquired during the war.

The report consists of the “Summary of Results” (included at the beginning of this report), four main sections, and three Annexes. Section 1 is a general “Introduction”. In Section 2 I discuss details of “Data Sources and Methods”, and in Section 3 I summarise “Changes in the Ethnic Composition 1991-1997”. Section 4 is devoted to “Basic Demographic Distributions of the Missing Persons in Višegrad”. Finally, the Annexes provide the reader with some additional information. Annex A contains the list of persons who went missing in the Višegrad municipality, being an excerpt from the ICRC list of missing persons. Annex B provides information about the ethnic composition of all settlements in Višegrad municipality in 1991 and of a selection of them in 1998. Annex C contains the description of statistical methodology (chi-squared goodness-of-fit test) used in the report.

One practical remark regarding the use of the Voters Register is that when the total number of the 1997 voters is broken down by place of registration, the resulting samples can be very small. In order to increase the sample size, I use the 1997 Voters Register in combination with the Register from the 1998 election, which was also supervised by the OSCE. The type of information available from the two Registers is the same. The 1998 Register is only used for those voters who registered first time in 1998. Approximately 95% of the voters registered first time in 1997 and only about 5% in 1998. Therefore, my results should be seen (and will be further referred to) as the 1997 figures.

2. Data Sources and Methods

2.1 Population Census for Bosnia and Herzegovina 1991

My source of information on the pre-war population of Višegrad is the 1991 Census for Bosnia and Herzegovina. The Census was taken in April 1991 (officially per March 31, 1991), just before the outbreak of hostilities in the former Yugoslavia.

In statistical practice, the population census is the largest and most complete source of information about the population in a country. The 1991 Population Census covered the entire population of Bosnia and Herzegovina as of 31 March 1991. During the Census, information was collected about a total of 4.4 million individuals. The information about individuals was obtained in face-to-face interviews based on a Census questionnaire designed in a uniform way for the whole country, i.e. the former Yugoslavia. Preparations for the 1991 Census started about a decade earlier and included among other things: preparing and adopting the Census Law at the country and republican levels, appointing the authority responsible for the conduct of the Census (in Bosnia it was the Republican Statistical Office in Sarajevo; the municipal Statistical Offices were the local agencies responsible for the actual Census taking), developing the Census questionnaire, issuing manuals and training of the Census inspectors and interviewers, developing procedures for duplicate elimination, error checking and corrections, designing data processing schemes, preparing and conducting a Pilot Census, and after the actual 1991 Census - a Control Census, plan of publication etc.

The electronic Census files contain one record for each enumerated person. These records include information on a large number of variables, such as the municipality and settlement of residence, name and surname, father's name, household sequential number, personal ID number, date and place of birth, sex, occupation, ethnicity, mother tongue, religion, educational attainment, the number of children born (for women only), and many more.

The overall data quality is good, except for frequent errors in the persons' names. These errors are mostly consequences of poor optical scanning of the original forms (for example misreading V for U, as in MVSIC) and no subsequent checking and editing. To correct the scanning errors the Demographic Unit - OTP employed several strategies. First, computer software was developed and applied to detect combinations of letters that are impossible in the B/C/S language. The software used the B/C/S syntax in order to assess the viability of combinations. The impossible combinations were corrected by eliminating miss-shaped (illogical) characters and inserting their most likely equivalents. Secondly, we developed correction tables to eliminate scanning mistakes from the names. The tables contained the actual names and their correct versions which both were used by a computer programme to produce suggestions regarding the corrections needed. Then, these suggestions were controlled manually to discard any wrong corrections produced by the software. The accepted corrections were then applied to the data. Native speakers of the B/C/S language, who in addition were familiar with naming traditions in Bosnia and Herzegovina, undertook all these tasks. Furthermore, we also developed and applied computer software that utilised household information to correct surnames within households. The software checked the correctness and consistency of family names within the same households. Household members, whose family name was different from the (correct) name of others in this particular household, received the correct name. For instance, if MUSIC was the correct surname in a household, the person enumerated as part of this household under the name MVSIC would become MUSIC.

A second data quality problem is that for a number of records the unique 13-digit personal ID number (*jedinstveni matični broj*, JMB), introduced in the former Yugoslavia in 1981, is only partly available. The JMB consists of date of birth (DOB, 7 digits), region of birth (2 digits), a sex-specific sequential number (3 digits), and a check digit (1 digit). For our needs the date of birth is essential, other components of the JMB being of less value. The date of birth is missing only for a few per cent of the 1991 population; i.e. for only 4.3% of the 1991 population of Višegrad.

In my opinion, data-related problems do not discredit the 1991 Census as a powerful source of information about the pre-conflict population in Bosnia and Herzegovina.

The Census includes a variable on the ethnicity of the enumerated individuals. This allows us to study the population in the context of the 1991 ethnicity for all those individuals whose records have been linked between two data sources (e.g. the 1991 Census and ICRC list). The question on ethnicity in the Census questionnaire was open-ended meaning that individuals could declare themselves as belonging to any ethnicity. The majority of the 1991 Census population declared themselves as belonging to one of the three major ethnic groups in Bosnia and Herzegovina: Serbs, Muslims, or Croats. Other ethnic declarations in the 1991 Census included Yugoslavs (relatively frequently), combinations of ethnicities, such as “Serb-Croat” or “Muslim-Serb” (infrequently), and other national (e.g. Vlach or Gypsies) or foreign (e.g. Hungarians) ethnicities (less frequently). Those who called themselves Yugoslavs, or by names combining two ethnicities, were often children from mixed marriages. The Yugoslavs did not feel they belonged to any particular ethnic group and frequently disliked ethnic categorisation.

For this report, four ethnic groups were distinguished on the basis of ethnicity declarations in the 1991 Census: Serbs, Muslims, Croats, and Others. The last group, Others, is a residual category and covers persons who declared themselves as Yugoslavs, combinations of ethnic groups, and other national or foreign ethnic groups.

2.2 OSCE Voters Registers 1997 and 1998

The Voters’ Registers discussed in this section were established under the auspices of the OSCE; i.e. the Organization for Security and Co-operation in Europe; they are therefore often referred to as the OSCE Voters’ Registers. The basis for establishing these Registers was the 1991 Population Census that after the conflict was the latest available complete source of information about the population of Bosnia and Herzegovina, and in particular about the eligible voters. To register to vote, people had to be included in the 1991 Census, be 18 years old at the time of elections, or present other evidence that they were eligible to vote. Registration stations were established in all municipalities of BH and in many foreign countries. It was possible to register in the municipality of current residence, (i.e. residence in 1997 or 1998), that was different from the one where the person lived in before the war. At the same time, the voters could give their votes for the municipalities of their pre-war residence. The municipality of registration to vote was thus a good proxy for the actual place of living of the voters in 1997 and 1998.

The registration to vote was voluntary, which implies that the registers exclude those who did not register because they were not interested, ill, too old or too young. Still, since countrywide at least 75% of the eligible population registered for the elections, the results on IDPs and refugees presented in this report cannot be greatly weakened. The reason for this is simply that since such a large propor-

tion of the population registered themselves, the errors which may be caused by people who did not register, are not large enough to seriously bias these results.

Because of the voluntary character of the registration, Voters' Registers cannot be used as a source on the overall population size in 1997 and 1998. In these years the population of Bosnia was certainly larger than the approximate 2.7 million voters covered in the Registers (probably around 3.5 or more million). The Registers can be, however, safely seen as a large sample of the population that survived the 1992-95 conflict in Bosnia and Herzegovina, including IDPs and refugees. Noteworthy, this population was aged 18 years or older at the time of elections; children below 18 years of age, who are not eligible to vote, are not represented in the Registers.

The 1997-98 Voters' Register is a large sample of the 1997-98 population of eligible voters of Bosnia and Herzegovina. All voters who registered to vote in 1997 and in 1998 are covered in this source. The Demographic Unit - OTP merged the two Voters' Registers (1997 and 1998) in one (1997-98). The overlap of these two lists is large. Only about 150,000 records are new in 1998 (1st registration in 1998). All other records reported in the 1998 Register are also covered in the 1997 Register. While merging the Registers, we included all records from 1997 (1st registration in 1997) and additionally the new records from 1998 (150,000 records from the 1st registration in 1998). In most cases, the 1998 records appeared to cover municipalities where the registration was less complete in 1997. The total size of the merged 1997-98 Voters' Register is 2,674,506 records and it mainly covers the year 1997.

Besides the variables such as the surname, first name, sex, date of birth, and *matični broj (JMB)*, four location items were registered: municipality of residence in 1991, municipality (and centre) of registration to vote in 1997 (or 1998), and municipality for which the person wanted to vote in 1997 (or 1998). In the 1998 Register, also the settlement of registration is available.

The Voters Register has some of the same data quality problems as the 1991 Census, although not as many, especially misspelled names and missing or incomplete date of birth or *matični broj*. The deficiencies are mostly due to optical scanning of the registration forms. The *matični broj* was checked and found to be complete and valid for 83.7% of the 1997 voters from Višegrad. The names were checked and corrected with the computer programme and other procedures mentioned above in the section on the 1991 Census.

There have been allegations that some people registered fraudulently to vote in the 1997 elections, by using false names (i.e. names of dead people). Brunborg and Urdal (2000) investigated this thoroughly for Srebrenica and found no evidence of massive fraud in the registration of voters in 1997 and 1998. For Srebrenica only 12 persons (out of about 7,661 missing) were found both in the lists of missing persons and in the 1997 and 1998 Voters Registers.²

² Helge Brunborg, Ewa Tabeau and Arve Hetland, 2005: Missing and Dead from Srebrenica: The 2005 Report and List. Expert report for the case of VUJADIN POPOVIĆ et al. (IT-05-88), 16 November 2005. ERN 0501-6180-0501-6209, Exhibit No. P02413. These 12 records were excluded from the 2005 Srebrenica list of missing.

2.3 The ICRC List of Missing Persons for Bosnia and Herzegovina

The ICRC started the registration of missing persons from the territory of Bosnia and Herzegovina (BH) already during the 1992-1995 conflict, primarily to register persons believed to be in detention.³ The registration of the missing persons from Bosnia was one of the largest ICRC operations after the WWII. The National BH Red Cross/ Red Crescent Societies were involved in collecting tracing requests as well as and in public campaigns run in Bosnia and Herzegovina in order to increase the awareness of the society of the ICRC activities. The registration continued after the war until the present time, although recently at a much lower pace. In the year 2007, 40 additional tracing requests were registered. The work of ICRC in Bosnia and Herzegovina has so far resulted in the publication of eight editions of their list of missing persons (the 8th edition published in 2007), as well as an addendum containing about 1,000 entries (published in 2000). The latest editions of the ICRC books (starting with the 4th) contained records of still missing persons as well as known deaths.

In addition to publishing of these books, ICRC maintains a website where the names of still missing persons from Bosnia and Herzegovina are presented. The website, available at http://www.familylinks.icrc.org/mis_bos.nsf/bottin, is regularly up-dated.

ICRC used a standard questionnaire for tracing requests. Thus, the same data items were collected for all missing: names (first, father's, family), date and place of birth, date and place of disappearance, who reported etc. Each missing person received a unique identification number (the so-called BAZ number). As respondents only close relatives or eye witnesses were accepted. Data was computerized with IT specialists and is available in a database format. Data was systematically provided from Sarajevo to Geneva for further processing, cross-referencing with other sources, and including on the web. Importantly, as a result of cross-referencing, ICRC systematically excluded closed cases both dead and alive, as well as administrative exclusions.

The 2005 up-date of the ICRC list of missing persons for all of Bosnia and Herzegovina used for this report was provided directly by the Geneva Office of the ICRC on 17 August 2005 (ERN: D000-1714-D000-1714). The list sent to the OTP in August 2005 is broader than the web-based list of “still missing” only and includes some information about the body for those still missing and about persons who are not missing any more. The 2005 ICRC list provided to the OTP has five components:

- still missing with information about the body not yet available (14,105 records);
- still missing with information about the body already available (1,528);
- ICRC closed cases, i.e. confirmed deaths (6,093);
- alive persons, i.e. cases no more valid as part of the missing persons list (434);
- administrative exclusions (52).

Altogether these lists contain 22,212 records, of which 21,726 are related to still missing or dead persons and 486 are no more relevant.

³ Sources for this section include: Special Report by ICRC on “The issue of missing persons from Bosnia and Herzegovina, Croatia and the Federal Republic of Yugoslavia”, Feb 1998, ERN 0349-2128-0349-2143; ICRC Annual Report 2007- downloaded from the ICRC website.

The 2005 ICRC list, as all previous editions of the list, includes data on surname, first name, father's name, sex, date and place of birth, and date and place of disappearance (reported as the "place – municipality").

It is noteworthy that even though ICRC obviously has improved their records throughout the years since the publication of their first list in 1996, empty or incomplete fields are still seen on the 2005 ICRC list. The most frequently incomplete items are date of birth (28.8 % incomplete; 6,403 incomplete DoB out of 22,212 records; but only 12 without year of birth) and date of disappearance (11.8 % incomplete; 2,624 incomplete out of all 22,212, but only one record without year of death). The other variables are recorded for almost everybody – but that does not necessarily mean that they are always correct. Errors are seen in the spelling of names of persons and places. Moreover, from comparing several lists we know that there are errors, although mostly small, in variables such as date of birth. Such errors are common all over the world in data collected through questionnaires in surveys, censuses and elsewhere. It is, therefore, not surprising that there are errors in variables concerning tragic events collected in a chaotic and traumatic situation.

In connection with a study of the number of missing persons from Srebrenica, the Demographic Unit – OTP did a thorough analysis of the quality of the 2005 ICRC list. We found that the quality of the data is generally good and reliable, although there are some deficiencies in the data, as those mentioned above.

The ICRC list is primarily a list of missing and not dead people. It is generally assumed, however, that most (if not all) of these people are dead. The ICRC itself also expressed this opinion⁴.

2.4 Methods

Our approach has been to match information about individuals from the 1991 Census with individual records from the lists of missing/dead persons and the OSCE Voters Register for the 1997 elections. When comparing various lists with data on individuals our approach has been to use the Access database program to search for records on one list that match records on the other list. If key variables are identical in two lists the matched records are assumed to represent the same person, otherwise not. This would have been a fast and easy procedure if all individuals on each list were uniquely determined by one or more variables, such as an ID number. However, this is not the case with all lists available to us. Although a unique ID number was introduced in Yugoslavia in 1981, it is not used by e.g. ICRC in their database. Moreover, when it is used, such as in the 1991 Census and the OSCE Voters Register, it is sometimes missing or inconsistent.

The matching of two lists always began by searching for records with identical names and date of birth. It is very unusual that two different persons have identical names *and* are born on exactly the same date, especially if we are only considering the population of a limited area, such as a single municipality. Quite often, however, names are spelled differently or the date of birth is recorded slightly differently – or missing altogether in one or both lists. Consequently, for persons not matched in the first round we made the search criteria gradually broader for one or more variables, for example by including only the *year* (and not the full date) of birth, or only the *initial* of the first name, in

⁴ See the ICRC's special report on "The issue of missing persons from Bosnia and Herzegovina, Croatia and the Federal Republic of Yugoslavia", February 1998. ERN 0349-2128-0349-2143.

addition to the surname. The results of such matches have, however, to be inspected visually to decide if the matches are likely to be of the same person or not, by looking at other available information, such as municipality and place of birth or residence. For example, the place of birth may be given as a municipality on one list and a small hamlet, located in the municipality, on the other list. It would be very complicated, if possible at all, to automate such checks. For difficult cases we checked the 1991 Census for additional information, e.g. information about family members of the person in question.

To record the quality and basis for a match, a parameter (a quality indicator) was assigned to each matched person depending on the criteria used for the match. This parameter was used to study the number of accepted matches according to the type and quality of the match. We believe that the accuracy of this method is very good and that it yields reliable results.

As a result of the matching process the DU-OTP was able to identify 10,522 survivors (i.e. registered voters from 1997 and 1998)⁵ out of 21,198 individuals reported as living in Višegrad in the 1991 Population Census, i.e. 49.63%. Some changes are due to natural population movements before, during and after the war, in particular natural deaths and out-migrations. The largest group of people that we do not have any information about, are the eligible voters who did not register to vote. We also do not possess any post-war information about survivors from age 0 to 17 years. Thus, all estimates of survivors provided in this report are *minimum* numbers. The true figures are substantially higher.

Many analyses presented in this report are made by ethnicity, obtained from exactly the same definition for both analyzed years, for 1991, for 1997-98, and also for the moment of disappearance. The definition I applied is the one used in the questionnaire of the 1991 Population Census, where ethnicity was a self-reported response to an open-ended question. In the original census forms, the citizens of Bosnia and Herzegovina mentioned about one hundred of ethnic categories. The Demographic Unit - OTP re-grouped these categories into four major clusters: those who reported themselves as Muslims, Croats or Serbs were regarded as members of these particular groups, all remaining categories, including Yugoslavs, were taken together as Others.

With regard to the definition of internally displaced persons, the 1991 and 1997-98 municipality of residence were compared for each person studied. If an individual resided in 1991 in a different municipality than the municipality where he/she registered to vote in 1997-98 elections, than the person was considered internally displaced. Comparisons were made for post-Dayton municipalities, which involved creating a new variable, post-Dayton municipality, for all individuals reported in the Census. This task was successfully completed for the Višegrad area (including Višegrad and other municipalities studied in this report).

It needs to be noted that *internal* migration in former socialist countries, such as Yugoslavia and, in particular, Bosnia and Herzegovina, was limited in the years until 1991. Our analysis of differences in the place of residence *before* and *after* the conflict is therefore fully justified as a method for assessment of population movements during the 1992-95 conflict. Pre-conflict internal migration in Bosnia and Herzegovina was negligible. Moreover the usual causes of internal migration (labour market, housing, education etc.) did not operate during the conflict. Poor housing was one of the

⁵ The term “survivor” as used here relates to records matched between the 1991 Census and the 1997-98 Voters Registers. More broadly, sources such as the BH government registration of IDPs and refugees can be used to identify survivors in addition to the voters’ registration. The resulting number is then 12,658, slightly higher than 10,870.

reasons for low population mobility in Bosnia and Herzegovina before 1991. Also the urbanisation process was relatively slow in Bosnia when compared with dynamic Western countries. The process was controlled by the socialist party. Labour migration did not play much role as unemployment did not exist in the socialist system. Jobs were guaranteed for everyone. Making career was related to factors largely beyond individual ambition and readiness to move for a job. These factors were related to, for example, socialist party membership or employment policies of the leading party. The working age population of the former Yugoslavia, including Bosnia, mainly men, travelled, however, to Western European countries for temporary jobs and better income, but this temporary (external, not internal) migration returned systematically back home.

Refugees were persons who in 1991 were reported in the population of Bosnia and Herzegovina (including those temporarily residing abroad) and who in 1997-98 registered to vote in countries different than Bosnia. There were approximately 300,000 out-of-country voters from Bosnia and Herzegovina who satisfied this criterion.

Note that our definitions of internally displaced persons and refugees are statistical, not legal. As such the numbers of IDPs and refugees presented in this report should be seen as approximations of the actual true figures. Note also that obtaining the true figures is in our view an impossible task due to limited existing sources of information and fragmentary information contained in these sources.

3. Changes in the Ethnic Composition in the Višegrad Region, 1991-1997

3.1 Višegrad Municipality, 1991-97

In this section I discuss changes in the ethnic composition in the Višegrad municipality by comparing the 1991 structure with the structure for 1997. In addition, a comparison between ethnic structures of selected settlements (i.e. administrative sub-units within the municipality) in the years 1991 and 1998 is provided. At the end of this discussion I place the changes that occurred in Višegrad in the context of similar changes in surrounding municipalities.

Before the war the population of Višegrad increased systematically from about 18,923 in 1948 to 21,199 in 1991 (Table 1). The municipality was relatively thinly populated in 1991 (47.3 persons per 1 sq.km), much of the population lived in the town of Višegrad. In 1991, as in 1981, the majority ethnic group was the Muslims (63.5% in 1991 and 62.1% in 1981). Serbs were the second largest group; their share was 33% and 31.8% in 1981 and 1991 respectively (Table 2).

Table 1. Total Population of Višegrad Since 1948

1948	1953	1961	1971	1981	1991
18,923	21,566	24,557	25,389	23,201	21,199

Source: Stanovništvo Bosne i Hercegovine. CROSTAT, Zagreb, Travanj 1995

Table 2. Ethnic Composition of Višegrad in 1981, 1991, and 1997

Year	Total	Croats	Muslims	Serbs	Others
1981	23,201	60	14,397	7,648	1,096
1981	100.0	0.3	62.1	33.0	4.7
1991	21,199	32	13,471	6,743	953
1991	100.0	0.2	63.5	31.8	4.5
1997(18+)	9,241	60	3	8,861	317
1997 (18+)	100.0	0.6	0.0	95.9	3.4

Source: For 1981 and 1991: Stanovništvo Bosne i Hercegovine. CROSTAT, Zagreb, Travanj 1995.

For 1997: The OSCE Voters Register

Table 2 also shows the ethnic composition of Višegrad in 1997. The figures for 1997 do not entirely correspond to those for 1981 and 1991. For 1997 only the population at age 18 years or more is included, i.e. the eligible voters, while for 1981 and 1991 all age groups are shown. Moreover, the 1997 voters represent a sample of the whole population, while the 1981 and 1991 figures cover all citizens living in this area. Despite these deficiencies, the 1997 figures give a good impression of the ethnic structure in 1997. As we can see from Table 2, for Višegrad as a municipality, the pre-war majority group, Muslims, were entirely gone in 1997. The proportion of Serbs was substantially higher in 1997 than in 1991, whereas the remaining shares of Croats and Others stayed at similar levels as

before the war. The Serbs became not only the dominant ethnic group in Višegrad, but also almost exclusively the only group remaining in this municipality.

In order to produce a more accurate picture of changes in the ethnic composition it is necessary to analyse the population at age 18 or more years for both considered years. This is reported below.

Figure 1a. Ethnic Composition in Višegrad: Pre- and Post-war Population

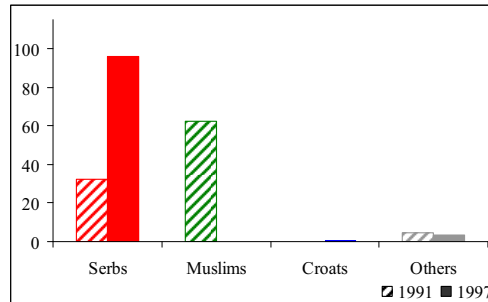
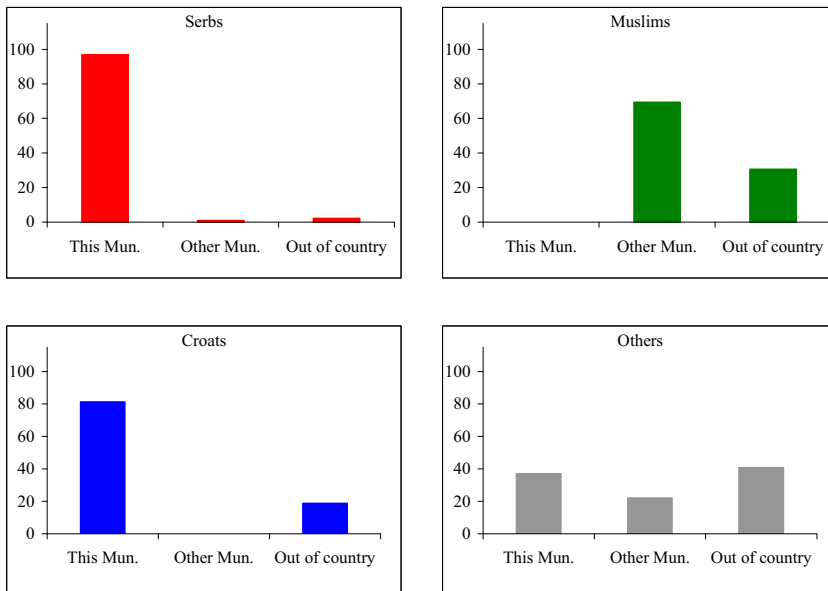


Figure 1b. Registered 1997 Voters Originally from Višegrad by Ethnicity and Place of Registration



The 1991 population of Višegrad was estimated at 21,199 individuals (Table 2), out of which 17,883 were at age 18 or more years in 1997 (Table 3a) and were eligible to vote. The eligible voters are the subjects of all analyses following in the next sections of this report.

The population of Višegrad was in 1991 dominated by Muslims (about 62.5%; Figure 1a and Table 3a). The 1997 ethnic composition of the Višegrad population, as estimated from our sample of 9,241 registered voters, was completely different than the 1991 composition, i.e. it became dominated by Serbs in 95.9 per cent. Figure 1b and Table 3b further confirm that practically all Muslim voters who lived in Višegrad in 1991, registered to vote in 1997 in other municipalities in Bosnia and Herzegovina or abroad (some 6,798 or almost all out of the 6,799 registered). On the contrary to Muslims, Serbs from Višegrad registered mainly in the Višegrad municipality (3,704 or 96.9% out of 3,822 registered) in 1997.

Croats were weakly represented among the 1997 voters, which may indicate that this group was largely absent in the area of Višegrad in 1997. Also Others were not numerous. Some 63% of Others registered to vote in 1997 outside the borders of the Višegrad municipality (22% in other municipalities in BH and 41% abroad).

Table 3a. Ethnic Composition in Višegrad: Pre- and Post-war Population
(18 Years of Age or Older)

Ethnicity	Absolute numbers		Percentages	
	1991 Census	1997 Voters Register	1991 Census	1997 Voters Register
Serbs	5837	8861	32.64	95.89
Muslims	11178	3	62.51	0.03
Croats	30	60	0.17	0.65
Others	838	317	4.69	3.43
Total	17883	9241	100.00	100.00

Table 3b. Registered 1997 Voters Originally from Višegrad by Ethnicity and Place of Registration

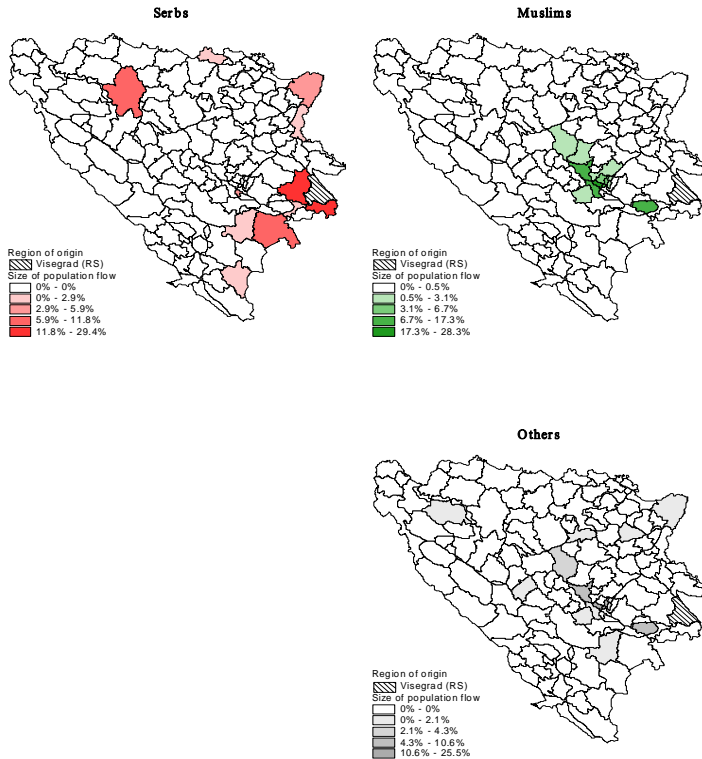
Ethnicity	Absolute numbers			
	This municipality	Other municipalities	Out of country	Total
Serbs	3704	34	84	3822
Muslims	1	4717	2081	6799
Croats	13	0	3	16
Others	79	47	87	213

Ethnicity	Percentages			
	This municipality	Other municipalities	Out of country	Total
Serbs	96.91	0.89	2.20	100.00
Muslims	0.01	69.38	30.61	100.00
Croats	81.25	0.00	18.75	100.00
Others	37.09	22.07	40.85	100.00

The largest group of the internally displaced population from the Višegrad municipality were the Muslims. There were in total 4,717 registered voters whom I identified as registered in municipalities different than Višegrad. The 1997 place of registration of the displaced Muslim population is shown in Figure 1c.

The Muslim population moved to areas located in the Federation of Bosnia and Herzegovina. Many Muslims fled to the Federal part of the Goražde municipality, and to the Federal parts of Sarajevo (Centar, Stari Grad, Novi Grad, Novo Sarajevo, Ilidža, Ilijaš, Hadžići, Vogošća) and surrounding municipalities such as Visoko, Kakanj, and Zenica.

Figure 1c. Population Displacement from Višegrad (RS): Pre- and Post-war Population



Our results shown on the map above are very much in accordance with the distribution of displaced persons reported in 1998 by the UNHCR in Sarajevo (Table 4).

Table 4. Distribution of Internally Displaced Persons from Višegrad Reported by UNHCR, 1998

Municipality	Number of DPs	Municipality	Number of DPs
Tuzla	139	Sarajevo Hadžići	255
Breza	50	Sarajevo Ilidža	601
Kakanj	129	Sarajevo Ilijaš	244
Visoko	853	Sarajevo Novi Grad	3576
Zenica	616	Novo Sarajevo	906
Fojnica	102	Sarajevo Stari Grad	227
Sarajevo Centar	516	Sarajevo Vogošća	384
		Total	8598

Source: *Raseljena lica po opcinama i kantonima (regijama) prebivališta i boravišta. Stanje: 31.12.1998. UNHCR Sarajevo, 1998.*

Table 5. Emigration from Višegrad, 1991-1997

Ethnicity	Outmigration structure (out of country voters)							
	Croatia		FRY		Other countries		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Serbs	0	0.00	73	86.90	11	13.10	84	100.00
Muslims	1	0.05	19	0.91	2061	99.04	2081	100.00
Croats	0	0.00	0	0.00	3	100.00	3	100.00
Others	0	0.00	15	17.24	72	82.76	87	100.00

Source: *The 1997 Voters Register and the 1991 Population Census for BH*

Table 5 summarises the emigration (i.e. out-migration) from the municipality of Višegrad. It is striking that out of 2,255 persons who left the municipality and in 1997 still lived in locations different from their pre-war place of residence which in addition were outside the borders of Bosnia and Herzegovina, the largest group (some 2,081) were Muslims. About 2,061 (99%) of all Muslim migrants went obviously to countries outside of the area of the former Yugoslavia.

The remaining out-migration from Višegrad was of Serbs and Others (84 and 87 individuals respectively). Some 87% of the Serbs moved to FRY (practically to Serbia) and 83% of Others moved to countries outside the former Yugoslavia.

3.2 Changes in the Ethnic Composition in Selected Settlements in Višegrad, 1991-1998

In 1991 there were 159 settlements (administrative sub-units) in the Višegrad municipality. Most of them (93) had a clear Muslim majority (well above 50% Muslims), whereas 60 had a clear Serb majority. Only six settlements could be considered as “mixed”, i.e. having the difference between the

shares of two major ethnic groups less than 15%. These settlements include Višegrad town and the villages: Koritnik, Pijavice (with hamlet Uzamnica), Prelovo, Sase and Velji Lug (with hamlets Krčevine, Omar, Šipovac and Žilići).

The detailed list of all settlements in Višegrad with their ethnic composition in 1991, as reported in the Population Census, is attached in Annex B. The Annex also includes the estimated ethnic composition of selected settlements in 1998, based on the 1998 Voters Register (only for 1998 the information about voters' settlements is provided). Note however, that as the Voters Register is only a *sample* of the post-war population, only those settlements are shown, for which the sample size is large enough, i.e. the number of observations exceeds 50. This condition is met for 15 settlements (Višegrad town and some larger villages, the full list is provided in Annex B). From this example it can be clearly seen that during the period 1991–1998 all of them became almost exclusively Serb, regardless their pre-war ethnic composition.

3.3 Selected Municipalities in the Višegrad Region, 1991–97

The objective of the analysis presented in this subsection is to compare the changes of the ethnic composition in Višegrad with the changes that occurred in the surrounding municipalities. The municipalities selected to study all entirely belong to Republika Srpska since 1995. These municipalities are: Bratunac, Čajniče, Han Pijesak, Milići, Rogatica, Rudo, Sokolac, Srebrenica and Vlasenica. Goražde municipality which was split by the Dayton line and since 1995 consists of two parts (Goražde-FBH and Srpsko Goražde-RS), has been excluded from this study. I excluded Goražde for the reason that in all split municipalities extremely large population movements occurred **between** the Serb and Federal areas. Such extreme changes are not directly comparable with the changes that occurred in non-split municipalities. It is also worth noting that Han Pijesak, Milići, (part of) Rogatica, Sokolac and Vlasenica belonged to the so-called Serbian Autonomous District of Romanija-Birać, whereas Čajniče and Rudo – to the Serbian Autonomous District of Hercegovina (as defined by the Assembly of Serbian People in BH on 21.11.1991). However, the municipalities with a considerable Muslim majority (Srebrenica, Vlasenica, Višegrad and part of Rogatica) were not assigned to any of the Serbian Autonomous Districts.

To measure the size of changes in the ethnic composition in the mentioned municipalities and to arrange the municipalities in a rank order, a statistical measure called the χ^2 statistic (*chi-square*) was used. The interpretation of this measure is straightforward: the bigger the value of χ^2 , the more dramatic changes in the ethnic composition occurred. On the basis of the calculated χ^2 , a statistical test can be performed, indicating whether the obtained results show the true (significant) pattern or could they have been obtained by chance. The values of the χ^2 statistic showing the rank order of municipalities around Višegrad in terms of the size of ethnic changes are presented in Table 6. The statistical methodology underlying all the calculations and inference is described in Annex C.

Table 6. Rank Order of Selected Municipalities in the Višegrad Region due to the 1991-1997 Change in Ethnic Composition

Post-Dayton Municipality	Serbs 91	Serbs 97-98	Muslims 91	Muslims 97-98	Croats 91	Croats 97-98	Others 91	Others 97-98	Chi-square Statistic	P-Value
105 - Srebrenica	24.7	96.3	73.2	0.1	0.1	0.5	2.0	3.1	21027.7	0.00000
104 - Bratunac	36.4	97.0	61.8	0.1	0.1	0.4	1.7	2.5	17744.7	0.00000
147 - Višegrad	32.6	95.9	62.5	0.0	0.2	0.6	4.7	3.4	17254.7	0.00000
146 - Rogatica	38.8	97.7	59.4	0.0	0.1	0.3	1.7	1.9	10812.5	0.00000
103 - Vlasenica	39.1	96.8	57.9	0.2	0.2	0.4	2.8	2.6	10555.3	0.00000
121 - Sokolac	66.1	97.9	32.5	0.0	0.1	0.3	1.2	1.8	4086.0	0.00000
185 - Milići	49.0	98.8	49.2	0.0	0.1	0.1	1.7	1.1	3770.0	0.00000
169 - Čajniče	53.0	97.3	44.5	0.0	0.1	0.1	2.5	2.6	2711.6	0.00000
170 - Rudo	70.1	97.5	27.5	0.0	0.1	0.2	2.4	2.3	1935.5	0.00000
123 - Han Pijesak	58.7	97.4	39.2	0.0	0.1	0.2	2.0	2.5	1620.5	0.00000

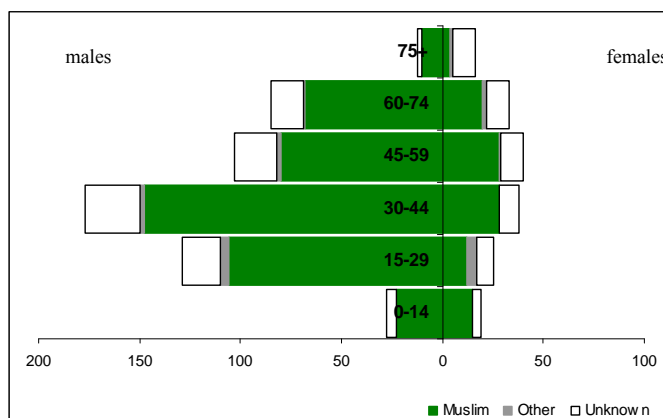
It can be seen that the most dramatic changes occurred in Srebrenica, Bratunac and Višegrad. Taking into consideration that in Srebrenica and Bratunac the changes are mainly related to a single event – the fall of Srebrenica enclave in July 1995 (see also Section 4.2), it appears that Višegrad experienced the most dramatic changes in ethnic composition among the municipalities in the region. Moreover, the tests for all the municipalities proved that all changes are statistically significant, with the probability of obtaining such results by chance being practically equal 0. Summing up, changes in the ethnic composition in Višegrad reflect the pattern observed overall in the whole region, which became almost entirely Serb after the war. Finally, the intensity of these changes in Višegrad is substantially higher than of those in the surrounding municipalities (except Srebrenica and Bratunac).

4. Basic Demographic Distributions of the Missing Persons in Višegrad

4.1 Višegrad Municipality

In the ICRC list of missing persons (2005 release) I have found 705 individuals who disappeared in the Višegrad municipality. Of these persons, 560 have been identified in the 1991 Population Census (79.4%).⁶ For the persons, whose identity was confirmed by linking with the respective Census records, I could provide basic demographic distributions such as the distribution by sex, time and place of disappearance and ethnicity. Of the persons identified, 542 declared themselves in 1991 as Muslims (96.8%) and 18 as Others – Yugoslavs, other ethnicities and undeclared (3.2%). The basic demographic distributions are shown below in Figures 2 through 4 and in Tables 7 and 8. The complete list of persons missing in Višegrad municipality, being an excerpt from the 2005 ICRC list, is attached in Annex A.

Figure 2. Number of Persons Missing in Višegrad, by Sex, Age and Ethnicity



Source: ICRC List of Missing Persons (2005) and 1991 Population Census for BH

Table 7. Number of Persons Missing in Višegrad, by Sex, Age and Ethnicity

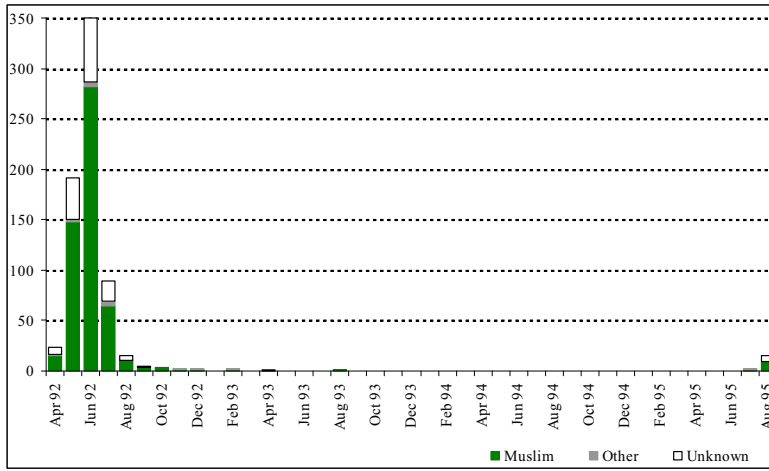
Age Group	Men			Total	Women			Total
	Muslim	Other	Unknown		Muslim	Other	Unknown	
0-14	23	0	5	28	15	0	4	19
15-29	106	4	19	129	12	5	8	25
30-44	148	2	27	177	28	0	10	38
45-59	80	2	21	103	28	1	11	40
60-74	68	1	16	85	20	2	11	33
75+	10	0	2	12	4	1	11	16
Total	435	9	90	534	107	9	55	171

Note: 1 Serb male, age 15-29, is included in "Others"

Source: ICRC List of Missing Persons (2005) and 1991 Population Census for BH

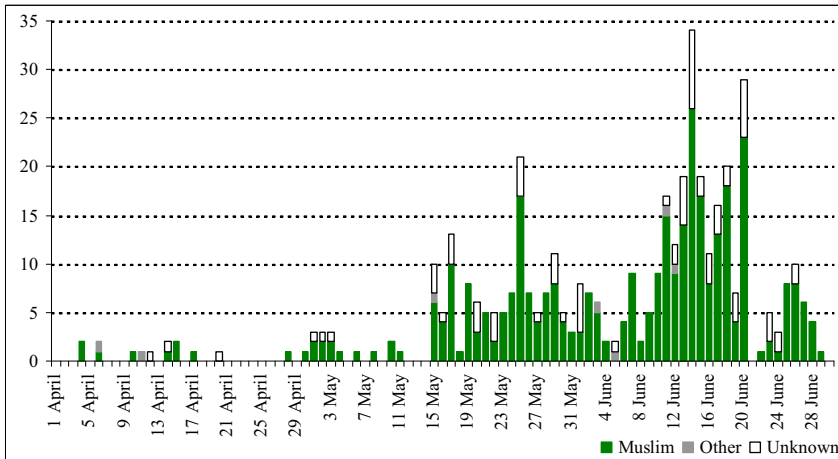
⁶ Records that remain unmatched are characterized by misspelling and incompleteness. Manual searching for these records in the 1991 Census one by one would likely bring more matches. Some records might be, however, too poor to be declared matched.

Figure 3. Number of Persons Missing in Višegrad, by Ethnicity and Month of Disappearance



Source: ICRC List of Missing Persons (2005) and 1991 Population Census for BH

Figure 4. Number of Missing Persons from Višegrad, by Ethnicity and Date of Disappearance (in the Period April-June 1992)



Source: ICRC List of Missing Persons (2005) and 1991 Population Census for BH

Table 8. Distribution of Missing Persons in Višegrad, by Place of Disappearance
(Only Places with 5 or More Missing Persons Are Shown)

PLACE OF MISSING	NO. MISSING
VIŠEGRAD	396
BIKAVAC	28
DRINSKO	21
DOBRUN	20
DUSCE	18
RODIC BRDO	14
MUSICI	13
PRELOVO	12
VELIKA GOSTILJA	12
SASE	10
MALA GOSTILJA	9
BAN POLJE	9
KLASNIK	8
KABERNIK	7
VUCINE	7
MEDEDA	6
KORITNIK	6
BABIN POTOK	6
BOSANSKA JAGODINA	6
SEGANJE	6
BARIMO	5
ZLATNIK	5
OTHER PLACES	81
ALL PLACES	705

Source: ICRC List of Missing Persons (2005)

From Figure 2 and Table 7 it can be seen that the vast majority of persons missing in Višegrad were Muslim men, mainly aged 15 to 44 years (younger military age). Figures 3 and 4 show that the process of going missing was most intense in May and June 1992, especially around May 25th, June 14th and June 20th 1992. Moreover, from Figure 3 it can be clearly seen that the disappearances of persons in Višegrad took place almost exclusively in late spring and early summer 1992. Table 8 shows that from all the places where people went missing in the municipality, most important was the town of Višegrad, where 396 persons disappeared (56%).

4.2 Selected Municipalities in the Višegrad Region

The aim of the review presented in this subsection is to compare the number of persons missing in Višegrad with the numbers of persons who disappeared in the surrounding municipalities. The list of municipalities taken into account is the same as in the analysis presented in Section 3.3. For all these municipalities (including Višegrad) I have found that 9,719 individuals have been reported to the ICRC as missing during the war. Of these persons, 83.8% have been identified in the 1991 Population Census, out of those 98.1% had declared themselves in 1991 as Muslims. The detailed figures by municipality are presented in Table 9.

Table 9. Distribution of Missing Persons in and around Višegrad, by Ethnicity and Municipality of Disappearance

Municipality of Disappearance	Croats	Muslims	Serbs	Others	Unknown	Total	Percent in 1991 Census	Percent Muslims in 1991
BRATUNAC		2,972	15	28	489	3,504	86.0	98.6
CAJNICE		67			25	92	72.8	100.0
HAN PIJESAK		47	1	1	7	56	87.5	95.9
ROGATICA	2	353	7	4	102	468	78.2	97.0
RUDO		52			40	92	56.5	100.0
SOKOLAC	1	95	1	6	33	136	75.7	93.1
SREBRENICA	1	3,144	24	28	578	3,775	84.7	98.4
SREBRENİK			3		1	4	75.0	0.0
VIŠEGRAD		542	1	17	145	705	79.4	96.8
VLASENICA	1	713	5	11	157	887	82.3	97.8
TOTAL	5	7,985	57	95	1,577	9,719	83.8	98.1

Source: ICRC List of Missing Persons (2005) and 1991 Population Census for BH

To eliminate the bias caused by uneven timing of the incidents in the municipalities around Višegrad (especially related to the fall of Srebrenica enclave in July 1995, what is reflected by the figures for Srebrenica and Bratunac), the totals from Table 9 are further broken down by the year of disappearance as shown in Table 10.

Table 10. Distribution of Missing Persons in and around Višegrad, by Year and Municipality of Disappearance

Municipality of Disappearance	1992	1993	1994	1995	Total
BRATUNAC	372	43	4	3,085	3,504
CAJNICE	90	2			92
HAN PIJESAK	41	3	2	10	56
ROGATICA	343	6	6	113	468
RUDO	71	21			92
SOKOLAC	127	6	3		136
SREBRENICA	181	54	25	3,515	3,775
SREBRENİK			4		4
VIŠEGRAD	684	4		17	705
VLASENICA	619	66	6	196	887
TOTAL	2,528	205	50	6,936	9,719

Source: ICRC List of Missing Persons (2005)

In 1992, out of the ten selected municipalities, most missing persons disappeared in Višegrad (684). The figures for 1992 are further shown on monthly basis in Table 11.

Table 11. Distribution of Persons Missing in and around Višegrad in 1992, by Month and Municipality of Disappearance

Municipality	Apr 92	May 92	Jun 92	Jul 92	Aug 92	Sep 92	Oct 92	Nov 92	Dec 92
BRATUNAC	15	273	21	17	8	12	9	10	6
CAJNICE	7	66	11	3		2	1		
HAN PIJESAK			2	1	3	1	1	2	30
ROGATICA	14	40	162	38	69	15	3		2
RUDO		9	17	18	17		10		
SOKOLAC	7	3	8	17	18	67	3	1	
SREBRENICA	8	94	28	27	5	7		8	3
VIŠEGRAD	23	192	350	89	15	5	4	2	2
VLASENICA	14	102	194	89	32	110	40	17	16
TOTAL	88	779	793	299	167	219	71	40	59
PERCENT	26.1	24.6	44.1	29.8	9.0	2.3	5.6	5.0	3.4

Source: ICRC List of Missing Persons (2005)

From this table it can be seen that most disappearances in and around Višegrad occurred in late spring and early summer of 1992. In particular, the process of going missing was most intense in May and June 1992 – together 62.2% of all missing in 1992 disappeared during these two months. Timing of disappearances in 1992 in Višegrad is similar to the timing in the surrounding municipalities, which indicates that the events in Višegrad could have been a part of larger-scale processes which occurred in the whole area in late spring and early summer of 1992.

Sources:

ERN D000-0070-D000-0070 and D000-0079-D000-0079: The 1991 Population Census for Bosnia and Herzegovina (data files)

ERN D000-0072-D000-0072: OSCE 1997 Voters Register for municipal elections in BH (data files)

ERN D000-0103-D000-0103: OSCE 1998 Voters Register for local elections in BH (data files)

ERN D000-1714-D000-1714: The 2005 edition of the ICRC List of Missing Persons from Bosnia and Herzegovina

ANNEX A

List of Persons Missing in the Višegrad Municipality

Excerpts from the ICRC List of Missing Persons, 2005 Release

Excerpts from the 2005 ICRC List of Missing Persons from Bosnia and Herzegovina: Those who Disappeared in Višegrad Municipality

No.	ICRC Number	Name of the sought person	Sex	Date and place of birth	Father's name	Date and place of disappearance	Opstina	Ethnicity
1	BAZ-0011633-01	AGIC MEHO		02.01.1930	AHMET	18.06.1992	VIŠEGRAD	Unknown
2	BAZ-108241-01	AHMETAGIC SALKO	M	14.06.1947	VLAHOVICI - VIŠEGRAD	--.05.1992	VLAHOVICI	Muslim
3	BAZ-108241-02	AHMETAGIC SAMIR	M	10.01.1975	VLAHOVICI - VIŠEGRAD	03.06.1992	RODIC BRDO	Muslim
4	HRZ-022041-01	AHMETSPAHIC ALMAS	M	17.11.1972	VELJI LUG - VIŠEGRAD	18.07.1992	KOSOVO POLJE	Muslim
5	BAZ-105988-01	AHMETSPAHIC AMIR	M	24.09.1990	FOCA	15.06.1992	VIŠEGRAD	Unknown
6	BAZ-105988-02	AHMETSPAHIC HALIL	M	01.10.1996		15.06.1992	VIŠEGRAD	Muslim
7	BAZ-108250-01	AHMETSPAHIC HAMED	M	20.05.1928	VELJI LUG - VIŠEGRAD	15.06.1992	SEGANJE	Muslim
8	BAZ-104551-01	AHMETSPAHIC HASAN	M	03.03.1963	VIŠEGRAD	--.05.1992	CRNCA	Muslim
9	BAZ-108250-02	AHMETSPAHIC HASIBA	F	11.03.1936	ILOVACA - GORAZDE	15.06.1992	SEGANJE	Muslim
10	BAS-002934-01	AHMETSPAHIC JA SMINA	F	28.01.1968	VIŠEGRAD	14.06.1992	VIŠEGRAD	Unknown
11	BAS-001487-01	AHMETSPAHIC MUŠTAFIJA	F	00.00.1929	MEHMED	13.06.1992	VIŠEGRAD	Muslim
12	HRZ-022041-02	AHMETSPAHIC RAZUJA		27.12.1948	DAUT	25.07.1992	VIŠEGRAD	Muslim
13	BAZ-105097-01	ALIC DAHMO	M	--.1958	GRUJICICI - SREBRENICA	04.08.1995	VIŠEGRAD	Muslim
14	BAZ-104805-01	ALIHODZIC MUJO	M	28.08.1950	STRMAC - PRIBOJ	21.09.1992	BIOCJE	Unknown
15	BAZ-102816-02	ALLJASEVIC HANKA	F	01.06.1968	MALA GOSTILJA	25.06.1992	MALA GOSTILJA	Muslim
16	BAZ-102816-01	ALLJASEVIC NURA	F	20.04.1938	KLASNJK - VIŠEGRAD	23.06.1992	MALA GOSTILJA	Muslim
17	BAZ-109325-01	ALISP AHIC DZEVAD	M	20.12.1958	MUNIB	18.06.1992	VIŠEGRAD	Muslim
18	BAZ-100171-01	ALISP AHIC SEMSUDIN	M	15.06.1966	HRANJEVAC - VIŠEGRAD	05.08.1992	HRANJEVAC	Muslim
19	BAZ-102997-01	ALJIC FAHRUDIN	M	14.06.1965	VIŠEGRAD	25.05.1992	VIŠEGRAD	Muslim
20	BAZ-109111-01	ALJIC SAFUJA	F	09.07.1904	IBRO BESLIJA	25.07.1992	VIŠEGRAD	Unknown
21	BAZ-109107-01	ALJIC SMAIL	M	--.1967	KORITNIK - VIŠEGRAD	--.05.1992	KORITNIK	Muslim
22	BAZ-110987-02	ALJUŠEVIC DELIJA FATA	F	20.10.1947	VIŠEGRAD	23.07.1992	VIŠEGRAD	Unknown
23	BAZ-110987-01	ALJUŠEVIC MERSIHA	F	04.11.1978	SARAJEVO	23.07.1992	VIŠEGRAD	Muslim
24	BAZ-109128-01	ARNAUT ELVIR	M	28.12.1971	KONJIC	15.06.1992	VIŠEGRAD	Muslim
25	BAZ-109219-01	ARNAUTOVIC JUSUF	M	05.03.1948	VIŠEGRAD	--.06.1992	VIŠEGRAD	Muslim
26	BAZ-105977-03	ARUKOVIC FADIL	M	08.03.1975	BERKOVICI - ROGATICA	05.08.1995	KLASNJK	Muslim
27	BAZ-105977-01	ARUKOVIC SEMSUDIN	M	05.09.1967	BERKOVICI - ROGATICA	05.08.1995	TRSEVINE	Muslim
28	BAZ-105977-02	ARUKOVIC SEUDIN	M	12.06.1971	BERKOVICI - ROGATICA	05.08.1995	KLASNJK	Muslim
29	BAS-002159-01	AVDAGIC IBRAHIM	M	17.10.1951	KLASNJK - VIŠEGRAD	17.06.1992	VIŠEGRAD	Muslim
30	BAZ-108023-01	AVDAGIC SABIT	M	14.04.1965	VLAHOVICI-VIŠEGRAD	25.05.1992	VIŠEGRAD	Muslim
31	BAZ-110635-01	AVDIC ALENA	F	31.08.1975	TITOVO UZICE	12.04.1992	VIŠEGRAD	Unknown
32	BAZ-108557-02	AVDIC AMEL	F	--.1982	VIŠEGRAD	--.06.1992	VIŠEGRAD	Muslim
33	BAZ-108557-01	AVDIC AMELA	F	--.1981	VIŠEGRAD	--.06.1992	VIŠEGRAD	Muslim
34	BAZ-109083-01	AVDIC FADILA	F	--.1985	FEHIM BALEŠIĆ	--.07.1992	VIŠEGRAD	Muslim
35	BAZ-107066-01	AVDIC FADILA	F	--.1957	MEHMED OMEROVIC	02.06.1992	VIŠEGRAD	Muslim
36	BAZ-108083-03	AVDIC JASMIN	M	--.1978	JUSO	--.07.1992	VIŠEGRAD	Muslim

Excerpts from the 2005 ICRC List of Missing Persons from Bosnia and Herzegovina: Those who Disappeared in Višegrad Municipality

No.	ICRC Number	Name of the sought person	Sex	Date and place of birth	Father's name	Date and place of disappearance	Opstina	Ethnicity*
37	BAZ-108083-06	AVDIC JUSO	M	---,1950	PRELOVO - VIŠEGRAD	VIŠEGRAD	VIŠEGRAD	Muslim
38	BAZ-108083-04	AVDIC MUSA	M	---,1952	PRELOVO - VIŠEGRAD	VIŠEGRAD	VIŠEGRAD	Muslim
39	BAZ-108086-01	AVDIC NAZLIJA	F	---,1939	PRELOVO - VIŠEGRAD	VIŠEGRAD	VIŠEGRAD	Muslim
40	BAZ-110333-01	AVDIC NURA	F	18.05.1928	BLAZ - VIŠEGRAD	VIŠEGRAD	VIŠEGRAD	Other
41	BAZ-108083-05	AVDIC RASIM	M	00.00.1955		VIŠEGRAD	VIŠEGRAD	Muslim
42	BAZ-108083-02	AVDIC SAMIR	M	---,1980	VIŠEGRAD	VIŠEGRAD	VIŠEGRAD	Muslim
43	BAZ-106131-01	AVDIC SEVALA	F	01.01.1961	DRINSKO-VIŠEGRAD	VIŠEGRAD	VIŠEGRAD	Unknown
44	BAZ-104806-01	BAHTOVIC MIRSAD	M	07.11.1949	VIŠEGRAD	VIŠEGRAD	VIŠEGRAD	Muslim
45	BAZ-309498-01	BAJIC MIRZET	M	27.01.1975	V.GOSTILJA-VIŠEGRAD	KAMENICA	VIŠEGRAD	Muslim
46	BAZ-107092-01	BAJURKAREVIC MUHAREM	M	03.03.1968	VIŠEGRAD	18.06.1992	VIŠEGRAD	Muslim
47	BAZ-106753-01	BAJRAMOVIC IBRUMSA	F	14.08.1914	VIŠEGRAD	17.07.1992	VIŠEGRAD	Unknown
48	BAZ-106994-02	BAJRAMOVIC MEHMED	M	---,1941	SARAJEVO	---,05.1992	VIŠEGRAD	Unknown
49	BAZ-101017-02	BAJRIC FADIL	M	---,1957	BARIMO - VIŠEGRAD	14.06.1992	VIŠEGRAD	Muslim
50	BAZ-106101-01	BAJRIC NIJAZ	M	08.03.1965	BARIMO - VIŠEGRAD	20.05.1992	VIŠEGRAD	Muslim
51	BAZ-106555-01	BALIC AHMET	M	31.03.1965	PROZOR	09.08.1992	VIŠEGRAD	Muslim
52	BAZ-108612-01	BALIC CAMIL	M	---,1933	VIŠEGRAD	15.05.1992	VIŠEGRAD	Muslim
53	BAZ-109612-02	BALIC DZEVAHIRA	F	---,1925	VIŠEGRAD	20.06.1992	VIŠEGRAD	Unknown
54	BAZ-109119-02	BARIMAC ABDULAH	M	01.01.1920	HRANJEVAC-VIŠEGRAD	20.06.1992	VIŠEGRAD	Unknown
55	BAZ-109119-01	BARIMAC EMINA	F	15.02.1914	ORAHOVCI-VIŠEGRAD	12.06.1992	VIŠEGRAD	Muslim
56	BAZ-102687-01	BASIC HIMZO	M	25.04.1933	DOBRUN - VIŠEGRAD	---,08.1992	VIŠEGRAD	Unknown
57	BAZ-106801-01	BECIROVIC AISA	F	---,1926	VIŠEGRAD	01.07.1992	VIŠEGRAD	Unknown
58	BAZ-106807-02	BECIROVIC MUJO	M	12.12.1927	HAMZICI - VIŠEGRAD	03.05.1992	VIŠEGRAD	Unknown
59	BAZ-104351-01	BEGIC ALMAS	M	10.10.1936	VIŠEGRAD	DUSCE	VIŠEGRAD	Muslim
60	BAZ-109772-01	BEGIC MUJO	M	---,1940	VIŠEGRAD	14.06.1992	VIŠEGRAD	Muslim
61	BAZ-106210-01	BESIC FARUK	M	---,1941	SARAJEVO	D. CRNCA	VIŠEGRAD	Muslim
62	BAZ-109849-01	BESREVIC AHMET	M	05.06.1925		VIŠEGRAD	VIŠEGRAD	Unknown
63	BAZ-105612-02	BESREVIC HANIFA	F	23.05.1949	VLAHOVCI-VIŠEGRAD	15.05.1992	VIŠEGRAD	Unknown
64	BAZ-106666-04	BESREVIC LATIF	M	12.08.1960	LASC-VIŠEGRAD	---,06.1992	VIŠEGRAD	Muslim
65	BAZ-108686-01	BESREVIC RASIM	M	22.05.1936	DUBOVO - VIŠEGRAD	RODIC BRDO	VIŠEGRAD	Muslim
66	BAZ-108236-01	BESREVIC SABAN	M	03.07.1947	DUBOVO - VIŠEGRAD	RODIC BRDO	VIŠEGRAD	Muslim
67	BAZ-108666-03	BESREVIC SAGIR	M	06.05.1930	DUBOVO-VIŠEGRAD	18.06.1992	VIŠEGRAD	Muslim
68	BAZ-108666-02	BESREVIC UZEIR	M	---,1929	DUBOVO-VIŠEGRAD	18.06.1992	VIŠEGRAD	Muslim
69	BAZ-108727-01	BESO HASAN	M	12.09.1971	CAJNICE	29.10.1992	VIŠEGRAD	Muslim
70	BAZ-109850-01	BOSNJAK FADILA	F	---,1934		15.05.1992	VIŠEGRAD	Muslim
71	BAZ-003224-01	BOSNO CAMIL	M	---,1926	MUSICI	14.04.1992	VIŠEGRAD	Unknown
72	BAZ-104782-02	BOSNO HARIŠ	M	---,1985	FOCA	23.06.1992	VIŠEGRAD	Unknown
73	BAZ-101685-02	BOSNO IBRISIM	M	---,1929	KURTALICI - VIŠEGRAD	02.05.1992	VIŠEGRAD	Muslim
74	BAZ-104782-01	BOSNO MIRSADA	F	10.05.1957	VIŠEGRAD	23.06.1992	VIŠEGRAD	Muslim
75	BAZ-103007-01	BOSNO SABIT	M	---,1922	MUSICI - VIŠEGRAD	17.05.1992	VIŠEGRAD	Muslim

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No.	ICRC Number	Name of the sought person	Sex	Date and place of birth	Father's name	Date and place of disappearance	Opstina	Ethnicity*
76	BAZ-103007-02	BOSNO SULEJMA	F	---,1925	MENZILOVIC - VIŠEGRAD	MUSICI	VIŠEGRAD	Muslim
77	BAZ-003225-01	BOSNO ZEMKA	F	---,1927	RODIC BRDO	17.05.1992	VIŠEGRAD	Muslim
78	BAZ-106617-01	BRANKOVIC CAMILA	F	05.03.1927	FOJNICA	24.06.1992	VIŠEGRAD	Unknown
79	BAZ-106132-01	BRKO SARAJA	M	26.10.1966	BOFOVAC - ROGATICA	20.06.1992	VIŠEGRAD	Unknown
80	BAZ-109057-01	BRKO SEVAL	M	28.08.1960	NEZUCI - VIŠEGRAD	16.06.1992	VIŠEGRAD	Unknown
81	BAZ-106080-01	BUKVA IBRAHIM	M	30.08.1963	MEDEDA - VIŠEGRAD	23.05.1992	VIŠEGRAD	Muslim
82	BAZ-104409-01	BULATOVIC HUSO	M	00.00.1936	MEDEDA - VIŠEGRAD	--.05.1992	VIŠEGRAD	Muslim
83	BAZ-106971-01	BULATOVIC ISMET	M	16.03.1959	VLAHOVICI-VIŠEGRAD	21.07.1992	VIŠEGRAD	Muslim
84	BAZ-109430-01	BULATOVIC SAFET	M	05.11.1955		--.06.1992	VIŠEGRAD	Muslim
85	BAZ-106142-01	CAGARA SALKO	M	28.12.1952	GORAZDE	29.06.1992	VIŠEGRAD	Muslim
86	BAZ-106809-01	CAKAR SEAD	M	13.02.1964	CRNI VRH - VIŠEGRAD	02.08.1992	VIŠEGRAD	Muslim
87	BAZ-002208-01	CAKIC HAJRA	F	20.06.1957	GOSTILJIA - PRELOVO	26.05.1992	VIŠEGRAD	Muslim
88	BAZ-106583-03	CANCAR ALIJA	M	---,1955	VIŠEGRAD	20.07.1992	VIŠEGRAD	Unknown
89	BAZ-106583-01	CANCAR BESIMA	F	---,1955	DZANKICI - VIŠEGRAD	--.07.1992	VIŠEGRAD	Muslim
90	BAZ-106583-02	CANCAR MUSAN	M	---,1952	KABERNIK - VIŠEGRAD	--.07.1992	VIŠEGRAD	Muslim
91	BAZ-106549-01	CANCAR OMER	M	17.05.1922	KABERNIK-VIŠEGRAD	--.07.1992	VIŠEGRAD	Muslim
92	BAZ-109029-01	CANCAR SIDIK	M	20.02.1973	VIŠEGRAD	--.05.1992	VIŠEGRAD	Muslim
93	BAZ-003378-01	CANTO NAZA	F	---,1937	VIŠEGRAD	--.05.1992	VIŠEGRAD	Muslim
94	BAZ-003377-01	CANTO NJURA	F	---,1908	VELJI LUG	01.06.1992	VIŠEGRAD	Unknown
95	BAZ-104469-01	CELIK AVOO	M	31.01.1955	VIŠEGRAD	01.06.1992	VIŠEGRAD	Unknown
96	BAZ-106520-01	CELIK MUSAN	M	29.11.1963		17.05.1992	VIŠEGRAD	Unknown
97	BAZ-004193-01	CELIK REDZO	M	16.03.1905	SMRIJECE	00.06.1992	VIŠEGRAD	Unknown
98	BAZ-107037-01	CELJO SABAHUDIN	M	18.01.1965	GORAZDE	--.06.1992	VIŠEGRAD	Unknown
99	BAZ-104231-02	COCALIC AVDIJA	M	15.03.1970	STITAREVO - VIŠEGRAD	16.06.1992	VIŠEGRAD	Muslim
100	BAZ-106734-01	COCALIC FAHRUDIN	M	00.00.1966		30.07.1995	VIŠEGRAD	Muslim
101	BAZ-102088-01	COCALIC MUHAMED	M	18.12.1952		19.05.1992	VIŠEGRAD	Muslim
102	BAZ-107717-01	COCALIC RAMIZ	M	---,1969	STITAREVO - VIŠEGRAD	11.06.1992	VIŠEGRAD	Muslim
103	BAZ-102611-02	CORMEHIC ISLAM	M	07.01.1957	VIŠEGRAD	05.08.1995	VIŠEGRAD	Unknown
104	BAZ-102611-01	CORMEHIC VELJISIL	M	---,1928	VIŠEGRAD	22.05.1992	VIŠEGRAD	Unknown
105	BAZ-107108-01	COSIC SABIT	M	28.03.1955	DUBOVO - VIŠEGRAD	20.06.1992	VIŠEGRAD	Muslim
106	BAZ-109443-01	COSIC SADIK	M	---,1930	DUBOVO-VIŠEGRAD	13.06.1992	VIŠEGRAD	Unknown
107	BAZ-106689-01	COSIC SAFET	M	17.06.1956	DUBOVO-VIŠEGRAD	19.06.1992	VIŠEGRAD	Unknown
108	BAZ-003233-01	CUKOJEVIC MUHAMED	M	28.02.1965	PRELOVO	03.08.1995	VIŠEGRAD	Muslim
109	SAS-002810-01	DAVIDOVIC LJUBINKO	M	06.10.1965	ZENICA	--.05.1992	VIŠEGRAD	Muslim
110	BAZ-106690-01	DEDIC HAMDIJA	M	16.10.1965	MICIVODE-SOKOLAC	16.10.1992	VIŠEGRAD	Serb
111	BAZ-107186-01	DEDIC MUSA	F	---,1922	DOBUN-VIŠEGRAD	15.07.1992	VIŠEGRAD	Muslim
112	BAZ-106096-01	DELIBASIC HUSO	M	15.08.1945	VIŠEGRAD	29.05.1992	VIŠEGRAD	Muslim
113	BAZ-109377-03	DELJUA ADIS	M	27.10.1990	VIŠEGRAD	14.06.1992	VIŠEGRAD	Muslim
114	BAZ-109010-01	DELJUA AHMET	M	06.05.1949	MILOSEVICI-VIŠEGRAD	13.06.1992	VIŠEGRAD	Unknown

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No.	ICRC Number	Name of the sought person	Sex	Date and place of birth	Father's name	Date and place of disappearance	Opstina	Ethnicity*
115	BAZ-109377-01	DELIJA AJINLIJA	F	---,1946	ZEPA - ROGAČICA	VISEGRAD	VISEGRAD	Muslim
116	BAZ-109377-02	DELIJA JASMINA	F	11.08.1967	KORITNIK-VISEGRAD	14.06.1992	VISEGRAD	Muslim
117	BAZ-109010-02	DELIJA NEZIR	M	01.06.1930	MILOSEVIC-VISEGRAD	14.06.1992	VISEGRAD	Muslim
118	BAZ-107114-02	DEMIR AZEM	M	---,1956	DOBRUN - VISEGRAD	DUSCE	VISEGRAD	Muslim
119	BAZ-108234-01	DEMIR DZEVDAD	M	09.01.1957	VISEGRAD	26.07.1992	G. LUESKA	Muslim
120	BAZ-107863-01	DEMIR ELZEDIN	M	08.07.1974	VISEGRAD	04.04.1992	VISEGRAD	Muslim
121	BAZ-106200-01	DEMIR HIMZO	M	04.04.1938	MEHO	28.05.1992	VISEGRAD	Muslim
122	BAZ-104441-01	DEMIR MUSTAFA	M	23.04.1937	JELACICI - VISEGRAD	12.06.1992	VISEGRAD	Muslim
123	BAZ-108607-01	DEMIR MUSTAFA	M	18.09.1962	CRNI VRH-VISEGRAD	10.06.1992	VISEGRAD	Muslim
124	BAZ-107114-03	DEMIR NEFA	F	---,1925	DOBRUN - VISEGRAD	--,06.1992	VISEGRAD	Muslim
125	BAZ-107114-01	DEMIR OSMAN	M	---,1931	VELJILUG-VISEGRAD	--,06.1992	VISEGRAD	Unknown
126	BAZ-107016-01	DERVISEVIC MALKIJA	F	---,1931	ZLUJEB - VISEGRAD	09.06.1992	PAOCICI	Muslim
127	BAZ-107016-02	DERVISEVIC RAMO	M	---,1930	PRESJEKA - VISEGRAD	09.06.1992	PAOCICI	Muslim
128	BAZ-100056-01	DERVISEVIC DIKA	F	---,1928	DOBRU - VISEGRAD	23.07.1992	VISEGRAD	Muslim
129	BAZ-108198-01	DERVISEVIC EIJUB	M	15.02.1940	DOBRU - VISEGRAD	31.05.1992	VISEGRAD	Muslim
130	BAZ-302130-01	DERVISEVIC SAMIR	M	28.06.1977	VISEGRAD	13.06.1992	VISEGRAD	Muslim
131	BAZ-109296-01	DILIC SADIJA	F	---,1969	GLUMINA - ZVORNIK	06.04.1992	VISEGRAD	Other
132	BAZ-103526-01	DIZDAREVIC IBRO	M	---,1932	VISEGRAD	--,05.1992	VISEGRAD	Muslim
133	BAZ-105860-01	DIZDAREVIC ISMET	M	---,1929	DOBRUN - VISEGRAD	18.06.1992	DOBRUN	Muslim
134	BAZ-110146-01	DIZDAREVIC IZET	M	28.12.1938	DOBRUN - VISEGRAD	14.04.1992	VISEGRAD	Muslim
135	BAZ-108569-01	DIZDAREVIC MUHAREM	M	21.03.1938	DOBRUN - VISEGRAD	15.06.1992	DOBRUN	Muslim
136	BAZ-109413-01	DIZDAREVIC NEZIR	M	---,1932	DOBRUN - VISEGRAD	--,07.1992	DOBRUN	Muslim
137	BAS-003576-01	DIZDAREVIC SAHIN	M	---,1924	DOBRUN - VISEGRAD	--,07.1992	DOBRUN	Unknown
138	BAZ-100964-01	DOLOVAC KEMAL	M	25.05.1973	VISEGRAD	06.06.1992	ZAMNICA	Muslim
139	BAZ-107522-01	DOLOVAC MUSTAFA	M	18.12.1956	KAPETANOVICI - VISEGRAD	29.05.1992	VISEGRAD	Muslim
140	BAZ-104383-01	DRAGULJ MIRSAD	M	---,1959	VISEGRAD	06.04.1992	VISEGRAD	Muslim
141	BAZ-108447-01	DRAGULJ SAHIN	M	00.00.1935	LICANI - NASICE	18.06.1992	VISEGRAD	Muslim
142	BAS-002587-01	DRAZIC MIRA	F	17.05.1965	KAMENICA - VISEGRAD	26.07.1992	VISEGRAD	Other
143	BAZ-105565-02	DUDEVIC HAIRUDIN	M	01.01.1962	SABAN	--,06.1992	DUSCE	Muslim
144	BAZ-105565-01	DUDEVIC SABAN	M	---,1935	KAMENICA - VISEGRAD	--,06.1992	DUSCE	Muslim
145	BAZ-107348-01	DZAFEROVIC DZEVDAD	M	01.01.1959	HAŠO	--,06.1992	DUSCE	Unknown
146	BAZ-109855-01	DZAFEROVIC ENES	M	03.11.1955	DZAFER	25.06.1992	VISEGRAD	Muslim
147	BAZ-109855-02	DZAFEROVIC ENVER	M	---,1959	KAOSTICE-VISEGRAD	--,06.1992	VISEGRAD	Muslim
148	BAZ-106807-03	DZAFEROVIC IGBALA	F	16.09.1960	KAOSTICE-VISEGRAD	03.05.1992	VISEGRAD	Muslim
149	BAZ-103741-01	DZAFIC EDHEM	M	11.04.1940	VISEGRAD	06.06.1992	BIKAVAC	Muslim
150	BAZ-106661-02	DZAFIC EKREM	M	17.05.1956	HOLJACI - VISEGRAD	07.06.1992	HOLJACI	Muslim
151	BAZ-103542-01	DZAFIC FAID	M	00.00.1958	ZAJKO	00.06.1992	VISEGRAD	Muslim
152	BAZ-109081-01	DZAFIC JAKUF	M	15.02.1936	RASID	06.07.1992	BIKAVAC	Muslim
153	BAZ-106661-03	DZAFIC MEHO	M	13.03.1931	MEDO	07.06.1992	VISEGRAD	Muslim

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No.	ICRC Number	Name of the sought person	Sex	Date and place of birth	Father's name	Date and place of disappearance	Opstina	Ethnicity*
154	BAZ-103498-01	DZAFIC ZAKO	M	---,1930	MUJO	--.06.1992	VIŠEGRAD	Muslim
155	BAZ-108984-01	DZAFIC MELIHA	F	---,1988	MEHMEDALLIA DZAFIC	--.05.1992	VELI LUG	Unknown
156	BAZ-106097-01	DZAGADUROVSKI SABAN	M	15.01.1919	ISEIN	--.06.1992	VIŠEGRAD	Other
157	BAZ-101825-02	FEHRIC DULSA	F	---,1903	SALKO RAMOVIC	13.07.1992	VIŠEGRAD	Unknown
158	BAZ-108425-01	FEHRIC IZET	M	---,1937	MEDO	20.07.1992	JARCI	Unknown
159	BAZ-108709-01	FEHRIC KENAN	M	13.07.1973	ASIM	29.10.1992	D. LUESKA	Muslim
160	BAZ-101825-01	FEHRIC TIDZA	F	---,1937	MEHMED CORMEHIC	13.07.1992	VIŠEGRAD	Muslim
161	BAZ-108652-01	FEJZIC ENIZ	M	00.00.1940	SULJO	00.05.1992	SEGANJE	Unknown
162	BAZ-108682-01	FEJZIC JUSUF	M	11.12.1969	ALLIA	21.05.1992	VIŠEGRAD	Muslim
163	BAZ-107118-01	FELEKATOVIC ZUHRA	F	15.02.1923	AVDO	--.07.1992	VIŠEGRAD	Other
164	BAZ-108573-01	FERHATOVIC ALIJA	F	29.03.1930	AVDIJA	13.06.1992	DRINSKO	Muslim
165	BAZ-108573-02	FERHATOVIC AVDIJA	F	01.03.1963	ALLIA	13.06.1992	DRINSKO	Muslim
166	BAZ-108599-01	FERIC FAHRA	F	--.01.1959	FEHIM	25.06.1992	VELIKA GOSTILJA	Muslim
167	BAZ-108599-02	FERIC HAJRUDIN	M	16.01.1981	MEHMEDALLIA	25.06.1992	VELIKA GOSTILJA	Muslim
168	BAS-000366-02	FERIC MUSA	F	---,1932	AHMET FERIC	20.06.1992	VELIKA GOSTILJA	Muslim
169	BAZ-108599-03	FERIC SABAHUDIN	M	30.06.1979	MEHMEDALLIA	25.06.1992	VELIKA GOSTILJA	Muslim
170	BAS-000366-01	FERIC SABIT	M	---,1930	IBRO	20.06.1992	VELIKA GOSTILJA	Muslim
171	BAS-000366-03	FERIC SABRIJA	F	---,1970	SABIT	20.06.1992	VELIKA GOSTILJA	Muslim
172	BAZ-108594-04	GACKA DZENANA	F	---,1969	MEHO	20.06.1992	DOBRUN	Muslim
173	BAZ-108594-03	GACKA FAHRUDIN	M	---,1963	MEHO	20.06.1992	D. CRNCA	Muslim
174	BAZ-108594-05	GACKA HAMSA	F	---,1930	REDZO KASAPOVIC	20.06.1992	VIŠEGRAD	Muslim
175	BAZ-108594-02	GACKA MEHO	M	---,1928	BEKTO	20.06.1992	VIŠEGRAD	Muslim
176	BAZ-108594-01	GACKA MUJO	M	00.00.1937	BEKTO	20.06.1992	DOBRUN	Muslim
177	BAZ-110626-01	GADZO RESID	M	10.02.1928	SIP - VIŠEGRAD	12.07.1992	DUSCE	Muslim
178	BAZ-108564-01	GLUSCEVIC HASIB	M	13.10.1977	BESIR	18.06.1992	VIŠEGRAD	Muslim
179	BAZ-108591-02	GUSO ALMIR	M	25.05.1969	HASAN	07.06.1992	VIŠEGRAD	Muslim
180	BAZ-108361-01	GUSO ASIM	M	24.02.1965	HILMO	24.05.1992	VIŠEGRAD	Muslim
181	BAZ-107188-01	GUSO ELVEDIN	M	27.09.1973	TAIB	17.07.1992	DRINSKO	Muslim
182	BAZ-107537-01	GUSO HAJRUDIN	M	18.08.1961	RASID	22.05.1992	DRINSKO	Muslim
183	BAZ-108591-01	GUSO HILMO	M	28.08.1937	MEHO	07.06.1992	VIŠEGRAD	Muslim
184	BAZ-108588-01	GUSO HILMO	M	---,1934	LATIF	--.06.1992	VUCINE	Muslim
185	BAZ-108542-02	GUSO MIRSAD	M	28.01.1959	HALIL	27.05.1992	VIŠEGRAD	Unknown
186	BAZ-108588-02	GUSO MULAIM	M	---,1953	HILMO	--.06.1992	VUCINE	Unknown
187	BAS-000372-01	GUSO RAMIZ	M	04.09.1955	HAJRAN	01.06.1992	BAN POLJE	Muslim
188	BAZ-108284-01	GUSO SABAN	M	10.05.1932	HUSO	23.05.1992	DRINSKO	Muslim
189	BAZ-314505-02	GUSO SALKO	M	12.12.1936	SABIT	24.05.1992	DRINSKO	Muslim
190	BAZ-314505-01	GUSO SENAD	M	01.07.1974	SALKO	24.05.1992	DRINSKO	Muslim
191	BAZ-108542-01	GUSO SEVAL	M	04.09.1955	HALIL	02.06.1992	PJAJ VICE	Muslim
192	BAZ-109003-01	HADZIC ALMIR	M	05.05.1977	MUSTAFA	18.06.1992	DRINSKO	Muslim

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No.	ICRC Number	Name of the sought person	Sex	Date and place of birth	Father's name	Date and place of disappearance	Opstina	Ethnicity*
193	BAZ-001545-04	HADŽIĆ ELMA		00.00.1985	ESAD	VIŠEGRAD	VIŠEGRAD	Muslim
194	BAZ-104553-01	HADŽIĆ HUSO	M	01.04.1947	JAROVLIJE - VLAŠENICA	11.06.1992	VIŠEGRAD	Unknown
195	BAZ-109003-02	HADŽIĆ MUSTAFA	M	-- --,1939	DRINSKO - VIŠEGRAD	19.06.1992	VIŠEGRAD	Unknown
196	BAZ-106792-01	HADŽIĆ SALKO	M	25.04.1934	DRINSKO - VIŠEGRAD	28.05.1992	DRINSKO	Muslim
197	BAZ-100362-01	HADŽIHALILOVIĆ EMINA	F	01.01.1958	DUSCE - VIŠEGRAD	14.07.1992	VIŠEGRAD	Muslim
198	BAZ-100362-02	HADŽIHALILOVIĆ JASMIN	M	29.01.1979	VIŠEGRAD	14.07.1992	VIŠEGRAD	Muslim
199	BAZ-100362-03	HADŽIHALILOVIĆ NERMIN	M	22.03.1981	VIŠEGRAD	14.07.1992	VIŠEGRAD	Muslim
200	BAZ-107196-01	HAJĐAREVIĆ ESAD	M	07.03.1951	ZAIM	16.06.1992	VIŠEGRAD	Muslim
201	BAZ-108408-02	HAJĐAREVIĆ HABIB	M	-- --,1920	DOBRUN - VIŠEGRAD	16.06.1992	VIŠEGRAD	Muslim
202	BAZ-109125-01	HAJĐAREVIĆ HANIFA	F	15.03.1926	DOBRUN-VIŠEGRAD	--.06.1992	VIŠEGRAD	Unknown
203	BAZ-107536-01	HAJĐAREVIĆ ISMET	M	20.05.1940	CAMIL	14.06.1992	DOBRUN	Muslim
204	BAZ-108092-01	HAJĐAREVIĆ MUNIB	M	18.12.1938	DOBRUN - VIŠEGRAD	03.06.1992	VIŠEGRAD	Muslim
205	BAZ-108408-01	HAJĐAREVIĆ SALKO	M	01.05.1954	DOBRUN - VIŠEGRAD	16.06.1992	VIŠEGRAD	Muslim
206	BAZ-001641-01	HAJĐAREVIĆ SUADA	F	29.11.1954	KAHIRMANOVIĆ - SOKOLAC	20.05.1992	VIŠEGRAD	Unknown
207	BAZ-108875-01	HAJĐARPASIĆ HATIDŽA	F	20.11.1940	VIŠEGRAD	--.06.1992	VIŠEGRAD	Muslim
208	BAZ-108875-02	HAJĐARPASIĆ MURAT		15.02.1934	OSMO	00.06.1992	VIŠEGRAD	Muslim
209	BAZ-109198-01	HALILOVIĆ AHMET	M	13.08.1930	SASE - VIŠEGRAD	26.06.1992	VIŠEGRAD	Muslim
210	BAZ-104388-02	HALILOVIĆ ENES	M	30.04.1963	MUJO	13.06.1992	VIŠEGRAD	Muslim
211	BAZ-106799-01	HALILOVIĆ HAJRA	F	21.10.1951	NOVOSEOCI - FOCA	--.06.1992	SASE	Unknown
212	BAZ-100257-01	HALILOVIĆ MEHO	M	08.03.1938	VIŠEGRAD	20.06.1992	VIŠEGRAD	Muslim
213	BAZ-104388-01	HALILOVIĆ MUJO	M	08.11.1941	SASE - VIŠEGRAD	20.06.1992	VIŠEGRAD	Muslim
214	BAZ-101696-01	HALILOVIĆ NAZIF	M	-- --,1907	SIP - VIŠEGRAD	15.05.1992	SIP	Unknown
215	BAZ-107660-03	HASEČIĆ ALMA	F	19.05.1982	VIŠEGRAD	19.07.1992	VIŠEGRAD	Muslim
216	BAZ-105194-01	HASEČIĆ HANA	F	-- --,1937	ORAHOVCI - VIŠEGRAD	--.04.1992	VIŠEGRAD	Muslim
217	BAZ-107660-01	HASEČIĆ NERMIN	M	27.04.1977	REMO	19.07.1992	VIŠEGRAD	Muslim
218	BAZ-107660-02	HASEČIĆ VEZIMA	F	-- --,1952	DOBRUN - VIŠEGRAD	19.07.1992	VIŠEGRAD	Muslim
219	BAZ-107397-01	HASIĆ KASIM	M	-- --,1914	DOMANOVIĆ-CAPLJINA	--.05.1992	VIŠEGRAD	Muslim
220	BAZ-106401-01	HASKIĆ AVDO	M	-- --,1935	VIŠEGRAD	--.06.1992	VIŠEGRAD	Muslim
221	BAZ-106401-02	HASKIĆ ESMIA	F	15.08.1938	DOBRUN-VIŠEGRAD	--.07.1992	VIŠEGRAD	Unknown
222	BAZ-108999-01	HASKIĆ FERIDA	F	-- --,1958	MUJO HASKIĆ	--.06.1992	VIŠEGRAD	Unknown
223	BAZ-107362-01	HASKOVIĆ RIZO	M	-- --,1968	BISTRICA - BIJELO POLJE	--.05.1992	VIŠEGRAD	Unknown
224	BAZ-103540-01	HEČIMOVIĆ MUJO	M	13.05.1968	VIŠEGRAD	22.07.1992	VIŠEGRAD	Unknown
225	BAZ-107677-01	HEČIMOVIĆ MURAT	M	20.05.1930	MUSTAFA	06.06.1992	VIŠEGRAD	Muslim
226	BAZ-108548-01	HECO MEHMED	M	29.10.1966	VIŠEGRAD	29.10.1992	VIŠEGRAD	Muslim
227	BAZ-104613-01	HODŽEGLIĆ SAID	M	-- --,1938	VIŠEGRAD	11.06.1992	VIŠEGRAD	Other
228	BAZ-108753-02	HODŽIĆ AJNA		00.00.1942	HASAN	07.07.1992	BABIN POTOK	Muslim
229	BAZ-108753-03	HODŽIĆ DŽELAL		15.01.1959	ALIJA	16.06.1992	VIŠEGRAD	Muslim
230	BAZ-101795-02	HODŽIĆ EDIN	M	19.08.1972	KADRIJA	10.06.1992	VIŠEGRAD	Muslim
231	BAZ-105612-04	HODŽIĆ FATA	F	28.02.1979	SALKO	--.06.1992	VIŠEGRAD	Muslim

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232	BAZ-105612-03	HODZIC FATIMA	F	---,1984	TITOVO UZICE	VISEGRAD	VISEGRAD	Unknown
233	BAZ-105655-01	HODZIC HAMDJA	M	25.12.1934	VRELO - ZEPa	19.05.1992	VISEGRAD	Muslim
234	BAS-001545-01	HODZIC HASAN	M	00.00.1928	VISEGRAD	11.06.1992	VISEGRAD	Muslim
235	BAZ-105612-05	HODZIC IBRAHIM	M	---,1982	VISEGRAD	--06.1992	VISEGRAD	Muslim
236	BAZ-105655-02	HODZIC JASMIN	M	28.04.1961	VISEGRAD	19.05.1992	VISEGRAD	Muslim
237	BAZ-107195-01	HODZIC KADRIJA	M	17.11.1944	VISEGRAD	10.06.1992	VISEGRAD	Muslim
238	BAZ-108814-01	HODZIC MUHAMMED	M	29.03.1967	DAKOVICI - CAJNICE	30.05.1992	VISEGRAD	Unknown
239	BAZ-105749-01	HODZIC NIHAD	M	17.12.1971	VISEGRAD	04.05.1992	VISEGRAD	Muslim
240	BAS-001545-03	HODZIC NIRMELA	F	00.00.1985	VISEGRAD	11.06.1992	VISEGRAD	Muslim
241	BAZ-1056612-01	HODZIC PA SUIA	F	12.02.1968	VLAHOVICI-VISEGRAD	--06.1992	VISEGRAD	Muslim
242	BAS-001545-02	HODZIC SABHA	M	00.00.1964	VISEGRAD	11.06.1992	VISEGRAD	Muslim
243	BAZ-105731-02	HODZIC SALKO	M	30.03.1955	ZLJEB - VISEGRAD	03.06.1992	VISEGRAD	Muslim
244	BAZ-105731-01	HODZIC SELIM	M	07.03.1959	ZLJEB - VISEGRAD	03.06.1992	VISEGRAD	Muslim
245	BAN-108629-01	HOTA ABDULAH	M	---,1914	BLAZ - VISEGRAD	--06.1992	VISEGRAD	Muslim
246	BAZ-105195-01	HOTA ESAD	M	07.04.1958	VISEGRAD	16.06.1992	VISEGRAD	Muslim
247	BAZ-107373-01	HOTA FIKRETA	F	15.02.1964	SIP-VISEGRAD	14.06.1992	VISEGRAD	Unknown
248	BAZ-108442-01	HOTA HUSO	M	19.03.1931	BLAZ - VISEGRAD	10.06.1992	VISEGRAD	Muslim
249	BAZ-108442-02	HOTA MIRSAĐ	M	07.04.1958	VISEGRAD	10.06.1992	VISEGRAD	Muslim
250	BAZ-109433-01	HRUSTIC BESIR	M	25.05.1930	DOBRUN - VISEGRAD	--06.1992	VISEGRAD	Muslim
251	BAZ-105878-01	HUBIC EMINA	F	16.06.1976	VISEGRAD	09.06.1992	VISEGRAD	Muslim
252	BAZ-107248-01	HUBIC MEHMED	M	01.01.1953	VISEGRAD	23.05.1992	VISEGRAD	Muslim
253	BAZ-105938-01	HUREM KEMAL	M	---,1961	VISEGRAD	17.05.1992	VISEGRAD	Muslim
254	BAZ-104375-01	HUSOVIC MUSTAFA	M	---,1902	DONJI DUBOVIK - VISEGRAD	--05.1992	VISEGRAD	Muslim
255	BAZ-111387-02	HUSOVIC RASIM	M	---,1905	VISEGRAD	05.07.1992	VISEGRAD	Muslim
256	BAZ-104375-02	HUSOVIC SULEJMAN	M	---,1953	VISEGRAD	--05.1992	VISEGRAD	Muslim
257	BAZ-107237-01	IBSEVIC FATIMA	F	28.05.1950	PRESJEKA-VISEGRAD	15.07.1992	VISEGRAD	Muslim
258	BAZ-107237-03	IBSEVIC INDIRA	F	06.03.1980	VISEGRAD	15.07.1992	VISEGRAD	Muslim
259	BAZ-107237-02	IBSEVIC NIHAD	M	25.08.1985	VISEGRAD	15.07.1992	VISEGRAD	Muslim
260	BAZ-107534-01	IBSEVIC OSMAN	M	01.12.1951	VISEGRAD	14.06.1992	VISEGRAD	Muslim
261	BAZ-104468-01	IMAMAGIC AHMED	M	29.04.1964	VISEGRAD	18.06.1992	VISEGRAD	Muslim
262	BAZ-104468-02	IMAMAGIC MUHAREM	M	12.05.1956	VISEGRAD	18.06.1992	VISEGRAD	Muslim
263	BAZ-109020-01	ISIC EDHEM	M	---,1926	DOBRUN-VISEGRAD	--06.1992	DOBRUN	Muslim
264	BAZ-108806-01	ISIC SADIK	M	15.02.1955	TITOVO UZICE	20.06.1992	VISEGRAD	Unknown
265	BAZ-103485-01	JAKUBOVIC BEGIR	M	01.05.1947	ZEPa	24.05.1992	VISEGRAD	Muslim
266	BAZ-102101-01	JAKUBOVIC RASID	M	31.07.1943	VISEGRAD	20.06.1992	VISEGRAD	Muslim
267	BAZ-102714-01	JAMAK HUSO	M	08.11.1934	DUSCE - VISEGRAD	--06.1992	DUSCE	Muslim
268	BAZ-108735-01	JAMAK JUSUF	M	---,1923	DUSCE - VISEGRAD	15.07.1992	VISEGRAD	Muslim
269	BAZ-103430-01	JAMAK ZEJFA	F	25.02.1938	POVJESTACA - VISEGRAD	13.06.1992	VISEGRAD	Muslim
270	BAZ-108544-02	JASAREVIC ASIM	M	15.04.1954	VISEGRAD	--04.1992	VISEGRAD	Muslim

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271	BAZ-108956-03	JASAREVIC HAJDAR	M	---,1956	SASE-VISEGRAD	SASE	VISEGRAD	Muslim
272	BAZ-102589-01	JASAREVIC HANIFA	M	---,1928	CRNCA - VISEGRAD	SASE	VISEGRAD	Muslim
273	BAZ-108544-01	JASAREVIC MUHAMMED	M	09.03.1976	SARAJEVO	VISEGRAD	VISEGRAD	Muslim
274	BAZ-102589-02	JASAREVIC RESID	M	---,1918	SASE - VISEGRAD	SASE	VISEGRAD	Muslim
275	BAZ-102589-03	JASAREVIC SEFIK	M	---,1960	SASE - VISEGRAD	SASE	VISEGRAD	Muslim
276	BAZ-108956-02	JASAREVIC SENAD	M	---,1954	SASE-VISEGRAD	SASE	VISEGRAD	Muslim
277	BAZ-108956-01	JASAREVIC ZARFA	F	---,1931	CRNCA-VISEGRAD	SASE	VISEGRAD	Unknown
278	BAZ-105612-06	JUNUZOVIC HAMED	M	01.01.1956		REDZO	VISEGRAD	Muslim
279	BAZ-104459-01	JUSIC HASAN	M	---,1949	VISEGRAD	PASAN	VISEGRAD	Muslim
280	BAZ-108715-01	JUSIC SELIM	M	20.11.1938	VISEGRAD	PASAN	VISEGRAD	Muslim
281	BAZ-103430-03	KABAKLIJA HATIDZA	F	13.06.1932	DUSCE - VISEGRAD	PASAN	VISEGRAD	Unknown
282	BAZ-111364-01	KADRIC AHMO	M	21.06.1952	KAOSTICE - VISEGRAD	ZEJNIL	VISEGRAD	Muslim
283	BAZ-102096-01	KADRIC ISMET	M	---,1956	VISEGRAD	ESAD	VISEGRAD	Muslim
284	BAZ-108848-01	KADRIC MUHAMMED	M	07.06.1958	POKREVENIK-ROGATICA	NEZIR	VISEGRAD	Muslim
285	BAZ-105937-01	KADRIC MUSTAFA	M	00.00.1939		RAMO	VISEGRAD	Muslim
286	BAZ-106842-01	KADRIC SAHMAN	M	09.10.1943		RAMO	VISEGRAD	Muslim
287	BAZ-108580-01	KADRIC SINAN	M	24.04.1961	HLADILJE-GORAZDE	HADZO	VISEGRAD	Muslim
288	BAZ-309541-01	KAHRIMAN ABDULAH	M	---,1968	DUSCE - VISEGRAD	HASAN	VISEGRAD	Muslim
289	BAZ-102715-01	KAHRIMAN DERVO	M	---,1938	PRELOVO - VISEGRAD	HALL	VISEGRAD	Muslim
290	BAZ-112441-01	KAHRIMAN EKREM	M	00.00.1957		JAKUP	VISEGRAD	Muslim
291	BAZ-110655-01	KAHRIMAN JAKUP	M	---,1921	ORAHOVICE - VISEGRAD	RAMO	VISEGRAD	Muslim
292	BAZ-108098-01	KARAHODZIC RASIM	M	20.06.1956	VELJI LUG	HAMED	VISEGRAD	Muslim
293	BAZ-101884-01	KARAHODZIC SABIT	M	25.05.1959	KLASNIK - VISEGRAD	NESIB	VISEGRAD	Muslim
294	BAZ-105288-01	KARAMAN ESAD	M	30.12.1960		IBRAHIM	VISEGRAD	Muslim
295	BAZ-107386-02	KARAMAN FIKRET	M	00.12.1948		ABID	VISEGRAD	Muslim
296	BAZ-108581-01	KARAMAN HASAN	M	12.05.1967		HAMED	VISEGRAD	Muslim
297	BAZ-106042-01	KARAMAN RAMIZ	M	05.07.1950	SMRUCJE - VISEGRAD	HAMED	VISEGRAD	Muslim
298	BAZ-102637-01	KARAMAN SAFET	M	29.11.1949	VISEGRAD	MUSTAFA	VISEGRAD	Muslim
299	BAZ-107386-01	KARAMAN SAFET	M	20.09.1969	OKRUGLA - VISEGRAD	JUSUF	VISEGRAD	Muslim
300	BAZ-108476-01	KARAMAN ZARIF	M	00.00.1932		SABIT	VISEGRAD	Muslim
301	BAZ-107070-01	KAROC EDIN	M	14.05.1965	VISEGRAD	ISMET	VISEGRAD	Muslim
302	BAZ-106121-01	KAROC IBRAHIM	M	---,1946	VISEGRAD	SACIR	VISEGRAD	Unknown
303	BAZ-107070-03	KAROC ISMET	M	06.04.1941	VISEGRAD	IBRAHIM	VISEGRAD	Muslim
304	BAZ-108628-01	KAROC NEDZAD	M	30.06.1967	VISEGRAD	JUSUF	VISEGRAD	Muslim
305	BAZ-109612-03	KAROC SEVALA	F	15.01.1941	VISEGRAD	MEHMED KARCIC	VISEGRAD	Unknown
306	BAZ-107070-02	KAROC TIFA	F	08.12.1942	DOBRUN-VISEGRAD	IBRISIM MUHIC	VISEGRAD	Muslim
307	BAZ-107072-01	KARIC RAMIZ	M	---,1945	VRLAZUJE-ROGATICA	KARIC HALL	DOBRUN	Unknown
308	BAZ-101870-01	KARISIK AHMET	M	27.06.1928	VISEGRAD	IBRAHIM	VISEGRAD	Unknown
309	BAS-003351-02	KARISIK CAMKA	F	20.11.1980	VISEGRAD	AHMO KARISIK	BIKAVAC	Unknown

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310	BAS-003351-01	KARISIK FATA	F	---,1964	PALJEVICI - DRINJACA - ZVORNIK	23.06.1992	BIKAVAC	VISEGRAD Unknown
311	BAZ-102007-04	KARISIK NIHAD	M	25.01.1988	SEAD	17.05.1992	MUSICI	VISEGRAD Unknown
312	BAZ-102007-04	KARISIK OMER	M	---,1958	KUKA-VISEGRAD	--,04.1992	MUSICI	VISEGRAD Muslim
313	BAZ-103007-03	KARISIK ZLATA	F	10.05.1961	MUSICI - VISEGRAD	17.05.1992	MUSICI	VISEGRAD Unknown
314	BAZ-108451-01	KASAPOVIC AHMET	M	05.04.1954	MIRLOVICI - VISEGRAD	10.06.1992	VISEGRAD	VISEGRAD Muslim
315	BAZ-108916-01	KASAPOVIC ASIM	M	17.02.1945	HASAN	25.05.1992	VISEGRAD	VISEGRAD Muslim
316	BAZ-104858-02	KASAPOVIC DZEMAL	M	25.03.1987	ALJIA	02.12.1992	VISEGRAD	VISEGRAD Muslim
317	BAZ-102686-01	KASAPOVIC HILMO	M	---,1938	ZANOZJE - VISEGRAD	15.06.1992	SECE KARISIKA	VISEGRAD Muslim
318	BAZ-104505-01	KASAPOVIC MITHAD	M	30.07.1965	VISEGRAD	25.05.1992	VISEGRAD	VISEGRAD Muslim
319	BAZ-104552-01	KASAPOVIC NEZIR	M	---,1922	ZANOZJE - VISEGRAD	25.05.1992	ZANOZJE	VISEGRAD Muslim
320	BAZ-102428-01	KASAPOVIC UZEIR	M	10.08.1956	MIRLOVICI - VISEGRAD	12.06.1992	BIKAVAC	VISEGRAD Muslim
321	BAZ-102686-02	KASAPOVIC ZUHRA	F	---,1938	NIJHE - USTIKOLINA	15.06.1992	SECE KARISIKA	VISEGRAD Muslim
322	BAZ-108743-01	KESMER IZET	M	04.07.1962	ZLJEB - VISEGRAD	29.05.1992	MEDEDA	VISEGRAD Unknown
323	BAZ-109141-01	KLACAR FATIMA	F	01.02.1941	OKRUGLA-VISEGRAD	10.07.1992	VISEGRAD	VISEGRAD Muslim
324	BAZ-108189-01	KOPIC CAMIL	M	01.06.1945	HASAN	17.06.1992	VISEGRAD	VISEGRAD Unknown
325	BAZ-105630-04	KORIC HAJIRA	F	19.04.1947	DUSCE - VISEGRAD	--,07.1992	VISEGRAD	VISEGRAD Muslim
326	BAZ-109005-01	KOS BEGO	M	---,1900	KOS.POLJE-VISEGRAD	--,06.1992	VISEGRAD	VISEGRAD Muslim
327	BAZ-109005-02	KOS FATA	F	---,1924	DUBOVO-VISEGRAD	--,06.1992	VISEGRAD	VISEGRAD Muslim
328	BAS-003379-01	KOS MULA	F	---,1915	VELJI LUG	01.06.1992	VISEGRAD	VISEGRAD Unknown
329	BAZ-108804-01	KOS NAIL	M	---,1904	KOSOVO POLJE-VISEGRAD	--,07.1992	KOSOVO POLJE	VISEGRAD Muslim
330	BAZ-108815-01	KOS SALKO	M	04.01.1951	KOSOVO POLJE-VISEGRAD	09.08.1992	BARIMO	VISEGRAD Muslim
331	BAZ-109110-01	KUJOVIC HAJRUDIN	M	04.12.1972	SULEJMAN	15.05.1992	VISEGRAD	VISEGRAD Other
332	BAZ-105940-01	KULOVIC ZIJAD	M	19.11.1958	RODIC BRDO - VISEGRAD	17.05.1992	VISEGRAD	VISEGRAD Muslim
333	BAS-002633-01	KUPUS HALIL	M	00.01.1939		00.08.1992	VISEGRAD	VISEGRAD Unknown
334	BAS-003380-01	KUPUS HANSA	F	---,1944	VISEGRAD	--,05.1992	VISEGRAD	VISEGRAD Unknown
335	BAS-003401-01	KUPUS MIRSAD	M	---,1960	MUJO	--,04.1992	VISEGRAD	VISEGRAD Unknown
336	BAZ-109388-01	KUPUS MUJO	M	19.05.1930	VISEGRAD	--,06.1992	VISEGRAD	VISEGRAD Muslim
337	BAS-003257-01	KURSPAHIC AIDA	F	10.05.1979	KORITNIK - VISEGRAD	14.06.1992	VISEGRAD	VISEGRAD Muslim
338	BAS-003257-03	KURSPAHIC AJKA	F	---,1926	KURTALICI - VISEGRAD	14.06.1992	VISEGRAD	VISEGRAD Unknown
339	BAZ-108305-01	KURSPAHIC ALJIA	M	---,1937	KORITNIK - VISEGRAD	11.06.1992	VISEGRAD	VISEGRAD Muslim
340	BAS-003257-05	KURSPAHIC ALMIR	M	04.08.1980	KORITNIK - VISEGRAD	14.06.1992	VISEGRAD	VISEGRAD Muslim
341	BAZ-106678-01	KURSPAHIC ANER	M	18.01.1982	VISEGRAD	29.05.1992	DOBRUN	VISEGRAD Muslim
342	BAZ-106432-01	KURSPAHIC BULA	F	---,1934	KORITNIK - VISEGRAD	17.06.1992	KORITNIK	VISEGRAD Muslim
343	BAZ-106432-02	KURSPAHIC DZEHA	F	25.09.1965	BARIMO - VISEGRAD	17.06.1992	KORITNIK	VISEGRAD Unknown
344	BAZ-100713-02	KURSPAHIC FIKRET	M	---,1962	KORITNIK - VISEGRAD	29.05.1992	DOBRUN	VISEGRAD Unknown
345	BAZ-105567-01	KURSPAHIC HIDAJET	M	18.11.1957	KORITNIK - VISEGRAD	25.05.1992	VISEGRAD	VISEGRAD Muslim
346	BAZ-106432-03	KURSPAHIC ISMET	M	30.07.1990	KORITNIK - VISEGRAD	17.06.1992	KORITNIK	VISEGRAD Muslim
347	BAS-003257-02	KURSPAHIC ISMETA	F	30.04.1960	BRSTANICA - VISEGRAD	14.06.1992	VISEGRAD	VISEGRAD Unknown
348	BAZ-106432-04	KURSPAHIC MIRELA	F	27.09.1988	KORITNIK - VISEGRAD	17.06.1992	KORITNIK	VISEGRAD Muslim

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No.	ICRC Number	Name of the sought person	Sex	Date and place of birth	Father's name	Date and place of disappearance	Opstina	Ethnicity*
349	BAZ-108305-03	KURSPAHIC MUNEVERA	F	---,1964	KORITNIK-VISEGRAD	VISEGRAD	VISEGRAD	Muslim
350	BAZ-108305-02	KURSPAHIC MUNIRA	F	---,1939	ROGATICA	VISEGRAD	VISEGRAD	Muslim
351	BAZ-100713-01	KURSPAHIC OMER	M	05.06.1957	KORITNIK - VISEGRAD	VISEGRAD	VISEGRAD	Muslim
352	BAZ-103199-01	KURSPAHIC OSMAN	M	27.02.1954	KORITNIK - VISEGRAD	DOBRUN	VISEGRAD	Muslim
353	BAZ-003257-04	KURSPAHIC OSMAN	M	---,1925	KORITNIK - VISEGRAD	17.05.1992	VISEGRAD	Muslim
354	BAZ-915206-02	KURSPAHIC SADETA	F	---,1972	POLJE-VISEGRAD	--.08.1992	VISEGRAD	Unknown
355	BAZ-110670-01	KURSPAHIC SAKIB	M	23.03.1963	KORITNIK - VISEGRAD	00.06.1992	VISEGRAD	Unknown
356	SAS-003257-06	KURSPAHIC VAHID	M	19.11.1981	KORITNIK - VISEGRAD	14.06.1992	VISEGRAD	Unknown
357	SAS-003391-01	KURTALIC AMIR	M	--.04.1943	VOLJEVICA - BRATUNAC	--.06.1992	VISEGRAD	Unknown
358	BAZ-109013-01	KURTALIC NIJAZ	M	20.11.1951	UZEIR	04.06.1992	VISEGRAD	Muslim
359	BAZ-107395-01	KURTALIC NURIF	M	---,1920	KURTALIC-VISEGRAD	20.05.1992	VISEGRAD	Muslim
360	SAS-000933-01	KURTALIC SALKO	M	02.07.1953	KURTALICI - VISEGRAD	25.02.1992	VISEGRAD	Muslim
361	BAZ-108705-02	KUSTURA ADILA	F	---,1931	KURJEP-VISEGRAD	10.05.1992	VISEGRAD	Muslim
362	BAZ-108286-01	KUSTURA ASIM	M	17.03.1928	ZLATNIK-VISEGRAD	20.05.1992	VISEGRAD	Muslim
363	BAZ-106202-01	KUSTURA AZIZ	M	24.10.1935	DUBOVIK - VISEGRAD	28.05.1992	VISEGRAD	Muslim
364	BAZ-108952-01	KUSTURA DZEMAL	M	16.11.1962	VISEGRAD	18.07.1992	VISEGRAD	Muslim
365	BAZ-101873-01	KUSTURA DZEVD	M	21.08.1960	VISEGRAD	17.05.1992	VISEGRAD	Muslim
366	BAZ-107535-04	KUSTURA ESAD	M	---,1967	VISEGRAD	--.06.1992	VISEGRAD	Muslim
367	BAZ-102784-01	KUSTURA FATIMA	M	00.00.1958	DERVIS	01.05.1992	VISEGRAD	Muslim
368	BAZ-108286-02	KUSTURA FATIMA	M	00.00.1938	MEHO SMAJIC	27.05.1992	VISEGRAD	Muslim
369	BAZ-106231-01	KUSTURA HAMED	M	15.01.1929	DOBOVIK - VISEGRAD	02.07.1992	VISEGRAD	Muslim
370	BAZ-108230-01	KUSTURA HASAN	M	13.08.1959	IBRAHIM	25.05.1992	VISEGRAD	Muslim
371	BAZ-108521-01	KUSTURA IBRAHIM	M	25.10.1950	VISEGRAD	20.06.1992	VISEGRAD	Muslim
372	BAZ-107133-01	KUSTURA IBRAHIM	M	08.08.1930	VEJISIL	13.06.1992	VISEGRAD	Muslim
373	SAS-001543-01	KUSTURA IBRAHIM	M	11.01.1955	ISLAM	27.05.1992	VISEGRAD	Unknown
374	BAZ-107535-02	KUSTURA MEDO	M	00.00.1937	MEHO	17.06.1992	VISEGRAD	Muslim
375	BAZ-100052-01	KUSTURA MUHAMED	M	00.06.1965	ALUA	14.06.1992	D. DUBOVIK	Muslim
376	BAZ-109653-01	KUSTURA RAMIZ	M	20.08.1947	REDZO	02.09.1992	BREZUA	Muslim
377	BAZ-108705-01	KUSTURA REDZO	M	---,1925	BREZJE - VISEGRAD	10.05.1992	VISEGRAD	Muslim
378	BAZ-107094-01	KUSTURA SAFET	M	30.03.1955	VISEGRAD	13.06.1992	VISEGRAD	Muslim
379	BAZ-107535-03	KUSTURA SEVALA	F	---,1937	VISEGRAD	--.06.1992	VISEGRAD	Muslim
380	BAZ-102784-02	KUSTURA SUHRA	M	00.00.1915	HAJDAR SALIHOVIC	01.05.1992	VISEGRAD	Unknown
381	BAZ-108675-02	KUSTURA SULEJMAN	M	---,1955	BREZJE - VISEGRAD	14.07.1992	BAN POLJE	Unknown
382	BAZ-107535-01	KUSTURA ZAIM	M	27.09.1963	MEDO	14.06.1992	D. DUBOVIK	Muslim
383	BAZ-107862-02	LEPIR NURA	F	13.05.1939	KOZJA LUKA - FOCA	--.07.1992	VISEGRAD	Muslim
384	BAZ-107862-01	LEPIR ZUAD	M	22.04.1964	STRGACINA - RUDO	28.05.1992	VISEGRAD	Muslim
385	BAZ-108461-01	LIPA ALMIR	M	02.03.1961	VISEGRAD	20.05.1992	VISEGRAD	Unknown
386	BAZ-109220-02	LIPA HAMLET	M	09.12.1959	VISEGRAD	05.06.1992	VISEGRAD	Unknown
387	BAZ-109220-01	LIPA NASIHA	F	03.05.1933	ABDULAH MUJEZINOVIC	05.06.1992	VISEGRAD	Other

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No.	ICRC Number	Name of the sought person	Sex	Date and place of birth	Father's name	Date and place of disappearance	Opstina	Ethnicity*
388	BAZ-102102-01	LONGAR FAJKO	M	14.09.1963	RODIC BRDO - VIŠEGRAD	17.05.1992	VIŠEGRAD	Muslim
389	BAS-004518-01	LONGARIC RUDOLF	M	15.09.1962	VIŠEGRAD	12.06.1992	VIŠEGRAD	Unknown
390	BAZ-104406-01	LOŠIC IBRAHIM	M	15.05.1931	RUTENOVICI	14.06.1992	VIŠEGRAD	Muslim
391	BAZ-109426-01	LOŠIC MUJO	M	02.01.1965	RUTENOVICI - VIŠEGRAD	18.07.1992	VIŠEGRAD	Muslim
392	BAZ-103116-01	MALAGIC LUTVIJA	F	---1968	SELUSTA - BRATUNAC	11.04.1992	VIŠEGRAD	Other
393	BAZ-106815-01	MALUHC KEMAL	M	06.09.1965	VIŠEGRAD	26.05.1992	VIŠEGRAD	Muslim
394	BAZ-107190-01	MALUHIJA MEHMED	M	09.09.1946	VIŠEGRAD	17.06.1992	VIŠEGRAD	Muslim
395	BAZ-100259-01	MAMELEDZIJA ESAD	M	---1963	KABERNIK - VIŠEGRAD	15.05.1992	KABERNIK	Muslim
396	BAZ-100259-01	MAMELEDZIJA MIRSAD	M	---1958	KABERNIK - VIŠEGRAD	21.05.1992	VIŠEGRAD	Muslim
397	BAZ-105931-01	MAMELEDZIJA SABIT	M	21.12.1939	KABERNIK - VIŠEGRAD	18.05.1992	VIŠEGRAD	Muslim
398	BAZ-104368-01	MANGAFIC HAMDO	M	15.08.1949	SARAJEVO	--06.1992	SASE	Muslim
399	BAZ-109010-03	MASLO ADEM	M	02.08.1939	BOGDASICI - VIŠEGRAD	12.06.1992	BAN POLJE	Muslim
400	BAZ-106087-01	MASLO CEMIL	M	25.10.1949	VIŠEGRAD	20.05.1992	VIŠEGRAD	Unknown
401	BAZ-102415-01	MEDIC EDIN	M	04.08.1970	VIŠEGRAD	11.05.1992	OKOLISTE	Muslim
402	BAZ-109049-01	MEDUSELIJAC AVDULAH	M	10.01.1926	DUBOVO-VIŠEGRAD	15.06.1992	VIŠEGRAD	Muslim
403	BAZ-107860-01	MEDUSELIJAC IBRAHIM	M	01.06.1941	BABIN POTOK - VIŠEGRAD	01.06.1992	VIŠEGRAD	Unknown
404	BAZ-105703-01	MEDUSELIJAC MASA	F	26.05.1935	BABIN POTOK - VIŠEGRAD	15.06.1992	VIŠEGRAD	Muslim
405	BAZ-105703-02	MEDUSELIJAC MUNEVER	M	18.07.1989	VIŠEGRAD	15.06.1992	VIŠEGRAD	Muslim
406	BAZ-109340-01	MEDUSELIJAC MUNIBA	F	---1952	KAOSTICE-VIŠEGRAD	--05.1992	RODIC BRDO	Muslim
407	BAZ-106951-02	MEMISEVIC ABDULAH	M	27.01.1952	OMERAGICI-VIŠEGRAD	29.07.1992	HRANJEVAC	Muslim
408	BAZ-103201-01	MEMISEVIC ALMEDIN	M	23.09.1990	PRELOVO - VIŠEGRAD	--06.1992	PRELOVO	Muslim
409	BAZ-103201-02	MEMISEVIC ALMEDINA	F	11.08.1973	PRELOVO - VIŠEGRAD	--06.1992	PRELOVO	Muslim
410	BAS-003370-02	MEMISEVIC DEVIJA	F	---1934	KUKA-PRELOVO-VIŠEGRAD	26.06.1992	BIKAVAC	Unknown
411	BAS-003370-01	MEMISEVIC EMINA	F	22.07.1958	PRELOVO - VIŠEGRAD	26.06.1992	BIKAVAC	Muslim
412	BAZ-102596-01	MEMISEVIC HABIB	M	07.01.1943	OMERAGICI - VIŠEGRAD	21.05.1992	PRELOVO	Muslim
413	BAS-000890-01	MEMISEVIC KASIM	M	16.03.1923	DRINSKO - VIŠEGRAD	--05.1992	DRINSKO	Muslim
414	BAZ-105689-02	MEMISEVIC RASIM	M	---1936	VIŠEGRAD	--05.1992	VIŠEGRAD	Muslim
415	BAZ-105689-01	MEMISEVIC VAHIDA	F	---1937	SIP - VIŠEGRAD	--05.1992	VIŠEGRAD	Muslim
416	BAZ-103201-03	MEMISEVIC VASVIJA	F	19.09.1953	ZAGRA - VIŠEGRAD	--06.1992	PRELOVO	Muslim
417	BAZ-108695-03	MENZLOVIC ADMIR	M	16.06.1986	VIŠEGRAD	11.06.1992	PRELOVO	Muslim
418	BAZ-108695-02	MENZLOVIC AJKA	F	03.05.1993	KUKA - VIŠEGRAD	11.06.1992	PRELOVO	Muslim
419	BAZ-108097-01	MENZLOVIC HAMED	M	10.10.1952	MENZLOVICI-PRELOVO	01.06.1992	PRELOVO	Muslim
420	BAZ-108606-01	MENZLOVIC OMER	M	15.10.1939	MENZLOVICI	14.06.1992	MENZLOVICI	Muslim
421	BAZ-108695-01	MENZLOVIC SALKO	M	12.04.1947	MENZLOVICI	08.07.1992	DRINSKO	Muslim
422	BAZ-108695-04	MENZLOVIC SELINA	F	11.07.1978	VIŠEGRAD	11.06.1992	PRELOVO	Muslim
423	BAZ-106984-01	MENZLOVIC SUVAJ	M	---1968	PRELOVO-VIŠEGRAD	22.06.1992	VIŠEGRAD	Muslim
424	BAZ-108984-02	MESANOVIC HAJRA	F	15.01.1931	VIŠEGRAD	--05.1992	VIŠEGRAD	Unknown
425	BAZ-106107-01	MESANOVIC IDRIZ	M	13.06.1969	VIŠEGRAD	23.05.1992	DRINSKO	Muslim
426	BAZ-108984-01	MESANOVIC MEHO	M	04.04.1924	DRINSKO-VIŠEGRAD	--05.1992	VIŠEGRAD	Muslim

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427	BAZ-108964-03	MESANOVIĆ MIDHAT	M	11.09.1958	VIŠEGRAD	VIŠEGRAD	VIŠEGRAD	Other
428	BAZ-106107-02	MESANOVIĆ RAMIZ	M	05.01.1971	VIŠEGRAD	MEHO	VIŠEGRAD	Muslim
429	BAZ-102643-01	MESANOVIĆ RAMIZ	M	03.11.1971	DRINSKO - VIŠEGRAD	AZIZ	DRINSKO	Muslim
430	BAZ-103432-01	MIRVIĆ MIRSAD	M	16.07.1965	VIŠEGRAD	RAMO	VIŠEGRAD	Muslim
431	BAZ-109157-01	MIRVIĆ MUHAMED	M	10.11.1945		NEZIR	VIŠEGRAD	Muslim
432	BAZ-108928-02	MIRDIĆ MEHMED	M	17.03.1969	VIŠEGRAD	HASIB	VIŠEGRAD	Muslim
433	BAZ-108928-01	MIRDIĆ OSMAN	M	24.09.1965	VIŠEGRAD	AVDO	BAN POLJE	Muslim
434	BAZ-108409-01	MUCOVSKI RESAD	M	14.12.1968	VIŠEGRAD	AVDIJA	BAN POLJE	Muslim
435	SAS-002596-01	MUHAREMOVIĆ HAKUJA	M	09.11.1950	DIPI - VIŠEGRAD	SABRIJA	VIŠEGRAD	Muslim
436	BAZ-302139-01	MUHAREMOVIĆ NUSRET	M	22.01.1956	MEDEDA - VIŠEGRAD	NURKO	VIŠEGRAD	Muslim
437	BAZ-107341-01	MUHIĆ ADIL	M	24.06.1950	MEDEDA - VIŠEGRAD	RASIM	VIŠEGRAD	Muslim
438	SAS-003352-01	MUHIĆ SAKIB	M	04.02.1971	DOBRUN - VIŠEGRAD	ZAIM	VIŠEGRAD	Muslim
439	BAZ-108781-01	MUHIĆ SENAD	M	09.04.1959	DOBRUN - VIŠEGRAD	MUJO	VIŠEGRAD	Muslim
440	BAZ-109016-01	MULJEZINOVIĆ AJKA	M	--.06.1930	G.GOSTILJA-VIŠEGRAD	SALKO CAKO	DOBRUN	Muslim
441	BAZ-108675-01	MULJEZINOVIĆ DERVISA	F	--.1926	VELATOVO-VIŠEGRAD	MUJO OMERVIĆ	BABIN POTOK	Muslim
442	BAZ-107372-01	MUJKIĆ HAJRUDIN	M	18.11.1958		SALKO	VIŠEGRAD	Unknown
443	SAS-003390-02	MUJKIĆ IZETA	F	--.1930	PRESJEKA - VIŠEGRAD	SAHIN SUČESKA	VIŠEGRAD	Unknown
444	BAZ-102417-01	MUJKIĆ KEMAL	M	05.08.1955	DOBRUN - VIŠEGRAD	IBRAHIM	VIŠEGRAD	Muslim
445	BAZ-108070-01	MULHAŠIĆ MEDO	M	--.04.1930	VIŠEGRAD	SALKAN	VIŠEGRAD	Muslim
446	BAZ-110190-01	MULHAŠIĆ RIZAH	M	15.03.1938	VIŠEGRAD	RASID	VIŠEGRAD	Muslim
447	BAZ-108070-02	MULHAŠIĆ SEVALA	F	--.10.1956	VIŠEGRAD	HAMID BEČIROVIĆ	VIŠEGRAD	Unknown
448	BAZ-101875-02	MULAOMEROVIĆ HAMED	M	00.00.1940	VIŠEGRAD	MUSTAFA	VIŠEGRAD	Unknown
449	BAZ-101875-01	MULAOMEROVIĆ MUSTAFA	M	29.05.1979		HAMED MULAOMEROVIĆ	VIŠEGRAD	Unknown
450	BAZ-109849-02	MUNIC MEHO	M	10.06.1929	MEREMISLJE-VIŠEGRAD	SULJO	VIŠEGRAD	Unknown
451	BAZ-316306-01	MUNIKOZA IBRAHIM	M	01.01.1961		MUJO	VIŠEGRAD	Muslim
452	BAZ-108687-01	MURATOVIĆ MAGEBULA	F	28.06.1914	RAKITNICA-ROGATICA	SENSO TANKOVIĆ	VIŠEGRAD	Unknown
453	BAZ-109014-01	MURTIĆ FATMA	F	--.1909	M.GOSTILJA-VIŠEGRAD	ADEM SEHIĆ	VIŠEGRAD	Muslim
454	BAZ-109014-02	MURTIĆ FATIMA	F	--.1936	TRBUHOVCI - GORAZDE	SEMO BAJRAMOVIĆ	VIŠEGRAD	Muslim
455	BAZ-111399-01	MURTIĆ HRISTEM	M	--.1930	VELIKA GOSTILJA - VIŠEGRAD	BEGO	VIŠEGRAD	Muslim
456	BAZ-109024-01	MURTIĆ KASIM	M	--.1958	MUŠIĆ-VIŠEGRAD	SULJO	VIŠEGRAD	Muslim
457	BAZ-102603-01	MURTIĆ MUNIRA	F	--.1960	KAMENICA - VIŠEGRAD	NEZIR DUDEVIĆ	VIŠEGRAD	Muslim
458	BAZ-111399-02	MURTIĆ SEVKA	F	--.1932	VELIKA GOSTILJA - VIŠEGRAD	AGAN SABANOVIĆ	VIŠEGRAD	Muslim
459	BAZ-105176-01	MUSANOVIĆ AJKA	F	20.04.1933	PALEZ - VIŠEGRAD	HAJRAN RAMIĆ	VIŠEGRAD	Unknown
460	BAZ-110316-01	MUSTAFIĆ MUSTAFA	M	--.1966	FOČA	MUHAREM	VIŠEGRAD	Muslim
461	BAZ-107103-01	MUSTAFIĆ SULJO	M	15.10.1958	OSATICA - SREBRENICA	NURUJA	VIŠEGRAD	Muslim
462	SAS-001541-01	MUTAPCIĆ AHMET	M	30.04.1961		SALKO	DRINSKO	Muslim
463	BAZ-109144-01	MUTAPCIĆ HAJRUDIN	M	--.1967	TURJIAK-VIŠEGRAD	HUSEIN	VIŠEGRAD	Muslim
464	BAZ-106518-02	MUTAPCIĆ HASAN	M	07.07.1952		ABDULAH	VIŠEGRAD	Muslim
465	BAZ-103664-01	MUTAPCIĆ MEDO	M	02.06.1947	TURJIAK - VIŠEGRAD	ZECO	VIŠEGRAD	Unknown

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No.	ICRC Number	Name of the sought person	Sex	Date and place of birth	Father's name	Date and place of disappearance	Opstina	Ethnicity*
466	BAZ-109144-02	MUTAPIC MEHMED	M	---,1962	TURJAK-VISEGRAD	14.09.1992	DRINSKO	VISEGRAD Muslim
467	BAZ-106518-01	MUTAPIC MIRSAD	M	26.07.1975	BABIN POTOK - VISEGRAD	07.06.1992	BIKAVAC	VISEGRAD Muslim
468	BAZ-109448-01	NEZIR JUŠUF	M	01.01.1948	IGOCE-FOCA	16.06.1992	DOBUN	VISEGRAD Muslim
469	BAZ-107677-02	NUHANOVIC MIDHAT	M	07.02.1964	VISEGRAD	13.06.1992	DUSCE	VISEGRAD Muslim
470	BAZ-106579-01	NUHANOVIC RASIM	M	17.09.1950		16.06.1992	VISEGRAD	VISEGRAD Muslim
471	BAZ-102759-01	NUHANOVIC SACIR	M	17.05.1951	DRINSKO - VISEGRAD	14.06.1992	VISEGRAD	VISEGRAD Muslim
472	BAZ-102759-02	NUHANOVIC SAMIR	M	07.08.1974	DRINSKO - VISEGRAD	14.06.1992	VISEGRAD	VISEGRAD Muslim
473	BAZ-105568-01	OGLECEVAC HASAN	M	00.00.1952		04.06.1992	CRNCA	VISEGRAD Muslim
474	BAZ-105642-01	OGLECEVAC RAMIZ	M	15.08.1954	CURICI - RUDO	09.06.1992	CRNCA	VISEGRAD Muslim
475	BAZ-105734-01	OHANOVIC MEHO	M	06.12.1996	KLASNIK-VISEGRAD	25.05.1992	VISEGRAD	VISEGRAD Muslim
476	BAZ-111399-04	OMERAGIC ERVIN	M	--,02.1992	FADIL OMERAGIC	27.06.1992	BIKAVAC	VISEGRAD Muslim
477	BAZ-105620-01	OMERAGIC MURAT	M	---,1962	BODEZNIK - VISEGRAD	08.05.1992	VISEGRAD	VISEGRAD Muslim
478	BAZ-111389-03	OMERAGIC SUHRA	F	10.10.1962	VELIKA GOSTILJA - VISEGRAD	27.06.1992	BIKAVAC	VISEGRAD Muslim
479	BAZ-108913-02	OMEROVIC AHMET	M	---,1969	HIMZO	--,06.1992	VISEGRAD	VISEGRAD Muslim
480	BAZ-104455-01	OMEROVIC DERVIS	M	06.09.1954	BOSANSKA JAGODINA	--,06.1992	DOBUN	VISEGRAD Muslim
481	BAZ-108528-01	OMEROVIC ERMIN	M	---,1969	DUSCE - VISEGRAD	13.06.1992	MEREMISLJE	VISEGRAD Muslim
482	BAZ-108913-01	OMEROVIC HIMZO	M	---,1932	DRINSKO-VISEGRAD	--,06.1992	VISEGRAD	VISEGRAD Muslim
483	BAZ-107066-02	OMEROVIC MEHMED	M	---,1926	VELATOVO-VISEGRAD	14.06.1992	VISEGRAD	VISEGRAD Muslim
484	BAZ-108295-01	OMEROVIC MEHO	M	15.08.1937				VISEGRAD Muslim
485	BAZ-108855-03	OMEROVIC NERMIN	M	---,1967	UNISTA-VISEGRAD	02.05.1992	UNISTA	VISEGRAD Unknown
486	BAZ-109021-01	OMEROVIC RABUJA	F	---,1907	MEDUSELJE-VISEGRAD	--,06.1992	SEGANJE	VISEGRAD Unknown
487	BAZ-108836-01	OMEROVIC RASIM	M	13.03.1949	VISEGRAD	--,06.1992	VISEGRAD	VISEGRAD Muslim
488	BAZ-102104-01	OMEROVIC SALKO	M	10.03.1949		14.06.1992	VISEGRAD	VISEGRAD Muslim
489	BAZ-107150-01	OMEROVIC ZIHNIJA	M	15.02.1953	DRINSKO - VISEGRAD	01.05.1992	VISEGRAD	VISEGRAD Unknown
490	BAZ-107715-02	OMERSPAHIC AGONJA	M	24.05.1954	GODENJE - HAN PUESAK	05.08.1995	KLASNIK	VISEGRAD Unknown
491	BAZ-107715-01	OMERSPAHIC BELMIR	M	07.03.1978	GODENJE - HAN PUESAK	05.08.1995	KLASNIK	VISEGRAD Unknown
492	HRZ-019004-02	OPRASIC HIMZO	M	10.10.1945	VISEGRAD	25.05.1992	OKRUGLA	VISEGRAD Muslim
493	HRZ-019004-01	OPRASIC HIMZO	M	01.07.1983	FOCA	17.07.1992	DRINSKO	VISEGRAD Muslim
494	BAZ-108941-01	OSMANBEGOVIC NAIL	M	03.03.1928	ZLJEB - VISEGRAD	01.06.1992	VISEGRAD	VISEGRAD Muslim
495	BAZ-104362-01	PAJO NEZIR	M	---,1933	MEDEDA - VISEGRAD	20.04.1992	VISEGRAD	VISEGRAD Unknown
496	BAZ-002873-01	PASALIC FATIMA	F	---,1934	BOSANSKA KRUPA	---,1992	MUHAREM	VISEGRAD Unknown
497	BAZ-109147-01	PECIKOZA REMZUA	M	17.07.1960	VELIKA GOSTILJA	12.04.1993	MUHAREM	VISEGRAD Muslim
498	BAZ-106233-02	PEŠIC STEVAN	M	27.07.1938		12.04.1993	DEDEA	VISEGRAD Unknown
499	BAZ-108844-01	PIRIC CAMIL	M	02.10.1936	MENZLOVIC-VISEGRAD	18.06.1992	VISEGRAD	VISEGRAD Unknown
500	BAZ-109491-01	PJEVO KADRIJA	M	10.12.1962	MIGOSTILJA-VISEGRAD	12.07.1992	MALA GOSTILJA	VISEGRAD Muslim
501	BAZ-106679-01	PJEVO NERMIN	M	31.01.1973	KAMENICA-VISEGRAD	26.07.1995	DOBUN	VISEGRAD Other
502	SAS-003503-01	PJEVO NEZIR	M	---,1949	KAMENICA-VISEGRAD	--,05.1992	VISEGRAD	VISEGRAD Unknown
503	SAS-003503-02	PJEVO SEAD	M	01.01.1973	VISEGRAD	13.07.1992	VISEGRAD	VISEGRAD Unknown
504	BAZ-108963-02	PODZIC CAMKA	F	19.04.1959	HOLJACI-VISEGRAD	15.06.1992	VISEGRAD	VISEGRAD Unknown

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No.	ICRC Number	Name of the sought person	Sex	Date and place of birth	Father's name	Date and place of disappearance	Opstina	Ethnicity*
505	BAZ-108963-01	PODZIC HARIŠ	M	17.08.1988	FOČA	VIŠEGRAD	VIŠEGRAD	Muslim
506	BAZ-105793-02	POLJO ALMIR	M	06.06.1974	VLAHOVICI - VIŠEGRAD	VIŠEGRAD	VIŠEGRAD	Muslim
507	BAS-003388-02	POLJO JUSUF	M	20.08.1967	VLAHOVICI	MALA GOSTILJA	VIŠEGRAD	Unknown
508	BAZ-110034-01	POLJO JUSUF	M	--:--:1920	M.GOSTILJA - VIŠEGRAD	VIŠEGRAD	VIŠEGRAD	Muslim
509	BAS-003388-03	POLJO RAMIZ	M	--:--:1971	VLAHOVICI	MALA GOSTILJA	VIŠEGRAD	Unknown
510	BAZ-101827-01	POLJO RAMIZ	M	21.05.1954	VLAHOVICI - VIŠEGRAD	VIŠEGRAD	VIŠEGRAD	Muslim
511	BAS-003388-01	POLJO RAMO	M	09.01.1965	VLAHOVICI	MALA GOSTILJA	VIŠEGRAD	Muslim
512	BAZ-108534-02	POLJO SEMSO	M	--:--:1923	STARA GORA	BABIN POTOK	VIŠEGRAD	Muslim
513	BAZ-105793-01	POLJO SEMSO	M	--:--:1952	VLAHOVICI - VIŠEGRAD	VUCINE	VIŠEGRAD	Muslim
514	BAZ-108534-01	POLJO ZINETA	F	--:--:1923	DONJI DUBOVIK	BABIN POTOK	VIŠEGRAD	Muslim
515	BAZ-107656-01	PRIBISIC OSMAN	M	11.08.1964	STRGACINA - RUDO	DRINSKO	VIŠEGRAD	Muslim
516	BAZ-108988-01	RACIC HIDIN	M	09.09.1973	VIŠEGRAD	VIŠEGRAD	VIŠEGRAD	Muslim
517	BAZ-103750-01	RACIC SNAJO	M	--:--:1964	VIŠEGRAD	VIŠEGRAD	VIŠEGRAD	Unknown
518	BAZ-107200-01	RAMILOVIC MIRŠAD	M	17.12.1956	RADMILOVICI-GORAZDE	VIŠEGRAD	VIŠEGRAD	Muslim
519	BAZ-103548-01	RAMIC ALAGA	M	23.10.1969	PRIPCEKAK - ROGATICA	G. GOSTILJA	VIŠEGRAD	Muslim
520	BAZ-104755-01	RAMIC ESREF	M	12.08.1956	PRIPCEKAK - ROGATICA	MEHMED	VIŠEGRAD	Unknown
521	BAZ-109881-01	REDZOVIC NAHOD	M	03.01.1953	VIŠEGRAD	MUJO	VIŠEGRAD	Muslim
522	BAZ-108617-02	REDZOVIC NAHOD	M	02.05.1942	VIŠEGRAD	VIŠEGRAD	VIŠEGRAD	Unknown
523	BAZ-107918-01	REPUH HAMED	M	05.06.1935	REPUSEVICI-VIŠEGRAD	DUSCE	VIŠEGRAD	Muslim
524	BAZ-100059-01	RIBAC NEDZAD	M	18.09.1963	VIŠEGRAD	VIŠEGRAD	VIŠEGRAD	Muslim
525	BAZ-108946-01	RIZVANOVIC OSMAN	M	06.05.1928	VIŠEGRAD	ASIM	VIŠEGRAD	Muslim
526	BAZ-107004-01	SABANJICA DULSA	F	--:--:1952	BOGDASICI - VIŠEGRAD	HALID SISIC	VIŠEGRAD	Muslim
527	BAZ-107004-02	SABANJICA ENVER	M	--:--:1974	CRNI VRH - VIŠEGRAD	SALKO	VIŠEGRAD	Muslim
528	BAZ-108531-01	SABANJICA MEVZET	F	07.12.1957	VIŠEGRAD	SALKO	VIŠEGRAD	Muslim
529	BAZ-107004-03	SABANJICA MUNEVERA	F	--:--:1972	CRNI VRH - VIŠEGRAD	SALKO	VIŠEGRAD	Muslim
530	BAZ-108907-02	SABANOVIC BEHJA	F	--:--:1932	BRIGOVO - ROGATICA	MAHMUT ALIC	VIŠEGRAD	Muslim
531	BAS-001544-01	SABANOVIC HASIB	M	02.08.1915	VIŠEGRAD	MURAT	VIŠEGRAD	Muslim
532	BAZ-108737-01	SABANOVIC IBRO	M	--:--:1927	VELIKA GOSTILJA	POVJESTACA	VIŠEGRAD	Muslim
533	BAZ-108907-01	SABANOVIC MEHMED	M	--:--:1934	V.GOSTILJA-VIŠEGRAD	PASAN	VIŠEGRAD	Muslim
534	BAS-001366-01	SABANOVIC MUSTAFA	M	--:--:1929	VIŠEGRAD	AGAN	VIŠEGRAD	Muslim
535	BAS-003385-01	SABANOVIC NAIL	M	--:--:1920	MALA GOSTILJA	NURJA	VIŠEGRAD	Muslim
536	BAS-001664-01	SABANOVIC NERMIN	M	06.04.1972	MALA GOSTILJA	OMER	VIŠEGRAD	Unknown
537	BAZ-102837-01	SABANOVIC REDZO	M	11.04.1954	KUKA - VIŠEGRAD	OMER	VIŠEGRAD	Unknown
538	BAZ-001545-05	SABANOVIC SENAD	M	00.00.1961	VIŠEGRAD	HASIB	VIŠEGRAD	Muslim
539	BAZ-108907-03	SABANOVIC TIJA	F	--:--:1903	ŠTITAREVO-VIŠEGRAD	AVDO FEZIC	VIŠEGRAD	Muslim
540	BAS-003399-01	SADIKOVIC RABJA	M	12.09.1939	NASELJE SIP	ABID HOTA	VIŠEGRAD	Unknown
541	BAZ-108617-03	SAKIC ISMET	M	--:--:1932	VIŠEGRAD	TAIB	VIŠEGRAD	Muslim
542	BAZ-108617-01	SAKIC MUSTAFA	M	--:--:1949	VIŠEGRAD	TAIB	VIŠEGRAD	Muslim
543	BAZ-103311-01	SAKIC NEDZAD	M	04.05.1951	VIŠEGRAD	TAIB	VIŠEGRAD	Muslim

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544	BAZ-105927-01	SALIC BEKTO	M	00.07.1936	ABID	00.07.1992	KABERNIK	VISEGRAD Muslim
545	BAZ-104749-01	SALIC HAMED	M	01.05.1940	EDHEM	02.06.1992	VISEGRAD	VISEGRAD Muslim
546	BAZ-102355-01	SALIC MUJO	M	01.09.1972	RASIM	02.06.1992	VISEGRAD	VISEGRAD Muslim
547	BAZ-108221-01	SALIC RAMIZ	M	01.05.1954	DRINSKO - VISEGRAD	05.09.1992	DRINSKO	VISEGRAD Muslim
548	BAZ-102355-02	SALIC RASIM	M	15.03.1938	DRINSKO - VISEGRAD	02.06.1992	VISEGRAD	VISEGRAD Muslim
549	SAS-001466-01	SALIC ZAMIR	M	--:--:1932	VISEGRAD	01.06.1992	VISEGRAD	VISEGRAD Unknown
550	BAZ-108961-02	SARACEVIC FATIMA	F	--:--:1931	VISEGRAD	25.06.1992	VISEGRAD	VISEGRAD Muslim
551	BAZ-108961-01	SARACEVIC MURAT	M	--:--:1933	PRIBOJ	25.06.1992	VISEGRAD	VISEGRAD Muslim
552	BAZ-108602-01	SEHIC BESIMA	F	16.10.1954	MEDEDA-VISEGRAD	--.05.1992	VISEGRAD	VISEGRAD Muslim
553	BAZ-108719-02	SEHIC FARUK	M	28.12.1979	VISEGRAD	13.06.1992	MUSICI	VISEGRAD Muslim
554	BAZ-109129-01	SEHIC FAZILA	F	--:--:1918	VELIKA GOSTILJA	12.07.1992	VELIKA GOSTILJA	VISEGRAD Muslim
555	BAZ-109751-01	SEHIC KADA	F	31.01.1948	HASIB KURSPAHIC	13.06.1992	MUSICI	VISEGRAD Muslim
556	BAZ-108936-01	SEHIC MUSTAFA	M	--:--:1932	M.GOSTILJA-VISEGRAD	--.06.1992	MALA GOSTILJA	VISEGRAD Muslim
557	BAZ-108593-01	SEJDIC FAHRIJA	F	--:--:1951	DROKAN - VISEGRAD	02.08.1992	DROKAN	VISEGRAD Unknown
558	BAZ-108549-02	SEJDIC FATA	F	11.03.1894	HRANJEVAC-VISEGRAD	--.05.1992	KABERNIK	VISEGRAD Unknown
559	BAZ-108619-01	SELAK ALIJA	M	--:--:1946	PRACA-VISEGRAD	16.05.1992	VISEGRAD	VISEGRAD Muslim
560	BAZ-108619-02	SELAK NEZIR	M	--:--:1972	VISEGRAD	16.05.1992	VISEGRAD	VISEGRAD Muslim
561	BAZ-104849-01	SELMOVIC RAMIZ	M	10.01.1969	STITAREVO - VISEGRAD	06.08.1995	OSMAN	VISEGRAD Muslim
562	SAS-003800-01	SELMAN FEJZULAH	M	17.04.1921	U. SKOPSKO	--.05.1992	VISEGRAD	VISEGRAD Muslim
563	SAS-003800-02	SELMAN SEVKA	F	13.03.1916	BABIN POTOK - VISEGRAD	--.05.1992	VISEGRAD	VISEGRAD Unknown
564	BAZ-105685-01	SENDO RASIM	M	--:--:1962	SENDICI - VISEGRAD	--.06.1992	VISEGRAD	VISEGRAD Muslim
565	BAZ-104316-01	SETA OMER	M	23.07.1954	VISEGRAD	--.06.1992	DOBRUN	VISEGRAD Unknown
566	BAZ-108991-01	SETKIC MEHMED	M	--:--:1924	ROHCI-VISEGRAD	--.06.1992	ROHCI	VISEGRAD Muslim
567	BAZ-107742-01	SISIC BAJRO	M	27.03.1968	MEDEDA - VISEGRAD	12.07.1992	VISEGRAD	VISEGRAD Muslim
568	BAZ-104454-01	SISIC HASIB	M	29.09.1965	MEDEDA	21.05.1992	VISEGRAD	VISEGRAD Muslim
569	BAZ-107742-02	SISIC IBRAHIM	M	--:--:1936	MEDEDA - VISEGRAD	--.06.1992	VISEGRADSKA BANJA	VISEGRAD Muslim
570	BAZ-100140-01	SISIC RENZO	M	01.06.1952	MEDEDA - VISEGRAD	--.04.1992	VISEGRAD	VISEGRAD Muslim
571	BAZ-109284-01	SMAJIC ENIZ	M	--:--:1947	DUBOVO - VISEGRAD	11.08.1992	VISEGRAD	VISEGRAD Unknown
572	BAZ-107104-01	SMAJIC FADIL	M	03.01.1960	DUBOVO-VISEGRAD	11.06.1992	VISEGRAD	VISEGRAD Muslim
573	BAZ-967211-01	SMAJIC KEMAL	M	02.03.1977	DUBOVO-VISEGRAD	11.08.1992	BOSANSKA JAGODINA	VISEGRAD Muslim
574	BAZ-100368-01	SMAJIC MUHIDIN	M	03.11.1970	MUSAN	19.05.1992	VISEGRAD	VISEGRAD Muslim
575	BAZ-102777-04	SMAJIC MUSTAFA	M	31.12.1929	VISEGRAD	--.06.1992	VISEGRAD	VISEGRAD Muslim
576	SAS-000047-01	SMAJIC MUSTAFA	M	22.09.1972	VISEGRAD	30.08.1995	MALA GOSTILJA	VISEGRAD Muslim
577	BAZ-107104-02	SMAJIC NEZIR	M	16.03.1937	DUBOVO - VISEGRAD	14.06.1992	JELASCI	VISEGRAD Muslim
578	BAZ-102777-03	SMAJIC SALIH	M	11.10.1956	MUSTAFA	20.06.1992	VISEGRAD	VISEGRAD Muslim
579	BAZ-107863-02	SMAJIC SUAD	M	04.04.1958	DOBRUN - VISEGRAD	04.04.1992	DOBRUN	VISEGRAD Muslim
580	BAZ-107104-03	SMAJIC SUMBULA	F	23.04.1938	HOLLJACI - VISEGRAD	14.06.1992	JELASCI	VISEGRAD Muslim
581	BAZ-103430-02	SMAJLOVIC ALMASA	F	15.08.1936	DUSCE - VISEGRAD	13.06.1992	VISEGRAD	VISEGRAD Unknown
582	BAZ-106661-01	SMAJLOVIC EDHEM	M	03.12.1959	LASCI-VISEGRAD	07.06.1992	VISEGRAD	VISEGRAD Muslim

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583	BAZ-106112-01	SMALJLOVIC HAJRILJA	F	--:--:1927	FOCA	VIŠEGRAD	VIŠEGRAD	Unknown
584	BAZ-106112-03	SMALJLOVIC KEMAL	M	--:01:1975	FOCA - VIŠEGRAD	26.06.1992	VIŠEGRAD	Muslim
585	BAZ-109858-01	SMALJLOVIC MEVLA	F	--:--:1954	DUBOVIK-VIŠEGRAD	--:06:1992	VIŠEGRAD	Muslim
586	BAZ-106112-04	SMALJLOVIC NESIBA	F	--:--:1954	VIŠEGRAD	26.06.1992	VIŠEGRAD	Muslim
587	BAZ-106112-02	SMALJLOVIC SAFET	M	--:07:1955	VIŠEGRAD	26.06.1992	VIŠEGRAD	Muslim
588	BAZ-106112-05	SMALJLOVIC SENAD	M	--:02:1974	FOCA - VIŠEGRAD	26.06.1992	VIŠEGRAD	Muslim
589	BAZ-104332-01	SOFTIC HASO	M	23.08.1962	KAOSTICE - VIŠEGRAD	17.05.1992	KAOSTICE	Muslim
590	BAS-001367-03	SOFTIC DERSVIS	M	--:--:1953	ZLUJEB - VIŠEGRAD	15.06.1992	VIŠEGRAD	Muslim
591	BAS-001367-01	SOFTIC MEHO	M	--:--:1924	ZLUJEB - VIŠEGRAD	18.06.1992	VIŠEGRAD	Muslim
592	BAS-001367-02	SOFTIC SAMIR	M	30.01.1975		18.06.1992	VIŠEGRAD	Muslim
593	BAZ-102015-01	SOLAK MUJO	M	10.07.1923	MEDUSELJE - VIŠEGRAD	--:06:1992	VIŠEGRAD	Muslim
594	BAZ-100182-01	SPAHIC ZULFO	M	--:--:1952	CENGIĆI - VIŠEGRAD	--:05:1992	VIŠEGRAD	Muslim
595	BAZ-107197-01	SUBASIC AISA	F	--:--:1914	DOBROUN-VIŠEGRAD	--:08:1992	VIŠEGRAD	Muslim
596	BAS-002456-01	SUBASIC IRMA	F	19.04.1992	GORAĐE	--:07:1992	BIKAVAC	Unknown
597	BAZ-107197-02	SUBASIC PASAN	M	--:--:1917	BIKAVAC - VIŠEGRAD	--:07:1992	BIKAVAC	Muslim
598	BAZ-105630-03	SUBASIC SABAHETA	F	06.11.1964	VIŠEGRAD	16.06.1992	BIKAVAC	Unknown
599	BAZ-103199-02	SUCESKA SALKO	M	--:--:1934	PRESJEKA - VIŠEGRAD	11.06.1992	VIŠEGRAD	Muslim
600	BAZ-103199-03	SUCESKA MEVA	F	--:--:1933	GOSTILJA	11.06.1992	VIŠEGRAD	Muslim
601	BAZ-100712-01	SUCESKA MUSA	F	15.02.1932	VELIKA GOSTILJA - VIŠEGRAD	--:06:1992	VIŠEGRAD	Muslim
602	BAZ-106126-01	SUCESKA SALKO	M	17.07.1960	PRESJEKA-VIŠEGRAD	06.06.1992	VIŠEGRAD	Muslim
603	BAS-003390-01	SUCESKA SENAD	M	24.12.1964	PRESJEKA	24.06.1992	VIŠEGRAD	Unknown
604	BAZ-106784-01	SUCESKA SMAJO	M	09.07.1944		00.05.1992	VIŠEGRAD	Muslim
605	BAZ-102572-01	SUCESKA SUAD	M	02.01.1967	PRESJEKA - VIŠEGRAD	22.05.1992	VIŠEGRAD	Unknown
606	BAZ-105787-01	SUCESKA UZEIR	M	00.00.1954		17.05.1992	VIŠEGRAD	Muslim
607	BAZ-107716-01	SULEJMANOVIC AZMIR	M	--:--:1975	LUKA - SREBRENICA	05.08.1995	VIŠEGRAD	Muslim
608	BAZ-905258-04	SULEJMANOVIC HAZIM	M	--:--:1953	LUKE - SREBRENICA	05.08.1995	VIŠEGRAD	Unknown
609	BAZ-103653-01	SULEJMANOVIC IBRAHIM	M	--:--:1956	LUKE - SREBRENICA	17.05.1992	VIŠEGRAD	Muslim
610	BAZ-106342-01	SUSKO A'DO	M	10.10.1943	VIŠEGRAD	12.06.1992	VIŠEGRAD	Muslim
611	BAZ-106802-01	SUSKO SEAD	M	17.08.1963	VIŠEGRAD	26.05.1992	VIŠEGRAD	Muslim
612	BAZ-108850-01	SUSKO SMIL	M	05.01.1935	VIŠEGRAD	12.06.1992	BOSANSKA-JAGODINA	Muslim
613	BAZ-110853-01	SUTROVIC MUAMER	M	--:--:1984	VIŠEGRAD	--:05:1992	VIŠEGRAD	Other
614	BAZ-105648-01	TABAKOVIC ALIJA	M	--:--:1945	VISOKO	26.06.1992	VIŠEGRAD	Muslim
615	BAZ-109135-01	TABAKOVIC BIDO	M	00.00.1926		25.06.1992	VIŠEGRAD	Muslim
616	BAZ-103411-01	TABAKOVIC ESAD	M	16.10.1962	BRCKO	26.05.1992	VIŠEGRAD	Muslim
617	BAZ-108426-02	TABAKOVIC FATIMA	F	--:--:1923	BUELJINA	--:05:1992	VIŠEGRAD	Unknown
618	BAZ-104334-03	TABAKOVIC FEHIM	M	17.05.1933		19.05.1992	VIŠEGRAD	Muslim
619	BAZ-104334-01	TABAKOVIC FERID	M	13.06.1956		19.05.1992	VIŠEGRAD	Muslim
620	BAZ-103411-02	TABAKOVIC HASIB	M	--:--:1938		14.06.1992	VIŠEGRAD	Muslim
621	BAZ-104334-02	TABAKOVIC IZET	M	14.06.1967	DRINSKO - VIŠEGRAD	19.05.1992	VIŠEGRAD	Muslim

Excerpts from the 2005 ICRC List of Missing Persons from Bosnia and Herzegovina: Those who Disappeared in Višegrad Municipality

No.	ICRC Number	Name of the sought person	Sex	Date and place of birth	Father's name	Date and place of disappearance	Opstina	Ethnicity*
622	BAZ-109372-01	TABAKOVIC RABJA	F	12.06.1974	DRINSKO-VISEGRAD	09.06.1992	VISEGRAD	Muslim
623	BAZ-108426-01	TABAKOVIC SEVAL	M	15.10.1917	VISEGRAD	--.05.1992	VISEGRAD	Muslim
624	BAS-003385-01	TANKOVIC TEUFIK	M	06.11.1937	RAKITNICA - ROGATICA	--.05.1992	SASE	Muslim
625	BAZ-106196-01	TESKEREDZIC AHMET	M	--.19.06	ROGATICA	17.07.1992	VISEGRAD	Muslim
626	BAZ-106196-03	TESKEREDZIC ZEINEBA	F	07.09.1946	VISEGRAD	17.07.1992	VISEGRAD	Muslim
627	BAS-001656-01	TOMIC STOJA	M	04.08.1936		00.06.1992	VISEGRAD	Unknown
628	BAZ-109364-01	TOPALIC HAJRUDIN	M	13.09.1975	OMERAGICI-VISEGRAD	24.05.1992	VISEGRAD	Muslim
629	BAZ-108216-02	TOPALIC RAMIZ	M	--.19.28	OMERAGICI-VISEGRAD	13.07.1992	VISEGRAD	Muslim
630	BAZ-108216-01	TOPALIC RASIM	M	02.03.1963		15.06.1992	VISEGRAD	Muslim
631	BAZ-103494-01	TOSKIC MEVZET	M	--.19.32	VISEGRAD	--.05.1992	VISEGRAD	Unknown
632	BAZ-103494-03	TOSKIC SAMIR	M	--.19.64	VISEGRAD	--.05.1992	VISEGRAD	Unknown
633	BAZ-103494-02	TOSKIC ZUMRA	F	29.07.1938	TUZLA	--.05.1992	VISEGRAD	Muslim
634	BAS-003262-03	TUFEKIC DZEHVA	F	07.08.1964	VISEGRAD	19.06.1992	BAN POLJE	Muslim
635	BAS-003262-01	TUFEKIC EKSAD	M	24.08.1990	FOCA	19.06.1992	BAN POLJE	Unknown
636	BAS-003262-02	TUFEKIC ELMA	F	14.01.1987	VISEGRAD	19.06.1992	BAN POLJE	Muslim
637	BAZ-105630-02	TUFEKIC HASA	F	18.03.1917	VISEGRAD	--.07.1992	VISEGRAD	Other
638	BAZ-105630-01	TUFEKIC RAMIZ	M	20.06.1950	DUSCE - VISEGRAD	--.07.1992	VISEGRAD	Other
639	BAZ-110132-01	TURJACANIN AIDA	F	14.01.1987	BIKAVAC - VISEGRAD	19.06.1992	VISEGRAD	Muslim
640	BAZ-110132-02	TURJACANIN DILKA	F	--.19.41	BISEVICI - RUDO	19.06.1992	VISEGRAD	Muslim
641	BAZ-109138-01	TURKIC FADILA	F	20.01.1969		00.11.1992	VISEGRAD	Other
642	BAZ-110875-01	TUROHAN RASIM	M	--.12.1952	DRINSKO - VISEGRAD	--.06.1992	VISEGRAD	Muslim
643	BAZ-102711-01	TURUDIC VASVUA	F	--.19.40	DRINSKO - VISEGRAD	20.06.1992	VISEGRAD	Muslim
644	BAZ-108849-02	TVRTKOVIC ABIDA	F	--.19.53	SEGANJE-VISEGRAD	--.05.1992	VISEGRAD	Unknown
645	BAZ-109814-01	TVRTKOVIC HAMED	M	08.08.1938	KABERNIK - VISEGRAD	12.06.1992	VISEGRAD	Muslim
646	BAZ-109814-02	TVRTKOVIC HUSEIN	M	06.02.1966	VISEGRAD	12.06.1992	KOCARIM	Muslim
647	BAZ-108831-01	TVRTKOVIC MUHAREM	M	--.19.33	CRNCA-VISEGRAD	09.08.1992	BARIMO	Unknown
648	BAZ-106196-02	TVRTKOVIC RABJA	F	--.19.02	ROGATICA	17.07.1992	VISEGRAD	Unknown
649	BAZ-107090-01	TVRTKOVIC SAFET	M	00.00.1951		06.05.1992	VISEGRAD	Muslim
650	BAZ-108849-03	TVRTKOVIC SELIM	M	--.19.75	VISEGRAD	--.05.1992	VISEGRAD	Muslim
651	BAZ-108849-01	TVRTKOVIC SULEJMAN	M	--.19.51	VISEGRAD	--.05.1992	VISEGRAD	Muslim
652	BAZ-108437-01	USTAMUJIC DZEVAD	M	22.07.1951	SARAJEVO	--.08.1992	VISEGRAD	Muslim
653	BAZ-108919-01	USTAMUJIC MEHO	M	16.05.1922	VISEGRAD	--.05.1992	VISEGRAD	Muslim
654	BAZ-102711-03	USTAMUJIC MUAMERA	F	09.04.1974	VISEGRAD	20.06.1992	OSOJNICA	Muslim
655	BAZ-102711-02	USTAMUJIC RAZJA	F	--.19.44	VISEGRAD - DRINSKO	20.06.1992	OSOJNICA	Unknown
656	BAZ-108462-01	USTAMUJIC SALEM	M	28.03.1954	NEZUCI - VISEGRAD	08.06.1992	CRNCA	Muslim
657	BAS-002595-01	UZEIRBEGOVIC SAFA	F	16.11.1929	VISEGRAD	20.06.1992	VISEGRAD	Muslim

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No.	ICRC Number	Name of the sought person	Sex	Date and place of birth	Father's name	Date and place of disappearance	Opstina	Ethnicity*
658	BAZ-108425-02	UZICANIN HASIB	M	---,1952	SALIH	VIŠEGRAD	VIŠEGRAD	Muslim
659	BAS-003318-01	UZICANIN KASIM	M	---,1947	SALIH	KABERNIK	VIŠEGRAD	Unknown
660	BAZ-106825-01	VALJEVIC SAFET	M	29.09.1946	VEJŠIL	VIŠEGRAD	VIŠEGRAD	Muslim
661	BAZ-101700-02	VARNICA HASIB	M	06.07.1922	BEGO	VIŠEGRAD	VIŠEGRAD	Unknown
662	BAZ-101700-01	VARNICA MUJO	M	06.02.1950	HASIB	VIŠEGRAD	VIŠEGRAD	Muslim
663	BAZ-104130-01	VATRES ADIL	M	---,1931	MEDO	MUSICI	VIŠEGRAD	Muslim
664	BAZ-108592-02	VELAGIC SABAHUDIN	M	15.11.1967	SULJO	VIŠEGRAD	VIŠEGRAD	Muslim
665	BAZ-108592-01	VELAGIC SULJO	M	15.05.1939	MUJO	SLAP	VIŠEGRAD	Muslim
666	BAZ-108368-01	VELATOVAC MIRŠAD	M	---,10.1959	ALJA	VIŠEGRAD	VIŠEGRAD	Muslim
667	BAZ-104598-02	VELETOVAC BEGO	M	---,1928	AHMO	VELETOVO	VIŠEGRAD	Muslim
668	BAZ-107125-01	VELJAN ISMET	M	12.11.1952	DELJA	VIŠEGRAD	VIŠEGRAD	Unknown
669	BAZ-105917-02	VIDRAK DERSIVA	F	---,1930	OMER KAHRIMAN	BIKAVAC	VIŠEGRAD	Muslim
670	BAZ-105917-01	VIDRAK IBRAHIM	M	---,1930	RUSTEM	BIKAVAC	VIŠEGRAD	Unknown
671	BAZ-107300-02	VILA JASMINA	F	24.02.1971	MUSTAFA	VUCINE	VIŠEGRAD	Unknown
672	BAZ-107300-03	VILA MUSTAFA	M	08.05.1934	SULJO	MUSICI	VIŠEGRAD	Unknown
673	BAZ-107300-01	VILA NERMIN	M	24.10.1963	MUSTAFA	MUSICI	VIŠEGRAD	Unknown
674	BAZ-305167-01	VILA SULJO	M	22.11.1957	MUSICI - VIŠEGRAD	MUSICI	VIŠEGRAD	Muslim
675	BAZ-107111-01	VILA UZEIR	M	---,1937	MUSICI - VIŠEGRAD	MUSICI	VIŠEGRAD	Muslim
676	BAZ-109989-01	VILIC MINA	F	---,1956	VIŠEGRAD	VIŠEGRAD	VIŠEGRAD	Muslim
677	BAZ-109989-04	VILIC NIHAD	M	---,1985	VIŠEGRAD	VIŠEGRAD	VIŠEGRAD	Muslim
678	BAZ-109989-03	VILIC NIHADA	F	---,1981	VIŠEGRAD	VIŠEGRAD	VIŠEGRAD	Muslim
679	BAZ-109989-02	VILIC ZHMETA	F	---,1984	VIŠEGRAD	VIŠEGRAD	VIŠEGRAD	Muslim
680	BAZ-102359-01	ZDERO SUVAD	M	10.03.1963	VIŠEGRAD	VIŠEGRAD	VIŠEGRAD	Muslim
681	BAS-003329-01	ZDRALOVIC VALIDA	F	02.12.1968	BUGUJNO	VIŠEGRAD	VIŠEGRAD	Other
682	BAZ-110273-01	ZEJNILOVIC SAFET	M	26.02.1946	LOZNICA - BIJELO POLJE	VIŠEGRAD	VIŠEGRAD	Muslim
683	BAZ-104605-01	ZUBAN ESAD	M	---,1956	MUSICI - VIŠEGRAD	MUSICI	VIŠEGRAD	Muslim
684	BAZ-101932-01	ZUBAN HAJRUDIN	M	07.03.1963	MUSICI - VIŠEGRAD	MUSICI	VIŠEGRAD	Muslim
685	BAZ-107535-06	ZUKIC ALEN	M	---,1990	VIŠEGRAD	VIŠEGRAD	VIŠEGRAD	Muslim
686	BAZ-100362-04	ZUKIC BEHUA	F	18.03.1928	ISLAMOVIĆ - BRCKO	VIŠEGRAD	VIŠEGRAD	Muslim
687	BAZ-106442-01	ZUKIC DZENAL	M	---,1948	D. DUBOVIK - VIŠEGRAD	DUSCE	VIŠEGRAD	Muslim
688	BAZ-104488-01	ZUKIC DZENAL	M	10.05.1955	SAHKO	VIŠEGRAD	VIŠEGRAD	Unknown
689	BAZ-100042-03	ZUKIC FADIL	M	20.05.1956	ZUKIC HASAN	VIŠEGRAD	VIŠEGRAD	Muslim
690	BAZ-106442-02	ZUKIC FARUK	M	---,1974	DZEMAL	DUSCE	VIŠEGRAD	Muslim
691	BAZ-103627-02	ZUKIC MUHAMMED	M	15.08.1953	MEHMED	VIŠEGRAD	VIŠEGRAD	Muslim
692	BAZ-103627-01	ZUKIC MUHAREM	M	11.10.1955	MEHMED	VIŠEGRAD	VIŠEGRAD	Muslim
693	BAZ-107535-05	ZUKIC SEHUA	F	---,1961	MEDO	VIŠEGRAD	VIŠEGRAD	Muslim

Excerpts from the 2005 ICRC List of Missing Persons from Bosnia and Herzegovina: Those who Disappeared in Višegrad Municipality

No.	ICRC Number	Name of the sought person	Sex	Date and place of birth	Father's name	Date and place of disappearance	Opstina	Ethnicity*
694	BAZ-100042-02	ZUKIC SEVAL	M	16.09.1963	VISEGRAD	29.05.1992	VISEGRAD	Muslim
695	BAZ-100042-01	ZUKIC SMAIL	M	11.04.1949	VISEGRAD	15.06.1992	VISEGRAD	Muslim
696	BAZ-107535-07	ZUKIC VILDANA	F	--.-.1986	VISEGRAD	17.06.1992	VISEGRAD	Muslim
697	BAZ-107216-02	ZUKO MIRSAD	M	02.01.1967	VISEGRAD	10.07.1992	VISEGRAD	Muslim
698	BAZ-107216-01	ZUKO RAMIZ	M	01.03.1971	TURJAK - VISEGRAD	10.07.1992	TURJAK	Muslim
699	BAS-003397-01	ZUKO RASID	M	15.05.1920	STRGACINA	--.06.1992	BIKAVAC	Muslim
700	BAZ-107106-01	ZULCIC ENIZ	M	00.00.1938	VISEGRAD	29.05.1992	VISEGRAD	Muslim
701	BAS-002287-01	ZULCIC MUSTAFA	M	01.05.1928	VISEGRAD	13.06.1992	DUSCE	Unknown
702	BAZ-107106-02	ZULCIC SABAHUDIN	M	08.09.1969	REPULSEVIC-VISEGRAD	29.05.1992	VISEGRAD	Muslim
703	BAS-001093-01	ZULCIC ZVIJEZDAN	M	28.12.1969	SARAJEVO	27.02.1993	PRELOVO	Other
704	BAZ-105708-01	ZULOVIC BAKIR	M	30.04.1963	RODIC BRDO- VISEGRAD	25.05.1992	VISEGRAD	Muslim
705	BAZ-109859-01	ZUNIC NEZIR	M	03.01.1955	MEDEDA-VISEGRAD	19.05.1992	MEDEDA	Muslim

* Ethnicity as self-reported in the 1991 Population Census for Bosnia and Herzegovina.

ANNEX B

Ethnic Composition in the Selected Settlements in Višegrad, 1991 and 1998

Pre-war Ethnic Composition in Settlements in Višegrad, According to the 1991 Population Census

Settlement	Serbs	Muslims	Croats	Others	Total	% Serbs	% Muslims	% Croats	% Others	Majority
AJDINOVIĆI		15			15		100.0			Muslim
BABIN POTOK		158	8		166		95.2	4.8		Muslim
BAN POLJE	27	377	4		408	6.6	92.4	1.0		Muslim
BARIMO		78			78		100.0			Muslim
BATKOVIĆA	95		2		97	97.9		2.1		Serb
BATKUSICI		34			34		100.0			Muslim
BIJELA	100		2		102	98.0		2.0		Serb
BILJEZI	24				24	100.0				Serb
BISTRIVODE		121	1		122		99.2	0.8		Muslim
BJEGOVIĆI	37				37	100.0				Serb
BJELJAJCI	50				50	100.0				Serb
BLACE (HRTAR)	118				118	100.0				Serb
BLAŽ		20			20		100.0			Muslim
BODEŽNIK	14	4			18	77.8	22.2			Serb
BOGDAŠIĆI		48			48		100.0			Muslim
BOGLICE	8				8	100.0				Serb
BOROVAC		64			64		100.0			Muslim
BREZJE	4	12			16	25.0	75.0			Muslim
BRODAR		52			52		100.0			Muslim
BURSIĆI	9				9	100.0				Serb
CRIJEP		136			136		100.0			Muslim
CRNČIĆI	81				81	100.0				Serb
CRNI VRH		63			63		100.0			Muslim
ČENGICI		31			31		100.0			Muslim
ČEŠALJ	50				50	100.0				Serb
ČAČICE	67	48			115	58.3	41.7			Serb
DOBRUNSKA RIJEKA	74		1		75	98.7		1.3		Serb
DONJA BRŠTANICA		56			56		100.0			Muslim
DONJA CRNČA	4	903			907	0.4	99.6			Muslim
DONJA JAGODINA	71	33	1	3	108	65.7	30.6	0.9	2.8	Serb
Settlement	Serbs	Muslims	Croats	Others	Total	% Serbs	% Muslims	% Croats	% Others	Majority
DONJA LIJESKA	118		1		119	99.2		0.8		Serb
DONJE DUBOVO		50			50		100.0			Muslim
DONJE ŠTITAREVO		19			19		100.0			Muslim
DONJE VARDIŠTE	113				113	100.0				Serb
DONJI DOBRUN	97	260	1	9	367	26.4	70.8	0.3	2.5	Muslim
DONJI DUBOVİK		40			40		100.0			Muslim
DRINA		45			45		100.0			Muslim
DRINSKO		280			280		100.0			Muslim
DROKAN		23			23		100.0			Muslim
DUBOČICA		62	6		68		91.2		8.8	Muslim
DUŠĆE	59	754	28		841	7.0	89.7		3.3	Muslim
DŽANKICI		85			85		100.0			Muslim
ĐIPI		77			77		100.0			Muslim
ĐUREVICI	57		1		58	98.3			1.7	Serb
FALJENOVIĆI	9	2			11	81.8	18.2			Serb
GAZIBARE		30			30		100.0			Muslim
GLOGOVA	49	2	1		52	94.2	3.8		1.9	Serb
GORNJA BRŠTANICA		48	1		49		98.0		2.0	Muslim
GORNJA CRNČA		197	6		203		97.0		3.0	Muslim
GORNJA JAGODINA	2				2	100.0				Serb
GORNJA LIJESKA	39				39	100.0				Serb
GORNJE DUBOVO	86				86	100.0				Serb
GORNJE ŠTITAREVO		105			105		100.0			Muslim
GORNJI DOBRUN		170	1		171		99.4		0.6	Muslim
GORNJI DUBOVİK		18			18		100.0			Muslim
GRANJE	28				28	100.0				Serb
GREBEN	105		3		108	97.2		2.8		Serb
HADROVIĆI	14				14	100.0				Serb
HALUGE	92		5		97	94.8		5.2		Serb
HAMZIĆI		121	1		122		99.2		0.8	Muslim
HAN BRDO	8				8	100.0				Serb
HOLJACI	7	215			222	3.2	96.8			Muslim

Pre-war Ethnic Composition in Settlements in Višegrad, According to the 1991 Population Census

Settlement	Serbs	Muslims	Croats	Others	Total	% Serbs	% Muslims	% Croats	% Others	Majority
HRANJEVAC		57			57		100.0			Muslim
JABLANICA	28				28	100.0				Serb
JARCI		13			13		100.0			Muslim
JELAČIĆI		131			131		100.0			Muslim
JELASCI	31				31	100.0				Serb
JELIĆI		90			90		100.0			Muslim
JEZERNICE	27				27	100.0				Serb
KABERNIK	48	343		2	393	12.2	87.3		0.5	Muslim
KAMENICA	1	188		2	191	0.5	98.4		1.0	Muslim
KAPETANOVIĆI	2	45			47	4.3	95.7			Muslim
KLAŠNIK		134			134		100.0			Muslim
KLISURA	26	1			27	96.3	3.7			Serb
KOČARIM	62				62	100.0				Serb
KOPITO	14				14	100.0				Serb
KORITNIK	84	80			164	51.2	48.8			mixed
KOSOVO POLJE	47	120			167	28.1	71.9			Muslim
KRAGUJEVAC	48				48	100.0				Serb
KUKA		65			65		100.0			Muslim
KUPUSOVIĆI	2	60		2	64	3.1	93.8		3.1	Muslim
KURTALIĆI		70		2	72		97.2		2.8	Muslim
KUSTUR POLJE		71			71		100.0			Muslim
LASCI		29			29		100.0			Muslim
LOZNICA	46				46	100.0				Serb
MACUTE	34				34	100.0				Serb
MADŽAREVICI		13			13		100.0			Muslim
MALA GOSTILJA	5	94		2	101	5.0	93.1		2.0	Muslim
MANGALIN HAN	1	19			20	5.0	95.0			Muslim
MASALI	80				80	100.0				Serb
MEĐEDA	2	383		2	387	0.5	99.0		0.5	Muslim
MEĐUSELJE	19	38			57	33.3	66.7			Muslim
MENZILOVCI		58		1	59		98.3		1.7	Muslim
MEREMIŠLJE		68			68		100.0			Muslim

Settlement	Serbs	Muslims	Croats	Others	Total	% Serbs	% Muslims	% Croats	% Others	Majority
MILOŠEVIĆI		26			26		100.0			Muslim
MIRLOVIĆI	21	3		1	25	84.0	12.0		4.0	Serb
MUŠIĆI		118		12	130		90.8		9.2	Muslim
NEBOGOVINE	22				22	100.0				Serb
NEZUĆI		260	1	2	263		98.9	0.4	0.8	Muslim
OBRAVNJE	3	12			15	20.0	80.0			Muslim
ODŽAK	12	22			34	35.3	64.7			Muslim
OKOLIŠTA	38	89			127	29.9	70.1			Muslim
OKRUGLA		152		1	153		99.3		0.7	Muslim
OMEROVIĆI		113		2	115		98.3		1.7	Muslim
OPLAVE	17				17	100.0				Serb
ORAHOVCI		123		1	124		99.2		0.8	Muslim
PALEŽ		47			47		100.0			Muslim
PAOČIĆI	44				44	100.0				Serb
PIJAVICE (UZAMNICE)	52	50		1	103	50.5	48.5		1.0	mixed
PODGORJE	47				47	100.0				Serb
POLJANICE	33			2	35	94.3			5.7	Serb
POLJE		58			58		100.0			Muslim
POVJESTAČA	5	78			83	6.0	94.0			Muslim
POZDERČIĆI	126	22		1	149	84.6	14.8		0.7	Serb
PRELOVO	84	93		5	182	46.2	51.1		2.7	mixed
PRESJEKA	4	41			45	8.9	91.1			Muslim
PRETIŠA	15	5			20	75.0	25.0			Serb
PRISOJE	64				64	100.0				Serb
RAONICI		50			50		100.0			Muslim
REPUŠEVIĆI	5	58		2	65	7.7	89.2		3.1	Muslim
RESNIK		32			32		100.0			Muslim
ZAGRADE	49				49	100.0				Serb
RODIĆ BRDO	13	116		3	132	9.8	87.9		2.3	Muslim
ROHCI		53			53		100.0			Muslim
RUJIŠTA	29	18		2	49	59.2	36.7		4.1	Serb
RUTENOVIĆI		38			38		100.0			Muslim

Pre-war Ethnic Composition in Settlements in Višegrad, According to the 1991 Population Census

Settlement	Serbs	Muslims	Croats	Others	Total	% Serbs	% Muslims	% Croats	% Others	Majority
RZAV	101			1	102	99.0			1.0	Serb
SASE	54	40	4	1	99	54.5	40.4	4.0	1.0	mixed
SENDIĆI		17			17		100.0			Muslim
SMRIJEČJE		44		1	45		97.8		2.2	Muslim
STANIŠEVAC	36				36	100.0				Serb
STOLAC	17				17	100.0				Serb
STRAŽBENICE	26				26	100.0				Serb
ŠEGANJE	116	182		10	308	37.7	59.1		3.2	Muslim
ŠIP	6	31			37	16.2	83.8			Muslim
ŠUMICE		25			25		100.0			Muslim
TRŠEVINE	83				83	100.0				Serb
TUPEŠI		35			35		100.0			Muslim
TURJAK		29			29		100.0			Muslim
TUSTA MED		34			34		100.0			Muslim
TVRTKOVIĆI		44			44		100.0			Muslim
UBAVA	94			1	95	98.9			1.1	Serb
UNIŠTA	8	44		4	56	14.3	78.6		7.1	Muslim
VELETOVO	76				76	100.0				Serb
VELIKA GOSTILJA	30	121		1	152	19.7	79.6		0.7	Muslim
VELJE POLJE	47				47	100.0				Serb
VELJI LUG	164	142		4	310	52.9	45.8		1.3	mixed
VIŠEGRAD	2619	3463	23	797	6902	37.9	50.2	0.3	11.5	mixed
VIŠEGRADSKA BANJA	14	5			19	73.7	26.3			Serb
VLAHOVIĆI	8	140		1	149	5.4	94.0		0.7	Muslim
VODENICE	35	21		3	59	59.3	35.6		5.1	Serb
VUČINE	118	30		3	151	78.1	19.9		2.0	Serb
ZAGORAC		19			19		100.0			Muslim
ZAKRSNICA		61			61		100.0			Muslim
ZANOŽJE		11			11		100.0			Muslim
ZEMLJICE	45			1	46	97.8			2.2	Serb
ZLATNIK		26			26		100.0			Muslim
ŽAGRE		60			60		100.0			Muslim
Settlement	Serbs	Muslims	Croats	Others	Total	% Serbs	% Muslims	% Croats	% Others	Majority
ŽLIJEB	37	142			179	20.7	79.3			Muslim
TOTAL	6740	13469	32	958	21199	31.8	63.5	0.2	4.5	Muslim

Source: Stanovništvo Bosne i Hercegovine - narodnosni sastav po naseljima, CROSTAT, Zagreb, Travanj 1995.

**Post-war Ethnic Composition in Selected Settlements in Višegrad According to the
1998 Voters Register (Population at Age 18 or More Years),**

Settlement	Serbs	Muslims	Croats	Others	Total	% Serbs	% Muslims	% Croats	% Others	Majority
TOTAL	8854	3	60	318	9235	95.9	0.0	0.6	3.4	Serb
- of which in:										
BAN POLJE	135	0	0	3	138	97.8	0.0	0.0	2.2	Serb
DOBRUNSKA RIJEKA	99	0	0	3	102	97.1	0.0	0.0	2.9	Serb
DONJA JAGODINA	81	0	0	0	81	100.0	0.0	0.0	0.0	Serb
DONJI DOBRUN	185	0	0	8	193	95.9	0.0	0.0	4.1	Serb
DUŠČE	360	0	1	9	370	97.3	0.0	0.3	2.4	Serb
HALUGE	60	0	0	0	60	100.0	0.0	0.0	0.0	Serb
KORITNIK	85	0	0	0	85	100.0	0.0	0.0	0.0	Serb
NEZUCI	561	0	7	44	612	91.7	0.0	1.1	7.2	Serb
OKOLIŠTA	623	0	2	10	635	98.1	0.0	0.3	1.6	Serb
POZDERČIĆI	56	0	0	0	56	100.0	0.0	0.0	0.0	Serb
PRELOVO	195	0	0	4	199	98.0	0.0	0.0	2.0	Serb
SASE	53	0	3	3	59	89.8	0.0	5.1	5.1	Serb
ŠEGANJE	58	0	0	0	58	100.0	0.0	0.0	0.0	Serb
VIŠEGRAD	4824	3	38	210	5075	95.1	0.1	0.7	4.1	Serb
VUČINE	90	0	0	0	90	100.0	0.0	0.0	0.0	Serb
ALL ABOVE-LISTED	7465	3	51	294	7813	95.5	0.0	0.7	3.8	Serb

Note. To ensure the reliability of the sample, only settlements with 50 or more registered voters are shown.

Nevertheless, voters from these settlements constitute about 85% of all registered in Višegrad in 1998.

ANNEX C

Chi-squared Measure of Ethnic Changes and the Goodness-of-Fit Test:

Methodology

The methodology used in this report to verify the significance of the changes in the ethnic composition in selected municipalities in BH is known in statistics as the χ^2 (*chi-squared*) goodness-of-fit test. This test is a well-established non-parametric statistical method giving the probability that the observed frequencies could have been sampled from a population with the given expected values. In our case, the hypothesis of ethnic distributions in 1997 (observed frequencies) remaining the same as in 1991 (expected frequencies) is verified using the following χ^2 statistic, which is calculated as follows:

$$\chi^2 = \frac{(\text{Serbs}_{97} - \text{Serbs}_{91})^2}{\text{Serbs}_{91}} + \frac{(\text{Muslims}_{97} - \text{Muslims}_{91})^2}{\text{Muslims}_{91}} + \frac{(\text{Croats}_{97} - \text{Croats}_{91})^2}{\text{Croats}_{91}} + \frac{(\text{Others}_{97} - \text{Others}_{91})^2}{\text{Others}_{91}}.$$

Serbs_{97} , Muslims_{97} , Croats_{97} and Others_{97} denote here the **observed numbers** of voters from respective ethnic groups found in the 1997 Register in a given municipality, whereas Serbs_{91} , Muslims_{91} , Croats_{91} and Others_{91} denote the **expected numbers** of voters from a given municipality. These expected numbers of voters from respective ethnic groups have been calculated providing that the total number of voters would be distributed among ethnic groups following the ethnic distribution from 1991. Note that the Voters Register is only a sample of the post-war population and therefore a more detailed statistical inference is required to compare the pre- and post-war ethnic structures than just comparing the percentages. This is described below.

The χ^2 statistic calculated in this way can be itself interpreted as a measure of the degree of ethnic changes: the bigger the value of χ^2 , the more dramatic changes in the ethnic composition have been observed. Assuming that the observed numbers of voters (being a sample from the post-war population) follow a normal distribution, this statistic follows a χ^2 distribution with $k - 1 = 3$ degrees of freedom, where $k = 4$ denotes the number of classes, i.e. ethnic groups. This feature can be used for testing purposes, i.e. to indicate whether obtained results prove that the structure really (significantly) changed or is such result obtained only by chance. Small values of χ^2 indicate no

significant differences in the ethnic structure, whereas large values of χ^2 show that with big probability the changes observed show a real pattern of changes.

Generally, probability that a random variable following χ^2 distribution would get a value greater than the value of the statistic obtained from the sample (so-called *probability level*), indicates the probability of erroneously rejecting the hypothesis of no changes in the ethnic distribution. This probability of error is therefore a declining function of the χ^2 statistic. Thus, the greater the value of χ^2 calculated from a sample, the smaller probability of wrong inference, i.e. rejecting the hypothesis of no changes in favour of the hypothesis of significant changes, while there are no real changes in ethnic structure and the result is obtained solely by chance.

Reference: Frederick J. Gravetter, Larry B. Wallnau (2000), *Statistics for the Behavioral Sciences*, Wadsworth, Belmont (CA), USA, pp. 582-594.





**DEMOGRAPHIC CONSEQUENCES OF THE
CONFLICT IN THE MUNICIPALITY OF VLASENICA,
MAY–SEPTEMBER 1992**

Ewa Tabeau and Marcin Żółtkowski
Demographic Unit - LRT

1 November 2002

**RESEARCH REPORT PREPARED FOR THE CASE
OF DRAGAN NIKOLIĆ (IT-94-2-PT)**



THE INTERNATIONAL CRIMINAL TRIBUNAL
FOR THE FORMER YUGOSLAVIA

**EXPERT WITNESS STATEMENT OF EWA TABEAU MADE PURSUANT TO
RULE 94 BIS OF THE ICTY RULES AND PROCEDURE OF EVIDENCE**

1. The Scope, Objectives and Structure of this Statement

I am a demographer employed in the Demographic Unit (DU) of the Office of the Prosecutor (OTP) at the International Criminal Tribunal for the Former Yugoslavia (ICTY). A summary of my professional qualifications and experience in the field of demography is outlined in Annex A of this statement. My main field of work at the OTP are studies of demographic consequences of the 1990s conflicts in the former Yugoslavia, and in particular in Bosnia and Herzegovina. The main subjects studied at DU are conflict-related changes in the size and ethnic composition of the population, population displacements and refugees, conflict-related mortality, and missing persons. Reliable individual-level data sources, such as for example the population census, other large questionnaire surveys, or detailed lists of killed or missing persons, and well-recognised standard statistical methods form the basis of demographic studies conducted at the Demographic Unit. Our goal is to provide reliable statistics that allow for assessment of the type and scale of demographic consequences of the conflicts.

The study reported in this statement was prepared by me, with assistance of Marcin Żółtkowski, research associate in the Demographic Unit. The primary objective of the study is to provide demographic figures regarding changes in the ethnic composition in, as well as displaced persons and refugees from the Vlasenica municipality in the middle-east of Bosnia and Herzegovina during the period from 1991 to 1997 (the reference map of Vlasenica is included at the end of this section). Secondly, we also discuss basic demographic profiles of persons who went missing in the Vlasenica municipality during the conflict from May to September 1992. The study of missing persons aims at showing absolute numbers and ethnic composition of those who went missing from May to September 1992, and finding whether there were any particular periods in which people disappeared.

In our report we analyse three data sources: the 1991 population census, conducted in Bosnia and Herzegovina as part of the 1991 census in the former Yugoslavia, the voters register compiled by the Organisation of Security and Co-operation in Europe (OSCE)

for the 1997 and 1998 elections, and the list of missing persons established by the International Committee of Red Cross (ICRC).

We compared the individuals listed in the voters register and ICRC list of missing persons with the names and data for individuals in the 1991 census. The search for one the same person in two or more different source is called individual matching and increases the quantity of information about persons. Linking made it possible for us to jointly analyse items coming from multiple sources.

For example, having completed the matching process of the voters with the 1991 census, we analysed their numbers in 1997 by ethnicity reported in the 1991 census, and grouped the voters by their place of residence in 1991. The major analysis of voters was made by grouping voters by their ethnicity, place of residence in 1991 and place of registration to vote in 1997. Comparison of the two location items provided us with changes in the pre-war location of the voters, and with the number of displaced persons and refugees from the Vlasenica municipality. The analysis was made by ethnicity as reported in the 1991 census.

Matching of the missing persons from the ICRC list with the 1991 census allowed us to analyse the missing individuals by ethnicity taken from the 1991 census files.

Details of the sources and methods of the analysis are extensively discussed in Annex B. In the main text of this statement (sections 2 to 4), we only report the major results of our study.

The report consists of the following sections:

1. Introduction: The Scope, Objectives, and Structure of the Statement
2. Summary of Findings
3. Findings
 - 3.1 Total Population and Ethnic Composition of the Vlasenica Municipality, 1971 – 1991
 - 3.2 Ethnic Composition of the Vlasenica Municipality Before and After War
 - 3.3 Place of Registration to Vote in 1997 of the Muslims who lived in the Vlasenica Municipality in 1991
 - 3.4 Displaced Persons from the Vlasenica Municipality
 - 3.5 Emigration from the Vlasenica Municipality, 1991-1997
 - 3.6 Missing Persons in the Vlasenica Municipality, May – September 1992
 - 3.7 Missing Persons in the Vlasenica Municipality, January 1992 – December 1995
 - 3.8 Number of Missing Persons in the Vlasenica Municipality by Ethnicity and Month of Disappearance, May – September 1992
 - 3.9 Number of Missing Persons in the Vlasenica Municipality by Ethnicity and Day of Disappearance, May – September 1992
 - 3.10 Distribution of Missing Persons in the Vlasenica Municipality by Place of Disappearance, January 1992 – December 1995

3.11 Missing Muslims in and around the Vlasenica Municipality, May – September 1992

3.12 Missing Persons in and around the Vlasenica Municipality by Month of Disappearance, May – September 1992

4. Conclusion

Annex A. Summary of Professional Qualifications of the authors

Annex B. Data Sources and Methods Used in this Study

Annex C. Ethnic Composition in the Settlements of the Vlasenica Municipality Reported in the 1991 Population Census

The Reference Map of the Pre-war Municipality of Vlasenica and its Surroundings



In 1991 the Vlasenica municipality (opština)¹ was a middle-size municipality situated in the middle east of Bosnia and Herzegovina. It consisted of 92 smaller areas (naselja), i.e. settlements. Its surface equalled 532 squared kilometres and population 33,942 individuals. The population density was 63.8 individuals per 1 sq. km in 1991 and belonged to the average level in Bosnia and Herzegovina. The capital of the municipality, Vlasenica town, had a population of 7,909 individuals.

In the Dayton Peace Accords, the pre-war municipality of Vlasenica was split into two new municipalities: Vlasenica and Milići. The post-war municipality of Vlasenica consists of 35 settlements (including the Vlasenica town) and is approximately a half of the pre-war size. Milići consists of 56 settlements. One (very small) settlement,

¹ This paragraph is based on the Croatian publication of the 1991 population census: *Stanovništvo Bosne i Hercegovine. Narodnosni Sastav po Naseljima. CROSTAT, Zagreb, Travanj 1995*

Zaklopača, is split between Vlasenica and Milići. In this report we study the *pre-war municipality of Vlasenica*, as defined at the time of the 1991 census.

2. Summary of Findings

From 1971 to 1991, the population of Vlasenica Municipality increased from 26,623 to 33,942. Muslims and Serbs were the two major ethnic groups comprising 97.5% of the population in 1991. By 1991 the Muslim share of the total population had increased by 6.8 percent points while the Serb share had declined by 8.1 percent points.

Muslims comprised the overwhelming majority of missing persons (80%) from Vlasenica municipality. The majority (58.8%) of missing persons disappeared in the period May - September 1992. More than 88% of missing Muslim women disappeared in the period May - September 1992. The number of persons reported missing in Vlasenica was highest in June and September 1992.

Nearly all Muslim voters living in the Vlasenica municipality in 1991 became displaced persons (left the municipality but stayed in the country) or refugees (left the country) by 1997. Muslim voting age population (18 years and older) in Vlasenica Municipality declined from 53.38% in 1991 to 0.07% by 1997. Disappearance of the Muslim voting age population by 1997 coincides with the decline of the absolute size of the Muslim population in Vlasenica municipality between 1991 and 1997. The absolute size of the Muslim 18+ population dropped from 14,037 in 1991 to 7 registered voters in 1997. The small number of Muslim voters in the Vlasenica municipality in 1997 was however not caused by voters' absence in the elections: Muslims originating from the Vlasenica municipality voted in other municipalities in Bosnia and Herzegovina or abroad.

Our conclusion about the decline of Muslim population in Vlasenica is consistent with UNHCR statistics of displaced persons from Vlasenica. Also the vast majority of refugees (i.e. people who left the country) originating from Vlasenica municipality were Muslims.

The absolute number of missing Muslims from Vlasenica municipality (396) rates third highest compared to surrounding municipalities. The share of missing Muslims from Vlasenica, compared to other municipalities in the neighbourhood of Vlasenica, is second highest in Vlasenica municipality (97.30%). During the period from May to September 1992, for 3 out of 5 months, the number of persons missing from Vlasenica municipality was the highest, compared to the surrounding municipalities.

3. Findings

3.1. Total Population and Ethnic Composition of the Vlasenica Municipality, 1971 – 1991

- From 1971 to 1991, the population of Vlasenica Municipality increased from 26,623 to 33,942.
- Muslims and Serbs were the two major ethnic groups comprising 97.5% of the population in 1991.
- By 1991 the Muslim share of the total population had increased by 6.8% while the Serb share had declined by 8.1% (i.e. percentage points).

As illustrated in Table 1, the total population in Vlasenica municipality in 1971 was 26,623. In 1991, the total population had increased to 33,942. Muslims and Serbs were the two major ethnic groups. They comprised 98.8% of the population in 1971 and 97.5% of the population in 1991. The Muslim share of the total population increased from 12,881 or 48.4% of the population in 1971 to 18,727 or 55.2% of the population in 1991. The actual Serb population increased, from 13,431 in 1971 to 14,359 in 1991, but the Serb share of the population declined from 50.4% in 1971 to 42.3% in 1991.

Table 1. Total Population and Ethnic Composition of the Vlasenica Municipality Since 1971

Year	Total	Croats	Muslims	Serbs	Others
1991	33,942	39	18,727	14,359	817
1981	30,498	44	15,337	13,531	1,586
1971	26,623	42	12,881	13,431	269
1991	100	0.1	55.2	42.3	2.4
1981	100	0.1	50.3	44.4	5.2
1971	100	0.2	48.4	50.4	1.0

Source: Stanovništvo Bosne i Hercegovine. Narodnosni Sastav po Naseljima. CROSTAT, Zagreb, Travanj 1995

3.2. Ethnic Composition of the Vlasenica Municipality Before and After War

- Muslim voting age population (18 years and older) in Vlasenica municipality declined from 53.38% in 1991 to 0.07% by 1997.
- The dramatic decline of the fraction of Muslim voters in Vlasenica municipality is associated with the decline of the absolute size of the Muslim 18+ population from 14,037 in 1991 to only 7 registered voters in 1997.

Table 2 and Figure 1 show that in 1991 some 44.2% of the population eligible to vote in Vlasenica municipality in 1997 were Serbs and 53.38% were Muslims. By 1997 Serbs were in absolute majority at 97.6% of all voters and Muslim voters had almost disappeared (0.07%, i.e. 7 persons out of 10,339).

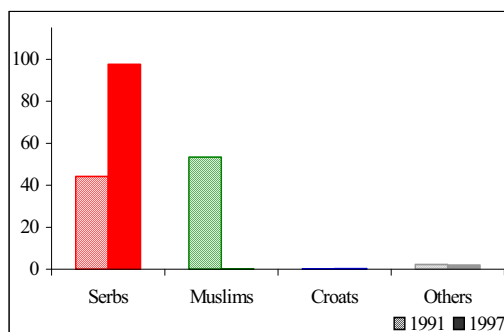
A comparison of absolute figures (1991 vs. 1997; Table 2) shows, that the sample size decreased from 26,296 in 1991 to 10,339 in the year 1997. The difference equals 15,957. The change from 26,296 to 10,339 can be largely explained by the disappearance of the Muslim population in the period from 1991 to 1997. The decrease in the Muslims population is 14,030.

In order to assess changes in the ethnic composition and population size in Vlasenica municipality between 1991 and 1997, a sample population was used. Note that the 1991 sample of 26,296 is complete. It includes all persons 12 years old or older, who were reported in the 1991 population census. The sample consisted of persons eligible to vote in 1997 (at least 18 years old in 1997; the same persons were at least 12 years old in 1991)¹. The 1997 sample is incomplete. Only those voters who registered to vote are in the 1997 sample. The unregistered voters are excluded. The 1997 sample size is however large (10,339) and estimates based on this sample are reliable.²

Table 2. Ethnic Composition in the Vlasenica Municipality (RS): Pre- and Post-War Population (18 years of age or older in 1997)

Ethnicity	Absolute numbers		Percentages	
	1991 census	1997 voters register	1991 census	1997 voters register
Serbs	11624	10091	44.20	97.60
Muslims	14037	7	53.38	0.07
Croats	33	34	0.13	0.33
Others	602	207	2.29	2.00
Total	26296	10339	100.00	100.00

Figure 1. Ethnic Composition in the Vlasenica Municipality (RS): Pre- and Post-War Population (18 years of age or older in 1997)



² The reason for using this particular sample was the availability of data about the post-war population. Except for the voter registers from 1997 or later years, no other post-war sources exist that could be used in comparison with the 1991 census population.

3.3. Place of Registration to Vote in 1997 of the Muslims who lived in the Vlasenica Municipality in 1991

- Nearly all Muslim voters living in the Vlasenica municipality in 1991 became displaced persons (left the municipality but stayed in the country) or refugees³ (left the country) by 1997.
- The small number of Muslim voters in the Vlasenica municipality in 1997 was not caused by voters' absence in the elections: Muslims originating from the Vlasenica municipality voted in other municipalities in Bosnia and Herzegovina or abroad.

Table 3 and Figure 2 show the 1997 registration places of Muslim voters who were counted in the 1991 census in Vlasenica municipality. Three possible locations are shown: Vlasenica municipality itself, other municipalities in Bosnia and Herzegovina ("Displaced Persons") and other countries ("Refugees").

Out of the 6,832 Muslim voters who resided in Vlasenica in 1991 only 0.07% (5 people) registered to vote in Vlasenica municipality in 1997, while 76.52% (5228 persons) registered in other municipalities in Bosnia and 23.41% (1599 persons) registered abroad. Only seven ethnic Muslims registered to vote in Vlasenica in 1997, 5 Muslim voters previously lived in Vlasenica in 1991 and 2 Muslim voters were new residents. All five ethnic Muslims originating from Vlasenica were persons from mixed Muslim-Serb or Muslim-Serb-Yugoslav families. They belonged to five different households.

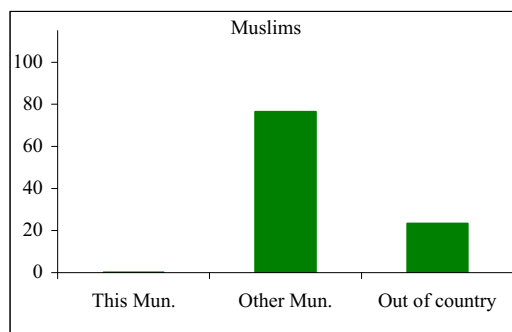
Table 3 and Figure 2 indicate that the low Muslim voters participation in 1997 is related to the small size of the Muslim voters population in the Vlasenica municipality in 1997 (7 persons only, see Table 2). The Muslim voters originating from the Vlasenica municipality registered to vote in other municipalities of Bosnia and Herzegovina or in other countries. Table 3 and Figure 2 point to the fact that the Muslim voters population indeed disappeared from Vlasenica during the period 1991 – 1997.

Table 3. Place of Registration to Vote for the 1997 Muslim Voters Enumerated in the 1991 Population Census in Vlasenica Municipality

	Vlasenica Municipality	Displaced Persons	Refugees	Total
Number	5	5228	1599	6832
Fraction	0.07	76.52	23.41	100

³ The term "refugee" is used in this report for the citizens of the Vlasenica municipality who left their 1991 place of residence during the period 1991-1997 and moved overseas. They registered to vote in the 1997 elections in countries different than Bosnia and Herzegovina. No other formal definition was applied.

Figure 2. Place of Registration to Vote for the 1997 Muslim Voters Enumerated in the 1991 Population Census in Vlasenica Municipality



3.4. Displaced Persons from the Vlasenica Municipality

- The decline of Muslim population in Vlasenica shown in Section 3.3 is consistent with UNHCR statistics of displaced persons from Vlasenica municipality.

Table 4 contains numbers of displaced persons from Vlasenica collected by UNHCR in 1998 (the 1998 DPs Registration Project). The total number of displaced persons from Vlasenica municipality reported by UNHCR is 17,409. The total of displaced persons is only slightly higher than the difference in the Muslim population size between 1991 and 1997 (14,030, the difference for all ethnic groups is 15,957) discussed in Paragraph 3.2 of this report (see also Table 2). Although the UNHCR figures are not directly comparable with our statistics from Table 2⁴, the similarity of the two is striking. Note that from the list of receiving municipalities (i.e. where the displaced persons from Vlasenica lived in 1998) we see that the largest populations lived in: Živinice, Tuzla, Kladanj, Srebrenik, and Lukavac. Again, this list directly corresponds with our independent findings that the Muslim population of Vlasenica sharply declined between 1991 and 1997.

Table 4. Distribution of Displaced Persons (DPs) from Vlasenica as Reported by UNHCR, 1998

Municipality	Number of DPs	Municipality	Number of DPs
Živinice	3973	Kakanj	41
Tuzla	3264	Visoko	30
Kladanj	2684	Sarajevo Hadžići	28
Srebrenik	2599	Olovo	25
Lukavac	1261	Sapna	23
Banovići	521	Vareš	21
Gračanica	357	Travnik	20
Zaviadovići	352	Brčko	14
Sarajevo Vogošća	334	Bihać	11
Sarajevo Novi Grad	302	Bosanski Petrovac	10
Zenica	269	Tešanj	8
Sarajevo Ilidža	251	Busovača	7
Novo Sarajevo	251	Čelić	6
Sarajevo Centar	232	Maglaj	5
Gradačac	165	Fojnica	4
Sarajevo Ilijaš	144	Cazin	2
Kalesija	122	Ključ	2
Breza	71		
		Total	17,409

Note: All municipalities from Table 4 are in the Federation of Bosnia and Herzegovina

⁴ UNHCR figures shown in Table 4 are aggregate numbers of all displaced persons, not only Muslims. Our statistics only refer to persons at 18 or more years of age who registered to vote in 1997. Thus, our figures do not include those not eligible to vote (i.e. at age 0 to 17 years in 1997) and those eligible to vote (i.e. at age 18 or more in 1997) who did not register to vote.

3.5. Emigration from the Vlasenica Municipality, 1991-1997

- Most refugees (i.e. people who left the country) originating from Vlasenica municipality were Muslims.

Information about refugees (i.e. moved outside BiH territory) originating from Vlasenica can be found in Table 5, which shows the distribution of refugees by ethnicity and country of destination. We found a total of 1,789 refugees originating from the Vlasenica municipality. Some 1,599 of the refugees were Muslims (compare with Table 3). Very few Muslim refugees moved into Croatia (nine persons) or into the Federal Republic of Yugoslavia (ten persons). Most Muslim refugees (1580 persons) went to countries outside the area of the former Yugoslavia. Figures presented in this table are based on the 1997 voters register and 1991 population census (only those at age 18 or more years in 1997), and can be compared with all previous results, except those presented in Table 4 (as explained above).

Table 5. Emigration from Vlasenica, 1991 -1997

Ethnicity	Outmigration structure (out of country voters)							
	Croatia		FRY		Other countries		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Serbs	0	0.00	118	94.40	7	5.60	125	100.00
Muslims	9	0.56	10	0.63	1580	98.81	1599	100.00
Croats	0	0.00	0	0.00	2	100.00	2	100.00
Others	0	0.00	11	17.46	52	82.54	63	100.00

Source: The 1997 voters register and the 1991 population census for BH

3.6. Missing Persons in the Vlasenica Municipality, May – September 1992

- Muslims comprised the overwhelming majority of missing persons (80%) in Vlasenica municipality.

Table 6 and Figure 3 present the distribution of persons reported missing in Vlasenica municipality during the period of May to September 1992, by sex, age and ethnicity⁵. The Muslim share within the missing population is 80.5% (329 males and 67 females). The second largest group of missing persons were those with unknown ethnicity who comprised 17.3% (69 males and 16 females) of all missing persons.

Among the missing Muslims (396), 83.1% of the disappeared were men (329). The age distribution shows that 84.2% of the 329 Muslim men reported missing were between 15 and 59 years old. The missing Muslim men constituted some 80.4% of all missing men.

Among the missing Muslims (396), 16.9% of the disappeared were women (67). The age distribution of these women was nearly uniform. The share of Muslim women among all missing women reported in Vlasenica municipality was 80.7 per cent.

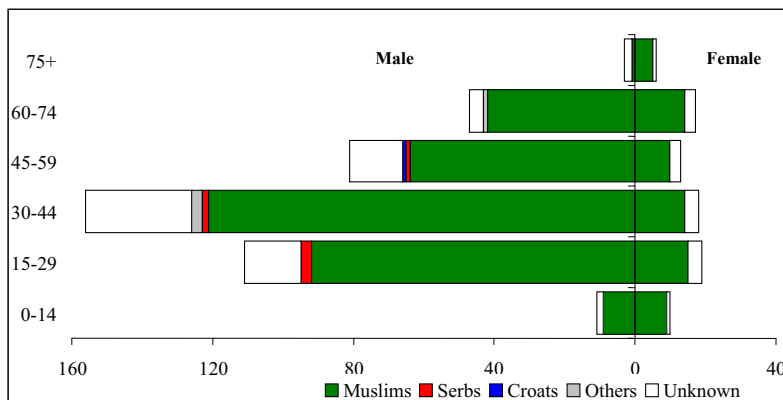
Table 6. Number of Persons Missing in Vlasenica Between May and September 1992, by Sex, Age and Ethnicity

Age Group	Males						Females			
	Muslims	Serbs	Croats	Others	Unknown	TOTAL	Muslims	Unknown	TOTAL	
0-14	9					2	11	9	1	10
15-29	92	3				16	111	15	4	19
30-44	121	2		3		30	156	14	4	18
45-59	64	1	1			15	81	10	3	13
60-74	42			1		4	47	14	3	17
75+	1					2	3	5	1	6
TOTAL	329	6	1	4	69	409	67	16	83	

Source: ICRC List of Missing Persons (1998) and 1991 Population Census for BH

⁵ Ethnicity of missing persons is not reported on the ICRC list. In our study ethnicity of missing persons was obtained from the 1991 population census through the links established between the records from the ICRC list and the census. For unmatched records (69 men and 83 women), ethnicity remains unknown.

Figure 3. Number of Persons Missing in Vlasenica Between May and September 1992, by Sex, Age and Ethnicity



3.7. Missing Persons in the Vlasenica Municipality, January 1992 – December 1995

- The majority (58.8%) of missing persons disappeared in the period May – September 1992.
- More than 88% of missing Muslim women disappeared in the period May – September 1992.

Like Table 6, Table 7 also shows missing persons in Vlasenica municipality, but in a longer period of time (January 1992 – December 1995). It shows that 58.8% of all missing persons (491 in total or 409 males and 83 females) were reported as missing in the period May – September 1992.

Out of the total number of missing women (99 females), about 76.8% were Muslim women (76 females). Out of the total number of missing Muslim women some 88.2% (67 females) disappeared between May and September 1992.

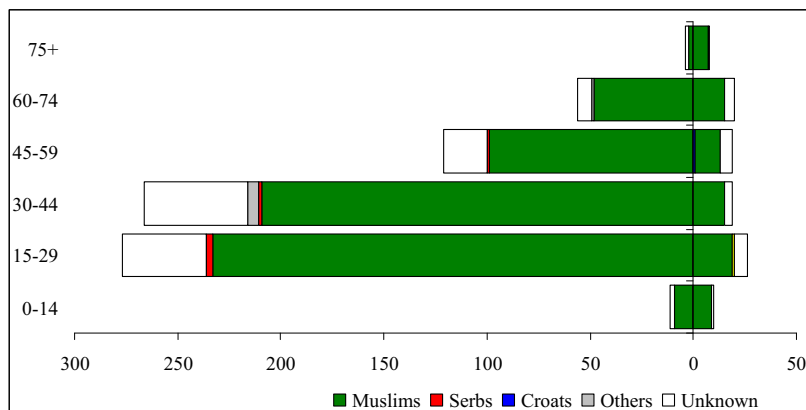
Out of the total of missing men (738), some 81.4% (601) were Muslim men. Out of the total of 601 missing Muslim men, about 54.7% (329) disappeared between May and September 1992.

Table 7. Number of Persons Missing in Vlasenica from January 1992 to December 1995, by Sex, Age and Ethnicity

Age Group	Males					Total	Females			
	Muslims	Serbs	Croats	Others	Unkn.		Muslims	Others	Unkn.	Total
0-14	10				2	12	9		1	10
15-29	232	3		1	40	276	19	1	6	26
30-44	211	2		5	50	268	15		4	19
45-59	97	1	1		22	121	12		5	17
60-74	48			1	7	56	15		5	20
75+	3				2	5	6		1	7
Total	601	6	1	7	123	738	76	1	22	99

Source: ICRC List of Missing Persons (1998) and 1991 Population Census for BH

Figure 4. Number of Persons Missing in Vlasenica from January 1992 to December 1995, by Sex, Age and Ethnicity



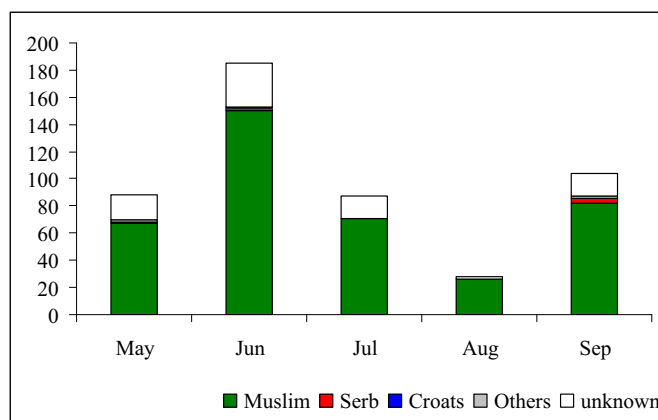
Source: ICRC List of Missing Persons (1998) and 1991 Population Census for BH

3.8. Number of Missing Persons in the Vlasenica Municipality by Ethnicity and Month of Disappearance, May – September 1992

- The number of missing persons from Vlasenica was highest in June and September 1992.

The distribution of missing persons in Vlasenica municipality in the period May – September 1992 by month of disappearance can be seen in Figure 7. The number of missing persons is significantly higher in June than in the other months (37.6% of all persons reported as missing in the period May – September 1992). In August that number is clearly lower than in other months (5.7% of all persons reported as missing in the period May – September 1992). In September there is a notable rise in the number of the missing persons.

Figure 7. Number of Missing Persons in Vlasenica, by Ethnicity and Month of Disappearance, May - September 1992



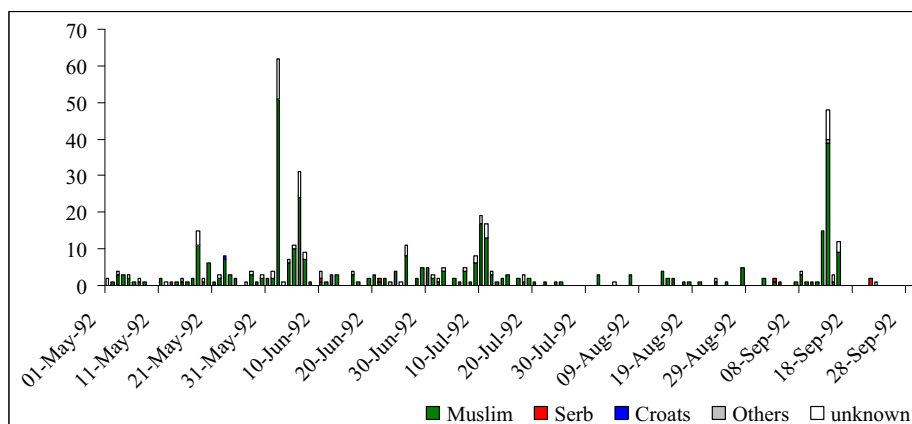
Source: ICRC List of Missing Persons (1998) and 1991 Population Census for BH

3.9. Number of Missing Persons in the Vlasenica Municipality by Ethnicity and Day of Disappearance, May – September 1992

- There were 10 days in the period May – September 1992 when the number of missing persons was 11 or more.

Figure 8 shows the same data as Figure 7 but divided into single days. It can be seen that there were 10 days (18-May-1992, 02-Jun-1992, 05-Jun-1992, 06-Jun-1992, 26-Jun-1992, 10-Jul-1992, 11-Jul-1992, 12-Sep-1992, 13-Sep-1992 and 15-Sep-1992) when the number of missing persons was 11 or more.

Figure 8. Number of Missing Persons in Vlasenica, by Ethnicity and Day of Disappearance, May - September 1992



Source: ICRC List of Missing Persons (1998) and 1991 Population Census for BH

3.10. Distribution of Missing Persons in the Vlasenica Municipality by Place of Disappearance, January 1992 – December 1995

- There were 9 places where more than 10 persons disappeared.

Table 8 shows the names of places in Vlasenica municipality where 5 or more persons were reported missing during the conflict. 43.7% of all missing persons in that area were missing in Vlasenica city. There were 9 places where more than 10 persons disappeared and 19 places where 5 or more persons were reported as missing.

Table 8. Distribution of Missing Persons in the Vlasenica Municipality, by Place of Disappearance (only places with 5 or more missing persons are shown), January 1992 – December 1995

Place of Disappearance	Number of missing persons
Vlasenica (town)	366
Nova Kasaba	136
Klještani	42
Cerska	39
Sušica	25
Debelo Brdo	22
Milići	19
Ružina Voda	16
Gradina	11
Durići	9
Piskavica	9
Sadići	8
Drum	7
Džamdžići	7
Pijući	7
Alihodžići	6
Jarovlje	6
Grabovica	5
Skugrići	5
Total	745

Source: ICRC List of Missing Persons (1998)

3.11. Missing Muslims in and around the Vlasenica Municipality, May – September 1992

- The number of missing Muslims in Vlasenica municipality rates third highest compared to surrounding municipalities.
- The share of missing Muslims from Vlasenica, compared to other municipalities reporting missing Muslim population, is second highest in Vlasenica municipality and equals 97.30 per cent.

Table 9 compares the distribution of missing persons in Vlasenica municipality with other nearby municipalities. Only two municipalities, Zvornik and Visegrad, of the twelve surrounding municipalities reported more Muslims missing than Vlasenica municipality.

For Vlasenica municipality, out of the overall number of missing persons (492), 407 records have been found in the 1991 census. Among those individuals identified in the census there were 396 Muslims, which is 97.3% of all identified.

Table 9. Distribution of Missing Persons in and around Vlasenica from May to September 1992, by Ethnicity and Municipality of Disappearance

Municipality	Total	Serbs	Muslims	Croats	Others	Unknown	Percent Matched	Percent Muslims In Matched	
Zvornik	1066	11	874			10	171	83.96	97.65
Visegrad	578		464			13	101	82.53	97.27
Vlasenica	492	6	396	1	4	85	82.72	97.30	
Rogatica	290	6	218		5	61	78.97	95.20	
Bratunac	261	9	197		5	50	80.84	93.36	
Srebrenica	122	12	84		3	23	81.15	84.85	
Sokolac	101		80	1	2	18	82.18	96.39	
Kalesija	63	2	53		2	6	90.48	92.98	
Bijeljina	44		31		3	10	77.27	91.18	
Sekovici	17	2	11			4	76.47	84.62	
Lopare	12	1	9			2	100.00	75.00	
Han Pijesak	8		5		1	2	75.00	83.33	
Ugljevik	3		1		1	1	66.67	50.00	
Total	3057	49	2423	2	51	532	82.60	95.96	

Source: ICRC List of Missing Persons (1998) and 1991 Population Census for BH

3.12. Missing Persons in and around the Vlasenica Municipality by Month of Disappearance, May – September 1992

- During the period from May to September 1992, for 3 out of 5 months, the number of persons missing in Vlasenica municipality was the highest, compared to the surrounding municipalities.

Table 10 shows the monthly distribution of missing persons in Vlasenica municipality and its surroundings, irrespective of ethnicity (comp. Table 9). Table 10 shows that the number of missing persons in Vlasenica municipality in the months of July (87 persons), August (28 persons) and September (104 persons) was higher than in any other surrounding municipality. In June the number of missing persons from Vlasenica municipality (185) was the third highest compared to the surrounding municipalities.

Table 10. Distribution of Persons Missing in and around Vlasenica in 1992, by Month and Municipality of Disappearance

Municipality	May	Jun	Jul	Aug	Sep	Total
Zvornik	304	711	27	10	14	1066
Višegrad	186	299	75	13	5	578
Vlasenica	88	185	87	28	104	492
Rogatica	36	152	39	52	11	290
Bratunac	215	17	16	2	11	261
Srebrenica	76	23	14	3	6	122
Sokolac	2	8	12	14	65	101
Kalesja	31	26	4	2		63
Bijeljina	5	6	2	4	27	44
Šekovići	7	8	2			17
Lopare	3	6	2	1		12
Han Pijesak	2	2	1	2	1	8
Ugljevik	1		2			3
Total	956	1469	301	146	244	3057
Percent	31.27	48.05	9.85	4.78	7.98	100

Source: ICRC List of Missing Persons (1998)

4. Conclusion

In my expert opinion, based upon the results presented in this report, the demographic shift in the Vlasenica Municipality between 1991 and 1997, that resulted in a reduction of the Muslim population from 53.38% to 0.07% of the whole population, several thousands of displaced persons (at least 5,228 Muslim DPs; UNHCR figure for all ethnicities is 17,409) and refugees (1,599) of Muslim ethnicity, and hundreds of missing persons (492 in the indictment period, of which 396 Muslims) cannot be attributed to common demographic or socio-economic factors. The mechanism responsible for this shift was likely related to the conflict itself and may be linked to a systematic campaign of ethnic cleansing possibly conducted in the territory of Vlasenica municipality or military incidents that occurred in this area.

ANNEX A: QUALIFICATIONS AND EXPERIENCE OF THE AUTHORS

A.1 SUMMARY OF PROFESSIONAL QUALIFICATIONS OF EWA TABEAUE (ET)

ET graduated in econometrics and statistics (M.Sc. degree, with the highest grade, 1981) and obtained her Ph.D. (with the highest grade, 1991) in mathematical demography at the Warsaw School of Economics. In 1983-1991 she was an academic teacher at the Warsaw School of Economics where she taught descriptive and mathematical statistics and demography to undergraduate courses. Thereafter, she moved to the Netherlands where she lives and works also at present. Since September 2000 she has been working as a demographer and project leader in the Demographic Unit at the Office of the Prosecutor, ICTY.

From July 1991 to September 2000, ET worked at the Netherlands Interdisciplinary Demographic Institute (NIDI) in The Hague (which is the Dutch national demographic institute), as a senior researcher and project leader. Her responsibilities at NIDI included conducting and proposing demographic research regarding modeling and prediction of mortality and health processes in the Netherlands and other European countries. Several of these projects were contracted by the Commission of the European Communities, other were funded in response to research proposals submitted to the Dutch Organization for Scientific Research, the NIDI itself, or other Dutch and non-Dutch organizations (e.g. the Netherlands Institute for Public Health and Milieu, or the French National Demographic Institute). ET has been invited, as an expert, by national and international organizations (e.g. Eurostat – Statistical Office of the European Union; ING Group - Life Insurance NL, Goldman & Sachs - Life Insurance USA, Statistics Netherlands, British Government Actuary's Department) to consult their projects involving issues of mortality and health development and prediction. She has supervised young researchers completing their theses for the M.Sc. or Ph.D. degrees. International and national demographic journals have invited her to review submitted papers.

ET has authored more than 80 research papers. Her record of selected recent papers includes:

- 3 monographs published internationally (Kluwer Academic/Plenum Publishers), in the Netherlands and in Poland,
- 24 articles published in international and national journals,
- 14 conference papers presented at international conferences,
- 40 research reports and working papers.

ET has links with demographers all over Europe, but especially with demographers in Belgium, Czech Republic, Finland, France, Germany, Hungary, Italy, Norway, Poland,

and United Kingdom. ET has excellent knowledge of several types of software. She speaks and writes Polish (native tongue), English, Dutch, Russian and German.

During her employment in the Office of the Prosecutor, ET completed several expert reports and testified as an expert witness before the Tribunal for the Former Yugoslavia.

Analytical reports of ET at ICTY in 2001-2002:

- E. Tabeau, 2002, Basic Demographic Characteristics and Socio-Economic Status of Missing and Killed Persons from the Municipality of Prijedor, 30.04-30.09.1992. Expert report prepared for the STAKIĆ case (IT-97-24).
- E. Tabeau, M., Żółtkowski, 2002, Ethnic Composition and Displaced Persons and Refugees in 37 Municipalities of Bosnia and Herzegovina, 1991 and 1997. Expert report prepared for the KRAJIŠNIK-PLAVŠIĆ case (IT-00-39&40).
- E. Tabeau, M. Żółtkowski and J. Bijak, 2002, Population Losses in the Siege of Sarajevo, 10 September 1992 to 10 August 1994. Expert report prepared for the GALIĆ case (IT-98-29-I), LRT/ET/100-02.
- E. Tabeau, J. Bijak, M. Duncker and M. Żółtkowski, 2002, Demographic Analysis Project Sarajevo (DAPS), Overview of the Survey and Survey Statistics. OTP research report prepared for the GALIĆ case (IT-98-29-I), LRT/ET/043-02.
- E. Tabeau and J. Bijak, 2001, Changes in the Ethnic Composition of Bosanski Šamac and Odžak, 1991 and 1997. Expert report prepared for the SIMIĆ et al. case (IT-95-9), LRT/ET/208A-01.
- E. Tabeau and J. Bijak, 2001, Changes in the Ethnic Composition in the Municipality of Višegrad, 1991 and 1997. Expert report prepared for the LUKIĆ et al. case (IT-98-32-1), LRT/ET/229-01.
- E. Tabeau and J. Bijak, 2001, Missing and Killed Persons in the Autonomous Region of Krajina in 1992: Basic Demographic Characteristics, Timing and Location of Incidents. Expert report prepared for the BRĐANIN and TALIĆ case (IT-99-36), LRT/ET/077-02.
- E. Tabeau and J. Bijak, 2001, The Range of 1992-95 Mortality in Bosnia and Herzegovina. OTP research report, LRT/ET/332-01.
- J. Bijak and E. Tabeau, 2001, Fertility Differences between Ethnic Groups in BH and a Fertility-Based Simulation of the Population Development 1991-2010. OTP research report, LRT/JB/139-01.
- E. Tabeau, T. Lyngstad, and H. Brunborg, 2001, Changes in the Ethnic Composition of the Population in the Autonomous Region of Krajina from 1991 to 1997. Research report prepared for the case of the BRĐANIN & TALIĆ case (IT-99-36). ICTY, The Hague.
- H. Brunborg, T. Lyngstad, and E. Tabeau, 2001, Population changes in Prijedor from 1991 to 1997. Research report prepared for the case of KERATERM CAMP (IT-95-8). ICTY, The Hague.

Expert Testimonies of Ewa Tabeau in 2001-2002:

LUKIĆ et al. (IT-98-32-1, Višegrad), 19.09.01

SIMIĆ et al. (IT-95-9, Bosanski Šamac, Odžak), 10.07.2002

GALIĆ (IT-98-29-I, Sarajevo), 22-23.07.2002

STAKIĆ (IT-97-24, Prijedor), 24-25.07.2002

GALIĆ (IT-98-29-I, Sarajevo), 30.07.2002

STAKIĆ (IT-97-24, Prijedor), 23.09.2002

A.2 SUMMARY OF PROFESSIONAL QUALIFICATIONS OF MARCIN ŻÓŁTKOWSKI (MZ)

In 2001, MZ graduated in Banking and Finance at the Warsaw School of Economics in Poland (WSE, M.Sc. degree in Banking and Finance, with “excellent”, the highest grade), and also completed the programme of Quantitative Methods and Information Systems at WSE. He is now finishing mathematics at the Warsaw University (the 4th year; in 2002 having a leave of absence due to his employment at OTP), specialising in the probability theory. In 2001, MZ engaged in a PhD programme in Financial Mathematics at WSE.

In 2000-2001 MZ worked as a student assistant in the Institute of Econometrics, WSE, where he taught econometrics and stochastic processes to undergraduate courses. In 2001-2002, he lectured “Capital and Monetary Markets” at the postgraduate programme in the International School of Managers in Warsaw. Since February 2002, he has been a research assistant in the Demographic Unit at the Office of the Prosecutor, ICTY, the Hague.

In 1998-99, he was an active member of the Artificial Intelligence Research Group at WSE, organising and taking part in conferences on artificial intelligence.

MZ is an expert in computer programming (C/C++, Delphi, Pascal, VB, HTML, etc.), software (MS Access, MS Excel, MS Word, GIS and ArcView, SPSS, Statistica, Mathematica, Matlab, Maple, LaTeX, etc.), hardware and operating systems (Windows, Linux). MZ speaks and writes Polish (native tongue), English, German, and Russian.

During his employment in the Demographic Unit, OTP, he authored the following research reports:

- E. Tabeau, M. Żółtkowski, 2002, Expert Report for the KRAJIŠNIK-PLAVŠIĆ case: Ethnic Composition and Displaced Persons and Refugees in 37 Municipalities of Bosnia and Herzegovina, 1991 and 1997, Expert report prepared for the case of Momčilo Krajišnik & Biljana Plavšić (IT-00-39&40), Memo: LRT/ET/174-02

- E. Tabeau, M. Żótkowski, 2002, Population Losses in the Siege of Sarajevo, 10 September 1992 to 10 August 1994, Expert report presented in the case of Stanislav Galić (IT-98-29-I), Memo: LRT/ET/100-02
- E. Tabeau, M. Żótkowski, 2002, Addendum to the Demographic Report: Population Losses in the Siege of Sarajevo, 10 September 1992 to 10 August 1994 with additional list of possible duplicates among those killed and wounded, Expert report presented in the case of Stanislav Galić (IT-98-29-I), Memo: LRT/MZ/126-02
- E. Tabeau, M. Żótkowski, 2002, Addendum-II to the Demographic Report: Population Losses in the Siege of Sarajevo, 10 September 1992 to 10 August 1994, Expert report presented in the case of Stanislav Galić (IT-98-29-I), Memo: LRT/ET/175-02
- E. Tabeau, J. Bijak, M. Duncker, M. Żótkowski, 2002, Demographic Analysis Project Sarajevo (DAPS): Overview of the Survey and the Survey Statistics, Research report prepared for the case of Stanislav Galić (IT-98-29-I), Memo: LRT/ET/043-02

ANNEX B. DATA SOURCES AND METHODS USED

B.1 THE 1991 POPULATION CENSUS FOR BOSNIA AND HERZEGOVINA

Our source of information on the pre-war population of the Vlasenica area is the 1991 population census for Bosnia and Herzegovina. The census was taken from 1 to 30 April 1991 (with 31 March as the official census date), just before the outbreak of hostilities in the country, and covered the entire population of the country.

The census files contain one record for each enumerated person. These records include information on a large number of variables, such as the municipality and settlement of residence, name and surname, father's name, household sequential number, personal ID number, date and year of birth, sex, occupation, ethnicity, mother tongue, religion, educational attainment, and number of children born (for women only).

The overall data quality is good, except for frequent errors in the persons' names. These errors are mostly consequences of poor optical scanning of the original forms (for example misreading V for U, as in MVSIC'Ć) and no subsequent checking and editing. To correct the scanning errors we employed several strategies. First, computer software was developed and applied to detect combinations of letters that are impossible in the B/C/S language. The software used the B/C/S syntax in order to access the viability of combinations. The impossible combinations were corrected by eliminating the miss-shaped characters and inserting their most likely equivalents. Secondly, we developed correction tables to eliminate scanning mistakes from the names. The tables contained the actual names and their correct versions which both were used in a computer programme to produce suggestions regarding the corrections needed. Then, these suggestions were controlled manually to discard any wrong corrections produced by the software. The accepted corrections were then applied to the data. Native speakers of the B/C/S language who in addition were familiar with naming traditions in Bosnia and Herzegovina undertook all these tasks. Furthermore, we also developed and applied computer software that utilised household information to correct surnames within households. The software checked the correctness and consistency of family names within the same households. Household members, whose family name was different from the (correct) name of others in this particular household, received the correct name. For instance, if MUSIĆ was the correct surname in a household, the person enumerated as part of this household under the name MVSIC'Ć would become MUSIĆ.

A second data quality problem is that for a number of records the unique 13-digit personal ID number (*matični broj*, MB), introduced in the former Yugoslavia in 1981, is only partly available. The MB consists of date of birth (DOB, 7 digits), region of birth (2 digits), a sex-specific sequential number (3 digits), and a check digit (1 digit). For our

needs the date of birth is essential, other components of the MB being of less value. The date of birth is missing only for a few per cent of the 1991 population.

The census includes a variable that relates to the ethnicity of the enumerated individuals. This allows us to study the population in the context of the same ethnicity declaration in both years studied, in 1991 and also in 1997, for all those individuals whose records have been linked in the two data collections (in the 1991 census and 1997 voters register). The question on ethnicity in the census questionnaire was open-ended meaning that individuals could declare themselves as belonging to any ethnicity. The majority of the 1991 census population declared themselves as belonging to one of the three major ethnic groups in Bosnia and Herzegovina: Serbs, Muslims, or Croats. Other ethnic declarations in the 1991 census included Yugoslavs (relatively frequently), combinations of ethnicities, such as "Serb-Croat" or "Muslim-Serb" (infrequently), and other national (e.g. Vlach or Gypsies) or foreign (e.g. Hungarians) ethnicities (less frequently). Those who called themselves Yugoslavs, or by names combining two ethnicities, were often children from mixed marriages. The Yugoslavs did not feel they belonged to any particular ethnic group and frequently disliked ethnic categorisation.

All analyses presented in this report have been made for the four ethnic groups distinguished on the basis of ethnicity declarations from the 1991 census: Serbs, Muslims, Croats, and Others. The last group, Others, is a residual category and covers persons declaring themselves as Yugoslavs, combinations of ethnic groups, and other national or foreign ethnic groups.

The pre-war Bosnia and Herzegovina was divided into municipalities, *opština*, that were further broken down into sub-units called "settlements". The number of pre-war municipalities was 109 whereas the number of settlements was 5831. The Dayton Accords divided some pre-war municipalities between the Federation and Republika Srpska resulting in a new division of the country into now 185 post-Dayton municipalities. The 1991 census information on the settlement of each person's residence allowed us to look at the post-Dayton municipalities, and in particular separately at each part of the divided pre-war municipalities, in order to view population changes between 1991 and 1997.

The conversion scheme for the aggregation of settlements into post-Dayton municipalities was obtained from the OSCE Election Registration Office in Sarajevo and was used to group settlements into municipalities. A few settlements were split between municipalities in the Federation and Republika Srpska. For the split settlements, we were unable to determine their post-Dayton municipality of residence. For the Vlasenica municipality this problem is however small.

As mentioned above the settlement of residence was reported in the 1991 census, but was unavailable for about 2% of the census respondents due to the reasons explained below.

B.2 THE 1997 OSCE VOTERS REGISTER

All post-Dayton elections in Bosnia and Herzegovina, including the one in 1997, were conducted under the supervision of the Organisation for Security and Co-operation in Europe (OSCE). For the purpose of elections, OSCE established a register of persons eligible to vote, the so-called OSCE voters register (VR). Development of the register and data entry was conducted by the OSCE Office in Sarajevo.

Eligibility to vote is discussed in article IV of annex 3 of the Dayton Peace Accords: “Any citizen of Bosnia and Herzegovina aged 18 or older whose name appears on the 1991 census for Bosnia and Herzegovina shall be eligible, in accordance with electoral rules and regulations, to vote”. Registration stations were established in all municipalities of Bosnia and Herzegovina and in many foreign countries. Since the eligibility to vote in 1997 was based on a person’s presence in the 1991 census rolls, the voters register is a *subset* of the 1991 census. Every person in the voters register should be therefore also included in the census. However, some people could stay abroad during the census or were not enumerated for other reasons. If indeed such persons existed, this would only apply to an insignificant proportion of the population. Moreover, such persons could provide evidence of their eligibility and still had the possibility to vote.

Persons who wanted to vote in the 1997 local elections had to register first. The election registration form recorded the following basic items: surname, first name, sex, date of birth, and personal identification number (*matični broj*). The 1997 register contained also four items related to the location of voters in 1997 and 1991:

- Municipality of residence in 1991, as reported in the 1991 census;
- Municipality of residence in 1997, self-reported;
- Municipality or country where the registration took place in 1997;
- Municipality the person wanted to vote *for* in 1997.

Absentee registration and voting was permitted.

The municipality of registration is seen as a good indicator of the area where people actually lived when they registered. This variable can be therefore taken as an important source of statistical information about the *de facto* population living in Bosnia and Herzegovina in 1997. The various items on the municipalities where people lived and registered to vote in 1997 can be used to study changes in residence between 1991 and 1997. To be sure about the 1991 residence of the 1997 voters, we applied individual matching to link the data for 1991 with those for 1997.

The information contained in the 1997 voters register was made available to us by the OSCE. The data from the voters register show some of the same quality problems as the census. Although errors are generally less common in the 1997 voters register than in

the 1991 census, deficiencies in names caused by optical scanning of the registration forms, often pose problems for the identification of persons. The names from the voters register, as those from the census, were all checked and corrected with various computer programs and manual procedures. This was again done with the assistance of native B/C/S speakers familiar with naming traditions in Bosnia and Herzegovina.

The registration to vote was voluntary, which implies that the register is only a *sample* of the post-war population, excluding those who did not register to vote because they were not interested, ill, too young, or too old. The number of persons who registered to vote in the 1997 elections was 2.56 million. Out of the 2.56 million, about 2 million voters were matched in our project with the 1991 population census. The total population of the country was approximately 4.3 million in 1991, whereas an estimate of 3.4 million people was given for 1995 by the 1998 World Population Prospects (United Nations, 1999). It is clear that the 2 million voters constitute a large and reliable sample of the 18+ population. Its size is big enough to prevent errors related to the persons not registering to vote.

There have been allegations that some people registered fraudulently to vote in the 1997 elections. This alleged fraud is believed to have been committed by persons who registered under false names for political reasons. This was investigated thoroughly for Srebrenica and no evidence of massive fraud in the registration of voters in 1997 was found.⁶

The next problem inherent to the 1997 voters register is the return of refugees and displaced persons. More specifically, the 1997 voters register would *under*-estimate the number of persons who fled from their homes if many people returned to their pre-war place of residence before 1997.

The Dayton Peace Accords made it clear that the return of refugees and internally displaced persons from Bosnia and Herzegovina should be made possible. Since our post-war data was collected during 1997, some refugees or internally displaced persons could already have returned to their pre-war municipalities of residence. The impact of this problem is however believed to be small for 1996-1997 as according to official statistics (see below) the returns of refugees and internally displaced persons to their pre-war homes were far from being completed in the period until 1997. Finally, if there were refugees or displaced persons that returned to their former locations, this would only decrease the number of displaced persons and refugees.

According to the 1998 estimates made by the UN High Commissioner for Refugees (UNHCR, UNHCR (1998)), within Bosnia and Herzegovina up to 820,000 people

⁶ Of 7,490 persons believed to have gone missing after the fall of the Srebrenica enclave, only 9 persons were found both in the lists of missing persons and in the 1997 and 1998 Voters' registers. See "Report on the Number of Missing and Dead from Srebrenica", by Helge Brunborg and Henrik Urdal, Office of the Prosecutor, ICTY, 12 February 2000.

remained *displaced* from their pre-conflict homes in mid-1998, of whom 450,000 in the Federation of Bosnia and Herzegovina and 366,000 in the Republika Srpska. Furthermore, over 550,000 *refugees* from Bosnia and Herzegovina were still in need of a durable solution by mid-1998. The largest numbers of refugees from Bosnia and Herzegovina were hosted by Yugoslavia (i.e. by Serbia and Montenegro, 226,000) and Croatia (34,500), with smaller numbers in the former Yugoslav Republic of Macedonia (3,000) and Slovenia (4,500). Outside the former Yugoslavia, Germany and Switzerland hosted the highest numbers of refugees (in total 254,000).

According to the UNHCR Office in Sarajevo (<http://www.unhcr.ba> and personal communication with the Public Information Unit) the total number of returns of refugees and displaced persons to the Republika Srpska was 83,518 in 1996-97. Out of these persons, only 966 Muslims and 159 Croats returned to RS in 1996-97 (1.2% and 0.2% of the total returns, respectively). Almost everybody returning to RS during this period were Serbs, 82,306 (98.5%). In most cases, only internally displaced persons returned and not refugees. On the other hand, the total number of returns in the Federation was about 347,837 in 1996-97, out of which 291,024 (83.7%) were Bosnian Muslims (i.e. Bosniacs), 47,249 (13.6%) were Croats, and only 1013 (0.3%) Serbs.

All in all, several hundred thousand people returned home in 1996-97. However, comparing the number of 1996-97 returns with the total number of refugees and displaced who were still in need of a durable solution in 1998, one can see that the scale of returns was relatively low in 1996-97. Moreover, the RS entity was apparently still considered unsafe for Muslims and Croats in 1996-97, as these were mainly Serbs who returned to RS in this period. The situation in the Federation was opposite to that in RS. The ethnic structure of returns is an additional reason why the 1996-97 returns do not significantly change the general picture of ethnic changes in the war period. However, because of the problem mentioned above, the results presented in this report can only be taken as an estimate of the number displaced persons and refugees as observed in 1997 and not as an estimate of the total ethnic change in the years from 1991 to 1997.

B.3 DATA LINKING

Our analysis of changes in the ethnic composition of the Vlasenica area is based on three variables with values specified for each individual: location before the war, location after the war, and ethnicity. The 1991 census contains information on ethnicity and location before the war, but not on the persons' location after the war. The 1997 voters register contains, on the other hand, the persons' post-war location, but neither the pre-war location nor ethnicity, the two latter variables being available only in the 1991 census. By combining these two data sets together into one set, we were able to make a joint analysis of the pre- and post-war population changes. Combining related data sets through individual linking has been used as the data reconstruction method in this study.

To link our data sets, we employed a multi-step procedure. Each step consisted of several comparisons between two sets of related individual-level data records. One record always describes one individual and is a collection of his/her characteristics on a number of items, such as for example the first name, family name, father's name, date of birth etc. All steps followed the same logic (see below). The differences between the steps were the slightly differing criteria used to match the records, and the fact that the population available for next possible matches shrank after each step. In other words, once a number of records had been matched in two related data sets, these records were excluded from the next round of matching. In the new step, the matching criterion applied was modified compared with the previous ones to capture new matches.

Each step consisted of three separate rounds. The first round was to identify the records in the voters register corresponding to the records in the census and to store the sequential numbers of these records in a table. Information common to both data sets was used to identify the corresponding records. The fields used in the matching were the following: first name, last name, personal ID number, date of birth, and municipality of residence. These fields in the records in the voters register were compared with the respective fields in the census records. For each record in the voters register that corresponded with one record in the census, the sequential numbers from each data set (i.e. source) were registered in a separate table. These combinations of sequential record numbers are called *matches*.

The second step concentrated on quality and consistency checks of the matches obtained. All matches were checked for duplicates to make sure that each record in the voters register had one and only one corresponding record in the census, and vice versa. Duplicates were deleted⁷. After duplicate checks and other quality control measures such as inspecting samples of the matched records visually, they were registered in the databases as final matches.

The third step was to register the approved matches in the data sets as links between records in the voters register and records in the census. The result from this process was that more than 2 million records out of the total of 2.56 million in the voters register were linked to corresponding records in the 1991 census.

The set of linked records forms the basis for our calculations involving the post-war population. The meaning of a link established between the voters register and the census is that a person whose records have been linked is identified as a *survivor*⁸. An identified survivor is known to be alive after the war since the person registered to vote

⁷ Note that duplicates are multiple matches and not multiple records. Deleting duplicates means deleting multiple links and not records that still remain available for the next round of matching.

⁸ Note that "a survivor" is a standard term used in the life table analysis in demography to denote a person who has not died until the age x years. The term does not have any negative connotations.

in 1997. All references made to the post-war population of survivors refer to the set of individual records successfully linked in our procedures.

Because of the voluntary nature of the registration to vote any *absolute* number provided in this report is in fact a minimum estimate of the 1997 population, for example a minimum size of an ethnic group, population displacement, age and sex distribution etc. The actual absolute figures are higher due to the fact that some part of the population did not register to vote. If however, one considers the population of registered voters as a sample of the actual population, then the sample can be seen as extremely large and reliable. This is why the *relative* figures (i.e. fractions or percentages) are good measures of the actual distributions and can be safely used.

The voters register was used as the source of statistical information about the actual 1997 population in the country. For the registered voters their municipality of residence in 1997 is not explicitly reported in the register. The place of registration is however specified for each registered voter in all necessary detail. In the analyses that involved the 1997 population, we assumed that the place where a person registered to vote (i.e. the place of registration) was a good approximation of the location where the person actually lived in when he or she registered. The municipality where they registered to vote is then referred to as the voters' municipality of residence.

The persons eligible to vote in the 1997 elections had to be born before 1980. Consequently, all comparisons involving the 1997 voters on one hand and the 1991 census population on the other hand must be restricted to individuals who were born at the latest in 1979. All comparisons presented in this report are restricted to those who were 18 or more years of age in 1997. Birth cohorts⁹ born after 1979 are excluded from the census data in our analyses (in the voters register no such persons should be registered). The final data set of the (18+) census population, who used to live in the Vlasenica area before the war, includes 26,296 individuals. Some 10,339 individuals have been identified as voters who registered to vote in the Vlasenica municipality.

Linking of individual data is common in demography and statistics. Scandinavian countries have been applying this approach for about 30-40 years. An operational system of unique ID numbers is a prerequisite for such linking. If there exists no such system or the existing system is not fully operational, as in the countries of the former Yugoslavia, other data items have to be used, in particular first and family names and date of birth. Similar items are also often used in historical demography for linking parish records, census data and other individual data, in the so-called family reconstitution studies.

The linking approach, although well established and known to demographers, is not commonly used throughout the world. Sizeable populations, lack of consistent ID

⁹ A birth cohort is the group of people who were born the same year.

numbers, and strong privacy protection regulations make the individual linking rarely useable in many high-income countries. The method is rarely applied in low-income countries since these countries cannot afford the costs of highly skilled personnel and expensive equipment required for the individual linking approach. Moreover, most low-income countries cannot afford or are unable to keep systematic high-quality records of the population.

Nation-wide comparisons of populations between different periods or geographic locations are usually done without individual-level linking but by using cross-sectional aggregate (or macro) data. The macro-level approach is for instance commonly applied by official national and international statistical agencies to produce and compare basic demographic statistics, such as death and birth rates, nuptiality and migration statistics, and others. The usefulness of the macro approach is still great, as the large population size and the large numbers of demographic events observed guarantee a fair degree of reliability of the results.

We believe that for our purposes the individual linking approach is superior to the macro approach, but not only in the sense of accuracy of the aggregate level statistics showing the relative distributions of the population. Here the benefits can be minor. The real advantage of the individual linking approach is that we can follow the same individuals between the two years considered. It is the best approach for the reconstruction of the fate of the population. Moreover it is, generally believed that the individual linking approach yields highly reliable results. The only problems with this method are inherited from the deficiencies in the data quality, which have, however, been largely overcome in our project by quality checks and applying extensive procedures for data matching.

**ANNEX C. ETHNIC COMPOSITION IN THE SETTLEMENTS OF THE
VLAZENICA MUNICIPALITY REPORTED IN THE 1991
POPULATION CENSUS¹⁰**

**Table C.1 Ethnic Composition in the Settlements of the Vlasenica Municipality
The 1991 Population Census**

Code	Settlement Name	Absolute Numbers					Percentages				
		Serbs	Muslims	Croats	Others	Total	Serbs	Muslims	Croats	Others	Total
160482	BACICI	500	0	0	2	502	99.6	0.0	0.0	0.4	100.0
160504	BAKICI	116	0	0	0	116	100.0	0.0	0.0	0.0	100.0
160512	BESICI	0	388	0	2	390	0.0	99.5	0.0	0.5	100.0
160539	BIJELO POLJE	25	0	0	0	25	100.0	0.0	0.0	0.0	100.0
160547	BISINA	54	0	0	0	54	100.0	0.0	0.0	0.0	100.0
160555	BRDA	70	0	0	1	71	98.6	0.0	0.0	1.4	100.0
160563	BUKOVICA DONJA	109	30	0	0	139	78.4	21.6	0.0	0.0	100.0
160571	BUKOVICA GORNJA	0	178	0	0	178	0.0	100.0	0.0	0.0	100.0
160580	BULJEVICI	177	43	0	0	220	80.5	19.5	0.0	0.0	100.0
160598	CERSKA	12	1389	0	8	1409	0.9	98.6	0.0	0.6	100.0
160601	BOZICI / DERVENTA	308	1	1	14	324	95.1	0.3	0.3	4.3	100.0
160610	DONJE VRSINJE	62	262	0	3	327	19.0	80.1	0.0	0.9	100.0
160628	DRAGASEVAC	219	1	0	19	239	91.6	0.4	0.0	7.9	100.0
160636	DRUM	43	589	2	90	724	5.9	81.4	0.3	12.4	100.0
160644	DUBACKO	81	0	0	0	81	100.0	0.0	0.0	0.0	100.0
160652	DUBNICA	195	0	0	0	195	100.0	0.0	0.0	0.0	100.0
160679	DUKICI	46	0	0	2	48	95.8	0.0	0.0	4.2	100.0
160687	DURAKOVICI	0	119	0	0	119	0.0	100.0	0.0	0.0	100.0
160695	DURICI	0	309	0	0	309	0.0	100.0	0.0	0.0	100.0
160709	DZEMAT	1	344	0	6	351	0.3	98.0	0.0	1.7	100.0
160717	DJILE	0	287	0	1	288	0.0	99.7	0.0	0.3	100.0
160725	DJURDJEVICI	161	0	0	0	161	100.0	0.0	0.0	0.0	100.0
160733	GEROVI	0	260	0	2	262	0.0	99.2	0.0	0.8	100.0
160741	GLUSAC	87	0	0	0	87	100.0	0.0	0.0	0.0	100.0
160750	GOBELJE	11	216	0	0	227	4.8	95.2	0.0	0.0	100.0
160768	GOLICI	82	0	0	2	84	97.6	0.0	0.0	2.4	100.0
160776	GORNJE VRSINJE	19	233	0	0	252	7.5	92.5	0.0	0.0	100.0
160784	GRABOVICA	528	0	1	8	537	98.3	0.0	0.2	1.5	100.0
160792	GRADINA	0	754	0	1	755	0.0	99.9	0.0	0.1	100.0
160806	NAZDA / GUNJACI	1	0	0	0	1	100.0	0.0	0.0	0.0	100.0
160814	JASEN	134	0	0	0	134	100.0	0.0	0.0	0.0	100.0
160822	JEREMICI	50	0	0	0	50	100.0	0.0	0.0	0.0	100.0
160849	KLJESTANI	82	0	0	0	82	100.0	0.0	0.0	0.0	100.0
160857	KOJCEVINA	163	0	0	8	171	95.3	0.0	0.0	4.7	100.0
160865	KOKANOVICI	107	0	0	1	108	99.1	0.0	0.0	0.9	100.0
160873	KOPRIVNO	169	0	0	0	169	100.0	0.0	0.0	0.0	100.0
160881	KOSTRACA	81	0	0	1	82	98.8	0.0	0.0	1.2	100.0
160890	KOZJA RAVAN	44	0	0	0	44	100.0	0.0	0.0	0.0	100.0
160903	KRAJCI NOVICI	194	0	0	2	196	99.0	0.0	0.0	1.0	100.0
160911	KULINA	132	0	0	0	132	100.0	0.0	0.0	0.0	100.0
160920	KULJANCICI	1	247	0	1	249	0.4	99.2	0.0	0.4	100.0
160938	LUKAVICA	94	0	0	0	94	100.0	0.0	0.0	0.0	100.0
160946	LUKICI	223	0	0	1	224	99.6	0.0	0.0	0.4	100.0
160954	RAZISTA / MACESI	5	680	0	2	687	0.7	99.0	0.0	0.3	100.0
160962	MAJSTOROVICI	121	0	0	4	125	96.8	0.0	0.0	3.2	100.0
160989	MILICI	2229	107	3	75	2414	92.3	4.4	0.1	3.1	100.0
160997	MISARI	229	2	0	1	232	98.7	0.9	0.0	0.4	100.0

¹⁰ Source: Stanovništvo Bosne i Hercegovine. Narodnosni Sastav po Naseljima. CROSTAT, Zagreb, Travanj 1995

**Table C.1 Ethnic Composition in the Settlements of the Vlasenica Municipality
The 1991 Population Census - Continued**

Code	Settlement Name	Absolute Numbers					Percentages				
		Serbs	Muslims	Croats	Others	Total	Serbs	Muslims	Croats	Others	Total
161004	MISICI	239	4	1	3	247	96.8	1.6	0.4	1.2	100.0
161012	MRSICI	0	98	0	0	98	0.0	100.0	0.0	0.0	100.0
161039	NEDELJISTA	119	618	0	1	738	16.1	83.7	0.0	0.1	100.0
161047	NOVA KASABA	76	814	0	152	1042	7.3	78.1	0.0	14.6	100.0
161055	NURICI	0	241	0	0	241	0.0	100.0	0.0	0.0	100.0
161063	ODZAK	55	0	0	1	56	98.2	0.0	0.0	1.8	100.0
161071	PAVKOVICI	127	0	0	0	127	100.0	0.0	0.0	0.0	100.0
161080	PESEVINA	95	126	0	3	224	42.4	56.3	0.0	1.3	100.0
161098	KUSELJ / PIJUKE	0	186	0	0	186	0.0	100.0	0.0	0.0	100.0
161101	PLAKALOVICI	53	0	0	0	53	100.0	0.0	0.0	0.0	100.0
161110	PODBIRAC	110	0	0	1	111	99.1	0.0	0.0	0.9	100.0
161128	PODCRKVINA	255	0	0	2	257	99.2	0.0	0.0	0.8	100.0
161136	PODGORA	106	0	0	0	106	100.0	0.0	0.0	0.0	100.0
161144	POMOL	1	458	0	0	459	0.2	99.8	0.0	0.0	100.0
161152	PUSTOSE	56	491	0	5	552	10.1	88.9	0.0	0.9	100.0
161179	RACA	104	0	0	0	104	100.0	0.0	0.0	0.0	100.0
161187	RAJICI	170	0	0	0	170	100.0	0.0	0.0	0.0	100.0
161195	RASEVO	133	331	0	0	464	28.7	71.3	0.0	0.0	100.0
161209	RASICA GAJ	66	151	0	1	218	30.3	69.3	0.0	0.5	100.0
161217	RASKOVICI	79	0	0	0	79	100.0	0.0	0.0	0.0	100.0
161225	RISTJEVICI	56	0	0	0	56	100.0	0.0	0.0	0.0	100.0
161233	ROGOSHA	34	0	0	0	34	100.0	0.0	0.0	0.0	100.0
161241	ROVASI	0	1236	0	0	1236	0.0	100.0	0.0	0.0	100.0
161250	RUPOVO BRDO	116	8	0	1	125	92.8	6.4	0.0	0.8	100.0
161268	SEBIOCINA	0	332	0	0	332	0.0	100.0	0.0	0.0	100.0
161276	SIMICI	200	0	3	1	204	98.0	0.0	1.5	0.5	100.0
161284	SKUGRICI	67	1067	0	10	1144	5.9	93.3	0.0	0.9	100.0
161292	SUPAC	131	0	0	1	132	99.2	0.0	0.0	0.8	100.0
161306	SADICI DONJI	58	447	0	0	505	11.5	88.5	0.0	0.0	100.0
161314	SADICI GORNJI	224	0	0	12	236	94.9	0.0	0.0	5.1	100.0
161322	STEDRA	0	168	0	0	168	0.0	100.0	0.0	0.0	100.0
161349	TIKVARICI	161	0	0	4	165	97.6	0.0	0.0	2.4	100.0
161357	TOLJEVICI	93	0	0	0	93	100.0	0.0	0.0	0.0	100.0
161365	TUGOVO	91	3	0	4	98	92.9	3.1	0.0	4.1	100.0
161373	TURALICI	65	397	0	0	462	14.1	85.9	0.0	0.0	100.0
161381	VISNJICA	65	12	0	2	79	82.3	15.2	0.0	2.5	100.0
161390	VITICI	41	0	0	0	41	100.0	0.0	0.0	0.0	100.0
161403	VLASENICA	2743	4800	26	340	7909	34.7	60.7	0.3	4.3	100.0
161411	VRLI KRAJ	91	7	0	0	98	92.9	7.1	0.0	0.0	100.0
161420	VRTOCE	561	5	1	12	579	96.9	0.9	0.2	2.1	100.0
161438	VUKOVICI	218	0	0	1	219	99.5	0.0	0.0	0.5	100.0
161446	VUKSICI	217	0	1	0	218	99.5	0.0	0.5	0.0	100.0
161454	ZABRDE	83	0	0	0	83	100.0	0.0	0.0	0.0	100.0
161462	ZAGRADE	89	0	0	0	89	100.0	0.0	0.0	0.0	100.0
161489	ZAKLOPACA	146	288	0	3	437	33.4	65.9	0.0	0.7	100.0
ALL	TOTAL VLASENICA:	14359	18727	39	817	33942	42.3	55.2	0.1	2.4	100.0



**CHANGES IN THE ETHNIC COMPOSITION
IN BOSANSKI ŠAMAC AND ODŽAK,
1991 AND 1997**

Ewa Tabeau and Jakub Bijak

August 9, 2001



Summary of Results

This report summarises changes in the ethnic composition of two municipalities in the north-eastern Bosnia and Herzegovina, Bosanski Šamac and Odžak, between 1991 and 1997. Our goal is to provide reliable demographic statistics that allow for an assessment of the type and scale of the changes. In our study we analyse two data sources: the 1991 population census and 1997 voters register, and use standard statistical and demographic methods.

Following the Dayton Peace Accords, the pre-war municipalities of Bosanski Šamac and Odžak were divided between the Federation of Bosnia and Herzegovina and Republika Srpska. Four new municipalities emerged: Domaljevac / Šamac (FBH), Šamac (RS), Odžak (FBH), and Odžak / Vukosavlje (RS). The reference map illustrating this division is included at the end of this summary. We use the post-Dayton municipalities as geographic units of the analysis. This approach makes it possible to show population movements *between* and *within* the municipalities of Bosanski Šamac and Odžak, and also *between these and other municipalities* in Bosnia and Herzegovina or *other countries*. We have reconstructed the 1991 population (and its ethnic composition) of the four post-Dayton municipalities using the 1991 census data and compared it with the ethnic composition of the 1997 population of registered voters.

Our major findings are the following:

- The reconstructed 1991 population of Domaljevac Šamac (FBH) amounted to approximately 17% of the population of the (pre-war) Bosanski Šamac. Some 79% of the 1991 Bosanski Šamac population belonged to Serb Šamac, and some 4% of the population to Odžak (FBH).
- In 1991 Bosanski Šamac as a whole had two dominant ethnic groups: Croats (45%) and Serbs (41%). Muslims and Others were represented at 7% each.
- The 1991 population was however unequally distributed within Bosanski Šamac: the part called Domaljevac / Šamac (FBH) in the Dayton Peace Accords had a Croat majority (98%) whereas the part called Šamac (RS) had a Serb majority (55%), a considerable representation of Croats (27%), and a small Muslim minority (10%).
- The post-war ethnic structure of the Domaljevac / Šamac was still dominated by Croats (98%) whereas the Serb Šamac became almost exclusively Serb (92%). **Croats and Muslims largely disappeared from RS Šamac.**
- We reconstructed that some 88% of the 1991 population of the (pre-war) Odžak resided in the area of the Federal Odžak and 12% in the area of the Serb Odžak Vukosavlje.
- The 1991 population of Odžak had a Croat majority (54%) and two considerable minorities of Serbs and Muslims (19% and 21% respectively).
- Again the within-municipality population distribution was far from uniform. Croats (75%) dominated in the Federal part (FBH Odžak), where also Serbs lived as a minority group (22%). Surprisingly in 1991 Croats (38%) and Muslims (38%) were two dominant groups in the Serb part (RS Odžak / Vukosavlje). The fraction of Serbs was 19% in Odžak / Vukosavlje.
- In 1997, the domination of Croats in the Federal part of Odžak had become less prominent (65%) and the place of the Serb minority was taken by Muslims (31%) who probably moved out from the neighbouring Serb part of Odžak. **The Serb Odžak / Vukosavlje became in 93% Serb whereas the two pre-war Croat and Muslim minorities had almost disappeared.**

- Summing up, two clear examples of ethnic cleansing have been shown in this report: **Croats and Muslims largely disappeared from the Serb Šamac and from the Serb Odžak / Vukosavlje. Before the war in both these areas Croats and Muslims represented a considerable fraction of the actual population.**

Map 1. The reference map of the pre-war municipalities of Bosanski Šamac and Odžak



1. Introduction

This report summarises changes in the ethnic composition of two municipalities in the north-eastern Bosnia and Herzegovina, Bosanski Šamac and Odžak, between 1991 and 1997. Our goal is to provide reliable demographic statistics that allow for an assessment of the type and scale of the changes.

In this report we analyse two data sources: the 1991 population census and the 1997 voters register. These sources are reliable and relevant to our objectives. Changes in the ethnic composition are shown by comparing the 1991 census-based statistics with statistics based on the 1997 voters register. The 1991 census is the latest complete population survey conducted directly before the war and gives a very accurate perspective on the population and its ethnic composition in this period. As to the 1997 voters register, we realise that ideally a period closer to the early phase of the conflict should be taken for the comparison with the 1991 census. Such sources are however unavailable to us and therefore cannot be analysed here. Even though the year 1997 is quite distant from the period in which the most population movements occurred, the 1997 voters register can be seen as a valuable source to discuss the war-related changes in the ethnic composition. Firstly, because in 1997 (as we will prove in this report) many displaced persons still lived in areas different from their place of residence in 1991. Secondly, because the returns of internally displaced persons that took place in 1996-97 were not considerable which suggests that many displaced persons resided in 1997 in temporary locations acquired during the war.

The report consists of the “Summary of Results” (included at the beginning of this report), three main sections, and an annex. Section 1 is a general “Introduction”, in Section 2 we discuss details of “Data Sources and Methods”, and in Section 3 we summarise “Changes in the Ethnic Composition 1991-1997”. Finally, the annex provides the reader with some background information about “The Ethnic Composition in Bosnia and Herzegovina in 1991 and 1997-98”.

One practical remark regarding the use of the voters register is that when the total number of the 1997 voters is broken down by place of registration, the resulting samples can be very small. In order to increase the sample size, we often use the 1997 voters register in combination with the register from the 1998 election, which was also supervised by the OSCE. The type of information available from the two registers is the same. The 1998 register is only used for those voters who registered first time in 1998. On average approximately 90% or more voters registered first time in 1997 and only 10% in 1998. Therefore, our results should be seen as mainly the 1997 figures.

The use of the 1998 voters register for the municipalities of Bosanski Šamac and Odžak is summarised in Table 1 below. From Table 1 we can see that generally 87.3% voters included in our analysis were the 1997 voters, and only the remaining 12.7% were the 1998 voters. The fraction of the 1997 voters varied amongst the analyses made by different places of registration, the highest being for the analyses completed for the voters registered in other municipalities in Bosnia and Herzegovina. The lowest fraction of the 1997 voters was used in the analysis of the voters who registered to vote in the municipality of the Federal Šamac. In this case, the 1997 voters were replaced by the 1998 voters, which is also reflected in the in appropriate parts of the text (i.e. the discussion of Figure 1 and Table 5).

Table 1. Distribution of voters by the year of first registration to vote

By Place of Registration		Year of First Registration to Vote			
		1st 97	1st 98	1st 97	1st 98
Šamac and Odžak		13915	2428	85.1	14.9
Other BH		1717	79	95.6	4.4
Other Countries		6678	727	90.2	9.8
Total		22310	3234	87.3	12.7
Municipality	OSCE code	1st 97	1st 98	1st 97	1st 98
Odžak (FBH)	017	4612	730	86.3	13.7
Odžak (RS)	018	844	14	98.4	1.6
Šamac (FBH)	020	6	1471	0.4	99.6
Šamac (RS)	021	8453	213	97.5	2.5
Total		13915	2428	85.1	14.9

2. Data Sources and Methods

2.1 Population census for Bosnia and Herzegovina 1991

Our source of information on the pre-war population of Bosanski Šamac and Odžak is the 1991 census for Bosnia and Herzegovina. The census was taken in April 1991 (officially per March 31, 1991), just before the outbreak of hostilities in the former Yugoslavia. The census contains information about a number of variables for each person enumerated. These include municipality and place of residence, name and surname, father's name, household number, personal ID number (*matični broj*), date of birth, sex, occupation, ethnicity, mother tongue, religion, educational attainment, number of children born (for women only), and many other variables.

The overall data quality is good, except for a large amount of misspelled names, due to poor optical scanning of the original census questionnaire and no subsequent checking. To eliminate the misspelling we have developed special software for checking and correcting the names, with the help of experts familiar with naming traditions in the region. A second data quality problem is that a number of records do not include the full 13-digit personal ID number, the *matični broj*, introduced in the former Yugoslavia in 1981. The full date of birth is missing for only 3.3 % and 5.4 % of the 1991 population of Bosanski Šamac and Odžak, respectively.

2.2 OSCE voters register 1997

OSCE (Organisation for Security and Cooperation in Europe) supervised the 1997 (and also 1998) local elections for Bosnia and Herzegovina, as part of this organisation's mandate for democracy building. In this connection it established a register of voters. To register to vote, people had to be included in the 1991 census or present other evidence that they were eligible to vote. Registration stations were established in all municipalities of BH and in many foreign countries. It was possible to register in a municipality that was different from the one where the person lived in before the war.

Besides the variables such as the surname, first name, sex, date of birth, and *matični broj*, four location items were registered: municipality of residence in 1991, municipality (and centre) of registration to vote in 1997 (or 1998), and municipality for which the person wanted to vote in 1997 (or 1998).

The voters register has some of the same data quality problems as the 1991 census, although not as many, especially misspelled names and missing or incomplete date of birth or *matični broj*. The deficiencies are mostly due to optical scanning of the registration forms. The *matični broj* was checked and all components of this number were found to be complete and valid for 87.6 % of the 1997 voters from Bosanski Šamac and Odžak. The names were checked and corrected with the computer programme mentioned above.

The registration to vote was voluntary, which implies that the register is only a *sample* of the post-war population, excluding those who survived the war but did not register to vote because they were not interested, ill, too old or too young. Still, since at least 75 % of the eligible population registered, our results cannot be greatly weakened. The reason for this is simply that since such a large proportion of the population registered, the errors which may be caused by people who have not registered, are not large enough to seriously bias our results.

There have been allegations that some people registered fraudulently to vote in the 1997 elections, by using false names (i.e. names of dead people). We investigated this thoroughly for Srebrenica and found no evidence of massive fraud in the registration of voters in 1997 and 1998. For Srebrenica only 9 persons (out of about 7500) were found both in the lists of missing persons and in the 1997 and 1998 voters registers.¹

2.4 Methods

Our approach has been to match information about individuals from the 1991 census with individual records from the lists of missing/dead persons and the OSCE voters register for the 1997 elections. When comparing various lists with data on individuals our approach has been to use the Access database program to search for records on one list that match records on the other list. If key variables are identical in two lists the matched records are assumed to represent the same person, otherwise not. This would have been a fast and easy procedure if all individuals on each list were uniquely determined by one or more variables, such as an ID number. However, this is not the case with all lists available to us. Although a unique ID number was introduced in Yugoslavia in 1981, it is not used by e.g. ICRC in their database. Moreover, when it is used, such as in the 1991 census and the OSCE voters register, it is sometimes missing or inconsistent.

The matching of two lists always began by searching for records with identical names and date of birth. It is very unusual that two different persons have identical names *and* are born on exactly the same date, especially if we are only considering the population of a limited area, such as a single municipality. Quite often, however, names are spelled differently or the date of birth is recorded slightly differently – or missing altogether in one or both lists. Consequently, for persons not matched in the first round we made the search criteria gradually broader for one or more variables, for example by including only the *year* (and not the full date) of birth, or only the *initial* of the first name, in addition to the surname. The results of such matches have, however, to be inspected visually to decide if the matches are likely to be of the same person or not, by looking at other available information, such as municipality and place of birth or residence. For example, the place of birth may be given as a municipality on one list and a small hamlet, located in the municipality, on the other list. It would be very complicated, if possible at all, to automate such checks. For difficult cases we checked the 1991 census for additional information, e.g. information about family members of the person in question.

To record the quality and basis for a match, a parameter (a quality indicator) was assigned to each matched person depending on the criteria used for the match. This parameter was used to study the number of accepted matches according to the type and quality of the match. We believe that the accuracy of this method is very good and that it yields reliable results.

As a result of the matching process we were able to identify 25,558 (40.6%) survivors out of 63,016 individuals reported as living in Bosanski Šamac and Odžak in the 1991 population census. Some changes are due to natural population movements before, during and after the war, in particular natural deaths and out-migrations. The largest group of people that we do not have any information about, are the eligible voters who did not register to vote. We also do not possess any post-war information about survivors from age 0 to 17 years. Thus, all estimates of survivors provided in this report are *minimum* numbers. The true figures are substantially higher.

¹ “Report on the Number of Missing and Dead from Srebrenica”, by Helge Brunborg and Henrik Urdal, Office of the Prosecutor, ICTY, 12 February, 2000.

3. Changes in the Ethnic Composition 1991-1997

In this section we discuss changes in the ethnic composition in Bosanski Šamac and Odžak by comparing the 1991 structure with the structure for 1997. In doing so, we analyse four post-Dayton municipalities corresponding to the pre-war municipalities of Bosanski Šamac and Odžak.

3.1 Bosanski Šamac

Before the war the population of Bosanski Šamac increased systematically from about 25,000 in 1948 to 33,000 in 1991. The municipality was relatively densely populated in 1991 (150 persons per 1sq km), much of the population lived in the town of Bosanski Šamac. In 1991, as in 1981, the majority ethnic group were Croats (44.7%; 44.3% in 1981), and Serbs (41.3%; 41.2% in 1981). Muslims were in the minority; their share was only 5.3 and 6.7% in 1981 and 1991 respectively.

Table 2. The total population of Bosanski Šamac since 1948

1948	1953	1961	1971	1981	1991
24593	26383	27944	31374	32320	32960

Source: Stanovništvo Bosne i Hercegovine. CROSTAT, Zagreb, Travanj 1995

Table 3. Ethnic composition of Bosanski Šamac in 1981, 1991, and 1997

Year	Total	Croats	Muslims	Serbs	Others
1981	32320	14327	1725	13328	2940
1981	100.0 %	44.3 %	5.3 %	41.2 %	9.1 %
1991	32960	14731	2233	13628	2368
1991	100.0 %	44.7 %	6.8 %	41.3 %	7.2 %
1997(18+)	14315	4838	1049	7704	724
1997 (18+)	100.0 %	33.8 %	7.3 %	53.8 %	5.1 %

Source: For 1981 and 1991: Stanovništvo Bosne i Hercegovine. CROSTAT, Zagreb, Travanj 1995. For 1997: The OSCE Voters Register

Table 3 also shows the ethnic composition of Bosanski Šamac in 1997. The figures for 1997 do not entirely correspond to those for 1981 and 1991. For 1997 only the population at age 18 years or more is included, i.e. the eligible voters, while for 1981 and 1991 all age groups are shown. Moreover, the 1997 voters represent a sample of the whole population, while the 1981 and 1991 figures cover all citizens living in this area. Despite of these deficiencies, the 1997 figures give some impression of the ethnic structure in 1997. As we can see from Table 3, for Bosanski Šamac as a whole, the two pre-war majority groups, Croats and Serbs, were still in majority in 1997. The proportion of Serbs was however considerably higher in 1997 than in 1991, whereas the share of Croats declined from about 45% to only 34 per cent.

In order to produce a more accurate picture of changes in the ethnic composition it is necessary to break down the pre-war municipality of Bosanski Šamac into two parts, exactly as done by the Dayton Accords. This breakdown allows us to reconstruct the population movements that took place within the pre-war municipality of Bosanski Šamac. In addition to this, we will also show internal population displacements within Bosnia and Herzegovina and migration from Bosanski Šamac to other countries.

Bosanski Šamac was split by the Dayton Peace Agreement into Domaljevac / Šamac belonging to the Federation of Bosnia and Herzegovina, and Bosanski Šamac/Šamac belonging to Republika Srpska (hereafter Šamac). The geographic area of Domaljevac / Šamac (FBH) is much smaller than the area of Šamac (RS). Also the population size of these two new municipalities are much different. We have reconstructed the 1991 population for the two post-Dayton municipalities (Table 4) and obtained 4,691 individuals for Domaljevac / Šamac (FBH), and 22,124 individuals for Šamac (RS). One settlement, Prud (1,293 inhabitants in 1991; part of Bosanski Šamac in 1991), was assigned to Odžak by the Dayton Accords and is not included in Domaljevac / Šamac (FBH) nor in Šamac (RS). Some more settlements are excluded as well. These settlements had a total population of 4,852 individuals in 1991 and are excluded from our post-Dayton municipalities because the Dayton line split them between FBH and RS. We are unable to assign the appropriate parts of the split settlements to either political entity.

Table 4. The 1991 population of Bosanski Šamac shown for the post-Dayton municipalities of Domaljevac / Šamac (FBH) and Bosanski Šamac / Šamac (RS)

Post-Dayton Municipality	OSCE Code	Ethnicity	Total	Percent
split settlements	-	Serbs	1642	33.8
		Muslims	7	0.1
		Croats	3004	61.9
		Others	199	4.1
		All	4852	100
Odžak (FBH)	017	Serbs	30	2.3
		Muslims	3	0.2
		Croats	1141	88.2
		Others	119	9.2
		All	1293	100
Domaljevac / Šamac (FBH)	020	Serbs	26	0.6
		Muslims	7	0.1
		Croats	4597	98.0
		Others	61	1.3
		All	4691	100
Bosanski Šamac / Šamac (RS)	021	Serbs	11928	53.9
		Muslims	2214	10.0
		Croats	5977	27.0
		Others	2005	9.1
		All	22124	100
Total		All	32960	

The 1991 population of Domaljevac / Šamac (FBH) was estimated at 4,691 individuals (Table 4), out of which 3,978 were at age 18 or more years in 1997 (Table 5a) and were eligible to vote. The eligible voters are the subjects of all analyses following in the next sections of this report.

Figure 1a. Ethnic composition in Domaljevac-Šamac (FBiH)
Pre- and post-war population

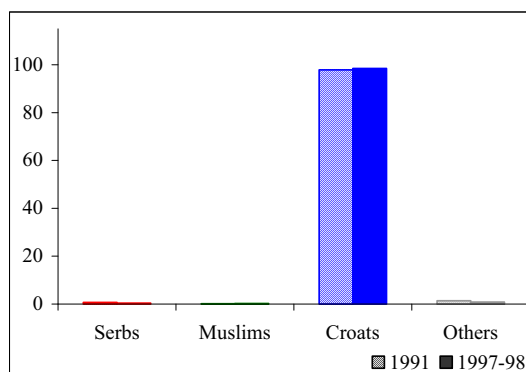


Table 5a. Ethnic composition in Domaljevac-Šamac (FBiH): pre- and post-war population
(18 years of age or older)

Ethnicity	Absolute numbers		Percentages	
	1991 census	1997-98 voters register	1991 census	1997-98 voters register
Serbs	26	6	0.65	0.40
Muslims	7	4	0.18	0.27
Croats	3891	1473	97.81	98.46
Others	54	13	1.36	0.87
Total	3978	1496	100.00	100.00

The population of Domaljevac / Šamac (FBH) was in 1991 dominated by Croats (about 98%; Figure 1a and Table 5a). The 1997-98 ethnic composition of the Domaljevac / Šamac population, as estimated from our sample of 1,496 registered voters, was practically the same as the 1991 composition, that is dominated by Croats in 98.5 per cent.

It is striking that the remaining ethnic groups were weakly represented among the 1997-98 voters, which may indicate that these groups were largely absent in the area of Domaljevac in 1997-98. This conclusion is further supported by rather infrequent returns of Muslims and Serbs to Domaljevac / Šamac (FBH) in 1996-97. UNHCR reports that there were in total 124 minority returns in this area (95 Muslims and 29 Serbs).

Worth noting is that Figure 1a and Table 5a illustrate the changes in the ethnic composition that occurred in the population which *de facto* lived in the area of Domaljevac Šamac in 1991 or 1997-98. The perspective of “de facto population” focuses on the individuals who physically resided in this area by 1997-98 and ignores the fact how many of these individuals originally belonged to Domaljevac Šamac (i.e. lived in Domaljevac Šamac in 1991), and how many of them were newcomers from other municipalities in Bosnia and Herzegovina. Tracing the fate of the 1991 population of Domaljevac Šamac is however essential for the understanding of the scale of population movements from the municipality where this population originally lived.

In order to trace the post-war fate of the individuals who in 1991 resided in Domaljevac Šamac, we grouped the 1997-98 voters originating from Domaljevac Šamac (i.e. the voters who lived there in 1991) due to the place where they registered to vote in 1997-98. Three types of residence were distinguished: this municipality (i.e. Domaljevac Šamac), other municipalities in Bosnia and Herzegovina, and other countries (including Croatia, Slovenia and FRY). The results of this analysis are shown in Figure 1b and Table 5b.

Figure 1b. Registered 1997 voters originating from Domaljevac-Šamac (FBiH) by ethnicity and place of registration

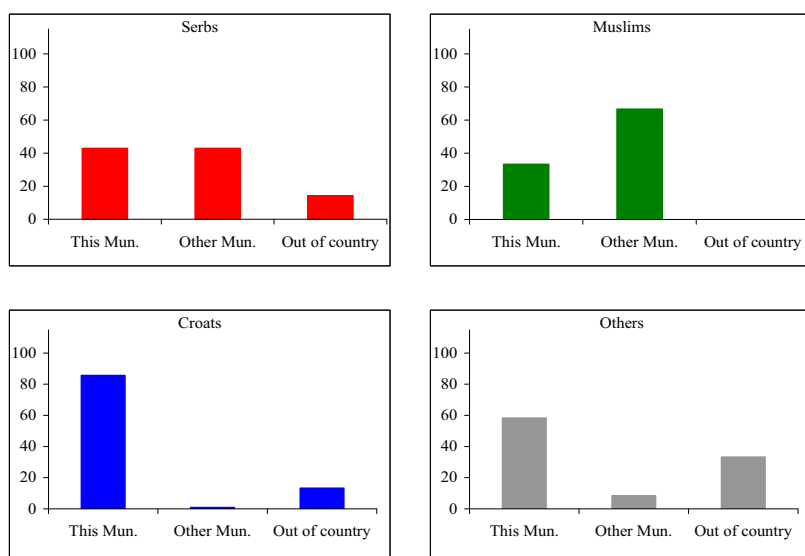


Table 5b and Figure 1b clearly confirm that the vast majority of the Croat voters who lived in Domaljevac in 1991, registered to vote in Domaljevac in 1997-98 (some 1,271 or 85.7% out of the 1,483 registered). Some 198 Croat voters resided abroad in 1997-98, some of them in Croatia (27 voters) and many in other countries (171 voters). These results indicate that the population movements were indeed minor in Domaljevac Šamac and that the original 1991 population remained relatively intact in this municipality.

Table 5b. Registered 1997-98 voters originating from Domaljevac-Šamac (FBiH) by ethnicity and place of registration

Ethnicity	Absolute numbers			
	This municipality	Other municipalities	Out of country	Total
Serbs	3	3	1	7
Muslims	1	2	0	3
Croats	1271	14	198	1483
Others	7	1	4	12

Ethnicity	Percentages			
	This municipality	Other municipalities	Out of country	Total
Serbs	42.86	42.86	14.29	100.00
Muslims	33.33	66.67	0.00	100.00
Croats	85.70	0.94	13.35	100.00
Others	58.33	8.33	33.33	100.00

The second municipality created in the Dayton Peace Accords of the pre-war area of Bosanski Šamac is the Serb Bosanski Šamac. Below we have analysed the changes in the ethnic composition in the Serb Šamac using the same methods as previously applied to Domaljevac Šamac (FBH).

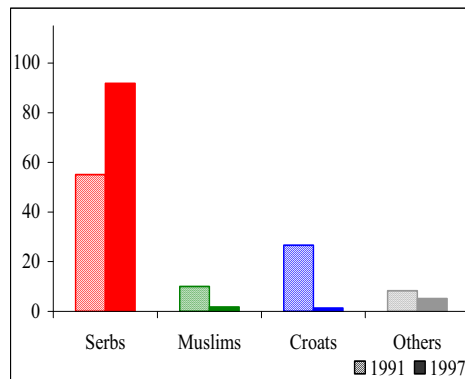
Figure 2a. Ethnic composition in Bosanski Šamac / Šamac (RS)
Pre- and post-war population

Table 6a. Ethnic composition in Bosanski Šamac / Šamac (RS): pre- and post-war population (18 years of age or older)

Ethnicity	Absolute numbers		Percentages	
	1991 census	1997 voters register	1991 census	1997 voters register
Serbs	10454	10362	55.07	91.85
Muslims	1902	194	10.02	1.72
Croats	5062	145	26.66	1.29
Others	1566	581	8.25	5.15
Total	18984	11282	100.00	100.00

The municipality of Šamac (RS) was predominantly Serb in 1991. The Serb majority amounted to 55% whereas Croats were the second largest ethnic group at 27% and Muslims represented only 10% of the total 1991 population (Figure 2a and Table 6a). In 1997 Serbs dominated at about 92% and the remaining ethnic groups had almost disappeared (Croats 1.3% and Muslims 1.7%). The results for 1997 are based on a large and reliable sample of voters (11,282 voters linked with the census). The above results indicate that a large scale ethnic cleansing occurred in Šamac (RS). Almost all Croats and Muslims moved out from this municipality. Those who left their homes during the war had not yet returned in 1997 to their pre-war place of residence. The UNHCR statistics on minority returns in 1996-97 support our conclusion: for Šamac (RS) no returns were reported in 1996-97.

Figure 2b. Registered 1997 voters originating from Bosanski Šamac / Šamac (RS) by ethnicity and place of registration

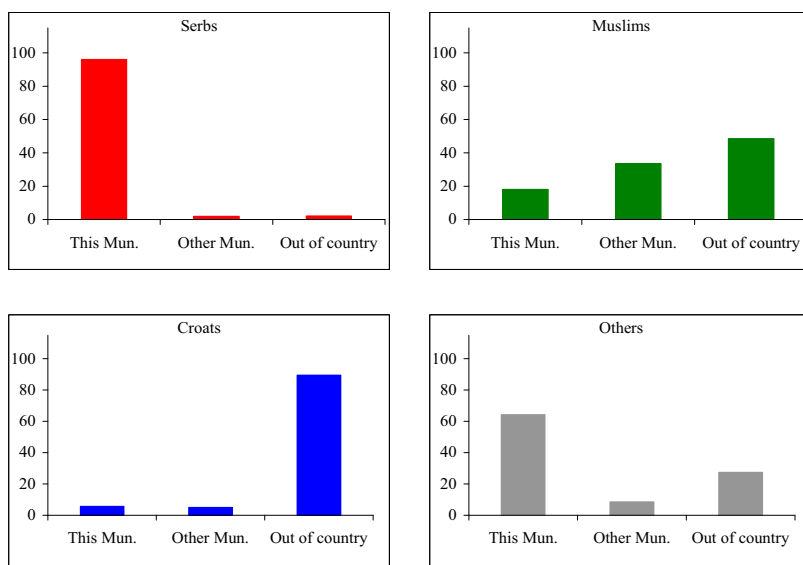


Table 6b. Registered 1997 voters originating from Bosanski Šamac / Šamac (RS) by ethnicity and place of registration

Ethnicity	Absolute numbers			
	This municipality	Other municipalities	Out of country	Total
Serbs	6528	128	142	6798
Muslims	187	349	505	1041
Croats	104	93	1674	1871
Others	394	52	168	614

Ethnicity	Percentages			
	This municipality	Other municipalities	Out of country	Total
Serbs	96.03	1.88	2.09	100.00
Muslims	17.96	33.53	48.51	100.00
Croats	5.56	4.97	89.47	100.00
Others	64.17	8.47	27.36	100.00

Out of the original 1991 population of Šamac (RS), i.e. 18,984 of those born up to 1979 (i.e. eligible to vote in 1997), we were able to identify some 10,324 individuals in the 1997 voters register (Table 6b; the sum of "Total"). Among those 10,324 individuals, some 7,213 persons registered in Šamac (RS) in 1997, some 622 in other municipalities in BH, and some 2,489 in other countries. The vast majority of those identified were Serbs (6,798); Croats were the second largest group (1,871) and Muslims the third (1,041). Striking is the fact that about 96% of the identified Serbs stayed in Šamac (RS) in 1997. The Croats who stayed in Šamac (RS) constituted only about 6% of all identified, the remaining Croats moved to other municipalities in BH (5%) or abroad (89%). Only 18% of Muslims stayed in Šamac, 34% of Muslims moved to other BH municipalities and 49% went to other countries.

The specific directions of population movements from Šamac (RS) are shown in Figure 2c, which comprises those voters who registered to vote in other municipalities in Bosnia and Herzegovina. Those who left Šamac and moved to other municipalities within Bosnia and Herzegovina were mainly Muslims (34%).

Muslims from Šamac (RS) went to the neighbouring Orašje (FBH), and to Rahić / Ravne (the Federation part of the Brčko District). In the north-east of the country, they also registered in Gračanica (FBH), Čelić (FBH), Tuzla (FBH), and Banovići (FBH). Muslims were also found in 1997 in Sarajevo (Novi Grad and Centar, FBH) and in Bosanski Petrovac (FBH).

Croats mainly moved from Šamac (RS) to the neighbouring municipalities located in the Federation, that is to Orašje (FBH), Odžak (FBH), and Domaljevac / Šamac (FBH), but also to Stolac (FBH) and Čapljina (FBH) located at the border with Croatia.

Serbs who left Šamac went to Brčko, Bijeljna, Modriča, and Banja Luka (all in RS).

Figure 2c. Displacements from Bosanski Šamac / Šamac (RS)

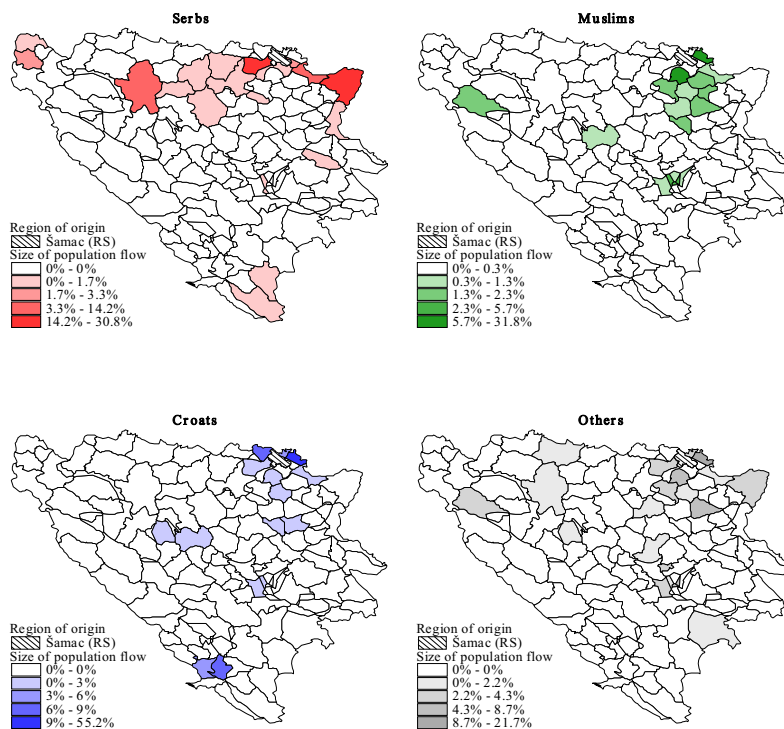


Table 7 summarises the emigration (i.e. out-migration) from the (pre-war) municipality of Bosanski Šamac. It is striking that out of 3,339 persons who left the municipality and in 1997 still lived in locations different from their pre-war place of residence which in addition were outside the borders of Bosnia and Herzegovina, the largest group (some 2,507) were Croats. About 1,602 (64%) of all Croat migrants went obviously to Croatia. Some 901 (36%) of Croat migrants lived in 1997 in countries outside the area of the former Yugoslavia.

The second largest group of migrants from Bosanski Šamac were Muslims (475 migrants). Some 433 (91%) of Muslim migrants went to countries different than Croatia or the Federal Republic of Yugoslavia.

The out-migration of Serbs and Others from Bosanski Šamac was relatively low.

Table 7. Emigration from Bosanski Šamac, 1991-1997

Ethnicity	FRY	Croatia	Other countries	Total
Serbs	86	4	76	166
Muslims	10	32	433	475
Croats	4	1602	901	2507
Others	25	47	119	191
TOTAL	125	1685	1529	3339

Ethnicity	FRY	Croatia	Other countries	Total
Serbs	51.8	2.4	45.8	100.0
Muslims	2.1	6.7	91.2	100.0
Croats	0.2	63.9	35.9	100.0
Others	13.1	24.6	62.3	100.0
TOTAL	3.7	50.5	45.8	100.0

Source: The 1997 voters register and the 1991 population census for BH

3.2 Odžak

The population of Odžak increased from about 20,000 in 1948 to some 30,000 in 1991 (Table 8). Croats were the dominating ethnic group in 1991 with about 54% of the population, whereas Muslims and Serbs were two minorities with, respectively, about 21 and 19 % shares. A comparison of the 1991 ethnic composition with the post-war figures obtained from the voters register shows that no major changes occurred: in 1997 the share of Croats was still the highest (about 50%), and that of Muslims and Serbs were 26% and 20% respectively (Table 9). The fraction of Serbs remained more-or-less unchanged between 1991 and 1997.

Table 8. The total population of Odžak since 1948

1948	1953	1961	1971	1981	1991
19827	20554	22364	25901	27895	30056

Source: Stanovništvo Bosne i Hercegovine. CROSTAT, Zagreb, Travanj 1995

Table 9. Ethnic composition of Odžak in 1981, 1991, and 1997

Year	Total	Croats	Muslims	Serbs	Others
1981	27895	15430	5371	5361	1733
1981	100.0	55.3	19.3	19.2	6.2
1991	30056	16338	6220	5667	1831
1991	100.0	54.4	20.7	18.9	6.1
1997(18+)	11252	5645	2923	2201	483
1997(18+)	100.0	50.2	26.0	19.6	4.3

Source: Stanovništvo Bosne i Hercegovine. CROSTAT, Zagreb, Travanj 1995

Table 9 has the same shortcoming as the analogous Table 3 for Bosanski Šamac, where the ethnic composition for 1991 is given for the whole population (i.e. including all ages) whereas for 1997 only for those at age 18 or more years. The next disadvantage of Table 9 is that it does not make it possible to assess population movements within the municipality of Odžak. In order to present a more precise picture of the changes in Odžak, we have analysed the ethnic composition in this area in 1991 and 1997 at the level of two post-Dayton municipalities originating from the pre-war Odžak (Odžak (FBH) and Odžak/Vukosavlje (RS)).

Table 10 shows the ethnic composition in the two post-Dayton municipalities, Odžak (FBH) and Odžak/Vukosavlje (RS). Both the Federal and the Serb Odžak were created basically from the area of the pre-war Odžak. However, a few extra settlements belonging in 1991 to the neighbouring municipalities of Modriča and Bosanski Šamac became parts of the new Odžaks in the Dayton Peace Accords. Specifically speaking, since 1995 the Federal Odžak included one extra settlement (Prud) from Bosanski Šamac, and the Serb Odžak included three settlements (Pećnik, Jakeš, and Modrički Lug) that were under Modriča administration in 1991. As the post-Dayton municipalities are the subject of the discussion in this and next section, we have included the extra settlements in the

analysis. In Table 10 we however also distinguish the part of each Odžak that has been reconstituted from the pre-war Odžak (i.e. *without extra settlements* from Modriča and Bosanski Šamac).

Worth noting is also that the town of Odžak (with 9,384 citizens in 1991) and two settlements, Potočani and Vrbovac, could not be included in the reconstituted population of the post-Dayton Federal and Serb Odžak municipalities (see “split settlements” in Table 10). These three settlements, with the total population of 13,356 persons, were divided between the political entities and we could not assign the population living there to neither of the two new post-Dayton municipalities.

In 1991 the Federal Odžak consisted of a total of 9 settlements and had a population of 15,943 individuals (out of which 14,650 were from the original Odžak, and the rest from Bosanski Šamac). In 1991, Croats were the vast majority with 75% of the total population. There were about 22% Serbs living in the Federal Odžak. Other ethnic groups amounted together to about 3 per cent.

The RS part, Odžak/Vukosavlje, included 6 settlements with the total population of 7,116 individuals (out of which 2,050 persons lived in the original Odžak, and the rest in Modriča). The pre-war ethnic structure comprised almost equal fractions of Croats and Muslims (about 40% each) and some 18% of Serbs in this area. Others were represented at about 4.5 per cent.

For both municipalities in 1991 the ethnic composition of the 18+ population was very close to the above mentioned structures for the all age population (compare Tables 10, 11, and 12 below).

Table 10. The 1991 ethnic composition in the post-Dayton municipalities of Odžak (FBH) and Odžak/Vukosavlje (RS). Reconstituted from the pre-war Odžak and all components

Post-Dayton Municipality	OSCE Code	Ethnicity	Reconstituted from the pre-war Odžak		All components	
			Total	Percent	Total	Percent
Split settlements		Serbs	1061	7.9	na	na
		Muslims	6197	46.4	na	na
		Croats	4836	36.2	na	na
		Others	1262	9.4	na	na
		All	13356	100.0	na	na
Odžak (FBH)	017	Serbs	3472	23.7	3502	22.0
		Muslims	10	0.1	13	0.1
		Croats	10770	73.5	11911	74.7
		Others	398	2.7	517	3.2
		All	14650	100.0	15943	100.0
Odžak / Vukosavlje (RS)	018	Serbs	1133	55.3	1279	18.0
		Muslims	7	0.3	2859	40.2
		Croats	728	35.5	2655	37.3
		Others	182	8.9	323	4.5
		All	2050	100.0	7116	100.0
Total		All	30056	100.0	na	na

Note: “na” is “not applicable”

Figure 3a. Ethnic composition in Odžak (FBiH)
Pre- and post-war population

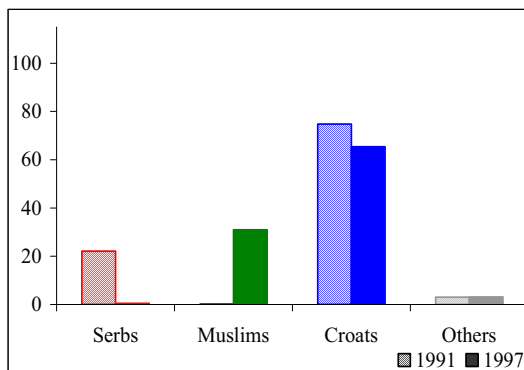


Table 11a. Ethnic composition in Odžak (FBiH): pre- and post-war population
(18 years of age or older)

Ethnicity	Absolute numbers		Percentages	
	1991 census	1997 voters register	1991 census	1997 voters register
Serbs	3000	28	22.06	0.48
Muslims	13	1794	0.10	30.95
Croats	10174	3791	74.80	65.40
Others	414	184	3.04	3.17
Total	13601	5797	100.00	100.00

The ethnic structure of the Federal Odžak was dominated by Croats in 1991 (75%; Figure 3a and Table 11a), but a considerable representation of Serbs (22%) also lived there. In 1997 Croats were less frequent but still in majority (65%), and Serbs disappeared completely (0.5%). The fraction of Muslims, practically absent in Odžak in 1991, increased in 1997 up to 31 per cent.

In order to depict the post-war residence of the original 1991 population of Odžak (FBH), we again traced this population among the 1997 voters and showed their 1997 place of registration to vote in Figures 3b, 3c and Table 11b below. Table 11b indicates that significant population movements occurred between 1991 and 1997 from Odžak (FBH). In our sample of 5,854 voters who in 1991 resided in Odžak (FBH) there were 3,087 voters who in 1997 registered outside the Odžak (FBH) municipality. Some 1,279 voters registered in other municipalities in Bosnia and Herzegovina, and some 1,808 voters in other countries. Croats and Serbs were the largest groups that left Odžak (FBH) and lived elsewhere in 1997. Croats stayed outside Bosnia and Herzegovina in 1997, and Serbs lived in other municipalities in Republika Srpska (most commonly in the neighbouring Bosanski Šamac, Modriča, and Odžak/Vukosavlje; see Figure 3c). Croats however were also the largest group which stayed in Odžak (FBH) in 1997.

Figure 3b. Registered 1997 voters originating from Odžak (FBiH) by ethnicity and place of registration

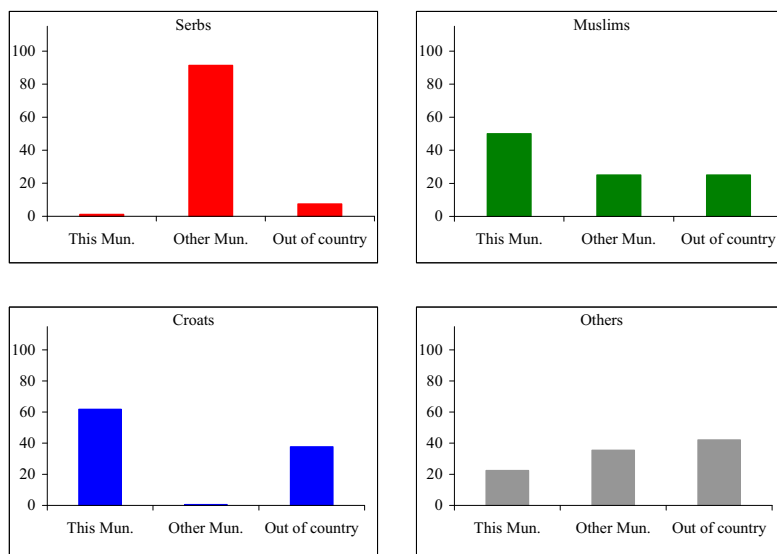
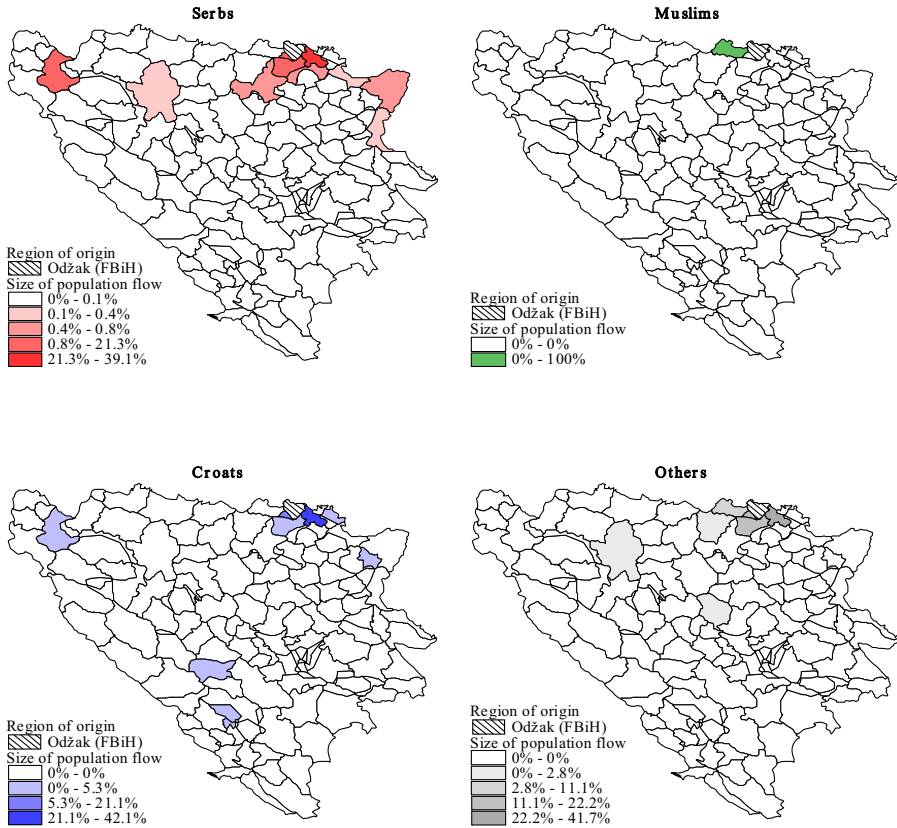


Table 11b. Registered 1997 voters originating from Odžak (FBiH) by ethnicity and place of registration

Ethnicity	Absolute numbers			Total
	This municipality	Other municipalities	Out of country	
Serbs	16	1218	100	1334
Muslims	2	1	1	4
Croats	2725	22	1662	4409
Others	24	38	45	107

Ethnicity	Percentages			Total
	This municipality	Other municipalities	Out of country	
Serbs	1.20	91.30	7.50	100.00
Muslims	50.00	25.00	25.00	100.00
Croats	61.81	0.50	37.70	100.00
Others	22.43	35.51	42.06	100.00

Figure 3c. Displacements from Odžak (FBH)



The ethnic composition of the Serb Odžak/Vukosavlje changed in a different way than the composition of the Federal Odžak. In 1991, both the Croats and the Muslims were the two dominant groups in Odžak / Vukosavlje (RS), each at about 38% of the total population, and Serbs were in a minority at approximately 19 per cent (Figure 4a and Table 12a). In 1997 Serbs were the majority group (93%) whereas Croats and Muslims almost completely disappeared. Others remained at about 5% as in 1991. These dramatic declines in the fraction of Croats and Muslims make it important to check how many of them left the municipality and where they went.

Figure 4b and Table 12b confirm that about 93% of Serbs did not move out from Odžak/ Vukosavlje (RS) but still lived here in 1997. Croats and Muslims largely left and moved to other municipalities in FBH, or abroad. There were in total 1,209 Muslims in our sample of 2,624 of all identified 1997 voters originating from the 1991 Odžak (RS). They all moved out from Odžak (RS) and lived elsewhere in 1997 (about 31% moved to other municipalities in the Federation of Bosnia and Herzegovina and 69% to other countries).

Figure 4a. Ethnic composition in Odžak / Vukosavlje (RS): pre- and post-war population

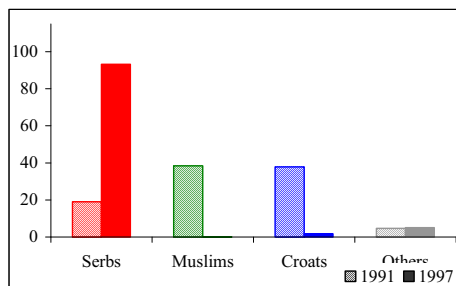


Figure 4b. Registered 1997 voters originating from Odžak / Vukosavlje (RS) by ethnicity and place of registration

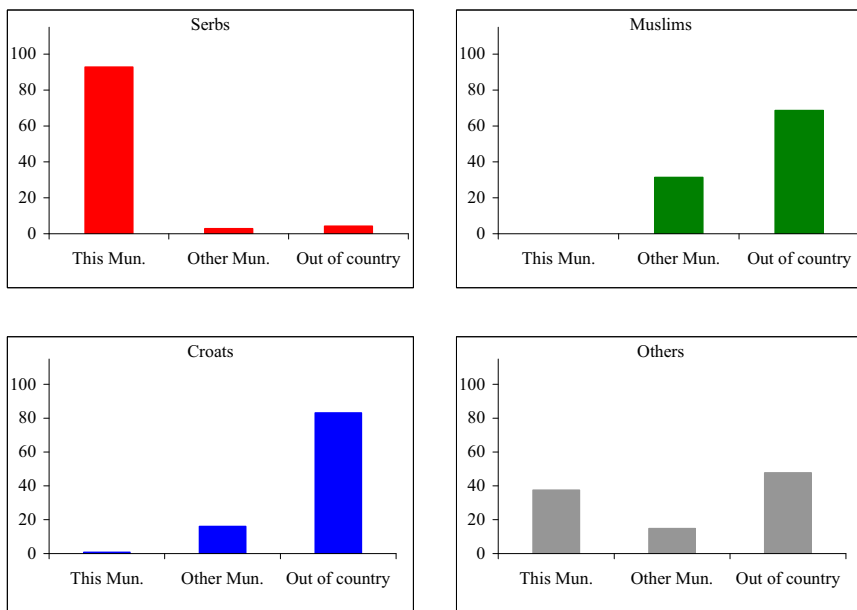


Table 12a. Ethnic composition in Odžak / Vukosavlje (RS): pre- and post-war population (18 years of age or older)

Ethnicity	Absolute numbers		Percentages	
	1991 census	1997 voters register	1991 census	1997 voters register
Serbs	1113	1169	19.03	93.22
Muslims	2250	1	38.46	0.08
Croats	2215	21	37.86	1.67
Others	272	63	4.65	5.02
Total	5850	1254	100.00	100.00

Table 12b. Registered 1997 voters originating from Odžak / Vukosavlje (RS) by ethnicity and place of registration

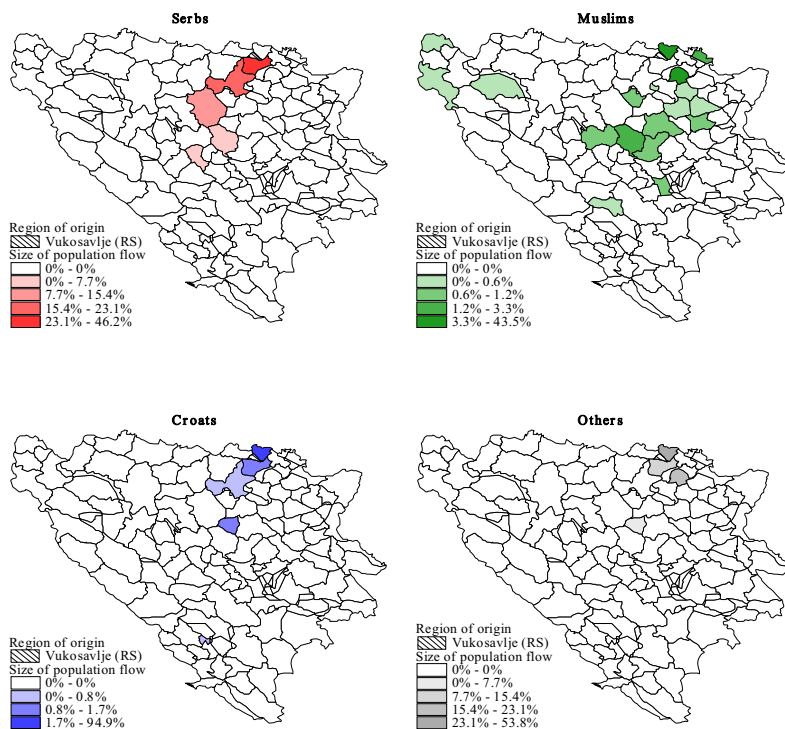
Ethnicity	Absolute numbers			
	This municipality	Other municipalities	Out of country	Total
Serbs	480	15	22	517
Muslims	0	379	830	1209
Croats	6	130	674	810
Others	33	13	42	88

Ethnicity	Percentages			
	This municipality	Other municipalities	Out of country	Total
Serbs	92.84	2.90	4.26	100.00
Muslims	0.00	31.35	68.65	100.00
Croats	0.74	16.05	83.21	100.00
Others	37.50	14.77	47.73	100.00

The number of Croats amongst the 2,624 identified voters from Odžak (RS) was 810. Some 804 of them registered to vote outside the Serb Odžak (some 16.1 % in other municipalities in BH and 83.2 % abroad).

Figure 4c further shows that Croats mainly moved to Odžak (FBH) and Žepče (FBH), and also to Modriča (RS) and Doboј (RS). Muslims moved to the neighbouring Odžak (FBH), Orašje (FBH), Gradačac (FBH), and to Zenica and surrounding Donji Vakuf, Kakanj and Zavidovići in Central Bosnia (all FBH).

Figure 4c. Displacements from Odžak/ Vukosavlje (RS)



Finally, we also analysed the emigration (called also out-migration) from the (pre-war) Odžak. It appeared the emigration was mainly of Croats. Out of 3,886 individuals who left Odžak and lived in 1997 outside Bosnia and Herzegovina, some 2,212 were Croats. The second largest group of migrants were Muslims (1,306). Some 64% of Croat migrants lived in countries outside the former Yugoslavia and some 36% in Croatia. Almost all Muslim migrants (98%) lived in countries outside the former Yugoslavia in 1997.

Similarly to Bosanski Šamac, the out-migration of Serbs and Others was minor compared with Croats and Muslims.

Table 13. Emigration from Odžak, 1991-1997

Ethnicity	FRY	Croatia	Other countries	Total
Serbs	106	9	63	178
Muslims	3	25	1278	1306
Croats	7	802	1403	2212
Others	35	29	126	190
TOTAL	151	865	2870	3886

Ethnicity	FRY	Croatia	Other countries	Total
Serbs	59.6	5.1	35.4	100.0
Muslims	0.2	1.9	97.9	100.0
Croats	0.3	36.3	63.4	100.0
Others	18.4	15.3	66.3	100.0
TOTAL	3.9	22.3	73.9	100.0

3.3 Final Conclusion

Summing up, two clear examples of ethnic cleansing have been shown in this report: Croats and Muslims largely disappeared from the Serb Šamac and from the Serb Odžak / Vukosavlje. Before the war in both these areas Croats and Muslims represented a considerable fraction of the actual population.

Using the 1991 population census and the 1997-98 OSCE voters register, we were able to conform the identity of 2,458 displaced persons (Tables 5b, 6b, 11b, and 12b) and 7,225 refugees (Tables 7 and 13) from the pre-war municipalities of Bosanski Šamac and Odžak. These numbers are minimum estimates of all those who fled during the war period and in 1997 still lived outside their 1991 place of residence. These minimum numbers do not include the population below age 18 years and all those who did not registered to vote.

ANNEX

**The Ethnic Composition in Bosnia and Herzegovina
in 1991 and 1997-98**

The Annex contains a set of maps showing the pre-war (1991) ethnic distribution in Bosnia and Herzegovina and the post-war (1997) ethnic composition of this population.

The results are based on the 1991 census population and on information from the 1997 and 1998 voter registers. As a rule, the figures from the 1997 voters register are shown. Figures for 1998 are only provided in case the 1997 data are not available due to changes in the municipal division of the country between 1997 and 1998². The figures are given in terms of post-war municipalities, i.e. are based on the municipal division as introduced in the Dayton Peace Agreement³. For the voters, place of registration to vote was taken as their place of residence in 1997-98. The population of voters should be seen as a sample and not as the exact figure of the post-war population size. Nevertheless, as at the municipal level the sample is large, the estimates obtained of population fractions (e.g. by ethnicity) are reliable.

Information on 1997-98 voters has been linked at the individual level with the census records. In this way we have assured that the voters with established links are real individuals who did live in Bosnia and Herzegovina in 1991. An overview of this part of the original BH population, which has been identified in the 1997-98 voters register, is presented in Table 1 below:

Table 1. The 1991 Population Identified in the 1997-98 Voters Register

	Serbs	Muslims	Croats	Others	ALL
Identified 1997/98	573 683	864 174	245 696	104 512	1 788 065
Of which:					
- in the same municipalities	407 280 71.0%	567 931 65.7%	179 605 73.1%	75 315 72.1%	1 230 131 68.8%
- in other municipalities	161 310 28.1%	154 328 17.9%	35 366 14.4%	16 097 15.4%	367 101 20.5%
- outside BH	5 093 0.9%	141 915 16.4%	30 725 12.5%	13 100 12.5%	190 833 10.7%

Note: Only persons with valid municipality codes (including Out-of-Country) have been considered

² Municipalities where the 1998 figures are provided instead of the 1997 ones, are marked with small asterisks (*) in Figure 1b.

³ An OSCE municipality conversion chart has been used (version as at 25.05.1998) for bridging the pre- and post-war municipal divisions. However, one municipality (Bužim) was established later in 1998 and is therefore not included in the conversion chart. Moreover, for a number of settlements there was no clear rule of classification, as it depended on the precise address of voters. Such settlements (including parts of Sarajevo and Mostar) had to be excluded from the analysis, with the exception of results shown in Figure 1b. Such areas are marked with an orange colour in Figures 1a and 2a.

As no data about population displacements is available for the war period (1992-1995), results presented in this Annex should be merely seen as an overall illustration of all war-related ethnic changes *sensu largo* and the conclusions should not be extrapolated to any particular period of time within the 1991-1997/98 frame.

This overview consists of two sets of maps. Figures 1a and 1b show the ethnic majority in municipalities in 1991 and 1997-98, respectively. Dark colours denote municipalities with an absolute majority (more than 50%) of one ethnic group (red - Serbs, green - Muslims, blue - Croats), light colours – relative majority (less than 50%, but still dominant and having at least 5% majority over the second largest group). Mixed colours denote municipalities with no clear domination of one ethnic group.

Figures 2a, 2b, 2c and 2d illustrate the population distribution by municipality in Bosnia and Herzegovina before the war, in 1991, showing absolute numbers of Serbs, Muslims, Croats and Others, respectively.

Finally, Figure 3 is a reference map of post-war municipalities and entities in BH. The respective municipal codes are explained in Table 2.

Regarding the maps, several remarks are worth mentioning:

- Map 1a indicates there were large areas in Bosnia and Herzegovina where Serbs, Muslims and Croats were in absolute majority in 1991. The Serbs lived mainly in the northwest and southeast of the country, the Muslims in the central part, middle east and northwest, and the Croats in the southwest and northeast of the country. Remarkably, in many other areas the ethnic composition was mixed and ethnic groups lived together. The ethnically mixed areas were located within the ethnically homogenous areas.
- Map 1b shows that by 1997 the ethnically mixed areas disappeared completely from the ethnic composition of Bosnia and Herzegovina. The 1997 ethnic composition of Bosnia and Herzegovina consisted of three ethnic majority areas: the absolute majority of Serbs (the northwest, northeast, and all east of BH), the absolute majority of Muslims (central BH and the north-west of BH), and the absolute majority of Croats (the south of BH).
- Striking is that the geographic location of the Serb majority strictly conforms to the area of Republika Srpska, and the location of the Muslim and Croat majority to the area of the Federation of Bosnia and Herzegovina. The Dayton line is drawn on Map 1b just by the borders of ethnic majorities.
- Maps 2a to 2d illustrate the actual residence of four major ethnic groups in Bosnia and Herzegovina in 1991. It is obvious that before the war the ethnic groups were spread all over the country and lived in almost all municipalities of Bosnia and Herzegovina. The geographic distribution of the ethnic groups likely changed between 1991 and 1997 as only large population movements would result in the new ethnic composition shown on Map 1b.

Figure 1a. Ethnic Majority in BH in 1991, Post-Dayton Municipalities

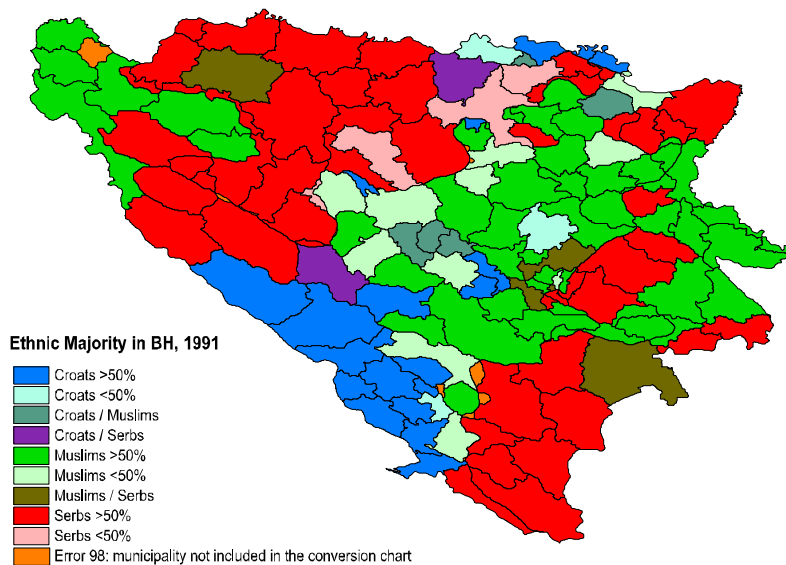
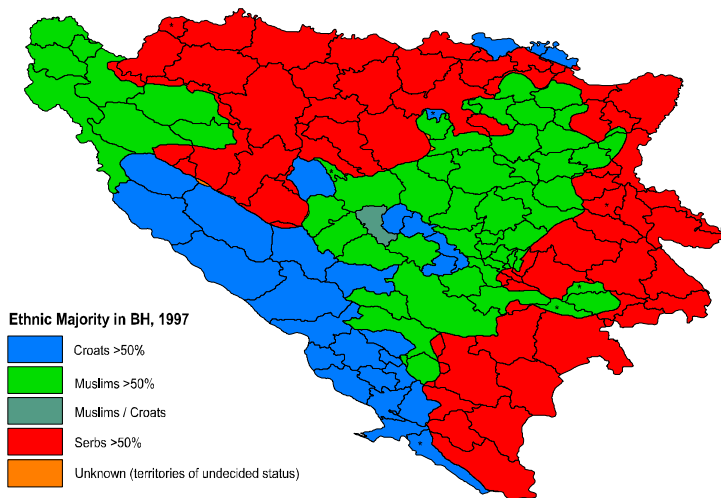


Figure 1b. Ethnic Majority in BH in 1997 / 98, Post-Dayton Municipalities



* Data for 1998

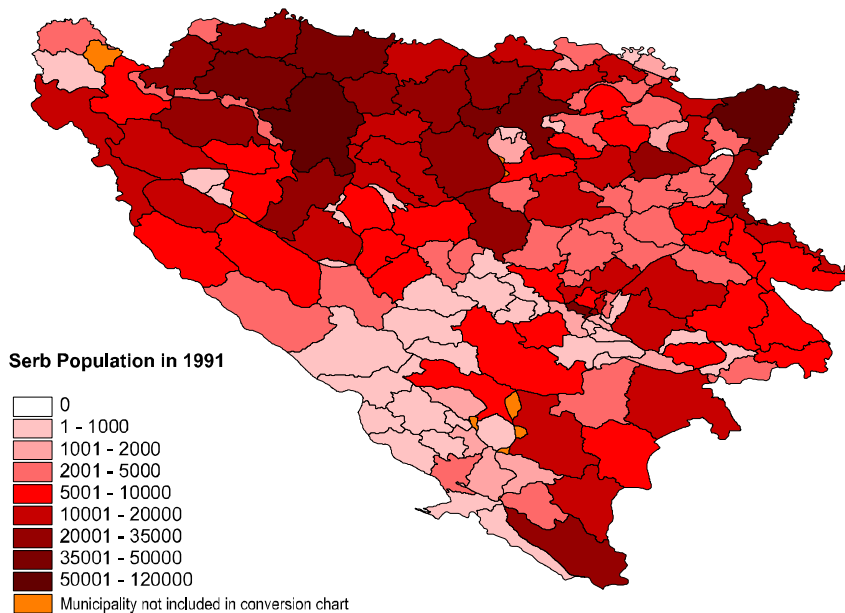
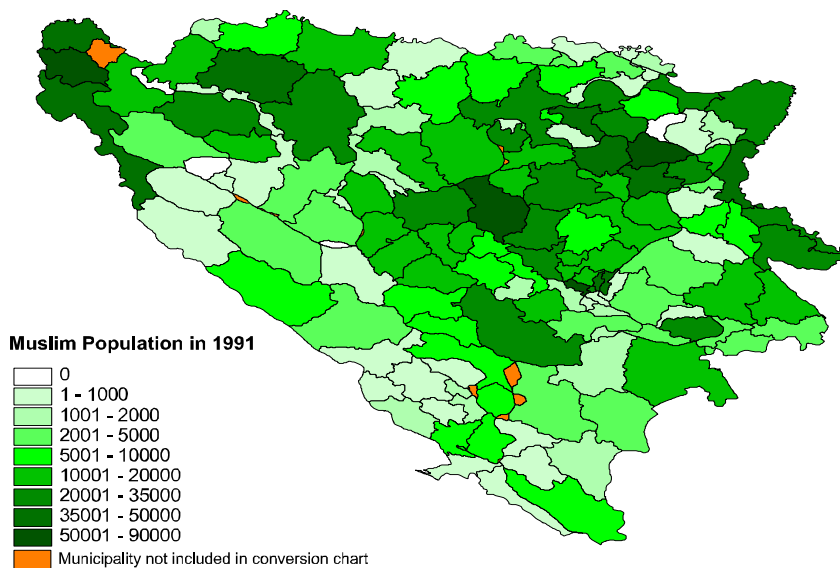
Figure 2a. Geographic Distribution of Serb Population in 1991, Post-Dayton Municipalities**Figure 2b.** Geographic Distribution of Muslim Population in 1991, Post-Dayton Municipalities

Figure 2c. Geographic Distribution of Croat Population in 1991, Post-Dayton Municipalities

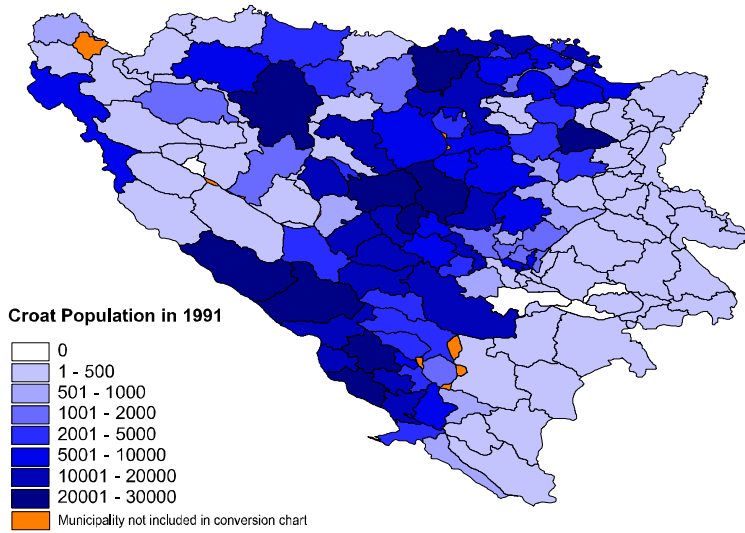


Figure 2d. Geographic Distribution of Others Population in 1991, Post-Dayton Municipalities

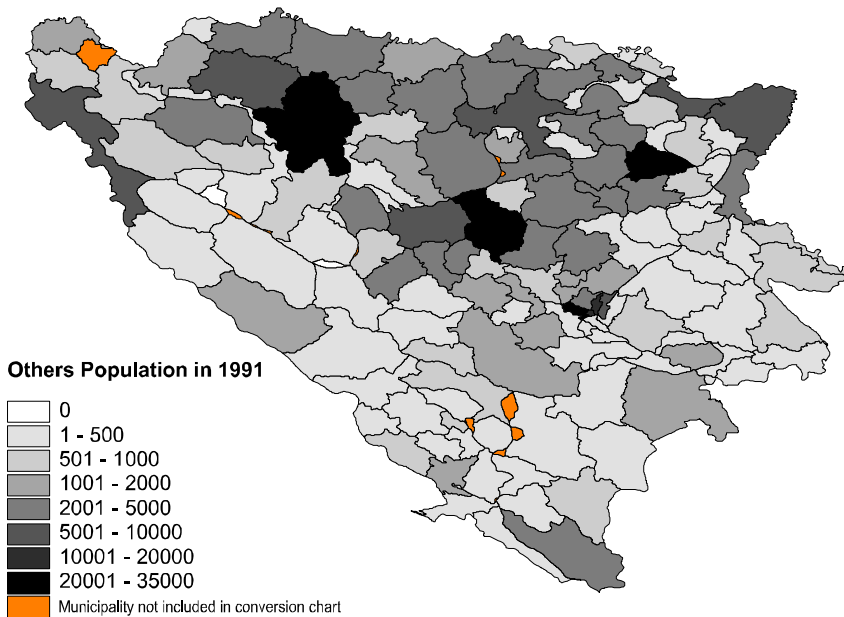
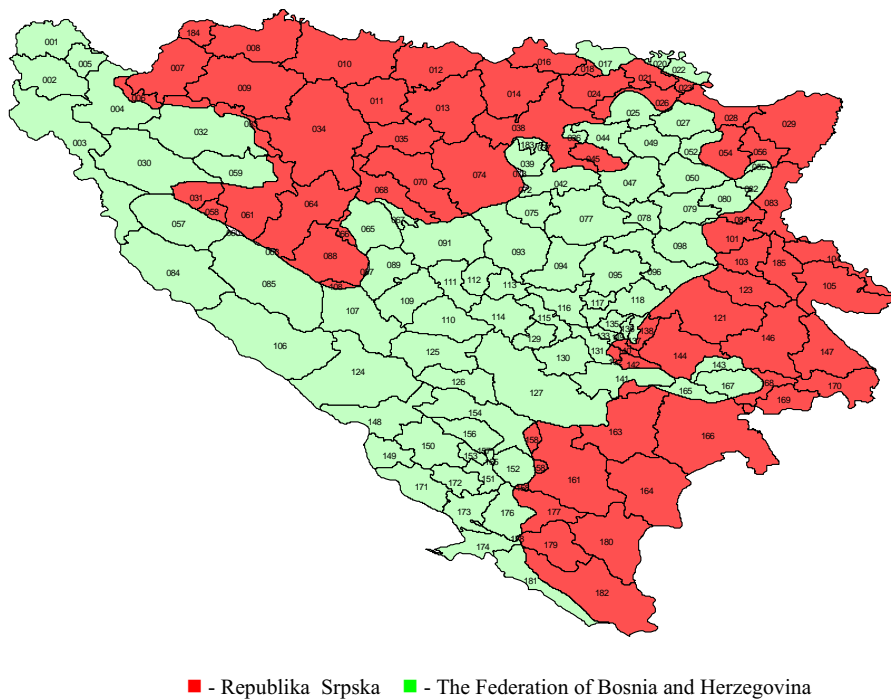


Figure 3. Municipalities and Political Entities in BH – Reference Map

For a list of municipality codes please refer to the table on the next page.

Table 2. Post-Dayton municipality codes

Code	Name	Entity	Code	Name	Entity
001	Velika Kladuša	FBiH	066	Jajce / Jezero	RS
002	Cazin	FBiH	067	Dobretići	FBiH
003	Bihac	FBiH	068	Skender Vakuf / Kneževo	RS
004	Bosanska Krupa	FBiH	070	Kotor Varoš	RS
005	Bužim	FBiH	074	Teslić	RS
006	Bosanska Krupa / Krupa na Uni	RS	075	Žepče	FBiH
007	Bosanski Novi / Novi Grad	RS	077	Zavidovići	FBiH
008	Bosanska Dubica / Kozarska Dubica	RS	078	Banovići	FBiH
009	Prijedor	RS	079	Živinice	FBiH
010	Bosanska Gradiška / Gradiška	RS	080	Kalesija	FBiH
011	Laktaši	RS	081	Kalesija / Osmaci	RS
012	Srbac	RS	082	Sapna	FBiH
013	Prnjavor	RS	083	Zvornik	RS
014	Derвента	RS	084	Bosansko Grahovo / Grahovo	FBiH
016	Bosanski Brod / Srpski Brod	RS	085	Glamoč	FBiH
017	Odžak	FBiH	088	Šipovo	RS
018	Odžak / Vukosavlje	RS	089	Donji Vakuf	FBiH
020	Domaljevac - Šamac	FBiH	091	Travnik	FBiH
021	Bosanski Šamac / Šamac	RS	093	Zenica	FBiH
022	Orašje	FBiH	094	Kakanj	FBiH
023	Orašje / Srpsko Orašje	RS	095	Vareš	FBiH
024	Modriča	RS	096	Olovo	FBiH
025	Gradačac	FBiH	098	Kladanj	FBiH
026	Gradačac / Pelagićevo	RS	101	Šekovići	RS
027	Rahić / Ravne (Brčko Federation)	FBiH	103	Vlasenica	RS
028	Brčko	RS	104	Bratunac	RS
029	Bijeljina	RS	105	Srebrenica	RS
030	Bosanski Petrovac	FBiH	106	Livno	FBiH
031	Bosanski Petrovac / Petrovac	RS	107	Kupres	FBiH
032	Sanski Most	FBiH	108	Kupres / Srpski Kupres	RS
033	Sanski Most / Srpskianski Most	RS	109	Bugojno	FBiH
034	Banja Luka	RS	110	Gornji Vakuf	FBiH
035	Čelinac	RS	111	Novi Travnik	FBiH
036	Doboj - Istok	FBiH	112	Vitez	FBiH
037	Doboj - Jug	FBiH	113	Busovača	FBiH
038	Doboj	RS	114	Fojnica	FBiH
039	Tešanj	FBiH	115	Kiseljak	FBiH
042	Maglaj	FBiH	116	Visoko	FBiH
044	Gračanica	FBiH	117	Breza	FBiH
045	Gračanica / Petrovo	RS	118	Ilijaš	FBiH
047	Lukavac	FBiH	121	Sokolac	RS
049	Srebrenik	FBiH	123	Han Pijesak	RS
050	Tuzla	FBiH	124	Tomislavgrad	FBiH
052	Čelić	FBiH	125	Prozor / Prozor-Rama	FBiH
054	Lopare	RS	126	Jablanica	FBiH
055	Teočak	FBiH	127	Konjic	FBiH
056	Ugljevik	RS	129	Kreševo	FBiH
057	Drvar	FBiH	130	Hadžići	FBiH
058	Drvar / Srpski Drvar	RS	131	Ilidža	FBiH
059	Ključ	FBiH	132	Ilidža / Srpska Ilidža	RS
061	Ključ / Ribnik	RS	133	Novi Grad Sarajevo	FBiH
064	Mrkonjić Grad	RS	135	Vogošća	FBiH
065	Jajce	FBiH	136	Centar Sarajevo	FBiH

Reference table of municipality codes - continued

Code	Name	Entity
137	Stari Grad Sarajevo	FBiH
138	Stari Grad Sarajevo / Srpski Stari Grad	RS
139	Novo Sarajevo	FBiH
140	Novo Sarajevo / Srpsko Novo Sarajevo	RS
141	Trnovo (FBiH)	FBiH
142	Trnovo (RS)	RS
143	Pale (FBiH)	FBiH
144	Pale (RS)	RS
146	Rogatica	RS
147	Višegrad	RS
148	Posušje	FBiH
149	Grude	FBiH
150	Široki Brijeg	FBiH
151	Mostar Jug	FBiH
152	Mostar Jugoistok	FBiH
153	Mostar Jugozapad	FBiH
154	Mostar Sjever	FBiH
155	Mostar Stari grad	FBiH
156	Mostar Zapad	FBiH
157	Mostar Central District	FBiH
158	Mostar / Srpski Mostar	RS
161	Nevesinje	RS
163	Kalinovik	RS
164	Gacko	RS
165	Foča	FBiH
166	Foča / Srbinje	RS
167	Goražde	FBiH
168	Goražde / Srpsko Goražde	RS
169	Čajniče	RS
170	Rudo	RS
171	Ljubuški	FBiH
172	Čitluk	FBiH
173	Čapljina	FBiH
174	Neum	FBiH
176	Stolac	FBiH
177	Stolac / Berkovići	RS
179	Ljubinje	RS
180	Bileća	RS
181	Ravno	FBiH
182	Trebinje	RS
183	Usora	FBiH
184	Kostajnica	RS
185	Milići	RS



**BASIC DEMOGRAPHIC CHARACTERISTICS
AND SOCIO-ECONOMIC STATUS
OF MISSING AND KILLED PERSONS
FROM THE MUNICIPALITY OF PRIJEDOR,
30.04 – 30.09.1992**

Ewa Tabeau

September 9, 2002



Summary of Results

This report presents statistics concerning persons from the municipality of Prijedor who were reported killed or missing from 30 April to 30 September 1992. The report was prepared by the demographic unit of the Office of the Prosecutor (OTP) for the case of the Prosecutor of the Tribunal vs. Milomir Stakić, Case Number IT-98-24. The author utilised three sources for data on those missing or killed: The International Committee of the Red Cross (ICRC) List of Missing Persons, *Knjiga Nestalih* of Prijedor (KN), and the Exhumations Database and Proof of Death Databases (EXH). The latter two databases were compiled by the OTP from documents concerning exhumations and Bosnian courts' Declarations of Death. The identities of all those listed in these documents were verified by comparing the names and data concerning the individual to the 1991 census conducted by the government of Yugoslavia. As a further check, the names of those listed as missing or dead were compared to the voter lists for the 1997 and 1998 elections in Bosnia, to ensure that no individual was incorrectly listed as missing or dead who had actually voted in either of these elections.

The following are the principal findings from the analysis of the data:

- The three sources together include 2,789 names.
- The individuals listed in the databases were compared to the names and other details of individuals in the 1991 census. If the individual was identified in the 1991 census, the name was then compared to voters lists compiled by the Organisation of Security and Co-operation in Europe (OSCE), Regional Office for Bosnia and Herzegovina, for the 1997 and 1998 elections. Any name that also appeared on one of these voter lists was then removed, since in such a case the individual had possibly¹ survived the conflict.
- We also compared the names on the lists of missing, exhumed or declared dead with each other and removed any duplicates, that is, any name that appeared in more than one of the three databases of those reported missing, exhumed or declared dead.
- The above-mentioned process reduced the original list of merged names (2,789) to a total of 1,731 unique individuals. These individuals were all identified in the 1991 census and their name did not appear on the 1997 or 1998 voter lists. At the same time, ICRC or KN had reported them as missing in 30.04-30.09.92, or they had been on a list of those exhumed with indications he or she was killed in 30.04-30.09.92, or declared by a court to have died in this period.
- This number of 1,731 names clearly understates the total number of persons who were killed in 1992 since undoubtedly some individuals who were killed were not reported missing by family members, no one obtained a certificate of death for them and their body has not been exhumed and identified. In order to provide some insight into the actual number of victims from Prijedor who were killed during this time period, the author utilised a recognised statistical tool for making such estimates (i.e. the capture-recapture method). The three databases have been used to produce a stochastic estimate of the total number of victims from Prijedor by using the capture-recapture method, which is further explained in the annex to this report. This method results in an estimate that some 2,190 persons from Prijedor were killed or went missing in 30.04-30.09.92.
- The vast majority of missing/killed persons from Prijedor were Muslims (1,651 persons out of 1,731, 95.4 % of all victims).
- The most affected age groups were from 20 to 49 years (1,313), and most victims were men (1,665).

¹ Inconsistent evidence may also indicate registration fraud.

- We however have also found children (77 individuals; age 0-18 years), women (65 persons), and elderly (61 persons; age 65+) among the victims.
- The number of victims from Prijedor was the largest among all municipalities in the Autonomous Region of Krajina in 1992, and those from Prijedor who went missing or got killed in 30.04-30.09.92 constituted the vast majority of all victims in 1992.

- We also studied the socio-economic status of those missing or killed, i.e. their educational attainment and occupational status.
- We found that persons with secondary or post-secondary level of education, especially Muslims, had higher risks of missing/killed than persons with lower education. However, also those with elementary education were characterised by relatively high risks of missing/killed. In addition to that, persons with the highest education did not always show the highest risks of missing/killed. Thus, the pattern found in our lists of missing/killed does not consistently indicate the existence of education-related targeting of the Prijedor population.
- Unlike the education - oriented targeting, an occupational status – related selection could be clearly seen. We found for all Non-Serbs, but most evidently for Muslims, that two uppermost categories on the occupational position, i.e. owners and self-employed with their aid, consistently showed the highest risks of missing/killed. Two lower categories, inactive and employees, consistently had the lowest risks of missing/death. Moreover, one can even speak about a systematic, regular increase in the risks of missing/killed associated with the socio-economic gradient in the occupational status. The risks for Muslims were the highest among all three Non-Serb ethnic groups, but the same patterns basically emerged also for Croats and Others. The results for men indicate essentially the same pattern, the risks being considerably higher due to the fact that the vast majority of victims from Prijedor were men.
- We also estimated differences in the risks of missing/killed by comparing the risks for a given group with the risks of occupationally inactive Others. Statistical significance of these differences was estimated as well.
- Relative risks of missing/killed Muslims were all statistically significant and the highest among all ethnic groups. The pattern obtained for Muslims consistently indicated a socio-economic targeting of this ethnic group with the occupational status as the targeting mechanism.
- Croats and Others were also affected groups in Prijedor and their risks of missing/killed were consistently the highest for those self-employed with aid and also those with secondary and post-secondary education. This result indicates some kind of targeting too, but for both SES variables the difference in risks of missing/killed between Croats and inactive Others was statistically insignificant suggesting comparable losses among these two ethnic groups.

1. Introduction

This report utilises three sources of information about missing and killed persons from the municipality of Prijedor who went missing or were killed in the period from 30 April to 30 September 1992. The major source for missing persons from Prijedor is the ICRC List of Missing Persons. Two more sources available to us were *Knjiga Nestalih* from Prijedor and the Exhumations and Proof of Death Databases established recently at the Office of the Prosecutor for the purpose of obtaining a better insight into the crimes committed in the Autonomous Region of Krajina (Sé bire, 2001)². The three sources are briefly summarised in Annex A1.

In Section 2, the numbers of victims found in each source are presented, the overlap between the sources is analysed and the three sources are used together to produce a stochastic estimate of the total number of victims from Prijedor. We also show basic demographic features of the Prijedor victims, such as their sex, age, and ethnicity.

Section 3 of this report concentrates on the socio-economic status of the victims by studying their educational attainment and occupational position.

2. Victims from Prijedor Absolute Numbers and Basic Distributions

2.1 Absolute Numbers

Using the three sources³ discussed in Annex A1, we identified the following total numbers of victims from the municipality of Prijedor (hereafter Prijedor), who were killed or disappeared in the period from 30 April to 30 September 1992⁴:

- ICRC: 1,063 (of the total of 1,168 ICRC records linked with the 1991 census for Prijedor)
- KNP: 1,088 (of the total of 1,953 KNP records linked with the 1991 census for Prijedor)
- EXH: 638 (of the total of 1,122 EXH records linked with the 1991 census for Prijedor)

Altogether the three sources add up to 2,789 individuals, all of which were matched with the 1991 population census. By linking with the census, the identities of 2,789 victims were confirmed. In the remainder of this section we analyse only those victims linked with the census and not all victims reported in the three sources. We do that to ensure the reliability of the analysis, and in particular to avoid any double counting of victims from different databases and exclude inconsistent records (e.g. records of missing or dead persons reported also as survivors in voters registers).

The total of 2,789 names comes from the three sources, which are independent but also overlapping. A person reported to ICRC as missing could be also listed in the *Knjiga Nestalih* from Prijedor, later the same persons could be identified in exhumations, and a request to declare the individual dead could be

² Nicolas Sé bire, 2001, "Exhumations and Proof of Death, Autonomous Region of Krajina". OTP Report.

³ The source excluded from the analysis was MAG, which for Prijedor contained mainly the same information as the ICRC and KN lists of missing. There were only 23 records in MAG relevant to STAKIC that were **not overlapping** with ICRC, KNP, and EXH lists. Because of the repeated records and for simplicity of calculations (i.e. the capture-recapture method), we decided not to include MAG in the analysis.

⁴ All totals discussed in this section do not contain inconsistent records, i.e. persons identified on the lists of dead and at the same time on the 1997/98 electoral lists.

made at the municipal court. To avoid any possibility of double counting, we removed duplicates from the list of merged sources and arrived at the total number of **1,731 unique victims** (only persons identified in 1991 population census were considered, see Figure 1 below):

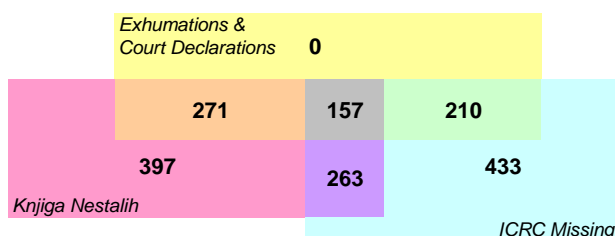
The overlap of sources was the following:

- ICRC and KNP: 263 individuals
- ICRC and EXH: 210
- KNP and EXH: 271
- ICRC, KNP, and EXH: 157

The unique parts of the three sources are given below:

- ICRC: 433 individuals
- KNP: 397
- EXH: 0

Figure 1. Overview of Sources for Verified Victims from Prijedor Municipality



The total number of victims from Prijedor (1,731) comes from all three sources together and is checked for duplicates and inconsistent records. However, it is reasonable to believe that the actual number of victims is higher than this figure since some individuals, particularly where entire families were killed, may not have been reported missing, no one may have sought a declaration of death and the corpses may not have been exhumed and identified, particularly where there are no close family members remaining to make the identification. Finally, the matching process is imperfect and a number of records relevant to the STAKIĆ case have not been linked with the census (usually about 20% records remain unlinked).

In order to present a closer approximation of the actual population loss, we applied the so-called capture-recapture technique⁵ to stochastically estimate the victims from Prijedor (Bishop, Fienberg and Holland, 1975). The method allows for computing both the recorded and the unrecorded numbers of events (i.e. missing and killed) using several quasi-independent sources. The ICRC List of Missing Persons was considered to be the most systematically taken and broadest among the three sources at our disposal. In this case, the variance estimator for the capture-recapture estimate of the Prijedor victims can be obtained as suggested by Bishop, Fienberg and Holland (1975; p. 241, eq. 6.4-20). All relevant formulas are included in Annex A2.1 to this report.

⁵ The method was developed in the 1940s for estimating the size of wildlife populations. Since then it has been often used to estimate the scale of weakly measurable processes such as the prevalence of drug use, HIV infection, or prostitution. Examples of publications with applications of the capture-recapture method can be found in *Political Killings in Kosova/Kosovo. March-June 1999* (see Annex A2.1 for details).

The result of the capture-recapture method is an estimate that the actual number of those missing or killed from the municipality of Prijedor from 30.04.92 to 30.09.92 totalled 2,190 victims, with 95% confidence interval ranging from 2,115 to 2,265 individuals. Our sample of the 1,731 identified victims constitutes about 79 % of the stochastically estimated total.

2.2 Ethnicity, Age, and Sex and of the Victims

The total 1991 population of Prijedor municipality reported in official sources equaled 112,543, of which 56,092 individuals were men, and 56,451 were women. After eliminating duplicates (140 records were excluded), we ended with a population of 112,403 unique records of which 56,019 were men and 56,384 were women. This population was exposed to going missing and being killed by the perpetrators, in this case by Bosnian Serbs.

In this section we take the perspective of the 1991 place of residence of the victims and analyze all those victims who in 1991 lived in the municipality of Prijedor. By relating the numbers of victims originating from Prijedor to the 1991 population of Prijedor, we can produce measures of the risk of being killed or going missing for the 1991 Prijedor population⁶.

Table 1. Victims from Prijedor Municipality, 30.04-30.09.92

1991 Census Population -Adjusted	Count	Missing or Dead, 30.04-30.09.92	Count	Deaths per 100,000 1991 Population
1991 Census Population -Adjusted	112,403	Missing or Dead, 30.04-30.09.92	1,730	1539.10
- Non-Serbs	64948	- Non-Serbs	1,727	2659.05
- Owners, Self-Employed with Help	8335	- Owners, Self-Employed with Help	169	2027.59
- Children (0-18 years)	30803	- Children (0-18 years)	77	249.98
- Elderly (65+ years)	7735	- Elderly (65+ years)	61	788.62
- Women	56384	- Women	65	115.28

Note: The official population size in 1991, 112,543 records, contains 140 duplicates

Table 1 summarizes the major findings of this section. The total number of 1,731 includes 1,645 deaths of civilians and 86 of (ABH) soldiers. In relative terms (i.e. after relating it to a reference population), the overall total (1,731) is equivalent to about 1,539 deaths per 100,000 population in Prijedor in 1991. Note that the latest (1991) pre-war death rate of overall mortality in Bosnia and Herzegovina was 720 deaths per 100,000 population⁷. The conflict-related mortality of the Prijedor population in 30.04-30.09.92, i.e. an excess mortality that would not occur under peace, was thus equal as much as 214 % of the 1991 level. It is striking that the number of Non-Serb victims was 1,727, which was 99.83 % of all excess deaths in this period (1,731). The death rate for Non-Serbs, i.e. about 2,659 deaths per 100,000, corresponds to 369 % of the pre-war 1991 overall rate for Bosnia.

The second highest loss reported in Table 1 is for owners and self-employed together with their assistance. This population group is defined on the basis of the socio-economic status (SES) of those

⁶ Note that place of death is available in our sources as the place where victims were last seen (i.e. as place of disappearance), or as location of mass graves, or place of death (or disappearance) indicated to court by relatives of victims. A vast majority of places are consistently reported to be in Prijedor, or as surroundings of Prijedor.

missing or killed. It includes two upper classes of the SES structure: persons who owned a firm, shop etc. and free professions and farmers with their co-workers (i.e. families and relative of the self-employed). The death rate for owners and self-employed with their assistance equaled 2,028 per 100,000 population and constituted approximately 282 % of the 1991 mortality rate for Bosnia.

The usually most protected population groups, i.e. children, elderly and women, appeared on our lists of dead too, to a much lesser extent though than Non-Serbs or upper SES individuals. The number of children from birth to 18 years of age that died in the conflict-related circumstances in the STAKIĆ-relevant period was 77 (on average about 250 children per 100,000 population of the same age). The number of women killed or disappeared in 1992 was 65, that is about 115 per every 100,000 women living in Prijedor in 1991. There were also in total 61 deaths of those aged 65 years or more (the death rate was approximately 789 deaths per 100,000 census population of respective age). Death rates for the elderly indicate that death was very frequent among this population group, which may be related to the weak spatial mobility of the elderly who were unable to quickly move out from the conflict-affected area.

Below we discuss basic demographic distributions of the victims more specifically. Table 2 is devoted to the ethnicity of victims and Table 3 to their age distribution. Note that almost all victims reported in this section died or disappeared within the Prijedor municipality or in the close neighborhood of Prijedor. The last table in this section, Table 4, provides figures of conflict-related mortality in a larger area, to which Prijedor belonged in 1992. Table 4 makes it possible to compare the scale of mortality in Prijedor with mortality in its surroundings.

Table 2. Victims from Prijedor Municipality, 30.04-30.09.92, by Ethnicity

Ethnicity	Total 1991	Died 1992	Deaths per 100,000
		30.04-30.09	1991 Population
Muslims	49281	1651	3350.18
% in All	43.8	95.4	
Croats	6303	23	364.91
% in All	5.6	1.3	
Others	9364	53	566.00
% in All	8.3	3.1	
Non-Serbs	64948	1727	2659.05
% in All	57.8	99.8	
Serbs	47455	4	8.43
% in All	42.2	0.2	
All Ethnicities	112403	1731	1539.99

Note: Reference population is ethnicity-specific

⁷ Statistički Godišnjak, Republike Bosne i Hercegovine, 1992. Državni Zavod za Statistiku, Sarajevo, svibanj 1994. Page 42.

Table 2 shows that most victims were of the Muslim ethnicity (1,651, about 95.4 % of all victims). Croats, Yugoslavs and remaining ethnic groups (excluding Serbs) were less frequently reported as victims (76, some 4.4 %). The mortality rate for Muslims (3,350) several times exceeded the 1991 rate of overall mortality for Bosnia and Herzegovina (720), the ratio of the two rates was 465 per cent. The rates for Croats and Others were lower and equalled 365 and 566 deaths per 100,000 relevant population (they represented 51 and 79 % of the 1991 overall rate for BH).

Figure 2. Victims from Prijedor Municipality, 30.04-30.09.92, by Age Rates per 100,000 Census Population in Prijedor

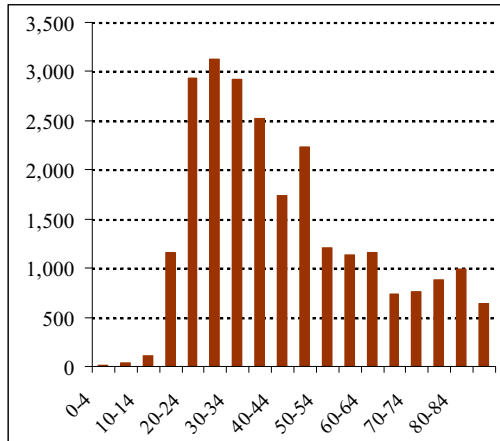
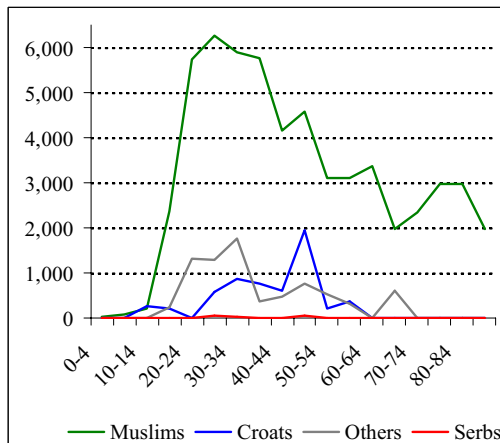


Figure 3. Victims from Prijedor Municipality, 30.04-30.09.92, by Age and Ethnicity Rates per 100,000 Ethnicity-Specific Census Population in Prijedor



Figures 2 and 3 illustrate the age distribution of the victims. In Figure 2 all ethnicities are presented jointly. Figure 3 shows the mortality age patterns of each ethnic group separately. The difference

between these two presentations is the reference population used in the calculation of rates. In Figure 1 the total (age-specific) population of Prijedor is used as reference, in Figure 2 the reference population is (age- and) ethnicity-specific. Thus, mortality of Muslims is related to the 1991 Muslim population, Serbs' mortality in relation to the 1991 Serb population and so on.

The pattern shown in Figure 2 and Table 3 allows us to distinguish four classes of death rates:

(a) death rates of children and youth: relatively low rates, especially between 0 and 14 years, clearly higher rates for the youth at age 15 to 19 years (about 1,160 deaths per 100,000), the years of life lost⁸ are however still substantial in this sub-population,

(b) death rates of young adults: obviously the highest rates among the whole population, this class includes age groups from 20 to 49 years with the maximum seen at age 25-29 years (some 3,126 deaths per 100,000),

(c) death rates of older adults: death rates for older adults at age from 50 to 64 years are the second highest in the population and are slightly higher than 1,100 deaths per 100,000, less variation in the rates is striking,

(d) death rates of the elderly: death rates of those at age 65 years or older are approximately from 600 to 1,000 deaths per 100,000, this level is the third highest and should be considered as relatively high.

The ethnic composition of the age-specific rates (Figure 2) is consistent with the pattern shown in Table 2, thus the Muslim victims are the most frequently seen among all ethnic groups, and Non-Serb victims dramatically dominate all deaths.

Figure 3 shows the age profiles of each ethnic group separately. These ethnicity-specific patterns clearly reflect the overall age pattern discussed above for all ethnic groups jointly. Note that the rates for Muslims are extremely high, for practically all age groups from 15-19 onwards the Muslim rates are higher than 2,000 deaths per 100,000 (which is almost three times the 1991 overall death rate for Bosnia and Herzegovina). The highest rates, obtained for the age groups 20-49 years (approximately 4,000 to 6,000 deaths per 100,000) are about six to eight times higher than the overall rate for Bosnia in 1991.

Finally, it must be noted that the age patterns discussed above are all dramatically different from mortality age patterns observed in contemporary population living under peace. In such populations most deaths occur due to old age. The ageing-related increase in mortality rates develops quickly from age of approximately 40-44 years until the highest attainable age (about 124 years). Considerable numbers are also seen for infants and around age of 20-24 years (the so-called accident hump). The figures we presented for Prijedor show no similarity to the regular pattern and confirm the extraordinary character of these population losses.

⁸ Those who die young could have lived longer, for instance as long as the whole population lives. The life duration of a population is expressed quantitatively as the life expectancy at birth, a concept that is widely known in demography and other social sciences. The difference between someone's age at death and the life expectancy can be seen as the lost years of life. The younger the deceased the higher the difference, and the larger number of life years lost.

Table 3. Age Distribution of Victims from Prijedor, 30.04-30.09.92

Age 1991	Died 30.04-30.09.92		Total 1991	Deaths per 100,000
	Count	Percent		1991 Population
0-4	1	0.06	6848	14.60
5-9	3	0.17	8231	36.45
10-14	9	0.52	8214	109.57
15-19	110	6.35	9479	1160.46
20-24	284	16.41	9683	2932.98
25-29	307	17.74	9820	3126.27
30-34	263	15.19	9007	2919.95
35-39	217	12.54	8587	2527.08
40-44	124	7.16	7137	1737.42
45-49	118	6.82	5292	2229.78
50-54	88	5.08	7260	1212.12
55-59	79	4.56	6986	1130.83
60-64	66	3.81	5699	1158.10
65-69	25	1.44	3374	740.96
70-74	14	0.81	1838	761.70
75-79	11	0.64	1250	880.00
80-84	8	0.46	804	995.02
85-89	3	0.17	469	639.66
Unknown	1	0.06	2425	41.24
Total	1731	100.00	112403	1539.99

The last table discussed in this section is Table 4. It illustrates the 1992 victims from the Autonomous Region of Krajina (ARK) in 1992. The period covered in Table 4 is the entire year of 1992, somewhat longer than the five months from 30.04.92 to 30.09.92. Prijedor belonged geographically to ARK and the conflict in Prijedor was part of the events occurring in ARK in 1992. ARK-1992 is therefore a relevant and important context for comparisons of conflict-related mortality in Prijedor with similar mortality in other municipalities in ARK.

The victims included in Table 4 were counted from three sources: the ICRC list of missing persons (1998 edition) and exhumations and court rulings databases of OTP. Knjiga Nestalih was not used for Prijedor. Thus, the total for Prijedor is likely to be slightly higher for 1992.

In Table 4, four municipalities show exceptionally high figures: Prijedor with 1,747⁹ deaths, Ključ (377), Sanski Most (283) and Kotor Varoš (207). If compared with the 1991 overall mortality rate for Bosnia and Herzegovina the respective ratios are as follows: Prijedor - 215.87 %, Ključ - 140.31 %, Sanski Most - 65.25 %, and Kotor Varoš - 78.18 per cent. The rate for Prijedor is the highest in the entire region of ARK. One can also see that the vast majority of victims from Prijedor went missing or got killed in the period from 30 April to 30 September 1992.

⁹ Note that that the total for Prijedor mentioned in Table 4 is slightly higher than our total of 1,731 deaths. The records relevant to ARK covered a longer period, namely the entire year of 1992, and were obtained from different sources.

**Table 4. 1992 Victims from Prijedor Compared with 1992 Victims from ARK
Death Rates pre 100,000 Population, By Municipality of Residence in 1991**

Municipality		Total 1991	Deaths	Deaths per 100,000 1991 Population
Banja Luka	Count	195126	16	8.20
	%	20.0	0.5	
Bihać	Count	70607	134	189.78
	%	7.2	4.5	
Bos Dubica	Count	31538	3	9.51
	%	3.2	0.1	
Bos Gradiška	Count	59907	10	16.69
	%	6.1	0.3	
Bos Krupa	Count	58227	31	53.24
	%	6.0	1.0	
Bos Novi	Count	41609	63	151.41
	%	4.3	2.1	
Bos Petrovac	Count	15586	20	128.32
	%	1.6	0.7	
Čelinac	Count	18669	7	37.50
	%	1.9	0.2	
Donji Vakuf	Count	24533	28	114.13
	%	2.5	0.9	
Jajce	Count	44974	29	64.48
	%	4.6	1.0	
Ključ	Count	37317	377	1010.26
	%	3.8	12.5	
Kotor Varoš	Count	36774	207	562.90
	%	3.8	6.9	
Mrkonjić Grad	Count	27332	4	14.63
	%	2.8	0.1	
Prijedor	Count	112403	1747	1554.23
	%	11.5	58.0	
Prnjavor	Count	46994	1	2.13
	%	4.8	0.0	
Sanski Most	Count	60238	283	469.80
	%	6.2	9.4	
Skender Vakuf	Count	19345	4	20.68
	%	2.0	0.1	
Šipovo	Count	15535	1	6.44
	%	1.6	0.0	
Teslić	Count	59766	45	75.29
	%	6.1	1.5	
Total	Count	976480	3010	308.25
	%	100	100	

3. Educational Attainment, Occupational Activity and Ethnicity of Missing and Killed Persons from Prijedor 30.04-30.09.92

This section discusses the statistical relationship between the socio-economic status of the Prijedor population (hereafter: SES) and their risk of going missing or being killed (hereafter: MISSING) during the period 30.04-30.09.92. The socio-economic status was measured by using two variables: educational attainment (hereafter EDU) and occupational status (hereafter OCCU), both obtained from the 1991 census questionnaire. Below, for each SES variable we firstly show the empirical fraction of those missing and killed in the 1991 population of Prijedor municipality. This allows us to identify certain SES patterns among missing and killed persons. Secondly, we verify these patterns by estimating relative risks of going missing or being killed, and their respective significance levels, for SES variables and all ethnic groups. Logistic regression models are used as the statistical tool of estimation.

The census question underlying the operationalisation of educational attainment was related to the number of school years completed by the respondent. The census interviewers assigned responses to this question into one of 10 possible answers mentioned in the questionnaire. Later we re-coded the original responses into the following categories: (1) no education at all, (2) incomplete elementary school, (3) elementary school, (4) middle school (i.e. secondary education), (5) higher or university education (i.e. post-secondary), (6) in school (i.e. continuing education), and (7) missing values. The categories (6) and (7) were excluded from the analysis.

Occupational status was defined on the basis of two census questions combined in one variable. The questions were the following:

- occupational activity (ZAN: active vs. various categories of inactive; question answered by all respondents)
- occupational position (PZAN: employees vs. owners, self-employed, and their aid; question answered only by those professionally active)

The variable made of the two above-mentioned questions is a measure of occupational status of those professionally active as well as those inactive. It allowed us to classify the population among the following five categories: (1) inactive, (2) employees, (3) owners of a firm or a private store or shop, (4) self-employed persons (including farmers) working on their own or with assistance of other household members, (5) household members giving assistance to (i.e. helping) self-employed. The variable OCCU was obtained by combining all original responses on PZAN, with one common code of being inactive taken from ZAN¹⁰.

The missing/killed persons studied, were those listed in the ICRC List of Missing Persons, version 4 1998, *Knjiga Nestalih* of Prijedor, and OTP Exhumations and Court Rulings Databases. In all analyses only the persons matched with the 1991 census were analysed. All persons included in the analyses were required to be 18 or more years of age, which was dictated by the need of excluding those who were still taking education in 1991 and those not yet allowed to work.

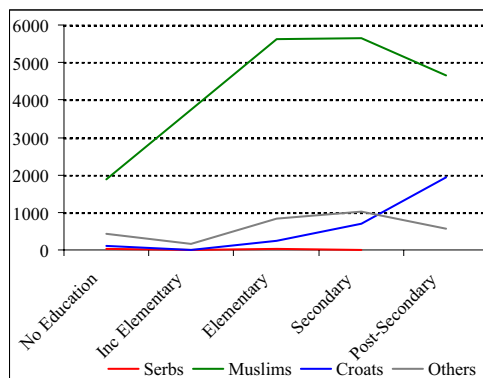
In the municipality of Prijedor there were in total 1,666 men and 65 women, who went missing or got killed from 30 April to 30 September 1992. The 1991 population of Prijedor consisted of 56,019 valid records¹¹ for men and 56,384 for women. As mentioned before, the age of the population has been

¹⁰ A number of persons who reported themselves as inactive also indicated themselves as being active, especially housekeepers, pupils or students made this type of double statement of occupational activity. For such persons we took their response on PZAN as superior to that on ZAN. In other words, we coded them as active and neglected their inactivity.

¹¹ The numbers quoted exclude duplicates. Generally, a valid record is the one that is complete in terms of information needed for a particular analysis. If for instance ethnicity is not available for a person, such a person

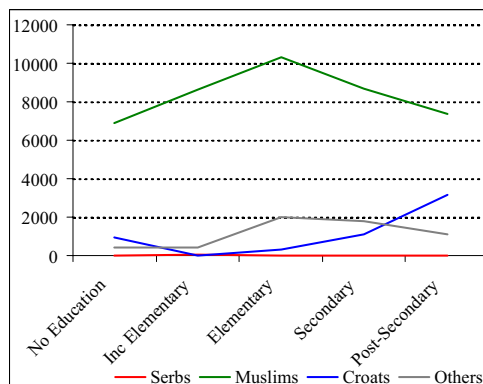
restricted to those at age 18 or more years. This restriction ensured that persons attending schools and those too young to work were excluded from the analysis. Some persons aged 18 years or more were found who still continued education but the number of these persons was low and could be neglected. The total 18+ population of Prijedor municipality amounted to 83,518 individuals, of which 41,361 were men and 42,157 were women in 1991.

**Figure 4a. Rates of Missing/Killed Persons from Prijedor, 30.04-30.09.92
By Ethnicity and Education (age 18+)**



Note: Rates express Missing/Deaths per 100,000 1991 Population 18+

**Figure 4b. Rates of Missing/Killed Men from Prijedor, 30.04-30.09.92
By Ethnicity and Education (age 18+)**



Note: Rates express Missing/Deaths per 100,000 1991 Population 18+

cannot be included in the analysis where ethnicity is studied. Thus, the total number of valid records is not necessarily identical in all types of analysis and can be different from the same total available from official sources.

**Table 5a. Missing/Killed Persons from Prijedor, 30.04-30.09.92
By Ethnicity and Education (age 18+)**

Variable	Ethnicity	No Education	Incomplete Elementary	Elementary	Secondary	Post-Secondary	Unknown	Total
Died 18+	Serbs	0	2	0	2	0	0	4
	Muslims	94	258	496	695	57	9	1609
	Croats	1	0	3	12	5	0	21
	Others	2	1	10	34	4	1	52
	Total	97	261	509	743	66	10	1686
1991 Population 18+	Serbs	6406	6852	7695	13253	2142	591	36939
	Muslims	4977	6886	8816	12301	1226	731	34937
	Croats	839	949	1199	1725	258	53	5023
	Others	463	577	1193	3308	692	386	6619
	Total	12685	15264	18903	30587	4318	1761	83518
Deaths per 100,000 Population	Serbs	0	29	0	15	0	0	11
	Muslims	1889	3747	5626	5650	4649	1231	4605
	Croats	119	0	250	696	1938	0	418
	Others	432	173	838	1028	578	259	786
	Total	765	1710	2693	2429	1528	568	2019

**Table 5b. Missing/Killed Men from Prijedor, 30.04-30.09.92
By Ethnicity and Education (age 18+)**

Variable	Ethnicity	No Education	Incomplete Elementary	Elementary	Secondary	Post-Secondary	Unknown	Total
Died 18+	Serbs	0	2	0	2	0	0	4
	Muslims	74	240	488	687	56	9	1554
	Croats	1	0	2	12	5	0	20
	Others	1	1	10	31	4	1	48
	Total	76	243	500	732	65	10	1626
1991 Population 18+	Serbs	1173	3104	4206	8045	1357	310	18195
	Muslims	1075	2780	4719	7889	760	354	17577
	Croats	104	381	600	1067	159	23	2334
	Others	224	237	499	1729	364	202	3255
	Total	2576	6502	10024	18730	2640	889	41361
Deaths per 100,000 Population	Serbs	0	64	0	25	0	0	22
	Muslims	6884	8633	10341	8708	7368	2542	8841
	Croats	962	0	333	1125	3145	0	857
	Others	446	422	2004	1793	1099	495	1475
	Total	2950	3737	4988	3908	2462	1125	3931

The number of missing/killed persons at age 18+ equalled respectively 1,626 men and 20 women. It is obvious that the Prijedor male population of missing persons can be studied with most credibility.

An indicator characterising the missing/killed persons population in relative terms is the rate of missing/killed persons in the 1991 census population (after dividing by 1,000, the rate becomes a proportion of missing/killed in the 1991 population). Figure 4a shows the education-specific rate by ethnicity for men and women jointly, Figure 4b shows the same rates for men only.

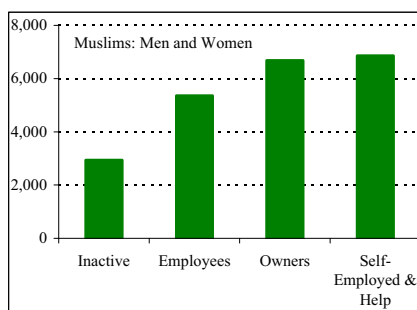
The proportions of missing Muslims (men and women) from Prijedor have clearly elevated levels on the education categories 3 (elementary), 4 (secondary) and 5 (post-secondary), see Figure 4a and Table 5a. The respective proportions are approximately 5.6, 5.7 and 4.6 per cent. Persons with "no education" or "incomplete elementary education" are characterised by lower levels of the risk of missing/killed. One more finding of the same type is that Croats from Prijedor show higher proportions of missing/killed on the three upper categories of the education attainment (elementary EDU: 0.3%, secondary EDU: 0.7%, and post-secondary EDU: 1.9%). Also Others from Prijedor show a similar pattern of increased levels in the proportion of missing/killed associated with higher classes of the educational attainment (elementary EDU: 0.8%, secondary EDU: 1.0%, post-secondary EDU: 0.6%). The fractions for Croats and Others are clearly lower than the fractions for Muslims.

Summing up, persons with secondary or post-secondary level of education, especially Muslims, have higher risks of missing/killed than persons with lower education. However, also those with elementary education are characterised by relatively high risks of missing/killed. In addition to that, persons with the highest education do not always show the highest risks of missing/killed. The results obtained for men confirm the findings discussed above for both sexes jointly.

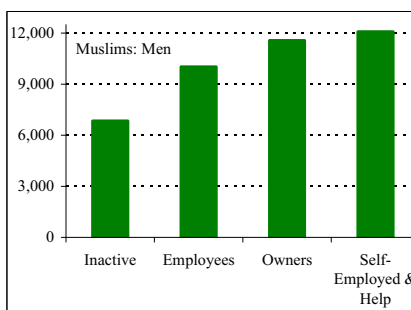
Thus, the pattern found in our list of missing/killed does not consistently indicate the existence of education-related targeting of the Prijedor population.

The second SES variable studied here is the occupational status of the victims (see Figure 5 and Tables 6a and 6b below).

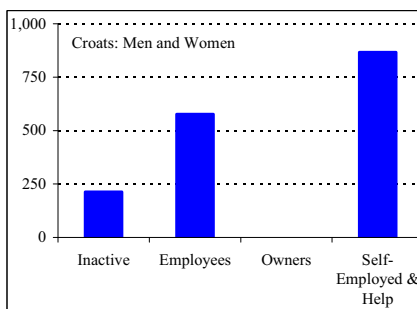
**Figure 5. Rates of Missing and Killed Persons from Prijedor, 30.04-30.09.92
Age 18+, By Occupational Status**



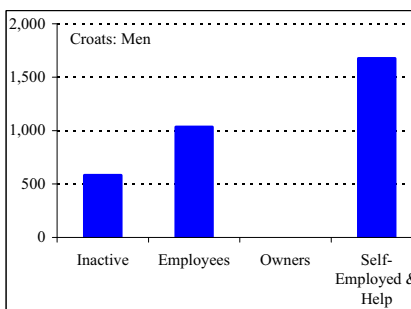
Note: Deaths per 100,000 1991 Population 18+



Note: Deaths per 100,000 1991 Population 18+



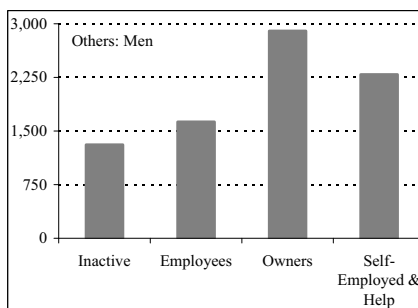
Note: Deaths per 100,000 1991 Population 18+



Note: Deaths per 100,000 1991 Population 18+



Note: Deaths per 100,000 1991 Population 18+



Note: Deaths per 100,000 1991 Population 18+

It is unquestionable that for all Non-Serbs two uppermost categories on the occupational status, i.e. owners and self-employed with their aid, consistently show the highest risks of missing/killed. Two lower categories, inactive and employees, consistently have lowest risks of missing/death. It is also clear that a systematic increase in the risk of missing/killed is associated with the socio-economic gradient in occupational status. The risks for Muslims are the highest among all three Non-Serb ethnic groups. The results for men indicate basically the same pattern, their risks are considerably higher though, due to the fact that the vast majority of victims from Prijedor were men.

**Table 6a. Missing and Killed Persons from Prijedor, 30.04-30.09.92
Age 18+, By Occupational Status**

Variable	Ethnicity	Inactive	Employees	Owners	Self-Employed	Help to Self Employed	Unknown	Total
Died 18+	Serbs	0	4	0	0	0	0	4
	Muslims	268	1114	32	110	13	72	1609
	Croats	4	14	0	3	0	0	21
	Others	11	33	2	3	1	2	52
	Total	283	1165	34	116	14	74	1686
1991 Population 18+	Serbs	10019	21395	372	2741	177	2235	36939
	Muslims	9133	20786	479	1657	136	2746	34937
	Croats	1875	2426	38	316	30	338	5023
	Others	1516	4023	144	218	16	702	6619
	Total	22543	48630	1033	4932	359	6021	83518
Deaths per 100,000 Population	Serbs	0	19	0	0	0	0	11
	Muslims	2934	5359	6681	6639	9559	2622	4605
	Croats	213	577	0	949	0	0	418
	Others	726	820	1389	1376	6250	285	786
	Total	1255	2396	3291	2352	3900	1229	2019

**Table 6b. Missing and Killed Men from Prijedor, 30.04-30.09.92
Age 18+, By Occupational Status**

Variable	Ethnicity	Inactive	Employees	Owners	Self-Employed	Help to Self Employed	Unknown	Total
Died 18+	Serbs	0	4	0	0	0	0	4
	Muslims	250	1082	31	107	13	71	1554
	Croats	4	13	0	3	0	0	20
	Others	10	31	2	2	1	2	48
	Total	264	1130	33	112	14	73	1626
1991 Population 18+	Serbs	3801	11294	210	1407	62	1421	18195
	Muslims	3648	10796	268	943	50	1872	17577
	Croats	689	1257	20	167	12	189	2334
	Others	765	1904	69	124	7	386	3255
	Total	8903	25251	567	2641	131	3868	41361
Deaths per 100,000 Population	Serbs	0	35	0	0	0	0	22
	Muslims	6853	10022	11567	11347	26000	3793	8841
	Croats	581	1034	0	1796	0	0	857
	Others	1307	1628	2899	1613	14286	518	1475
	Total	2965	4475	5820	4241	10687	1887	3931

In order to test the significance of the empirical patterns discussed above, we estimated a logistic regression models that made it possible to us measure relative risks of going missing or being killed, and significance levels of these risks, by occupational status. The model was formulated for the risk of missing/killed, ethnicity and occupational status.

Logistic regression allows us to estimate the risks of missing/killed and the differences in these risks by ethnicity and SES variables (Hutcheson and Sofroniou, 1999; see also Annex). The estimation usually takes the risk for one pre-selected population group, such as for instance Others, occupationally “inactive”, as the reference.

Several logistic regression models have been estimated in this study, but only the interaction effects models are taken for the discussion below (Figure 6, Table 7). These models are essential for showing the joint effect of belonging to a particular ethnic group and having a particular category of occupational status at the same time.

The $\exp(\beta)$ parameters are the interaction effects of ethnicity and occupational status with respect to the odds of being missing/killed versus non-missing/non-killed and taking occupationally inactive Others as the reference group.

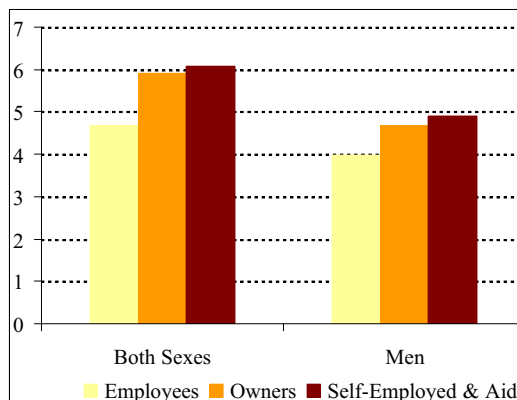
For Muslims from Prijedor all effects (i.e. $\exp(\beta)$) are statistically significant. For Croats, only the effect for employees is significant. Generally, we can therefore speak about a statistically significant pattern of targeting obtained for Muslims whose risk, as shown in Table 7 and Figure 6, are all several times higher than the risk for the reference category of inactive Others. Moreover the risks for Muslims clearly increase as one moves up the occupational status. This finding is clear for both sexes together and also for men.

The odds of missing to non-missing occupationally inactive Others were approximately 0.0121 (about 12 missing/killed inactive Others per 1000 non-missing inactive Others). Muslim employees had the $\exp(\beta)$ value of about 4.7, meaning that the odds for Muslim employees were 4.7 times higher than the odds for inactive Others. In other words, Muslim employees had the risk of going missing 4.7 times higher than inactive Others. Moreover, for Muslims aged 18+ from Prijedor, the estimated

relative risk of missing/killed (i.e. $\exp(\beta)$) increased with the occupational status from about 4.7 to 6.1.

For Croats, only the effects for employees are significant, the effects for those with higher occupational status are statistically insignificant. The effects for Croats are lower than 1 indicating that the risks for Others are higher than those for Croats. Nevertheless, the self-employed and their aid have the highest risks among all occupational categories.

**Figure 6. Relative Risks of Missing/Killed for Muslims from Prijedor, 30.04-30.09.92
In Reference to Occupationally Inactive Others**



**Table 7. Relative Risks of Missing/Killed for Muslims from Prijedor, 30.04-30.09.92
In Reference to Occupationally Inactive Others**

Ethnicity	SES Position	Men and Women		Men	
		Significance	Exp(B)	Significance	Exp(B)
Croats	Employees	0.0073	0.4799	0.0005	0.3730
Croats	Owners	0.8280	0.0031	0.8568	0.0013
Croats	Self_Employed & Help	0.5779	0.7231	0.3957	0.6084
Muslims	Employees	0.0000	4.6819	0.0000	3.9754
Muslims	Owners	0.0000	5.9187	0.0000	4.6683
Muslims	Self_Employed & Help	0.0000	6.0894	0.0000	4.9058
Serbs	Employees	0.0000	0.0158	0.0000	0.0127
Serbs	Owners	0.4968	0.0031	0.5587	0.0013
Serbs	Self_Employed & Help	0.0570	0.0031	0.1220	0.0013
Constant		0.0000	0.0121	0.0000	0.0280

To summarise the results discussed in this section, the following can be stated:

- Muslims (especially men) were targeted in Prijedor much more intensively than other Non-Serbs. The risks of missing/killed estimated for Muslims by occupational status were all significant and the highest among all ethnic groups.
- Those Muslims who were owners of a firm or a shop etc. or who were self-employed were targeted most of all, especially Muslim men.
- For all Non-Serbs the estimated risks of going missing were clearly higher for those from upper occupational classes, and to a lesser extent for those with higher (but not always the highest) educational categories. The pattern related to occupational status is extremely obvious. The one related to education is less clear.
- Croats and Others were targeted too and their risks of going missing were consistently the highest for owners and self-employed with aid and for those with secondary and post-secondary education. The risks for Croats and Others were considerably lower than the risks for Muslims.

ANNEX

- **A1. SOURCES USED FOR THIS REPORT**
- **A2. STATISTICAL FOUNDATION FOR THE ANALYSIS**

A2. STATISTICAL FOUNDATION FOR THE ANALYSIS

A2.1 CAPTURE-RECAPTURE METHOD

The capture – recapture method was originally proposed for estimating the unknown size of animal populations. Since then it has been then adopted by many other research disciplines. In this annex we present the rationale of this method and explain how we used it in our study.

The capture – recapture method is applied when we deal with a population of unknown size and our task is to estimate the total number of members of this population. We do this in two steps. First, we randomly select a sample from this population, mark all captured individuals, put them back to the original population and allow them to mix up with the rest of the population. Every individual should have the same probability of being captured as the others. In the second step we select a next random sample. The two samples should be drawn independently. Thus, the probability that an individual is re-captured in sample 2 has nothing to do with the fact, whether or not it was captured and marked in sample 1. From the mathematical point of view the independence of two events means, that the probability of occurring two events jointly is equal to the probability of occurrence of the first event multiplied by the probability of occurrence of the second event. We can write it that way:

$$P(A \cap B) = P(A) \cdot P(B).$$

Having selected the second sample, we count the re-captured individuals in it. Note that the “re-captured” individuals are those of all captured in sample 2 who previously were also captured (and marked) in sample 1. The underlying principle of the capture – recapture method is that the share of re-captured individuals in sample 2 estimates the share of captured (and marked) individuals from sample 1 in the whole population. Because the number of marked individuals in the whole population is known (from step 1) and also the estimated share of the marked individuals in the population is known (from step 2), we can calculate the total number of individuals in the population. We do this by dividing the number of marked individuals by their estimated share in the population.

If M denotes the total number of individuals in the population, p is the estimated share of all marked individuals in the population (i.e. the share of re-captured individuals in the second sample), and M_A is the number of individuals marked in step 1 (i.e. those captured in sample 1), we obtain¹⁷:

$$\hat{M} = \frac{M_A}{p}. \quad (1)$$

If M_B is the number of individuals in the second sample and M_{AB} for the number of re-captured individuals from the second sample (i.e. those also captured and marked in the first sample) we get, that:

$$p = \frac{M_{AB}}{M_B}. \quad (2)$$

The estimated total size of the population can be therefore also expressed as:

$$\hat{M} = \frac{M_A M_B}{M_{AB}}. \quad (3)$$

¹⁷ A hat above M means that it is an estimated value.

Or as: $\hat{M} = M_{11} + M_{01} + M_{10} + M_{00}$, where $M_{00} = \frac{M_{10} \cdot M_{01}}{M_{11}}$ is the unreported part of M, whereas

M_{11} is the overlap of the two samples, M_{10} is the number of individuals only in sample 1, and M_{01} the number of those only in sample 2.

All this reasoning makes sense if the samples are large as is the overlap between both samples (i.e. the number of re-captured individuals in the second sample)¹⁸.

Our objective was to estimate the total number of persons from Prijedor who went missing or got killed during the given period of time (30.04-30.09.92). We had three samples at our disposal, the ICRC List of Missing Persons (ICRC), *Knjiga Nestalih* (KN) of Prijedor, and Exhumations and Court Rulings Databases (EXH). The sources were large and there existed a significant overlap between them. We considered the ICRC list as the first sample and all records from this source as captured and marked. The two remaining sources (KN and EXH) were considered the second and third samples. We then counted the “re-captured” records in KN and EXH databases. This means that we measured the overlap of the three sources. Under the realistic assumption that all sources were created independently¹⁹, we recalled that the share of “re-captured” records in the KN and EXH databases is the same as the share of “captured” records (from ICRC) in the whole population and applied Equation 4 (a modification of Equation 3) to obtain the total number of killed persons.

SOURCES' OVERLAP	Symbol	No. of Persons
ICRC Missing Persons <i>only</i>	M_{001}	433
<i>Knjiga Nestalih only</i>	M_{010}	397
Exhumations <i>only</i>	M_{100}	0
ICRC and <i>Knjiga Nestalih</i>	M_{011}	263
ICRC and Exhumations	M_{101}	210
<i>Knjiga Nestalih</i> and Exhumations	M_{110}	271
ICRC, <i>Knjiga Nestalih</i> , and Exhumations	M_{111}	157
ALL SOURCES TOGETHER		1,731

Where three data sources are analysed, one being quasi-independent from the other two (in our case the ICRC List of Missing Persons, being the source with data systematically collected during the war), the number of victims not included in three mentioned sources (M_{000}) can be estimated by the following equation (Bishop, Fienberg and Holland, *Discrete Multivariate Analysis: Theory and Practice*, Cambridge, Mass.: MIT Press, 1975, equations 6.4-20, p. 241):

¹⁸ What is “large” or “small” is quite subjective, but we will not discuss this issue, for our samples are approximately 1,000 records, which is definitely not small.

¹⁹ The independence of sources means that the fact, that a record is reported in ICRC list, does not change the chance of being included in KN and EXH databases, and *vice-versa*.

$$\hat{M}_{000} = M_{001} \cdot \frac{M_{110} + M_{100} + M_{010}}{M_{111} + M_{101} + M_{011}} = 459 \quad (4)$$

Thus, the total number of victims N , can be estimated by:

$$\hat{M} = M + \hat{M}_{000} = 1,731 + 459 = 2,190$$

Standard error of estimation can be obtained from the following equation:

$$SE(\hat{N}) = SE(\hat{M}_{000}) = \sqrt{\hat{M}_{000}^2 \cdot \left(\frac{1}{M_{110} + M_{100} + M_{010} + M_{000}} + \frac{1}{M_{111} + M_{101} + M_{011}} + \frac{1}{M_{001}} + \frac{1}{\hat{M}_{000}} \right)} =$$

38.3

When the sample is large (more than 120 observations, as in our case) the $(1-\alpha) \cdot 100\%$ confidence interval for the total number of victims N is based on the normal distribution, ranging from $\hat{N} - SE(\hat{N}) \cdot u_\alpha$ to $\hat{N} + SE(\hat{N}) \cdot u_\alpha$, where u_α denotes the α -rank quantile from the normal distribution. In our case, the 95% confidence interval is relatively narrow, ranging from 2,115 to 2,265.

Sources:

Y. Bishop, Fienberg and Holland, *Discrete Multivariate Analysis: Theory and Practice*, Cambridge, Mass.: MIT Press, 1975,

E. Marks, W. Seltzer, K. Krotki, 1974: *Population Growth Estimation: Handbook of Vital Statistics Measurement*. Quoted after: *Political Killing in Kosovo/Kosova*, March-June 1999.

Political Killings in Kosova/Kosovo, March-June 1999 (Washington: ABA-CEELI and AAAS, 2000)

P. Spiegel, P. Salama, 2000, *War and Mortality in Kosovo, 1998-1999: An Epidemiological Testimony*. *Lancet* 2204 (355).

Capture-Recapture Webpage: <http://www.pitt.edu>

A2.2 LOGISTIC REGRESSION MODEL: THEORY

The logistic regression model is

$$\frac{P(y=1)}{P(y=0)} = \exp(b_0 + b_1x_1 + \dots + b_nx_n) + err$$

The dependent (or response) variable $\frac{P(y=1)}{P(y=0)}$ is the ratio of the probability of going missing ($y=1$) divided by the probability of not going missing ($y=0$). The ratio is called the odds.

The x_1, x_2 etc. are the categories of the explanatory variables. The b_0, b_1 etc are the coefficients (or model parameters). The coefficient b_i gives the change in log odds of $y=1$ (the event occurring) for a unit change in x_i , holding all other explanatory variables constant. Equivalently, $\exp(b_i)$, the

exponential of the coefficient, shows the change in the odds of $y=1$ for a unit change in x . The *err* is the error term.

Logistic regression does not make any assumptions about the underlying distribution of the response variable. Logistic regression is appropriate for binary response variables when the distribution of the attribute of interest lies between about 0.05 and 0.95 of the sample.

Logistic regression does not calculate R^2 , which is the usually used measure of goodness of fit. For logistic regression the likelihood L is used to assess the probability of the sample of data occurring under the model. The likelihood is the product of the probabilities for each case:

$$L = \prod_{j=1}^n P_j(\hat{y} = y_j)$$

The higher the likelihood, the more likely it is that the sample has occurred under the given model, i.e. the better the fit of the model. The coefficients are estimated to maximise the likelihood.

As the likelihood is a product of probabilities, its maximum value is 1 (perfect fit). In practice, it has a small, hard to compare value, and hence a function of the likelihood is used instead: $-2 \log(\text{likelihood})$ (or $-2LL$). The smaller the value of the $-2LL$, the better the model. A perfect model will have a $-2LL$ of 0).

Source: G. Hutcheson, N. Sofroniou, (1999), *The Multivariate Social Scientist. Introductory Statistics Using Generalized Linear Models*. SAGE Publications. London, Thousand Oaks, New Delhi.

A2.3 LOGISTIC REGRESSION: PRACTICAL REMARKS

The logistic regression model explains the variation in the so-called dependent variable by the variation in a number of independent explanatory variables. In our study the dependent variable is the ratio of the probability of missing/killed to that of non-missing/non-killed persons. The ratio is called odds. The explanatory variables are ethnicity, occupational status, and a variable measuring the joint impact (or interaction) of ethnicity and occupational status. Next to the explanatory variables the model includes several parameters (called effects) and a constant. Parameters are specified for each category of the independent variables. For the variable “ethnicity”, four parameters need to be included: one for Serbs, one for Muslims, one for Croats, and one for Others. Likewise, the number of effects for “occupational status” is four: “occupationally inactive” effect, “employees” effect, “owners” effect, “self-employed and aid to self-employed” effect. The number of interaction effects is 16 (combinations of all categories of ethnicity and occupational position). During the estimation one of the effects for each particular variable is eliminated (otherwise the model cannot be estimated; for ethnicity Others can be eliminated, for occupational status those “inactive”, and for interactions all combinations of Others and “inactive” category). The eliminated effects indicate a reference category (e.g. Others who were occupationally inactive) that is used in estimating the remaining components of the model. In fact, all model parameters (except of the constant) are obtained as relative indicators (i.e. in relation to the reference category). The constant is just the effect for the reference group.

The most complex regression model separates the effects of belonging to a particular ethnic group (main effects of ethnicity), from those of having a particular occupational status (main effects of occupational position), and of being a member of an ethnic group and having a certain occupational

status at the same time (the interaction effects of ethnicity and occupational status). Simpler models include the main effects of ethnicity and occupational status, or interaction effects only. Any of these models can be used to show occupation-related differences in the risk of missing/killed among the ethnic groups, importantly the estimates of these risks are obtained from a joint estimation and better characterise the process of going missing than any parametric test of significance for single proportions.



**MISSING AND KILLED PERSONS
IN THE AUTONOMOUS REGION OF KRAJINA
IN 1992**

**BASIC DEMOGRAPHIC CHARACTERISTICS,
TIMING AND LOCATION OF INCIDENTS**

Ewa Tabeau and Jakub Bijak

January 10, 2002



Summary of Results

This report presents statistical data and analysis concerning persons who were killed or reported missing in 1992 in the Autonomous Region of Krajina (ARK). The report was prepared by the demographic unit of the Office of the Prosecutor (OTP) for the case of the Prosecutor of the Tribunal vs. Radoslav Brđanin and Momir Talić, Case Number IT-99-36-PT. The authors utilised three sources for data on those missing or killed: The International Committee of the Red Cross (ICRC) List of Missing Persons, the Exhumations Database, and Proof of Death Database. The latter two databases were compiled by the OTP for use in this case from documents concerning exhumations and Bosnian courts' Declarations of Death. The identities of all those listed in these documents were verified by comparing the names and data concerning the individual to the 1991 census conducted by the government of Yugoslavia. As a further check, the names of those listed as missing or dead were compared to the voter lists for the 1997 and 1998 elections in Bosnia, to ensure that no individual was incorrectly listed as missing or dead who had actually voted in either of these elections.

The following are the principal findings from the analysis of the data:

- The three sources together include 5,168 names.
- The individuals listed in the databases were compared to the names and data for individuals in the 1991 census. If the individual was identified in the 1991 census, the name was then compared to voter lists compiled by the Organization of Security and Co-operation in Europe (OSCE), Regional Office for Bosnia and Herzegovina, for the 1997 and 1998 elections. Any name that also appeared on one of these voter lists was then removed, since in such a case the individual had possibly¹ survived the conflict.
- This process reduced the original list of names to a total from the three lists of 3,833 individuals who had been identified in the 1991 census, had been on a list of those exhumed with indications he or she was killed in 1992, declared by a court to have died in 1992, or reported missing in 1992 and whose name did not appear on the 1997 or 1998 voter lists.
- We then compared the names on the three lists and removed any duplicates, that is, any name that appeared in more than one of the three databases of those exhumed, reported missing or declared dead. After removing duplicates, the combined list contained 3,071 names.
- This number of 3,071 names clearly understates the total number of persons who were killed in 1992 since undoubtedly some individuals who were killed were not reported missing by family members, no one obtained a Certificate of Death for them and their body has not been exhumed and identified. In order to provide some insight into the actual number of victims who were killed in the ARK during this time period, the authors utilised a recognised statistical tool for making such estimates (i.e. the capture-recapture method). The three databases have been used to produce a stochastic estimate of the total number of victims in ARK by using the capture-recapture method, which is further explained in the annex to this report. This method results in an estimate that some 6,018 persons were killed or went missing in the ARK in 1992.

¹ Inconsistent evidence may also indicate registration fraud.

- Most victims identified in the merged Exhumations and Proof of Death databases were killed in the summer of 1992 (from the end of May through the end of August). Many were killed during several short time periods, those being: May 24th - 27th, May 30th - June 3rd, July 9th - 10th, July 20th, and July 23rd - 27th.
- Based on the exhumations and proof-of-death data, the vast majority (97 %) of killed in ARK in 1992 are Muslims. To verify this result, an analogous examination has been performed using the ICRC List of Missing Persons.
- Most persons reported to the ICRC as missing disappeared in the municipalities of Prijedor (almost 57.2 % of those missing in the whole ARK), Kotor Varoš, Bihać, and Sanski Most.
- Most persons went missing in ARK either in summer 1992 (in the period from end of May till end of August) or in the very beginning of November. In the summer period there are some evident peaks, most important being the periods May 24th- 27th, May 30th - June 3rd, June 11th -14th, June 20th, June 25th - 26th, July 10th, and July 20th, 23th, and 25th. This pattern shows much coincidence with the timing of killings.
- Based on the ICRC list, the clear majority (90.6 %) of persons missing in ARK in 1992 are Muslims. This outcome confirms the results obtained from the exhumations and proof-of-death data. The data obtained by the ICRC as an impartial authority provide a better estimate on the share of Muslim victims in ARK, the figure equalling about 91%.
- The correlation coefficient between the number of missing and number of killed persons in the period April-December 1992 amounts to 0.76 (the maximum level is 1.00), and is statistically significant. This result confirms that the killings and disappearances of people in ARK show very similar time patterns.

1. Introduction

This report utilises three sources of information about missing and killed persons in the Autonomous Region of Krajina – ARK (hereafter the missing and killed persons are called “ARK victims”). The major source for missing persons from ARK is the ICRC List of Missing Persons. Two more sources have recently become available to us, the Exhumations Database and the Proof of Death Database, both established recently at the Office of the Prosecutor for the purpose of obtaining a better insight into the crimes committed in ARK (Sébire, 2001)². The three sources are briefly summarised below in Section 2. More information about the recent OTP sources can be obtained from the report by Sébire (2001).

In Section 3, the numbers of victims found from each source are presented, the overlap between the sources is analysed and the three sources are used together to produce a stochastic estimate of the total number of victims in ARK. We also show basic demographic features of the ARK victims, such as their sex, age, and ethnicity.

Section 4 of this report is devoted to the incidents that took place in ARK in 1992, in which the victims described in Section 3 lost their lives. Here we discuss the particular time periods in which people went missing or were killed and the location of the largest incidents. The statistical information used in both parts comes from the same three sources. In Section 3 this information is shown for individuals, in Section 4 for incidents in which these individuals died.

² Nicolas Sébire, 2001, “Exhumations and Proof of Death, Autonomous Region of Krajina”. OTP Report.

2. Information Sources

2.1. The ICRC List of Missing Persons

Since 1991, the International Committee of the Red Cross (ICRC) has collected data on persons reported as missing from the Former Yugoslavia, including ARK, in order “... to help families establish the fate of their relatives who remain missing.”³ The organisation collected data primarily from close family members and occasionally accepted reports from more distant relatives and from friends and neighbours. They registered persons known to be dead but whose bodies have not been found. ICRC published a separate list of persons known to be dead (generally previously registered as missing)⁴.

ICRC published several versions (i.e. up-dates) of their list of missing persons from Bosnia and Herzegovina. In June 1998, they issued the latest 4th version of the Book of the Missing (about 19,000 names), and in October 2000 an addendum to the 4th edition with additional 1,000 names collected between June 1998 and October 2000. For the analyses presented in this report, the 4th version of the Book of Missing, released in June 1998, was used.

Till the year 2000, the ICRC has received requests to trace a total of 20,508 persons who disappeared in the conflict in Bosnia and Herzegovina⁵. Out of this total, some 1,949 persons were identified dead following exhumations, 860 missing persons were declared dead but their mortal remains were not recovered, and some 292 were found alive. The families of 17,407 missing persons have still received no confirmation of the fate of their relatives. It is generally assumed, however, that most (if not all) of those people are dead. The ICRC itself also expressed this opinion⁶.

2.2. The Exhumations Database

This database (hereafter EXH) has been established at OTP by Nicolas Sébire (2001) on the basis of the extensive documentation received by ICTY from the parties involved in the exhumations in ARK. The documentation was prepared during the exhumations by either the Bosnian authorities or the forensic team and archaeologists from the International Criminal Tribunal for the former Yugoslavia.

The essential part of the documentation is a general exhumation report drawn up by the examining judge. The report consists of a general description of the exhumation site, the exhumation itself, the number of bodies exhumed and, in most cases, provides a description of the forensic results of the autopsies. Where known, the report states the identity of the exhumed bodies and information about the circumstances and date of death.

³ From the introduction to “*Missing persons on the territory of Bosnia and Herzegovina*”, Fourth edition issued on 30.06.1998 – by alphabetical order, International Committee of the Red Cross. Place of publication not given (probably Sarajevo).

⁴ Death has been established based on eyewitness accounts and/or evidence provided by the family.

⁵ ICRC Report on “Persons Unaccounted for in BiH”. Sarajevo, October–November 2000

⁶ See ICRC’s special report on “The issue of missing persons from Bosnia and Herzegovina, Croatia and the Federal Republic of Yugoslavia”, published in February 1998.

The identification of the exhumed bodies was conducted by the Bosnian Police using witness interview reports. The interviews made it possible to establish the circumstances of death or disappearance of an individual and also the date the person died (or at least the year).

The ICTY documentation consisted of several reports, including the summary reports by the chief archaeologist and chief forensic scientist, and the reports on the DNA analyses performed to identify the bodies.

Examples of variables included in the Exhumations Database are the following: municipality, exhumation site, exhumation date, number of bodies exhumed at the site, family name of the exhumed individual (LNU standing for “last name unknown”), the first name of the individual exhumed (FNU standing for “first name unknown”), date of birth of the exhumed individual (with place of birth if known), date of death of the exhumed individual, that is, either the exact date of death, the month and the year, or just the year. In many cases, this information has not been inputted.

The Exhumations Database that has been used for analysis presented in this report is dated on 23 November 2000.

2.3. The Proof of Death Database

Nicolas Sébire has established this database (hereafter CR; Sébire, 2001) on the basis of judgements (i.e. court rulings, CR) issued in the past years by two municipal courts, the Sanski Most and Ključ municipal courts, officially declaring individuals dead. The judgements were rendered at the request of a member of the missing person’s family and relied on the testimony of the applicant or, in some cases, of witnesses able to testify to the date and circumstances surrounding the disappearance or death.

The documentation relates to a population of 1,668⁷ individuals from the municipalities of Prijedor, Sanski Most, Banja Luka, Bosanski Novi, Bosanska Dubica, Ključ and Kotor Varoš, who were killed or went missing. A list was compiled according to municipality showing persons who in the most cases died or went missing in 1992 (1,465 victims died in 1992, and 203 victims in other periods).

The lists are not exhaustive since this sort of judgement is only issued at the request of a member of the missing person’s family. Requests of this kind can be made to any municipal court in Bosnia-Herzegovina provided that the applicant resides within its jurisdiction.

The Court Rulings Database that has been discussed in this report is dated on 13 March 2001.

⁷ Originally, there were 1,672 records in this database. Four duplicates were found and excluded, which brought the total down to 1,668 individuals.

3. Victims from ARK: Absolute Numbers and Basic Distributions

3.1. Absolute Numbers

Using the three sources discussed in Section 2, we identified the following total numbers of victims⁸ who were killed or disappeared in ARK in 1992:

- ICRC: 2,147 of which 1,728 identified in 1991 population census,
- CR: 1,465 of which 1,209 identified in 1991 population census,
- EXH: 1,556 of which 896 identified in 1991 population census.

Altogether the three sources add up to 5,168 individuals, of which 3,833 have been matched with the 1991 population census. By linking with the census, the identities of 3,833 victims have been confirmed. In the remainder of this section we will only analyse those victims linked with the census and not all victims included in the three sources. There are many explanations for why some individuals listed in the databases could not be linked to the 1991 census. First, the names listed in the database could have been misspelled, or the names or dates of birth could have been incomplete or inaccurate. To ensure the reliability of the analysis, and in particular to avoid any double counting of victims from different databases, we made the decision to only rely on data concerning individuals who could be linked the 1991 census.

The total of 3,833 names comes from the three sources, which are independent but also overlapping. A person reported to ICRC as missing could be later identified in exhumations, and a request to declare the individual dead could have been made at the municipal court. To remove any possibility of double counting, we removed any duplicates from the list and arrived at the total number of **3,071 victims** (only persons identified in 1991 population census were considered, see Figure 1 below):

The overlap of sources was the following:

- ICRC and CR: 423 individuals
- ICRC and EXH: 79
- CR and EXH: 182
- ICRC, CR, and EXH: 39

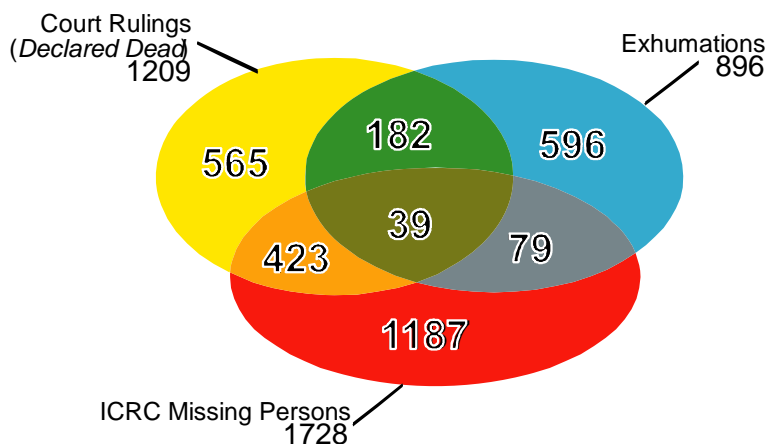
The total number of victims from ARK (3,071) comes from all three sources together and is checked for duplicates. However, it is reasonable to believe that the actual number of victims killed in 1992 in the ARK is higher than this figure since some individuals, particularly where entire families were killed, may not have been reported missing, no one may have sought a declaration of death and the corpses may not have been exhumed and identified, particularly where there are no close family members remaining to make the identification.

In order to present a closer approximation of the actual population loss, we applied the so-called capture-recapture technique⁹ to stochastically estimate the victims in ARK (Bishop,

⁸ All totals discussed in this section do not contain inconsistent records, i.e. persons identified on the lists of dead and at the same time on the 1997/98 electoral lists. There were some 91 (5%) such records on the ICRC list, 24 (2.6%) in the Exhumations Database, and 48 (3.8%) in the Court Rulings Database.

Fienberg and Holland, 1975). The method allows for computing both the recorded and the unrecorded numbers of events (i.e. missing and killed) using several quasi-independent sources. The ICRC List of Missing Persons was considered to be the most systematically taken and broadest among the three sources at our disposal. In this case, the variance estimator for the capture-recapture estimate of the ARK victims can be obtained as suggested by Bishop, Fienberg and Holland (1975; p. 241, eq. 6.4-20). All relevant formulas are included in the Annex to this report.

Figure 1. Overview of Sources for Verified ARK Victims



The result of the capture-recapture method is an estimate that the actual number of those killed in the ARK in 1992 totalled 6,018 victims, with 95% confidence interval ranging from 5,663 to 6,372 individuals. Our sample of the 3,071 identified victims constitutes about 51% of the stochastically estimated total.

3.2. Ethnicity, Age, Sex and Municipality of Residence Distributions of the Victims (All Sources Together)

The total 1991 population of ARK, as based on pre-war municipalities¹⁰, was 976,480 of which 488,820 individuals were men, and 487,660 were women. This population was exposed to going missing and being killed by the perpetrators, in this case by Bosnian Serbs.

⁹ The method was developed in the 1940s for estimating the size of wildlife populations. Since then it has been often used to estimate the scale of weakly measurable processes such as the prevalence of drug use, HIV infection, or prostitution. Examples of publications with applications of the capture-recapture method can be found in *Political Killings in Kosova/Kosovo. March-June 1999* (see Annex for details).

¹⁰ The following municipalities have been included: Banja Luka, Bihać, Bosanska Dubica, Bosanska Gradiška, Bosanska Krupa, Bosanski Novi, Bosanski Petrovac, Čelinac, Donji Vakuf, Jajce, Ključ, Kotor Varoš, Markonjić Grad, Prijedor, Prnjavor, Sanski Most, Skender Vakuf, Šipovo, and Teslić.

In this section we take the perspective of the 1991 residence of the victims and analyze all those victims who in 1991 lived in the municipalities of ARK. By relating the numbers of victims originating from ARK to the 1991 population of ARK, we can produce measures of the risk of being killed or going missing for the 1991 ARK population. We stress that the total numbers of victims *from ARK* and *in ARK* are not the same. In Section 3.1 the total of **3,071** victims were identified who were killed or went missing in ARK, whereas in this section we analyze the total of **3,010** victims who lived in ARK in 1991 and died or went missing in ARK.

Table 1. The 1992 Victims in the Serb Autonomous Region of Krajina

Type of Statistics	Count	Deaths per 100,000 1991 Population*
1991 Census Population	976480	-
1992 Total Deaths	3010	308.25
1992 Deaths of Non-Serbs	2983	600.38
1992 Deaths of Children (0-18 years)	202	73.13
1992 Deaths of the Elderly (65+ years)	150	212.13
1992 Deaths of Women	161	33.01
1992 Deaths in 4 Most Affected Municipalities	2614	1059.45

* The reference population is always consistent with death categories and is equivalent to a total or a sub-population of the same ethnicity, age, sex, and municipality.

Table 1 summarizes the major findings of this section. The total number of 3,010 deaths are civilians. In relative terms (i.e. after relating it to a reference population), this total is equivalent to about 308 deaths per 100,000 population in ARK in 1991. Note that the latest (1991) pre-war death rate of overall mortality in Bosnia and Herzegovina was 720 deaths per 100,000 population¹¹. The war-related mortality of civilians in ARK in 1992, i.e. an excess mortality that would not have occurred under peace, was thus equal as much as 42.81 % of the 1991 level. It is striking that the number of Non-Serb victims was 2,983, which was 99.10 % of all deaths of civilians in this period. The death rate for Non-Serbs, i.e. about 600 deaths per 100,000, corresponds to 83.39 % of the pre-war 1991 overall rate for Bosnia.

The usually most protected population groups, i.e. children, elderly and women, were often listed on our lists of dead. The number of children from birth to 18 years of age that died in the conflict-related circumstances in 1992 was 202 (on average about 73 children per 100,000 population of the same age). These lives are the most dramatic losses, never to be compensated by any means. The number of women killed or disappeared in 1992 was 161,

The pre-war municipal division gives a higher population total than the post-Dayton municipalities due to much less exclusions of records, particularly the RS-FBH split of the settlement of residence is irrelevant.

¹¹ Statistički Godišnjak, Republike Bosne i Hercegovine, 1992. Državni Zavod za Statistiku, Sarajevo, svibanj 1994. Page 42.

that is about 33 per every 100,000 women living in ARK in 1991. The elderly who died in 1992 are listed in our sources even more often than children and women. There were in total 150 deaths of those aged 65 years or more, and in total 272 deaths of those aged 61 years or more in ARK in 1992 (the respective death rates are approximately 212 and 249 deaths per 100,000 census population of respective age). Death rates for the elderly indicate that death was very frequent among this population group, which may be related to the weak spatial mobility of the elderly who were unable to quickly move from the conflict-affected area.

Some 2614 victims (86.80 % of all victims) resided in 1991 in only four municipalities: Ključ, Kotor Varoš, Prijedor, and Sanski Most. Deaths encountered in each of the above mentioned municipalities in 1992 run into hundreds and thousands, from 207 deaths in Kotor Varoš to 1,747 in Prijedor. The death rate calculated for the four municipalities jointly is equal approximately 1,060 deaths per 100,000 census population and its level is far higher than the level of 1991 mortality rate for Bosnia and Herzegovina (147.15 %).

Below we discuss each basic distribution of the victims more specifically. Table 2 is devoted to the ethnicity of victims, Table 3 to their age distribution, and Table 4 the place of residence of victims in 1991. Note that all victims reported in this section died or disappeared within ARK, in most cases the municipality of residence in 1991 and the municipality of death in 1992 were the same.

Table 2. Victims from ARK by Ethnicity

Ethnicity	Total 1991	Died 1992	Deaths per 100,000 1991 Population
Muslims	323078	2802	867.28
% in All Ethnicities	33.09	93.09	
Croats	95309	91	95.48
% in All Ethnicities	9.76	3.02	
Others	78468	90	114.70
% in All Ethnicities	8.04	2.99	
Total Non-Serbs	496855	2983	600.38
% in All Ethnicities	50.88	99.10	
Serbs	479625	27	5.63
% in All Ethnicities	49.12	0.90	
Total All Ethnicities	976480	3010	308.25
% in All Ethnicities	100.00	100.00	

Note: Reference population is ethnicity-specific

Table 2 shows that most victims were of the Muslim ethnicity (2802, about 93 % of all victims). Croats, Yugoslavs and remaining ethnic groups were less frequently reported as victims (181, some 6 %). The mortality rate for Muslims (867) exceeded the 1991 rate of

overall mortality for Bosnia and Herzegovina (720), the ratio of the two rates was 120.46 per cent. The rates for Croats and Others were lower and equalled 95 and 115 deaths per 100,000 relevant population (they represented 13.26 and 15.93 % of the 1991 overall rate for BH).

Figure 2. The 1992 Deaths in ARK by Ethnicity and Age. Rates per 100,000 Total Census Population in ARK

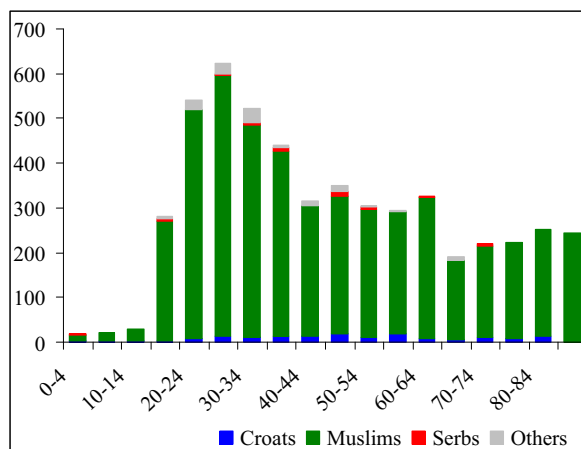
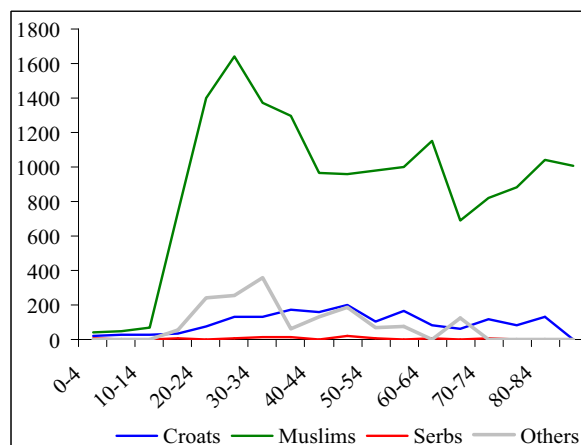


Figure 3. The 1992 Deaths in ARK by Ethnicity and Age. Rates per 100,000 Ethnicity-Specific Census Population in ARK



Figures 2 and 3 illustrate the age distribution of the victims, Figure 2 shows the general mortality age pattern (by five-year age groups) and its ethnic composition for the entire ARK. All ethnicities are presented in this figure jointly. Figure 3 shows the mortality age patterns of each ethnic group separately. The difference between these two presentations is the reference population used in the calculation of rates. In Figure 1 the total 1991 population of ARK is

always used as reference, in Figure 2 the reference population is ethnicity-specific. Thus, mortality of Muslims is related to the 1991 Muslim population, Serbs' mortality in relation to the 1991 Serb population and so on.

The pattern shown in Figure 2 allows us to distinguish four classes of death rates:

(a) death rates of children and youth: relatively low rates, especially between 0 and 14 years, clearly higher rates for the youth at age 15 to 19 years (about 280 deaths per 100,000), the years of life lost¹² are however still substantial in this sub-population,

(b) death rates of young adults: obviously the highest rates among the whole population, this class includes age groups from 20 to 44 years with the maximum seen at age 25-29 years (some 622 deaths per 100,000),

(c) death rates of older adults: death rates for older adults at age from 45 to 64 years are the second highest in the population and are slightly higher than 300 deaths per 100,000, less variation in the rates is striking,

(d) death rates of the elderly: death rates of those at age 65 years or older are approximately 200 to 250 deaths per 100,000, this level is the third highest and should be considered as relatively high.

The ethnic composition of the age-specific rates (Figure 2) is consistent with the pattern shown in Table 2, thus the Muslim victims are the most frequently seen among all ethnic groups, and Non-Serb victims dramatically dominate all deaths.

Figure 3 shows the age profiles of each ethnic group separately. These ethnicity-specific patterns clearly reflect the overall age pattern discussed above for all ethnic groups jointly. Note that the rates for Muslims are extremely high, for almost all age groups from 20-24 onwards the Muslim rates are higher than 720 deaths per 100,000 (which is the 1991 overall death rate for Bosnia and Herzegovina). The highest rate, obtained for the age group 25-29 years (approximately 1640 deaths per 100,000) is more than twice as high as the overall rate for Bosnia in 1991 (specifically it is 227.81 %). The second and third highest rates for the age groups 20-24 and 30-34 years were about 1397 and 1370 deaths per 100,000 and were equal 194.05 and 190.28 % of the 1991 BH rate.

Finally, it must be noted that the age patterns discussed above are all dramatically different from mortality age patterns observed in contemporary population living under peace. In such populations most deaths occur due to old age. The ageing-related increase in mortality rates develops exponentially from age of approximately 40-44 years until the highest attainable age (about 124 years). Considerable numbers are also seen for infants and around age of 20-24 years (the so-called accident hump). The figures we presented for ARK show no similarity to the regular pattern and confirm the extraordinary character of these population losses.

¹² Those who die young could have lived longer, for instance as long as the whole population lives. The life duration of a population is expressed quantitatively as the life expectancy at birth, a concept that is widely known in demography and other social sciences. The difference between someone's age at death and the life expectancy can be seen as the lost years of life. The younger the deceased the higher the difference, and the larger number of life years lost.

Table 3. Age Distribution of Victims¹³

Age	Deaths 92		Total 1991	Deaths per 100,000 1991 Population
	Count	Percent		
0-4	11	0.37	59022	18.64
5-9	15	0.50	74260	20.20
10-14	22	0.73	77408	28.42
15-19	232	7.71	82791	280.22
20-24	441	14.65	81717	539.67
25-29	501	16.64	80499	622.37
30-34	403	13.39	77018	523.25
35-39	337	11.20	76553	440.22
40-44	201	6.68	63461	316.73
45-49	158	5.25	45298	348.80
50-54	177	5.88	58012	305.11
55-59	169	5.61	57414	294.35
60-64	157	5.22	48014	326.99
65-69	58	1.93	30484	190.26
70-74	37	1.23	16846	219.64
75-79	26	0.86	11715	221.94
80-84	19	0.63	7571	250.96
85+	10	0.33	4097	244.08
Unknown	36	1.20	24300	148.15
Total	3010	100.00	976480	308.25

The last table discussed in this section is Table 4. As mentioned earlier it illustrates the 1991 place of residence of the 1992 victims within ARK. Four municipalities show exceptional figures: Prijedor with 1,747 deaths, Ključ (377), Sanski Most (283) and Kotor Varoš (207). If compared with the 1991 overall mortality rate for Bosnia and Herzegovina the respective ratios are as follows: Prijedor - 215.87 %, Ključ - 140.31 %, Sanski Most - 65.25 %, and Kotor Varoš - 78.18 per cent. Note that the rates for other municipalities are substantial. Only 4 out of 19 municipalities have death rates below 10, 7 municipalities show rates higher than 10 and lower than 100, and 8 municipalities rates above 100 deaths per 100,000 population.

¹³ Out of the 1991 census population of ARK (976,480), some 24,300 individuals had (completely or partly) missing or incorrect date of birth. These individuals had to be excluded from the analysis of age. Among the victims there were some 36 individuals whose age was unknown.

Table 4. Victims from ARK by Municipality of Residence in 1991

Municipality		Total 1991	Deaths	Deaths per 100,000 1991 Population
Banja Luka	Count	195126	16	8.20
	% within RISK92	20.0	0.5	
Bihać	Count	70607	134	189.78
	% within RISK92	7.2	4.5	
Bos Dubica	Count	31538	3	9.51
	% within RISK92	3.2	0.1	
Bos Gradiška	Count	59907	10	16.69
	% within RISK92	6.1	0.3	
Bos Krupa	Count	58227	31	53.24
	% within RISK92	6.0	1.0	
Bos Novi	Count	41609	63	151.41
	% within RISK92	4.3	2.1	
Bos Petrovac	Count	15586	20	128.32
	% within RISK92	1.6	0.7	
Čelinac	Count	18669	7	37.50
	% within RISK92	1.9	0.2	
Donji Vakuf	Count	24533	28	114.13
	% within RISK92	2.5	0.9	
Jajce	Count	44974	29	64.48
	% within RISK92	4.6	1.0	
Ključ	Count	37317	377	1010.26
	% within RISK92	3.8	12.5	
Kotor Varoš	Count	36774	207	562.90
	% within RISK92	3.8	6.9	
Mrkonjić Grad	Count	27332	4	14.63
	% within RISK92	2.8	0.1	
Prijedor	Count	112403	1747	1554.23
	% within RISK92	11.5	58.0	
Prnjavor	Count	46994	1	2.13
	% within RISK92	4.8	0.0	
Sanski Most	Count	60238	283	469.80
	% within RISK92	6.2	9.4	
Skender Vakuf	Count	19345	4	20.68
	% within RISK92	2.0	0.1	
Šipovo	Count	15535	1	6.44
	% within RISK92	1.6	0.0	
Teslić	Count	59766	45	75.29
	% within RISK92	6.1	1.5	
Total	Count	976480	3010	308.25
	% within RISK92	100	100	

4. Location and Timing of the Largest Incidents in ARK

In this section the largest incidents which occurred in ARK are portrayed twofold: an overview of geographic distribution of mass graves and places where people went missing during the war is accompanied by the analysis of timing of either deaths or disappearances which occurred in ARK in 1992. Data explored in this section come from the same sources: the ICRC List of Missing Persons (4th Edition, 1998) and the Exhumations (EXH) and Court Rulings (CR) Database obtained from Nicolas Sébire (2001; version available on May 1st, 2001).

4.1 Geographic Distribution of Persons Killed and Missing in ARK in 1992

In this section the geographic distribution of persons killed and missing in ARK in 1992 is shown using maps. For the killed persons, whose remains have been exhumed, it was only possible to indicate the grave site, that may be different from the place of death. Grave locations can be therefore be seen only as an approximation for the sites where the crimes and atrocities were committed. For the missing persons, place of disappearance (i.e. location, where a person was last seen) can be shown. Complete picture can be obtained by comparing maps of exhumation sites with maps indicating places where people went missing.

Figure 4. Approximate Locations of Places with Significant Numbers of Bodies in Western ARK

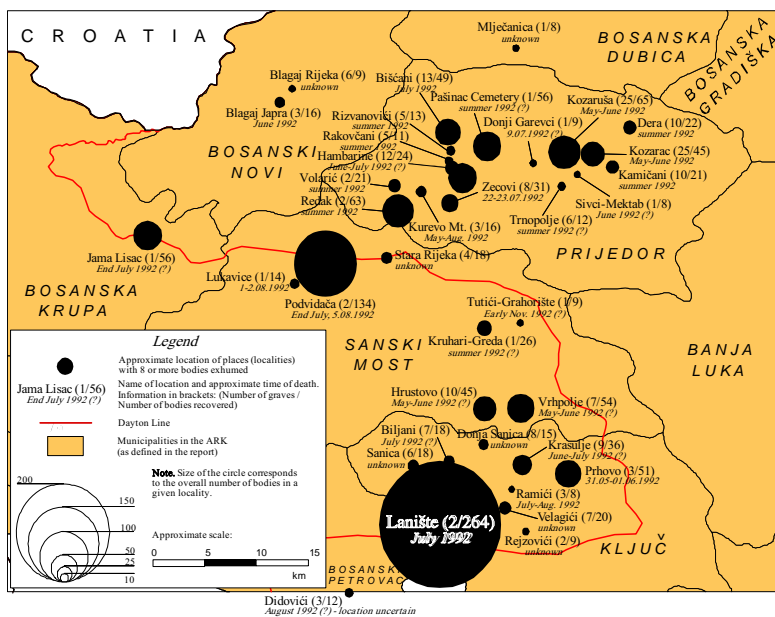


Table 4. The 1992 Victims Exhumed in ARK by Municipality and Location

Loc No.	Municipality	Locality	Graves	Bodies	Approximate time
1	Bosanski Novi	Blagaj Japra	3	16	June 1992
2	Bosanski Novi	Blagaj Rijeka	6	9	(?)
3	Bosanski Petrovac	Didovići	3	12	August 1992 (?)
4	Ključ	Prhovo	3	51	1.06.1992
5	Ključ	Biljani	7	18	July 1992 (?)
6	Ključ	Krasulje	9	36	June-July 1992 (?)
7	Ključ	Donja Sanica	8	15	(?)
8	Ključ	Lanište	2	264	July 1992
9	Ključ	Ramići	3	8	July-Aug. 1992
10	Ključ	Rejzovići	2	9	(?)
11	Ključ	Sanica	6	18	(?)
12	Ključ	Velagići	7	20	(?)
13	Kotor Varoš	Han, Hanifići	1	8	12-14.08.1992
14	Krupa na Uni (Bos. Krup.)	Jama Lisac	1	56	End July 1992 (?)
15	Prijedor	Čarakovo	27	57	23-26.07.1992
16	Prijedor	Biščani	13	49	July 1992
17	Prijedor	Dera	10	22	summer 1992
18	Prijedor	Garevci	1	9	9.07.1992 (?)
19	Prijedor	Hambarine	12	24	June-July 1992 (?)
20	Prijedor	Kamićani	10	21	summer 1992
21	Prijedor	Kozarac	25	45	May-June 1992
22	Prijedor	Kozaruša	25	65	May-June 1992
23	Prijedor	Kurevo Mt.	3	16	May-Aug. 1992
24	Prijedor / Bos. Dubica	Mlječanica	1	8	(?)
25	Prijedor	Pašinac	1	56	summer 1992 (?)
26	Prijedor	Rakovčani	5	11	summer 1992 (?)
27	Prijedor	Redak	1	63	summer 1992 (?)
28	Prijedor	Rizvanovići	5	13	(?)
29	Prijedor	Sivci-Mektab	1	8	June 1992 (?)
30	Prijedor	Trnopolje	6	12	summer 1992 (?)
31	Prijedor	Volarić	2	21	summer 1992 (?)
32	Prijedor	Zecovi	8	31	22-23.07.1992
33	Sanski Most	Podvidača	2	134	End July, 5.08.1992
34	Sanski Most	Greda - Kruhari	1	26	summer 1992 (?)
35	Sanski Most	Stara Rijeka	2	7	(?)
36	Sanski Most	Groblje Grahorište-brdo	1	9	Early Nov. 1992
37	Sanski Most	Hrustovo	10	45	May-June 1992
39	Sanski Most	Lukavice	1	14	1-2.08.1992
40	Sanski Most	Stari Majdan-Stara Rijeka	2	11	(?)
41	Sanski Most	Vrhoplje	7	54	May-June 1992
42	Teslić	Bebe	1	27	(?)
43	Teslić	Kruševlje-Stenjak	1	9	Early June 1992

For transparency of the presentation, only localities with 8 or more bodies and places where 8 or more missing persons were reported are shown. Under the term “locality”, we mean a town, village or hamlet where many, often single-person, graves were found that we show jointly as one particular location. Maps 4 and 5 are made for particular sub-areas within ARK and together with Tables 4 to 6 give specific locations and timing of crimes in ARK and also an insight into the overall scale of small-range crimes (i.e. total number of bodies found in

single-person graves). The analysis was performed using the data for 1,556 exhumed persons included in the EXH and CR Databases and 2,147 persons reported to the ICRC as missing in ARK in 1992.

To illustrate localities of the graves, Figure 4 is provided. In this figure, the graves where 8 or more bodies were found and numbers of bodies from these graves are shown for localities in Western ARK. The data used for drawing this map are included in Table 4, where localities are listed by names, municipality, number of graves and bodies discovered, and approximate dates of death for those buried. These dates can be given in different ways, depending on the quality of information about dates of death. And thus, if more than 50% of the victims are known to have died within a certain period, this period is specifically indicated (e.g. *June 1992*, or *31.05-2.06.1992*). If there are between 10% and 50% of such cases while for most of the remaining persons the date of death is unknown, such period is followed by the question mark (e.g. *June/July 1992 (?)*). No clear majority of dates from one period is indicated by the label *various periods*, while sites with more than 90% of cases with an unknown date of death are labelled *unknown*.

It can be clearly seen that most of the victims have been exhumed in the municipalities of Prijedor, Ključ and Sanski Most. It is however worth noting that for example in Prijedor there are a few mass graves, while most of the victims have been buried separately and are therefore presumed to have been killed in various incidents. Good examples here can be the towns of Kozarac and Kozaruša, where respectively 45 and 65 persons have been found in a number (25) of smaller graves. On the other hand, mass graves like Lanište (Ključ), Hrastova Glavica – Podvidača (Sanski Most), Redak (Prijedor), and Jama Lisac (Bosanska Krupa) indicate mass-scale killings that occurred in these areas.

Table 5. Missing Persons in ARK in 1992 by Municipality of Disappearance

Opština	Missing	Percent
PRIJEDOR	1229	57.24%
KOTOR VAROŠ	224	10.43%
BIHAĆ	200	9.32%
SANSKI MOST	113	5.26%
SKENDER VAKUF	69	3.21%
KLJUČ	69	3.21%
JAJCE	58	2.70%
TESLIĆ	38	1.77%
BOS. NOVI	37	1.72%
DONJI VAKUF	30	1.40%
BOS. KRUPA	20	0.93%
BOS. GRADIŠKA	17	0.79%
BANJA LUKA	17	0.79%
MRKONJIĆ GRAD	7	0.33%
BOS. DUBICA	7	0.33%
BOS. PETROVAC	5	0.23%
ČELINAC	4	0.19%
ŠIPOVO	2	0.09%
PRNJAVOR	1	0.05%

As a complementary picture illustrating places in ARK where people went missing, five more maps are provided. The total numbers of persons who disappeared in all municipalities and localities of ARK are shown in Tables 5 and 6. The pattern of going missing by place of disappearance (for places with 8 or more missing persons) is shown in Figure 5A. Figures 5B through 5E illustrate the scale of such incidents for: Prijedor, north-western ARK, south-eastern ARK, Sanski Most with Ključ and northern ARK, respectively. Localities where people went missing are mentioned by names and approximate dates of disappearance. Also here, if more than 50% of the victims have date of disappearance within a certain period, this period is indicated (e.g. *summer 1992*, or *1.06.1992*). No clear majority of dates from one period is indicated by the label *various periods*.

Table 6. Missing Persons in ARK in 1992 by Locality and Date of Disappearance

Loc No.	Opština	Locality (>7 missing)	Missing	Approximate Date
1	BANJA LUKA	BANJA LUKA	16	summer 1992
2	BIHAĆ	ŠTRBACKI BUK	16	11-12.06.1992
3	BIHAĆ	ČUKOVI	10	11-12.06.1992
4	BIHAĆ	BIHAĆ	25	summer 1992
5	BIHAĆ	GOLUBIĆ	17	11-12.09.1992
6	BIHAĆ	GRABEZ	20	most Sept.-Nov.1992
7	BIHAĆ	ORAŠAC	75	10-15.06.1992
8	BIHAĆ	RIPAC	13	summer 1992
9	BOS. NOVI	BOSANSKI NOVI	22	summer 1992
10	DONJI VAKUF	DONJI VAKUF	16	summer 1992
11	JAJCE	JAJCE	27	autumn 1992
12	JAJCE	JEZERO	9	31.05-4.06.1992
13	JAJCE	VRBICA	9	Sept.-Oct. 1992
14	KLJUČ	BILJANI	11	10.07.1992
15	KLJUČ	DONJI BILJANI	12	10.07.1992
16	KOTOR VAROŠ	DABOVCI	10	26.07-16.08.1992
17	KOTOR VAROŠ	GRABOVICA	132	2-3.11.1992
18	KOTOR VAROŠ	KOTOR VAROŠ	26	summer 1992
19	KOTOR VAROŠ	VECIĆI	22	3.11.1992
20	KOTOR VAROŠ	VRBANJCI	20	25-27.06.1992
21	PRIJEDOR	KOZARA MT.	18	May-June 1992
22	PRIJEDOR	BABIĆI	9	24-27.05.1992
23	PRIJEDOR	BIŠĆANI	55	most 19-30.07.1992
24	PRIJEDOR	BRĀANI	12	26-30.05.1992
25	PRIJEDOR	ČARAKOVO	123	most 23-28.07.1992
26	PRIJEDOR	DONJI GAREVCI	8	May-August 1992
27	PRIJEDOR	GOMJENICA	8	June-July 1992
28	PRIJEDOR	HAMBARINE	65	most 17-27.07.1992
29	PRIJEDOR	KAMIĆANI	62	24.05-20.06.1992
30	PRIJEDOR	KEVLJANI	15	May-June 1992
31	PRIJEDOR	KOZARAC	171	20-30 May 1992
32	PRIJEDOR	KOZARUŠA	41	24-30 May 1992
33	PRIJEDOR	KUREVO MT.	14	20-30 July 1992
34	PRIJEDOR	LJUBIJA	27	June-July 1992
35	PRIJEDOR	OMARSKA	47	May-August 1992
36	PRIJEDOR	PRIJEDOR	194	summer 1992, incl. 30-31.05.1992
37	PRIJEDOR	RAKOVĆANI	100	20-30.07.1992
39	PRIJEDOR	RIZVANOVIĆI	50	19-27.07.1992
40	PRIJEDOR	TRNOPOLJE	63	May-August 1992
41	PRIJEDOR	ZECOVI	35	20-27.07.1992
42	SANSKI MOST	HRUSTOVO	29	29.05-1.06.1992
43	SANSKI MOST	SANSKI MOST	34	summer 1992
44	SANSKI MOST	VRHPOLJE	22	30.05-3.06.1992
45	SKENDER VAKUI VLAŠIĆ MT.		58	21.08.1992
46	TESLIĆ	TESLIĆ	12	summer 1992

Figure 5A. Distribution of Missing Persons in ARK in 1992, by Place of Disappearance

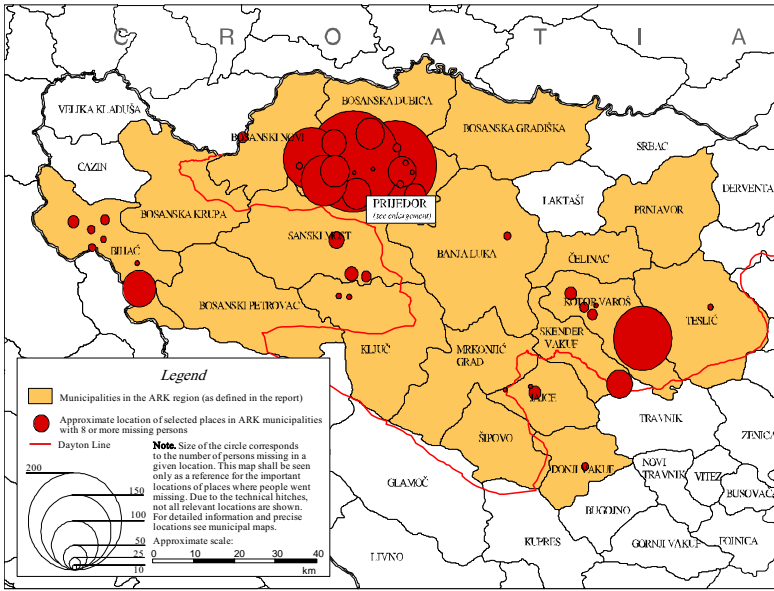


Figure 5B. Distribution of Missing Persons in Prijedor in 1992, by Place of Disappearance

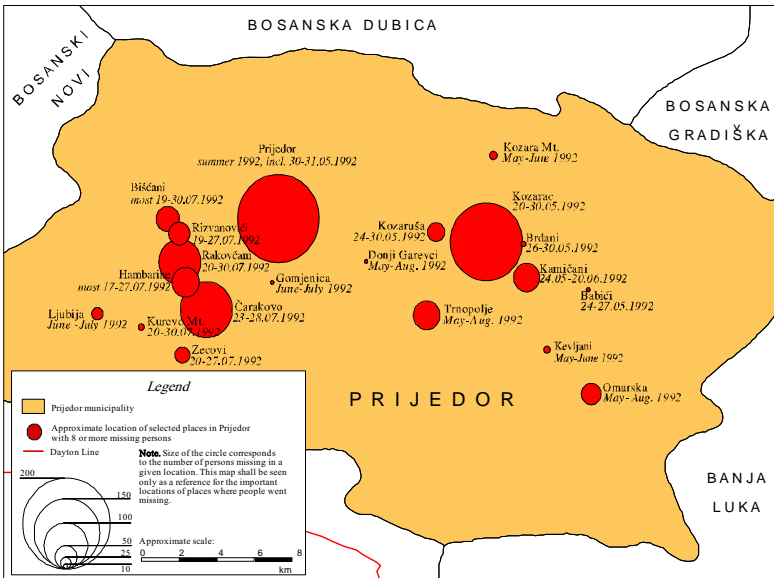


Figure 5C. Distribution of Missing Persons in north-western ARK in 1992, by Place of Disappearance

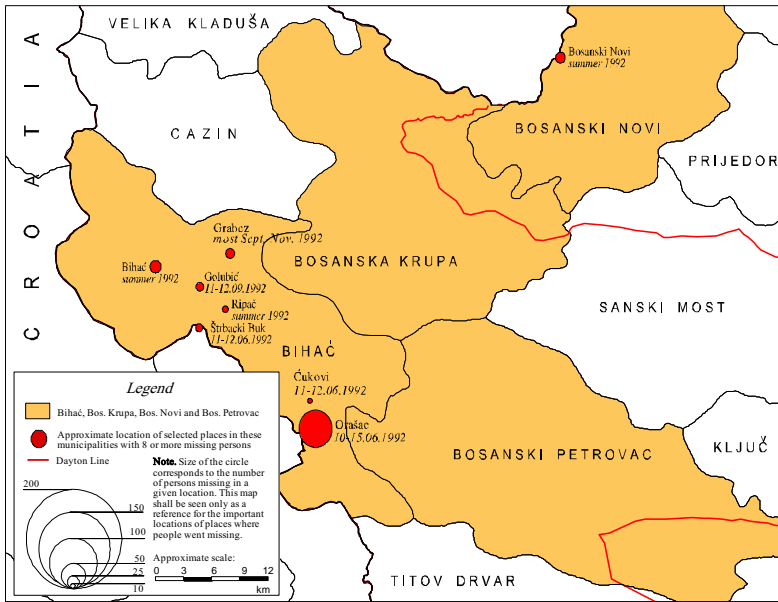


Figure 5D. Distribution of Missing Persons in south-eastern ARK in 1992, by Place of Disappearance

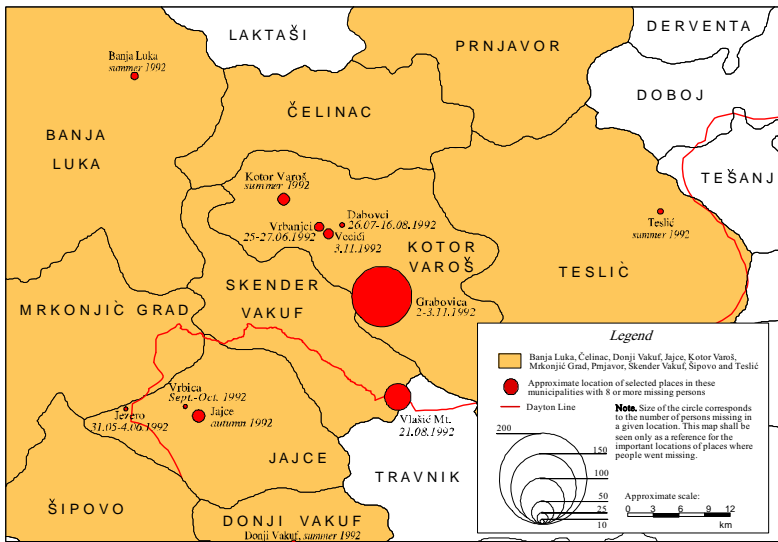
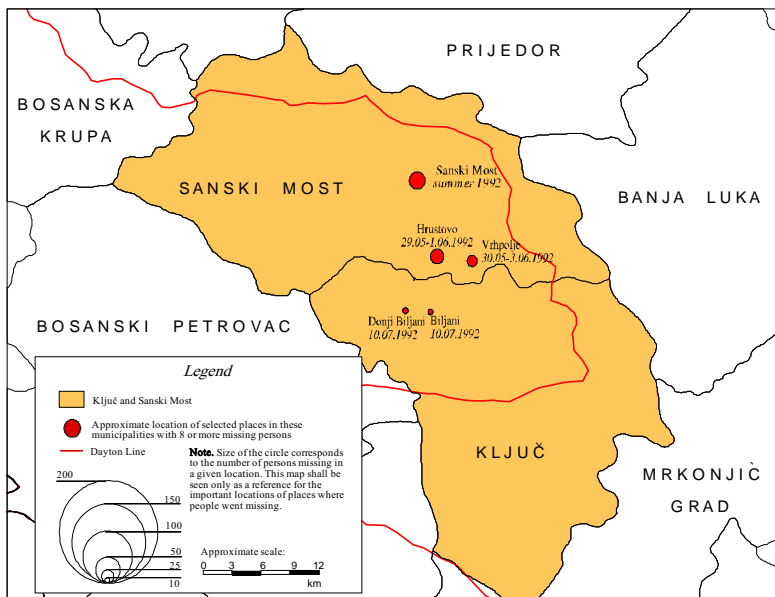


Figure 5E. Distribution of Missing Persons in Ključ and Sanski Most in 1992, by Place of Disappearance



It can be clearly seen that most of the persons reported to the ICRC as missing disappeared in the municipalities of Prijedor (almost 57% of those missing in the whole ARK), Kotor Varoš, Bihac and Sanski Most.

In Prijedor the largest groups of people disappeared in the town of Prijedor and its surroundings (194 missing persons), the town of Kozarac (171) and in the Brdo area (Čarakovo - 123, Rakovčani - 100, Hambarine - 65, Rizvanovići - 50, and Biščani - 55). Also three other localities show large numbers of the disappeared: Trnopolje (63), Omarska (47), and Kamičani (62).

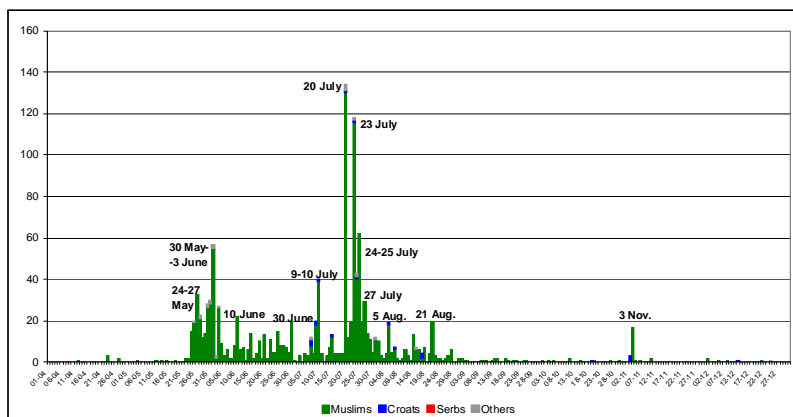
In Kotor Varoš the most disappeared were reported around Grabovica (132), in Bihac in Orašac (75), and in Sanski Most in the town of Sanski Most (34).

4.2 Timing of Killings and Missing in ARK in 1992

The objective of the analysis presented in this subsection is to indicate these periods of 1992, when most of the killings and disappearances of people occurred in ARK. Both the EXH and CR Databases and the ICRC List of Missing Persons have been corroborated with regard to this matter. The timing of the killings and disappearances is shown for the period April 1st – December 31st, 1992, on daily basis.

In the list of persons exhumed or declared dead in ARK, the date of death within the interval April-December 1992 has been fully provided for 1,295 cases out of the total 1,895 (i.e. for 68 %). The remaining 600 cases are either persons for whom some of the information is missing (i.e. day, month, or day and month) or persons for whom the date is incorrect. The overall timing of deaths is shown in Figure 6 below. Most important dates (with more than 20 persons killed during one day) are precisely indicated on the chart.

Figure 6. Number of Persons Exhumed or Declared Dead in the ARK, by Date of Death (in 1992) and Ethnicity



It can be seen in Figure 6 that most of the victims in ARK have been killed either in summer 1992 (in the period from end of May till end of August). In the summer period there are some evident peaks, most important being the periods: May 24th - 27th, May 30th - June 3rd, July 9th - 10th, July 20th, and July 23rd - 27th.

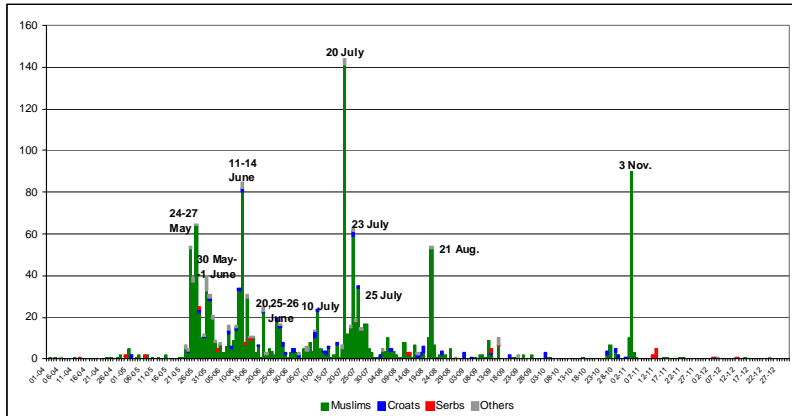
To show the patterns of 'ethnic cleansing', the above-shown figures can be further broken down by ethnicity. For the mentioned 1,295 cases, the ethnicity of victims was obtained from the 1991 population census which was linked with the Exhumations and Court Rulings Databases. For those "linked" persons information on ethnicity was provided as stated in the census. The timing of deaths by ethnicity is shown in Figure 6.

Figure 6 indicates that the clear majority among killed in ARK in 1992 were Muslims (about 97 % for those with the known date of death). This outcome however has to be treated with caution, because the EXH and CR Databases contained data on exhumations performed by the Bosniak exhumation commission. To verify the hypothesis of Muslims being almost exclusively the group targeted by atrocities in ARK, an analogous examination has been performed using the data from ICRC List of Missing Persons. The ICRC, being an independent and impartial authority, can be seen as a reference here.

In the ICRC list the date of disappearance between April and December 1992 has been fully and correctly given for 1,504 cases out of the analysed total of 1,772 persons missing in ARK (i.e. for 85 %). The remaining 268 cases are either persons for whom a part of the date is

missing or persons with incorrect dates. The overall timing of disappearances is shown in Figure 7 below. Most important dates (with more than 20 persons missing during one day) are precisely indicated on the chart.

Figure 7. Number of Persons Missing in the ARK in 1992, by Date of Disappearance and Ethnicity



Source: ICRC List of Missing Persons (4th edition, 1998), 1991 Population Census for BH

It can be seen that most of the persons went missing in ARK either in summer 1992 (in the period from end of May till end of August) or in the very beginning of November. In the summer period there are some evident peaks, most important being the periods May 24th - 27th, May 30th - June 3rd, June 11th - 14th, June 20th, June 25th - 26th, July 10th, and July 20th, 23rd, and 25th. This pattern shows much coincidence with the timing of killings presented before.

Also in this case it can be seen that the clear majority (90.6 %) of the persons missing in ARK in 1992 (with a known date) are Muslims. This outcome confirms the results of the previous analysis regarding persons killed in ARK in 1992. The data obtained by the ICRC as an impartial authority can however provide with a better estimate on the share of Muslim victims in ARK, the figure equalling about 91%.

For the purpose of comparing the time-frame of events on the basis of both independent sources (persons exhumed or declared dead in ARK and ICRC List of Missing Persons), the correlation analysis has been performed. The correlation coefficient between number of missing and number of killed persons in the period April-December 1992 totals 0.7568. This result is statistically significant with Student's *t* statistic equalling 19.061, what corresponds to the probability of erroneously rejecting the hypothesis of the lack of correlation very close to 0. This result confirms that there were several events that caused together killings and disappearances of people in ARK, as the events of both types show very similar time pattern.

ANNEX

Capture-Recapture Method in Estimation of Total Number of Victims in ARK

The capture-recapture method was introduced in statistics in the 1940s and also at present is often used to estimate total number of events on the basis of several incomplete sources, which are assumed to be independent. Core principle of the method is a probability theorem stating that the probability of occurring of two independent events together equals the product of probabilities of occurrence of each of the events separately, i. e.:

Prob (A and B) = Prob (A) · Prob (B), where A and B are independent events.

In practice, when three data sources are concerned (in our case regarding ARK victims: the ICRC List of Missing Persons, Exhumations Database and Court Rulings Declaring People Dead), the estimation of number of victims not included in any of these sources can be based on the analysis of the sources' overlap (see table below):

SOURCES' OVERLAP	Symbol	No. of Persons
ICRC Missing Persons <i>only</i>	M_{001}	1,786
Exhumations <i>only</i>	M_{010}	761
Court Rulings <i>only</i>	M_{100}	738
ICRC and Exhumations	M_{011}	81
ICRC and Court Rulings	M_{101}	503
Exhumations and Court Rulings	M_{110}	224
ICRC, Exhumations and Court Rulings	M_{111}	46
ALL SOURCES TOGETHER	M	4,139

Where three data sources are analysed, one being quasi-independent from the other two (in our case the ICRC List of Missing Persons, being the source with data systematically collected during the war, unlike both Exhumations and Court Rulings), the number of victims not included in three mentioned sources (M_{000}) can be estimated by the following equation (following Bishop, Fienberg and Holland, *Discrete Multivariate Analysis: Theory and Practice*, Cambridge, Mass.: MIT Press, 1975, equations 6.4-20, p. 241):

$$\hat{M}_{000} = M_{001} \cdot \frac{M_{110} + M_{100} + M_{010}}{M_{111} + M_{101} + M_{011}} = 4885.$$

Thus, the total number of victims N , can be estimated by:

$$\hat{N} = M + \hat{M}_{000} = 9024.$$

Standard error of estimation can be obtained from the following equation:

$$SE(\hat{N}) = SE(\hat{M}_{000}) = \sqrt{\hat{M}_{000}^2 \cdot \left(\frac{1}{M_{110} + M_{100} + M_{010}} + \frac{1}{M_{111} + M_{101} + M_{011}} + \frac{1}{M_{001}} + \frac{1}{\hat{M}_{000}} \right)}$$

= 265.

When the sample is large (more than 120 observations, as in our case) the $(1-\alpha) \cdot 100\%$ confidence interval for the total number of victims N is based on the normal distribution, ranging from $\hat{N} - SE(\hat{N}) \cdot u_\alpha$ to $\hat{N} + SE(\hat{N}) \cdot u_\alpha$, where u_α denotes the α -rank quantile from the normal distribution. In our case, the 95% confidence interval is relatively narrow, ranging from 8,505 to 9,524.

For the application of the capture-recapture method in estimating the numbers of victims in another Yugoslav conflict compare:

Political Killings in Kosova/Kosovo, March-June 1999 (Washington: ABA-CEELI and AAAS, 2000)

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**ETHNIC COMPOSITION, INTERNALLY
DISPLACED PERSONS AND REFUGEES
FROM EIGHT MUNICIPALITIES
OF HERCEG-BOSNA,
1991 TO 1997–1998¹**

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Demographic Unit, Office Of The Prosecutor, ICTY

17 January 2006

**EXPERT REPORT FOR THE CASE OF
JADRANKO PRLIĆ ET AL. (IT-04-74-PT)**

¹ The results discussed in the HERCEG-BOSNA report were obtained from data sources and methods similar to those used in our earlier reports submitted in other ICTY cases. Notably, they were the same as those in our MILOŠEVIĆ report: “Ethnic composition and displaced persons and refugees in 47 municipalities of Bosnia and Herzegovina, 1991 and 1997-98”, by E. Tabeau, M. Zoltkowski, J. Bijak and A. Hetland, dated 4 April 2003, ERN: 0291-5501-0291-5738, Exhibit 548 Tab 2. As the sources and methodology applied in both reports were the same, we included (after a slight adaptation) Annexes B to D of the MILOŠEVIĆ report in the HERCEG-BOSNA report.



1. OBJECTIVE AND SCOPE

This report (hereafter: the HERCEG-BOSNA report) is a product of the Demographic Unit (DU), Office of the Prosecutor (OTP), ICTY. We made it on request of the Prosecution team of the ICTY case of JADRANKO PRLIĆ ET AL. (IT-04-74-PT). The report contains demographic statistics regarding the ethnic composition *in* as well as minimum numbers of internally displaced persons (IDPs) and refugees (REFs) *from* eight selected municipalities in Bosnia and Herzegovina related to the case of JADRANKO PRLIĆ ET AL. (hereafter: HERCEG-BOSNA municipalities), in the years 1991 and 1997-98. In addition to these two major figures, we also present estimates of the unknown overall numbers of IDPs and refugees for HERCEG-BOSNA and summary statistics for the entire Bosnia and Herzegovina. Tables reviewing results at the municipal level are provided in Annex A to this report (A1 to A5), whereas Annex B (B1 to B6) contains the description of data sources. Annex C (C1 and C2) summarizes methods applied in this study and finally Annex D (D1 to D4) professional qualifications of the authors.

Table 1. Overview of Data Sources Used for this Report

Source	Collection Period	Responsible Institution	Source Size (Persons)	Included Population	Not Included Population	Collected Items (Variables)	Limitations
Population Census	1-15 April 1991	Statistical Office of SRBH	4.4 million	All residents in BH and citizens of BH working abroad with their family members	Individuals omitted due to errors or oversight, post-census immigrants	Full name, name of father, date and place of birth, sex, ID number (JMB), locality and municipality of residence in 1991, ethnicity, religion, etc.	Errors in variables, missing data, duplicates
Voters Register	1997-1998	OSCE	2.7 million	Individuals eligible to vote who had registered	Individuals younger than 18, those not registered, those who died during the conflict	Full name, date of birth, sex, ID number (JMB), municipality of residence in 1991 and 1997-98 etc.	Errors in variables, missing data, duplicates
Database of Displaced Persons and Refugees (DDPR)	2000	UNHCR Government of BH	583,816	Applicants for assistance (i.e. who did not 1992-95 IDPs) and their family members still registered in 2000	Individuals who did not apply, those who returned home, those who died during the conflict	Full name, name of father, date of birth, sex, ID number (JMB), relationship to the applicant, municipality of current residence, etc.	Errors in variables, missing data, duplicates

For the purpose of this report individual records of information about the population of Bosnia and Herzegovina were analysed for two years, 1991 (the 1991 population census, see Table 1) and 1997-98 (OSCE voters register, Table 1). These two years are studied here, even though the indictment period started in November 1991 and ended in April 1994. For the period from November 1991 until April 1994 we do not possess sources that could be used for complex analyses such as those discussed in this report. Such sources do not exist.

In this report we also compared the 1997-98 voters-based statistics of IDPs (the Demographic Unit (DU) statistics) with the UNHCR and BH government figures for 2000 (DDPR, Table 1; and Annex A, Table 4). The 2000 data are official statistics of the government of Bosnia and Herzegovina and were collected and processed under UNHCR auspices in the years from 1992 until 2000. More information about this source is available from Annex B (B6).

The *main* results presented in this report are the following:

- Absolute and relative size of a given ethnic group in the entire HERCEG-BOSNA and in all single HERCEG-BOSNA municipalities: status as of 1991 and 1997-98. Exclusively individuals born before 1980. Municipal borders as of 1997-98. (Table 1, Annex A1)
- A minimum number of internally displaced persons and refugees from HERCEG-BOSNA as whole and all single HERCEG-BOSNA municipalities: status as of 1997-98, by municipality of residence in 1991. Based on the minimum numbers, fractions of IDPs and refugees among a given ethnic group and among the total number of all IDPs and refugees traced in 1997-98 are shown as well. Exclusively individuals born before 1980. Municipal borders as of 1997-98. (Table 2, Annex A2)
- An estimate of the unknown overall number of internally displaced persons and refugees from HERCEG-BOSNA as whole and all single HERCEG-BOSNA municipalities: status as of 1997-98, by municipality of residence in 1991. Exclusively individuals born before 1980. Municipal borders as of 1997-98. This analysis has indicative character. (Table 3, Annex A3)

Annex A contains complete data tables, also at a municipal level, prepared for this report. The (most) tables refer only to the municipalities belonging to HERCEG-BOSNA. We made three main data tables. Tables 1 to 3, Annexes A1 to A3, are available for every ethnic group (i.e. Muslims, Serbs, Others and Croats). In Annex A, we present however in total 5 tables. In addition to Tables 1 to 3, Annex A4 contains figures from the DDPR database, i.e. UNHCR and BH government statistics of IDPs and refugees in Bosnia in 2000. Only statistics for those at age 18+ during the 1997-98 elections (directly comparable with our statistics) are shown. Annex 5 is an overview of the results obtained for Bosnia and Herzegovina.

Details of the sources and methods applied in this report can be found in Annex B and C, respectively. In Annex D, professional qualifications of the authors are summarized.

Major deficiencies of our sources are summarized in Section 2 of this report. In Sections 3 to 6, we present our major findings for every ethnic group separately. Sections 7 and 8 contain an overview of statistics on IDPs and refugees and on changes in the ethnic composition for the entire HERCEG-BOSNA area. Finally, Section 9 is an executive summary of the main findings discussed in this report. The HERCEG-BOSNA area is introduced below.

In 1991 Bosnia and Herzegovina consisted of 109 municipalities (hereafter pre-war municipalities). The Dayton Peace Accords of 1995 divided the country into two political entities, the Republika Srpska (hereafter RS) and the Federation of Bosnia and Herzegovina (hereafter the Federation), and introduced a new classification of municipalities. Many municipalities stayed the same as they were in 1991, but many new ones were also established. The inter-entity boundary line has split several pre-war municipalities into two parts; with one part belonging to RS and one to the Federation. In the Dayton Accords, the status of a regular municipality was assigned to each of these parts. Several smaller areas that separated from the pre-war municipalities between 1992 and 1995 were also given such status. After the war, each municipality (hereafter post-Dayton municipality) was given a numeric code ranging from 1 to 185. A number of codes remained blank (36) with no particular area assigned to these codes. The actual number of post-Dayton municipalities is 149 (as of 1997-98, according to the OSCE classification scheme).

For the purposes of this study, the HERCEG-BOSNA area is defined as consisting of the municipalities listed below. Except for Mostar and Stolac, all other municipalities remained unchanged (pre- and post-war municipalities are the same). Mostar was split into 8 smaller Post-Dayton municipalities and Stolac into two.

Čapljina (FBH), OSCE code: 173

Gornji Vakuf (FBH), 110

Jablanica (FBH), 126

Ljubuški (FBH), 171

Mostar:

- Mostar Central District (FBH), 157

- Mostar Jug (FBH), 151

- Mostar Jugoistok (FBH), 152

- Mostar Jugozapad (FBH), 153

- Mostar Sjever (FBH), 154

- Mostar / Srpski Mostar (RS), 158

- Mostar Stari Grad (FBH), 155

- Mostar Zapad (FBH), 156

Prozor / Prozor-Rama (FBH), 125

Stolac:

- Stolac (FBH), 176

- Stolac / Berkovići (RS), 177

Vareš (FBH), 095

For split municipalities all relevant components are included in this study, i.e. all those post-Dayton municipalities are analysed that together constitute the area of a given pre-war municipality. The analysis is conducted, however, at the level of post-Dayton municipalities which allows for a more specific description of the demographic processes concerned.

Figure 1. Reference map of Bosnia and Herzegovina and HERCEG-BOSNA

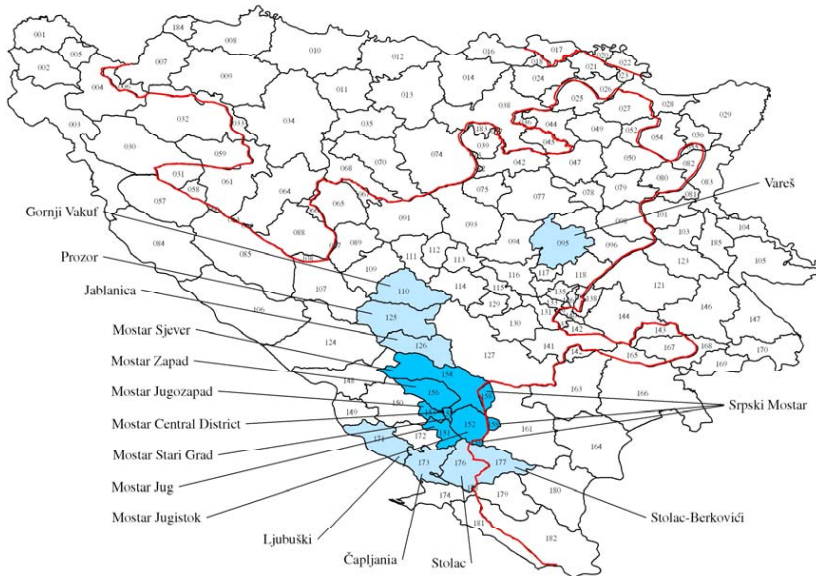


Figure 1 shows the map² of Bosnia and Herzegovina divided into post-Dayton municipalities in their 1997-98 borders. The division of the country into two political entities, RS and the Federation, is also shown on this map. The municipalities that are studied in this report are indicated with a blue colour (see below). They form the HERCEG-BOSNA region as studied here. A vast majority of HERCEG-BOSNA is located in the Federation of Bosnia and Herzegovina.

² This map is merely an illustration of where the HERCEG-BOSNA, as defined in this report, is located and what municipalities constitute it.

2. DEFICIENCIES OF SOURCES

The sources used for this report are large and generally reliable (see Annex B). Deficiencies of the sources and their impact on the results presented in this report have been identified and are briefly addressed below and more extensively in Annex B (B1 to B6).

In statistical practice, population census is the largest and most complete source of information about the population in a country. The 1991 population census covered the entire population of Bosnia and Herzegovina as of 31 March 1991. It resulted in a total number of 4.4 million individuals in Bosnia in 1991. The information about individuals was obtained in face-to-face interviews based on a census questionnaire designed in a uniform way for the whole country, i.e. former Yugoslavia. Methodological preparations, organization, carrying out of the census, as well as data quality control are discussed in an expert statement attached in Annex B3 of this report. The statement was provided by statistical authorities from Sarajevo who were directly involved in the 1991 census since its very beginning (i.e. since around 1984), had access to important documents related to the census and were therefore capable to most closely assess the reliability of the census.

Major deficiencies of the census are (scanning-related) spelling mistakes in the names and unfinished quality control of data items (due to unstable political situation in 1991 and the 1992-95 conflict). In Annex B2 we extensively explain how we dealt with these and other data problems in the census. In our opinion, data-related problems do not discredit the census as a powerful source of information about the pre-conflict population in Bosnia and Herzegovina and the census can be reliably used in producing statistics as those presented in this report.

Other problems related to the census are those resulting from inclusion in the census of the population temporarily residing abroad (some 234,213 persons out of 4,377,032, i.e. 5.4% of the census population). This population is included in official census statistics produced and published by local statistical authorities, and is therefore also included in our 1991 and 1997-98 figures. The inclusion of the population abroad could produce a bias in the 1991 ethnic composition of small areas, such as for example settlements. We investigated this bias for all municipalities in Bosnia and Herzegovina and it turned out to be fairly acceptable, with all but three municipalities retaining the same ethnic composition for both *de facto* (i.e. the actual) and *de jure population*³ (i.e. the actual and temporary abroad, see also Annex B4).

The inclusion of the population abroad could also have impact on the numbers of out-of-country voters (OCV), whom we report as refugees in 1997-98. Some 87% of OCV from Bosnia and Herzegovina left the country *after the census* (the so-called post-census emigration) and did not return home until 1997-98. The remaining 13% resided abroad in 1991 (the pre-census emigration) and remained there after the census in March 1991. If there

³ The terms *de facto population* and *de jure population* are demographic, not legal. More explanation of these terms is available from Annex B3.

were no war in Bosnia and Herzegovina the pre-census émigrés would perhaps have returned, but they registered to vote in 1997-98 still as out-of-country. We therefore believe that all out-of-country voters *may and should* be considered as refugees. The issue of the pre-census emigration is specifically discussed in Annex B4 where we show results of several analyses of the impact of pre-census emigration on our statistics on refugees in Bosnia and Herzegovina.

Note that the fractions of the post- and pre-census émigrés (87% and 13%) were obtained only for those voters who registered in countries *other* than the former Yugoslav republics. In 1997-98 five of the former republics had the status of countries: Bosnia and Herzegovina, Croatia, FRY, Macedonia and Slovenia. The Bosnian voters who registered in 1997-98 in Croatia or FRY (and to a lesser extent in Macedonia and Slovenia) resided in Bosnia in 1991, and systematically travelled for work to other Yugoslav republics (predominantly to Croatia or FRY). The fact that in 1991 they resided in Bosnia and in 1997-98 in Croatia or FRY implies that they must be considered as refugees. If the voters registered in Croatia or FRY were included in the estimation of the above mentioned fractions, then the respective estimates would be: 91.2% (instead of 87%) of the 1997-98 voters being the post-census emigration, and 8.8% (instead of 13%) of the voters being the pre-census emigration. In both situations, the bias of including the pre-census émigrés in the numbers of generally displaced persons (IDPs and refugees) is approximately at most 5% for the whole country, which is a widely accepted error level in statistic.

The 1997-98 voters register is a large sample of, practically, the 1997-98 population of eligible voters of Bosnia and Herzegovina (i.e. age 18 or more years at the elections). All voters who registered to vote in 1997 and 1998, are covered in this source. We merged the two voters registers (1997 and 1998) in one (1997-98). The overlap of these two lists is large. Only about 150,000 records are new in 1998 (1st registration in 1998). All other records reported in the 1998 register are also covered in the 1997 register. While merging the registers, we included all records from 1997 (1st registration in 1997) and additionally the new records from 1998 (150,000 records from the 1st registration in 1998). In most cases, the 1998 records appeared to cover municipalities where the registration was less complete in 1997. The total size of the merged 1997-98 voters register is 2,674,506 records and it mainly covers the year 1997.

Note that the voters register cannot be used to estimate the overall population size in 1997 or 1998, the population was certainly larger than the 2,7 million voters covered in the register. However, it can be safely used in producing statistics *characterizing* the ethnic composition in 1997-98 and internally displaced persons and refugees as of 1997-98. All absolute numbers obtained from the register are “at least” numbers, which is related to the incompleteness of this source. All relative measures (i.e. percentages) can be extrapolated over the entire population and can be seen as reliable. 0503-1634

Voters register has some deficiencies as those discussed for the census (e.g. spelling mistakes, incomplete or missing JMB – personal identification number etc.). The deficiencies can be corrected in the same way as done for the census (Annex B5).

The two types of individual records, i.e. records from the census and from the voters register, have been linked together through a complex matching process. In this process the vast majority of individuals included in the voters register (about 80%) have been found in the 1991 population census. Out of the total of 2,674,506 voters' records, some 2,125,999 records (i.e. exactly 79.5%) have been linked, of which 319,405 records were reported as out-of-country and 1,805,419 as in the country. The linked data formed the basis for all analyses completed for this report. Linking of the 1991 census and the 1997-98 voters register made it possible to include all census items for every voter matched. Thus, for all those 1997-98 voters who have been linked with the census, we could use records of ethnicity reported in the 1991 census, and also their municipality of residence in 1991.

All analyses are made by ethnicity, obtained from exactly the same definition for both analyzed years, for 1991 and also for 1997-98. The definition we applied is the one used in the questionnaire of the 1991 population census, where ethnicity was a self-reported response to an open-ended question. In the original census forms, the citizens of Bosnia and Herzegovina mentioned several hundreds of ethnic categories. We re-grouped these categories into four major clusters: those who reported themselves as Muslims, Croats or Serbs were regarded as members of these particular groups, all remaining categories, including Yugoslavs, were taken together as Others.

With regard to the definition of internally displaced persons, the 1991 and 1997-98 municipality of residence were compared for each person studied. If an individual resided in 1991 in a different municipality than the municipality where he/she registered to vote in 1997-98 elections, than the person was considered internally displaced. Comparisons were made for post-Dayton municipalities, which involved creating a new variable, post-Dayton municipality, for all individuals reported in the census. This task was largely successfully completed and in the end only a small number of settlements split between the political entities, RS and FBH, had to be excluded from the analysis.

It needs to be noted that *internal* migration in former socialist countries, such as Yugoslavia and, in particular, Bosnia and Herzegovina, was limited in the years until 1991. Our analysis of differences in the place of residence *before* and *after* the conflict is therefore fully justified as a method for assessment of population movements during the 1992-95 conflict. Pre-conflict internal migration in Bosnia and Herzegovina was negligible. Moreover the usual causes of internal migration (labour market, housing, education etc.) did not operate during the conflict. Poor housing was one of the reasons for low population mobility in Bosnia and Herzegovina before 1991. Also the urbanisation process was relatively slow in Bosnia when compared with dynamic Western countries. The process was controlled by the socialist party. Labour migration did not play much role as unemployment did not exist in the socialist system. Jobs were guaranteed for everyone. Making career was related to factors largely beyond individual ambition and readiness to move for a job. These factors were related to, for example, socialist party membership or employment policies of the leading party. The working age population of the former Yugoslavia, including Bosnia, mainly men, travelled, however, to Western

European countries for temporary jobs and better income, but this temporary (external, not internal) migration returned systematically back home. The impact of the population working abroad on our statistics of refugees is discussed in Annex B4.

Refugees were persons who in 1991 were reported in the population of Bosnia and Herzegovina (including those temporarily residing abroad) and who in 1997-98 registered to vote in countries different than Bosnia. There were approximately 300,000 out-of-country voters who satisfied this criterion. Some were excluded from refugees' statistics due to unsuccessful matching with the census or lacking value of the post-Dayton municipality for 1991 (split settlement problem).

Note that our definitions of internally displaced persons and refugees are statistical, not legal. As such the numbers of IDPs and refugees presented in this report should be seen as approximations of the actual true figures. Note also that obtaining the true figures is in our view an impossible task due to limited existing sources of information and fragmentary information contained in these sources.

Section 7 of this report (“Summary Statistics on IDPs and Refugees ...”) contains, among other things, a comparison of our OSCE-based statistics of IDPs in 1997-98 with those produced by the UNHCR and Bosnian government for the year 2000. The UNHCR and BH government database (DDPR) can be seen as legal, for it has been developed as a registration system of all IDPs and refugees in Bosnia for the purpose of providing them with social benefits and compensations for lost property. The DDPR-based statistics describe the IDPs as of the year 2000, unlike the OSCE-based figures that relate to 1997-98. Nevertheless, we found many similarities between these two sources. Both sources are also much lower than the actual 1992-95 true figures.

3. MAJOR FINDINGS FOR MUSLIMS

3.1 PERCENTAGE OF MUSLIMS IN THE POPULATION OF HERCEG-BOSNA: STATUS IN 1991 AND 1997-98

In the eight municipalities included in the indictment the share of Muslims increased from **34.6%** in 1991 to **37.4%** in 1997-98, i.e. by **8.0** percent (Table 1M, Annex A). These figures include all eight municipalities, both those assigned to the Federation of Bosnia and Herzegovina, and those assigned to Republika Srpska after the Dayton Peace Agreement in November 1995. In the areas that in 1997-98 belonged to the Federation of Bosnia and Herzegovina, the share of Muslims increased from **34.8%** in 1991 to **37.8%** in 1997-98 (by **8.9%**). Considering only the territories which eventually constituted Republika Srpska, the share of Muslims fell from **25.9%** to **0.1%** (i.e. by **99.7** percent) over the same period. The detailed figures by municipality are provided in Table 1M in Annex A.

3.2 THE MINIMUM NUMBER OF INTERNALLY DISPLACED PERSONS AND REFUGEES FROM HERCEG-BOSNA: STATUS IN 1997-98

Table 2M, Annex A, contains figures that refer to the individuals who resided in the HERCEG-BOSNA municipalities in 1991 (and were therefore enumerated in the 1991 census) and also registered to vote in the 1997-98 elections. In Table 2M we grouped the voters by municipality of residence in 1991.⁴ Thus, Table 2M shows internally displaced persons and refugees by municipality of departure. Only HERCEG-BOSNA municipalities are included.

Of the whole post-war population originating from the eight HERCEG-BOSNA municipalities (i.e. the population residing in these municipalities in 1991), at least **61,487** persons (**43.2%** of all identified survivors) were still displaced or refugees in 1997-98. Out of this total, some **26,663** persons were the Muslims. Thus, there were **43.4%** Muslims among all refugees and persons displaced from the eight HERCEG-BOSNA municipalities.

The equivalent indicator for the HB area in the Federation of Bosnia and Herzegovina shows **43.2%** of Muslim IDPs and refugees (**26,189** out of **60,586**). From the HB territories, which in 1997-98 belonged to Republika Srpska, **52.6%** of all internally displaced persons and refugees were Muslims (**474** out of **901**).

In 1997-98, the fraction of IDPs and refugees among the population of Muslims originating from the eight HERCEG-BOSNA municipalities equalled **49** percent. This indicator for the Federation is **48.6** per cent and for RS **100.0%** (see also Figures 2 and 3 below).

⁴ In Table 1M, the voters are grouped by the municipality where they registered to vote in 1997-98. Thus, the populations of voters in Table 1M are partly different than those in Table 2M.

Figure 2. Percentage of Muslim IDPs and Refugees Living Outside Their 1991 Place of Residence as of 1997-98: Geographic Pattern

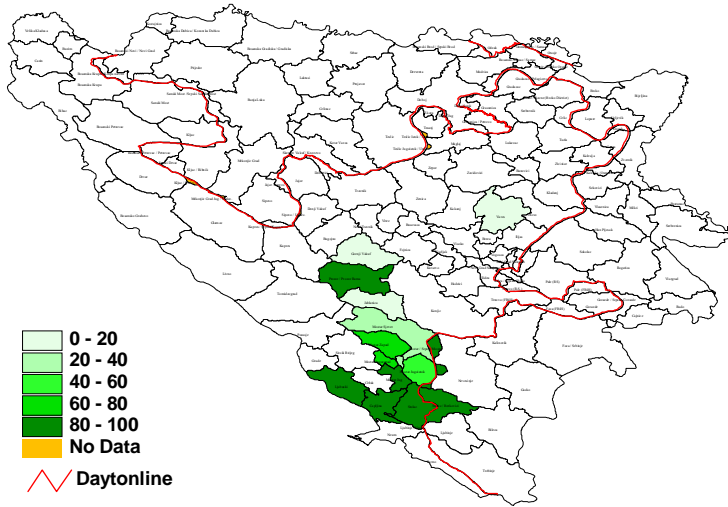
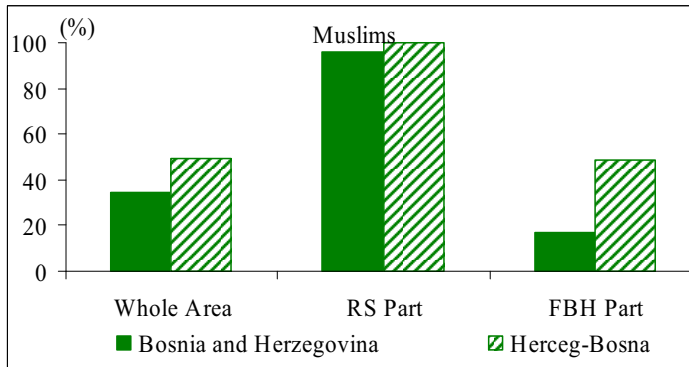


Figure 3. Percentage of Muslim IDPs and Refugees Living Outside Their 1991 Place of Residence as of 1997-98: Bosnia and Herzegovina versus HERCEG-BOSNA Area



The detailed figures by municipality are provided in Table 2M and 2BH in Annex A.

3.3 AN ESTIMATE OF THE OVERALL NUMBER OF INTERNALLY DISPLACED PERSONS AND REFUGEES FROM HERCEG-BOSNA: STATUS IN 1997-98: THE MUSLIMS

The absolute figures included in Table 2M, Annex A, are minimum numbers, based on the most conservative approach to the data. The true figures must be expected to be substantially higher. We produced an estimate of the unknown true figures, which are shown in Table 3M in Annex A. For the whole HERCEG-BOSNA area we estimated a total of **101,107** internally displaced persons and refugees, with a 95% confidence interval ranging from 100,137 to 102,078 persons. Among all IDPs and refugees, there were estimated **40,266** Muslim IDPs and refugees (95% confidence interval: from 39,797 to 40,735).

For the HB area in the Federation of Bosnia and Herzegovina, we obtained a total of **99,031** (98,092-99,970) IDPs and refugees, and a total of **39,275** (38,806-39,744) of Muslims IDPs and refugees.

For the HB area in Republika Srpska, the numbers were as follows: **2,076** (2,045-1,108) of all IDPs and refugees, and **991** (991-991) of Muslims IDPs and refugees.

4. MAJOR FINDINGS FOR SERBS

4.1 PERCENTAGE OF SERBS IN THE POPULATION OF HERCEG-BOSNA: STATUS IN 1991 AND 1997-98

In the eight municipalities included in the indictment the share of Serbs fell from **13.2%** in 1991 to **2.8%** in 1997-98, i.e. by **79.0** percent (Table 1S, Annex A). These figures include all eight municipalities, both those assigned to the Federation of Bosnia and Herzegovina, and those assigned to Republika Srpska after the Dayton Peace Agreement in November 1995. In the areas that in 1997-98 belonged to the Federation of Bosnia and Herzegovina, the share of Serbs fell from **12.6%** in 1991 to **1.6%** in 1997-98 (by **87.5%**). Considering only the territories which eventually constituted Republika Srpska, the share of Serbs increased from **49.4%** to **98.3%** (i.e. by **99.0** percent) over the same period. The detailed figures by municipality are provided in Table 1S in Annex A.

4.2 THE MINIMUM NUMBER OF INTERNALLY DISPLACED PERSONS AND REFUGEES FROM HERCEG-BOSNA: STATUS IN 1997-98

Table 2S, Annex A, contains figures that refer to the individuals who resided in the HERCEG-BOSNA municipalities in 1991 (and were enumerated in the 1991 census) and also registered to vote in the 1997-98 elections. In Table 2S we grouped the voters by municipality of residence in 1991.⁵ Thus, Table 2S shows internally displaced persons and refugees by municipality of departure. Only HERCEG-BOSNA municipalities are included.

Of the whole post-war population originating from the eight HERCEG-BOSNA municipalities (i.e. the population residing in these municipalities in 1991), at least **61,487** persons (**43.2%** of all identified survivors) were still displaced or refugees in 1997-98. Out of this total, some **14,614** persons were the Serbs. Thus, there were **23.8%** Serbs among all refugees and persons displaced from the eight HERCEG-BOSNA municipalities.

The equivalent indicator for the HB area in the Federation of Bosnia and Herzegovina shows **24.0%** of Serb IDPs and refugees (**14,536** out of **60,586**). From the HB territories, which in 1997-98 belonged to Republika Srpska, **8.7%** of all internally displaced persons and refugees were Serbs (**78** out of **901**).

In 1997-98, the fraction of IDPs and refugees among the population of Serbs originating from the eight HERCEG-BOSNA municipalities equalled **86.9** percent. This indicator for the Federation of Bosnia and Herzegovina is **91.6** per cent and for the Republika Srpska **8.2%** (see also Figures 4 and 5 below).

⁵ In Table 1S, the voters are grouped by the municipality where they registered to vote in 1997-98. Thus, the populations of voters in Table 1S are partly different than those in Table 2S.

Figure 4. Percentage of Serb IDPs and Refugees Living Outside Their 1991 Place of Residence as of 1997-98: Geographic Pattern

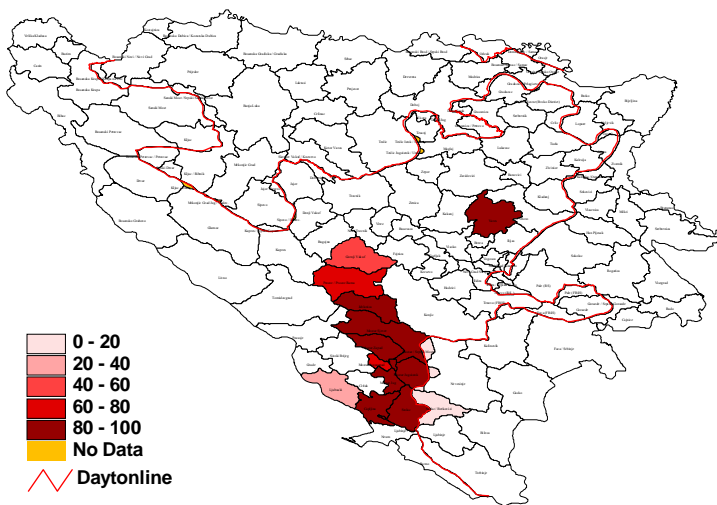
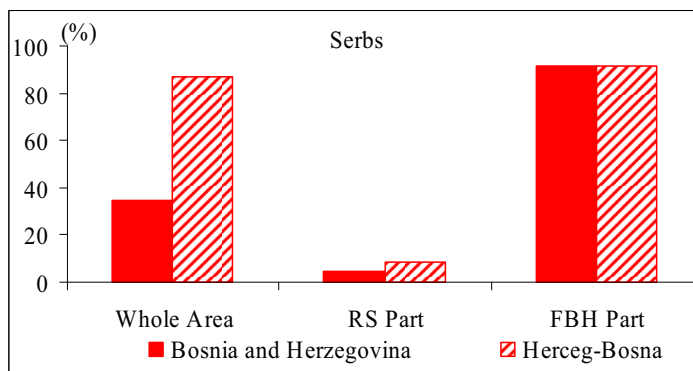


Figure 5. Percentage of Serb IDPs and Refugees Living Outside Their 1991 Place of Residence as of 1997-98: Bosnia and Herzegovina versus HERCEG-BOSNA Area



The detailed figures by municipality are provided in Table 2S and 2BH in Annex A.

4.3 AN ESTIMATE OF THE OVERALL NUMBER OF INTERNALLY DISPLACED PERSONS AND REFUGEES FROM HERCEG-BOSNA: STATUS IN 1997-98: THE SERBS

The absolute figures included in Table 2S, Annex A, are minimum numbers, based on the most conservative approach to the data. The true figures must be expected to be substantially higher. We produced an estimate of the unknown true figures, which are shown in Table 3S in Annex A. For the whole HERCEG-BOSNA area we estimated a total of **101,107** internally displaced persons and refugees, with a 95% confidence interval ranging from 100,137 to 102,078 persons. Among all IDPs and refugees, there were estimated **26,304** Serb IDPs and refugees (95% confidence interval: from 26,039 to 26,569).

For the HB area in the Federation of Bosnia and Herzegovina, we obtained a total of **99,031** (98,092-99,970) IDPs and refugees, and a total of **26,148** (25,913-26,382) of Serb IDPs and refugees.

For the HB area in Republika Srpska, the numbers were as follows: **2,076** (2,045-2,108) of all IDPs and refugees, and **156** (126-187) of Serb IDPs and refugees.

5. MAJOR FINDINGS FOR OTHERS

5.1 PERCENTAGE OF OTHERS IN THE POPULATION OF HERCEG-BOSNA: STATUS IN 1991 AND 1997-98

In the eight municipalities included in the indictment the share of Others fell from **7.8%** in 1991 to **5.7%** in 1997-98, i.e. by **27.3** percent (Table 10, Annex A). These figures include all eight municipalities, both those assigned to the Federation of Bosnia and Herzegovina, and those assigned to Republika Srpska after the Dayton Peace Agreement in November 1995. In the areas that in 1997-98 belonged to the Federation of Bosnia and Herzegovina, the share of Others decreased from **7.9 %** in 1991 to **5.7%** in 1997-98 (**by 27.7%**). Considering only the territories which eventually constituted Republika Srpska, the share of Others increased from **0.9%** to **1.4%** (i.e. by **52.3** percent) over the same period. The detailed figures by municipality are provided in Table 10 in Annex A.

5.2 THE MINIMUM NUMBER OF INTERNALLY DISPLACED PERSONS AND REFUGEES FROM HERCEG-BOSNA: STATUS IN 1997-98

Table 20, Annex A, contains figures that refer to the individuals who resided in the HERCEG-BOSNA municipalities in 1991 (and were enumerated in the 1991 census) and also registered to vote in the 1997-98 elections. In Table 20 we grouped the voters by municipality of residence in 1991.⁶ Thus, Table 20 shows internally displaced persons and refugees by municipality of departure. Only HERCEG-BOSNA municipalities are included.

Of the whole post-war population originating from the eight HERCEG-BOSNA municipalities (i.e. the population residing in these municipalities in 1991), at least **61,487** persons (**43.2%** of all identified survivors) were still displaced or refugees in 1997-98. Out of this total, some **4,497** persons were the Others. Thus, there were **7.3%** Others among all refugees and persons displaced from the eight HERCEG-BOSNA municipalities.

The equivalent indicator for the HB area in the Federation of Bosnia and Herzegovina shows **7.4%** of Other IDPs and refugees (**4,490** out of **60,586**). From the HB territories, which in 1997-98 belonged to Republika Srpska, **0.8%** of all internally displaced persons and refugees were Others (**7** out of **901**).

In 1997-98, the fraction of IDPs and refugees among the population of Others originating from the eight HERCEG-BOSNA municipalities equalled **51.6** percent. This indicator for the Federation of Bosnia and Herzegovina is **51.6** per cent and for the Republika Srpska **46.7%** (see also Figures 6 and 7 below).

⁶ In Table 10, the voters are grouped by the municipality where they registered to vote in 1997-98. Thus, the populations of voters in Table 10 are partly different than those in Table 20.

Figure 6. Percentage of Other IDPs and Refugees Living Outside Their 1991 Place of Residence as of 1997-98: Geographic Pattern

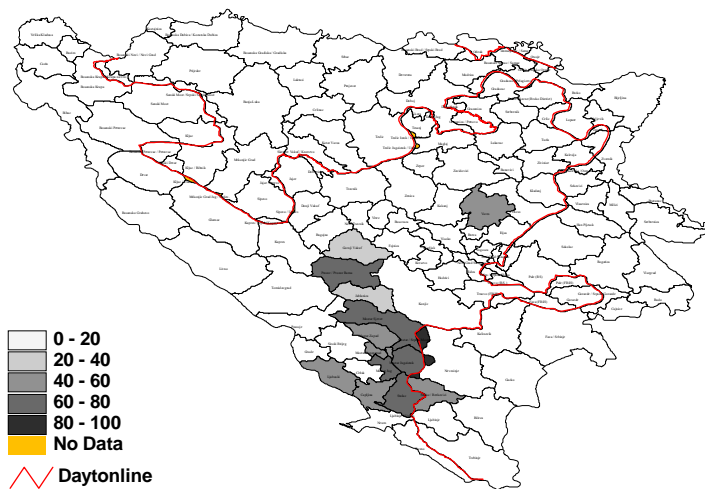
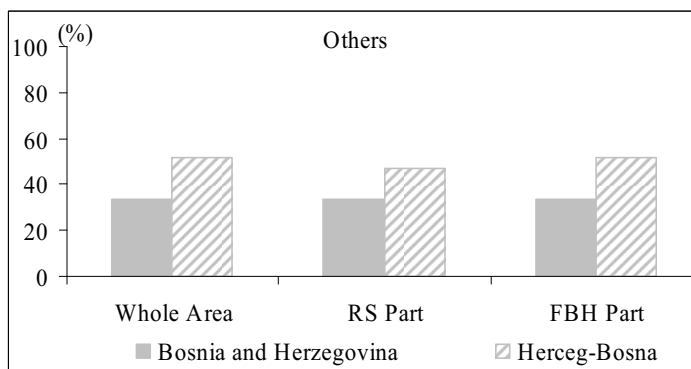


Figure 7. Percentage of Other IDPs and Refugees Living Outside Their 1991 Place of Residence as of 1997-98: Bosnia and Herzegovina versus HERCEG-BOSNA Area



The detailed figures by municipality are provided in Table 2O and 2BH in Annex A.

5.3 AN ESTIMATE OF THE OVERALL NUMBER OF INTERNALLY DISPLACED PERSONS AND REFUGEES FROM HERCEG-BOSNA: STATUS IN 1997-98: THE OTHERS

The absolute figures included in Table 2O are minimum numbers, based on the most conservative approach to the data. The true figures must be expected to be substantially higher. We produced an estimate of the unknown true figures, which are shown in Table 3O in Annex A. For the whole HERCEG-BOSNA area we estimated a total of **101,107** internally displaced persons and refugees, with a 95% confidence interval ranging from 100,137 to 102,078 persons. Among all IDPs and refugees, there were estimated **9,391** Other IDPs and refugees (95% confidence interval: from 8,940 to 9,836).

For the HB area in the Federation of Bosnia and Herzegovina, we obtained a total of **99,031** (98,092-99,970) IDPs and refugees, and a total of **9,374** (8,932-9,815) of Other IDPs and refugees.

For the HB area in Republika Srpska, the numbers were as follows: **2,076** (2,045-2,108) of all IDPs and refugees, and **17** (7-21) of Other IDPs and refugees.

6. MAJOR FINDINGS FOR CROATS

6.1 PERCENTAGE OF CROATS IN THE POPULATION OF HERCEG-BOSNA: STATUS IN 1991 AND 1997-98

In the eight municipalities included in the indictment the share of Croats increased from **44.4%** in 1991 to **54.2%** in 1997-98, i.e. by **22.0** percent (Table 1C, Annex A). These figures include all eight municipalities, both those assigned to the Federation of Bosnia and Herzegovina, and those assigned to Republika Srpska after the Dayton Peace Agreement in November 1995. In the areas that in 1997-98 belonged to the Federation of Bosnia and Herzegovina, the share of Croats increased from **44.8%** in 1991 to **54.9%** in 1997-98 (by **22.6%**). Considering only the territories which eventually constituted Republika Srpska, the share of Croats fell from **23.8%** to **0.2%** (i.e. by **99.1** percent) over the same period. The detailed figures by municipality are provided in Table 1C in Annex A.

6.2 THE MINIMUM NUMBER OF INTERNALLY DISPLACED PERSONS AND REFUGEES FROM HERCEG-BOSNA: STATUS IN 1997-98

Table 2C, Annex A, contains figures that refer to the individuals who resided in the HERCEG-BOSNA municipalities in 1991 (and were enumerated in the 1991 census) and also registered to vote in the 1997-98 elections. In Table 2C we grouped the voters by municipality of residence in 1991.⁷ Thus, Table 2C shows internally displaced persons and refugees by municipality of departure. Only HERCEG-BOSNA municipalities are included.

Of the whole post-war population originating from the eight HERCEG-BOSNA municipalities (i.e. the population residing in these municipalities in 1991), at least **61,487** persons (**43.2%** of all identified survivors) were still displaced or refugees in 1997-98. Out of this total, some **15,713** persons were the Croats. Thus, there were **25.6%** Croats among all refugees and persons displaced from the eight HERCEG-BOSNA municipalities.

The equivalent indicator for the HB area in the Federation of Bosnia and Herzegovina shows **25.4%** of Croat IDPs and refugees (**15,371** out of **60,586**). From the HB territories, which in 1997-98 belonged to Republika Srpska, **38.03%** of all internally displaced persons and refugees were Croats (**342** out of **901**).

In 1997-98, the fraction of IDPs and refugees among the population of Croats originating from the eight HERCEG-BOSNA municipalities equalled **25.2** percent. This indicator for the Federation is **24.8** per cent and for RS **100.0%** (see also Figures 8 and 9 below).

⁷ In Table 1C, the voters are grouped by the municipality where they registered to vote in 1997-98. Thus, the populations of voters in Table 1C are different than those in Table 2C.

Figure 8. Percentage of Croat IDPs and Refugees Living Outside Their 1991 Place of Residence as of 1997-98: Geographic Pattern

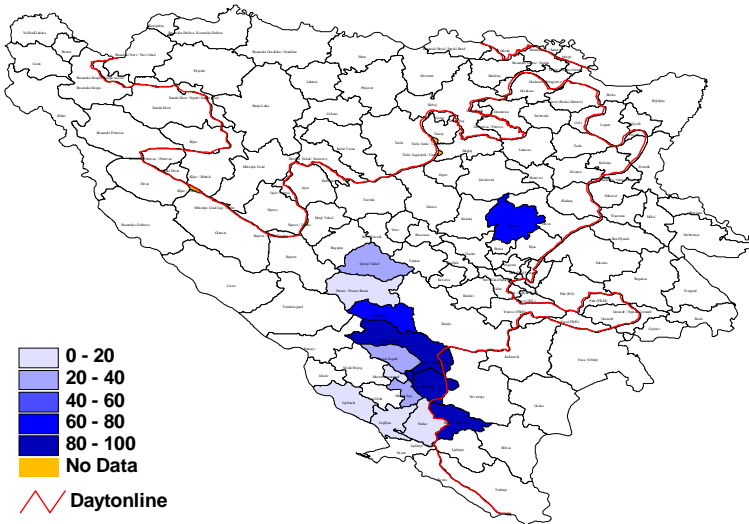
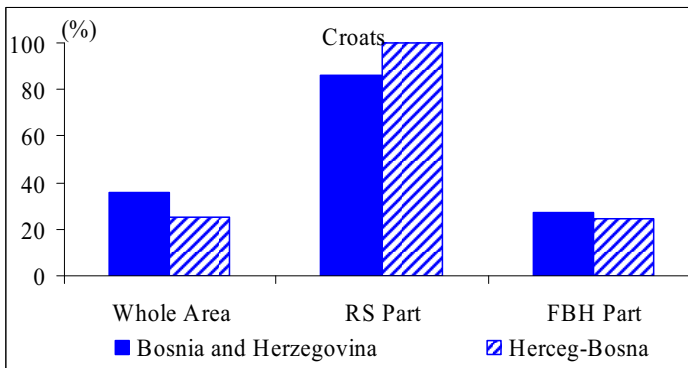


Figure 9. Percentage of Croat IDPs and Refugees Living Outside Their 1991 Place of Residence as of 1997-98: Bosnia and Herzegovina versus HERCEG-BOSNA Area



The detailed figures by municipality are provided in Table 2C and 2BH in Annex A.

6.3 AN ESTIMATE OF THE OVERALL NUMBER OF INTERNALLY DISPLACED PERSONS AND REFUGEES FROM HERCEG-BOSNA: STATUS IN 1997-98: THE CROATS

The absolute figures included in Table 2C, Annex A, are minimum numbers, based on the most conservative approach to the data. The true figures must be expected to be substantially higher. We produced an estimate of the unknown true figures, which are shown in Table 3C in Annex A. For the whole HERCEG-BOSNA area we estimated a total of **101,107** internally displaced persons and refugees, with a 95% confidence interval ranging from 100,137 to 102,078 persons. Among all IDPs and refugees, there were estimated **25,147** Croat IDPs and refugees (95% confidence interval: from 24,638 to 25,656).

For the HB area in the Federation of Bosnia and Herzegovina, we obtained a total of **99,031** (98,092-99,970) IDPs and refugees, and a total of **24,235** (23,726-24,744) of Croat IDPs and refugees.

For the HB area in Republika Srpska, the numbers were as follows: **2,076** (2,045-2,108) of all IDPs and refugees, and **912** (912-912) of Croats IDPs and refugees.

7. SUMMARY OF STATISTICS ON IDPS AND REFUGEES, STATUS AS OF 1997-98

In this section we summarise the findings related to IDPs and refugees shown in Sections 2 to 6 of this report. Below an overview is included of the major figures discussed in this report (Table 2). The overview is a guide for reading through the many statistics discussed in this report.

Table 2. Overview of the Population Size and Numbers of IDPs and Refugees from the HERCEG-BOSNA Area, 1991 and 1997-98, for Those Born before 1980

ETHNICITY	Population 1991 "IN"	Population 1997 "FROM"	Population 1997 "IN"	MINIMUM NUMBER	ESTIMATED NUMBER	MINIMUM NUMBER	MINIMUM NUMBER
				"AT LEAST" IDPs + Refugees among POP97 "FROM"	"COMPLETE" IDPs + Refugees among POP97 "FROM"	"AT LEAST" IDPs among POP97 "FROM" (DU OTP)	"AT LEAST" IDPs among POP 2000 "FROM" (UNHCR & BH Govern)
Non-Croats	128,742	79,928	54,425	45,774	75,961	30,119	24,357
Muslims	80,151	54,395	44,397	26,663	40,266	17,183	11,943
Serbs	30,495	16,814	3,281	14,614	26,304	10,492	12,207
Others	18,096	8,719	6,747	4,497	9,391	2,444	207
Croats	102,868	62,276	64,367	15,713	25,147	10,410	7,730
All Ethnicities	231,610	142,204	118,792	61,487	101,107	40,529	32,087

In this report we discussed two types of figures on the population size and two figures on IDPs and refugees. All statistics in this report relate to those born before 1980 that at the time of 1997 elections were eligible to vote.

The reference population of our study was the 1991 census population of the HERCEG-BOSNA area. The size of this population for Non-Croats was 128,742 individuals (Table 2 above), who all were registered during the census in the eight municipalities - constituent parts of the HERCEG-BOSNA area. Hereafter we call this population POP91 "IN". In this report we also studied the POP97 "IN" population, which comprised all those individuals who registered to vote in the eight municipalities of the HERCEG-BOSNA area. There were 54,425 Non-Croats who belonged to this population in 1997-98 (Table 2). The POP97 "IN" population included partly those that used to live in this area in 1991 and also newcomers, who moved into this territory during and after the conflict. Changes in the ethnic composition of every municipality were assessed in this report on the basis of a comparison of the two "IN" populations (1991 and 1997-98). The changes obviously resulted from both the outflow of the original 1991 inhabitants of the HERCEG-BOSNA area and the inflow of newcomers into this territory. A next factor determining the changes were deaths.

In the analysis of population movements between 1991 and 1997-98, the POP97 "IN" population was not used, however. The original 1991 population traced in the 1997-98 voters register and living at any location in or outside Bosnia was essential. This population is called "FROM" in Table 2 (hereafter: POP97 "FROM"). We identified 79,928 Non-Croats as of

1997-98 (Voters Register) who were also registered in the 1991 census as living in the HERCEG-BOSNA area. However, it is clear from Table 2 that not all Non-Croats reported in the 1991 census have been traced. Some 79,928 Non-Croats out of totally 128,742 Non-Croats reported in 1991 were identified (62%). This sample, although incomplete, is certainly large enough to draw conclusions about minimum numbers of IDPs and refugees, and also to make estimates of the unknown more complete numbers of IDPs and refugees originating from this territory.

The minimum number of IDPs and refugees originating from the 1991 census population of the HERCEG-BOSNA area was for Non-Croats 45,774 (out of 128,742 in 1991) and for all ethnic groups together 61,487 (out of 231,610 in 1991). The minimum numbers are certainly extremely low. The reasons for this include:

- the analysed 1991 population did not include all those born after 1980 up to the census in March 1991, (exactly 49,756 persons, i.e. 17.7% of the 1991 population, were excluded),⁸
- the analysed voters population did not include persons whose records were not matched with the census, (about 36,669 persons were excluded)⁹
- the analysed population of voters did not include those that did not register to vote, their exact number is unknown, we estimate they could comprise about 12% of the 1997-98 population of eligible voters. The 12% of unregistered voters would amount to about 24,392 persons from the HERCEG-BOSNA area.¹⁰

⁸ The 49,756 persons were obtained as a difference between the POP91 “IN” (231,610 comprising only those born before 1980) and the overall 1991 census population of the HERCEG-BOSNA area (281,366; see below).

MUNICIPALITY	YEAR	TOTAL	CROATS	MUSLIMS	SERBS	YUGO-SLAVS	OTHERS & UNKNOWN
BOSNIA AND HERZEGOVINA	1991	4,377,033	760,852	1,902,956	1,366,104	242,682	104,439
ČAPLJINA	1991	27,882	14,969	7,672	3,753	1,047	441
GORNJI VAKUF	1991	25,181	10,706	14,063	110	158	144
JABLANICA	1991	12,691	2,291	9,099	504	581	216
LJUBUŠKI	1991	28,340	26,127	1,592	65	227	329
MOSTAR	1991	126,628	43,037	43,856	23,846	12,768	3,121
PROZOR	1991	19,760	12,259	7,225	45	100	131
STOLAC	1991	18,681	6,188	8,101	3,917	307	168
VAREŠ	1991	22,203	9,016	6,714	3,644	2,071	758
HERCEG-BOSNA	1991	281,366	124,593	98,322	35,884	17,259	5,308

Stanovništvo Bosne i Hercegovine. Narodnosni Sastav po Naseljima. Republika Hrvatska. Državni Zavod za Statistiku, Zagreb, Travanj, 1995

⁹ The number of 36,669 is an estimate based on the matching rate of the 1997-98 voters register with the 1991 census (79.5% voters records were matched) and the size of POP97 “FROM” (142,204), which comprises matched records only. If 142,204 is corrected for unmatched records (142,204 is divided by 0.795), the result of this simple calculation (178,873 individuals) are all (matched and unmatched) registered voters of POP97 “FROM”. The 36,669 is the difference between 178,873 and 142,204.

¹⁰ The 12% of unregistered voters is *our educated guess*; it does not come from the OSCE. Despite of the fact that in the 1997 elections the OSCE attempted to achieve a full registration of all eligible voters, not all of them did register (OSCE, 1997). The assumed 12% of unregistered voters would

In order to produce more complete numbers that give a better impression of the scale of population migration, we made an estimate of IDPs and refugees (see Annex C2 for the method), based on the fraction of IDPs and refugees in every ethnic group as observed by 1997-98 (Annex A, Tables 2M, 2S, 2O, and 2C) and applied this fraction to the 1991 population born before 1980 (Annex A, Tables 1M, 1S, 1O, and 1C). The resulting numbers, and their associated confidence intervals, are included in Annex A, Tables 3M, 3S, 3O, and 3C. For Non-Croats this estimate equals 75,961 individuals (Table 2 above, versus the minimum of 45,774 IDPs and refugees given next to it in the same table).

All in all, the estimated number of 75,961 IDPs and refugees is a considerable quantity in relation to the 1991 population of 231,610 of those born before 1980, especially that this estimate is still incomplete and should be further increased to include all those IDPs and refugees who were born after 1980 up to March 1991.

Table 3a. The 1997 Voters Originating from HERCEG-BOSNA Area By Ethnicity and Place of Registration to Vote in 1997-98 Absolute Numbers

Ethnicity	Non-DPs	IDPs	Refugees	Total
Serbs	2,200	10,492	4,122	16,814
Muslims	27,732	17,183	9,480	54,395
Croats	46,563	10,410	5,303	62,276
Others	4,222	2,444	2,053	8,719
Total	80,717	40,529	20,958	142,204

Table 3b. The 1997 Voters Originating from HERCEG-BOSNA Area By Ethnicity and Place of Registration to Vote in 1997-98, Percentages

Ethnicity	Non-DPs	IDPs	Refugees	Total
Serbs	13.1	62.4	24.5	100.0
Muslims	51.0	31.6	17.4	100.0
Croats	74.8	16.7	8.5	100.0
Others	48.4	28.0	23.5	100.0
Total	56.8	28.5	14.7	100.0

imply that the complete population of eligible voters would be on estimated 2.91 million ($2.56 / 0.88$) and the complete 1997 population in BH would be 3.42 million ($2.91 / 0.85$). The 1997 BH population size has been and remains unknown, but the 3.42 million figure is largely consistent with the projections published by the UN in the World Population Prospects (UN, 2002), which are the best known population projections in the world. For 1995, the 2002 UN Population Prospects reported an estimated 3.42 millions citizens in Bosnia and Herzegovina.

The formula for obtaining the 24,392 unregistered voters: $178,873/0.88$ (all voters)-178,873 (registered voters).

Table 3 (a, b) shows the distribution of the 1997 population of voters (i.e. minimum numbers), who used to live in the HERCEG-BOSNA area also in 1991, by their place of registration to vote in 1997-98. The table makes a distinction between domestic population (Non-DPs), internally displaced persons (IDPs) and refugees (Ref). According to Table 3b, except of the Serbs the most voters originating from the HERCEG-BOSNA area were non-displaced persons and registered in the domestic municipality in 1997 (56.8% of the total; i.e. a minimum of 80,717 out of 231,610). The majority of Non-DPs were ethnic Croats (a minimum of 46,563 out of 80,717).

Some 28.5% of the 1997-98 voters were internally displaced and resided in municipalities other than domestic in 1997-98 (a minimum of 40,529; mostly Muslims). In addition to that, 14.7% of the 1997-98 voters originating from the HERCEG-BOSNA area resided abroad in 1997 (a minimum of 20,958; mostly Muslims).

Table 3c. Refugees Originating from HERCEG-BOSNA Area By Country of Registration and Ethnicity, Status as of 1997

Ethnicity	Croatia		FRY		Other Countries		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Serbs	26	0.6	3,892	94.4	204	4.9	4,122	100.0
Muslims	128	1.4	31	0.3	9,321	98.3	9,480	100.0
Croats	1,835	34.6	106	2.0	3,362	63.4	5,303	100.0
Others	118	5.7	537	26.2	1,398	68.1	2,053	100.0
Total	2,107	na	4,566	na	14,285	na	20,958	na

Source: The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.

Table 3c further confirms that the largest group of refugees from the HERCEG-BOSNA area was of Muslims (a minimum of 9,480 persons) and that 98.3% of this group stayed in 1997-98 in countries outside the region of the former Yugoslavia (a minimum of 9,321 out of 9,480). A majority of Croat and Other refugees registered outside the former Yugoslavia region and a majority of Serbian refugees in the Federal Republic of Yugoslavia (Serbia and Montenegro).

8. SUMMARY OF CHANGES IN THE ETHNIC COMPOSITION OF THE ENTIRE POPULATION AND OF IDPS AND REFUGEES FROM THE HERCEG-BOSNA AREA, 1991 vs. 1997-98

Table 4 (a,b) and Figure 10 below summarise the 1992-97 changes in the ethnic composition of the HERCEG-BOSNA area. The results were obtained using records of those born before 1980. The actual population, i.e. all those who resided in the HERCEG-BOSNA Area in 1991 (or 1997-98), was used. The 1991 population was complete and the 1997-98 population was represented by a large sample (Voters Register).

Table 4. Ethnic Composition in RS and FBH Parts of HERCEG-BOSNA Area, 1991 versus 1997, Actual Population, Born Before 1980

(a) The HERCEG-BOSNA Area as a Whole

Ethnicity	POP 1991 IN	POP 1997 IN	Percentage Change
Muslims	80,151	44,397	-
Serbs	30,495	3,281	-
Others	18,096	6,747	-
Croats	102,868	64,367	-
All Ethnicities	231,610	118,792	-
Muslims	34.6	37.4	+8.0
Serbs	13.2	2.8	-79.0
Others	7.8	5.7	-27.3
Croats	44.4	54.2	+22.0
All Ethnicities	100.0	100.0	-

(b) The HERCEG-BOSNA Area By Political Entity

	RS Part of Herceg-Bosna					FBH Part of Herceg-Bosna				
	All	Serbs	Muslims	Croats	Others	All	Serbs	Muslims	Croats	Others
Numbers										
1991	3,831	1,892	991	912	36	227,779	28,603	79,160	101,956	18,060
1997	1,467	1,442	1	3	21	117,325	1,839	44,396	64,364	6,726
Per cent										
1991	100.0	49.4	25.9	23.8	0.9	100.0	12.6	34.8	44.8	7.9
1997	100.0	98.3	0.1	0.2	1.4	100.0	1.6	37.8	54.9	5.7
1991-1997 Change	na ⁾	+99.0	-99.7	-99.1	+52.3	na ⁾	-87.5	+8.9	+22.6	-27.7

⁾ na - not applicable

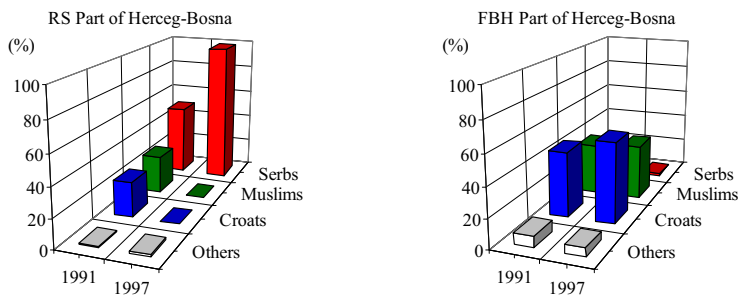
In the period from 1991 to 1997-98 the share of Croats increased by 22%, and that of Muslims by 8 per cent (Table 4a). Serbs and Other ethnic groups largely moved out from the HERCEG-BOSNA area and their fractions declined by 79 and 27.3 per cent, respectively. The

HERCEG-BOSNA area as a whole was dominated by Croats in 1997-98 (54.2%) and the second largest ethnic group was of Muslims (37.4%). There were very few Serbs and Others left (2.8 and 5.7 per cent).

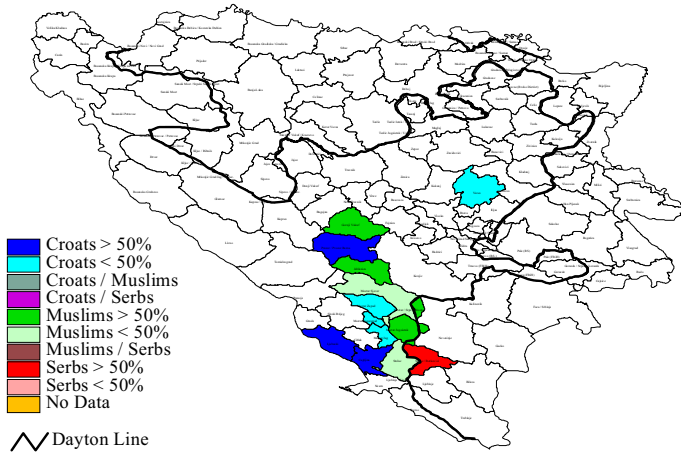
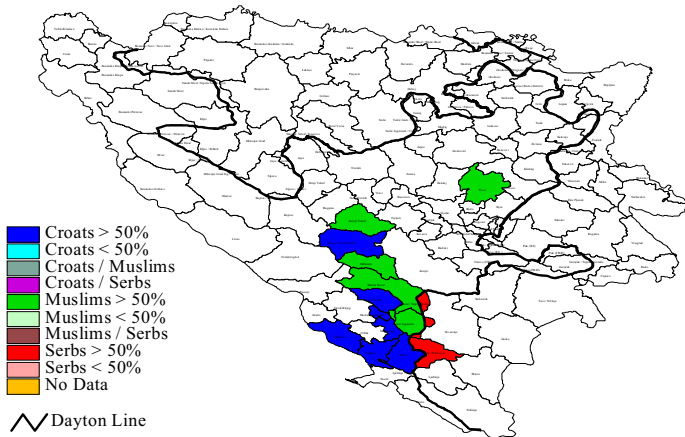
An almost identical patterns of changes is seen in the FBH part of HERCEG-BOSNA area (Table 4b), whereas in the RS part of the area almost exclusively Serbs lived by 1997-98 (98.3%) as opposed to the mixed ethnic composition in 1991.

Further Figure 10 illustrates these changes graphically. It is striking that no considerable changes are seen in the (percentage) ethnic composition in the Federal part of HERCEG-BOSNA, which as we know covers the vast majority of the HERCEG-BOSNA territory analysed in this report. The FBH part of HERCEG-BOSNA used to be dominated by two ethnic groups Croats (the largest of all groups) and Muslims in 1991 and remained to be so in 1997-98. The fraction of each of these groups slightly increased after the conflict, at the expense of all those that left this area. However, below we show a more specific geographic picture of 1991 to 1997-98 changes in the ethnic composition in the municipalities of HERCEG-BOSNA. The ethnic changes in the municipalities prove that the internal migration of the HB population within the area was considerable, even though this cannot be seen at the level of the entire HERCEG-BOSNA.

Figure 10. Ethnic Composition in RS and FBH Parts of HERCEG-BOSNA Area, 1991 vs. 1997, Actual Population, Born Before 1980



The changes in the HB municipalities are shown in Figures 11 to 13. The reversal of proportions in the RS and FBH parts of the HERCEG-BOSNA area in 1991 and 1997-98 is clearly seen for all three ethnic groups, Croats, Muslims and Serbs. This kind of rapid changes cannot be linked to demographic or socio-economic factors of population development and must be attributed to factors related to the 1992-95 conflict.

Figure 11. Ethnic Majority in the HERCEG-BOSNA municipalities, 1991**Figure 12.** Ethnic Majority in the HERCEG-BOSNA municipalities, 1997-98

In 1991, in the Federal part of HERCEG-BOSNA area three municipalities had an absolute majority of Croats (dark blue colour in Figure 11: Ljubuški and Čaplina at the border with Croatia and Prozor in central HB) and another three municipalities of Muslims (dark green in Figure 11: Gornji Vakuf, Jablanica and Mostar Jugoistok). The remaining parts of HERCEG-BOSNA, in particular the rest of the pre-war municipality of Mostar had a mixed ethnic composition, some areas with a relative majority of Croats (light blue in Figure 11: Mostar Zapad, Mostar Jugozapad, Mostar Jug, and Vareš; Vareš is a single separate municipality on the North-East from all other HB municipalities) and some other with a relative majority of Muslims (light green in Figure 11: Mostar Sjever, Mostar Stari Grad and Stolac).

In 1997-98, all municipalities in the Federal part of HERCEG-BOSNA had either a Croat or Muslim *absolute* majority (Figure 12). The municipalities that in 1991 used to have the Croat (absolute or relative) majority became all Croat, except for Vareš (the Croat relative majority in 1991 changed to the Muslim absolute majority in 1997-98) and Stolac (change from the Muslim relative majority in 1991 to the Croat absolute majority in 1997-98).

The municipalities that in 1991 used to have the Muslim (absolute or relative) majority became all Muslim, except for Vareš and Stolac. It seems that after the end of the HERCEG-BOSNA conflict a perfect status quo was achieved between the Croats and Muslims regarding the control over the HB territories by these two major ethnic groups.

Note that the municipalities in RS part of HERCEG-BOSNA included only two *opštine*: a relatively large Stolac-Berkovići (absolute majority of Serbs in 1991 and 1997-98) and a very small Srpski Mostar (consisting of three separate territories adjusting to Eastern Mostar; absolute majority of Muslims in 1991 and of Serbs in 1997-98; Figure 12). Once again, the inter-entity boundary line divided the population of the HERCEG-BOSNA along the ethnic lines.

Figure 13. Ethnic Majority of IDPs and Refugees Living Outside Their 1991 Place of Residence as of 1997-98, HERCEG-BOSNA Area

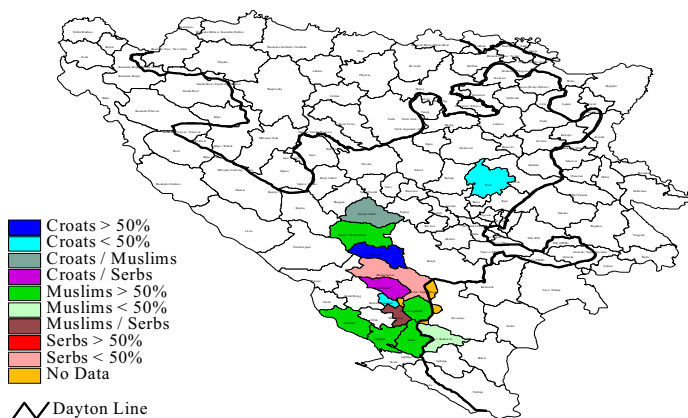


Figure 13 above indicates the ethnic majority of IDPs and refugees who, while originating from the HERCEG-BOSNA area, still lived in 1997 outside their 1991 place of residence. The Muslims were moving out from Ljubuški, Stolac, and Prozor and Croats from Gornji Vakuf, Jablanica and Vareš. The migration patterns within the pre-war municipality of Mostar is more complex and suggest movements of all three ethnic groups, not only Muslims and Croats but also Serbs.

9. CONCLUSIONS

The objective of this report was to present reliable statistics on internally displaced persons and refugees relevant to the indictment period and indictment area of the HERCEG-BOSNA - Bosnia and Herzegovina. The indictment period is from November 1991 to April 1994. The indictment area comprises eight (out of 109) pre-war municipalities in Bosnia and Herzegovina. In 1991 the eight municipalities covered totally 281,366 persons of whom 231,610 individuals were born before 1980. The post-war fate of this reference population was studied in this report.

Data sources required for analyses as those presented in this report are extremely scarce, especially for the conflict period. The 1992-95 conflict in Bosnia is an example of a humanitarian emergency, in which a large civilian population was affected by war and cruel attempts to restructure the ethnic composition of the population, leading to large-scale population displacements, deterioration of living conditions, severe health problems, and increased mortality. In humanitarian emergency situations, regular statistical sources are unavailable and a variety of substitute sources are used instead (National Research Council (2001)). Administrative records, community estimations, international aid records, household surveys, mapping and photography, and camp registrations are few examples of the sources suggested for use in humanitarian emergencies (National Research Council (2002), see also

Refugees (1994), and Sphere Project (2000)).

For this report we identified and acquired several large information sources, which not only fully satisfy the demands of population assessment in humanitarian emergencies, but also meet general requirements of sources used under peace. The sources studied in this report were the following:

- the population census conducted in Bosnia in 1991,
- the 1997-98 voters register established and maintained by the Organisation for Security and Co-operation in Europe (OSCE),
- the registration of internally displaced persons and refugees in Bosnia set up by UNHCR and kept going by the BH government, status as of 2000.

Individual records were collected and analysed in our study, not only summary statistics. We only studied the population at age 18 or more years (as of 1997-98), for no individual data were available on those at age from birth to 17 years for the post-conflict period.

The results discussed in this report point out to the following general conclusions:

- Changes in the ethnic composition, especially when studied at the level of a municipality, as summarised in Section 8, suggest that significant population movements took place during the 1991-94 conflict in the HERCEG-BOSNA area. Before the conflict started in

1991, several municipalities had a *relative majority* ethnic composition. In the FBH part of HB area which covers the most of HB territory discussed in this report, exactly 7 municipalities out of all 13 *Post-Dayton* municipalities in this area had a relative majority of one ethnic group; the remaining 6 had an absolute majority. In 1997-98 all 13 municipalities had an *absolute majority* ethnic composition, some of Croats (7), and some of Muslims (6). Two municipalities changed the ethnic profile entirely, one from Croat to Muslim (Vareš) and one from Muslim to Croat (Stolac).

- Changes in the ethnic composition resulted from massive population movements and thousands of internally displaced persons and refugees from this territory (Section 7). As of 1997-98, there were still in total (on estimated) 101,107 IDPs and refugees who did not live at their 1991 residence (Section 7, Table 2). Whereas this number is an estimate of the unknown overall total, the minimum number of IDPs and refugees shown in this report is 61,487 such persons (Section 7, Table 2).
- Generally, the minimum numbers given in this report (61,487 persons mentioned above) are far too low. The reasons for this are the following (Section 7):
 - the analysed 1991 population did not include all those born after 1980 up to the census in March 1991, (exactly 49,756 persons, i.e. 17.7% of the 1991 population, were excluded),
 - the analysed voters population did not include persons whose records were not matched with the census, (about 36,669 persons were excluded)
 - the analysed population of voters did not include those that did not register to vote, their exact number is unknown, we estimate they could comprise about 12% of the 1997-98 population of eligible voters. The 12% of unregistered voters would amount to about 24,392 persons from the HERCEG-BOSNA area.
- The estimated more complete numbers of IDPs and refugees (the total of 101,107 persons) are a better measure of the unknown true numbers on IDPs and refugees from the HERCEG-BOSNA area than the minimum numbers.
- The estimated total of 101,107 individuals should be seen as related to the respective 1991 population eligible to vote in 1997-98 registered in the census as living in the HERCEG-BOSNA area, i.e. 231,610 individuals (Table 1, any ethnicity, Annex 1 and Table 2 Section 7). Obviously, the fraction of IDPs and refugees in this population was high.
- The above population (231,610) only comprised persons who became eligible to vote in the 1997-98 elections. The actual 1991 population was larger due to the children born in and after 1980 up to March 1991 and equalled 281,366 persons. Moreover, the 1997-98 voters register was incomplete (lacking the unregistered and unmatched voters) which might have had impact on the estimated fraction of IDPs and refugees used in this report. For this reason the actual number of IDPs and refugees should be expected to be even higher than the estimated total of 101,107 individuals.

- A majority of the displaced and refugees were Muslims (a minimum of 26,663 to an estimated 40,266), then subsequently: Croats (15,713 to 25,147), Serbs (14,614 to 26,304) and Others (4,497 to 9,391). Generally, a minimum of 45,774 to an estimated 75,961 of the displaced were Non-Croats, making them the largest group among all those who left their pre-war homes (Sections 2 to 6; Annex A, Tables 2 and 3; also the summary Table 2 in Section 7).
- At least 43.2% of Non-Croats who in 1991 lived in the HERCEG-BOSNA area were still displaced in 1997-98 (Section 2 to 6; Annex A, Tables 2. The specific distribution for every ethnic group was as follows:
 - Serbs: 86.9%
 - Muslims: 49.0%
 - Croats: 25.2%
 - Others: 51.6%
- The Non-Croats, (a majority of whom were Muslims), who were affected by the conflict in the highest degree, used to live in 1991 on the territories located in the FBH part of the HERCEG-BOSNA area (Section 8). A considerable fraction of the Non-Croats (15,655) did not only move out of the HERCEG-BOSNA area, but they also moved out from Bosnia and Herzegovina and became refugees abroad (Tables 3 and 4, Section 7).

All in all, the above-mentioned findings must be seen as serious consequences of violent forces whose effects were incomparable with those of usual demographic or socio-economic factors.

Sources:

Database containing records from The 1991 Population Census for Bosnia and Herzegovina, Federal Institute for Statistics (FIS), Sarajevo

Database containing records from The 1997 and 1998 Voters Registers, Organisation for Security and Co-operation in Europe (OSCE)

Database containing records of Internally Displaced Persons and Refugees in Bosnia and Herzegovina (DDPR), (2000), State Ministry for Human Rights and Refugees, Sarajevo, and UNHCR, Regional Office for Bosnia and Herzegovina, Sarajevo

References:

W.G. Cochran (1977), *Sampling Techniques*, 3rd edition. John Wiley & Sons, New York, Chichester, Brisbane, Toronto, Singapore

National Research Council (2001), *Forced Migration and Mortality. Roundtable on Demography of Forced Migration*. H.E. Reed and Ch.B. Keely (eds.), Committee on Population, Commission on Behavioural and Social Sciences and Education, Washington, D.C., National Academy Press, ISBN: 0-309-07334-0. Chapter by

Ch.B. Keely, H.E. Reed and R.J. Waldman (2001), *Understanding Mortality Patterns in Complex Humanitarian Emergencies* (p.1).

Situations. London, Macmillan Education Ltd.

National Research Council (2002), *Demographic Assessment Techniques in Complex Humanitarian Emergencies*. Summary of a Workshop, H.E. Reed (rap.), Committee on Population, Commission on Behavioural and Social Sciences and Education, Washington, D.C., National Academy Press, ISBN: 0-309-08497-0 (p.2)

Organization for Security and Co-operation in Europe (1997), *Annual Report on OSCE Activities* (1 November 1996 – 30 November 1997), A-1010 Vienna, Kärntner Ring 5-7.

Sphere Project (2000), *Humanitarian Charter and Minimum Standards in Disaster Response*. Geneva, Sphere Project.

Stanovništvo Bosne i Hercegovine, *Narodnosni sastav po naseljima*, (1995), Republika Hrvatska. Državni Zavod za Statistiku. Zagreb, Travanj 1995

United Nations (1999), *World Population Prospects. The 1998 Revision*. Department of Economic and Social Affairs, Population Division. New York.

United Nations High Commissioner for Refugees (UNHCR), (1998), *A regional strategy for sustainable return of those displaced by conflict in the former Yugoslavia*. Report presented to the Steering Board of the Peace Implementation Council on 9 June 1998. Available from the UN High Commissioner for Refugees, Sarajevo Office (<http://www.unhcr.ba>)

United Nations High Commissioner for Refugees (UNHCR), (1994), *Registration: A Practical Guide for Field Staff*. Geneva: United Nations High Commissioner for Refugees.

ANNEX A. REVIEW OF THE RESULTS AT THE MUNICIPAL LEVEL

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- A3. Table 3.** An Estimate of the Overall Number of Internally Displaced Persons and Refugees of a Given Ethnicity from HERCEG-BOSNA, Status as of 1997-98, Individuals Born before 1980, Municipal Borders as in 1997-98
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ANNEX A1

Table 1S. Percent of Serbs in the Population of Herceg-Bosna, Status as of 1991 and 1997
Individuals Born Before 1980, Municipal Borders as in 1997

Municipality	1991 Population		% Serbs		1997 Sample Population		% Serbs		1991–97 Change in % of Serbs (Percent)
	All Ethnicities	Serbs	All Ethnicities	Serbs	All Ethnicities	Serbs	All Ethnicities	Serbs	
Herceg-Bosna	231,610	30,495	13.2	118,792	3,281	2.8	-79.0		
of which:									
- Republika Srpska (RS)	3,831	1,892	49.4	1,467	1,442	98.3	+99.0		
- The Federation of BH (FBH)	227,779	28,603	12.6	117,325	1,839	1.6	-87.5		
1. Čapljina (FBH)	23,185	3,231	13.9	12,318	227	1.8	-86.8		
2. Gornji Vakuf (FBH)	19,947	102	0.5	11,373	32	0.3	-45.0		
3. Jablanica (FBH)	10,133	419	4.1	6,964	52	0.7	-81.9		
4. Ljubuski (FBH)	23,895	62	0.3	10,073	23	0.2	-12.0		
5. Mostar:									
- Mostar Central District (FBH)	3,110	548	17.6	622	29	4.7	-73.5		
- Mostar Jug (FBH)	6,764	1,678	24.8	2,424	11	0.5	-98.2		
- Mostar Jugoistok (FBH)	8,459	780	9.2	4,464	3	0.1	-99.3		
- Mostar Jugozapad (FBH)	36,489	4,795	13.1	19,516	713	3.7	-72.2		
- Mostar Sjever (FBH)	12,095	4,154	34.3	5,423	3	0.1	-99.8		
- Mostar / Srpski Mostar (RS)	498	93	18.7	118	116	98.3	+426.4		
- Mostar Stari Grad (FBH)	18,758	4,135	22.0	14,990	130	0.9	-96.1		
- Mostar Zapad (FBH)	18,607	3,838	20.6	11,003	517	4.7	-77.2		
6. Prozor / Prozor-Rama (FBH)	15,594	39	0.3	6,425	9	0.1	-44.0		
7. Stolac:									
- Stolac (FBH)	12,313	1,653	13.4	5,192	35	0.7	-95.0		
- Stolac / Berkovići (RS)	3,333	1,799	54.0	1,349	1,326	98.3	+82.1		
8. Vareš (FBH)	18,430	3,169	17.2	6,538	55	0.8	-95.1		

ANNEX A1

Table 1M. Percent of Muslims in the Population of Herceg-Bosna, Status as of 1991 and 1997
Individuals Born before 1980, Municipal Borders as in 1997

Municipality	1991 Population		1997 Sample Population		1991-97 Change in % of Muslims (Percent)	
	All Ethnicities	% Muslims	All Ethnicities	% Muslims	All Ethnicities	% Muslims
Herceg-Bosna	231,610	80,151	118,792	44,397	37.4	+8.0
of which:						
- Republika Srpska (RS)	3,831	991	1,467	1	0.1	-99.7
- The Federation of BH (FBH)	227,779	79,160	117,325	44,396	37.8	+8.9
1. Čapljina (FBH)	23,185	6,252	12,318	182	1.5	-94.5
2. Gornji Vakuf (FBH)	19,947	11,052	11,373	6,999	61.5	+11.1
3. Jablanica (FBH)	10,133	7,205	6,964	6,270	90.0	+26.6
4. Ljubuski (FBH)	23,895	1,345	10,073	148	1.5	-73.9
5. Mostar:						
- Mostar Central District (FBH)	3,110	1,082	622	426	68.5	+96.9
- Mostar Jug (FBH)	6,764	1,524	2,424	37	1.5	-93.2
- Mostar Južnoistoč (FBH)	8,459	6,525	4,464	4,383	98.2	+27.3
- Mostar Jugozapad (FBH)	36,489	8,763	19,516	1,566	8.0	-66.6
- Mostar Sjever (FBH)	12,095	5,145	5,423	5,319	98.1	+130.6
- Mostar / Srpski Mostar (RS)	498	277	118	0	0.0	-100.0
- Mostar Stari Grad (FBH)	18,758	9,039	14,990	13,646	91.0	+88.9
- Mostar Zapad (FBH)	18,607	4,155	11,003	863	7.8	-64.9
6. Prozor / Prozor-Rama (FBH)	15,594	5,675	6,425	401	6.2	-82.9
7. Stolac:						
- Stolac (FBH)	12,313	5,905	5,192	18	0.3	-99.3
- Stolac / Berkovići (RS)	3,333	714	1,349	1	0.1	-99.7
8. Vareš (FBH)	18,430	5,493	6,538	4,138	63.3	+112.4

ANNEX A1

Table 1C. Percent of Croats in the Population of Herceg-Bosna, Status as of 1991 and 1997
Individuals Born before 1980, Municipal Borders as in 1997

Municipality	1991 Population		1997 Sample Population		1991-97 Change in % of Croats (Percent)	
	All Ethnicities	% Croats	All Ethnicities	% Croats	All Ethnicities	% Croats
Herceg-Bosna	231,610	102,868	118,792	64,367	54.2	+22.0
of which:						
- Republika Srpska (RS)	3,831	912	1,467	3	0.2	-99.1
- The Federation of BH (FBH)	227,779	101,956	117,325	64,364	54.9	+22.6
1. Čapljina (FBH)	23,185	12,467	12,318	11,372	92.3	+71.7
2. Gornji Vakuf (FBH)	19,947	8,529	11,373	4,209	37.0	-13.4
3. Jablanica (FBH)	10,133	1,881	6,964	348	5.0	-73.1
4. Ljubuski (FBH)	23,895	22,026	10,073	9,786	97.2	+5.4
5. Mostar:						
- Mostar Central District (FBH)	3,110	743	622	36	5.8	-75.8
- Mostar Jug (FBH)	6,764	3,313	2,424	2,330	96.1	+96.2
- Mostar Jugoistok (FBH)	8,459	946	4,464	3	0.1	-99.4
- Mostar Jugozapad (FBH)	36,489	17,484	19,516	15,271	78.2	+63.3
- Mostar Sjever (FBH)	12,095	2,408	5,423	8	0.1	-99.3
- Mostar / Srpski Mostar (RS)	498	125	118	1	0.8	-96.6
- Mostar Stari Grad (FBH)	18,758	2,881	14,990	84	0.6	-96.4
- Mostar Zapad (FBH)	18,607	7,737	11,003	8,277	75.2	+80.9
6. Prozor / Prozor-Rama (FBH)	15,594	9,700	6,425	5,976	93.0	+49.5
7. Stolac:						
- Stolac (FBH)	12,313	4,363	5,192	4,959	95.5	+169.5
- Stolac / Berkovići (RS)	3,333	787	1,349	2	0.1	-99.4
8. Vareš (FBH)	18,430	7,478	6,538	1,705	26.1	-35.7

ANNEX A1

Table 10. Percent of Others in the Population of Herceg-Bosna, Status as of 1991 and 1997
Individuals Born before 1980, Municipal Borders as in 1997

Municipality	1991 Population		1997 Sample Population		1991-97 Change in % of Others (Percent)	
	All Ethnicities	% Others	All Ethnicities	% Others	All Ethnicities	% Others
Herceg-Bosna	231,610	18,096	118,792	6,747	7.8	5.7
of which:						
- Republika Srpska (RS)	3,831	36	1,467	21	0.9	1.4
- The Federation of BH (FBH)	227,779	18,060	117,325	6,726	7.9	5.7
1. Čapljina (FBH)	23,185	1,235	12,318	537	5.3	4.4
2. Gornji Vakuf (FBH)	19,947	264	11,373	133	1.3	1.2
3. Jablanica (FBH)	10,133	628	6,964	294	6.2	4.2
4. Ljubuski (FBH)	23,895	462	10,073	116	1.9	1.2
5. Mostar:						
- Mostar Central District (FBH)	3,110	737	622	131	23.7	21.1
- Mostar Jug (FBH)	6,764	249	2,424	46	3.7	1.9
- Mostar Jugoistok (FBH)	8,459	208	4,464	75	2.5	1.7
- Mostar Jugozapad (FBH)	36,489	5,447	19,516	1,966	14.9	10.1
- Mostar Sjever (FBH)	12,095	388	5,423	93	3.2	1.7
- Mostar / Srpski Mostar (RS)	498	3	118	1	0.6	0.8
- Mostar Stari Grad (FBH)	18,758	2,703	14,990	1,130	14.4	7.5
- Mostar Zapad (FBH)	18,607	2,877	11,003	1,346	15.5	12.2
6. Prozor / Prozor-Rama (FBH)	15,594	180	6,425	39	1.2	0.6
7. Stolac:						
- Stolac (FBH)	12,313	392	5,192	180	3.2	3.5
- Stolac / Berkovići (RS)	3,333	33	1,349	20	1.0	1.5
8. Vareš (FBH)	18,430	2,290	6,538	640	12.4	9.8

ANNEX A1

Table 1. Percent of Given Ethnic Groups in the Population of Herceg-Bosna, Status as of 1991 and 1997
Individuals Born before 1980, Municipal Borders as in 1997

Municipality	1991 Population		1997 Sample Population		1991-97 Change (%)	
	All Ethnicities	% This Ethnicity	All Ethnicities	% This Ethnicity	in % This Ethnicity	in % This Ethnicity
Herceg-Bosna	231,610		118,792			
of which:						
- Republika Srpska (RS)	3,831	1.7	1,467	1.2	-61.8	-36.1
- The Federation of BH (FBH)	227,779	98.3	117,325	98.8	-99.1	-87.5
Herceg-Bosna	231,610		118,792			
of which:						
- Republika Srpska (RS)	3,831	1.7	1,467	1.2	-61.8	-36.1
- The Federation of BH (FBH)	227,779	98.3	117,325	98.8	-99.1	-87.5
Herceg-Bosna	231,610		118,792			
of which:						
- Republika Srpska (RS)	3,831	1.7	1,467	1.2	-61.8	-36.1
- The Federation of BH (FBH)	227,779	98.3	117,325	98.8	-99.1	-87.5
Herceg-Bosna	231,610		118,792			
of which:						
- Republika Srpska (RS)	3,831	1.7	1,467	1.2	-61.8	-36.1
- The Federation of BH (FBH)	227,779	98.3	117,325	98.8	-99.1	-87.5
Herceg-Bosna	231,610		118,792			
of which:						
- Republika Srpska (RS)	3,831	1.7	1,467	1.2	-61.8	-36.1
- The Federation of BH (FBH)	227,779	98.3	117,325	98.8	-99.1	-87.5

ANNEX A2

Table 2S. A Minimum Number of Internally Displaced Persons and Refugees from Herceg-Bosna: The Serbs Status as of 1997, Individuals Born before 1980, Municipal Borders as in 1997

Municipality of Residence in 1991	Total Population Identified in 1997		Serb Population Identified in 1997		Percentage of Serbs	
	All	IDPs and Refugees	All	IDPs and Refugees	Percentage	Among IDPs and Refugees
Herceg-Bosna	142,204	61,487	16,814	14,614	86.9	23.8
of which:						
- Republika Srpska (RS)	1,779	901	948	78	8.2	8.7
- The Federation of BH (FBH)	140,425	60,586	15,866	14,536	91.6	24.0
1. Čapljina (FBH)	14,247	6,192	1,783	1,598	89.6	25.8
2. Gornji Vakuf (FBH)	14,228	3,282	69	41	59.4	1.2
3. Jablanica (FBH)	7,428	1,637	254	204	80.3	12.5
4. Ljubuški (FBH)	10,503	1,277	15	4	26.7	0.3
5. Mostar:						
- Mostar Central District (FBH)	1,507	1,071	206	185	89.8	17.3
- Mostar Jug (FBH)	4,308	2,429	981	973	99.2	40.1
- Mostar Jugoistok (FBH)	4,879	2,903	433	432	99.8	14.9
- Mostar Jugozapad (FBH)	23,648	10,230	2,639	2,101	79.6	20.5
- Mostar Sjever (FBH)	7,335	4,655	2,327	2,327	100.0	50.0
- Mostar / Srpski Mostar (RS)	199	172	30	3	10.0	1.7
- Mostar Stari Grad (FBH)	10,788	5,552	2,153	2,059	95.6	37.1
- Mostar Zapad (FBH)	11,381	6,017	2,045	1,735	84.8	28.8
6. Prozor / Prozor-Rama (FBH)	10,113	4,296	20	14	70.0	0.3
7. Stolac:						
- Stolac (FBH)	8,141	5,307	911	887	97.4	16.7
- Stolac / Berkovići (RS)	1,580	729	918	75	8.2	10.3
8. Vareš (FBH)	11,919	5,738	2,030	1,976	97.3	34.4

ANNEX A2

Table 2M. A Minimum Number of Internally Displaced Persons and Refugees from Herceg-Bosna: The Muslims Status as of 1997, Individuals Born before 1980, Municipal Borders as in 1997

Municipality of Residence in 1991	Total Population Identified in 1997		Muslim Population Identified in 1997		Percentage of Muslims	
	All	IDPs and Refugees	All	IDPs and Refugees	Among IDPs	and Refugees
Herceg-Bosna	142,204	61,487	43.2	54,395	49.0	43.4
of which:						
- Republika Srpska (RS)	1,779	901	50.6	474	100.0	52.6
- The Federation of BH (FBH)	140,425	60,586	43.1	53,921	48.6	43.2
1. Čapljina (FBH)	14,247	6,192	43.5	4,191	4,024	96.0
2. Gornji Vakuf (FBH)	14,228	3,282	23.1	8,337	1,604	19.2
3. Jablanica (FBH)	7,428	1,637	22.0	5,535	391	7.1
4. Ljubuški (FBH)	10,503	1,277	12.2	825	686	83.2
5. Mostar:						
- Mostar Central District (FBH)	1,507	1,071	71.1	581	285	49.1
- Mostar Jug (FBH)	4,308	2,429	56.4	944	917	97.1
- Mostar Jugoistok (FBH)	4,879	2,903	59.5	3,731	1,786	47.9
- Mostar Jugozapad (FBH)	23,648	10,230	43.3	5,839	4,501	77.1
- Mostar Sjever (FBH)	7,335	4,655	63.5	3,321	681	20.5
- Mostar / Srpski Mostar (RS)	199	172	86.4	113	113	100.0
- Mostar Stari Grad (FBH)	10,788	5,552	51.5	5,724	1,230	21.5
- Mostar Zapad (FBH)	11,381	6,017	52.9	2,703	2,131	78.8
6. Prozor / Prozor-Rama (FBH)	10,113	4,296	42.5	4,001	3,612	90.3
7. Stolac:						
- Stolac (FBH)	8,141	5,307	65.2	4,096	4,079	99.6
- Stolac / Berkovići (RS)	1,580	729	46.1	361	361	100.0
8. Vareš (FBH)	11,919	5,738	48.1	4,093	262	6.4

ANNEX A2

Table 20. A Minimum Number of Internally Displaced Persons and Refugees from Herceg-Bosna: The Others Status as of 1997, Individuals Born before 1980, Municipal Borders as in 1997

Municipality of Residence in 1991	Total Population Identified in 1997		Other Population Identified in 1997		Percentage of Others		
	All	IDPs and Refugees	All	IDPs and Refugees	Percentage	Among IDPs and Refugees	
Herceg-Bosna	142,204	61,487	43.2	8,719	4,497	51.6	7.3
of which:							
- Republika Srpska (RS)	1,779	901	50.6	15	7	46.7	0.8
- The Federation of BH (FBH)	140,425	60,586	43.1	8,704	4,490	51.6	7.4
1. Čapljina (FBH)	14,247	6,192	43.5	584	280	47.9	4.5
2. Gornji Vakuf (FBH)	14,228	3,282	23.1	139	30	21.6	0.9
3. Jablanica (FBH)	7,428	1,637	22.0	332	76	22.9	4.6
4. Ljubuški (FBH)	10,503	1,277	12.2	136	55	40.4	4.3
5. Mostar:							
- Mostar Central District (FBH)	1,507	1,071	71.1	291	198	68.0	18.5
- Mostar Jug (FBH)	4,308	2,429	56.4	94	69	73.4	2.8
- Mostar Jugoistok (FBH)	4,879	2,903	59.5	92	63	68.5	2.2
- Mostar Jugozapad (FBH)	23,648	10,230	43.3	2,719	1,377	50.6	13.5
- Mostar Sjever (FBH)	7,335	4,655	63.5	152	119	78.3	2.6
- Mostar / Srpski Mostar (RS)	199	172	86.4	1	1	100.0	0.6
- Mostar Stari Grad (FBH)	10,788	5,552	51.5	1,197	620	51.8	11.2
- Mostar Zapad (FBH)	11,381	6,017	52.9	1,391	723	52.0	12.0
6. Prozor / Prozor-Rama (FBH)	10,113	4,296	42.5	69	43	62.3	1.0
7. Stolac:							
- Stolac (FBH)	8,141	5,307	65.2	197	145	73.6	2.7
- Stolac / Berkovići (RS)	1,580	729	46.1	14	6	42.9	0.8
8. Vareš (FBH)	11,919	5,738	48.1	1,311	692	52.8	12.1

ANNEX A2

Table 2. A Minimum Number of Internally Displaced Persons and Refugees of a Given Ethnicity from Herceg-Bosna, Status as of 1997
Individuals Born before 1980, Municipal Borders as in 1997

Municipality of Residence in 1991	Total Population Identified in 1997		Given Ethnicity Population Identified in 1997		Percentage of This Ethnicity Among DPs and Refugees					
	All DPs and Refugees	Percentage	All DPs and Refugees	Percentage	Percentage	Percentage				
Herceg-Bosna	142,204		All Ethnic Groups	61,487	43.2	16,814	Serbs	14,614	86.9	23.8
of which:										
- Republika Srpska (RS)	1,779	901		901	50.6	948		78	8.2	8.7
- The Federation of BH (FBH)	140,425	60,586		60,586	43.1	15,866		14,536	91.6	24.0
Herceg-Bosna	142,204		All Ethnic Groups	61,487	43.2	54,395	Muslims	26,663	49.0	43.4
of which:										
- Republika Srpska (RS)	1,779	901		901	50.6	474		474	100.0	52.6
- The Federation of BH (FBH)	140,425	60,586		60,586	43.1	53,921		26,189	48.6	43.2
Herceg-Bosna	142,204		All Ethnic Groups	61,487	43.2	62,276	Croats	15,713	25.2	25.6
of which:										
- Republika Srpska (RS)	1,779	901		901	50.6	342		342	100.0	38.0
- The Federation of BH (FBH)	140,425	60,586		60,586	43.1	61,934		15,371	24.8	25.4
Herceg-Bosna	142,204		All Ethnic Groups	61,487	43.2	8,719	Others	4,497	51.6	7.3
of which:										
- Republika Srpska (RS)	1,779	901		901	50.6	15		7	46.7	0.8
- The Federation of BH (FBH)	140,425	60,586		60,586	43.1	8,704		4,490	51.6	7.4

ANNEX A3

Table 3S. An Estimate of the Overall Number of Internally Displaced Persons and Refugees from Herceg-Bosna: The Serbs Status as of 1997, Individuals Born before 1980, Municipal Borders as in 1997

Municipality of Residence in 1991	Estimated Number of all DP's		Estimated Number of Serbs DP's	
	Estimate	95% Confidence Interval	Estimate	95% Confidence Interval
Herceg-Bosna	101,107	100,137	26,304	26,039
of which:				
- Republika Srpska (RS)	2,076	2,045	156	126
- The Federation of BH (FBH)	99,031	98,092	26,148	25,913
1. Čapljina (FBiH)	9,961	9,899	2,896	2,865
2. Gornji Vakuf (FBiH)	4,656	4,580	61	54
3. Jablanica (FBiH)	2,379	2,338	337	324
4. Ljubuški (FBiH)	2,552	2,465	17	4
5. Mostar:				
- Mostar Central District (FBiH)	2,222	2,175	492	474
- Mostar Jug (FBiH)	4,008	3,971	1,664	1,658
- Mostar Jugostok (FBiH)	4,989	4,918	778	776
- Mostar Jugozapad (FBiH)	16,492	16,371	3,817	3,768
- Mostar Sjever (FBiH)	7,910	7,863	4,154	4,154
- Mostar / Srpski Mostar (RS)	414	406	9	1
- Mostar Stari grad (FBiH)	10,059	9,972	3,954	3,930
- Mostar Zapad (FBiH)	10,135	10,041	3,256	3,215
6. Prozor / Prozor-Rama (FBiH)	6,272	6,216	27	22
7. Stolac:				
- Stolac (FBiH)	8,070	8,038	1,609	1,598
- Stolac / Berkovići (RS)	1,662	1,639	147	125
8. Vareš (FBiH)	9,327	9,245	3,085	3,071

ANNEX A3

Table 3M. An Estimate of the Overall Number of Internally Displaced Persons and Refugees from Herceg-Bosna: The Muslims Status as of 1997, Individuals Born before 1980, Municipal Borders as in 1997

Municipality of Residence in 1991	Estimated Number of all DPs		Estimated Number of Muslims DPs	
	Estimate	95% Confidence Interval	Estimate	95% Confidence Interval
Herceg-Bosna	101,107	100,137	40,266	39,797
of which:				
- Republika Srpska (RS)	2,076	2,045	991	991
- The Federation of BH (FBH)	99,031	98,092	39,275	38,806
1. Čapljina (FBiH)	9,961	9,899	6,003	5,982
2. Gornji Vakuf (FBiH)	4,656	4,580	2,126	2,080
3. Jablanica (FBiH)	2,379	2,338	509	486
4. Ljubuški (FBiH)	2,552	2,465	1,118	1,097
5. Mostar:				
- Mostar Central District (FBiH)	2,222	2,175	531	501
- Mostar Jug (FBiH)	4,008	3,971	1,480	1,470
- Mostar Jugoistok (FBiH)	4,989	4,918	3,123	3,055
- Mostar Jugozapad (FBiH)	16,492	16,371	6,755	6,700
- Mostar Sjever (FBiH)	7,910	7,863	1,055	1,013
- Mostar / Srpski Mostar (RS)	414	406	277	277
- Mostar Stari grad (FBiH)	10,059	9,972	1,942	1,884
- Mostar Zapad (FBiH)	10,135	10,041	3,276	3,238
6. Prozor / Prozor-Rama (FBiH)	6,272	6,216	5,123	5,095
7. Stolac:				
- Stolac (FBiH)	8,070	8,038	5,880	5,874
- Stolac / Berkovići (RS)	1,662	1,639	714	714
8. Vareš (FBiH)	9,327	9,245	352	331

ANNEX A3

Table 3C. An Estimate of the Overall Number of Internally Displaced Persons and Refugees from Herceg-Bosna: The Croats Status as of 1997, Individuals Born before 1980, Municipal Borders as in 1997

Municipality of Residence in 1991	Estimated Number of all DP's		Estimated Number of Croats DP's	
	Estimate	95% Confidence Interval	Estimate	95% Confidence Interval
Herceg-Bosna	101,107	100,137	25,147	24,638
of which:				25,656
- Republika Srpska (RS)	2,076	2,045	912	912
- The Federation of BH (FBH)	99,031	98,092	24,235	24,744
1. Čapljina (FBiH)	9,961	9,899	470	437
2. Gornji Vakuf (FBiH)	4,656	4,580	2,412	2,354
3. Jablanica (FBiH)	2,379	2,338	1,390	1,415
4. Ljubuški (FBiH)	2,552	2,465	1,230	1,153
5. Mostar:				
- Mostar Central District (FBiH)	2,222	2,175	698	687
- Mostar Jug (FBiH)	4,008	3,971	680	650
- Mostar Jugostok (FBiH)	4,989	4,918	944	943
- Mostar Jugozapad (FBiH)	16,492	16,371	3,161	3,097
- Mostar Sjever (FBiH)	7,910	7,863	2,397	2,392
- Mostar / Srpski Mostar (RS)	414	406	125	125
- Mostar Stari grad (FBiH)	10,059	9,972	2,762	2,744
- Mostar Zapad (FBiH)	10,135	10,041	2,108	2,055
6. Prozor / Prozor-Rama (FBiH)	6,272	6,216	1,010	964
7. Stolac:				
- Stolac (FBiH)	8,070	8,038	291	269
- Stolac / Berkovići (RS)	1,662	1,639	787	787
8. Vareš (FBiH)	9,327	9,245	4,682	4,615

ANNEX A3

Table 30. An Estimate of the Overall Number of Internally Displaced Persons and Refugees from Herceg-Bosna: The Others Status as of 1997, Individuals Born before 1980, Municipal Borders as in 1997

Municipality of Residence in 1991	Estimated Number of all DPs		Estimated Number of Others DPs	
	Estimate	95% Confidence Interval	Estimate	95% Confidence Interval
Herceg-Bosna	101,107	100,137	9,391	8,940
of which:				
- Republika Srpska (RS)	2,076	2,045	17	7
- The Federation of BH (FBH)	99,031	98,092	9,374	8,932
1. Čapljina (FBiH)	9,961	9,899	592	556
2. Gornji Vakuf (FBiH)	4,656	4,580	57	45
3. Jablanica (FBiH)	2,379	2,338	144	124
4. Ljubuški (FBiH)	2,552	2,465	187	155
5. Mostar:				
- Mostar Central District (FBiH)	2,222	2,175	501	471
- Mostar Jug (FBiH)	4,008	3,971	183	165
- Mostar Jugoistok (FBiH)	4,989	4,918	142	128
- Mostar Jugozapad (FBiH)	16,492	16,371	2,759	2,686
- Mostar Sjever (FBiH)	7,910	7,863	304	284
- Mostar / Srpski Mostar (RS)	414	406	3	na
- Mostar Stari grad (FBiH)	10,059	9,972	1,400	1,343
- Mostar Zapad (FBiH)	10,135	10,041	1,495	1,441
6. Prozor / Prozor-Rama (FBiH)	6,272	6,216	112	96
7. Stolac:				
- Stolac (FBiH)	8,070	8,038	289	271
- Stolac / Berkovići (RS)	1,662	1,639	14	7
8. Vareš (FBiH)	9,327	9,245	1,209	1,168
				1,249

ANNEX A3

Table 3. An Estimate of the Overall Number of Internally Displaced Persons and Refugees of a Given Ethnicity from Herceg-Bosna, Status as of 1997 Individuals Born before 1980, Municipal Borders as in 1997

Municipality of Residence in 1991	Estimated Number of all DPs and Refugees 95% Confidence Interval (from-to)		Estimated Number of DPs and Refugees 95% Confidence Interval (from-to)	
	Estimate		Estimate	
Herceg-Bosna	101,107	All Ethnic Groups	26,304	Serbs
of which:		100,137		26,039
- Republika Srpska (RS)	2,076	2,045	156	126
- The Federation of BH (FBH)	99,031	98,092	26,148	25,913
				26,382
Herceg-Bosna	101,107	All Ethnic Groups	40,266	Muslims
of which:		100,137		39,797
- Republika Srpska (RS)	2,076	2,045	991	991
- The Federation of BH (FBH)	99,031	98,092	39,275	38,806
				39,744
Herceg-Bosna	101,107	All Ethnic Groups	25,147	Croats
of which:		100,137		24,638
- Republika Srpska (RS)	2,076	2,045	912	912
- The Federation of BH (FBH)	99,031	98,092	24,235	23,726
				24,744
Herceg-Bosna	101,107	All Ethnic Groups	9,391	Others
of which:		100,137		8,940
- Republika Srpska (RS)	2,076	2,045	17	7
- The Federation of BH (FBH)	99,031	98,092	9,374	8,932
				9,836
				21
				9,815

ANNEX A4

Table 1B1. Percent of Given Ethnic Groups in the Population of Bosnia and Herzegovina, Status as of 1991 and 1997
Individuals Born before 1980, Municipal Borders as in 1997

Municipality	1991 Population		1997 Sample Population		1991-97 Change (%) in % This Ethnicity	
	All Ethnicities	% This Ethnicity	All Ethnicities	% This Ethnicity		
Bosnia and Herzegovina of which:						
		Serbs	Serbs			
		1,147,904	1,804,142	637,321	35.3	+9.7
- Republika Srpska (RS)	1,339,341	735,021	670,125	615,758	91.9	+67.4
- The Federation of BH (FBH)	2,226,362	412,883	1,134,017	21,563	1.9	-89.7
Bosnia and Herzegovina of which:						
		Muslims	Muslims			
		1,505,893	1,804,142	820,844	45.5	+7.7
- Republika Srpska (RS)	1,339,341	376,880	670,125	8,552	1.3	-95.5
- The Federation of BH (FBH)	2,226,362	1,129,013	1,134,017	812,292	71.6	+41.3
Bosnia and Herzegovina of which:						
		Croats	Croats			
		630,895	1,804,142	241,008	13.4	-24.5
- Republika Srpska (RS)	1,339,341	128,490	670,125	7,871	1.2	-87.8
- The Federation of BH (FBH)	2,226,362	502,405	1,134,017	233,137	20.6	-8.9
Bosnia and Herzegovina of which:						
		Others	Others			
		281,011	1,804,142	104,969	5.8	-26.2
- Republika Srpska (RS)	1,339,341	98,950	670,125	37,944	5.7	-23.4
- The Federation of BH (FBH)	2,226,362	182,061	1,134,017	67,025	5.9	-27.7

ANNEX A4

Table 2BH. A Minimum Number of Internally Displaced Persons and Refugees of a Given Ethnicity from Bosnia and Herzegovina, Status as of 1997
Individuals Born before 1980, Municipal Borders as in 1997

Municipality of Residence in 1991	Total Population Identified in 1997		Given Ethnicity Population Identified in 1997		Percentage of This Ethnicity Among DPs and Refugees
	All DPs and Refugees	Percentage	All DPs and Refugees	Percentage	
Bosnia and Herzegovina of which:	2,065,472	34.6	667,271	34.7	32.4
- Republika Srpska (RS)	735,835	37.6	435,468	4.5	7.1
- The Federation of BH (FBH)	1,329,637	33.0	231,803	91.5	48.4
Bosnia and Herzegovina of which:	2,065,472	34.6	959,036	34.3	46.0
- Republika Srpska (RS)	735,835	37.6	211,266	96.2	73.4
- The Federation of BH (FBH)	1,329,637	33.0	747,770	16.8	28.7
Bosnia and Herzegovina of which:	2,065,472	34.6	312,416	35.9	15.7
- Republika Srpska (RS)	735,835	37.6	45,869	86.1	14.3
- The Federation of BH (FBH)	1,329,637	33.0	266,547	27.2	16.5
Bosnia and Herzegovina of which:	2,065,472	34.6	126,749	33.5	5.9
- Republika Srpska (RS)	735,835	37.6	43,232	33.5	5.2
- The Federation of BH (FBH)	1,329,637	33.0	83,517	33.5	6.4

ANNEX A4

Table 3BH. An Estimate of the Overall Number of Internally Displaced Persons and Refugees of a Given Ethnicity from Bosnia and Herzegovina, Status as of 1997 Individuals Born before 1980, Municipal Borders as in 1997

Municipality of Residence in 1991	Estimated Number of all DPs and Refugees		Estimated Number of DPs and Refugees	
	Estimate	95% Confidence Interval (from-to)	Estimate	95% Confidence Interval (from-to)
Bosnia and Herzegovina of which:				
		All Ethnic Groups		Serbs
- Republika Srpska (RS)	538,146	534,111	34,475	32,318
- The Federation of BH (FBH)	768,230	760,714	375,778	373,864
				377,691
Bosnia and Herzegovina of which:				
		All Ethnic Groups		Muslims
- Republika Srpska (RS)	538,146	534,111	360,774	359,790
- The Federation of BH (FBH)	768,230	760,714	193,710	189,631
				559,540
Bosnia and Herzegovina of which:				
		All Ethnic Groups		Croats
- Republika Srpska (RS)	538,146	534,111	109,229	107,455
- The Federation of BH (FBH)	768,230	760,714	136,748	132,865
				251,636
Bosnia and Herzegovina of which:				
		All Ethnic Groups		Others
- Republika Srpska (RS)	538,146	534,111	33,668	31,786
- The Federation of BH (FBH)	768,230	760,714	61,994	58,822
				100,684
				35,544
				65,140

ANNEX A5

Table 5S. Geographic Distribution of Serb Internally Displaced Persons Born before 1980 from Herceg-Bosna as Reported by OSCE and UNHCR and BH Government Sources, Municipal Borders as in 1997

Municipality of Residence in 1991	OSCE - 1997		UNHCR and BH Government - 2000	
	No of IDPs	% of IDPs	No of IDPs	% of IDPs
Herceg-Bosna	10,492	5.8	12,207	6.2
of which:				
- Republika Srpska (RS)	70	0.0	8	0.0
- The Federation of BH (FBH)	10,422	5.8	12,199	6.2
1. Čapljina (FBH)	1,015	0.6	1,237	0.6
2. Gornji Vakuf (FBH)	24	0.0	40	0.0
3. Jablanica (FBH)	143	0.1	170	0.1
4. Ljubuški (FBH)	0	0.0	5	0.0
5. Mostar:				
- Mostar Central District (FBH)	122	0.1	0	0.0
- Mostar Jug (FBH)	746	0.4	758	0.4
- Mostar Jugoistok (FBH)	350	0.2	384	0.2
- Mostar Jugozapad (FBH)	1,219	0.7	456	0.2
- Mostar Sjever (FBH)	1,786	1.0	2,170	1.1
- Mostar / Srpski Mostar (RS)	2	0.0	0	0.0
- Mostar Stari Grad (FBH)	1,520	0.8	1,624	0.8
- Mostar Zapad (FBH)	961	0.5	2,288	1.2
6. Prozor / Prozor-Rama (FBH)	10	0.0	7	0.0
7. Stolac:				
- Stolac (FBH)	740	0.4	887	0.4
- Stolac / Berkovići (RS)	68	0.0	8	0.0
8. Vareš (FBH)	1,786	1.0	2,173	1.1

ANNEX A5

Table 5M. Geographic Distribution of Muslim Internally Displaced Persons Born before 1980 from Herceg-Bosna as Reported by OSCE and UNHCR and BH Government Sources, Municipal Borders as in 1997

Municipality of Residence in 1991	OSCE - 1997		UNHCR and BH Government - 2000	
	No of IDPs	% of IDPs	No of IDPs	% of IDPs
Herceg-Bosna	17,183	10.1	11,943	7.2
of which:				
- Republika Srpska (RS)	415	0.2	178	0.1
- The Federation of BH (FBH)	16,768	9.9	11,765	7.1
1. Čapljina (FBH)	3,032	1.8	2,007	1.2
2. Gornji Vakuf (FBH)	541	0.3	460	0.3
3. Jablanica (FBH)	131	0.1	435	0.3
4. Ljubuški (FBH)	147	0.1	159	0.1
5. Mostar:				
- Mostar Central District (FBH)	148	0.1	0	0.0
- Mostar Jug (FBH)	738	0.4	274	0.2
- Mostar Jugoistok (FBH)	1,442	0.9	792	0.5
- Mostar Jugozapad (FBH)	2,567	1.5	1,837	1.1
- Mostar Sjever (FBH)	296	0.2	72	0.0
- Mostar / Srpski Mostar (RS)	103	0.1	17	0.0
- Mostar Stari Grad (FBH)	274	0.2	340	0.2
- Mostar Zapad (FBH)	1,283	0.8	1,052	0.6
6. Prozor / Prozor-Rama (FBH)	2,673	1.6	1,667	1.0
7. Stolac:				
- Stolac (FBH)	3,311	2.0	1,915	1.2
- Stolac / Berkovići (RS)	312	0.2	161	0.1
8. Vareš (FBH)	185	0.1	755	0.5

ANNEX A5

Table 5C. Geographic Distribution of Croat Internally Displaced Persons Born before 1980 from Herceg-Bosna as Reported by OSCE and UNHCR and BH Government Sources, Municipal Borders as in 1997

Municipality of Residence in 1991	OSCE - 1997		UNHCR and BH Government - 2000	
	No of IDPs	% of IDPs	No of IDPs	% of IDPs
Herceg-Bosna	10,410	28.4	7,730	27.4
of which:				
- Republika Srpska (RS)	314	0.9	53	0.2
- The Federation of BH (FBH)	10,096	27.5	7,677	27.2
1. Čapljina (FBH)	141	0.4	17	0.1
2. Gornji Vakuf (FBH)	265	0.7	923	3.3
3. Jablanica (FBH)	870	2.4	417	1.5
4. Ljubuški (FBH)	161	0.4	0	0.0
5. Mostar:				
- Mostar Central District (FBH)	369	1.0	0	0.0
- Mostar Jug (FBH)	336	0.9	63	0.2
- Mostar Jugostok (FBH)	594	1.6	605	2.1
- Mostar Jugozapad (FBH)	1,555	4.2	351	1.2
- Mostar Sjever (FBH)	1,410	3.8	1,272	4.5
- Mostar / Srpski Mostar (RS)	48	0.1	0	0.0
- Mostar Stari Grad (FBH)	1,504	4.1	1,429	5.1
- Mostar Zapad (FBH)	1,076	2.9	338	1.2
6. Prozor / Prozor-Rama (FBH)	110	0.3	232	0.8
7. Stolac:				
- Stolac (FBH)	118	0.3	256	0.9
- Stolac / Berkovići (RS)	266	0.7	53	0.2
8. Vareš (FBH)	1,587	4.3	1,774	6.3

ANNEX A5

Table 50. Geographic Distribution of Other Internally Displaced Persons Born before 1980 from Herceg-Bosna as Reported by OSCE and UNHCR and BH Government Sources, Municipal Borders as in 1997

Municipality of Residence in 1991	OSCE - 1997		UNHCR and BH Government - 2000	
	No of IDPs	% of IDPs	No of IDPs	% of IDPs
Herceg-Bosna	2,444	12.8	207	13.2
of which:				
- Republika Srpska (RS)	3	0.0	0	0.0
- The Federation of BH (FBH)	2,441	12.8	207	13.2
1. Čapljina (FBH)	130	0.7	15	1.0
2. Gornji Vakuf (FBH)	11	0.1	13	0.8
3. Jablanica (FBH)	43	0.2	11	0.7
4. Ljubuški (FBH)	11	0.1	2	0.1
5. Mostar:				
- Mostar Central District (FBH)	122	0.6	0	0.0
- Mostar Jug (FBH)	38	0.2	4	0.3
- Mostar Jugostok (FBH)	42	0.2	15	1.0
- Mostar Jugozapad (FBH)	679	3.6	16	1.0
- Mostar Sjever (FBH)	78	0.4	10	0.6
- Mostar / Srpski Mostar (RS)	1	0.0	0	0.0
- Mostar Stari Grad (FBH)	351	1.8	36	2.3
- Mostar Zapad (FBH)	338	1.8	17	1.1
6. Prozor / Prozor-Rama (FBH)	19	0.1	40	2.6
7. Stolac:				
- Stolac (FBH)	97	0.5	7	0.4
- Stolac / Berkovići (RS)	2	0.0	0	0.0
8. Vareš (FBH)	482	2.5	21	1.3

ANNEX A5

Table 5. Geographic Distribution of Displaced Persons (DPs) from Herceg-Bosna as Reported by OSCE and BH Governmental Sources, Status as of 1997 and 2000, Municipal Borders as in 1997

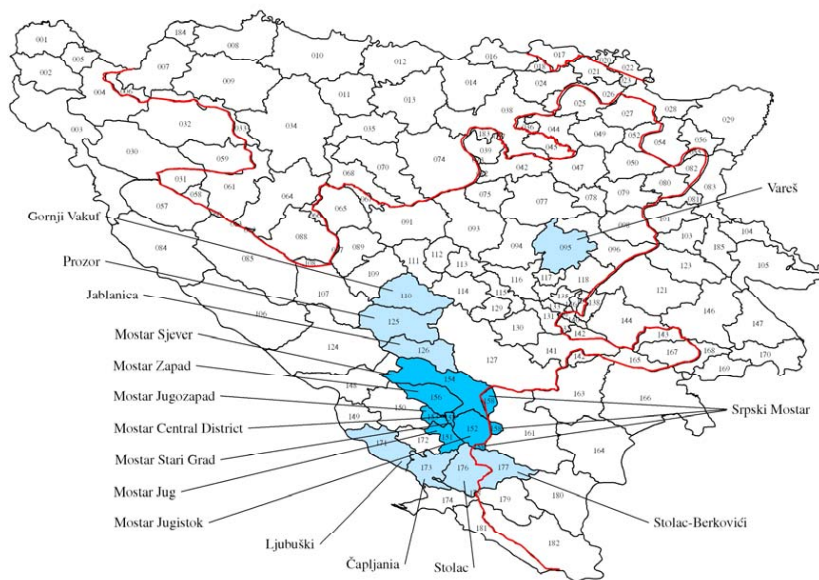
Municipality of Residence in	OSCE Statistics - 1997		BH Governmental Statistics - 2000	
	No of DPs	% of DPs	No of DPs	% of DPs
Herceg-Bosna		Serbs		Serbs
of which:	10,492	5.8	12,207	6.2
- Republika Srpska (RS)	70	0.0	8	0.0
- The Federation of BH (FBH)	10,422	5.8	12,199	6.2
Herceg-Bosna		Muslims		Muslims
of which:	17,183	10.1	11,943	7.2
- Republika Srpska (RS)	415	0.2	178	0.1
- The Federation of BH (FBH)	16,768	9.9	11,765	7.1
Herceg-Bosna		Croats		Croats
of which:	10,410	28.4	7,730	27.4
- Republika Srpska (RS)	314	0.9	53	0.2
- The Federation of BH (FBH)	10,096	27.5	7,677	27.2
Herceg-Bosna		Others		Others
of which:	2,444	12.8	207	13.2
- Republika Srpska (RS)	3	0.0	0	0.0
- The Federation of BH (FBH)	2,441	12.8	207	13.2

ANNEX B1

ANNEX B. OVERVIEW OF SOURCES

ANNEX B1. HERCEG-BOSNA AREA: REFERENCE MAP AND OSCE MUNICIPAL CODES

Figure 1(B1). Reference Map of Bosnia and Herzegovina and HERCEG-BOSNA



The HERCEG-BOSNA area definition:

- Čapljina (FBH), 173
- Gornji Vakuf (FBH), 110
- Jablanica (FBH), 126
- Ljubuški (FBH), 171
- Mostar:
 - Mostar Central District (FBH), 157
 - Mostar Jug (FBH), 151
 - Mostar Jugoistok (FBH), 152
 - Mostar Jugoizapad (FBH), 153
 - Mostar Sjever (FBH), 154
 - Mostar / Srpski Mostar (RS), 158
 - Mostar Stari Grad (FBH), 155
 - Mostar Zapad (FBH), 156
- Prozor / Prozor-Rama (FBH), 125
- Stolac:
 - Stolac (FBH), 176
 - Stolac / Berkovići (RS), 177
- Vareš (FBH), 095

ANNEX B1

Scheme 1(B1). Names and OSCE codes of All Post-Dayton Municipalities in Bosnia and Herzegovina

Code	Name	Entity	Code	Name	Entity
1	Velika Kladuša	FBiH	66	Jajce / Jezero	RS
2	Cazin	FBiH	67	Dobretići	FBiH
3	Bihać	FBiH	68	Skender Vakuf / Kneževo	RS
4	Bosanska Krupa	FBiH	70	Kotor Varoš	RS
5	Bužim	FBiH	74	Teslić	RS
6	Bosanska Krupa / Krupa na Uni	RS	75	Žepče	FBiH
7	Bosanski Novi / Novi Grad	RS	77	Zavidovići	FBiH
8	Bosanska Dubica / Kozarska Dubica	RS	78	Banovići	FBiH
9	Prijedor	RS	79	Živinice	FBiH
10	Bosanska Gradiška / Gradiška	RS	80	Kalesija	FBiH
11	Laktaši	RS	81	Kalesija / Osmaci	RS
12	Srbac	RS	82	Sapna	FBiH
13	Prnjavor	RS	83	Zvornik	RS
14	Derventa	RS	84	Bosansko Grahovo / Grahovo	FBiH
16	Bosanski Brod / Srpski Brod	RS	85	Glamoč	FBiH
17	Odžak	FBiH	88	Šipovo	RS
18	Odžak / Vukosavlje	RS	89	Donji Vakuf	FBiH
20	Domaljevac - Šamac	FBiH	91	Travnik	FBiH
21	Bosanski Šamac / Šamac	RS	93	Zenica	FBiH
22	Orašje	FBiH	94	Kakanj	FBiH
23	Orašje / Srpsko Orašje	RS	95	Vareš	FBiH
24	Modriča	RS	96	Olovo	FBiH
25	Gradačac	FBiH	98	Kladanj	FBiH
26	Gradačac / Pelagićevo	RS	101	Šekovići	RS
27	Rahić / Ravne (Brčko Federation)	FBiH	103	Vlasenica	RS
28	Brčko	RS	104	Bratunac	RS
29	Bijeljina	RS	105	Srebrenica	RS
30	Bosanski Petrovac	FBiH	106	Livno	FBiH
31	Bosanski Petrovac / Petrovac	RS	107	Kupres	FBiH
32	Sanski Most	FBiH	108	Kupres / Srpski Kupres	RS
33	Sanski Most / Srpski Sanski Most	RS	109	Bugojno	FBiH
34	Banja Luka	RS	110	Gornji Vakuf	FBiH
35	Čelinac	RS	111	Novi Travnik	FBiH
36	Doboj - Istok	FBiH	112	Vitez	FBiH
37	Doboj - Jug	FBiH	113	Busovača	FBiH
38	Doboj	RS	114	Fojnica	FBiH
39	Tešanj	FBiH	115	Kiseljak	FBiH
42	Maglaj	FBiH	116	Visoko	FBiH
44	Gračanica	FBiH	117	Breza	FBiH
45	Gračanica / Petrovo	RS	118	Ilijaš	FBiH
47	Lukavac	FBiH	121	Sokolac	RS
49	Srebrenik	FBiH	123	Han Pijesak	RS
50	Tuzla	FBiH	124	Tomislavgrad	FBiH
52	Čelić	FBiH	125	Prozor / Prozor-Rama	FBiH
54	Lopare	RS	126	Jablanica	FBiH
55	Teočak	FBiH	127	Konjic	FBiH
56	Ugljevik	RS	129	Kreševo	FBiH
57	Drvar	FBiH	130	Hadžići	FBiH
58	Drvar / Srpski Drvar	RS	131	Ilidža	FBiH
59	Ključ	FBiH	132	Ilidža / Srpska Ilidža	RS
61	Ključ / Ribnik	RS	133	Novi Grad Sarajevo	FBiH
64	Mrkonjić Grad	RS	135	Vogošća	FBiH
65	Jajce	FBiH	136	Centar Sarajevo	FBiH

Scheme 1(B1) – continued

Code	Name	Entity
137	Stari Grad Sarajevo	FBiH
138	Stari Grad Sarajevo / Srpski Stari Grad	RS
139	Novo Sarajevo	FBiH
140	Novo Sarajevo / Srpsko Novo Sarajevo	RS
141	Trnovo (FBiH)	FBiH
142	Trnovo (RS)	RS
143	Pale (FBiH)	FBiH
144	Pale (RS)	RS
146	Rogatica	RS
147	Višegrad	RS
148	Posušje	FBiH
149	Grude	FBiH
150	Široki Brijeg	FBiH
151	Mostar Jug	FBiH
152	Mostar Jugoistok	FBiH
153	Mostar Jugozapad	FBiH
154	Mostar Sjever	FBiH
155	Mostar Stari grad	FBiH
156	Mostar Zapad	FBiH
157	Mostar Central District	FBiH
158	Mostar / Srpski Mostar	RS
161	Nevesinje	RS
163	Kalinovik	RS
164	Gacko	RS
165	Foča	FBiH
166	Foča / Srbinje	RS
167	Goražde	FBiH
168	Goražde / Srpsko Goražde	RS
169	Čajniče	RS
170	Rudo	RS
171	Ljubuški	FBiH
172	Čitluk	FBiH
173	Čapljina	FBiH
174	Neum	FBiH
176	Stolac	FBiH
177	Stolac / Berkovići	RS
179	Ljubinje	RS
180	Bileća	RS
181	Ravno	FBiH
182	Trebinje	RS
183	Usora	FBiH
184	Kostajnica	RS
185	Milići	RS

ANNEX B2

ANNEX B2. THE 1991 POPULATION CENSUS FOR BOSNIA AND HERZEGOVINA

Our source of information on the pre-war population of the HERCEG-BOSNA area is the 1991 population census for Bosnia and Herzegovina. The census was taken from 1 to 30 April 1991 (with 31 March as the official census date), just before the outbreak of hostilities in the country, and covered the entire population of the country.

The census files contain one record for each enumerated person. These records include information on a large number of variables, such as the municipality and settlement of residence, name and surname, father's name, household sequential number, personal ID number, date and year of birth, sex, occupation, ethnicity, mother tongue, religion, educational attainment, and number of children born (for women only).

The overall data quality is good, except for frequent errors in the persons' names. These errors are mostly consequences of poor optical scanning of the original forms (for example misreading V for U, as in MVSIC) and no subsequent checking and editing. To correct the scanning errors we employed several strategies. First, computer software was developed and applied to detect combinations of letters that are impossible in the B/C/S language. The software used the B/C/S syntax in order to access the viability of combinations. The impossible combinations were corrected by eliminating the miss-shaped characters and inserting their most likely equivalents. Secondly, we developed correction tables to eliminate scanning mistakes from the names. The tables contained the actual names and their correct versions which both were used in a computer programme to produce suggestions regarding the corrections needed. Then, these suggestions were controlled manually to discard any wrong corrections produced by the software. The accepted corrections were then applied to the data. Native speakers of the B/C/S language who in addition were familiar with naming traditions in Bosnia and Herzegovina undertook all these tasks. Furthermore, we also developed and applied computer software that utilised household information to correct surnames within households. The software checked the correctness and consistency of family names within the same households. Household members, whose family name was different from the (correct) name of others in this particular household, received the correct name. For instance, if MUSIĆ was the correct surname in a household, the person enumerated as part of this household under the name MVSIC would become MUSIĆ.

A second data quality problem is that for a number of records the unique 13-digit personal ID number (*matični broj*, MB), introduced in the former Yugoslavia in 1981, is only partly available. The MB consists of date of birth (DOB, 7 digits), region of birth (2 digits), a sex-specific sequential number (3 digits), and a check digit (1 digit). For our needs the date of birth is essential, other components of the MB being of less value. The date of birth is missing only for a few per cent of the 1991 population.

The census includes a variable that relates to the ethnicity of the enumerated individuals. This allows us to study the population in the context of the same ethnicity declaration in both years studied, in 1991 and also in 1997, for all those individuals whose records have been linked in

the two data collections (in the 1991 census and 1997 voters register). The question on ethnicity in the census questionnaire was open-ended meaning that individuals could declare themselves as belonging to any ethnicity. The majority of the 1991 census population declared themselves as belonging to one of the three major ethnic groups in Bosnia and Herzegovina: Serbs, Muslims, or Croats. Other ethnic declarations in the 1991 census included Yugoslavs (relatively frequently), combinations of ethnicities, such as “Serb-Croat” or “Muslim-Serb” (infrequently), and other national (e.g. Vlach or Gypsies) or foreign (e.g. Hungarians) ethnicities (less frequently). Those who called themselves Yugoslavs, or by names combining two ethnicities, were often children from mixed marriages. The Yugoslavs did not feel they belonged to any particular ethnic group and frequently disliked ethnic categorisation.

All analyses presented in this report have been made for the four ethnic groups distinguished on the basis of ethnicity declarations from the 1991 census: Serbs, Muslims, Croats, and Others. The last group, Others, is a residual category and covers persons declaring themselves as Yugoslavs, combinations of ethnic groups, and other national or foreign ethnic groups.

The pre-war Bosnia and Herzegovina was divided into municipalities, *opština*, that were further broken down into sub-units called “settlements”. The number of pre-war municipalities was 109 whereas the number of settlements was 5829. The Dayton Accords divided some pre-war municipalities between the Federation and Republika Srpska resulting in a new division of the country into now 185 post-Dayton municipalities. The 1991 census information on the settlement of each person’s residence allowed us to look at the post-Dayton municipalities, and in particular separately at each part of the divided pre-war municipalities, in order to view population changes between 1991 and 1997.

The conversion scheme for the aggregation of settlements into post-Dayton municipalities was obtained from the OSCE Election Registration Office in Sarajevo and was used to group settlements into municipalities. A number of settlements were split between municipalities in the Federation and Republika Srpska. For the split settlements, we at first were unable to determine their post-Dayton municipality of residence and a uniform (or fifty-fifty) distribution of the split-settlement-population was applied. This solution was not satisfactory for five largest settlements: Mostar (133647), Sarajevo-Ilidža (192023), Bosanski Šamac (105945), Odžak (135348), and Trnovo (145700). Therefore, we additionally requested specific maps of census enumeration areas located within these settlements from the Statistical Office of the Federation of Bosnia and Herzegovina. The maps and the population size (by ethnicity) in the relevant enumeration areas were sent to us on 11 November 2002. Using this information we were able to precisely define statistically the area of all split settlements in question. The HERCEG-BOSNA area was generally not affected by this problem, except for Mostar, whose population had to be split using the maps of enumeration areas in this territory. The splitting (conducted in November 2002) was successful and afterwards also Mostar is not affected by this problem.

As mentioned above the settlement of residence was reported in the 1991 census, but was unavailable for about 2% of the census respondents due to the reasons explained below.

We acquired *two* sets of census files, each set contained 109 files (one file for one pre-war municipality). The first set included a limited number of basic variables (15), but *no socio-economic items*, such as ethnicity and educational attainment. The second set contained all information collected on the census questionnaire (46 variables) except of two essential items, the place (i.e. settlement) and address of residence in 1991. Later enquiries revealed that the second set of files was virtually the same as the original census files. The first set of files was a copy of the census files prepared for OSCE in connection with the first post-war elections in 1996. For this purpose the place (i.e. settlements) of residence was included, derived from the code for enumeration area.

We had to merge the two census versions to include all variables in one set. During the merging we discovered that changes were made between the two versions, including deleting and adding records for some persons. In the latter case, the most recent version of the changed records was accepted. In addition, some cleaning of the data was done, in particular moving people who were recorded as being only temporarily present in a household. Finally, obvious duplicate records were removed. These procedures reduced the total number of records from 4,377,032 (second data set) to 4,298,896 (first data set). The second set contained 46 variables, the first set only 15. The 2% respondents with no settlement of residence were mainly the persons who were included in one set only and not in the other set and for whom individual links could not be established between the two sets of census files.

ANNEX B3. THE 1991 POPULATION CENSUS FOR BOSNIA AND HERZEGOVINA: METHODOLOGICAL PREPARATIONS, ORGANISATION AND CONDUCT¹¹

ORGANISATION OF THE CENSUS

- Articles 13 and 14 of the Law on the Registration of the Population, Households, Dwellings and Agricultural Farms in 1991 (SFRY Official Gazette no. 3/90) designated the organisations and official organs which were to organise and conduct the 1991 population census in the former Yugoslavia. (Federal statistics organisations, federal administration organs, and federal organisations and organs in charge of the census in the republics and autonomous provinces).
- Article 2 of the Law on Organising and Conducting the Registration of the Population, Households, Dwellings and Agricultural Farms in 1991 and Census Financing (Socialist Republic of Bosnia and Herzegovina (SRBiH) Official Gazette no. 22/90) designated the organs which were to organise and conduct the census in Bosnia and Herzegovina in 1991. (Republican Statistical Office, municipal commissions and republican and municipal administration organs).
- Articles 4, 5, 6 and 7 of the Federal Law on the Registration of the Population in 1991 regulated which data was to be acquired during the census. Any republic of the former Yugoslavia was allowed to collect information in addition to the standard census questionnaire, if it was of particular interest to the republic. The Republics' Census Laws could regulate that. Bosnia and Herzegovina did not add supplementary questions to the census questionnaire.
- The Assembly of the Socialist Federal Republic of Yugoslavia (SFRY) adopted the Law on the Registration of the Population, Households, Dwellings and Agricultural Farms in 1991 at the session of the Federal Chamber on 17 January, 1990. The Assembly of the Socialist Republic of Bosnia and Herzegovina (SRBiH) adopted the Law on Organising and Conducting the Registration of the Population, Households, Dwellings and Agricultural Farms in 1991, and decided on the means for financing the census at the session of the Chamber of Associated Labour on 30 July, 1990, and at the session of the Chamber of Municipalities at 30 July, 1990.
- Article 20 of the Federal Census Law and Article 19 of the Republic Law instructed the organisation in charge of statistics in the census to present a report to the Assembly upon completion of activities and census related tasks, as well as on the expenditure of

¹¹ This section was written by *Nora Selimović*, Expert Advisor on Aggregation and Analysis of Data and Development of the Methodology in the Field of Demography in the Bosnia and Herzegovina Agency for Statistics in Sarajevo. A summary of her professional qualifications is included at the end of Annex B3.

financial means. This was to be done annually, by the end of March, for the previous year. Such reports were presented regularly.

- The Republican Statistical Office (RZS) conducted methodological and organisational preparations for conducting the 1991 census in Bosnia and Herzegovina. For that purpose, a Census Bureau was established in the Republican Statistical Office, consisting of 15 members - experts in census-related fields. The Bureau co-ordinated all census related activities. Several groups existed within the Census Bureau, each was responsible for conducting particular tasks as specified below:

Group 1 was responsible for plans of census enumeration areas for settlements (and parts of them), local communities, and municipalities, preparation of the lists P-8, P-9, and P-10, preliminary results for all territorial units starting from the census enumeration area up to the level of the republic.

Group 2 was responsible for printing all necessary material /such as questionnaires/ and its distribution to the municipal census commissions, and for storing the acquired census material.

Group 3 was responsible for census propaganda and contacts with municipal census commissions during the preparation of the census.

Group 4 was responsible for early registration of auxiliary forms, registration of individuals working for Yugoslav companies abroad, registration of individuals in penal-corrective facilities and of employees of the Secretariat of Internal Affairs.

Group 5 was responsible for financing the census, starting from preliminary cost calculations to cost realisation – preliminary calculations in municipalities, preparation of instructions, expense control, funding supply.

Group 6 was responsible for the preparation of manual and electronic processing of the census, recruitment and work premises.

Group 7 was responsible for the program for controlling the completeness of the acquired material, logical control and obtaining results.

Group 8 was responsible for selection of republican instructors, group leaders for the manual preparation of the data, automatic coding and processing of the data.

Group 9 was responsible for methodological aspects of the census: preparing and applying methodological guidelines (including additional instructions), guidelines for training of

the interviewers (also called enumerators), requests for automatic data processing, selecting samples for response completeness and exactness control.

Municipal census commissions were the immediate organisers of the census in the municipalities, while the enumerators were the immediate executors of the census in the field. During the 1991 census, over 21,000 personnel were directly involved, out of which 17,467 were enumerators, 2,423 municipal instructors, 1,500 members of municipal census commissions, 124 republican instructors and a number of other associates. The republican instructors were employed by the RZS and were selected by the Census Bureau, while the municipal census commissions selected municipal instructors and enumerators for their municipalities. Details of selection procedures are explained on page 5 of “The Instruction for the Municipal Census Commissions”.

In the 1991 census in BiH there were 109 municipalities and 17,467 census enumeration areas. In each municipality a municipal census commission was formed, which was composed of a president and 8 to 14 members, depending on the size of a given municipality. There was at least one republican instructor in each municipality, while in larger municipalities there were two instructors (Tuzla, Zenica, Banja Luka, Mostar, Sarajevo Centar, Novi Grad, Novo Sarajevo, Ilidža...).

All personnel involved in the census (members of municipal census commissions, republican instructors and enumerators) were obliged to undergo special training. Training sessions were organised at several levels (for republican instructors, members of municipal census commissions and municipal instructors and finally for enumerators). The Census Bureau members conducted the training for republican instructors. Republican instructors held training sessions for the members of municipal census commissions and for municipal instructors, and then municipal instructors trained enumerators. All census personnel received written instructions for their work. Republican instructors received “The Methodology for Preparing, Organising and Conducting the Census”. Enumerators received “The Instruction for the Enumerator” and a sketch (plan) of the census enumeration area where they had to conduct the interviews. Municipal census commissions received “The Methodology and Additional Instruction for the Work of the Municipal Census Commissions”.

DATA COLLECTION METHODS

The basic data collection method in the 1991 census was the so-called face-to-face interview method, i.e. a method where the enumerator asked questions and then he/she wrote down the answers in the census questionnaire. Enumerators received training on the methodology of the census and explanations of certain questions, as well as on the system of reporting responses. Census questionnaires were prepared for optical reading (i.e. scanning) and therefore enumerators were obliged to take special care when writing down the responses.

The auxiliary form P-1/IN, designed for the BiH citizens temporarily working abroad and for their families, were completed by the citizens themselves (using the method of self-registration), while the enumerator was responsible for copying those forms into the forms foreseen for optical reading.

The guidelines given to the municipal census commissions regarding their tasks in relation to the self-completed forms conducted prior to the census were to be found in “The Instruction for the Work of the Municipal Census Commission” on page 11.

Page 30 of “The Methodology for Preparing and Conducting the Census” explains, in detail, why it was necessary to complete the self-registered forms prior to the proper census. Special instructions was prepared for completion of these forms. During the census, some items had to be defined more clearly, therefore additional instructions (five) were given in written form (those instructions were also presented in the attachment to the Methodology).

DATA SOURCES IN THE CENSUS

The responses recorded in the census questionnaires were mainly based on the statements made by the persons providing the enumerator with the data. It was not necessary to present documents to the enumerator for verification of responses. However, enumerators had the possibility to take data from documents, especially with regard to personal identification numbers, which could be obtained from the identity card, passport, birth certificate or from other personal documents.

For employed persons, the source of data regarding the personal identification number, level of education, occupation, work position, qualifications, as well as data about a given company, the code of the sub-group of activity and the identification number of the company, were taken from the company records maintained by that company for its employees. The companies were obliged to provide these items to each employee on the PL census auxiliary form before the census. During the interview the employees passed on the PL forms to the enumerator.

REGISTRATION OF PERSONS TEMPORARILY WORKING ABROAD

The aim of the census was to gather data on all Yugoslav citizens, both those staying in the country at the time of the census and those staying (working or otherwise) abroad at that time. Information on persons staying abroad was provided by the adult members of the family/household. If the entire household was abroad, then persons staying in the apartment at the time of the census, relatives or neighbours provided basic data about the absentees.

The Federal Statistical Office in co-operation with the Federal Secretariat for Foreign Affairs organised the registration of individuals abroad through diplomatic-consular representatives,

and through clubs and associations of Yugoslav citizens abroad in order to include as many such individuals as possible.

For that purpose, 500,000 auxiliary forms (P-1/IN) were printed and distributed to these bodies. The completed P-1/IN forms were sent by the citizens themselves to the municipal census commissions, to the municipality of their permanent place of residence in Yugoslavia. That was done by March 20, 1991.

Because of the importance of the registration of individuals working abroad, the BiH Republican Statistical Office printed additional 100,000 auxiliary forms and distributed them to the municipal census commissions in all 109 municipalities in BiH. The additional forms were completed during visits of these individuals at their permanent residence in the period before the census. Precise guidelines on how to deal with these auxiliary forms were given on pages 11 and 12 of “The Instructions for the Work of the Municipal Census Commissions”.

The population staying abroad was included in the census results and the exact number of these individuals is known at any given time. Therefore, the population concept applied in the census is “**concept de jure**”.

INTERVIEWING

The enumerators and all other personnel engaged in the census acted following the guidelines described in “The Methodology for Preparing, Organising and Conducting the Census” and in “The Instruction for the Enumerator”.

Before interviewing, the enumerator (supervised by a member of the municipal census commission or a municipal instructor) was obliged to physically check the boundaries of his/her census enumeration area using a map and a description of boundaries.

One or more census enumeration areas make up a statistical area. Statistical areas are permanent statistical territorial units that cover the entire territory of the former Yugoslavia, including Bosnia and Herzegovina. The creation of a network of statistical areas in 1959 had two basic aims: first to ensure that the entire territory is covered in censuses (and other large surveys) and second, if needed, to enable the re-calculation of data from one to another political territorial division. Through statistical areas the settlements, municipalities and other socio-political communities are defined. Documentation was created for every statistical area when it was determined, and it contained a map and a description of the boundaries of the area. A revision of this documentation is conducted before every census (or other large surveys) in order to determine all changes that possibly occurred in the areas during the intercensal period. After becoming acquainted with the boundaries of the enumeration area, the enumerator was obliged to prepare, together with the instructors, a plan of movement through the area, in order to avoid skipping units registered in the enumeration area.

The census was conducted in the period from 1 to 15 April, 1991, according to the situation at midnight of 31 March (the so-called “critical moment” of the census).

The enumerator, after completing the interviewing, was obliged to complete the census control form (Kontrolnik) by including preliminary results for a given enumeration area, and together with the census material (questionnaires), hand them over to the municipal instructor.

The municipal instructors examined the census material with each enumerator individually during the interviewing and also during the receipt of the census forms, by paying special attention to the completeness of the interviewing (by covering the entire census area), the completeness of answers to all questions and the exactness of preliminary results for the census area. When necessary, they returned the material to the enumerators for additional information and corrections. After receiving the material from all enumerators, the municipal instructors passed them on to the municipal census commission, which, upon receipt of the material from all instructors, was obliged to prepare preliminary results of the census in the census areas for the settlements and the municipality.

Thanks to the good organisation and great engagement of the municipal census commissions, the census was conducted in most municipalities without major problems, some minor difficulties that appeared were solved in good time. Therefore, we could conclude that the activities and tasks of the census were conducted in accordance with the Law on Organising the Census and methodological instructions. Good contact maintained between the Republican Statistical Office and the municipal census commissions certainly contributed to that (success) and this was achieved primarily through the republican instructors, and then by organising round the clock duty shifts in the Republican Office, whose employees maintained daily contacts with all municipal census commissions. In that manner all the problems were solved effectively, both of the methodological and the organisational nature.

THE PILOT CENSUS

A pilot census was carried-out in the BiH between April 1 and 10, 1988, in 10 selected census areas in eight municipalities (Banja Luka, Bijeljina, Kiseljak, Mostar, Ilidža and Zenica). The enumerators conducted the census, while observers, municipal and republican instructors supervised their work. Three employees of the Federal Statistical Office participated in the pilot as observers. The Census Bureau members inspected all regions where the pilot census was carried-out, both during training and the census itself.

The experience gained during the pilot census served for preparing and improving the questionnaires and methodological instructions for the 1991 census.

PROCESSING AND PUBLISHING OF THE PRIMARY RESULTS OF THE CENSUS

The deadline for the municipal census commissions to prepare the preliminary results in settlements was 21 April, which then had to be handed over to the Republican Statistical Office by 22 April. The deadlines were generally adhered to. Several large municipalities were late in providing their materials, this however did not significantly influence the deadlines set up by the Republican Statistical Office. The material from the municipality of Kupres was not received in time, and therefore could not be included in the preliminary results.

The Republican Statistical Office After commenced control of the preliminary results as soon as they arrived from the municipalities. Thanks to the fast procedure, the cleaned preliminary results, prepared for municipalities and settlements, were published in special publications on 15 May, 1991. Data on the total number of inhabitants, households, dwellings and agricultural farms, the number of persons working abroad, as well as data on the livestock in municipalities and settlements were presented in these publications. The ethnic composition of the population in municipalities was also included. All publications were issued without the figures for the municipality of Kupres, which were additionally published at 10 September, 1991, after the quality-control was conducted.

In the municipality of Kupres census related activities were not completed within the legal deadline, above all due to the insufficient work of the municipal census commission, inconsistent usage of the methodology and, in particular, Article 2 of the Federal Census Law, which regulates which persons were to be included in the census.

The employees of the Republican Statistical Office visited the Municipality of Kupres on several occasions and attempted to solve the problems, so that the census could be completed within the legal deadline and preliminary results processed. Since the problems could not be solved because of disagreements in the municipal census commission, the Republican Statistical Office informed the Government of the Socialist Republic of Bosnia and Herzegovina about the problems that appeared during the census in this municipality. The representatives of the Republican Statistical Office took over the census material from the municipality of Kupres and placed it in special rooms where the work on the quality control of the census material could continue.

During the examination of the census material, important aberrations from the Methodology and the Census Law were revealed, in particular, a number of persons were registered as permanent citizens of the municipality of Kupres contrary to the methodology and the law. For the purpose of determining as objectively as possible the data on the population in this municipality, the Republican Statistical Office proposed to the municipal census commission to conduct a control census, which was not accepted.

After that, the Republican Statistical Office commenced enquiring into the places of residence and citizenships for a certain number of individuals. A detailed examination of registration and de-registration of place of residence, citizenship and personal identification numbers of citizens (JMBG), obtained from the SRBiH Ministry of Internal Affairs, revealed that a

number of persons who had been registered as residing in the municipality of Kupres had previously deregistered from this municipality. Also a number of persons had not registered their place of residence in this municipality, a number of persons had registered twice, some in two different settlements in the municipality of Kupres, or both in the municipality of Kupres and in the municipality of Bugojno. Some persons with changed surname had registered twice, one time under their old surname (maiden name) and second time under their new surname. Finally, a number of persons had been stripped off their SFRY, that is SRBiH, citizenship.

Keeping the above-mentioned considerations in mind, the census forms for 1,071 persons were excluded from the census material from the municipality of Kupres. It's worth mentioning that special attention was paid to the number of incorrect information items, therefore the decision to exclude a person from the census was only made when a number of information items regarding that person were incorrect.

The number of inhabitants in the municipality of Kupres was determined after the above-mentioned persons were excluded from the census material. Then the population size closely corresponded to the size expected by the Republican Statistical Office, based on demographic analyses (expert studies), and taking into consideration data on the natural and migratory movement of the population in this municipality.

QUALITY CONTROL OF THE DATA COLLECTED IN THE CENSUS

Pursuant to Article 1, Paragraph 3, of the Census Law ("SFRY Official Gazette", no. 3/90) between April 16 and 23, a statistical quality control of the completeness and exactness of the census data was conducted by randomly selecting 80 census areas in 49 municipalities (in 1991 there were 109 municipalities in BiH and 17,467 census areas). This type of control is the usual manner of determining data quality, it is based on scientific methods, as used in statistics all over the world. The control included re-collection of data from a number of registered units in chosen areas and re-completion of census questionnaires for randomly chosen households in those areas.

This was done based on special instructions for conducting data quality control. After the statistical control was finished, the newly collected data and the data collected during the proper census were matched and compared. It was then determined that there were no major aberrations between the two data sets.

At the 17th session of the SR Bosnia and Herzegovina Government, held on 25 March, 1991, at proposal by the Commission for Internal Politics, Judicature and Administration, a decision was made that in the period between 14 and 20 April, 1991, the Republican Statistical Office should organise additional control of the data for all persons in respect to the following items: name and surname, father's name, the personal identification number, date of birth, place of residence, sex, nationality, mother tongue and religious affiliation.

Following this decision, the Republican Statistical Office prepared a bill on “Amendment to the Law on Organisation and Conduct of the Census”, and printed special guidelines for the Control Census and distributed it to all municipalities. The Assembly of SR Bosnia and Herzegovina at the session of the Chamber of Citizens and the Chamber of Municipalities held on 22 April, 1991, regarding the proposal of the Government of SR Bosnia and Herzegovina on the Control Census, passed the following conclusion:

The bill on “Amendment to the Law on Organising and Conducting the Registration of the Population, Households, Dwellings and Agricultural Farms in 1991 and the Means for Financing the Census” *should not be included in the agenda* and the Republican Statistical Office should conduct the control census only in those regions, or municipalities, where omissions were found”.

In accordance with the above-mentioned conclusion by the Assembly of the SRBiH, the Republican Statistical Office received nine requests for a control census. Four requests were received from municipal census commissions for the municipalities of Gruda, Prozor, Novi Grad and Srebrenica, five requests were submitted by political parties. For the municipalities of Nevesinje, Šipovo and Čajniče, the Party for Democratic Action sent the request for the control census, while for the municipalities of Novo Sarajevo and Prijedor the request was sent by the Serbian Democratic Party.

An expert commission was formed within the Republican Statistical Office composed of representatives of three nationalities, with the task of conducting the analysis of the preliminary results and based on that, to decide whether a control census should be conducted in these municipalities. After the examination of the census material and an expert demographic analysis, the commission decided, (and the Expert Group in the Republican Statistical Office accepted the proposal), that the results in the above-mentioned municipalities were in accordance with the natural and migratory movements of the population and that iteration of the census was unnecessary. The municipal census commissions were informed about this decision and given a detailed explanation.

PREPARATION OF THE CENSUS MATERIAL FOR PROCESSING

After the census material was gathered at the Republican Statistical Office, the preparation of this material for computer processing was organised, which included transfer of the data from questionnaires to electronic media. The data entry was conducted by scanning. Before the material was passed on to be entered, a manual preparation of the questionnaires took place. The manual preparation was conducted on the basis of the Special Instructions for the Manual Preparation of the Census Material.

The preparation of the material and its entry through optical reading was completed by 12 December, 1991, which was in accordance with the planned timetable. In the Republican

Statistical Office during the period from May to December, around 150 associates worked on the preparation and computerisation of the census material.

In order to prepare the census material for processing as effectively and qualitatively as possible, special software for coding items from census questionnaires was applied for the first time in this census. This phase was completed by the end of January 1992. Besides the employees of the Statistical Office, 40 associates were also engaged in these tasks.

CONTROL OF THE PROJECT AND LOGICAL CONTROL

After completion of data entry and automatic coding of items, control and corrections of the census material were conducted in two phases – control of the completeness and logical control. The control of the completeness was finished by the end of February 1992, and the Statistical Office published the final results of the census on the number of registered units in municipalities and inhabited areas as well as data on the national structure of the population, then on religious affiliation and mother tongue, as well as data on the number of persons working abroad and on the number of their family members (Statistical Bulletin no. 233, 234, 236 /probably 235/ and 236).

After the control of completeness, the logical control commenced. Logical control is a procedure for examining mutual logical (dis)harmony of responses to questions from the census forms. Corrections are included in this. In fact, this is only the final step in a number of logical controls of responses. It was foreseen that after this phase figures describing other structures of the population would be published, such as educational characteristics, social-economic position etc., as well as data on households, dwellings and agricultural farms.

With the aggression on Bosnia and Herzegovina in 1992, the processing of the census data ceased, therefore, the Statistical Office was unable to produce and publish all tables that had to be prepared according to the program of data processing. After the end of the military conflict, the Statistical Office managed to publish some more data in connection with the population and households (Statistical Bulletin no. 257, 271 and 272). The data on dwellings and agricultural farms were not published because this material never passed the phase of logical control.

CONCEPT DE JURE

During the 1991 census as well as during all post war censuses (1948, 1953, 1961, 1971, 1981), the population was registered according to the concept of a permanent population. The permanent population consists of persons who reside at a given location permanently, i.e. they have their permanent place of residence there, without taking into consideration whether at the time of the census (on the day March 31, 1991, at 24 hrs) they were at that location or were absent for any reason.

Persons temporarily working abroad, either for foreign employers or self-employed, as well as their family members who remain with them abroad, are registered as permanent citizens of the appropriate settlement in the country where their permanent place of residence is located.

The official data published on the population has passed all control phases, including the control for duplicates that was conducted on the level of each municipality.

Sarajevo, August 23, 2002

This section was written (originally in B/C/S) by **Nora Selimović**, Expert Advisor for Aggregation and Analysis of Data and the Development of the Methodology in the Field of Demography in the Bosnia and Herzegovina Agency for Statistics in Sarajevo.

Nora Selimović (NS) was born on 31 August, 1956, in Zenica. She graduated from the Faculty of Economics at the Sarajevo University on 30 June, 1979, and started working on 15 August, 1979, in the company ZPP (joint production and turnover) in Zenica. Since 12 December, 1980, she was employed at the Republican Statistical Office in Sarajevo in the Department of Population Statistics. In 1984, NS became Chief of the Department of Population Statistics. Since 1985, she worked on methodological preparations for the population census in 1991, as a member of the work group for the 1991 census methodology in the Federal Statistical Office in Belgrade and a member of the Census Bureau in the Republican Statistical Office in Sarajevo. She was involved in all census-related activities starting from methodological and organisational preparations up to producing census results. In October 1998, after the creation of the State Agency for Statistics in Bosnia and Herzegovina she commenced working in this institution. She is still employed there at present.

ANNEX B4. THE 1991 POPULATION CENSUS FOR BOSNIA AND HERZEGOVINA: POPULATION ABROAD

Summarised below are the results of the analysis of impact of pre-war emigration from Bosnia and Herzegovina on the *de facto* ethnic composition within the country in 1991 and on the estimated minimum number of refugees by 1998. The term 'pre-war emigration' is hereafter used for describing individuals, who temporarily resided abroad (in countries other than Yugoslavia) already by the time of 1991 population census. A person is considered a pre-war *émigré*, if her/his census record shows the value of the 'DUI' variable (length of the work/stay abroad, *dužina rada/boravka u inostranstvu*) other than '00'. This condition is fully consistent with another one, namely that the 'SDRZ' variable (country of work/stay abroad, *strana država rada/boravka*) is other than '000' – these two constraints may be used alternatively when extracting the data. Data used in this study were selected to ensure consistency with published sources covering the issue,¹² i.e. the duplicates additionally found by the Demographic Unit (approximately 8,500 in total for the whole census) were not excluded from the analysis. All analyses presented in this study are made for pre-war municipalities, due to split-settlement-conversion failures in some post-war (i.e. post-Dayton) municipalities, especially in Bosanski Šamac, Mostar, Odžak, Sarajevo-Ilidža, and Sarajevo-Trnovo. The analyses involving displaced persons and refugees were all conducted using only matched records (the 1997-98 voters register matched with the 1991 census).

The average share of persons staying abroad for the whole Bosnia and Herzegovina totalled ca. 5.4% (234,213 out of 4,377,032), however there were considerable differences between particular municipalities. And thus, the lowest shares of *émigrés* among the whole census population were observed for Kalinovik (0.3%) and Srebrenica (0.4%), while the highest – for Tomislavgrad (26.4%), Odžak (23.1%) and Livno (20.4%). The exact figures for all pre-war municipalities and ethnic groups are listed in Table 3(B4) at the end of this memo. Figures obtained from the PopDB are fully accordant with the 1994 publication of the RBiH State Office for Statistics.¹³

¹² Consistency issues are related to elimination of duplicates, which was only partly achieved by the statistical authorities in Bosnia. Duplicate control should be conducted by comparing records within municipalities and between municipalities. The "within municipality" control was completed by the Bosnian municipal census commissions in 1991 for all municipalities, and all found duplicates were deleted. The official census files do not contain duplicates within municipalities. The "between municipality" control had not been conducted by statistical authorities due to the outbreak of the 1992-95 conflict. Therefore, the Demographic Unit carried out a number of additional duplicate checks. Some 17,101 suspected records were identified on the basis of comparing first name, father's name, surname, and date of birth. Of these, some 8,506 records were flagged as duplicates. These records are normally excluded from studying the census data. Note that statistical authorities in Bosnia produced their official statistics without checking duplicates at the inter-municipal level. Therefore, small differences are usually seen in the figures produced locally in Bosnia and those produced at OTP.

¹³ Državni zavod za statistiku Republike Bosne i Hercegovine, *Građani R BiH na privremenom radu – boravku u inostranstvu, rezultati za republiku po opštinama*, Statistički Bilten (Statistical Bulletin) No. 235, Sarajevo, June 1994.

Impact on the Ethnic Composition

The impact of excluding persons working or staying abroad by 1991 from the whole pre-war census population on the ethnic composition of particular municipalities in general appeared to be limited. There were only three exceptional cases of pre-war municipalities, where the ethnic majority in 1991 appeared to be different for *de facto* and *de jure* population, i.e. when the population residing abroad was excluded (*de facto*) or respectively included (*de jure*) in the census population. In four other municipalities, the dominant group remained the same, but the type of majority changed, either from absolute (more than 50% of the dominant group) to relative (less than 50%), or from relative to absolute. All above-mentioned municipalities are listed below:

Table 1(B4). Municipalities where Ethnic Composition for *De Facto* and *De Jure* Population Differed Most Considerably

Municipality (code + name)	Ethnic Majority in 1991 <i>De Facto</i> Population	Ethnic Majority in 1991 <i>De Jure</i> Population
10138 Bosanski Šamac	Serb (relative majority)	Croats (relative majority)
10219 Busovača	Muslims (relative majority)	Croats (relative majority)
10774 Novi Travnik	Muslims (relative majority)	Croats (relative majority)
10324 Fojnica	Muslims (absolute majority)	Muslims (relative majority)
10472 Kiseljak	Croats (relative majority)	Croats (absolute majority)
10502 Ključ	Serbs (absolute majority)	Serbs (relative majority)
10707 Odžak	Croats (relative majority)	Croats (absolute majority)

The complete list of pre-war municipalities showing their ethnic composition for both *de facto* and *de jure* population (respectively, excluding and including the émigrés) is shown in Table 4(B4). In that table, the above-mentioned seven municipalities are highlighted grey.

Impact on the Out-Of-Country Voters 1998

Because of the existence of the population temporarily residing abroad in 1991, there might be a suspicion that the estimates of refugees produced by the Demographic Unit are inflated by including in DU statistics those voters who resided abroad already at the time of the 1991 census. This population group can be seen as pre-war emigration from Bosnia and Herzegovina, and thus, unrelated to the 1992-95 conflict. This issue is however questionable because, irrespective of when those persons left Bosnia, they had not returned until 1998, perhaps because of the conflict.

In order to investigate the impact of pre-war emigration from Bosnia and Herzegovina on the estimated minimum numbers of refugees by 1998, we examined the 1991 place of residence of the out-of-country (OCV) voters reported in the 1998 voters register. In other words, we checked how many of the 1998 OCV voters left the country before the 1991 census (pre-census emigration) and how many of them left after the census (post-census emigration). The pre-census emigration can be seen as war-unrelated and the post-census can be considered as war-related.

Before completing the proper analysis, we investigated voters' place of registration in the 1998 elections: whether it took place in Bosnia and Herzegovina, in Croatia, in the FRY or in other countries. To ensure a better credibility of results, 55,341 individuals registered in Croatia and 54,624 registered in the FRY are excluded from the analysis. The reason for these exclusions was that these particular out-of-country voters were in fact in Bosnia and Herzegovina in 1991, even though they could be temporarily working or staying in present-day Croatia or FRY.¹⁴ In the 1991 census they were reported as actually residing in Bosnia and Herzegovina, not abroad. In 1998 they registered to vote abroad, and thus according to our definition of refugees they have been post-census emigration to Croatia or Yugoslavia. Only the voters from countries other than the former Yugoslav republics are considered in tracing population movements, and only this category is hereafter referred to as 'Out-of-Country' voters.

The analysis showed, that for the whole country some 181,273 persons out of the overall number of 209,440 Out-of-Country voters (i.e. **86.6%**) were those who were post-census refugees (left the country after the 1991 census), while they actually resided in Bosnia and Herzegovina in 1991. In other words, only 28,167 of the 1998 Out-of-Country voters (i.e. **13.4%**) were those, who already stayed or worked abroad in 1991. This group can be seen as pre-census emigration. This leads to the conclusion, that on the country level the size of a bias related to including pre-war *émigrés* in the total number of refugees is not substantial.

¹⁴ These voters who registered in Croatia or FRY should be considered as belonging to *de facto* population in 1991. A query on the VSP variable from the census (frequency of returns home while working or studying elsewhere in the former Yugoslavia: daily, weekly, less frequently, or unknown) has shown the following:

- Of those OCV voters from BH reported in 1998 in present-day Croatia (55,341 in total) only 3,117 voters systematically travelled in 1991 to other Yugoslav republics (2,650 to SR of Croatia). Of the 3,117 travellers, approximately 1,532 visited their homes less frequently than daily or weekly (excluding 115 invalid records). The vast majority of the 55,341 voters can be thus considered as *de facto* population (as they returned home daily or weekly).
- Of those OCV voters from BH reported in 1998 in present-day FRY (54,624 in total) only 1,265 voters systematically travelled in 1991 to other Yugoslav republics (308 to Serbia, 205 to Vojvodina, 175 to Croatia). Of the 1,265 travellers, approximately 784 visited their homes less frequently than daily or weekly (excluding 74 invalid records). The vast majority of the 54,624 voters can be therefore considered *de facto* population (as they returned home daily or weekly).

Summing up, by excluding the voters registered in 1998 in Croatia and FRY from the analysis discussed in this chapter, we substantially underestimated the fraction of post-census *émigrés* among all refugees, and automatically overestimated the fraction of pre-census emigration.

For the particular ethnic groups it can be seen, that 63.8% of the Out-of-Country voters of a Serb ethnicity and 68.5% of the Croats are the post-census refugees, while the figures for Muslims and Others are substantially higher, totalling 90.8 and 90.7%, respectively. Therefore, for the largest group of post-census (or war-time) refugees, i.e. the Muslims (74.3% of the total number of Out-of-Country voters), our figures seem to be least overestimated.

Regardless of the above-mentioned conclusions, significant differences could be observed at the municipal level. Five lowest fractions of post-census refugees (below 50%) were obtained for the municipalities of: Grude (18.0%), Posušje (22.0%), Lištica/Široki Brijeg (26.3%), Bosansko Grahovo (27.3%) and Čitluk (35.2%). The exact figures for all pre-war municipalities and ethnic groups are listed in Table 5(B4).

Note that the total minimum number of refugees and displaced persons reported in this study for the whole Bosnia and Herzegovina is 674,350 individuals. If some 28,167 pre-census émigrés are included in this total, then about 4.2 % of the total is questioned, which is less than the usually accepted error of 5 per cent. If the total of 28,167 persons is distributed proportionally to the fractions of ethnic groups among refugees, we obtain the following approximated numbers of pre-census refugees for each ethnic group:¹⁵

Serbs:	4,625	(2.1 % of all DPs and refugees)
Muslims:	14,563	(4.6 %)
Croats:	6,944	(6.6 %)
Others:	2,035	(5.3 %)

All in all, the impact of including the pre-census emigration in the minimum numbers of DPs and refugees is within the acceptable error. It is however not necessarily correct to assume that all these émigrés should be excluded from statistics of refugees.

A second issues investigated in this study attempts to answer what portion of the pre-census emigration returned to Bosnia and Herzegovina, but not to their pre-war residence, and therefore they are included in our statistics of displaced persons. One could argue that these particular returnees would inflate the DPs numbers estimated by the Demographic Unit (they were absent in BH during the 1991 census but present in BH - as DPs - in 1997/98).

¹⁵ The table attached in this footnote explains the calculations for the whole Bosnia:

Ethnicity	DPs and Refugees	Of which Refugees	Ethnicity of Refugees (%)	Bias Abs. Size	Bias Per cent
Serbs	217,283	48,350	0.164	4,625	0.021
Muslims	314,382	152,224	0.517	14,563	0.046
Croats	104,579	72,591	0.247	6,944	0.066
Others	38,106	21,267	0.072	2,035	0.053
Total	674,350	294,432	1.000	28,167	na

The issue is related to the 1991 *émigrés*, who returned to Bosnia and Herzegovina and were found in the 1997/98 electoral lists as registered within the country, i.e. in one (not necessarily the same as pre-war) of the 149 new municipalities. Out of the total number of 20,248 such records that were identified (i.e. the census records matched with the voter records having valid *REGMUN* codes), only some 1,742 (8.6%) appeared to be internally displaced, i.e. registered in post-war municipality which was different than the area, where they were enumerated during the 1991 census. Another 17,476 (86.2%) persons were registered in the same area as they were enumerated in 1991, while for the remaining 1,066 (5.3%) there is no information about their pre-war residence in terms of post-war municipalities, as they originate from the split settlements. The ethnic breakdown of these figures is given below:

Table 2(B4). Pre-Census *Émigré* Returns to Bosnia and Herzegovina by Ethnicity and Displacement Status in 1998

<i>Émigré</i> returns to BH	ALL	Serbs	Muslims	Croats	Others
TOTAL, <i>of which</i> :	20,284	7,936	5,113	6,468	767
- not displaced	17,476 (86.2%)	6,655 (83.9%)	4,383 (85.7%)	5,829 (90.1%)	609 (79.4%)
- displaced	1,742 (8.6%)	729 (9.2%)	554 (10.8%)	365 (5.6%)	94 (12.3%)
- unknown	1,066 (5.3%)	552 (7.0%)	176 (3.4%)	274 (4.2%)	64 (8.3%)

The main conclusion is, that as the vast majority of returns of pre-war *émigrés* to Bosnia and Herzegovina are not displaced persons, therefore the numbers of persons internally displaced presented in our demographic reports, i.e. without considering the pre-war residence abroad, are not substantially biased at all, especially at the country level. This conclusion remains valid for all ethnic groups (Serbs, Muslims, Croats and Others). Moreover, the numbers of these particular returnees are generally small and this is another reason that their impact cannot be considerable.

Table 3(B4). Population Temporarily Residing Abroad during the 1991 Census and Its Fraction in the Total Census Population, By Ethnicity and Municipality

Opstina	Opstina Name	Pop. IN	Pop. OUT	% OUT	% Serbs OUT	% Muslims OUT	% Croats OUT	% Others OUT
10014	BANOVICI	26268	322	1.2%	1.8%	0.6%	2.2%	4.6%
10022	BANJA LUKA	186709	8983	4.6%	5.3%	1.7%	4.7%	4.6%
10049	BIHAC	66308	4424	6.3%	1.7%	7.1%	7.5%	8.3%
10057	BIJELINA	89789	7199	7.4%	7.8%	3.6%	10.2%	17.7%
10065	BILECA	13140	144	1.1%	1.2%	1.0%	0.0%	0.1%
10073	BOSANSKA DUBICA	28566	3040	9.6%	7.9%	7.0%	6.6%	28.1%
10081	BOSANSKA GRADISKA	55887	4087	6.8%	6.3%	5.0%	10.3%	13.0%
10090	BOSANSKA KRUPA	54869	3451	5.9%	4.1%	6.3%	12.9%	12.7%
10103	BOSANSKI BROD	32088	2050	6.0%	5.1%	4.4%	6.8%	7.3%
10111	BOSANSKI NOVI	40518	1147	2.8%	1.7%	4.4%	7.7%	3.6%
10120	BOSANSKI PETROVAC	15005	616	3.9%	2.3%	5.8%	8.3%	25.3%
10138	BOSANSKI SAMAC	28743	4217	12.8%	8.0%	1.7%	18.4%	16.5%
10146	BOSANSKO GRAHOVO	7859	452	5.4%	5.3%	0.0%	8.4%	6.5%
10154	BRATUNAC	33073	546	1.6%	1.2%	1.8%	5.0%	2.3%
10162	BRCKO	76121	11506	13.1%	9.9%	4.7%	28.6%	17.8%
10189	BREZA	16969	348	2.0%	2.1%	1.4%	4.9%	6.2%
10197	BUGOJNO	43808	3081	6.6%	3.6%	4.0%	9.7%	16.9%
10219	BUSOVACA	17604	1275	6.8%	2.6%	2.3%	11.3%	5.5%
10227	CAZIN	58724	4685	7.4%	6.9%	7.3%	13.0%	13.0%
10235	CAJNICE	8874	82	0.9%	1.0%	0.7%	0.0%	2.2%
10243	CAPLINA	26889	993	3.6%	1.0%	0.8%	5.4%	5.0%
10251	CELINAC	17652	1061	5.7%	5.5%	3.3%	7.9%	16.2%
10260	CITLUK	13168	1915	12.7%	0.0%	0.0%	12.4%	60.8%
10278	DERVENTA	52344	4145	7.3%	8.5%	1.8%	8.2%	6.0%
10286	DUBOVI	98096	4453	4.3%	4.4%	1.7%	8.1%	11.3%
10294	DONJI VAKUF	24124	420	1.3%	1.4%	1.4%	5.9%	7.4%
10308	TOMISLAVGRAD	22083	7926	26.4%	16.6%	5.7%	29.4%	31.7%
10316	FOCA	39821	692	1.7%	1.4%	1.6%	5.4%	6.6%
10324	FOJNICA	15121	1174	7.2%	4.5%	2.1%	14.5%	2.4%
10332	GACKO	10668	120	1.1%	1.0%	0.0%	0.0%	2.4%
10359	GLAMOC	12205	388	3.1%	2.5%	4.3%	8.2%	12.9%
10367	GORAZDE	36712	861	2.3%	1.7%	2.3%	3.8%	5.7%
10375	GORNJI VAKUF	22452	2729	10.8%	4.5%	5.7%	17.4%	18.4%
10383	GRACANICA	57289	3186	3.1%	3.0%	3.1%	5.3%	21.7%
10391	GRADACAC	51707	4874	8.6%	8.0%	2.6%	25.4%	29.8%
10405	GRUDE	14080	2278	13.9%	22.2%	0.0%	13.6%	55.6%
10413	HAN PUJESAK	6250	98	1.5%	1.7%	1.2%	14.3%	3.2%
10421	JABLANICA	12306	385	3.0%	0.2%	1.7%	4.5%	15.9%
10430	JAJCE	43542	1465	3.3%	1.8%	2.0%	5.3%	3.7%
10448	KAKANJ	53196	2754	4.9%	1.5%	1.7%	10.6%	10.3%
10456	KALESIJA	38833	2976	7.1%	9.5%	6.4%	17.1%	12.9%
10464	KALINOVIK	4655	12	0.3%	0.1%	0.5%	0.0%	0.0%
10472	KISELANJ	21477	2687	11.1%	1.9%	5.7%	15.0%	20.9%
10499	KLADANJ	15542	528	3.3%	2.6%	3.1%	0.0%	13.3%
10502	KLJUC	35823	1568	4.2%	3.1%	5.3%	5.2%	5.1%
10529	KONJIC	42206	1672	3.8%	0.5%	2.3%	8.4%	6.1%
10537	KOTOR VAROS	34379	2474	6.7%	3.7%	3.6%	13.9%	6.0%
10545	KRESEVO	6209	522	7.8%	5.9%	2.0%	9.1%	13.3%
10553	KUPRES	8416	1202	12.5%	10.2%	3.9%	17.0%	18.0%
10561	LAKTASI	27917	1915	6.4%	5.5%	2.0%	6.0%	15.5%
10570	LISTICA	23413	3747	13.8%	3.4%	11.1%	13.7%	41.0%
10588	LIVNO	32307	8293	20.4%	3.7%	4.0%	26.3%	13.2%
10596	LOPARE	28536	4001	12.3%	15.4%	5.1%	20.6%	30.5%
10600	LUKAVAC	55457	1613	2.8%	2.6%	1.9%	5.8%	9.5%
10618	LJUBINJE	4126	46	1.1%	1.0%	1.5%	2.6%	1.9%
10626	LJUBUSKI	23720	4620	16.3%	4.6%	1.0%	17.0%	27.5%
10634	MAGLAI	41626	1762	4.1%	2.7%	2.9%	6.3%	14.0%
10642	MODRICA	31304	4309	12.1%	12.9%	2.3%	20.1%	16.9%
10669	MOSTAR	122071	4557	3.6%	1.2%	2.1%	6.6%	3.3%
10677	MRKONJIC GRAD	25680	1715	6.3%	6.4%	4.0%	5.8%	11.8%
10685	NEUM	3974	351	8.1%	0.0%	0.0%	9.0%	5.9%
10693	NEVESINJE	13886	562	3.9%	3.2%	5.2%	10.0%	11.9%
10707	ODZAK	23106	6950	23.1%	24.5%	2.5%	29.9%	27.9%
10715	OLOVO	16652	304	1.8%	1.7%	1.2%	7.4%	11.7%
10723	ORASIE	24683	3684	13.0%	4.8%	1.2%	15.8%	10.0%
10731	POSUSJE	14131	3003	17.5%	11.1%	33.3%	17.3%	39.1%
10740	PRIJEDOR	106968	5575	5.0%	4.2%	5.3%	5.4%	6.5%
10758	PRNJAVOR	42377	4678	9.9%	10.5%	5.4%	5.4%	14.1%
10766	PROZOR	18040	1720	8.7%	0.0%	4.3%	11.2%	14.9%
10774	NOVI TRAVNIK	29570	1143	3.7%	0.9%	1.0%	7.0%	4.8%
10782	ROGATICA	21597	381	1.7%	1.7%	1.6%	10.5%	7.3%
10804	RUDO	11426	145	1.3%	1.2%	0.6%	0.0%	6.6%
10812	SANSKI MOST	55702	4605	7.6%	3.7%	9.6%	6.7%	26.9%

Note: Population 'IN' denotes persons having their 'DUI' variable equal '00' (or 'SDRZ' variable equal '000', equivalently), population 'OUT' – other cases, i.e. *émigrés* (those temporarily residing abroad).

Table 3(B4). - Continued

Opstina	Opstina Name	Pop. IN	Pop. OUT	% OUT	% Serbs OUT	% Muslims OUT	% Croats OUT	% Others OUT
10839	SARAJEVO-CENTAR	77749	1537	1.9%	1.1%	1.5%	2.5%	3.5%
10847	SARAJEVO-HADZICI	23850	350	1.4%	0.6%	1.4%	5.4%	3.6%
10855	SARAJEVO-ILIDZA	66295	1642	2.4%	1.2%	2.4%	4.9%	4.3%
10863	SARAJEVO-ILIJAS	24623	561	2.2%	1.8%	1.5%	5.7%	6.4%
10871	SARAJEVO-NOVI GRAD	134860	1756	1.3%	0.9%	1.2%	1.9%	2.0%
10880	SARAJEVO-NOVO SARAJEVO	93638	1451	1.5%	1.1%	1.6%	2.2%	1.9%
10898	SARAJEVO-PALE	16021	334	2.0%	1.7%	2.0%	3.1%	9.7%
10901	SARAJEVO-STARI GRAD	49779	965	1.9%	1.3%	1.7%	2.7%	3.8%
10910	SARAJEVO-TRNOVO	6927	64	0.9%	0.8%	0.7%	6.2%	8.8%
10928	VOGOSCA	24034	613	2.5%	1.7%	1.8%	5.6%	7.8%
10936	SKENDER VAKUF	18722	696	3.6%	4.0%	0.6%	2.7%	8.3%
10944	SOKOLAC	14570	313	2.1%	1.8%	2.4%	0.0%	11.0%
10952	SRBAC	19328	2512	11.5%	11.1%	8.8%	15.1%	18.5%
10979	SREBRENICA	36518	148	0.4%	0.5%	0.4%	0.0%	1.1%
10987	SREBRENIC	38373	2523	6.2%	11.3%	2.8%	16.1%	27.1%
10995	STOLAC	18070	611	3.3%	0.7%	1.5%	6.8%	7.8%
11002	SEKOVICI	9408	221	2.3%	1.7%	0.9%	12.5%	21.6%
11029	SIPOVO	14986	593	3.8%	3.5%	4.6%	9.7%	7.3%
11037	TESLIC	56412	3442	5.8%	5.3%	2.1%	10.5%	9.5%
11045	TESANJ	46311	2169	4.5%	3.6%	2.5%	11.4%	9.9%
11053	TITOV DRVAR	16944	182	1.1%	1.0%	0.0%	0.0%	2.4%
11061	TRAVNIK	66512	4235	6.0%	1.0%	2.1%	12.2%	6.0%
11070	TREBINJE	30739	257	0.8%	0.7%	1.1%	2.8%	0.7%
11088	TUZLA	127833	3785	2.9%	2.5%	1.1%	4.4%	5.9%
11096	UGLJEVIK	23948	1639	6.4%	8.0%	3.3%	10.7%	13.8%
11100	VARES	21789	414	1.9%	1.0%	0.7%	2.6%	3.4%
11118	VELIKA Kladusa	50601	2307	4.4%	1.3%	4.2%	8.1%	10.7%
11126	VISOKO	45178	982	2.1%	1.0%	1.5%	7.1%	10.4%
11134	VISEGRAD	20636	563	2.7%	2.6%	2.4%	3.1%	6.6%
11142	VITEZ	26463	1396	5.0%	1.9%	0.9%	8.3%	9.8%
11169	VLAZENICA	33161	781	2.3%	1.7%	2.1%	0.0%	17.9%
11177	ZAVIDOVICI	55879	1285	2.2%	1.5%	1.5%	4.9%	6.1%
11185	ZENICA	143080	2437	1.7%	1.3%	1.1%	3.1%	2.7%
11193	ZVORNIK	78048	3247	4.0%	5.2%	3.1%	13.9%	5.0%
11207	ZEPCE	21827	1139	5.0%	5.7%	2.4%	7.6%	7.3%
11215	ZIVINICE	53271	1512	2.8%	4.2%	1.7%	3.3%	14.4%
Total Bosnia and Herzegovina		4142819	234213	5.4%	4.4%	2.9%	12.0%	7.9%

Note: Population 'IN' denotes persons having their 'DUI' variable equal '00' (or 'SDRZ' variable equal '000', equivalently), population 'OUT' – other cases, i.e. *de facto émigrés* (those temporarily residing abroad)..

Table 4(B4). Ethnic Composition in Pre-War Municipalities in Bosnia and Herzegovina Estimated for *De Jure* and *De Facto* Population Reported in the 1991 Census

Opština	Opština Name	ALL Serbs	ALL Muslims	ALL Croats	ALL Others	Serbs in BH	Muslims in BH	Croats in BH	Others in BH
10014	BANOVICI	17.0%	72.0%	2.1%	9.0%	16.9%	72.4%	2.0%	8.7%
10022	BANJA LUKA	54.5%	14.5%	14.8%	16.1%	54.1%	15.0%	14.8%	16.1%
10049	BIHAC	17.9%	66.0%	7.9%	8.2%	18.8%	65.4%	7.8%	8.0%
10057	BIJELINA	59.1%	31.1%	0.5%	9.2%	58.9%	32.5%	0.5%	8.2%
10065	BILECA	80.0%	14.6%	0.3%	5.1%	79.9%	14.6%	0.3%	5.2%
10073	BOSANSKA DUBICA	68.7%	20.3%	1.5%	9.5%	69.9%	20.9%	1.6%	7.5%
10081	BOSANSKA GRADISKA	59.6%	26.4%	5.7%	8.3%	59.9%	26.8%	5.5%	7.8%
10090	BOSANSKA KRUPA	23.7%	73.9%	0.2%	2.2%	24.2%	73.6%	0.2%	2.0%
10103	BOSANSKI BROT	33.3%	12.0%	41.0%	13.7%	33.7%	12.2%	40.6%	13.5%
10111	BOSANSKI NOVI	60.2%	33.6%	1.0%	5.2%	60.9%	33.1%	0.9%	5.1%
10120	BOSANSKI PETROVAC	74.8%	21.0%	0.3%	3.9%	76.1%	20.6%	0.3%	3.0%
10138	BOSANSKI SAMAC	41.3%	6.8%	44.7%	7.2%	43.6%	7.6%	41.8%	6.9%
10146	BOSANSKO GRAHOVO	94.9%	0.1%	2.7%	2.2%	95.0%	0.2%	2.6%	2.2%
10154	BRATUNAC	34.1%	64.0%	0.1%	1.8%	34.3%	63.9%	0.1%	1.8%
10162	BRCKO	20.7%	44.0%	25.4%	10.0%	21.4%	48.3%	20.9%	9.4%
10189	BREZA	12.2%	75.5%	4.9%	7.3%	12.2%	76.0%	4.8%	7.0%
10197	BUGOJNO	18.5%	41.9%	34.2%	5.4%	19.1%	43.1%	33.0%	4.8%
10219	BUSOVACA	3.3%	44.7%	48.1%	3.9%	3.4%	46.9%	45.7%	3.9%
10227	CAZIN	1.2%	97.2%	0.2%	1.3%	1.2%	97.3%	0.2%	1.3%
10235	CARNICE	52.6%	44.8%	0.1%	2.6%	52.5%	44.9%	0.1%	2.6%
10243	CAPLJINA	13.5%	27.2%	53.7%	5.6%	13.8%	28.0%	52.6%	5.5%
10251	CELNAC	88.5%	7.7%	0.4%	3.5%	88.7%	7.9%	0.4%	3.1%
10260	CITLUK	0.1%	0.7%	98.3%	0.9%	0.1%	0.8%	98.6%	0.4%
10278	DERVENTA	40.6%	12.5%	38.8%	8.1%	40.1%	13.3%	38.5%	8.2%
10286	DOBOJ	38.8%	40.1%	12.9%	8.2%	38.8%	41.2%	12.4%	7.6%
10294	DONJI VAKUF	38.8%	55.0%	2.8%	3.4%	39.0%	55.2%	2.7%	3.2%
10308	TOMISLAVGRAD	1.9%	10.5%	86.6%	1.0%	2.6%	13.4%	83.0%	1.0%
10316	FOCA	45.2%	51.2%	0.2%	3.4%	45.3%	51.2%	0.2%	3.2%
10324	FOJNICA	1.0%	49.2%	40.6%	9.2%	1.0%	51.9%	37.4%	9.7%
10332	GACKO	61.7%	35.6%	0.3%	2.3%	61.7%	35.7%	0.3%	2.3%
10359	GLAMOC	17.9%	17.9%	1.5%	1.7%	17.4%	17.7%	1.4%	1.5%
10367	GORAZDE	26.2%	69.9%	0.2%	3.7%	26.3%	69.9%	0.2%	3.5%
10375	GORNJI VAKUF	0.4%	55.8%	42.5%	1.3%	0.5%	59.0%	39.4%	1.2%
10383	GRACANICA	22.9%	71.9%	0.2%	5.0%	23.0%	72.8%	0.2%	4.0%
10391	GRADACAC	19.8%	59.6%	15.2%	5.4%	19.9%	63.5%	12.4%	4.1%
10405	GRUDE	0.1%	0.0%	99.1%	0.8%	0.0%	0.0%	99.5%	0.4%
10413	HAN PUESAK	57.9%	40.1%	0.1%	2.0%	57.8%	40.2%	0.1%	1.9%
10421	JABLANICA	4.0%	71.6%	18.1%	6.3%	4.1%	72.6%	17.8%	5.5%
10430	JAJCE	19.2%	38.6%	35.1%	7.1%	19.5%	39.1%	34.4%	7.0%
10448	KAKANJ	8.8%	54.4%	29.6%	7.3%	8.1%	56.2%	27.8%	6.8%
10456	KALEŠIJA	18.3%	79.2%	0.1%	2.4%	17.8%	79.9%	0.1%	2.2%
10464	KALINOVIK	60.6%	36.7%	0.4%	2.3%	60.6%	36.7%	0.4%	2.3%
10472	KISELJAK	3.0%	40.4%	51.8%	4.8%	3.3%	42.9%	49.5%	4.3%
10499	KLADANJ	24.6%	72.2%	0.2%	3.0%	24.8%	72.3%	0.2%	2.7%
10502	KLJUC	49.5%	47.2%	0.9%	2.4%	50.1%	46.7%	0.9%	2.4%
10529	KONJIC	15.1%	54.2%	26.2%	4.4%	15.0%	55.1%	25.0%	4.3%
10537	KOTOR VAROS	38.1%	30.1%	29.0%	2.8%	39.4%	31.1%	26.8%	2.8%
10545	KRESEVO	0.5%	22.7%	69.8%	6.9%	0.5%	24.2%	68.8%	6.5%
10553	KUPRES	50.6%	8.3%	39.6%	1.4%	51.9%	9.2%	37.6%	1.4%
10561	LAKTASI	81.0%	1.4%	8.6%	9.0%	81.8%	1.4%	8.6%	8.1%
10570	LISTICA	0.5%	0.0%	98.9%	0.5%	0.6%	0.0%	99.0%	0.4%
10588	LIVNO	9.6%	14.2%	72.2%	3.9%	11.7%	17.1%	66.9%	4.3%
10596	LOPARE	56.1%	36.8%	3.9%	3.2%	54.1%	39.9%	3.5%	2.5%
10600	LUKAVAC	21.3%	66.6%	3.7%	8.4%	21.4%	67.2%	3.6%	7.8%
10618	LUBINJE	89.8%	8.0%	0.9%	1.3%	89.9%	7.9%	0.9%	1.3%
10626	LUBUSKI	0.2%	5.6%	92.2%	2.0%	0.3%	6.6%	91.4%	1.7%
10634	MAGLAJ	30.7%	45.0%	19.3%	5.0%	31.1%	45.6%	18.8%	4.5%
10642	MODRICA	35.2%	29.1%	27.5%	8.2%	34.9%	32.4%	25.0%	7.7%
10669	MOSTAR	18.8%	34.5%	34.0%	12.7%	19.3%	35.1%	32.9%	12.7%
10677	MRKONJIC GRAD	76.8%	11.9%	7.8%	3.4%	76.7%	12.2%	7.8%	3.2%
10685	NEUM	4.8%	4.4%	87.7%	3.1%	5.2%	4.8%	86.8%	3.2%
10693	NEVESINJE	74.1%	22.9%	1.5%	1.5%	74.7%	22.6%	1.4%	1.4%
10707	ODZAK	18.9%	20.7%	54.3%	6.1%	18.5%	26.2%	49.5%	5.7%
10715	OLOVO	18.8%	74.9%	3.8%	2.5%	18.9%	75.3%	3.6%	2.3%
10723	ORASIE	14.9%	6.7%	75.1%	3.4%	16.3%	7.6%	72.6%	3.5%
10731	POSUSJE	0.1%	0.0%	99.0%	0.9%	0.1%	0.0%	99.2%	0.7%
10740	PRIFEDOR	42.2%	43.8%	5.6%	8.3%	42.6%	43.6%	5.6%	8.2%
10758	PRNJAVOR	71.2%	15.2%	3.7%	10.0%	70.7%	15.9%	3.8%	9.5%
10766	PROZOR	0.2%	36.5%	62.0%	1.2%	0.2%	38.3%	60.3%	1.1%
10774	NOVI TRAVNIK	13.3%	37.8%	39.6%	9.3%	13.7%	38.9%	38.2%	9.2%
10782	ROGATICA	38.2%	60.0%	0.1%	1.7%	38.2%	60.1%	0.1%	1.6%
10804	RUDO	70.4%	27.1%	0.0%	2.5%	70.4%	27.2%	0.0%	2.4%
10812	SANSKI MOST	42.1%	46.6%	7.2%	4.2%	43.8%	45.6%	7.2%	3.3%

Note: Population 'in BH' denotes persons having their 'DUI' variable equal '00' (or 'SDRZ' variable equal '000', equivalently), i.e. *de facto* residing in BH in 1991, while the 'ALL' (*de jure*) population includes also persons temporarily residing (working or not) abroad.

Table 4(B4). Continued

Opstina	Opstina Name	ALL Serbs	ALL Muslims	ALL Croats	ALL Others	Serbs in BH	Muslims in BH	Croats in BH	Others in BH
10839	SARAJEVO-CENTAR	20.9%	49.8%	6.8%	22.5%	21.1%	50.0%	6.8%	22.1%
10847	SARAJEVO-HADZICI	26.3%	63.4%	3.1%	7.2%	26.5%	63.4%	3.0%	7.1%
10855	SARAJEVO-ILIDZA	36.8%	43.1%	10.2%	9.9%	37.3%	43.1%	9.9%	9.7%
10863	SARAJEVO-ILIJAS	45.0%	42.0%	6.9%	6.1%	45.1%	42.4%	6.6%	5.9%
10871	SARAJEVO-NOVI GRAD	27.5%	50.6%	6.5%	15.4%	27.6%	50.6%	6.4%	15.3%
10880	SARAJEVO-NOVO SARAJEVO	34.5%	35.4%	9.2%	20.8%	34.7%	35.4%	9.2%	20.7%
10898	SARAJEVO-PALE	69.0%	26.7%	0.8%	3.5%	69.3%	26.7%	0.8%	3.3%
10901	SARAJEVO-STARI GRAD	10.1%	77.4%	2.2%	10.3%	10.2%	77.5%	2.2%	10.1%
10910	SARAJEVO-TRNOVO	29.5%	68.2%	0.2%	2.1%	29.5%	68.4%	0.2%	1.9%
10928	VOGOSCA	35.7%	50.7%	4.3%	9.2%	36.0%	51.1%	4.2%	8.7%
10936	SKENDER VAKUF	68.3%	5.5%	24.6%	1.6%	68.0%	5.7%	24.8%	1.5%
10944	SOKOLAC	68.4%	30.2%	0.1%	1.3%	68.6%	30.1%	0.1%	1.2%
10952	SRBAC	88.7%	4.3%	0.6%	6.4%	89.1%	4.4%	0.6%	5.9%
10979	SREBRENIKA	22.7%	75.2%	0.1%	2.1%	22.7%	75.2%	0.1%	2.1%
10987	SREBRENIK	13.0%	74.6%	6.7%	5.8%	12.3%	77.3%	6.0%	4.5%
10995	STOLAC	21.0%	43.1%	33.1%	2.8%	21.5%	43.9%	31.9%	2.7%
11002	SEKOVICI	93.6%	3.4%	0.1%	2.9%	94.1%	3.4%	0.1%	2.4%
11029	SIPOVO	79.1%	19.0%	0.2%	1.7%	79.4%	18.8%	0.2%	1.6%
11037	TESLIC	55.1%	21.3%	15.9%	7.7%	55.3%	22.2%	15.1%	7.4%
11045	TESANI	6.3%	72.0%	18.4%	3.3%	6.4%	73.4%	17.1%	3.1%
11053	TITOV DRVAR	97.0%	0.2%	0.2%	2.7%	97.0%	0.2%	0.2%	2.6%
11061	TRAVNIK	11.0%	44.9%	36.9%	7.2%	11.6%	46.8%	34.4%	7.2%
11070	TREBINJE	68.9%	17.8%	4.0%	9.3%	69.0%	17.7%	3.9%	9.3%
11088	TUZLA	15.4%	47.4%	15.3%	22.0%	15.4%	48.2%	15.1%	21.3%
11096	UGLJEVIK	56.5%	39.5%	0.2%	3.7%	55.6%	40.8%	0.2%	3.4%
11100	VARES	16.4%	30.2%	40.4%	13.1%	16.5%	30.6%	40.1%	12.9%
11118	VELIKA Kladusa	4.3%	91.0%	1.4%	3.3%	4.4%	91.1%	1.3%	3.1%
11126	VISOKO	16.2%	74.4%	4.1%	5.4%	16.3%	74.9%	3.9%	5.0%
11134	VISEGRAD	31.8%	63.5%	0.2%	4.5%	31.8%	63.7%	0.2%	4.3%
11142	VITEZ	5.4%	41.3%	45.4%	7.9%	5.5%	43.1%	43.9%	7.5%
11169	VLASENICA	42.3%	55.1%	0.1%	2.4%	42.6%	55.3%	0.1%	2.0%
11177	ZAVIDOVICI	20.4%	59.7%	13.2%	6.7%	20.5%	60.2%	12.9%	6.4%
11185	ZENICA	15.4%	55.2%	15.4%	14.0%	15.4%	55.5%	15.2%	13.9%
11193	ZVORNIK	38.0%	59.1%	0.2%	2.8%	37.5%	59.6%	0.1%	2.8%
11207	ZEPCE	9.9%	47.0%	39.6%	3.5%	9.8%	48.2%	38.5%	3.4%
11215	ZIVNICE	6.4%	80.2%	7.2%	6.2%	6.3%	81.1%	7.1%	5.5%
	Total Bosnia and Herzegovina	31.2%	43.4%	17.4%	8.1%	31.5%	44.5%	16.1%	7.8%

Note: Population 'in BH' denotes persons having their 'DUI' variable equal '00' (or 'SDRZ' variable equal '000', equivalently), i.e. *de facto* residing in BH in 1991, while the 'ALL' (de jure) population includes also persons temporarily residing abroad.

Table 5(B4). Fraction of Refugees Who Left Bosnia and Herzegovina after the 1991 Census Among the 1998 Out-of-Country Voters, By Municipality and Ethnicity

Opstina	Opstina Name	OC Voters '98	Refugees	% Refugees	% Ref. Serbs	% Ref. Muslims	% Ref. Croats	% Ref. Others
10014	BANOVICI	316	270	85.4%	64.0%	89.1%	63.6%	83.3%
10022	BANJA LUKA	10476	10093	96.3%	58.6%	98.9%	90.3%	96.7%
10049	BIHAC	1669	1081	64.8%	80.0%	64.6%	51.1%	72.7%
10057	BIHELJINA	9428	9068	96.2%	58.0%	96.8%	88.2%	96.3%
10065	BILECA	733	727	99.2%	80.0%	90.3%	100.0%	100.0%
10073	BOSANSKA DUBICA	2691	2443	90.8%	40.5%	93.3%	93.3%	80.1%
10081	BOSANSKA GRADISKA	6115	5681	92.9%	39.5%	94.8%	80.3%	89.2%
10090	BOSANSKA KRUPA	1338	961	71.8%	60.7%	71.5%	75.0%	91.2%
10103	BOSANSKI BROD	2345	2158	92.0%	82.0%	97.3%	83.6%	95.6%
10111	BOSANSKI NOVI	4491	4256	94.8%	70.0%	94.9%	100.0%	97.1%
10120	BOSANSKI PETROVAC	576	531	92.2%	34.8%	94.7%	100.0%	92.0%
10138	BOSANSKI SAMAC	1644	1302	79.2%	43.8%	97.6%	71.6%	92.1%
10146	BOSANSKO GRAHOVO	11	3	27.3%	0.0%	-	100.0%	100.0%
10154	BRATUNAC	1918	1780	92.8%	50.0%	92.7%	100.0%	100.0%
10162	BRCKO	7783	6514	83.7%	66.0%	91.4%	61.0%	92.6%
10189	BREZA	305	249	81.6%	93.3%	80.8%	83.9%	80.0%
10197	BUGOJNO	3555	2744	77.2%	87.7%	76.5%	77.4%	75.8%
10219	BUSOVACA	782	467	59.7%	100.0%	67.8%	56.7%	68.4%
10227	CAZIN	2225	1359	61.1%	80.0%	61.2%	50.0%	50.0%
10235	CAJNICE	529	513	97.0%	75.0%	97.1%	97.3%	100.0%
10243	CAPLJINA	1163	1091	93.8%	90.9%	97.3%	56.8%	95.8%
10251	CELINAC	463	407	87.9%	51.2%	96.0%	100.0%	93.1%
10260	CITLUK	250	88	35.2%	-	100.0%	27.1%	83.3%
10278	DERVENTA	3791	3364	88.7%	47.5%	98.4%	84.0%	95.7%
10286	DOBOJ	6791	6234	91.8%	62.9%	94.8%	81.2%	91.0%
10294	DONJI VAKUF	972	896	92.2%	72.7%	92.9%	86.2%	92.1%
10308	TOMISLAVGRAD	1534	778	50.7%	100.0%	90.9%	16.9%	45.5%
10316	FOCA	2214	2100	94.9%	78.6%	95.3%	85.7%	89.6%
10324	FOJNICA	540	390	72.2%	-	61.2%	74.7%	100.0%
10332	GACKO	512	500	97.7%	100.0%	97.6%	100.0%	100.0%
10359	GLAMOC	643	586	91.1%	47.8%	93.8%	40.0%	83.3%
10367	GORAZDE	1520	1341	88.2%	76.0%	88.3%	33.3%	97.8%
10375	GORNJI VAKUF	2026	1321	65.2%	100.0%	66.9%	63.7%	43.8%
10383	GRACANICA	1246	987	79.2%	66.7%	83.1%	100.0%	52.6%
10391	GRADACAC	1650	1099	66.6%	50.0%	76.9%	56.4%	58.4%
10405	GRUDE	172	31	18.0%	-	-	18.2%	0.0%
10413	HAN PIESAK	71	67	94.4%	-	94.3%	-	100.0%
10421	JABLANICA	323	264	81.7%	75.0%	83.6%	76.9%	70.8%
10430	JAJCE	4121	3731	90.5%	89.8%	91.6%	88.2%	95.2%
10448	KAKANJ	2104	1684	80.0%	86.4%	75.1%	81.3%	83.3%
10456	KALESIJA	2370	1734	73.2%	46.7%	72.2%	100.0%	96.1%
10464	KALINOVIK	25	25	92.6%	-	92.6%	-	-
10472	KISELJAK	1019	692	67.9%	66.7%	75.6%	61.5%	53.3%
10499	KLADANJ	454	346	76.2%	52.4%	77.4%	-	77.3%
10502	KLJUC	3731	3321	89.0%	53.1%	89.5%	75.0%	90.3%
10529	KONJIC	1209	840	69.5%	100.0%	66.7%	69.5%	88.5%
10537	KOTOR VAROS	3307	2806	84.9%	62.5%	90.4%	71.6%	83.1%
10545	KRESEVO	239	149	62.3%	-	68.6%	59.7%	100.0%
10553	KUPRES	475	338	71.2%	72.0%	93.8%	56.1%	100.0%
10561	LAKTASI	205	153	74.6%	53.2%	94.1%	79.3%	76.5%
10570	LISTICA	429	113	26.3%	-	-	26.5%	0.0%
10588	LIVNO	1586	973	61.3%	92.9%	91.4%	27.4%	84.6%
10596	LOPARE	919	625	68.0%	39.3%	74.2%	62.5%	55.9%
10600	LUKAVAC	1095	872	79.6%	79.5%	80.8%	89.7%	70.8%
10618	LJUBINJE	43	39	90.7%	66.7%	92.3%	-	100.0%
10626	LJUBUSKI	875	619	70.7%	100.0%	100.0%	20.6%	87.5%
10634	MAGLJAI	1375	1050	76.4%	70.0%	80.2%	64.0%	73.1%
10642	MODRICA	5040	4514	89.6%	48.6%	98.2%	68.0%	93.0%
10669	MOSTAR	7169	6477	90.3%	92.7%	94.6%	61.9%	96.6%
10677	MRKONJIC GRAD	666	571	85.7%	34.4%	89.0%	81.0%	89.7%
10685	NEUM	50	31	62.0%	100.0%	100.0%	17.4%	100.0%
10693	NEVESINJE	267	201	75.3%	20.0%	78.6%	-	75.0%
10707	ODZAK	3037	2173	71.6%	38.0%	97.4%	48.5%	85.5%
10715	OLOVO	332	279	84.0%	66.7%	85.5%	78.1%	84.6%
10723	ORASJE	754	435	57.7%	76.9%	93.3%	51.0%	82.1%
10731	POSUSJE	182	40	22.0%	-	-	22.1%	0.0%
10740	PRJEDOR	14987	14027	93.6%	61.0%	94.1%	82.6%	93.6%
10758	PRNJAVOR	1996	1638	82.1%	43.9%	90.7%	85.0%	76.6%
10766	PROZOR	1298	1028	79.2%	100.0%	89.7%	48.5%	100.0%
10774	NOVI TRAVNIK	862	663	76.9%	94.1%	83.9%	73.8%	81.2%
10782	ROGATICA	792	746	94.2%	100.0%	94.1%	100.0%	95.8%
10804	RUDO	741	730	98.5%	80.0%	98.8%	-	85.7%
10812	SANSKI MOST	6181	5226	84.5%	50.9%	86.2%	77.5%	60.3%

Note: 'Refugees' are persons having their 'DUI' variable equal '00' (or 'SDRZ' variable equal '000', equivalently), i.e. *de facto* resided in Bosnia and Herzegovina in 1991, but left the country after the 1991 census and registered as Out-of-Country (OC) Voters in the 1998 elections, i.e. being post-census refugees.

Table 5(B4). - Continued

Opstina	Opstina Name	OC Voters '98	Refugees	% Refugees	% Ref. Serbs	% Ref. Muslims	% Ref. Croats	% Ref. Others
10839	SARAJEVO-CENTAR	2539	2369	93.3%	96.7%	92.7%	94.8%	94.1%
10847	SARAJEVO-HADZICI	595	522	87.7%	90.9%	86.5%	90.0%	100.0%
10855	SARAJEVO-ILIDZA	2693	2523	93.7%	96.9%	93.6%	92.4%	95.9%
10863	SARAJEVO-ILIJAS	464	419	90.3%	65.0%	90.8%	91.3%	95.6%
10871	SARAJEVO-NOVI GRAD	3517	3286	93.4%	91.8%	92.7%	94.5%	97.2%
10880	SARAJEVO-NOVO SARAJEVO	2414	2253	93.3%	92.9%	92.4%	92.9%	96.5%
10898	SARAJEVO-PALE	131	106	80.9%	52.4%	84.7%	100.0%	100.0%
10901	SARAJEVO-STARI GRAD	1420	1262	88.9%	84.4%	88.9%	91.3%	89.3%
10910	SARAJEVO-TRNOVO	96	86	89.6%	100.0%	87.8%	100.0%	100.0%
10928	VOGOSCA	873	792	90.7%	81.3%	91.7%	86.4%	91.0%
10936	SKENDER VAKUF	277	219	79.1%	52.1%	100.0%	83.4%	41.7%
10944	SOKOLAC	138	101	73.2%	11.1%	78.4%	-	50.0%
10952	SRBAC	238	157	66.0%	31.6%	92.5%	100.0%	70.6%
10979	SREBRENICA	1745	1714	98.2%	85.7%	98.2%	100.0%	100.0%
10987	SREBRENIK	842	586	69.6%	61.0%	76.5%	43.9%	31.3%
10995	STOLAC	931	864	92.8%	100.0%	96.8%	49.4%	100.0%
11002	SEKOVICI	65	55	84.6%	33.3%	98.1%	-	0.0%
11029	SIPOVO	532	476	89.5%	60.0%	90.6%	100.0%	82.4%
11037	TESLIC	2894	2564	88.6%	62.7%	94.1%	81.6%	94.4%
11045	TESANJ	1618	1275	78.8%	82.4%	81.7%	70.7%	82.5%
11053	TITOV DRVAR	44	35	79.5%	75.0%	100.0%	-	100.0%
11061	TRAVNIK	2099	1512	72.0%	88.9%	72.7%	69.7%	89.4%
11070	TREBINJE	2686	2660	99.0%	75.0%	99.2%	92.9%	99.0%
11088	TUZLA	1904	1651	86.7%	87.9%	86.8%	83.9%	89.3%
11096	UGLJEVIK	1099	978	89.0%	60.0%	90.3%	100.0%	83.5%
11100	VARES	753	702	93.2%	88.2%	90.8%	93.0%	97.7%
11118	VELIKA KLADUSA	2043	1677	82.1%	83.3%	82.4%	80.0%	75.3%
11126	VISOKO	831	648	78.0%	92.0%	77.3%	80.0%	74.5%
11134	VISEGRAD	2154	2007	93.2%	63.6%	93.2%	100.0%	97.2%
11142	VITEZ	896	612	68.3%	71.4%	84.3%	61.0%	78.5%
11169	VLASENICA	1703	1544	90.7%	71.4%	91.0%	100.0%	81.5%
11177	ZAVIDOVICI	1525	1325	86.9%	93.8%	89.4%	69.5%	83.3%
11185	ZENICA	2643	2275	86.1%	89.3%	81.3%	92.2%	86.7%
11193	ZVORNIK	8469	7946	93.8%	64.2%	93.9%	100.0%	98.9%
11207	ZEPCE	789	551	69.8%	84.2%	74.6%	62.0%	75.0%
11215	ZIVINICE	1032	888	86.0%	82.6%	85.4%	95.8%	75.6%
Total Bosnia and Herzegovina		209440	181273	86.6%	63.8%	90.8%	68.5%	90.7%

Note: 'Refugees' are persons having their 'DUI' variable equal '00' (or 'SDRZ' variable equal '000', equivalently), i.e. *de facto* resided in Bosnia and Herzegovina in 1991, but left the country after the 1991 census and registered as Out-of-Country (OC) Voters in the 1998 elections, i.e. being post-census refugees.

ANNEX B5. THE 1997 OSCE VOTERS REGISTER

All post-Dayton elections in Bosnia and Herzegovina, including the one in 1997 and 1998, were conducted under the supervision of the Organisation for Security and Co-operation in Europe (OSCE). For the purpose of elections, OSCE established a register of persons eligible to vote, the so-called OSCE voters register (VR). Development of the register and data entry was conducted by the OSCE Office in Sarajevo.

Eligibility to vote is discussed in article IV of annex 3 of the Dayton Peace Accords: “Any citizen of Bosnia and Herzegovina aged 18 or older whose name appears on the 1991 census for Bosnia and Herzegovina shall be eligible, in accordance with electoral rules and regulations, to vote”. Registration stations were established in all municipalities of Bosnia and Herzegovina and in many foreign countries. Since the eligibility to vote in 1997 (and 1998) was based on a person’s presence in the 1991 census rolls, the voters register is a *subset* of the 1991 census. Every person in the voters register should be therefore also included in the census. However, some people could stay abroad during the census or were not enumerated for other reasons. If indeed such persons existed, this would only apply to an insignificant proportion of the population. Moreover, such persons could provide evidence of their eligibility and still had the possibility to vote.

Persons who wanted to vote in the 1997 (1998) local elections had to register first. The election registration form recorded the following basic items: surname, first name, sex, date of birth, and personal identification number (*matični broj*). The 1997 (1998) register contained also four items related to the location of voters in 1997 (1998) and 1991:

- Municipality of residence in 1991, as reported in the 1991 census;
- Municipality of residence in 1997 (1998), self-reported;
- Municipality or country where the registration took place in 1997 (1998);
- Municipality the person wanted to vote *for* in 1997 (1998).

Absentee registration and voting was permitted.

The municipality of registration is seen as a good indicator of the area where people actually lived when they registered. This variable can be therefore taken as an important source of statistical information about the *de facto* population living in Bosnia and Herzegovina in 1997 (1998). The various items on the municipalities where people lived and registered to vote in 1997 (1998) can be used to study changes in residence between 1991 and 1997 (1998). To be sure about the 1991 residence of the 1997 (1998) voters, we applied individual matching to link the data for 1991 with those for 1997 (1998).

The information contained in the 1997 (1998) voters register was made available to us by the OSCE. The data from the voters register show some of the same quality problems as the census. Although errors are generally less common in the 1997 (1998) voters register than in the 1991 census, deficiencies in names caused by optical scanning of the registration forms,

often pose problems for the identification of persons. The names from the voters register, as those from the census, were all checked and corrected with various computer programs and manual procedures. This was again done with the assistance of native B/C/S speakers familiar with naming traditions in Bosnia and Herzegovina.

The registration to vote was voluntary, which implies that the register is only a *sample* of the post-war population, excluding those who did not register to vote because they were not interested, ill, too young, or too old. The number of persons who registered to vote in the 1997 elections was 2.56 million, about 150,000 new voters registered additionally in 1998. Thus, the overlap of the two registers was considerable. We merged the individual records from these two registers, and established a joint database of 2,674,506 records. Out of the 2.67 million records, about 2.13 million (i.e. 2,125, 999) voters were matched in our project with the 1991 population census. This gave a matching rate of 79.5 percent. Among the total of 2.13 million records, some 319,405 voters were reported as out-of-country and 1,805,419 as in the country. Some 1,175 records had a corrupted location code and were excluded from the analysis. We also checked duplicates and compared the merged voters register with the lists of dead that we have available at OTP for Bosnia and Herzegovina. Some 864 records were additionally excluded due to the possibility of being reported in mortality sources, and some 730 records were excluded from the analysis as possible duplicates. Note that the excluded records could only be verified with certainty, if more information would become available about the persons in question.

The total population of the country was approximately 4.3 million 1991, whereas an estimate of 3.4 million people was given for 1995 by the 1998 World Population Prospects (United Nations, 1999). It is clear that the 2.13 million voters constitute a large and reliable sample of the 18+ population. Its size is big enough to prevent errors related to the persons not registering to vote.

There have been allegations that some people registered fraudulently to vote, especially in the 1997 elections. This alleged fraud is believed to have been committed by persons who registered under false names for political reasons. This was investigated thoroughly for Srebrenica and no evidence of massive fraud in the registration of voters in 1997 was found.¹⁶

The next problem inherent to the 1997-98 voters register is the return of refugees and displaced persons. More specifically, the 1997-98 voters register would *under-estimate* the number of persons who fled from their homes if many people returned to their pre-war place of residence before 1997-98.

The Dayton Peace Accords made it clear that the return of refugees and internally displaced persons from Bosnia and Herzegovina should be made possible. Since our post-war data was

¹⁶ Of 7,490 persons believed to have gone missing after the fall of the Srebrenica enclave, only 9 persons were found both in the lists of missing persons and in the 1997 and 1998 Voters' registers. See "Report on the Number of Missing and Dead from Srebrenica", by Helge Brunborg and Henrik Urdal, Office of the Prosecutor, ICTY, 12 February 2000.

collected during 1997-98, some refugees or internally displaced persons could already have returned to their pre-war municipalities of residence. The impact of this problem is believed to be small for 1996-1997 as according to official statistics (see below) the returns of refugees and internally displaced persons to their pre-war homes were far from being completed in the period until 1997. Finally, if there were refugees or displaced persons that returned to their former locations, this would only decrease the number of displaced persons and refugees.

According to the 1998 estimates made by the UN High Commissioner for Refugees (UNHCR, UNHCR (1998)), within Bosnia and Herzegovina up to 820,000 people remained *displaced* from their pre-conflict homes in mid-1998, of whom 450,000 in the Federation of Bosnia and Herzegovina and 366,000 in the Republika Srpska. Furthermore, over 550,000 *refugees* from Bosnia and Herzegovina were still in need of a durable solution by mid-1998. The largest numbers of refugees from Bosnia and Herzegovina were hosted by Yugoslavia (i.e. by Serbia and Montenegro, 226,000) and Croatia (34,500), with smaller numbers in the former Yugoslav Republic of Macedonia (3,000) and Slovenia (4,500). Outside the former Yugoslavia, Germany and Switzerland hosted the highest numbers of refugees (in total 254,000).

According to the UNHCR Office in Sarajevo (<http://www.unhcr.ba> and personal communication with the Public Information Unit) the total number of returns of refugees and displaced persons to the Republika Srpska was 83,518 in 1996-97. Out of these persons, only 966 Muslims and 159 Croats returned to RS in 1996-97 (1.2% and 0.2% of the total returns, respectively). Almost everybody returning to RS during this period were Serbs, 82,306 (98.5%). In most cases, only internally displaced persons returned and not refugees. On the other hand, the total number of returns in the Federation was about 347,837 in 1996-97, out of which 291,024 (83.7%) were Bosnian Muslims (i.e. Bosniacs), 47,249 (13.6%) were Croats, and only 1013 (0.3%) Serbs.

All in all, several hundred thousand people returned home in 1996-97. However, comparing the number of 1996-97 returns with the total number of refugees and displaced who were still in need of a durable solution in 1998, one can see that the scale of returns was relatively low in 1996-97. Moreover, the RS entity was apparently still considered unsafe for Muslims and Croats in 1996-97, as these were mainly Serbs who returned to RS in this period. The situation in the Federation was opposite to that in RS. The ethnic structure of returns is an additional reason why the 1996-97 returns do not significantly change the general picture of ethnic changes in the war period. However, because of the problem mentioned above, the results presented in this report can only be taken as an estimate of the number displaced persons and refugees as observed in 1997 and not as an estimate of the total ethnic change in the years from 1991 to 1997.

ANNEX B6. DISPLACED PERSONS AND REFUGEES IN BOSNIA AND HERZEGOVINA REPORTED BY UNHCR AND BH GOVERNMENTAL SOURCES (DDPR)

The Database of Displaced Persons and Refugees (DDPR) is an official source of information coming from the government of Bosnia and Herzegovina and UNHCR. It covers the whole territory of the country and can serve to produce official statistics of internally displaced persons (IDPs) and refugees in Bosnia and Herzegovina for municipalities, settlements or any other required area (e.g. towns or villages).

The database was established by UNHCR together with local authorities. Individual records of information about IDPs and refugees were collected in BH municipalities already during the conflict. After the war ended, the records were centralised and structured in a database. The process of centralisation and database development was co-ordinated by UNHCR, while municipal authorities provided the input information for the database. Two most obviously used versions of the database are from 1998 and 2000. The 2000 version is an improved and up-dated version of the 1998 collection and is based on records obtained in the so-called re-registration project conducted by UNHCR together with municipal and state authorities. In this project, the status of all displaced persons and refugees in Bosnia and Herzegovina was checked and if necessary revised. The 2000 version, available at the demographic unit, reports persons who in the year 2000 were still registered as displaced from their pre-war homes and needed a durable solution. A copy of the DDPR was acquired from the State Ministry of Human Rights and Refugees (MHRR) in Sarajevo in Mid-August, 2002.

The database contains information about 583,816 persons. Among them it also includes about 60,000 persons born after 1 April 1991, which can not be matched against the census. For about 1/3 of the persons reported in DDPR the available information is very complete (the third actually made the application: 191,954 persons). For the remaining 2/3 (i.e. families of the applicants: 391,862 persons), the information is more limited, and assumptions or linked information are needed to process the data (e.g. ethnicity of applicant is used for all family members). The quality of the data seems overall quite good, although there are some problems, such as in particular the personal identification numbers (JMBs) are incomplete or invalid in about 1/4 of all cases.

The most important shortcoming of the database is that the information about family members is limited to names, date of birth, sex, kinship with applicant, and JMB. There is no information about place of birth or ethnicity for the family members. The only additional information is the work status and occupation for the spouse of the applicant, and the implied information about current residence. Depending on the matching rate and purposes, information about pre-war residence might be linked from census.

Also ethnicity may be linked from census, although this would limit information available to those records that actually match. More generally, ethnicity might be induced from family relations, i.e. children get the same ethnicity as the head of household, for spouses and in-laws only an assumption of no inter-ethnic marriages will provide any additional information.

All in all, for about 190,000 records, the DDPR contains quite a lot of information. For the remaining ca. 390,000 records, the available information is more limited, and we have to make assumptions and/or link the information from other sources.

For purposes of information gathering all records related to applicants and their family members have been combined in one data table. Based on the combined table and on the assumption that all families have the same nationality as the family head, we obtained the following ethnic composition of DPs and refugees (not considering duplicates):

Table 1(B6). Absolute and Relative Number of Internally Displaced Persons and Refugees in Bosnia and Herzegovina by Ethnicity, Status as of 2000

Ethnicity	IDPs		Refugees		Total	
	Number	Percent	Number	Percent	Number	Percent
Muslims	247,378	44.3	27	0.1	247,405	42.4
Croats	41,913	7.5	73	0.3	41,986	7.2
Serbs	267,350	47.8	24,571	98.7	291,921	50.0
Others	2,280	0.4	224	0.9	2,504	0.4
Total	558,921	100.0	24,895	100.0	583,816	100.0

The vast majority of the persons registered are IDPs within BH, but some 25,000 persons are refugees from Croatia, obviously Croatian Serbs, currently *residing in* Bosnia. For purposes concerning the HERCEG-BOSNA case, these refugees are excluded.

Note that the ethnic composition of refugees *from* Bosnia and Herzegovina is a different issue that has been estimated in this report on the basis of out-of-country voters reported in the 1997-98 voters register (see Table 2(B6) below). The out-of-country voters left Bosnia and moved abroad where they still resided at the time of the 1997 and 1998 elections.

Note also that the ethnic composition of internally displaced persons in Bosnia and Herzegovina and refugees from this country residing abroad are quite different too, which can be only partly ascribed to the differences between the sources. It seems that these two processes affected different ethnic groups. While Muslims were the absolute majority among refugees outside Bosnia, both the Muslims and the Serbs were two majority groups among the IDPs.

Table 2(B6). Ethnic Composition of Persons Displaced within Bosnia and Herzegovina and Refugees from the Country, Status as of 2000 (IDPs) and 1997-98 (REFs)

Ethnicity	Refugees from BH 1997-98	DPs in BH 2000
Muslims	51.0	44.3
Croats	24.8	7.5
Serbs	16.7	47.8
Others	7.5	0.4
Total	100.0	100.0

Matching against the census proved, as with most sources, possible. A test case using Prijedor and different matching criteria, showed a matching rate close to 80%. Matching directly against the 1997/98 voters register may also prove useful, and an initial, strict matching criterion matched at once 65% of all those born in 1980 or before.

There are some duplicates in the database, but the problem is quite limited. Based on initial testing, between 1.5% and 3% of all records are duplicates.

There are also some other relatively minor issues, like misspelled names, invalid date of births, and mismatch between JMB and reported sex and/or date of birth. Some of these issues can be, at least partially, addressed and corrected, others can not be fixed. However, the scopes of these problems are very limited.

Having assessed the overall quality of the DDPR as fairly satisfactory, in this report we present uncorrected statistics obtained by running queries in the original database. We believe that any improvements of the data would not significantly change the aggregate numbers as those discussed in Section 3.5.

ANNEX C. OVERVIEW OF METHODS OF THE ANALYSIS

ANNEX C1. DATA LINKING

Our analysis of changes in the ethnic composition of the HERCEG-BOSNA area is based on three variables with values specified for each individual: location before the war, location after the war, and ethnicity. The 1991 census contains information on ethnicity and location before the war, but not on the persons' location after the war. The 1997 voters register contains, on the other hand, the persons' post-war location, but neither the pre-war location nor ethnicity, the two latter variables being available only in the 1991 census. By combining these two data sets together into one set, we were able to make a joint analysis of the pre- and post-war population changes. Combining related data sets through individual linking has been used as the data reconstruction method in this study.

To link our data sets, we employed a multi-step procedure. Each step consisted of several comparisons between two sets of related individual-level data records. One record always describes one individual and is a collection of his/her characteristics on a number of items, such as for example the first name, family name, father's name, date of birth etc. All steps followed the same logic (see below). The differences between the steps were the slightly differing criteria used to match the records, and the fact that the population available for next possible matches shrank after each step. In other words, once a number of records had been matched in two related data sets, these records were excluded from the next round of matching. In the new step, the matching criterion applied was modified compared with the previous ones to capture new matches.

Each step consisted of three separate rounds. The first round was to identify the records in the voters register corresponding to the records in the census and to store the sequential numbers of these records in a table. Information common to both data sets was used to identify the corresponding records. The fields used in the matching were the following: first name, last name, personal ID number, date of birth, and municipality of residence. These fields in the records in the voters register were compared with the respective fields in the census records. For each record in the voters register that corresponded with one record in the census, the sequential numbers from each data set (i.e. source) were registered in a separate table. These combinations of sequential record numbers are called *matches*.

The second step concentrated on quality and consistency checks of the matches obtained. All matches were checked for duplicates to make sure that each record in the voters register had one and only one corresponding record in the census, and vice versa. Duplicates were deleted.¹⁷ After duplicate checks and other quality control measures such as inspecting samples of the matched records visually, they were registered in the databases as final matches.

¹⁷ Note that duplicates are multiple matches and not multiple records. Deleting duplicates means deleting multiple links and not records that still remain available for the next round of matching.

The third step was to register the approved matches in the data sets as links between records in the voters register and records in the census. The result from this process was that more than 2 million records out of the total of 2.56 million in the voters register were linked to corresponding records in the 1991 census.

The set of linked records forms the basis for our calculations involving the post-war population. The meaning of a link established between the voters register and the census is that a person whose records have been linked is identified as *a survivor*.¹⁸ An identified survivor is known to be alive after the war since the person registered to vote in 1997. All references made to the post-war population of survivors refer to the set of individual records successfully linked in our procedures.

Because of the voluntary nature of the registration to vote any *absolute* number provided in this report is in fact a minimum estimate of the 1997 population, for example a minimum size of an ethnic group, population displacement, age and sex distribution etc. The actual absolute figures are higher due to the fact that some part of the population did not register to vote. If however, one considers the population of registered voters as a sample of the actual population, then the sample can be seen as extremely large and reliable. This is why the *relative* figures (i.e. fractions or percentages) are good measures of the actual distributions and can be safely used.

The voters register was used as the source of statistical information about the actual 1997 population in the country. For the registered voters their municipality of residence in 1997 is not explicitly reported in the register. The place of registration is however specified for each registered voter in all necessary detail. In the analyses that involved the 1997 population, we assumed that the place where a person registered to vote (i.e. the place of registration) was a good approximation of the location where the person actually lived in when he or she registered. The municipality where they registered to vote is then referred to as the voters' municipality of residence.

The persons eligible to vote in the 1997 elections had to be born before 1980. Consequently, all comparisons involving the 1997 voters on one hand and the 1991 census population on the second hand must be restricted to individuals who were born at the latest in 1979. All comparisons presented in this report are restricted to those who were 18 or more years of age in 1997. Birth cohorts¹⁹ born after 1979 are excluded from the census data in our analyses (in the voters register no such persons should be registered). The final data set of the (18+) census population, who used to live in the HERCEG-BOSNA area before the war, includes 231,610 individuals (see Table 2, Section 7). Out of this 1991 population, 142,204 individuals have

¹⁸ Note that "a survivor" is a standard term used in the life table analysis in demography to denote a person who has not died until the age x years. The term does not have any negative connotations.

¹⁹ A birth cohort is the group of people who were born the same year.

been identified²⁰ at any place in Bosnia or abroad (*ibid*). Some 118,792 persons have been identified as voters who registered to vote in the HERCEG-BOSNA municipalities (*ibid*).

Linking of individual data is common in demography and statistics. Scandinavian countries have been applying this approach for about 30–40 years. An operational system of unique ID numbers is a prerequisite for such linking. If there exists no such system or the existing system is not fully operational, as in the countries of the former Yugoslavia, other data items have to be used, in particular first and family names and date of birth. Similar items are also often used in historical demography for linking parish records, census data and other individual data, in the so-called family reconstitution studies.

The linking approach, although well established and known to demographers, is not commonly used throughout the world. Sizeable populations, lack of consistent ID numbers, and strong privacy protection regulations make the individual linking rarely useable in many high-income countries. The method is rarely applied in low-income countries since these countries cannot afford the costs of highly skilled personnel and expensive equipment required for the individual linking approach. Moreover, most low-income countries cannot afford or are unable to keep systematic high-quality records of the population.

Nation-wide comparisons of populations between different periods or geographic locations are usually done without individual-level linking but by using cross-sectional aggregate (or macro) data. The macro-level approach is for instance commonly applied by official national and international statistical agencies to produce and compare basic demographic statistics, such as death and birth rates, nuptiality and migration statistics, and others. The usefulness of the macro approach is still great, as the large population size and the large numbers of demographic events observed guarantee a fair degree of reliability of the results.

We believe that for our purposes the individual linking approach is superior to the macro approach, but not only in the sense of accuracy of the aggregate level statistics showing the relative distributions of the population. Here the benefits can be minor. The real advantage of the individual linking approach is that we can follow the same individuals between the two years considered. It is the best approach for the reconstruction of the fate of the population. Moreover it is, generally believed that the individual linking approach yields highly reliable results. The only problems with this method are inherited from the deficiencies in the data quality, which have, however, been largely overcome in our project by quality checks and applying extensive procedures for data matching.

²⁰ The term “identified” is used here to denote records matched with the 1991 census.

ANNEX C2. ESTIMATION OF NUMBERS OF DISPLACED PERSONS AND REFUGEES

The estimated overall numbers of the IDPs and refugees were obtained using a classical statistical method of sampling proportions (W.G. Cochran, 1977). The method applies the theorem stating that the sample proportion p ($p=a/n$; proportion (p) of IDPs and REFs (a) in the population of 1997-98 voters (n)) is an unbiased estimate of the population proportion P ($P=A/N$; proportion (P) of IDPs and REFs (A) in the 1991 census population (N)). In this case, the estimate of the unknown overall size of the population of all IDPs and refugees (A) can be obtained by multiplying the sample proportion (p), by the size of the census population (N). Confidence intervals can be calculated by applying the formulas explained below, towards the end of this Annex.

Note, that the estimation was made for every ethnic group separately at the municipal level, and, in the second step, a system of weights was used in order to produce consistent estimates for larger areas.

The following variables are available to estimate the number of internally displaced persons (IDPs) and refugees from the selected municipalities in Bosnia and Herzegovina:

- N_{ij} 1991 population size of i -th ethnic group ($i \in \{\text{Serbs, Muslims, Croats, Others}\}$) from j -th municipality,
- N_j Total 1991 population size of j -th municipality (sum of all N_{ij} values with respect to i),
- W_{ij} Share (weight) of the i -th ethnic group from j -th municipality in the total population of Bosnia and Herzegovina (N), calculated as:

$$W_{ij} = N_{ij} / N = N_{ij} / \left(\sum_j N_j \right) = N_{ij} / \left(\sum_i \sum_j N_{ij} \right)$$
- W_j Share (weight) of the total population from j -th municipality in the total population of Bosnia and Herzegovina (N), calculated as $W_j = N_j / N$ (sum of all W_{ij} values with respect to i),
- n_{ij} 1997 number of identified survivors from i -th ethnic group originating from j -th municipality (post-war population sample size), of which:
- d_{ij} 1997 number of identified displaced survivors (including refugees) of i -th ethnic group originating from j -th municipality, i.e. number of persons registered to vote either in other municipalities or out of country (an observed value).
- p_{ij} fraction of persons displaced from the j -th municipality within the given i -th ethnic group (a random variable),
- \hat{p}_{ij} a point estimate of the p_{ij} , calculated as $\hat{p}_{ij} = d_{ij} / n_{ij}$.
- τ_{ij} number of persons of a given i -th ethnic group displaced from the j -th municipality, $\tau_{ij} = p_{ij} N_{ij}$ (a random variable): displacements from different municipalities and for different ethnic groups are assumed to be independent,
- $\hat{\tau}_{ij}$ a point estimate of the τ_{ij} , calculated as $\hat{\tau}_{ij} = \hat{p}_{ij} N_{ij}$.

For each municipality j , the numbers $d_{Serbs,j}$, $d_{Muslims,j}$, $d_{Croats,j}$, $d_{Others,j}$, represent therefore **minimum estimates** of numbers of persons displaced from this municipality, Serbs, Muslims, Croats and Others, respectively. The minimum estimate of the total number of persons displaced from this municipality (d_j) can be obtained as a simple sum: $d_j = d_{Serbs,j} + d_{Muslims,j} + d_{Croats,j} + d_{Others,j}$.

A **point estimate** of the overall number of refugees and DPs from i -th ethnic group ($i \in \{Serbs, Muslims, Croats, Others\}$) originating from j -th municipality ($\hat{\tau}_{ij}$) is calculated as:²¹

$$(1) \quad \hat{\tau}_{ij} = \frac{d_{ij}}{n_{ij}} \cdot N_{ij},$$

the standard error of its estimation being equal:

$$(2) \quad SE(\hat{\tau}_{ij}) = N_{ij} \cdot SE(\hat{p}_{ij}) = N_{ij} \cdot \sqrt{\frac{\frac{d_{ij}}{n_{ij}} \cdot \left(1 - \frac{d_{ij}}{n_{ij}}\right)}{n_{ij} - 1}} \cdot \sqrt{\frac{(N_{ij} - n_{ij})}{N_{ij}}} = \sqrt{\frac{\frac{d_{ij}}{n_{ij}} \cdot \left(1 - \frac{d_{ij}}{n_{ij}}\right)}{n_{ij} - 1}} \cdot \sqrt{(N_{ij} - n_{ij}) \cdot N_{ij}}.$$

The precision of estimation can be evaluated using the concept of **confidence intervals**. A confidence interval covers the unknown value of estimated number of refugees and displaced persons from i -th ethnic group originating from j -th municipality, with a certain probability, say $(1-\alpha)$. In the other words, we can be $(1-\alpha)$ -100% confident that the true number of refugees and DPs is covered by the interval. Therefore, the narrower the confidence interval, the better the estimation. For large samples, the $(1-\alpha)$ confidence interval for $\hat{\tau}_{ij}$ can be obtained from the normal distribution as ranging from $\hat{\tau}_{ij} - u_{\alpha} \cdot SE(\hat{\tau}_{ij})$ to $\hat{\tau}_{ij} + u_{\alpha} \cdot SE(\hat{\tau}_{ij})$, where u_{α} is the quantile of rank $1 - \alpha / 2$ from the standard normal distribution.

A **point estimate** of the overall number of refugees and DPs originating from the j -th municipality ($\hat{\tau}_j$) is calculated in the following way:

$$(3) \quad \hat{\tau}_j = N_j \cdot \hat{p}_j = N_j \cdot \sum_i \hat{p}_{ij} \cdot \frac{W_{ij}}{W_j} = \frac{N_j}{W_j} \cdot \sum_i \hat{\tau}_{ij} \cdot \frac{W_{ij}}{N_{ij}} = N \cdot \sum_i \hat{\tau}_{ij} \cdot \frac{1}{N} = \sum_i \hat{\tau}_{ij},$$

where \hat{p}_j is the estimate of the fraction of persons displaced from the j -th municipality (which is a weighted average of estimated fractions for particular ethnic groups, with shares of these ethnic groups in the total census population used as weights), and the summation with respect to i involves *Serbs*, *Muslims*, *Croats* and *Others*. The standard error of $\hat{\tau}_j$ estimation is equal (following the assumption of independence of displacements for different ethnic groups):

$$(4) \quad SE(\hat{\tau}_j) = \frac{N_j}{W_j} \cdot \sqrt{\sum_i (SE(\hat{p}_{ij}))^2 \cdot W_{ij}^2} = \frac{N_j}{W_j} \cdot \sqrt{\sum_i \frac{(SE(\hat{\tau}_{ij}))^2}{N_{ij}^2} \cdot W_{ij}^2} = N \cdot \sqrt{\sum_i \frac{(SE(\hat{\tau}_{ij}))^2}{N^2}} = \sqrt{\sum_i (SE(\hat{\tau}_{ij}))^2}$$

²¹ All equations follow William G. Cochran (1977), *Sampling Techniques*, 3rd edition. John Wiley & Sons, New York, Chichester, Brisbane, Toronto, Singapore. See Chapter 3, p. 50-53.

where the summation with respect to i involves *Serbs*, *Muslims*, *Croats* and *Others*. Again, for the large samples, the $(1-\alpha)$ confidence interval for $\hat{\tau}_j$ can be obtained from the normal distribution as ranging from $\hat{\tau}_j - u_\alpha \cdot SE(\hat{\tau}_j)$ to $\hat{\tau}_j + u_\alpha \cdot SE(\hat{\tau}_j)$. A similar analysis may be performed for a set of ethnic groups, e.g. for *non-Serbs*. The summation with respect to i involves in such cases only *Muslims*, *Croats* and *Others*.

To obtain the overall number of refugees and DPs ($\hat{\tau}_A$) originating from any of the municipalities within a certain set of municipalities A (where A can be for example a region, a political entity, the whole country, or it can be subjectively chosen), the summation with respect to j (i.e. for all municipalities $j \in A$) is required:

$$(5) \quad \hat{\tau}_A = \sum_{j \in A} \hat{\tau}_j.$$

Similarly, it can be proven, that the standard error of $\hat{\tau}_A$ estimation is equal (assuming the independence of displacements from different municipalities):

$$(6) \quad SE(\hat{\tau}_A) = \sqrt{\sum_{j \in A} (SE(\hat{\tau}_j))^2}$$

The same procedure can be applied for obtaining estimates of numbers of refugees and DPs originating from any of the municipalities from the set A , for any particular (i -th) ethnic group, in equations (5) and (6) $\hat{\tau}_j$ is then to be replaced by $\hat{\tau}_{ij}$.

■

ANNEX D. PROFESSIONAL QUALIFICATIONS OF THE AUTHORS

The report “Ethnic Composition, Internally Displaced Persons and Refugees in Eight Municipalities of Herceg-Bosna, 1991 to 1997-98” (hereafter: the HERCEG-BOSNA report) is a product of the Demographic Unit (DU), Office of the Prosecutor (OTP), ICTY. The results discussed in the HERCEG-BOSNA report were obtained in the course of a broader project conducted at DU in 2001 and 2002, in which all municipalities in Bosnia and Herzegovina were covered. Results for selected municipalities were summarized in the expert report: “Ethnic Composition and Displaced Persons and Refugees in 47 Municipalities of Bosnia and Herzegovina, 1991 to 1997-98”, by Ewa Tabeau (ET), Marcin Zoltkowski (MZ), Jakub Bijak (JB) and Arve Hetland (AH), dated 4 April 2003, ERN: 0291-5501-0291-5738 (hereafter: MILOŠEVIĆ report). Large parts of these two reports are therefore overlapping (such as, for example, the discussion of sources and methods included in the annexes).

Both reports are outcomes of a team effort. The team consisted of four DU demographers, E. Tabeau, M. Zoltkowski, J. Bijak and A. Hetland. ET is a senior researcher with extensive experience in demography and statistics, graduated in statistics and econometrics, and has a Ph.D. in mathematical demography. JB is a young professional, specialised in quantitative methods of statistics and econometrics, graduated in mathematical demography, and with broad interest and already considerable experience in statistical methods and their applications in demography. AH is a senior computer scientist and mathematician, with extensive experience in large-scale individual-level data processing, computer programming, and generally in demography. MZ is a quantitative researcher and talented computer programmer, a statistician and economist, who also studied mathematics and specialized in probabilistic theory. ET was involved in all stages of the project’s completion (data quality control and data processing, design of the analysis, selection of methods, interpretation of results, and writing the report); she was responsible for the analytical aspects of the MILOŠEVIĆ and HERCEG-BOSNA reports. JB, AH, and MZ were engaged in data processing, quality controls, database development, writing computer programs, and also analysis. All authors contributed to writing of the text. The MILOŠEVIĆ and HERCEG-BOSNA reports builds up on the work completed by other DU demographers, i.e. Helge Brunborg, Torkild Lyngstad, and Henrik Urdal, who were engaged in the OTP population project in the years 1998-2000.

Details of professional qualifications of the authors are contained in Annexes D1 to D4. The most significant expert and research reports prepared in the Demographic Unit and experts witness testimonies of DU demographers completed so far are listed below.

ANNEX D ANALYTICAL REPORTS DISCLOSED BY THE DEMOGRAPHIC UNIT IN ICTY CASES

Case No.	Case Name	Author	Title	Date
IT-02-54	MILOŠEVIĆ (Bosnia)	E. Tabeau, M. Žóltkowski, J. Bijak, and A. Hetland	Ethnic Composition in and Internally Displaced Persons and Refugees from 47 Municipalities of Bosnia and Herzegovina, 1991 to 1997.	04 April 2003
IT-02-54	MILOŠEVIĆ (Bosnia)	E. Tabeau, M. Žóltkowski and J. Bijak	Population Losses in the Siege of Sarajevo, 10 September 1992 to 10 August 1994.	10 May 2002
IT-02-54	MILOŠEVIĆ (Bosnia)	E. Tabeau, M. Žóltkowski and J. Bijak	Addendum I to the report: Population Losses in the Siege of Sarajevo, 10 September 1992 to 10 August 1994. (Possible duplicates).	03 June 2002
IT-02-54	MILOŠEVIĆ (Bosnia)	E. Tabeau, M. Žóltkowski and J. Bijak	Addendum II to the report: Population Losses in the Siege of Sarajevo, 10 September 1992 to 10 August 1994. (Excluded records).	24 July 2002
IT-02-54	MILOŠEVIĆ (Bosnia)	E. Tabeau, J. Bijak, N. Lončarić	Death Toll in the Siege of Sarajevo, April 1992 to December 1995: A Study of Mortality Based on Eight Large Data Sources.	18 August 2003
IT-98-29-I	GALIĆ (Sarajevo)	E. Tabeau, M. Žóltkowski and J. Bijak	Population Losses in the Siege of Sarajevo, 10 September 1992 to 10 August 1994.	10 May 2002
IT-98-29-I	GALIĆ (Sarajevo)	E. Tabeau, M. Žóltkowski and J. Bijak	Addendum I to the report: Population Losses in the Siege of Sarajevo, 10 September 1992 to 10 August 1994. (Possible duplicates).	03 June 2002
IT-98-29-I	GALIĆ (Sarajevo)	E. Tabeau, M. Žóltkowski and J. Bijak	Addendum II to the report: Population Losses in the Siege of Sarajevo, 10 September 1992 to 10 August 1994. (Excluded records).	24 July 2002
IT-97-24	STAKIĆ (Prijeđor)	Brunborg, T. Lyngstad, and E. Tabeau	Population changes in Prijeđor from 1991 to 1997.	10 March 2001
IT-97-24	STAKIĆ (Prijeđor)	E. Tabeau	Basic Demographic Characteristics and Socio-Economic Status of Missing and Killed Persons from the Municipality of Prijeđor, 30.04-30.09.1992.	9 September 2002
IT-95-9	SIMIĆ et al. (Šamac and Odžak)	E. Tabeau and J. Bijak	Changes in the ethnic composition in Bosanski Šamac and Odžak, 1991 and 1997	9 August 2001
IT-98-32-T	VASILJEVIĆ (Višegrad)	E. Tabeau and J. Bijak	Changes in the Ethnic Composition in the Municipality of Višegrad, 1991 and 1997	17 August 2001
IT-94-2	NIKOLIĆ (Susića Camp)	Ewa Tabeau and Marcin Zoitkowski	Demographic Consequences of the Conflict in the Municipality of Vlasenica, May-September 1992	01 Nov. 2002
IT-00-39 & 40	KRAJŠNIK-PLAVSIĆ (Bosnia)	E. Tabeau and M. Zoitkowski	Ethnic Composition and Displaced Persons and Refugees in 37 Municipalities of Bosnia and Herzegovina 1991 and 1997	28 July 2002
IT-98-33	KRSTIĆ (Srebrenica)	H. Brunborg and H. Urdal	Report on the Number of Missing and Dead from Srebrenica	12 February 2000
IT-98-33	KRSTIĆ (Srebrenica)	H. Brunborg	Addendum on the Number of Missing and Dead from Srebrenica	12 April 2003
IT-02-60	BLAGOJEVIĆ et al. (Srebrenica)	H. Brunborg and H. Urdal	Report on the Number of Missing and Dead from Srebrenica	12 February 2000
IT-02-60	BLAGOJEVIĆ et al. (Srebrenica)	H. Brunborg	Addendum on the Number of Missing and Dead from Srebrenica	12 April 2003
IT-02-60	BLAGOJEVIĆ et al. (Srebrenica)	H. Brunborg, E. Tabeau and A. Hetland	Rebuttal Report Blagojević et al. (IT-02-60) Regarding Report on the Number of Missing and Dead from Srebrenica by Heige Brunborg and Henrik Urdal, 12 February 2000	25 August 2004
IT-02-54	MILOŠEVIĆ (Kosovo)	H. Brunborg	Report on the size and ethnic composition of the population of Kosovo	14 August 2002
IT-02-54	MILOŠEVIĆ (Kosovo)	H. Brunborg	Addendum on the size and ethnic composition of the population of Kosovo	12-Sep-2003

EXPERT TESTIMONIES OF OTP DEMOGRAPHERS

H. Brunborg, in: MILOŠEVIĆ (IT-02-54, Bosnia and Herzegovina), 18.02.2004

H. Brunborg, in: BLAGOJEVIĆ (IT-02-60-T, Srebrenica), 3.02.2004

E. Tabeau, in: MILOŠEVIĆ (IT-02-54, Bosnia and Herzegovina), 7.10.2003

E. Tabeau, in: STAKIĆ (IT-97-24, Prijedor), 23.09.2002

E. Tabeau, in: GALIĆ (IT-98-29-I, Sarajevo), 30.07.2002

E. Tabeau, in: STAKIĆ (IT-97-24, Prijedor), 24-25.07.2002

E. Tabeau, in: GALIĆ (IT-98-29-I, Sarajevo), 22-23.07.2002

E. Tabeau, in: SIMIĆ et al. (IT-95-9, Bosanski Šamac, Odžak), 10.07.2002

E. Tabeau, in: LUKIĆ et al. (IT-98-32-1, Višegrad), 19.09.2001

H. Brunborg, in: KRISTIĆ (IT-98-33, Srebrenica), 15.06.2000

**ANNEX D1. PROFESSIONAL QUALIFICATIONS OF EWA TABEAU (ET) –
DEMOGRAPHER, PROJECT LEADER²²**

ET graduated in statistics and econometrics (M.Sc. degree, with the highest grade, 1981) and obtained her Ph.D. (with the highest grade, 1991) in mathematical demography at the Warsaw School of Economics. In 1983-1991 she was an academic teacher at the Warsaw School of Economics where she taught descriptive and mathematical statistics and demography to undergraduate courses. Thereafter, she moved to the Netherlands where she lives and works also at present. In the Netherlands she worked almost 10 years at the Dutch National Demographic Institute, where she was responsible for mortality research for the Netherlands and other European countries (see below). Since September 2000 she has been working as a demographer and project leader in the Demographic Unit at the Office of the Prosecutor, ICTY. During her employment at the OTP, ET completed more than twenty analytical research reports related to demographic consequences of the 1990s conflicts in the former Yugoslavia, and in particular in Bosnia; many of them were expert reports and were used in ICTY cases, and testified seven times as an expert witness before the Tribunal for the Former Yugoslavia.

ET worked at the Netherlands Interdisciplinary Demographic Institute (NIDI) in The Hague (Dutch national demographic institute) from July 1991 to September 2000, most time as a senior researcher and project leader. Her responsibilities at NIDI included conducting and proposing demographic research regarding modeling and prediction of mortality and health processes in the Netherlands and other European countries. Modeling mortality by cause of death had become her first domain, and resulted in several widely recognized international publications. ET was invited, as an expert, by national and international organizations (e.g. Eurostat – Statistical Office of the European Union; ING Group - Life Insurance NL, Goldman & Sachs - Life Insurance USA, Statistics Netherlands, British Government Actuary's Department) to consult their projects involving issues of mortality and health development and prediction. She supervised young researchers completing their theses for the M.Sc. and Ph.D. degrees. International and national demographic journals invited her to review submitted papers.

ET had fellowships in the French (1995) and German (1990) National Demographic Institutes. She has links with demographers all over Europe, especially with those from Belgium, Czech Republic, Finland, France, Germany, Hungary, Italy, Netherlands, Norway, Poland, and United Kingdom. ET has excellent knowledge of several types of software. She speaks and writes Polish (native tongue), English, Dutch, and, to less extent, Russian and German.

ET has authored more than 100 research papers. Her record of selected recent papers includes: 3 monographs published internationally, 25 articles published in international and national journals, 18 conference papers presented at international conferences, and more than 50 other research reports and working papers.

²² Project Leader Listed First, All Remaining Authors Follow in Alphabetical Order.

**ANNEX D2. PROFESSIONAL QUALIFICATIONS OF JAKUB BIJAK (JB) -
DEMOGRAPHER**

JB graduated in Quantitative Methods and Information Systems at the Warsaw School of Economics (WSE), where he obtained, with the outstanding grade, the M.Sc. degree for the thesis in the field of mathematical demography. Results of his dissertation have been invited for presentation at the European Population Conference in August 2003 and have also been published in the scientific journal of Polish demographers. In 1999 he was a junior guest researcher (a three-month fellowship) at the Netherlands Interdisciplinary Demographic Institute (NIDI) in The Hague. In 1999-2000 JB worked as a student assistant at the Institute of Statistics and Demography, WSE, where he taught statistics (descriptive and mathematical) to undergraduate courses. During 2001, he was a research assistant in the Demographic Unit at the Office of the Prosecutor, ICTY. Since October 2002 he was employed, as a young professional, at the Demographic Unit again. During his employment at OTP he co-authored 7 expert and research reports. From the year 2003 he has been employed at the International Organization for Migration, Regional Office for Central Europe in Warsaw, and he has also been working on his Ph.D dissertation.

Already during his university education JB authored many excellent study research papers. As a student he attended several conferences for young researchers where he presented a number of valuable papers. He was head of the Artificial Intelligence Research Group at WSE. He also participated in some (Polish and international) research projects related to demographic and economic aspects of society, and wrote several reports.

JB has outstanding knowledge of computer software (among others: MS Access, MS Excel, MapInfo, ArcView GIS, Statgraphics, SPSS, Statistica) and programming languages (Turbo Pascal, Visual Basic). He speaks and writes several languages (Polish, English, German, and to less extent Serbo-Croatian and Dutch).

ANNEX D3. PROFESSIONAL QUALIFICATIONS OF ARVE HETLAND (AH) - DEMOGRAPHER

AH completed the university programme of undergraduate courses in mathematics and computer science and obtained the Bachelor degree (cand. mag.) from the University of Oslo in 1993. As part of his (on-going) Master (M.Sc.) programme he has taken courses in Logic, Rewriting Systems and Compiler Design. He also attended the 7th International Summer School in Jyväskylä, Finland, 1997, with lectures by prof. Juha Alho, on Stochastic Population Projections.

AH was employed at Statistics Norway from February 1994 to August 1999 and from August 2000 to August 2001, (first in the IT Section and lastly in the Division for Social and Demographic Research), where he was responsible for software development for a household micro simulation project and for official Norwegian population projections. He helped produce and publish the official population projections in 1996 and 1999. From 1998 to 2001 he worked on a research project funded by the Norwegian Research Council, in which he applied probabilistic methods to population projections. AH was the main software developer in this project, and also co-authored several scientific papers related to the project.

From August 1999 to August 2000 AH was affiliated with by SafetyCable AS, a Norwegian company specialised in solutions for computer theft prevention. In his position there he supervised the company's software projects, acted as network manager, and contributed to the management of the company. From May 2001 until his employment at ICTY, he was also a member of the board of SafetyCable.

AH has been employed as a Demographer in the Demographic Unit at the office of the Prosecutor, ICTY, The Hague, since August 2001, and has been working on analysing new data sources to be incorporated in the unit's database project.

AH is a computer programming expert, with experience in C, C++, Java, Simula and SAS and working knowledge of Pascal, SML, VB, Lisp, Perl, HTML, and several scripting languages. AH is also familiar with many software tools (MS Word, MS Excel, MS PowerPoint, MS Access, OpenOffice, ArcView, SAS, LaTeX), operating systems (all MS Windows platform, Linux (Certified Professional), BSD-derivatives), and PC and networking hardware. AH speaks and writes Norwegian (native tongue) and English, and can speak some German.

ANNEX D4. PROFESSIONAL QUALIFICATIONS OF MARCIN ŻÓŁTKOWSKI (MZ) – DEMOGRAPHIC ASSISTANT

In 2001, MZ graduated in Banking and Finance at the Warsaw School of Economics in Poland (WSE, M.Sc. degree in Banking and Finance, with “excellent”, the highest grade), and also completed the Master programme of Quantitative Methods and Information Systems at WSE. In 2005 he finished mathematics at the Warsaw University (M.Sc. degree; in 2002 having a leave of absence due to his employment at OTP), specialising in the probability theory. Since 2001, MZ has been engaged in a Ph.D. programme in Financial Mathematics at WSE.

In 2000-2001 MZ worked as a student assistant in the Institute of Econometrics, WSE, where he taught econometrics and stochastic processes to undergraduate courses. In 2001-2002, he lectured “Capital and Monetary Markets” at the postgraduate programme in the International School of Managers in Warsaw. In 2002-2003, he was a research assistant in the Demographic Unit at the Office of the Prosecutor, ICTY, the Hague. During his employment in the Demographic Unit, OTP, he co-authored four expert and research reports and developed software for the analysis of demographic data.

In 1998-99, he was an active member of the Artificial Intelligence Research Group at WSE, organising and taking part in conferences on artificial intelligence.

MZ is an expert in computer programming (C/C++, Delphi, Pascal, VB, HTML, etc.), software (MS Access, MS Excel, MS Word, GIS and ArcView, SPSS, Statistica, Mathematica, Matlab, Maple, LaTeX, etc.), hardware and operating systems (Windows, Linux). MZ speaks and writes Polish (native tongue), English, German, and Russian.



**WOUNDED PERSONS RELATED TO
THE SIEGE OF MOSTAR:
A STATISTICAL ANALYSIS OF THE
MOSTAR WAR HOSPITAL BOOKS**

Ewa Tabeau

Demographic Unit, Office Of The Prosecutor, ICTY

6 February 2006

**EXPERT REPORT PREPARED FOR THE
CASE OF PRLIĆ ET AL. (IT-04-74)**



1. BACKGROUND

This report summarizes the results of a statistical analysis of wounded persons related to violent incidents that occurred during the siege of East Mostar from May 1993 to April 1994. The analysis was requested from the Demographic Unit of the Office of the Prosecutor by the Prosecution Team preparing the case of JADRANKO PRLIĆ ET AL. (case number: IT-04-74), and had the goal of producing an expert report on the wounded persons. In particular, the Bosniak victims were the target for our analysis.

The report focuses on the wounded persons from the area of East Mostar. The area is much smaller than the pre-war municipality of Mostar. East Mostar was located on the east side of Neretva river, including a narrow strip of buildings on the west bank, where the most Bosnian Muslims moved to in result of the HVO actions against Non-Croats on 9-10 May 1993. The Muslim enclave in East Mostar was separated from the rest of the town by the HVO-ABH confrontation line running north and south along the Bulevar and Šantićeva Street, to the west of the Neretva river. The enclave was surrounded by the Croat forces at the north and south, with Bosnian Serb forces to the east.

Sources that contain information about the wounded population from East Mostar are extremely seldom. Occasional press reports, reports by international observers of the Herceg-Bosna conflict, statements of eyewitnesses are examples of these sources. There were no systematic surveys of wounded persons from this territory. One source that could be used for this type of analysis were hospital records. Basically two hospitals operated during the siege in Mostar: one in West Mostar (controlled by the Croat forces) and one in East Mostar (controlled by the Bosnian government forces, i.e. by Bosniaks). The latter source exists in the form of the Mostar War Hospital Books and contains records of mainly Bosniak population wounded and killed during the siege. This report concentrates, therefore, on this single source.

Records from the Mostar War Hospital Books (almost 6,000 entries) include killed and wounded persons from the territory of East Mostar and the period from 9 May 1993 to 25 May 1994, i.e. longer by about 1 month than the formal indictment period (that lasts to April 1994). Records reported after April 1994 are likely related to the siege too as these are cases of wounding from occasional shutting incidents in this period, delayed consequences of injuries acquired during the siege and other siege-related health problems. This is why these records are included in this analysis too. The War Hospital records were collected by the Prosecution team and copies of five original War Hospital Protocol Books are available from the Evidence Unit.

In order to distinguish between civilians and soldiers¹, for this report I also used the Military Records of Soldiers and other Military Personnel Killed during the Bosnian War. These lists cover completely all three armies (ABH, HVO and VRS) and the entire war period (April 1992 to December 1995), and were provided to the OTP by the (FBH and RS) Ministries of Defence. The total number of records in the three lists is about 48,500 (about 28,000 from ABH, 14,000 from VRS, and 6,500 from HVO). Also these lists are available from the Evidence Unit.

¹ The term "soldier" is used interchangeably with "military". It covers members of the army, police, other military forces of the Ministry of Defence, and supporting military personnel. In the context of records from the Mostar War Hospital Books it can relate to armed individuals that were not necessarily formally affiliated with the army or other military forces.

This report comprises an Executive Summary and the following sections:

1. Background
2. Mostar War Hospital Books: The Original Source
3. Data Cleaning and Establishing the Mostar War Hospital Database
4. Assessment of Deficiencies of the War Hospital Records and Minimum Numbers of Victims
5. Age, Sex and Timing Patterns of Patients Marked and Not Marked as Wounded
6. Final Results

The Herceg-Bosna conflict is understood in this report as the facts and events referred to in the Indictment of the case IT-04-74, that occurred on the territory of eight Herceg-Bosna municipalities (Čapljina, Gornj Vakuf, Jablanica, Ljubuški, Mostar, Prozor, Stolac, and Vareš) in the time period from November 1991 to (around) April 1994). The siege of Mostar is an episode of the conflict in Herceg-Bosna that took place in the town of Mostar and its surroundings between 9 May 1993 and 12 April 1994, when an agreement was signed by the Herceg-Bosna/HVO representatives and the Muslim side in Split, Croatia.

2. MOSTAR WAR HOSPITAL BOOKS: THE ORIGINAL SOURCE

Information about establishing and character of the Mostar War Hospital (hereafter: WH) is available from the witness statement of Jovan Rajkov, a physician that worked in the hospital during the siege (ERN 0200-0448-0200-0459). Rajkov joined the BH Army in August 1992 and was with the WH (first as a general practitioner, later as a surgeon) since its creation until several years after the end of the siege.

- The Mostar War Hospital was located at the Titova-street on the right bank of Neretva river and during the siege of Mostar functioned (mainly, but not exclusively) as the war hospital for the Bosnian Army; thus, it was a military hospital;
- As a military facility the WH had a limited access to humanitarian aid; therefore, the status of WH was changed in December 1993 from military to just a hospital;
- Disregarding its status, all kinds of patients were treated in the hospital at all times; according to Rajkov, approximately 50% of the patients were civilians (mainly Muslims); occasionally, a few prisoners of war (mainly Croats) were treated here as well;
- During the siege the main hospital of Mostar, i.e. the Regional Medical Centre of Mostar, located on the West bank of the Neretva river controlled by the HVO forces, functioned as the War Hospital for the HVO; this situation continued already since the spring of 1992;
- The creation of the ABH War Hospital was obviously a necessity as the (mainly) Muslim population from East Mostar had practically no access to the Regional Medical Centre of Mostar;
- The WH was created about one month before the siege started (i.e. around early April 1993) by a group of physicians (including Rajkov) in anticipation of possible casualties of the intensifying conflict; they established this facility on their own initiative and no one stopped them from doing so; the physicians received a lot of support from the BH Army and from the local population of Mostar; occasionally they received some help from international organizations;
- The WH was created out of an out-patient clinic established in October 1992 mainly for the needs of the BH Army; the clinic was meant to be used by both the civilian population of Mostar and the BH army, however;

- The WH was a rather small facility; at first there were only seven-eight beds in the Intensive Care Unit and probably only a few more beds in regular patients rooms; in the beginning of the siege only (a part of) the basement was used, later patients were transported to upper floors too;
- The basement remained the major part of the hospital, however; the surgery room, intensive care unit, small pharmacy, reception room and major pieces of equipment were all there; at first, there was no kitchen and no laundry service in the hospital itself; all these services were provided from private houses in the neighbourhood of the hospital; only later a small kitchen was established; washing clothes (and cleaning of the equipment) remained a problem;
- The conditions in and the equipment of the hospital were extremely bad; water was only available from water tanks (three of them were available), water was not tested and not purified with chlorine; there were breaks in electricity supply; an old electricity generator was only used for surgeries; there was not enough fuel for the generator; they did not have enough light and surgeons were using little headlamps during the surgeries; they had shortages of surgical clothes and often operated half-naked (from waist up); surgical equipment was sterilized in an ancient autoclave heated up with fire made of wood; at first they did not even have an X-ray machine; there were shortages of medicines, including anaesthetics and blood testers;
- The hospital was located closely to the confrontation lines and was systematically exposed to the fire of HVO;
- According to Rajkov (ERN: 0200-0455-0200-0455): The Hospital was twice hit by the tank fire. I cannot remember exact time of the shelling but it was not cold. The northern part of the building got two hits. The shells must have come from the direction of ORLOVAC according to our estimation. Once a big piece of shrapnel came through the front door. There was a huge hole on the western and northern side of the building. The roof had many holes. From the mountain HUM HVO could not see the Hospital, but they used a kind of Anti-Aircraft fragmentation ammunition that exploded above the Hospital. Many mortar shells hit the area in front of the surgery room and the path behind the building. There were people who got wounded around and insight the building too.
- At the beginning of the siege the WH staff did not pay attention to keeping patients' records complete and in good order; only later they realised how important it was (e.g. for receiving medicines) to show a register of patients and treatments they received;
- Except of this hospital there were no other hospitals in the area of East Mostar; there existed some other (out-patient) medical facilities in this part of the town, however;
- First aid clinics² included: ŠANTIĆEVA, CERNICA, ŠEMOVAC, MAHALA, and TEKIJA;
- Stationary clinics included the following objects: at the building across the road from hospital, at DUNAV insurance company building, at social care building, at communist party committee building, at BRANKOVAC, and at ZELIK (after Rajkov; ERN: 0200-0456-0200-0456);
- The War Hospital at the TITOVA street was not a single medical facility in the area of East Mostar and many victims from this territory likely contacted other health centres instead of coming to the War Hospital (for convenience and/or with less severe injuries). However, the War Hospital was the only in-patient facility in this area.
- Thus, the population treated in the War Hospital is a sample of all those that suffered injuries or death during the siege. It is difficult to assess how large this sample is, especially with regard to the wounded persons; no reference can be made to

² The meaning of the word clinic is unclear. It might be that these clinics were health centres not necessarily equipped as regular clinics and not necessarily offering the same services and treatments as the regular clinics usually do.

alternative statistical sources as such sources do not exist; it is easier to make an assessment for the killed; this will be done in the report on the killed persons.

For use in the assessment of casualties of the siege of Mostar, five original patients' registers of the Mostar War Hospital, the so-called War Hospital Protocol Books (hereafter the WH Books), were collected by OTP investigators in the year 2001. The ERNs of the original material are the following:

- a) 0200-0460-0200-0467: 8 pages, 09.05.1993-10.05.1993
- b) 0109-7072-0109-7198: 127 pages, 09.05.1993-23.06.1993³
- c) 0200-9824-0201-0226: 599 pages, 15.06.1993-18.08.1993
- d) 0200-5409-0200-5610: 203 pages, 18.08.1993-13.10.1993
- e) 0201-0424-0201-0824: 400 pages, 13.10.1993-24.05.1994

Entries in the WH Books are personal records of those who came or were brought to the War Hospital in the order as they were received. Some records may have been entered later than at the moment of arrival due to the work load of the hospital staff. Each entry is a different hospital case, i.e. a person registered under a unique sequential number.⁴ Each hospital case (i.e. each record in the WH Books) contains the following data items⁵:

- Unique sequential number
- Date of arrival at hospital
- Surname
- First name
- Year of birth
- Status (civilian - military)
- Military unit
- Location of incident
- Time of incident
- Wound description
- Marker explains the status of the patients, such as P = admission; K = sent home; OP = operation; () = death (in the book it is actually a circle around the number)

The original entries give a total of 5,910 records from all books; they start on 09-May-93 and end on 24-May-94.

3. DATA CLEANING AND ESTABLISHING THE MOSTAR WAR HOSPITAL DATABASE

The War Hospital Database (hereafter the WH database) was established by the Demographic Unit, OTP, of the records reported in the War Hospital Protocol Books. The WH database is

³ In document b) one part of pages (about a half) is ERNed in ascending order and the remaining pages in descending order. The documents' dates clearly overlap. The overlapping as well as missing pages are discussed later in this report.

⁴ In the WH Database, one duplicate was, however, found on the SerialNumber (2043) and was eliminated. More duplicates were found based on other criteria, i.e. names/initials, YoB, and date of event, and controlling for additional factors, such as type of event. These duplicates were registered in the WH Books under different SerialNumbers and might represent different persons, but according to our criteria they are too similar to be considered different. See Section 3 for more about duplicates.

⁵ In addition to the above items, also sex, age and ethnicity were created by data entry clerks (B/C/S native speakers).

organised exactly as reported in the WH Books. As the basic data entry was done by others, i.e. the OTP investigations team, (hereafter: InvT), we - demographers - started our project by controlling the completeness and quality of the computerized data. This was done by studying the original books registered with the EU and comparing records in the database with those on paper. A summary of major findings and improvements is attached below:

- A new item was created, MyDate, which contains info as in DATE (InvT variable). Dates of incidents in MyDate have been checked, corrected if erroneous, and cleaned. Dates stamped in the WH books over two days were taken starting at the first stamped day.
- One new record (skipped in the InvT file) has been entered (MyKey 5911 or SerNo 240/A),
- In the original WH books, pages ERN: 0201-0719 to 0201-0823, some serial numbers of records are incorrect. Records: 3441-3959 should be numbered as: 3491-4009. Thus, 50 records (3441-3490) received already existing serial numbers, but these are not duplicates. In the DU database with war hospital data, two types of reference (or serial) numbers are available: one as in the WH original books, and the second one as mathematically logical (from 3491 to 4009).
- A similar mistake has been found on page ERN 0200-9888. After record (serial number) 183, the next following is 194 in the original books. Thus, records from 184 to 193 have been skipped. These numbers 184-193 are, however, present in the InvT spreadsheet, implying that an additional 10 records are included in the total number of entries from the WH books. The total is artificially inflated. The non-viable records are deleted from the DU database.
- Records (MyKey) 5466 to 5482 (17 records) had Null (i.e. no value) on Date. The date of registration (a proxy for the date of incident) was, however, available from the WH Books (14/04/94). MyDate/Date and MyAge/Age have been completed for these records.
- Records (MyKey) 2, 2103, and 5910 (page ERN: 0201-0823) had no serial number in the InvT spreadsheet. These records are likely to be from 1994, as in the WH book for October 1993 to May 1994 they are mentioned at the very last page (next following after May 1994). MyDate/Date and MyAge/Age have been completed for these records based on 00/00/94.
- Record serial number 3425 has been found empty. In the WH books the space under this number is used for record 3424. Record 3425 has been deleted from the DU database.
- Record serial number 2043 (ERN: 01201-0427, Delalić Aida) is duplicated in the InvT spreadsheet (the serial number 2043 is included two times). The duplicated record is deleted (together with other duplicates) from the DU database.
- 49 records were entered in the InvT spreadsheet with incorrect dates. These records were corrected:
 - record serial no. 728 - correction on month (01 into 07)
 - records 5706-5753 – correction on month (03 into 06).
- Duplicates were dealt with in two ways, I checked duplicates in the original serial number, and secondly duplicated records of persons reported arriving on the same date, and having the same YoB, names, event type etc. Note that if one the same person was reported as wounded several times at different dates, I did not consider this a duplicate, as such cases are perfectly possible.
- a) Duplicates in serial numbers: 231 records were found to have the same (numeric part of the) serial numbers. Among those 231 records, 3 records had Null on the serial number but persons had different particulars, 10 records were indicated as skipped in the database and Marked for deletion, and 109 pairs (218 records) had the same serial numbers. Of the 109 pairs, only one pair appeared to be the actual duplicate (serial no. 2043). 50 pairs were the records registered in the WH books under repeated serial numbers but the registered individuals were all different. All other pairs, (58),

contained names of two different persons too, and every 2nd person had an additional letter associated with his/her serial number.

One of the two records 2043 and all skipped records were removed. All other records remained in the database.

- b) **Duplicated persons:** All pairs of records reported as occurring: on the same day, and with the same YoB, and with the same 1st letter of the (dedia⁶) surname, were selected and checked manually by comparing all available data items (full 1st name, surname, YoB, sex, age, ethnicity, type of event etc). 193 such records were identified. Among those 193 records only 15 were duplicates (15 pairs, of which one is the duplicate on the serial number (2043)), even though small differences were noticed in, for example, spelling of the names. The rest were different persons. The 15 duplicated records were Marked on the duplo variable (code 2) and removed from the database.
- There were in total 5,870 unique records that remained in the database. Of the 5,870 records, 472 were deaths, 4,925 are not deaths (i.e. mainly wounded persons; including 3 unrelated cases), and 474 records are only available as records' sequential numbers (i.e. relate to incomplete entries and entries from missing pages; unclear whether alive or dead). Among the not dead, a number of persons had no indication of wounding at all but most of these persons were most likely wounded. These records were used in the analysis too.

The above-summary describes data entry and related problems as well as data cleaning and the contents of the database itself. Deficiencies and basic statistics from this database are discussed below.

4. ASSESSMENT OF DEFICIENCIES OF THE WAR HOSPITAL RECORDS AND MINIMUM NUMBERS OF VICTIMS

This section concentrates on deficiencies of the records available from the Protocol Books of the Mostar War Hospital. There are in total 5,870 cases reported in the WH Books (after cleaning), relating to (up to) 4,925 wounded, 472 deceased (that were wounded too), 3 unrelated persons, and 474 unclear cases. Most unfortunately, the WH books are far from a reasonable quality. The limited coverage (only a sample of all killed and wounded are included in the books), incompleteness of this source; (i.e. several pages are missing altogether and also many responses are missing partly or entirely on many data items), and other deficiencies of the available data (e.g. spelling mistakes, errors in DoB etc.), are the reasons for being cautious when producing siege-related statistics.

Records reported in the War Hospital Books cover patients treated in the Mostar War Hospital during the conflict in Mostar in 1993-94. The first day of reporting is 9 May 1993 and the last day is 24 May 1994. The registration follows the order of calendar time. Day stamps (i.e. a complete date in the ddmmyy format) are consistently imprinted in the WH Books in the area of the first record taken on a given day. (Almost) every day is Marked with its own stamp, and a specific date can be assigned to (almost) every record. A few day stamps clearly cover two records instead of one. In such cases both records are considered as the two first ones to occur on this given day. Records are numbered consecutively by using sequential numbers, which (after data cleaning) are all unique.

⁶ The term dedia is used to express removing diacritics from the original B/C/S names and replacing them with Latin letters (e.g. š with s, č with c etc.). This procedure is essential for successful matching of the names.

The term “treated” means that any person who arrived at the Hospital in this period and received any type of treatment could be reported; it is uncertain that all actual patients are reported in the books, however. Individuals with less severe injuries could have been sent home without taking any notice of the treatment at all. Both the admitted and the not admitted (i.e. sent home) patients are reported. Four major categories of patients can be explicitly distinguished by markers and the availability of diagnosis: conflict-related **wounded**, conflict-related **killed**, **unrelated** cases (alive), and **undecided** cases (both alive and dead). From here on, I consequently use these terms throughout the rest of this report.

Wounded and killed persons are obviously related to the conflict. Note that killed persons were admitted to the hospital because of their injuries, (although for a number of persons this fact is not explicitly stated). The killed persons are considered in the report as wounded too. Unrelated patients, (only 3 out of 5,870 cases), ended in the War Hospital for reasons unrelated to the conflict, for example, for giving birth, which was caused by the lack of or restricted access to other health care facilities in the East Mostar at that time. The undecided cases are patients, (both survivors and deceased), for whom information is scattered and/or limited; they cannot be explicitly assigned to any of the other groups. Why the information is not complete for such a high number of records is related to the circumstances in which the hospital operated during the siege; the circumstances were dramatic and often made it impossible to the hospital staff to complete the records in the books. As I show in Section 5 of this report, there are no reasons, however, to believe that undecided cases were significantly different than a majority of all other records in the books, which obviously were war-related. So, it is rather certain that undecided cases should be seen either as wounded persons (those alive; not marked as dead) or as wounded and killed (those marked as dead). The undecided cases are included in siege-related statistics presented in this report.

Deficiencies of WH data on the deceased and on the wounded population are largely similar. An assessment of deficiencies is therefore made for the entire source (all possibly related cases, i.e. wounded, dead, and undecided cases, but excluding unrelated cases). From here on, all statistics in this section are related to all possibly related cases reported in WH books (unless explicitly stated that not). All possibly related cases cover wounded persons, deaths of wounds or injuries or other conflict-related causes, and undecided cases. Note also that one the same person could be wounded several times and in the end killed. My objective is first of all to characterise deficiencies of the War Hospital records, and secondly to identify the number of **conflict-related wounded patient-cases** (a concept similar to the term of person-days commonly used in short-term employment arrangements), here in particular civilians. I will do that by showing **a minimum number** and by producing **a less conservative more real estimate** of wounded patient-cases.

4.1 Missing pages are the most serious deficiency of the WH Books (Table 1); a total of 465 records are on the missing pages, i.e. about 8% of all 5,867 WH records. In addition to this, 9 records are very incomplete; they lack names and most other details.

Table 1. Overview of Missing Pages

Type of Reporting	Count	Percent
Reported in WHB, with Names	5,393	91.9
Reported in WHB, No Names	9	0.2
Reported on Missing Pages	465	7.9
Total	5,867	100.0

Note: 3 records with names are excluded as unrelated

Table 2. Timing of Missing Pages

Month-Year	Count
May-93	181
Jun-93	274
Aug-93	10
Total	465

That some pages are missing is an obvious fact. It is clear from the gaps in the sequential numbers and missing day stamps. There is no reason to believe that the missing pages were inserted as missing intentionally. It is rather the chaos of the siege and its intensity that should be blamed for this. Almost all these pages are related to two first months of the conflict in East Mostar, i.e. May and June 1993, (see Table 2). As it is shown in statistics on timing, discussed more specifically further in this report, these two months belong to the most intensive episode of the conflict and at the same time, missing information is most considerable for this phase.

A problem related to the missing pages is the completeness of reporting of names (and of other personal details). Table 1 show that about 5,393 (92%) records are reported with names. Of those records with names, a small fraction has rather deficient names (171; only one name is available, or initials, or the handwriting is illegible). A vast majority of records without names are the records from missing pages (465; 7.9%). Only 9 (0.2%) additional records do not have names included implying that their usefulness is very limited.

As a consequence of the missing pages, names and other personal details are unavailable for 465 records which have to be excluded from siege statistics; despite that the 465 individuals (almost certainly) were victims of the siege and suffered injuries and some perhaps died.

4.2 Dates of arrival at hospital are available, however, for all patients registered in the WH Books from 9 May 1993 to 24 May 1994, also for those 465 patients registered on the missing pages.

Table 3. Overview of Multiple-Day Reports from Missing Pages (Only 1993)

Day	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
03-04	0	24	0	0	0	0	0	0	24
05-06	0	12	0	0	0	0	0	0	12
12-13	0	12	0	0	0	0	0	0	12
16-19	0	82	0	0	0	0	0	0	82
20-22	0	72	0	0	0	0	0	0	72
24-25	12	0	0	0	0	0	0	0	12
28-29	60	0	0	0	0	0	0	0	60
Total	72	202	0	0	0	0	0	0	274

Unfortunately, a specific day cannot be assigned to 274 records out of 465, due to the lack of day stamps in the WH books. For 274 patients whose records were listed on missing pages from May and June 1993, days are available as covering two- or even three-day periods, while month and year are exactly known (Table 3).

So even though the 465 records cannot be included in siege-related statistics, they could be analysed in the timing patterns, especially by month. Despite of this, all 465 records are excluded from all analyses, also from the analysis of timing.

4.3 One of the most essential items in the War Hospital records is the type of wounding. The original item Wound Type, and its recoded version, are shown in Table 4 below.

Table 4. Overview of Diagnosis (Wound Type) in War Hospital Records

Wound Type Original	Wound Type Re-Coded	Count	Percent
V.E.	shelling	2,088	38.72
V.T.	gunshots	298	5.53
V.S.	gunshots	159	2.95
Vulnus ...	shelling or gunshots	3	0.06
Beaten	beaten	1	0.02
<i>Gave birth</i>	<i>unrelated</i>	<i>2</i>	-
<i>Artificial limb</i>	<i>unrelated</i>	<i>1</i>	-
Unknown	unknown	2,844	52.74
<i>Miss names/pages</i>	<i>miss names/pages</i>	<i>474</i>	-
Total All	all	5,870	-
Total Valid	all excluding unrelated and miss names/pages	5,393	100.00

Notes:

- V.T. - *Transclopetarium*
V.S. - *Vulnus Sclopetarium*
V.E. - *Vulnus Explosiva*

In total, 5,870 records are reported in the War Hospital books. 2,549 cases out of 5,870 (47.3%, Tables 4 and 5) have a known and siege-related diagnosis specifying the causes of hospitalization (shelling, gunshots and beaten). 2,844 cases out of 5,870 (52.7%) have an unknown diagnosis. These records belong to the category undecided or Not Marked as Wounded. As stated before, no reasons exist to believe that undecided cases were significantly different than the cases of wounded (or wounded and killed) persons. So, a majority of the records in the WH Books relate to the wounded persons, except of the records explicitly stated to be unrelated. Three such records were identified (two women gave birth and one men was admitted for making an artificial limb). These three records and the records of missing names/pages (474) were excluded from any further analysis. The remaining 5,393 records were studied for making estimates of the siege-related wounded person-cases.

Generally, all records for which a specific diagnosis of gunshots or shelling, and also one beaten by Ustasha, were defined as Marked as Wounded. All cases with unavailable diagnosis were considered as Not Marked as Wounded (Table 5).

Table 5. War Hospital Cases According to Indication of Wounding

Indication of Wounding	Count	Percent
Marked as Wounded	2,549	47.3
Not Marked as Wounded	2,844	52.7
Total	5,393	100.0

Table 5 summarizes the distribution of the WH records according to the availability of diagnosis. Out of the total of 5,393 valid hospital cases, 2,549 (47.3%) patients were Marked

as Wounded, i.e. their diagnosis was available and siege-related. Another 2,844 (52.7%) cases were Not Marked as Wounded; thus they had no diagnosis mentioned in the WH books.

Based on Table 5, only 2,549 persons could be counted (in a strict approach) as wounded in the siege of East Mostar. This number is a minimum that has little to do with the reality of the siege.

4.4 Table 6 contains an overview of causes of wounding. Some 2,549 (47.3%) records are reported as wounded with a specific diagnosis available. A majority of those are cases of wounding by shelling 2,088 (38.7%). 457 cases (8.5%) are results of gunshots. Just 3 cases relate to either shelling or gunshots and 1 case to beating.

Table 6. Wound Type Distribution in War Hospital Records

Type of Wounding	Count	Percent
Shelling	2,088	38.7
Gunshots	457	8.5
Shelling or Gunshots	3	0.1
Beaten	1	0.0
Unknown	2,844	52.7
Total	5,393	100.0

4.5 The distinction between civilians and military personnel is one of the most essential in presenting estimates of conflict casualties. Two original items in the War Hospital books make it possible to study these two groups of patients, Status and Military Unit. Using these two items a new variable was created. All records with Military Unit available were consistently coded as military status, disregarding the value on Status. All remaining records reported as C (civilian) or V (soldier) were kept as civilian and military status. All missing values (no indication and no information cases) were coded into unknown. The results of the coding are summarised in Table 7.

Table 7. Status of Patients According to the Internal Definition from on the WH Books

Military vs. Civilian Status	Count	Percent
Civilian	1,215	22.5
Detainee	49	0.9
Military	1,341	24.9
Unknown	2,788	51.7
Total	5,393	100.0

A total of 1,215 (22.5%) cases are marked as civilians and 1,341 (24.9%) cases as soldiers. A majority of all cases (2,788 or 51.7%) are of unknown status, however. A small group of 49 cases are detainees. Out of 49 in total, exactly 31 detainees have been identified as Croats, 5 as Bosniaks, and 13 as unknown. Whether they were civilians or soldiers is unclear; it is not possible to determine their status from the available information. We keep them as a separate group.

4.6 Table 8 below shows how many cases specifically reported as civilians, detainees or militaries are Marked at the same time as wounded. In other words, it shows how many known status cases also have the cause of hospitalisation available and related to the conflict.

Table 8. Internally Defined Status and the Indication of Wounding in WH Books

Internal definition of Status

Military vs. Civilian Status	Marked as Wounded	Not Marked as Wounded	Total	Percent
Civilians (number)	831	384	1,215	22.5
Civilians (percent)	68.4	31.6	100.0	-
Detainees (number)	29	20	49	0.9
Detainees (percent)	59.2	40.8	100.0	-
Militaries (number)	952	389	1,341	24.9
Militaries (percent)	71.0	29.0	100.0	-
Unknown (number)	737	2,051	2,788	51.7
Unknown (percent)	26.4	73.6	100.0	-
Total (number)	2,549	2,844	5,393	100.0
Total (percent)	47.3	52.7	100.0	-

Exactly 831 (68.4%) civilians, 29 (59.2%) detainees, and 952 (71%) militaries have the cause of hospitalisation available. Another 737 (26.4%) cases are known to be wounded but the status of these cases is unknown. In total 1,812 cases out of all 5,393 records (33.6%) are valid on both items, Status and Marked as Wounded. This number (1,812) can be seen as a minimum number of civilians, detainees and soldiers who got wounded during the siege of East Mostar between 9 May 1993 and 24 May 1994. The minimum number of wounded civilians (patient-cases) is 831, (or 860 together with the detainees), and of soldiers is 952 (patient-cases). For all these cases the time, place and cause of wounding are available and related to the siege.

The minimum numbers are heavily underestimated. First of all, because of the severely incomplete register of wounded persons available for Mostar (i.e. War Hospital Books with many missing pages and frequent missing values on the available data items), and secondly because of records registered outside of War Hospital in emergency and/or stationary in-patient medical facilities in Mostar.

4.7 In order to confirm the reporting of military status, external lists of fallen soldiers from the ABH (and HVO) were compared with the WH Books. In this way, also some WH cases of the unknown status could be re-coded using an external definition of the status. This step was possible due to the availability of the complete lists of fallen soldiers from ABiH and HVO (1992-95), provided to the Demographic Unit by the Ministry of Defence of Bosnia and Herzegovina in the years 2001 and 2002. The coverage of these lists is the entire country and the whole war period.

The assumption underlying the cross-referencing of these lists is that many of the fallen soldiers who died in the conflict in Herzeg-Bosnia were also wounded during the siege of Mostar and treated in the Mostar War Hospital. Thus, records of all such soldiers can be linked with their respective records from War Hospital books. Having achieved this, new cases of soldiers can be marked in War Hospital records, while keeping the status of all remaining cases unchanged. In this way, the definition of Status based so far exclusively on the internal War Hospital reporting can be broadened by using external information. In addition to that, fallen soldiers identified in War Hospital records as wounded persons can be also considered as new killed persons. Thus, all fallen soldiers not yet reported as killed in War Hospital books can be marked as additional deaths.

Table 9 below gives an overview of WH records linked with the records of the fallen soldiers, from the Bosnian army (ABiH) as well as from HVO. In total 218 records were matched. All matches were checked visually and were consistent on first name, last name, year of birth, date of death and date of wounding. Minor difference in spelling were allowed for, no differences in the year of birth, and only consistent differences between dates of death and of wounding.

Table 9. Overview of War Hospital Records Matched with the Lists of Fallen Soldiers

Original Status	Ethnicity			Total
	Muslim	Croat	Unknown	
Civilians	11	0	4	15
Detainees	0	9	2	11
Militaries	81	0	19	100
Unknown	80	0	12	92
Total Matched Soldiers	172	9	37	218

Exactly 100 records previously coded as soldiers were confirmed as soldiers (mainly Bosniaks). 11 records of WH detainees changed into soldiers (most of them Croats) and 15 records of WH civilians changed into soldiers too (most of them Bosniaks). In addition to this, 92 records, previously coded as unknown (or unavailable) status, became known as military status. A majority of these records were again of Bosniaks. Table 10 below summarises new statistics on patients of War Hospital obtained by applying the external definition of status.

Table 10. Externally Defined Status and the Indication of Wounding in WH Books

External Definition of Status

Military vs. Civilian Status	Marked as Wounded	Not Marked as Wounded	Total	Percent
Civilians (number)	819	381	1,200	22.3
Civilians (percent)	68.3	31.8	100.0	-
Detainees (number)	23	15	38	0.7
Detainees (percent)	60.5	39.5	100.0	-
Militaries (number)	1,006	453	1,459	27.1
Militaries (percent)	69.0	31.0	100.0	-
Unknown (number)	701	1,995	2,696	50.0
Unknown (percent)	26.0	74.0	100.0	-
Total (number)	2,549	2,844	5,393	100.0
Total (percent)	47.3	52.7	100.0	-

According to the external definition of Status, there were 819 (68.3%) civilians, 23 (60.5%) detainees, and 1,006 (69%) militaries for whom the Status and Wound Type were concurrently available. Another 701 (26%) individuals are known to be wounded but their status is unknown.

Altogether the minimum number of wounded civilians, detainees and militaries obtained from the external definition of status is 1,848 (vs. 1,812 based on the internal definition). The improvement achieved is mainly related to the number of soldiers in WH records.

The overall conclusion from applying the external definition of status is that even though the improvement achieved is minor, the coding is more correct. Slightly more records are now coded as militaries, less as civilians and detainees, which is in line with the conservative approach.

4.8 Two more tables are included below in order to illustrate deficiencies of two more items: Sent Home and Ethnicity (Tables 11 and 12). These two tables again address the incompleteness problem and its impact on the quality of statistics that can be produced from war Hospital data. Note that Ethnicity originally was not reported in the War Hospital books. It was created during data entry on the basis of studying names. Native B/C/S speakers decided on the ethnicity based on their knowledge of naming traditions in Bosnia. Note also that hand writing is very unclear and spelling is often uncertain. For these reasons Ethnicity is not one hundred percent reliable.

Table 11. Overview of Admission Status of Records from War Hospital Books

Admission vs. Sent Home	Count	Percent
Marked as Sent Home	1,516	28.1
Marked as Admitted	1,375	25.5
Not Marked	2,502	46.4
Total	5,393	100.0

Table 12. Overview of Ethnicity of Individuals Reported in the War Hospital Books

Ethnicity	Count	Percent
Muslim	4,160	77.1
Croats	97	1.8
Unknown	1,136	21.1
Total	5,393	100.0

4.9 All in all, the War Hospital records appear to be very deficient. Incompleteness is a serious problem, which implies that the minimum numbers obtained from the War Hospital Database are extremely low and basic demographic distributions of casualties are poor. All this is most certainly not compatible with the reality of the siege. For these reasons, an attempt is made in the next sections to produce more complete estimates of the casualties (here = wounded person-cases). The new estimates are still exclusively based on War Hospital records.

5. Age, Sex and Timing Patterns of Patients Marked and Not Marked as Wounded

The risk of being wounded or killed in the siege of East Mostar can be seen as related to several factors. The most significant factors having impact on this risk include:

- being an ethnic Muslim or another Non-Croat (i.e. belonging to those exposed to the risk of violence from a better armed and larger force),
- physically being present in the area of East Mostar during the siege period,
- being exposed to intense and frequently occurring incidents,
- active siege-related behaviour, i.e. being engaged in combat as opposed to life supporting activities, (i.e. being a combatant or a civilian),
- general risk-taking behaviour that can be approximated by basic demographic characteristics of a person such as age and sex; sex and age being determinants of human behaviour in general.

A meaningful analysis of the wounding process should be made using records of relevant wounded persons (from East Mostar and siege period) by (at least) age, sex, ethnicity, and place, time and cause of wounding. It should also include the military status of these individuals (civilians/soldiers). Information from the War Hospital Books makes it relatively easy to define the victims of wounding in terms their actual presence in East Mostar in the relevant period of time as well as in terms of their sex, age, and even ethnicity. It is much more difficult to define them in terms of the availability of diagnosis (Marked versus Not Marked as Wounded) and military status.

I discussed deficiencies of the availability of diagnosis and military status in Section 4. The major problem in both cases was the incompleteness of reporting, i.e. extraordinarily high number of records with missing values on each (or just one) of the two items. The missing values were most likely the result of underreporting of wounding by medical authorities responsible for keeping hospital records up-to-date and in good order. At the same time, many other records from the War Hospital Books had these two (and other) items available, and thus they could serve as a basis for an estimation of more complete statistics on siege-related wounded persons from East Mostar.

Generally speaking if two groups of individuals, (i.e. those Marked and those Not Marked as Wounded), physically located in East Mostar during the siege period and exposed to the same risk of being wounded, had the basic demographic distributions (such as sex and age) consistently similar, there would be no reason to assume that these groups arrived in the War Hospital because of totally different health problems.

In this section I therefore check statistically whether the sex and age distribution of patients Marked and Not Marked as Wounded are similar. I do this separately for civilians and militaries. My expectation is that no significant differences will be found between those Marked and those Not Marked as Wounded. If so, then these two groups could be seen as largely similar and an adjustment would be possible of the minimum numbers presented in Section 4 in order to produce statistics that describe the actual wounding process in more realistic (although still lower level) terms.

I also investigate the timing of the siege. And again ideally I would like to see similar patterns of timing for those Marked and those Not Marked as Wounded. (Again done separately for civilians and militaries). The expectation might be however too optimistic as I already saw a considerable underreporting of wounding in particular siege periods (e.g. May-June 1993). A systematic pattern of underreporting of one group implies that timing of this group and of a second group cannot be the same.

In this section, I use all available War Hospital records, except for the previously excluded records from missing pages or with missing names (474). In total, after excluding the 474 records from missing pages/names, exactly 5,393 records remain. Three major items are studied: sex, age, and timing⁷, each separately for civilians, militaries and those of the unknown status. Generally, two major sub-populations are compared: Marked as Wounded versus Not Marked as Wounded, with the purpose of investigating whether or not those Not Marked as Wounded can be still considered as representing the same overall population of wounded persons related to the siege of East Mostar.

In addition to the descriptive analysis in this section, in Annex I also tested statistically the significance of the differences in age, sex and timing distribution of those Marked and those Not Marked as Wounded (separately for civilians and militaries; no test for all status categories jointly). The (one-sample) Kolmogorov-Smirnov test of goodness-of-fit was applied to test whether these differences are significant statistically. Generally, the test's results confirm (what is also shown in this section) that these two groups are not different and can be considered as representing the general population of wounded persons.

⁷ In fact also place of event could be studied, but generally the place is known to be within East Mostar for all records reported.

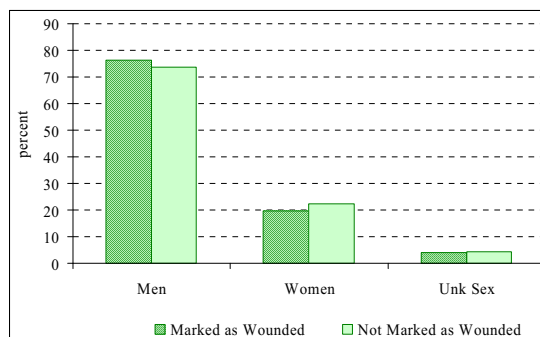
Based on the results from this section and those from the Kolmogorov-Smirnow test, in Section 6 I determine the size of the populations affected by the siege of East Mostar. This new estimates should be seen as more complete and better justified numbers of casualties, yet these new estimates still belong to lower values of the unknown true number of casualties.

5.1 Sex patterns of those Marked as Wounded and those Not Marked as Wounded are largely similar (Table 13 and Figure 1); it so despite of the fact that the individuals treated in the War Hospital comprised both civilians and soldiers that usually have distinguished age profiles. This similarity can be seen as a first indication that the persons Not Marked as Wounded belong to a population that was treated in War Hospital for the same reasons as the individuals Marked as Wounded.

Table 13. Sex Patterns among Marked and Not Marked as Wounded

Sex	Mark of Wounding		Total	Sex	Mark of Wounding		Total
	No	Yes			No	Yes	
Men	2,093	1,945	4,038	Men	73.6	76.3	74.9
Women	630	504	1,134	Women	22.2	19.8	21.0
Unk/Unav	121	100	221	Unk/Unav	4.3	3.9	4.1
Total	2,844	2,549	5,393	Total	100	100	100

Figure 1. Sex Patterns among Marked and Not Marked as Wounded

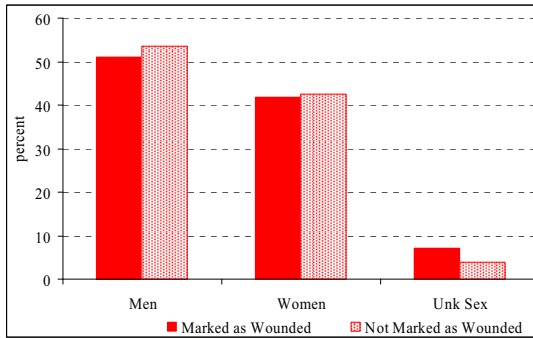


I also compared the sex of Civilians, Militaries and Unknown Status according to the Marked as Wounded Distribution. Three sets of the resulting charts are included below (Figures 2a, 2b and 2c; data tables associated with these charts and results of the related Kolmogorov-Smirnov test are available from the Annex). The charts indicate that the sex patterns are not the same for Civilians as compared with Soldiers, or with Unknown Status⁸. At the same time, the sex distributions of those Marked as Wounded and those Not Marked as Wounded are very similar within every category of the status.

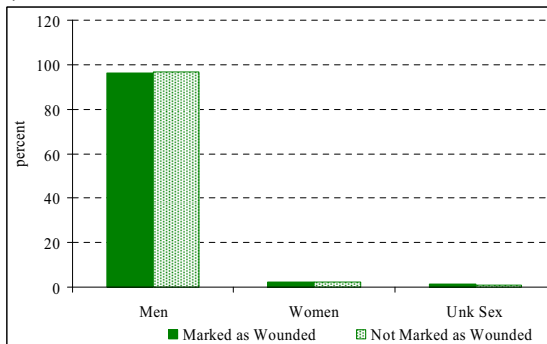
⁸ Persons of Unknown Status are obviously a combination of both civilians and soldiers (Figure 2c); this category of Status has only a little relevance for investigating the similarities/differences of those Marked and those Not Marked as Wounded. The categories of civilians and militaries are the most essential ones with this regard.

Figure 2. Sex Distribution and Diagnosis Availability

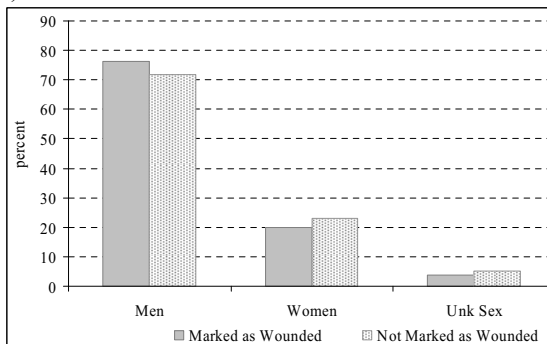
a) Civilians



b) Militaries



c) Unknown Status



Among civilians about 50% are men and about 40% are women (Figure 2a), whereas among soldiers almost all are men (Figure 2b). The sex distribution of persons with unknown status is clearly the same as the cumulative distribution of both civilians and soldiers (Figure 2c).

The sex distributions of persons Marked and Not Marked as Wounded are almost identical within every category of the status.

The Kolgorov-Smirnov test confirms that the differences observed in the sex distribution of those Marked as Wounded and those Not Marked as Wounded are statistically insignificant. This result holds true for civilians as well as for militaries. Thus, for both civilians and militaries these two groups (Marked and Not Marked as Wounded) can be seen as representing the same population of wounded persons related to the siege of East Mostar.

5.2 Based on the visual inspection also the age patterns of those Marked as Wounded and those Not Marked as Wounded are largely similar (Table 14 and Figure 3). This further confirms that the persons Not Marked as Wounded do not form a distinguished population, which was treated in War Hospital for reasons different than the population Marked as Wounded.

Figure 3. Age Patterns among Marked and Not Marked as Wounded

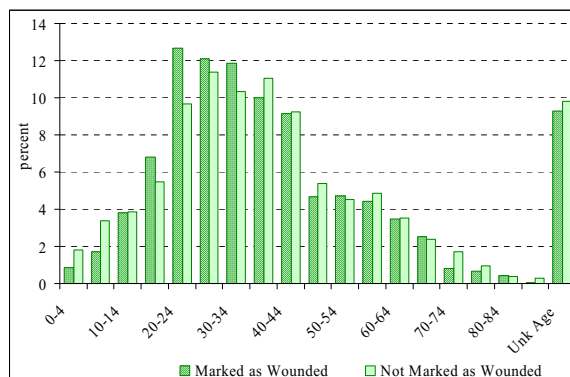


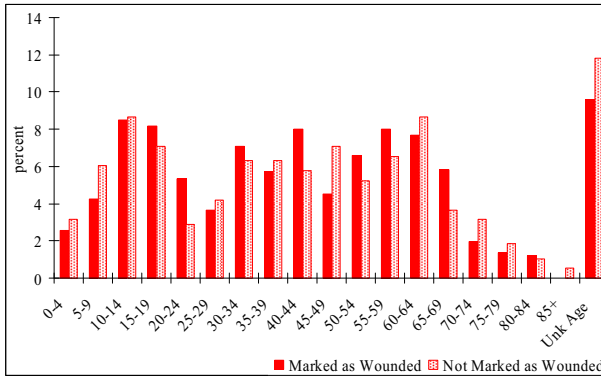
Table 14. Age Patterns among Marked and Not Marked as Wounded

Age	Mark of Wounding		Total	Age	Mark of Wounding		Total
	No	Yes			No	Yes	
0-4	52	22	74	0-4	1.83	0.86	1.37
5-9	96	44	140	5-9	3.38	1.73	2.60
10-14	110	96	206	10-14	3.87	3.77	3.82
15-19	156	172	328	15-19	5.49	6.75	6.08
20-24	276	323	599	20-24	9.70	12.67	11.11
25-29	323	308	631	25-29	11.36	12.08	11.70
30-34	292	302	594	30-34	10.27	11.85	11.01
35-39	314	254	568	35-39	11.04	9.96	10.53
40-44	263	233	496	40-44	9.25	9.14	9.20
45-49	153	119	272	45-49	5.38	4.67	5.04
50-54	129	121	250	50-54	4.54	4.75	4.64
55-59	138	113	251	55-59	4.85	4.43	4.65
60-64	101	89	190	60-64	3.55	3.49	3.52
65+	162	115	277	65+	5.70	4.51	5.14
Unk/Unav	279	238	517	Unk/Unav	9.81	9.34	9.59
Total	2,844	2,549	5,393	Total	100.00	100.00	100.00

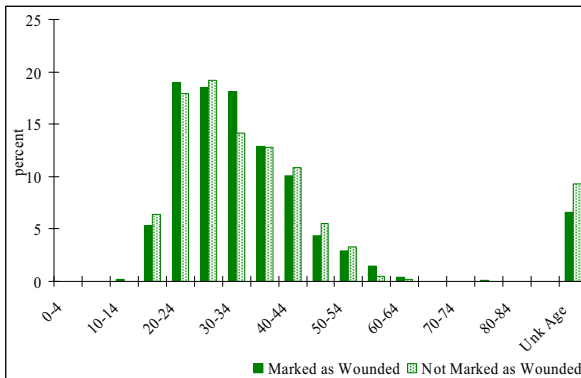
Results of comparing of the age pattern of Civilians, Militaries and Unknown Status according to the Marked as Wounded Distribution are shown below (Figures 4a, 4b and 4c; data tables and the Kolmogorov-Smirnov test associated with these charts are available from the Annex). The age patterns are not the same for Civilians as compared with Soldiers, or with Unknown Status. However, the age distributions of Marked as Wounded and Not Marked as Wounded are very similar within every status category.

Figure 4. Age Distribution and Diagnosis Availability

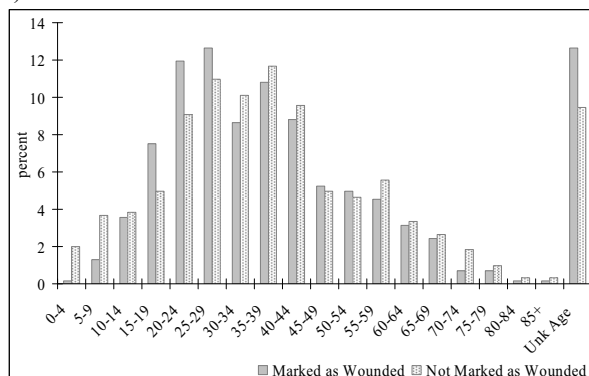
a) Civilians



b) Militaries



c) Unknown Status



The age distribution of civilians has three peaks in the age intervals 10-19, 30-44 and 55-64 years (Figure 4a). The age distribution of soldiers has one wide peak at ages 20-44 years (Figure 4b). The age distribution of persons with unknown status is clearly the same as the cumulative distribution of both civilians and soldiers (Figure 4c). The age distribution of the persons Marked as Wounded and Not Marked as Wounded are again almost identical within every category of the status.

The Kologorov-Smirnov test confirms that the differences observed in the age distribution of those Marked as Wounded and those Not Marked as Wounded are statistically insignificant. The same result was obtained for civilians and for militaries. In terms of age, these two groups (Marked and Not Marked as Wounded) can be seen as representing the same population of wounded civilians (or wounded militaries) related to the siege of East Mostar.

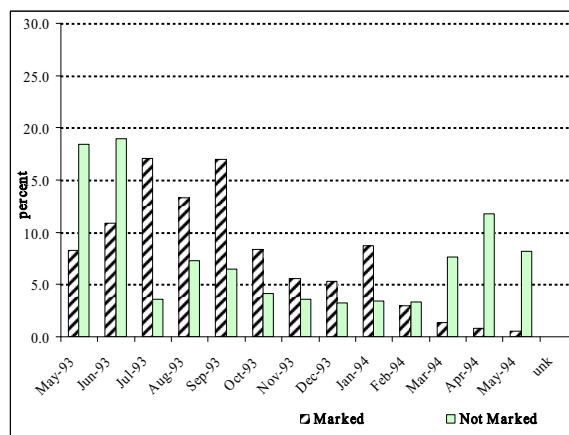
5.3 Timing of those Marked and those Not Marked as Wounded clearly have different patterns (Table 15 and Figure 5). In particular, the months May-93, June-93, and March-94, April-94 and May-94 show exceptionally high levels of arrivals of persons Not Marked as Wounded. Together with February-94, these are the only months when arrivals of those Not Marked as Wounded are higher than the arrivals of those Marked as Wounded.

May-93 and June-93 are known from other sources (Rajkov, ERN: 0200-0456) of heavy underreporting of diagnosis (Marked as Wounded). Note that records from missing pages (mainly from May and June 1993) have been excluded from these particular analyses, but still the profound underreporting of Marked as Wounded in May and June 1993 is obvious in Table 15 and Figure 5.

Table 15. Timing of Arriving at War Hospital among Those Marked and Not Marked as Wounded

Month/Year	Mark of Wounding		Total	Month/Year	Mark of Wounding		Total
	No	Yes			No	Yes	
May-93	524	210	734	May-93	18.42	8.24	13.61
Jun-93	540	277	817	Jun-93	18.99	10.87	15.15
Jul-93	101	434	535	Jul-93	3.55	17.03	9.92
Aug-93	206	339	545	Aug-93	7.24	13.30	10.11
Sep-93	184	432	616	Sep-93	6.47	16.95	11.42
Oct-93	118	214	332	Oct-93	4.15	8.40	6.16
Nov-93	101	141	242	Nov-93	3.55	5.53	4.49
Dec-93	92	136	228	Dec-93	3.23	5.34	4.23
Jan-94	98	222	320	Jan-94	3.45	8.71	5.93
Feb-94	94	75	169	Feb-94	3.31	2.94	3.13
Mar-94	217	34	251	Mar-94	7.63	1.33	4.65
Apr-94	335	21	356	Apr-94	11.78	0.82	6.60
May-94	233	13	246	May-94	8.19	0.51	4.56
Unk	1	1	2	unk	0.04	0.04	0.04
Total	2,844	2,549	5,393	all	100.00	100.00	100.00

Figure 5. Timing of Arriving at War Hospital among Those Marked and Not Marked as Wounded



The months of March-94, April-94, May-94, and partly also February-94 cover the period after the Washington agreement. Thus, wounded persons were less frequent in these months and patients arriving at War Hospital were coming there for other reasons. Many of them could have come for the treatment of late consequences of wounds or similar problems. Secondly, marking persons as wounded became less relevant in these months as officially the conflict ended around 25 February 1994, and some underreporting was probably in place too. In conclusion, on the contrary to the period until February 1994, the timing of events occurring after February 1994 describes a different process than the intensity of the siege. This process should be, however, seen as related to the siege. All health problems that cumulated during the siege and were postponed because of difficult life circumstances under the siege were finally explicitly addressed to health authorities in the first months after the siege ended.

All in all, it seems that in order to properly describe the timing of incidents during the siege, it is necessary to analyse both Marked and Not Marked as Wounded jointly, despite of the differences observed in the timing of arrivals of these two groups at the War Hospital. Merging the two groups (those Marked as Wounded and those Not Marked as Wounded) is a solution to the obvious underreporting of wounding in May-June 1993 and in February-May 1994.

A good alternative to this is studying the total daily number of patients arriving at the War Hospital (see Figure 6). According to this indicator, the intensity of the siege was the highest in May and June 1993. The second most intensive period is apparently September 1993, and the third is January 1994. The increase in the daily number of patients after February 1994 should be mainly seen as treatment of late consequences of the siege.

Figure 6. Timing of Arriving at War Hospital among Those Marked and Not Marked as Wounded

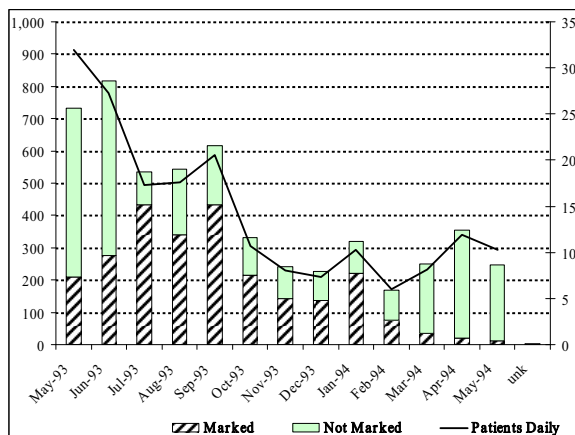
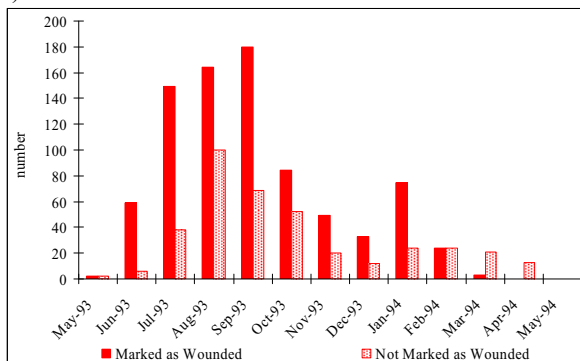
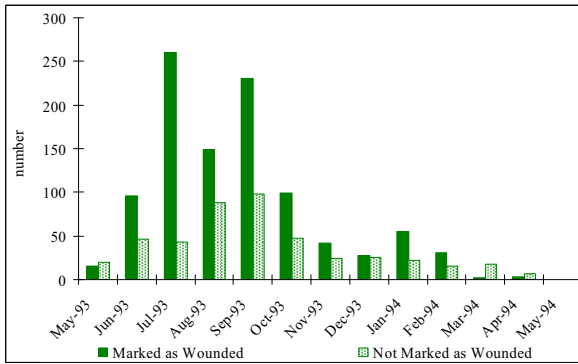


Figure 7. Timing Distribution and Diagnosis Availability

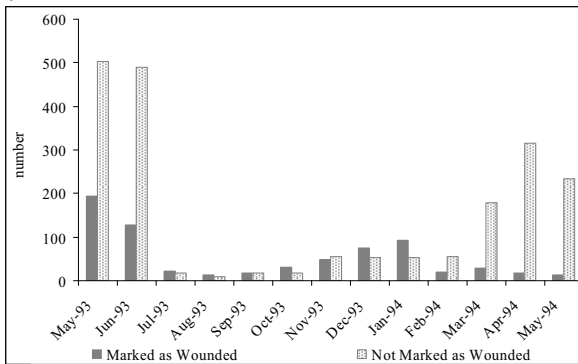
a) Civilians



b) Militaries



c) Unknown Status



Interestingly, Figure 7a shows that for civilians the timing of patients' arrivals at the War Hospital has a rather similar pattern for those Marked and those Not Marked as Wounded. However, the level of the arrivals of those Not Marked as Wounded is clearly considerably lower. The timing pattern of both groups (those Marked and Not Marked as Wounded) indicates that most arrivals of civilians took place in July-August-September 1993, and later in October 1993, and January 1994. A similar observation applies to the militaries (Figure 7b), although less arrivals of militaries were noted in August 1993 than of civilians in the same month.

For those with the unknown status, the timing of those Marked as Wounded and those Not Marked as Wounded is similar only from July 1993 to January 1994. The arrivals of those Not Marked as Wounded in May-June 1993 and February-March-April-May 1994 are much higher than the arrivals of those Marked as Wounded in these periods (Figure 7c). Figure 7c confirms again the temporal pattern of underreporting of wounding which is clear in May-June 1993 and February-March-April-May 1994.

Statistical testing of the differences between Marked and Not Marked as Wounded confirms that significant differences exist for civilians as well as for militaries. This suggests that the timing of wounding was different for these two groups. However, having explained that the differences were caused by a systematic bias of underreporting of wounding in May-June 1993 and in February through May 1994, combining these two groups is necessary for being able to properly describe the overall timing of incidents during the siege.

5.5 The results presented in Section 5 confirm that the population of patients Marked as Wounded is not different in terms of age and sex from the population of those Not Marked as Wounded. This observation holds true for each distinguished group of patients, i.e. for civilians and also for militaries. Timing of arrivals at the War Hospital does not confirm to this rule, however. Different patterns of timing have been found for those Marked and Not Marked as Wounded, also when the civilian-military status is taken into account. Generally, the differences in the timing in May-June 1993 and February-March-April-May 1994 were related to the fact that a large number of arrivals had not been Marked as Wounded in these months. This observation is an expression of a systematic reporting bias inherent in the War Hospital records and not of the true data pattern. This is why also in the case of timing, the records of those Marked and Not Marked as Wounded may and should be combined and analysed jointly.

6. FINAL RESULTS

- A minimum number of wounded persons that acquired their injuries during the siege of East Mostar between 9 May 1993 and 25 May 1994 and were treated in the Mostar War Hospital is 2,549.⁹ This number is based on cases that have diagnosis explicitly stated in their hospital records and the diagnosis is clearly siege-related, (Tables 4 and 5, Section 4).
- This number (2,549) is most certainly a heavy underestimation; a better estimate is 5,393 wounded persons and is based on all records from the WH Books, disregarding whether or not the diagnosis is available, (Tables 4 and 5, Section 4). The 5,393 cases still do not properly represent the actual number of wounded persons as they do not include 474 records of patients whose names and other details were reported on the missing pages of the WH Books, or their names and other personal details were unavailable in the WH Books.

⁹ 13 persons out of 2,549 are reported for May 1994.

- An additional reason for the 5,393 cases being an under-representation of all wounded persons is that the Mostar War Hospital was not the only medical facility in East Mostar at the time, although it was most likely the largest one. Four out-patients clinics and another four emergency clinics were operating in this area during the siege too and many patients contacted these clinics (e.g. for having access to, convenience or less severe injuries) instead of coming to the War Hospital.
- It is hard to estimate the complete number of wounded persons as no data is available from the eight out-patients facilities.
- It is also impossible to assess the type and severity of the injuries as the WH records are rather poor. The only measure that can be calculated is the fatality rate among the admissions (the number of deaths divided by the number of all patients with injuries). This rate would be equal 80 per 1,000 admissions if all 5,867 persons reported in the WH Books are taken into account. (Note, the fatality rate would be 185 per 1,000 if only the minimum number of 2,549 wounded persons is considered). The conservative rate of 80/1000 is high.
- The distribution of causes of patients' injuries, obtained from the diagnosis mentioned in the War Hospital Books, is attached below in **Table 16** (comp. Table 6, Section 4).

If only the cases of available and well-defined diagnosis are considered (2,549), about 82 % of the diagnosed patients acquired their injuries from shelling, and the remaining (approximately) 18% from gunshots. A very small fraction of patients were victims of either shelling or gunshots, or beating (about 0.1 %; 4 persons). The minimum number of shelling victims was 2,088; it is possible and likely that this number was much higher and equalled approximately 4,418, however. The minimum number of gunshots victims was 457, but more likely 967.

Table 16. The Minimum and Estimated Overall Numbers of Wounded Persons According to the Cause of Wounding

Wound Type	Minimum (Observed)	Percent (Observed)	Estimated (Adjusted)	Percent (Adjusted)	Confidence Interval	
					Lower Limit	Upper Limit
Shelling	2,088	81.9	4,418	81.9	4,377	4,458
Gunshots	457	17.9	967	17.9	927	1,007
Shelling or Gunshots	3	0.1	6	0.1	3	10
Beaten	1	0.0	2	0.0	0	4
Unknown	2,844	na	na	na	na	na
Missing names/pages	474	na	na	na	na	na
Total	5,867	100.0	5,393	100	5,307	5,479

The more likely numbers are estimates, which are more complete than the observed minimum numbers. The estimates were obtained through including in the adjusted statistics all cases of treatments in the War Hospital, disregarding the availability of their diagnosis. There were in total 2,844 cases without the diagnosis in the War Hospital Books; these cases were re-distributed in Table 16 according to the observed distribution of diagnosis and resulted in the adjusted estimated numbers of wounded persons.

Persons reported on the missing pages or whose records contained no names were excluded from this adjustment (474).

The statistical procedure applied to obtain the estimates and related confidence intervals is described in Section 2 in the Annex.

- The civilian - military status of victims can be analysed based on the Mostar War Hospital records too. The final figures are shown in Tables 17, 18a and 18b below (see also Table 10, Section 4).

Table 17. The Minimum and Estimated Overall Numbers of Wounded Persons According to the Status

Status Category	Minimum (Observed)	Percent (Observed)	Estimated (Adjusted)	Percent (Adjusted)	Confidence Interval	
					Lower Limit	Upper Limit
Civilian	1,200	44.49	2,400	44.49	2,349	2,450
Detainee	38	1.41	76	1.41	64	88
Military	1,459	54.10	2,917	54.10	2,867	2,968
Unknown	2,696	na	na	na	na	na
Missing names/pages	474	na	na	na	na	na
Total	5,867	100.00	5,393	100.00	5,280	5,506

Note: External Definition of Status was used

Table 18a. The Minimum and Estimated Overall Numbers of Wounded Civilians According to the Age and Sex Distribution

Age	Minimum Observed			Total	Estimated Adjusted		
	Men	Women	Unk Sex		Men	Women	Total
0-4	18	13	2	33	42	31	74
5-9	29	26	3	58	68	62	129
10-14	62	38	2	102	140	87	227
15-19	46	43	4	93	107	101	208
20-24	17	35	3	55	40	83	123
25-29	17	26	3	46	40	62	103
30-34	20	52	9	81	50	131	181
35-39	29	35	7	71	71	87	159
40-44	39	40	9	88	96	100	196
45-49	40	20	4	64	95	48	143
50-54	46	25	3	74	106	59	165
55-59	61	24	6	91	145	58	203
60-64	60	34	2	96	136	78	214
65+	78	38	8	124	185	91	276
Unk Age	60	55	9	124	na	na	na
Total	622	504	74	1,200	1,321	1,079	2,400
Percent	51.83	42.00	6.17	100.00	55.05	44.95	100.00

Table 18b. The Minimum and Estimated Overall Numbers of Wounded Militaries According to the Age and Sex Distribution

Age	Minimum Observed			Total	Estimated Adjusted		
	Men	Women	Unk Sex		Men	Women	Total
10-14	1	0	1	2	4	0	4
15-19	81	1	1	83	177	2	179
20-24	266	5	2	273	577	12	590
25-29	267	5	2	274	580	12	592
30-34	236	5	5	246	519	12	532
35-39	179	4	3	186	392	10	402
40-44	146	3	1	150	317	7	324
45-49	67	1	1	69	146	2	149
50-54	41	3	0	44	88	7	96
55-59	17	0	0	17	37	0	37
60-64	4	1	0	5	9	2	11
65+	1	0	0	1	2	0	2
Unk	100	6	3	109	na	na	na
Total	1,406	34	19	1,459	2,848	69	2,917
<i>Percent</i>	<i>96.37</i>	<i>2.33</i>	<i>1.30</i>	<i>100.00</i>	<i>97.64</i>	<i>2.36</i>	<i>100.00</i>

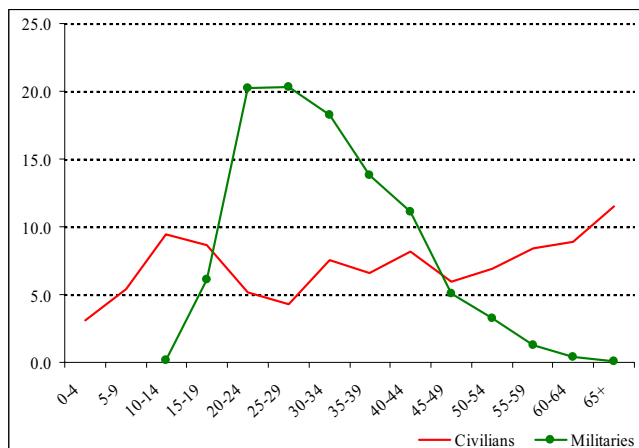
Table 17 contains the minimum numbers (observed) as well as the more complete estimates (adjusted). There were at least 1,200 civilians injured in the siege of Mostar; more likely, however, the number of wounded civilians was 2,400 (an estimate). The number of wounded militaries was at least 1,459 individuals, but a more complete estimate of wounded militaries is approximately twice as many, i.e. 2,917.

The ratio of wounded civilians to wounded militaries was 0.8225, i.e. about 8 civilians were wounded per each 10 militaries. The sex distribution of this ratio was extremely uneven. For women the ratio equalled 14.8235 (148 female civilians per 10 female militaries) and for men 0.4424 (4 male civilians per each 10 male militaries). Thus, a vast majority of wounded women were civilians and of wounded men were militaries.

The sex and age distributions of each status category are shown in Tables 18a, 18b and in Figure 8.

Whereas the age distribution of the militaries spreads over the ages from about 15 to 65 years and rapidly picks up at ages around 20 to 29 years, that of civilians relates to the entire age range of the population and is much more uniform. A hump is clearly seen for civilians at around 15 to 19 years of age, and then at the older ages (55 years or more).

Figure 8. Percentage Distribution of Patients of the Mostar War Hospital According to the Civilian-Military Status and Age



- The ethnicity of wounded persons is reported in Table 19. The most victims were ethnic Muslims (97.7%), only 2.3% were Croats. The minimum numbers were respectively 4,160 and 97. More complete estimates were, respectively, 5,270 and 123 individuals.

Table 19. The Minimum and Estimated Overall Numbers of Wounded Persons According to the Ethnic Distribution

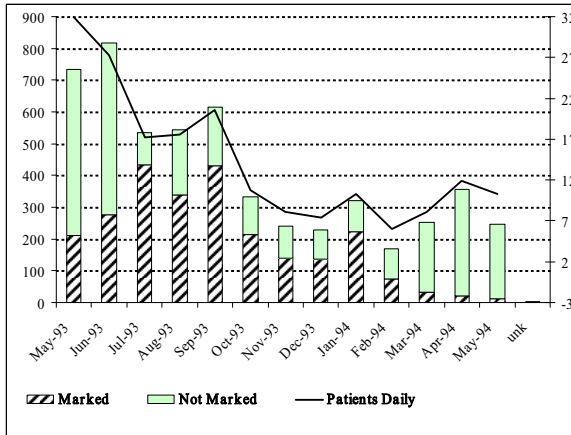
Ethnicity	Minimum (Observed)	Percent (Observed)	Estimated (Adjusted)	Percent (Adjusted)	Confidence Interval	
					Lower Limit	Upper Limit
Muslim	4,160	97.72	5,270	97.72	5,260	5,280
Croat	97	2.28	123	2.28	113	133
Unknown	1,136	na	na	na	na	na
Missing names/pages	474	na	na	na	na	na
Total	5,867	100.00	5,393	100.00	5,373	5,413

- Final statistics on timing are contained in Table 20 (by months) and Tables 21a and 21b (by day). A graphical presentation of timing is available from Figures 9 and 10 (a and b). The absolute numbers in these tables/charts are all observed, no adjustments were necessary as (almost) all dates are available from the Mostar Hospital Books, even for the illegible records (9) or for the records from missing pages (465). Tables 20 and 21 are compiled only for the well-defined records, however; thus excluding the illegible and missing pages records. These statistics should be, therefore, seen much more complete than the minimum numbers presented in all other tables in this section (comparable with the estimates).

Table 20. Timing of Arrivals at the Mostar War Hospital (By Month)

Month/Year	Count	Percent	Patients Daily
May-93	734	13.61	32
Jun-93	817	15.15	27
Jul-93	535	9.92	17
Aug-93	545	10.11	18
Sep-93	616	11.42	21
Oct-93	332	6.16	11
Nov-93	242	4.49	8
Dec-93	228	4.23	7
Jan-94	320	5.93	10
Feb-94	169	3.13	6
Mar-94	251	4.65	8
Apr-94	356	6.60	12
May-94	246	4.56	10
Unk	2	0.04	na
Total	5,393	100.00	na

Figure 9. Timing of Arrivals at the Mostar War Hospital (By Month)



Clearly, the first months of the siege were the most intensive and most harmful to the Mostar population. Fights in the months from May to September 1993 resulted in many more wounded persons than in any other of the remaining months of the siege. May and June were exceptional among these five months (734 and 817 wounded persons, respectively). Each day in May 1993 there arrived on average 32 patients at the War Hospital, and the daily average for June 1993 was 27 individuals. The lowest daily average is seen for February 1994 when the Washington agreement was signed.

Figure 10a. Timing of Arrivals at the Mostar War Hospital, 1993 (By Day)

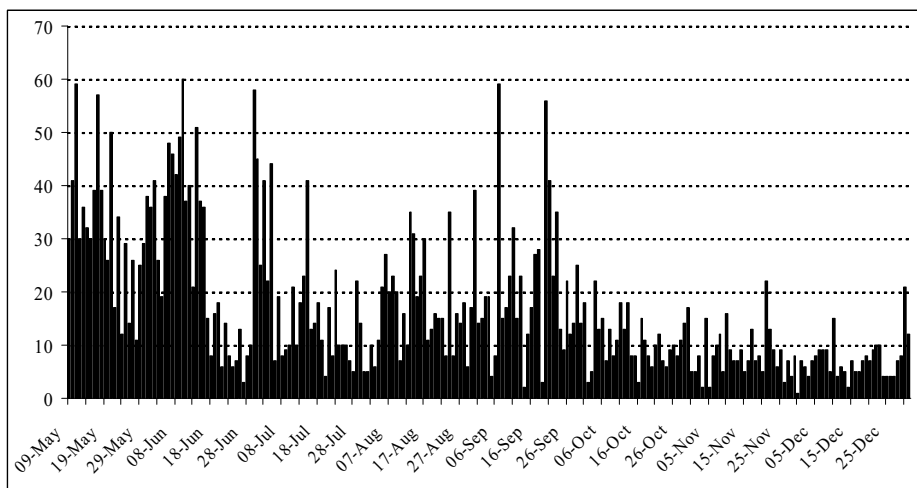
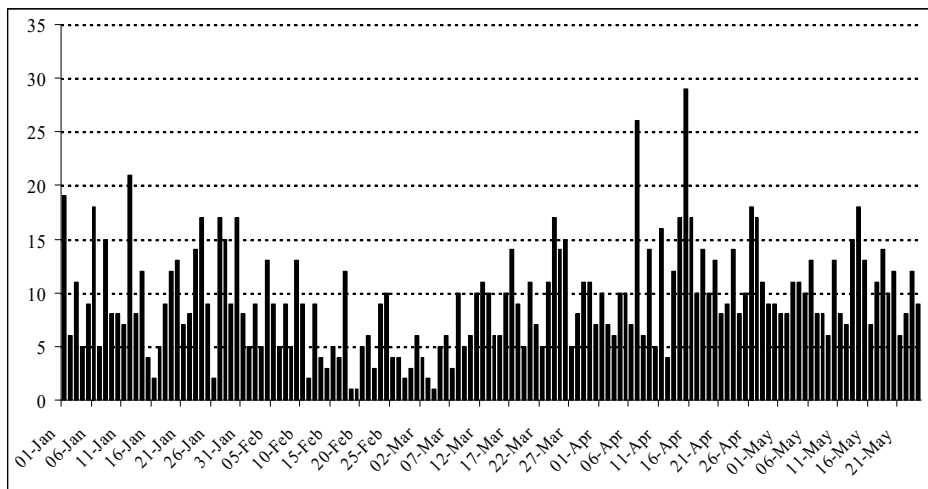


Figure 10b. Timing of Arrivals at the Mostar War Hospital, 1994 (By Day)



Figures 10a and 10b visualize the daily distribution of patients' arrivals at the War Hospital. These two charts are highly consistent with Figure 9, and in addition to that also indicate which days were characterized by high intensity of arrivals.

For May 1993, no days are observed with less than 10 arrivals a day. The lowest number of arrivals was on 28 May (11). Most days had from 20 to 29 arrivals, (10 days out of in total 23

studied here), and there were 4 days characterized by more than 40 arrivals (10, 11, 17 and 21 May 1993).

The situation in June was slightly different. 14 days in June 1993 had the number of arrivals lower than 20 a day, but there were also more days in June (than in May 1993) with extremely high numbers of arrivals. 9 days were characterized by more than 40 patients arriving at the hospital each day (2, 6-10, 12, 14, 30 June).

Specific dates in the period from 9 May 1993 to 24 May 1994 and the associated numbers of patients' arrivals on each day are reported in Tables 24a (for 1993) and 24b (for 1994) attached below. These two tables can be seen as a summary of the daily siege intensity, which every day brought new patients to the Mostar War Hospital.

Table 21(a) Timing (Daily): 1993

MyDay	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
01	0	36	45	5	14	18	5	7
02	0	41	25	10	15	3	8	6
03	0	26	41	6	19	5	2	4
04	0	19	22	11	19	22	15	7
05	0	38	44	21	4	13	2	8
06	0	48	7	27	8	15	8	9
07	0	46	19	20	59	7	10	9
08	0	42	8	23	15	13	12	9
09	30	49	9	20	17	8	5	5
10	41	60	10	7	23	11	16	15
11	59	37	21	16	32	18	9	4
12	30	40	10	10	15	13	7	6
13	36	21	18	35	23	18	7	5
14	32	51	23	31	2	8	9	2
15	30	37	41	19	12	8	5	7
16	39	36	13	23	17	3	7	5
17	57	15	14	30	27	15	13	5
18	39	8	18	11	28	11	7	7
19	30	16	11	13	3	8	8	8
20	26	18	4	16	56	6	5	7
21	50	6	17	15	41	10	22	9
22	17	14	8	15	23	12	13	10
23	34	8	24	8	35	7	9	10
24	12	6	10	35	13	6	6	4
25	29	7	10	8	9	9	9	4
26	14	13	10	16	22	10	3	4
27	26	3	7	14	12	8	7	4
28	11	8	5	18	14	11	4	7
29	25	10	22	6	25	14	8	8
30	29	58	14	17	14	17	1	21
31	38	0	5	39	0	5	0	12
Total	734	817	535	545	616	332	242	228

Table 21(b) Timing (Daily): 1994

MyDay	Jan	Feb	Mar	Apr	May	unk
unk						2
01	19	5	6	10	8	0
02	6	9	4	7	8	0
03	11	5	2	6	11	0
04	5	13	1	10	11	0
05	9	9	5	10	10	0
06	18	5	6	7	13	0
07	5	9	3	26	8	0
08	15	5	10	6	8	0
09	8	13	5	14	6	0
10	8	9	6	5	13	0
11	7	2	10	16	8	0
12	21	9	11	4	7	0
13	8	4	10	12	15	0
14	12	3	6	17	18	0
15	4	5	6	29	13	0
16	2	4	10	17	7	0
17	5	12	14	10	11	0
18	9	1	9	14	14	0
19	12	1	5	10	10	0
20	13	5	11	13	12	0
21	7	6	7	8	6	0
22	8	3	5	9	8	0
23	14	9	11	14	12	0
24	17	10	17	8	9	0
25	9	4	14	10	0	0
26	2	4	15	18	0	0
27	17	2	5	17	0	0
28	15	3	8	11	0	0
29	9	0	11	9	0	0
30	17	0	11	9	0	0
31	8	0	7	0	0	0
Total	320	169	251	356	246	0

After the five most intensive first months of the siege (May to September 1993), the intensity of fights obviously declined, the lowest being in February-March 1994 and second lowest in November-December 1993.

- The last table in this section, (Table 22), shows detailed locations of incidents that caused injuries of the patients treated in the War Hospital. Only locations characterized by 10 or more wounded persons are shown. Note that not all individuals listed at a given place were wounded in the same incident; sometimes several incidents occurred at the same location on different moments of time.

Table 22. Place of Incidents (Specific Location for Incidents with 10 or more Victims)

INCIDENT PLACE	Count	Percent
ZALIK	238	4.4
TEKLJA	172	3.2
BLAGAJ	167	3.1
ŠANTIĆEVA	118	2.2
CARINA	92	1.7
CERNICA	91	1.7
MAZOLJICE	64	1.2
RAZVITAK	63	1.2
B. POLJE	52	1.0
MAHALA	47	0.9
SDK	45	0.8
LUKA	26	0.5
VRAPČIĆI	26	0.5
"BEJRUT"	25	0.5
ŠHOVINA	24	0.4
BULEVAR	20	0.4
S. LOGOR	20	0.4
OPINE	20	0.4
RAŠTANI	18	0.3
STARI MOST	17	0.3
GNOJNICE	17	0.3
FEJIĆEVA	16	0.3
D. MAHALA	16	0.3
KOČINE	16	0.3
B. POLJE	15	0.3
BRANA	15	0.3
J. LOGOR	14	0.3
SJEVERNI LOGOR	13	0.2
Socijalno	12	0.2
POZORIŠTE	12	0.2
DUNAV	12	0.2
SJ. LOGOR	11	0.2
ŠANTIĆA	11	0.2
BIJELO POLJE	11	0.2
SUTINA	11	0.2
BRANKOVAC	10	0.2
S. LOGOR	10	0.2
ŠEMOVAC	10	0.2
REMAINING PLACES	493	9.1
UNKNOWN	3323	61.6
TOTAL	5393	100.0

The final conclusion of this report is that the siege of Mostar lasting between 9 May 1993 and 24 May 1994 resulted in high numbers of wounded persons (several thousands) and hundreds of killed persons. So the human consequences of the siege must be seen as very considerable.

ANNEX

1. **RESULTS OF THE KOLMOGOROV-SMIRNOV ONE-SAMPLE TEST**
2. **ESTIMATING THE UNKNOWN OVERALL NUMBER OF WOUNDED PERSONS TREATED IN THE MOSTAR WAR HOSPITAL**

References

1. RESULTS OF THE KOLMOGOROV-SMIRNOV ONE-SAMPLE TEST

The description of the Kolmogorov-Smirnov one-sample test attached below is taken from Chapter 4.3, (pages 51 to 55), from Siegel and Castellan (1988).

The Kolmogorov-Smirnov one-sample test (hereafter K-S test) is a test of goodness-of-fit. The test is concerned with the degree of agreement between the distribution of a set of sample values (observed scores) and some specified theoretical distribution. It determines whether the scores in a sample can reasonably be thought to have come from a population having the theoretical distribution. Thus, the null hypothesis (H_0) is that the sample has been drawn from the specified theoretical distribution.

The test involves specifying the cumulative frequency distribution which would occur under the given theoretical distribution and comparing that with the observed cumulative frequency distribution. The theoretical distribution represents what would be expected under H_0 . The point at which these two distributions, theoretical and observed, show the greatest divergence is determined. Reference to the sampling distribution indicates whether such a large divergence is likely to occur on the basis of chance. That is the sampling distribution indicates the likelihood that a divergence of the observed magnitude would occur if the observations were really a random sample from the theoretical distribution. Critical values of the Kolmogorov-Smirnov test are used to determine the likelihood.

In our study of wounded persons reported in the Mostar War Hospital Books, we compare those patients for whom diagnosis is available (Marked as Wounded) with those for whom diagnosis is unavailable (Not Marked as Wounded). Patients with diagnosis are considered to represent the general population of wounded persons, thus their distributions (e.g. by sex or age) are seen as the theoretical distribution of all wounded persons. Patients without diagnosis are considered to be a sample and their distributions are seen as sample distributions.

Because the sex and age distribution of civilians and soldiers are considerably different, it only makes sense to apply the Kolmogorov-Smirnov test separately for civilians and soldiers. Another reason for applying this test to civilians and militaries is that these two groups are central in this report. Technically the test can be also applied to records reported as the unknown status but the results of this option are meaningless from the perspective of the two major groups investigated here (i.e. civilians and militaries).

Note as well that similarly to (status-specific) age and sex distributions of the WH patients also the timing-of-event distribution can be tested in exactly the same way. However, we argue in the main report (Section 5) that timing is affected (and severely so) by a very unevenly distributed underreporting of diagnosis which was most considerable in the first and last months of the conflict (May-June 1993 and March-May 1994). Moreover, we explained the reasons that caused this phenomenon. Therefore testing the agreement of these two distributions (timing among those Marked and Not Marked as Wounded) makes little sense. Nevertheless the results of testing the timing are included in this Annex as well.

The following variants of the K-S test have been completed and are included in this Annex:

- Variant 1. Sex distribution of civilians: Marked vs. Not Marked as Wounded (Tables A1 and A2)
- Variant 2. Sex distribution of militaries: Marked vs. Not Marked as Wounded (Tables A1 and A2)
- Variant 3. Age distribution of civilians: Marked vs. Not Marked as Wounded (Tables A3 and A4)

- Variant 4. Age distribution of militaries: Marked vs. Not Marked as Wounded (Tables A5 and A6)
- Variant 5. Age distribution of detainees: Marked vs. Not Marked as Wounded (Tables A7 and A8)
- Variant 6. Timing of arrival of civilians: Marked vs. Not Marked as Wounded (Tables A9 and A10)
- Variant 7. Timing of arrival of militaries: Marked vs. Not Marked as Wounded (Tables A11 and A12)
- Variant 8. Timing of arrival of detainees: Marked vs. Not Marked as Wounded (Tables A13 and A14)

The results of the test are included below in Tables A1 to A14.

The hypothesis tested (Ho) is the following:

Ho: The observed distribution of Marked as Wounded cases (by age or sex or timing-of-arrival) is the same as that of cases Not Marked as Wounded

The hypothesis is tested separately for civilians and militaries.

The decision regarding the Ho is **positive** for the age and sex distributions of civilians, militaries, and also detainees (variants 1, 2, 3, 4 and 5; Tables A2, A4, A6, and A8), i.e. there are no reasons to reject the hypothesis that the observed distribution of patients Not Marked as Wounded is **the same as** the theoretical distribution of patients Marked as Wounded. So, in every case the agreement of these two distributions has been statistically confirmed.

The decision regarding the Ho is **negative** for the timing-of-arrival distributions of civilians and militaries (variants 6, 7 and 8; Tables A10, A12 and A14), i.e. there are reasons to reject the hypothesis that the observed distribution of patients Not Marked as Wounded is **the same as** the theoretical distribution of patients Marked as Wounded. So, in every case the disagreement of these two distributions has been statistically confirmed.

Table A1. Observed Sex Distribution of Patients Marked and Not Marked as Wounded. Input Data for the Kolmogorov-Smirnov Test of Goodness-Of-Fit. Variants 1 (civilians) and 2 (militaries)

Category	Sex	Diagnosis		Total	Category	Sex	Diagnosis		Total
		No	Yes				No	Yes	
Civilians	Men	204	418	622	Civilians	Men	53.54	51.04	51.83
	Women	162	342	504		Women	42.52	41.76	42.00
	Unk/Unav	15	59	74		Unk/Unav	3.94	7.20	6.17
Militaries	Men	438	968	1,406	Militaries	Men	96.69	96.22	96.37
	Women	11	23	34		Women	2.43	2.29	2.33
	Unk/Unav	4	15	19		Unk/Unav	0.88	1.49	1.30
Unk Status	Men	1,436	536	1,972	Unk Status	Men	71.98	76.46	73.15
	Women	457	139	596		Women	22.91	19.83	22.11
	Unk/Unav	102	26	128		Unk/Unav	5.11	3.71	4.75
Detainees	Men	15	23	38	Detainees	Men	100.00	100.00	100.00
Total	All	2,844	2,549	5,393	Total	All	100.00	100.00	100.00

Table A5. Observed Age Distribution of Patients Marked and Not Marked as Wounded. Used as Input Data for the Kolmogorov-Smirnov Test of Goodness-Of-Fit, Variant 4: Militaries

Status	Age	Diagnosis		Total	Status	Age	Diagnosis		Total
		No	Yes				No	Yes	
Militaries	10-14	0	2	2	Militaries	10-14	0.00	0.20	0.14
	15-19	29	54	83		15-19	6.40	5.37	5.69
	20-24	81	192	273		20-24	17.88	19.09	18.71
	25-29	87	187	274		25-29	19.21	18.59	18.78
	30-34	64	182	246		30-34	14.13	18.09	16.86
	35-39	58	128	186		35-39	12.80	12.72	12.75
	40-44	49	101	150		40-44	10.82	10.04	10.28
	45-49	25	44	69		45-49	5.52	4.37	4.73
	50-54	15	29	44		50-54	3.31	2.88	3.02
	55-59	2	15	17		55-59	0.44	1.49	1.17
	60-64	1	4	5		60-64	0.22	0.40	0.34
	65+	0	1	1		65+	0.00	0.10	0.07
Unk	42	67	109	Unk	9.27	6.66	7.47		
Total	all	453	1,006	1,459	Total	all	100.00	100.00	100.00

Table A6. Results of the Kolmogorov-Smirnov Test of Goodness-Of-Fit for Age Distributions of Patients Marked and Not Marked as Wounded. Variant 4: Militaries

Status	Age	Cumulative Distribution		Total	Difference With-No	Abs Diff With-No	Sample Size (N)	Significance (Alfa)	Critical Value (Abs Diff)	Decision on Ho
		No Diagnosis	With Diagnosis							
Militaries	10-14	0.00	0.20	0.14	-0.0020	0.0020				
	15-19	6.40	5.57	5.83	0.0084	0.0084				
	20-24	24.28	24.65	24.54	-0.0037	0.0037				
	25-29	43.49	43.24	43.32	0.0025	0.0025				
	30-34	57.62	61.33	60.18	-0.0372	0.0372	453	0.01	0.0766	retain Ho
	35-39	70.42	74.06	72.93	-0.0364	0.0364				
	40-44	81.24	84.10	83.21	-0.0286	0.0286				
	45-49	86.75	88.47	87.94	-0.0171	0.0171				
	50-54	90.07	91.35	90.95	-0.0129	0.0129				
	55-59	90.51	92.84	92.12	-0.0234	0.0234				
	60-64	90.73	93.24	92.46	-0.0251	0.0251				
	65+	90.73	93.34	92.53	-0.0261	0.0261				
Unk	100.00	100.00	100.00	0.0000	0.0000					
Total	all									

Table A7. Observed Age Distribution of Patients Marked and Not Marked as Wounded. Input Data for the Kolmogorov-Smirnov Test of Goodness-Of-Fit, Variant 5: Detainees

Status	Age	Diagnosis		Total	Status	Age	Diagnosis		Total
		No	Yes				No	Yes	
Detainees	20-24	2	4	6	Detainees	20-24	13.33	17.39	15.79
	25-29	2	3	5		25-29	13.33	13.04	13.16
	30-34	4	2	6		30-34	26.67	8.70	15.79
	35-39	0	3	3		35-39	0.00	13.04	7.89
	40-44	1	4	5		40-44	6.67	17.39	13.16
	45-49	1	1	2		45-49	6.67	4.35	5.26
	50-54	1	3	4		50-54	6.67	13.04	10.53
	65+	1	0	1		65+	6.67	0.00	2.63
	Unk	3	3	6		Unk	20.00	13.04	15.79
	Total	all	15	23		38	Total	all	100.00

Table A8. Results of the Kolmogorov-Smirnov Test of Goodness-Of-Fit for Age Distributions of Patients Marked and Not Marked as Wounded. Variant 5: Detainees

Status	Age	Cumulative Distribution		Total	Difference With-No	Abs Diff With-No	Sample Size (N)	Significance (Alfa)	Critical Value (Abs Diff)	Decision on Ho
		No Diagnosis	With Diagnosis							
Detainees	20-24	13.33	17.39	15.79	-0.0406	0.0406	15	0.01	0.4040	retain Ho
	25-29	26.67	30.43	28.95	-0.0377	0.0377				
	30-34	53.33	39.13	44.74	0.1420	0.1420				
	35-39	53.33	52.17	52.63	0.0116	0.0116				
	40-44	60.00	69.57	65.79	-0.0957	0.0957				
	45-49	66.67	73.91	71.05	-0.0725	0.0725				
	50-54	73.33	86.96	81.58	-0.1362	0.1362				
	65+	80.00	86.96	84.21	-0.0696	0.0696				
	Unk	100.00	100.00	100.00	0.0000	0.0000				
Total	all									

Table A9. Observed Timing of Arrival at the War Hospital for Patients Marked and Not Marked as Wounded. Input Data for the Kolmogorov-Smirnov Test of Goodness-Of-Fit. Variant 6: Civilians

Year of Death	Status	Month of Death	Diagnosis		Total	Year of Death	Status	Month of Death	Diagnosis		Total
			No	Yes					No	Yes	
1993	civilians	05	2	2	4	1993	civilians	05	0.52	0.24	0.33
1993	civilians	06	6	58	64	1993	civilians	06	1.57	7.08	5.33
1993	civilians	07	38	148	186	1993	civilians	07	9.97	18.07	15.50
1993	civilians	08	100	164	264	1993	civilians	08	26.25	20.02	22.00
1993	civilians	09	69	180	249	1993	civilians	09	18.11	21.98	20.75
1993	civilians	10	52	83	135	1993	civilians	10	13.65	10.13	11.25
1993	civilians	11	20	49	69	1993	civilians	11	5.25	5.98	5.75
1993	civilians	12	12	33	45	1993	civilians	12	3.15	4.03	3.75
1994	civilians	01	24	75	99	1994	civilians	01	6.30	9.16	8.25
1994	civilians	02	24	24	48	1994	civilians	02	6.30	2.93	4.00
1994	civilians	03	21	3	24	1994	civilians	03	5.51	0.37	2.00
1994	civilians	04	13		13	1994	civilians	04	3.41	0.00	1.08
Total	civilians	All	381	819	1200	Total	civilians	All	100.00	100.00	100.00

Table A10. Results of the Kolmogorov-Smirnov Test of Goodness-Of-Fit for Age Distributions of Patients Marked and Not Marked as Wounded. Variant 6: Civilians

Status	Month of Death	Cumulative Distribution		Total	Difference With-No	Abs Diff With-No	Sample Size (N)	Significance (Alfa)	Critical Value (Abs Diff)	Decision on Ho
		No Diagnosis	With Diagnosis							
civilians	05	0.52	0.24	0.33	0.0028	0.0028	381	0.01	0.0835	reject Ho
civilians	06	2.10	7.33	5.67	-0.0523	0.0523				
civilians	07	12.07	25.40	21.17	-0.1332	0.1332				
civilians	08	38.32	45.42	43.17	-0.0710	0.0710				
civilians	09	56.43	67.40	63.92	-0.1097	0.1097				
civilians	10	70.08	77.53	75.17	-0.0745	0.0745				
civilians	11	75.33	83.52	80.92	-0.0819	0.0819				
civilians	12	78.48	87.55	84.67	-0.0907	0.0907				
civilians	01	84.78	96.70	92.92	-0.1193	0.1193				
civilians	02	91.08	99.63	96.92	-0.0856	0.0856				
civilians	03	96.59	100.00	98.92	-0.0341	0.0341				
civilians	04	100.00	100.00	100.00	0.0000	0.0000				
civilians	All	-	-	-	-	-				

Table A11. Observed Timing of Arrival at the War Hospital for Patients Marked and Not Marked as Wounded. Input Data for the Kolmogorov-Smirnov Test of Goodness-Of-Fit. Variant 7: Militaries

Year of Death	Status	Month of Death	Diagnosis			Year of Death	Status	Month of Death	Diagnosis		
			No	Yes	Total				No	Yes	Total
1993	militaries	05	20	14	34	1993	militaries	05	4.42	1.39	2.33
1993	militaries	06	46	93	139	1993	militaries	06	10.15	9.24	9.53
1993	militaries	07	43	260	303	1993	militaries	07	9.49	25.84	20.77
1993	militaries	08	88	149	237	1993	militaries	08	19.43	14.81	16.24
1993	militaries	09	98	230	328	1993	militaries	09	21.63	22.86	22.48
1993	militaries	10	47	99	146	1993	militaries	10	10.38	9.84	10.01
1993	militaries	11	24	42	66	1993	militaries	11	5.30	4.17	4.52
1993	militaries	12	25	28	53	1993	militaries	12	5.52	2.78	3.63
1994	militaries	01	22	55	77	1994	militaries	01	4.86	5.47	5.28
1994	militaries	02	15	31	46	1994	militaries	02	3.31	3.08	3.15
1994	militaries	03	18	2	20	1994	militaries	03	3.97	0.20	1.37
1994	militaries	04	7	3	10	1994	militaries	04	1.55	0.30	0.69
Total	militaries	All	453	1006	1459	Total	militaries	All	100.00	100.00	100.00

Table A12. Results of the Kolmogorov-Smirnov Test of Goodness-Of-Fit for Age Distributions of Patients Marked and Not Marked as Wounded. Variant 7: Militaries

Status	Month of Death	Cumulative Distribution			Total	Difference With-No	Abs Diff With-No	Sample Size (N)	Significance (Alfa)	Critical Value (Abs Diff)	Decision on Ho
		No	Diagnosis	With Diagnosis							
militaries	05	4.42	1.39	2.33	0.0302	0.0302					
militaries	06	14.57	10.64	11.86	0.0393	0.0393					
militaries	07	24.06	36.48	32.63	-0.1242	0.1242	453	0.01	0.0766	reject Ho	
militaries	08	43.49	51.29	48.87	-0.0780	0.0780					
militaries	09	65.12	74.16	71.35	-0.0903	0.0903					
militaries	10	75.50	84.00	81.36	-0.0850	0.0850					
militaries	11	80.79	88.17	85.88	-0.0738	0.0738					
militaries	12	86.31	90.95	89.51	-0.0464	0.0464					
militaries	01	91.17	96.42	94.79	-0.0525	0.0525					
militaries	02	94.48	99.50	97.94	-0.0502	0.0502					
militaries	03	98.45	99.70	99.31	-0.0125	0.0125					
militaries	04	100.00	100.00	100.00	0.0000	0.0000					
militaries	All	-	-	-	-	-					

Table A13. Observed Timing of Arrival at the War Hospital for Patients Marked and Not Marked as Wounded. Input Data for the Kolmogorov-Smirnov Test of Goodness-Of-Fit. Variant 8: Detainees

Year of Death	Status	Month of Death	Diagnosis			Year of Death	Status	Month of Death	Diagnosis		
			No	Yes	Total				No	Yes	Total
1993	detenees	07	3	4	7	1993	detenees	07	20.00	17.39	18.42
1993	detenees	08	9	12	21	1993	detenees	08	60.00	52.17	55.26
1993	detenees	09		5	5	1993	detenees	09	0.00	21.74	13.16
1993	detenees	10	1	1	2	1993	detenees	10	6.67	4.35	5.26
1993	detenees	11	1	1	2	1993	detenees	11	6.67	4.35	5.26
1993	detenees	12	1		1	1993	detenees	12	6.67	0.00	2.63
Total	detenees	All	15	23	38	Total	detenees	All	100.00	100.00	100.00

Table A14. Results of the Kolmogorov-Smirnov Test of Goodness-Of-Fit for Age Distributions of Patients Marked and Not Marked as Wounded. Variant 8: Detainees

Status	Month of Death	Cumulative Distribution			Total	Difference With-No	Abs Diff With-No	Sample Size (N)	Significance (Alfa)	Critical Value (Abs Diff)	Decision on Ho
		No	Diagnosis	With Diagnosis							
detenees	07	20.00	17.39	18.42	0.0261	0.0261					
detenees	08	80.00	69.57	73.68	0.1043	0.1043					
detenees	09	80.00	91.30	86.84	-0.1130	0.1130	15	0.01	0.4040	reject Ho	
detenees	10	86.67	95.65	92.11	-0.0899	0.0899					
detenees	11	93.33	100.00	97.37	-0.0667	0.0667					
detenees	12	100.00	100.00	100.00	0.0000	0.0000					
detenees	All	-	-	-	-	-					

2. ESTIMATING THE UNKNOWN OVERALL NUMBER OF WOUNDED PERSONS TREATED IN THE MOSTAR WAR HOSPITAL

The estimation method is explained here on the example of the variable Wound Type (i.e. cause of wounding) for patients registered with a specific diagnosis in relation to those registered without any diagnosis. The estimation method is based on the proportion (p) of patients reported under a given cause of wounding. The estimator of this proportion is obtained in our study from the scores of patients reported with a specific diagnosis available (comp Table 16, Section 6; see also Table A15 below).

Table A15. Adjustment of the Minimum Numbers of Wounded Persons According to the Observed Distribution of Wound Type (comp Table 16 Section 6)

Wound Type	Count	Percent	Count	Percent	Confidence Interval	
	(Observed)	(Observed)	(Adjusted)	(Adjusted)	Lower Limit	Upper Limit
Shelling	2,088	81.9	4,418	81.9	4,377	4,458
Gunshots	457	17.9	967	17.9	927	1,007
Shelling or Gunshots	3	0.1	6	0.1	3	10
Beaten	1	0.0	2	0.0	0	4
Unknown	2,844	na	na	na	na	na
Missing names/pages	474	na	na	na	na	na
Total	5,867	100.0	5,393	100	5,307	5,479

Three (non-zero) proportions were obtained from the observed sample of 2,549 patients with diagnosis available (i.e. with known causes of wounding): 81.3, 17.9 and 0.1 percent. We further assumed that the estimated proportions hold true for the entire (unknown) population of wounded persons. Based on the records from the War Hospital Books, another 2,844 additional persons should be included in the estimate of the overall total of the wounded. In the next step, we therefore applied these proportions to the sample of patients without a specific cause of wounding available (2,844; this total was multiplied by each of these three proportions). For example, 2,844 *81.9% resulted in an *additional* number of 2,330 victims of shelling. Together with the *observed* number of shelling victims (2,088), the overall total for shelling equals 4,418 individuals (2,088+2,330). We proceeded in this way in the case of this particular variable (i.e. cause of wounding) and also of all other variable discussed in Section 6 Final Results.

Table A15 also includes the confidence intervals associated with the estimated unknown overall numbers of wounded persons according to the cause of wounding. For victims of shelling, for example, the specific point estimate is 4,418 persons, with a 95% confidence interval from 4,377 to 4,458 individuals.

The same type of estimated overall numbers of wounded persons and the related confidence intervals are shown in Tables 17 and 19 in Section 6 for the wounded according to the status (civilians versus military) and ethnicity.

The theoretical basis for the above estimation procedures is summarized below:

$$\hat{p} = \frac{X}{n} - \text{Proportion of distinguished (X-value) elements in an n-element sample; an estimator of the unknown proportion } p \text{ of these elements in the entire population}$$

Statistic $\hat{p} = \frac{X}{n}$ has the binomial distribution with the mean $E(\hat{p}) = p$ and standard deviation $D(\hat{p}) = \sqrt{\frac{p(1-p)}{n}}$. For big samples, the statistic $\hat{p} = \frac{X}{n}$ is approximated by the normal distribution with the same parameters.

The confidence interval for statistic $\hat{p} = \frac{X}{n}$ can be therefore estimated using the following formula:

$$P\left(\hat{p} - u_{\alpha} \sqrt{\frac{p(1-p)}{n}} < p < \hat{p} + u_{\alpha} \sqrt{\frac{p(1-p)}{n}}\right) \cong 1 - \alpha$$

Based on the above formula and the fact that the number of distinguished elements can be obtained from the proportion equation $\hat{p} = \frac{X}{n}$ as: $X = \hat{p} n$, the formula of the confidence interval for X can be easily derived from that for \hat{p} :

$$P\left(n \hat{p} - u_{\alpha} \sqrt{np(1-p)} < X < n \hat{p} + u_{\alpha} \sqrt{np(1-p)}\right) \cong 1 - \alpha$$

■

References:

- F.J. Gravetter and L.B. Wallnau, 2000, *Statistic for Behavioral Sciences*. Wadsworth Thomson Learning. Australia, Canada, Denmark etc. (5th edition).
- G.K. Kanji, 1999, *100 Statistical Tests*. New Edition. Sage Publications. London, Thousand Oaks, New Delhi.
- J. Jozwiak and J. Podgorski, 1997, *Statystyka od Podstaw*. Polskie Wydawnictwo Ekonomiczne. Warsaw. (5th edition).
- S. Siegel and N.J. Castellan, 1988, *Nonparametric Statistics for the Behavioural Sciences*. McGraw-Hill Book Company. International Editions, Statistics Series. New York, St. Louis, San Francisco etc. (2nd Edition).

**KILLED PERSONS RELATED TO
THE SIEGE OF MOSTAR:
A STATISTICAL ANALYSIS OF THE
MOSTAR WAR HOSPITAL BOOKS
AND THE MOSTAR DEATH REGISTRIES**

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19 January 2006

**AN EXPERT REPORT PREPARED FOR THE
CASE OF PRLIĆ ET AL. (IT-04-74)**



1. BACKGROUND

The main objective of the activities summarized in this report was to obtain reliable statistics on deaths caused by armed incidents during the siege of Mostar from May 1993 to (around) April 1994, and to analyze the patterns inherent in these deaths (by age, sex, military status, time, geographic area etc.). The report was requested from the Demographic Unit by the Prosecution team preparing the case of PRLIĆ et al. (IT-04-74).

The report focuses on the killed persons from the area of East Mostar. The area is much smaller than the pre-war municipality of Mostar. East Mostar was located on the east side of Neretva river, including a narrow strip of buildings on the west bank, where the most Bosnian Muslims moved to in result of the HVO actions against Non-Croats on 9-10 May 1993. The Muslim enclave in East Mostar was separated from the rest of the town by the HVO-ABH confrontation line running north and south along the Bulevar and Šantićeva Street, to the west of the Neretva river. The enclave was surrounded by the Croat forces at the north and south, with Bosnian Serb forces to the east.

Sources that contain information about specific places of death within East Mostar are infrequent. The most existing sources include place of death reported as a municipality, (such as the pre-war Mostar), which makes it impossible to distinguish between deaths from East Mostar versus outside it. Two sources could be used for this type of analysis, however, the Mostar War Hospital Books and the Mostar Death Registries. This report contains results of a statistical analysis of these two sources.

Records from the Mostar War Hospital Books (hereafter: WH) include both the killed and wounded persons, altogether almost 6,000 entries of which 472 are of killed persons, from the territory of East Mostar and the period from 9 May 1993 to 25 May 1994. The War Hospital records were collected by the Prosecution investigation team and copies of five original War Hospital Protocol Books are registered with the Evidence Unit. A detailed discussion of this source is available from the expert report on wounded persons – victims of the siege of Mostar.¹

Records on deaths reported in the Mostar Death Registries (hereafter: DR) were also collected by the Prosecution investigation team and submitted to the Evidence Unit. In total ten registration books were submitted: from Bijelo Polje, Blagaj (2), Dreznica, Jablanica, and Mostar (5). The books contain jointly 1,383 records that cover deaths that occurred in the area of in total 11 municipalities in Bosnia (most of them from the Herceg-Bosna region including Mostar; out of 862 deaths in Bosnia, 853 deaths were in Herceg-Bosna), a few deaths from outside Bosnia (4) and a relatively high number of deaths from an unknown location (517). Almost all deaths occurred during the Bosnian conflict period (1992-95; 1,370). The few remaining deaths are either from outside of the conflict period or have an unknown date of death. Obviously, this source contains many more records than only those related to the siege of Mostar. For this analysis a sample of relevant records was extracted from the Mostar Death Registries according to the criteria of relevance to the siege.

In order to distinguish between civilians and soldiers, for this report we also used the Military Records of Soldiers and other Military Personnel Killed during the Bosnian war. These lists

¹ E. Tabeau, 2006, "Wounded Persons Related to the Siege of Mostar: A Statistical Analysis of the Mostar War Hospital Books." An expert report prepared for the PRLIĆ case (IT-04-74).

cover completely all three armies (ABH, HVO and VRS) and the entire war period (April 1992 to December 1995), and were provided to the OTP by the (FBH and RS) Ministries of Defence. The total number of records in the three lists is about 48,500 (about 28,000 from ABH, 14,000 from VRS, and 6,500 from HVO). Also these lists are available from the Evidence Unit.

This report comprises the following sections:

1. Background
2. The Mostar Death Registries: Summary of the Source
3. Siege-Related Deaths Reported Independently in the Mostar War Hospital Books and Mostar Death Registries
4. Siege-Related Deaths Reported in the Two Sources Merged Together
5. Final Conclusions

The Herceg-Bosna conflict is understood in this report as the facts and events referred to in the Indictment of the case IT-04-74, that occurred on the territory of eight Herceg-Bosna municipalities (Čapljina, Gornj Vakuf, Jablanica, Ljubuški, Mostar, Prozor, Stolac, and Vareš) in the time period from November 1991 to (around) April 1994). The siege of Mostar is an episode of the conflict in Herceg-Bosna that took place in the town of Mostar and its surroundings between 9 May 1993 and 12 April 1994, when an agreement was signed by the Herceg-Bosna/HVO representatives and the Muslim side in Split, Croatia.

2. THE MOSTAR REGISTRIES OF DEATH: SUMMARY OF THE SOURCE

The Death Registries of the municipality of Mostar, (hereafter: DR), were (and still are) maintained by the legal administration organs of Bosnia-Herzegovina in Mostar. The death registration was (and is) a part of the broader vital events registration system concerning not only deaths but also births, marriages and marriage dissolution. This kind of systems is common in almost every country in the world.

The basic principle of how the death registration system operates is the following. Shortly after the occurrence of death, statistical agencies have to take a record of it, based on the compulsory notification from the family of the deceased. For statistical purposes, every death is described in terms of date, place, and cause of death. Personal details, such as the first and family names, date and place of birth, place of residence, education, profession etc. are reported as well. (Socio-economic characteristics are not always provided, however). A physician, other trained medical personnel, or a coroner must declare the cause of death as a medical category on the basis of the International Classification of Diseases and Conditions Leading to Death (ICD) provided by the World Health Organisation. (Currently, the 10th revision of the classification is used throughout the world, before 1991 it was the 9th Revision). The ICD allows us to distinguish between diseases, or fatal health conditions, and external causes of death (i.e. accidents and violent deaths). These standards were also applied in the former Yugoslavia, including Bosnia and Herzegovina and the Mostar municipality as part of it. However, during the difficult times of the 1990s conflict, statistical and administration authorities in the municipalities were not always in the position to achieve a satisfactory level of death reporting by the citizens. The conflict had a negative effect on the quality of death registration from this period.

Already since 1993, the municipality of Mostar was practically divided in two larger administrative areas: Mostar West and Mostar East, according to the division of the city as a result of the conflict. Starting in 1993 thus, the Croat and Bosniak authorities kept their vital events registration separately; each authority only in their area of responsibility. Since 1995

this division was official. Each of the two larger administrative areas were sub-divided into a number of smaller (newly created) municipalities. Around the fall of 1997, the FBH part of Mostar (studied in this report) was officially divided in six new municipalities. Three municipalities were controlled by the Bosniaks (Mostar Stari Grad, Mostar Sjever and Mostar Jug) and three by the Croats (Mostar Jugozapad, Mostar Jugoistok, and Mostar Zapad). The status of the seventh extremely small area of Mostar Central District, (predominantly Muslim before the war), was less straightforward being more a special area than a regular municipality.

The Death Registries used in our study basically cover the administrative area of East Mostar, equivalent to the area of the three new municipalities controlled by the Bosniak authorities. Deaths are reported in the period of the conflict in Bosnia and Herzegovina (1992-95), with an exception of a very few deaths reported in 1991, 1996 and 1998, or with unknown date of death (a total of 8 records). The registries were provided to the OTP in February 2001, by the AID agency from Sarajevo, in the form (paper copies) as they were kept by the administration authorities of Mostar. The Death Registries kept by the municipal boards of the HZHB from 1993 onward have not been used in our study. The following registries were provided from the area of Mostar (with a total number of pages equal to 534):

1. Death Register - Mostar I (100 pages)
2. Death Register - Mostar II (100 pages)
3. Death Register - Mostar III (65 pages)
4. Death Register - Mostar k-3 (25 pages)
5. Death Register - Blagaj / municipality of Mostar (42 pages)
6. Death Register - Blagaj / municipality of Mostar (43 pages)
7. Death Register - Drežnica / municipality of Mostar (46 pages)
8. Death Register - Bijelo Polje / municipality of Mostar (33 pages)
9. Death Register - Mostar / registers (70 pages)

In addition to the Mostar registries listed above, also the Death Registry from Jablanica (a municipality bordering Mostar Sjever) was provided which mainly contained records of deaths from Jablanica, (not exclusively though; some records were related to other areas including Mostar). The Jablanica Death Register was included in this study as well.

The information available from the Death Registries was computerised (partly by the OTP Investigations Team, partly by the Demographic Unit) and a searchable database was established. The database contains the following items; (except of “East Mostar” all items are original):

Table 1. Overview of Data Items Available from the Death Registries

Data Items	Data type	Description
No	Number	ID given in the Death Register
FN	Text	First name
FaN	Text	Father's name
LN	Text	Surname
Sex	Text	Sex: 1 – male, 2 – female
DoB	Text	Date of birth
PoB	Text	Place of birth
PoR	Text	Place of residence
MoR	Text	Municipality of residence
JMBG	Text	Personal identification number

DoD	Text	Date of death
PoD	Text	Place of death
CoD	Text	Cause of death
East Mostar	Yes/No	Is the location in East Mostar?
Source	Text	Which Death Register

The item “East Mostar” was created by investigators of the Prosecution investigation team on the basis of studying the individual places of death reported in the Death Registries and checking their location on maps and confirming this with witnesses of the conflict. Only a limited number of places could be classified in this way as “East Mostar”; a number of places could not. So the places not marked as “East Mostar” are not necessarily from outside of East Mostar. Although the “Not East Mostar” category mainly refers to the records of deaths from outside East Mostar, the records from East Mostar which for various reasons have not been marked as “East Mostar” are contained under this category as well.

The quality of the personal data was reasonably good, in the majority of cases first, last and fathers’ names were included, as well as dates and places of birth and death. In a few cases the personal identification number (JMBG) was also reported. The information about the death was more deficient, especially about the causes of death. This was despite of the fact that a medical certificate was normally required to register a death and report the date, place and cause of death. In many cases, this requirement could not be fulfilled, especially in 1993 when the intensity of the siege made it hardly possible to the authorities to send doctors to every single death case that occurred in Mostar.

There were 1,383 records in total in all 10 Registries, where 63 came from the Bijelo Polje registers; 143 from Blagaj registers; 77 from Drežnica; 306 from Jablanica and 794 from Mostar registers.

In the remainder of this section we discuss the coverage and data quality issues. We also formulate the criteria of relevance of records from the Death Registries to the siege of Mostar. Note that such criteria are not needed for the War Hospital records, which only concern deaths from the East Mostar area.

Below we include an overview of major data deficiencies in the Death Registries. In this overview all reported deaths are included, also those from outside East Mostar and even outside the Herceg-Bosna area. Out of all death records, a selection is eventually made of records relevant to the siege period (May 1993 - April 1994) and East Mostar area (hereafter “the siege of Mostar” or “the siege”).

Note that in this section we pay attention to the records relevant to the entire area of Herceg-Bosna and the period from November 1991 to April 1994. The siege of Mostar is seen here as an episode of the Herceg-Bosna conflict.

2.1 A majority of deaths reported in the Death Registries occurred in the Herceg-Bosna municipalities (853 out of 1,383 deaths). The number of deaths reported in the Mostar municipality alone is 581. In addition to this, a few records are of deaths from outside the Herceg-Bosna area (9) or even outside Bosnia and Herzegovina (4). A large number of records have no place of death reported (517). Obviously, the total of 1,383 reported deaths cannot be taken as war-related deaths from HB; also because not all these deaths occurred in the conflict period.

2.2 Dates of death basically cover the period from November 1991 to December 1995, with a few dates from 1996 (3), 1998 (1) or unknown (4); the dates are broader than the period of the Herceg-Bosna conflict. Deaths consistent with the Herceg-Bosna conflict period comprise 1,316 individuals, and 1,140 deaths are from 1993 alone. Not all those deaths occurred in the HB area, however.

2.3 A high number of deaths have no cause of death reported (1,251 out of 1,383). A vast majority of deaths with unknown causes occurred in 1993 (1,065 out of 1,251), and 573 of those 1,065 also in the indictment area. Further, exactly 132 records include cause of death. Among the reported causes, the violent war-related causes are the largest category (89; killed/killed in action, shelling, gunshots, wounding). The natural causes (37) are the second largest. Noteworthy, several natural causes could have happened because of lack of or insufficient health services available at the time of conflict. No distinction is possible, however, between the natural causes from this point of view.

2.4 Based on the observations from paragraphs 2.1 to 2.3 and the necessity of possessing a full list of personal details about every victim we formulated the criteria of records' validity. As a minimum, the availability of the following items was required for a record to become a valid one in this study:

- all names (first, family, father's)
- year of birth
- year of death
- relevance to the indictment period
- relevance to the indictment area
- not being duplicated

In the first step, the time and area validity was defined for the entire conflict in Herceg-Bosna.² All valid records were then searched through in the next step in order to select records related to the siege of Mostar.

Note as well that no restriction was imposed as to the availability of the cause of death. Studying causes of death will be done later in the stage of producing final statistics on siege-related deaths of East Mostar, where a distinction will be made between minimum number of war-related deaths and a more realistic estimate of the overall number of war-related deaths and their causes.

Table 2 below summarises the results of applying the validity requirements onto the records reported in the ten Death Registries. Out of all 1,383 records, only 773 records can be seen as relevant and valid to the conflict in Herceg-Bosna. All other records must be excluded from the analysis as either too poor or irrelevant. The largest group of excluded records is because of deaths coming from an unknown location or from outside of the indictment area (a total of 525; alone or in combination with other deficiencies). Exactly 53 records are excluded because the month of death is either earlier than November in 1991 or later than April 1994. 10 records are excluded as duplicates (alone or in combination with other deficiencies; together with 1 record with an unrelated YoD, the total is 54 records excluded; see Table 2).

Among the excluded records, some 517 have an unknown place of death. Of these 517 entries, (after excluding duplicates) exactly 484 records remain with dates of death in the siege-of-Mostar period (May 1993 to April 1994). These 484 records might be potentially

² The territory of eight Herceg-Bosna municipalities (Čapljina, Gornj Vakuf, Jablanica, Ljubuški, Mostar, Prozor, Stolac, and Vareš) and the time period from November 1991 to April 1994).

relevant to the siege of Mostar but have to be excluded from the analysis due to the missing place of death. This loss of information is very considerable.

Table 2. Criteria of Records' Relevance to the Indictment Period and Area

Validity	Duplicate	Surname	FirstName	FaName	YoB	YoD	IndictArea	Total
Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	773
No*	No	Yes	Yes	Yes	Yes	No	Yes	54
No	No	Yes	Yes	Yes	Yes	Yes	No	375
No	No	Yes	Yes	Yes	Yes	No	No	1
No	No	Yes	Yes	Yes	No	Yes	Yes	4
No	No	Yes	Yes	Yes	No	Yes	No	4
No	No	Yes	Yes	Yes	No	No	Yes	1
No	No	Yes	Yes	No	Yes	Yes	Yes	14
No	No	Yes	Yes	No	Yes	Yes	No	107
No	No	Yes	Yes	No	No	Yes	Yes	1
No	No	Yes	Yes	No	No	Yes	No	13
No	No	Yes	Yes	No	No	No	No	1
No	No	Yes	No	Yes	Yes	Yes	No	2
No	No	Yes	No	Yes	No	Yes	No	2
No	No	Yes	No	No	Yes	Yes	No	2
No	No	No	Yes	Yes	Yes	Yes	No	4
No	No	No	Yes	Yes	No	Yes	No	1
No	No	No	Yes	No	Yes	Yes	No	1
No	No	No	No	No	No	Yes	Yes	1
No	No	No	No	No	No	Yes	No	12
No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	5
No	Yes	Yes	Yes	Yes	Yes	Yes	No	1
No	Yes	Yes	Yes	Yes	No	Yes	No	1
No	Yes	Yes	Yes	No	Yes	Yes	No	3
Total								1,383

Note: "No" on YoD stands for records rejected due to the year or month of death, unrelated to the Indictment period (MoD <11 in 1991, MoD >4 in 1994)

2.5 All in all, the number of deaths (from all causes; including the few natural deaths) reported within the Indictment area and Indictment period was 773 (Tables 2 and 3). Most of these deaths were most likely conflict-related.³

Table 3. Overview of Valid Records by Municipality of Death and Relevance to the Siege in East Mostar

MoD Name	East Mostar		Total
	No/Unk	Yes	
Čapljina	11	0	11
Jablanica	227	0	227
Mostar	135	389	524
Prozor	5	0	5
Stolac	6	0	6
Total	384	389	773

³ For the 773 Indictment-related deaths, the following causes were actually reported:

Violent war-related: 85 (killed, gunshots, wounded, shelling)
 Violent possibly war-related: 3 (murder, accident, suicide)
 Natural deaths: 18
 Unknown causes: 672

The total given for the Mostar municipality is 524 records (see Tables 3 and 4), out of which only 373 records fall under the strict requirement of being relevant to the siege of Mostar (i.e. death occurred in the East Mostar in the period from May 1993 to April 1994).

Table 4. Overview of Valid Records from Mostar by Date and Place of Death: Mostar vs. East Mostar

YearD	MonthD	East Mostar		Total
		No/Unk	Yes	
1991	11	1		1
1991	12	1		1
1992	1	1		1
1992	2	4		4
1992	3	2		2
1992	4		1	1
1992	5	2	3	5
1992	6	5	2	7
1992	7	4	1	5
1992	8	1	1	2
1992	10	1		1
1992	11	3	1	4
1992	12	1	1	2
1993			1	1
1993	1	2	1	3
1993	3	5	2	7
1993	4	11	2	13
1993	5	5	19	24
1993	6	6	18	24
1993	7	24	48	72
1993	8	15	78	93
1993	9	10	74	84
1993	10	11	40	51
1993	11	7	41	48
1993	12	2	33	35
1994	1	6	5	11
1994	2	3	11	14
1994	3	1	4	5
1994	4	1	2	3
Total	1993-94	91	373	464
Total	1991-94	135	389	524

Notes:

1. "Not/Unk" relates to records that were not from East Mostar or could not be assigned to East Mostar
2. The term "Total 1993-94" covers only the siege period from May 1993 to April 1994

The **373** records reported as in the East Mostar and falling under the siege period (May 1993-April 1994) are considered as relevant valid records to be used in the analysis of victims of the siege.⁴

⁴ The end of the siege period is consequently mentioned throughout this report as April 1994, and no records are reported for May 1994 in the Death Registries. The records from the Mostar War Hospital Books (discussed in the next section) do include, however, some deaths from the first two decades of May 1994 which are reported too. The number of these deaths is very low (2 out of 472).

3. SIEGE-RELATED DEATHS REPORTED INDEPENDENTLY IN THE WAR HOSPITAL BOOKS AND DEATH REGISTRIES

In this section a comparison is made of the siege-related death records reported in the Mostar Death Registries and in the Mostar War Hospital Books. The two sources are considered independent in this section, to study how large their agreement is. It is, however, very likely that the two sources report a large group of the same records (overlapping records). Also it is certain that each of the sources contains unique records that are not included in the other one. In the final analysis in Section 4, we produce statistics based on the merged sources: Mostar Death Registries, Mostar War Hospital Books and Military Records of Fallen Soldiers (ABH and VHO), in an attempt to estimate the actual number of victims of the siege.

Studying the agreement of the two sources was done in order to assess their level of consistency. Consistent sources would show us very similar or just the same demographic and death patterns of the deceased which could then be seen as reliable descriptions of the siege. In the case of consistent sources the missing aspects of one source, (e.g. missing causes of death in the Death Registries), could be estimated by extrapolating the same aspects available in the second source (in the War Hospital Books). On the other hand, inconsistent sources would point out differences in the demographic and death patterns and raise doubts about the reliability of the sources and the reality of the siege.

3.1 In total 472 death records are reported in the War Hospital books and 373 records in the Death Registries (Table 5). There exist several explanations for this difference, for example, that some deaths from the War Hospital could have been reported to authorities outside the Mostar area, moreover, the authorities could have been different than Bosniak. For these reasons the number of 373 DR records is lower than the 472 WH records. In addition to that, some DR deaths were never registered in the War Hospital as the deceased did not die in the Hospital.

Regarding the year of death both sources consistently report that the most East Mostar deaths occurred in 1993 (90.5% in WH and 94.1% in DR).

Table 5. The Number of Siege-Related Deaths Reported in the Mostar War Hospital Books and in the Mostar Death Registries by Year of Death

YearD	WH	DR
EM-93	427	351
EM-94	45	22
Total	472	373

EM stands for East Mostar

3.2 The reporting of causes of death is summarized in Table 6. Violent war-related causes (gunshots, killed, shelling, wounding) comprise 263 cases in WH records (55.7%) and only 28 cases in the DR records (7.5%). Natural deaths and accidents are not reported at all in the WH Books whereas there are 12 such deaths (3.2%) included in the DR Books. Finally, the unknown causes of death comprise a large number of cases in both sources (44.3% in WH and 89.3% in DR); although it is clear much more information about specific causes is available from the WH Books. Note as well that the unknown causes from the WH Books are in fact related to **killed persons** for whom the specific causes of killing were unavailable. In the case of a large overlap of the two sources, (i.e. a large number of the same records reported in both sources), causes of death reported in the WH Books can be extrapolated onto the records from the DR Books.

Table 6. Causes of Siege-Related Deaths Reported in the Mostar War Hospital Books and in the Mostar Death Registries

CAUSE OF DEATH	WH	DR	CAUSE OF DEATH	WH	DR
Accident	0	1	Accident	0.0	0.3
Gunshots	49	6	Gunshots	10.4	1.6
Killed	0	6	Killed	0.0	1.6
Natural Death	0	11	Natural Death	0.0	2.9
Shelling	214	14	Shelling	45.3	3.8
Unknown	209	333	Unknown	44.3	89.3
Wounding	0	2	Wounding	0.0	0.5
Total	472	373	Total	100	100

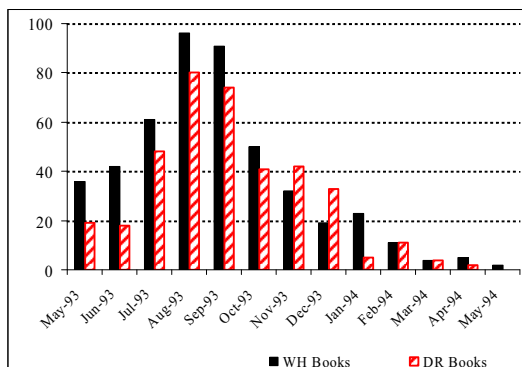
Regarding the year of death of cases with the unknown causes, again most deaths are reported for 1993 in both sources (188 out of 209 in WH and 324 out of 333 in DR). This further confirms that the fact of not reporting the cause of death was most certainly related to the circumstances of the siege, especially its intensity and difficulties in inspecting every single death case by the doctors.

3.3 A very high consistency of timing of deaths is seen between the two sources (Table 7 and Figure 1).

Table 7. Timing of Siege-Related Deaths Reported in the Mostar War Hospital Books and in the Mostar Death Registries. By Month and Year of Death

East Mostar records in WH			East Mostar records in DR		
YearD	MonthD	Count	YearD	MonthD	Count
93	May-93	36	1993	May-93	19
93	Jun-93	42	1993	Jun-93	18
93	Jul-93	61	1993	Jul-93	48
93	Aug-93	96	1993	Aug-93	78
93	Sep-93	91	1993	Sep-93	74
93	Oct-93	50	1993	Oct-93	40
93	Nov-93	32	1993	Nov-93	41
93	Dec-93	19	1993	Dec-93	33
94	Jan-94	23	1994	Jan-94	5
94	Feb-94	11	1994	Feb-94	11
94	Mar-94	4	1994	Mar-94	4
94	Apr-94	5	1994	Apr-94	2
94	May-94	2	1994	May-94	0
Total	93-94	472	Total	All	373

Figure 1. Victims Reported in WH vs. DR Books by Month and Year of Death



The monthly number of reported deaths is usually slightly higher in the WH Books and lower in DR Books, (except for November–December 1993 when the DR Books reported more deaths than the WH Books). A particularly high difference is seen between the two sources in May–June 1993, just at the beginning of the siege and at the time when the actual separation of the Croat and Bosniak administration just took place. This suggests an underreporting of deaths in the Bosniak part of the death registration system, which started to operate more properly only after a few months after the separation, likely after July 1993 onwards. Another reason for underreporting of DR deaths in this period is the intensity of the siege.

Generally, according to both sources the most victims died in 1993, especially in the months of August and September. The number of deaths per month clearly increased from May 1993 to August–September 1993, and thereafter slowly declined until April 1994.

3.4 The age and sex patterns of victims are remarkably similar based on each source (Table 8 and Figure 2), men being much more often reported dead than women. Men died mainly at ages from about 18 to 65 whereas women's age at death was rather uniformly distributed.

Figure 2. Age and Sex Distribution of Siege-Related Victims Reported in the Mostar War Hospital Books and in the Mostar Death Registries

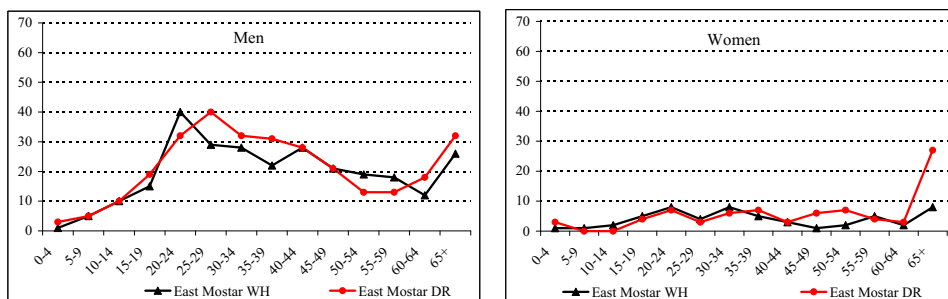


Table 8. Age and Sex Distribution of Siege-Related Victims Reported in the Mostar War Hospital Books and in the Mostar Death Registries

East Mostar records in WH					East Mostar records in DR				
Age(5)	Men	Women	Unk	Total	Age(5)	Men	Women	Total	
0-4	1	1	0	2	0-4	3	3	6	
5-9	5	1	0	6	5-9	5	0	5	
10-14	10	2	0	12	10-14	10	0	10	
15-19	15	5	0	20	15-19	18	4	22	
20-24	40	8	1	49	20-24	32	7	39	
25-29	29	4	0	33	25-29	40	3	43	
30-34	28	8	1	37	30-34	32	5	37	
35-39	22	5	0	27	35-39	31	7	38	
40-44	28	3	0	31	40-44	28	3	31	
45-49	21	1	0	22	45-49	21	6	27	
50-54	19	2	0	21	50-54	13	7	20	
55-59	18	5	2	25	55-59	13	4	17	
60-64	12	2	0	14	60-64	18	3	21	
65+	26	8	0	34	65+	32	25	57	
Unk	101	32	6	139	Unk	0	0	0	
Total	375	87	10	472	Total	296	77	373	

3.5 A comparison of causes of death of men and women seems to be of particular importance. The question is whether or not women died equally frequently of violent war-related causes as men.

Table 9. Sex Distribution of Causes of Death of Siege-Related Victims Reported in the Mostar War Hospital Books and in the Mostar Death Registries

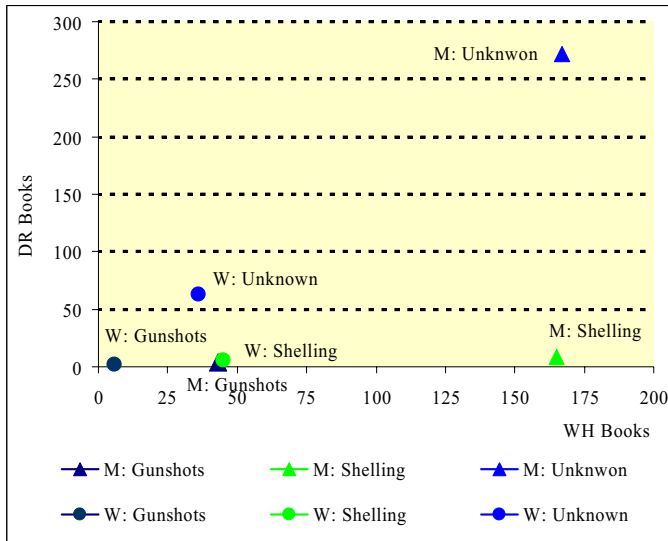
East Mostar records in WH					East Mostar records in DR				
CoD	Men	Women	Unk	Total	CoD	Men	Women	Total	
Accident	0	0	0	0	Accident	1	0	1	
Gunshots	43	6	0	49	Gunshots	4	2	6	
Killed	0	0	0	0	Killed	6	0	6	
Nat Death	0	0	0	0	Nat Death	5	6	11	
Shelling	165	45	4	214	Shelling	8	6	14	
Unknown	167	36	6	209	Unknown	271	62	333	
Wounding	0	0	0	0	Wounding	1	1	2	
Total	375	87	10	472	Total	296	77	373	

Note:

War Hospital Books			Death Registries Books		
Causes	Men	Women	Causes	Men	Women
Violent No	208	51	Violent No	19	9
Violent %	55.5	58.6	Violent %	6.4	11.7
Unk %	44.5	41.4	Unk %	91.6	78.8

In both sources women are reported (in relative percentage terms) to have died of violent war-related causes a bit more frequently than men (see “*Note*” under Table 9). However, both sources agree that, in absolute terms, these were men who died on the first place of violent war-related causes. Regarding the unknown causes, the WH Books lack about 45% (men) and 41% (women) of causes whereas the DR Books do not report about 92% of causes for men and about 79% causes remain unknown for women in the DR Books.

Figure 3. Reporting of Major Causes of Death in the Mostar War Hospital Books and in the Mostar Death Registries



The high percent of unknown causes in the Death Registries puts the reliability of the calculated sex-specific percent of violent causes under doubt (6.4% for men versus 11.7% for women). The same percentages obtained from the War Hospital Books suggest a rather uniform distribution of these causes among men and women (55.5% for men vs. 58.6% for women), which might be a better estimate (as less causes are missing on the WH Books).

All in all, as summarized in Figure 3,⁵ the major categories of violent war-related causes, (gunshots and shelling), are much better reported in the WH Books and the unknown causes are more frequent in the DR Books. The sex distribution of violent causes (based on the WH Books) suggests that both sexes died equally frequently of these causes.

3.6 The last overview in this section is of the ethnicity and status of victims, (status only based on the WH Books). Ethnicity is included in the WH Books as an item created on the basis of names reported in this source (surnames and first names). This was done by native speakers that cooperated with the Prosecution team with this regard. Ethnicity in the DR Books is also a created item; (originally not reported in this source), created on the basis of the ethnicity distribution of names reported in the 1991 Population Census in Bosnia. In the Census, a given name can be associated with one or more ethnic affiliation. The ethnic affiliation prevailing in the 1991 census for this given name was taken as the best estimator of the missing ethnicity report for the person carrying this name in the DR Books.

⁵ Figure 3 is a scatter chart showing the level of reporting of three major causes (shelling, gunshots and unknown) for men and women in the WH and DR books. If all marked points were located on the diagonal, the levels of reporting were equal in the WH and DR. The points under the diagonal indicate a higher reporting level in the WH Books and the points above the diagonal a higher level in the DR Books.

Table 10. Ethnicity of Siege-Related Victims Reported in the Mostar War Hospital Books and in the Mostar Death Registries

Ethnicity	WH	DR	Ethnicity	WH	DR
Muslim	345	318	Muslim	95.3	87.6
Croat	17	17	Croat	4.7	4.7
Serb	0	24	Serb	0.0	6.6
Other	0	4	Other	0.0	1.1
Unknown	110	10	Unknown	na	na
Total	472	373	Total	100.0	100.0

Table 10 summarizes the ethnicity distribution of victims in both sources. The sources are again consistent in reporting the ethnic Muslims as the largest group of victims (95.3 and 87.6 percent).

Table 11. Status of Siege-Related Victims Reported in the Mostar War Hospital Books

Status in WH	Number	Percent
Civilian	160	48.5
Detainee	12	3.6
Military	158	47.9
Unknown	142	na
Total	472	100.0

Finally, Table 11 gives an overview of the status of victims reported in the WH Books.⁶ This item is unavailable from the DR Books. The fractions (and absolute numbers) of civilian and military victims are almost the same, so it seems that even an (approximate) fifty-fifty distribution can be considered as appropriate.

Major conclusions from the results discussed in this section are the following:

- Both sources are highly consistent with regard to the overall number of reported deaths, age and sex distribution of the victims, and the time and (partly) cause-of-death patterns,
- Timing of deaths reported in each source is practically the same. The timing shows an increase in deaths from May 1993 to the highest numbers of deaths in the months of August and September 1993 and a decline afterwards until April 1994. This pattern is totally opposite to the seasonality pattern usually observed in mortality from natural causes. The seasonal mortality change is characterized by a systematic maximum of deaths in the winter and early spring months and a minimum in the summer and fall months.
- The fact that the observed timing is contradictory to the expected seasonality pattern in mortality suggests that causes of death of those that died during the siege of Mostar were completely different than natural causes. Only violent war-related causes could result in the dramatic increases in mortality in Mostar in the summer and fall of 1993.
- The reported causes of death are unfortunately poor in both sources but in particular in the Death Registries.
- In both sources (especially in the DR Books), the reporting of causes of death is particularly deficient in 1993, especially in the first months of the siege, most likely due to the extremely difficult circumstances and high intensity of the siege and organizational problems of the death registration system.
- Next to the causes of death, also the status (civilian vs. military) of victims is practically not available from the Death Registries. This must be carefully taken into account when producing estimates of victims by cause and status.

⁶ An external definition of status was used as described in the (Tabeau) report on wounded persons related to the siege of Mostar.

- Despite of these deficiencies, and because of a high degree of consistency of the two sources it is, however, fully justified to consider them as two reliable samples describing the same population of victims of the siege.
- The sources should be therefore combined and used jointly for producing a better more complete description of the victims of the siege.

4. SIEGE-RELATED DEATHS REPORTED IN THE TWO SOURCES MERGED TOGETHER

In this section we discuss the results of an analysis based on two sources, the War Hospital Books and the Death Registries, merged together. Combining the sources in one list is much more appropriate than analysing every source separately. Statistics produced from combined sources which have been cleaned from duplicated records, are much more complete and reliable.

Although many more mortality sources are available at the Demographic Unit, we used only two sources in this study, (WH and DR Books), as no more sources reported specific places of death within East Mostar. All other sources we have in our disposal report the place of death as a municipality, which implies that studying deaths from a small area of East Mostar is impossible. In order to provide a more complete picture of the victims killed in the entire Mostar municipality (and also in the entire Herceg-Bosna region) an additional study is planned to be submitted separately.

Because only two sources have been used in this study, it is rather certain that the statistics we produced are incomplete. It is difficult to assess to level of incompleteness, but some qualitative statements (by others) about the victimization in the siege of Mostar are available and can be compared with our numbers based on the records from War Hospital Books and Death Registries.

Details of merging the two East Mostar sources are explained below. Generally, the following steps were completed during the merging:

- Both sources (as a whole; DR=1,383 and WH=about 6,000) were first checked for duplicates within each source. Duplicates have been eliminated (10 from DR and 15 from WH Books).
- Death Registries (all 1,383 records) were matched with the ABH and HVO lists of fallen military personnel. Exactly 466 records were marked as militaries of which exactly 181 records are valid and related to the siege of Mostar.
- All War Hospital records, (those of the wounded and those of the dead individuals), were matched with the lists of fallen soldiers (ABH and HVO). A small number of wounded persons not marked as dead in the WH Books were successfully linked with the records of fallen soldiers. The dates of death and treatment in the War Hospital were compared. Only the unique records with consistent dates were taken for analysis (89; of which 31 records overlapped with fallen soldiers in DR). The matched records of fallen soldiers (58 after excluding the overlap with DR)) were accepted as additional records of deaths from East Mostar.
- In the main merging procedure, the Death Registries were considered the base source (i.e. the beginning for the merge). Reasons for this included the fact that the quality of reporting names and other personal and death related details is higher in the Death Registries than in the War Hospital Books.
- Records from the War Hospital Books and additional records of fallen soldiers were appended to the records from Death Registries.

- Overlapping (or duplicated) records, i.e. records repeated in one, two or more sources, were eliminated from the consolidated list (in total 319).
- The consolidated list obtained at this stage (1,625) contained not only records from East Mostar but also many other records unrelated to the siege. In the next step of our project, we made a selection of valid reliable records that were at the same time relevant to the siege (539 siege-related).

In the remainder of this section we explain the criteria for selecting valid siege-related records (539) from the consolidated list of deaths reported in the WH and DR Books (1,625) and present siege statistics obtained from the selected 539 records.

4.1 The selection procedure is summarized in Table 12 below.

Table 12. An Overview of the Criteria for Records' Selection for the Analysis of Siege-of-Mostar Related Deaths

No.	Validity	Duplicate	East Mostar	YoD/MoD	War-Related Cause	Surname	First Name	YoB	Total
1	yes	no	yes	yes	yes	yes	yes	yes	539
2	no	no	yes	yes	yes	yes	yes	no	54
3	no	no	yes	yes	yes	yes	no	yes	1
4	no	no	yes	yes	yes	yes	no	no	2
5	no	no	yes	yes	yes	no	yes	no	1
6	no	no	yes	yes	yes	no	no	no	2
7	no	no	yes	yes	no	yes	yes	yes	13
8	no	no	yes	no	yes	yes	yes	yes	54
9	no	no	yes	no	no	yes	yes	yes	5
10	no	no	no	yes	yes	yes	yes	yes	694
11	no	no	no	yes	yes	yes	yes	no	19
12	no	no	no	yes	yes	yes	no	yes	4
13	no	no	no	yes	yes	yes	no	no	1
14	no	no	no	yes	yes	no	yes	yes	3
15	no	no	no	yes	yes	no	no	no	12
16	no	no	no	yes	no	yes	yes	yes	7
17	no	no	no	no	yes	yes	yes	yes	188
18	no	no	no	no	yes	yes	yes	no	3
19	no	no	no	no	yes	yes	no	no	1
20	no	no	no	no	yes	no	yes	yes	2
21	no	no	no	no	yes	no	yes	no	1
22	no	no	no	no	yes	no	no	no	1
23	no	no	no	no	no	yes	yes	yes	18
Total 2-23									1,086
24	no	yes	yes	yes	yes	yes	yes	yes	230
25	no	yes	yes	yes	yes	yes	yes	no	82
26	no	yes	yes	no	yes	yes	yes	yes	1
27	no	yes	no	yes	yes	yes	yes	yes	5
28	no	yes	no	yes	yes	yes	yes	no	1
Total 24-28									319
Overall Total									1,944

The selection criteria comprised three groups of items:

- Duplicates (only unique records were accepted)
- Relevance to the siege area and siege period (death in East Mostar from May 1993 to April 1994)
- Availability of detailed personal information (at least: names and year of birth)

In addition to the above criteria, cause of death was required to be either war-related or unknown. Deaths from natural causes, accidents, suicide, or just reported as “died” were excluded from the records approved for this analysis. Records with the unknown causes were taken as relevant, however. We believe that a vast majority (if not all) of these records were related to the siege. Because of the dramatic circumstances of the siege, its intensity and chaos, and the largely lacking or insufficient functioning of the state administration organs responsible for the registration of deaths many causes remained unreported in the sources used for this report, and especially in the Mostar Death Registries.

The above-mentioned procedure resulted in selecting **539 records** as valid and relevant to the siege. This number is the number of war-related deaths that can be linked directly to the siege of Mostar.

Regarding the rejected records, 319 were rejected as duplicates (alone or together with other deficiencies). Among the non-duplicated records, exactly 1,013 records were rejected as not adhering to the siege area and/or the siege period (again alone or in combination with other deficiencies). Also records with **unknown place of death** were rejected as part of this criterion; there were 517 such records, of which 484 had date of death consistent with siege period. Finally, 73 (non-duplicated) records were rejected because of poor personal information about the victims (names and/or year of birth).

Table 13. An Overview of Accepted Death Records by Source

Source	DR	WH	ABH	HVO	Total
Number	370	134	29	6	539

Out of the 539 accepted records, exactly 370 entered the consolidated list from the Death Registries, 134 from the War Hospital Books, 29 as the ABH records and 6 as HVO records (Table 13).

4.2 Table 14 summarizes the ethnicity of the persons that died during the siege of Mostar. Two types of statistics are given in this table: the minimum observed numbers of a given ethnic group and the estimated more complete numbers. The estimated numbers were obtained under the assumption that the individuals of unknown ethnicity have the same ethnic distribution as those with the well-reported observed ethnicity.

The most victims (87.8%) were of Muslim ethnicity. The minimum number of Muslim victims is 445 individuals and the more complete estimate is 473 persons (out of the total of 539 victims of the siege).

Table 14. Ethnicity Distribution of the Victims of the Siege

Ethnicity	Observed	Percent	Estimated	Percent
Muslim	445	87.8	473	87.8
Croat	36	7.1	38	7.1
Serb	22	4.3	23	4.3
Other	4	0.8	4	0.8
Unknown	32	na	na	na
Total	539	100.0	539	100.0

4.3 The civilian-military status of the victims was only available from the War Hospital Books and from Army records (ABH and HVO). The main source, the Mostar Death Registries, do not include this information.

The WH estimates of status (Table 11, Section 3, par. 3.6), report 48.5% (160) civilian victims and 47.9% (158) military victims. If detainees (12 persons or 3.6%) are considered as civilians, then the percent of civilian victims becomes 52.1% and their number 172 individuals. These percentages (52.1 and 47.9 percent), when applied to the total of 539 deaths, are equivalent to **281 civilians** and **258 militaries**.

The interval estimate for civilians is then from **172 to 281 persons**. The interval for militaries is from **158 to 258 individuals**. (The lower limits come from the WH Books; see Table 11 in Section 3)

Alternatively, the status can be estimated on the basis of matching of the consolidated list of 539 siege-related records with the lists of fallen military personnel (ABH and HVO). Death records successfully matched with the records of fallen soldiers can be then taken as militaries and all remaining records as civilians. The results of this approach are shown in Table 15 below.

Table 15. Distribution of the Victims of the Siege According to the Civilian-Military Status and Source

Source	Civilians	Militaries	Civilians (%)	Militaries (%)
War Hospital	78	56	58.2	41.8
Death Register	189	181	51.1	48.9
ABH	0	29	0.0	100.0
HVO	0	6	0.0	100.0
Total	267	272	49.5	50.5

Also in this approach about 50% death records are of civilians and 50% of militaries. In terms of absolute numbers, out of 539 siege-related deaths a minimum of the 267 deceased were civilians and a minimum of 272 were militaries.

4.4 Causes of Death of the victims of the siege are shown in Table 16.

Table 16. Distribution of the Victims of the Siege According to Cause of Death

Cause of Death	Observed	Percent	Estimated	Percent
Shelling	76	56.3	303	56.3
Killed	34	25.2	136	25.2
Gunshots	18	13.3	72	13.3
Wounding	6	4.4	24	4.4
Murdered	1	0.7	4	0.7
Unknown	404	na	na	na
Total	539	100.0	539	100.0

It is clear that a large number of deaths were reported without mentioning any cause of death at all (404). This does not mean that the unknown causes were unrelated to the siege. Most of these causes were associated with deaths that occurred in 1993 in the first (extremely intensive) months of the siege which were also characterized by serious problems with the registration of deaths.

Based on the assumption that the unknown causes would have the same distribution as the well-defined causes, the more complete estimates were produced and are shown in Table 16 together with the minimum numbers.

The *estimated* numbers in Table 16 are *not* fully reliable, however. Likewise the status, also the cause-of-death reporting is biased in the merged sources. The DR records, accepted as the first ones for the consolidated list, are at the same time extremely poor of reported causes of death. The reporting of causes is more reliable in the War Hospital Books.

Using the War Hospital Books we estimated in Table 6 (Section 3, par. 3.2) of this report the following:

- A minimum of 214 deaths of shelling (45.3%)
- A minimum of 49 deaths of gunshots (10.4%)
- A minimum of 209 deaths of unspecified violent cause (44.3%; covering cases like e.g. killed, murdered, wounded etc.)

When the above percentages are applied to the total of 539 deaths included in the consolidated list the following new estimates are obtained:

- 244 deaths of shelling
- 56 deaths of gunshots
- 239 deaths of unspecified violent causes

In consequence of this procedure the interval estimates of the major causes of death of the siege victims can be formulated:

Shelling was the foremost cause of death during the siege: 45.3% of individuals died of shelling; i.e. a minimum of **214 to 244** persons.

Another 10.4% (25.2+13.3) of deaths occurred because of being **gunshot**; from a minimum of **49 to 56** persons.

Remaining violent causes of unspecified character (44.3%) accounted for a minimum of **209 to 239** individuals.

4.5 The timing of deaths is discussed below in Table 17 and Figures 4 and 5. Generally, the intensity of siege was much higher in 1993 (especially in the summer) than in 1994. The most deaths occurred in the months of August and September 1993 (105 and 106, respectively). Since October 1993, a systematic decline is clearly seen in the number of deaths every month.

Table 17. Distribution of the Victims of the Siege According to Year and Month of Death

YoD	MoD	Observed
1993	May-93	28
1993	Jun-93	28
1993	Jul-93	68
1993	Aug-93	105
1993	Sep-93	106
1993	Oct-93	55
1993	Nov-93	50
1993	Dec-93	37
1994	Jan-94	30
1994	Feb-94	18
1994	Mar-94	8
1994	Apr-94	6
Total	All	539

Figure 4. Distribution of the Victims of the Siege According to Year and Month of Death

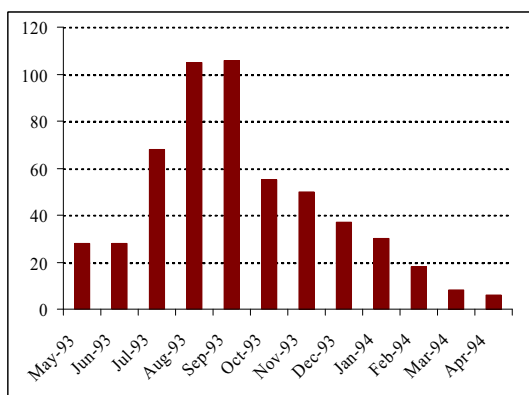
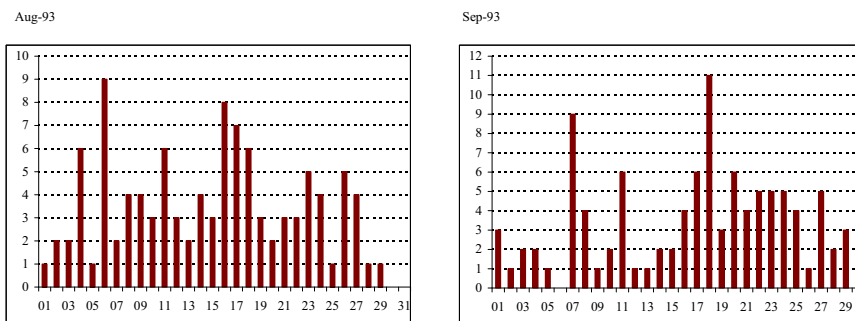


Figure 5. Distribution of the Victims of the Siege According to Day of Death in August and September 1993



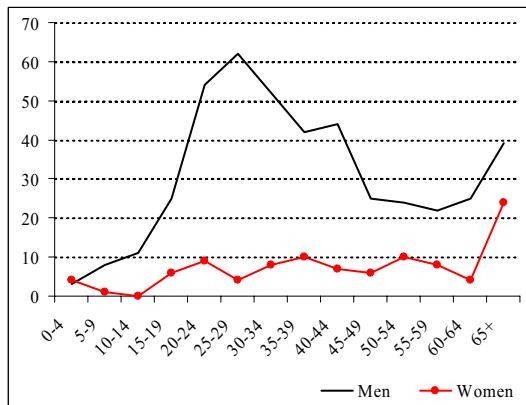
4.6 Finally, the sex and age distribution of victims is shown in Table 18 and Figure 6.

Table 18. Distribution of the Victims of the Siege According to Age and Sex

Age(5)	Men	Women	Unknown	Total
0-4	3	4	0	7
5-9	8	1	0	9
10-14	11	0	0	11
15-19	25	6	0	31
20-24	54	9	1	64
25-29	62	4	0	66
30-34	52	8	1	61
35-39	42	10	0	52
40-44	44	7	0	51
45-49	25	6	0	31
50-54	24	10	0	34
55-59	22	8	0	30
60-64	25	4	0	29
65+	39	24	0	63
Total	436	101	2	539

Men comprised 80.9% of all deaths (436), women 18.7% (101). The number of children and teenagers up to 19 years of age was 58 individuals (10.8%). Individuals at age from 20 to 64 years were the largest group (418 persons; 77.6%). 63 elderly persons at age 65 or more years died as well (11.7%).

Figure 6. Distribution of the Victims of the Siege According to Age and Sex



Most men died at ages from about 18 to 65 years. Striking is also a rapid increase in the number of male deaths after the age of 65 years. Generally, however, the age distribution of men is consistent with that of fallen soldiers.

Women died at all ages, but especially after 65 years. It is clear that the age pattern of women's deaths is not consistent with that of military personnel.

5. FINAL CONCLUSIONS

Below we summarize our major findings:

- The **minimum number** of persons that died during the siege of East Mostar (May 1993 to April 1994) is **539**. This total has been obtained from the consolidated list of two sources the War Hospital Books and the Death Registries. Duplicates and other deficient and/or unrelated records were excluded from this total.
- The minimum number of 539 deaths does not include deaths reported with an unknown place of death in the Death Registries. There were in total 517 such deaths, of which 484 records had the reported date of death from the siege-of-Mostar period (April 1993 to April 1994; duplicates excluded). These 484 records may have been relevant to the siege but are not reported under the minimum number.
- If the excluded 484 records are taken into account, **a new estimate** of the actual number of siege-related deaths becomes **1,023 deaths** of both civilians and soldiers (a minimum of 539 deaths plus an additional 484 deaths).
- 49.5% of siege-related deaths were of civilians (a minimum of 267 persons out of 539 deaths).
- 50.5% of deaths were of militaries (a minimum of 272 out of 539 deaths).
- Based on the consolidated list of the (minimum) 539 deaths, we estimated that 87.8% of deaths were of ethnic Muslims (a minimum of 445 to 473 persons out of 539 deaths).
- The timing of the 539 death shows a systematic increase in deaths from May 1993 to the highest numbers of deaths in August and September 1993 and a decline afterwards until April 1994. This pattern is totally opposite to the seasonality pattern usually observed in mortality from natural causes. The seasonal mortality change is characterized by a maximum of deaths in the winter and early spring months and a minimum in the summer and fall months.
- The fact that the observed timing of the siege-related deaths is contradictory to the expected seasonality pattern in mortality suggests that causes of death of those individuals that died during the siege of Mostar were completely different than natural causes. Only violent war-related causes could result in the dramatic increases in mortality in Mostar in the summer and fall of 1993.
- The reported causes of death are unfortunately poor in both sources but in particular in the Death Registries.
- In both sources (especially in the DR Books), the reporting of causes of death is particularly deficient in 1993, especially in the first months of the siege, most likely due to the extremely difficult circumstances, high intensity of the siege and organizational problems of the death registration system.
- Despite of the poor information about the causes of death we estimated (on the basis of War Hospital records) that the major causes included:
 - Shelling: 45.3% (a minimum of 214 to 244 deaths out of 539 deaths)
 - Gunshots: 10.4% (a minimum of 49 to 56 deaths out of 539 deaths)
 - Unspecified violent causes: 44.3% (a minimum of 209 to 239 out of 539 deaths)
- Using the consolidated list we also estimated the sex distribution of victims:
 - 80.9% were men (436 persons out of 539 deaths)
 - 18.7% were women (101 persons out of 539 deaths)
- Among the (minimum of) 539 victims there were children and youth below the age of 19 years: 58 persons, and the elderly at age 65 or more years: 63 persons.
- Finally, the most frequent age at death for men was 20 to 24 years whereas generally men very frequently died at 18 to 64 years of age. Women died uniformly at all ages from about 18 to 64 years.

We would like to stress that the above-mentioned statistics were obtained from a clearly conservative approach; very many records have been rejected because of missing information or deficiencies that perhaps could have been repaired. The final numbers presented in this report should be therefore seen as minimum numbers (i.e. “at least”). Opinions of other authors familiar with the siege of Mostar might show alternative statistics that are higher than our figures.

**REPORT ON THE NUMBER
OF MISSING AND DEAD
FROM SREBRENICA**

Helge Brunborg and Henrik Urdal

12 February, 2000



Summary

We have been asked by the Office of the Prosecutor to validate the number of missing persons in connection with the fall of the enclave of Srebrenica. In the process of preparing the report we analysed the reliability of available data sources of missing persons from Srebrenica, which included studying the history, methods and procedures used for collecting the data. A crucial task has been to identify Srebrenica victims utilising the specific knowledge of the Office of the Prosecutor as to the dates and places that Srebrenica victims went missing from.

We compared data from the database of missing persons on the territory of Bosnia and Herzegovina of the International Committee of the Red Cross (ICRC) and the Ante Mortem database of the American humanitarian organisation Physicians for Human Rights (PHR) to arrive at a consolidated list of missing persons. We then analysed the individual records of missing persons from this consolidated list in order to identify the number of persons that went missing.

We furthermore compared the ICRC and PHR lists of missing persons with the OSCE Voters' Registers for Bosnia and Herzegovina for the 1997 and 1998 elections. This was done in order to investigate whether persons registered as missing on the ICRC and PHR lists were registered to vote. As the general assumption is that the persons on these lists of missing persons are dead, the purpose of this comparison was to explore the possibility that persons reported as missing could still be alive. Finally, data were compared with files from the 1991 Census of Bosnia and Herzegovina containing relevant information for all inhabitants of the country in 1991. This information was utilised to investigate whether potential cases of persons appearing both on the ICRC and PHR lists of missing persons and on the Voters' lists were actually identical. Information from the Census was additionally used to verify whether persons on the missing lists were actual persons who were alive in 1991.

As the result of our work, we conclude that a minimum of 7,475 persons from the Srebrenica enclave are missing and presumed dead. Our analysis also shows that only a very small number of the persons registered on the ICRC and PHR lists of missing persons could be alive. We could only identify a maximum of 15 cases where persons registered as missing could be alive, according to information from the OSCE Voters' Registers and that provided by the tracking section of the ICRC in Sarajevo. Furthermore, we have found no proof that persons registered as missing are fictitious.

Background

When the enclave of Srebrenica fell on 11 July 1995 a number of men tried to escape by walking through the forest, and many of them were killed on the way or after surrendering or being captured. Others were separated from their families in Potočari and later executed. Several women, children and old men were also killed. Many dead bodies were buried in mass graves, which were often disturbed soon after, while others were left in the forest. The total number of victims is not known. ICTY exhumations have uncovered about 1,900 bodies so far¹, of which only a few have yet been identified.²

Several organisations collected data on persons missing after the fall of Srebrenica, including the International Committee of the Red Cross (ICRC) and Physicians for Human Rights (PHR). ICRC registered missing persons "... to help families establish the fate of their relatives who remain miss-

¹ "Report on the anthropology examination of human remains from Eastern Bosnia in 1999", by José Pablo Baraybar, ICTY, Den Haag, December 8th 1999.

² By 7.2.2000 73 bodies have far been identified, according to the Podrinje Identification Project (PIP) in Tuzla. Of these, 45 were exhumed by ICTY teams, while the remaining were exhumed by local teams. A previous list, provided to us on 27.10.1999, included the names 70 identified bodies.

ing.”³ Similarly, the American-based PHR registered missing persons with extensive details on them to assist in identifying exhumed bodies, and to help families to find out what happened to their missing relatives. Their list, the Ante-mortem database (AMDB), is in principle a compilation of data on people believed to be dead.

While PHR concentrated mainly on persons missing from Srebrenica after the fall of the enclave in July 1995, ICRC registered missing persons from all of Bosnia and Herzegovina throughout the war period 1992–1995. Both organisations collected data primarily from close family members but occasionally accepted reports from more distant relatives and from friends and neighbours. Both organisations have been registering persons known to be dead but whose bodies have not been found. ICRC has published a separate list of persons known to be dead (generally previously registered as missing)⁴. ICRC has published several versions of its list of “missing persons” whereas PHR has not.

The objective of this report is to use these two sources of missing persons, as well as other data, to arrive at a reliable estimate of the number of people who were killed or who are still missing after the fall of Srebrenica. At the same time we have looked at attempts to discredit the ICRC list of missing persons.

The methods used to do this have been to:

- evaluate the quality of the data sources, particularly of the missing persons,
- compare the lists with other sources of data on individuals from the Srebrenica area, from both before and after the war, and
- compare the lists of missing persons with each other.

Definition of terms for Srebrenica victims

In this report, the terms ‘missing’ and ‘disappearance’ are used interchangeably, as is also the case with the data of ICRC and PHR. To qualify as a Srebrenica-related missing person, i.e. a person missing in connection with the fall of the enclave on 11 July 1995, the following definitions were applied:

- *Date of disappearance*: This phrase refers to the date a missing person was last seen alive.⁵ It is, however, not necessarily the date the person may have been killed. Only those who are reported as missing between 11 July and 31 August 1995, from locations in or near the enclave, are included in our analysis. Additionally, a few cases of persons missing on later dates (September 1st to December 31st 1995) from locations related to the fall of the enclave have been included.
- *Place of disappearance*: This phrase refers to the place a missing person was last seen alive.⁶ Again, this is not necessarily a reference to where the person may have been killed. A person may, for example, have left Srebrenica on 11 July and started to walk through the forest, been picked up by the RS Army and transported to a place, say Nova Kasaba, where he was executed. The place of disappearance in this example could be any of Srebrenica, “Forest” or Nova Kasaba, depending on who saw him last alive. For this project a list was compiled of “missing”-locations related to the fall of the enclave. This compilation was done in close co-operation with

³ From the introduction to *Missing persons on the territory of Bosnia and Herzegovina*, Fourth edition issued on 30.06.1998 – by alphabetical order, International Committee of the Red Cross. Place of publication not given (probably Sarajevo).

⁴ Death has been established based on eyewitness accounts and/or evidence provided by the family.

⁵ This could either be the date the informant her/himself last saw the person alive, or a date based on information provided by an eyewitness through the informant.

⁶ This could either be the place the informant her/himself last saw the person alive, or information provided by an eyewitness through the informant.

investigators knowledgeable of refugee flows from the enclave, and after consulting with people from the area on difficult cases⁷.

PHR asked a specific question on the fall of the enclave, “Did he/she disappear after the fall of Srebrenica in July 1995?”, and the answers to which were provided to us for each Srebrenica-related person. We have used this information in conjunction with date and place of disappearance.

ICRC did not pose any precise question to the families but defined Srebrenica-related victims on the basis of the story given by the informant, which usually starts with: “During the fall of Srebrenica” or “After the fall of Srebrenica”.⁸

Quality of the ICRC and PHR lists of missing persons

ICRC started the registration soon after the fall (in July 1995), primarily to register persons believed to be in detention. At that time the memories of the people escaping from Srebrenica were still fresh. On the other hand the people were very distressed and suffered from emotional and physical fatigue, and were usually not in possession of identification papers or other documentation showing the exact particulars of the disappeared persons. Because of the chaotic situation some people reported as missing were later found to be living,⁹ but ICRC removes such cases from the list of missing persons.

PHR started their registration process somewhat later, in July 1996. It includes some very detailed questions about the missing persons, such as special physical characteristics and clothing, which was often emotionally difficult for the informants to answer. At the same time, the informants were often more prepared for the interview situation, with many providing identification papers for the missing persons.

Although the objectives and the procedures for the two registration activities seem somewhat different it is our conclusion that the type of cases registered were very similar. Both activities were done to trace missing persons; more than 95 per cent were registered by close relatives; and registration of persons known to be dead was accepted in several cases. The PHR list has fewer cases than ICRC most likely because they started later and worked actively to register persons in only two areas (Tuzla and Sarajevo).

Fully four versions of the ICRC list of missing persons for Bosnia and Herzegovina have been published, versions 3 and 4 in January 1997 and July 1998, respectively. We matched these two, together with a list of dead persons published together with version 4 of the ICRC list in July 1998,¹⁰ and arrived at 19,403 persons for all BiH, after correcting for a few obvious inconsistencies. About 40 per cent of these were Srebrenica-related, based on the criteria given above.

The PHR Ante-Mortem Database (AMDB) we used was updated in July 1999 but we also received some additional information from PHR in May and October 1999, totalling 7,269 persons, about 80 per cent being Srebrenica-related.

⁷ See the attached list and map of locations for details. Note that the data reflected on this list/map are derived from the PHR list only.

⁸ Fax to ICTY from ICRC, Sarajevo, 7.12.99.

⁹ The “Total number of persons for whom a tracing request regarding Srebrenica fall was opened by the family” is 7421, of these the fate has been clarified for 85, with 22 determined to be alive and 63 to be dead. Source: “Tracing requests Missing in BiH (updated on 29/09/99)”, International Committee of the Red Cross, Sarajevo.

¹⁰ Prior to the publication of version 4 of the ICRC list, families had the opportunity to register missing relatives that were not assumed to have survived, as dead.

Both organisations collected data on surname, first name, father's name, sex, date and place of birth, date and place of disappearance. Some information was only recorded by ICRC, such as municipality of disappearance, and other information only by PHR, such as ethnicity.

In both lists there are many empty fields. In the ICRC list the least frequently completed items are date of birth (65.4% complete) and date of disappearance (89.6%). The *year* of these events is included for almost everybody, however. For the PHR list the least complete items are date of birth (78.2%) and place of disappearance (80.7%). The other variables are recorded for almost everybody – but that does not necessarily mean that they are always correct. Errors are particularly common in the spelling of names of persons and places. Moreover, from comparing the two lists we know that there are many errors, although mostly small, in variables such as date of birth. Such errors are common all over the world in data collected through questionnaires in surveys, censuses and elsewhere. It is, therefore, not surprising that there are many errors in variables concerning tragic events collected in a chaotic and traumatic situation.

We cannot generally say that one of the lists of missing persons is of better quality than the other. Each of the two has its strengths and weaknesses - together they corroborate each other and provide more reliable information than either used separately.

Methodology

Our approach has been to match data from the lists of missing persons from ICRC and PHR, compare the data with the OSCE lists of voters for the 1997 and 1998 elections and, if necessary, compare information with the 1991 Census. When comparing various lists with data on individuals our approach has been to use the Access database program to search for records on one list that match records on the other list. If key variables are identical in the two lists the matched records are assumed to represent the same person, otherwise not. This would have been a fast and easy procedure if all individuals on each list were uniquely determined by one or more variables, such as an ID number, but this is not the case with all lists available to us. Although a unique ID number was introduced in Yugoslavia in 1981, it is not used by ICRC and PHR in their databases. Moreover, when it is used, such as in the 1991 Census and the OSCE Voters' Register, it is sometimes missing or wrong.

The matching of two lists was always begun by searching for records with identical names and date of birth. It is very unusual that two different persons have identical names *and* are born on exactly the same date, especially if we are only considering the population of a limited area, such as a municipality or Eastern Bosnia. Quite often, however, names are spelled differently or the date of birth is recorded slightly differently – or missing altogether in one or both lists (as discussed in footnote 11). Consequently, for persons not matched in the first round we made the search criteria gradually broader for one or more variables, for example by including only the *year* (and not the full date) of birth, or only the *initial* of the first name, in addition to the surname. The results of such matches have, however, to be inspected visually to decide if the matches are likely to be of the same person or not, by looking at the other available information, such as municipality and place of birth or residence. For example, the place of birth may be given as a municipality on one list and a small hamlet, located in the municipality, on the other list. It would be very complicated, if possible at all, to automate such checks.

For difficult cases we checked the 1991 Census for more information about the persons in question, for example when one of the lists has information on an item which is also included in the Census but not on the other list, such as ID number or place of birth. The spelling of names was also checked in this way, often by looking at the names of other family members contained in the Census files.

Matching records from the ICRC and PHR lists of missing persons with the OSCE Voters' list presents a special problem, since only a limited number of variables are included in *all* of these lists. The father's name, for example, which is important for identifying people in BiH, is recorded in the lists of missing persons but not in the Voters' list, whereas the opposite is the case for the national ID number (*matični broj*). Thus, when we attempted to match records from these sources a large number of potential matches were often found since there were not always enough variables common to the two data sources to distinguish between real and false matches, for example when the full date of birth was lacking. To allow for errors in the date of birth we also searched for matches of records with a difference of up to several years in the year of birth. Such matches were not accepted, of course, before the likelihood of a match was confirmed after comparing information on other items, for example on various locations such as place of birth, residence or disappearance on the missing persons lists, *and* current municipality or municipality of voting in the Voters' list. A match of missing people and registered voters was not accepted if the locations were clearly inconsistent, for example if a person was born, lived and went missing in Eastern Bosnia according to the missing lists, but registered to vote in and for a municipality in a completely different part of the country, according to the Voters' list.

The use of data from the 1991 Census has been crucial in concluding whether a pair of potential matches of records from two different lists represents the same person. When, for example, a set of matched records from the PHR/ICRC lists and the Voters' list were also identified in the Census file, both the ID number and the father's name were checked in order to ascertain whether the matched records represented the same person. In some cases only one of a pair of matched persons was identified in the Census and not the other. In such cases the match was rejected if the father's name as recorded in the Census differed significantly from the father's name as recorded by ICRC/PHR. If only the person from the ICRC/PHR list was found in the Census file the match was rejected if the Census ID number differed significantly from the Voter's list ID number. There were no examples of matches where neither of the persons was found in the Census.

To record the quality and basis for a match a parameter was assigned to each matched person depending on the criteria used for the match. This parameter was used to study the number of accepted matches according to the type and quality of the match.

Matching lists of missing persons with post-war Voters' registers

The ICRC and PHR lists of missing persons were compared with the 1997 and 1998 Voters' lists, finding a total of nine Srebrenica-related matches.¹¹ The identities of these nine persons have been checked with the 1991 Census for Eastern Bosnia.¹² We are convinced that the matches are matches of the same people and not a mix-up of persons with the same name and identical or similar date of birth.¹³

Since dead people cannot register to vote, these matches imply that the nine persons are either wrongly registered as missing, or that their identities have been misused when registering to vote. Another possibility is that their names should have been taken off the list but have not been so, for miscellaneous reasons. The survival of some people may not have been reported to ICRC, for example, because they do not want their survivorship to be disclosed. Six of the nine persons were reported independently *both* to ICRC and PHR, decreasing the likelihood that the inconsistencies are due to fraudulent registration of missing persons.¹⁴

In any case, the number of such inconsistencies is very small, only 0.1 per cent of the approximately 7,500 missing persons. This indicates that there cannot have been any large-scale campaign of registering living persons as missing.

Almost all persons who were in the Srebrenica enclave when it fell came originally from the surrounding municipalities. Supportive of this is the fact that of the 358 persons that we looked for in the Census file, fully 93.3 per cent were found to be living in one of these municipalities in 1991. The reason why the remaining 6.7 per cent were not found could either be a result of insufficient information, or because they were enumerated outside these municipalities in 1991. Additional evidence about the origin of the people in the enclave is that of the 210 people on an ICTY list of people known to have been in the enclave before it fell, including victims and survivors, all but one lived in the six municipalities before the war: 57% in Srebrenica, 22% in Vlasenica, 19% in Bratunac, and the remaining 2.5% in Rogatica, Han Pijesak, Zvornik and Živinice. This strengthens our approach using the Census file for the area to check the identities of difficult cases.

Furthermore, the high proportion of missing persons found in the Census proves that the persons on the missing lists are not fictitious. The samples of 358 missing persons and 210 victims and survivors may be considered to be random samples, although not in a strict probabilistic sense, i.e. that the sample was drawn randomly from a larger population. We do not see that the samples are biased in a way that is essential to the conclusions drawn here.

¹¹ The comparison was done separately with three different combinations of data sets, including data for all of Bosnia and Herzegovina (BH): ICRC 3 and Voters' Register 1997; ICRC 4 and Voters' Register 1998 (done by OSCE Sarajevo); and PHR AMDB and Voters' Register 1998.

¹² A special census file for Eastern Bosnia was compiled for this purpose, including the municipalities of Bratunac, Han Pijesak, Rogatica, Šekovići, Srebrenica, Vlasenica and Zvornik.

¹³ We found four additional genuine matches of persons disappearing in 1992 (2 from Bratunac, 1 from Srebrenica, and 1 from Zvornik). We also investigated thoroughly the identities of three additional matches, which revealed that each pair of matched records represented two *different* persons. We found, for example, that there were two persons with identical first names, last names and dates of birth, but different father's names, and another example of two persons having the same first names, surnames and father's names, but with different dates of birth and ID numbers.

¹⁴ Four of the nine have the same family name, Gabeljić, and registered to vote, surprisingly, in Serbia (Šabac). Of the other five, two lived in Tuzla, one in Srebrenik, one in Germany and one in Austria when they registered to vote.

Comparison of the two lists of missing persons

We matched and merged the ICRC and the PHR lists of missing persons, arriving at a *consolidated list of missing persons* for all of Bosnia and Herzegovina, including all ICRC and PHR records but with only one record for each person.¹⁵ For records with excessively limited information, we compared the available data with the 1991 Census to decide if two records from each list represent the same person. If we did not find explicit evidence in the Census that two such records existed for two different persons, the records were accepted as being for the same person.

7,490 records on the consolidated list are Srebrenica-related, according to the strict criteria defined above, see Table 1.¹⁶ In addition to expanding the total number of missing persons, the combination of the two sources have corroborated the available data as well as provided information when data are missing in one of the sources. For example, 75.5 per cent of the Srebrenica-related records on the consolidated list have full dates of birth, against 53.5 per cent and 79.1 per cent on the ICRC and PHR lists, respectively.

To be accurate, the nine missing persons who were found on the Voters' Registers 1997 or 1998 have been deleted from the total number. Moreover, we have also subtracted the six missing persons from Srebrenica who have been found to be alive since ICRC published its version 3 in January 1997.¹⁷ Some or all of the six, whose identities are unknown to us, may be the same people as the nine mentioned above. Thus, the number of cases where persons registered as missing could be alive is between 9 and 15, i.e. a maximum of 15.

Table 1. Srebrenica-related missing and dead persons

	Number of records
On both ICRC and PHR lists	+5,712
On ICRC list only	+1,586
On PHR list only	+192
<i>Srebrenica-related missing persons registered by ICRC and/or PHR</i>	<i>7,490</i>
Found in Voters' Registers 1997 and 1998	-9
<i>Srebrenica-related victims, excluding persons found in the Voters' Registers</i>	<i>7,481</i>
Found alive by ICRC since Jan. 1997 (identities unknown to us)	-6
<i>Srebrenica-related victims</i>	<i>7,475</i>

Thus, we have found that at least **7,475** persons are dead or missing after the fall of Srebrenica, according to our conservative criteria. This number does not, however, include 148 cases of missing persons who may be Srebrenica-related according to either the ICRC or the PHR lists, but where the information are in conflict with regard to date and place of disappearance.

Moreover, the number does not include the unknown number of persons *not reported as missing*. This situation could arise for a number of reasons: there is nobody to report the missing because the entire family was killed; single persons without any surviving relatives; people too sick or old to be able to do the reporting; people too pessimistic or disillusioned to find it worth while to do the reporting; family members who emigrated too soon after the fall of the enclave to be captured by the

¹⁵ The consolidated list includes 19,692 persons missing from all of BH, where 6,980 records are found on both lists, 12,423 on the ICRC list only, and 289 found on the PHR list only.

¹⁶ We have included 63 persons reported to have disappeared in September 1995 and 39 persons disappearing during October-December 1995. We have also included 68 persons who are reported to be missing from the Srebrenica area in July 1995 but without exact day, because we believe that all, or almost all, of them disappeared on or after 11 July. Supporting this inclusion is the fact of the 6,727 persons who, according to the ICRC list, went missing from Srebrenica in July 1999 with a known day of disappearance, only 0.5 per cent went missing before the 11th.

¹⁷ According to a fax from ICRC, Sarajevo on 7.12.99, six of the 22 Srebrenica-related cases determined to be alive (as mentioned in footnote 9) were registered as missing in versions 3 and 4, which we based on our work on. The 22 cases found to be alive include everybody reported to ICRC since the first version of the ICRC list was published.

registration activities of ICRC (although the missing could also be reported from abroad); and persons not identified as Srebrenica-related because the information contained in the lists was lacking or incorrect. There may also be a few cases of people who were not reported as missing because their families were convinced that their relatives were dead and did not think it was worth while, or were not allowed by ICRC to do so.

Thus, the actual number is likely to be higher than 7,475 but we do not know how much. We have not, however, come across many examples of people missing or killed after the fall of the enclave who had not previously been reported as missing¹⁸. One indication of the high degree of completeness of the ICRC list is that PHR registered only 192 additional Srebrenica-related persons not on the ICRC list after a thorough search. Moreover, only a few of the bodies exhumed in Srebrenica-related graves and later identified, were not already on the ICRC and PHR lists.

Of the 7,481 missing persons there are 5,555 Bosniacs (Muslims) and 1 Serb. The ethnicity is unknown for the remaining 1,925 persons, because ethnicity was recorded only by PHR and not by ICRC. 753 persons, or 10.1 per cent of the total, are women, children and old men, see Table 2. The youngest are two girls, who were aged 8 and 9 when they disappeared. The sex and age distribution is shown in figures 1 and 2 in annex 1.

Table 2. People missing from Srebrenica by sex and age group¹⁹

Age group	Number	Per cent
Men <16	76	1.0
Men 16-60	6,727	89.9
Men >60	629	8.4
Men, age unknown	1	0.0
Women <16	2	0.0
Women 16-60	20	0.3
Women >60	26	0.3
Total	7,481	100.0

¹⁸ According to the list of 70 identified bodies provided by PIP (Podrinje Identification Project) on 27.10.1999, 68 persons are Srebrenica-related. Only two of these are registered neither with ICRC nor with PHR. According to PIP, one disappeared on the way between Srebrenica and Tuzla and the other on the way between Srebrenica and Kladanj. They were found in graves in Jelah in Bratunac, and Jezernica in Turalići, respectively and although the exact dates of disappearance are unknown, it is highly likely that these are Srebrenica-related cases. The only additional identified body from the grave of Jezernica in Turalići, is of a Srebrenica-related person who disappeared after the fall of the enclave. I.e., on the list of 68 Srebrenica-related identified bodies, only 2.9 per cent are not reported to ICRC or PHR. If we assume that the proportion of non-reported missing persons is the same for all who disappeared after the fall of the Srebrenica, the estimated number of persons who were not reported would be 217 based on the current number of 7,475. The two non-reported bodies are not included in our minimum estimate of 7,475 missing persons, however, since we do not have sufficient information about the exact time of disappearance to decide that they are Srebrenica-related.

¹⁹ As mentioned above the table includes six missing persons known to have survived, according to ICRC, but with ages and identities unknown to us.

Attempts at undermining the ICRC list of missing persons

Finally, we have investigated several claims attacking the credibility of the ICRC list by Serbian institutions and individuals.

- Lacking the date of birth:** “For 60 percent of people from the list there is no information such as date of birth, which is quite impossible, for they have been reported missing by their closest family members ...”²⁰ It is, however, not correct that the date of birth is lacking for 60 per cent of the persons missing from Srebrenica. Among the people on the ICRC list reported to be missing from Srebrenica and related places, such as Potočari, the *year* of birth is lacking for nobody, the *month* of birth for 44.4 per cent and the *day* of birth for 46.5 per cent.²¹ Moreover, it is not at all surprising that the informants did not recall the exact date of birth during such traumatic circumstances.
- Missing persons who vote:** “On the list of 3,016 missing persons officially recorded in the registers of the International Red Cross, the names of 350 persons whose identity has been established with certainty appear on the electoral list of September 1996.”²² There was, however, no registration of voters as such for the 1996 elections, instead the 1991 Census was used²³. Thus, it hardly surprising that many missing people were found on the “list of voters”, i.e. the 1991 Census. We would expect that almost all of these would be found on the Census list, but because the Centre only compared names beginning with letters A-K, and only records with complete information on both lists (about 1/2 on each list), only a fraction (about 1/8) would be expected to be found. In fact, we estimated the *expected* number of such matches with the *Census* list to be 360, which is almost identical to the actual number of 350 claimed by the Centre. This supports our conclusion that the Research Centre did their comparison of the ICRC list with the *1991 Census* - and not with a list of voters registered after the fall of Srebrenica.
- Radovan Karadžić, my defence:** In the book *Radovan Karadžić, my defence*²⁴ it is claimed that several persons reported as missing on the ICRC list also appear on the Voters’ list. The book lists only 17 persons by name, claimed to be “*picked out at random*” of a total of 3,016 “*dead men from Srebrenica who are at the same time put on the official roll for the elections in the Srebrenica municipality!*” Eleven of the 17 names are found on either the 1997 or the 1998 Voters’ list, but when the date of birth and ID number of these were checked with Census records, it became obvious that none of the persons mentioned in the book can be identical to persons on the Voters’ list, i.e. they are different people. This corroborates our finding about the very limited fraud using Srebrenica names to register for voting.
- People on the missing list who died from natural causes:** It is argued that the names of 76 persons on the ICRC list were Muslims killed in previous combat operations or who died from natural causes, and were buried at the cemetery of Kazani between 1992 and early 1995²⁵. We did not, however, find any of these names on the ICRC list with the same or approximately the same date of birth.

²⁰ Report submitted to the Tribunal by the “Law Projects Center Yugoslavia”, Belgrade, on 30.06.1998.

²¹ In our list of 7,481 Srebrenica-related missing persons the date of birth is missing for 24.5 per cent.

²² “Centre of Research into War Crimes Committed Against the Serbian People”, Belgrade, in a report called “Les Disparus qui Votent” (missing persons who vote). The report was submitted to ICTY on 13 April 1999 by Marie Mattei.

²³ Letters from OSCE to ICTY dated 17 September and 29 October 1999.

²⁴ Dejan Lukić, *Radovan Karadžić, My Defence*, ETNOS. ISBN 86-431-0046-6. Place and time of publishing not given.

²⁵ Report provided by Professor Ivanišević. The report was submitted to ICTY on 13 April 1999 by Marie Mattei.

Are the missing persons dead?

The ICRC and PHR lists are primarily lists of missing and not dead people. It is generally assumed, however, that most if not all of these people are dead.²⁶ But what is the evidence of this? In addition to witness statements, books, documentaries etc, we know the following:

- Of the approximately 1,900 bodies exhumed so far only a few have been identified. Of the 70 names on a list of identified by the Podrinje Identification Project on 27.10.1999, which may be considered to be a random sample in this connection, 66 appear on our list of 7,481 Srebrenica-related missing persons. Of the remaining four, two are listed as having disappeared in 1992 and two are believed to have gone missing after the fall of the enclave.
- The age distributions of the Srebrenica-related missing persons and the exhumed bodies are very similar (figure 3), indicating that the exhumed bodies are a random sample of the persons assumed to be killed after the fall of the enclave. It is not surprising that there are some differences between the distributions, however, considering the uncertainties involved in estimating the age of an exhumed body, especially since the estimates are often based on fragments of bodies (see the report referred to in footnote 1). There is also uncertainty due to the fact that the exhumed bodies is only a *sample* of the missing persons (sampling variance).
- Only 22 Srebrenica-relevant persons of a total of 7,421 persons have been found to be alive by ICRC since they started registering them in July 1995, and only six since January 1997, in spite of strong efforts by ICRC to find survivors²⁷.
- Only nine Srebrenica-related missing persons can be found on the Voters' Registers 1997 and 1998, which strengthens the argument that very few of the persons missing from Srebrenica survived.

These points support a conclusion that the missing people are dead.

Summary and conclusions

After analysing and matching several versions of the ICRC and PHR lists of missing persons, and also comparing them with the pre-war Census list and two post-war lists of registered voters, we conclude that:

At least **7,475** persons are missing in connection with, the fall of the Srebrenica enclave on 11 July 1995, according to our conservative criteria. Also, an unknown number of persons were probably not reported as missing, for various reasons. Our estimate is lower than the commonly referred to range of 8 - 10,000 killed persons, which need not be wrong but which we do not find that sufficient evidence has been provided for. Thus, the actual number of killed and missing is likely to be higher than 7,475 and this figure should be considered a *minimum estimate*.

In support of this conclusion, the number of 7,475 is very close to the number of Srebrenica-related cases published recently by ICRC, 7,399²⁸.

²⁶ The same conclusion has been drawn by ICRC: "In February 1996, the ICRC's conclusions were made public for the first time: that the vast majority of the missing men had been killed after capture and that many others had been killed in armed confrontations while fleeing the enclave or in lieu of arrest." Source: ICRC Special Report "The issue of missing persons in Bosnia and Herzegovina, Croatia and the Federal Republic of Yugoslavia". The date of publication not given but it is probably 1 February 1998.

²⁷ See footnotes 9 and 16.

²⁸ 7,421 less 22 cases determined to be alive, according to "Tracing requests Missing in BiH (updated on 29/09/99)", International Committee of the Red Cross, Sarajevo. The ICRC number includes, however, also some persons who went missing from Srebrenica *before* the fall of the enclave and some people whose disappearance is related to the fall

There is no evidence that any significant number of the Srebrenica-related missing persons have survived. On the contrary, all available information indicates that all - or almost all - of them are dead: Only six survivors have been identified since January 1997 in spite of strong efforts by ICRC and others to find survivors; only nine Srebrenica-related missing persons can be found in the Voters' Registers 1997 and 1998; a large number of bodies have been found in mass graves near Srebrenica - 1,909 so far; of 70 identified exhumed bodies 66 are found on our list of Srebrenica-listed missing persons and of the remaining four, two appear on the ICRC list as having disappeared in 1992.

Almost all of the missing persons are men (99.4%), but many of the men are young boys under 16 (76 persons) or old men above 60 (629 persons). Only 48 of the missing persons are women, the youngest being 8 years old at the time of disappearance. Of the 5,556 persons for whom ethnicity is known from the PHR list, all but one are Bosniacs (i.e. Muslims), the single exception being a Serb.

Our study shows that the missing persons are real, and not made-up, persons who lived in the Srebrenica area before 1995. Of a sample of missing persons more than 90% appeared in the Census 1991 files for Srebrenica and five neighbouring municipalities, and almost everybody who was in the enclave before it fell lived in these seven municipalities (footnote 12).

Finally, our analyses strongly reject claims that many persons on the ICRC list were entered wrongly. There is no indication of large-scale fraudulent registration of missing persons, although there may be a few cases of persons who are listed as missing but who should have been removed from the list. Moreover, there is no evidence of large-scale fraudulent use of Srebrenica missing persons' identities in the registration of voters in 1997 and 1998.

ANNEX – FIGURES

Figure 1. Missing men from Srebrenica by age at disappearance

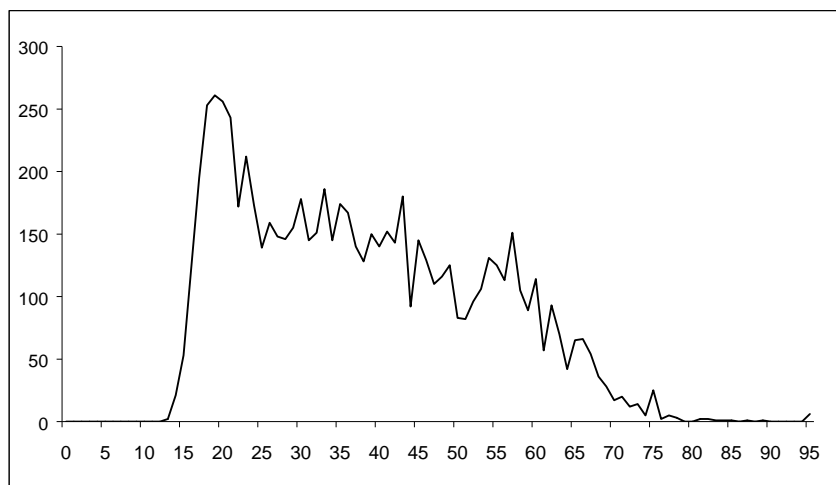
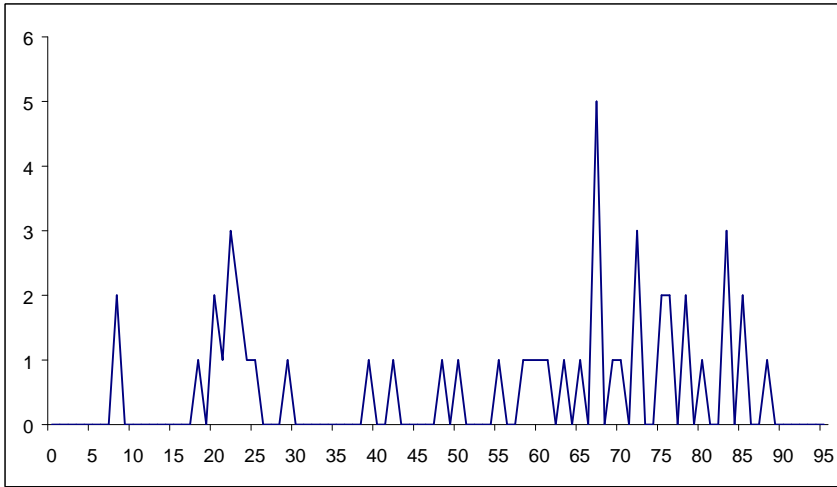
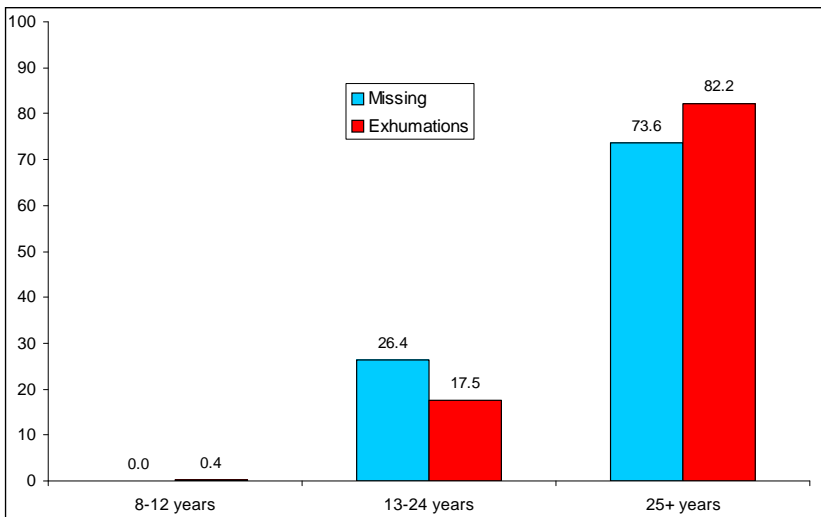


Figure 2. Missing women from Srebrenica by age at disappearance**Figure 3. Age distribution of missing persons and exhumed bodies. Per cent.**

**MISSING AND DEAD FROM SREBRENICA:
THE 2005 REPORT AND LIST**

Helge Brunborg, Ewa Tabeau and Arve Hetland
Office of the Prosecutor, ICTY

16 November 2005

**EXPERT REPORT FOR THE CASE OF
VUJADIN POPOVIĆ ET AL. (IT-05-88)**



1. EXECUTIVE SUMMARY

In the year 2000, the OTP demographers, Helge Brunborg and Henrik Urdal, compiled a list of missing and dead persons from the Srebrenica territory, see the expert report of Brunborg and Urdal (ERN 0092-6372-0092-6384), hereafter the **2000 OTP report**. The names in the attachment to this report will be called the **2000 OTP list**. Originally, the report was presented to the Trial Chamber in the KRSTIĆ case (IT-98-33), and later also to the Trial Chambers of VIDOJE BLAGOJEVIĆ et al. (IT- 02-53) and SLOBODAN MILOŠEVIĆ (IT-02-54). The 7,475 persons reported on this list disappeared as a result of the fall of Srebrenica in July 1995. The number of missing and dead on this list was obtained on the basis of two sources: the 1997 and 1998 editions of the ICRC¹ list of missing persons, and the 1999 version of the PHR² list of missing persons.

Because of new information that has become available to the OTP between the year 2000 and September 2005, and in particular the 2005 version of the ICRC list of missing persons, and also because of the progress made in the identification of bodies exhumed from the Srebrenica territory, the OTP decided that an update of the 2000 list of missing and dead persons from Srebrenica was required (hereafter called the **2005 OTP report** and the **2005 OTP list**). In order to present the Trial Chamber with the most recent available evidence related to Srebrenica victims, two projects were conducted at the OTP in August-September 2005:

- **Compiling the 2005 OTP list** of missing and dead from Srebrenica by exploring the 2005 version of the ICRC list of missing persons from Bosnia and Herzegovina. The resulting 2005 OTP list on Srebrenica victims largely confirmed the names included on the 2000 OTP list. In addition to this, 186 new names of missing and dead persons were added to the 2005 list.
- **Validating the number of known deaths** on the 2005 OTP list for Srebrenica, by tracing the **identified persons** exhumed from the Srebrenica territory, that at the same time were reported on the 2005 OTP list of missing and dead from Srebrenica. This issue is discussed in a separate report, (the so-called Addendum to the 2005 Report), where we found that out of the overall total of 2,591 exhumed and identified Srebrenica-related bodies (ICMP; closed as well as open cases; as of 9 September 2005), exactly 2,488 names (96%) appear on the OTP 2005 list of missing and dead persons, which is a strong evidence that almost all, with perhaps a few exceptions, of the missing are dead. Moreover, exactly 2,395 of the exhumed and identified persons were also found on the 2000 OTP list.

The relatively small number of the new names added to the 2005 OTP list on Srebrenica victims and the large number of identified persons found on both the 2005 and 2000 lists confirms that the 2000 list was highly complete and reliable.

Both projects were conducted by Helge Brunborg, an external expert to the OTP (formerly an OTP staff member; currently at Statistics Norway), in cooperation with Ewa Tabeau and Arve Hetland of the Demographic Unit, the Office of the Prosecutor (DU-OTP).

¹ ICRC stands for the International Committee of Red Cross.

² PHR stands for the Physicians for Human Rights, an American non-governmental organisation that collected records of missing persons from the Srebrenica territory, see the Brunborg and Urdal 2000 report for more information.

The detailed results of these two endeavours are the following:

- The 2005 OTP list of missing and dead related to the fall of Srebrenica contains 7,661 names, i.e. 186 additional names compared with the 2000 OTP list.
- We found a high degree of consistency between the previous list from 2000 and the current list, meaning that almost all names are on both lists.
- Comparisons with post-war lists of voters and displaced persons indicate that it is quite unlikely that many, if any, of the missing persons survived the war, but to be on the conservative side we have excluded 12 (out of 27 potential) such cases from the 2005 OTP list of missing and dead persons.
- Only 27 persons have been removed from the 2005 OTP list of missing persons for administrative or other reasons, such as errors.
- 2,054 missing persons from the 2005 OTP list have been confirmed to be dead, (as the ICRC closed cases – dead), as of 17 August 2005, but the identification process is continuing.
- In a public statement made on 10 July 2005, the ICMP³ announced that 2,079 individuals (closed cases only) have so far been identified through the DNA matching and that every week new matches are found.
- The age and sex distribution of those still missing and those confirmed dead are remarkably similar.
- 96.4 % of those reported as missing or dead disappeared in July 2005
- 97.2 % of those reported as missing or dead were the residents of Srebrenica and four other municipalities in the region (Bratunac, Vlasenica, Zvornik and Han Pijesak))

Our overall conclusion is that a minimum of 7,661 persons from the Srebrenica enclave are missing and presumed dead, i.e. 186 more than in the 2000 OTP report. More than 2,000 of the persons registered as missing have been confirmed dead, most of them through DNA analysis of victims and their relatives. These results are corroborated by the ICMP announcement that 7,789 Srebrenica victims are registered in the ICMP blood donors database, of which (as mentioned already) 2,079 have been identified and closed until 10 July 2005.

These findings support the conclusion that the remaining missing persons, who have not been accounted for, are dead. As in the 2000 report we have found that only a very small number of the persons registered as missing could be alive. Finally, we have found no proof that persons registered as missing are fictitious persons.

2. BACKGROUND

When the enclave of Srebrenica fell on 11 July 1995 a number of men tried to escape by walking through the forest, and many of them were killed on the way or after surrendering or being captured. Others were separated from their families in Potočari and later executed. Several women, children and old men were also killed. Many dead bodies were buried in mass graves, which were often disturbed soon after, while others were left in the forest. The

³ ICMP stands for the International Commission for Missing Persons in Sarajevo, which is the main international organization mandated to conduct the identification of human remains exhumed from graves in the area of Srebrenica and the entire Bosnia and Herzegovina. As the identification method, the ICMP applies the DNA matching of the exhumed bone samples and the blood sampled collected from the relatives.

total number of victims is not known. Exhumations conducted by the ICTY and local Bosnian Commissions for Tracing Missing Persons have uncovered more than 7,000 bodies out of the (broadly defined) Srebrenica territory. Of these more than 2,000 have so far been identified.

Information sources that reliably cover the fall of Srebrenica allowing for a detailed statistical analysis of victims, and in particular making it possible to obtain the total number of Srebrenica victims, and its basic demographic distributions, are limited. The 1997-1998 ICRC⁴ and 1999 PHR lists of missing persons belong certainly to the best existing sources in this regard. These two lists (the 1997-1998 ICRC and 1999 PHR editions) were used by OTP in producing the 2000 list of missing and dead persons from Srebrenica (i.e. Brunborg and Urdal's list).⁵ Since July 1998 (when 4th 1998 edition of the ICRC list was published), the ICRC has systematically up-dated their list for Bosnia, the latest up-date being from July 2005. All subsequent up-dates of the ICRC list are available from the ICRC website on the Internet (http://www.familylinks.icrc.org/mis_bos.nsf/). Despite the fact that the vast majority of ICRC records of missing persons from Bosnia was collected before 1998, and that the post-1998 up-dates of the ICRC list of missing persons were limited, there are several hundreds of new records on the 2005 ICRC list when compared with the previous editions of the ICRC list. Whereas the ICRC has continued their activities in Bosnia until the present time, the PHR has unfortunately closed their Srebrenica project after 1999, and this source is not up-dated any longer.

The new 2005 OTP list of Srebrenica-related missing persons is based almost solely on the most recent, i.e. as of August 2005, version of the ICRC list of missing persons for Bosnia and Herzegovina. The previously reported PHR records have been kept exactly as reported on the 2000 OTP list. There are now (i.e. on the 2005 OTP list) very few missing persons registered only on the PHR list and not on the ICRC list, just 23, whereas there were 192 such persons on the 2000 list. Consequently, the 2005 OTP list of missing and dead persons is almost entirely based on the ICRC list and this report therefore focuses on the ICRC and to a much lesser extent on the PHR data.

The objective of this report is to use the sources on missing persons and other data (i.e. on identified persons), to arrive at a reliable estimate of the number of people who were killed or who are still missing after the fall of Srebrenica. We have paid particular attention to data on missing persons who have been confirmed dead. This report gives relatively more attention to results and less to methodology and data quality as compared to the 2000 report. A more thorough discussion of these issues can be found in the previous report. Importantly, the methodology applied in the 2005 OTP report is basically the same as the one used for the 2000 OTP report, although some methodological improvements have been done. The data quality has also improved in 2005 as compared with 2000.

This report contains the following sections:

1. Executive Summary
2. Background
3. Definition of Terms for Srebrenica victims

⁴ The 1997-1998 ICRC list of missing persons for Bosnia and Herzegovina is actually a merge of two lists: version 3 of the ICRC list from January 1997 and version 4 from July 1998.

⁵ Most of the work on the 2000 OTP list of missing persons was done in 1999. The report by Brunborg and Urdal was submitted to court in February 2000 and the list of missing persons in May 2000.

4. Data Sources of This Report
5. Sources on “Missing-Exhumed-Identified” Persons
6. Methodology
7. Results

The 2005 OTP list of persons reported dead or missing in relation to the events in the Srebrenica territory in July–December 1995 is attached as a separate document.

3. DEFINITION OF TERMS FOR SREBRENICA VICTIMS

In this report, the terms “missing” and “disappeared” are used interchangeably. To qualify as a Srebrenica-related missing person, i.e. a person missing in connection with the fall of the enclave on 11 July 1995, the following definitions were applied:

- *Date of disappearance:* This phrase refers to the date a missing person was last seen alive.⁶ This is, however, not necessarily the date the person may have been killed. Records with a reported disappearance or death between 11 July, (or immediately before, but not earlier than 1 July), and 31 August 1995, were considered the most relevant, but also records with disappearances between 1 September and 31 December 1995, from locations in or near the enclave, were included in our analysis.
- *Place of disappearance:* This phrase refers to the place a missing person was last seen alive.⁷ Again, this is not necessarily a reference to where the person may have been killed. A person may, for example, have left Srebrenica on 11 July and started to walk through the forest, been picked up by the RS Army and transported to a place, say Nova Kasaba, where he was executed. The place of disappearance in this example could be any of Srebrenica, “Forest” or Nova Kasaba, depending on who saw him last alive. For this project a list was compiled of “missing”-locations related to the fall of the enclave. This compilation was done in close co-operation with investigators knowledgeable of refugee flows from the enclave, and after consulting with people from the area on difficult cases.⁸ For the OTP 2005 list the municipalities covering these locations, together with the date of disappearance, was used to decide whether a person disappeared in relation to the fall of Srebrenica. The following municipalities were considered relevant: Bijeljina, Bratunac, Han Pijesak, Kalesija, Ključ, Rogatica, Šekovići, Srebrenica, Vlasenica and Zvornik. Brunborg and Urdal (2000) also included in their list a few records of citizens of Bosnia who disappeared in three municipalities in Serbia (bordering the Srebrenica area): Bajina Bašta, Ljubovija, and Valjevo. Also these three municipalities were considered relevant.

⁶ This could either be the date the informant her/himself last saw the person alive, *or* a date based on information provided by an eyewitness through the informant.

⁷ This could either be the place the informant her/himself last saw the person alive, *or* information provided by an eyewitness through the informant.

⁸ PHR asked the specific question “Did he/she disappear after the fall of Srebrenica in July 1995?”, and the answers to which were provided to us for each Srebrenica-related person. We have used this information in conjunction with date and place of disappearance to make the list of Srebrenica-related places of disappearance. ICRC did not pose any precise question to the informants but defined Srebrenica-related victims on the basis of the story given by the informant, which usually starts with: “During the fall of Srebrenica” or “After the fall of Srebrenica”. (Fax to ICTY from ICRC, Sarajevo, 7.12.99.) However, this information was not provided to ICTY for the missing persons.

4. DATA SOURCES OF THIS REPORT

4.1 SUMMARY OF SOURCES

The major source used in the compilation of the 2005 OTP list of missing and dead persons from Srebrenica was the 2005 version of the ICRC list of missing persons for Bosnia and Herzegovina, dated 17 August 2005. A second major source, as in the case of the 2000 OTP list, was the PHR Ante-Mortem Database, versions from May, July and October 1999 merged together and analysed jointly with the 2005 ICRC list. Due to a large overlap with the ICRC list, only very few exclusive PHR records (23) entered the 2005 OTP list of missing and dead from Srebrenica, whereas all remaining records were from the ICRC list.

The ICRC and PHR lists were the major but not the only sources used, however. This report is also based on the following additional sources for Bosnia and Herzegovina with data on individuals:

- Population Census 1991.
- Voters' Registers from 1997, 1998 (merged: 1997-98), and 2000.
- Database of Displaced Persons and Refugees (DDPR), version 2000.

The 1991 Census served as a reference source linked with the ICRC and PHR lists and searched through in order to check the personal details of individuals reported missing or dead in relation to Srebrenica, to study their ethnicity or place of residence reported in the 1991 Census, and to eliminate possible duplicates on the Srebrenica missing persons list. The Voters' Registers 1997-98 and 2000, and the DDPR-2000, were used as sources on the post-war population that survived the conflict of 1992-95. These three lists were used to attempt to identify possible survivors reported on the Srebrenica missing persons list.

Finally, several comparisons were made of the new 2005 OTP list with the previous 2000 OTP list of missing and dead persons related to Srebrenica.

All above-mentioned sources are summarized below.

4.2 THE 2005 ICRC LIST OF MISSING PERSONS FROM BOSNIA AND HERZEGOVINA

The ICRC started the registration of missing persons from the territory of Srebrenica and neighbouring municipalities soon after the fall of the Srebrenica enclave (already in July 1995), primarily to register persons believed to be in detention. The registration of Srebrenica victims, as of all other victims of the Bosnian war, has continued until the present. The work of ICRC in Bosnia and Herzegovina has so far resulted in the publication of six editions of their list of missing persons (the 6th edition published in October 2004), as well as an addendum containing about 1,000 entries (published in 2000). The 4th, 5th and 6th editions of the ICRC books contained records of still missing persons as well as known deaths.

In addition to publishing these books, ICRC maintains a website where the names of (still) missing persons from Bosnia and Herzegovina are presented. The website, available at http://www.familylinks.icrc.org/mis_bos.nsf/bottin, is regularly up-dated.

The 2005 up-date of the ICRC list of missing persons for all of Bosnia and Herzegovina used for this report was provided directly by the Geneva Office of the ICRC on 17 August 2005

(ERN: D000-1714-D000-1714). The list sent to the OTP in August 2005 is broader than the web-based list of “still missing” only, including some information about the body for those still missing and about persons who are not missing any more. The 2005 ICRC list provided to the OTP has five components:

- still missing with information about the body not yet available (14,105 records);
- still missing with information about the body already available (1,528);
- ICRC closed cases, i.e. confirmed deaths (6,093);
- alive persons, i.e. cases no more valid as part of the missing persons list (434);
- administrative exclusions (52).

Altogether these lists contain 22,212 records, of which 21,726 are related to still missing or dead persons and 486 are no more relevant.

The 2005 ICRC list, as all previous editions of the list, includes data on surname, first name, father’s name, sex, date and place of birth, and date and place of disappearance (reported as the “place – municipality”).

It is noteworthy that even though ICRC obviously has improved their records throughout the years since the publication of their first list in 1996, empty or incomplete fields are still seen on the 2005 ICRC list. The most frequently incomplete items are date of birth (28.8 % incomplete; 6,403 incomplete DoB out of 22,212 records; but only 12 without year of birth) and date of disappearance (11.8 % incomplete; 2,624 incomplete out of all 22,212, but only one record without year of death). The other variables are recorded for almost everybody – but that does not necessarily mean that they are always correct. Errors are seen in the spelling of names of persons and places. Moreover, from comparing several lists we know that there are errors, although mostly small, in variables such as date of birth. Such errors are common all over the world in data collected through questionnaires in surveys, censuses and elsewhere. It is, therefore, not surprising that there are errors in variables concerning tragic events collected in a chaotic and traumatic situation.

4.3 THE PHR ANTE-MORTEM DATABASE FOR PERSONS REPORTED MISSING FROM THE SREBRENICA AREA

PHR started their registration process somewhat later than ICRC, in July 1996. Their objective was to produce an ante-mortem database that could later be used in the identification of exhumed bodies. The process included, therefore, very detailed questions about the missing persons, such as special physical characteristics and clothing, which were often emotionally difficult for the informants to answer. At the same time, the informants were often far better prepared for the interview situation than when they reported their relatives as missing to ICRC, with many providing identification papers for the missing persons. The PHR Ante-Mortem Database has been and is still used today in the identification process of Srebrenica victims in the framework of the Podrinje Identification Project in Tuzla, which was established and co-funded by both local Bosnian state authorities (Entities) together with the ICMP in Bosnia and Herzegovina.

As the ICRC, the PHR collected data on surname, first name, father’s name, sex, date and place of birth, date and place of disappearance. The PHR also registered the ethnicity of missing persons.

Although the objectives and the procedures for the two registration activities of ICRC and PHR seem somewhat different it is our conclusion that the type of cases registered were very similar. Both activities were done to trace missing persons; more than 95 % records were reported by close relatives; and registration of persons known to be dead was accepted in several cases. The PHR list has fewer cases than ICRC most likely because PHR started later than ICRC and worked actively to register persons in only two areas (Tuzla and Sarajevo).

The PHR Ante-Mortem Database (AMDB) we used was updated in July 1999 but we also received some additional information from PHR in May and October 1999, totalling 7,269 persons, about 80 per cent being Srebrenica-related.

4.4 THE 1991 POPULATION CENSUS FOR BOSNIA AND HERZEGOVINA

In statistical practice, the population census is usually the largest and most complete source of information about the population in a country. The 1991 Population Census covered the entire population of Bosnia and Herzegovina as of 31 March 1991. During the Census, information was collected about a total of 4,4 million individuals. The information about individuals was obtained in face-to-face interviews based on a census questionnaire designed in a uniform way for the whole country, i.e. the former Yugoslavia.

The census files contain one record for each enumerated person. These records include information on a large number of variables, such as the municipality and settlement of residence, name and surname, father's name, household sequential number, personal ID number, date and place of birth, sex, occupation, ethnicity, mother tongue, religion, educational attainment, the number of children born (for women only), and many more.

The overall data quality is good, except for frequent errors in the persons' names. These errors are mostly consequences of poor optical scanning of the original forms (for example misreading V for U, as in MVSIC) and no subsequent checking and editing. To correct the scanning errors we employed several strategies. First, computer software was developed and applied to detect combinations of letters that are impossible in the B/C/S language. The software used the B/C/S syntax in order to access the viability of combinations. The impossible combinations were corrected by eliminating miss-shaped (illogical) characters and inserting their most likely equivalents. Secondly, we developed correction tables to eliminate scanning mistakes from the names. The tables contained the actual names and their correct versions which both were used by a computer programme to produce suggestions regarding the corrections needed. Then, these suggestions were controlled manually to discard any wrong corrections produced by the software. The accepted corrections were then applied to the data. Native speakers of the B/C/S language, who in addition were familiar with naming traditions in Bosnia and Herzegovina, undertook all these tasks. Furthermore, we also developed and applied computer software that utilised household information to correct surnames within households. The software checked the correctness and consistency of family names within the same households. Household members, whose family name was different from the (correct) name of others in this particular household, received the correct name. For instance, if MUSIC was the correct surname in a household, the person enumerated as part of this household under the name MVSIC would become MUSIC.

A second data quality problem is that for a number of records the unique 13-digit personal ID number (*jedinstveni matični broj*, JMB), introduced in the former Yugoslavia in 1981, is only partly available. The JMB consists of date of birth (DOB, 7 digits), region of birth (2 digits), a sex-specific sequential number (3 digits), and a check digit (1 digit). For our needs the date

of birth is essential, other components of the JMB being of less value. The date of birth is missing only for a few per cent of the 1991 population.

In our opinion, data-related problems do not discredit the census as a powerful source of information about the pre-conflict population in Bosnia and Herzegovina.

The census includes a variable on the ethnicity of the enumerated individuals. This allows us to study the population in the context of the 1991 ethnicity for all those individuals whose records have been linked between the two data sources (in the 1991 census and ICRC list). The question on ethnicity in the census questionnaire was open-ended meaning that individuals could declare themselves as belonging to any ethnicity. The majority of the 1991 census population declared themselves as belonging to one of the three major ethnic groups in Bosnia and Herzegovina: Serbs, Muslims, or Croats. Other ethnic declarations in the 1991 census included Yugoslavs (relatively frequently), combinations of ethnicities, such as “Serb-Croat” or “Muslim-Serb” (infrequently), and other national (e.g. Vlach or Gypsies) or foreign (e.g. Hungarians) ethnicities (less frequently). Those who called themselves Yugoslavs, or by names combining two ethnicities, were often children from mixed marriages. The Yugoslavs did not feel they belonged to any particular ethnic group and frequently disliked ethnic categorisation.

For this report, four ethnic groups were distinguished on the basis of ethnicity declarations in the 1991 census: Serbs, Muslims, Croats, and Others. The last group, Others, is a residual category and covers persons who declared themselves as Yugoslavs, combinations of ethnic groups, and other national or foreign ethnic groups.

4.5 THE VOTERS’ REGISTERS OF 1997, 1998, AND 2000 FOR BOSNIA AND HERZEGOVINA

The Voters’ Registers discussed in this section were established under the auspices of the OSCE; i.e. the Organization for Security and Co-operation in Europe; they are therefore often referred to as the OSCE Voters’ Registers. The basis for establishing these registers was the 1991 Population Census that after the conflict was the latest available complete source of information about the population of Bosnia and Herzegovina, and in particular about the eligible voters. Note, however, that Voters’ Registers cannot be used as a source on the overall population size in 1997, 1998, or 2000. In these years the population of Bosnia was certainly larger than the approximate 2.7 million voters covered in the Registers (probably around 3.5 or more million). However, all Registers can be safely seen as a large sample of the population that survived the 1992-95 conflict in Bosnia and Herzegovina. Noteworthy this population was aged 18 years or older at the time of elections; children below 18 years of age, who are not eligible to vote, are not represented in the Registers.

The 1997-98 Voters’ Register is a large sample of the 1997-98 population of eligible voters of Bosnia and Herzegovina. All voters who registered to vote in 1997 and in 1998 are covered in this source. We merged the two Voters’ Registers (1997 and 1998) in one (1997-98). The overlap of these two lists is large. Only about 150,000 records are new in 1998 (1st registration in 1998). All other records reported in the 1998 register are also covered in the 1997 register. While merging the registers, we included all records from 1997 (1st registration in 1997) and additionally the new records from 1998 (150,000 records from the 1st registration in 1998). In most cases, the 1998 records appeared to cover municipalities where the registration was less complete in 1997. The total size of the merged 1997-98 Voters’

Register is 2,674,506 records and it mainly covers the year 1997. The size of the 2000 Voters' Register is 2,296,308 records.

Voters' Registers contain information about surname, first name, JMB, DoB, municipality of residence in 1991, municipality of registration to vote, and the municipality they wanted to vote for.

The Voters' Registers have some of the same deficiencies as those discussed for the Census (e.g. spelling mistakes, incomplete or missing JMB, etc.). These deficiencies were corrected in the same way as for the Census.

4.6 THE REGISTER OF DISPLACED PERSONS AND REFUGEES 2000 FOR BOSNIA AND HERZEGOVINA

The register of Displaced Persons and Refugees (DDPR) is an official source of information of the government of Bosnia and Herzegovina and UNHCR. The development of the database was co-ordinated by UNHCR, while municipal authorities provided the input data for the database. The database covers the entire country. The 2000 version, made available to the Demographic Unit, reports persons who in the year 2000 were still registered as displaced from their pre-war homes and in need of a durable solution. A copy of the DDPR was acquired from the State Ministry of Human Rights and Refugees (MHRR) in Sarajevo in mid August, 2002.

The database contains information for about 583,816 persons. Among them it also includes about 60,000 persons born after 1 April 1991, who can not be matched with the 1991 Census. For about 1/3 of the persons reported in DDPR the available information is very complete (this is the third that actually made the application, 191,954 persons). Items such as names, date and place of birth, place of residence before the conflict, marital status, ethnicity etc. are all available. For the remaining 2/3 (i.e. families of the applicants, 391,862 persons), the information is more limited and includes only names, date of birth, sex, kinship with applicant, and JMB. There is no information about place of birth or ethnicity of the family members. The only additional information is the work status and occupation of the spouse of the applicant, and the implied information about current residence. In this situation, assumptions or linked information are needed to process the data (e.g. assuming the same ethnicity as the applicant for all the other family members).

The overall quality of the data seems quite good, although there are some problems, such as the personal identification numbers (JMBs) which are incomplete or invalid in about 1/4 of all cases.

5. SOURCES ON "MISSING-EXHUMED-IDENTIFIED" PERSONS

The OTP list of missing persons related to the fall of Srebrenica in 1995 has been occasionally criticised for the fact that it mainly presents missing persons, whereas the confirmed deaths reported on this list constitute only a small fraction of the overall total of Srebrenica victims. This was indeed the case with the 2000 version of the OTP list, when only a few individuals of the 7475 missing persons had been confirmed dead. This is not the case for the 2005 OTP list, however. The number of known deaths on the 2005 list is 2,054 out of the 7,661 reported names, which is 26.8% of the total. This number is based on the ICRC closed cases. In addition, we have good reasons for believing that the known deaths on

the 2005 OTP list are underrepresented at the expense of persons reported as “still missing”. The reason for this is that organizations operating in the area of exhumations and identification likely have more records of known deaths than the ICRC. It is also obvious that the number of known deaths generally will increase in the future, reflecting the progress made in the exhumation of human remains from graves in the Srebrenica area and in the identification of these remains.

It has been one of the goals of this report to find out how many of the missing persons have been exhumed and identified so far. With regard to the exhumed bodies, this task appeared to be rather complex, however.⁹ The number of identified persons also varies, depending on the identification approach considered (DNA matching versus other methods of identification, such as presumptive identification cases based on IDs, clothing, other personal belongings etc. of the exhumed victims).

A concise yet exhaustive overview of the exhumation and identification status in the former Yugoslavia, and in Srebrenica in particular, is not available from one single organization. For Srebrenica alone, which is by far the most elaborated area, this information is scattered among several agencies. Information and documentation related to Srebrenica, are available from the Cantonal Court in Tuzla, Podrinje Identification Project in Tuzla (PIP; a joint project of ICMP and local authorities in Bosnia), ICMP Identification Coordination Centre (ICC-ICMP) in Tuzla, ICMP Office for Bosnia in Sarajevo, and University Clinical Centre in Tuzla (UCC). In addition to these, the newly established (August 2005) Institute for Missing Persons (IMP), funded by ICMP together with the Bosnian Government, and the BH State Commission for Tracing Missing Persons (CTMP), are in charge of much of the existing information about exhumations and identification of victims of the Bosnian war. The IMP and CTMP are now creating a central database on exhumations and identifications. Unfortunately, this database does not yet exist in a usable electronic format.

Despite of these difficulties we can conclude that of the about 22,000 missing persons reported in Bosnia, human remains of (at least) more than a half of this total have been exhumed so far (more than 13,000)¹⁰. A majority of these remains relate to Srebrenica, which is also best represented in the DNA matching and identification process. According to the PIP, about (at least) 7,000 body bags are stored in the Tuzla morgues. According to the ICMP estimate based on the blood samples collected so far, the number of missing persons from Srebrenica is 7,789.

The most reliable source on the exhumed and identified persons is with no doubt the ICMP. We used this source to check whether the number of known deaths is equal to or higher than

⁹ One reason for this is that several new grave sites have been found, some being rather large, the documentation of which yet needs to be studied. A second reason is that the re-association of remains has been considerably advanced by applying the DNA matching methodology to the exhumed bone samples. These new results need to be taken into account when producing an up-date on the Srebrenica-related sites and new estimates of the exhumed bodies, which is the main goal of a separate OTP project.

¹⁰ The FBH Exhumations Commission reported in December 2003 that they were aware of 8,188 bodies exhumed so far, of which 2,512 persons had been identified, (graves containing 5 or more bodies). The RS Exhumations Commission reported in January 2004 that they were aware of 2,525 bodies exhumed and 54 re-exhumed, of which 911 had been identified (during 1995-98, more identifications have probably been made since 1998). About 2,570 bodies were exhumed in the ICTY exhumations between 1996 and 2001, (graves with 2 or more bodies). These three totals add up to 13,283 bodies.

the ICRC-based total of 2,054 deaths. The results of this exercise are discussed elsewhere; in the present report we only generally summarize the method of the ICMP operation.¹¹

The International Commission on Missing Persons (ICMP) believes that as a legacy of the 1992-1995 war there are an estimated 40,000 persons missing from the former Yugoslavia, of which about 22,300 are from Bosnia and Herzegovina. ICMP, which was created in 1996 at the G-7 summit in Lyon, France, assists families, regardless of their ethnic or religious origin, in determining the fate of their loved ones lost during this conflict.

Many of these family members are most likely dead. The problem is how to identify them when, as in the case of those from Srebrenica, traditional forensic methods have only identified five to eight percent of the exhumed bodies. To address this problem, the ICMP employs modern technology to ensure that the bodies can be identified quickly and accurately, by using DNA sampling and matching. Bone samples taken from dead bodies and blood samples from living relatives are matched. Such samples, if matched, provide a reliable basis for the identification of a missing person.

Each human being has a distinct DNA code. Humans inherit this distinct code from their parents, therefore their DNA will bear similarities with their relatives: The closer the relative, the closer the match. The laboratories analyse certain points of the genetic code to determine whether a body's DNA matches a living relative's. When a comparison is said to result in a match, it is considered very accurate (probability of 0.9999, or probability of a false match of 0.0001). In order to keep this probability high, blood samples are ideally taken from *three* relatives of every missing person. The ICMP will have to collect at least about 100,000 blood samples in order to identify all missing persons from the territory of the former Yugoslavia.

Once a match is made, the result is sent to the pathologist, who, if satisfied, will sign the death certificate. To ensure that the system works, bodies have to be recovered from graves and elsewhere and blood samples have to be taken of relatives. Family outreach centres for collecting blood samples have been established in Tuzla, Sarajevo, Mostar, Sanski Most and Banja Luka. There are also ICC-ICMP mobile teams that collect blood samples from all over BiH and other regions of the former Yugoslavia. Most of the staff have worked for a long time with the ICMP, and are trained on how to approach people (relatives) and how to take blood samples.

The process of blood donating is entirely voluntary, and ensures complete confidentiality for the donor. Once either blood or bone samples have been taken, they are bar coded (done at the ICC-ICMP by computer) so that no one outside of the central office is aware of the details behind the sample. The DNA profile is separated out of the blood samples at the Tuzla University Clinical Centre.

Exhumations are the source for obtaining bone samples. Informants (e.g. witnesses or victims) report possible graves to the local Bosnian commission for missing persons, or to international organisations, such as SFOR, ICMP or ICTY. After a pre-visit to an exhumation site, with an assessment of the location and history of the site, the local court issues an exhumation warrant. It is at this point that the ICMP co-ordinates the proceedings. The digs are closely monitored by several agencies, to ensure that they are conducted legally and

¹¹ The review of the ICMP operation is based on materials from the ICMP website on the Internet and on interviews with staff members of the ICC-ICMP and PIP in Tuzla conducted during the missing of Ewa Tabeau (Demographic Unit, OTP) and Ronald Turnbull (Evidence Unit, OTP) to Bosnia in August 2004.

thoroughly. SFOR can provide information for the pre-visits and enhanced security for the site and surrounding area, if the dig is sensitive. The corpses go to one of the many morgues in the area of Sarajevo or Banja Luka, or in Tuzla for the Podrinje Identification Project (PIP).

PIP helps the DNA sampling project by extracting bone samples, as well as by carrying out more traditional forensic work, such as identifying bodies through old injuries and from clothes, which is also done at the Tuzla hospital. Small bone samples are taken, bar-coded for anonymity, and sent to a laboratory in Sarajevo, where the DNA is extracted.

The DNA profiles of the blood and bone samples are returned to the ICC-ICMP in Tuzla, where the matching is done. At the ICC-ICMP, all blood and bone samples are archived, all of them bar-coded, with names of donors being removed from the samples. The ICC-ICMP also maintains the ICMP databases containing among others the following modules:

- Blood donors (i.e. relatives of the missing)
- DNA matches and reports on matches
- Closed cases (i.e. positive identification), with names and other available personal details.

All ICMP records are identified through unique bar codes. The bar codes are consistently used throughout all databases and serve to establish unique links between them. The most valuable databases are those of the blood donors (relatives of the missing), DNA matches and identified persons.

Importantly, from our visits to the PIP and ICC-ICMP in August 2004 we learned that the identification of Srebrenica victims has been done very thoroughly. Thus, records on the identified persons can safely be presented in court.

6. METHODOLOGY

The methodology used for this report was the same as the methodology for the 2000 OTP list, i.e. matching of records on individuals from the 2005 ICRC list, 1999 PHR list, 1991 Population Census, and 1997-98 and 2000 Voters' Registers. The following steps were completed:

- First of all, a searchable database was established from the 2005 ICRC list of missing persons for Bosnia and Herzegovina,
- The 2005 ICRC list was matched with the 1991 Population Census. This was done through the link with the 2004 ICRC & PHR list, which resulted from merging all ICRC lists up to and including version 6 from 2004 and also PHR records. Information about the ethnicity and the place of residence according to the 1991 Census was incorporated into the 2005 ICRC list,
- The 2005 ICRC list was checked for duplicates; duplicates were marked and excluded from further analysis,
- The 2005 ICRC list was searched for Srebrenica-related missing persons, using the criteria of relevance to the fall of Srebrenica in 1995 (see Section 3) in order to select records for the 2005 OTP list,
- Srebrenica-relevant PHR records that were not reported in the 2005 ICRC list were added, resulting in the first version of the 2005 OTP list,
- An additional check for survivors was conducted, using the first version of the 2005 OTP list on one hand and all three Voters' Registers on the other hand.

- All matches of potential survivors reported in the 1997, 1998, 2000 Voters' Registers and/or DDPR-2000 were checked manually in the 1991 Population Census.
- A small number of potential survivors was excluded from the 2005 OTP list, which at this point became final.

6.1 MATCHING METHODOLOGY

When matching various lists with data on individuals our approach was to use the Access database program to search for records on one list that represent the same individuals on another list. If key variables are identical in two given lists the matched records are assumed to correspond to the same person, otherwise not. This would have been a fast and easy procedure if all individuals on each list were uniquely determined by one or more variables, such as an ID number, but this is not the case with all lists available to us. Although a unique ID number (JMB; *jedinstveni matični broj*) was introduced in Yugoslavia in 1981, it is not used by ICRC and PHR in their databases. Moreover, when it is used, such as in the 1991 Census and the OSCE Voters' Register, it is sometimes missing or wrong.

The matching of two lists was always begun by searching for records with identical names and date of birth. It is very unusual that two different persons have identical names *and* are born on exactly the same date, especially if we are only considering the population of a small area, such as a municipality or Eastern Bosnia. Quite often, however, names are spelled differently or the date of birth is recorded slightly differently – or missing altogether in one or both lists. Consequently, for persons not matched in the first round we made the search criteria gradually broader for one or more variables, for example by including only the *year* (and not the full date) of birth, or only the *initial* of the first name, in addition to the surname. The results of such matches have to be inspected visually, however, to decide if the matches are likely to be of the same person or not, by looking at the other available information, such as municipality and place of birth or residence. For example, the place of birth may be given as a municipality on one list and a small hamlet, located in the same municipality, on the other list. It would be very complicated, if possible at all, to automate such checks.

For difficult cases we checked the 1991 Census for more information about the persons in question, for example when one of the lists has information on an item which is also included in the Census but not on the other list, such as ID number or place of birth. The spelling of names was also checked in this way, often by looking at the names of other family members contained in the Census files.

Matching records from the ICRC and PHR lists of missing persons with the Voters' Registers presents a special problem, since only a limited number of variables are included in *all* of these lists. The father's name, for example, which is important for identifying people in BiH, is recorded in the lists of missing persons but not in the Voters' lists, whereas the opposite is the case with the national ID number (JMB). Thus, when we attempted to match records from these sources a large number of potential matches were often found since there were not always enough variables common to the two data sources to distinguish between real and false matches, for example when the full date of birth was lacking. To allow for errors in the date of birth we also searched for matches of records with a difference of up to several years in the year of birth. Such matches were not accepted, of course, before the likelihood of a match was confirmed after comparing information on other items, for example on various locations such as place of birth, residence or disappearance on the missing persons lists, *and* current municipality or municipality of voting in the Voters' list. A match of missing people and registered voters was not accepted if the locations were clearly inconsistent, for example

if a person was born, lived and went missing in Eastern Bosnia according to the missing lists, but registered to vote in and for a municipality in a completely different part of the country, according to the Voters' list.

The use of data from the 1991 Census was crucial in concluding whether a pair of potential matches of records from two different lists represented the same person. When, for example, a set of matched records from the ICRC/PHR lists and the Voters' list were also identified in the Census file, both the ID number and the father's name were checked in order to ascertain whether the matched records represented the same person. In some cases only one of a pair of matched persons was identified in the Census and not the other. In such cases the match was rejected if the father's name recorded in the Census differed significantly from the father's name recorded by ICRC/PHR. If only the person from the ICRC/PHR list was found in the Census file the match was rejected if the Census ID number differed significantly from the Voter's list ID number. There were no examples of matches where neither of the persons was found in the Census. This is both an indication of the completeness of the 1991 Census and the quality of the registers of missing persons, showing that false persons were not registered as missing to inflate the numbers or for other reasons.

To record the quality and basis for a match, a parameter was assigned to each matched person depending on the criteria used for the match. This parameter was used to study the number of accepted matches according to the type and quality of the match.

6.2 THE COMPILATION OF THE 2005 OTP LIST AND DUPLICATE CHECKS

As noted in the beginning of Section 6, the first step in the compilation of the 2005 OTP list of Srebrenica victims was related to establishing a database containing the 2005 ICRC records. The five original tables of ICRC were combined into one data table, and the five categories of records were marked in this table, i.e. still missing, still missing with info on death, closed cases alive, closed cases dead, and administrative exclusions. The resulting list (22,212 records) was checked for duplicates and 28 records were marked for exclusion. The remaining records were all considered unique.

In the next step, the 2005 ICRC list was compared with the latest *previous* version of the ICRC data at the OTP, i.e. the 2004 joined ICRC&PHR list, which contains all previous versions of the ICRC data, as well as the PHR records. The match of the 2004 and 2005 lists, based on the ICRC BAZ number i.e. the ICRC ID, was excellent: 21,800 records on the 2004 list were matches of the 22,212 records on the 2005 ICRC list. The remaining 412 records on the 2005 list were expected to represent new records unique to the 2005 ICRC list only. In order to make sure that they do not overlap with the 2004 ICRC&PHR records, several matching attempts were made using criteria other than the BAZ, mainly names. A few of these records were indeed successfully matched with the 2005 ICRC list (5 records), but the vast majority were not (407 records). The 407 unmatched records were considered to be additions to the 2005 ICRC list, i.e. missing persons that had not previously been registered by ICRC or PHR. We checked these records for the Srebrenica relevance criteria in order to identify records to add to the 2005 OTP list for Srebrenica.

During the matching of the 2005 ICRC list with the 2004 ICRC&PHR list, the consistency of the BAZ numbers was checked as well as the consistency of the names. The BAZ numbers were generally the same on both lists for the same missing persons, but some of the names were different (76, with all other information identical). The majority of these names were very similar, almost identical, and the differences were most likely due to spelling mistakes

or errors in entering the names in the computer. Only two persons had completely different surnames in the two lists, both being women who most likely changed their last name because of marriage. The first names were the same. Thus, there was no reason to exclude them from the analysis.

Using the links between the joined ICRC&PHR database and the 1991 Census, several items were copied from the 1991 Census to the 2005 ICRC list, including ethnicity and place of residence as reported in the Census.

In the next step records related to Srebrenica were selected from the 2005 ICRC list. Whether or not a record was previously, i.e. in 2000, marked as Srebrenica-related was not considered. The criteria used to select the Srebrenica-related records were the same as those specified in Section 3.

All records conforming to the range for date of disappearance and the municipalities of disappearance were marked as Srebrenica-related. Ten records previously marked as duplicates were excluded, bringing the overall total of relevant records to 7,677, see Table 1.

Table 1. Srebrenica-Related Records According to the Category in the Original 2005 ICRC Table

ICRC Category	Srebrenica-Related Records	
	Number	Per cent
Still missing	5,278	68.75%
Still missing, with info on death	318	4.14%
Closed cases, alive	26	0.34%
Closed cases, dead	2,054	26.76%
Administrative exclusions	1	0.01%
Total	7,677	100.00%

From Table 1 it can be seen that the new list of missing from Srebrenica, based on the 2005 ICRC list, includes records of 7,650 missing persons (7,677 minus 26 survivors and 1 administrative exclusion).

The selection of 7,650 records was made from the 2005 ICRC list, together with the 407 new ICRC records not reported on the 2004 or earlier lists. The 2005 ICRC list did not include several old PHR records, however. There were exactly 400 such records.¹² It was, therefore, necessary to check whether these 400 old records were overlapping with the 2005 ICRC list or not, using criteria other than the BAZ-number.¹³ In order to check their status as overlapping/non-overlapping, the 400 records were matched with the 2005 ICRC list based on the following three criteria:

- Same first name, same last name, and same first initial of father's name
- First three letters of first name, first three letters of last name, and first initial of father's name

¹² After matching the 2004 ICRC&PHR with the 2005 ICRC list using the BAZ numbers, 401 records from the 2004 ICRC&PHR remained unmatched; one of those records *had* been matched, but the BAZ-number was duplicated; this record was therefore ignored, and only 400 records considered relevant. These 400 records consist mostly of old PHR records and represent a possible extension to the 2005 ICRC list.

¹³ The PHR and ICRC do not use the same system of records' IDs.

- First initial of first name, first three letters of last name, and first initial of father's name

All potential matches were checked manually and only unquestionable links were kept. This procedure resulted in identifying 33 Srebrenica-related records (out of the 400) that are additional to the 2005 OTP list obtained so far. Of these 33, only 23 are marked as being from PHR (only), the rest are from various older ICRC lists (9 from older lists, 1 from 2004). Although we do not have information as to why ten names no longer appear on the ICRC list, it is most reasonable to assume that ICRC removed them for a reason, such as a technical error or being found alive, and that they therefore should not be included on the new list of missing. The 23 PHR records may be considered to be still missing, but were never reported to ICRC for various reasons. The new list of missing from Srebrenica can therefore be extended by the 23 missing persons reported by PHR only; none of those 23 are marked as duplicates. Thus, the new total of Srebrenica-related records on the 2005 OTP list is now 7,673 (7650 + 23).

In the last step we subtracted from the above-mentioned total (7,673) the 12 potential survivors identified in the Voters' Registers. The final number of records on the 2005 OTP list of missing and dead persons related to the fall of Srebrenica in 1995 is 7,661, as of September 2005.

6.2 SEARCH FOR POTENTIAL SURVIVORS

The 2005 OTP list of 7,661 missing and dead persons related to Srebrenica should, in principle, include no survivors. However, some of the registered missing persons could be later found in detention etc. and the relatives may have forgotten to strike them off the list. On the other hand, it is also possible that dead persons could be reported among the survivors such as voters, displaced persons or refugees. Political or economic advantages to be registered as a voter or a displaced person include the right to an additional vote for a party or additional economic support for the family, which can work as incentives for false registration. For both kinds of registration some kind of ID was required but it is difficult to say how strict the checking of the IDs was or how easy it was to obtain false identification documents. In addition to that, unintentional errors may have been made for a variety of reasons, such as typing and computer errors. Thus, the quality of such lists may not be trusted one hundred per cent and we need to explicitly address all names that appear on the list of missing on one hand and on the lists of survivors, i.e. voters or displaced persons, on the second hand.

In order to make sure that no survivors are indeed included in the 2005 OTP list, a search for possible survivors was conducted. This was achieved by two approaches:

1. Records marked as possible survivors by OTP in 2000 and consequently excluded from the 2000 OTP list, were checked to find out if they were still registered on the 2005 OTP list.
2. The 2005 OTP records were checked against the Voters' Registers (1997, 1998 and 2000) and against the BH Database of Displaced Persons and Refugees (2000).

The results of this exercise are reported in Table 2 below.

Table 2. Matches Between the 2005 OTP List of Missing Persons Related to the Fall of Srebrenica and Post-War Sources on the Surviving Population

Source on the Post-War Surviving Population	Included in the 2005 OTP list			Excluded	Total
	Still missing	Confirmed dead	Info about death	Still missing	
Voters 1997-98 (only)	7	2			9
Voters 1997-98 & Voters 2000 & DDPR 2000		1		5	6
Voters 1997-98 & Voters 2000		1		5	6
Voters 2000 (only)		1			1
DDPR (only)		2	1	2	5
Total	7	7	1	12	27

Abbreviations: DDPR: Database of Displaced Persons and Refugees, Voters: Voters' Register

When compiling the 2000 OTP list, the ICRC and PHR lists of missing persons were compared with the 1997 and 1998 Voters' lists, finding a total of 9 Srebrenica-related matches.¹⁴ The identities of these 9 persons have been checked with the 1991 Census for Eastern Bosnia.¹⁵ We are convinced that the matches are matches of the same people and not a mix-up of persons with the same name and identical or similar date of birth.¹⁶ Eight out of those 9 records can still be found on the 2005 OTP list of missing and dead from Srebrenica, (i.e. on the first selection of Srebrenica-relevant records from the 2005 ICRC list), under the same BAZ numbers. However, only 3 of the 9 possible survivors could be found on the 2000 Voters' Register, possibly indicating that the remaining 6 were not survivors after all.

The increase in the number of possible survivors from 9 in 2000 to in total 27 in 2005 is due to improved matching methodology, improved data quality, and an increase in the matching rate of the Voters' Registers with the 1991 Census achieved in the years after 2000. We have, e.g., corrected the misspelling of a large number of names in especially the 1991 Census, and the ICRC has improved the quality of its missing list considerably. For example, the proportion of records with full date of birth has increased from 65.8% in the ICRC 1997-98 list to 71.2% in the 2005 list.

Of the 27 matches on the 2005 OTP list of missing and dead persons related to Srebrenica with the post-war lists of survivors, exactly 8 matches represent persons that are recorded by the ICRC as confirmed deaths, i.e. the body has been identified (7 cases), or is believed to be dead based on information about the body from family members (1 case). The very same 8 matches are also seen among voters or displaced persons. This shows that the quality of the post-war lists is not perfect, as indicated above. In particular, it strengthens our suspicion that some or all of the matches of the missing list with lists of survivors may be due to errors, intentional or not, in the post-war lists - rather than errors in the missing lists.¹⁷

¹⁴ The comparison was done separately with three different combinations of data sets, including data for all of Bosnia and Herzegovina (BH): ICRC 3 and Voters' Register 1997; ICRC 4 and Voters' Register 1998 (done by OSCE Sarajevo); and PHR AMDB and Voters' Register 1998.

¹⁵ A special census file for Eastern Bosnia was compiled for this purpose, including the municipalities of Bratunac, Han Pijesak, Rogatica, Šekovići, Srebrenica, Vlasenica and Zvornik.

¹⁶ We found four additional genuine matches of persons disappearing in 1992 (2 from Bratunac, 1 from Srebrenica, and 1 from Zvornik). We also investigated thoroughly the identities of three additional matches, which revealed that each pair of matched records represented two *different* persons. We found, for example, that there were two persons with identical first names, last names and dates of birth, but different father's names, and another example of two persons having the same first names, surnames and father's names, but with different dates of birth and ID numbers.

¹⁷ Table 2 also includes the 9 matches of missing persons with the Voters' list that we found previously and excluded from the OTP 2000 list of missing and dead persons. Analysis of more recent data sources revealed that of these 9 matches, one is dead according to ICRC, 3 are still on the Voters'

However, to be on the safe side, we have decided to exclude some of these 27 potential survivors from the 2005 OTP list of missing and dead persons, while others will remain. We keep the 7 missing persons who only appeared in the 1997-98 Voters' Register but not in the more recent Voters' list or in the database of displaced persons and refugees (DDPR-2000). These matches are most likely the result of errors or fraud in the registration to vote. We also, quite obviously, include the 8 persons recorded by the ICRC as being dead. We exclude, however, the 12 persons who have been matched with the 2000 Voters' list and/or the DDPR-2000 list. We think, though, that the missing persons found in the DDPR are highly questionable since 3 of these 5 persons are dead, according to ICRC.

Thus, we conclude that of the 27 matches of the ICRC 2005 missing list with the three post-war lists of survivors, 15 can be quite safely regarded as missing while 12 should be excluded from our list of dead and missing. This does not mean that we are convinced that these persons are survivors. On the contrary, we think that it is more likely that all or most of them are wrongly registered as voters or displaced persons, rather than being wrongly registered as missing. Only further investigation may clarify this. The 12 (excluded) names are listed in an addendum to the OTP 2005 list of missing that is available with this report.

In any case, the number of such inconsistencies is very small compared to the total number of the 7,661 missing persons. This indicates that there cannot have been any large-scale campaign of registering living persons as missing.

list (2000 version), whereas 5 cannot be found in any other post-war list available to us. The appearance of the dead person on the Voters' lists 1997-1998 is most probably a case of error or fraud in the registration to vote.

7. RESULTS

7.1 GENERAL OBSERVATIONS

As already stated before in this report, the total number of victims related to the fall of Srebrenica in 1995 is at least 7,661 (Table 3). This number is 186 higher than the overall total of 7,475 individuals reported on the 2000 OTP list. The two OTP lists were compiled applying exactly the same methodology and almost the same sources (although more sources and more recent versions were used in 2005). The ICRC list of missing persons was still our main source. The 1997 and 1998 versions of the ICRC list were used for the 2000 OTP list and the 2005 ICRC version for the 2005 OTP list, in addition to the 1999 PHR list in both cases. The OTP lists were compiled separately from each other using, however, the same formal criteria. A large number of records appear on both lists (7,264, see next section). 397 records are new on the 2005 OTP list and were identified on the basis of the 2005 ICRC list of missing persons for Bosnia and Herzegovina.

As summarized in Table 3, 2,054 (26.8 %) of the victims are known to be dead (i.e. have been identified). Together with those not-yet identified but whose bodies are already found the number of dead is even higher and equals 2,372 (31.0%). The remaining individuals are still missing (68.7%).

Table 3. Number of Cases on the 2005 OTP List of Missing and Dead Persons Related to the Fall of Srebrenica By Victim Categories

Victim Category	Count	Percent
Still missing	5,266	68.7
Still missing, info about death	318	4.2
Closed cases, dead	2,054	26.8
Still missing, PHR	23	0.3
Total number of cases on the list	7,661	100.0

It needs to be noted that the actual number of confirmed deaths on the Srebrenica list is much higher than the number of the ICRC closed cases (dead) and the ICRC still missing whose bodies are now available. This observation is drawn based on additional recent sources of information that we have at our disposal and which will be discussed in an addendum to this report.

7.2 CONSISTENCY WITH THE 2000 OTP LIST

The two OTP lists, from 2000 and 2005, were compiled independently. The overlap of these two lists is large, however; 97.2 % of cases included in the 2000 OTP list were also registered on the 2005 list (7,264 out of 7,475, see Table 4).

The largest overlap, in relative terms, is seen for the closed cases (i.e. dead), where 1,979 out of 2,054 deaths were included on the OTP list in 2000, but almost all of them with unknown status as to death.

Table 4. Cases Reported Both on the 2000 and 2005 OTP Lists of Missing and Dead Related to the Fall of Srebrenica in 1995 by Category

Victim Category	2000	2005	% Overlap
Still missing	4,969	5,266	94.4
Still missing, info about death	295	318	92.8
Closed cases, dead	1,979	2,054	96.3
Still missing, PHR	21	23	91.3
Total Overlap	7,264	7,661	94.8

The number of additional missing persons on the 2005 OTP list is about 400 (i.e. 397). The number of 2000 records that are not on the 2005 OTP list is about 200 (i.e. 211). Many in the latter group are old PHR entries that are now reported by the ICRC. Some of these records were also dropped by the ICRC from their 2005 list, for reasons such as, for example, withdrawal by families, and technical reasons such as duplicates and replacing deficient records.

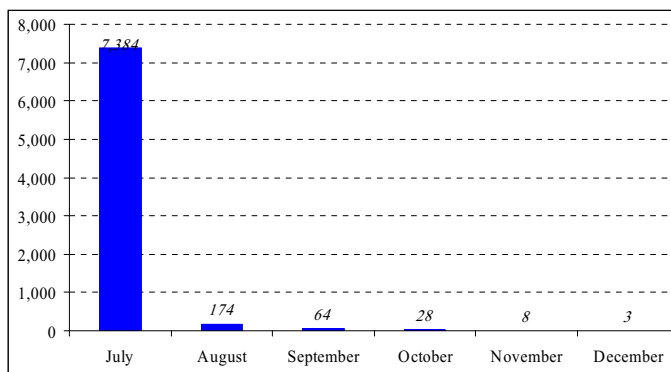
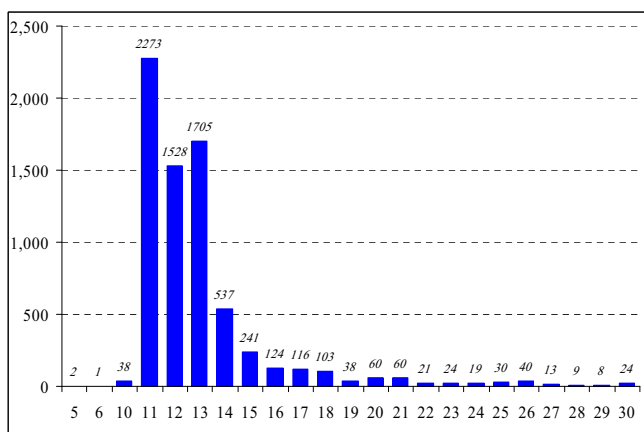
7.3 DETAILED RESULTS

The period analysed in this report, from July to December 1995, is relatively broad relative to the events in July 1995. The results shown in Table 5 confirm that the fall of Srebrenica and the following massacre was a rapid and short-term incident. 96.4 % of victims were reported as disappearing in July 1995. By the end of August 1995 almost 99% of victims had been reported missing; i.e. 7,558 out of 7,661. In absolute terms, “only” 103 victims disappeared in the period from September to December 1995.

Table 5. Srebrenica-Related Missing and Dead by Month of Disappearance

Month of disappearance	Count	Percent	Cumulative
July	7,384	96.4%	96.4%
August	174	2.3%	98.7%
September	64	0.8%	99.5%
October	28	0.4%	99.9%
November	8	0.1%	100.0%
December	3	0.0%	100.0%
Total	7,661	100.0%	100.0%

Figure 1a below illustrates these findings graphically. Figure 1b focuses on the daily distribution of disappearances during the month of July (7,384 out of the overall total of 7,661 missing). Most individuals disappeared on the 11, 12 and 13 July 1995 - 5,506 out of 7,661 cases (71.9% of all disappearances).

Figure 1a. Srebrenica-Related Missing and Dead by Month of Disappearance**Figure 1b. Srebrenica-Related Missing and Dead by Day of Disappearance in July 1995**

Note: Excluding 348 persons for whom the day of disappearance was not reported

The next topic analysed in this report is the place of disappearance. Table 6 and Figure 2 concentrate on the most frequent places of disappearance of the missing from Srebrenica. Only places with 50 or more disappearances are shown individually. All other places are combined into the category “Total < 50”. A distinction is made between place of disappearance of those still missing and those already known to be dead.

The first observation is that 7,121 individuals, i.e. about 93% of all missing, disappeared from only 14 locations, most notably that 3,155 persons (41.2%) disappeared from Potočari and in the forest. Another 2,338 persons (30.5%) disappeared from the three locations Kravica, Konjevic Polje and Kamenica. These five places of disappearance are almost equally frequent among the still missing persons and the closed cases (i.e. dead).

However, the ratio of those confirmed dead to still missing persons, (which shows more clearly the progress of victims’ identification for any given place of disappearance), is

relatively higher for those who disappeared from Potočari (“dead to missing ratio” of 51%) than on average for all places with 50 or more disappearances (“dead to missing ratio” of 37%). The ratio is relatively low for those who were reported missing from the forest (32%), which is not surprising since many (or most) of these individuals were not buried in mass graves. The high proportion of identified persons who disappeared from Potočari is probably due to the fact that most of these were buried in near-by mass graves.

Table 6. Number of Srebrenica-Related Missing by Place of Disappearance

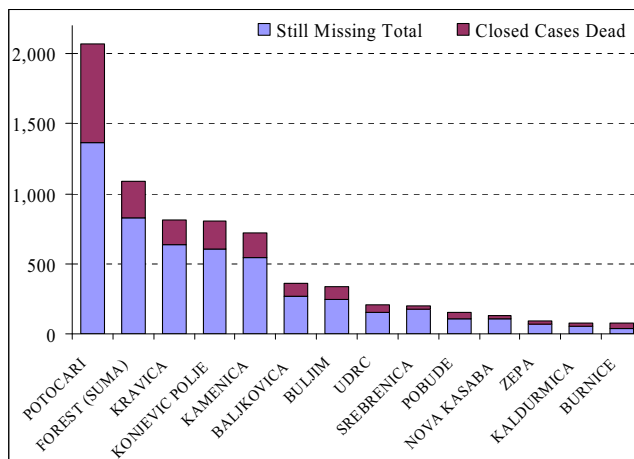
PLACE OF DISAPPEARANCE	Still Missing ICRC (1)	Still Missing ICRC (2)	Closed Cases ICRC	Still Missing PHR	Total	Percent	Proportion Dead/Missing	Proportion Dead/Total
POTOCARI	1,365	3	702	0	2,070	27.0	51.3	33.9
FOREST (SUMA)	825	0	260	0	1,085	14.2	31.5	24.0
KRAVICA	378	256	177	0	811	10.6	27.9	21.8
KONJEVIC POLJE	605	1	198	0	804	10.5	32.7	24.6
KAMENICA	539	3	181	0	723	9.4	33.4	25.0
BALJKOVICA	257	9	92	0	358	4.7	34.6	25.7
BULJIM	232	13	95	0	340	4.4	38.8	27.9
UDRC	153	1	50	0	204	2.7	32.5	24.5
SREBRENICA	157	3	28	15	203	2.6	16.0	13.8
POBUDE	107	0	47	0	154	2.0	43.9	30.5
NOVA KASABA	102	0	26	2	130	1.7	25.0	20.0
ZEPA	68	1	20	0	89	1.2	29.0	22.5
KALDURMICA	55	1	20	0	76	1.0	35.7	26.3
BURNICE	37	0	37	0	74	1.0	100.0	50.0
TOTAL >50	4,880	291	1,933	17	7,121	93.0	37.3	27.1
TOTAL <50	386	27	121	6	540	7.0	28.9	22.4
OVERALL TOTAL	5,266	318	2,054	23	7,661	100.0	36.6	26.8

Only places with 50 or more victims are reported; all other places are reported jointly

ICRC (1) covers "Still Missing" with no information about death yet available

ICRC (2) covers "Still Missing" with information about death already available

Figure 2. Srebrenica-Related Missing and Dead by Place of Disappearance



Note: Only places with 50 or more victims are reported

As shown in Table 7, almost all of the Srebrenica-related missing and dead are men (7,593 or 99.1%), only 68 being women (0.9%). The vast majority of them are of Muslim ethnicity (at

least 85.7%, but more correctly 99% obtained having excluded the unknown ethnicity category). The absolute number of missing Muslims, 6,568, must be seen as a lower estimate as the ethnicity shown in Table 7 is taken from the linking of the 2005 OTP list with the 1991 Population Census, and records of 1,030 missing persons remain unlinked. The ethnicity of the unlinked individuals is unknown but a plausible estimate would be that the proportion of Muslims among them is about the same, i.e. at least 85.7 but more correctly 99 per cent, which would bring the total number of missing Muslims to 7,588 (99% estimate).

Table 7. Srebrenica-Related Missing and Dead by Ethnicity and Sex

Ethnicity	Male	Female	Total	Percent
Muslim	6,531	37	6,568	85.7
Croat	1	0	1	0.0
Serb	4	0	4	0.1
Other	58	0	58	0.8
Unknown	999	31	1,030	13.4
Total	7,593	68	7,661	100.0
Percent	99.1	0.9	100.0	na

Table 8 and Figure 3 show the age and sex distribution of the Srebrenica victims. The statistics confirm that most of the missing persons were men at age between 15 and 69. More specifically, some 7,442 out of all 7,661 missing persons were men aged from 15 to 69, which is 97.1% of all missing.

Table 8. Sex and Age Distributions of Srebrenica-Related Missing and Dead

Age	Men	Women	Men	Women
			Percent	Percent
5-9	0	2	0.0	0.0
10-14	20	0	0.3	0.0
15-19	891	4	11.6	0.1
20-24	1,083	11	14.1	0.1
25-29	769	2	10.0	0.0
30-34	835	2	10.9	0.0
35-39	758	4	9.9	0.1
40-44	728	2	9.5	0.0
45-49	628	2	8.2	0.0
50-54	514	2	6.7	0.0
55-59	591	6	7.7	0.1
60-64	389	4	5.1	0.1
65-69	256	7	3.3	0.1
70-74	83	4	1.1	0.1
75-79	34	6	0.4	0.1
80-84	9	4	0.1	0.1
85-89	5	6	0.1	0.1
Total	7,593	68	99.1	0.9
Overall Total	7,661		100.0	

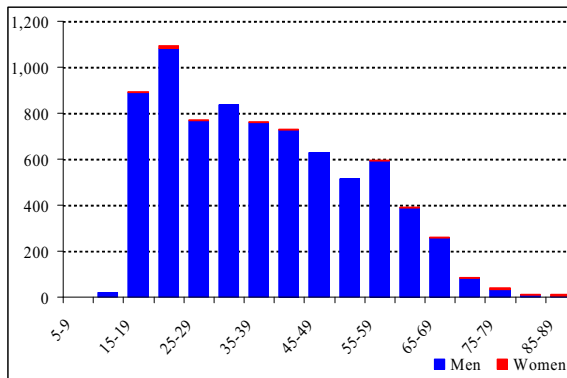
Figure 3. Sex and Age Distributions of Srebrenica-Related Missing and Dead

Figure 4 shows the age distribution of all missing persons reported on the 2005 OTP list (7,661) and of the persons known to be dead as of mid-2005 (2,054). The age distributions are strikingly similar. Among the closed cases, relatively more persons at higher ages were identified as compared with all missing. This may be related to the place of disappearance, in particular because the men who went missing from Potočari were on average older than those who disappeared from other places. Approximately two thirds of them were 50 years or older (66.6%), versus only one tenth (9.7%) of those that disappeared from other places. The reason for this is that most of the older men walked with their families to Potočari.

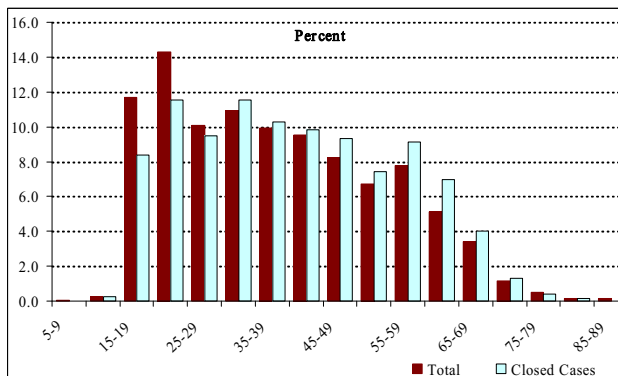
Figure 4. Age Distribution of Srebrenica-Related Missing and Dead Persons: All Missing versus Closed Cases (Dead)

Table 6 and Figure 3 (discussed earlier in this section) clearly indicated that the highest proportion of closed cases (known deaths) were for persons who disappeared from Potočari. Table 9 and Figure 5 below show that those who went missing from Potočari were on average older than persons missing from other places.

Table 9. Age Distribution of Srebrenica-Related Missing and Dead by Place of Disappearance and Category**(a) All Places**

Age	Still Missing ICRC (1)	Still Missing ICRC (2)	Closed Cases ICRC	Still Missing PHR	Total	Percent	Proportion Dead/Total
5-9	2	0	0	0	2	0.0	0.0
10-14	15	0	5	0	20	0.3	25.0
15-19	670	49	172	4	895	11.7	19.2
20-24	804	50	237	3	1,094	14.3	21.7
25-29	527	48	195	1	771	10.1	25.3
30-34	555	43	237	2	837	10.9	28.3
35-39	507	41	211	3	762	9.9	27.7
40-44	490	37	202	1	730	9.5	27.7
45-49	416	22	192	0	630	8.2	30.5
50-54	348	13	152	3	516	6.7	29.5
55-59	399	8	188	2	597	7.8	31.5
60-64	246	4	143	0	393	5.1	36.4
65-69	174	3	82	4	263	3.4	31.2
70-74	60	0	27	0	87	1.1	31.0
75-79	32	0	8	0	40	0.5	20.0
80-84	10	0	3	0	13	0.2	23.1
85-89	11	0	0	0	11	0.1	0.0
Total	5,266	318	2,054	23	7,661	100.0	26.8

ICRC (1) covers "Still Missing" with no information about death yet available

ICRC (2) covers "Still Missing" with information about death already available

(b) Potočari

Age	Still Missing ICRC (1)	Still Missing ICRC(2)	Closed Cases ICRC	Total	Percent	Proportion Dead/Total
5-9	2	0	0	2	0.1	0.0
10-14	4	0	4	8	0.4	50.0
15-19	86	0	25	111	5.4	22.5
20-24	39	0	14	53	2.6	26.4
25-29	40	0	22	62	3.0	35.5
30-34	48	1	23	72	3.5	31.9
35-39	59	1	28	88	4.3	31.8
40-44	75	0	37	112	5.4	33.0
45-49	117	0	66	183	8.8	36.1
50-54	191	0	95	286	13.8	33.2
55-59	276	0	150	426	20.6	35.2
60-64	207	0	129	336	16.2	38.4
65-69	147	1	76	224	10.8	33.9
70-74	48	0	25	73	3.5	34.2
75-79	20	0	6	26	1.3	23.1
80-84	2	0	2	4	0.2	50.0
85-89	4	0	0	4	0.2	0.0
Total	1,365	3	702	2,070	100.0	33.9

ICRC (1) covers "Still Missing" with no information about death yet available

ICRC (2) covers "Still Missing" with information about death already available

(c) Forest

Age	Still Missing ICRC (1)	Still Missing ICRC (2)	Closed Cases ICRC	Total	Percent	Proportion Dead/Total
5-9	0	0	0	0	0.0	na
10-14	2	0	0	2	0.2	0.0
15-19	115	0	31	146	13.5	21.2
20-24	146	0	35	181	16.7	19.3
25-29	102	0	33	135	12.4	24.4
30-34	122	0	45	167	15.4	26.9
35-39	99	0	32	131	12.1	24.4
40-44	88	0	28	116	10.7	24.1
45-49	75	0	21	96	8.8	21.9
50-54	39	0	16	55	5.1	29.1
55-59	26	0	9	35	3.2	25.7
60-64	7	0	6	13	1.2	46.2
65-69	1	0	1	2	0.2	50.0
70-74	3	0	1	4	0.4	25.0
75-79	0	0	1	1	0.1	100.0
80-84	0	0	1	1	0.1	100.0
Total	825	0	260	1,085	100.0	24.0

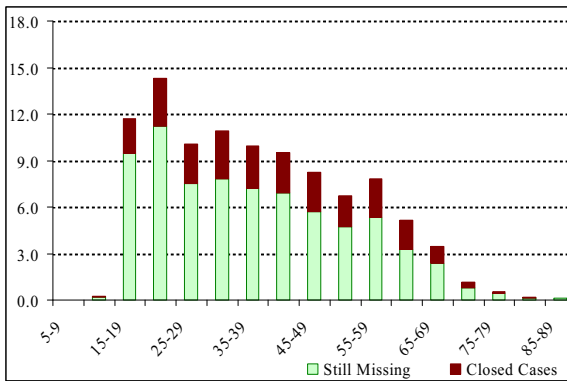
ICRC (1) covers "Still Missing" with no information about death yet available

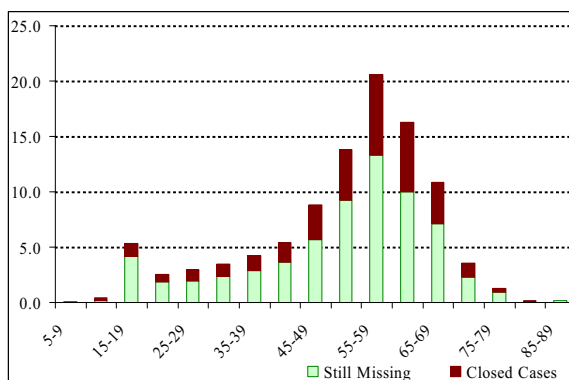
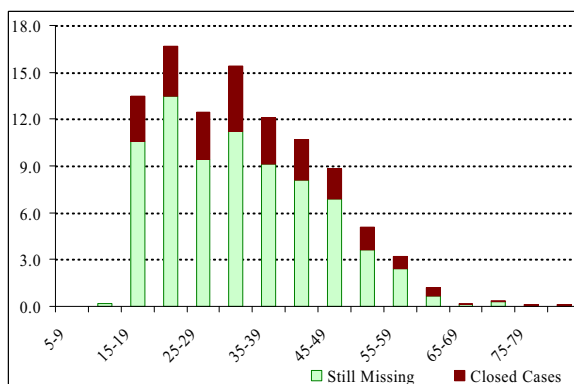
ICRC (1) covers "Still Missing" with information about death already available

Clearly, the majority of the missing persons from Potočari were aged from 45 to 69 years, whereas those missing from other places, in particular from the Forest, were much younger, i.e. mainly between 15 and 49 years of age.

The same pattern is seen for both the still missing and the closed cases.

Figure 4. Age Distribution of Srebrenica-Related Missing and Dead by Place of Disappearance and Category

(a) All Places (Percent)

(b) Potočari (Percent)**(c) Forest (Percent)**

The last item discussed in this report is the death ratios (or proportions) of the missing persons relative to their 1991 municipality of residence (MoR). The ratios are relative measures that show the proportion of deaths of a given population. Ideally, the deaths and the population at risk should be measured at the same time. The resulting measure would then be the mortality rate. This is unfortunately not possible in the case of Srebrenica, for reasons explained below. Instead, we calculated the proportions of Srebrenica-related deaths in relation to the 1991 Census population (as of 31 March 1991) in the affected municipalities. In this analysis we focus on men as almost all of the missing were men (99.1 %).

Between the outbreak of the war in April 1992 and the fall of Srebrenica in July 1995, there were several flows of the population into and out of Srebrenica due to the conflict in the surrounding areas. Some of those who were enumerated in Srebrenica in the 1991 census fled, while most of them probably stayed until July 1995, to be joined by people who came from neighbouring areas and who had been enumerated there. Some of the people who were enumerated in Srebrenica in March 1991 died from natural or other causes before the fall of Srebrenica and were thus not part of the population at risk of being killed. The local authorities and international humanitarian organisations are said to have compiled lists of

people in the enclave but we have not been able to locate such lists and we doubt their existence. It is assumed that about 40,000 people were in the town of Srebrenica before it fell, but the exact size of this population is not known. The lack of data on the population at risk makes it difficult to calculate the proper mortality rates, so we had to choose another methodology, i.e. ratios, or proportions, of deaths.

In our approach we matched the missing persons from the 2005 OTP list with the 1991 Census records. After employing a number of techniques to detect and correct errors in the data, particularly misprints in names, we managed to match fully 87 per cent of the missing persons. This gave us access to the Census records for these persons, in particular ethnicity and the municipality of residence in 1991. Moreover, it seems quite safe to assume that the matched persons constitute an unbiased representative sample of the total population of missing persons, which implies that the remaining 13 per cent of the missing persons have the same age and residence distribution etc. as the matched persons.¹⁸

Furthermore, the high proportion of missing persons found in the 1991 Census proves that the persons on the missing lists are not fictitious.

To get a better picture of the scale of the atrocities, we computed the proportion of men that went missing after the fall of Srebrenica relative to the number of men of Muslim ethnicity who were enumerated in the 1991 Census, broken down by age and pre-war municipality of residence.

We found that the majority of the missing men lived in Srebrenica in 1991 or in one of the neighbouring municipalities that were captured by Serb forces early in the war, Bratunac, Vlasenica, Zvornik, and Han Pijesak, see Table 10.

Table 10. Srebrenica-Related Missing and Dead Males by Ethnicity and Municipality of Residence in 1991

Residence in 1991	Muslim	Croat	Serb	Other	Total
Srebrenica	4,168	1	0	44	4,213
Bratunac	1,802	0	0	8	1,810
Vlasenica	915	0	0	2	918
Zvornik	397	0	2	7	406
Han Pijesak	96	0	0	2	98
Total	7,379	1	2	63	7,446

Note: Figures in this table have been adjusted for the unmatched records (999 for men) according to the original distribution of the matched records by their 1991 municipality of residence and ethnicity

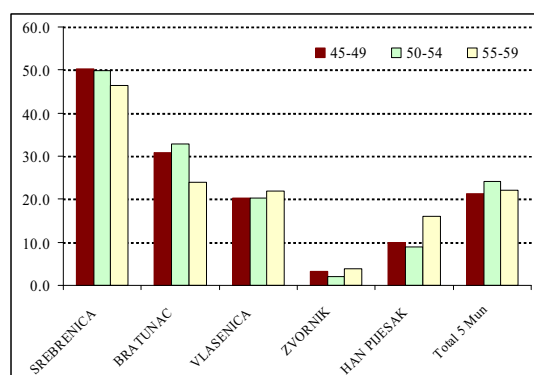
For these five municipalities, Table 11 (below) shows the proportions of Muslim men that disappeared from the enclave in 1995, by age. Srebrenica is the municipality with the highest proportion of missing Muslims, as expected, with fully 34 %. The proportions of missing for the other municipalities decline with the geographic distance from their major settlements to Srebrenica. Bratunac (19.2 %), the municipality with the second highest proportion, has a long border with Srebrenica, whereas Zvornik is farther away. Consequently, we would expect that persons from Zvornik to a larger extent fled to other Muslim-held areas in Bosnia.

¹⁸ An argument against this is that some of the missing persons we did not manage to match may have been enumerated in other republics of the former Yugoslavia (or elsewhere), particularly in Serbia which is only a few kilometres away from Srebrenica, on the other side of the river Drina. The number of such persons is not likely to have been very high, however.

Table 11. Proportion of Srebrenica-Related Missing and Dead Muslim Men Relative to the 1991 Census Population, by Municipality of Residence in 1991 and Age in 1995

Age 1995	SREBRENICA	BRATUNAC	VLASENICA	ZVORNIK	HAN PIJESAK	Total 5 Mun.
10-14	0.4	0.4	0.4	0.0	0.0	0.2
15-19	31.7	17.5	11.4	1.1	12.5	13.7
20-24	37.2	22.7	10.3	2.0	9.0	16.1
25-29	31.9	17.5	9.2	1.1	10.1	13.1
30-34	40.2	20.8	8.5	2.0	4.8	15.0
35-39	37.9	23.7	12.8	2.0	10.4	15.2
40-44	44.6	24.4	14.6	2.8	11.4	17.3
45-49	50.2	30.7	20.3	3.2	10.0	21.3
50-54	49.9	32.8	20.2	2.0	8.9	24.1
55-59	46.5	23.8	21.8	3.8	16.0	22.0
60-64	40.2	27.5	14.8	3.4	8.3	17.7
65-69	33.0	20.9	16.7	2.8	6.5	14.4
70-74	26.0	9.1	15.0	2.3	10.1	9.4
75-79	16.6	11.9	13.4	3.0	6.4	9.2
80-84	12.4	4.4	0.0	2.0	0.0	3.8
85-89	7.9	0.0	4.1	0.0	0.0	2.4
Total	33.9	19.2	11.2	1.9	8.7	14.1

Three age groups were particularly seriously affected: 45-49, 50-54 and 55-59 years, see Figure 5. The highest death ratios, about 50% of the 1991 population, are noted for age group 45-49.

Figure 5. Srebrenica-Related Missing and Dead by Age Group and Municipality of Residence in 1991

Noteworthy, these missing proportions should be considered low estimates, because of demographic and other events that occurred between the Census on 31 March 1991 and the fall of the enclave on 11 July 1995, which reduced the population at risk of disappearing:

- Deaths from natural causes, especially among the elderly.
- Deaths from war-related causes, especially among young men.
- People migrating or fleeing from Srebrenica.
- Men of military age fighting in the army elsewhere.

On the other hand, people who had gone to Srebrenica from other municipalities have been included in the population at risk in the municipalities they came from, since the matching procedure yielded information about their 1991 residence.

Only a few young children (10-14 years of age) from the four municipalities went missing, but the proportions are very high for Srebrenica boys (31.7 % for ages 15-19 years) and young men (37.2 % for ages 20-24 years). In Srebrenica the proportion of missing is extremely high for Muslim men of almost *all* ages - 1/3 of all Muslim men between 15 and 70 went missing in 1995. The proportion is in fact the highest, around 50 per cent for middle-aged men, aged 45-59. This may seem surprising, since such "old" men should be less likely to be suspected of being soldiers and singled out for execution.

There are several possible explanations why the missing proportions are higher for middle-aged than for young men: older men probably had lower propensities to leave at the beginning of the war because most of them were fathers and had families. It is much harder to flee with a family with children than by oneself. Younger men are generally healthier which increased the likelihood that they would manage to make the 70-km trek through the woods to Tuzla. Moreover, many of the men aged 20-40 years would more likely be fighting elsewhere (or may already have been killed or captured) and consequently not be at risk of disappearing from the enclave. The youngest boys, aged 15-19 in 1995, were also less likely to be in the army, which may explain their elevated risk of disappearance compared to their preceding cohorts.

**SREBRENICA MISSING:
THE 2007 PROGRESS REPORT
ON THE DNA-BASED IDENTIFICATION
BY ICMP**

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1. BACKGROUND INFORMATION

In February 2007, Helge Brunborg, the demographic expert for the Prosecution in the POPOVIĆ ET AL. case, presented to the Trial Chamber two demographic expert reports:

- Report 1: Helge Brunborg, Ewa Tabeau and Arve Hetland, 2005: Missing and Dead from Srebrenica: The 2005 Report and List. Expert report for the case of VUJADIN POPOVIĆ et al. (IT-05-88), 16 November 2005. (ERN 0501-6180-0501-6209, Exhibit No. P02413).
- The lists of victims associated with the above-mentioned report were the following:
 - (1.1) SREBRENICA MISSING: Persons Reported Missing and Dead after the Take-Over of the Srebrenica Enclave by the Bosnian Serb Army on 11 July 1995. The Hague, 16 November 2005. (ERN 0501-5985-0501-6177; Exhibit P02414).
 - (1.2) SREBRENICA MISSING: Possible Survivors Excluded from Persons Reported Missing and Dead after the Take-Over of the Srebrenica Enclave by the Bosnian Serb Army on 11 July 1995. The Hague, 16 November 2005. (ERN 0501-6178-0501-6179; Exhibit P02415).
- Report 2: Helge Brunborg, Ewa Tabeau and Arve Hetland, 2005: Identified Persons among the Missing and Dead from Srebrenica. An Addendum to the Expert Report: Missing and Dead from Srebrenica: The 2005 Report and List, 21 November 2005. (ERN R089-6474-R089-6490; Exhibit No. P02416).
- The lists of victims associated with this report were as follows:
 - (2.1) SREBRENICA IDENTIFIED: Identified Persons (ICMP) Included among Those Reported Missing and Dead after the Take-Over of the Srebrenica Enclave by the Bosnian Serb Army on 11 July 1995. The Hague, 16 November 2005. ERN R089-6406-R089-6469; Exhibit P02417).
 - (2.2) SREBRENICA IDENTIFIED: Identified Persons (ICMP) not Included among Those Reported Missing and Dead after the Take-Over of the Srebrenica Enclave by the Bosnian Serb Army on 11 July 1995. The Hague, 16 November 2005. ERN R089-6470-R089-6473; Exhibit P02418).

Report 2 and the two lists associated with this report contained an analysis of data on the DNA-based identification of Srebrenica victims provided to the OTP on 9 September 2005 by the International Commission for Missing Persons in Sarajevo (ICMP). This data represented the state-of-the-art of the DNA identification process of Srebrenica victims accomplished by the ICMP at that time. The September 2005 records became quickly outdated due to the rapidly growing number of identifications obtained by the ICMP every month. Thus, after the September 2005 update, the OTP requested and received from ICMP several next updates, the latest being from 4 October 2007 (ERN: D000-2146-D000-2146).

The 4 October 2007 data on the identified individuals provided by ICMP was analyzed by the Demographic Unit, OTP, which - as in 2005 - prepared an overview of the latest statistics on the progress in the DNA-based identification of Srebrenica victims, and accordingly updated the 2005 OTP list of missing and dead persons related to the fall of Srebrenica. The analysis was conducted using the previously applied methods and following the same standard procedures for data matching and duplicate checks. As part of this latest analysis, the 2005 OTP list of Srebrenica Missing (list 1.1) had been integrated with the latest 4 October 2007 ICMP records of the identified from Srebrenica (equivalent to list 2.1 but more recent). As a result, one integrated list became available: the 2005 OTP list of Srebrenica Missing with

details of the exhumation gravesites and the ICMP DNA identification reports inserted for individuals that have been identified so far through the DNA analysis.

Thus, the present report (hereafter: the 2007 report) should be seen merely as an update of the 2005 demographic expert report on the identified persons from Srebrenica (P02416) and the relevant lists of victims (P02417 and P02418). The methodology used in the 2007 report remains the same as in the 2005 report. A frequent reference is therefore made here to the 2005 report instead of repeating a full explanation of details.

The 4 October 2007 data was also presented by Dean Manning, the OTP witness on exhumations of Srebrenica related mass graves, in his research report of 27 November 2007 (ERN 0614-8656-0614-8680; P017126) and subsequent testimony of 10-12 December 2007. Manning's results are referred to in this report, mainly in explaining differences in our and his analytical approach.

The 2007 report on the DNA-based identification of Srebrenica missing comprises the following sections:

1. Background information
2. Executive summary of updated statistics
3. Data used: The 4 October 2007 ICMP Update
4. Data cleaning and new items
5. Data matching
 - 5.1 Matching of the October and February ICMP updates
 - 5.2 Matching of the 2005 OTP List of Srebrenica Missing with the October 2007 ICMP List of Srebrenica Identified
6. Results
 - Annex 1. Note on Corrections in the ICMP Update of 4 October 2007 on the Identified Persons Related to Srebrenica" (ERN R064-6798-R064-6801)
 - Annex 2. Srebrenica Missing. The 2007 Progress Report on the DNA-Based Identification by ICMP (ERN D000-2200-D000-2200)

As part of the 2007 report, the integrated 2005 OTP list of missing and dead persons related to the fall of Srebrenica is attached (Annex 2). The same list was prepared in November 2007 as part of materials related to Dean Manning's testimony on 10-12 December 2007. It is now resubmitted in exactly the same form, subject to one correction of the introductory text. Thus, the last paragraph of page ii (R091-9553) which now reads as follows:

*"Gravesites from the ICMP List were cross-referenced with Srebrenica-related gravesites known and accepted by the OTP. The minimum number of individuals identified via DNA analysis by ICMP in mass graves known and accepted by the OTP to contain only individuals executed following the fall of Srebrenica is **4,010**. This number consists of **3,252** DNA profiles matched to a missing person and **758** unique DNA profiles."*

The correction reflects Manning's removal of seven "N.KAS" records from the list of identified individuals exhumed from the Nova Kasaba gravesite (1996 exhumation).

2. EXECUTIVE SUMMARY OF UPDATED STATISTICS

As of 4 October 2007, there were 4,263 unique main cases, i.e. records of different individuals identified through the DNA analysis, and 2,346 reassociations, i.e. bone-to-bone DNA matches, reported in the October 2007 update on the DNA-based identifications of Srebrenica victims (cleaned data).¹ The total number of records in the ICMP update is 6,609. Each ICMP record represents the identification of one individual but due to the presence of reassociations included in the ICMP data, the overall number of records in the ICMP file contains duplicate cases. The analysis presented in this report is based on records of unique main cases (4,263); all reassociations (2,346) were excluded.

Of the unique main cases about 90% (i.e. 3,837 out of 4,263 individuals) are found in the 2005 OTP List of Srebrenica Missing. The remaining 426 records (out of 4,263; about 10% of the ICMP list) remain either unmatched (165 individuals) or represent less certain matches (261 individuals). The unmatched records (165) can be seen as new and additional to the 2005 OTP list of missing and dead persons related to Srebrenica. Noting that the 2005 OTP list of Srebrenica Missing contains records of 7,661 individuals, the new ICMP records increase the number of Srebrenica victims (i.e. missing and dead persons) to 7,826 persons. This number is increasingly approaching the 8,100 figure which has recently been mentioned by the ICMP as their estimate of the Srebrenica Missing (ICMP statement of 30 November 2007; ERN 0614-8923-0614-8923).

The less certain matches (261) were obtained based on names only as date of birth (DoB) was in most of these cases missing in the ICMP or ICRC data (or both). A majority of less certain matches relate to records with multiple names, in which cases as a rule DoB is not reported by ICMP.

All statistics mentioned above were obtained from the ICMP records of the identified persons whose names and other personal details are known (hereafter: "with names"). In addition to the records "with names", the ICMP has in their databases an additional list of records "without names" (hereafter: "without/no name records"). A "no name" record represents a DNA profile obtained from a bone sample taken from the exhumed remains, which has not yet been matched with a DNA profile of this person's relatives. Thus, personal details are yet unavailable. The unique profiles represent different individuals whose names will become available in a later time. These currently nameless individuals may and should be regarded, however, the same as the victims with names.

There are in total 816 unique profiles provided by the ICMP on October 8, 2007 (ERN D000-2189-D000-2189). The exhumation gravesite is known for all unique profiles. For the gravesites that Dean Manning considers as Srebrenica-related in his 27 November 2007 report, the list of unique profiles comprises 758 records (out of 816). The list can be analysed jointly with the records with names. The "no name" records can be added to the records with names and adjusted new statistics can be produced. The resulting overall number of identified persons is then 5,021 (4,263+758).

Taking into account that the minimum number of individuals identified via the DNA analysis by ICMP in mass graves known and accepted by the OTP to contain only individuals related to the fall of Srebrenica is 3,259 (Manning's 2007 report), and by additionally including 758

¹ Details of the initial assessment and cleaning of the ICMP update of 4 October 2007 are available from Annex 1: Note on Corrections in the ICMP Update of 4 October 2007 on the Identified Persons Related to Srebrenica (ERN R064-6798-R064-6801).

unique DNA profiles, a more conservative minimum number of Srebrenica identified becomes 4,010 (3,252+758). Dean Manning presented this number in his 27 November 2007 report.

The minimum number produced by Manning, i.e. **4,010** persons, is more conservative than any other number of Srebrenica Identified as it is based on the identification of the remains from the gravesites he considers as exclusively Srebrenica related (with no additional remains from other conflict incidents). The ICMP records of the identified, i.e. the latest data from October 2007 and also earlier versions of this data, indicate however, that Srebrenica victims were found as well in gravesites which do not entirely relate exclusively to the fall of Srebrenica. Therefore another minimum number of Srebrenica identified can be obtained from all data provided by ICMP, disregarding whether a gravesite was exclusively related to the fall of Srebrenica or contained mixed remains. We showed that this second minimum number equals **5,021** individuals (4,263+758), of whom 3,837 persons (out of 4,263 cases with names) are also listed in the 2005 OTP List of Srebrenica Missing and 758 are unique DNA profiles. Both these numbers (5,021 and 4,010) will further increase in the future according to the identification progress made by ICMP.

In order to illustrate the present day status of the DNA-based identification of Srebrenica Missing we attach in Annex 2 the latest October 2007 ICMP data on the identified as part of the 2005 OTP list of Srebrenica Missing. The 2005 OTP list is exactly the same as that presented by Brunborg et al. in 2005 (P02414). It contains 7,661 cases of Srebrenica Missing. The ICMP records are only those that have been matched with the 2005 OTP list, thus include 3,837 cases of Srebrenica Identified confirmed on both lists. The unmatched cases (165) and less certain matches (261) are listed separately in part 2 of the list in Annex 2. The unique DNA profiles with no names (758) are excluded altogether.

3. DATA USED: THE 4 OCTOBER 2007 ICMP UPDATE

The data items provided by ICMP are generally the same as those available from the previous updates (e.g. February 2007 or September 2005) and the ICMP Notice. An excerpt from the 4 October 2007 ICMP update on the Srebrenica identified is attached below in Table 1. (It represents a closed case in ICMP data). For a more detailed description of these items, we refer the reader to the Brunborg et al. report of 21 November 2007, Sections 3.1 and 3.2. New in the October 2007 update are three items: “type of report”, and date and place of disappearance (DoDis and PoDis, respectively). “Type of report” points out whether a given report is the main case or a re-association. Negative reports are excluded from the October 2007 update. The availability of this item makes cross-referencing of the October 2007 update with any additional data from the ICMP Notice unnecessary. The DNA reports marked as main cases represent different individuals and can be directly used in analysis.

Table 1. Overview of data items provided in the October 2007 update of ICMP on DNA-based identifications of Srebrenica victims

ICMP Items	Example of Data
Name	Malagic (Ramiz) Muhamed
DoB	4-Sep-72
Protocol Id	1935/03
Case Id	GL5-065BPZ
ID ICMP	12142
Site Name	Glogova
Site Coordinates	CP615964
Jurisdiction	BiH/Federation Commission
Date of Submission	4-Jun-03
D(ate) of Dis	11-Jul-95
P(lace) of Dis	Forest
type of report	Main Case

Date and place of disappearance are both related to the fall of Srebrenica. DoDis has one value for all identified persons related to the fall of Srebrenica “11 July 1995” disregarding the actual date of disappearance or death of victims. We therefore did not use DoDis in any analysis. PoDis has two values “forest” or “Potočari” and represents the actual place of disappearance. We used these values in some analysis.

4. DATA CLEANING AND NEW ITEMS

In a related “Note on Corrections in the ICMP Update of 4 October 2007 on the Identified Persons Related to Srebrenica” (ERN R064-6798-R064-6801; see as well Annex 1) we discussed problems of consistency of the latest ICMP records. In this report we concentrate on matching and analysis of the ICMP data as required from the point of view of previously presented 2005 demographic expert reports and 2005 OTP lists.

No other data cleaning/corrections than what is described in the “Note on Corrections” were done. All data cleaning/corrections were related to Protocol IDs and in a few cases the type of report was modified.

In addition to that a number of searches for duplicated records were conducted on the main cases as indicated in the “type of report revised” (revision according to the Note on Corrections; ERN R064-6798-R064-6801). The criteria 1 to 8 from the Brunborg et al. report of 21 November 2007, Section 4, were used. No duplicates were found. Criterion 8 (duplicates on names: first, father’s and family names) resulted in a list of 138 potential duplicates none of which was the true duplicate. Out of the 138 records, 112 were records with multiple names; each with a set of three unique IDs (Protocol ID, Case ID and ICMP ID), pointing out that these were all different persons. The remaining 26 records were pairs of unrelated individuals, each with a different ID and a different date of birth.

A few new data items were created based on the original information from the October 2007 update on the identified and on the links of the October update with the ICRC missing persons list (the 2005 edition and as reported in the 2005 OTP list of missing and dead from Srebrenica).

1. **“Type of Report Revised”**: same as the original item “type of report” except for 47 records of “stand-alone” reassociations (called by ICMP: Main Cases in Process).
2. **“Unique Main Cases”**: marking of unique main cases. Out of the 47 stand-alone reassociations, 31 were arbitrarily flagged by us as main cases. The flagging was based on the three IDs (Protocol ID, Case ID and ICMP ID) together with names and DoBs of the identified. Remaining records are as originally reported by ICMP
3. Sex (3 items; “Sex (Merged)” was used in analysis):
 - a. **“Sex(1)”**: As reported by ICRC (for matched records only)
 - b. **“Sex(2)”**: Frequency-based from the 1991 Census (for unmatched and unreported by ICRC records only)
 - c. **“Sex (Merged)”**: Original ICRC reports all taken first (for certain matches only); Rest as “Frequency-Based” in the 1991 Census
4. Age (3 items; “Age (Merged)” was used in analysis):
 - a. **“Age (ICMP Based)”**: 1995-YoB (YoB from original ICMP reports)
 - b. **“Age (ICRC Based)”**: 1995-YoB (YoB from ICRC reports for matched records only)
 - c. **“Age (Merged)”**: 1995-YoB (YoB as Reported by ICMP; Rest as reported by ICRC in matched records)
5. **“Match with Feb07”**: indication of whether a given record was included in the Feb07 update or is new in Oct07 update
6. **“BAZ ICRC (Merged)”**: The BAZ (ID) number of the ICRC (only for the records matched with the 2005 OTP List of Missing)

The above-mentioned items were created for use in analysis.

5. DATA MATCHING

5.1 MATCHING OF THE OCTOBER AND FEBRUARY ICMP UPDATES

We matched these two lists through all three IDs: the Protocol ID, Case ID and ICMP ID, and a few additional manual searches based on all information available from data. The result is that all but three records from the February update have been matched with the October update. The three unmatched records might be a result of a slightly different formulation of the selection criterion used by ICMP for the two updates. The three records are the following:

Table 2. Three records of identified persons reported in the ICMP February 2007 update and not in the October 2007 update.

Name	DoB	Protocol Id	Case Id	ID ICMP	Site Name	Site Coordinates
Delic (Edhem) Enver	01-Jan-75	1958/03	HZ03B-074F	17086	Hodzici	CQ423174
Karic (Dzermal) Edin or Nedim		3417/04	ZJ5B-141H	9465 or 9469	Zeleni Jadar	CP641788

Records of ██████████ and Karic (Dzermal) Edin or Nedim are not listed on the 2005 OTP list of Srebrenica missing and dead.² The record of Delic (Edhem) Enver is included in the 2005 list as a match with the February 2007 update of ICMP.

² More specifically, the name of Karic (Dzermal) Nedim is not on the OTP list. Karic (Dzermal) Edin is listed as a match with the ICMP update of October 2007 but the link goes through a different ICMP record (ICMP ID 9465), not the one reported in Table 2. The (two-name) record reported in Table 2 has been removed from the October 2007 update in consequence of the corrections we obtained from the ICMP (comp. “Note on Corrections”; ERN R064-6798-R064-6801).

5.2 MATCHING OF THE 2005 OTP LIST OF SREBRENICA MISSING WITH THE OCTOBER 2007 ICMP LIST OF SREBRENICA IDENTIFIED

Matching of these two lists was done in two steps:

- First, those records of the 2005 OTP List of Srebrenica Missing marked as matched with the February ICMP update were also marked as matched on the October 2007 ICMP list of identified. Links were moved through the ICMP ID. This was applied to both main cases and reassociations in the same step.
- Second, additional matches were created using comparisons of all names and DoBs in both lists. Matching criteria and additional checks in the 1991 Census were as discussed in the Brunborg et al. report of 21 November 2005 (Section 6). Generally, names always had to be identical or largely similar. Differences in DoBs were allowed (as the ICMP reports of DoB are often approximate only) but the maximum acceptable difference in YoBs was assumed to be 3 years.
- In the above procedure, the matches were created for main cases only and later were moved onto the reassociations related to these main cases.

The matching resulted in 3,837 records of the identified persons reported in the October 2007 ICMP update marked as matched with the 2005 OTP List of Missing Persons (7,661). This is about 50% of the 2005 OTP List of Missing from Srebrenica are reported now by ICMP as identified.

The matched records (3,837) comprise about 90% of the ICMP October update (in total 4,263 identified individuals).

Note that a high number of less certain matches, (261 out of the remaining 426 records); have not been accepted due to missing DoBs. 165 records were not matched at all and should be considered as new and additional individuals to the 2005 OTP list of Srebrenica missing and dead.

Together with the less certain matches (261), the matched records (3,837) comprise about 96% of the ICMP October update (in total 4,263 identified individuals).

Based on the matching of these two lists, we incorporated into the 2005 OTP list of Srebrenica Missing two items from the October 2007 ICMP list of Srebrenica Identified:

- name of the gravesite where the remains of a given identified person were exhumed,
- ICMP Protocol ID of the DNA identification report for this person.

The above-mentioned list is available from Annex 2. The 2005 OTP list of Srebrenica Missing contains 7,661 names, of which 3,837 are marked as already identified persons. In the same Annex, in part 2 of the same list, the ICMP cases representing unmatched records (165) and less certain matches (261) are listed. Regarding the ICMP cases included in part 2, we believe that unmatched records represent missing persons that are new with respect to the 2005 OTP list of Srebrenica Missing and that the less certain matches will be confirmed on the 2005 OTP list at some point in the future.

6. RESULTS

Our main findings from this section are summarized below:

- According to the ICMP list of 4 October 2007, there are **4,263** missing persons that have been identified so far as dead (through DNA matching).
- **3,837** cases of the ICMP identified persons match the 2005 OTP list of Srebrenica-related missing persons.
- In the 2005 OTP list of Srebrenica-related missing and dead persons, **2,054** persons have also been identified as dead by ICRC (closed cases; until 17 August 2005).
- **1,797** of the ICMP identified cases match the ICRC closed cases. The matched records are equivalent to **87.5%** of the Srebrenica-related ICRC closed cases (1,797 out of 2,054).
- A majority of the (matched) identified were men (99.3% of all identified), of which almost all were Muslim (87.9% of all identified).
- There were 30 youngsters (boys only) below 16 years of age among the identified and 360 elderly individuals older than 60 years (including one woman).

Detailed results of our analysis are discussed below.

Out of the overall number of 4,263 of Srebrenica Identified reported by ICMP as of 4 October 2007, exactly 3,837 cases have been confirmed on the 2005 OTP list of Srebrenica Missing (Table 3). This is about 50% of all 7,661 cases from the 2005 OTP list of Srebrenica Missing are now identified by DNA analysis (3,837 out of 7,661). A large number of these ICMP cases were reported as closed cases- deaths by ICRC already in mid-2005.

Table 3. Identified Persons Reported on the 2005 OTP List by ICRC Status from Mid-2005

Original ICRC Table	Number
Closed Cases Dead	1,797
Still Missing (1)	1,925
Still Missing (2)	110
PHR records	5
Total	3,837

Note:

Still Missing (1) - no info about death

Still Missing (2) - with info about death

Table 3 shows how the 3,837 ICMP cases of Srebrenica Identified were reported by ICRC in mid-2005. We can see that 1,797 cases were by then closed as known deaths by ICRC. This is about 47% of all 3,837 cases of the (matched) identified were closed by mid-2005. This percentage is most certainly much higher today.

Table 4 confirms that at least 99.3 % of all matched identified were men, while only 0.3 % were women; (at least) 87.9 % were Muslim men. (Sex and ethnicity come from the links with the 2005 OTP list). These results are highly consistent with the overall statistics we obtained from the 2005 OTP list of missing and dead persons, 99.1% men vs. 0.9% women, and (at least) 85.2 % Muslim men.

Table 4. Identified Persons Reported on the 2005 OTP List by Ethnicity and Sex

Absolute Numbers				
EthnicityNew	Men	Women	Unk Sex	Total
Muslim	3,373	8	13	3,394
Other	23			23
Unknown	416	3	1	420
Total	3,812	11	14	3,837

Percentages				
EthnicityNew	Men	Women	Unk Sex	Total
Muslim	87.9	0.2	0.3	88.5
Other	0.6	0.0	0.0	0.6
Unknown	10.8	0.1	0.0	10.9
Total	99.3	0.3	0.4	100.0

There are several similarities between the matched identified persons and the 2005 OTP list of missing and dead. The age and sex distributions of these two groups of records are the next example of such similarities (Table 5 and Figures 1 and 2), see the discussion below.

Table 5a confirms that among the identified men almost all were between 16 and 60 years of age (3,423 out of 3,812; i.e. about 90%). The same pattern holds true for Muslim men (about 90% of all identified Muslim men were 16-60 years old).

Table 5a. Identified Persons Reported on the 2005 OTP List by Sex and Age (Broad Intervals)

Age	Number			Percent			Total	Number Muslim men	Percent Muslim men
	Men	Women	Unk Sex	Men	Women	Unk Sex			
0-15	30	0	0	0.8	0.0	0.0	30	24	0.6
16-60	3,423	10	14	89.2	0.3	0.4	3,447	3,039	79.2
61+	359	1	0	9.4	0.0	0.0	360	310	8.1
Total	3,812	11	14	99.3	0.3	0.4	3,837	3,373	87.9

Note:

Age is based on "Age(broad) (Merged)"

Table 5b. Identified Persons Reported on the 2005 OTP List by Sex and Age

Age	Number			Percent			Total	Number Muslim men	Percent Muslim men
	Men	Women	Unk Sex	Men	Women	Unk Sex			
10-14	9	0	0	0.2	0.0	0.0	9	6	0.2
15-19	351	0	3	9.1	0.0	0.1	354	306	8.0
20-24	457	3	1	11.9	0.1	0.0	461	413	10.8
25-29	389	0	3	10.1	0.0	0.1	392	348	9.1
30-34	422	2	3	11.0	0.1	0.1	427	373	9.7
35-39	400	2	1	10.4	0.1	0.0	403	361	9.4
40-44	401	0	1	10.5	0.0	0.0	402	352	9.2
45-49	351	2	1	9.1	0.1	0.0	354	317	8.3
50-54	287	1	1	7.5	0.0	0.0	289	248	6.5
55-59	331	0	0	8.6	0.0	0.0	331	291	7.6
60-64	213	0	0	5.6	0.0	0.0	213	186	4.8
65+	201	1	0	5.2	0.0	0.0	202	172	4.5
Total	3,812	11	14	99.3	0.3	0.4	3,837	3,373	87.9

Note:

Age is based on "Age(5) (Merged)"

When the more detailed five-year age distribution of the identified persons is compared with that of all missing and dead on the 2005 OTP list, a high degree of similarity is seen, except for the age groups 15-19 and 20-24 (Table 5b and Figure 1). For these ages, relatively more individuals were reported as missing on the 2005 OTP list than have been identified so far by ICMP. However, the age pattern of the closed cases from the 2005 OTP list is almost identical with the age pattern of the ICMP identified persons (Figure 2), which suggests that the differences observed between the 2005 OTP and the 2005 ICMP data for ages 15 to 24 are related to the still missing persons whose remains still await exhumation and/or identification.³

Figure 1. Age Distribution of Identified Persons Reported on the 2005 OTP List and of All Missing and Dead Persons on this List

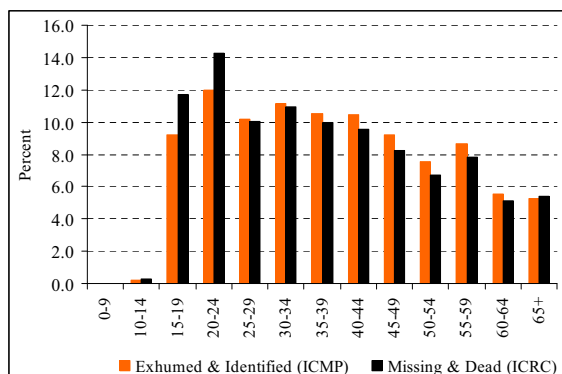
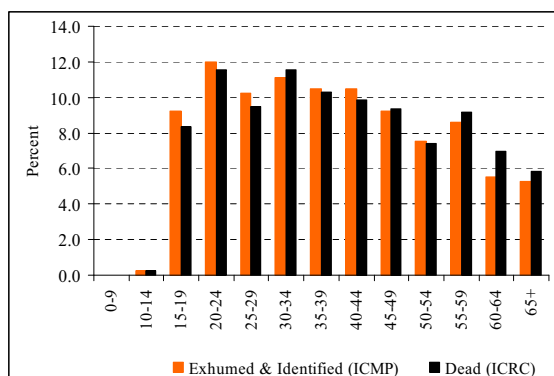


Figure 2. Age Distribution of ICMP Identified Persons Reported on the 2005 OTP List and the Dead Persons on this List



³ One possible explanation is that the men who walked through the forest were younger and to a smaller extent executed and buried in mass graves than other missing men. Consequently a lower percentage of them have been exhumed and identified.

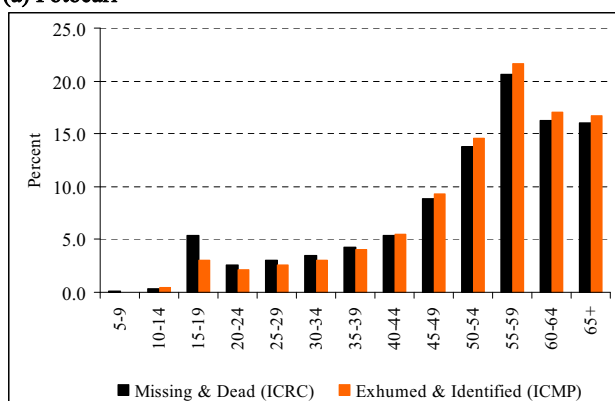
Finally, we also compared the age distributions of those identified and those reported as missing or dead on the 2005 OTP list from the point of view of place of disappearance (Table 6 and Figure 3a and b). The age pattern of individuals reported missing from Potočari is consistently the same among the identified persons and persons reported on the OTP list (Figure 3a).

Table 6. Age Distribution of Identified Persons Reported on the 2005 OTP List: Cases of Disappearance from Potočari versus other Places

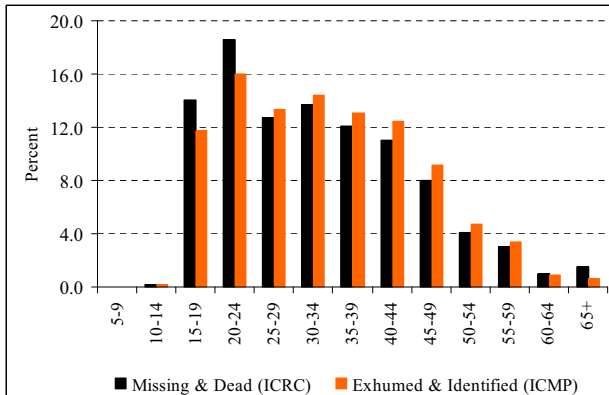
Age	Potočari		Age	Remaining Places	
	Number	Percent		Number	Percent
5-9	0	0	5-9	0	0
10-14	5	0.5	10-14	4	0.1
15-19	33	3.0	15-19	321	11.7
20-24	23	2.1	20-24	438	16.0
25-29	28	2.5	25-29	364	13.3
30-34	33	3.0	30-34	394	14.4
35-39	45	4.1	35-39	358	13.1
40-44	61	5.5	40-44	341	12.5
45-49	103	9.4	45-49	251	9.2
50-54	160	14.5	50-54	129	4.7
55-59	238	21.6	55-59	93	3.4
60-64	188	17.1	60-64	25	0.9
65+	184	16.7	65+	18	0.7
Total	1101	100.0	Total	2736	100.0

Figure 3. Age Distribution of Identified Persons Reported on the 2005 OTP List and of All Missing and Dead from this List: Cases of Disappearance from Potočari vs. other Places

(a) Potočari



(b) Other Places



However, some differences are obvious in the two age patterns of individuals that went missing from locations other than Potočari. Relatively more persons have been identified at ages 25 to 59 years and relatively less persons at ages 15 to 24, than persons in the same age groups reported on the 2005 OTP list. Most likely, the explanation of these differences is again the exhumation sites of the bodies identified so far. Many sites have not yet been exhumed and/or bodies have not yet been identified, especially those that walked through the forest. Note as well the striking difference between the age distributions in Figures 3a and 3b. The men who went missing in Potočari are much older than those who disappeared elsewhere.

ANNEX 1

NOTE ON CORRECTIONS IN THE ICMP UPDATE OF 4 OCTOBER 2007 ON THE IDENTIFIED PERSONS RELATED TO SREBRENICA

Demographic Unit, Office of the Prosecutor, ICTY

26 October 2007

The Demographic Unit of the OTP (DU-OTP) analysed the updated records of the identified persons from Srebrenica provided to the OTP on 4 October 2007 (ERN: D000-2146-D000-2146; hereafter: the Srebrenica update). Some inconsistencies were found (see the e-mail correspondence with the ICMP ERN: D000-2150-D000-2150). An explanation was therefore requested from the ICMP regarding 5 issues (see below para. 1 to 5). ICMP responded to this request on 22 October 2007 by providing corrections to the inconsistencies as summarized below in para. Re: 1 to Re: 5.

Generally, the DU-OTP concluded that the labelling in the ICMP's Srebrenica update of 4 October 2007 of the Main Cases and Reassociations is inconsistent. Firstly, the "Protocol ID" and the related descriptive data item "type of report" do not correspond to each other; the "type of report" gives a better indication of the actual Main Cases and Reassociations. Secondly, a number of Reassociations (53 as of the current review) were not linked to any related Main Cases. Through an analysis by DU-OTP of "Protocol IDs", (and names, Case IDs, ICMP IDs etc.), it was possible to determine which cases of Reassociations were "standing alone". These cases, together with some additional possibly inconsistent cases, were sent back by DU-OTP to the ICMP for clarification.

Based on the clarification obtained from the ICMP on 22 October, DU-OTP corrected the data sent to the OTP on 4 October 2007 and used the corrected data in the analysis of individuals exhumed and identified until the present time.

The clarification provided by the ICMP is summarized below. The corrections should be seen as minor. A majority of the identified records (at least 51 out of 77)⁴ remain correct. The affected records (up to 26) need minor revision on mainly "Protocol ID". Importantly, the clarification from the ICMP allows considering the "stand-alone" records of Reassociations (at least 51) as additional Main Cases representing different individuals.

ISSUES ADDRESSED TO THE ICMP BY DU-OTP

A total of 77 records are problematic, the main inconsistencies being the following:

1. There are 26 unique records of Reassociations not linked with any Main Case report (Table 1). Possibly, the "type of report" of these records should be indicated as Main Case instead of Reassociation.
2. There are 27 related Records of Reassociations not linked with any Main Case report (Table 2). Some of these records are possibly Main Cases and not Reassociations.

⁴ The 51 correct records are reported by the ICMP in their clarification sheet called "correct" (comp. ERN: D000-2150-D000-2150). However, several additional records do not need any correction as well. These additional records were listed by the ICMP for contextual reasons in the sheet "correction needed" as they were related to records requiring revision.

3. There are 5 pairs of different Main Cases (10 records) with duplicated Protocol IDs (Table 3). The Protocol IDs need to be checked.
4. There are 4 pairs of associated records (Main Cases and Reassociations; 8 records) with possibly inconsistent Protocol IDs (Table 4). Their Protocol IDs need checking.
5. There are 6 inconsistent records with multiple names (Table 5; 1 out of 6 records also included in Table 1). The Protocol IDs possibly need revision.

CORRECTIONS OBTAINED FROM THE ICMP

- Re 1: Out of 26 unique records of Reassociations not linked with any Main Case report, 6 needed revision. 20 records were correct (for corrections see Table 1 below).
- Re 2: Out of 27 related Records of Reassociations not linked with any Main Case report all were correct (Table 2).
- Re 3: The 5 pairs of different Main Cases (10 records) with duplicated Protocol IDs included five records with errors and five correct (Table 3).
- Re 4: The 4 pairs of associated records (Main Cases and Reassociations; 8 records) with possibly inconsistent Protocol IDs included 1 pair of records which were consistent and 3 pairs of records were incorrect (Table 4).
- Re 5: Out of 6 possibly inconsistent records with multiple names (Table 5) one record was revised.

The ICMP have broken up Tables 1 to 5 (which DU-OTP sent to them) into two parts, one indicating listings for which correction is necessary in the original list, and the second indicating the explanation for the apparent discrepancy where corrections are either not needed or not possible. The explanation of inconsistencies is attached below in relevant parts of Tables 1 to 5. (The complete Tables 1 to 5 are available from the ERN: D000-2150-D000-2150).

Finally, the ICMP made the following explanation:

“The most common explanation for why a Reassociation report exists without a Main Report (indicated by the comment line “Main Case in Progress”) is as follows: An ICMP ID number and Protocol ID number are issued when the first DNA match report is generated for an individual, at the stage when that match report enters into the review process. Any subsequent sample matching to the same missing person will be issued as a Reassociation report. For any number of reasons, however, it is possible that the Reassociation report can complete the final review process before the initial report does, with the main case still being “in process”.

For one case “Tihic (Mehmedalija) Hazim or Fahrudin”, the Main Report was inadvertently left off the list. The relevant information on the main case is appended below:

M.P. **Tihic (Mehmedalija) Hazim or Fahrudin**
 Protocol ID **606/02**
 Case No. **D-19**
 ID ICMP **9929 or 9932**
 Site Location **Kravica**
 Site Coordinates **CP5462797301**
 Jurisdiction **BiH/Federation Commission**
 Date of Submission **09.09.02**
 Type of Report **Main Case”**

TABLES 1 TO 5: ICMP CORRECTIONS TO INCONSISTENT RECORDS

Table 1. Unique records of Reassociations not linked with any Main Case report: Corrections

Name	DoB	Protocol Id	type of report	Case Id	ID ICMP	Site Name	Site Coordinates	ID	ICMP Comment
Buric (Hasib) Nihad	15-Aug-74	6787/05R	Reassociation	CR11-368-M1		1255 Cancari	CQ412099	643	Typo error, should be 6878/05R, corresponding to rows 644,645,646 on master list
Hajdarevic (Sevko) Kemal	10-Feb-50	46/02R	Reassociation	PLC-65(F)		5225 Pilica	CO5-46368	2689	Transpositional error in corresponding Main Case. Master list row 2689, PLC-108 is the Main Case; Protocol ID should be 46/02
Hasanovic (Reso) Adil	31-Jul-56	2455/03	Reassociation	NK8-062B		7417 Nova Kasaba	N/A	3552	Should be listed as a Main Case, not Reassociation
Muhic (Fejzo) Ismet	01-Jan-48	2843/03	Reassociation	KK3-952BK		10490 Kozluk	CO508302	4811	Should be listed as a Main Case, not Reassociation
Omerovic (Omer) Sulejman	09-Oct-48	649/02	Reassociation	KRA-286		12431 Kravica	CP5462797301	5304	Typo error in Main Case on master list; Row 5306, Protocol Id should be 649/02
Tihic (Mehmedalija) Hazim or Fahudin		606/02R	Reassociation	D-64T		Kravica	CP5462797301	6603	The Main Case, D-19, was inadvertently left off list.

Source: ICMP, Srebrenica Identified, 4 October 2007

Table 3. Five pairs of different Main Cases with duplicated Protocol IDs: Corrections

Name	DoB	Protocol Id	type of report	Case Id	ID ICMP	Site Name	Site Coordinates	ID	ICMP Comment
Omerovic (Omer) Sulejman	09-Oct-48	249/02	Main Case	KRA-296-I		12431 Kravica	CP5462797301	5305	Typo. See line 10 above. Protocol ID for Omerovic (Omer)
Omerovic (Sulejman) Sead	04-Feb-74	3417/04	Main Case	KRI-1J-4		376 Kravica	CO405420383	159	Sulejman should be 649/02.
Katic (Dzenko) Edin or Nedim		3417/04	Main Case	Z15B-141H		Zilje	CP641788	6580	The entry for Z15B-141H was included in error, and should
Ahmetovic (Saliko) Enez	01-Jan-44	3417/04	Main Case	Z105B-171F		1048 Zeleni Jadar	CP641788	529	be entirely removed from the list.
Muminovic (Niko) Talib	14-Nov-54	692/405	Main Case	ZV-SNA-02/029B-TMX		7842 Snagovo	CQ4301417647	3741	Typo. Protocol ID should be 6942/05
Sabic (Asim) Ejub	01-Jan-77	692/405	Main Case	ZV-SNA-01/000B(F)		5186 Snagovo	CQ4292017700	2650	
Hajdarevic (Sevko) Kemal	10-Feb-50	92/02	Main Case	PLC-108		5225 Pilica	CO5-46368	2668	Typo, see Row 7. Protocol ID for PLC-108 should be
Harbas (Omer) Asim	10-Jun-52	92/02	Main Case	PLC-109		3823 Pilica	CO546368	2021	46/02
Mehinovic (Musafer) Mehmed	01-Jan-50	96/02	Main Case	CR12B-086		4375 Cancari	CQ410101	2282	
Gerovic (Nurija) Nurif	13-Jun-40	96/02	Main Case	LZ2-87		1819 Lazare	CQ4495020430	987	Typo, protocol ID should be 97/02

Source: ICMP, Srebrenica Identified, 4 October 2007

Table 4. Pairs of associated records (Main Cases and Reassociations) with inconsistent Protocol IDs: Corrections

Name	DoB	Protocol Id	type of report	Case Id	ID/ICMP	Site Name	Site Coordinates	ID	ICMP Comment
Delic (Suljo) Ramo	01-Jan-43	2334/04R	Reassociation	RV02-076BP-RHZ		4859 Ravnice	CP5965097808	2478	Same individual, clerical error in protocol number related to year.
Delic (Suljo) Ramo	01-Jan-43	2334/03	Main Case	RV02-088BF		4859 Ravnice	CP5965097808	2479	
Ibrahmovic (Sadik) Sajib or Samir	11-Dec-72	2512/03	Main Case	CSK-140	8134 or 8135 Cereka	8134 or 8135 Cereka	Q0473004	3842	Two different bodies, two brothers Sajib and Samir.
Ibrahmovic (Sadik) Sajib or Samir	11-Dec-72	2513/03	Main Case	CSK-43	8134 or 8135 Cereka	14049 Ravnice	Q0473004	3843	
Osmanovic (Ramiz) Nijad	01-Jan-76	1530/02R	Reassociation	RV01-456BP-T		14049 Ravnice	CP5965097808	5534	
Osmanovic (Ramiz) Nijad	01-Jan-76	1530/03	Main Case	RV01-143B		14049 Ravnice	CP5965097808	5535	Same individual, clerical error in protocol number related to year.

Source: ICMP, *Srebrenica Identified, 4 October 2007*

Table 5. Inconsistent records with multiple names: Corrections

Name	DoB	Protocol Id	type of report	Case Id	ID/ICMP	Site Name	Site Coordinates	ID	ICMP Comment
Hadzibulic (Redzep) Mirsad		6525/05R	Reassociation	CR11-400BP		Cancar	Q0412099	6606	
Hadzibulic (Redzep) Mirsad or Resid		6525/05R	Reassociation	CR11-368-H1		Cancar	Q0412099	6607	All should be Mirsad or Resid. 6925/05 should be
Hadzibulic (Redzep) Mirsad or Resid		6525/05R	Reassociation	CR11-368-T6		Cancar	Q0412099	6608	6525/05.
Hadzibulic (Redzep) Mirsad or Resid		6525/05	Main Case	CR11-399BP		Cancar	Q0412099	6609	

Source: ICMP, *Srebrenica Identified, 4 October 2007*

ANNEX 2

SREBRENICA MISSING: Persons Reported Missing and Dead after the Take-Over of the Srebrenica Enclave by the Bosnian Serb Army on 11 July 1995

The 2007 Progress Report on the DNA-Based Identification by ICMP

The Hague, 7 January 2007

(Attached as a separate file)



**POPULATION LOSSES IN THE
“SIEGE” OF SARAJEVO
10 SEPTEMBER 1992 TO 10 AUGUST 1994**

Ewa Tabeau, Marcin Żółtkowski and Jakub Bijak
DEMOGRAPHIC UNIT – LRT

10 May 2002

**RESEARCH REPORT PREPARED FOR
THE CASE OF STANISLAV GALIĆ (IT-98-29-I)**



Section 1. Executive Summary

In this report we discuss population losses in the siege¹ of Sarajevo. The major source used in this report was the Households Survey of Sarajevo, 1994, (HSS-1994). Since its completion until the present, this survey has never been presented to any audience. The authors of the survey lacked resources for computerisation, data processing, and analysis. The Office of the Prosecutor (hereafter OTP) conducted a project in which these activities were completed in order to produce reliable statistics of population losses during the siege of Sarajevo. The outcome of the OTP project is presented in this report.

The study area was the one within the Sarajevo front lines as set up by mid-1994. In practice, the area covered *parts* of six municipalities²: Centar, Ilidža, Novi Grad, Novo Sarajevo, Stari Grad, and Vogošća. The statistical definition of the area included 89 local communities (mjesne zajednice). The period of the study was from 10 September 1992 to 10 August 1994.

The HSS-1994 was conducted at mid-1994 (from April to September 1994), and collected retrospective information about several demographic events, including killing, wounding and natural death. The reporting period lasted from January 1992 to September 1994. The survey population, meant to be complete, was about 340,000 individuals³. This large size of this population, even if it was incomplete, gives good reasons to believe, that it was large enough to use it in estimating statistics of killing, wounding and natural death for the area and period studied here. The source is discussed in Section 3.

We also used several other sources of information, such as the Bakije Mortality Database (*Bakije*) and Mortality Database of Muslims against Genocide (*MAG*). In order to verify the identity of all casualties, the above-mentioned sources (HSS-1994, Bakije and MAG) were cross-examined against the 1991 population census for Bosnia and Herzegovina. (In other words, sources were matched or linked⁴ with the census at the level of individual records). In order to distinguish between civilian and military casualties, the two major sources (HSS-1994 and Bakije) were compared (through linking) with official lists of fallen soldiers from ABiH (Armija Bosne i Hercegovine) and VRS (Armija Republike Srpske), obtained from the Ministries of Defence of the Federation of Bosnia and Herzegovina and Republika Srpska. All these sources are summarised in Section 4.

¹ The term siege is used to refer to events in Sarajevo, as they become popularly known.

² The area of the six *entire* municipalities is hereafter called *Sarajevo Six*, on the contrary to *parts* of the six municipalities located within the 1994 front lines in Sarajevo.

³ The size of survey population is to a certain extent indicative. It has been obtained from the number of households interviewed in HSS-1994, i.e. 85,000, each consisting on average of 4 persons. The number of individuals in the survey could be slightly lower, but assuming a larger population is safer for the calculation of relative measures, such as demographic rates of killing or wounding. Rates, which relate a fixed number of events to a larger population, are more conservative (i.e. lower).

⁴ Approximately 80% of records in each source were successfully linked with the census (for some sources the matching rate was even higher). The unsuccessful matching was due to mistakes in names or other data deficiencies.

Table 1. An overview of summary statistics from the Households Survey of Sarajevo, 1994

Variables	Variables' Categories	Killed		Wounded		
		Number	Percent	Number	Percent	
Sample Size	Overall Total	3798	100.00	12919	100.00	
Sex	Men	3127	82.33	10438	80.80	
	Women	670	17.64	2477	19.17	
	Unknown	1	0.03	4	0.03	
Age (years)	0-4	22	0.58	69	0.53	
	5-9	79	2.08	234	1.81	
	10-17	194	5.11	948	7.34	
	0-17	295	7.77	1251	9.68	
	18-69	3397	89.44	11473	88.81	
	70+	85	2.24	179	1.39	
	Unknown	21	0.55	16	0.12	
Ethnicity	Croats	135	3.55	452	3.50	
	Muslims	2340	61.61	8715	67.46	
	Others	330	8.69	1391	10.77	
	Serb	158	4.16	633	4.90	
	Unknown	835	21.99	1728	13.38	
Status: Reported in HSS94	Civilians	1399	36.84	5093	39.42	
	Soldiers	2381	62.69	7774	60.17	
	Unknown	18	0.47	52	0.40	
Status: External Definition	Civilians	1732	45.60	na	na	
	Soldiers	2062	54.29	na	na	
	Unknown	4	0.11	na	na	
	<i>Of Soldiers:</i>	<i>Of 2062:</i>				
	<i>ABH</i>	<i>1577</i>	<i>41.52</i>	na	na	
	<i>VRS</i>	<i>1</i>	<i>0.03</i>	na	na	
	<i>HSS94</i>	<i>484</i>	<i>12.74</i>	na	na	
Year of Event	1992	1201	31.62	3923	30.37	
	1993	2196	57.82	7897	61.13	
	1994	401	10.56	1099	8.51	
Opština of Event	Centar	369	9.72	1504	11.64	
	Iliđža	856	22.54	2626	20.33	
	Novi Grad	1053	27.73	3817	29.55	
	Novo Sarajevo	265	6.98	1089	8.43	
	Stari Grad	507	13.35	1423	11.01	
	Vogošća	175	4.61	391	3.03	
	Sarajevo unsp.	573	15.09	2069	16.02	
Cause of Event	Shelling	2160	56.87	8009	61.99	
	Sniping	699	18.40	3111	24.08	
	Other Firearms	529	13.93	1199	9.28	
	Other Casualties	410	10.80	600	4.64	

Table 1. - Continued: Civilian Casualties

Variables	Variables' Categories	Killed		Wounded	
		Number	Percent	Number	Percent
Sample Size	Overall Total	1399	100.00	5093	100.00
Sex	Men	782	55.90	2802	55.02
	Women	617	44.10	2291	44.98
	Unknown	0	0.00	0	0.00
Age (years)	0-4	22	1.57	69	1.35
	5-9	79	5.65	233	4.57
	10-17	166	11.87	848	16.65
	0-17	267	19.09	1150	22.58
	18-69	1040	74.34	3769	74.00
	70+	83	5.93	172	3.38
	Unknown	9	0.64	2	0.04
Cause of Event	Shelling	932	66.62	3405	66.86
	Sniping	253	18.08	1296	25.45
	Other Firearms	101	7.22	288	5.65
	Other Casualties	113	8.08	104	2.04

The linking confirmed the validity of sources and also helped increase information about individuals by using the sources jointly. This method of analysis considerably increased the reliability and scientific value of our results.

In this report we present the following types of results:

- absolute numbers of killed and wounded persons (Section 5)
- demographic rates of killing, wounding and natural death (Section 6)
- an estimated overall number of persons killed (Section 7)

All absolute numbers are the lowest confirmed and should be seen as minimum numbers. The lists of casualties of the siege from 10.09.1992 to 10.08.1994 (3,798 names of killed persons, and 12,919 names of wounded persons) can be obtained from the demographic unit at a request.

Table 2. Overview of total numbers of events reported in three HSS-1994 samples

Event	HSS-1994	HSS-1994	HSS-1994
	ALL	01.01.92-30.09.94	10.09.92-10.08.94
Wounding	24197	21681	12919
Killing	7879	6055	3798
Nat Death	4981	4967	3434
Total	37057	32703	20151

The most significant findings of our study are shown in Table 1 and 2 and are listed below:

Absolute numbers of casualties:

- the total number of events reported in HSS-1994 was 37,057 (killing, wounding and natural deaths). Of this total, 20,151 events occurred in the area and period studied in this report,
- the number of killed persons obtained from HSS-1994 for the area and period studied here was 3,798, and the number of wounded persons was 12,919,
- these two numbers were obtained after data cleaning, re-coding of variables, a thorough control of data quality and internal data consistency, and elimination of duplicates from the HSS-1994 data,
- the vast majority of those killed or wounded were men (3,127 killed and 10,438 wounded men), most of them were at active military age (18-69 years) and were soldiers,
- however, many children, women and the elderly were reported among casualties as well,
- among those killed there were 295 children (0-17 years of age), 670 women, 85 elderly (70+ years of age),
- among those wounded the numbers were as follows: 1,251 children (0-17), 2,477 women, 179 elderly (70+),
- in total a minimum of 1,399 civilians were killed and 5,093 were wounded,
- shelling, sniping and other firearms were the most significant causes of killing and wounding
- some 2,160 persons (of which 932 civilians) were killed by shelling, 699 (253 civilians) by sniping, and 529 (101 civilians) by other firearms, some 410 remaining deaths (113 civilians) were caused by other causes of killing,
- with regard to wounding, 8,009 persons (of which 3,405 civilians) were wounded by shelling, 3,111 (1,296 civilians) by sniping, 1,199 (288 civilians) by other firearms, and 600 (104 civilians) by other causes,
- the ethnic composition of casualties includes a majority of Muslims (2,340 killed and 8,715 wounded, also killing and wounding rates for Muslims were considerably higher than for any other ethnic group), which may be related to the ethnic composition of the population at risk,
- ethnic targeting of the population could not be studied in this report as the ethnic composition at mid-1994 was rather uncertain (no source available),
- daily timing of killing and wounding indicates that casualties were observed almost every day from 10 September 1992 to 10 August 1994,
- most incidents occurred in 1992 (average of 300 killed persons per month and 10 killed per day), then in 1993 (177 killed per month and 6 per day), and at last in 1994 (64 killed per month and 2 per day),
- a similar pattern was obtained for wounded persons, which confirms the timing of shelling and sniping and other conflict-related activities,
- the analysis of timing also suggests that many civilian casualties were not caused by mechanisms which were killing or wounding soldiers, thus, some kind of targeting civilians might be possible.

Demographic rates:

- the 1992-94 killing rate was very high, equalled 1,153 deaths per 100,000 population and made up about 85% of the 1990-91 total rate for the Sarajevo Six,

- the overall death rate (for killing and natural deaths together) equalled 2,213 deaths per 100,000 and was higher than the 1990-91 by 65%, more than a half of this rate (52%) were killings, which means that the natural death rate (1,060) was lower than the killing rate (1,153),
- the municipalities that suffered most (in terms of killing) were the following: Stari Grad (ratio of 1992-94 to 1990-91 rates = 115%), Vogošća (104%) and Novi Grad (100%),
- the age patterns of killing and natural death are distinctively different: for killings most deaths are associated with lower ages (18-69), this must be seen as premature mortality, which does not compare with regular age-related mortality (i.e. in the age pattern of natural mortality most deaths appear at the highest ages),
- the 1992-94 wounding rate was extremely high, 4,412 wounded persons per 100,000 population, and was more than three times higher than the 1990-91 death rate.

Estimated overall numbers:

- although the major source used in this report (i.e. HSS-1994) is very large, the total of 3,798 killed persons is incomplete (so are all sources of information about war-related mortality),
- we therefore made an estimate of the unknown overall number of killed persons and obtained 4,352 individuals,
- the ethnic composition of this estimate includes 3,437 (79%) Muslims, 232 (5.3%) Serbs, 198 (4.5%) Croats and 485 (11.1) Others,
- we repeated the estimation also for natural deaths and produced an estimate of all deaths in the area and period studied, the number obtained is 8,132 deaths, which include approximately 53.5% killed persons.

List of casualties:

- We completed two lists of casualties of the siege, one of those killed (3,789 names), one of those wounded (12,919) persons. The lists are based on the Households Survey of Sarajevo, 1994, and include the casualties that are relevant to the area and period studied in this report.

Summing up, we must conclude that the population of Sarajevo experienced great losses during the siege. The share of killed civilians was very high, and of wounded civilians extremely high. So was the share of children, the elderly and women killed or wounded during the siege. Civilian casualties were largely unrelated to mechanisms that killed or wounded soldiers. The losses lasted over the whole period studied in this report.

Section 2. The Scope, Sources and Structure of This Report

This report presents statistical data and analysis concerning persons who were killed, died naturally, or were wounded during the siege of Sarajevo between 10 September 1992 and 10 August 1994. The area studied in this report covers selected parts of six municipalities of Sarajevo: Centar, Ilidža, Novi Grad, Novo Sarajevo, Stari Grad, and Vogošća. The parts included in this report were located within the Sarajevo front lines by mid-1994, were seen by Bosnian authorities and local people as a free territory of the city by that time, and the population living in these areas at that time was able to report demographic events that occurred in their families to those searching for this information.

Our principal objectives are to provide reliable statistics on population losses in the above-mentioned period and area, to measure the scale of these losses in relative terms (i.e. as mortality ratios), and to compare them with pre-war mortality ratios for Sarajevo. All this can be done as the sources used for this report are extensive. Our major source, the Households Survey on the Free Territory of Sarajevo in 1994, was a census-like population survey in the area within front lines in Sarajevo at mid-1994. Thus, it was expected to cover the entire population living in this area at the time the survey was conducted. It largely succeeded to achieve this objective, for the coverage within the front lines was 85,000 households⁵. However, none of existing sources is complete, not even the 1994 Sarajevo Households Survey⁶. Thus, the numbers we obtained from the original sources must be seen as the lowest confirmed (i.e. so-called minimum numbers). In order to increase our knowledge of the overall number of casualties, we also present a probabilistic⁷ estimate of this total, produced on the basis of merged sources with eliminated duplicates.

The report was prepared by the demographic unit of the Office of the Prosecutor (OTP) for the case of the Prosecutor of the Tribunal vs. Stanislav Galić, Case Number IT-98-29-I. Two main sources of information analysed in this report are *the Households Survey on the Free Territory of Sarajevo in 1994* (hereafter *HSS-1994*), conducted by the Institute for Research of War Crimes and International Law in Sarajevo, and *Mortality Database of the Bakije Funeral Home in Sarajevo* (hereafter *Bakije*). Both sources cover the area within the front lines in Sarajevo, both contain detailed information about those killed or who died naturally during the siege of Sarajevo. The cause of death is however not explicitly reported in the Bakije collection. To obtain causes of death for the records in the Bakije Mortality Database, we matched them with the Mortality Database of the Muslims against Genocide (hereafter *MAG*) and also the Households Survey of Sarajevo, 1994.

⁵ It is difficult to say how many households altogether lived within the 1994 front lines. Certainly the number was much less than the total number of households reported in the 1991 population census for the six municipalities, that **contained** the survey area. Large parts of these six municipalities were located outside the front lines and were inaccessible to the survey. Survey area was therefore a merger of certain smaller parts within the six municipalities. The number reported in the census for six municipalities (each as a whole) was 144,102 households. The survey total of 85,000 households is approximately 59% of the pre-war total for six entire municipalities.

⁶ This conclusion is based on a comparison of siege-relevant records from three sources: the 1994 Sarajevo Households Survey, Mortality Database of Muslims against Genocide and Database of Bakije Funeral Home in Sarajevo. A number of records are reported in all three sources, some in two of them, but each source also includes a number of unique records that are not included elsewhere.

⁷ The terms “probabilistic” or “stochastic” mean that an estimate is based on the probability theory.

In order to verify the identity of all casualties, the above mentioned sources (HSS-1994, Bakije and MAG) were cross-examined (through linking) against the 1991 population census for Bosnia and Herzegovina. In order to distinguish between civilian and military casualties, the two major sources (HSS-1994 and Bakije) were compared (i.e. linked) with official lists of fallen soldiers from ABH and VRS obtained from the Ministries of Defence of both political entities, i.e. the Federation of Bosnia and Herzegovina and Republika Srpska.

The sources were linked with the census at the level of individual records. The linking confirmed the validity of sources and also helped increase information about individuals by using the sources jointly. The reliability of results obtained from this method of analysis is considerably higher than if no linking is applied.

We divided this report into 8 sections and 6 annexes. Section 1 is a summary of findings. The scope, sources and structure of this report are discussed in Section 2. Sections 3 and 4 concentrate on our information sources. Measures of population losses obtained from HSS-1994 are presented in Sections 5 (absolute terms) and 6 (relative terms and comparisons with pre-war ratios). A stochastic estimate of the overall number of casualties obtained from two sources, *HSS-1994* and *Bakije*, is discussed in Section 7. Section 8 summarises the findings of this report.

The annexes 1 to 6 contain, respectively: a description of survey area (Annex 1), the questionnaire used in HSS-1994 (Annex 2), statistics of those killed (Annex 3) and those wounded (Annex 4) obtained from HSS-1994, demographic rates of killing, wounding and natural death for the area and period of the siege (Annex 5), and finally details of the capture-recapture method applied in estimation of the overall number of those killed in Sarajevo from 10.09.1992 to 10.08.1994 (Annex 6).

Section 3. The Households Survey in the Free Territory of Sarajevo in 1994 (HSS-1994)

3.1 The Households Survey on the Free Territory of Sarajevo in 1994 (HSS-1994)

The Households Survey on the Free Territory of Sarajevo in 1994 was conducted during the war in the spring and summer of 1994 (most of interviews were completed in May and June 1994, Table 3), in these parts of the besieged Bosnian capital, which were under control of the BiH government army. The survey was designed, co-ordinated and executed by the Sarajevo Institute for Research of War Crimes and International Law (hereafter *the Institute*), led by Prof. Smail Ćekić, in co-operation with the University of Sarajevo, statistical authorities of Sarajevo, and local communities (*mjesne zajednice, MZ*) from the survey area. The interviews were conducted via the local communities⁸ located within the front lines in Sarajevo.

Table 3. Timing of Interviews of HSS-1994

Year	Month	Count	Percent	Cumulative
1994	April	69	0.19	0.19
1994	May	6668	18.01	18.20
1994	June	25431	68.69	86.89
1994	July	79	0.21	87.10
1994	August	1695	4.58	91.68
1994	September	1357	3.67	95.35
	Blank Date	1723	4.65	100.00
Total	All Months	37022	100.00	na

Practically only certain parts of six municipalities: Centar, Novi Grad, Stari Grad, Novo Sarajevo, Ilidža and Vogošća, were covered by the survey. Specific local communities are indicated in Table A1.1 in Annex 1.

The questionnaires used in the survey are related to households; i.e. one questionnaire contains information about one household (Annex 2). According to the authors of HSS-1994, approximately 85,000 households living in Sarajevo at mid-1994 participated in the survey. Individual household members can be easily identified as well, for their names are listed in responses to subsequent questions. An assumption, that each household consisted of 4 members⁹, gives us a survey population

⁸ Local communities, officially constituting small administrative units within municipalities, remained in touch with their members and had the easiest access to the population. During the siege the communities distributed goods provided by the international aid among the population of Sarajevo.

⁹ The assumption of the four-person household size is not fully consistent with the pre-war 1991 household size (3.2 persons per household in the Sarajevo Six). We increased this number in order to adjust it for the large number of displaced persons and refugees living in Sarajevo, in many cases together with their relatives or friends, at mid-1994. Although for 1994 we were unable to rely on reliable statistics with this regard, for 1998

of approximately 340,000 individuals, which is 75% of the 1991 census population of the Sarajevo Six.

The questionnaire includes information on the following items:

1. Place of residence of a given household (current, i.e. 1994 address)
2. Type of place the household lives at:
 - a) They have not changed their pre-war place of residence (currently live at their pre-war address)
 - b) They have changed their location within the free territory, i.e. the territory controlled by the government army (ABiH)
 - c) They are refugees or displaced persons from territories controlled by other armies; currently live at a temporary location
3. Members of the household who at the time of interview lived on the free territory of the city of Sarajevo (first listed: head of the household)
4. Members of the household who became refugees or displaced, also those who at the time of interview stayed on the territory controlled by armies other than ABiH
5. Members of the household who had been killed during the conflict
6. Members of the household who had been wounded during the conflict
7. Members of the household who had gone missing during the conflict
8. Members of the household who had been in detention camps and/or in prisons during the conflict
9. Those disabled by war activities
10. Live births in the household during the conflict
11. Stillbirths in the household during the conflict
12. Those who died naturally during the conflict (and where are they buried)
13. Household's living conditions in Sarajevo in 1994
 - a) Pre-war (own?) home/flat
 - b) A place different from their pre-war (own?) home/flat since their pre-war place has been destroyed
 - c) A place different from their pre-war place but they moved not because of destruction of their pre-war place
 - d) They live in a collective place with other refugees/displaced
 - e) They are refugees/displaced and live with their relatives
14. Were there any refugees from this household in World War II?
15. Did the household lose any relatives in World War II?

For survivors living in Sarajevo at mid-1994 (listed under question 3) ethnicity and religion were reported, for all respondents their year of birth (i.e. age). Sex was available for everyone from the relationship to household head or name. Importantly, for killings, woundings and natural deaths, the place, date- and cause-of-event were included (for natural deaths place-of-death was given as place-of-burial and cause-of-death as just "natural death").

we can quote the UNHCR (United Nations High Commissioner for Refugees) figure of DPs (displaced persons) and refugees living still in the Sarajevo Six, which is 72,372 persons.

There are several reasons for the uniqueness of this survey:

- two types of variables are available from one and the same survey: the population exposed to the conflict, and several essential demographic events (killing, natural death, wounding, gone missing, displaced etc.) that occurred in this population
- these two types of variables could be used jointly to estimate relative measures (i.e. fractions) of killed, natural deaths, wounding, gone missing, displaced etc. in the de facto population living in Sarajevo in 1994
- the estimated fractions can be extrapolated for the whole Sarajevo population under the siege
- the number of events included in the questionnaire is very large and many war consequences can be revealed based on this single source
- the sample is large and covers the majority of the Sarajevo population in this period, which ensures a high reliability of the estimates.

The authors of the survey have never computerised the information reported in the questionnaires, for they lacked the necessary resources. Thus, losses of the Sarajevo population have never been estimated and presented to a broad audience.

As population losses of Sarajevo are an essential issue in the GALIĆ case (IT-98-29-I), the survey material was requested by OTP to produce statistics about population losses relevant to this case. We concentrated on three most significant events: killing, natural death and wounding, which brought us to establishing a database of approximately 40,000 records. The population exposed to risk (in total some 340,000 individuals) was generally left aside¹⁰, as the computerisation of such a large quantity of information would be too time consuming and too costly. The data processing project, conducted at OTP, is summarised below.

3.2 Survey Computerisation

Databases and analyses discussed in this report are individuals-oriented. Only questions 1, 2, 3, 5, 6, 12, and date of survey and person giving statement (interviewed person) were computerised and analysed. Note that the above-mentioned questions contain information about killings, woundings and natural deaths and also personal details of those who experienced these events. The remainder of the questionnaire was neglected.

This practically means that out of the original 85,000 questionnaires a selection was made of **all these questionnaires in which killings, woundings and natural deaths were reported (approximately 40,000 questionnaires)**. In this way we collected all available information about the events that were needed to produce statistics on the population losses during the siege of Sarajevo.

¹⁰ Except of the municipality of Stari Grad, which was the most centrally located and most exposed to risk. For Stari Grad we included all collected questionnaires, i.e. those where events were reported and those with no events. We did it for future reference and having an example of both the population data and demographic events

Relevant questionnaires were selected from the archive of the Institute for Research of War Crimes and International Law in Sarajevo in August 2001 by the staff of the demographic unit, OTP, together with the staff of the Institute. The selected documents contained information about killings, woundings or natural deaths from six Sarajevo municipalities¹¹ (approx. **40,000**). After selection, original documents were sent out for computerisation.

Data entry and scanning of the questionnaires commenced on 1 October 2001 in the ICTY Field Office in Zagreb. The data entry and scanning processes were successfully carried out in the period from 1 October to 31 December 2001 by six data entry clerks and two scanning staff. In late October 2001, a mission to Zagreb was undertaken by the demographic unit, OTP, to quality-control the data entry process at the early stage of the project, pick up the errors, correct them and, taking these errors into consideration, to set the standards required for the further work. The objectives of the mission were fully achieved.

3.3 Duplicate Removal

After initial cleaning of erroneously entered empty records, the collection had 40,204 records depicting casualties as reported while the survey was conducted. Then, **31** records with no information about any incident, including one person that was killed in the World War II, were deleted. Afterwards, a duplicate check was performed.

Duplicated records¹² are often seen in war-related sources due to imperfect reporting and limited or absent data quality control. The presence of duplicates can affect statistics by unjustifiably inflating their level. Thus, duplicate removal is a necessity in surveys like HSS-1994, especially that reliability of figures plays an extremely important role in this case.

In the duplicate check, the following criteria were used:

First name, last name, initial of father's name and year of birth – 2,798 records were removed and 2,537 kept, of which 52 after updating information about events encountered by individuals.

Last name, year of birth and three first letters of a first name – 338 records were removed and 615 kept, of which 50 after updating information about events.

coming from this population. In this report, however, Stari Grad municipality is only included in terms of events, i.e. killing, natural deaths and wounding, not the population.

¹¹ Municipalities: Centar, Novi Grad, Novo Sarajevo, Ilidža, Stari Grad and Vogošća, all areas being largely (not entirely) located within the confrontation lines at the time of the survey (mid-1994).

¹² Sometimes the same record appears in a database more than one time (or even more than twice). Reasons for duplicates are different depending on the specificity of a source. Also in HSS-1994, different respondents could report one the same person several times. This was largely related to frequent changes in the households' composition due to population movements during the war. Also mistakes of interviewers could be the cause for duplicates. In the duplicate control, we first identify all possible duplicates. Then, only unique records are kept and all other deleted. Before deleting the duplicates, we check whether we can improve the unique records by adding information from records to delete. Moving information from one record to another is called "up-dating".

We expected few more duplicated records left in the database, but as finding them automatically seemed to be very complicated at this stage, they had been left for the matching process, when they could be uncovered more easily. During the matching process another 15 duplicates in the 1991 census table were found. Finally, the collection was left with 37,022 unique records, of which 24,197 depict wounded persons, 7,879 - killed persons and 4,981 - those who died naturally. Thirty-five of those who were killed or died naturally were reported as being wounded before.

3.4 Recoding of Variables

In the preparatory stage, preceding the analytical phase, several variables underwent a thorough quality control, consistency check-up and re-coding. Some new variables were also added. The most significant variables, which later were used in the analysis and which had their values modified, are as follows¹³:

- *OpstinaOfResidence (q.1)*: valid names accepted, otherwise corrected
- *LocalCommunitOfResidency (q.1)*: valid names accepted, otherwise corrected, lacking information on a local community updated using address or sequence of questionnaire numbers
- *SameAddress (q.2a)*, *MovedFromAddress (q.2b)*, *MovedFromOpstina (q.2b)*, *RefugeesDPsFromAddress (q.2c)*, *RefugeesDPsFromOpstina (q.2c)*: mutual consistency checked, valid municipal names accepted, otherwise re-coded
- *CurrentOpstinaCode (q.1)*, *MovedFromOpstinaCode (q.2b)*, *RefugeeDPsOpstinaFromCode (q.2c)*: created by using official municipal codes (5 digits), with code 00000 for unknown municipalities, 99999 for countries abroad (including other former Yugoslavia) and 19200 for unspecified municipalities in Sarajevo¹⁴
- *Gender (q.3, 5, 6, or 12)*: recoded into (M)ales / (F)emales / (U)nknown sex
- *YearBorn (q.3, 5, 6, or 12)*: consistency checked (range 1874–1994 accepted)
- *Killed (yes/no, q.5)*: consistency assured with other variables on killed persons
- *DateOfDeath (q.5)*: cleaned and logically controlled¹⁵

¹³ Variables' names express their meaning. The names should be read together with the questionnaire attached in Annex 2 or the list of questions included in Section 3.1.

¹⁴ On the basis of these checks, an assessment of the 1991 municipality of residence was made, stored as a new variable *BestOpstina*. And thus, if a person didn't report anything about his place of residence or reported that the household didn't change the place of residence, the current municipality was assumed to be also the pre-war one. If it was stated that the household moved from another location, this municipality was taken as a priority. If reporting was inconsistent, the furthest possible municipality was taken as the 1991 municipality of residence, providing that it was not empty. In any case, valid municipal codes had priority towards the unknown cases (00000 or 19200). All inconsistent information was manually checked.

¹⁵ Several dates were recoded into *unknown* dates (00-00-0000): (a) possible, but outlying values of day/month/year combinations; (b) impossible day/month/year combinations (e.g. date of death later than date of survey or earlier than the year of birth); (c) impossible dates (e.g. days bigger than 30 or 31, months larger than 12), or event dates later than September 1994. In any case, a *minimum correction strategy* was applied. Whenever possible, the dates were re-coded using information about similar cases (i.e. the same period, place and cause of event). In such cases, frequency distributions were used. If additional information was unavailable, typical typing errors were considered, like "anything-10-1994" instead of "anything-01-1994", etc.). *DateOfQuestioning* has also been cleaned, obtaining consistent values, with most dates in the range May 1994 - September 1994 (with a break in July). In logical controls, comparisons were made between dates of events and

- *CauseOfDeath (q.5)*: cleaned (spelling) and regrouped into *NewCoD*
- *PlaceOfDeath (q.5)*: cleaned (spelling) and regrouped into *NewPoD*
- *StatusOfDeceased (q.5)*: cleaned, allowing only: Civilian / Soldier / Unknown
- *Wounded (yes/no, q.6)*: consistency with other variables on wounded persons assured
- *DateOfWound1st (q.6)*: cleaned and logically controlled
- *CauseOfWound1st (q.6)*: cleaned (spelling) and regrouped into *NewCoW1*
- *PlaceOfWound1st (q.6)*: cleaned (spelling) and regrouped into *NewPoW1*
- *StatusOfWounded1st (q.6)*: cleaned, allowing only: Civilian / Soldier / Unknown
- *NaturallyDied (yes/no, q.12)*: consistency assured with other variables on natural deaths
- *DateOfNatDeath (q.12)*: cleaned and logically controlled
- *DateOfQuestioning*: cleaned and logically controlled.

Note that *Wounding1st* denotes that an individual was wounded first time. Several persons were wounded two or three times. In this report we only study the overall number of wounded persons and do not discuss the number of times a person was wounded altogether.

Descriptive variables, such as cause or place of death or wounding, were obtained from open-ended questions, thus re-coding had to be more complex than cleaning only. Details of re-coding of these variables are therefore more thoroughly explained in the next section.

3.5 Matching Results

This section is devoted to the attempts made to match persons from the HSS-1994 collection with the 1991 population census. Generally speaking, matching is searching for the same individuals in different sources by comparing personal information in these individuals' records. Persons can be uniquely identified by their identification numbers (ID), or, when IDs are unavailable, by a set of characteristics such as names, date and place of birth, place of residence etc. If matching is done with a population census, we can speak about verifying the identity of individuals.

We tried to match the HSS-1994 records with the 1991 population census for Bosnia and Herzegovina. Matching criteria were applied as indicated above. Some of the criteria were less strict with regard to names (e.g. initials, or three first letters, of first or father's names instead of full names). For less strict criteria, manual control was additionally performed for all records, in other cases – only for those of the lethal cases which matched with survivors (represented in the 1997/98 voters list) the coherence of match was checked.

Altogether, 30,086 records have been matched (20,686 wounded persons, 5,711 killed and 3,612 naturally died), which makes about 81,3% of the total of 37,022 persons from the HSS-1994 collection. For 77 records the evidence is inconsistent, i.e. we also found them on our lists of survivors. We excluded them from the analysis.

dates of survey. As errors are inherent in all variables, dates of events were given a higher priority than the *DateOfQuestioning*.

Section 4. Mortality Database of Bakije Funeral Home and Auxiliary Sources Used in This Report

As mentioned in Section 1 and 2, we used several other sources of information, such as the Bakije Mortality Database and Mortality Database of Muslims against Genocide, the 1991 population census for Bosnia and Herzegovina, and official lists of fallen soldiers from ABH and VRS. All these sources are summarised in this section.

Note that the number and types of sources used for this report are exceptional. We are dealing here with a war situation, when usually only limited and deficient information is available. Despite of this fact, we were able to collect and process a large number of sources, some of them (e.g. the census, lists of fallen soldiers) were fully complete and of a high or reasonable quality. Through linking mortality sources with the census and lists of fallen soldiers we proved that the quality and validity of our mortality sources, including the HSS-1994, are fairly acceptable. This result allows considering population losses estimated from the mortality sources as reliable too.

4.1 Mortality Database of Bakije Funeral Home

This source contains business records collected by the Bakije Funeral Home from Sarajevo during the years 1992-95. The Bakije Funeral Home is the largest and oldest (since 1923) Muslim funeral home in Sarajevo. They bury Muslims. Other funeral homes in Sarajevo bury Croats, Serbs or all ethnic groups. During the war, Bakije operated in the area within the front lines in Sarajevo, most likely in the municipalities of Centar, Novi Grad, Novo Sarajevo, and Stari Grad. They buried persons reported dead by their families, or collected bodies from the area of conflict.

The (Access) database includes three data tables: DZENAZE (FUNERALS), LICA (PERSONS; the reporting household members of the deceased), and PORODI(CA) (HOUSEHOLDS of the deceased; represented by household heads). DZENAZE and LICA contain personal details (names, fathers' name, date and place of birth, date of death, place of burial, sex and civilian-soldier divide), PORODI(CA) holds details related to households. Dates with unknown day and/or month are reported as 01/01/.*. Causes of death and places of death are lacking in the Bakije database.

The number of records (i.e. persons) in this database is 12,867, of which 3,517 are marked with letter 'b' (=borac; i.e. soldier), and 9,350 records with letter 'c' (=civilian). These records cover the period from January 1992 to August 1996. The number of records for 1996 is less than in the respective period in 1992-1995. Generally, we have 11,546 records from the period from January 1992 to December 1995 (3,414 soldiers and 8,132 civilians), and 1,319 records covering the period from January 1996 to August 1996 (102 soldiers and 1,217 civilians). Two records are illegible (obvious mistakes in the year of death). Regarding the period from September 1992 to August 1994 the respective numbers are the following: total: 6,266, soldiers: 2,024, and civilians: 4,242.

4.2 Mortality Database of Muslims against Genocide

MAG is the acronym for "The Association of Muslims Against Genocide", a non-governmental organisation operating in Sarajevo. It collected data (including cause of death) on persons killed during the war in BiH, initially in Sarajevo but later in other areas as well. Volunteers collected data from a variety of sources, such as relatives, neighbours, hospitals, ambulances, newspapers, and community contacts all over the country. Some 90 % of the information come from eyewitnesses. Each death is recorded on a separate form and entered into a database. The same deaths may be reported by different persons and may also be mentioned in newspapers, hospital records, etc. Thus, there are often several completed forms for the same death. There is however good control of duplicates in the database. Deaths of all ethnic groups are collected but it is not unlikely that there is an under-registration of deaths among non-Muslims. The procedures for collecting, entering and checking seem to be convincing and the comparisons we have made with other sources indicate that the MAG data are of a very good quality. Until 2001 about 35,000 forms have been entered, covering about 26,600 victims in Bosnia. Approximately 9,500 records report one of the ten municipalities¹⁶ belonging to the (pre-war) Sarajevo area as the place of death.

4.3 The 1991 Population Census

The census was taken in spring 1991 (officially per March 31, 1991), just before the outbreak of hostilities in the country. The census contains information about a number of variables for each person enumerated. These include name and surname, father's name, household number, personal ID number (*matični broj*: JMBG), sex, date and place of birth, municipality and place of residence, occupation, ethnicity, mother tongue, religion, educational attainment, number of children born (for women only), and many other variables. The census gives us the possibility of confirming the identity of casualties of Sarajevo. We used it in matching with sources containing death reports.

The overall data quality is good, however a large quantity of names are misspelled, due to poor optical scanning of the original census questionnaire and no subsequent checking. To eliminate the misspelling we have developed special software for checking and correcting the names, with the help of experts familiar with naming traditions in the region. A second data quality problem is that a number of records do not include the full 13-digit personal ID number, the *matični broj*, introduced in the former Yugoslavia in 1981. The sources about deaths do not include any ID either, thus matching must be based on personal information such as names, date and place of births, father's name etc.

4.4 Lists of Fallen Soldiers of ABiH

This is a complete list of killed soldiers and other military personnel from the official records of the Army of Bosnia and Herzegovina. The following seven regions are included: Bihac, Goražde, Mostar,

¹⁶ The ten municipalities of the pre-war Sarajevo area are the following: Centar, Hadžići, Ilidža, Ilijaš, Novi Grad, Novo Sarajevo, Stari Grad, Pale, Trnovo and Vogošća.

Sarajevo, Travnik, Tuzla, and Zenica. The data include soldiers' names, ID (i.e. JMBG) numbers, places of birth and residence, military affiliation (army/police/ministry of defence) and cause of death. The database was provided by the Ministry of Defence of the Federation of Bosnia and Herzegovina. The database covers the whole territory of Bosnia and Herzegovina. Data quality is very good.

4.5 Lists of Fallen Soldiers of VRS

This list of fallen soldiers was obtained from the Ministry of Defence of Republika Srpska. The soldiers were members of the Serbian Army (VRS) and died during the war. Items such as their names, dates of birth, municipality of residence and birth, date of death, and cause of death are included. Also this database covers the entire territory of Bosnia and Herzegovina. Data quality is very good as well.

Section 5. Absolute Measures of Population Losses Obtained from HSS-1994

In this section we present absolute numbers of the killed and wounded population that experienced these events in the period from 10 September 1992 to 10 August 1994 in the area within the front lines in Sarajevo (see Table 1 in Section 1 and also repeated below). The statistics are obtained from one single source: the Households Survey of Sarajevo, 1994. We believe that this source is relatively complete and large. The survey was meant to cover the *entire* population of Sarajevo that lived within the front lines at mid-1994. But it is not exhaustive¹⁷ and therefore the numbers discussed in this section should be seen as minimum numbers (i.e. “at least”). Additional sources, such as Bakije Mortality Database or MAG Mortality Database, could have been used together with HSS-1994. However, each of the additional sources has deficiencies that would decline the quality of produced statistics. Bakije, for instance, does not include information about causes of death, which would prevent us from distinguishing between natural and violent deaths, and in particular from proving which deaths were related and which were not to the siege of Sarajevo. MAG database reports places of death as a municipality only, thus we would have to include larger areas in our analysis than the area within front lines. The estimated number of deaths that occurred within front lines would be inflated by the improper definition of the study area.

In Section 3.3 we mentioned a total of 37,022 records in HSS-1994, of which 24,197 were wounded persons, 7,879 - killed persons and 4,981 - those who died naturally. Thirty-five of those who were killed or died naturally were reported as being wounded before. The figures presented in Section 3.3 represent the complete outcome of HSS-1994. The area and period covered by these figures are not all relevant to the GALIĆ case, and must be adjusted to satisfy the requirements of the GALIĆ sample.

The HSS-1994 was expected to cover the within-front-lines area of Sarajevo and the period from approximately 1 January 1992 to 30 September 1994. Reporting of events was meant to be retrospective but not beyond the conflict period. In practice, the respondents also reported some marginal numbers of events that occurred in other periods or at other places. The irrelevant events had to be excluded from the analysis of casualties of the siege. After excluding the irrelevant events, there were 6,055 killings, 21,681 woundings, and 4,967 natural deaths reported within front lines in Sarajevo for the period from January 1992 to September 1994 (unknown dates included).

¹⁷ The HSS-1994 survey certainly covered a large fraction of the population in this area but it is uncertain that the coverage was complete. The access to certain places could be impossible due to the war situation in Sarajevo, the selection of the survey population was not based on the population register as is usually done in censuses, but on the basis of population records of local communities. The communities kept these records for their own purposes (such as administrative tasks or distribution of international aid) but did not have the legal obligation of up-dating the records by registering vital events, such as deaths, births, or marriages, or in-coming or out-going population.

Table 3. An overview of summary statistics from the Households Survey of Sarajevo, 1994

Variables	Variables' Categories	Killed		Wounded		
		Number	Percent	Number	Percent	
Sample Size	Overall Total	3798	100.00	12919	100.00	
Sex	Men	3127	82.33	10438	80.80	
	Women	670	17.64	2477	19.17	
	Unknown	1	0.03	4	0.03	
Age (years)	0-4	22	0.58	69	0.53	
	5-9	79	2.08	234	1.81	
	10-17	194	5.11	948	7.34	
	0-17	295	7.77	1251	9.68	
	18-69	3397	89.44	11473	88.81	
	70+	85	2.24	179	1.39	
	Unknown	21	0.55	16	0.12	
Ethnicity	Croats	135	3.55	452	3.50	
	Muslims	2340	61.61	8715	67.46	
	Others	330	8.69	1391	10.77	
	Serb	158	4.16	633	4.90	
	Unknown	835	21.99	1728	13.38	
Status: Reported in HSS94	Civilians	1399	36.84	5093	39.42	
	Soldiers	2381	62.69	7774	60.17	
	Unknown	18	0.47	52	0.40	
Status: External Definition	Civilians	1732	45.60	na	na	
	Soldiers	2062	54.29	na	na	
	Unknown	4	0.11	na	na	
	<i>Of Soldiers:</i>	<i>Of 2062:</i>				
	<i>ABH</i>	<i>1577</i>	<i>41.52</i>	na	na	
	<i>VRS</i>	<i>1</i>	<i>0.03</i>	na	na	
	<i>HSS94</i>	<i>484</i>	<i>12.74</i>	na	na	
Year of Event	1992	1201	31.62	3923	30.37	
	1993	2196	57.82	7897	61.13	
	1994	401	10.56	1099	8.51	
Opština of Event	Centar	369	9.72	1504	11.64	
	Ilidža	856	22.54	2626	20.33	
	Novi Grad	1053	27.73	3817	29.55	
	Novo Sarajevo	265	6.98	1089	8.43	
	Stari Grad	507	13.35	1423	11.01	
	Vogošća	175	4.61	391	3.03	
	Sarajevo unsp.	573	15.09	2069	16.02	
Cause of Event	Shelling	2160	56.87	8009	61.99	
	Sniping	699	18.40	3111	24.08	
	Other Firearms	529	13.93	1199	9.28	
	Other Casualties	410	10.80	600	4.64	

Table 3. - Continued: Civilians

Variables	Variables' Categories	Killed		Wounded	
		Number	Percent	Number	Percent
Sample Size	Overall Total	1399	100.00	5093	100.00
Sex	Men	782	55.90	2802	55.02
	Women	617	44.10	2291	44.98
	Unknown	0	0.00	0	0.00
Age (years)	0-4	22	1.57	69	1.35
	5-9	79	5.65	233	4.57
	10-17	166	11.87	848	16.65
	0-17	267	19.09	1150	22.58
	18-69	1040	74.34	3769	74.00
	70+	83	5.93	172	3.38
	Unknown	9	0.64	2	0.04
Cause of Event	Shelling	932	66.62	3405	66.86
	Sniping	253	18.08	1296	25.45
	Other Firearms	101	7.22	288	5.65
	Other Casualties	113	8.08	104	2.04

In order to create an appropriate sample for the GALIĆ case, a sub-period of the siege from 10 September 1992 to 10 August 1994 was selected and the area of events was constraint to be within the front lines. All events that occurred outside the siege period or siege area and siege-relevant events from outside the indictment period were excluded from the GALIĆ sample. In addition, in order to present conservative statistics, also completely or partly unknown dates of events (especially unknown year, or unknown month in 1992 or 1994) were excluded as well.

Imposing the above-mentioned restrictions on the survey data, led us to the numbers presented above in Table 1. The table presents essential results on the killed and wounded population. In the discussion below, we first discuss killings, and then woundings. We also make several references to more detailed results available from Annexes 3 and 4.

5.1 Killed Population

The total number of killed persons is 3,798, and includes 670 women and 3127 men (sex was unavailable for 1 person). There were 295 children and youngsters (age 0 to 17 years). About 34% of them were below 10 years of age and 66% at age from 10 to 17 years.

Table 4. Ethnic Composition of Persons Killed Within Front Lines in Sarajevo¹⁸, 10.09.1992-10.10.1994, versus the 1991 Population Census

Ethnicity	1991 Census		Household Survey, Sarajevo 1994			
	Number (Observed)	Percent	No Killed (Observed)	Percent	No Killed (Adjusted)	Percent
Croats	32246	7.10	135	3.55	173	4.56
Muslims	224339	49.38	2340	61.61	2999	78.97
Serbs	126113	27.76	330	8.69	423	11.14
Others	71621	15.76	158	4.16	203	5.33
Unknown	0	0	835	21.99	0	0
Total	454319	100.00	3798	100.00	3798	100.00

Source: *Statistički Godišnjak Republike Bosne i Hercegovine, 1992. RBH, Državni Zavod za Statistiku, Sarajevo, maj 1992*

Note: In the census data the six municipalities (Centar, Ilidža, Novi Grad, Novo Sarajevo, Stari Grad and Vogošća) are shown as entire areas, in HSS-1994 data only parts of the same six municipalities are included.

Most of the killed population were Muslims (2340 persons, which is about 62% of all killed, or as much as 79%, if the number of unknown ethnicity victims (835) is re-distributed proportionally to the ethnic composition of victims of specific ethnicity). Other ethnic groups are represented much less frequently among the killed. This outcome can be a result of the ethnic composition within the front lines in Sarajevo at mid-1994, different than the 1991 ethnic composition of the Sarajevo Six. The survey can also be slightly biased towards the Muslim population¹⁹. Generally, however, the ethnic structure of killings probably does not indicate targeting of any particular ethnic group.

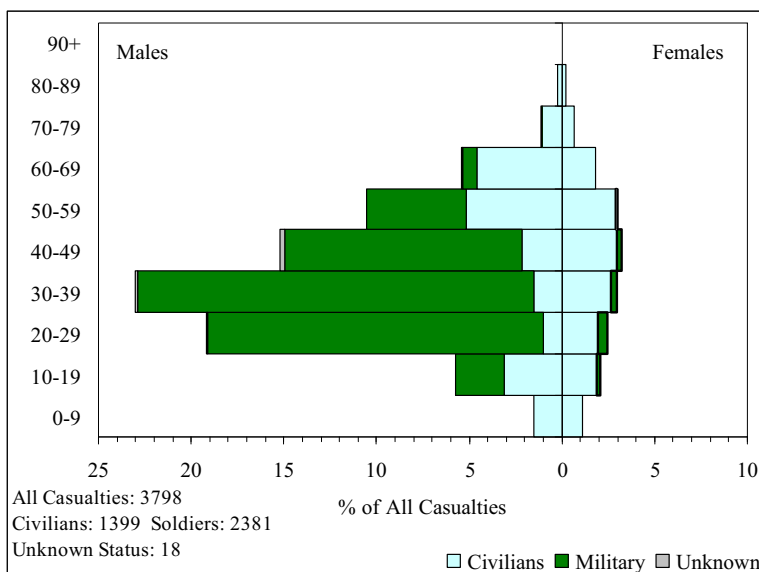
An essential distribution of those killed is into civilians and soldiers. Information about the civilian-soldier divide (hereafter *the status*) comes from question 5 (6 for the wounded), where for every person the status is explicitly requested. Respondents reported the status without having it proved to the interviewers by the means of any official documents (thus, it was a self-reported status). Also the distinction of civilians and soldiers does not mean that a person of a military status was killed while engaged in combat.

¹⁸ Ethnicity (and religion) of those who died or got wounded was mostly unavailable from HSS-1994, where only ethnicity (and religion) of those household members was reported who were alive and stayed with the household at the moment of the interview. The source for ethnicity shown in Table 3 is the 1991 population census. Through the matching of records from HSS-1994 with census records we established individual-level links for persons reported dead or wounded. Through the links we could increase our information about the casualties by accessing census items such as ethnicity, religion, education etc. As the matching process was not 100% successful (matching rate was about 80%), for some 20% of the (unlinked) victims no ethnicity was obtained.

¹⁹ The ethnic composition of those living within the front lines in 1994 could include more Muslims than the one observed in the 1991 population census for six municipalities included in Table 4. The reason for this could be the Muslim DPs who moved into Sarajevo in early stages of the war. However, it is also possible that the access of survey interviewers to minority groups, such as Serbs, Croats, other ethnicities, was perhaps more difficult than access to the Muslim majority.

There were 1399 civilians reported killed in HSS-1994 and 2381 soldiers. The status of 18 persons was unknown. The ratio of civilian to military victims was as 1 to 1.7 meaning that on average one civilian was killed per every 1.7 killed soldiers. Note that this result only describes the structure of killings within the HSS-1994 survey population and does not say anything about differences in *death intensity* between non-combatants and combatants. In order to assess such differences we would need to know the size of both populations at the time when they were exposed to the risk of being killed. Such information is unavailable to us.

Figure 1. Sex, Age, and Civilian-Soldier Distributions of Those Killed Within Front Lines in Sarajevo, 10.09.1992-10.08.1994



Note: *From 10.09.1992 to 10.08.1994

Figure 1 shows the structure of the survey population by three characteristics: age, sex and status. Obviously, the vast majority of the killed were male soldiers (about 63% of the whole survey population, while civilians made up approximately 37%, see also Annex 3). (Male) soldiers died mainly at age 18-39 (41%), 40-59 (18%), and to a lesser extent also at 10-17 (1%). The fraction of female soldiers was negligible. The most killed civilians were also men. About 5% of the study population of men were killed at age 50-59, another 5% at 60-69, and 3% at age 10-17. About 9% of female civilians were killed at age from 30 to 59 and about 2% from age 10 to 17 years.

Note that the figures discussed above include considerable numbers of civilians: children (267, age from birth to 17 years), women (617) and the elderly (83, age 70+). Still these numbers are understated due to the subjective definition of the status. The actual numbers were likely higher than those in

Table 1. In order to understand why too many soldiers were reported and too few civilians, it is good to realise that during the siege those who had guns or other weapons were commonly seen as soldiers. A number of (male) teenagers, or elderly men, were customarily considered soldiers even though they were too young or too old to become members of the army. A second reason for inflating the number of soldiers is that families hoped to obtain a post-mortal pension to which only soldiers' families were entitled.

In order to illustrate the scale of possible differences in the number of killed civilians and soldiers, we applied an alternative definition of the status by using official lists of fallen soldiers provided by the Ministries of Defence of the FBH and RS. After establishing links between the HSS-1994 records and the records on the lists of fallen soldiers, we assigned the status "soldier" to all dead soldiers included in the official lists, and the status "civilian" to all those casualties who were not found among the fallen soldiers. We were able to do so for those records from HSS-1994 that had links established with the census (80% of HSS-1994 data). For about 20% of the HSS-1994 records (unlinked ones), the subjective self-reported status was kept. The result of this exercise is reported in Table 1 under "Status: External Definition". In this case the number of killed civilians is higher than previously by 333 and the number of killed soldiers is lower than previously by 319 persons.

Note that the above approach cannot be applied to the wounded population as the official lists include only soldiers who were killed, and there is no information on the lists about those wounded.

Table 5. Monthly and Daily Average of Persons Killed Within Front Lines in Sarajevo, 10.09.1992-10.08.1994

Year	Civilians	Soldiers	All	C:S Ratio
<i>Monthly</i>				
1992	105.00	192.75	300.25	1 : 1.84
1993	63.50	112.50	176.50	1 : 1.77
1994	28.33	35.17	63.67	1 : 1.24
<i>Daily</i>				
1992	3.67	6.73	10.48	1 : 1.83
1993	2.04	3.65	5.71	1 : 1.80
1994	0.93	1.15	2.09	1 : 1.24

Note: In 1994, June is the last month included

In order to examine the timing of killing, we analysed yearly, monthly and daily numbers of the killed (for monthly and daily figures see Annex 3). Table 1 only shows the annual totals. Note that only one year (1993) is included in the survey as a complete year, 1992 is represented by 4 months, and 1994 by 8 months. In addition to that, the events that occurred in July and August of 1994 are certainly underrepresented in survey statistics. This is caused by the timing of interviews that were mainly taken in May and June of 1994 (87% of all interviews were completed already in the end of June; in Table 5 the averages for 1994 were therefore calculated up to June, July and August were excluded). All in all, the annual totals reported in Table 1 should be taken with caution. Although the highest number of

casualties is reported for 1993, the monthly and daily numbers of the killed, shown in Table 5, suggest that people got killed most intensively in the year 1992, then in 1993, and at last in 1994. This observation applies to both civilians and soldiers and also to all casualties jointly. The ratio of civilian to military deaths is also the highest in 1992 (about 1 to 1.8) and the lowest in 1994 (1 to 1.2). The patterns are the same irrespectively whether monthly or daily indicators are considered.

In Section 5.3 we continue the theme of timing by associating the daily distribution of casualties with certain well-known incidents reported by external sources.

Two last issues mentioned in Table 1 are the place (i.e. *opština*) and cause of event. In HSS-1994 questions related to these items were open-ended. This means that any answer could be given by respondents and they did not have to choose from a standardised list of possible answers. Interviewers were instructed that as detailed answers as possible were most welcome. As a result of this approach, hundreds and thousands of responses were obtained. The original responses had to be re-coded and structured in order to synthesise the responses in a uniform approach.

Regarding the places of events, respondents usually reported names of local communities within the survey area or common names of particular locations within Sarajevo. We also saw names of municipalities different than "Sarajevo Six" or even countries other than Bosnia and Herzegovina. Some places were non-specific, such as: airport, *pista*, apartment, hospital, Kasarna Maršal Tito etc. We developed a system of codes for the reported place names, in which every place was re-coded into a local community. If a place was located outside the front lines, the code of a municipality in Bosnia or country code was assigned. If a place could not be identified in terms of a local community, but we knew it was located within the front lines, one of the non-specific codes was used: "opština-within front lines", "opština-other" or "opština-unspecified". A team of our Bosnian colleagues coming from Sarajevo or its surroundings did assigning particular places to local communities. We also used maps of local communities drawn by local authorities from Sarajevo. In this way we were able to propose a classification of places that were available at the level of local communities. The Federal Institute for Statistics in Sarajevo provided us with a bridging system for linking local communities with municipalities. Thus, also grouping the events by municipality became possible.

Table 1 shows that most persons were killed in Novi Grad, Ilidža and Stari Grad. Again these absolute numbers should not be taken too literally: death intensities (not death numbers) must be used in order to reliably assess the differences among the six municipalities. This is done in Section 6 for the population that used to live in the six municipalities during the 1991 population census.

A similar re-classification and re-coding approach was applied to cause of death reporting. The many individual responses obtained in HSS-1994 were organised in a consistent system of a limited number of cause-of-death categories. The standardised categories are presented in Table 1 and also in many more detailed tables attached in Annex 3.

The basic principle of the re-classification of causes of death was to keep the categories, such as shelling, sniping, shooting, or cold steel, slaughtered, tortured, human shield, execution etc., unchanged. Many of these categories were reported with spelling mistakes, or slight differences in

wording. In such cases we just re-coded the different names into one standardised name. Secondly, for causes reported rather broadly a number of uniform general codes were proposed (e.g. wounding, war operations, war conditions, other accident, or just unspecified). In the final stage we distinguished a number of meaningful groups of causes that could be used in presenting summary statistics on causes of death. These groups and sub-categories within the groups are shown in Table 6 below.

Table 6. Persons Killed Within Front Lines in Sarajevo, 10.09.1992-10.08.1994, Number by Cause of Death

<i>Civilians, Soldiers and Unknown Status</i>				
Causes Of Death	Women	Men	Unk Sex	Total
Firearms - Shelling	468	1692	0	2160
Firearms - Sniper	103	595	1	699
Firearms - Shooting	26	202	0	228
Firearms - Other and Unspecified	27	274	0	301
- <i>Firearms - anti-aircraft machinegun</i>	1	31	0	32
- <i>Firearms - M-84 and the like</i>	2	9	0	11
- <i>Firearms - unspecified</i>	24	234	0	258
Direct Casualties of War	10	179	0	189
- <i>Cold steel/slaughtered/tortured</i>	4	10	0	14
- <i>Execution</i>	3	4	0	7
- <i>Human shield</i>	0	4	0	4
- <i>Disappeared</i>	2	11	0	13
- <i>Other casualties - wounding</i>	0	4	0	4
- <i>Other casualties - war operations</i>	1	146	0	147
Indirect Casualties of War	3	22	0	25
- <i>Stepped on mine</i>	3	16	0	19
- <i>Other casualties - war conditions</i>	0	6	0	6
Other casualties - unspecified	8	42	0	50
Accidents and Violence	19	63	0	82
- <i>Other - traffic accident</i>	3	16	0	19
- <i>Other - other accident</i>	6	15	0	21
- <i>Other - suicide</i>	5	5	0	10
- <i>Other - violent</i>	5	27	0	32
Unknown/Unspecified	6	58	0	64
Total	670	3127	1	3798

The first group includes causes related to firearms. Three basic categories in this group are shelling, sniping and other firearms (“shooting” and “other and unspecified” taken together). The total number of deaths from these three categories is 3,388 out of the overall 3,798 deaths (1,286 civilians out of the total of 1,399 deaths of civilians). Only 410 deaths are caused by other factors (113 deaths of civilians). The “other factors” include causes grouped as follows:

- direct casualties of war
- indirect casualties of war
- other casualties (unspecified)
- accidents and violence
- unknown causes.

Note that the above groups include causes that are different than firearms. Altogether the *non-firearms causes* were responsible for about 11% of killings (410 deaths). Most of them were reported under *direct casualties of war* (189 deaths), thus as a victim of cold steel, slaughter, torture, execution, human shield, late consequence of wounding etc. In Table 6 also some 82 deaths are reported under causes generally called *accidents and violence*. This group includes cause-of-death categories such as accidents (including traffic accidents), suicide and violent deaths. These death categories can be seen as external causes of death, and actually are also reported in populations that are not exposed to armed conflicts. However, many accidents reported in the HSS-1994 survey were strictly conflict-related, such as frequent gas explosions, building collapses, accidents related to road deficiencies, lack of traffic signs or regulations, damages of cars and the similar. For these reasons we kept the group accidents and violence among the causes of killing.

Death rates by cause of death, presented in Section 6, provide information about death intensity by cause of death.

5.2 Wounded Population

The numbers obtained for the wounded population are characterised by the same patterns as those for the killed (Figure 2 and Tables 7 and 8 below). The numbers of the wounded are however much higher than the numbers of the killed (the overall ratio of the killed to wounded is 1 to 3.4).

The total number of wounded persons was 12,919, of which 5,093 were civilians. There were 1,250 wounded children at age 0 to 17 years (1,150 civilians), and 179 wounded elderly at age 70 or more years (172 civilians).

Some 8,009 persons were wounded by shelling (3,405 civilians), 3,111 persons by sniping (1,296 civilians), and 1,199 by other firearms (288 civilians). Some 600 persons were wounded by other causes (among them 104 civilians).

Figure 2. Sex, Age and Civilian-Soldier Distributions of Those Wounded Within Front Lines in Sarajevo, 10.09.1992-10.08.1994

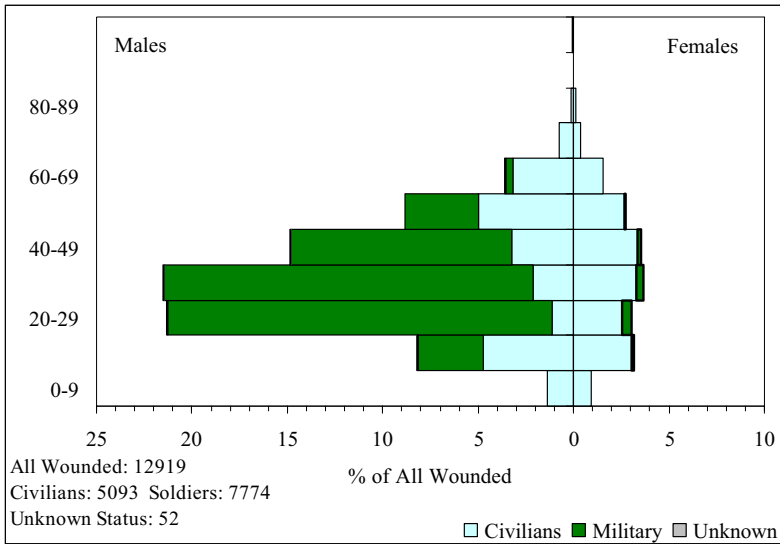


Table 7. Monthly and Daily Average of Persons Wounded Within Front Lines in Sarajevo, 10.09.1992-10.08.1994

Year	Civilians	Soldiers	All	C:S Ratio
<i>Monthly</i>				
1992	342.50	633.00	980.75	1:1.85
1993	254.75	353.08	609.83	1:1.39
1994	72.17	95.50	168.33	1:1.32
<i>Daily</i>				
1992	11.65	21.50	33.32	1:1.84
1993	7.90	10.88	18.70	1:1.38
1994	4.27	3.70	6.13	1:0.87

Note: In 1994, June is the last month included

Table 8. Persons Wounded Within Front Lines in Sarajevo, 10.09.1992-10.08.1994, Number by Cause of Death

Causes Of Wounding	Women	Men	Unk Sex	Total
Firearms - Shelling	1681	6326	2	8009
Firearms - Sniper	604	2505	2	3111
Firearms - Shooting	4	37	0	41
Firearms - Other and Unspecified:	135	1023	0	1158
- <i>Firearms - anti-aircraft machinegun</i>	38	182	0	220
- <i>Firearms - M-84 and the like</i>	2	12	0	14
- <i>Firearms - unspecified</i>	95	829	0	924
Direct Casualties of War	11	215	0	226
- <i>Cold steel/slaughtered/tortured</i>	1	10	0	11
- <i>Execution</i>	0	0	0	0
- <i>Human shield</i>	0	4	0	4
- <i>Disappeared</i>	7	28	0	35
- <i>Other casualties - war operations</i>	3	173	0	176
Indirect Casualties of War	5	118	0	123
- <i>Stepped on mine</i>	3	95	0	98
- <i>Other casualties - war conditions</i>	2	23	0	25
Other casualties - unspecified	0	4	0	4
Accidents and Violence:	9	47	0	56
- <i>Other - traffic accident</i>	4	24	0	28
- <i>Other - other accident</i>	4	20	0	24
- <i>Self-inflicted</i>	1	3	0	4
Unknown/Unspecified	28	163	0	191
Total	2477	10438	4	12919

5.3 Timing of Killing and Wounding

In this section we discuss daily numbers of killing and wounding in the given area in Sarajevo in the period from 10-09-1992 to 10-8-1994. The numbers of killed and wounded persons are shown separately for civilians and soldiers. In order to reveal an association between the events observed for civilians and soldiers, we analyse the correlation of these two time series.

All records for which the exact date of event was unknown had to be excluded from the analysis of timing. The total number of killed persons during the given time period, both civilians and soldiers, whose date of death was known, is 3,652. The total number of killed civilians is 1,328 and such a number for soldiers is 2,308. There are also 16 records, for which the status was unknown. In our database we also have records of 11,580 wounded persons (with known dates of wounding), out of which 4,585 were civilians and 6,950 were soldiers. Some 45 records are of unknown status. Our time-

series consist of 700 observations (i.e. days). In the given period (700 days) on average more than 5 people got killed every day and more than 16 got wounded. The standard deviation is accordingly 6.5 and 17 events. The maximum number of people killed on one single day is 55. The maximum number of people wounded on one day is 107.

The charts with daily distributions of killing and wounding are attached in Annex 3 (A3.15 and A3.16) and 4 (A4.15 and A4.16). For a better clarity, we divided the period from 10 September 1992 to 10 August 1994 into two parts, each relating to a sub-period of about one year. The first part shows the period from 10-09-1992 to 30-09-1993 (A3.15 and A4.15) and the second from 01-10-1993 to 10-08-1994 (A4.16 and A4.16).

The above-mentioned figures show that from 10-Sep-1992 to early February 1994, incidents were happening every day. From February 1994 to the end of August 1994 the number of killed and wounded persons decreased significantly. In July and August it is, to some extent, due to the character of our data, as was mentioned in Section 3.1 (majority of events were reported before July 1994). While examining the charts, we can easily recognise some significant dates, when there were much more killed or wounded persons than on average. These days are listed in Tables 9 to 14. When we compare the timing of killed civilians with the timing of fallen soldiers in terms of correlation between them, we obtain the correlation coefficient²⁰ equal 0.47. It shows the positive correlation between these two time-series. Correlation coefficient between the number of wounded soldiers and civilians is 0.65. It is again positive, but both those numbers are relatively small. That means that the death of civilians was not necessarily caused by the same reasons as soldiers. The existing evidence of dates when a lot of civilians were killed and only a small number of soldiers, (Tables 9 to 14), supports this conclusion statistically.

Figure A3.15 presents the total number of *killed* civilians, soldiers and the total number of all persons killed in the period 10-09-1992 to 30-09-1993. For this period Table 9 lists all days when more than 24 people were killed (dates are sorted by the total number of casualties). As an addition to Table 9, Table 10 that shows all events when 10 or more civilians were killed (dates sorted by the number of civilian casualties).

Figure A4.15 likewise shows the total number of *wounded* civilians, soldiers and the total number of all persons wounded in the same period (10-09-1992 to 30-09-1993). As for killing, also for wounding two additional tables are made: one reporting dates when more than 64 persons were wounded (Table 11; dates sorted by Total), and one with dates when more than 30 civilians were wounded (Table 12; dates sorted by Civilians).

Finally Tables 13 and 14 below are based on data shown in Figures A3.16 (killing) and A4.16 (wounding) and display dates selected from the period from 01.10.1993 to 10.08.1994. Tables 13 and 14 show only dates selected due to the number of killed or wounded civilians.

²⁰ A correlation coefficient is a measure of association (or similarity) between two series. It can take values from -1 to +1. Negative values denote an inverse relationship (increase-decrease), positive values denote a parallel relationship (increase-increase or decrease-decrease). The "0" value means no correlation, -1 or +1 a maximum correlation.

Table 9. Days When More than 24 Persons Were Killed (Sorted by Total)

Date	Civilians	Soldiers	Total
30-May-93	16	39	55
27-Jul-93	12	31	43
04-Dec-92	8	32	40
27-Jan-93	8	27	36
14-Dec-92	4	30	34
12-Dec-92	4	27	31
14-Sep-92	6	23	29
03-Jul-93	6	23	29
05-Dec-92	6	22	28
18-Sep-92	10	17	27
07-Dec-92	3	24	27
08-Dec-92	3	23	27
12-Jun-93	14	12	26
03-Dec-92	8	17	25
24-Jul-93	6	19	25

Table 10. Days When 10 or More Civilians Were Killed (Sorted by Civilians)

Date	Civilians	Soldiers	Total
30-May-93	16	39	55
12-Jun-93	14	12	26
18-Oct-92	14	8	22
19-Oct-92	13	10	23
5-Oct-92	13	7	20
27-Jul-93	12	31	43
31-Oct-92	12	10	22
12-Jul-93	12	1	13
1-Oct-92	11	2	13
18-Sep-92	10	17	27

Numbers of casualties used as limits for selecting dates shown in Tables 9 to 14 were chosen based on a visual assessment of timing patterns in Figures A3.15, A3.16, A4.15, and A4.16. The selected dates can be seen as some kind of extreme days when extraordinarily high numbers of casualties occurred. Thus, Tables 9 to 14 give an overview of dates when likely most incidents (and most consequences of these incidents) took place. Figures A3.15, A3.16, A4.15, and A4.16 indicate that incidents in which people were killed or wounded were much more frequent in the first considered year (September 1992 to September 1993) than in the second. Thus, we mainly pay attention to this particular period.

Table 11. Days When More Than 64 Persons Were Wounded (Sorted by Total)

Date	Civilians	Soldiers	Total
14-Sep-92	33	74	107
01-Jun-93	46	59	105
17-Sep-92	22	78	100
18-Sep-92	26	73	99
10-Oct-92	38	59	97
08-Dec-92	13	71	85
30-May-93	30	51	81
04-Dec-92	22	58	80
05-Dec-92	4	71	75
15-Sep-92	35	39	74
12-Dec-92	30	42	72
21-Mar-93	33	38	71
04-Jul-93	18	52	70
07-Dec-92	5	62	67
05-Oct-92	29	36	65
03-Jul-93	34	31	65

Table 12. Days When More Than 30 Civilians Were Wounded (Sorted by Civilians)

Date	Civilians	Soldiers	Total
01-Jun-93	46	59	105
18-Oct-92	41	21	62
10-Oct-92	38	59	97
15-Sep-92	35	39	74
03-Jul-93	34	31	65
14-Sep-92	33	74	107
21-Mar-93	33	38	71
22-Sep-92	32	20	52
20-Sep-92	31	23	55
22-Mar-93	31	16	48

From September 1992 to September 1993 (Tables 9 and 11), there were 15 days when more than 24 persons were killed per day (the maximum was 55 deaths on 30 May 1992), and 15 days when more than 64 persons were wounded (the maximum of 107 wounded persons on 14 September 1992). When the rank order of the dates listed in these two tables is compared, the dates with the highest numbers of casualties are different for killing and wounding. Some association can be seen for all persons jointly (practically mainly for soldiers, who are the major component of these totals). September 1992, December 1992, and May 1993 are the months when high numbers of both daily killing and wounding were observed. On 4, 5, 8 and 12 December 1992 we observe respectively: 40, 28, 27, 31 killed and 80, 75, 85, 72 wounded persons. On 14 September 1992 there were 29 killed and 107 wounded, and 30 May 1993 was the day of 30 killed and 81 wounded. These persons were killed or wounded in many different incidents spread all over the city.

Tables 9 and 11 also prove that the overall number of daily casualties (killing and wounding) was more strongly associated with military than with civilian victims. (This conclusion is also largely valid for the second year of the siege, not shown here). Therefore, we additionally separately analyse dates when most civilians were killed (Tables 10, 12, 13 and 14).

In Tables 10 and 12 we show 10 dates characterised by more than 10 killed civilians or more than 30 wounded civilians on average each day from 10 September 1992 to 30 September 1993. In the second year of the siege (1 October 1993 to 10 August 1994, Tables 13 and 14), there were 11 days with daily numbers of killed civilians higher than 5 and 5 days with more than 20 civilians wounded.

Table 13. Days When 6 or More Civilians Were Killed

Dates	Civilians	Soldiers	Total
5-Feb-94	45	14	60
3-Jan-94	12	6	18
16-Oct-93	8	7	15
9-Nov-93	8	3	11
9-Dec-93	8	3	11
4-Feb-94	8	1	9
16-Oct-93	8	7	15
10-Nov-93	7	9	16
4-Jan-94	7	9	16
7-Jan-94	6	2	8
8-Jan-94	6	8	14

Table 14. Days When More Than 20 Civilians Were Wounded

Dates	Civilians	Soldiers	Total
05-Feb-94	84	17	101
09-Nov-93	35	5	40
10-Nov-93	25	16	41
31-Dec-93	25	8	34
16-Oct-93	21	19	40

In the first year (10 September 1992 to 30 September 1993), the maximum number of killed civilians was 16 on 30 May 1993 and of civilians wounded was 46 on 1 June 1993. The highest numbers of killed/wounded civilians in the second year (1 October 1993 to 10 August 1994) were, respectively, 45 and 84, both on 5 February 1994.

It is clear from Tables 10 and 12, and also from Tables 13 and 14, that there were days when a high number of killed/wounded civilians was associated with a relatively low number of military casualties. This confirms the conclusion presented earlier in this section that civilians were becoming victims not necessarily when soldiers were killed or wounded. This would suggest that the losses of the population were perhaps caused by mechanisms other than those accounting for killing or wounding soldiers.

Finally, we discuss some well-known incidents linking them with our data. Generally, the number of killed civilians would be much higher if we used external definition of status instead of self-reported status.

- **01.06.1993:** We can find this date in Table 11 and Table 12. On that day there were 46 civilians and 59 soldiers wounded. From our data we also know that 7 civilians and 11 soldiers were killed on that day. It is a day with the biggest number of wounded civilians in the period 10-09-1992 to 30-09-1993.
- **12.07.1993:** This date can be found in Table 10. On this day there were 12 civilians killed and 1 soldier. The number of killed civilians is much higher than the number of killed soldiers.
- **22.01.1994:** The number of killed people was 8 of which 4 were civilians and 4 soldiers. There were 6 civilians wounded and 3 soldiers.
- **04.02.1994:** Table 13 shows the number of killed persons on that day. There were 8 civilians killed and 1 soldier. Again, the number of killed civilians is much higher than the number of killed soldiers.
- **05.02.1994:** The numbers are available from Tables 13 and 14. The number of killed civilians was 45 and wounded civilians 84. These numbers were the highest in the whole period from 10 September 1992 to 10 August 1994. There were also 14 killed soldiers and 17 wounded.

Section 6. Relative Measures of Population Losses for Persons Enumerated in the 1991 Population Census

Demographic event rates (e.g. death or wounding rates) relate the number of particular events to the number of population exposed to the risk of experiencing these events. They describe intensity of events (death or wounding) and therefore are better suited for comparisons of processes, populations or areas than absolute numbers. Because of small numbers of deaths, mortality rates (especially by cause of death) are expressed per (at least) 1,000 or 100,000 population.

In this section we discuss event rates for the casualties of Sarajevo. We calculate “within-front-lines rates” for those killed or wounded within the mid-1994 front lines in the period from 10 September 1992 to 10 August 1994. To calculate these rates we need the number of relevant events and the size of the population exposed to these events (hereafter *population at risk*). The number of events is the one from HSS-1994 as discussed in Section 5. The population at risk is more difficult to obtain.

The latest reliable population figures are those from the 1991 census, and are only available for the six *entire* municipalities. While using the census figures we are unable to distinguish the within-front-lines area of Sarajevo²¹. By relating the events from HSS-1994 to the census figures for the Sarajevo Six, the events are taken for an area that is much smaller than the area of six municipalities. This implies that the rates (i.e. “within-front-lines rates”) are severely underestimated.

A second problem is the census population itself, which is not the same as the population at risk in the considered period. Population movements were massive in Sarajevo from March 1991 to mid-1994, many persons left the city and many moved in. Moreover, every death and birth changed the population exposed. We do not have information about these changes and cannot accordingly adjust the 1991 census population. We believe, however, that we can use the 1991 census population to obtain a reasonable approximation of the population at risk within the front lines area in the period 1992–94.

In order to do so, we considered the survey population of the HSS-1994, which was about 340,000 individuals. We checked the composition of this population from the point of view of where they lived at the time of the 1991 population census. We were interested in the fraction of individuals in the HSS-1994 survey population who used to live in Sarajevo Six during the 1991 census. If this fraction were large, we could assume that the basic distributions of the survey population, such as age, sex, ethnicity, municipality of residence etc. were the same in HSS-1994 as in the census. Knowing the total size of the survey population of HSS-1994 and the percentage distributions from the census, we could extrapolate all distributions in the HSS-1994 survey population, and then calculate all rates.

The fraction of the original census population in the HSS-1994 survey population was obtained in two procedures:

²¹ In order to reconstruct the within-front-lines area of Sarajevo from the 1991 census, we would need a local community reported as the place of residence in 1991. Such an item is unavailable from the census data.

- Those event records from HSS-1994 that had links with census records (30,086 out of the total 37,022) and the (linked) event records from HSS-1994 where municipality of residence in 1991 was one of the Sarajevo Six (26,641 out of 30,086) had been compared. The fraction obtained from this approach (i.e. 26,641/30,086) equalled **88.54** percent.
- The fraction of DPs/Refugees (17.25%) and of the Sarajevo Six population enumerated in the 1991 census (**82.75%**) were calculated from the pilot study of HSS-1994. The pilot was just a sub-sample of HSS-1994 data that contained 4,434 households (15,028 persons) from two municipalities of Sarajevo: Stari and Novi Grad. The pilot sample was randomly selected and included two types of questionnaires: those with and without events. All questionnaires reported the population at risk as well. The availability of complete population data made it possible to calculate the required fraction. The pilot was completed at OTP in July-August 2001 in order to assess the quality of the HSS-1994 data.

The fractions obtained in both procedures were large (88.54 and 82.75%; the mean of the two is 85.65%), and we could safely assume that the vast majority of the HSS-1994 survey population was the same as in the 1991 census. We therefore decided to extrapolate demographic distributions of the HSS-1994 survey population (in total 340,000 individuals), such as age, sex, ethnicity, (1991) municipality of residence, by applying to it the percentage distributions of the 1991 census for the Sarajevo Six²².

In order to define the rates as correctly as possible, we calculated them for those *who got killed or wounded within the mid-1994 front lines in the period from 10 September 1992 to 10 August 1994 and who lived in the Sarajevo Six during the 1991 population census*. Technically, it is possible by taking the *matched* records on events from HSS-1994 and relating them to the 1992-94 population at risk (340,000 individuals) *corrected by two factors*:

- 85.65% for the fraction of those originating from the 1991 census in HSS-1994
- 81.30% for the matching rate of the HSS-1994 with the 1991 census.

This group of casualties is slightly smaller from those discussed in Section 5. The casualties of the siege presented in Table 1 also include those who moved into Sarajevo from other municipalities of Bosnia and Herzegovina.

Note that rates can also be calculated for all reported events (coming from the original Sarajevo population and for DPs/Refugees reported in HSS-1994), and relating them to the whole population at risk (340,000 individuals, no correction factors). However, the rates for those enumerated in the 1991 census are much more reliable than the rates for the whole survey population, and still can be extrapolated over the whole population living within the front lines at mid-1994.

²² This procedure is a bit problematic, especially when estimating the ethnic composition of the survey population. Even though the majority of the survey population lived in Sarajevo in 1991, the newcomers were mainly Muslims from other municipalities in Bosnia or other countries. This is why the ethnic composition of the survey population likely included a higher fraction of Muslims than it was in 1991.

Table 15. Death Rate for the Sarajevo Six: 1991 and 1990-91

Municipality	Deaths		Population 1991	Death Rate 1991	Death Rate 1990-91
	1990	1991			
Centar	722	870	79286	1097.29	2007.92
Ilidža	357	334	67937	491.63	1017.12
Novi Grad	642	599	136616	438.46	908.39
Novo Sarajevo	712	681	95089	716.17	1464.94
Stari Grad	451	453	50744	892.72	1781.49
Vogošća	142	135	24647	547.73	1123.87
Six Municipalities	3026	3072	454319	676.2	1342.23

Note: Death Rate is given per 100,000 population

Table 16. Event Rates for the Within-Front-Lines Area of Sarajevo and the period from 10 September 1992 to 10 August 1994

Variables	Variables' Categories	Killing Rate	Natural Death Rate	Wounding Rate	Overall Death Rate
Total No.	Overall	1153.27	1059.98	4411.72	2213.25
Sex	Men	1969.23	1199.71	7254.54	3168.94
	Women	376.55	926.96	1705.61	1303.51
Age	0-4	210.55	30.08	684.28	240.62
	5-9	323.44	16.45	1513.04	339.89
	10-17	725.99	43.56	3709.82	769.55
	0-17	485.71	32.16	2350.71	517.87
	18-69	1438.16	921.27	5374.41	2359.43
	70+	530.86	11365.20	1278.89	11896.05
Ethnicity	Others	838.53	793.85	3569.68	1632.38
	Croats	799.82	1545.91	2668.04	2345.73
	Muslims	1822.10	1390.19	6883.98	3212.30
	Serbs	239.20	504.29	958.31	743.49
Opština	Centar	854.27	1422.97	3886.56	2277.24
	Ilidža	1006.63	496.27	3338.52	1502.90
	Novi Grad	1347.55	857.66	5473.01	2205.21
	Novo Sarajevo	957.87	1107.09	3658.04	2064.96
	Stari Grad	1540.62	1998.65	5299.44	3539.27
	Vogošća	1399.97	458.88	4262.12	1858.84
Cause of Event	Shelling	662.75	na	2743.02	662.75
	Sniping	220.78	na	1057.44	220.78
	Other Firearms	154.50	na	415.80	154.50
	Other Casualties	115.24	na	195.45	115.24

Table 15 shows reference rates for the Sarajevo Six for 1991 and also for a two-year period 1990–1991²³. The 1990–91 rates are used as a baseline standard for comparisons with the rates of population losses from September 1992 to August 1994.

The overall killing rate is about 1153 deaths per 100,000 population, which is approximately 86% of the overall death rate for six municipalities in 1990–91 (1342 per 100,000; hereafter the SS90–91 death rate). Remarkable differences were obtained between the rates for men and women (1969 vs. 377 deaths per 100,000). Whereas the death intensity of men was about 147% of the SS90–91 death rate, the one of women was 28 percent (the male rate was 5.23 times higher than the female one). The killing rates for children 0–17 years old (486 per 100,000) and the elderly (531 per 100,000) are high and equal about 36% and 40% of the SS90–91 death rate. The highest death intensity was however obtained for those at age 18 to 69 (1438 per 100,000), whose death rate was about 107% of the SS90–91 rate.

Among the six municipalities, death intensity was the highest in Stari Grad (115% of the SS90–91 rate), second highest was in Vogošća (104%) and third highest in Novi Grad (100%).

Finally, the death rates for causes of death show that shelling, responsible for most deaths, was most intensive among all causes of death and its death rate equalled about 49% of the SS90–91 death rate.

A similar pattern (not identical though) is seen in the rates of wounding, which are however much higher than those of killing. The overall wounding rate (4412 per 100,000) was 329% of the death rate for Sarajevo in 1990–91. But the male–female difference in the wounding rate was smaller than the one for killing, the rate for men being 4.25 times higher than the one for women (5.23 is the respective male–female ratio for killings).

With respect to age, the wounding rate was the highest for those at 18–69 years of the overall death (5374 per 100,000 population, which was 400% of the rate for Sarajevo in 1990–91). The wounding rate for those from 10 to 17 years old was second highest (3710 per 100,000, and 276% of the SS90–91 rate). Children and the elderly suffered considerably from wounding: age group 0–17 was characterised by the rate of wounding equal 2351 per 100,000 which was about 175% of the SS90–91 death rate. The age group 70+ had the wounding rate of 1279 per 100,000, equal about 95% of the reference death rate for Sarajevo in 1990–91.

The rate of wounding was the highest in the Novi Grad municipality (408% of the SS90–91 death rate), Stari Grad (395%), and Vogošća (318%).

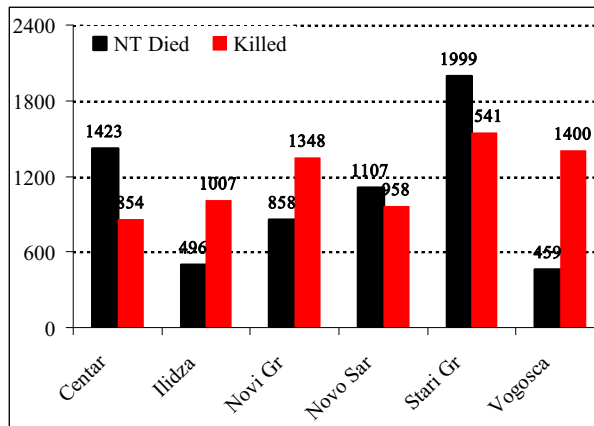
Shelling caused on average 2743 woundings per every 100,000 population, which was more than the SS90–91 death rate (204% of this rate).

²³ The reference population of 1990–91 rates is the 1991 census population. This is fully correct, as the 1991 census population is located the middle of the period of 1990–1991. The purpose of the calculation of two-year rates is to produce measures that are comparable (as a reference) with the rates for the two-year period from September 1992 to August 1994.

Table 17. Ratios of the Event Rates for the Within-Front-Lines Area of Sarajevo and the period from 10 September 1992 to 10 August 1994, and the 1990-91 Deaths Rate for Sarajevo Six

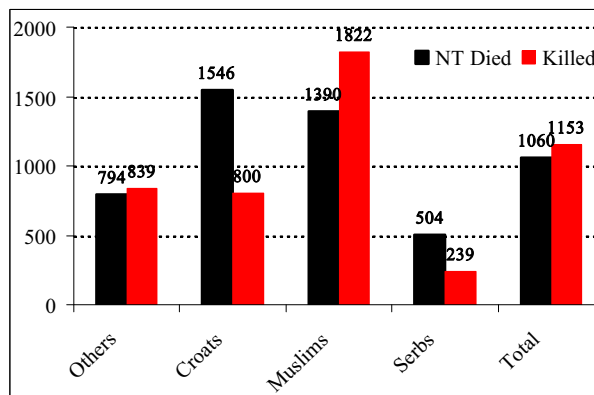
Variables	Variables' Categories	Killing	Natural Death	Wounding	Overall Death
Total No.	Overall	0.86	0.79	3.29	1.65
Sex	Men	1.47	0.89	5.40	2.36
	Women	0.28	0.69	1.27	0.97
Age	0-4	0.16	0.02	0.51	0.18
	5-9	0.24	0.01	1.13	0.25
	10-17	0.54	0.03	2.76	0.57
	0-17	0.36	0.02	1.75	0.39
	18-69	1.07	0.69	4.00	1.76
	70+	0.40	8.47	0.95	8.86
Ethnicity	Others	0.62	0.59	2.66	1.22
	Croats	0.60	1.15	1.99	1.75
	Muslims	1.36	1.04	5.13	2.39
	Serbs	0.18	0.38	0.71	0.55
Opština	Centar	0.64	1.06	2.90	1.70
	Ilidža	0.75	0.37	2.49	1.12
	Novi Grad	1.00	0.64	4.08	1.64
	Novo Sarajevo	0.71	0.82	2.73	1.54
	Stari Grad	1.15	1.49	3.95	2.64
	Vogošća	1.04	0.34	3.18	1.38
Cause of Event	Shelling	0.49	na	2.04	0.49
	Sniping	0.16	na	0.79	0.16
	Other Firearms	0.12	na	0.31	0.12
	Other Casualties	0.09	na	0.15	0.09

Figure 3. Death Rates of Those Naturally Died and Killed in Sarajevo, 1992-94, by Municipality of Residence in 1991



Importantly, the overall death rate for natural deaths was 1060 per 100,000 population and was lower than the killing rate (1153 per 100,000). The same pattern was also obtained for three (out of six) municipalities (Ilidža, Novi Grad, and Vogošća; see Figure 3). Also for Muslims (and Others), who were best represented among all ethnic groups in the HSS-1994 survey, the pattern is the same (see Figure 4).

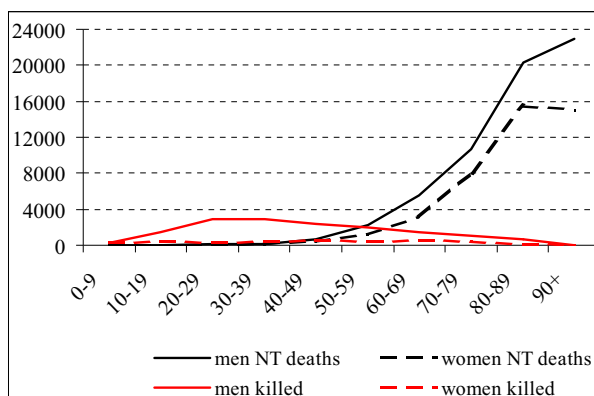
Figure 4. Death Rates of Those Naturally Died and Killed in Sarajevo, 1992-94, by Ethnicity



Finally, Figure 5 shows the age profiles of those killed and those naturally died. There is a distinctive difference between the profiles of killings and natural deaths. The rates of natural deaths increase rapidly with age (especially after age 40 years), with highest values associated with the highest ages.

The killing rates show an entirely different pattern, the most affected ages are those between 20 and 69 years for men and between 40 to 69 for women. The age pattern of those killed confirms the violent nature of the killings, which must be seen as population losses caused by the siege.

Figure 5. Death Rates of Those Naturally Died and Killed in Sarajevo, 1992-94, By Ten-Year Age Groups and Sex



Note that the overall death rate for the within-front-lines area of Sarejvo for 10.09.1002-10.08.1994 equalling 2213 deaths per 100,000 population is by 65% higher than the 1990-91 death rate for the Sarajevo six. More than a half of this rate (52%) are killings that would have never happened if there were no war in Bosnia.

Section 7. The Estimated Overall Number of the Population Killed Within Front Lines in Sarajevo from 10 September 1992 to 10 August 1994

In this section we estimate the overall number of persons killed within the 1994 front lines in Sarajevo in the period from 10 September 1992 to 10 August 1994. The estimation is based on two independent sources: the 1994 Households Survey of Sarajevo and Bakije Funeral Home in Sarajevo. The sources, although large, are incomplete, but there is a large overlap between them. These data are therefore suited for applying a statistical tool, the so-called capture – recapture method (Marks, Seltzer, Krotki, 1974; see also Annex 6), to obtain a statistical estimator of the overall number of killed persons.

Our estimation consists of three steps:

- In the first step, we only estimate the overall number of Muslim deaths, for the mortality data from the Bakije Funeral Home contain only records for Muslims. (HSS-1994 includes Muslims and all other ethnic groups.) A next problem with Bakije database is that it does not contain information about causes of death and we cannot distinguish between killed and naturally deceased persons. Thus, when using both sources at the same time, we can only estimate the total number of both killings and natural deaths for Muslims.
- In the second step of estimation, we apply the actual distribution of killings and natural deaths among the entire HSS-1994 survey population to split the estimator of the total number of deaths for Muslims into killings and natural deaths. It means that we first calculate the proportion of those killed among the whole population in HSS-1994, and then we multiplied the estimator of all deaths among Muslims by this factor. That gave us the estimated number of Muslims who got killed within the 1994 confrontation lines from 10.09.1992 to 10.08.1994. In the same way we used the proportion of natural deaths to obtain the estimated total number of natural deaths for Muslims.
- Finally, we extrapolate the results obtained for Muslims over the remaining ethnic groups. In order to do so, we assume that the ethnic composition of the estimated overall number of all killed remains the same as the ethnic composition of persons reported killed in HSS-1994. Consequently, this reflects the assumption that the ethnic composition in HSS-1994 represents the ethnic composition of all killings in the whole population living within the front lines at that time (10.09.1992 to 10.08.1994).

In practice, we proceed by obtaining the total number of Muslims killed or naturally died within the front lines in Sarajevo in the time period from 10.09.1992 to 10.08.1994 from the HSS-1994 (**4,067** persons²⁴). Then, we do the same using the mortality database of the Bakije Funeral Home (**4,060** persons) and, finally, we calculate the overlap between those two sources (number of records that

²⁴ The numbers mentioned in this paragraph and used in the calculations discussed in this section are all the so-called linked (or matched) records. The numbers of linked records in each source are lower than the numbers of all records available from each source (by about 20%, which is the matching rate). The matching, however, was a precondition of obtaining the overlap of the HSS-1994 and Bakije databases and also the ethnicity of casualties (as defined in the 1991 population census). These features were needed to apply the capture-recapture method.

appear in both collections; **2,764**). We then apply the capture – recapture method to these numbers and obtain an estimator of the total number of Muslims killed or naturally died in Sarajevo within the given period of time (**5,974** persons; see Annex 6 for calculation details).

Table 18. Overall Number of Persons Killed within Front Lines in Sarajevo, 10.09.1992 – 10.08.1994

Ethnic group	HSS-1994 Survey (linked records only)	Estimator
Muslims	2340	3437
Serbs	158	232
Croats	135	198
Others	330	485
Total	2963	4352

Note: All estimators rounded to integers

Table 19. Overall Number of Natural Deaths Within Front Lines in Sarajevo, 10.09.1992 – 10.08.1994

Ethnic group	HSS-1994 Survey (linked records only)	Estimator
Muslims	1727	2537
Serbs	315	463
Croats	242	355
Others	289	425
Total	2573	3780

Note: All estimators rounded to integers

Table 20. Overall Number of Killings and Natural Deaths Within Front Lines in Sarajevo, 10.09.1992 – 10.08.1994

Ethnic group	HSS-1994 Survey (linked records only)	Estimator
Muslims	4067	5974
Serbs	473	695
Croats	377	553
Others	619	910
Total	5536	8132

Note: All estimators rounded to integers

The above result (i.e. 5,974 persons) means, that HSS-1994 collection (reporting 4,067 killings) contains 68.08% of the whole population of killed or naturally died people. Knowing that, we completed steps 2 and 3 as described in the beginning of this section. In step 2 we distributed the

estimate for Muslims into killings and natural deaths. In step 3, in order to obtain the estimators of all killed (or naturally died) persons for other ethnic groups, we increased the actual numbers of persons killed (or naturally died) in every ethnic group taken from the HSS-1994 by 46.89%. The results are shown in Tables 18 to 20.

Summing up, the estimated overall number of persons killed within the front lines in Sarajevo in the given period is **4,352**, of which 3,437 persons were of Muslim ethnicity, 232 were Serbs, 198 Croats and 485 of other ethnic groups. The estimated total is higher than the total obtained from the 1994 Households Survey of Sarajevo (**3,798**) by 554 persons.

References:

Data sources:

- Households Survey on the Free Territory of Sarajevo, 1994 (*HSS-1994*), Institute for research of War Crimes and International Law, Sarajevo
- Bakije Mortality Database (*Bakije*), Bakije Funeral Home, Sarajevo
- Mortality Database of Muslims against Genocide (*MAG*), Muslims against Genocide, Sarajevo
- The 1991 Population Census for Bosnia and Herzegovina
- Official List of Fallen Soldiers from ABH, Ministry of Defence of the Federation of Bosnia and Herzegovina
- Official List of Fallen Soldiers from VRS, Ministry of Defence of Republika Srpska

Capture-recapture estimation:

Y. Bishop, Fienberg and Holland, *Discrete Multivariate Analysis: Theory and Practice*, Cambridge, Mass.: MIT Press, 1975,

E. Marks, W. Seltzer, K. Krotki, 1974: *Population Growth Estimation: Handbook of Vital Statistics Measurement*. Quoted after: *Political Killing in Kosovo/Kosova, March-June 1999*.

Political Killings in Kosova/Kosovo, March-June 1999 (Washington: ABA-CEELI and AAAS, 2000)

P. Spiegel, P. Salama, 2000, *War and Mortality in Kosovo, 1998-1999: An Epidemiological Testimony*. *Lancet* 2204 (355).

Capture-recapture Webpage: <http://www.pitt.edu>

ANNEX 1

Survey Area:

Classification of Local Communities

Table A1.1 Classification of Local Communities constituting the Survey Area

Number	Municipality	Local Community	Number	Municipality	Local Community
1	Centar	Bjelave	46	Novi Grad	Dobrinja D-5
2	Centar	Breka	47	Novi Grad	Dobrinja I
3	Centar	Centar	48	Novi Grad	Dobrinja II-A
4	Centar	Ciglane	49	Novi Grad	Dobrinja II-B
5	Centar	Cmi vrh i Gorica	50	Novi Grad	Dobrinja III-A
6	Centar	Džidžikovac	51	Novi Grad	Dobrinja III-B
7	Centar	Džidžikovac II	52	Novi Grad	Dolac
8	Centar	Hrastovi I	53	Novi Grad	Naselje heroja
9	Centar	Hrastovi II	54	Novi Grad	Olimpijsko selo
10	Centar	Koševo I	55	Novi Grad	Otoka
11	Centar	Koševo II	56	Novi Grad	Saraj polje
12	Centar	Koševsko brdo	57	Novi Grad	Staro Hrasno
13	Centar	Koševsko brdo I	58	Novo Sarajevo	Avdo Hodžić
14	Centar	Marijin Dvor	59	Novo Sarajevo	Blagoje Parović
15	Centar	Mejtaš I	60	Novo Sarajevo	Bratstvo-Jedinstvo
16	Centar	Mejtaš II	61	Novo Sarajevo	Danilo Đokić
17	Centar	Park	62	Novo Sarajevo	Donji Pofalići
18	Centar	Skenderija	63	Novo Sarajevo	Gornji Pofalići
19	Centar	Soukbunar	64	Novo Sarajevo	Hrasno brdo
20	Centar	Trg Oslobođenja	65	Novo Sarajevo	Ivan Krndelj
21	Centar	Višnjik	66	Novo Sarajevo	Kumrovec
22	Ilidža	Butmir	67	Novo Sarajevo	Omer Maslić
23	Ilidža	Hrasnica I	68	Novo Sarajevo	Trg Heroja
24	Ilidža	Hrasnica II	69	Novo Sarajevo	Velešići
25	Ilidža	Sokolovići	70	Stari Grad	Širokača
26	Ilidža	Stup I	71	Stari Grad	Baščaršija
27	Ilidža	Stup II	72	Stari Grad	Babića Bašta
28	Ilidža	Stupsko brdo	73	Stari Grad	Bistrik
29	Novi Grad	Švrakino selo I	74	Stari Grad	Gazin Han
30	Novi Grad	Švrakino selo II	75	Stari Grad	Hrid - Jarčedoli
31	Novi Grad	Švrakino selo III	76	Stari Grad	Kovači
32	Novi Grad	Čengić vila	77	Stari Grad	Logavina I
33	Novi Grad	Alipašin most I	78	Stari Grad	Logavina II
34	Novi Grad	Alipašin most II	79	Stari Grad	Mahmutovac
35	Novi Grad	Alipašino polje	80	Stari Grad	Medrese I
36	Novi Grad	Alipašino polje A-I	81	Stari Grad	Medrese II
37	Novi Grad	Alipašino polje A-II	82	Stari Grad	Mjedjenica
38	Novi Grad	Alipašino polje B-I	83	Stari Grad	Sedrenik
39	Novi Grad	Alipašino polje B-II	84	Stari Grad	Sumbuluša
40	Novi Grad	Alipašino polje C-I	85	Stari Grad	Toka - Džeka
41	Novi Grad	Alipašino polje C-II	86	Stari Grad	Trg Oslobođenja II
42	Novi Grad	Aneks	87	Stari Grad	Vratnik
43	Novi Grad	Briješće	88	Vogošća	Hotonj
44	Novi Grad	Buća Potok	89	Vogošća	Kobilja Glava
45	Novi Grad	Dobrinja C-5			

REPUBLIKA BOSNA I HERCEGOVINA

Institut za izražavanje zločina protiv čovječnosti i međunarodnog prava
SARAJEVO

UPITNIK

ZA POPIS PORODIČNIH DOMAĆINSTAVA NA SLOBODNIM PODRUČJIMA GRADA SARAJEVA U 1994. GODINI

Br. № 075505

1. Sadašnja adresa porodičnog domaćinstva: a) Opština Novi Grad
 b) Mjesna zajednica Dobrinja 1 c) Ulica i broj Žikice Jovanovića Španca br. 6

2. Porodično domaćinstvo:

- a) Živi na istoj adresi na kojoj je živjelo i prije rata;
 b) tokom rata, u okviru slobodnih teritorija RBiH, preselilo sa adrese: _____, opština _____;
 c) izbjeglice, ili raseljeni iz: adresa _____, opština _____

3. Članovi porodičnog domaćinstva koji sada žive na slobodnim područjima grada Sarajeva (pod a) se upisuje nosilac porodičnog domaćinstva):

	PREZIME (IME OCA) I IME	GODINA ROĐENJA	SKRODSTVO SA NOSIOC.	NACIONALNOST	VIERO-ISPOVIJEST
a)	<u>Dedović (Mihail) Aziz</u>	<u>1939</u>		<u>Bosnjak</u>	<u>Islamista</u>
b)	<u>Dedović (Bahman) Sejda</u>	<u>1953</u>	<u>suprug</u>	<u>Bosnjak</u>	<u>Islamista</u>
c)	<u>Dedović (Aziz) Hatid</u>	<u>1972</u>	<u>sin</u>	<u>Bosnjak</u>	<u>Islamista</u>
d)	<u>Dedović (Aziz) Nuhamera</u>	<u>1977</u>	<u>ćerka</u>	<u>Bosnjak</u>	<u>Islamista</u>
e)	<u>Dedović (Meho) Subrija</u>	<u>1920</u>	<u>majka</u>	<u>Bosnjak</u>	<u>Islamista</u>
f)					
g)					

4. Članovi porodičnog domaćinstva koji su izbjegli, odnosno raseljeni, van Sarajeva, ili su ostali na području RBiH koje je pod kontrolom agresora:

	PREZIME (IME OCA) I IME	GODINA ROĐENJA	SKRODSTVO SA NOSIOC.	NACIONALNOST	VIERO-ISPOVIJEST	Gdje sada živi
a)	<u>Dedović (Meho) Subrija</u>	<u>1920</u>	<u>majka</u>	<u>Bosnjak</u>	<u>Islamista</u>	<u>kod sina</u>
b)						
c)						
d)						
e)						
f)						
g)						

5. Poginuli u porodičnom domaćinstvu tokom agresije

	PREZIME (IME OCA) I IME	GODINA ROĐENJA	SKRODSTVO SA NOSIOC.	DATUM POGIBIJE	MIJESTO POGIBIJE	NAČIN POGIBIJE	CIVIL - BORAC
a)							
b)							
c)							

6. Ranjeni u porodičnom domaćinstvu tokom agresije

	PREZIME (IME OCA) I IME	GODINA ROĐENJA	SKRODSTVO SA NOSIOC.	DATUM RANJAV.	MIJESTO RANJAV.	NAČIN RANJAVANJA	CIVIL - BORAC
a)	<u>Dedović (Mihail) Aziz</u>	<u>1939</u>		<u>20.06.1992</u>	<u>Dobrinja</u>	<u>granata</u>	<u>borac</u>
b)							
c)							

7. Nestali u porodičnom domaćinstvu tokom agresije

	PREZIME (IME OCA) I IME	GODINA ROĐENJA	MJESTO NESTANKA	NAČIN ESTANKA	CIVIL - BORAC
a)	_____	_____	_____	_____	_____
b)	_____	_____	_____	_____	_____
c)	_____	_____	_____	_____	_____

8. Članovi porodičnog domaćinstva koji se nalaze ili su bili u logoru ili zatvoru tokom agresije

	PREZIME (IME OCA) I IME	GODINA ROĐENJA	LOGOR - ZATVOR (NAZIV I MJESTO)	OD - DO
a)	_____	_____	_____	_____
b)	_____	_____	_____	_____
c)	_____	_____	_____	_____

9. Invalidi u porodičnom domaćinstvu usljed ratnih dejstava

	PREZIME (IME OCA) I IME	GODINA ROĐENJA	OPIS INVALIDITETA	CIVIL - BORAC
a)	_____	_____	_____	_____
b)	_____	_____	_____	_____
c)	_____	_____	_____	_____

10. Živo rođeni u porodičnom domaćinstvu tokom agresije

	PREZIME (IME OCA) I IME	ROĐENJA (datum)	POL	GDJE JE ROĐENJA
a)	_____	_____	_____	_____
b)	_____	_____	_____	_____

11. Mrtvo rođeni u porodičnom domaćinstvu tokom agresije

NE; DA, koliko _____

12. Umrli u porodičnom domaćinstvu tokom agresije

	PREZIME (IME OCA) I IME	GODINA ROĐENJA	UMRO-LA (datum)	SRODSTVO SA NSC.	SAHRANJENJA (Mjesto)
a)	_____	_____	_____	_____	_____
b)	_____	_____	_____	_____	_____
c)	_____	_____	_____	_____	_____

13. Stambeni uslovi u kojima sada živi porodično domaćinstvo u Sarajevu

- a) U vlastitom stanu/kući od prije agresije;
 b) Vlastiti stan/kuća je uništen ili napušten zbog agresorskih dejstava - porodično domaćinstvo uselilo u drugi stan/kuću;
 c) Nije imalo stan/kuću - porodično domaćinstvo uselilo u drugi stan/kuću tokom agresije;
 d) Stanuje u kolektivnom smještaju sa ostalim izbjeglim i raseljenim licima;
 e) Izbjeglice ili raseljena lica smješteni kod rodbine;
 f) Ostalo _____

14. Da li je porodica (njeni stariji članovi ili roditelji) bila u izbjeglištvu u II svjetskom ratu (1941-1945)?

b) NE; a) DA, izbjegla iz Goražda u Brčko od 1945 do 1946

15. Da li je porodično domaćinstvo izgubilo nekog od bliške rodbine u II svjetskom ratu?

	PREZIME (IME OCA) I IME	GODINA ROĐENJA	KAO VOJNIK (KOJE VOJSKE)	CIVIL (GDJE I KAKO)
a)	<u>Dedović (Šerif) Midhat</u>	<u>1912</u>	_____	_____
b)	_____	_____	_____	_____
c)	_____	_____	_____	_____

U ime porodičnog domaćinstva podatak dao: Dedović Sejda, srodstvo sa nosiocem supruge

Datum popisa 30.05.1994.

Upitnik popunio Nuhanović Fikreta

REPUBLIKA BOSNA I HERCEGOVINA

Institut za izraživanje zločina protiv čovječnosti i međunarodnog prava
Sarajevo

Institute for the Research of Crimes Against Humanity and International Law, Sarajevo

UPITNIK

QUESTIONNAIRE

ZA POPIS PORODIČNIH DOMAĆINSTAVA NA SLOBODNIM PODRUČJIMA GRADA SARAJEVA U 1994. GODINI *Survey of households in the free territory of Sarajevo in 1994*

- 1) Sadašnja adresa porodičnog domaćinstva: a)

Opština _____
Current address family/household: Municipality
b) Mjesna zajednica _____ c) Ulica i broj _____
Community Address

- 2) Porodično domaćinstvo

Members of Family/household

- a) Živi na istoj adresi na kojoj je živjelo I prije rata;
same address as before the war

- b) Tokom rata, u okviru slobodnih teritorija RBiH, preselilo sa adrese: _____;
During the war moved within the free territories of BiH, from this address
_____, opština _____
municipality

- c) Izbjeglje, ili raseljeni iz: adresa _____, opština _____
Refugees or displaced from: address municipality

- 3) Članovi porodičnog domaćinstva koji sada žive na slobodnim područjima grada Sarajeva (pod a) se upisuje nosilac porodičnog domaćinstva):

	<i>Members of F/HH</i>	<i>who reside in the free territory</i>	<i>of Sarajevo (under a) the head of the F/HH.</i>			
	PREZIME (ime OCA) IME	GODINA RODENJA	SRODSTVO SA NOSIOC	NACIONALNOST	VJEROISPOVJEST	
	<i>Last name (father's name) first</i>	<i>Year of birth</i>	<i>Position in F/HH</i>	<i>Ethnicity</i>	<i>Religion</i>	
a)	_____	_____	_____	_____	_____	_____
b)	_____	_____	_____	_____	_____	_____
c)	_____	_____	_____	_____	_____	_____
d)	_____	_____	_____	_____	_____	_____
e)	_____	_____	_____	_____	_____	_____
f)	_____	_____	_____	_____	_____	_____

- 4) Članovi p porodičnog domaćinstva koji su izbjegli, odnosno raseljeni, van Sarajeva, ili su ostali na području RbiH koje je pod kontrolom agresora:

	<i>Members of F/HH</i>	<i>who fled,</i>	<i>were displaced,</i>	<i>from Sarajevo,</i>	<i>or who remained</i>	<i>in the</i>	<i>territory controlled by</i>
	PREZIME (IME OCA) I IME	GODINA RODENJA	SRODSTVO SA NOSIOC.	NACIONALNOST	VJEROISPOVJEST	GDJE SADA ŽIVI	
	<i>Last name (father's name) first</i>	<i>Year of birth</i>	<i>Position in F/HH</i>	<i>Ethnicity</i>	<i>Religion</i>	<i>Current residence</i>	
a)	_____	_____	_____	_____	_____	_____	
b)	_____	_____	_____	_____	_____	_____	
c)	_____	_____	_____	_____	_____	_____	
d)	_____	_____	_____	_____	_____	_____	
e)	_____	_____	_____	_____	_____	_____	
f)	_____	_____	_____	_____	_____	_____	

- 5) Poginuli u porodičnom domaćinstvu tokom agresije.

	<i>Killed</i>	<i>members of F/HH</i>	<i>during aggression.</i>				
	PREZIME (ime OCA) IME	GODINA RODENJA	SRODS. SA NSC.	DATUM POGIBIJE	MAJESTO POGIBIJE	NAČIN POGIBIJE	CIVIL-BORAC
	<i>Last name (father's name)</i>	<i>Year of birth</i>	<i>Position in F/HH</i>	<i>Date of death</i>	<i>Place of death</i>	<i>Cause of death</i>	<i>Civilian-Soldier</i>
a)	_____	_____	_____	_____	_____	_____	_____
b)	_____	_____	_____	_____	_____	_____	_____
c)	_____	_____	_____	_____	_____	_____	_____

- 6) Ranjeni u prordičnom domaćinstvu tokom agresije.

Wounded (members of F/HH) during aggression.

	PREZIME (ime OCA) I ME <i>Last name (father's name) First name</i>	GODINA RODENJA <i>Year of birth</i>	SRODS. SA NSC. <i>Position in F/HH</i>	DATUM RANJAV <i>Date of injury</i>	MAJESTO RANJAV <i>Place of injury</i>	NAČIN RANJAVANJA <i>Cause of injury</i>	CIVIL-BORAC <i>Civilian-Soldier</i>
a)	_____	_____	_____	_____	_____	_____	_____
b)	_____	_____	_____	_____	_____	_____	_____
c)	_____	_____	_____	_____	_____	_____	_____

7) Nestali u porodičnom domaćinstvu tokom agresije.

Missing (members of F/HH) during aggression.

	PREZIME (IME OCA) I IME <i>Last name (father's name) First name</i>	GODINA RODENJA <i>Year of birth</i>	MJESTO NESTANKA <i>Place of disappearance</i>	NAČIN NESTANKA <i>Cause of disappearance</i>	CIVIL-BORAC <i>Civilian-Soldier</i>
a)	_____	_____	_____	_____	_____
b)	_____	_____	_____	_____	_____
c)	_____	_____	_____	_____	_____

8) Članovi porodičnog domaćinstva koji se nalze ili su bili u logoru ili zatvoru tokom agresije.

Members of F/HH who were detained in prison or cam during aggression.

	PREZIME (IME OCA) I IME <i>Last name (father's name) First name</i>	GODINA RODENJA <i>Year of birth</i>	LOGOR – ZATVOR (NAZIV I MJESTO) <i>Place of detention (prison/camp)</i>	OD – DO <i>From - Until</i>
a)	_____	_____	_____	_____
b)	_____	_____	_____	_____
c)	_____	_____	_____	_____

9) Invalidi u porodičnom domaćinstvu usljed ratnih dejstava.

Invalid/handicapped members of F/HH because of war.

	PREZIME (IME OCA) I IME <i>Last name (father's name) First name</i>	GODINA RODENJA <i>Year of birth</i>	OPIS INVALIDITETA <i>Description of invalidity</i>	CIVIL-BORAC <i>Civilian-Soldier</i>
a)	_____	_____	_____	_____
b)	_____	_____	_____	_____
c)	_____	_____	_____	_____

10) Živorodeni u porodičnom domaćinstvu tokom agresije.

Persons born during the aggression.

	PREZIME (IME OCA) I IME <i>Last name (father's name) First name</i>	ROĐEN-A (datum) <i>Born (date)</i>	POL <i>Gender</i>	GDJE JE ROĐEN-A <i>Place of birth</i>
a)	_____	_____	_____	_____
b)	_____	_____	_____	_____

11) Mrtvorodeni u porodičnom domaćinstvu tokom agresije.

Still births (members of F/HH) during aggression.

a) NE; no b) DA, koliko yes. How many? _____

12) Umrli u porodičnom domaćinstvu tokom agresije.

Died (members of F/HH) during aggression.

	PREZIME (IME OCA) I IME <i>Last name (father's name) First name</i>	GODINA RODENJA <i>Year of birth</i>	UMRO-LA (Datum) <i>Died on (date)</i>	SRODSTVO SA NSC. <i>Relation to head of F/HH</i>	CIVIL-BORAC <i>Civilian-Soldier</i>
a)	_____	_____	_____	_____	_____
b)	_____	_____	_____	_____	_____
c)	_____	_____	_____	_____	_____

13) Stambeni uslovi u kojima sada živi porodično domaćinstvo u Sarajevu

Current housing conditions of F/HH in Sarajevo.

- a) U vlastitom stanu/kući od prije agresije;
Owns apartment since before the aggression
- b) Vlastiti stan/kuća je uništen ili napušten zbog agresorskih dejstava – porodično domaćinstvo uselilo u drugi stan/kuću;
Own house/apt. destroyed or abandoned because of aggression – F/HH moved to a new house/apartment
- c) Nije imalo stan/kuću – porodično domaćinstvo uselilo u drugi stan/kuću tokom agresije;
Did not have own house/apt. but F/HH moved to another during the aggression.
- d) Stanuje u kolektivnom smeštaju sa ostalim izbjeglim i raseljenim licima;
Shared house/apt. with other refugees during aggression
- e) Izbjeglilce ili raseljena lica smješteni kod rodbine;
Refugees and displaced residing with F/HH.
- f) Ostalo others _____

14) Da li je porodica (njeni stariji članovi ili roditelji) bila u izbjeglištvu u II svjetskom ratu (1941-1945)?

Has any member of F/HH (elder/parents) been displaced in the 2nd World War?

b) NE; a) DA, izbjegla

iz _____ u _____ od _____ do _____ until

from (location) to (location) since

15) Da li je porodično domaćinstvo izgubilo nekog od bliske rodbine u II svjetskom ratu?

Did any immediate member of the family die in WWII?

PREZIME (IME OCA) I IME
Last name (father's name) First name

GODINA ROĐENJA
Year of birth

KAO VOJNIK
(KOJE VOJSKE)
Soldier? (w/c army?)

CIVIL
(GDJE I KAKO)
Civilian (where and how)?

- a) _____
- b) _____
- c) _____

U ime porodičnog domaćinstva, podatke dao: _____, srodstvo sa
nosiocem _____
On behalf of the F/HH, data was given by: _____ relationship to head of F/HH

Datum popisa _____
popunio _____
Date of signature _____

Upitnik _____
Survey filled in by _____

ANNEX 3

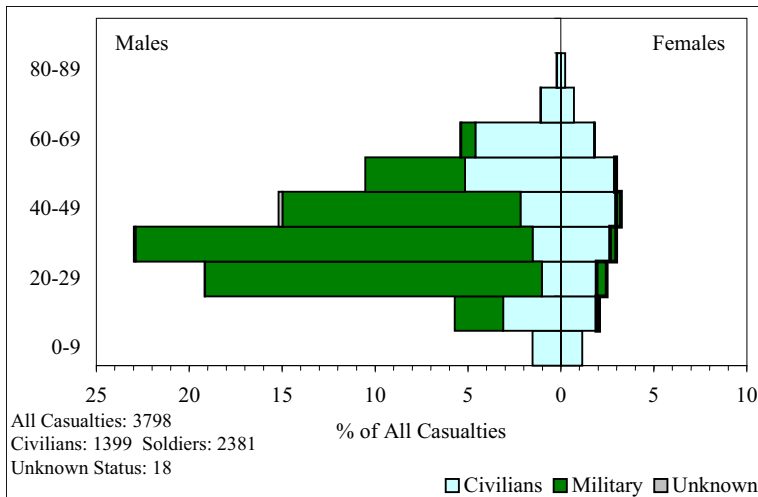
Statistics of the Killed Population Obtained from HSS-1994

A3.1 Population Killed Within Front Lines in Sarajevo, 1992-94*,
Absolute Number by Age and Sex

Age At Death	Civilians, Soldiers, and Unknown Status			Total
	Women	Men	Unk Sex	
0-9	43	58	0	101
10-19	79	217	0	296
20-29	93	728	0	821
30-39	113	873	0	986
40-49	122	577	0	699
50-59	114	400	0	514
60-69	69	206	0	275
70-79	26	42	0	68
80-89	8	9	0	17
90+	0	0	0	0
Unk Age	3	17	1	21
Total	670	3127	1	3798

*From 10.09.1992 to 10.08.1994

A3.2 Sex, Age and Civilian-Soldier Distribution of Persons Killed Within Front Lines in Sarajevo, 1992-1994*, Percent of All Casualties



*From 10.09.1992 to 10.08.1994

A3.3 Sex and Age Distribution of Persons Killed Within Front Lines in Sarajevo, 1992-1994*, Absolute Number and Percent of All Casualties

Civilians					Civilians			
Age At Death	Women	Men	Unk Sex	Total	Age At Death	Women	Men	Unk Sex
0-9	43	58	0	101	0-9	1.13	1.53	0.00
10-19	72	118	0	190	10-19	1.90	3.11	0.00
20-29	73	39	0	112	20-29	1.92	1.03	0.00
30-39	101	58	0	159	30-39	2.66	1.53	0.00
40-49	113	83	0	196	40-49	2.98	2.19	0.00
50-59	110	196	0	306	50-59	2.90	5.16	0.00
60-69	68	175	0	243	60-69	1.79	4.61	0.00
70-79	26	41	0	67	70-79	0.68	1.08	0.00
80-89	8	8	0	16	80-89	0.21	0.21	0.00
90+	0	0	0	0	90+	0.00	0.00	0.00
Unk Age	3	6	0	9	Unk Age	0.08	0.16	0.00
Total	617	782	0	1399	Total	36.84		

Soldiers					Soldiers			
Age At Death	Women	Men	Unk Sex	Total	Age At Death	Women	Men	Unk Sex
0-9	0	0	0	0	0-9	0.00	0.00	0.00
10-19	6	99	0	105	10-19	0.16	2.61	0.00
20-29	20	688	0	708	20-29	0.53	18.11	0.00
30-39	12	811	0	823	30-39	0.32	21.35	0.00
40-49	9	486	0	495	40-49	0.24	12.80	0.00
50-59	3	204	0	207	50-59	0.08	5.37	0.00
60-69	0	29	0	29	60-69	0.00	0.76	0.00
70-79	0	1	0	1	70-79	0.00	0.03	0.00
80-89	0	1	0	1	80-89	0.00	0.03	0.00
90+	0	0	0	0	90+	0.00	0.00	0.00
Unk Age	0	11	1	12	Unk Age	0.00	0.29	0.03
Total	50	2330	1	2381	Total	62.69		

Unknown Status					Unknown Status			
Age At Death	Women	Men	Unk Sex	Total	Age At Death	Women	Men	Unk Sex
0-9	0	0	0	0	0-9	0.00	0.00	0.00
10-19	1	0	0	1	10-19	0.03	0.00	0.00
20-29	0	1	0	1	20-29	0.00	0.03	0.00
30-39	0	4	0	4	30-39	0.00	0.11	0.00
40-49	0	8	0	8	40-49	0.00	0.21	0.00
50-59	1	0	0	1	50-59	0.03	0.00	0.00
60-69	1	2	0	3	60-69	0.03	0.05	0.00
70-79	0	0	0	0	70-79	0.00	0.00	0.00
80-89	0	0	0	0	80-89	0.00	0.00	0.00
90+	0	0	0	0	90+	0.00	0.00	0.00
Unk Age	0	0	0	0	Unk Age	0.00	0.00	0.00
Total	3	15	0	18	Total	0.47		

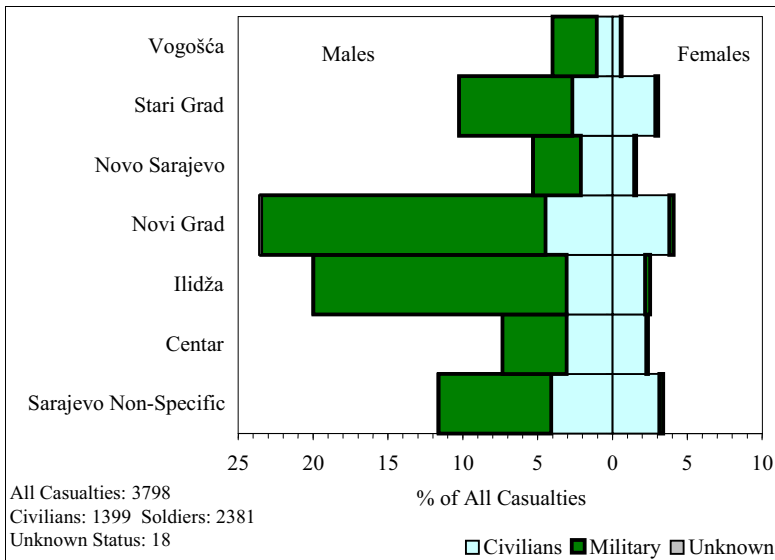
*From 10.09.1992 to 10.08.1994

A3.4 Persons Killed Within Front Lines in Sarajevo, 1992-94*, Absolute Number by Municipality of Death and Sex

Opstina of Death	Women	Men	Unk Sex	Total
Centar	90	279	0	369
Ilidža	95	761	0	856
Novi Grad	156	897	0	1053
Novo Sarajevo	61	204	0	265
Stari Grad	116	390	1	507
Vogošća	23	152	0	175
Sarajevo Non-Specific	129	444	0	573
Total	670	3127	1	3798

*From 10.09.1992 to 10.08.1994

A3.5 Persons Killed Within Front Lines in Sarajevo, 1992-94*, Percent of All Casualties by Municipality of Death, Sex and Civilian-Soldier Status



*From 10.09.1992 to 10.08.1994

A3.6 Sex and Municipality of Death Distribution of Persons Killed Within Front Lines in Sarajevo, 1992-94*, Absolute Number and Percent of All Casualties

Civilians					Civilians			
Opstina of Death	Women	Men	Unk Sex	Total	Opstina of Death	Women	Men	Unk Sex
Centar	86	117	0	203	Centar	2.26	3.08	0.00
Ilidža	83	116	0	199	Ilidža	2.19	3.05	0.00
Novi Grad	144	170	0	314	Novi Grad	3.79	4.48	0.00
Novo Sarajevo	55	81	0	136	Novo Sarajevo	1.45	2.13	0.00
Stari Grad	109	102	0	211	Stari Grad	2.87	2.69	0.00
Vogošća	21	40	0	61	Vogošća	0.55	1.05	0.00
Sarajevo Non-Specific	119	156	0	275	Sarajevo Non-Specific	3.13	4.11	0.00
Total	617	782	0	1399	Total	13.11	16.48	0.00

Soldiers					Soldiers			
Opstina of Death	Women	Men	Unk Sex	Total	Opstina of Death	Women	Men	Unk Sex
Centar	4	162	0	166	Centar	0.11	4.27	0.00
Ilidža	12	643	0	655	Ilidža	0.32	16.93	0.00
Novi Grad	11	721	0	732	Novi Grad	0.29	18.98	0.00
Novo Sarajevo	5	120	0	125	Novo Sarajevo	0.13	3.16	0.00
Stari Grad	7	287	1	295	Stari Grad	0.18	7.56	0.03
Vogošća	2	112	0	114	Vogošća	0.05	2.95	0.00
Sarajevo Non-Specific	9	285	0	294	Sarajevo Non-Specific	0.24	7.50	0.00
Total	50	2330	1	2381	Total	1.08	53.84	0.03

Unknown Status					Unknown Status			
Opstina of Death	Women	Men	Unk Sex	Total	Opstina of Death	Women	Men	Unk Sex
Centar	0	0	0	0	Centar	0.00	0.00	0.00
Ilidža	0	2	0	2	Ilidža	0.00	0.05	0.00
Novi Grad	1	6	0	7	Novi Grad	0.03	0.16	0.00
Novo Sarajevo	1	3	0	4	Novo Sarajevo	0.03	0.08	0.00
Stari Grad	0	1	0	2	Stari Grad	0.00	0.03	0.00
Vogošća	0	0	0	0	Vogošća	0.00	0.00	0.00
Sarajevo Non-Specific	1	3	0	4	Sarajevo Non-Specific	0.03	0.08	0.00
Total	3	15	0	19	Total	0.05	0.32	0.00

*From 10.09.1992 to 10.08.1994

A3.7 Persons Killed Within Front Lines in Sarajevo, 1992-94*, Absolute Number by Cause of Death and Sex

Civilians, Soldiers and Unknown Status

Causes Of Death	Women	Men	Unk Sex	Total
Firearms - Shelling	468	1692	0	2160
Firearms - Sniper	103	595	1	699
Firearms - Shooting	26	202	0	228
Firearms - Other and Unspecified	27	274	0	301
- <i>Firearms - anti-aircraft machinegun</i>	1	31	0	32
- <i>Firearms - M-84 and the like</i>	2	9	0	11
- <i>Firearms - unspecified</i>	24	234	0	258
Direct Casualties of War	10	179	0	189
- <i>Cold steel/slaughtered/tortured</i>	4	10	0	14
- <i>Execution</i>	3	4	0	7
- <i>Human shield</i>	0	4	0	4
- <i>Disappeared</i>	2	11	0	13
- <i>Other casualties - wounding</i>	0	4	0	4
- <i>Other casualties - war operations</i>	1	146	0	147
Indirect Casualties of War	3	22	0	25
- <i>Stepped on mine</i>	3	16	0	19
- <i>Other casualties - war conditions</i>	0	6	0	6
Other casualties - unspecified	8	42	0	50
Accidents and Violence	19	63	0	82
- <i>Other - traffic accident</i>	3	16	0	19
- <i>Other - other accident</i>	6	15	0	21
- <i>Other - suicide</i>	5	5	0	10
- <i>Other - violent</i>	5	27	0	32
Unknown/Unspecified	6	58	0	64
Total	670	3127	1	3798

*From 10.09.1992 to 10.08.1994

A3.8 Civilians Killed Within Front Lines in Sarajevo, 1992-94*, Absolute Number by Cause of Death and Sex

<i>Civilians</i>			
Causes Of Death	Women	Men	Total
Firearms - Shelling	439	493	932
Firearms - Sniper	99	154	253
Firearms - Shooting	21	34	55
Firearms - Other and Unspecified:	20	26	46
- <i>Firearms - anti-aircraft machinegun</i>	1	4	5
- <i>Firearms - M-84 and the like</i>	0	0	0
- <i>Firearms - unspecified</i>	19	22	41
Direct Casualties of War	8	13	21
- <i>Cold steel/slaughtered/tortured</i>	4	8	12
- <i>Execution</i>	2	2	4
- <i>Human shield</i>	0	2	2
- <i>Disappeared</i>	2	1	3
- <i>Other casualties - wounding</i>	0	0	0
- <i>Other casualties - war operations</i>	0	0	0
Indirect Casualties of War	3	8	11
- <i>Stepped on mine</i>	3	2	5
- <i>Other casualties - war conditions</i>	0	6	6
Other casualties - unspecified	8	14	22
Accidents and Violence:	14	28	42
- <i>Other - traffic accident</i>	3	9	12
- <i>Other - other accident</i>	5	6	11
- <i>Other - suicide</i>	3	3	6
- <i>Other - violent</i>	3	10	13
Unknown/Unspecified	5	12	17
Total	617	782	1399

*From 10.09.1992 to 10.08.1994

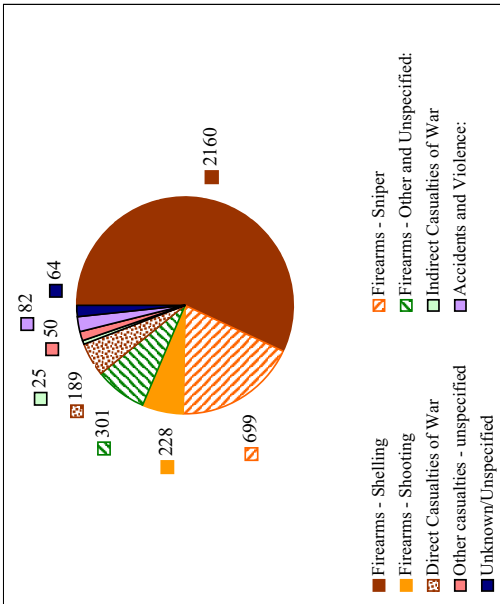
A3.9 Soldiers Killed Within Front Lines in Sarajevo, 1992-94*, Absolute Number by Cause of Death and Sex

Soldiers

Causes Of Death	Women	Men	Unk Sex	Total
Firearms - Shelling	29	1192	0	1221
Firearms - Sniper	4	441	1	446
Firearms - Shooting	5	168	0	173
Firearms - Other and Unspecified:	7	248	0	255
- <i>Firearms - anti-aircraft machinegun</i>	0	27	0	27
- <i>Firearms - M-84 and the like</i>	2	9	0	11
- <i>Firearms - unspecified</i>	5	212	0	217
Direct Casualties of War	1	163	0	164
- <i>Cold steel/slaughtered/tortured</i>	0	2	0	2
- <i>Execution</i>	0	1	0	1
- <i>Human shield</i>	0	2	0	2
- <i>Disappeared</i>	0	10	0	10
- <i>Other casualties - wounding</i>	0	4	0	4
- <i>Other casualties - war operations</i>	1	144	0	145
Indirect Casualties of War	0	14	0	14
- <i>Stepped on mine</i>	0	14	0	14
- <i>Other casualties - war conditions</i>	0	0	0	0
Other casualties - unspecified	0	28	0	28
Accidents and Violence:	3	34	0	37
- <i>Other - traffic accident</i>	0	7	0	7
- <i>Other - other accident</i>	1	9	0	10
- <i>Other - suicide</i>	0	1	0	1
- <i>Other - violent</i>	2	17	0	19
Unknown/Unspecified	1	42	0	43
Total	50	2330	1	2381

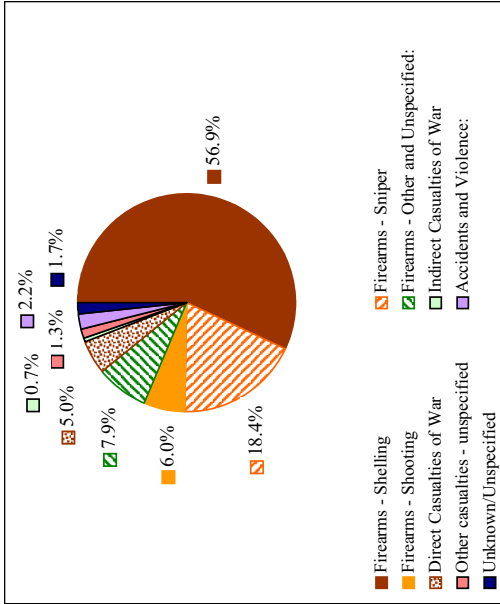
*From 10.09.1992 to 10.08.1994

A3.10a Persons Killed in Sarajevo, 1992-94*, Number by Cause of Death



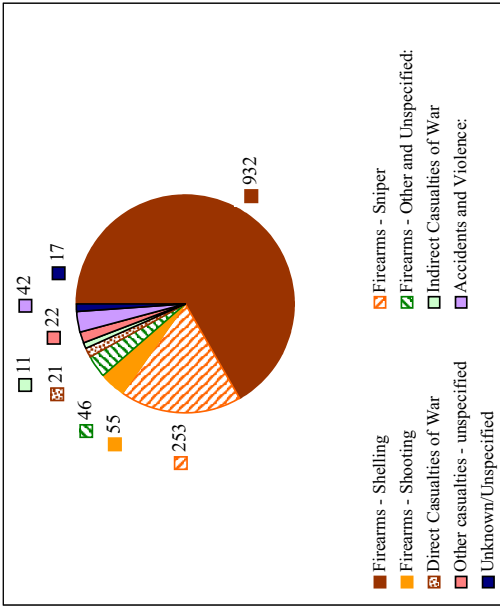
*Within Front Lines, from 10.09.1992 to 10.08.1994

A3.10b Persons Killed in Sarajevo, 1992-94*, Percent by Cause of Death



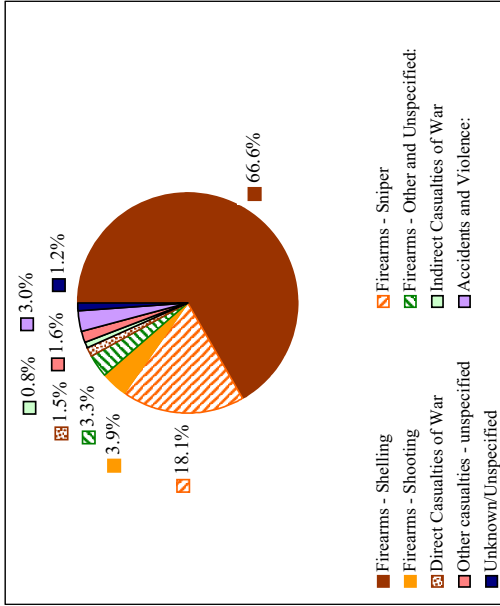
*Within Front Lines, from 10.09.1992 to 10.08.1994

A3.11a Civilians Killed in Sarajevo, 1992-94*, Number by Cause of Death



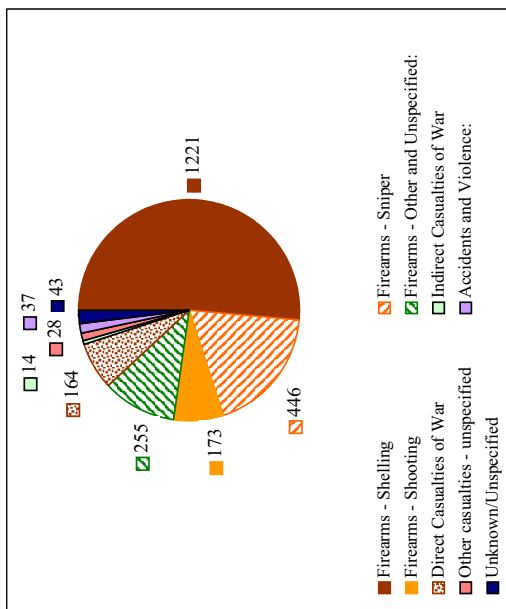
*Within Front Lines, from 10.09.1992 to 10.08.1994

A3.11b Civilians Killed in Sarajevo, 1992-94*, Percent by Cause of Death



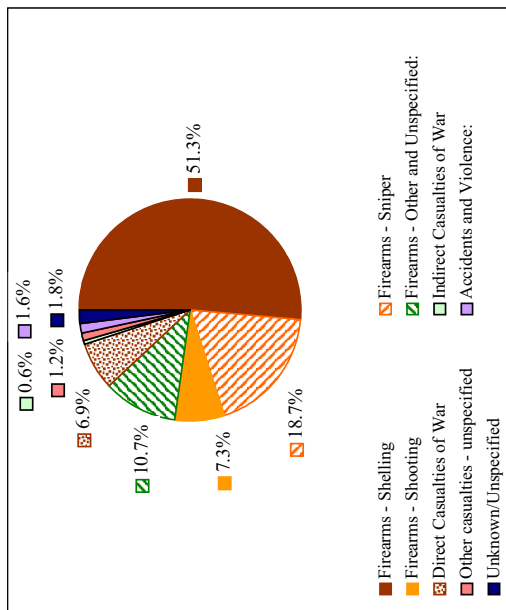
*Within Front Lines, from 10.09.1992 to 10.08.1994

A3.12a Soldiers Killed in Sarajevo, 1992-94*, Number by Cause of Death



*Within Front Lines, from 10.09.1992 to 10.08.1994

A3.12b Soldiers Killed in Sarajevo, 1992-94*, Percent by Cause of Death



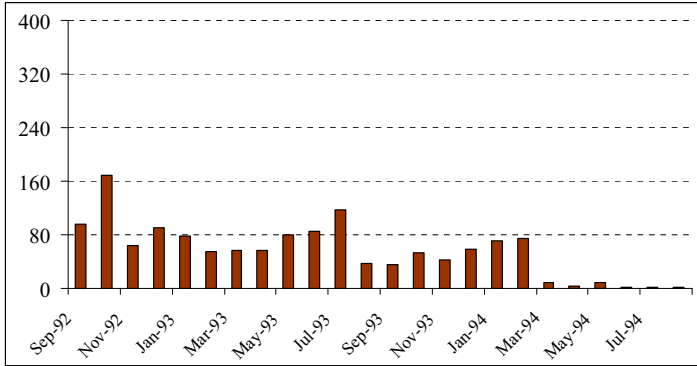
*Within Front Lines, from 10.09.1992 to 10.08.1994

A3.13 Monthly Number of Persons Killed Within Front Lines in Sarajevo,
From 10-09-1992 to 10-08-1994, by Civilian-Soldier Status

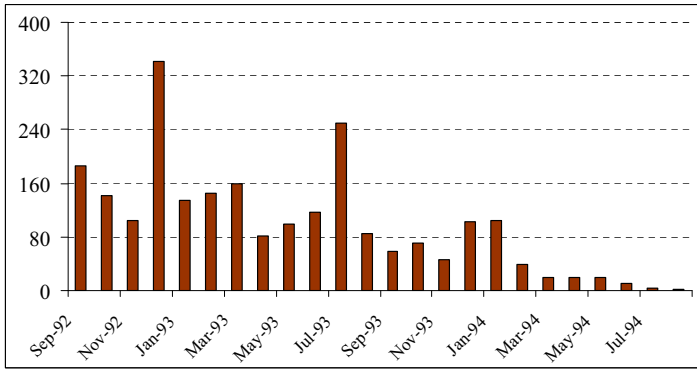
Time	Civilian	Soldiers	Unk Status	Total
Sep-92	96	185	1	282
Oct-92	169	141	5	315
Nov-92	64	104	1	169
Dec-92	91	341	3	435
Jan-93	79	135	2	216
Feb-93	56	146	0	202
Mar-93	57	159	1	217
Apr-93	57	81	0	138
May-93	80	100	0	180
Jun-93	86	117	0	203
Jul-93	118	249	0	367
Aug-93	38	85	0	123
Sep-93	35	59	0	94
Oct-93	54	70	0	124
Nov-93	43	46	1	90
Dec-93	59	103	2	164
Unk 1993	38	39	1	78
Jan-94	72	105	0	177
Feb-94	74	39	1	114
Mar-94	9	19	0	28
Apr-94	4	19	0	23
May-94	9	19	0	28
Jun-94	2	10	0	12
Jul-94	1	3	0	4
Aug-94	1	2	0	3
Unk 1994	7	5	0	12
Total	1399	2381	18	3798

A3.14 Monthly Number of Persons Killed Within Front Lines in Sarajevo, from 10-09-1992 to 10-08-1994

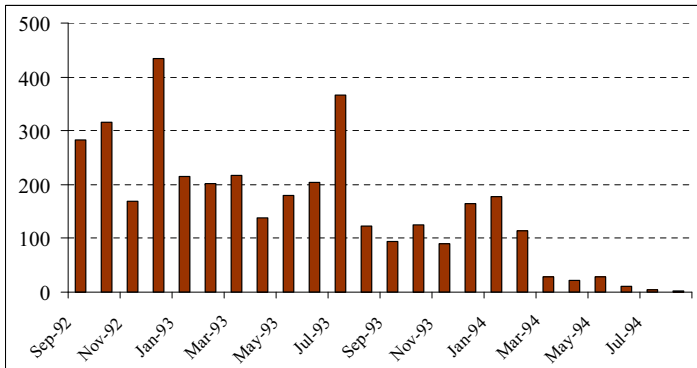
Civilians



Soldiers

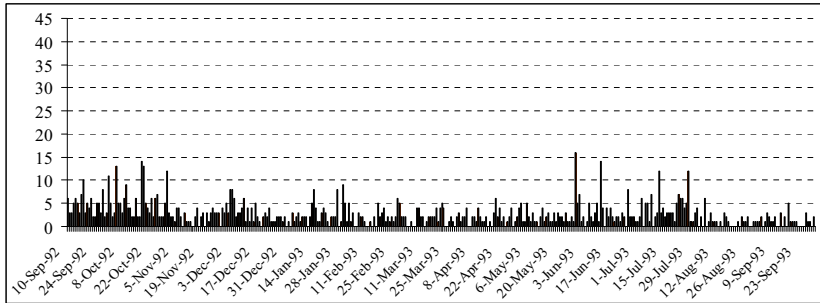


All Killed

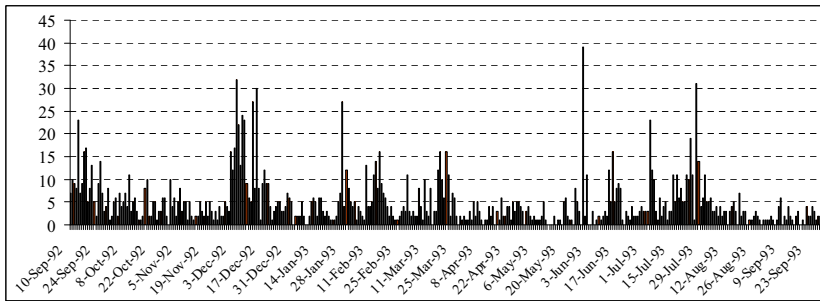


A3.15 Daily Number of Persons Killed Within Front Lines in Sarajevo,
from 10-09-1992 to 30-09-1993

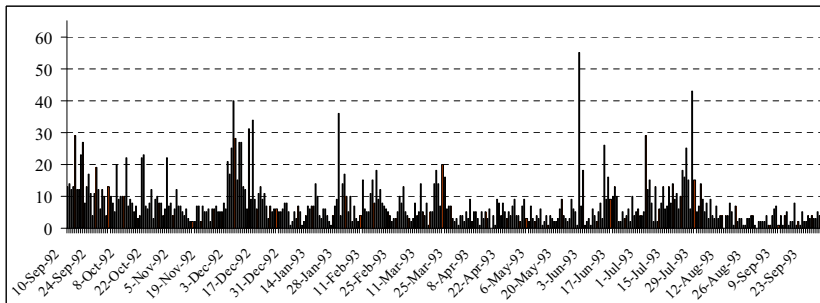
Civilians



Soldiers

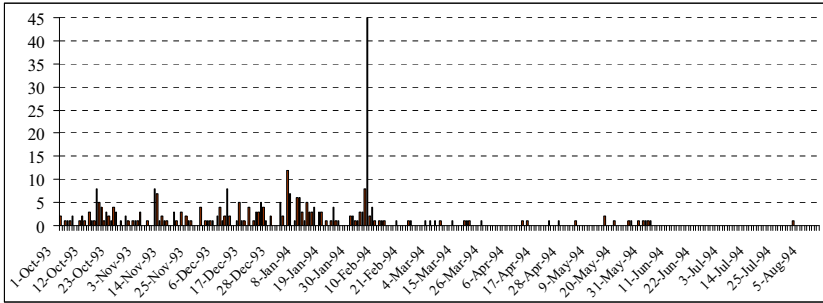


All Killed

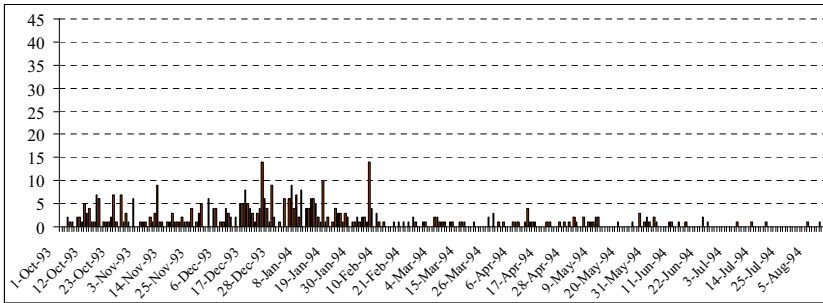


A3.16 Daily Number of Persons Killed Within Front Lines in Sarajevo, from 01-10-1993 to 10-08-1994

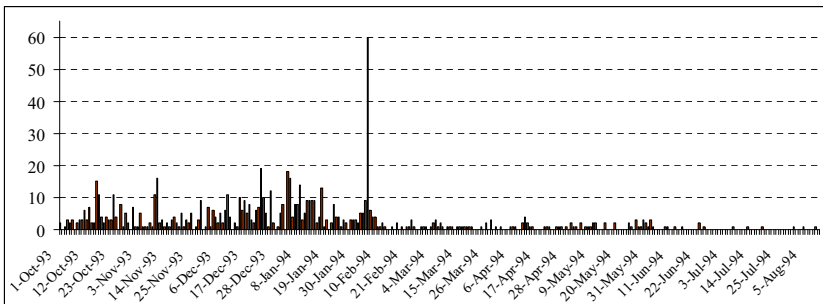
Civilians



Soldiers



All Killed



ANNEX 4

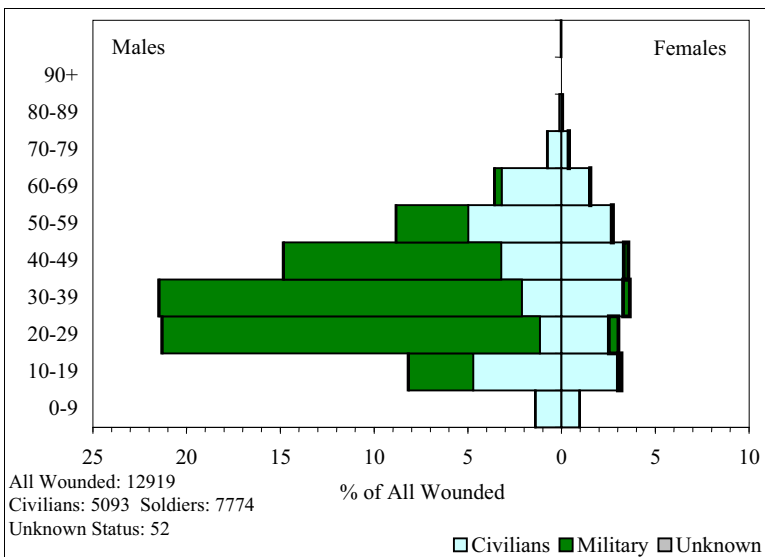
Statistics of the Wounded Population Obtained from HSS-1994

A4.1 Population Wounded Within Front Lines in Sarajevo, 1992-94*, Absolute Number, by Age and Sex

Age*	Civilians, Soldiers, and Unknown Status			Total
	Women	Men	Unk Sex	
0-9	123	180	0	303
10-19	412	1061	0	1473
20-29	393	2759	0	3152
30-39	472	2780	0	3252
40-49	459	1921	0	2380
50-59	355	1145	0	1500
60-69	199	465	0	664
70-79	50	100	0	150
80-89	11	17	0	28
90+	0	1	0	1
Unk Age	3	9	4	16
Total	2477	10438	4	12919

Note: Age* is Age at Wounding

A4.2 Sex, Age and Civilian-Soldier Distribution of Persons Wounded Within Front Lines in Sarajevo, 1992-1994*, Percent of all Casualties



*From 10.09.1992 to 10.08.1994

A4.3 Sex and Age Distribution of Persons Wounded Within Confrontation Lines in Sarajevo, 1992-1994*, Absolute Number and Percent of All Casualties

Civilians				
Age*	Women	Men	Unk Sex	Total
0-9	122	180	0	302
10-19	389	609	0	998
20-29	326	149	0	475
30-39	423	275	0	698
40-49	429	417	0	846
50-59	345	645	0	990
60-69	196	414	0	610
70-79	48	96	0	144
80-89	11	16	0	27
90+	0	1	0	1
Unk Age	2	0	0	2
Total	2291	2802	0	5093

Civilians			
Age in 94	Women	Men	Unk Sex
0-9	0.94	1.39	0.00
10-19	3.01	4.71	0.00
20-29	2.52	1.15	0.00
30-39	3.27	2.13	0.00
40-49	3.32	3.23	0.00
50-59	2.67	4.99	0.00
60-69	1.52	3.20	0.00
70-79	0.37	0.74	0.00
80-89	0.09	0.12	0.00
90+	0.00	0.01	0.00
Unk Age	0.02	0.00	0.00
Total		39.42	

Soldiers				
Age*	Women	Men	Unk Sex	Total
0-9	0	0	0	0
10-19	23	444	0	467
20-29	65	2602	0	2667
30-39	47	2496	0	2543
40-49	30	1496	0	1526
50-59	8	495	0	503
60-69	2	47	0	49
70-79	2	4	0	6
80-89	0	1	0	1
90+				
Unk Age	1	9	2	12
Total	178	7594	2	7774

Soldiers			
Age in 94	Women	Men	Unk Sex
0-9	0.00	0.00	0.00
10-19	0.18	3.44	0.00
20-29	0.50	20.14	0.00
30-39	0.36	19.32	0.00
40-49	0.23	11.58	0.00
50-59	0.06	3.83	0.00
60-69	0.02	0.36	0.00
70-79	0.02	0.03	0.00
80-89	0.00	0.01	0.00
90+	0.00	0.00	0.00
Unk Age	0.01	0.07	0.02
Total		60.17	

Unknown Status				
Age*	Women	Men	Unk Sex	Total
0-9	1	0	0	1
10-19	0	8	0	8
20-29	2	8	0	10
30-39	2	9	0	11
40-49	0	8	0	8
50-59	2	5	0	7
60-69	1	4	0	5
70-79	0	0	0	0
80-89	0	0	0	0
90+	0	0	0	0
Unk Age	0	0	2	2
Total	8	42	2	52

Unknown Status			
Age in 94	Women	Men	Unk Sex
0-9	0.01	0.00	0.00
10-19	0.00	0.06	0.00
20-29	0.02	0.06	0.00
30-39	0.02	0.07	0.00
40-49	0.00	0.06	0.00
50-59	0.02	0.04	0.00
60-69	0.01	0.03	0.00
70-79	0.00	0.00	0.00
80-89	0.00	0.00	0.00
90+	0.00	0.00	0.00
Unk Age	0.00	0.00	0.02
Total		0.40	

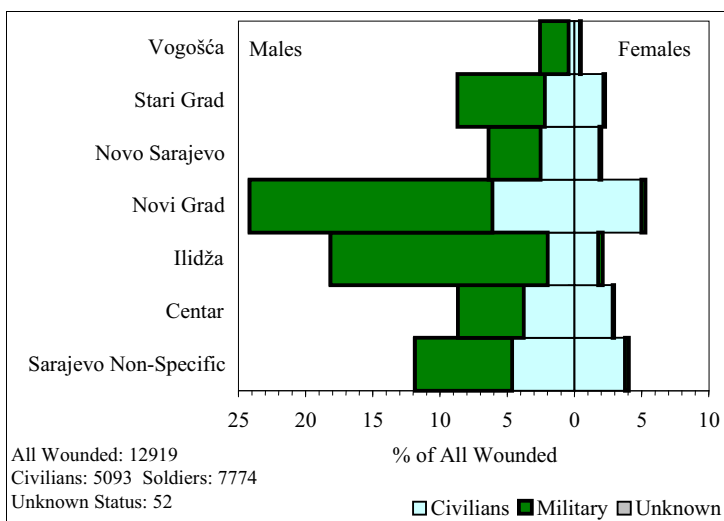
Note: Age* is Age at Wounding

A4.4 Persons Wounded Within Front Lines in Sarajevo, 1992-94*, Absolute Number by Municipality of Death, Sex and Civilian-Soldier Status

Opstina of Wounding	Women	Men	Unk Sex	Total
Centar	380	1122	2	1504
Ilidža	271	2355	0	2626
Novi Grad	684	3132	1	3817
Novo Sarajevo	259	829	1	1089
Stari Grad	296	1127	0	1423
Vogošća	62	329	0	391
Sarajevo Non-Specific	525	1544	0	2069
Total	2477	10438	4	12919

*From 10.09.1992 to 10.08.1994

A4.5 Persons Wounded Within Front Lines in Sarajevo, 1992-94*, Percent of All Casualties by Municipality of Death, Sex and Status



*From 10.09.1992 to 10.08.1994

A4.6 Sex and Municipality of Death Distribution of Persons Wounded Within Front Lines in Sarajevo, 1992-94*, Absolute Number and Percent of All Casualties

Civilians

Opstina of Wounding	Women	Men	Unk Sex	Total
Centar	366	489	0	855
Ilidža	229	258	0	487
Novi Grad	642	787	0	1429
Novo Sarajevo	240	326	0	566
Stari Grad	278	285	0	563
Vogošća	51	57	0	108
Sarajevo Non-Specific	485	600	0	1085
Total	2291	2802	0	5093

Soldiers

Opstina of Wounding	Women	Men	Unk Sex	Total
Centar	14	630	2	646
Ilidža	41	2086	0	2127
Novi Grad	41	2335	0	2376
Novo Sarajevo	17	501	0	518
Stari Grad	18	838	0	856
Vogošća	11	272	0	283
Sarajevo Non-Specific	36	932	0	968
Total	178	7594	2	7774

Unknown Status

Opstina of Wounding	Women	Men	Unk Sex	Total
Centar	0	3	0	3
Ilidža	1	11	0	12
Novi Grad	1	10	1	12
Novo Sarajevo	2	2	1	5
Stari Grad	0	4	0	4
Vogošća	0	0	0	0
Sarajevo Non-Specific	4	12	0	16
Total	8	42	2	52

*From 10.09.1992 to 10.08.1994

Civilians

Opstina of Wounding	Women	Men	Unk Sex
Centar	2.83	3.79	0.00
Ilidža	1.77	2.00	0.00
Novi Grad	4.97	6.09	0.00
Novo Sarajevo	1.86	2.52	0.00
Stari Grad	2.15	2.21	0.00
Vogošća	0.39	0.44	0.00
Sarajevo Non-Specific	3.75	4.64	0.00
Total	17.73	21.69	0.00

Soldiers

Opstina of Wounding	Women	Men	Unk Sex
Centar	0.11	4.88	0.02
Ilidža	0.32	16.15	0.00
Novi Grad	0.32	18.07	0.00
Novo Sarajevo	0.13	3.88	0.00
Stari Grad	0.14	6.49	0.00
Vogošća	0.09	2.11	0.00
Sarajevo Non-Specific	0.28	7.21	0.00
Total	1.38	58.78	0.02

Unknown Status

Opstina of Wounding	Women	Men	Unk Sex
Centar	0.00	0.02	0.00
Ilidža	0.01	0.09	0.00
Novi Grad	0.01	0.08	0.01
Novo Sarajevo	0.02	0.02	0.01
Stari Grad	0.00	0.03	0.00
Vogošća	0.00	0.00	0.00
Sarajevo Non-Specific	0.03	0.09	0.00
Total	0.06	0.33	0.02

A4.7 Persons Wounded Within Front Lines in Sarajevo, 1992-94*, Absolute Number by Cause of Death and Sex

Causes Of Wounding	Women	Men	Unk Sex	Total
Firearms - Shelling	1681	6326	2	8009
Firearms - Sniper	604	2505	2	3111
Firearms - Shooting	4	37	0	41
Firearms - Other and Unspecified:	135	1023	0	1158
- <i>Firearms - anti-aircraft machinegun</i>	38	182	0	220
- <i>Firearms - M-84 and the like</i>	2	12	0	14
- <i>Firearms - unspecified</i>	95	829	0	924
Direct Casualties of War	11	215	0	226
- <i>Cold steel/slaughtered/tortured</i>	1	10	0	11
- <i>Execution</i>	0	0	0	0
- <i>Human shield</i>	0	4	0	4
- <i>Disappeared</i>	7	28	0	35
- <i>Other casualties - war operations</i>	3	173	0	176
Indirect Casualties of War	5	118	0	123
- <i>Stepped on mine</i>	3	95	0	98
- <i>Other casualties - war conditions</i>	2	23	0	25
				0
Other casualties - unspecified	0	4	0	4
Accidents and Violence:	9	47	0	56
- <i>Other - traffic accident</i>	4	24	0	28
- <i>Other - other accident</i>	4	20	0	24
- <i>Self-inflicted</i>	1	3	0	4
Unknown/Unspecified	28	163	0	191
Total	2477	10438	4	12919

*From 10.09.1992 to 10.08.1994

A4.8 Civilians Wounded Within Front Lines in Sarajevo, 1992-94*,
Absolute Number by Cause of Wound and Sex

<i>Civilians</i>			
Causes Of Wounding	Women	Men	Total
Firearms - Shelling	1571	1834	3405
Firearms - Sniper	559	737	1296
Firearms - Shooting	3	4	7
Firearms - Other and Unspecified:	116	165	281
- <i>Firearms - anti-aircraft machinegun</i>	32	49	81
- <i>Firearms - M-84 and the like</i>	2	1	3
- <i>Firearms - unspecified</i>	82	115	197
Direct Casualties of War	8	11	19
- <i>Cold steel/slaughtered/tortured</i>	0	3	3
- <i>Execution</i>	0	0	0
- <i>Human shield</i>	0	1	1
- <i>Disappeared</i>	6	4	10
- <i>Other casualties - war operations</i>	2	3	5
Indirect Casualties of War	2	8	10
- <i>Stepped on mine</i>	2	5	7
- <i>Other casualties - war conditions</i>	0	3	3
- <i>Other casualties - unspecified</i>	0	0	0
Accidents and Violence:	8	11	19
- <i>Other - traffic accident</i>	4	6	10
- <i>Other - other accident</i>	4	5	9
- <i>Self-inflicted</i>	0	0	0
Unknown/Unspecified	24	32	56
Total	2291	2802	5093

*From 10.09.1992 to 10.08.1994

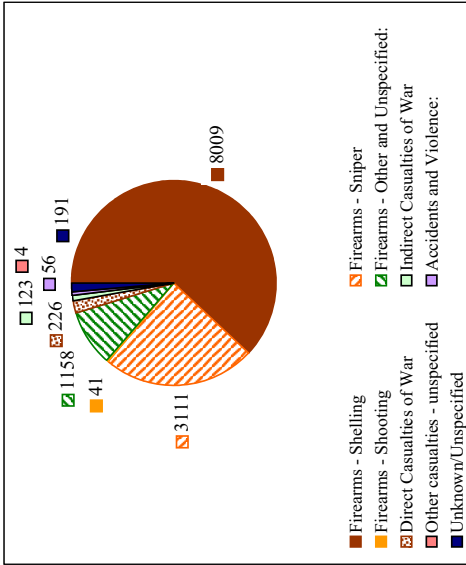
A4.9 Soldiers Wounded Within Front Lines in Sarajevo, 1992-94*,
Absolute Number by Cause of Wound and Sex

Soldiers

Causes Of Wounding	Women	Men	Unk Sex	Total
Firearms - Shelling	105	4471	1	4577
Firearms - Sniper	45	1759	1	1805
Firearms - Shooting	1	33	0	34
Firearms - Other and Unspecified:	18	857	0	875
- <i>Firearms - anti-aircraft machinegun</i>	6	133	0	139
- <i>Firearms - M-84 and the like</i>	0	11	0	11
- <i>Firearms - unspecified</i>	12	713	0	725
Direct Casualties of War	2	200	0	202
- <i>Cold steel/slaughtered/tortured</i>	0	6	0	6
- <i>Execution</i>	0	0	0	0
- <i>Human shield</i>	0	2	0	2
- <i>Disappeared</i>	1	23	0	24
- <i>Other casualties - war operations</i>	1	169	0	170
Indirect Casualties of War	3	108	0	111
- <i>Stepped on mine</i>	1	89	0	90
- <i>Other casualties - war conditions</i>	2	19	0	21
- <i>Other casualties - unspecified</i>	0	4	0	4
Accidents and Violence:	1	36	0	37
- <i>Other - traffic accident</i>	0	18	0	18
- <i>Other - other accident</i>	0	15	0	15
- <i>Self-inflicted</i>	1	3	0	4
Unknown/Unspecified	3	126	0	129
Total	178	7594	2	7774

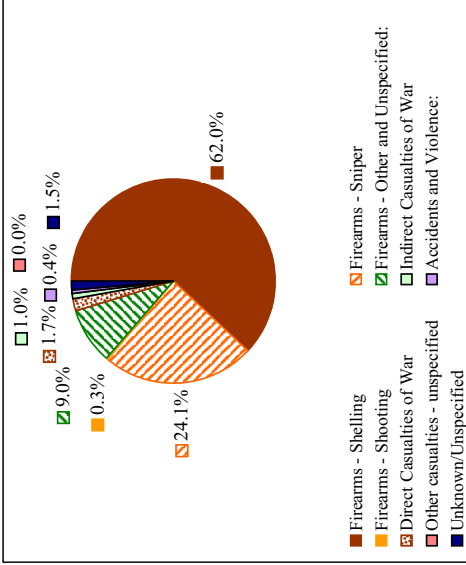
*From 10.09.1992 to 10.08.1994

A4.10a Persons Wounded in Sarajevo, 1992-94*, Number by Cause of Wounding



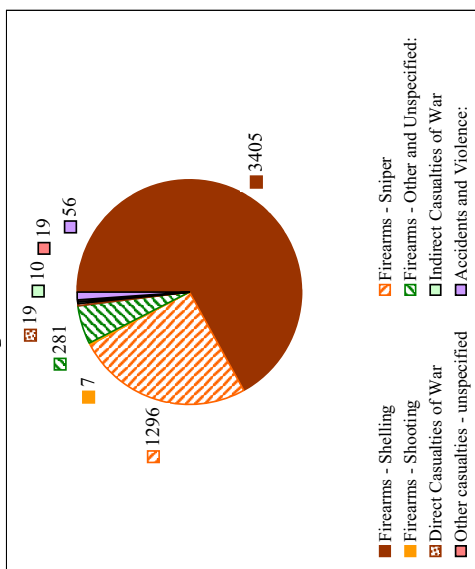
*Within Front Lines, From 10.09.1992 to 10.08.1994

A4.10b Persons Wounded in Sarajevo, 1992-94*, Percent by Cause of Wounding



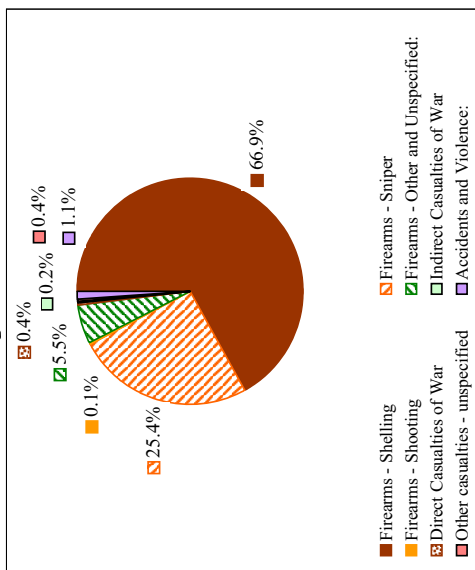
*Within Front Lines, From 10.09.1992 to 10.08.1994

A4.11a Civilians Wounded in Sarajevo, 1992-94*, Number by Cause of Wounding



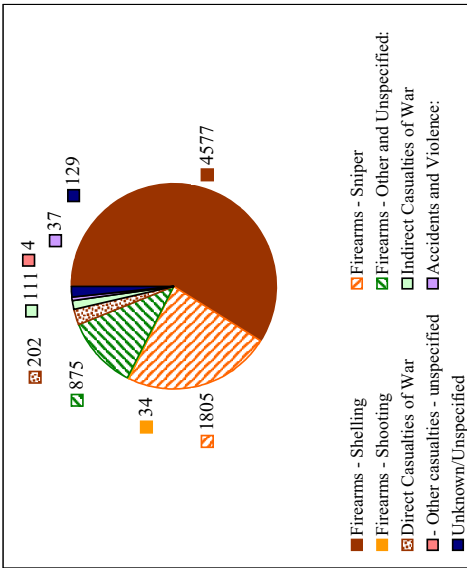
*Within Front Lines, From 10.09.1992 to 10.08.1994

A4.11b Civilians Wounded in Sarajevo, 1992-94*, Percent by Cause of Wounding



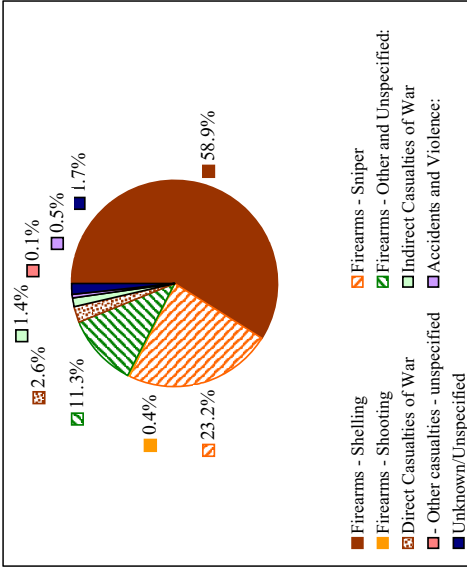
*Within Front Lines, From 10.09.1992 to 10.08.1994

A4.12a Soldiers Wounded in Sarajevo, 1992-94*, Number by Cause of Wounding



*Within Front Lines, From 10.09.1992 to 10.08.1994

A4.12b Soldiers Wounded in Sarajevo, 1992-94*, Percent by Cause of Wounding



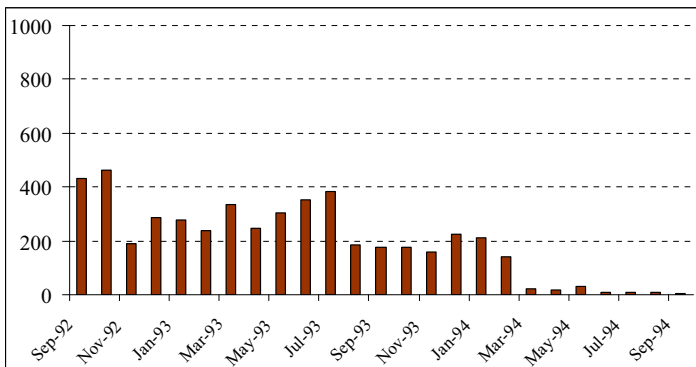
*Within Front Lines, From 10.09.1992 to 10.08.1994

A4.13 Monthly Number of Persons Wounded Within Front Lines in Sarajevo,
From 10-09-1992 to 10-08-1994, by Civilian-Soldier Status

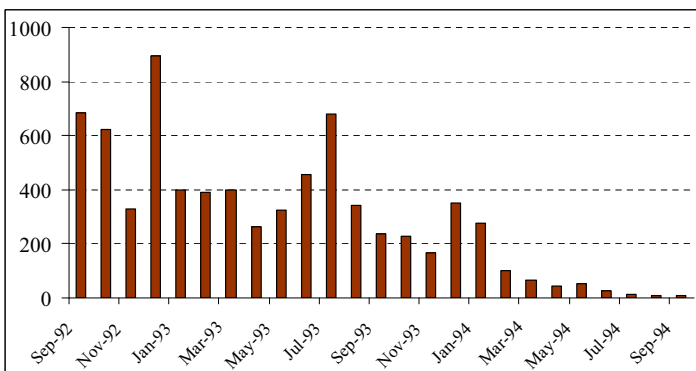
Time	Civilian	Soldiers	Unk Status	Total
Sep-92	432	686	6	1124
Oct-92	464	624	4	1092
Nov-92	189	328	4	521
Dec-92	285	894	7	1186
				0
Jan-93	279	400	0	679
Feb-93	236	391	4	631
Mar-93	335	398	2	735
Apr-93	247	262	1	510
May-93	302	324	2	628
Jun-93	352	456	3	811
Jul-93	382	681	1	1064
Aug-93	186	342	2	530
Sep-93	177	235	1	413
Oct-93	178	227	4	409
Nov-93	160	168	1	329
Dec-93	223	353	3	579
Unk 1993	202	374	3	579
Jan-94	212	278	2	492
Feb-94	143	103	1	247
Mar-94	23	65	0	88
Apr-94	16	46	0	62
May-94	30	54	1	85
Jun-94	9	27	0	36
Jul-94	7	12	0	19
Aug-94	7	9	0	16
Unk 1994	14	28	0	42
Total	5090	7765	52	12907

A4.14 Monthly Number of Persons Wounded Within Front Lines in Sarajevo, from 10-09-1992 to 10-08-1994

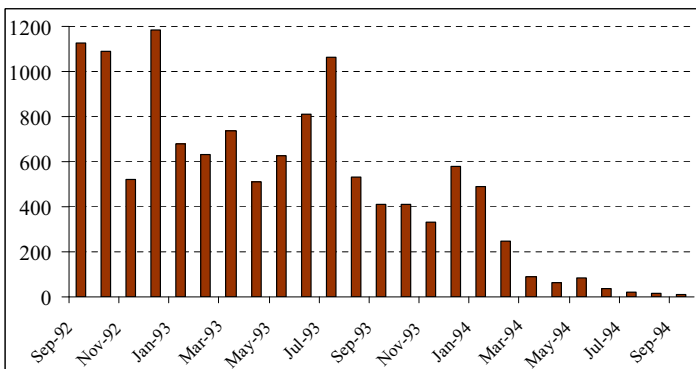
Civilians



Soldiers

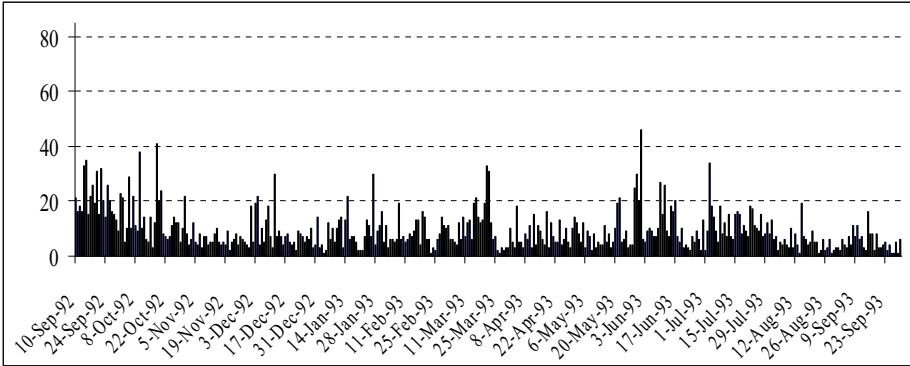


All Wounded

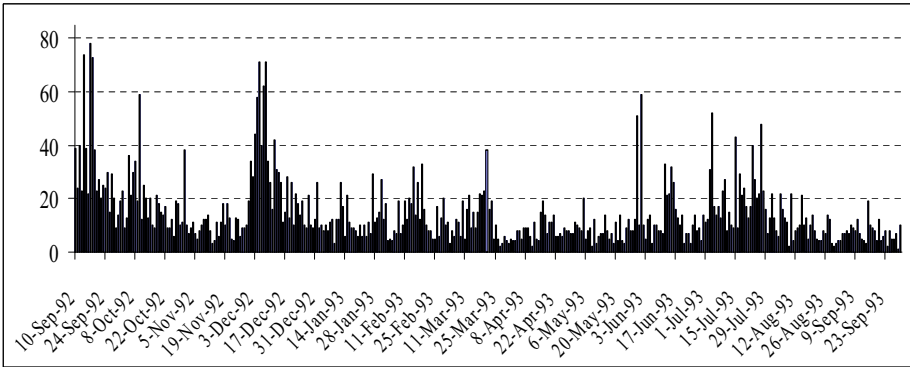


A4.15 Daily Number of Persons Wounded Within Front Lines in Sarajevo, from 10-09-1992 to 30-09-1993

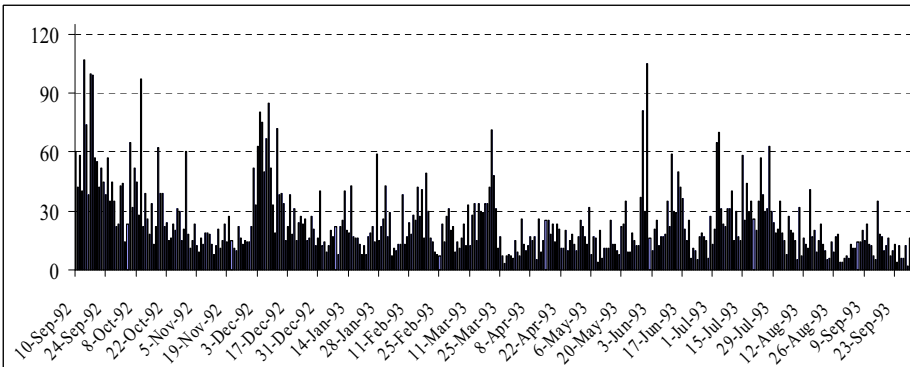
Civilians



Soldiers

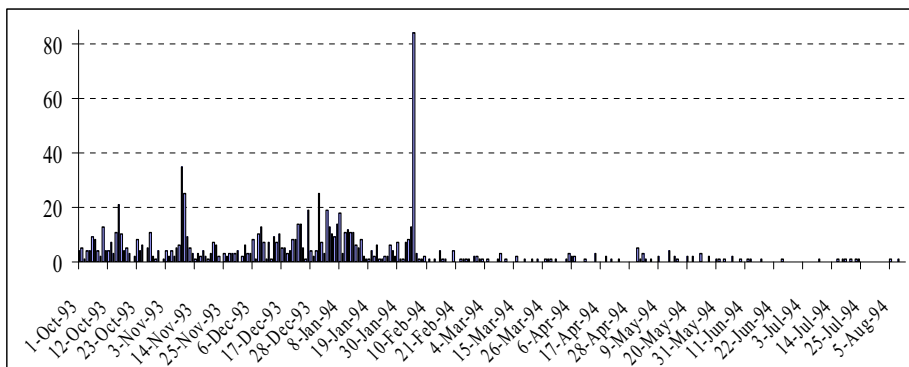


All Wounded

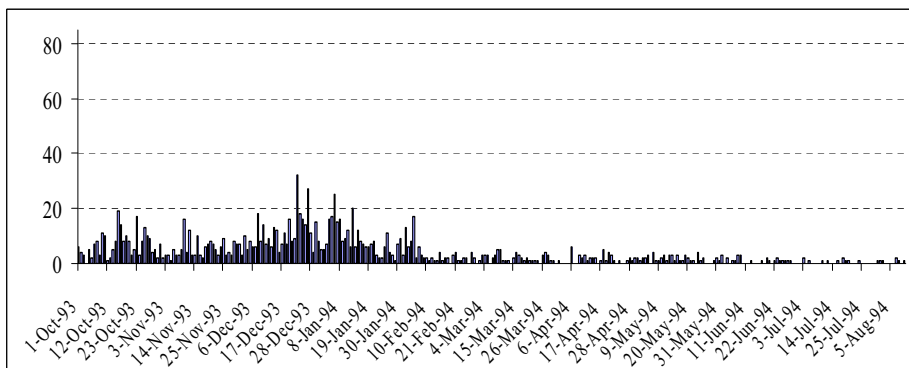


A4.16 Daily Number of Persons Wounded Within Front Lines in Sarajevo, from 01-10-1993 to 10-08-1994

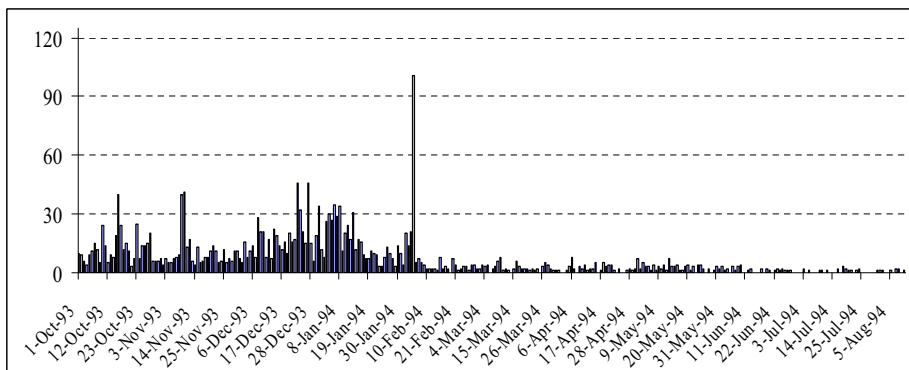
Civilians



Soldiers



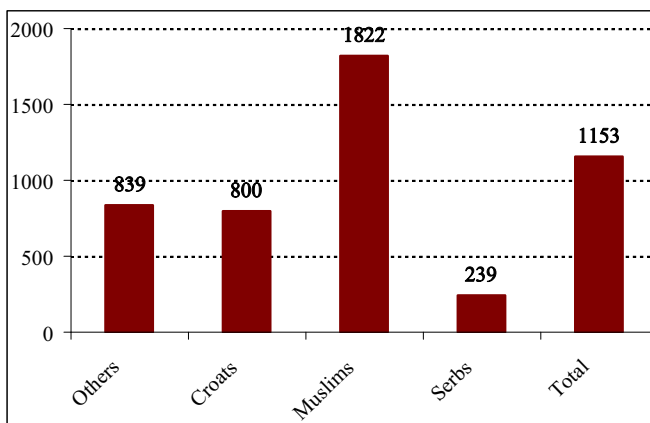
All Wounded



ANNEX 5

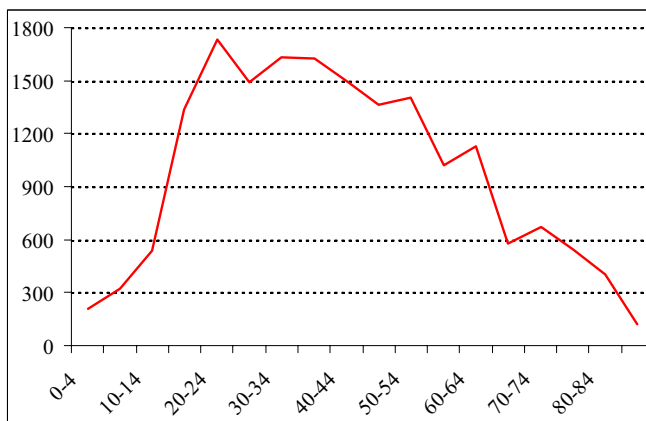
Demographic Rates of Killing, Wounding and Natural Death in Sarajevo

A5K.1 Death Rates of Persons Killed in Sarajevo, 1992-94*, by Ethnicity



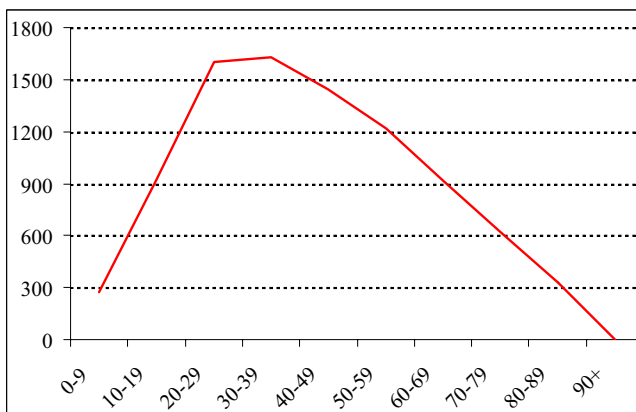
* Within Front Lines, from 10.09.1992 to 10.08.1994

A5K.2 Death Rates of Persons Killed in Sarajevo, 1992-94*, by Five-Year Age Groups



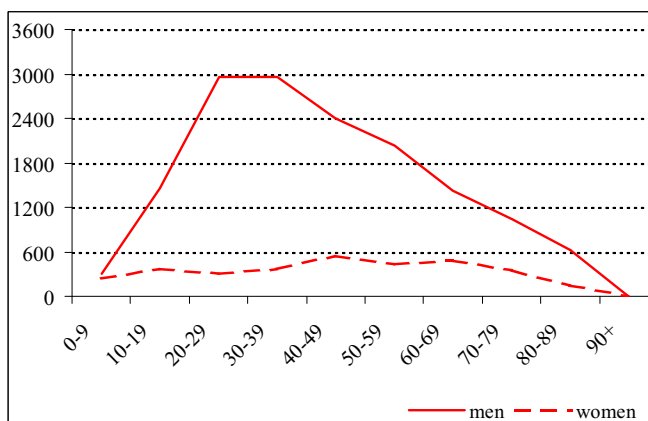
* Within Front Lines, from 10.09.1992 to 10.08.1994

A5K.3 Death Rates of Persons Killed in Sarajevo, 1992-94*, by Ten-Year Age Groups



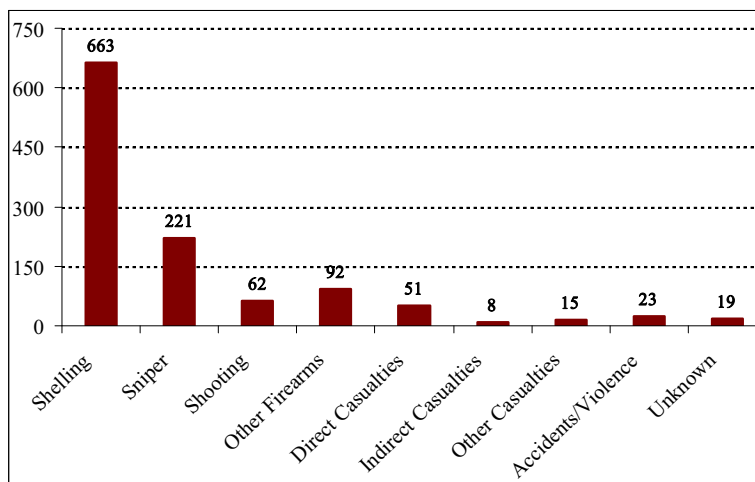
* Within Front Lines, from 10.09.1992 to 10.08.1994

A5K.4 Death Rates of Persons Killed in Sarajevo, 1992-94*, by Ten-Year Age Groups and Sex



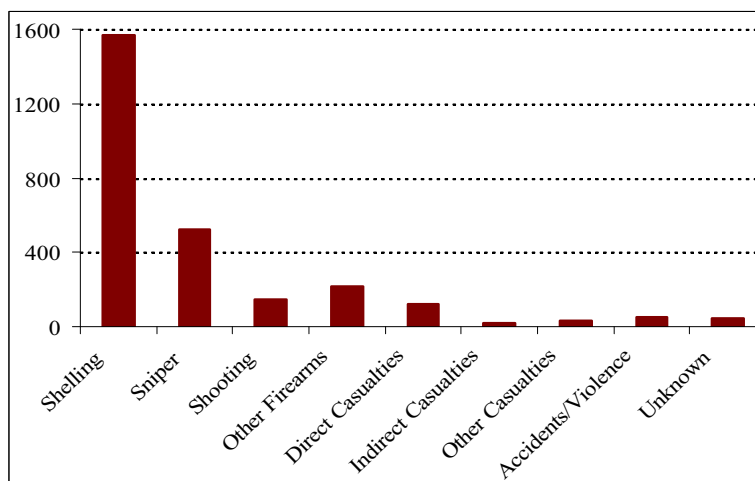
* Within Front Lines, from 10.09.1992 to 10.08.1994

A5K.5 Death Rates of Persons Killed in Sarajevo, 1992-94*, by Cause of Death



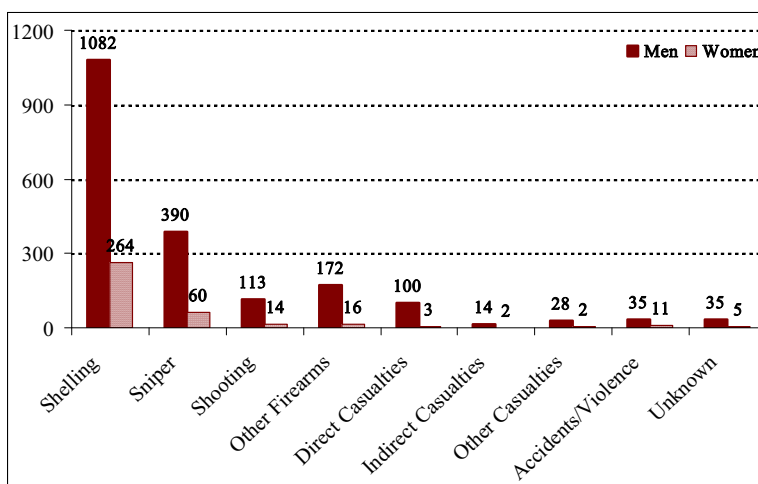
* *Within Front Lines, from 10.09.1992 to 10.08.1994*

A5K.6 Absolute Number of Persons Killed in Sarajevo, 1992-94*, by Cause of Death



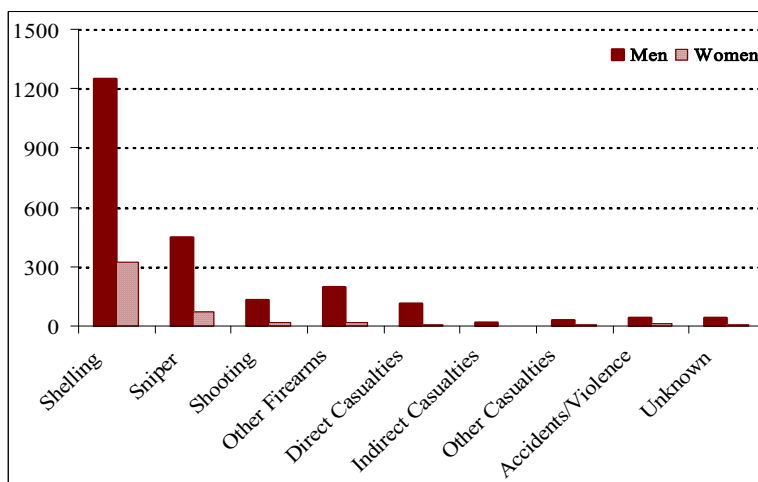
* *Within Front Lines, from 10.09.1992 to 10.08.1994*

A5K.7 Death Rates of Persons Killed in Sarajevo, 1992-94*, by Cause of Death and Sex



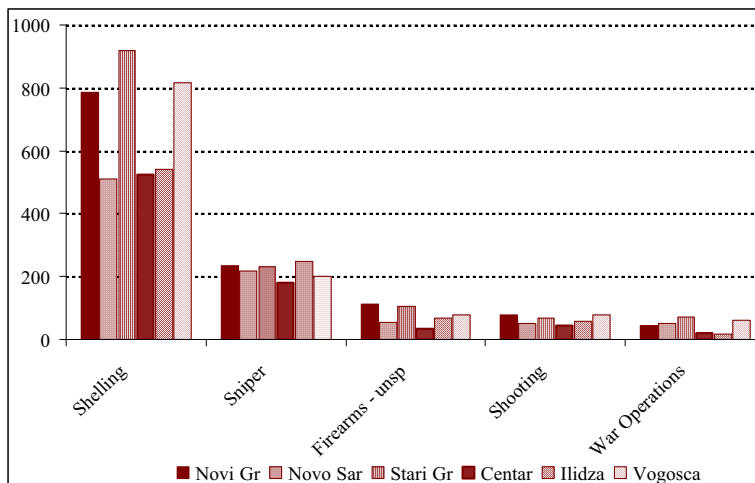
* Within Front Lines, from 10.09.1992 to 10.08.1994

A5K.8 Absolute Number of Persons Killed in Sarajevo, 1992-94*, by Cause of Death and Sex



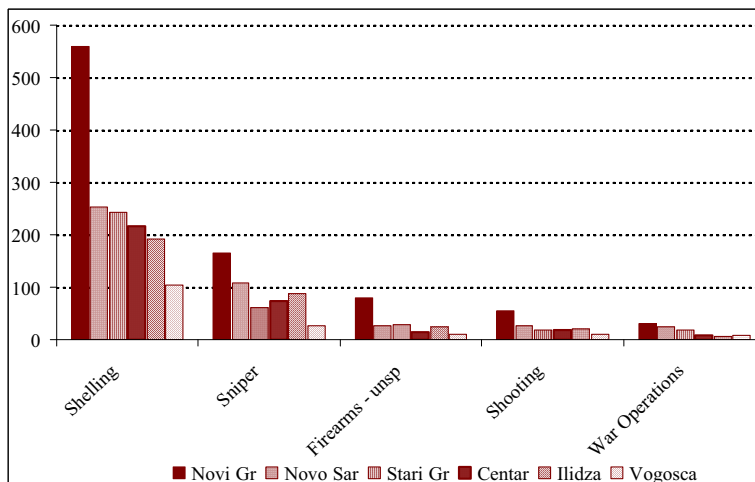
* Within Front Lines, from 10.09.1992 to 10.08.1994

A5K.9 Five Most Significant Causes of Death in Sarajevo, 1992-94*,
Death Rates per 100,000 Population



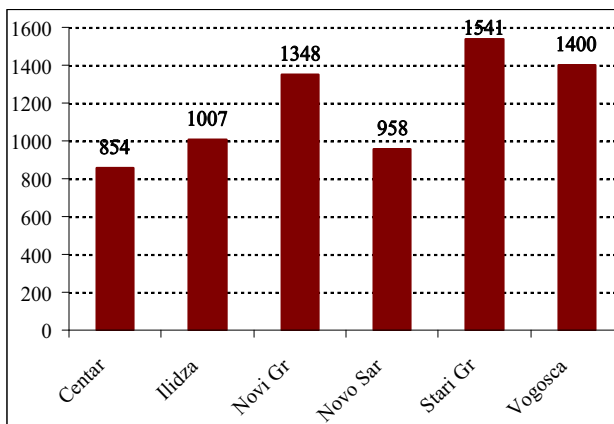
* Within Front Lines, from 10.09.1992 to 10.08.1994

A5K.10 Five Most Significant Causes of Death in Sarajevo, 1992-94*,
Absolute Number of Deaths



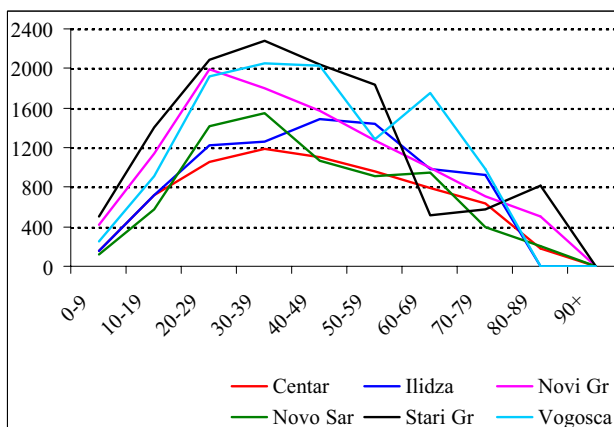
* Within Front Lines, from 10.09.1992 to 10.08.1994

A5K.11 Death Rates of Persons Killed in Sarajevo, 1992-94*,
By Municipality of Residence in 1991



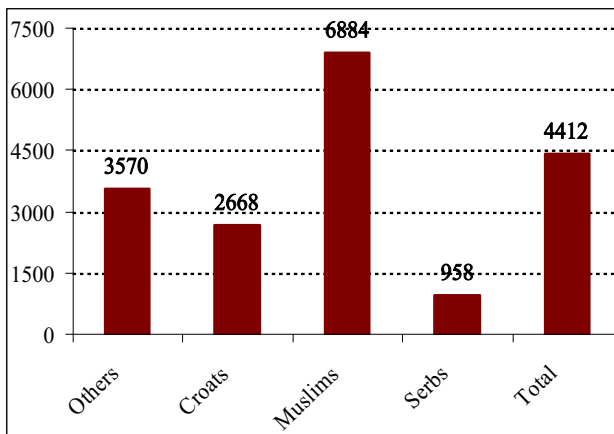
* Within Front Lines, from 10.09.1992 to 10.08.1994

A5K.12 Death Rates of Persons Killed in Sarajevo, 1992-94*,
By Municipality of Residence in 1991 and Age



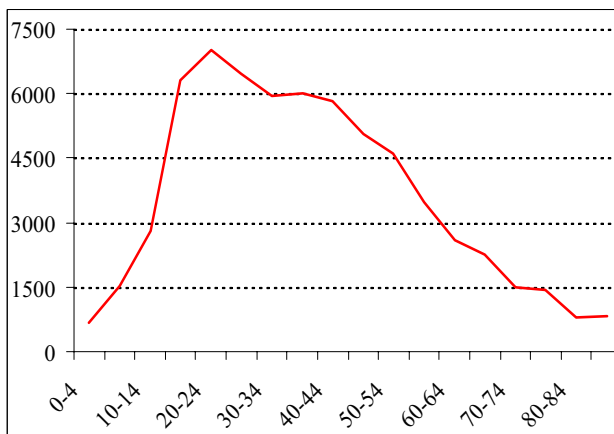
* Within Front Lines, from 10.09.1992 to 10.08.1994

A5W.1 Wounding Rates of Persons Wounded in Sarajevo, 1992-94*,
by Ethnicity



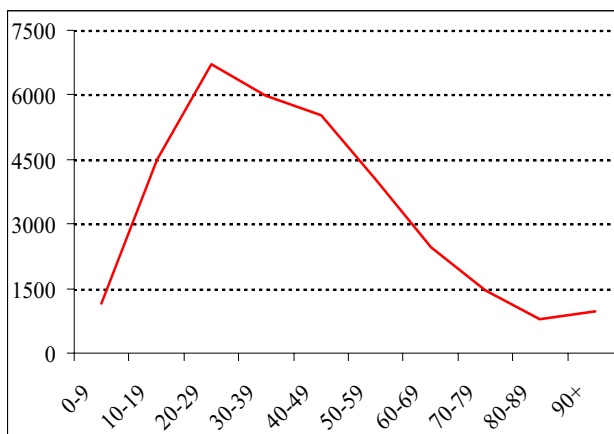
* Within Front Lines, from 10.09.1992 to 10.08.1994

A5W.2 Wounding Rates of Persons Wounded in Sarajevo, 1992-94*,
by Five-Year Age Groups



* Within Front Lines, from 10.09.1992 to 10.08.1994

A5W.3 Wounding Rates of Persons Wounded in Sarajevo, 1992-94*, by Ten-Year Age Groups



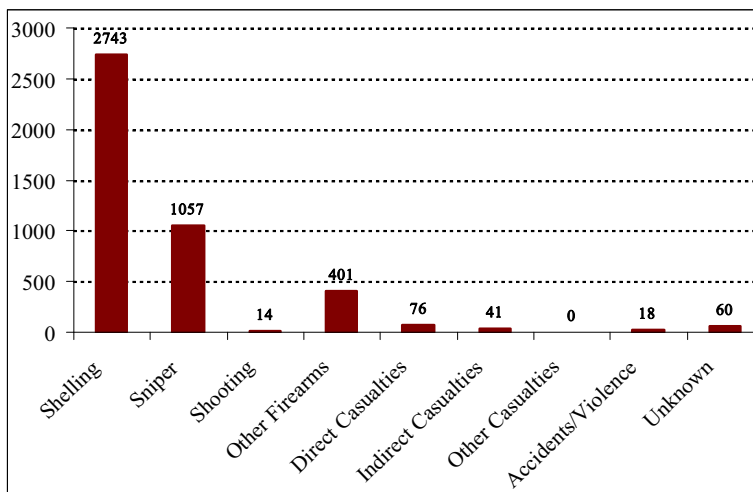
* Within Front Lines, from 10.09.1992 to 10.08.1994

A5W.4 Wounding Rates of Persons Wounded in Sarajevo, 1992-94*, by Ten-Year Age Groups and Sex



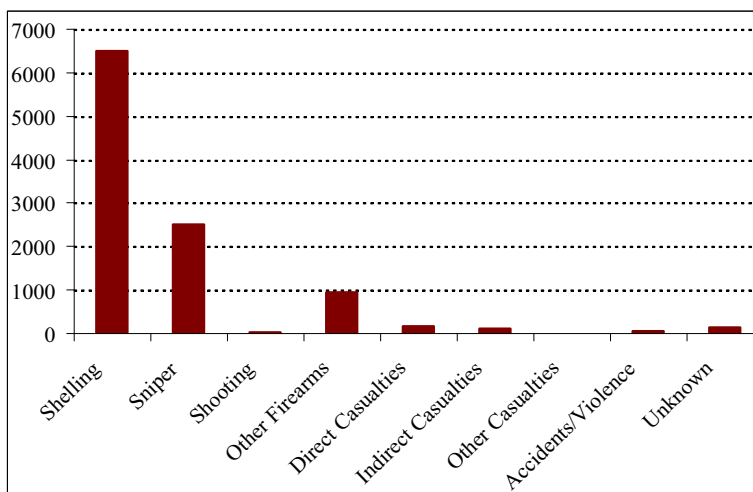
* Within Front Lines, from 10.09.1992 to 10.08.1994

A5W.5 Wounding Rates of Persons Wounded in Sarajevo, 1992-94*, by Cause of Wounding



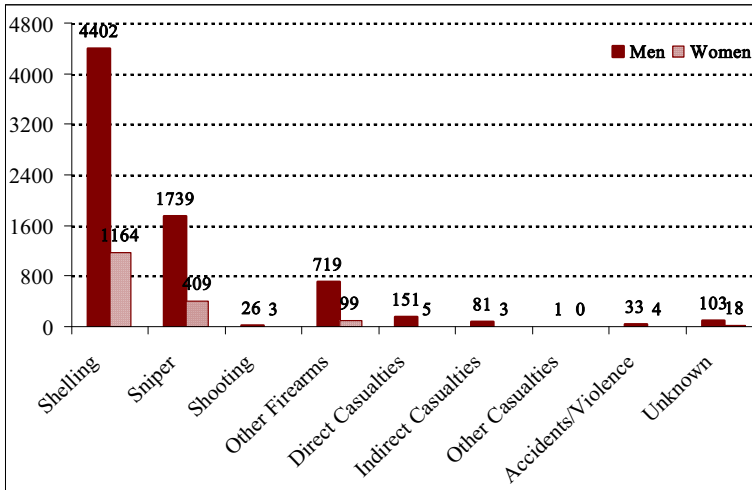
* Within Front Lines, from 10.09.1992 to 10.08.1994

A5W.6 Absolute Number of Persons Wounded in Sarajevo, 1992-94*, by Cause of Wounding



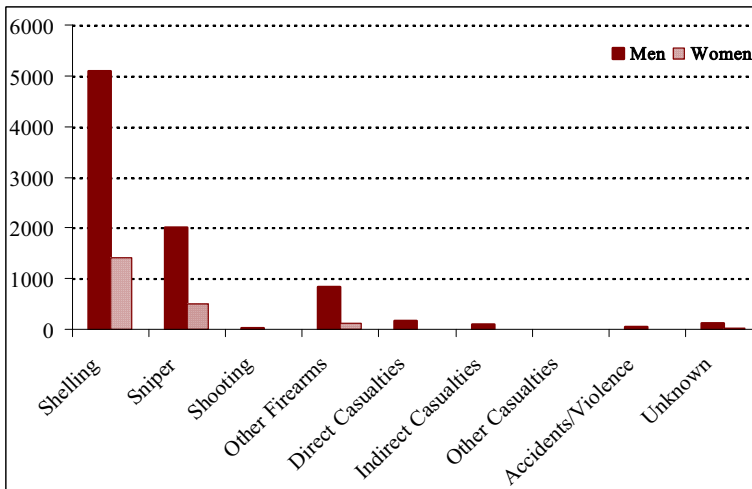
* Within Front Lines, from 10.09.1992 to 10.08.1994

A5W.7 Wounding Rates of Persons Wounded in Sarajevo, 1992-94*, by Cause of Wounding and Sex



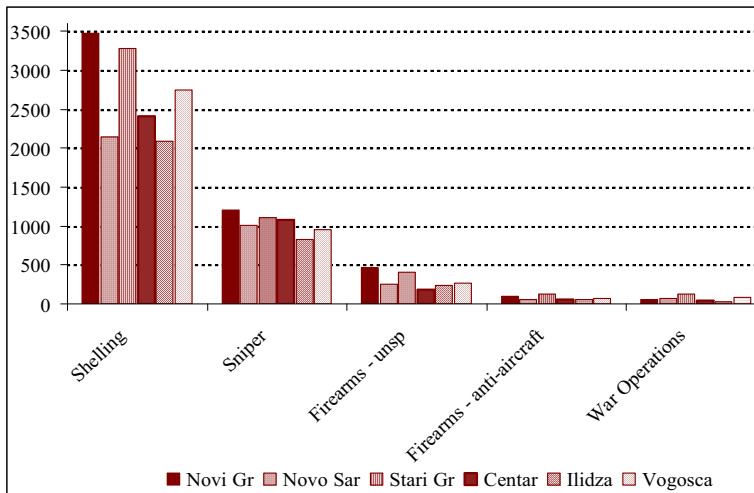
* Within Front Lines, from 10.09.1992 to 10.08.1994

A5W.8 Absolute Number of Persons Wounded in Sarajevo, 1992-94*, by Cause of Wounding and Sex



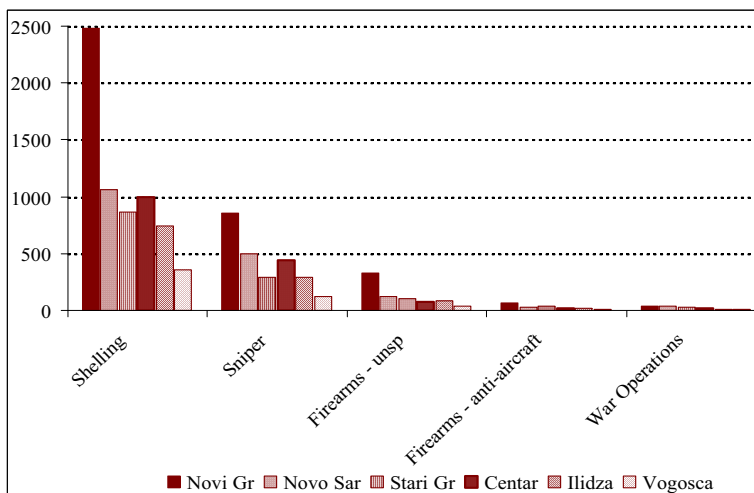
* Within Front Lines, from 10.09.1992 to 10.08.1994

A5W.9 Five Most Significant Causes of Wounding in Sarajevo, 1992-94*,
Wounding Rates per 100,000 Population



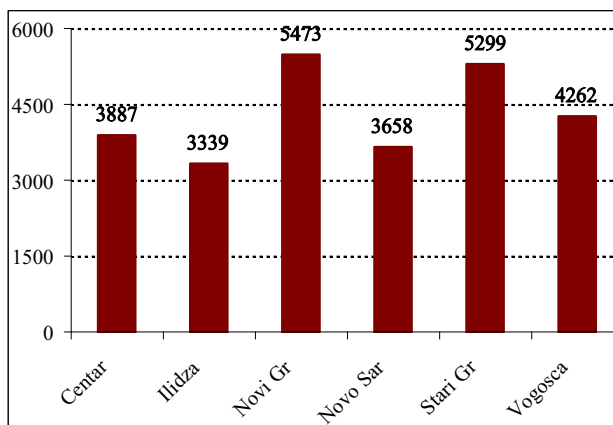
* *Within Front Lines, from 10.09.1992 to 10.08.1994*

A5W.10 Five Most Significant Causes of Wounding in Sarajevo, 1992-94*,
Absolute Number of Wounded Persons



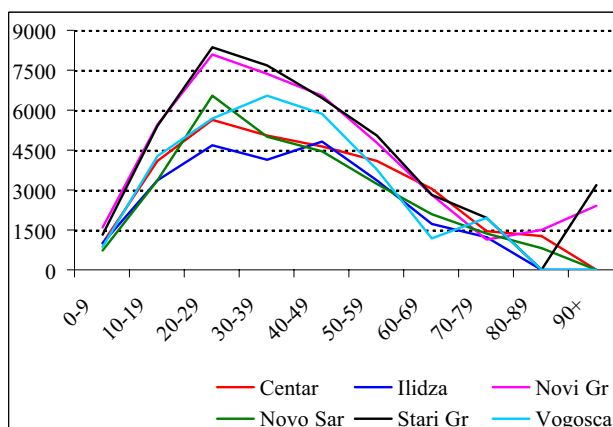
* *Within Front Lines, from 10.09.1992 to 10.08.1994*

A5W.11 Wounding Rates of Persons Wounded in Sarajevo, 1992-94*,
By Municipality of Residence in 1991



* Within Front Lines, from 10.09.1992 to 10.08.1994

A5W.12 Wounding Rates of Persons Wounded in Sarajevo, 1992-94*,
By Municipality of Residence in 1991 and Age



* Within Front Lines, from 10.09.1992 to 10.08.1994

ANNEX 6

Statistical Foundation of the Analysis: The Capture – Recapture method

Statistical Foundation of the Analysis: The Capture – Recapture method

The capture – recapture method was originally proposed for estimating the unknown size of animal populations. Since then it has been then adopted by many other research disciplines. In this annex we present the rationale of this method and explain how we used it in our study.

The capture – recapture method is applied when we deal with a population of unknown size and our task is to estimate the total number of members of this population. We do this in two steps. First, we randomly select a sample from this population, mark all captured individuals, put them back to the original population and allow them to mix up with the rest of the population. Every individual should have the same probability of being captured as the others. In the second step we select a next random sample. The two samples should be drawn independently. Thus, the probability that an individual is re-captured in sample 2 has nothing to do with the fact, whether or not it was captured and marked in sample 1. From the mathematical point of view the independence of two events means, that the probability of occurring two events jointly is equal to the probability of occurrence of the first event multiplied by the probability of occurrence of the second event. We can write it that way:

$$P(A \cap B) = P(A) \cdot P(B).$$

Having selected the second sample, we count the re-captured individuals in it. Note that the “re-captured” individuals are those of all captured in sample 2 who previously were also captured (and marked) in sample 1. The underlying principle of the capture – recapture method is that the share of re-captured individuals in sample 2 estimates the share of captured (and marked) individuals from sample 1 in the whole population. Because the number of marked individuals in the whole population is known (from step 1) and also the estimated share of the marked individuals in the population is known (from step 2), we can calculate the total number of individuals in the population. We do this by dividing the number of marked individuals by their estimated share in the population.

If N denotes the total number of individuals in the population, p is the estimated share of all marked individuals in the population (i.e. the share of re-captured individuals in the second sample), and N_1 is the number of individuals marked in step 1 (i.e. those captured in sample 1), we obtain¹:

$$\hat{N} = \frac{N_1}{p}. \quad (1)$$

If N_2 is the number of individuals in the second sample and N_{12} for the number of re-captured individuals from the second sample (i.e. those also captured and marked in the first sample) we get, that:

$$p = \frac{N_{12}}{N_2}. \quad (2)$$

The estimated total size of the population can be therefore also expressed as:

$$\hat{N} = \frac{N_1 N_2}{N_{12}}. \quad (3)$$

¹ A hat above X means that it is an estimated value.

All this reasoning makes sense if the samples are large as is the overlap between both samples (i.e. the number of re-captured individuals in the second sample)².

The objective of Section 6 was to estimate the total number of persons killed in Sarajevo during the given period of time. We had two samples at our disposal, the 1994 Household Survey of Sarajevo (*HSS-1994*) and the Bakije database (*Bakije*). The sources were large and there existed a significant overlap between them. We considered HSS-1994 as the first sample and all record from HSS-1994 as captured and marked. The Bakije database was considered the second sample. (Note, that it makes no difference which source is chosen as “first” and which as “second”; the problem is symmetric.) We then counted the “re-captured” records in the Bakije database. This means that we measured the overlap of the two sources. Under the realistic assumption that both sources were created independently³, we recalled that the share of “re-captured” records in the Bakije database is the same as the share of “captured” records (from HSS-1994) in the whole population and applied Equation 3 to obtain the total number of killed persons.

Samples 1 and 2 (i.e. our sources) are characterised below:

Table A6.1. Overview of the Size and Overlap of Sources used in the Capture-Recapture Estimation of the Overall Total of Persons Killed Within Front Lines in Sarajevo from 10.09.1992 to 10.08.1994

Killed or naturally died Muslims identified in:

DAPS: 4067 (N_1),

Bakije: 4060 (N_2),

Overlap: 2764 (N_{12}).

In order to estimate the total number of Muslims killed or naturally died within front lines in Sarajevo during the given period, the *capture – recapture* method was applied. The estimator of this total was given by the equation:

$$\hat{N} = \frac{N_1 N_2}{N_{12}}$$

Where:

N_1, N_2 : size of the sample 1 and 2, accordingly,

N_{12} : size of the overlap.

Using the data given in Table 1 we obtained the total number of Muslim deaths (killings and natural deaths) equal $\hat{N} = 5973.958$. We also produced a confidence interval for this estimator. The variance of the estimator is given by the equation:

$$\text{Var}(\hat{N}) = \frac{N_1 N_2 (N_1 - N_{12})(N_2 - N_{12})}{N_{12}^2 (N_{12} - 1)}.$$

² What is “large” or “small” is quite subjective, but we will not discuss this case, while our samples are bigger than 4000, which is definitely not small.

Using the data from Table 1 we calculated, that $Var(\hat{N}) = 1320.969$. The interval displayed below contains with the probability of 95% the unknown total number of population:

$$\left(\hat{N} - 1.96\sqrt{Var(\hat{N})}; \hat{N} + 1.96\sqrt{Var(\hat{N})} \right)$$

In our case it means, that:

$$P(5902.722 < N < 6045.195) = 0.95,$$

and the total number of killed or naturally died Muslims in Sarajevo in analysed period of time is (with the probability of 95%) **between 5903 and 6045**.

References:

- Y. Bishop, Fienberg and Holland, *Discrete Multivariate Analysis: Theory and Practice*, Cambridge, Mass.: MIT Press, 1975,
- E. Marks, W. Seltzer, K. Krotki, 1974: *Population Growth Estimation: Handbook of Vital Statistics Measurement*. Quoted after: *Political Killing in Kosovo/Kosova*, March-June 1999.
- Political Killings in Kosova/Kosovo*, March-June 1999 (Washington: ABA-CEELI and AAAS, 2000)
- P. Spiegel, P. Salama, 2000, *War and Mortality in Kosovo, 1998-1999: An Epidemiological Testimony*. *Lancet* 2204 (355).
- Capture-recapture Webpage: <http://www.pitt.edu>

³ The independence of sources means that the fact, that a record is reported in HSS-1994, does not change the chance of being included in the Bakije database, and *vice-versa*.



**DEATH TOLL IN THE SIEGE OF SARAJEVO,
APRIL 1992 TO DECEMBER 1995**

**A STUDY OF MORTALITY BASED ON
EIGHT LARGE DATA SOURCES**

Ewa Tabeau, Jakub Bijak, and Neda Lončarić
Demographic Unit, OTP

18 August 2003

**EXPERT REPORT PREPARED FOR THE CASE OF
SLOBODAN MILOŠEVIĆ – BOSNIA AND HERZEGOVINA
(IT-02-54)**



The subject of this report is the overall death toll of the siege of Sarajevo from April 1992 to December 1995. The numbers presented in this report have been obtained for an area that we call *Sarajevo Six*, which covers the territory of six municipalities of Sarajevo: Centar, Ilidža, Novi Grad, Novo Sarajevo, Stari Grad, and Vogošća. The municipalities were analysed according to the pre-war (as of 1991) territorial division of Bosnia and Herzegovina.

Eight large and reliable sources (i.e. lists of dead) have been used in obtaining the statistics presented in this report:

- The FIS Mortality Database, 1992-1995, established by the Federal Institute for Statistics (FIS) in Sarajevo through a backwards collection of individual death records from vital events registration system in Bosnia and Herzegovina,
- The ICRC and PHR Lists of Missing Persons for Bosnia and Herzegovina, 1992-1995, established by the International Committee of Red Cross (ICRC) and a non-governmental American organisation Physicians for Human Rights (PHR),
- The MAG Mortality Database, 1992-95, established by a non-governmental Bosnian organisation Muslims against Genocide (MAG),
- The HSS-94 Mortality Database, 1992-1994, established at OTP from original survey questionnaires obtained in mid-1994 through interviewing approximately 85,000 households living at that time on the territory within the front lines in Sarajevo, the survey was designed and conducted by the Research Institute for War Crimes and International Law in Sarajevo,
- The Bakije List of death records, 1992-1995, established by the Bakije Funeral Home in Sarajevo, the largest and oldest Muslim funeral home in the city,
- The ABH List of Fallen Soldiers, 1992-95, obtained from the Ministry of Defence of the Federation of Bosnia and Herzegovina,
- The VRS List of Fallen Soldiers, 1992-95, obtained from the Ministry of Defence of Republika Srpska,
- The HVO List of Fallen Soldiers, 1992-95, obtained from the Ministry of Defence of the Federation of Bosnia and Herzegovina,

In addition to the eight sources on mortality, we also used the 1991 population census for Bosnia and Herzegovina. The census served as a reference for all death records listed in our mortality sources and as a base for matching all death records together, merging the sources, and establishing one large list of unique death records related to the siege of Sarajevo.

As regarding the method of analysis, individual death records relevant to the siege of Sarajevo were extracted from each mortality source and merged together. A long list of all relevant records was made. As the mortality sources do overlap with one another, the list of merged sources included duplicated records. The duplicated records were eliminated through studying the matches of death records with the census records of the same persons. If a given person included in the census was linked with his/her death record reported in more than one mortality source, it was clear that only one death record could be included in the list of merged sources. All duplicated records were therefore deleted, and the record reported in the most reliable mortality source remained on the list of merged sources. The overview of overlapping records also helped improve the completeness and the quality of records.

Before the analysis started, we made an assessment of the sources reporting civilians and concluded that the rank order of the sources from the most to the least informative and reliable is the following: FIS, ICRC-PHR, MAG, HSS-94, Bakije. The lists of fallen soldiers had priority above any other source. Note that establishing the hierarchy of sources had nothing to do with their overall quality, which is relatively good for every source. The hierarchy was mainly needed for elimination of duplicates. For example, if one the same death was reported in all five sources, the most reliable record (i.e. FIS record) remained in our database and all other records were deleted.

All sources and methods are discussed more extensively in the Annex.

Below, in Tables 1a and 1b, we present the key statistics on the death toll of the siege of Sarajevo.

Table 1a.

Key Statistics of the Siege of Sarajevo, 1992-1995
Minimum Numbers - Linked Records

Death Categories	Count	Percent
Soldiers	3,686	24.1
Civilians, war-related	4,015	26.2
Civilians, not-related	6,715	43.9
Civilians, other deaths	893	5.8
Total	15,309	100.0

Note:

Average Matching Rate: 0.766
Correction Factor: 1.234

Table 1b.

Key Statistics of the Siege of Sarajevo, 1992-1995
Minimum Numbers - Corrected Linked Records

Death Categories	Count	Percent
Soldiers	4,548	24.1
Civilians, war-related	4,954	26.2
Civilians, not-related	8,285	43.9
Civilians, other deaths	1,102	5.8
Total	18,888	100.0

The final estimated mortality statistics of the siege are presented in Table 1b, while Table 1a serves merely as a basis for understanding how the final numbers were obtained. Table 1 shows only the records linked with the 1991 census. Figures in Table 1b are adjusted for the incomplete matching rate (see further in the report).

According to Table 1b, the estimated overall number of deaths in the area of *Sarajevo Six* from April 1992 to December of 1995 is 18,888. This number includes four death categories: war-related deaths of civilians (4,954), war-related deaths of soldiers (4,548), deaths of civilians that occurred as natural and we consider them not related to war (8,285), and a number of deaths of civilians, which could not be classified as war-related or war-unrelated (1,102). In total, we estimated that there were 9,502 direct casualties of the siege (civilians and soldiers: 4,954 and 4,548).

The overall number of deaths in Sarajevo Six in April 1992-December 1995 (18,888), and the number of siege casualties (9,502), were obtained *starting* from a list of *all possibly relevant records*, that contained 43,258 entries (among which duplicates, see Annex, Summary of Sources). We made this list by putting together all possibly relevant records reported in any of the five sources: FIS, ICRC-PHR, MAG, HSS-94 and Bakije. By a possibly relevant record we understood a death record reported for the Sarajevo Six area and the period from January 1992 to December 1995, as well as records with unknown month of death. Including a broader reporting period (the war started in April 1992), was dictated by the fact that many deaths before April 1992 resulted from incidents related to the later conflict, and we wanted to make an assessment of these deaths as well. The records reported as of January-March 1992 or with unknown month of death in 1992 are however *excluded* from Table 1b.

Of the 43,258 deaths, 33,548 records have been matched with the census, and the resulting average matching rate was 76.6 percent. Of the 33,548 matched records (possibly relevant but including duplicates), 15,309 records have been identified as *unique records* relevant to the siege area (Sarajevo Six) and siege period (April 1992 to December 1995). Table 1a shows the distribution of the 15,309 records by the type of death category. The Section "Summary of Sources" in Annex contains the year-and-month of death distribution for each death category.

Table 1a contains, therefore, statistics obtained from the list of merged sources after the elimination of duplicates. Table 1a contains *only* linked records, and leaves the unlinked records aside. According to the average matching rate of mortality sources with the 1991 census, which equals 76.6%, approximately 23.4% of records are not included in Table 1a. In order to compensate for the related loss of information, we increased the numbers from Table 1a by 23.4% and obtained the final statistics reported in Table 1b, which covers all available unique death records identified in our sources. It is

also worth noting that this number does not include the doubtful cases of possible survivors, i.e. persons both reported as war casualties and later reported for example in post-war voter registers.

Note that in order to eliminate duplicates we had to link mortality sources with the 1991 census. Searching for duplicates only in mortality lists would not be optimal, as the information about individuals is limited in these sources to their death records, which are sometimes incomplete or have other deficiencies. Census records are much more extensive and enable us to compare many more items - personal characteristics of the deceased. Moreover, only matching records against the census makes it possible to study the overlap of sources, which is essential for checking the consistency of records between the sources. The matching rate was, however, lower than 100%, due to spelling mistakes and other data deficiencies (see Annex: Methods of Analysis). On average we were able to match with the 1991 census approximately 76.6% of records in every mortality source, the remaining 23.4% was left unlinked. The correction factor applied in adjusting the figures from Table 1a was therefore equal 1,234.

The figures in Table 1b are the minimum (“at least”) numbers, obtained on the basis of five sources, with three additional sources (three lists of fallen soldiers) used to distinguish between civilians and militaries. Additional sources would increase these numbers, but likely not considerably. The coverage of our sources is relatively good and every new source would bring relatively little improvement in terms of new unique records.

Finally, the list of war-related casualties of the Sarajevo siege is the longest among the lists ever presented for the Bosnian war before the ICTY. It contains 9,502 individual names, and is still incomplete. Note that the list for Srebrenica, the largest reliably identified incident so far, contains 7,475 names.

ANNEX

1. Overview of Sources
2. Methods of Analysis

ANNEX

1. Overview of Sources

Mortality Database of the Federal Institute for Statistics (FIS), 1992-95

The data on war-time mortality, coming from the regular life events registration (known also as vital statistics), from the territories under the control of the FBiH government army and of HVO, was collected and computerised by the Federal Institute for Statistics in a project run at FIS in Sarajevo in the first half of 2002. In the framework of this project all existing death records from the period 1992–1995 were collected from local vital events offices and transferred to FIS in Sarajevo, where and a group of data entry clerks computerised the material under the supervision of the head of Population Statistics Division of FIS. A professional Access-format database is the outcome of this project.

The original death forms, (i.e. questionnaires that are compulsorily completed at the time of death), contained an extensive information on a person's particulars (name, date and municipality of birth, sometimes full *matični broj*, municipality of residence, ethnicity, etc.), as well as date, place (settlement and municipality), circumstances and cause of death. The data was entered from the original paper forms (death reporting forms), of which many were accompanied by death certificates, what enabled to provide information on a medical cause of death¹. Originally, the collection consisted of 74,539 records. During the processes of data preparation and matching, 137 duplicates were deleted (mostly using FN, IniFaN, LN and DoB variables) in addition to those removed already during the computerisation project at FIS (2,693), so the data table was left with 74,402 unique records. Note, that although several other (not many, though) records may be still duplicated, they have been not excluded from the collection due to some remaining level of uncertainty.

The number of records, relevant to the Sarajevo Six area in 1992–1995 (from January 1992 to December 1995), reported in the FIS database is 15,547, of which 12,724 have been matched with the 1991 census, resulting in the matching rate of 81.8 percent.

ICRC and PHR Lists of Missing Persons

The International Committee of the Red Cross (ICRC) does an impressive effort during armed conflicts and other crises to reunite persons with their families. For this purpose they publish lists of persons that are reported missing to the ICRC. The ICRC lists contain the following items: personal particulars of those missing, date and place of disappearance, age at disappearance, particulars of the reporting person etc. The ICRC list is primarily a list of missing and not dead people. It is generally assumed, however, that most (if not all) of these people are dead. The ICRC itself also expressed this opinion².

The work of ICRC in Bosnia and Herzegovina has so far resulted in four editions of their list of missing persons (4th edition published in 1998) and an addendum containing about 1,000 additional entries (published in 2000). In the third and fourth editions they have also included a section on persons who “are known to be dead, but whose mortal remains are yet to be recovered by their families”.

The Consolidated ICRC-PHR list of missing persons is based on the fourth edition of the ICRC list from 1998 and data from an American non-governmental organisation Physicians for Human Rights (PHR). The PHR did a similar type of work as ICRC. In Bosnia they were active in Srebrenica region

¹ Coding of the 10th Revision of the International Classification of Diseases (ICD-10) was applied, a current WHO standard for the purposes of statistical reporting of death events.

² From the introduction to “*Missing persons on the territory of Bosnia and Herzegovina*”, Fourth edition issued on 30.06.1998 – by alphabetical order, International Committee of the Red Cross. Place of publication not given (probably Sarajevo).

and produced their list of missing for this region. Helge Brunborg and Henrik Urdal have merged these two data sources in order to produce the “Report on the number of missing and dead from Srebrenica” presented in the case of KRSTIĆ. The ICRC-PHR table created by Brunborg and Urdal contains 19,692 records, where 12,423 records are unique to the ICRC list, 6,980 records are found on both lists and 289 records are found on the PHR list only.

In the year 2002, we up-dated the 1998 ICRC list by appending the records reported in the Addendum to the 4th edition of the ICRC list, by downloading files from the ICRC website on 18.04.2002. 616 HTML files containing a list of missing persons in an alphabetic order were received. These lists were converted to Excel format and imported to Access database. The up-dated ICRC-PHR database includes 20,612 records.

The number of records, relevant to the Sarajevo Six area in 1992–1995 (from the period from January 1992 to December 1995), reported in the up-dated ICRC-PHR lists is 761, of which 570 have been matched with the 1991 census, resulting in the matching rate of 74.9 percent.

Mortality Database of Muslims against Genocide

MAG is the acronym for "The Association of Muslims Against Genocide", a non-governmental organisation operating in Sarajevo. MAG collected death records (including personal particulars, such as names, father's name, date of birth etc., and death characteristics, i.e. date, place, and cause of death) on persons killed during the war in BiH, initially in Sarajevo but later in other areas as well. Volunteers collected data from a variety of sources, such as relatives, neighbours, hospitals, ambulances, newspapers, and community contacts all over the country. Some 90 % of the information came from eyewitnesses. Each death is recorded on a separate form and entered into a database. The same deaths may be reported by different persons and may also be mentioned in newspapers, hospital records, etc. Thus, there are often several completed forms for the same death. There was, however, a good control of duplicates in the MAG database. Deaths of all ethnic groups are collected but it is not unlikely that there is an under-registration of deaths among non-Muslims. The procedures for collecting, entering and checking seem to be convincing and the comparisons we have made with other sources indicate that the MAG data are of a very good quality. Until 2002 about 40,000 forms have been entered, covering 34,378 victims in Bosnia. Approximately 9,500 records report one of the ten municipalities³ belonging to the (pre-war) Sarajevo area as the place of death.

The number of records, relevant to the Sarajevo Six area and from the period from January 1992 to December 1995, reported in the MAG database is 8,173, of which 6,616 have been matched with the 1991 census, resulting in the matching rate of 80.9 percent.

The Households Survey Sarajevo - 1994 (HSS-94)

The Households Survey on the Free Territory of Sarajevo in 1994 was conducted during the war in the spring and summer of 1994 (most of interviews were completed in May and June 1994), in these parts of the besieged Bosnian capital, which were under control of the BiH government army (the territory within front lines at mid-1994). The survey was designed, co-ordinated and executed by the Sarajevo Research Institute for War Crimes and International Law (hereafter *the Institute*), led by Prof. Smil Čekić, in co-operation with the University of Sarajevo, statistical authorities of Sarajevo, and local communities (*mjesne zajednice*, *MZ*) from the survey area. The interviews were conducted via the local communities located within the front lines in Sarajevo. Practically only parts of six municipalities: Centar, Novi Grad, Stari Grad, Novo Sarajevo, Ilidža and Vogošća, were covered by the survey. The questionnaires used in the survey are related to households and households members (i.e. persons); i.e. one questionnaire contains information about one household. The most essential items covered in the survey include killed, wounded, and naturally died persons. Many more items

³ The ten municipalities of the pre-war Sarajevo area are the following: Centar, Hadžići, Ilidža, Ilijaš, Novi Grad, Novo Sarajevo, Stari Grad, Pale, Trnovo and Vogošća.

(such as household size at the interview, displacements, refugees, living conditions, detained and missing persons, live and stillbirths in the household since the beginning of 1992 etc.) are available as well. According to the authors of HSS-1994, approximately 85,000 households living within the front lines in Sarajevo at mid-1994 participated in the survey. An assumption, that each household consisted of 4 members⁴, gives a survey population of approximately 340,000 individuals, which is 75% of the 1991 census population of the Sarajevo Six.

The authors of the survey have never computerised the information reported in the questionnaires, for they lacked the necessary resources. Thus, losses of the Sarajevo population have never been estimated and presented to a broad audience.

The survey material was requested by OTP to produce statistics about population losses in Sarajevo. We concentrated on three most significant events: killing, natural death and wounding, which brought us to establishing a database of approximately 40,000 records (all three types of events). The records of the population exposed to risk (in total some 340,000 individuals) have not been computerised, as processing such a large quantity of information would be too time consuming and too costly. The data processing project was conducted at OTP.

The total number of deaths reported in HSS-94 was 12,860 (both killings and natural deaths jointly), of which 7,232 deaths were found relevant to the within-front-lines area of Sarajevo Six and the period from September 1992 to December 1995 (see GALIĆ report). The overall matching rate for HSS-94 was 81.3 percent (for both deaths and woundings), for deaths alone the matching rate was lower and equalled 73 % (9,387 matched out of 12,860 deaths of both killings and natural causes jointly).

More details about the HSS-94 are available from E. Tabeau, M. Żółtkowski and J. Bijak, (2002) *“Population Losses in the “Siege” of Sarajevo, 10 September 1992 to 10 August 199”* (hereafter called the GALIĆ report).

Mortality Database of Bakije Funeral Home

This source contains business records collected by the Bakije Funeral Home from Sarajevo during the years 1992-95. The Bakije Funeral Home is the largest and oldest (since 1923) Muslim funeral home in Sarajevo. They bury Muslims. Other funeral homes in Sarajevo bury Croats, Serbs or all ethnic groups. During the war, Bakije operated in the area within the front lines in Sarajevo, most likely in the municipalities of Centar, Novi Grad, Novo Sarajevo, and Stari Grad. They buried persons reported dead by their families, or collected bodies from the area of conflict.

The (Access) Bakije database includes three data tables: DZENAZE (FUNERALS), LICA (PERSONS; the reporting household members of the deceased), and PORODI(CE) (FAMILIES of the deceased; represented by family heads). DZENAZE and LICA contain personal details (names, fathers' name, date and place of birth, date of death, place of burial, sex and civilian-soldier divide), PORODI(CE) holds details related to households. Dates with unknown day and/or month are reported as 01/01/*. Causes of death and places of death are lacking in the Bakije database.

The number of records (i.e. persons) in this database is 12,867, of which 3,517 are marked with letter 'b' (=borac; i.e. soldier), and 9,350 records with letter 'c' (=civilian). These records cover the period from January 1992 to August 1996. The number of records for 1996 is much less than in the respective period in 1992-1995. Generally, we have 11,545 records from the period from January 1992 to

⁴ The assumption of the four-person household size is not fully consistent with the pre-war 1991 household size (3.2 persons per household in the Sarajevo Six). We increased this number in order to adjust it for the large number of displaced persons and refugees living in Sarajevo, in many cases together with their relatives or friends, at mid-1994. Although for 1994 we were unable to rely on reliable statistics with this regard, for 1998 we can quote the UNHCR (United Nations High Commissioner for Refugees) figure of DPs (displaced persons) and refugees living still in the Sarajevo Six, which is 72,372 persons.

December 1995 (3,414 soldiers and 8,132 civilians). The matching rate for those reported in the period is 72.4 % (8,359 matched out of 11,545).

The List of Fallen Soldiers of ABiH

Seven diskettes with original MS Excel spreadsheets containing lists of the (government-controlled, i.e. mainly Bosniak) Army of Bosnia and Herzegovina (*Armija Bosne i Hercegovine*, hereafter: ABiH) soldiers and other military personnel killed during the 1992-1995 conflict were obtained from the Federal Ministry of Defence on 10 May 2001. Originally, the collection consisted of 28,285 records. The original files, containing information on a person's name, date and municipality of birth, full *matični broj*, municipality of residence, military evidence, district and type of a unit, as well as date and cause of death (no place of death available), were merged and converted into the MS Access format. During the process of data preparation, 258 duplicates were deleted, so the data table was left with 28,027 unique records.

Altogether, 25,255 records were matched so far, which makes about 90,1% of the total of 28,027 persons found in the ABiH records of killed soldiers and other military personnel. Such a good outcome was achieved due to very good data quality, and mainly to the consistent presence of the personal ID number, the *JMBG*.

The List of Fallen Soldiers of HVO

Ten diskettes with original MS Excel spreadsheets and MS Word documents containing lists of the Bosnian Croat army of the Croatian Defence Council (*Hrvatsko Vijeće Odbrane*, HVO) soldiers and other military personnel killed during the 1992-1995 conflict, as well as 17 pages of the list on paper for the Žepče region, were obtained from the Federal Ministry of Defence in May 2002. The Žepče list was computerised and added to the folder with original files. The original files, containing information on a person's name, date and municipality of birth, full *matični broj*, municipality of residence, as well as date and cause of death (no place of death available), were merged and converted into the MS Access format. Originally, the collection consisted of 7,085 records. During the process of data preparation, 396 duplicates were deleted, so the data table was left with 6,689 likely unique records.

Altogether, 5,904 records have been matched, which makes about 88,3% of the total of 6,689 persons found in the HVO records of killed soldiers and other military personnel. It is also worth stressing that in the database includes some records with post-war date of death, but these sometimes have cause of death listed as “consequences of wounding” etc. Summing up, the HVO list is less reliable than the ABH list of fallen soldiers.

The List of Fallen Soldiers of VRS

The original text file containing a list of Republika Srpska Army (*Vojska Republike Srpske*, hereafter: VRS) soldiers and other military personnel killed during the 1992-1995 conflict was obtained from the RS Ministry of Defence on 12 December 2000. Originally, the collection consisted of 14,251 records. The original file, containing information on a person's name, date and place of birth, (sometimes) *matični broj*, place of residence as well as date and cause of death (no place of death available), was converted into the MS Access format. During the process of data preparation, 14 duplicates were deleted, so the data table was left with 14,237 records that seem to be unique. Data quality is good.

Altogether, 11,166 records have been matched with the census, which makes about 78,4% of the VRS collection.

Summary of Sources

An overview of records reported in the period from January 1992 to December 1995 in 5 sources (FIS, ICRC-PHR, MAG, HSS-94, and Bakije) is given below. The number of all records relevant to the Sarajevo Six area and reported on five lists is 43,258, of which 33,548 have been matched with the 1991 census resulting in the average matching rate of 76.6 percent. The 43,258 records include duplicates, which have been eliminated through links with the census (see next section). The list of unique records is much shorter and contains 16,247 records covering the period from *January* 1992 to December 1995 (all matched), of which 15,309 records cover the period from *April* 1992 to December 1995. After correcting the latter number of 15,309 by the average matching rate, the new total number of deaths in Sarajevo Six area from April 1992 to December 1995 is 18,888 unique records. This number covers all categories of deaths: war-related civilians, war-related soldiers, civilians not related to war, and other deaths.

Table A1. Overview of Death Records Relevant to Sarajevo Six Area, January 1992- December 1995 By Source and Matching Status

Merged Sources	All Relevant	Matched	Rate
FIS	15,547	12,724	81.8
ICRC-PHR	761	570	74.9
MAG	8,173	6,616	80.9
HSS-94	7,232	5,279	73.0
Bakije	11,545	8,359	72.4
Total 5 Sources	43,258	33,548	76.6

Note that the three lists of fallen soldiers do not include the item “place of death”. We therefore only used these lists as reference regarding the status (civilian versus soldier) for the casualties reported in the five remaining sources. The records reported on the lists of fallen soldiers and at the same time at any of the lists based on FIS, ICRC-PHR, MAG, HSS-94, or Bakije, have been included in the analysis as soldiers, all remaining records have been taken as civilians.

Table A2. Summary of the Overlap of Sources Reporting Deaths for Sarajevo Six Area from January 1992 to December 1995, (Matched Records Only)

Overlapping Sources	Records
5 sources	3
4 sources	2,130
3 sources	3,627
2 sources	5,428
unique FIS	3,503
unique ICRC	70
unique MAG	343
unique HSS-94	186
unique Bakije	957
Total	16,247

In Table A2, we show the overlap of sources after elimination of duplicates. In Table A2 the 16,247 unique records obtained for Sarajevo Six area from January 1992 to December 1995 are distributed

according to the number of sources where the records were reported. We can see that the vast majority of records were reported in more than one source, which increases the reliability of reported deaths.

In the following four tables (A3 to A6), we show the distribution of the 16,247 death records (covering the period from January 1992 to December 1995) according to time of death (year and month). Each table is related to one death category (war-related civilians, war-related soldiers, war-unrelated civilians, and other deaths). It is shown in these tables how many records are related to the months from January 1992 to March 1992, or have an unknown month of death in 1992. These records had been excluded from statistics referring to the war period covering the time span from April 1992 to December 1995. After excluding the irrelevant dates of death, the overall number of deaths in the period from April 1992 to December 1995 became 15,309. This number is reported in the main text in Table 1a.

Table A3. Fallen Soldiers by Year and Month of Death (MoD), Sarajevo Six Area, 1992-1995

MoD	1992	1993	1994	1995	Total
00	1				1
01	4	127	90	10	231
02	7	128	36	7	178
03	5	135	23	17	180
04	54	70	19	14	157
05	246	87	17	37	387
06	415	91	10	101	617
07	175	210	12	51	448
08	273	53	16	36	378
09	244	46	20	9	319
10	137	64	12	17	230
11	97	42	16	6	161
12	309	97	8	2	416
Total	1967	1150	279	307	3703

Included in analysis: 3686 records

Excluded from analysis: 17 records (1992: 00, 01, 02, 03)

Table A4. War-Related Deaths of Civilians by Year and Month of Death (MoD), Sarajevo Six Area, 1992-1995

MoD	1992	1993	1994	1995	Total
00	8	2	1		11
01	7	144	110	10	271
02	6	115	91	6	218
03	7	120	11	12	150
04	58	76	15	21	170
05	293	107	22	45	467
06	525	103	15	76	719
07	227	181	9	80	497
08	297	60	14	66	437
09	241	41	19	11	312
10	227	68	11	5	311
11	106	66	19	9	200
12	174	85	12	9	280
Total	2176	1168	349	350	4043

Included in analysis: 4,015 records

Excluded from analysis: 28 records (1992: 00, 01, 02, 03)

Table A5. War-Unrelated Deaths of Civilians by Year and Month of Death (MoD), Sarajevo Six Area, 1992-1995

MoD	1992	1993	1994	1995	Total
01	301	247	145	159	852
02	292	186	130	156	764
03	243	189	147	135	714
04	150	124	130	140	544
05	182	126	149	154	611
06	185	119	135	135	574
07	183	112	104	161	560
08	179	114	104	141	538
09	167	108	91	107	473
10	211	137	98	156	602
11	174	153	128	139	594
12	251	158	138	178	725
Total	2518	1773	1499	1761	7551

Included in analysis: 6,715 records

Excluded from analysis: 836 records (1992: 00, 01, 02, 03)

Table A6. Other Deaths of Civilians by Year and Month of Death, Sarajevo Six Area, 1992-1995

MoD	1992	1993	1994	1995	Total
01	16	40	17	25	98
02	16	23	7	40	86
03	25	20	4	27	76
04	27	17	10	28	82
05	14	12	6	21	53
06	21	7	30	24	82
07	12	12	28	25	77
08	21	9	15	14	59
09	25	2	23	25	75
10	26	9	30	23	88
11	29	10	25	21	85
12	22	10	43	14	89
Total	254	171	238	287	950

Included in analysis: 893 records

Excluded from analysis: 57 records (1992: 00, 01, 02, 03)

2. Methods of Analysis

The analysis discussed in this report consisted of the following steps:

- mortality sources to be used had been identified and reviewed (i.e. checked, cleaned, structured, duplicates removed),

- mortality sources had been matched with the 1991 population census and an overview of links between the sources had been made,
- all records *possibly relevant* to the siege had been extracted from all mortality sources according to the membership in the Sarajevo Six area and having the year of death reported as of between 1992 and 1995 (any month of death),
- a list of possibly relevant records had been made,
- duplicates had been removed through analysing the overview of links between the sources,
- the status of any record shown to belong to at least one list of fallen soldiers had been marked as “soldier”, all remaining records as “civilians”,
- the list of records relevant to the siege of Sarajevo (belonging to the Sarajevo Six area and having date of death between April 1992 and December 1995) had been extracted from the list of all possibly relevant records with eliminated duplicates,
- basic demographic distributions of the records on the list of records relevant to the siege had been made in order to check the correctness of final figures.

The essential step of our analysis was matching death records with the 1991 population census. We summarise this step more specifically below.

Matching

The essential term in matching is a record of information. One record in a given data set describes one individual and is a collection of his/her characteristics on a number of items, such as for example the personal identification number (JMBG), first name, family name, father’s name, date of birth etc.

To link two individual data sets, we employed a multi-step procedure. Steps consisted of comparisons between the two sets of related individual-level data records (such as the population census and a given mortality source). Slightly differing criteria were used in every next step and the population available for next round of matching shrank after each step. In other words, once a number of records had been matched in two related data sets, these records were first marked and then excluded from the next round of matching. In the new step, the matching criterion applied was modified in order to capture new matches. All matched records were always marked in every round of matching, such that in the end we could easily identify them in the database and use them in querying. For less strict matching criteria, manual checks were additionally performed on the matched records, in order to ensure the good quality and reliability of the whole matching process.

More details about matching sources with the population census can be obtained from Annex C of the expert report: *Ethnic Composition, Internally Displaced Persons and Refugees from 47 Municipalities of Bosnia and Herzegovina, 1991 to 1997-98*, by E. Tabeau, M. Żółtkowski, J. Bijak, and A. Hetland, prepared for the case of SLOBODAN MILOŠEVIĆ – BOSNIA AND HERZEGOVINA (IT-02-54).



**KILLED AND WOUNDED PERSONS
FROM THE SIEGE¹ OF SARAJEVO:
AUGUST 1994 TO NOVEMBER 1995**

Ewa Tabeau and Arve Hetland
Demographic Unit, Office of the Prosecutor, ICTY

19 March 2007

**EXPERT REPORT FOR THE DRAGOMIR
MILOŠEVIĆ CASE (IT-98-29/1)**



EXECUTIVE SUMMARY

The major objective of this report is producing statistics on individuals who had been killed or wounded during the 1992-95 siege of Sarajevo, and in particular from August 1994 to November 1995, which period is consistent with the ICTY indictment in the Dragomir Milošević case. We have collected the best available sources and applied the most relevant up-to-date experience in conflict analysis in order to come up with reliable and complete numbers. The report belongs to the research area of conflict statistics which is not necessarily the same as the official statistics area. Research on demographic consequences of conflict has received a separate place in social sciences as discussed by, for example, Keely et al (2001), National Research Council (2002), or Brunborg et al. (2007). The siege of Sarajevo is a human emergency situation and conventional sources and methods cannot be applied to this situation.

The current report is based on a number of extensive, high quality sources which contain information about killed persons and which have been merged together and analyzed jointly as one integrated master list of the victims of the siege. The following sources were used in the analysis of killed persons:

- Mortality databases, 1992-95, of the Federation of Bosnia and Herzegovina (FBH) and Republika Srpska (RS) statistical authority,
- International Commission of the Red Cross (ICRC) list of missing persons for Bosnia (2005 version),
- Household Survey Sarajevo, 1994, (HHS-94),
- Records of the Bakije Funeral Home, 1992-95,
- Lists of fallen soldiers and other military personnel from the three armies engaged in the 1992-95 conflict in Bosnia and Herzegovina (ABIH, HVO, VRS);

Details about the sources on killed persons are discussed in Section 2.1 of the report. Two major sources used here, the FBH and RS databases, were ordered by the OTP from the statistical authorities of the two political entities in Bosnia, Federation of Bosnia and Herzegovina and Republika Srpska, resulting in the establishment of two large databases on natural and war-related deaths provided to the OTP in, respectively, 2002 and 2005. Thanks to these two large databases, and additionally a few smaller sources, an exceptionally complete picture of conflict casualties could be made and is presented in this report.

The following sources were used when analyzing wounded persons:

- Hospital records of Sarajevo (Koševo, State and Dobrinja hospitals; records collected from hospital admission forms and first aid centers, and computerized at the OTP in 1998);
- Household Survey Sarajevo, 1994, (HHS-94).

Regarding wounded persons, our major source for the analysis of the wounded in August 1994 to November 1995 was the Sarajevo Hospital Records (HR). Its details are discussed in Section 2.2 of this report. The source, although certainly reliable and well documented, had one disadvantage, namely that it only covered hospitalized patients. In addition, it only covered civilians. Thus, based on the HR data, a rather limited analysis could be completed. However, by combining the HR data with data from the large-scale Household Survey Sarajevo (1994) we managed to produce a forecast of a more complete number of wounded for the indictment period, a forecast that covered both hospitalized and non-hospitalized civilians. The forecast is of excellent quality, thus, the produced number should be seen as very reliable.

As noted in Section 2.3 of this report (“Deficiencies of Sources”), the sources used for this report are large, incompleteness of their coverage is relatively low, and can be seen as reliable and well documented. All this is rather exceptional in the area of measurement of victimization and conflict statistics. This does not mean, however, that all information in the sources is perfect and that no deficiencies exist. The level of deficiencies is nevertheless acceptable.

Many data problems, such as e.g. missing, inconsistent or otherwise deficient data items, have been improved through comparisons with other sources, such as, for example, with the 1991 Population Census for Bosnia and Herzegovina that we also used in this project. Secondly, data cleaning, standardization and re-coding was done to make the databases consistent and comparable. Finally, the most deficient portions of the original material have been excluded from the analysis, which implies that the statistics presented here are rather conservative (i.e. low).

The method applied in our analysis of killed persons is discussed in detail in Section 2.2. The following summarizes in brief how we proceeded in data processing:

- We matched all sources with the 1991 Population Census through personal characteristics of the individuals listed. The purpose of the matching was a validation of records and improving data quality.
- We merged the relevant sources, (i.e. all except the military lists), with each other in one integrated master list. Only selected essential data items were taken from each source for the merge.
- We (first) established a Bosnia-wide deaths database, (187,260 entries), composed of records from five sources: FBH database, RS database, ICRC missing, HHS-94 and Bakije.
- Secondly, we extracted all records pertaining to Sarajevo (all ten municipalities) and the period from January 1992 to December 1995. In total, 40,180 records were identified.
- These 40,180 records were placed into a separate database, (the Sarajevo (deaths) database). The Sarajevo database contained war-related records and also records of natural and unknown deaths.
- The removal of the overlapping records was done in this particular database. Some cleaning of the raw material was conducted as well. The resulting data set relevant to the analysis presented in this report contained 26,466 records (without duplicates and without overlap of sources). We used this data in producing our final statistics for the case of Dragomir Milošević.

The major findings on killed civilians produced in our project and discussed in this report are the following (all statistics are given for six urban municipalities of Sarajevo and the period from August 1994 to November 1995, unless stated otherwise):

- The overall number of killed civilians who died in conflict incidents that occurred in the smaller reference area of six urban municipalities of Sarajevo, (i.e. Sarajevo Six), was at least 449 persons (Table 9a), but more likely a minimum of 659 deaths (Table 9b). The former of these numbers should be seen as an absolute minimum and the latter as a more likely minimum. None of them are complete.
- The overall number of killed civilians from the broader reference area of ten municipalities of Sarajevo, (i.e. Sarajevo Ten), was at least 631 individuals (Table 8a), but more likely it was (a minimum of) 915 deaths (Table 8b).
- The medical causes of death of killed civilians most frequently included the following; (Table 12):
 - open wounds of single or multiple body regions
 - crushing injuries of single or multiple body regions
 - fractures of single or multiple body regions
 - traumatic amputations

These causes confirm the violent war-related nature and dramatic circumstances of these deaths.

- Records of children and the elderly were often seen among killed civilians. About 29% of the killed were at age below 18 or older than 64 years, whereas 71% were at ages 18 to 64.
 - In the age group of 0-12 years, at least 22 children were noted (Table 13a), but more likely a minimum of 32 (Table 13b);
 - In the age group of 13-17 years, we found records of at least 29 children (Table 13a), but more likely a minimum of 43 (Table 13b);
 - In the age group of 65 or more years, at least 80 civilians were counted (Table 13a), but more likely a minimum of 117 (Table 13b);

- Women were found among killed civilians as well. Records of at least 160 of them (Table 13a), but more likely a minimum of 235, (Table 13b), were documented in our databases. In general, 36% of killed civilians were women and 64% of them were men.
- 65% of killed civilians were ethnic Muslims (at least 290 to 426), 12% of the victims were of Serb ethnicity (a minimum of 54 to 79), and about 7% were ethnic Croats (at least 29 to 43; Table 14a and 14b).
- The municipalities with the highest numbers of the killing incidents were the following (from the highest down; Table 15):
 - Centar, Ilidža, Novi Grad and Novo Sarajevo;
 - Stari Grad and Vogošća showed lower numbers of killed;
- The time pattern of killing incidents showed four separate episodes of the siege (Figures 7 and 8):
 - Two periods of increased military activity comprised August–December 1994 (Phase III) and March–August 1995 (Phase V). (Hereafter: high episodes). Out of the two, Phase V was much more intense and involved heavy combat actions that resulted in high numbers of shelling victims seen in data on wounded civilians (Figure 23). Both high episodes were characterized by frequent sniping incidents as seen in the data on wounded (Figure 23).
 - Two quieter periods included January–February 1994 (Phase IV) and September–November 1995 (Phase VI). (Hereafter: low episodes). Civilians were killed in the low episodes as well.
- Generally, the ratios of civilian-to-military casualties were higher in the low periods (from 0.9 to 11) than in the high periods (from 0.5 to 1.8; Table 17 and Figure 11).
- In the low periods of Phase IV and Phase VI, the ratio of civilians-to-military (the C:S ratios) were usually about 2 to 1, but also 11 to 1 in January 1995 (Table 17 and Figure 11).
- In the more active episodes of the siege (Phase III and in particular in Phase V), the C:S ratios were inversely proportional to the overall number of killed. This means during the more intense combat months the ratios dropped (as in June 1995 to 0.5:1) and increased immediately when the combat slowed down (e.g. as in August 1995 to 1.7:1; Table 17 and Figure 11).
- The fact that the losses of civilians were so high in the low episodes gave us an incentive to very carefully check all quieter periods of the siege. In order to do so, a detailed study was completed of killed during, in particular, the low (versus high) days of the siege, (a low day being with less than 3 casualties per day, and a high day with 3 or more casualties per day).
- The study confirmed that the highest ratios of civilian-to-military killings were obtained for the low days (1.6:1) in both quiet and active siege episodes (Table 18).
- The high days, especially those in the more active episodes, were characterized by relatively lower ratios of civilian-to-military casualties (0.9:1; Table 18).
- If next to the type of day (high-low), also the type of episode (high-low) is taken into account, it becomes clear the civilians-to-soldiers ratios are lower than one (0.9:1) in only two cases: in the high days from Phase III and Phase V (the high episodes). All other cases of low or high days in any episode have the C:S ratios higher than 1, most markedly in Phase IV (3.6:1 in low days and 3.0:1 in high days; Table 20).
- In Table 21 we also specifically analyzed 60 days when 3 or more persons were killed per day in any of the six municipalities of Sarajevo Six and concluded that even on these high days when the losses of civilians remained in a lower proportion to the losses of soldiers than on the low days, deaths of civilians were frequent and not always directly linked to the combat situations. In particular, the correlation between the time series of monthly observation on violent deaths of civilians and of soldiers as reported for the high days only in Table 21 was relatively low and equalled 0.206.
- The above findings suggest that the civilian population of Sarajevo had systematically been the target for military attacks disregarding the actual presence of heavy combat activities. This also indicates that a targeted terror campaign against civilians likely continued for most of the period from August 1994 to November 1995.

Regarding wounded persons our major findings are as follows:

- Our best source on wounded persons in the period of August 1994 to November 1995 comprised the Hospital Records from the three major hospitals in Sarajevo, (Koševo, State, and Dobrinja). The source was incomplete, as the records of two temporary war hospitals and emergency help stations were not covered. There were also other reasons for the Hospital Records being incomplete, such as, for example, that most likely some records were never taken by hospital authorities, some others were destroyed during the siege, and some were skipped during the selection of the material from the hospital archives.
- In addition to the above, the Sarajevo Hospital Records covered only civilian victims, (i.e. women at any age and men below 18 or above 60 years of age), who were hospitalized and received treatment for their wounds.
- For the above-mentioned reasons, the Sarajevo Hospital Records should be seen as a sample of all records of wounded persons from the siege.
- The overall total of 3,036 wounded civilians was reported in the Sarajevo Hospital Records database from April 1992 to November 1995 (Table 22). This sample was certainly large enough to use it in this report.
- Based on the Sarajevo Hospital Records, we identified 405 records of wounded civilians that were victims of incidents from the period of August 1994 to November 1995 (Table 22). This total is a minimum number of wounded civilians, (hospitalized cases only), directly related to the indictment of Dragomir Milošević.
- A minimum of 254 persons were wounded by shelling (63%), 77 (19%) by sniping and 70 (17%) by sniping or shelling (Table 22).
- The (monthly) time pattern of wounding obtained from the (minimum) sample of 405 HR cases, (Table 22), was highly consistent with that of killing obtained from the merged sources on killed persons (FBH, RS, ICRC). This conclusion was made based on visual inspection of the two time patterns and on correlation analysis of the two time series (one on wounding and one on killing in August 1994–November 1995).
- The correlation coefficient between the time series on wounded and killed equalled 0.99, (whereas the perfect correlation is expressed by 1), and was statistically significant at an error level of less than 0.001 (Section 5.1; the text following Figure 21).
- This very high correlation suggests that the same mechanism generated the incidents that led to killings and wounding and that most likely the underlying causes of wounding and death were largely the same.
- In order to assess the incompleteness of the minimum number, we compared the Sarajevo Hospital Records with the Household Survey Sarajevo-1994, by studying the overlapping part of the two sources, i.e. the records from April 1992 to July 1994. The HHS-94 was a very broad survey and covered both the hospitalized and non-hospitalized wounding cases in the surveyed population. The surveyed population was large, very close to the complete population which lived within the front lines in Sarajevo by mid-1994.
- Based on this comparison, we estimated that the minimum number of hospitalized civilians (405 cases) comprised about 33% of the overall number of both the hospitalized and non-hospitalized wounded civilians reported in the HHS-94. Thus 67% of wounding cases were not covered by the minimum number (Section 5.2; the text following Table 23).
- In order to specifically estimate the missing part of the minimum number (i.e. the number of non-hospitalized wounded civilians; overall and by causes of wounding), an in-depth analysis of HR and HHS-94 was completed by the means of correlation and regression analysis, using the data from April 1992 to July 1994.
- The correlation analysis confirmed that the similarity between Hospital Records and HHS-94 is enormous. The correlation coefficient was 0.97 for the overall numbers of wounded (reported in HR versus in HHS-94), 0.98 for the numbers of wounded by shelling, and 0.80 for victims of sniping. All coefficients were statistically highly significant (Table 24; Figures 25 to 27).
- Based on the similarities between the HR and HHS-94, a number of regression models were estimated that quantified the relationship between the two sources. All models had a very high fit of the observed data and all parameters were statistically significant (Section 5.3).

Statistically speaking, all these models were excellent and could be used in forecasting the numbers of wounded civilians, (overall and by cause of wounding).

- The forecast of the joint number of wounded civilians, both the hospitalized and the non-hospitalized, victims of conflict incidents from August 1994 to November 1995 was 1,248. The forecast of civilians wounded by shelling was 819, by sniping was 320, and by either sniping or shelling was 51 persons (Table 25).
- The modelling analysis confirmed that the proportion of sniping victims in the monthly totals of wounded was higher in the quieter periods than in the more intense phases of the siege. This proportion was particularly high between August 1994 and February 1995 (Figures 29 and 30).

1. BACKGROUND INFORMATION ABOUT THIS REPORT

This report was requested from the Demographic Unit by the prosecution team of the DRAGOMIR MILOŠEVIĆ case. The subject of this report is statistical analysis of records of individuals killed and/or wounded in the period from August 1994 to November 1995 during the siege of Sarajevo. The analysis covers the area of the siege defined according to two definitions:

- The broad definition covers all ten municipalities of the Sarajevo area: Centar, Hadžići, Ilidža, Ilijaš, Novi Grad, Novo Sarajevo, Pale, Stari Grad, Trnovo, and Vogošća; hereafter: “Sarajevo Ten”; the broad definition is consistent with the administrative area of Sarajevo;
- The narrow definition takes into account only six urban municipalities of Sarajevo: Centar, Ilidža, Novi Grad, Novo Sarajevo, Stari Grad, and Vogošća; hereafter: “Sarajevo Six”; this definition covers the very heart of the Sarajevo area that was most exposed to the attacks of the Army of Republika Srpska (VRS).

For reference purposes, both study areas are shown on the map included in Annex 1. In this report we give statistics following the lines of both definitions, and we even include some contextual information, such as, for example, the overall number of deaths (including natural deaths) in the Sarajevo area in the entire siege period (April 1992 to December 1995) or a few months preceding the siege (since January 1992). The focus of this study is, however, on the minimum numbers of killed and/or wounded persons, that is, on those individuals that can be proven to be killed/wounded in the smallest but most exposed area of the siege, i.e. in Sarajevo Six, in the period from August 1994 to November 1995. This minimum population of the affected persons is shown in this study by several characteristics including, for example, their military status, age and sex distribution, ethnicity, and location, timing and causes of death/wounding.

Worth noting is the fact that our minimum numbers are obtained from a conservative approach that rejects all records of death/wounding unrelated to the time frame and specific geographic area of the war episode in question, and skips as well those of the relevant records of death/wounding, (relevant according to time and space), that were indirectly caused by war activities. Indirect deaths are those related to insufficient health care, hunger, poor quality of drinking water, bad hygiene, physical and mental fatigue, exhaustion, hopelessness, seriously damaged infrastructure including destroyed housing, chaotic and risky traffic, dysfunctional institutions etc., and are all excluded from this report’s minimum numbers of the victims of the siege. Also unknown causes of death cannot be included as part of the minimum numbers. The minimum number approach takes into account only those records of death/wounding that can be directly linked to war activities.

Whereas there is little doubt (if any) that a research project like this one should be restricted to studying the consequences of the relevant war incidents and to victims that can unquestionably be proven to have resulted from these incidents, in a broader context of victimization, many other deaths/woundings should be included as well in war statistics. Despite this, the indirect deaths and hard-to-prove or uncertain cases are excluded from the minimum numbers presented here. This implies that the numbers from this report are low or even very low. We want to stress that our study

should not be taken as an ultimate source on war statistics of the siege of Sarajevo. The study serves the particular purposes of the ICTY case of DRAGOMIR MILOŠEVIĆ and should be used in the context of this particular case only.

For this report we used the best available sources covering deaths/woundings in the Sarajevo area in the period from April 1992 to December 1995 (some, since January 1992). The sources include those compiled by the authorities of the Federation of Bosnia and Herzegovina (FBH) as well as those assembled by the authorities of Republika Srpska (RS). Two major sources (on killed persons) are the FBH and RS databases on deaths, 1992-1995. Both databases were established on request of the Office of the Prosecutor in the years 2001-2005 by computerizing all existing documentation from the official deaths registration in 1992-1995 from the territory of Bosnia and Herzegovina. Together these two sources cover approximately 140,000 deaths of both natural and violent, war-related causes.

In addition to the official sources, a number of databases (on killed/wounded) obtained from local organizations from Sarajevo were utilized, such as: the Household Survey Sarajevo – 1994 (killed/wounded), and records of the Bakije funeral home from Sarajevo (deaths only). Also the ICRC missing persons list was used for this project. For the study of wounded persons, hospital admission records were collected from major hospitals in the Sarajevo area and carefully inspected for the needs of the DRAGOMIR MILOŠEVIĆ case.

Finally, as reporting of the military status in all above-mentioned sources is rather poor, we used in this project three lists of the military personnel fallen during the Bosnian war. The three lists cover all three armies involved in the war in Bosnia, i.e. the army of Bosnia and Herzegovina (ABiH; Bosniak army), the Croat army (HVO) and the army of Republika Srpska (VRS). In total, these lists include approximately 48,000 death records and are largely complete. In our study of Sarajevo, only the ABiH and VRS records were used.

Any source used in this project contained in every record a number of personal data items, (first name, family name, father's name, date of birth etc.), which were used in linking the sources with each other.² In order to check and possibly improve the reliability of records, sources were also linked with the 1991 Population Census for Bosnia and Herzegovina. The establishing of links with the Census made it possible to add certain data items from the Census (e.g. ethnicity) and incorporate them into the other sources studied.

With regard to the method, (details of which are discussed in Section 2), our intention was to trace in the above-mentioned sources as many individual death/wounding records related to the DRAGOMIR MILOŠEVIĆ siege episode as possible, and, based on these identified records, to produce death/wounding statistics that would be relevant to the case (according to time, space, causes etc.), reliable (source wise), internally consistent (i.e. not duplicated), and ideally complete (or otherwise their degree of incompleteness assessed). So, in the first stage of the project, a study of record quality and relevance was conducted. This step resulted in a number of records being accepted and a number rejected from analysis. Based on all accepted records, siege statistics were produced in the second step.

In the following sections of this report we discuss:

- Details of sources and methods used (Section 2)
- Overview of merged sources on killed persons: January 1992 to December 1995 versus August 1994 to November 1995 (Section 3)

² Linking sources is a procedure in which records are compared in various related data sources. Records representing the same individuals are flagged and cross-referenced. Names, (such as first, father's and family names), date and place of birth, and other personal characteristics are used in these comparisons in order to assess whether or not a pair of related records from two different sources correspond to the same person.

- Detailed statistics on killed persons: August 1994 to November 1995 (Section 4)
- Statistics on wounded persons (Section 5)
- Concluding remarks (Section 6)

2. SOURCES AND METHODS USED IN THIS REPORT

2.1 SOURCES AND METHODS USED IN THE ANALYSIS OF DEATHS

The following sources on deaths have been used in this report:

- *The FBH Mortality Database*, 1992–1995, established by the Federal Institute for Statistics (FIS) in Sarajevo through a centralisation and computerisation of individual death records available from the vital events registration system in the territory of the Federation of Bosnia and Herzegovina. The collected forms were stored locally until the Federal Statistical Office decided in late 2001 to engage in processing of this information. This decision was made in response to the request made by the OTP (ICTY), and approved by the Bosnian government. In the first half of 2002 all available forms were computerised. The OTP (ICTY) acquired the FBH database in mid-2002 from the Federal Institute for Statistics in Sarajevo. Coverage: *largely complete*,² the FBH territory, 74,402 unique death records,³ of which 25,103 are war-related.
- *The RS Mortality Database*, 1992–95, June 2005, with approximately 66,000 individual records of deaths that occurred on the territory of Republika Srpska from January 1992 to December 1995. Records consist of personal information (JMBG, names, DoB, PoB⁴ etc.) and of information about the death (DoD, PoD, CoD⁵ etc.). For about 43,000 records death certificates are available. The database includes both war-related deaths (explicitly reported for about 11,000 records) and natural and accidental deaths (about 55,000 records). Both civilians and military victims are covered. Coverage: *largely complete*, the RS territory, 65,424 unique records.
- *The ICRC list of Missing Persons for Bosnia and Herzegovina, 1992–1995*, August 2005 version, was provided to the OTP by the ICRC Head Quarters in Geneva in mid-2005. The list has five components: still missing with no information about the body, still missing with information about the body, ICRC closed cases - dead, ICRC closed cases - alive, and administrative exclusions. Altogether these lists contain approximately 22,000 records. The collection process was conducted during the 1992–95 conflict in Bosnia. The ICRC informants were close relatives of the missing. A standardized form was used for reporting and later for computerization of the material. ICRC lists of still missing persons are available from the Internet. The ICRC has been cooperating with other agencies involved in missing persons issues (e.g. International Commission for Missing Persons (ICMP), State Commissions for Tracing Missing Persons, families associations etc.) in actively tracing the missing individuals in a variety of sources. Coverage: *largely complete*, entire country, all records war-related.
- *The Households Survey Sarajevo, 1994*, (hereafter: HHS-94), was conducted during the war in the spring and summer of 1994, in these parts of the besieged Bosnian capital, which were under control of the ABiH. Larger parts of six municipalities were covered: Centar, Novi Grad, Stari Grad, Novo Sarajevo, Ilidža and Vogošća. The survey was designed, co-ordinated and executed by the Sarajevo Institute for Research of War Crimes and International Law

³ Next to the duplicate checks completed by the Bosnian authorities responsible for the cleaning of the FBH data, additional checks for duplicates were conducted by the Demographic Unit. These kinds of checks are normally carried out for every source acquired by the OTP. Statistics on the numbers of unique records and on duplicates given in the section are those of the Demographic Unit.

⁴ JMBG - *Jedinstveni Matični Broj Gradana* (unique personal ID number), DoB – Date of Birth, PoB – Place of Birth

⁵ DoD – Date of Death, PoD – Place of Death, CoD – Cause of Death

(hereafter *the Institute*), led by Prof. Smail Čekić, in co-operation with the University of Sarajevo, statistical authorities of Sarajevo, and local communities (*mjesne zajednice, MZ*) from the survey area. The interviews were conducted via the local communities⁶ located within the front lines in Sarajevo. According to the authors of HHS-94, approximately 85,000 households living in Sarajevo in mid-1994 participated in the survey. Individual household members were included as well; their names are listed in responses to subsequent questions. An assumption, that each household consisted of 4 members⁷, gives us a survey population of approximately 340,000 individuals, which is 75% of the 1991 census population of the Sarajevo Six.

- *Bakije* contains business records collected by the Bakije Funeral Home in Sarajevo during the years 1992-96. The Bakije Funeral Home is the largest and oldest (since 1923) Muslim funeral home in Sarajevo. They bury Muslims. Other funeral homes in Sarajevo bury Croats, Serbs or all ethnic groups. During the war, Bakije operated in the area within the front lines in Sarajevo, mainly in the municipalities of Centar, Novi Grad, Novo Sarajevo, and Stari Grad. They buried persons reported dead by their families, or collected bodies from the area of conflict. The number of records (i.e. persons) in this database is 12,867, of which 11,545 are unique records from the period from January 1992 to December 1995.
- *Military records of fallen soldiers of the BH Government Army (ABiH), 1992-95*. Acquired in 2001 from the Ministry of Defence of the Federation of Bosnia and Herzegovina. Coverage: *complete*, entire country, 28,027 unique records (258 duplicates deleted), all war-related.
- *Military records of fallen soldiers of the Republika Srpska Army (VRS), 1992-95*. Acquired in 2001 from the Ministry of Defence of Republika Srpska. Coverage: *complete*, entire country, 14,237 unique records, (14 duplicates deleted), all war-related.
- *Military records of fallen soldiers of the Croatian Defence Council (HVO), 1992-95*. Acquired in 2002 from the Ministry of Defence of the Federation of Bosnia and Herzegovina. Coverage: *complete*, entire country, 6,689 unique records, (396 duplicates deleted), all war-related.

Military lists do not report places of death, and therefore could only be used as a reference source about the military-civilian status of the deceased listed in all other lists.

Questionnaires used in the original surveys and/or lists of data items available from the original sources are attached in Annex 2. For this report we applied the standard methodological approach used at the Demographic Unit since 1998. The same approach has been applied for all demographic expert reports the unit produced so far (see Annex 3: “Matching Sources and Duplicate Removal by the Demographic Unit, OTP” and Annex 6: “Professional Qualifications of the Authors”). Its details, as applied in the Dragomir Milošević project, are summarized below.

- The above-mentioned sources were individually assessed (regarding their reliability), their quality and coverage checked, and duplicates were removed from each source.
- In the second step, all sources were linked with the 1991 Population Census through personal characteristics of the individuals listed. Matching details are described in detail in Annex 3.
- At the same time, the relevant sources, (i.e. all except military lists), were merged with each other. Merging, unlike matching, is meant to combine a number of sources, (i.e. lists), in one

⁶ Local communities, officially constituting small administrative units within municipalities, remained in touch with their members and had the easiest access to the population. During the siege the communities distributed goods provided by the international aid among the population of Sarajevo.

⁷ The assumption of the four-person household size is not fully consistent with the pre-war 1991 household size (3.2 persons per household in the Sarajevo Six (Statistical Yearbook – Republic of Bosnia and Herzegovina, 1992 (Sarajevo, 1994))). We increased this number in order to adjust it for the large number of displaced persons and refugees living in Sarajevo, in many cases together with their relatives or friends, in mid-1994. Although for 1994 we were unable to rely on reliable statistics with this regard, for 1998 we can quote the UNHCR (United Nations High Commissioner for Refugees) figure of DPs (displaced persons) and refugees living still in the Sarajevo Six, which is 72,372 persons.

master list. Merging increases the overall number of records in a data table, matching increases the quantity of information in a given list. Only a number of selected data items were taken from each source for the merge. These were the substantive items consistently reported in every source:

- Group I: names (first, family, and father's), DoB, PoB (if available), PoR⁸ (if available), ethnicity;
- Group II: details on death (date, specific place, municipality, and cause);
- Group III: the military-civilian status (if available); and whether record is war-related
- Group IV: the original record ID (primary key) from a given source (including the Census ID for the records matched with the Census), and the source name,

- In this way a Bosnia-wide deaths database was established (187,260 entries) composed of records from five sources: FBH database, RS database, ICRC missing, HHS-94 and Bakije. (Hereafter: Bosnia database). Although earlier duplicates had been removed from each source, many records were overlapping between sources in the merge. So, in order to present a meaningful analysis the overlap had to be removed.
- Removing the overlap from the Bosnia database would be a very time-consuming procedure. In order to save time, we decided to do this not at the level of the entire country but at the level of the administrative area of Sarajevo (i.e. Sarajevo Ten). So, in the next step we extracted all records belonging to Sarajevo Ten and the period from January 1992 to December 1995. In total, 40,180 records were identified.
- These 40,180 records were placed into a separate database which was then called Sarajevo deaths database. (Hereafter: Sarajevo database). The Sarajevo database contained war-related records and also records of natural and unknown deaths.
- The removal of the overlapping records was done in this particular database. Some cleaning of the raw material was conducted as well at this stage.
- During the cleaning, records which were incomplete and deficient were marked as invalid. At a minimum, the information about names, YoB and YoD⁹ were required to declare a given (unique) record valid. Overlapping records could not be declared valid even if they were complete and consistent.
- At the completion of the overlap removal and of cleaning, the number of unique valid records in Sarajevo database became 26,466. This number covers the unique (i.e. non-duplicated) and valid entries related to the siege. All types of deaths are included, also natural and unknown.
- The final Sarajevo database (26,466) was the basis for extracting records that were war related and the deceased seen as victims. Details of this procedure are discussed in Section 3 of this report.
- Eventually, final statistics were calculated in order to assess a number of relevant hypotheses.

2.2 SOURCES AND METHODS USED IN THE ANALYSIS OF WOUNDED

Hospital records from three major hospitals in Sarajevo, the Koševo, State and Dobrinja hospitals, were our major source for the analysis of wounded persons (hereafter: Sarajevo Hospital Records (HR)). These records were acquired for the OTP from the archives of the three hospitals in the summer of 1997, when two missions of OTP investigators were conducted in order to select appropriated records from the archives and make copies for further processing.¹⁰

⁸ PoR – Place of Residence

⁹ YoB – Year of Birth, YoD – Year of Death

¹⁰ Two OTP mission reports by a former OTP investigator Rejandra Singh from July and August 1997 report on how the collection was conducted.

Besides the three above-mentioned hospitals, several First Aid Centres and two temporary war hospitals, (in Suhodol and Hrasnica), had records of victims as well. First Aid records of the most severely injured individuals were subsequently sent to one of the main hospitals, and thus are covered in the hospital records. Records of less severe injuries and records from war hospitals were not collected for this study, the reason being that they are fragmented and largely missing. Generally, however, a major part of the available information on victims of wounding was collected and brought to the OTP for computerization and further processing.¹¹

During the collection process, male victims at age from 18 to 60 were excluded. Only women (all ages) and men below 18 and above 60 years of age were taken for the sample, which should be therefore seen as representing the civilian population of Sarajevo.

The overall number of records initially available from the Sarajevo Hospital Records database was 3,670. After data cleaning, some basic processing, and excluding duplicates, exactly 3,145 records remained, of which 3,036 are related to the period from April 1992 to November 1995. These records were studied in our report.

In addition to the Hospital Records, we used records of wounded persons from the Household Survey Sarajevo-1994, which also cover the non-hospitalized victims of wounding.

The quality of the hospital records is good and their contents well documented in the associated hospital forms; (all scanned and available from the Evidence Unit). We believe that Hospital Records are a valuable source, which together with the sources on killed persons can be successfully used for the analysis of victimization of the conflict in Sarajevo.

Our use of the HR and HHS-94 is discussed in detail in Section 5 of this report.

2.3 DEFICIENCIES OF SOURCES

A study of the coverage, reliability and deficiencies of sources is part of the standard procedure applied in the Demographic Unit to each and every newly acquired source. Such studies had also been carefully completed for all sources listed above.¹² The Demographic Unit has been using many of the above sources on a daily basis; we are familiar with problems inherent in these sources and are able to deal with them. A summary of main observations about these aspects of the sources is given below.

Generally, the sources used for this report are large, incompleteness of their coverage is relatively low, and several of them were established by professional authorities and can be seen as reliable and well documented. All this is rather exceptional in the area of measurement of victimization and conflict statistics. This does not mean, however, that all information in the sources is perfect and no deficiencies exist. The level of deficiencies is nevertheless acceptable.

The list of the most common deficiencies includes for example:

- spelling problems and/or partial incompleteness of names (of persons and places),
- incomplete or inconsistent dates,
- partially missing or lacking causes of death/wounding,

¹¹ A database on Sarajevo Hospital records was established in 1997 by OTP research officer Nenad Fišer, who described the creation of this database in his report on "Database of Hospital Records of Civilian Casualties. Basic Statistical Analysis", from 20 June 2000.

¹² For Sarajevo Hospital Records such a study was completed by Nenad Fišer, the author of the Hospital Records database. Ewa Tabeau made an assessment of his study in 2000 (29 September) and concluded that it was very professional and much to the point.

- partially missing or lacking military-civilian status,
- partially missing or lacking ethnicity,
- partially missing or lacking sex,
- partially missing or unavailable marking of a case as war-related,
- not fully consistent reporting of the same categories among the sources etc.

The above list is not exhaustive but gives a good impression of data problems. Many problems can be sorted out by improving the missing or deficient information through comparisons with other sources, such as, for example, with the 1991 Population Census for Bosnia and Herzegovina that we also used in this project. Secondly, a lot of data cleaning, standardization and re-coding is usually required to make the databases consistent and comparable. We did this as well. Finally, the most deficient portions of the original material have to be excluded from the analysis, which implies that the statistics presented here are rather conservative (i.e. low).

3. OVERVIEW OF THE MERGED SOURCES ON KILLED PERSONS: JANUARY 1992 TO DECEMBER 1995 VERSUS AUGUST 1994 TO NOVEMBER 1995

3.1 Table 1 below contains an overview of the sources used for this report and contained in the Sarajevo database. As mentioned earlier, the coverage of this database is ten Sarajevo municipalities and the period January 1992 to December 1995, (except the Sarajevo Household Survey, which was conducted in mid-1994, and therefore only partly covers the years 1992-1995; in addition to this, HHS-94 only covered six municipalities instead of ten; Bakije as well reported death records from the most urban parts of Sarajevo; i.e. Sarajevo Six instead of Sarajevo Ten). Note as well the database contains all deaths, i.e. also those of natural or unknown causes.

The part of “All Records” in Table 1 shows the number of relevant records (i.e. death cases; excluding duplicates within each source) that entered the Sarajevo database from each source. The largest source is no doubt the FBH mortality database compiled by the authorities of the Federation of Bosnia and Herzegovina. That database contributed about 17,000 records. Together with the records reported in the RS mortality database (4,219), the total number of deaths from Sarajevo Ten in 1992-1995 is 21,235 deaths. Knowing that the overlap between these two databases is very small, (unlike the overlap with other sources), we might conclude that there were at least approximately 21,235 deaths in Sarajevo in this period.

In any case, exactly 40,180 records from five sources were the basis for our selection of records of deaths known to be war-related and relevant to the DRAGOMIR MILOŠEVIĆ case.

Table 1. Overall Number of Deaths Reported in Five Sources in Sarajevo Ten, January 1992 to December 1995

All Records		Valid Records	
Source	Number	Source	Number
Bakije	11,545	Bakije	2,657
FIS	17,016	FIS	16,764
ICRC	1,161	ICRC	761
RS	4,219	RS	4,087
HHS-	6,239	HHS-	2,197
Total	40,180	Total	26,466

Note: a) Included are both natural and violent deaths

b) “All Records” are given per source (no duplicates in sources)

c) “Valid Records” exclude overlap of sources, and incomplete or deficient records

3.2 The selection of relevant records was preceded by elimination of the overlap of sources. The main rule in the identification of the overlap was related to the hierarchy of sources which was decided to be as follows:

- FBH and RS - top priority sources
- ICRC missing persons - second highest
- Sarajevo Household Survey - third
- Bakije - fourth

The reasons for the above ordering of sources are related to our assessment of source reliability, completeness, and reporting of circumstances of death.

FBH and RS databases were established by professional statistical authorities following the usual requirements for death registration. Death notification had to be provided by close relatives and documented with a death certificate or other relevant document. Causes of death are reported according to the official WHO¹³ Classification of Diseases and Conditions Leading to Death (10th revision). The medical coding was conducted on request of the OTP by official public health authorities from Sarajevo and Banja Luka. In addition to this, whenever possible, the authorities also explicitly indicated whether a given violent death was related to war activities (type of violent cause), and, for violent causes, listed the external factors leading to death. In fact, three ways of reporting causes of death are available: medical (for all deaths), external (for violent deaths), and by type of violent death. Finally, the reporting of places of death is in line with the statistical administrative division of the country into settlements and municipalities. All in all, the two databases are of a more than reasonably high quality. One deficiency of each of them is that the reporting does not cover all 1992-1995 deaths from the subsequent areas of responsibility of each statistical authority due to massive migratory movements of the population and destruction of documents in war. Moreover, a large number of missing persons from Bosnia and Herzegovina, (about 22,000 according to the ICRC; more than that according to the ICMP and the FBH and RS State Commissions for Tracing Missing Persons), could not be registered in these databases due to lack of bodies and still continuing identification of the remains.

Thus, for the above reason the third place on our list of sources is assigned to the ICRC list of missing persons. The credibility of the ICRC in the area of collecting information about missing individuals in conflict situations is unquestionable and has proven very solid on several occasions before the ICTY Trial Chambers (for example, in all Srebrenica trials: Krstić, Blagojević, and Popović et al.).

The Sarajevo Household Survey and Bakije Funeral Home lists take the fourth and fifth place in the hierarchy of our sources. Both sources are rather incomplete. Bakije does not include causes of death and the place of death is known as Sarajevo-unspecified only. Nevertheless, each of these sources is a valuable addition to the three main sources we use for this project. Each of them contributes extra records to the Sarajevo database, which are obviously additional to all those records already reported in the higher priority sources from our list.

Note, however, that we did not use the HHS-94 in the analysis of killed persons made for the Dragomir Milošević project due to its limited temporal coverage. The source was used though in the analysis of wounded persons presented in Section 5.

3.3 As stated before, the source hierarchy was our guideline in the elimination of the overlap of sources. In the first place we kept the unique (i.e. non-duplicated) records from the FBH and RS databases in the Sarajevo database. In addition to these records, the non-duplicated records from the ICRC list of missing persons were added. Finally, non-duplicated records from HHS-94 and Bakije were added to the Sarajevo database. Exactly 13,517 records were excluded as overlapping.

¹³ WHO stands for the World Health Organization with its headquarters in Geneva.

3.4 Before proceeding to the analysis, we also checked the completeness of records in the Sarajevo database according to our imposed criterion of record completeness. Only records which included names (first name and family name), and at least year of birth and year of death were accepted as complete. If any of these items was, missing records were marked as incomplete and excluded (244 marked as incomplete; 197 of the 244 were non-overlapping).

3.5 Valid records are the unique (i.e. not overlapping) and complete records only. As mentioned in Table 1, in the part called “Valid Records”, the number of valid records in the Sarajevo database is 26,466. This is the number of all deaths (war-related, natural and of unknown causes, Sarajevo Ten, January 1992- December 1995), which we were able to trace in the five sources used for this project. There are good reasons to believe that this number is relatively complete.

3.6 Table 2 gives an overview of selected pre-war statistics on deaths in Sarajevo.

Table 2. Number of Deaths in Sarajevo Ten Observed in 1989-1991

Area/Municipality	1989	1990	1991	Total 1989-1991	Annual Average
Sarajevo Ten	3,453	3,528	3,644	10,625	3,542
-Centar	780	722	870	2,372	791
-Hadzici	157	147	171	475	158
-Ilidza	365	357	334	1,056	352
-Ilijas	160	179	190	529	176
-Novi Grad	595	642	599	1,836	612
-Novo Sarajevo	647	712	681	2,040	680
-Pale	125	126	148	399	133
-Stari Grad	439	451	453	1,343	448
-Trnovo	60	50	63	173	58
-Vogosca	125	142	135	402	134
Total	3,453	3,528	3,644	10,625	3,542
Extrapolation of the number of deaths observed in 1989-91 over 1992-95					
Sarajevo Ten, 1992-1995				14,167	3,542

Source: *Statistical Yearbook 1992, Republic of Bosnia and Herzegovina, Sarajevo, April 1992 (in B/C/S)*

Note: Highlighted are the municipalities of Sarajevo Six

According to Table 2, the total number of deaths that occurred in Sarajevo Ten in 1989-1991 in the absence of conflict was 10,625, the average per year being 3,542. An extrapolation of this observed number over the years 1992-1995 results in the total of 14,167 expected deaths if there had been no conflict.

Assuming that our total of all deaths in Sarajevo Ten in 1992-1995, (26,466 deaths), is close to the actual unknown figure, the difference between this number and the estimated number of expected deaths unrelated to war (14,167) would give the number of war-related deaths; and this would be 12,299 deaths (civilians and soldiers jointly). This result would be valid if there was no major migration from and into Sarajevo in 1992-1995. As such migration was taking place in the Sarajevo area, and its size is generally unknown, it is hard to assess to what extent the above estimate holds.

3.7 In order to remain conservative and present only the statistics that can be proven to be war-related, in the rest of this report we proceeded according to the minimum number approach.

3.8 A quick review of the records from the Sarajevo database by municipality and year of death provides some insights into where and when these deaths occurred (Table 3). The largest part of all deaths is reported under “Sarajevo-unspecified” (about 32%). It is remarkable that deaths from this non-specific location were the highest in 1992 and their number gradually declined to the lowest

level in 1995. A very high intensity of war activities in 1992 and systematically lower one in the following years might be the explanation for this observation. So, this is likely a reporting problem that was related to the circumstances of war.

Table 3. Valid Records of Deaths in Sarajevo Ten, 1992-95, by Municipality and Year of Death

Municipality of Death	1992	1993	1994	1995	Total	Percent
SARAJEVO-CENTAR	1,913	905	729	1,339	4,886	18.5
SARAJEVO-HADZICI	411	259	126	167	963	3.6
SARAJEVO-ILIDZA	1,258	813	414	538	3,023	11.4
SARAJEVO-ILIJAS	253	162	213	212	840	3.2
SARAJEVO-NOVI GRAD	1,436	676	287	439	2,838	10.7
SARAJEVO-NOVO SARAJEVO	897	358	250	328	1,833	6.9
SARAJEVO-PALE	310	199	153	185	847	3.2
SARAJEVO-STARI GRAD	421	270	187	226	1,104	4.2
SARAJEVO-TRNOVO	241	185	125	320	871	3.3
SARAJEVO-VOGOSCA	354	224	98	94	770	2.9
SARAJEVO - UNSPECIFIED	3,502	2,720	1,536	733	8,491	32.1
ALL	10,996	6,771	4,118	4,581	26,466	100.0

It is striking that the annual number of deaths was much higher in almost every municipality in (especially) 1992-1993 than in the years 1989-1991 (comp. Table 2). This observation holds despite the extraordinarily high number of deaths from the Sarajevo-unspecified location in all years between 1992-1995.

The second highest number of deaths was from the municipality of Sarajevo-Centar (19%), (as was also the case during peace-time), then Ilidža and Novi Grad (about 11% each). Small shares of deaths come from the municipalities of Hadžići, Ilijaš, Pale and Trnovo (around 3.2-3.6 % each). These four municipalities are excluded from the detailed analysis in Section 4, where the minimum numbers are discussed.

Further, the highest number of deaths occurred in 1992 (41.5% of the deaths available for this report), then in 1993 (25.6%), in 1995 (17.3 %) and finally in 1994 (15.6%). This finding will be examined more deeply in the analysis of timing of the conflict in Sarajevo.

3.9 Important aspects of the analysis of deaths are their causes. Table 4 below gives an overview of a broad classification of all deaths into three groups: deaths from natural, violent or unknown causes. This classification is available from all sources except the Bakije Funeral Home, which does not include any information about causes, and which we report here as deaths of unknown nature. The staff of the Bakije Funeral Home clearly indicated to us that many deaths they recorded in their business books were violent and war-related. They collected bodies from the streets of Sarajevo, being exposed to shelling and/or sniping, often without any order from the relatives of the deceased, who learned about these deaths at a later time. This situation was quite common, particularly in the first two years of the conflict.

Secondly, the missing persons (of ICRC) are included in Table 4 as violent deaths explicitly related to war. This decision was motivated by the fact that thousands of human remains have been exhumed since 1995 from grave sites all over Bosnia and Herzegovina, with clear signs of violence and abduction. Thousands of these remains have been identified by the ICMP through DNA matching with blood samples from the surviving relatives, and thereafter marked on the missing persons lists as known deaths. Throughout the recent years, the Demographic Unit, OTP, has collected a considerable amount of evidence related to the remarkable consistency between the records of the missing and identified persons. This finding holds for Bosnia, Kosovo as well as for Croatia and there are no reasons to believe that missing persons cannot be seen as war victims.

Table 4. Valid Records of Deaths in Sarajevo Ten, 1992-95, By Cause of Death

Cause of Death	Bakije	FIS	ICRC	RS	SarHHS	Total	Percent
Violent Causes, of which:	0	7,244	761	1,811	2,197	12,013	45.4
-Explicitly war-related	0	6,906	761	1,354	2,114	11,135	42.1
-Accident, Murder, Suicide	0	327	0	173	33	533	2.0
-Unspecified/other	0	11	0	284	50	345	1.3
Natural Causes	0	8,109	0	1,479	0	9,588	36.2
Natural or Violent (unknown)	2,657	1,411	0	797	0	4,865	18.4
Total	2,657	16,764	761	4,087	2,197	26,466	100.0
Percent	10.0	63.3	2.9	15.4	8.3	100.0	-

Finally, deaths from unknown causes of death are a large category among all deaths (18.4 percent). Both the natural and the violent causes belong to this group, but the detailed fractions of the two in this group of deaths remain unknown.

3.10 Among violent deaths, the largest component in every source, (except for Bakije), are the explicitly reported war-related deaths (42.1% of all deaths). This category covers deaths caused by war activities,¹⁴ shelling, sniping, shooting, and going missing.

Shelling, sniping, and shooting are reported in only one source, i.e. the Sarajevo Household Survey, and only until July 1994. FBH, RS and ICRC do not contain this kind of reporting and therefore we are unable to present the distribution of war-related deaths according to shelling, sniping, and shooting for the entire conflict period. Instead, a solid classification of deaths by medical causes is available (except for the missing). The medical causes offer a high degree of detail of organ failures leading to death. These causes leave very little doubt, if any, with respect to the violent and war-related nature of these deaths.

The remaining two categories of violent deaths (“Accident, Murder and Suicide” and “Unspecified/other”) have much lower levels than the explicitly war-related deaths (in total 3.3% of all deaths). External causes of the deaths reported in the FBH and RS databases for these two categories indicate, among other things, the following factors as causes of death:

- consequence of injuries and wounding
- accidents caused by explosives,
- accidents by firearms discharge,
- accidental falls (from damaged stairs, steps, other parts of buildings),
- traffic accidents,
- exposure to smoke, fire, flames
- exposure to poisonous substances.

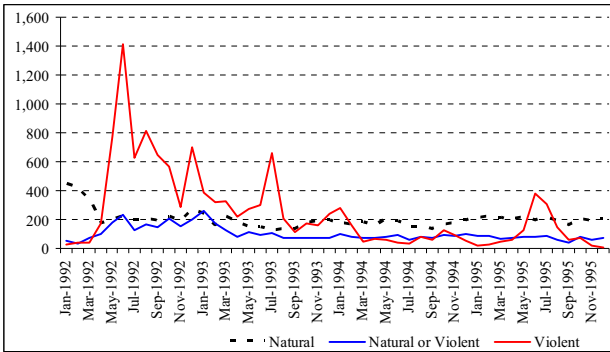
Many cases of suicide were also likely to be war-related as the mental and physical fatigue of the Sarajevo population was enormous in the years of war.

It is clear that although the statistical authorities of FBH and RS were not in the position to flag these deaths as explicitly war-related, in fact many of these deaths, (if not a majority), were related to war activities. We believe that considering all violent deaths as war-related is generally correct. The violent deaths unrelated to war are most certainly a marginal category among all violent deaths.

3.11 Figure 1 below shows the deaths from the Sarajevo database by type, (i.e. violent, natural, unknown), and time (year and month of death).

¹⁴ This general term was used for a variety of situations which were always related to war. Two sources use this term particularly intensively: the FBH and RS databases. From our intensive communications with the statistical authorities of both entities we know that only those deaths were marked as “war activities” for which written documents existed indicating this kind of circumstances. The authorities of both the FBH and RS mentioned that in many cases such documentation did not exist and several war-related deaths could not be marked as such.

Figure 1. Valid Records of Deaths in Sarajevo Ten, 1992-95, By Cause and Year/Month of Death

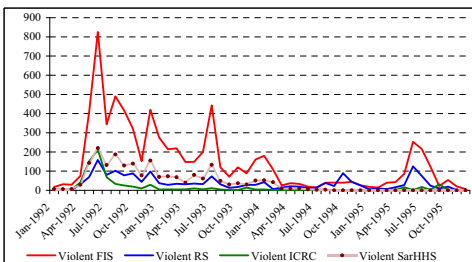


Three distinct trend lines are clearly seen. The trend in the number of violent deaths, which as concluded above are generally war-related, can be seen as an indication of the overall time pattern of war activities, with 1992 (starting in April) and 1993 being the most intense years of the war. The trend in natural deaths is quite different. The rapid drop in January-March 1992 might suggest an outflow of some population from Sarajevo. Afterwards the trend remains relatively stable throughout the entire conflict period. Finally, the trend of unknown (natural or violent) deaths confirms it is indeed a mixture of the two types of deaths. Most certainly, several of these deaths can be assigned (on statistical grounds) to natural and some other to violent war-related deaths. We will do this for deaths related to the indictment of the Dragomir MILOŠEVIĆ case.

3.12 Figure 2 below depicts trends in violent death records from the Sarajevo database by source.

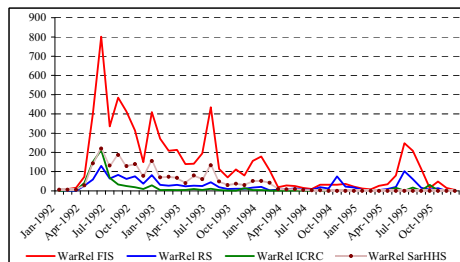
Figure 2. Valid Records of Deaths in Sarajevo Ten, 1992-95, Violent versus Explicitly Reported War-Related Causes by Year/Month of Death

Deaths in Sarajevo 10, 1992-1995, Violent Causes by Source, Year and Month of Death



Note: ICRC and SarHHS are the same in "violent" and "war related"

Deaths in Sarajevo 10, 1992-1995, War Related by Source, Year and Month of Death



Note: ICRC and SarHHS are the same in "violent" and "war related"

Two variants are shown: the left one for all violent deaths, the right one only deaths reported as explicitly related to war activities. Hardly any difference is noticed between these two charts, which further confirms that considering all violent deaths as war-related is justified.

The time patterns obtained from the four sources are largely consistent, (Bakije being excluded for the lack of cause-of-death reporting), although at totally different levels. The major source is obviously the FBH mortality database, the second largest being the HHS-94 (ends in July 1994) and the RS mortality database. The contribution of the ICRC records is minor and mainly relates to the years 1992-1993.

3.13 The subject of this paragraph is the military status of deaths from the Sarajevo database.

Table 5. Military Status Reported in (Valid) Death Records, Sarajevo Ten, 1992-95
Original versus Military Sources

Military Sources	Original Sources			Total	Percent
	1-Civilians	2-Soldiers	9-Unknown		
Civilians	2,738	608	11,689	15,035	73.7
Soldiers	133	1,984	3,259	5,376	26.3
Unknown	1,715	886	3,454	6,055	-
Total	4,586	3,478	18,402	26,466	100.0
Percent	56.9	43.1	-	100.0	

The military status of the deceased at the time of their death is essential to understanding the true nature of military actions in the siege area and their consequences to the population, (especially civilians), exposed to the warfare. In order to be able to precisely determine the military-civilian status of every deceased it is necessary to exactly understand the circumstances of every death; in particular the issue of the individuals being actively engaged in combat comes into question. Clarifying the circumstances of death is not really possible for every death in the Sarajevo database. Reporting of the status is largely incomplete in the original sources, resulting in more than 18,000 records having no status category assigned at all (18,402; Table 5). Moreover, it is not entirely clear what criteria were applied in the original sources for marking a given death as a civilian or soldier. Most likely, the marking followed what the informants said. No source required that any documents were submitted in order to prove the military status of the deceased and whether the person died in combat. Thus, it would make little sense to analyze this item as based on the original sources reporting.

3.14 An alternative to the unavailable (or only partly available) status information in the Sarajevo database is offered in additional sources that we eventually also used in this project. These sources include the military lists of the fallen soldiers and other military personnel from Bosnia and Herzegovina. Three such lists are in possession of the OTP, each related to one of the three armies involved in the 1992-95 war in Bosnia and Herzegovina: ABiH (about 28,000 records), HVO (about 6,700 records), and VRS (about 14,200 records). The lists were provided by the Ministries of Defence of the Federal and Republika Srpska authorities. They are a relatively complete and reliable source of information about military losses in the war, including as well the siege of Sarajevo. Thus, the military lists can be used to create a new item in the Sarajevo database distinguishing between soldiers and civilians according to the information from the military lists.

3.15 In order to create such an item, we compared the military lists with the death records in the Sarajevo database applying our usual matching procedure. The 1991 Census was used as a link between the military lists and the Sarajevo database. Those of the (matched)¹⁵ records in the Sarajevo database that were also found in the military lists were marked as soldiers. Those of the Sarajevo (matched) records that were not found in the military lists were marked as civilians. A number of Sarajevo records were not matched with the Census at all; these records were marked as unknown status.

After the above procedure was completed, the number of records with unknown status was still high (6,055, see Table 5). Note that in the original sources, 1,715 out of 6,055 were reported as civilians and 886 as soldiers. Therefore, in the next step, we made use of these additional reports of the military-civilian status available from the original sources. For all those (unmatched) records from

¹⁵ The term “matched” refers here to the matching with the 1991 Population Census. Both the Sarajevo database and the military lists were matched with the Census, resulting in about 80% or more records from each source found in the Census. These matches made it possible to decide whether a given record was of a military or a civilian casualty.

the Sarajevo database, deaths reported as civilians in the original sources were kept coded as civilians, and soldiers as soldiers. Finally, in order to be conservative, we made sure that any soldier reported in any source, (disregarding whether original or military), remained a soldier in the analysis. To achieve this, 608 death records of soldiers from the original sources coded as civilians according to the military sources, were re-coded back into soldiers. The adjustments can be summarized as follows (see as well Table 6):

Civilians: $15,035 + 1,715 - 608 = 16,142$

Soldiers: $5,376 + 886 + 608 = 6,870$

Table 6. Re-estimated (New) Military Status

Status Categories	Number (Military Lists)	Correction	Final Number	Percent
Civilians	15,035	+1,715-608	16,142	70.1
Soldiers	5,376	+886+608	6,870	29.9
Unknown	6,055	-1,715-886	3,454	-
Total	26,466	-	26,466	100.0

This new created item was used in all analysis presented in this report.

3.16 Table 6, (to be read together with Table 5), gives an overview of how the new status item was created and what was the distribution of the records from the Sarajevo database according to this new item. Table 6 also addresses the issue of how the new status variable and the originally reported status are related to each other.

According to Table 6, after the correction, the number of civilians is 16,142, of soldiers 6,870, and 3,454 records have unknown status.¹⁶ Worth noting is the fact that the high number of civilians in the Sarajevo database is quite understandable as about 50% of death records in this database are deaths of natural causes, so these deaths would be almost exclusively classified as civilians. The real question of the civilian-soldier distribution relates to the actual war victims (i.e. violent war-related causes).

We show in the following section of this report that the civilian-soldier distribution of the war victims is quite different from what is shown in Tables 5 and 6.

3.17 The above-presented discussion of time and area of reporting, causes of death, and of military-civilian status of death records in the Sarajevo database brings us to the issue of deciding which records may and which may not be considered as relevant to the indictment of the Dragomir Milošević case.

Generally, we used the following criteria to accept a given record as a relevant death case related to the Dragomir Milošević case:

- Time period and area had to be consistent with the time and geographic frame of the Dragomir Milošević case.
- The time period was decided to be from August 1994 to November 1995.
- According to the broad area definition, the first study area was the ten municipalities of Sarajevo. The broad definition was used for contextual purposes.

¹⁶ For the ease of comparison, Table 5 indicates that according to the original sources, 4,586 individuals were reported as civilians, 3,478 as soldiers and 18,402 as unknown status. The same table also indicates that according to exclusively military lists, 15,035 were civilians, 5,376 were soldiers, and 6,055 had unknown status.

- The second study area was composed of the six urban municipalities of Sarajevo (the narrow area definition). The narrow definition was used to produce minimum numbers of deaths resulting from war activities.
- The violent causes were taken as directly relevant to war activities.
- The natural causes were excluded from the analysis of war victims. This was done despite the fact that a number of deaths from natural causes resulted indirectly from war activities and could be seen as consequences of these activities as well.
- Also deaths from unknown causes were excluded from the analysis of war victims, and in particular from the minimum numbers on killed or wounded. However, we did use this category to illustrate the incompleteness of the “minimum numbers” statistics.
- In such situations, using statistical estimation techniques, the number of deaths from unknown causes was split into two components: the first one representing the violent war-related causes and the second representing the natural causes. The splitting was made by statistically distributing the number of all unknown causes proportionally to the observed distribution into natural versus violent war-related causes.
- The re-distributed death numbers from unknown causes were used in obtaining more complete numbers of the war-related versus natural deaths.
- The same re-distribution technique was applied to records with military-civilian status reported as unknown.

3.18 The discussion in this sub-section of the report focuses on violent war-related deaths. Statistics are presented, however, on all causes of death, including natural and unknown causes. Three reference schemes are used: (a) Sarajevo Ten, January 1992 to December 1995, (b) Sarajevo Ten, August 1994 to November 1995, (c) Sarajevo Six, August 1994 to November 1995

3.19 Sarajevo Ten, January 1992 to December 1995

Table 7a. Valid Death Records of Sarajevo Ten, 1992-95, by Cause of Death and Military Status

Number	CoDDesc	Civilians	Soldiers	Unknown	Total	Percent
1	War activities	3,593	5,823	950	10,366	39.2
2	Missing	393	156	220	769	2.9
3	Accident	139	44	21	204	0.8
4	Murder	89	44	21	154	0.6
5	Suicide	127	21	27	175	0.7
6	Violent unspecified/other	184	94	67	345	1.3
1-6	Total Violent	4,525	6,182	1,306	12,013	45.4
7	Natural	7,763	212	1,613	9,588	36.2
8	Natural or Violent (unknown)	3,854	476	535	4,865	18.4
1-14	Total All	16,142	6,870	3,454	26,466	100.0

According to Table 7a there were in total at least 12,013 deaths from violent war-related causes in the Sarajevo Ten area from January 1992 to December 1995. At least 4,525 of those 12,013 violent war-related causes were of civilians and at least 6,182 were of soldiers.

Table 7b. Corrected Number of Deaths of Sarajevo Ten, 1992-95. Unknown Deaths Distributed Proportionally over Deaths by Status and Cause

Cause	Civilians	Soldiers	Unknown	Total
Violent	6,626	7,573	-	14,199
Natural	11,990	277	-	12,267
Unknown	-	-	-	-
Total	18,616	7,850	-	26,466

Table 7b shows the corrected, more complete number of deaths in the same area and the same period. In Table 7b, records with the unknown causes of death and/or the unknown military-civilian status had been re-distributed proportionally to the observed distributions of violent versus natural deaths and civilian versus military deaths. The more complete number of violent war-related deaths is 14,199, of which 6,626 were civilians and 7,573 were soldiers. The number of deceased civilians per one deceased soldier is 0.9 to 1.

3.20 Sarajevo Ten, August 1994 to November 1995

In the period from August 1994 to November 1995, in the same area of Sarajevo Ten, the number of violent war-related deaths was at least 1,692 individuals (Table 8a), of which at least 631 were civilians and at least 870 soldiers. Obviously, the two and a half years from January 1992 to July 1994 were much more intense and saw many more deaths than the one and a half years from August 1994 to November 1995.

Table 8a. Valid Death Records of Sarajevo Ten, August 1994–November 95, by Cause of Death and Military Status

Number	CoDDesc	Civilians	Soldiers	Unknown	Total	Percent
1	War activities	415	795	141	1,351	22.7
2	Missing	61	7	11	79	1.3
3	Accident	45	13	7	65	1.1
4	Murder	20	6	4	30	0.5
5	Suicide	48	9	10	67	1.1
6	Violent unspecified/other	42	40	18	100	1.7
1-6	Total Violent	631	870	191	1,692	28.4
7	Natural	2,542	73	408	3,023	50.8
8	Natural or Violent (unknown)	931	184	121	1,236	20.8
1-8	Total All	4,104	1,127	720	5,951	100.0

Table 8b. Corrected Deaths of Sarajevo Ten, August 1994 – November 1995. Unknown Deaths Distributed Proportionally over Deaths by Status and Cause

Cause	Civilians	Soldiers	Unknown	Total
Violent	915	1,176	-	2,091
Natural	3,759	101	-	3,860
Unknown	-	-	-	-
Total	4,674	1,277	-	5,951

The re-distribution of the number of deaths from unknown cause/status resulted in an adjustment that brought the number of violent war-related deaths to 2,091 in the same area of Sarajevo Ten in the period from August 1994 to November 1995. 915 of them were civilians and 1,176 soldiers. The ratio of the deceased civilians to the deceased soldiers was 0.8 to 1.

3.21 Sarajevo Six, August 1994 to November 1995

The area of Sarajevo Six and the period August 1994 to November 1995 are the frame for obtaining the minimum numbers of violent war-related deaths relevant to the Indictment of Dragomir Milošević.

Table 9a indicates the minimum number of violent war-related deaths relevant to this indictment was 981. At least 449 of these deaths were of civilians and 419 of soldiers. These numbers do not include the deaths reported in the original sources under the unknown cause-of-death/military-civilian status category (1,097 excluded).

Table 9a. Valid Death Records of Sarajevo Six, August 1994–November 95, by Cause of Death and Military Status

Number	CoDDesc	Civilians	Soldiers	Unknown	Total	Percent
1	War activities	334	376	84	794	16.7
2	Missing	8	4	2	14	0.3
3	Accident	42	13	7	62	1.3
4	Murder	4	2	1	7	0.1
5	Suicide	43	8	9	60	1.3
6	Violent unspecified/other	18	16	10	44	0.9
1-6	Total Violent	449	419	113	981	20.6
7	Natural	2,253	63	362	2,678	56.3
8	Natural or Violent	829	172	96	1,097	23.1
1-8	Total All	3,531	654	571	4,756	100.0

Table 9b. Corrected Deaths of Sarajevo Six, August 1994 – November 1995. Unknown Deaths Distributed Proportionally over Deaths by Status and Cause

Cause	Civilians	Soldiers	Unknown	Total
Violent	659	636	-	1,294
Natural	3,364	97	-	3,462
Unknown	-	-	-	-
Total	4,023	733	-	4,756

Table 9b shows that the more complete minimum number of violent war-related deaths relevant to the indictment of Dragomir Milošević was 1,294, of which 659 were civilians and 636 soldiers. The ratio of civilian to military deaths was approximately 1 to 1.

4. BASIC STATISTICS ON PERSONS KILLED, AUGUST 1994 - NOVEMBER 1995, OBTAINED FROM THE MERGED SOURCES

In Section 4 we discuss the major distributions of the minimum numbers of violent war-related deaths from the Sarajevo Six area and the period from August 1994 to November 1995. In a few cases, we include as well the adjusted minimum number of violent deaths that covers the re-distributed unknown causes. A clear distinction is always made between these two types of statistics.

We show the minimum number by original source (4.1), (medical) causes of death and civilian-military status (4.2), age and sex (4.3), ethnicity (4.4), municipality and time of death (4.5), civilian-military status and time of death (4.6), and major incidents (4.7). Most of these distributions are self-explanatory and only short comments are given.

4.1 BY SOURCE

Table 10 confirms that the largest source used in the study of Sarajevo Six was the FBH mortality database (750 violent war-related deaths) and the second largest was the RS database (217). Only 14 records of missing persons were included from the ICRC list.

Table 10. Number of Deaths in Sarajevo Six, August 1994–November 1995, By Cause and Source

Number	CoDDesc	Bakije	FIS	ICRC	RS	Total	Percent
1	War activities	0	641	0	153	794	16.7
2	Missing	0	0	14	0	14	0.3
3	Accident	0	58	0	4	62	1.3
4	Murder	0	3	0	4	7	0.1
5	Suicide	0	48	0	12	60	1.3
6	Violent unspecified/other	0	0	0	44	44	0.9
1-6	Total Violent	0	750	14	217	981	20.6
7	Natural	0	2,300	0	378	2,678	56.3
8	Natural or Violent	779	219	0	99	1,097	23.1
1-8	Total	779	3,269	14	694	4,756	100.0
1-8	Percent	16.4	68.7	0.3	14.6	100.0	-

A total of 1,097 causes of death were reported without a specific cause. This was actually more (by 116) than the overall total of violent war-related deaths identified to be relevant to the Dragomir Milošević case (at least 981). The 1,097 records of unknown cause was a considerable loss of information that had a serious impact on our final statistics. The source for a majority of these records was the Bakije Funeral Home (779 out of 1,097).

4.2 BY CAUSE OF DEATH AND MILITARY STATUS

The loss of information due to the lack of reporting of cause of death can be compensated to some extent by applying statistical estimation techniques. This is achieved by re-distributing the number of deaths from unknown causes proportionally to the observed distribution of the well-defined causes. The same procedure can be applied to records with the unknown civilian-military status. Results of the joint re-distribution (according to unknown causes and/or status) are shown below (Table 11; the same statistics are also included in Table 9a, b; repeated here for ease of discussion).

Table 11. Number of Deaths in Sarajevo Six, August 1994–November 1995, By Status and Cause

Observed Deaths of Sarajevo Six Aug 1994–Nov 1995 By Status and Cause of Death					Re-distributed Deaths of Sarajevo Six Aug 1994–Nov 1995 By Status and Cause of Death				
Cause	Civilians	Soldiers	Unknown	Total	Cause	Civilians	Soldiers	Unknown	Total
Violent	449	419	113	981	Violent	659	636	-	1,294
Natural	2,253	63	362	2,678	Natural	3,364	97	-	3,462
Natural or Violent	829	172	96	1,097	Natural or Violent	-	-	-	-
Total	3,531	654	571	4,756	Total	4,023	733	-	4,756

However, the re-distribution cannot provide us with specific information about all other aspects of death statistics. Only the aggregate numbers can be improved through it.

The discussion of causes of deaths would be incomplete if medical causes were not mentioned. Below we include an overview of the medical causes for the violent war-related deaths relevant to the Dragomir Milošević case. In the overview civilian and military deaths are separated.

Table 12 leaves practically no doubt that the war-related violent deaths took place in dramatic circumstances. It is also striking that both civilians and soldiers frequently died of the same medical causes.

Causes of death seen in Table 12 most frequently include the following:

- open wounds of single or multiple body regions
- crushing injuries of single or multiple body regions
- fractures of single or multiple body regions

- traumatic amputations

Table 12. Medical Causes of Violent War-Related Deaths, Sarajevo Six, August 1994- November 1995, By Civilian-Military Status

Number	Medical Cause of Death	Civilians	Soldiers	Unknown	Total
1	Aortic aneurysm and dissection	1			1
2	Asphyxiation	10	1	4	15
3	Burn and corrosion of head and neck	2		2	4
4	Burn and corrosion of shoulder and upper limb, except wrist and hand	1			1
5	Burn and corrosion, body region unspecified	1			1
6	Burns and corrosions of multiple body regions	6		1	7
7	Burns classified according to extent of body surface involved	1		1	2
8	Certain early complications of trauma, not elsewhere classified		2		2
9	Crushing head injury	21	26	7	54
10	Crushing injuries involving multiple body regions	30	20	10	60
11	Crushing injury & traumatic amputation of part of abdomen, lower back & pelvis	8	2	1	11
12	Crushing injury of hip and thigh		5		5
13	Crushing injury of neck		2	1	3
14	Crushing injury of shoulder and upper arm	1	1		2
15	Crushing injury of thorax and traumatic amputation of part of thorax	1			1
16	Effects of air pressure and water pressure			1	1
17	Fracture of femur	1		1	2
18	Fracture of lower limb, level unspecified	1			1
19	Fracture of ribs, sternum and thoracic spine	2	2		4
20	Fracture of shoulder and upper arm	1	1		2
21	Fractures involving multiple body regions	2	1	1	4
22	Heart injury	2	6	1	9
23	Injury of blood vessels at neck level		2		2
24	Injury of blood vessels at abdomen, lower back and pelvis level			1	1
25	Injury of blood vessels at hip and thigh level	1			1
26	Injury of blood vessels at shoulder and upper arm level		1		1
27	Injury of intra-abdominal organs	6	5		11
28	Injury of other and unspecified intrathoracic organs	3	2		5
29	Injury of unspecified body region	93	125	26	244
30	Intracranial injury	16	17	3	36
31	Neck fracture		1		1
32	Open head wound	38	23	9	70
33	Open neck wound	10	5	5	20
34	Open thorax wound	49	25	7	81
35	Open wound of abdomen, lower back and pelvis	13	16		29
36	Open wound of forearm		1		1
37	Open wound of hip and thigh	3	3	1	7
38	Open wound of lower leg		1		1
39	Open wound of shoulder and upper arm	1	1		2
40	Open wounds involving multiple body regions	54	59	11	124
41	Other acute ischaemic heart diseases		1		1
42	Other and specified injuries of hip and thigh	1			1
43	Other and unspecified injuries of abdomen, lower back and pelvis		1		1
44	Other and unspecified injuries of head	1	2	1	4
45	Other and unspecified injuries of neck	1			1
46	Other and unspecified injuries of thorax	8	8		16
47	Other injuries involving multiple body regions, not elsewhere classified	2	1		3
48	Other injuries of upper limb, level unspecified		1		1
49	Poisoning by diuretics and other and unspecified drugs, medicaments and biological substances	3			3
50	Skull and facial bone fracture	13	10	2	25
51	Somnolence, stupor and coma	1			1
52	Superficial injury of lower leg			1	1
53	Toxic effect of alcohol	1			1
54	Toxic effect of carbon monoxide	2			2
55	Toxic effect of corrosive substances	1			1
56	Toxic effect of other gases, fumes and vapours			1	1
57	Traumatic amputation of hip and thigh	1			1
58	Traumatic amputation of lower leg		3		3
59	Traumatic amputation of part of head	1	1	1	3
60	Traumatic amputation of shoulder and upper arm	2			2
61	Traumatic amputations involving multiple body regions	5	5	1	11
62	Unspecified multiple injuries	3	2	1	6
63	Unspecified renal failure			1	1
64	Unknown	24	28	10	62
1-64	Total	449	419	113	981

The unknown (medical) causes of death (62 cases) account for 6.3% of all deaths reported in Table 12. For all these cases information is available as to their violent character, and most or all of them can be seen as directly war related.

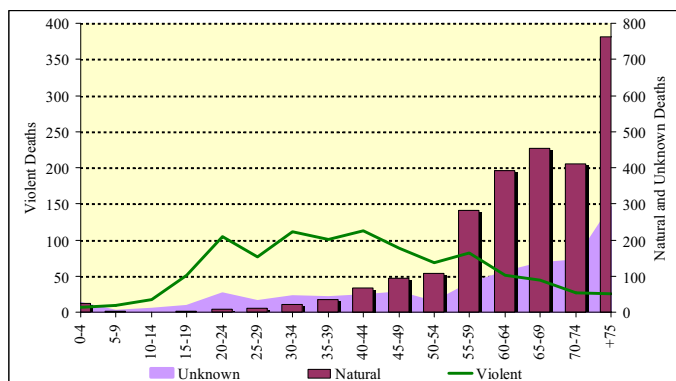
4.3 BY AGE AND SEX

Age and sex are two important characteristics of killed persons. In this section we show the distribution of deaths by age and sex, also in the context of their military-civilian status. As an introduction, Figure 3 shows how different the age patterns were for the deaths from violent, natural and unknown causes in Sarajevo Six from August 1994 to November 1995. Note that Figure 3 combines three different types of charts in one figure; a line, bar and area chart, with their values marked on two different axes. These three forms (and two axes) have been chosen for ease of presentation. Each of them represents a separate category of deaths:

- the line chart corresponds to violent deaths; its values are displayed on the left hand axis;
- the bar chart represents natural deaths; the right hand axis is where the numbers of natural deaths are shown;
- the area chart is associated with deaths from unknown causes; the right hand axis shows its values.

Note that the scales for the values displayed on the left and right axes are very different, with the left one, (a maximum of 400), being half of the right one (ending with a maximum of 800). This is done because the patterns are the most important in this figure, not the relative scale of each series.

Figure 3. Age Profile of Deaths from Violent War Related versus Natural and Unknown Causes, Sarajevo Six, August 1994 to November 1995, Civilians and Soldiers



Typically, in times of peace, violent deaths are concentrated around a clear but narrow accident hump located at ages 18 to 25 years. Such a hump cannot be seen in the line in Figure 3 representing the violent war-related deaths in the Sarajevo Six area in August 1994 to November 1995. Instead, deaths from violent causes shown are associated with a broad age interval from about 15 to 69 years and the number of violent deaths continues to be high thereafter. Even the elderly of about 75 or more years are still affected by violent war-related deaths.

In Figure 3, deaths from natural causes (bars) are the lowest around the ages 5 to 19 years, remain low from age 20 to 54 years, and rapidly increase with age thereafter. The highest levels are seen for the oldest population. Deaths from unknown causes (an area in Figure 3) are a mixture of violent

and natural deaths and are characterized by higher levels than natural deaths at the younger ages and much lower levels than the natural deaths for the older and very old individuals in the population.

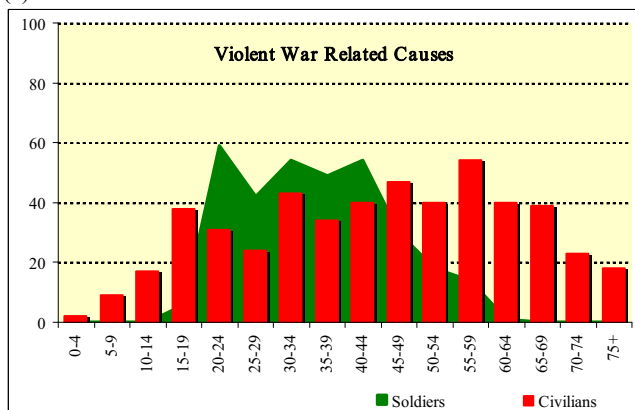
Notably, a significant disproportion is seen in natural deaths between two broad age intervals: 0 to 54 and 55 or more years. The part related to ages 55 years or more is disproportionately high compared with that related to younger ages. An explanation of this observation is that many deaths below age 55 were war related, not natural. Secondly, several deaths at ages 55 or more years, although called “natural”, were in fact related to war. This would be the indirect victims of war, mainly civilians that died of non-violent causes, and secondly also deaths, again of mainly civilians, which due to insufficient information on circumstances of death could not be reported in statistics as war-related.

Figure 4 (a and b) shows differences in the age profiles of deaths of civilians and soldiers for the two major groups of deaths, i.e. violent and natural deaths. Almost all soldiers died of violent war-related deaths at ages between 15 to 65 years; a very few are reported as natural deaths.

Notwithstanding that most civilians died of natural causes at ages 55 or more years, large numbers of civilians died of violent war related causes at all ages starting from birth to senescence. The civilian population from 15 to 69 years of age was the most affected.

Figure 4. Age Distribution of Violent War Related versus Natural Deaths, Sarajevo Six, August 1994 to November 1995, By Military Status

(a) Violent War Related Causes



(b) Natural Causes

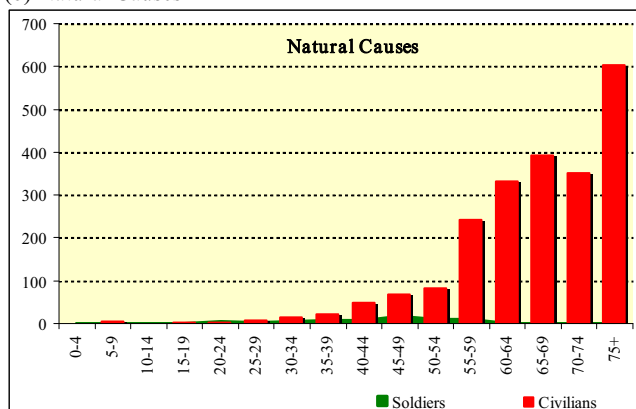


Table 13a. Observed Number of Violent War-Related Deaths in Sarajevo Six, August 1994 – November 1995, By Sex and Civilian-Military Status

Violent Causes: Civilians					Violent Causes: Soldiers				
Age(5)	Men	Women	Total	Percent	Age(5)	Men	Women	Total	Percent
0-12	11	11	22	4.9	0-12	-	-	-	-
13-17	24	5	29	6.5	13-17	4	-	4	1.0
18-44	99	56	155	34.5	18-44	316	5	321	76.6
45-64	102	61	163	36.3	45-64	92	1	93	22.2
65+	53	27	80	17.8	65+	1	-	1	0.2
Total	289	160	449	100.0	Total	413	6	419	100.0
Percent	64.4	35.6	100.0	-	Percent	98.6	1.4	100.0	-

Table 13b. Re-distributed Number of Violent War-Related Deaths in Sarajevo Six, August 1994 – November 1995, By Sex and Civilian-Military Status

Violent Causes: Civilians					Violent Causes: Soldiers				
Age(5)	Men	Women	Total	Percent	Age(5)	Men	Women	Total	Percent
0-12	16	16	32	4.9	0-12	-	-	-	-
13-17	35	7	43	6.5	13-17	6	0	6	1.0
18-44	145	82	227	34.5	18-44	480	8	487	76.6
45-64	150	90	239	36.3	45-64	140	2	141	22.2
65+	78	40	117	17.8	65+	2	0	2	0.2
Total	424	235	659	100.0	Total	627	9	636	100.0
Percent	64.4	35.6	100.0	-	Percent	98.6	1.4	100.0	-

In the context of age, the most essential question is related to the number of civilian victims who died of violent war related causes at especially young ages. It is also relevant to know how many of these deaths were of women. We present these numbers, including the sex divide, in Table 13a and 13b. Part “a” of the table includes the minimum numbers for Sarajevo Six, August 1994 to November 1995, and part “b” the more complete numbers for the same area and the same time period obtained by adding to the minimum numbers the component estimated from the re-distribution of deaths from unknown causes.

The exact way of doing this was as follows. Deaths from unknown causes (1,097 for Sarajevo Six, August 1994–November 1995; comp Table 9a) were first re-distributed according to the observed fractions of violent and natural causes in their total, resulting in two new totals of deaths from violent and natural causes (1,294 and 3,462 respectively; comp Table 9b; note in Tables 13b and 14b, due to rounding errors the new total of violent deaths is 1,295 instead of 1,294). These new

totals were used here as the basis for further re-distribution according to the observed percentage age distributions from Table 13a. Different percentage distributions were applied for (male/female) civilians and (male/female) soldiers. As a result of this procedure the percentage distributions inherent in the original data, (Table 13a), were preserved after the re-distribution, (Table 13b). The absolute numbers increased.

Figure 5. Age Distribution of Violent War-Related Deaths of Civilians and Soldiers. Sarajevo Six, August 1994 to November 1995

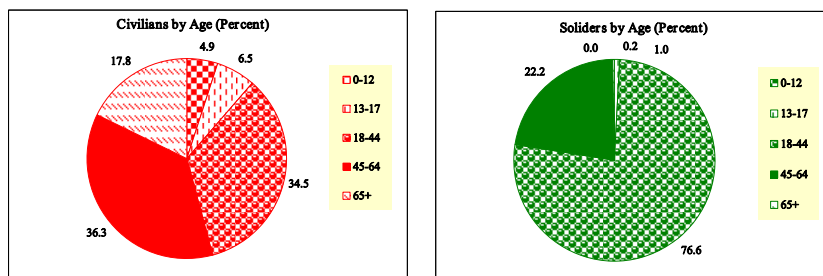


Figure 5 illustrates that among the civilians who died of violent war-related causes, most were at ages from 18–44 and 60–64 years (34.5 and 36.3 percent; 70.8% jointly). The remaining deaths were of the children, youth and elderly (28.2%). Among soldiers, these two age intervals covered 76.6 and 22.2% of them, that is almost all of deaths (98.8%).

Among civilians, a minimum of 51 to 75 children at age 0–17 years were killed, and a minimum of 80 to 117 individuals at old age (65+) died of violent war related causes. A minimum of 160 to 235 (civilian) women died of these causes as well.

4.4 BY ETHNICITY

Ethnicity is originally available from almost every source. Only Bakije and the ICRC lists do not include ethnicity. As Bakije is a Muslim funeral home, all deaths reported in this source should have the ethnicity “Muslim” assigned to them. With regard to the ICRC, we used the links of the ICRC records with the 1991 Census records and for every record linked we moved the ethnicity reported in the Census into the ICRC list. In this way, ethnicity became available for almost every record in our Sarajevo database.

In order to standardize the many ethnic categories originally reported in the sources, a simple classification scheme was used. In this scheme only Muslims, Croats and Serbs are distinguished as separate groups. All remaining ethnicities are taken jointly as “Others”. The unreported or unavailable ethnicities are coded as “Unknown”.

In Tables 14a and 14b below, two types of statistics are shown. Table 14a includes the minimum numbers, obtained on the basis of violent war-related deaths (981 deaths). Table 14b, similarly to Table 13b for the age-sex distribution, contains the corrected minimum numbers which in addition to the basic figures from Table 14a, additionally also include the re-distributed numbers of deaths from unknown causes, (a new total of 1,295 of violent war-related deaths). Also in this case, the re-distribution was conducted proportionally to the observed percentage distributions by ethnicity and status.

Table 14a. Observed Number of Violent War-Related Deaths in Sarajevo Six, August 1994 – November 1995, By Ethnicity and Civilian-Military Status

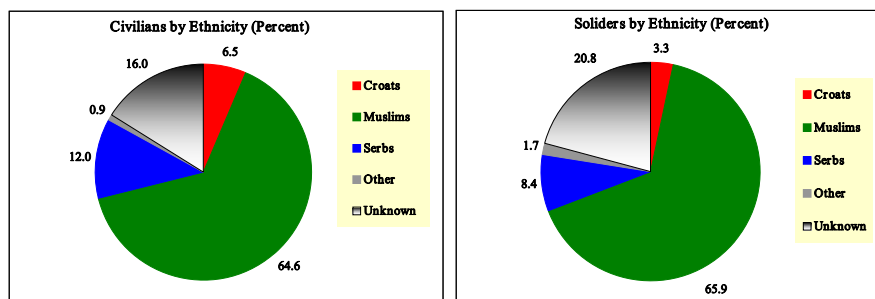
Violent Causes (Absolute Numbers)					Violent Causes (Percent)			
Ethnicity	Civilians	Soldiers	Unknown	Total	Ethnicity	Civilians	Soldiers	Unknown
Croats	29	14	5	48	Croats	6.5	3.3	4.4
Muslims	290	276	68	634	Muslims	64.6	65.9	60.2
Serbs	54	35	12	101	Serbs	12.0	8.4	10.6
Other	4	7	2	13	Other	0.9	1.7	1.8
Unknown	72	87	26	185	Unknown	16.0	20.8	23.0
Total	449	419	113	981	Total	100.0	100.0	100.0

Table 14b. Re-distributed Number of Violent War-Related Deaths in Sarajevo Six, August 1994 – November 1995, By Ethnicity and Civilian-Military Status

Violent Causes (Absolute Numbers)				Violent Causes (Percent)		
Ethnicity	Civilians	Soldiers	Total	Ethnicity	Civilians	Soldiers
Croats	43	21	64	Croats	6.5	3.3
Muslims	426	419	845	Muslims	64.6	65.9
Serbs	79	53	132	Serbs	12.0	8.4
Other	6	11	16	Other	0.9	1.7
Unknown	106	132	238	Unknown	16.0	20.8
Total	659	636	1,295	Total	100.0	100.0

The ethnic distribution is very similar for both civilians and soldiers (Figure 6). The largest group are ethnic Muslims (64.6% of all civilians and 65.9% of soldiers). The second largest category are deaths of ethnic Serbs (12.0 and 8.0 percent). The third largest group encompasses ethnic Croats (6.5 and 3.3 percent).

Figure 6. Ethnic Distribution of Violent War-Related Deaths of Civilians and Soldiers. Sarajevo Six, August 1994 to November 1995



In absolute terms, at least 290 to 426 civilians of Muslim ethnicity and 276 to 419 Muslim soldiers were killed in Sarajevo Six from August 1994 to November 1995. Regarding Serbs, the numbers were lower: at least 54 to 79 civilians and 35 to 53 soldiers. Finally, with respect to Croats, at least 29 to 43 civilians and 14 to 21 soldiers had died from violent war-related causes.

4.5 BY MUNICIPALITY AND TIME OF DEATH

In this section we study the geographic and temporal distribution of violent war-related deaths in Sarajevo Six. This is shown by simultaneously including the municipality and time of death (expressed as year and month of death) as part of the analysis. The purpose of the analyses

discussed in this section is looking for resemblance of the overall pattern of war-related deaths observed in the entire area of Sarajevo Six in the patterns identified for the municipalities.

The first table in this section, (Table 15), gives an overview of the overall numbers of deaths reported in the municipalities of the Sarajevo Six area in our Sarajevo database from August 1994 to November 1995. These municipal totals are distributed by time and shown on charts in the next parts of this section. In this section, the numbers of civilians and soldiers are shown jointly.

Table 15. Number of Deaths from Violent Causes in Sarajevo Six, August 1994 to November 1995, By Municipality and Month/Year of Death

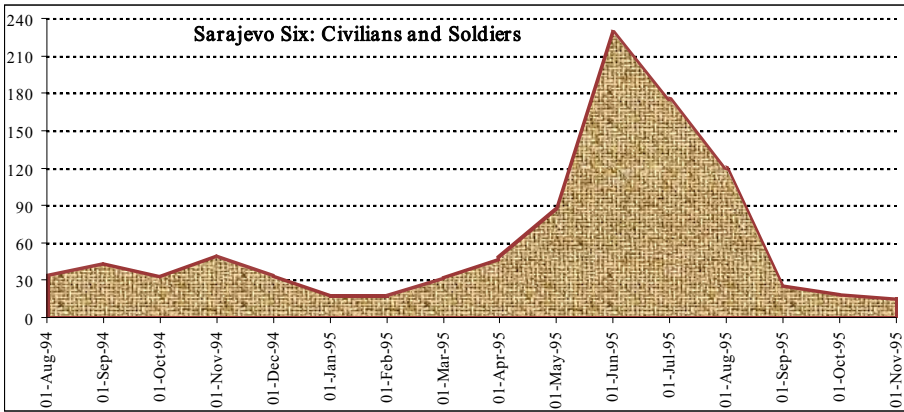
Date of Death	CENTAR	ILIDZA	NOVI GRAD	NOVO SARAJEVO	STARI GRAD	VOGO-SCA	UNSPECIFIED	Total
Aug-1994	11	6	4	2	1	4	6	34
Sep-1994	9	16	7		3	3	6	44
Oct-1994	8	9	3	3		2	8	33
Nov-1994	11	9	2	1	2	2	23	50
Dec-1994	5	9		3		3	14	34
Jan-1995	4	2	2	4	1	1	4	18
Feb-1995	5	5		3	3		2	18
Mar-1995	7	4	9	4	4	2	2	32
Apr-1995	8	17	8	4	5	1	4	47
May-1995	34	21	11	11	6		5	88
Jun-1995	42	71	46	19	8	36	6	228
Jul-1995	48	29	28	24	21	10	15	175
Aug-1995	57	23	12	13	7	3	5	120
Sep-1995	12	2	5	4	2		1	26
Oct-1995	8	5	2	2			2	19
Nov-1995	6	2	2	2		2	1	15
Total	275	230	141	99	63	69	104	981

4.5.1 The order of the municipalities in Table 15 is almost the same as their rank order, (according to municipality of death), from the highest to the lowest number of deaths from August 1994 to November 1995. Centar, Ilidža, Novi Grad, and Novo Sarajevo are the four municipalities with the highest numbers of violent war-related deaths in this period (from about 100 to 275 deaths per one municipality in this period). One more territorial unit, Sarajevo Unspecified, was characterized by a relatively high number of deaths (104) as well, but this total was composed of deaths from all other municipalities and cannot be associated with just one area. Stari Grad and Vogošća show similar numbers of deaths that were considerably lower than the numbers of deaths in the first four municipalities (about 65 deaths each).

4.5.2 The overall time distribution of violent war-related deaths in Sarajevo Six area in the period from August 1994 to November 1995, is depicted in Figure 7. Year and month of death were used as the time units for this presentation. Noting that the number of these particular deaths is a proxy for the intensity of war activities, two clear periods of increased war activities can be seen from Figure 7:

- a slightly increased activity from August 1994 to December 1994; in this period the overall number of violent deaths per month was at least 33 to 50;
- a considerably increased activity from March 1995 to August 1995 with the number of deaths being at least from 32 to 228 per month.

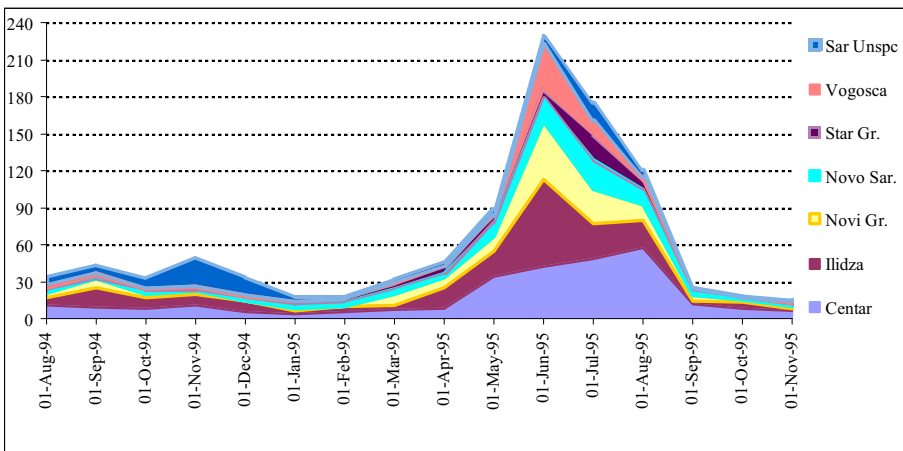
Figure 7. Number of Violent War-Related Deaths in Sarajevo Six, August 1994 – November 1995, by Month/Year of Death



January-February 1995 and September-November 1995 are the only two quieter periods during the period from August 1994 to November 1995.

4.5.3 Figure 8 shows how many deaths were “contributed” to this overall temporal pattern by each municipality. Deaths from unspecified locations, (still within the Sarajevo Six), were much more frequent in the first active period, (August-December 1994), than in the second one. Deaths from the two least represented municipalities, i.e. from Vogošća and Stari Grad, occurred mainly in the second active period (March-August 1995). Deaths from four major municipalities, i.e. Centar, Ilidža, Novi Grad, and Novo Sarajevo, occurred in both active periods, although not necessarily at a uniform rate.

Figure 8. Number of Violent War-Related Deaths in Sarajevo Six, August 1994 – November 1995, by Municipality and Month/Year of Death



4.5.4 In order to study the municipal time patterns more precisely, a number of additional charts were made and are attached here. The first one is Figure 9 displaying violent deaths in all

municipalities jointly by the precise day of death. Figure 10 shows the same kind of data for each municipality.

The threshold used in the discussion of the results from Figures 9 and 10 is 10 deaths per day. It is a high number and we use it for highlighting the largest incidents only. In the following section (4.6) the threshold is 3 deaths per day, and this gives us more room for studying differences between deaths of civilians and soldiers.

According to Figure 9, the following are the dates when 10 or more individuals were killed:

- 07-May-1995: 10 deaths (mainly from Ilidža)
- 16-May-1995: 13 deaths (mainly from Centar)
- 24-May-1995: 13 deaths (mainly from Centar)
- 04-Jun-1995: 10 deaths (mainly from Ilidža)
- 15-Jun-1995: 14 deaths (mainly from Ilidža)
- 16-Jun-1995: 53 deaths (from Centar, Ilidža, Novi Grad, Novo Sarajevo and Sarajevo-
unspecified)
- 17-Jun-1995: 10 deaths (mainly from Ilidža)
- 18-Jun-1995: 10 deaths (mainly from Novi Grad)
- 21-Jun-1995: 25 deaths (mainly from Sarajevo-unspecified and Novi Grad)
- 25-Jun-1995: 12 deaths (mainly from Novi Grad)
- 29-Jun-1995: 10 deaths (mainly from Ilidža and Novi Grad)
- 30-Jun-1995: 10 deaths (mainly from Novo Sarajevo)
- 01-Jul-1995: 17 deaths (mainly from Stari Grad and Novi Grad)
- 08-Jul-1995: 11 deaths (mainly from Novo Sarajevo)
- 18-Jul-1995: 11 deaths (mainly from Novo Sarajevo)
- 21-Jul-1995: 10 deaths (mainly from Centar)
- 26-Jul-1995: 15 deaths (mainly from Centar)
- 28-Aug-1995: 40 deaths (mainly from Centar)

Figure 9. Number of Deaths from Violent War-Related Causes in Sarajevo Six, August 1994 – November 1995, by Day-Month-Year of Death

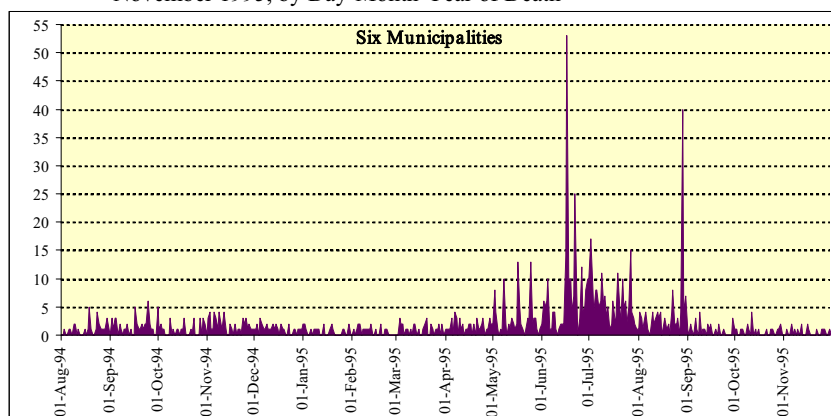
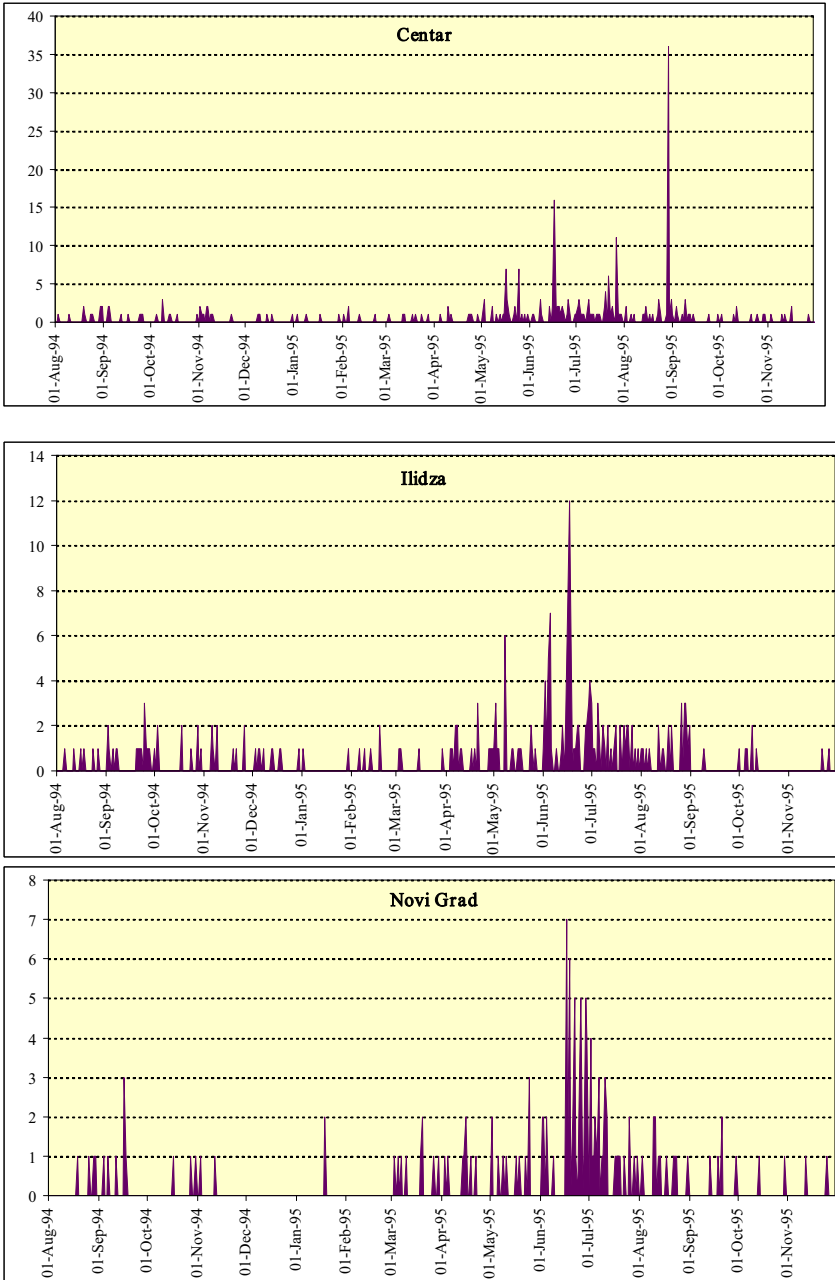


Figure 10. Number of Deaths from Violent War-Related Causes in Sarajevo Six, August 1994 – November 1995, by Municipality and Day-Month-Year of Death



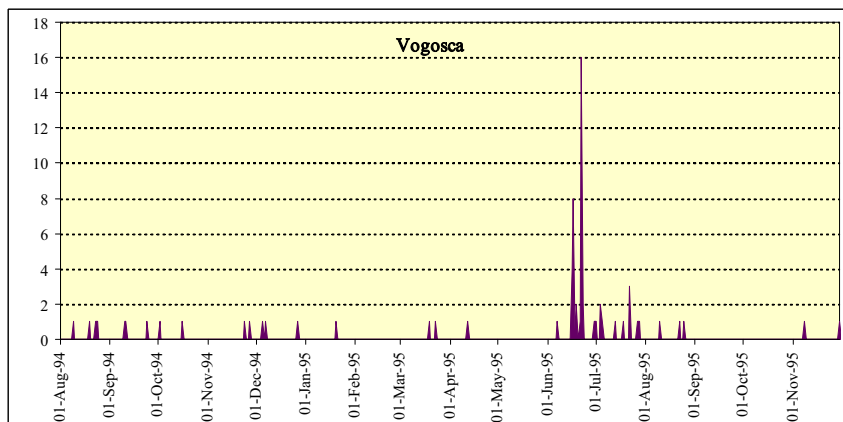
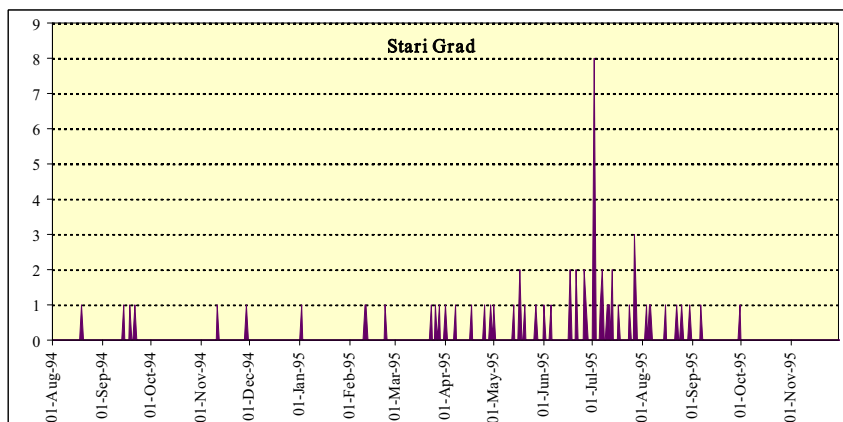
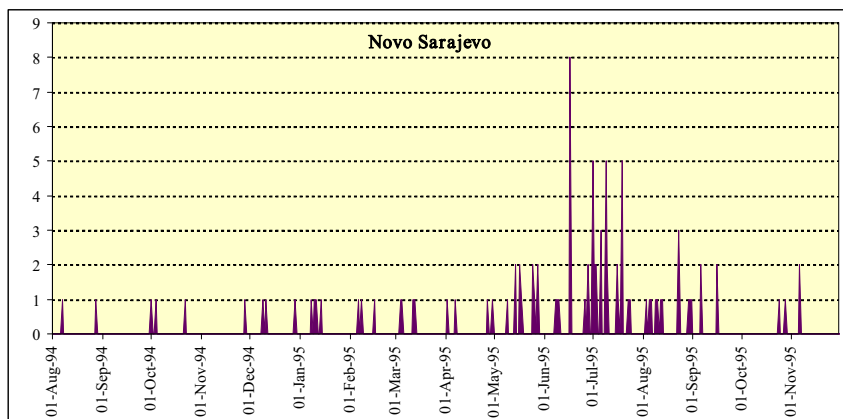


Table 16. Number of Violent War-Related Deaths in Sarajevo Six, August 1994 – November 1995: Ratio of Civilians to Soldiers By Municipality of Death

MoD Code	MoD Name	Civilians	Soldiers	Unknown	Total	C:S
10839	CENTAR	152	91	32	275	1.7
10855	ILIDZA	79	125	26	230	0.6
10871	NOVI GRAD	74	60	7	141	1.2
10880	NOVO SARAJEVO	53	39	7	99	1.4
10901	STARI GRAD	26	22	15	63	1.2
10928	VOGOSCA	13	46	10	69	0.3
19200	UNSPECIFIED	52	36	16	104	1.4
TOTAL	TOTAL	449	419	113	981	1.1

Notes: C:S is the number of civilians killed per 1 soldier

4.6.2 Table 17 concentrates on the civilians-to-militaries ratios for the subsequent months of the siege.

Table 17. Number of Violent War-Related Deaths in Sarajevo Six, August 1994 – November 1995: Ratio of Civilians to Soldiers By Month/Year of Death

Month-Year of Death	Civilians	Soldiers	Unknown	Total	C:S
Aug-1994	16	13	5	34	1.2
Sep-1994	18	19	7	44	0.9
Oct-1994	15	12	6	33	1.3
Nov-1994	21	21	8	50	1.0
Dec-1994	16	11	7	34	1.5
Jan-1995	11	1	6	18	11.0
Feb-1995	10	5	3	18	2.0
Mar-1995	18	12	2	32	1.5
Apr-1995	29	16	2	47	1.8
May-1995	37	37	14	88	1.0
Jun-1995	71	142	15	228	0.5
Jul-1995	88	71	16	175	1.2
Aug-1995	66	39	15	120	1.7
Sep-1995	16	7	3	26	2.3
Oct-1995	8	9	2	19	0.9
Nov-1995	9	4	2	15	2.3
Total	449	419	113	981	1.1

Notes: C:S is the number of civilians killed per 1 soldier

The highest ratios were obtained for the months of January-February 1995, (11:1¹⁷ and 2:1), and later for September and November 1995 (2.3:1 each). These months do not belong to the periods of increased military activities. On the contrary, in Section 4.5 we concluded that both these periods were clearly quieter than the two periods of high activity (August-December 1994 and March-August 1995). Still, even though the combat was quiet, many civilians were killed, obviously many more per 1 soldier than in the times of increased combat.

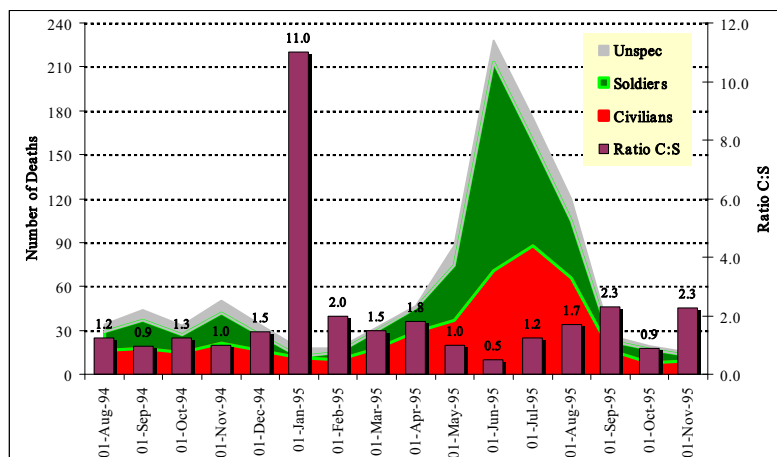
4.6.3 According to Table 17, (comp. as well Figure 11), in the periods of higher war activities, the ratios were generally higher than 1, meaning that more civilians were killed than soldiers, two exceptions being:

- September 1994 in the high period of August-December 1994 (0.9:1); the highest ratio in this period was for December 1995 (1.5:1);

¹⁷ The value of the ratio for January 1995 is extraordinarily high (11:1), which is the result of the fact that only one soldier was reported killed in this month. The ratio might have possibly been lower, but not considerably, we believe.

- June 1995 in the high period of March-August 1995 (0.5:1); the highest ratio for this period was for April 1995 (1.8:1).

Figure 11. Number of Violent War-Related Deaths in Sarajevo Six, August 1994 – November 1995, By Military Status



4.6.4 The relationship between deaths of civilians and soldiers is further summarized in Figure 11. In August-December 1994, the loss of civilians was relatively stable and remained around the level of 1.2:1, with the December ratio as a maximum (1.5:1). It is clear, however, that the lower values of C:S ratio were associated with the peaks in the numbers of killed.

In March-August 1995, the pattern is fluctuating. Relatively higher but declining values are observed from March to June 1995, with the ratio for June (0.5:1) being an absolute minimum at the time of the most intense combat activities (and the highest number of killed). Starting in July 1995, the ratios are increasing again up to the local maximum in September 1995 (2.3:1). In the second high intensity period, it is clear that the ratios C:S are inversely proportional to the overall number of deaths. (The higher the number of all violent deaths, the lower the ratio of C:S). The same type of relationship can be also seen, although less clearly, for the months of August 1994 to November 1995 (1st active period).

4.6.5 This kind of variable ratio, clearly seen especially in the second period of higher war activities, together with the extraordinarily high ratios in each of the two quieter periods of war activities, confirm that the civilian casualties do not follow the pattern of military activity. In other words, targeting of the civilian population as such most likely took place in the period from August 1994 to November 1995.

4.6.6 In order to further explore this statement, the same type of analysis was re-done for the entire conflict period, from April 1992 to November 1995. The result of this is shown below:

Figure 12a. Number of Violent War-Related Deaths in Sarajevo Six, April 1992 – November 1995, By Military Status

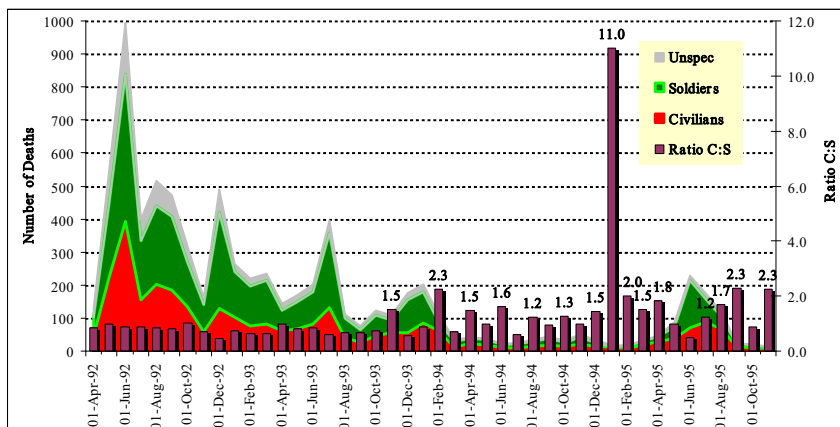
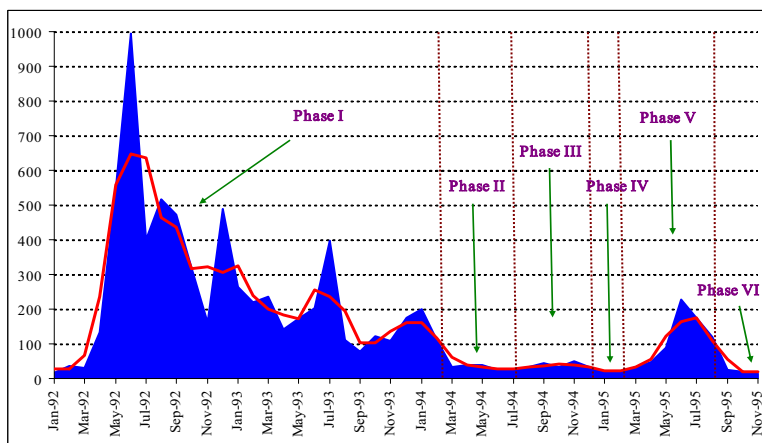


Figure 12b. Number of Violent War-Related Deaths in Sarajevo Six, April 1992 – November 1995: Phases of the Siege¹⁸



The pattern obtained for the period of August 1994 to November 1995 is displayed in Figure 12 (a, b) in a broader perspective of the entire conflict. Several observations are striking. The overall number of killed persons, together with the C:S ratio, indicate a number of distinctive phases of the conflict (see as well Figure 12).

- **Phase I:** The conflict episode lasting from April 1992 to February 1994 had a very high intensity and accounted for many victims. On average, at least 285 persons were killed per month. This high number of deaths was associated with a relatively low and stable level of the C:S ratios. With the exception of November 1993 and, in particular, February 1994 (i.e.

¹⁸ The red line shown in Figure 12 is a smoothed version of the same data on killed persons. It is calculated as a 3rd degree moving average centred around the middle component.

the first Markale incident), in all other months in this period, civilian losses, although high in terms of absolute numbers, were not of a particularly high proportion with regard to the military losses. This observation holds true disregarding the level and time trend of the overall number of killed persons. Phase I could be further split into a number of shorter phases, which we will not do as the subject of this report relates to the later phases of the siege.

- **Phase II:** February 1994 is a turning point in the intensity of conflict, with a high level of the C:S ratio (2.3 civilians killed per 1 soldier in this month). Starting in March 1994, the siege of Sarajevo acquired a new momentum, obviously a transition from high to low (and declining) war activity, which lasted rather briefly from March to July 1994. The overall number of killed is not particularly high in this period, (the average minimum number of killed per month is **32**), but civilians still died from war activities. The resulting C:S ratios started to be higher (around 1.5 to 1.6 per 1 soldier) and varying, unlike in Phase I.
- **Phase III:** August 1994 marked a new episode of the siege, of once again increased military activity. The number of killed persons per month is on average **39**. The proportion between killed civilians and soldiers remains high and varying (1.2 to 1.5).
- **Phase IV** (with an average of at least **18** deaths per month; January-February 1995), **Phase V** (on average a minimum of **115** deaths per month; March-August 1995), and **Phase VI** (on average at least **20** deaths per month; September-November 1995), are three phases already identified and discussed in much detail earlier in this section. As stated in paragraph 4.6.5 of this report, the variable C:S ratios obtained for the periods of higher war activity and exceptionally high ratios for the periods of quieter war activity, confirm that civilian casualties cannot be seen as proportional to military casualties and point out the targeting of civilians irrespective of the actual combat situations.

4.6.7 The most significant difference is between Phase I and all subsequent phases thereafter. After February 1994 which marks the end of Phase I, the losses of civilians were clearly higher than the losses of the military personnel. Starting already in Phase II, but in particular from Phase III onwards (after August 1994), the losses of civilians (i.e. C:S ratios) remained generally high, especially during Phase IV of the siege. Thus, the broader picture provided in Figures 12a and 12b confirmed that in the siege period relevant to the indictment of Dragomir Milošević case, civilians were killed disproportionately frequently in relation to killed soldiers. Moreover, the civilians were at a higher risk to be targeted in the August 1994-November 1995 period than in the earlier phases of the siege, (particularly during Phase I).

4.6.8 The relationship of civilian and military deaths needs to be explored in more detail in the context of the sub-periods of the siege discussed above. Our focus is now again only on the time span directly related to the Dragomir Milošević indictment (August 1994 to November 1995). Two types of war activity have been identified using the data on violent deaths: increased (Phase III and Phase V) and quieter (Phase IV and Phase VI). Within each war episode there were certainly days with increased war activity (hereafter: high days) and other quieter days (hereafter: low days).

4.6.9 To begin with, Table 18 contains a summary of the low and high days in Sarajevo Six in the period from August 1994 to November 1995, disregarding the episode the days belonged to. The purpose of Table 18 is to give a general impression of the prevailing days and of the violent deaths that occurred on the prevailing days.

Table 18. Summary of Violent Deaths in Sarajevo Six, August 1994–November 1995 by Daily Intensity and Military Status

Type of days	No of Days	Civilians	Soldiers	Unknown	Total	C:S
0 deaths/day	156	0	0	0	0	-
1-2 deaths/day	224	160	102	46	308	1.6:1
3+ deaths/day	107	289	317	67	673	0.9:1
Total	487	449	419	113	981	1.1:1

Generally, as summarized in Table 18, we obtained the following:

- 156 days of the 487 siege days were with no violent deaths reported,
- 224 days of the 487 siege days were with less than 3 deaths reported per day,
- 107 days of the 487 siege days were with 3 or more deaths reported per day.

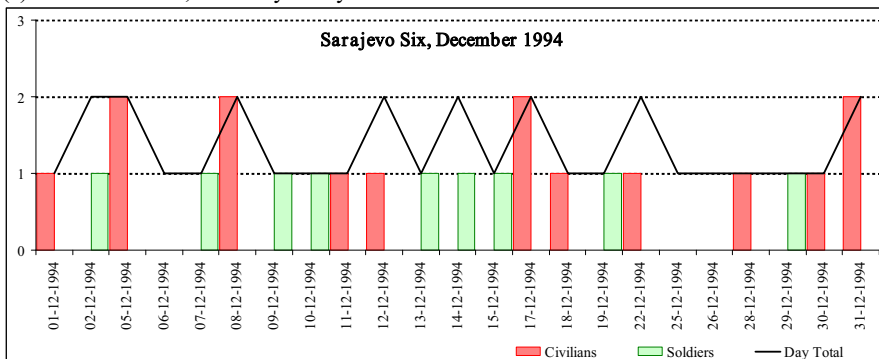
Thus, most days of the siege (224) were characterized by 1 or 2 violent deaths per day. In these 224 days, (at least) 308 persons out of 981 victims were killed. Most of them were civilians (at least 160) and their deaths did not occur in a reasonable proportion to the military deaths on the same days (see Figure 13a and 13b). In fact, most of these civilian victims were most likely targeted by military forces independently from regular combat activities in which the two fighting armies were engaged. The proportion of killed civilians in relation to soldiers was 1.6 to 1.

There were 107 days out of 487 in total characterized by 3 or more violent deaths per day. In total, at least 673 victims died on such days. Many of them (actually, a relative majority) were soldiers (at least 317 out of 673 as opposed to 289 civilians). The ratio of killed civilians per one soldier was 0.9:1.

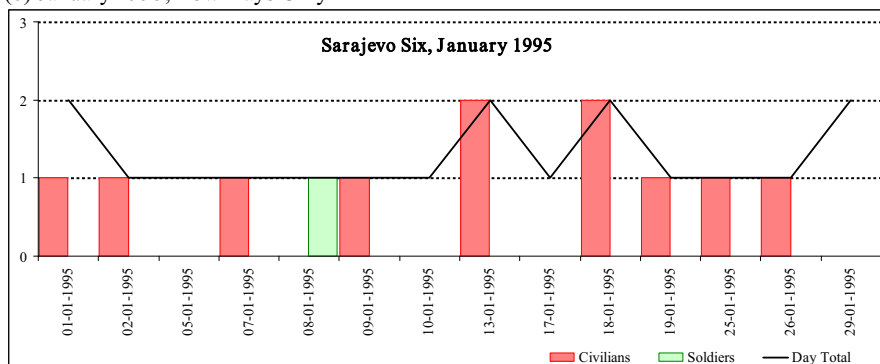
4.6.10 Figures 13a and 13b show the daily distribution of violent deaths in the Sarajevo Six area in two months, December 1994 (representing Phase III) and January 2005 (Phase IV), selected as examples of the aggregation of all violent deaths made according to their daily total required to remain **below** the level of 3 deaths per day. Thus, for both months only the low days are reviewed. (A similar tabulation is shown in Table 21 for daily totals of violent deaths required to be **3 or more**). The divide of the selected deaths into civilian and military casualties is retained in these charts as well in order to monitor the relationship between killed civilians and killed soldiers. The months of December 1994 and January 1995 were selected without a particular reason; each of them is just a good representation of the general pattern obtained when low days (with less than 3 violent deaths per day) are analysed.

Figure 13. Number of Violent Deaths in Sarajevo Six in Selected Months
Days With less than 3 Victims a Day

(a) December 1994, Low Days Only



(b) January 1995, Low Days Only

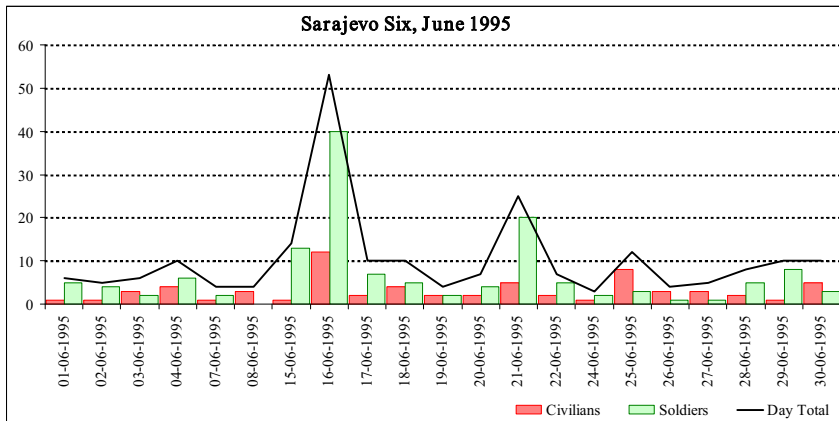


4.6.11 The striking observation from Figure 13 is that if the daily total is less than three deaths, mainly the civilians are killed, and soldiers to a much lower extent. In January 1995, 9 civilians versus 1 soldier were killed and in December 1994, 11 civilians as opposed to 9 soldiers. Secondly, there was no one single day included in Figures 13a and 13b in which both civilians and soldiers were killed on one the same day. During the low days it is **either** a civilian **or** a soldier killed on a given day. This kind of pattern cannot be seen as supportive of proportional killing of civilians in combat situations in which soldiers were involved. On the contrary, the pattern clearly suggests that on the low days civilians were killed without relation to soldiers engaged in combat.

4.6.12 The pattern for high days is different. An example of the daily distribution of violent deaths when 3 or more persons were killed per day is shown in Figure 14 for June 1995, the month with the highest number of violent deaths of both civilians and soldiers in the entire period from August 1994 to November 1995.

Out of the 30 days in June 1995, 21 were high days. 15 days of the 21 show both civilians and soldiers killed on the same day, the number of killed civilians being lower than the number of killed soldiers. However, on one day, 8 June, 3 civilians were killed but no soldiers. One person had an unknown military status. Five other days show more civilians killed than soldiers (3, 25, 26, 27, and 30 June).

Figure 14. Number of Violent Deaths in Sarajevo Six in June 1995
Dates With 3 or more Victims a Day



Summing up, a majority of civilians killed on high days in June 1995 may be seen as associated with military activity, but not all. In June 1995, the most intense combat month in the indictment period of the Dragomir Milošević case, during about 25% of time (i.e. of the high days), violent deaths of civilians were in excess of the deaths of soldiers.

4.6.13 Having investigated general issues related to the high and low days of the siege, our next question is how many days of each type belonged to each war episode, and how many victims had died in these episodes during the quieter as opposed to the increased-war-activity days? Simply speaking, we want to know whether victims were killed in a few large incidents concentrated in the episodes of increased war activity (Phase III and Phase V) or whether they were dying day by day systematically and persistently over long periods of time.

Table 19. Summary of Violent Deaths in Sarajevo Six, August 1994–November 1995 by Type of Days and Siege Episode

a) Days by Type and Siege Episode

Episode	Days in Aug. 1994– Nov. 1995			All days
	1-2 deaths/day	3+ deaths/day	No deaths/day	
Phase III	84	23	46	153
Phase IV	28	0	31	59
Phase V	75	80	29	184
Phase VI	37	4	50	91
Total All	224	107	156	487

b) Violent Deaths by Type of Day and Episode

Episode	Deaths in Aug. 1994– Nov. 1995, By Day			Total
	1-2 deaths/day	3+ deaths/day	No deaths/day	
Phase III	76	117	0	193
Phase IV	32	4	0	36
Phase V	75	611	0	686
Phase VI	39	21	0	60
Total	222	753	0	975

Note: 6 deaths excluded due to unknown day of death

c) Violent Deaths Per 1 Day by Type of Day and Episode

Episode	Deaths per Day in Aug. 1994- Nov. 1995			Total
	1-2 deaths/day	3+ deaths/day	No deaths/day	
Phase III	0.9	5.1	0.0	1.3
Phase IV	1.1	-	0.0	0.6
Phase V	1.0	7.6	0.0	3.7
Phase VI	1.1	5.3	0.0	0.7
Total	1.0	7.0	0.0	2.0

Note: 6 deaths excluded due to unknown day of death

4.6.14 Table 19 confirms some obvious expectations, such as, for example, that an increased military activity was taking place in Sarajevo Six over most of the time from August 1994 to November 1995. The two high episodes, Phase III and Phase V, lasted jointly over 337 days out of, in total, 487 days in the entire period related to the Dragomir Milošević indictment (Table 19a). The two low periods, Phase IV and Phase VI, lasted over the remaining 150 days.

Most victims were killed without any doubt in the high episodes, i.e. in Phase III and Phase V, bringing the overall total of victims from these two episodes to (at least) 879 out of 981 (Table 19b). Phase V alone accounted for (at least) 686 violent deaths, of which 611 took place on the high days and only 75 deaths on the low days (ibid). So, the episode of Phase V and the high days during the episode is the time when a majority of all violent deaths occurred (at least 611 out of 981) resulting in the ratio of (at least) 7.6 violent deaths per day.

Generally, however, according to Table 19c, the high days (with 3 or more deaths per day) were less frequent in almost every episode than the low days (1-2 deaths per day), one exception being of course the most intense and the longest Phase V episode in which there were more high days than the low ones. There were in total 224 low days versus 107 high days among all relevant 487 siege days. The number of violent deaths in the low days was (at least) 222 and the resulting average daily deaths ratio was approximately 1 death per day. Notably, the daily deaths ratio was slightly higher for the low days in Phase IV and Phase VI than for the low days in Phase III and Phase V.

Table 19c also confirms that the daily death ratio does not look high in low days, but it was really high during the high days, disregarding the siege episode, whether more intense or quieter. One exception from this rule was Phase IV which did not show any high days at all. In all other episodes, in the high days there were between 5 and 8 deaths per day.

4.6.15 Interestingly, although the daily deaths ratios were relatively low in the low days, the number of low days (224) was more than twice as large as that of the high days (107). One might wonder in this situation what would be the purpose and effect of this low but systematic killing of mainly civilians on the population of Sarajevo during the siege, other than terrorizing the population.

4.6.16 Table 20 gives an overview of yet one more aspect of the fighting in Sarajevo Six between August 1994 and November 1995. It is the civilian-soldiers divide of the victims according to the siege episode and the type of days (low versus high). The table makes it clear that the highest C:S ratios were associated with the quieter episodes of Phase IV and Phase VI (3.5:1 and 1.7:1) as opposed to the active fighting episodes of Phase III and Phase Vs (1.1:1 and 1:1).

Table 20. Violent Deaths in Sarajevo Six, August 1994–November 1995, by Type of Days, Siege Episode and Military Status

Violent Deaths in Aug. 1994– Nov. 1995					
Episode	Status	1-2 deaths per 1 day	3+ deaths per 1 day	No deaths per 1 day	All days
Phase III	Civilians	35	49	0	84
	Soldiers	24	52	0	76
	Unknown	17	16	0	33
	Total	76	117	0	193
	C:S	1.5	0.9	-	1.1
Phase IV	Civilians	18	3	0	21
	Soldiers	5	1	0	6
	Unknown	9	0	0	9
	Total	32	4	0	36
	C:S	3.6	3.0	-	3.5
Phase V	Civilians	40	266	0	306
	Soldiers	29	288	0	317
	Unknown	6	57	0	63
	Total	75	611	0	686
	C:S	1.4	0.9	-	1.0
Phase VI	Civilians	22	11	0	33
	Soldiers	13	7	0	20
	Unknown	4	3	0	7
	Total	39	21	0	60
	C:S	1.7	1.6	-	1.7
Total All	Total All	222	753	0	975

Note: 6 deaths excluded due to unknown day of death

If additionally also the type of day is taken into account, it becomes clear the civilians-to-soldiers ratios are lower than one (0.9:1) in only two cases: in the high days from Phase III and Phase V. All other cases of low or high days in any episode have the C:S ratios higher than 1, most markedly in Phase IV (both low and high days; 3.6:1 and 3.0:1 respectively).

4.6.17 This finding confirms that whereas the civilian victims killed on the high days during Phase III and Phase V episodes can be seen as relatively proportional to the military victims, the same is not true about the remaining victims, particularly those from the quieter episodes of Phase IV and Phase VI. Many more civilians were then killed than soldiers, and as shown earlier in this section civilians were targeted disregarding the engagement of soldiers in combat. Simply speaking, the results discussed here suggest that, except in high days in Phase III and Phase V, civilians were killed outside combat and without the presence of soldiers. This conclusion confirms that targeting of civilians largely took place in long time spans of the siege period from August 1994 to November 1995.

4.7 BY MAJOR INCIDENTS

The final issue discussed in this section is a study of major incidents, following below. It focuses on the dates with 3 or more deaths per day, by military status, in each of the six municipalities of Sarajevo and is meant to provide information regarding the timing and location of major incidents of the post-Phase I and post-Phase II episodes of the siege (see Table 21 and Figures 15 to 20).

4.7.1 According to Table 21, there were (at least) 60 days from August 1994 to November 1995 in which the number of violent deaths on one day in any of the six municipalities of Sarajevo Six was 3 or more. During these days, a total of (at least) 325 persons were killed out of the minimum number of all 981 identified. In Centar or Ilidža, for example, the number of such days was 17 in

each municipality. In Stari Grad 2 such dates have been identified. The results in Table 21 confirm that the violent deaths often occurred in smaller quantities and were systematically spread over time and space. They point out as well to the major incidents in the siege in August 1994 to November 1995. Below, we show these major incidents on charts, one chart representing one of the six municipalities of Sarajevo.

Table 21. Number of Violent War-Related Deaths in Municipalities of Sarajevo Six, August 1994 to November 1995: Dates When 3 or more Persons (All) Were Killed

MoD Code	MoD Name	YearDoD	MonthDoD	DayDoD	Civilians	Soldiers	Unk Status	Total
10839	CENTAR	1994	Oct	8	2	1	0	3
10839	CENTAR	1995	May	2		3	0	3
10839	CENTAR	1995	May	16	2	5	0	7
10839	CENTAR	1995	May	17	2	1	0	3
10839	CENTAR	1995	May	24	4	3	0	7
10839	CENTAR	1995	Jun	7	1	1	1	3
10839	CENTAR	1995	Jun	16	5	11	0	16
10839	CENTAR	1995	Jun	25	2		1	3
10839	CENTAR	1995	Jul	2	2	1	0	3
10839	CENTAR	1995	Jul	8	2		1	3
10839	CENTAR	1995	Jul	19	3	1	0	4
10839	CENTAR	1995	Jul	21	6		0	6
10839	CENTAR	1995	Jul	26	6	3	2	11
10839	CENTAR	1995	Aug	22	2	1	0	3
10839	CENTAR	1995	Aug	28	24	5	7	36
10839	CENTAR	1995	Aug	30	2	1	0	3
10839	CENTAR	1995	Sep	8	2		1	3
10855	ILIDZA	1994	Sep	25		2	1	3
10855	ILIDZA	1995	Apr	20	2	1	0	3
10855	ILIDZA	1995	May	1		1	2	3
10855	ILIDZA	1995	May	7	2	3	1	6
10855	ILIDZA	1995	Jun	1	1	3	0	4
10855	ILIDZA	1995	Jun	3	3	2	0	5
10855	ILIDZA	1995	Jun	4	2	5	0	7
10855	ILIDZA	1995	Jun	15		7	0	7
10855	ILIDZA	1995	Jun	16	2	10	0	12
10855	ILIDZA	1995	Jun	17	2	6	0	8
10855	ILIDZA	1995	Jun	28		2	1	3
10855	ILIDZA	1995	Jun	29		4	0	4
10855	ILIDZA	1995	Jun	30		2	1	3
10855	ILIDZA	1995	Jul	4	1	2	0	3
10855	ILIDZA	1995	Aug	25		2	1	3
10855	ILIDZA	1995	Aug	27	1	2	0	3
10855	ILIDZA	1995	Aug	28	2	1	0	3

Continued:

MoD Code	MoD Name	YearDoD	MonthDoD	DayDoD	Civilians	Soldiers	Unk Status	Total
10871	NOVI GRAD	1994	Sep	17		3	0	3
10871	NOVI GRAD	1995	May	24	3		0	3
10871	NOVI GRAD	1995	Jun	16	3	4	0	7
10871	NOVI GRAD	1995	Jun	18	3	3	0	6
10871	NOVI GRAD	1995	Jun	21	3	2	0	5
10871	NOVI GRAD	1995	Jun	25	2	3	0	5
10871	NOVI GRAD	1995	Jun	28	2	3	0	5
10871	NOVI GRAD	1995	Jun	29	1	2	1	4
10871	NOVI GRAD	1995	Jul	1	3	1	0	4
10871	NOVI GRAD	1995	Jul	6	1	2	0	3
10871	NOVI GRAD	1995	Jul	10	2	1	0	3
10880	NOVO SARAJEVO	1995	Jun	16	1	7	0	8
10880	NOVO SARAJEVO	1995	Jun	30	5		0	5
10880	NOVO SARAJEVO	1995	Jul	5		3	0	3
10880	NOVO SARAJEVO	1995	Jul	8	2	1	2	5
10880	NOVO SARAJEVO	1995	Jul	18	5		0	5
10880	NOVO SARAJEVO	1995	Aug	22	2	1	0	3
10901	STARI GRAD	1995	Jul	1	6	2	0	8
10901	STARI GRAD	1995	Jul	26		3	0	3
10928	VOGOSCA	1995	Jun	15		4	0	4
10928	VOGOSCA	1995	Jun	16		7	1	8
10928	VOGOSCA	1995	Jun	21		16	0	16
10928	VOGOSCA	1995	Jul	21		3	0	3
19200	UNSPECIFIED	1994	Oct	1	2	1	0	3
19200	UNSPECIFIED	1994	Nov	11	1	2	0	3
19200	UNSPECIFIED	1995	Jul	7	3		0	3
ALL	TOTAL				135	166	24	325

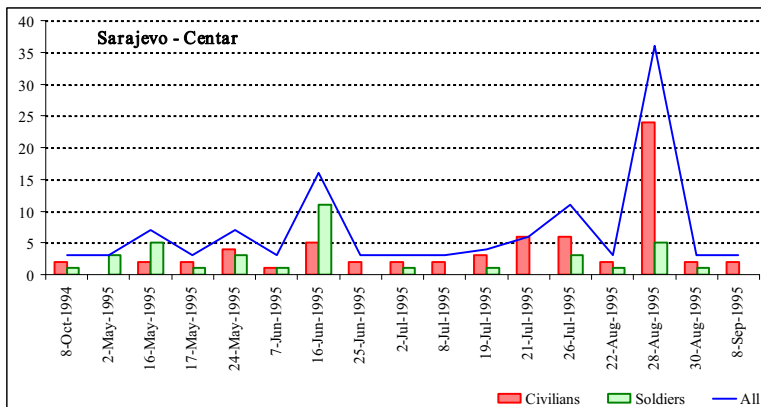
Note:

10 or more deaths / 1 day 5 to 9 deaths / 1 day

4.7.2 In Sarajevo - Centar, 17 high days were identified; the exact dates are shown in Figure 15. The largest number of violent deaths occurred on 28 August 1995, when at least 36 victims were reported, most of them being civilians (at least 24). The second highest day was 16 June 1995 with 16 victims of which at least 5 were civilians.

Out of the 17 high days, 13 days show more civilian than military victims (C:S >1; on 28 August 1995, C:S = 4.8:1).

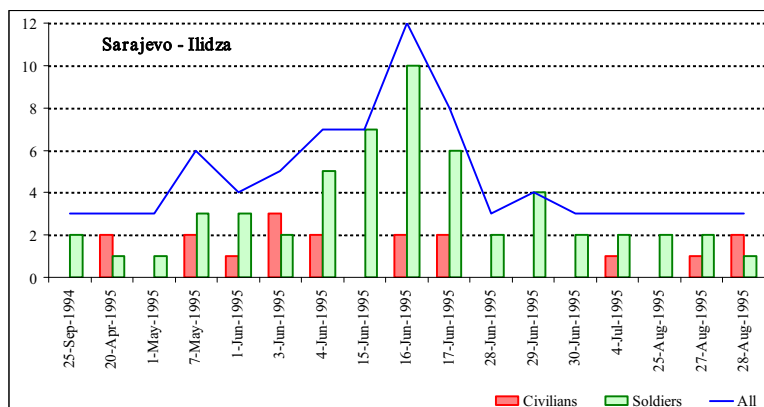
Figure 15. Number of Violent War-Related Deaths in Sarajevo Centar, August 1994 – November 1995: Dates When 3 or more Victims (All) Were Killed



4.7.3 In Sarajevo – Ilidža, out of 17 high days, 14 were characterized by a majority of soldiers killed (Figure 16). Among these 14 days, 7 were the days when no violent deaths of civilians were reported. The highest daily numbers of soldiers were reported killed between 15 and 17 of June 1995, when in total (at least) 23 soldiers died.

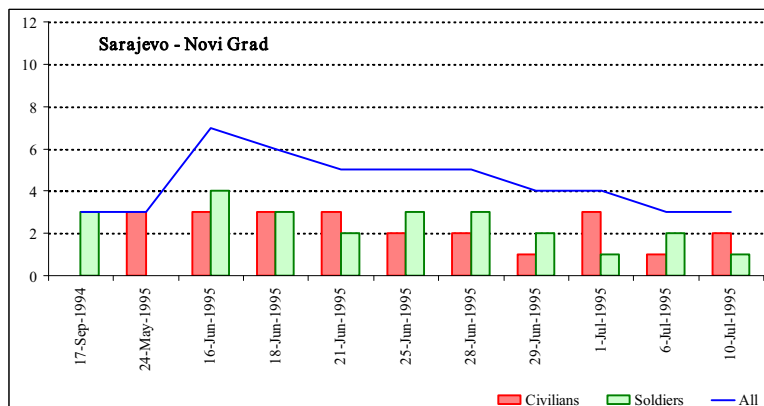
Only three days show the number of killed civilians higher than that of soldiers; 20 April 1995, 3 June 1995, and 28 August 1995.

Figure 16. Number of Violent War-Related Deaths in Sarajevo Ilidža, August 1994 – November 1995: Dates When 3 or more Victims (All) Were Killed



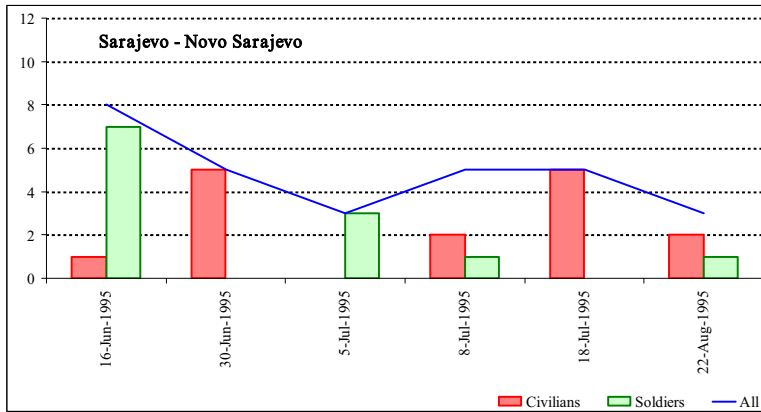
4.7.4 According to Figure 17, in the municipality of Sarajevo – Novi Grad, the daily number of violent deaths was 3 or more on 11 days. 4 days show more civilians killed than soldiers, 6 days more soldiers than civilians, 1 day the same number of civilians and soldiers. In all these days, the total number of violent deaths per day was never higher than 7 (16 June 1995; 3 civilians and 4 soldiers). In Novi Grad the daily distribution of violent deaths seems to be rather uniform.

Figure 17. Number of Violent War-Related Deaths in Sarajevo Novi Grad, August 1994 – November 1995: Dates When 3 or more Victims (All) Were Killed



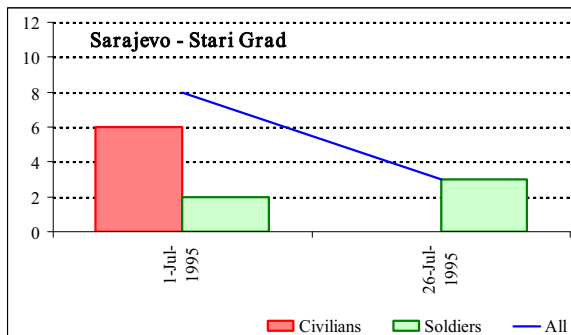
4.7.5 Figure 18 illustrates the daily distribution of violent deaths on high days in Sarajevo – Novo Sarajevo. Only 6 such days are shown (all in 1995). Out of the 6, 4 report more civilians killed than soldiers (30 June, 8 July, 18 July, and 22 August).

Figure 18. Number of Violent War-Related Deaths in Novo Sarajevo, August 1994 – November 1995: Dates When 3 or more Victims (All) Were Killed



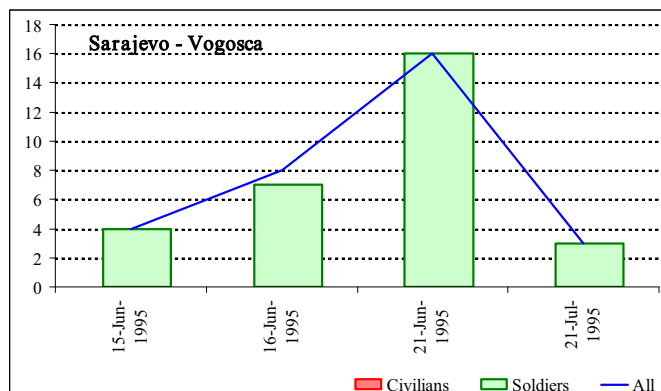
4.7.6 In Sarajevo – Stari Grad, two days were identified with 3 or more violent deaths per day, 1 and 26 July 1995 (Figure 19). On 1 July, more civilians died than soldiers.

Figure 19. Number of Violent War-Related Deaths in Sarajevo Stari Grad, August 1994 – November 1995: Dates When 3 or more Victims (All) Were Killed



4.7.7 Figure 20 relates to Sarajevo – Vogošća. On 4 days 3 or more violent deaths are reported. In all days, exclusively soldiers are reported as killed.

Figure 20. Number of Violent War-Related Deaths in Sarajevo Vogošća, August 1994 – November 1995: Dates When 3 or more Victims (All) Were Killed



Summing up this section, it is useful to realize that the correlation coefficient between the time series of violent deaths of civilians and of soldiers as reported for the high days only, (i.e. based on data from Table 21), is relatively low and equals 0.206 (refer to Annex 4 for methodological descriptions). At the same time, the overall number of deaths in the high days, (i.e. the sum of deaths of civilians, soldiers and unknown status as shown in Table 21), is more closely associated with deaths of civilians than with deaths of soldiers. The respective correlation coefficients are 0.889 and 0.578. Thus, we can conclude that even on the high days when the losses of civilians remained at a lower proportion to the losses of soldiers than on the low days, deaths of civilians were frequent and most likely were not always directly linked to the combat situations.

5. WOUNDED CIVILIANS IN APRIL 1992 – JULY 1994 VERSUS IN AUGUST 1994 – NOVEMBER 1995

Measuring of the wounding process in the exposed population is yet another way of expressing the victimization of a conflict, thus also of the siege of Sarajevo. In this section, we therefore discuss statistics on wounded civilians that acquired their injuries in Sarajevo between August 1994 and November 1995. Statistics on the wounding should be seen as additional to those on killed persons. At the same time, we expect that these two types of statistics remain highly consistent as both resulted from the same underlying process, that is from the siege.

Sources on the wounded population are infrequent but some exist. The best sources for our project include the Sarajevo hospital admission records, which contain an extensive documentation of every patient-case. The documentation is available from individual files of every patient, kept in the archives of the hospitals. Hospital admission records provide personal details of every patient, date and place of incident, information about medical conditions the person suffered from, including specific types of injuries and the explicitly reported external cause, such as, for example, shelling or sniping. They also include details of treatment and of transfer of patients between various clinics in Sarajevo.

The major deficiency of admission records is that they only cover the most severely injured patients who had been hospitalized. Less severe injuries, as for example those addressed to hospitals and/or emergency clinics and sent home, those fixed by informal help, and those not addressed to anybody, are beyond the scope of the admission files.

Even though the coverage of the hospital admission records is limited, these records have been found to be of a high quality and therefore we used them in this project as a new and additional source describing the wounding process in Sarajevo.

Admission records of three major hospitals in Sarajevo, i.e. the Koševo, State and Dobrinja hospitals, were collected (already in 1997) and used in our project. At this stage it is important to stress that the hospital records used here should be seen as a sample, incomplete but reasonable, of all records of wounded persons related to the siege: by no means can these records be seen as a complete registration of all wounded persons. There are several reasons for this fact:

- These records cover hospitalized persons only.
- Koševo, State and Dobrinja are three major hospitals in Sarajevo, but during the siege some other hospitals operated as well, in particular two war hospitals and several stations of emergency help; no records from war hospitals nor from emergency help have been used in our project;
- The selection of records from the Koševo, State and Dobrinja hospitals was made by only including cases of women (at all ages), and of men below 18 or above 60 years of age. All cases of men at age from 18 to 60 years were excluded. So, our sample only represents civilians.
- Although the intended selection was meant to be complete, it is likely that several individual files escaped the attention of the selectors. The archives of all three hospitals were not computerised back in 1997; the records were available as paper files only. Selecting the relevant material required manually checking thousands of pages. In the Koševo hospital alone the overall total of files on wounded persons, each file composed of several pages, was about 20,000, in the State hospital about 9,000 files, and in Dobrinja several hundreds.¹⁹ Also certain time restrictions were imposed on the selectors, (i.e. the appointed staff of the hospitals), who had to work rather quickly. So, the large scale of the selection project together with the paper format of the files and the imposed deadlines likely led to providing a sample of the complete material.
- In addition to the above, during the 1992-95 conflict the hospitals were shot by artillery and other firearms, which might have destroyed a number of original files.
- Finally, it is very likely that in times of extremely heavy combat activities, such as, for example, during the first two years of the siege, not all patients could be registered due to the extraordinary work load at the hospitals. So, some parts of relevant information might not have been archived at all.

All in all, our major source on wounded civilians are the Sarajevo Hospital Records, from the Koševo, State and Dobrinja hospitals, which represent a large sample of records of all wounded civilians that acquired their injuries in Sarajevo from April 1992 to November 1995. The overall number of records in this sample is 3,036. The sample size is big enough to use it in the analysis in this report.

In order to compensate for the missing records on wounded civilians unavailable in the Hospital Records, an additional source was used in this project, i.e. the Sarajevo Household Survey of (mid-) 1994. As mentioned earlier in this report, HHS-94 was a massive and largely complete population survey conducted by the Institute for Research of War Crimes and International Law in Sarajevo, in co-operation with the University of Sarajevo, statistical authorities of Sarajevo, and local communities (*mjesne zajednice*, *MZ*) from the survey area. Approximately 85,000 households living in Sarajevo at mid-1994 participated in the survey with an estimated survey population of approximately 340,000 individuals, which is 75% of the 1991 census population of the Sarajevo Six.

¹⁹ The source for these numbers is the mission report of the (former) OTP investigator Rajendra Singh from July 1997. Rajendra Singh was part of the OTP team that collected the hospital forms from Sarajevo and brought them to the OTP.

One of the questions included in the HHS-94 survey questionnaire was related to whether or not a person was wounded during the siege of Sarajevo, and if so, when, where and how the wounding incident took place. The question continued by exploring how many times the person was wounded and what were the dates, places and (external) causes of these wounding incidents. All wounding incidents could be reported, i.e. those that led to hospitalization as well as those that did not require the patient to be treated in hospital.

Major observations from comparing the coverage of the HHS-94 with the Sarajevo Hospital Records are the following:

- HHS-94 has a limited time coverage, i.e. from April 1992 to July 1994, but is much more complete with regard to the reporting of wounded civilians than the Hospital Records;
- HHS-94 reports on hospitalized and non-hospitalized wounded persons, and includes civilians and soldiers in its records, which is broader than in the Hospital Records. Civilians and soldiers can be separated from each other by using the HHS-94 reports on the civilian-military status.
- The two sources have a similar territorial coverage, i.e. include records of wounding incidents that took place in the six most urban municipalities of Sarajevo or just in the within-front-lines territory of Sarajevo. This territory is most certainly consistent with the indictment area.
- The coverage of the two sources overlaps, with the common part being the records of hospitalized civilians whose wounding resulted from incidents that occurred from April 1992 to July 1994.

The above observations can be used in improving the original material on wounded civilians that we have available for the analysis for the Dragomir Milošević case; that is in improving the Sarajevo Hospital Records for August 1994 –November 1995. Namely, we can use the HHS-94 data in making an estimate of the joint number of both hospitalized and non-hospitalized wounded civilians from Sarajevo for the period from August 1994 to November 1995. Such an estimate can be produced based on an estimated relationship between the Sarajevo Hospital Records and the records from the HHS-94 for the period from April 1992 to July 1994, and extrapolating the estimated relationship over the period from August 1994 to November 1995.

This section contains, therefore, the following issues:

- Overview of the Sarajevo Hospital Records on wounded civilians, (hospitalized only), from April 1992 to November 1995, and in particular from August 1994 to November 1995, and their similarity with the records on killed civilians from our merged sources. (Section 5.1).
- Overview of the HHS-94 records of wounded civilians from April 1992 to July 1994 and their similarity with the Hospital Records of wounded civilians. (Section 5.2).
- Modelling and prediction of the joint number of hospitalized and non-hospitalized civilians wounded in the siege of Sarajevo from August 1994 to November 1995. (Section 5.3).

5.1 SUMMARY OF THE SARAJEVO HOSPITAL RECORDS

The overall number of records on wounded civilians included in the Sarajevo Hospital Records is 3,036. All these records represent different persons, (i.e. duplicates are excluded), injured in war activities in Sarajevo between April 1992 and November 1995. Table 22 gives an overview of these records by month and external cause of incident.

Table 22. Wounded Civilians Reported in the Sarajevo Hospital Records
By Cause of Wounding, April 1992 to July 1994

Incident Year	Incident Month	Shelling	Vulnera Explosiva	Sniping	Sniping or Shelling*	Other	Total	Percent Shelling*	Percent Sniping	Percent Snip/Shell
1992	Apr-1992	8		3	11	1	23	34.8	13.0	47.8
1992	May-1992	113	8	20	21	1	163	74.2	12.3	12.9
1992	Jun-1992	142	31	20	30	3	226	76.5	8.8	13.3
1992	Jul-1992	110	15	34	18	3	180	69.4	18.9	10.0
1992	Aug-1992	198	23	24	30	1	276	80.1	8.7	10.9
1992	Sep-1992	153	8	22	14		197	81.7	11.2	7.1
1992	Oct-1992	100	11	28	8	1	148	75.0	18.9	5.4
1992	Nov-1992	42	2	24	1		69	63.8	34.8	1.4
1992	Dec-1992	54	7	20	4		85	71.8	23.5	4.7
1993	Jan-1993	52	20	14	5	1	92	78.3	15.2	5.4
1993	Feb-1993	25	5	12	12		54	55.6	22.2	22.2
1993	Mar-1993	54	19	30	12		115	63.5	26.1	10.4
1993	Apr-1993	35	11	26	13		85	54.1	30.6	15.3
1993	May-1993	50	20	17	9		96	72.9	17.7	9.4
1993	Jun-1993	63	22	25	11		121	70.2	20.7	9.1
1993	Jul-1993	82	21	38	16	2	159	64.8	23.9	10.1
1993	Aug-1993	11	6	19	10		46	37.0	41.3	21.7
1993	Sep-1993	12	5	18	6		41	41.5	43.9	14.6
1993	Oct-1993	39	9	15	13	1	77	62.3	19.5	16.9
1993	Nov-1993	36	17	14	13		80	66.3	17.5	16.3
1993	Dec-1993	58	23	6	10		97	83.5	6.2	10.3
1994	Jan-1994	35	20	14	11	1	81	67.9	17.3	13.6
1994	Feb-1994	44	10	3	9	1	67	80.6	4.5	13.4
1994	Mar-1994	1	2	3	4		10	30.0	30.0	40.0
1994	Apr-1994	6	3	2	2		13	69.2	15.4	15.4
1994	May-1994	4		9	2		15	26.7	60.0	13.3
1994	Jun-1994	1		2	2	1	6	16.7	33.3	33.3
1994	Jul-1994	2		2	5		9	22.2	22.2	55.6
1994	Aug-1994	2		3	5		10	20.0	30.0	50.0
1994	Sep-1994			5	4		9	0.0	55.6	44.4
1994	Oct-1994		2	7	9		18	11.1	38.9	50.0
1994	Nov-1994	7	1	8	5		21	38.1	38.1	23.8
1994	Dec-1994	2	2	4	3	1	12	33.3	33.3	25.0
1995	Jan-1995	1		2	1		4	25.0	50.0	25.0
1995	Feb-1995			2			2	0.0	100.0	0.0
1995	Mar-1995		1	7	2		10	10.0	70.0	20.0
1995	Apr-1995	4	4	6	3	1	18	44.4	33.3	16.7
1995	May-1995	12	5	6	8		31	54.8	19.4	25.8
1995	Jun-1995	47	12	11	8		78	75.6	14.1	10.3
1995	Jul-1995	70	12	5	9	1	97	84.5	5.2	9.3
1995	Aug-1995	37	20	7	7	1	72	79.2	9.7	9.7
1995	Sep-1995	2	8	3	4		17	58.8	17.6	23.5
1995	Oct-1995	1		1	1		3	33.3	33.3	33.3
1995	Nov-1995		2		1		3	66.7	0.0	33.3
Total Apr 92 to Nov 95		1715	387	541	372	21	3036	69.2	17.8	12.3
Total Aug 94 to Nov 95		185	69	77	70	4	405	62.7	19.0	17.3

Notes: Months of incidents are known

Shelling* includes V. Explosiva

External causes of wounding were taken from the original hospital admission forms which contained a short description of incidents that led to wounding. Based on these descriptions, a standardized coding of the causes was developed by the OTP researchers by focusing on shelling and sniping incidents. Whenever possible, these two causes were explicitly reported. In problematic cases, a solution was sought in expressing the nature of the incident by relating the cause to either shelling or sniping or both.

The major external causes of wounding reviewed in Table 22 are shelling and sniping. In addition to the above two, also the category of "sniping or shelling" is included (hereafter: sniping/shelling). This category covers cases for which, based on the available hospital documentation, it was not possible to specify which of the two major causes brought the injury. From the hospital forms it was clear, however, that one of the two caused the wounding. A next external cause is Vulnera Explosiva, which term was consistently used in our databases for the cases that could be seen as wounding by shelling but the term shelling was not explicitly used in the hospital forms. Thus, Vulnera Explosiva can be seen as wounding caused by implicit shelling. Jointly with the cases of

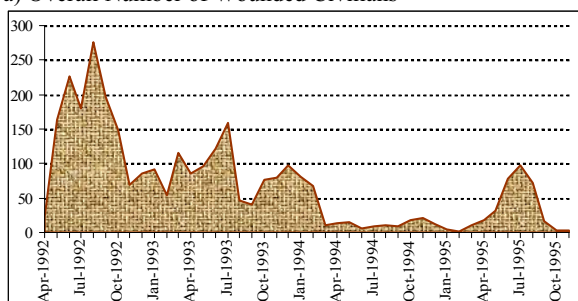
wounding by explicit shelling, *Vulnera Explosiva* cases give a good description of all shelling victims. Finally, a few cases of wounded civilians are reported under the cause “other” which covers the remaining causes of wounding and/or injuries acquired, for example, in war-related accidents.

Table 22 contains as well a brief overview of the proportion of the wounding cases caused by shelling, sniping and sniping/shelling in the monthly total of all wounding cases. Note that the proportion of civilians wounded by either sniping or shelling (sniping/shelling) is occasionally high (up to 40-50% of the monthly total), which means that the numbers reported separately under shelling or sniping were much higher in reality.

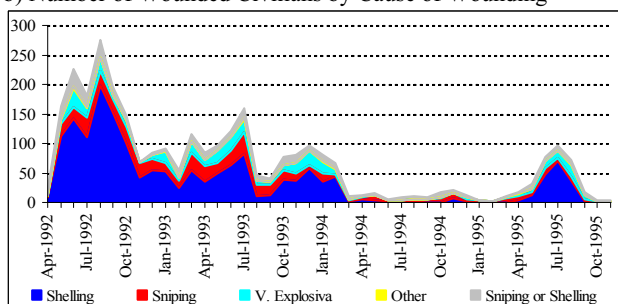
In addition to Table 22, Figure 21 shows the same data graphically, first as an overall total of wounded civilians by month from April 1992 to November 1995 (Figure 21a), and secondly also by cause of wounding (Figure 21b).

Figure 21. Timing of Wounding Incidents Reported in Sarajevo Hospital Records April 1992 to November 1995

a) Overall Number of Wounded Civilians



b) Number of Wounded Civilians by Cause of Wounding



Although the sample of 3,036 wounded (and hospitalized) civilians is not complete, the sample size is big and the time pattern of the wounding incidents obtained from this sample reliable. The time pattern of wounding is extremely consistent with that of killing based on data obtained from the merged sources (FBH, RS, ICRC) and presented earlier in this report in Figures 11 and 12, (Section 4.6.6). Both the time pattern for the overall total of killed persons, and the pattern for killed civilians are very consistent with Figure 21.

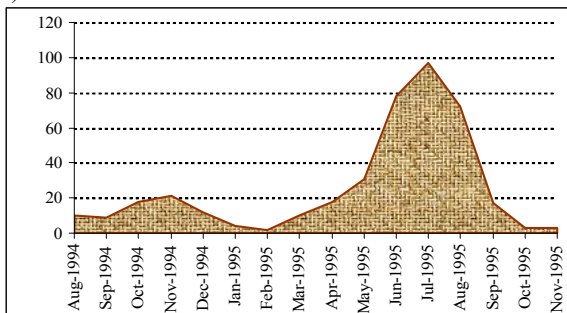
In order to quantify this similarity we calculated the coefficient of correlation between the monthly numbers of killed and wounded civilians and tested its significance:²⁰

- April 1992 - November 1995: 0.8757 (significant at $\alpha < 0.001$)
- August 1994 - November 1995: 0.9901 (significant at $\alpha < 0.001$)

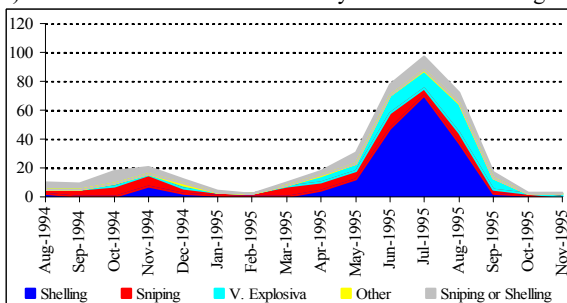
Note that in cases of a perfect (positive) correlation, the correlation coefficient equals 1 (-1 if a perfect negative correlation). Our two time series of monthly observations on wounded and killed civilians, although obtained completely independently from unrelated sources, show a very high and significant positive correlation, in particular for August 1994–November 1995, meaning that the obtained time patterns are extremely consistent. This confirms that the same mechanism generated the incidents that led to killings and wounding and that most likely the underlying causes of wounding and death were largely the same.

Figure 22. Timing of Wounding Incidents Reported in Sarajevo Hospital Records August 1994 to November 1995

a) Overall Number of Wounded Civilians



b) Number of Wounded Civilians by Cause of Wounding



The number of wounded persons reported in the Sarajevo Hospital Records that can be considered related to the Dragomir Milošević indictment period (August 1994 to November 1995) is lower than 3,036. In total, 405 cases of wounded civilians were found related to the indictment period (Table

²⁰ The correlation coefficient between the monthly number of wounded civilians and the monthly number of killed persons (disregarding their military-civilian status) was the following:

- April 1992–November 1995: 0.8757 (significant at $\alpha < 0.001$)
- August 1994–November 1995: 0.9385 (significant at $\alpha < 0.001$)

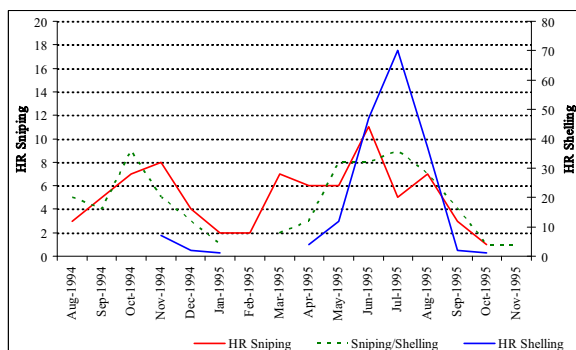
So, also in this case the correlation is extremely high and statistically significant at a very low error level.

22 and Figure 22; the selection according to the time and area criteria). Of the 405, at least 254 (63%) were civilians wounded by shelling, at least 77 (19%) were civilians wounded by sniping, and 70 (17%) cases were caused by either sniping or shelling.

Figure 22, (an excerpt from Figure 21), shows separately the wounding cases from the indictment period only. The consistency of the pattern shown in Figure 22 with that from Figures 6 and 7, (Sections 4.5.2 and 4.5.3), is striking.²¹ Another evident observation from Figure 22 is that the relative contribution of sniping cases in the overall total of wounded civilians had been particularly high from August 1994 to about May 1995. Between 30 to 55% of wounded civilians then acquired their wounds in sniping incidents as opposed to the average of 20% civilians wounded by shelling in the same period.

This latter result is further confirmed by data shown in Figure 23,²² depicting the trend in the number of wounded civilians according to shelling and sniping incidents. An intense shelling episode took place from April 1995 to September 1995 (Phase V), whereas sniping incidents were spread systematically over the entire period from August 1994 to October 1995.

Figure 23. Number of Wounded Civilians by Sniping versus Shelling Sarajevo Hospital Records, August 1994–November 1995

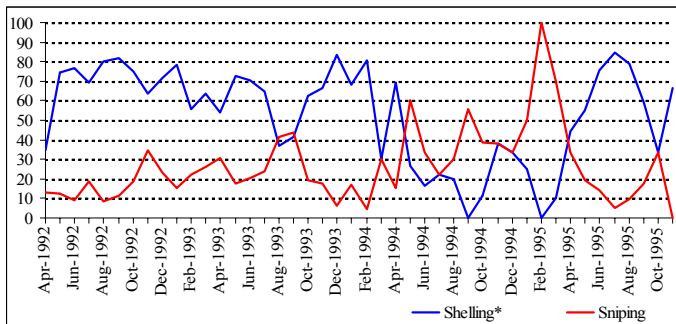


Finally, Figure 24 illustrates the trend in the proportion of wounded civilians according to shelling and sniping (data in Table 22). Figure 23 makes it clear that the relative importance of wounding by sniping increased since August 1994 as compared with the importance of wounding by shelling, this being especially true until the beginning of Phase V.

²¹ The wounding pattern, when compared with that of killed persons, seems to be slightly shifted towards somewhat later dates. This has a reason. Whereas dates of death are precisely the same as dates of killing incidents, dates associated with wounding express the registration in hospital and thus can be slightly later than the actual wounding incident. The shift between the two is, however, minor.

²² In Figure 23, two different scales were used; one for shelling and one for sniping victims, the former being four times wider than the latter.

Figure 24. Proportion of Wounded Civilians Reported in Hospital Records According to the Cause of Wounding, April 1992 to November 1995



Note: Shelling* includes Vulnura Explosiva

5.2 SUMMARY OF THE HOUSEHOLD SURVEY SARAJEVO-1994

The overall number of wounded persons, (civilians and soldiers; the first wounding incident only), reported in the Household Survey Sarajevo-1994 from January 1992 to mid-1994 is 21,492. Only a part of this number covers civilians; more specifically, 7,948 individuals (i.e. civilians) were reported wounded in the area of Sarajevo from April 1992 to July 1994; (disregarding whether or not were they treated for their wounds in a hospital; Table 23). All these civilians were different persons, (duplicates excluded), and many of them were wounded more than one time. In this report, we only analyze their first wounding incident and skip all incidents that followed.

Table 23. Wounded Civilians Reported in the Household Survey Sarajevo-1994 By Cause of Wounding, April 1992 to July 1994

Date of Wounding	Shelling	Vulnura Explosiva	Sniping	Sniping or Shelling	Other	Unknown	Total	Percent Shelling*	Percent Sniping	Percent Snip/Shell
Apr-1992	42		52	5	1	1	101	41.6	51.5	5.0
May-1992	450	1	120	20	4	5	600	75.2	20.0	3.3
Jun-1992	613		98	13	10	5	739	82.9	13.3	1.8
Jul-1992	348		105	15	4	3	475	73.3	22.1	3.2
Aug-1992	754	1	97	19	4	4	879	85.9	11.0	2.2
Sep-1992	558		127	12	4	4	705	79.1	18.0	1.7
Oct-1992	347		87	19	4	7	464	74.8	18.8	4.1
Nov-1992	109	1	66	8	2	3	189	58.2	34.9	4.2
Dec-1992	196		74	8	1	6	285	68.8	26.0	2.8
Jan-1993	193		75	8	2	1	279	69.2	26.9	2.9
Feb-1993	159		58	16	4	1	238	66.8	24.4	6.7
Mar-1993	232		91	9	1	3	336	69.0	27.1	2.7
Apr-1993	150		82	10	5	3	247	60.7	33.2	4.0
May-1993	211	1	70	16	2	2	302	70.2	23.2	5.3
Jun-1993	241	1	94	18	1		355	68.2	26.5	5.1
Jul-1993	278		83	18	3	6	388	71.6	21.4	4.6
Aug-1993	122		48	14	2	2	186	65.6	25.8	7.5
Sep-1993	94	1	70	8	1	3	177	53.7	39.5	4.5
Oct-1993	108	1	61	5	3	1	179	60.9	34.1	2.8
Nov-1993	105		41	11	3		160	65.6	25.6	6.9
Dec-1993	170		51	2			223	76.2	22.9	0.9
Jan-1994	154	1	46	9	1	1	212	73.1	21.7	4.2
Feb-1994	118		17	4	2	2	143	82.5	11.9	2.8
Mar-1994	8		13	1			23	34.8	56.5	4.3
Apr-1994	8		5		3	1	17	47.1	29.4	0.0
May-1994	7	1	18	3		1	30	26.7	60.0	10.0
Jun-1994	3		5		1		9	33.3	55.6	0.0
Jul-1994	1		3	1	1	1	7	14.3	42.9	14.3
	5779	9	1757	272	62	69	7948	72.8	22.1	3.4

Note: Excluding unknown month of wounding

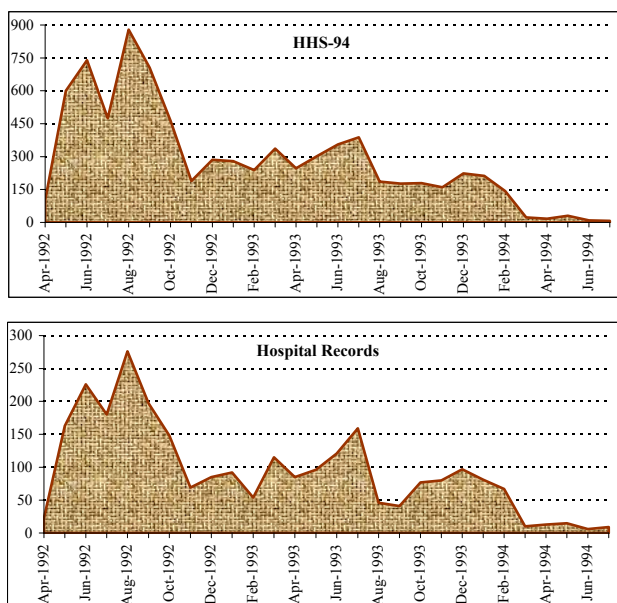
Shelling* includes V. Explosiva

Note as well that the causes of wounding reported in Table 23 are consistent with those reported in Table 22 based on the Sarajevo Hospital Records thanks to a re-coding procedure we applied to ensure consistency.²³

7,948 wounded civilians reported in the HHS-94 from April 1992 to July 1994 include both hospitalized and non-hospitalized patients. Note that the number of hospitalized patients reported in the Sarajevo Hospital Records for the same period was 2,631 (Table 23; the distribution of this total by cause of wounding is the following: shelling-1,530, Vulnera Explosiva-318, Sniping-464, Sniping/Shelling-302 and Other-17). Thus, about 33% of wounded civilians reported in the HHS-94 were hospitalized and 67% were not.

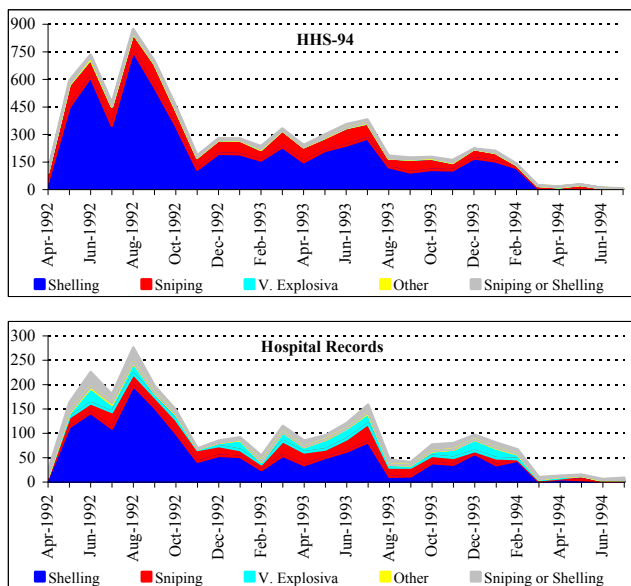
At the first glance the HHS-94 and the Hospital Records provide almost identical time patterns of wounding in Sarajevo in April 1992 to July 1994 (i.e. in the period when both sources overlap). The monthly distribution of wounding shown in Figures 25 and 26 express very similar “downs” and “ups” and suggests that the two sources describe one and the same phenomenon. Notably, they do this at two very different levels of the absolute monthly numbers of wounded. The maximum of both charts contained in Figure 25 is in August 1992. In the chart related to the HHS-94 the maximum number of wounded civilians is about 900 in this month (specifically, 879), while in the HR part the maximum noted in August 1992 is “only” about 300 wounded civilians (276). This difference once again confirms that the HHS-94 is much more complete than the Hospital Records.

Figure 25. Wounded Civilians Reported in the Household Survey versus in Hospital Records, April 1992 to (mid)1994



²³ HHS-94 contains extensive information about external causes of death and wounding, which express war-related factors that caused death, wounding or injury. For wounding (the first incident), some 47 factors were originally reported in HHS-94, including sniping, shelling, shots from several types of arms, or just gun shots, human shield, mines etc. We standardized these original reports by re-coding to the same codes as used in the Sarajevo Hospital Records.

Figure 26. Wounded Civilians Reported in the Household Survey versus in Hospital Records, April 1992 to (mid)1994, By Cause of Wounding

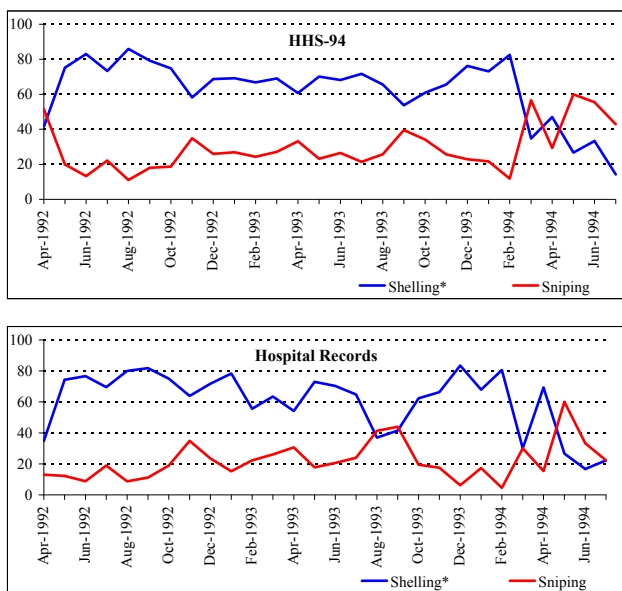


A closer look into the cause-of-wounding structure (Figure 26) reveals both similarities and slight differences as well. Whereas there is no doubt that the major cause of wounding in both sources is shelling and the second most significant cause is sniping, the category of Vulnera Explosiva practically does not exist in the HHS-94. This is the result of the re-coding we applied to the HHS-94 data on external causes of wounding. We used this category only in one case, wounding by stepping on mine, which was a minor cause of wounding in HHS-94. The authors of the database developed for the Sarajevo Hospital Records used the term of Vulnera Explosive more extensively and, thus, we see it clearly among the causes of wounding in the Hospital Records.

Secondly, also the joint category of sniping/shelling is reported more frequently in the Sarajevo Hospital Records database. In the re-coding of causes of wounding in the HHS-94 data we again applied a more explicit approach and reported fewer joint sniping/shelling records.

These slight differences in coding largely resulted from the specificity of the HHS-94 data which obviously made it possible to report separate cases of shelling or sniping and less frequently the joint category of sniping/shelling. The differences had no impact on the results discussed in this report. Note as well, the overall total remains unaffected by the structural differences.

Figure 27. Proportion of Wounded Civilians Reported in the Household Survey versus in Hospital Records, April 1992 to (mid)1994, Victims of Sniping and Shelling



Note: Shelling* includes *Vulnera Explosiva*

Figure 27 reviews the time pattern in the proportion of wounded civilians according to shelling and sniping as reported in the HHS-94 and in the Sarajevo Hospital Records. The picture is again extremely similar based on each source. Shelling is the dominating cause of wounding until approximately May 1994; thereafter sniping takes the first position before shelling. Note that in the case of Hospital Records, victims of shelling are represented in Figure 27 by shelling and *V. Explosiva* taken jointly as one category. In this way the series shown for HHS-94 and HR are fully consistent.

Finally, to summarize the comparison of the two sources, we also calculated the correlation of the major variables (overall totals, and numbers of wounded by shelling and sniping). The correlation between the numbers of wounded civilians reported in the HHS-94 as compared with those reported in the Sarajevo Hospital Records is very high and statistically significant (Table 24). The highest correlation coefficient (0.9804) was obtained for wounded by shelling. Obviously this group of wounded civilians has been reported most consistently among the two sources. Accordingly, also the proportion of civilians wounded by shelling shows a high correlation between the two sources as well (0.8835). Civilians wounded by sniping have the correlation coefficient slightly lower but still highly significant; 0.8045 (for numbers) and 0.6608 (for proportions) respectively. This can be explained by the fact that the relative size, (i.e. the proportion), of the joint category sniping/shelling is smaller in HHS-94 than in Hospital records, meaning that relatively more wounded civilians (particularly of sniping) have been explicitly reported in HHS-94 than in Hospital Records.

Generally, also the correlation of the total number of wounded civilians as reported by HHS-94 and Hospital Records is excellent (0.9740).

Table 24. Correlation Coefficient between the Numbers of Wounded Civilians Reported in HHS-94 and Hospital Records. April 1992 to July 1994

Correlation Coefficient between Wounded Civilians Reported in HHS-94 and Hospital Records		
<i>(Period for Correlation Analysis: April 1992-July 1994)</i>		
Overall Number	0.9740	signif.: <0.001
Sniping	0.8045	signif.: <0.001
Shelling	0.9804	signif.: <0.001
Proportion Shelling	0.8835	signif.: <0.001
Proportion Sniping	0.6608	signif.: <0.001

The above results lead to the conclusion that the two sources, the HHS-94 and the Sarajevo Hospital Records, are exceptionally consistent and complementary. They can and should be used jointly in obtaining a more complete estimate of the number of civilians wounded in Sarajevo from August 1994 to November 1995.

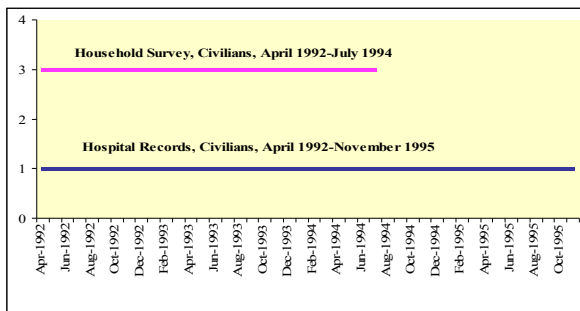
5.3 ESTIMATION OF MISSING NUMBERS OF WOUNDED CIVILIANS IN AUGUST 1994 – NOVEMBER 1995

As noted earlier in Section 5, the Sarajevo Hospital Records cover only wounded civilians that were hospitalized in the Koševo, State or Dobrinja Hospitals of Sarajevo. On the other hand, the HHS-94 covers as well the non-hospitalized civilians wounded during the siege of Sarajevo. For this reason, the number of Hospital Records is about 33% of that from the HHS-94 (from April 1992 to July 1994; comp. Figure 28). Other than that, no significant differences were found between these two sources. On the contrary, the two sources appear to be extremely similar.

Having concluded this, we decided to benefit from the similarities and to produce a forecast of a more complete number of both the hospitalized and non-hospitalized wounded civilians that acquired their wounds in incidents taking place from August 1994 to November 1995.

Note that a minimum number of hospitalized wounded civilians is known and equals 405 individuals for the above-mentioned period. The source for the minimum number are the Sarajevo Hospital Records.

Figure 28. Coverage of the Sources on Wounded Persons, Sarajevo, April 1992–November 1995



Our prediction of the new more complete number of wounded civilians was obtained in two steps:

- First, the April 1992-July 1994 relationship between the HHS-94 and HR data, expressed by a statistical regression model, was estimated.
- Secondly, the estimated relationship was extrapolated over the next period, i.e. over August 1994 to November 1995. Predicted values of the hospitalized and non-hospitalized wounded civilians are the result of this extrapolation.

We, first of all, were interested in the forecast of the overall number of wounded civilians, but secondly also in the numbers of wounding cases related to specific causes, namely to shelling, sniping and sniping/shelling categories. For this reason, four separate regression models were estimated.

Each model had the same general formula:

$$Y(t) = f(X_1(t), X_2(t), \dots, Err(t))$$

Where the symbols had the following meaning:

$Y(t)$ - Dependent variable Y in the month t

$X_i(t)$ - (i-th) Independent variable X in month t

$Err(t)$ - Error term Err in month t

The time units (t) were represented by observations by month from April 1992 to July 1994.

Four different dependent variables were modelled:

- $Y_1(t)$ - HHS-94 based overall total of wounded
- $Y_2(t)$ - HHS-94 based number of wounded by shelling
- $Y_3(t)$ - HHS-94 based number of wounded by sniping
- $Y_4(t)$ - HHS-94 based number of wounded by sniping or shelling

Four different independent variables were used, (separately or in combinations), to explain the variability of the above-mentioned dependent variables:

- $X_1(t)$ -HR based overall total of wounded
- $X_2(t)$ -HR based number of wounded by shelling
- $X_3(t)$ -HR based number of wounded by sniping
- $X_4(t)$ -HR based number of wounded by sniping or shelling

In every model, a HHS-94 based dependent variable was specified as a function of one or more related HR-based independent variable(s). Several variants of model specification were tested for each dependent variable. Eventually, based on the alternative specifications tested, four models were selected as the best, each describing a different dependent variable:

- $Y_1(t) = f(X_1(t), Err(t))$ (R square: 0.9469; all parameters significant at less than 5%)
- $Y_2(t) = f(X_2(t), X_4(t), Err(t))$ (R square: 0.9689; all parameters significant at less than 5%)
- $Y_3(t) = f(X_3(t), X_4(t), Err(t))$ (R square: 0.7261; all parameters significant at less than 5%)
- $Y_4(t) = f(X_3(t), X_4(t), Err(t))$ (R square: 0.6830; all parameters significant at less than 5%)

Detailed results of model estimation are attached in Annex 5. Here we only stress that an excellent model fit was obtained for every dependent variable, the R square coefficient being close to 1 (the perfect fit) for the overall total and wounding by shelling, and was clearly high (about 0.7) for wounding by sniping and sniping/shelling. This kind of outstanding fit is the result of similarities in the time patterns from the two sources that we discussed in Section 5.2 of this report. Having obtained excellent models, we used them to predict the values of the HHS-94 dependent variables for the period from August 1994 to November 1995.

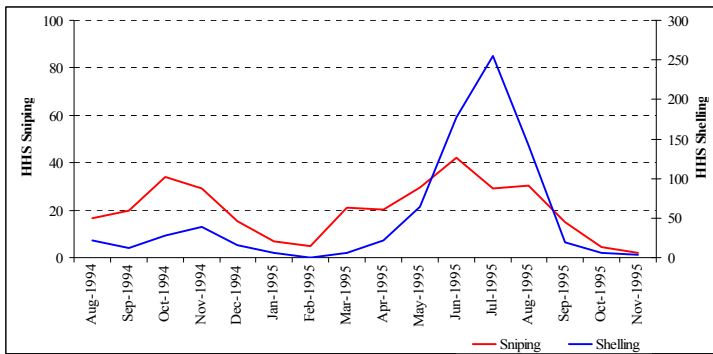
Prediction of each of the four HHS-94 dependent variables was obtained by inserting the observed values (from August 1994 to November 1995) of the appropriate HR-based variable(s) into the estimated models. The prediction can be seen as extrapolation of the model structure obtained for

April 1992–July 1994 onto the period of August 1994–November 1995. It was based on the actually observed values of all HR-based independent variables.

Table 25 contains the model values of the four dependent variables, $(Y_1(t), Y_2(t), Y_3(t), Y_4(t))$, for the t values starting in April 1992 to November 1995. Note that strictly speaking the values for the period April 1992–July 1994 cannot be seen as “predicted” but just “fitted”, or “model values”. Only the values for August 1994 to November 1995 can be seen as predicted.

According to Table 25, the overall total of the hospitalized and non-hospitalized wounded civilians from Sarajevo was 1,248 individuals from August 1994 to November 1995, i.e. in the indictment related period. Among them, 819 were wounding cases of shelling, 320 of sniping and 51 of sniping or shelling. (August 1994–November 1995) trend in the predicted numbers of shelling and sniping patients is the same as the one actually observed in the Hospital Records in this period (Figure 29 vs. Figure 23).

Figure 29. Predicted Number of Wounded Civilians According to Shelling and Sniping



Finally, also the trend in the predicted proportion of wounding cases by shelling and sniping is highly consistent with the observed trend (Figure 30 vs. Figure 24).

Figure 30. Predicted Proportion of Wounded Individuals by Shelling versus Sniping

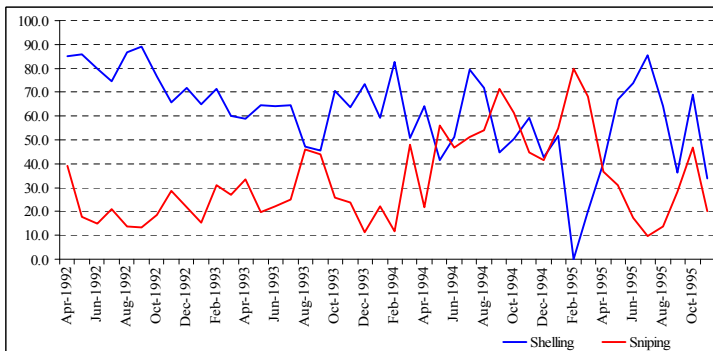


Table 25. Predicted Numbers of Wounded Civilians Including the Hospitalized and Non-Hospitalized Individuals, August 1994–November 1995

Date of Incident	Total Wounded		Wounded by Shelling		Wounded by Sniping		Wounded by Snip or Shell	
	Observed	Forecast	Observed	Forecast	Observed	Forecast	Observed	Forecast
Apr-1992	101	71	42	60	52	28	5	5
May-1992	600	502	450	432	120	88	20	14
Jun-1992	739	696	613	555	98	105	13	17
Jul-1992	475	555	348	413	105	117	15	19
Aug-1992	879	851	754	737	97	115	19	18
Sep-1992	705	607	558	541	127	80	12	13
Oct-1992	464	456	347	350	87	84	19	13
Nov-1992	189	213	109	140	66	61	8	9
Dec-1992	285	262	196	188	74	57	8	9
Jan-1993	279	284	193	184	75	44	8	7
Feb-1993	238	166	159	119	58	52	16	8
Mar-1993	336	354	232	213	91	96	9	15
Apr-1993	247	262	150	154	82	88	10	14
May-1993	302	296	211	190	70	59	16	9
Jun-1993	355	373	241	239	94	82	18	13
Jul-1993	388	490	278	316	83	123	18	19
Aug-1993	186	142	122	67	48	65	14	10
Sep-1993	177	126	94	58	70	55	8	9
Oct-1993	179	237	108	167	61	61	5	10
Nov-1993	160	247	105	157	41	59	11	9
Dec-1993	223	299	170	220	51	33	2	5
Jan-1994	212	250	154	148	46	55	9	9
Feb-1994	143	206	118	171	17	24	4	4
Mar-1994	23	31	8	16	13	15	1	2
Apr-1994	17	40	8	26	5	9		1
May-1994	30	46	7	19	18	26	3	4
Jun-1994	9	18	3	9	5	9		1
Jul-1994	7	28	1	22	3	14	1	2
Aug-1994		31		22		17		3
Sep-1994		28		12		20		3
Oct-1994		55		28		34		5
Nov-1994		65		38		29		5
Dec-1994		37		16		15		2
Jan-1995		12		6		7		1
Feb-1995		6		0		5		1
Mar-1995		31		6		21		3
Apr-1995		55		22		20		3
May-1995		96		64		30		5
Jun-1995		240		178		42		7
Jul-1995		299		255		29		5
Aug-1995		222		142		30		5
Sep-1995		52		19		15		2
Oct-1995		9		6		4		1
Nov-1995		9		3		2		0
Apr 92-Jul 94	7,948	8,108	5,779	5,910	1,757	1,704	272	271
Aug 94-Nov 95		1,248		819		320		51

Note: Observed values come from HHS-94, forecasted values from Models 1 to 4

6. CONCLUDING REMARKS

The concluding remarks and the contents of Executive Summary are the same. Executive Summary is attached in the beginning of this report.

Sources²⁴

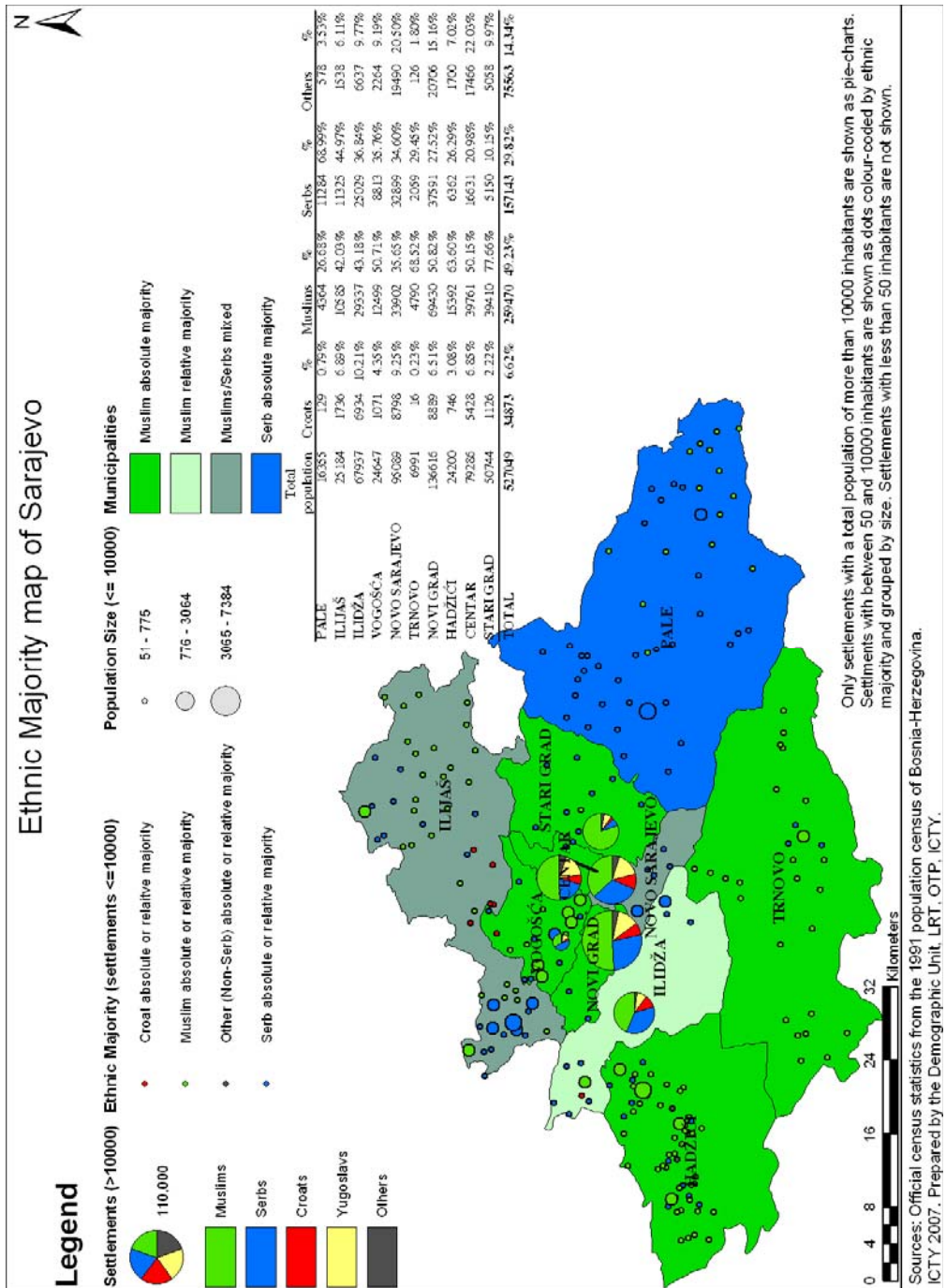
- *The FBH Mortality Database, 1992-1995*, Federal Institute for Statistics (FIS), Sarajevo, 2002.
- *The RS Mortality Database, 1992-95*, Statistical Office of Republika Srpska (RS), Banja Luka, 2005.
- *The ICRC list of Missing Persons for Bosnia and Herzegovina, 1992-1995*, ICRC, 2005.
- *The Households Survey Sarajevo, 1994*, (hereafter: HHS-94), Institute for Research of War Crimes and International Law, Sarajevo, 2002.
- *Bakije* - business records of the Bakije Funeral Home, Sarajevo, 1998.
- *(ABiH) Military records* of fallen soldiers and other military personnel of the BH Government Army (ABiH), 1992-95. Ministry of Defence of the Federation of Bosnia and Herzegovina, Sarajevo, 2001.
- *(VRS) Military records* of fallen soldiers and other military personnel of the Republika Srpska Army (VRS), 1992-95. Ministry of Defence of Republika Srpska, Banja Luka, 2001.
- *(HVO) Military records* of fallen soldiers and other military personnel of the Croatian Defence Council (HVO), 1992-95. Ministry of Defence of the Federation of Bosnia and Herzegovina, Sarajevo, 2002.
- *The 1991 Population Census* in Bosnia and Herzegovina, Sarajevo, 1998.
- *The Sarajevo Hospital Records*, Sarajevo, 1998.

References:

- Brunborg, H., E. Tabeau, and H. Urdal (eds.), 2007, *The Demography of Armed Conflict*. International Studies in Population, International Union for the Scientific Study of Population (IUSSP). Springer.
- Gravetter, F. J. and L. B. Wallnau, 2000, *Statistic for Behavioral Sciences*. Wadsworth Thomson Learning. Australia, Canada, Denmark etc. (5th edition).
- Jozwiak, J., and J. Podgorski, 1997, *Statystyka od Podstaw*. Polskie Wydawnictwo Ekonomiczne. Warsaw. (5th edition).
- Kanji, G. K., 1999, *100 Statistical Tests*. New Edition. Sage Publications. London, Thousand Oaks, New Delhi.
- Keely, Ch. B., H. E. Reed, and Waldman, 2001, *Understanding Mortality Patterns in Complex Humanitarian Emergencies* (p.1). Chapter in: National Research Council (2001), *Forced Migration and Mortality. Roundtable on Demography of Forced Migration*. H. E. Reed and Ch. B. Keely (eds.), Committee on Population, Commission on Behavioural and Social Sciences and Education, Washington, D.C., National Academy Press, ISBN: 0-309-07334-0.
- National Research Council, 2002, *Demographic Assessment Techniques in Complex Humanitarian Emergencies. Summary of a Workshop*, H. E. Reed (rap.), Committee on Population, Commission on Behavioural and Social Sciences and Education, Washington, D.C., National Academy Press, ISBN: 0-309-08497-0 (p.2)
- Statistical Yearbook – Republic of Bosnia and Herzegovina, 1992 (Sarajevo, 1994)

²⁴ The year mentioned at the end of every record of a source is related to the time when this sources was provided to the OTP. The sources were established much earlier than that, in most cases already during the 1992-95 conflict.

ANNEX 1 – Population size of the Sarajevo Ten area. Based on the 1991 Population Census (Map)



ANNEX 2 – Questionnaires and lists of data items available in the sources used for this report

The following copies of forms/questioners for sources used are included below:

- Census 1991 registration form (3 pages)
- FBH and RS Mortality Registrations: Dem-2 death-registration form (4 pages)
- Sarajevo Household Survey questioner (3 pages)

The following lists of data-items for sources used are included below:

- ICRC List of Missing Persons
- Bakje Funeral Home in Sarajevo
- ABIH List of Fallen Soldiers and Other Military Personnel
- HVO List of Fallen Soldiers and Other Military Personnel
- VRS List of Fallen Soldiers and Other Military Personnel
- Sarajevo Hospital

Popis stanovništva, domaćinstava, stanova i poljoprivrednih gazdinstava (stanje 31. 3. 1991. godine u 24 sata)

Svi podaci iz ovog obrasca su službena tajna i upotrijebiće se samo u statističke svrhe

Zakon o popisu.
Sl. list SFRJ br. 3/90

POPISNICA

3

opština pop. krug stan domać. lice

1. PREZIME I IME

2. POL

Muški 1
Ženski 2

3. JEDINSTVENI MATIČNI BROJ GRADANA

dan mjesec godina ostalih 6 br. JMBG

4a. MJESTO RODENJA

Mjesto - naselje

Opština - strana država

Mjesto - naselje

4b. PREBIVALIŠTE MAJKE U VRIJEME RODENJA LICA

Opština - strana država

5a. DA LI LICE ŽIVI NEPREKIDNO OD RODENJA U PREBIVALIŠTU

da 1
ne 2

Ako 2:

Mjesto - naselje odakle se lice doselilo

Opština - strana država odakle se lice doselilo

5b. GODINA DOSELJENJA

1

6. BRAČNO STANJE

8. NACIONALNA PRIPADNOST

Prema čl. 170. Ustava SFRJ građanin može i da se ne izjasni po ovom pitanju

7. BROJ ŽIVORODENE DJECE (i ona koja nisu živa)

9. MATERNJI JEZIK

10. VJEROISPOVIJEST

Naziv završene srednje, više ili visoke škole

11a. ZAVRŠENA ŠKOLA

Ako 6-8

Odsjek, grupa ili smjer

11b. PISMENOST

da 1
ne 2

13. ZANIMANJE OCA ILI MAJKE

12. POHAĐANJE ŠKOLE

14. RAD-BORAVAK U INOSTRANSTVU

Naziv strane države

Ako je upisano 1, 2 ili 3, upisati puni naziv zanimanja

15. DUŽINA RADA-BORAVKA U INOSTRANSTVU

16. ZANIMANJE

17. PRIHODI

18. ZANIMANJE IZDRŽAVA OCA

Ako izdržava lac obavlja zanimanje u Jugoslaviji, upisati puni naziv zanimanja

19a. POLOŽAJ U ZANIMANJU

19b. OBLIK VLASNIŠTVA

20. DJELATNOST ZA AKTIVNO LICE ILI IZDRŽAVA OCA

Sifra

21. STEPEN STRUČNOG OBRAZOVANJA

22. POVREMENO OBAVLJA POLJOPRIVR. POSLOVE da 1 ne 2

Ako 2: Mjesto-naselje rada ili školovanja

23. RADI - POHADA ŠKOLU U: prebivalištu 1 drugom mjestu 2

Ako 2:

24. VRAĆA SE U PREBIVALIŠTE - svakodnevno 1 - nedjeljno 2 - rjeđe 3

Opština - strana država rada ili školovanja

25. VRIJEME PROVEDENO NA RADU U INOSTRANSTVU (samo za povratnike):

Broj godina

Godina povratka

POPUNJAVA STATISTIKA:

Razlog prisutnosti-odsutnosti:

Redni broj porodice

Položaj u porodici

Popis stanovništva, domaćinstava, stanova i poljoprivrednih
gazdinstava (stanje 31. 3. 1991. godine u 24 sata)

Svi podaci iz ovog obrasca su
službena tajna i upotrijebiće
se samo u statističke svrhe

Zakon o popisu,
Sl. list SFRJ br. 3/90

UPITNIK ZA STAN I DOMAĆINSTVO

STAN

1

	opština	pop. krug	stan	domać.	zgrada
1. UPITNIK SE POPUNJAVA ZA:					
- stan					
- nastanjen poslovni prostor					
- prostor nastanjen iz nužde					
2. KORIŠĆENJE STANA:					
- samo za stanovanje					
- za stanovanje i djelatnost					
- samo za djelatnost					
- privremeno nenastanjen					
- napušten					
za odmor i rekreaciju					
- u vikend kući					
- u porodičnoj kući					
- u drugoj vrsti zgrade					
- u vrijeme sezonskih poljoprivrednih radova					
3. POVRŠINA STANA	m ²				
4. BROJ SOBA U STANU					
5. POVRŠINA KUHINJE	m ²				
6. KUPATILO U STANU		ima 1 nema 2			
7. NUŽNIK U STANU		ima 1 nema 2			
8. INSTALACIJE U STANU					
a) VODOVOD					
- priključen na javnu mrežu		1			
- priključen na hidrotor		2			
- nema		3			
b) KANALIZACIJA					
- javna mreža		1			
- septička jama		2			
- nema		3			
c) ELEKTRIČNA STRUJA					
- ima		1			
- nema		2			
d) CENTRALNO GRIJANJE					
- ima		1			
- nema		2			
9. SVOJINA STANA					
- društvena		1			
- privatna		2			
10. STAN SE NALAZI					
- u prizemlju		00			
- na prvom spratu		01			
- na drugom spratu		02			
- itd.					
- u podrumu		60			
- u suterenu		70			
- na mansardi		80			
- na dvije etaže		90			
11. GODINA IZGRADNJE ZGRADE					
12. MATERIJAL SPOLJNIH ZIDOVA					
- tvrdi		1			
- slabi		2			

DOMAĆINSTVO

1. OSNOVA KORIŠĆENJA STANA					
- vlasnik		1			
- nosilac stanarskog prava		2			
- zakupac (cijelog stana)		3			
- podstanar (u dijelu stana)		4			
- srodstvo		5			
- ostalo		6			
Ako je 1 ili 2, ime i prezime vlasnika-nosioca stanarskog prava					
2. REDNI BROJ VLASNIKA - NOSIOCA STANARSKOG PRAVA U DOMAĆINSTVU (iz Spiska 1)					
3. SNABDJEVANJE DOMAĆINSTVA VODOM ZA PICE I POVRŠINA ZEMLJIŠTA					
4. U SVOJINI	ha	ari			
a) od toga obradivo					
5. UZETO U ZAKUP					
6. DATO U ZAKUP					
7. UKUPNO KORISCIENO (4 + 5 - 6 = 7)					
a) od toga obradivo					
8. BROJ ODVOJENIH DIJELOVA KORIŠĆENOG ZEMLJIŠTA					
II STOKA, ŽIVINA I KOŠNICE PČELA					
9. KONJA - ukupno		broj			
a) kobila i ždrebnih omica					
10. MAZGI I MULA - ukupno					
11. MAGARACA - ukupno		broj			
12. GOVEDA - ukupno					
a) teladi i junadi					
b) krava i steonih junica					
c) volova, bikova i ostalih					
13. BIVOLA - ukupno					
14. OVACA - ukupno					
a) jagnjadi i šilježadi					
b) ovaca za priplod					
c) ovnova i ostalih					
15. KOZA - ukupno					
16. SVINJA - ukupno					
a) prasadi i nazimadi					
b) krmača i suprasnih nazimica					
c) nerasta i ostalih					
17. ODRASLE ŽIVINE - ukupno					
18. KOŠNICA PČELA					
19. DA LI DOMAĆINSTVO IMA GAZDINSTVO					
- ima		1			
- nema		2			
POPUNJAVA STATISTIKA:	Domaćinstava u stanu		Lica u stanu		Članova domaćinstva

Obrazac P – P

Popis stanovništva, domaćinstava, stanova i poljoprivrednih gazdinstava (stanje 31. 3. 1991. godine u 24 sata)

Svi podaci iz ovog obrasca su službena tajna i upotrijebice se samo u statističke svrhe

Zakon o popisu, Sl. list SFRJ br. 3/90

OSTALI PODACI O POLJOPRIVREDNOM GAZDINSTVU

		2		opština		pop. krug		stan		domać.	
		ha	ani	MLADIH	ODRASLIH						
UKUPNO ZEMLJIŠTE KOJE DOMAĆINSTVO KORISTI	20. Oranice i bašte	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	21. Voćnjaci – ukupno	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	od toga plantažni	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	22. Vinogradi – ukupno	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	od toga plantažni	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	23. Livade	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	24. Pašnjaci	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
25. Trsljaci, bare i ribnjaci	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	
26. Šume	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	
27. Neplodna zemlja (dvorišta i dr.)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	
POLJOPRIVREDNE MAŠINE I TRANSPORTNA SREDSTVA	38. Jednoosovinski traktori	<input type="text"/>	BROJ	<input type="text"/>	KS	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	39. Dvoosovinski traktori	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	40. Kombajni za strna žita	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	41. Kamioni i kombi vozila	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	42. Traktorski plugovi	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	43. Traktorske tanjirače	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	44. Traktorske drljače	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	45. Traktorske sijače za strna žita	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	46. Traktorske sijače za kukuruz	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	47. Traktorski rasipači vještačkog đubriva	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	48. Traktorski rasturači stajskog đubriva	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	49. Traktorske cisterne za osoku	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	50. Traktorske prskalice	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	51. Traktorske kosilice	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	52. Traktorske grabulje	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	53. Berači za kukuruz	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	54. Linije za šećernu repu	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	55. Linije za krompir	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	56. Traktorske prikolice	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
		37. Čokota vinove loze	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	57. Zaprežna kola, broj	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	58. Zaprežni plugovi, broj	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	59. Motorni krunjaci	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	60. Prekrupači i čekićari	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	61. Utrošeno vještačkog đubriva, kg	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	62. Podubreno vještačkim đubrivom	ha	<input type="text"/>	ani	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	63. Utrošeno sredstava za zaštitu bilja, kg od toga herbicida	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	64. Površina tretirana sredstvima za zaštitu bilja	ha	<input type="text"/>	ani	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	65. Navodnjavana površina	ha	<input type="text"/>	ani	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	66. Staje za krupnu stoku, m ²	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	67. Svinjci, m ²	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	68. Ovčarnici, m ²	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	69. Živarnnici, m ²	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	70. Zgrade za poljop. mašine, m ²	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	71. Zgrade za poljop. proizvode, m ²	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	72. Koševi za kukuruz, m ³	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	73. Zgrade za sijeno, m ³	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	74. Silosi za silažu, m ³	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	75. Jame za osoku, m ³	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

BROJ STABALA (ČOKOTA)

AGROTEHNIKA 1990.

POLJOPRIVREDNE ZGRADE I OBJEKTI

Bosna i Hercegovina
 FEDERACIJA BOSNE I HERCEGOVINE
 FEDERALNI ZAVOD ZA STATISTIKU
 SARAJEVO

Zakon o stat. istraž. u Federaciji BiH
 "Služb. novine Federacije BiH" br. 6/95

STATISTIČKI LISTIĆ O SLUČAJU SMRTI

Stat. istraživanje i godina 5

Kanton/Županija 7

Općina 12

Strana država 15

Mjesec upisa 17

Statistički redni broj 21

Mjesto smrti _____

Sjedište matičara _____

Upisano u matricu umrlih za
 matično područje _____

Tekući broj upisa _____

Datum upisa: _____

1. PREZIME (IME RODITELJA) I IME

2. SPOL
 Muški.....1 Ženski.....2

3. DATUM SMRTI

 dan, mjesec i god.
 sat smrti(0-24) _____

4. DATUM RODENJA I JMBG

 dan, mjesec i godina ostalih 6 br. JMBG
 sat rođenja (0-24) _____
 (samo za djecu do 7 dana)

5. PREBIVALIŠTE
 Kanton/Županija _____
 Općina _____
 Naselje _____
 Ulica i broj _____
 Strana država _____

5a. DA LI JE UMRLO LICE BILO ODSUTNO IZ
 PREBIVALIŠTA DUŽE OD JEDNE GODINE
 (u godini do datuma smrti)
 Da.....1 Ne.....2

5b. AKO JE 5a. "DA", UPISATI MJESTO BORAVKA
 Kanton/Županija _____
 Općina _____
 Naselje _____
 Ulica i broj _____
 Strana država _____

6. BRAČNO STANJE
 Neoženjen-neudana.....1
 Oženjen-udana.....2
 Udovac-udovica.....3
 Razveden-razvedena.....4
 Nepoznato.....9

7. DRŽAVLJANSTVO
 _____ 71
 Za dvojno državljanstvo _____ 74

8. NACIONALNA - ETNIČKA PRIPADNOST
 _____ 76

9. VJERA
 _____ 78

10. ŠKOLSKA SPREMA (najviša završena škola)
 Bez škole i 1-3 razr. osn. škole.....0
 4-7 razr. osnovne škole.....1
 Osnovna škola.....2
 Srednje škole:
 - Škole za zanimanja u trajanju 1-3 godine i
 i škole za KV i VKV radnike.....3
 - Škole za zanimanja u trajanju od 4 g. i gimnazije...4
 Viša škola i I.(VI.)stupanaj fakulteta.....5
 Fakulteti i umjetničke akademije.....6
 Magisterij.....7
 Doktorat.....8
 Nepoznato.....9

(Ako se ne može odrediti školska sprema,
 upisati naziv završene škole).

11. AKTIVNOST | | | |

11a. POLOŽAJ U AKTIVNOSTI

Obavljao(la) zanimanje u radnom odnosu ili samostalno..... 11
 Nije obavljao(la) zanimanje radi traženja prvog ili ponovnog zaposlenja i sl..... 12

(Ako je dan odgovor 11 ili 12, treba upisati puni naziv zanimanja)

Umirovljenik (starosni, invalidski, obiteljski)..... 61
 Osoba s prihodom od imanja..... 62
 Osoba sa ostalim prihodima 63
 Kućanica 71
 Dijete, učenik ili student 72
 Nesposoban za rad 73
 Ostale izdržavane osobe 74
 Osoba na radu ili boravku u inozemstvu ... 50
 Nepoznato 99

11b. POLOŽAJ U ZAPOSLENOSTI

(odgovor dati samo za osobe za koje je na pitanje 11a dan odgovor "11")

Zaposlenik 1
 Poslodavac 2
 Samozaposlenik 3
 Pomažući član kućanstva 4
 Nepoznato 9

12. AKTIVNOST UZDRŽAVATELJA

(ako je na pitanje 11a dan odgovor " 71-74 ", zaokružiti jedan od odgovora " 1 - 4, 9 ", a za ostale " 0 ")

Aktivna osoba u zemlji 1
 Osoba s osobenim prihodom 2
 Osoba na radu u inozemstvu 3
 Ostali 4
 Nepoznato 9
 Nije uzdržavana osoba 0

81 13. MJESTO SMRTI

u klinici - bolnici 1
 u drugoj zdravstvenoj ustanovi..... 2
 u ustanovi za smještaj 3
 u stanu 4
 na drugom mjestu..... 5

14. DA LI JE UMRLI BIO LIJEČEN OD BOLESTI OD KOJE JE UMRO

Da 1
 Ne 2

85 15. TKO JE UTVRADIO UZROK SMRTI

Mrtvozornik - doktor medicine..... 1
 Mrtvozornik - drugi zdravstveni djelatnik... 2
 Obducent..... 3
 Doktor medicine koji je liječio..... 4
 Uzrok smrti neutvrđen..... 5

16. UZROK SMRTI

_____ | | | | |
 upisuje liječnik iz "Potvrde o smrti"

86 17. SMRT JE :

prirodna..... 1
 nasilna..... 2

87

88

89

90

94

95

PODACI ZA UMRLU DOJENČAD	
<p>18. DATUM ROĐENJA I JMBG MAJKE UMRLLOG DJETETA</p> <p>_____</p> <p>dan, mjesec i godina ostalih 6 br. JMBG</p>	<p>22. AKTIVNOST MAJKE </p>
<p>19. DA LI JE DIJETE ROĐENO U BRAKU ILI VAN BRAKA</p> <p>Dijete je rođeno u braku 1 Dijete je rođeno izvan braka 2</p>	<p>22a. POLOŽAJ U AKTIVNOSTI</p> <p>Obavlja zanimanje u radnom odnosu ili samostalno 1 Ne obavlja zanimanje jer traži prvo ili ponovno zaposlenje I sl. 2</p>
<p>20. KOLIKO JE MAJKA OVOG DJETETA UKUPNO RODILA ŽIVOROĐENE DJECE (uključujući i ovo umrlo dojenče)</p> <p>_____ </p>	<p>(Ako je dan odgovor 1 ili 2, treba upisati puni naziv zanimanja)</p> <p>Osoba s osobnim prihodom 3 Uzdržavana osoba 4 Osoba na radu ili boravku u inozemstvu 5 Majka umrla prije djeteta Y Nepoznato 9</p>
<p>20a. KOLIKO JE DJECE U ŽIVOTU</p> <p>_____ </p>	<p>22b. POLOŽAJ U ZAPOSLENOSTI (odgovor daju samo osobe koje su na pitanje 22a. dale odgovor "1")</p> <p>Zaposlenik 1 Poslodavac 2 Samozaposlenik 3 Pomažući član kućanstva 4 Nepoznato 9</p>
<p>21. ŠKOLSKA SPREMA MAJKE (najviša završena škola)</p> <p>Bez škole i 1-3 razr. osn. škole 0 4-7 razr. osnovne škole 1 Osnovna škola 2 Srednje škole: - Škole za zanimanja u trajanju 1-3 godine i i škole za KV i VKV radnike 3 - škole za zanimanja u trajanju od 4 g. i gimnazije.. 4 Viša škola i I. (VI.) stupanj fakulteta 5 Fakulteti i umjetničke akademije 6 Magisterij 7 Doktorat 8 Majka umrla prije djeteta Y Nepoznato 9</p> <p>(Ako se ne može odrediti školska sprema, upisati naziv završene škole).</p>	<p>116</p> <p>108</p> <p>109</p> <p>111</p> <p>113</p> <p>114</p> <p>117</p> <p>118</p>

PODACI O NASILNOJ SMRTI		NAPOMENE:	
23. VRSTA NASILNE SMRTI			
Nesretan slučaj	1		
Samoubojstvo.....	2		
Ubojstvo.....	3	119	
Ratna dejstva.....	4		
Nepoznato	9		
24. KAD SE SLUČAJ DESIO			
_____	<input type="checkbox"/>	121	
dan, mjesec i godina			
_____	<input type="checkbox"/>	122	
sat (0 - 24)			
_____	<input type="checkbox"/>	123	
za slatistiku : interval između			
dogadaja i nastupa smrti			
_____	<input type="checkbox"/>	124	
dan u tjednu			
25. VANJSKI UZROK NASILNE SMRTI			
_____	<input type="checkbox"/>	128	
upisuje doktor medicine iz "Potvrde o smrti"			
26. VRSTA NESRETOG SLUČAJA			
Nije nesretan slučaj	0		
Nesreća na poslu	1		
Nesreća pri dolasku/odlasku na posao	2		
Nesreća u školi	3	129	
Nesreća pri dolasku/odlasku u školu	4		
Prometna nesreća (isključuju se nesreće			
pri dolasku/odlasku na posao ili školu)	5		
Nesreća kod kuće	6		
Ostalo	7		
Nepoznato	9		

M. P.

Matičar: _____

REPUBLIKA BOSNA I HERCEGOVINA

Institut za izražavanje zločina protiv čovječnosti i međunarodnog prava
Sarajevo
Institute for the Research of Crimes Against Humanity and International Law, Sarajevo

UPITNIK

QUESTIONNAIRE

ZA POPIS PORODIČNIH DOMAĆINSTAVA NA SLOBODNIM PODRUČJIMA GRADA SARAJEVA U 1994. GODINI Survey of households in the free territory of Sarajevo in 1994

- 1) Sadašnja adresa porodičnog domaćinstva: a)

Opština _____
Current address family/household: _____ Municipality _____
b) Mjesna zajednica _____ c) Ulica i broj _____
Community _____ Address _____

- 2) Porodično domaćinstvo

Members of Family/household

- a) Živi na istoj adresi na kojoj je živjelo I prije rata;
same address as before the war

- b) Tokom rata, u okviru slobodnih teritorija RBiH, preselilo sa adrese: _____
During the war moved within the free territories of BiH, from this address _____
_____ opština _____
municipality _____

- c) Izbjeglice, ili raseljeni iz: adresa _____, opština _____
Refugees or displaced from: address _____ municipality _____

- 3) Članovi porodičnog domaćinstva koji sada žive na slobodnim područjima grada Sarajeva (pod a) se upisuje nosilac porodičnog domaćinstva):

	Members of F/HH PREZIME (ime OCA) IME Last name (father's name) first	who reside in the free territory GODINA ROĐENJA Year of birth	of Sarajevo (under a) SRODSTVO SA NOSIOC Position in F/HH	the head of the F/HH. NACIONALNOST Ethnicity	VJEROISPOVJEST Religion
a)	_____	_____	_____	_____	_____
b)	_____	_____	_____	_____	_____
c)	_____	_____	_____	_____	_____
d)	_____	_____	_____	_____	_____
e)	_____	_____	_____	_____	_____
f)	_____	_____	_____	_____	_____

- 4) Članovi p porodičnog domaćinstva koji su izbjegli, odnosno raseljeni, van Sarajeva, ili su ostali na području RbiH koje je pod kontrolom agresora:

	Members of F/HH the aggressor: PREZIME (IME OCA) I IME Last name (father's name) first	who fled, GODINA ROĐENJA Year of birth	were displaced, SRODSTVO SA NOSIOC Position in F/HH	from Sarajevo, NACIONALNOST Ethnicity	or who remained VJEROISPOVJEST Religion	in the territory controlled by GDJE SADA ŽIVI Current residence
a)	_____	_____	_____	_____	_____	_____
b)	_____	_____	_____	_____	_____	_____
c)	_____	_____	_____	_____	_____	_____
d)	_____	_____	_____	_____	_____	_____
e)	_____	_____	_____	_____	_____	_____
f)	_____	_____	_____	_____	_____	_____

- 5) Poginuli u porodičnom domaćinstvu tokom agresije.
Killed members of F/HH during aggression.

	PREZIME (ime OCA) IME Last name (father's name)	GODINA ROĐENJA Year of birth	SRODS. SA NSC. Position in F/HH	DATUM POGIBIJE Date of death	MAJESTO POGIBIJE Place of death	NAČIN POGIBIJE Cause of death	CIVIL-BORAC Civilian-Soldier
a)	_____	_____	_____	_____	_____	_____	_____
b)	_____	_____	_____	_____	_____	_____	_____
c)	_____	_____	_____	_____	_____	_____	_____

- 6) Ranjeni u prordičnom domaćinstvu tokom agresije.
Wounded (members of F/HH) during aggression.
- | PREZIME (ime OCA) I IME
<i>Last name (father's name)</i> | GODINA
RODENJA
<i>Year of birth</i> | SRODS. SA NSC.
<i>Position in F/HH</i> | DATUM
RANJAV
<i>Date of injury</i> | MAJESTO
RANJAV
<i>Place of injury</i> | NAČIN
RANJAVANJA
<i>Cause of injury</i> | CIVIL-BORAC
<i>Civilian-Soldier</i> |
|---|---|---|--|---|---|--|
| a) _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| b) _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| c) _____ | _____ | _____ | _____ | _____ | _____ | _____ |
- 7) Nestali u porodičnom domaćinstvu tokom agresije.
Missing (members of F/HH) during aggression.
- | PREZIME (IME OCA) I IME
<i>Last name (father's name) First name</i> | GODINA
RODENJA
<i>Year of birth</i> | MJESTO NESTANKA
<i>Place of disappearance</i> | NAČIN NESTANKA
<i>Cause of disappearance</i> | CIVIL-BORAC
<i>Civilian-Soldier</i> |
|--|---|--|---|--|
| a) _____ | _____ | _____ | _____ | _____ |
| b) _____ | _____ | _____ | _____ | _____ |
| c) _____ | _____ | _____ | _____ | _____ |
- 8) Članovi porodičnog domaćinstva koji se nalze ili su bili u logoru ili zatvoru tokom agresije.
Members of F/HH who were detained in prison or cam during aggression.
- | PREZIME (IME OCA) I IME
<i>Last name (father's name) First name</i> | GODINA
RODENJA
<i>Year of birth</i> | LOGOR – ZATVOR
(NAZIV I MJESTO)
<i>Place of detention (prison/camp)</i> | OD – DO
<i>From - Until</i> |
|--|---|---|--------------------------------|
| a) _____ | _____ | _____ | _____ |
| b) _____ | _____ | _____ | _____ |
| c) _____ | _____ | _____ | _____ |
- 9) Invalidi u prordičnom domaćinstvu usljed ratnih dejstava.
Invalid/handicapped members of F/HH because of war.
- | PREZIME (IME OCA) I IME
<i>Last name (father's name) First name</i> | GODINA
RODENJA
<i>Year of birth</i> | OPIS INVALIDITETA
<i>Description of invalidacy</i> | CIVIL-BORAC
<i>Civilian-Soldier</i> |
|--|---|---|--|
| a) _____ | _____ | _____ | _____ |
| b) _____ | _____ | _____ | _____ |
| c) _____ | _____ | _____ | _____ |
- 10) Živorodeni u porodičnom domaćinstvu tokom agresije.
Persons born during the aggression.
- | PREZIME (IME OCA) I IME
<i>Last name (father's name) First name</i> | RODEN-A (datum)
<i>Born (date)</i> | POL
<i>Gender</i> | GDJE JE RODEN-A
<i>Place of birth</i> |
|--|---------------------------------------|----------------------|--|
| a) _____ | _____ | _____ | _____ |
| b) _____ | _____ | _____ | _____ |
- 11) Mrtvorodeni u porodičnim domaćinstvu tokom agresije.
Still births (members of F/HH) during aggression.
- a) NE; no b) DA, koliko yes. How many? _____
- 12) Umrli u porodičnom domaćinstvu tokom agresije.
Died (members of F/HH) during aggression.
- | PREZIME (IME OCA) I IME
<i>Last name (father's name) First name</i> | GODINA
RODENJA
<i>Year of birth</i> | UMRO-LA (Datum)
<i>Died on (date)</i> | SRODSTVO SA NSC.
<i>Relation to head of F/HH</i> | CIVIL-BORAC
<i>Civilian-Soldier</i> |
|--|---|--|---|--|
| a) _____ | _____ | _____ | _____ | _____ |
| b) _____ | _____ | _____ | _____ | _____ |
| c) _____ | _____ | _____ | _____ | _____ |
- 13) Stambeni uslovi u kojima sada živi porodično domaćinstvo u Sarajevu
Current housing conditions of F/HH in Sarajevo.
- a) U vlastitom stanu/kući od prije agresije;
Owns apartment since before the aggression
- b) Vlastiti stan/kuća je uništen ili napušten zbog agresorskih dejstava – porodično domaćinstvo uselilo u drugi stan/kuću;
Own house/apt. destroyed or abandoned because of aggression – F/HH moved to a new house/apartment
- c) Nije imalo stan/kuću – porodično domaćinstvo uselilo u drugi stan/kuću tokom agresije;
Did not have own house/apt. but F/HH moved to another during the aggression.
- d) Stanuje u kolektivnom smeštaju sa ostalim izbjeglim i raseljenim licima;
Shared house/apt. with other refugees during aggression
- e) Izbjeglince ili raseljena lica smješteni kod rodbine;
Refugees and displaced residing with F/HH.
- f) Ostalo others _____
- 14) Da li je porodica (njeni stariji članovi ili roditelji) bila u izbjeglištvu u II svjetskom, ratu (1941-1945)?
Has any member of F/HH (elder/parents) been displaced in the 2nd World War?
- b) NE; a) DA, izbjegla
- iz _____ u _____ od _____ do _____ until
from (location) to (location) since

15) Da li je porodično domaćinstvo izgubilo nekog od bliske rodbine u II svjetskom ratu?

Did any immediate member of the family die in WWII?

	PREZIME (IME OCA) I IME <i>Last name (father's name) First name</i>	GODINA RODENJA <i>Year of birth</i>	KAO VOJNIK (KOJE VOJSKE) <i>Soldier? (w/c army?)</i>	CIVIL (GDJE I KAKO) <i>Civilian (where and how)?</i>
a)	_____	_____	_____	_____
b)	_____	_____	_____	_____
c)	_____	_____	_____	_____

U ime porodičnog domaćinstva, podatke dao: _____, srodstvo sa
nosiocem _____

On behalf of the F/HH, data was given by:

relationship to head of F/HH

Datum popisa _____
popunio _____

Upitnik

Date of signature

Survey filled in by

OVERVIEW OF DATA ITEMS AVAILABLE FROM THE ICRC LIST OF MISSING PERSONS

Field name	Description
ID ↔	Primary key
ICRC ID No	ICRC ID number (unique)
First name	First name
Last name	Last name
Father's name	Fathers name
Sex	Sex
DOB	Date of birth
Place of birth	Place of birth (settlement-municipality) - name
DoDis	Date of disappearance
PoDIS	Place of disappearance(settlement-municipality) - name

OVERVIEW OF DATA ITEMS AVAILABLE FROM RECORDS OF THE BAKIJE FUNERAL HOME IN SARAJEVO

Item name	Description
B:Cnt	Primary key, sequential number of the record
Prezime	Last name
Ime	First name
Ime oca	Father's name
DatumR	Date of birth
DatumS	Date of burial (a proxy for death)
Spol	Sex (M/Ž)
Status	Status of the deceased (B=soldier, C=civilian)
MjestoS	Place of burial

OVERVIEW OF DATA ITEMS AVAILABLE FROM THE VRS LIST OF FALLEN SOLDIERS AND OTHER MILITARY PERSONNEL

Item name	Description
VRS:Cnt	Primary key, sequential number of the record
Broj	Sequential number of the record, as obtained from the RS authorities
Name (full)	Name as “Last Name, Father’s Name, First Name”
DOB	Date of birth
JMBG	JMBG - ID number (including DoB)
OpBoravka	Opština of residence (a settlement or town/village)
OpBirth	Opština of birth (a settlement or town/village)
DOD	Date of death
COD	Cause of death

OVERVIEW OF DATA ITEMS AVAILABLE FROM SARAJEVO HOSPITAL RECORDS

Data Item	Description
Record_ID	Primary Key
Hospital	1=Kosevo, 2=State hospital, 3=Dobrinja
Hospital Clinic	Codes for Kosevo clinics
Local ID#	ID# of the original document
Surname	Victim's surname
Father's name	Victim's father's name
Name	Victim's name
Sex	Victim's sex
DOB	Date of birth
Age	Victim's age
Date	Date of the incident
Time	Time of the incident
Place	Location of the incident
In Sarajevo?	Incident happened in Sarajevo?
Admitted	Date of hospital admission
Released	Date of release/death
Injured by	1=Shelling, 2=Sniping, 3=Other, 4=V.Explosiva, O=Unknown
Fatal	Victim died (Yes) or survived (No)
Transferred to	Victim sent to another clinic/hospital
Transferred from	Victim came from another clinic/hospital
Remarks	All other relevant remarks
Clinic code c	Clinic code (Kosevo hospital only) corrected via Auxilliary table

ANNEX 3 – Matching sources and duplicate removal by the Demographic Unit, OTP

MATCHING SOURCES AND DUPLICATE REMOVAL BY THE DEMOGRAPHIC UNIT

Before this summary can begin, a few terms need to be introduced for the ease of discussion.

- **Records** are composed of information items describing individual cases; e.g. the names and DoBs of persons listed in a given source are records of individual cases, one case being one victim reported.
- **Links** between records in two sources are record IDs from one source copied into the second source.
- **Establishing links** between records from a given list and another source (e.g. the 1991 Census) is done by comparing how names and other personal details of cases are reported in the two sources. Cases with a high consistency of the reporting can be declared as “matched” or “linked” in the related sources.

Having the terms defined, the summary can follow.

In the present report, not only cross-referencing of sources on deaths was conducted, but also merging of sources and removal of duplicates. The logic and the criteria used in duplicates’ checks, merging of sources, and linking records from different sources are largely the same. It is always the same **process** of comparing records, physically organized in two different data tables, by using a large number of criteria. The criteria are formulated as combinations of personal characteristics (including personal IDs) taken from individual records of information. Noteworthy, the queries formulated on the basis of comparing **exclusively** individual identification numbers – JMBs (thus, **exclusively numbers**) could result in quick and straightforward results. But due to deficiencies of the Yugoslav JMBs and the absence of JMBs from some sources, the feasibility of these queries is rather limited and many other (additional or alternative) personal characteristics must be compared in order to conclude a match of two records to be the **true match**.

Duplicates checks, merging and linking of sources are not just a numeric procedure limited to running a number of queries, which automatically result in classifying certain records to be the same and therefore representing the same persons. It is always a lengthy process in which the outcome of a query is inspected visually and decisions are made about which records represent the same persons and which not. The process of checking duplicates, merging and linking sources started in the Demographic Unit in 1997 and have continued up to the present day. Thousands of manual controls and individual decisions underlie the summary statistics included in our reports.

Below we attached an example of criteria used in duplicates’ checks, merging and matching of sources. The example comes from linking of the ICRC list of missing persons from Bosnia and Herzegovina with the 1991 population census for Bosnia. Personal identification number (JMB) was not used in this case as the ICRC list does not include it.

Note that before the linking was conducted, much data processing was done in each source, such as studying and correcting (if possible) errors in data and creating

additional variables for use in matching. Our knowledge of data specificity and corrections formed the basis, on which subsequent matches were obtained.

Table 3.1. Matching criteria for the 1991 Census with the ICRC list of missing persons

#	Criteria and Comments
1	First name, Fathers name, Last name, DoB, OoD
2	Initial(First name), Fathers name, Last name, DoB, OoD
3	First name, Initial(Fathers name), Last name, DoB, OoD
4	First name, Fathers name, Initial(Last name), DoB, OoD
5	First name, Initial(Fathers name), Initial(Last name), DoB, OoD
6	Initial of First name, Initial(Fathers name), Last name, DoB, OoD
7	Initial of First name, Fathers name, Initial of Last name, DoB, OoD
8	First name, Fathers name, Last name, DoB, OoB
9	Initial(First name), Fathers name, Last name, DoB, OoB
10	First name, Initial(Fathers name), Last name, DoB, OoB
11	First name, Fathers name, Initial(Last name), DoB, OoB
12	Initial(First name), Initial(Fathers name), Last name, DoB, OoB
13	First name, Initial(Fathers name), Initial(Last name), DoB, OoB
14	Initial(First name), Fathers name, Initial(Last name), DoB, OoB
15	First name, Fathers name, Last name, DoB
16	Initial(First name), Fathers name, Last name, DoB
17	First name, Initial(Fathers name), Last name, DoB
18	First name, Fathers name, Initial(Last name), DoB
19	Initial(First name), Initial(Fathers name), Last name, DoB
20	First name, Initial(Fathers name), Initial(Last name), DoB
21	Initial(First name), Fathers name, Initial(Last name), DoB
22	First name, Fathers name, Last name, YoB, OoD, DOB-comparison algorithm run.
23	Initial(First name), Fathers name, Last name, YoB, OoD, DOB-comparison algorithm run.
24	First name, Initial(Fathers name), Last name, YoB, OoD, DOB-comparison algorithm run.
25	First name, Fathers name, Initial(Last name), YoB, OoD, DOB-comparison algorithm run.
26	First name, Initial(Fathers name), Initial(Last name), YoB, OoD, DOB-comparison algorithm run.
27	Initial(First name), Initial(Fathers name), Last name, YoB, OoD, DOB-comparison algorithm run.
28	Initial(First name), Fathers name, Initial(Last name), YoB, OoD, DOB-comparison algorithm run.
29	First name, Fathers name, Last name, YoB, OoB, DOB-comparison algorithm run.
30	Initial(First name), Fathers name, Last name, YoB, OoB, DOB-comparison algorithm run.
31	First name, Initial(Fathers name), Last name, YoB, OoB, DOB-comparison algorithm run.
32	First name, Fathers name, Initial(Last name), YoB, OoB, DOB-comparison algorithm run.
33	First name, Initial(Fathers name), Initial(Last name), YoB, OoB, DOB-comparison algorithm run.
34	Initial(First name), Initial(Fathers name), Last name, YoB, OoB, DOB-comparison algorithm run.
35	Initial(First name), Fathers name, Initial(Last name), YoB, OoB, DOB-comparison algorithm run.
36	First name, Fathers name, Last name, YoB, DOB-comparison algorithm run.
37	Initial(First name), Fathers name, Last name, YoB, DOB-comparison algorithm run.
38	First name, Initial(Fathers name), Last name, YoB, DOB-comparison algorithm run.
39	First name, Fathers name, Initial(Last name), YoB, DOB-comparison algorithm run.
40	First name, Initial(Fathers name), Initial(Last name), YoB, DOB-comparison algorithm run.
41	Initial(First name), Initial(Fathers name), Last name, YoB, DOB-comparison algorithm run.
42	Initial(First name), Fathers name, Initial(Last name), YoB, DOB-comparison algorithm run.
43	First name, Fathers name, Last name, YoB, i:ExclDuploRecord=NULL, DOB-comparison
44	Initial(First name), Fathers name, Last name, YoB, i:ExclDuploRecord=NULL, DOB-comparison
45	First name, Initial(Fathers name), Last name, YoB, i:ExclDuploRecord=NULL, DOB-comparison
46	First name, Fathers name, Initial(Last name), YoB, i:ExclDuploRecord=NULL, DOB-comparison
47	Duplicate matches from previous queries resolved manually (matched on FN, Initial(FaN), LN,
48	First name, Fathers name, Last name, OoB, OoD, YoB
49	First name, Initial(Fathers Name), Last Name, OoB, OoD, YoB
50	Initial(First name), Fathers name, Last name, OoB, OoD, YoB
51	First name, Fathers name, Initial(Last name), OoB, OoD, YoB
52	First name, Fathers, Last name, YoB, OoD, Sex
53	First name, Fathers, Last name, YoB, OoB, Sex
54	First name, Initial(Fathers Name), Last Name, OoD, YoB, Sex
55	First name, Initial(Fathers Name), Last Name, OoB, YoB, Sex
56	Duplicate matches from previous queries resolved manually (matched on FN, FaN, LN, and YoB,
57	First name, Fathers name, Last name, OoB, OoD, Sex, Fuzzy DOB-comparison run.
58	First name, Initial(Fathers name), Last name, OoB, OoD, Sex, Fuzzy DOB-comparison run.

#	Criteria and Comments
59	Initial(First name), Fathers name, Last name, OoB, OoD, Sex, Fuzzy DOB-compoarison run.
60	First name, Fathers name, Initial(Last name), OoB, OoD, Sex, Fuzzy DOB-compoarison run.
61	First name, Fathers name, Last name, OoD, Sex, Fuzzy DOB-comparison run.
62	First name, Initial(Fathers name), Last name, OoD, Sex, Fuzzy DOB-comparison run.
63	Duplicate matches from previous queries resolved. (FN, FaN, LN, OoD, Fuzzy DOB comparison)
64	Initial(First name), Fathers name, Last name, OoD, Sex, Fuzzy DOB-compoarison run.
65	First name, Fathers name, Initial(Last name), OoD, Sex, Fuzzy DOB-compoarison run.
66	First name, Fathers name, Last name, OoD, Sex, Fuzzy DOB-comparison run.
67	First name, Initial(Fathers name), Last name, OoB, Sex, Fuzzy DOB-comparison run.
68	Initial(First name), Fathers name, Last name, OoB, Sex, Fuzzy DOB-compoarison run.
69	First name, Fathers name, Initial(Last name), OoB, Sex, Fuzzy DOB-compoarison run.
70	Initial(First name), Initial(Fathers name), Initial(Last name), DOB, OoD
71	Initial(First name), Initial(Fathers name), Initial(Last name), DOB

The aim of the linking procedures described in the table above was to do the most systematic exploitation of links as were possible by the nature of the data.

For the killed persons part of this report, the following sources were used:²⁵

- Mortality databases of the FBH and RS statistical authority;
 - ICRC list of missing persons for Bosnia (2005 version);
 - Household Survey Sarajevo, 1994, (HHS-94);
 - Records of the Bakije Funeral Home;
 - Lists of fallen soldiers and other military personnel: ABIH, HVO, VRS;
- The above-mentioned sources were individually assessed (regarding their reliability), their quality and coverage checked, and duplicates were removed from each source.
 - In the second step, all sources were linked with the 1991 Population Census through personal characteristics of the individuals listed.
 - Parallel, the relevant sources, (i.e. all except of military lists), were merged with each other. Merging, unlike the matching, is meant to combine a number of sources, (i.e. lists), in one master list. Merging increases the overall number of records in a data table, matching increases the quantity of information in a given list. Only a number of selected data items were taken from each source for the merge. These were the substantive items consistently reported in every source:

- Group I: names (first, family, and father's), DoB, PoB (if available), PoR (if available), ethnicity;
- Group II: details on death (date, specific place, municipality, and cause);
- Group III: the military-civilian status (if available); and whether record is war-related
- Group IV: the original record ID (primary key) from a given source (including the Census ID for the records matched with the Census), and the source name,

- In this way a Bosnia-wide deaths database was established (187,260 entries) composed of records from five sources: FBH database, RS database, ICRC missing, HHS-94 and Bakije. (Hereafter: Bosnia database). Although earlier duplicates had been removed from each source, many records were overlapping

²⁵ The part that follows here is the same as in the main text (Section 2.1).

between sources in the merge. So, in order to present a meaningful analysis the overlap had to be removed.

- Removing the overlap from the Bosnia database would be a very time-consuming procedure. In order to save time, we decided to do this not at the level of the entire country but at the level of the administrative area of Sarajevo (i.e. Sarajevo Ten). So, in the next step we extracted all records belonging to Sarajevo Ten and the period from January 1992 to December 1995. In total, 40,180 records were identified.
- These 40,180 records were placed into a separate database which was then called Sarajevo deaths database. (Hereafter: Sarajevo database). The Sarajevo database contained war-related records and also records of natural and unknown deaths.
- The removal of the overlapping records was done in this particular database. Some cleaning of the row material was conducted as well at this stage.
- During the cleaning, records which were incomplete and deficient were marked as invalid. As a minimum, the information about names, YoB and YoD were required to declare a given (unique) record valid. Overlapping records could not be declared valid even if they were complete and consistent.
- At the completion of the overlap removal and of cleaning, the number of unique valid records in Sarajevo database became 26,466. This number covers the unique (i.e. non-duplicated) and valid entries related to the siege. All types of deaths are included, also natural and unknown.
- The final Sarajevo database (26,466) was the basis for extracting records that were caused by war and the deceased seen as victims. Details of this procedure are discussed in Section 3 of this report.
- Eventually, final statistics were calculated in order to assess a number of relevant hypotheses.

ANNEX 4 – METHODOLOGICAL FOUNDATION OF ESTIMATING PROPORTIONS, CORRELATION AND REGRESSION ANALYSIS

4.1 ESTIMATING MORE COMPLETE NUMBERS OF VICTIMS²⁶

The estimation method is explained here on a hypothetical example of the variable “Wound Type” (i.e. cause of wounding) for patients registered with a specific diagnosis in relation to those registered without any diagnosis. The estimation method is based on the proportion (p) of patients reported under a given cause of wounding. The estimator of this proportion is obtained from the records of patients reported with a specific diagnosis available.

Table A.1 Adjustment of the Minimum Numbers of Wounded Persons According to the Observed Distribution of Wound Type

Wound Type	Count	Percent	Count	Percent	Confidence Interval	
	(Observed)	(Observed)	(Adjusted)	(Adjusted)	Lower Limit	Upper Limit
Shelling	2,088	81.9	4,418	81.9	4,377	4,458
Gunshots	457	17.9	967	17.9	927	1,007
Shelling or Gunshots	3	0.1	6	0.1	3	10
Beaten	1	0.0	2	0.0	0	4
Unknown	2,844	na	na	na	na	na
Missing names/pages	474	na	na	na	na	na
Total	5,867	100.0	5,393	100	5,307	5,479

Three (non-zero) proportions were obtained from the observed sample of 2,549 patients with the diagnosis available (i.e. with known causes of wounding): 81.3, 17.9 and 0.1 percent. We further assumed that the estimated proportions hold true for the entire (unknown) population of wounded persons. Based on the records from (hypothetical) Hospital Records, another 2,844 additional persons should be included in the estimate of the overall total of wounded. In the next step, we therefore applied these proportions to the sample of patients without a specific cause of wounding available (2,844; this total was multiplied by each of these three proportions). For example, 2,844 * 81.9% resulted in an *additional* number of 2,330 victims of shelling. Together with the *observed* number of shelling victims (2,088), the overall total for shelling equals 4,418 individuals (2,088+2,330). We proceeded in this way in the case of this particular variable (i.e. cause of wounding) and also of all other variable discussed in Section 6 “Final Results”.

Theoretical basis for the above procedure is summarized below:

$$\hat{p} = \frac{X}{n} - \text{Proportion of distinguished (X-value) elements in an n-element sample; an estimator of the unknown proportion } p \text{ of these elements in the entire population}$$

²⁶ Although in this section the discussion is made on the example of persons wounded, in fact the method was applied in this report to the numbers of persons killed. The methodology remains the same in both these cases.

Statistic $\hat{p} = \frac{X}{n}$ has the binomial distribution with the mean $E(\hat{p}) = p$ and standard deviation $D(\hat{p}) = \sqrt{\frac{p(1-p)}{n}}$. For big samples, the statistic $\hat{p} = \frac{X}{n}$ is approximated by the normal distribution with the same parameters.

The confidence interval for statistic $\hat{p} = \frac{X}{n}$ can be therefore estimated using the following formula:

$$P\left(\hat{p} - u_{\alpha} \sqrt{\frac{p(1-p)}{n}} < p < \hat{p} + u_{\alpha} \sqrt{\frac{p(1-p)}{n}}\right) \cong 1 - \alpha$$

Based on the above formula and the fact that the number of distinguished elements can be obtained from the proportion equation $\hat{p} = \frac{X}{n}$ as: $X = \hat{p} n$, the formula of the confidence interval for X can be easily derived from that for \hat{p} :

$$P\left(n \hat{p} - u_{\alpha} \sqrt{np(1-p)} < X < n \hat{p} + u_{\alpha} \sqrt{np(1-p)}\right) \cong 1 - \alpha$$

■

Source: Any textbook for statistics e.g.:

- F.J. Gravetter and L.B. Wallnau, 2000, *Statistic for Behavioral Sciences*. Wadsworth Thomson Learning. Australia, Canada, Denmark etc. (5th edition).
- G.K. Kanji, 1999, *100 Statistical Tests*. New Edition. Sage Publications. London, Thousand Oaks, New Delhi.
- J. Jozwiak and J Podgorski, 1997, *Statystyka od Podstaw*. Polskie Wydawnictwo Ekonomiczne. Warsaw. (5th edition).

4.2 T-TEST FOR A CORRELATION COEFFICIENT

In this report, on several occasions we calculated the so-called Pearson coefficient of correlation (usually denoted by letter “ r ”). The coefficient of correlation measures the degree and direction of linear relationship between two variables, X and Y . Conceptually, this correlation is computed by:

$$r = \frac{\text{Degree to which X and Y vary together}}{\text{Degree to which X and Y vary separately}}$$

When there is a perfect linear relationship, every change in the X variable is accompanied by a corresponding change in the Y variable. In both cases the absolute value of r is then “1”. The relationship can be positive or negative, however. A positive correlation is when an increase in X is associated with an increase in Y . The positive perfect linear relationship is expressed by $r = 1$. The negative relationship is when an increase in X is associated with a decline in Y . The negative perfect linear relationship is expressed by $r = -1$. The absolute values of r between 0 and 1 indicate that the relationship is not perfect; the lower the r the weaker the relationship.

Below we attached the t-test for testing the significance of the correlation coefficient r . We applied this test in this report.

Object

To investigate whether the difference between the sample correlation coefficient and zero is statistically significant.

Limitations

It is assumed that the x and y values originate from a bivariate normal distribution, and that the relationship is linear.

Method

Given a sample of n points (x_i, y_i) the correlation coefficient r is calculated from the formula

$$r = \frac{\sum (x_i - \bar{x})(y_i - \bar{y})}{[\sum (x_i - \bar{x})^2 \sum (y_i - \bar{y})^2]^{\frac{1}{2}}}$$

To test the null hypothesis that the population value of r is zero, the test statistics

$$t = \frac{r}{\sqrt{1-r^2}} \cdot \sqrt{n-2}$$

is calculated and this follows Student’s t -distribution with $n-2$ degrees of freedom. The test will normally be two-tailed but in certain cases could be one-tailed.

Sources:

- Gopal K. Kanji, 1999: 100 Statistical Tests, (New Edition). Sage Publications. London, Thousand Oaks, New Delhi. (pp. 33).
 F.J. Gravetter and L.B. Wallnau, 2000, Statistic for Behavioral Sciences. Wadsworth Thomson Learning. Australia, Canada, Denmark etc. (5th edition).

4.3 REGRESSION

In general, a *linear relationship* between two variables X and Y can be expressed by the equation $Y = bX + a$, where b and a are fixed constants. In the general linear equation, the value of b is called the *slope*. The slope determines how much the Y variable will change when X is increased by one point. The value of a in the general equation is called the *Y -intercept* because it determines the value of Y when $X = 0$. (On a graph, the a value identifies the point where the line intercepts the Y -axis.)

Because a straight line can be extremely useful for describing a relationship between two variables, a statistical technique has been developed that provides a standardized method for determining the best-fitting straight line for any set of data. The statistical procedure is regression, and the resulting straight line is called the regression line.

Definition

The statistical technique for finding the best-fitting straight line for a set of data is called *regression*, and the resulting straight line is called the *regression line*.

The goal for regression is finding the best-fitting straight line for a set of data. To accomplish this goal, however, it is first necessary to define precisely what is meant by “best fit”. For any particular set of data, it is possible to draw lots of different straight lines that all appear to pass through the centre of the data points. Each of these lines can be defined by a linear equation of the form

$$Y = bX + a$$

Where b and a are constants that determine the slope and Y -intercept of the line, respectively. Each individual line has its own unique values for b and a . The problem is to find the specific line that provides the best fit to the actual data points.

To determine how well a line fits the data points, the first step is to determine mathematically the distance between the line and each data point. For every X value in the data, the linear equation will determine a Y value on the line. This value is the predicted Y and is called \hat{Y} (“ Y hat”). The distance between this predicted value and the actual Y value in the data is determined by

$$\text{distance} = Y - \hat{Y}$$

Notice that we simply are measuring the vertical distance between the actual data point (Y) and the predicted point on the line. This distance measures the error between the line and the actual data. Because some of these distances will be positive and some will be negative, the next step is to square each distance in order to obtain a uniformly positive measure of error. Finally, to determine the total error between the line and the data, we sum the squared errors for all of the data points. The result is a measure of overall squared error between the line and the data:

$$\text{total squared error} = \sum(Y - \hat{Y})^2$$

Now we can define the *best-fitting* line as the one that has the smallest total squared error. For obvious reasons, the resulting line is commonly called the *least-squared-error* solution. In symbols, we are looking for a linear equation of the form

$$\hat{Y} = bX + a$$

For each value of X in the data, this equation will determine the point of the line (\hat{Y}) that gives the best prediction of that gives the best prediction of. The problem is to find the specific values for a and b that will make this the best-fitting line.

The calculations that are needed to find this equation require calculus and some sophisticated algebra, so we will not present the details of the solution. The results, however, are relatively straightforward, and the solutions for b and a are as follows:

$$b = \frac{SP}{SS_x} \quad (1)$$

where SP is the sum of products and SS_x is the sum of squares for the X scores.

$$a = \bar{Y} - b\bar{X} \quad (2)$$

Note that those two formulas determine the linear equation that provides the best prediction of Y values. This equation is called the regression equation for Y .

Definition

The *regression equation for Y* is the linear equation

$$\hat{Y} = b\bar{X} + a$$

where the constants b and a are determined by equations (1) and (2), respectively. This equation results in the least-squared error between the data points and the line.

Source

F.J. Gravetter and L.B. Wallnau, 2000: *Statistics for Behavioral Sciences*. (5th edition). Wadsworth/Thomson Learning, USA, Australia, Canada, Denmark etc.

ANNEX 5 – RESULTS OF MODEL ESTIMATION FOR THE NUMBERS OF WOUNDED CIVILIANS

Model: $Y_1(t) = f(X_1(t), Err(t))$

```

=====
Dependent Variable: HHS_TOTAL
Method: Least Squares
Date: 03/03/07 Time: 16:32
Sample(adjusted): 1992:04 1994:07
Included observations: 28 after adjusting endpoints
=====

```

Variable	Coefficient	Std. Error	t-Statistic	Prob.
HR_TOTAL	3.081610	0.085550	36.02096	0.0000

```

=====
R-squared      0.946869 Mean dependent var 283.8571
Adjusted R-squared 0.946869 S.D. dependent var 228.0722
S.E. of regression 52.57095 Akaike info criteri10.79727
Sum squared resid 74620.02 Schwarz criterion 10.84484
Log likelihood -150.1617 Durbin-Watson stat 1.514196
=====

```

Model: $Y_2(t) = f(X_2(t), X_4(t), Err(t))$

```

=====
Dependent Variable: HHS_SHELL
Method: Least Squares
Date: 03/03/07 Time: 17:40
Sample(adjusted): 1992:04 1994:07
Included observations: 28 after adjusting endpoints
=====

```

Variable	Coefficient	Std. Error	t-Statistic	Prob.
HR_SHELL	3.247524	0.214614	15.13191	0.0000
HR_SNIPSHELL	3.116534	1.219218	2.556175	0.0168

```

=====
R-squared      0.968898 Mean dependent var 206.3929
Adjusted R-squared 0.967701 S.D. dependent var 191.5681
S.E. of regression 34.42820 Akaike info criteri9.984378
Sum squared resid 30817.82 Schwarz criterion 10.07954
Log likelihood -137.7813 Durbin-Watson stat 1.933527
=====

```

Model: $Y_3(t) = f(X_3(t), X_4(t), Err(t))$

```

=====
Dependent Variable: HHS_SNIP
Method: Least Squares
Date: 03/03/07 Time: 17:43
Sample(adjusted): 1992:04 1994:07
Included observations: 28 after adjusting endpoints
=====

```

Variable	Coefficient	Std. Error	t-Statistic	Prob.
HR_SNIP	2.460334	0.337563	7.288519	0.0000
HR_SNIPSHELL	1.861758	0.503028	3.701098	0.0010

```

=====
R-squared      0.726142 Mean dependent var 62.75000
Adjusted R-squared 0.715609 S.D. dependent var 35.06779
S.E. of regression 18.70106 Akaike info criteri8.763786
=====

```


Sum squared resid 9092.967 Schwarz criterion 8.858944
 Log likelihood -120.6930 Durbin-Watson stat 1.759346

Model: $Y_4(t) = f(X_3(t), X_4(t), Err(t))$

Dependent Variable: HHS_SNIPSHELL
 Method: Least Squares
 Date: 03/03/07 Time: 17:49
 Sample(adjusted): 1992:04 1994:07
 Included observations: 28 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
HR_SNIPSHELL	0.309659	0.098219	3.152750	0.0040
HR_SNIP	0.381880	0.065911	5.793877	0.0000

R-squared 0.683039 Mean dependent var 9.714286
 Adjusted R-squared 0.670848 S.D. dependent var 6.364585
 S.E. of regression 3.651476 Akaike info criteri5.496889
 Sum squared resid 346.6651 Schwarz criterion 5.592046
 Log likelihood -74.95645 Durbin-Watson stat 2.271686

ANNEX 6 – PROFESSIONAL QUALIFICATIONS OF THE AUTHORS²⁷

The report “Killed and wounded persons from the siege of Sarajevo: August 1994 to November 1995”, (hereafter: DRAGOMIR MILOŠEVIĆ report), is a product of dr. Ewa Tabeau (ET) and Arve Hetland (AH) from the Demographic Unit (DU), Office of the Prosecutor (OTP), ICTY. The results discussed in the DRAGOMIR MILOŠEVIĆ report were obtained in the course of a project conducted in the unit in 2006-2007. ET is a senior researcher with extensive experience in demography and statistics, graduated in statistics and econometrics, and has a Ph.D. in mathematical demography. She was involved in all stages of the project’s completion (establishment of databases, quality control and data processing, design and completion of the analysis, selection of methods, interpretation of results, and writing of the report); she was responsible for all analytical and other aspects of the report. AH is a senior computer scientist and mathematician, with extensive experience in large-scale individual-level data processing, computer programming, and generally in demography. He established the databases for the DRAGOMIR MILOŠEVIĆ report and was responsible for matching of sources, merging them, and duplicate checks. He also contributed to the analytical process and writing of the report.

Details of professional qualifications of ET are contained in Annex 6.1 and of Arve Hetland in Annex 6.2. The most significant expert reports that ET (and associates) prepared in the Demographic Unit, OTP, and expert witness testimonies of Ewa Tabeau and of Helge Brunborg, a former OTP demographer, completed so far are listed below.

MAIN EXPERT REPORTS PRODUCED BY THE DEMOGRAPHIC UNIT, OTP

- E. Tabeau, 2006: The Out-migration of Croats and Other Non-Serbs from the Village of Hrtkovci in the Autonomous Province of Vojvodina in 1992. Expert report prepared for the case of VOJISLAV ŠEŠELJ (IT-03-67-PT).
- E. Tabeau, M. Żótkowski, J. Bijak and A. Hetland, 2006: Ethnic Composition, Internally Displaced Persons and Refugees from Eight Municipalities of Herceg-Bosna, 1991 to 1997-98. Expert report for the case of JADRANKO PRLIĆ ET AL. (IT-04-74-PT).
- E. Tabeau and A. Hetland, 2006: Killed Persons Related to the Siege of Mostar: A Statistical Analysis of the Mostar War Hospital Books and the Mostar Death Registries. Expert report for the case of JADRANKO PRLIĆ ET AL. (IT-04-74-PT).
- E. Tabeau and A. Hetland, 2006: Wounded Persons Related to the Siege of Mostar. Expert report for the case of JADRANKO PRLIĆ ET AL. (IT-04-74-PT).
- H. Brunborg, E. Tabeau and A. Hetland, 2005: The 2005 Srebrenica Report and List of Missing and Dead. Expert report prepared for the case of VUJADIN POPOVIĆ ET AL. (IT-05-88).
- H. Brunborg, E. Tabeau and A. Hetland, 2005: Addendum to the 2005 Srebrenica Report: “Identified Persons among the Missing and Dead from Srebrenica”. Expert report prepared for the case of VUJADIN POPOVIĆ ET AL. (IT-05-88).

²⁷ Also Neda Lončarić, another staff member of the Demographic Unit, contributed to this report by her investigation and analysis of a number of related sources and editing the final text of this report. We want to thank her for her input.

- E. Tabeau, A. Hetland, N. Lončarić, 2004, The 2004 Addendum to the List of Missing and Dead Persons from Srebrenica. Research Report prepared for the cases of BLAGOJEVIĆ (IT- 02-60-T) and MILOSEVIC / BOSNIA (IT-02-54).
- E. Tabeau, M. Żółtkowski, J. Bijak, A. Hetland, 2004, Ethnic Composition, Internally Displaced Persons and Refugees from Six Municipalities of Bosnia and Herzegovina, 1991 to 1997-98. Expert Report for the case of JOVICA STANISIC and FRANKO SIMATOVIĆ (IT-03-69-PT).
- H. Brunborg, E. Tabeau and A. Hetland, 2004, Rebuttal report on: H. Brunborg and H. Urdal, 2000: Report on the Number of Missing and Dead from Srebrenica. Expert report prepared for the case of KRISTIĆ (IT-98-33).
- E. Tabeau, J. Bijak, N. Lončarić, 2003, Death Toll in the Siege of Sarajevo, April 1992 to December 1995: A Study of Mortality Based on Eight Large Data Sources. Expert report prepared for the case of the MILOSEVIC / BOSNIA (IT-02-54)
- E. Tabeau, 2002, Basic Demographic Characteristics and Socio-Economic Status of Missing and Killed Persons from the Municipality of Prijedor, 30.04-30.09.1992. Expert report prepared for the STAKIĆ case (IT-97-24).
- E. Tabeau and M. Żółtkowski, 2002, Demographic Consequences of the Conflict in the Municipality of Vlasenica, May-September 1992. Expert report prepared for the NIKOLIĆ case (IT-94-2-PT).
- E. Tabeau, M., Żółtkowski, 2002, Ethnic Composition and Displaced Persons and Refugees in 37 Municipalities of Bosnia and Herzegovina, 1991 and 1997. Expert report prepared for the KRAJIŠNIK-PLAVŠIĆ case (IT-00-39&40).
- E. Tabeau, M. Żółtkowski and J. Bijak, 2002, Population Losses in the Siege of Sarajevo, 10 September 1992 to 10 August 1994. Expert report prepared for the GALIĆ case (IT-98-29-I).
- E. Tabeau and J. Bijak, 2001, Changes in the Ethnic Composition of Bosanski Šamac and Odžak, 1991 and 1997. Expert report prepared for the SIMIĆ et al. case (IT-95-9).
- E. Tabeau and J. Bijak, 2001, Changes in the Ethnic Composition in the Municipality of Višegrad, 1991 and 1997. Expert report prepared for the LUKIĆ et al. case (IT-98-32-1).
- E. Tabeau and J. Bijak, 2001, Missing and Killed Persons in the Autonomous Region of Krajina in 1992: Basic Demographic Characteristics, Timing and Location of Incidents. Expert report prepared for the BRĐANIN and TALIĆ case (IT-99-36).
- H. Brunborg, T. Lyngstad, and E. Tabeau, 2001, Population changes in Prijedor from 1991 to 1997. Research report prepared for the case of KERATERM CAMP (IT-95-8). ICTY, The Hague.
- H. Brunborg and H. Urdal, 2000, Report on the Number of Missing and Dead from Srebrenica. Expert report prepared for the case of KRISTIĆ (IT-98-33). ICTY, The Hague

EXPERT TESTIMONIES OF OTP DEMOGRAPHERS

- H. Brunborg, in: MILOŠEVIĆ (IT-02-54, Bosnia and Herzegovina), 18.02.2004
- H. Brunborg, in: BLAGOJEVIĆ (IT-02-60-T, Srebrenica), 3.02.2004
- E. Tabeau, in: MILOŠEVIĆ (IT-02-54, Bosnia and Herzegovina), 7.10.2003
- E. Tabeau, in: STAKIĆ (IT-97-24, Prijedor), 23.09.2002
- E. Tabeau, in: GALIĆ (IT-98-29-I, Sarajevo), 30.07.2002
- E. Tabeau, in: STAKIĆ (IT-97-24, Prijedor), 24-25.07.2002

- E. Tabeau, in: GALIĆ (IT-98-29-I, Sarajevo), 22-23.07.2002
E. Tabeau, in: SIMIĆ et al. (IT-95-9, Bosanski Šamac, Odžak), 10.07.2002
E. Tabeau, in: LUKIĆ et al. (IT-98-32-1, Višegrad), 19.09.2001
H. Brunborg, in: KRISTĆ (IT-98-33, Srebrenica), 15.06.2000

ANNEX 6.1 – PROFESSIONAL QUALIFICATIONS OF EWA TABEAU (ET) – DEMOGRAPHER, PROJECT LEADER

ET graduated in econometrics and statistics (M.Sc. degree, with the highest grade, 1981) and obtained her Ph.D. (with the highest grade, 1991) in mathematical demography at the Warsaw School of Economics. In 1983-1991 she was an academic teacher at the Warsaw School of Economics where she taught descriptive and mathematical statistics and demography to undergraduate courses. Thereafter, she moved to the Netherlands where she lives and works also at present. In the Netherlands she worked more than 9 years at the Dutch National Demographic Institute, where she was responsible for mortality research on the Netherlands and other European countries. Since September 2000 she has been working as demographer and project leader in the Demographic Unit at the Office of the Prosecutor, ICTY. During her employment at OTP, ET completed more than 20 expert and research reports and testified seven times as an expert witness before the Tribunal for the Former Yugoslavia.

At the ICTY (2000 up to the present), ET worked on projects related to demographic consequences of the 1990s conflicts in the former Yugoslavia, mainly in Bosnia and Herzegovina. The subjects of her research included estimating internally displaced persons and refugees, as well as war-related casualties (i.e. killed and wounded persons and timing, location and causes of events). Expert reports, that she produced, were used in trials as evidentiary information about population losses and/or movements related to war. Other major tasks of ET included expert testimonies, identification, collection and studies of new sources of information, assessment of sources, frequent missions to the former Yugoslavia, presentation of results at internal meetings and also at conferences, workshops, and seminars, also outside the Tribunal. Several of her research results had been published in international journals. ET has given supervision to 2 to 5 staff members in the Demographic Unit. Occasionally, ET supervised projects with 10 persons involved.

ET worked at the Netherlands Interdisciplinary Demographic Institute (NIDI) in The Hague (Dutch national demographic institute) from July 1991 to September 2000, most time as a senior researcher and project leader. Her responsibilities at NIDI included conducting and proposing demographic research regarding modeling and prediction of mortality and health processes in the Netherlands and other European countries. Modeling mortality by cause of death had become her first domain, and resulted in several widely recognized international publications. ET was invited, as an expert, by national and international organizations (e.g. Eurostat – Statistical Office of the European Union; ING Group - Life Insurance NL, Goldman & Sachs - Life Insurance USA, Statistics Netherlands, British Government Actuary's Department) to consult their projects involving issues of mortality and health development and prediction. She supervised young researchers completing their theses for the M.Sc. and Ph.D. degrees. International and national demographic journals and publishers invited her to review submitted papers, such as the European Journal of Population,

Journal of Peace Research, Mathematical Population Studies, Studia Demograficzne (Demographic Studies), Springer, Thela Thesis etc.

At the Warsaw School of Economics (1983-1991), ET worked as academic teacher of descriptive statistic (basic and socio-economic), mathematical statistic and statistical inference, and demography to undergraduate courses. The institute where she was affiliated with provided all types of statistical courses to students from all faculties of the university. ET was teaching approximately 12-14 hours a week (about 6-7 groups of students a year). In this period (i.e. from 1983 to 1991) ET also worked part time (50%) on her Ph.D. dissertation, which she successfully defended in April 1991.

ET had fellowships in the French (1995) and German (1990) National Demographic Institutes. She has links with demographers all over Europe, especially with those from Belgium, Czech Republic, Finland, France, Germany, Hungary, Italy, Netherlands, Norway, Poland, and United Kingdom. ET has excellent knowledge of several types of software. She speaks and writes Polish (native tongue), English, Dutch, and, to less extent, Russian and German.

ET is a member of several professional associations and working groups: International Union for Studies of Population (IUSSP), IUSSP Working Group on Demography of Conflict and Violence, Households in Conflict Network, (development economists' network supported by the Institute of Development Studies (UK), the German Institute for Economic Research in Berlin and the Institute of Social Studies in The Netherlands), European Association for the Population Studies (EAPS), and the Netherlands Society for Demography (NVD). Recently (in 2005), ET was a guest editor (together with Helge Brunborg) in the European Journal of Population, preparing a special issue on Demography of Conflict and Violence.

ET has authored more than 100 research papers. Her record of selected recent papers includes: 4 monographs published internationally, 24 articles published in international and national journals, 18 conference papers presented at international conferences, and 47 research reports and working papers.

SELECTED PUBLICATIONS

(Conference papers, research reports and internal papers not listed)

Monographs:

- H. Brunborg, E. Tabeau, and H. Urdal (eds.), 2007, *The Demography of Armed Conflict*. International Studies in Population, International Union for the Scientific Study of Population (IUSSP). Springer.
- H. Brunborg and E. Tabeau (eds.), 2005, *The Demography of Conflict and Violence*. Special Issue of the European Journal of Population Vol. 21(2005, No. 2/3, Kluwer Academic Publishers.
- E. Tabeau, A. van den Berg Jeths, and C. Heathcote, (eds.), (2001), *Forecasting of mortality in developed countries: Insights from a statistical, demographic, and epidemiological perspective*. ESPO Vol. 9, Kluwer Academic Publishers.
- E. Tabeau, F. van Poppel, and F. Willekens (1994), *Mortality in the Netherlands. The data base*. NIDI-Reports, No. 36, The Hague, Netherlands.
- E. Tabeau (1993), *Spatial analysis of mortality determinants in Poland in the 1980s*. Monographs and Working Papers of the Warsaw School of Economics, No.29/371, Warsaw, Poland. PhD thesis.

Articles:

- H. Brunborg, E. Tabeau, and H. Urdal, 2007, Introduction (into The Demography of Armed Conflict). *The Demography of Armed Conflict*. International Studies in Population, International Union for the Scientific Study of Population (IUSSP). Springer.
- H. Brunborg and E. Tabeau, 2005, Demography of Conflict and Violence: An Emerging Field. In the *European Journal of Population* Vol. 21(2005), No. 2/3.
- E. Tabeau and J. Bijak, 2005, War-related Deaths in the 1992–1995 Armed Conflicts in Bosnia and Herzegovina: A Critique of Previous Estimates and Recent Results. In the *European Journal of Population* Vol. 21(2005), No. 2/3. Reprinted in Brunborg et al. (2007).
- E. Tabeau, F. van Poppel, and F. Willekens (2002), Parameterization functions in mortality analyses: Selecting the dependent variable and measuring the goodness of fit. In: Wunsch and Mouchart (eds.) *Life tables in Europe: Data, methods and models*. ESPO Vol. 10, Kluwer Academic Publishers.
- E. Tabeau (2001), A review of demographic models for forecasting of mortality. In: Tabeau, Van den Berg Jeths, and Heathcote: *Forecasting mortality ...*”, ESPO Vol. 9, Kluwer Academic Publishers.
- E. Tabeau (2001), Prospects for life expectancy in the Netherlands in an international perspective. In: J. Kune (ed.): *Studies naar lang leven en pensioenvoorzieningen*. (Studies of life duration and financial aspects of retirement). SPW Publications, Stichting Pensioenwetenschap (Foundation for the Pension Finance Research), The Hague.
- E. Tabeau, A. van den Berg Jeths, Heathcote (2001), Towards an integration of the statistical, demographic, and epidemiological perspectives in forecasting of mortality. In: Tabeau, Van den Berg Jeths, and Heathcote: *Forecasting mortality ...*”, ESPO Vol. 9, Kluwer Academic Publishers.
- E. Tabeau, P. Ekamper, C. Huisman, A. Bosch (2001), The role of period, cohort and cause-of-death effects in forecasting of mortality in developed countries. In: Tabeau, Van den Berg Jeths, and Heathcote: *Forecasting mortality ...*”, ESPO Vol. 9, Kluwer Academic Publishers.
- L. Boleslawski and E. Tabeau (2001), Comparing theoretical age patterns of mortality after age 80 years. In: Tabeau, Van den Berg Jeths, and Heathcote: *Forecasting mortality ...*”, ESPO Vol. 9, Kluwer Academic Publishers.
- A. van den Berg Jeths, R. Hoogenveen, G. de Hollander, and E. Tabeau (2001), A review of epidemiological approaches to forecasting of mortality and health. In: Tabeau, Van den Berg Jeths, and Heathcote: *Forecasting mortality ...*”, ESPO Vol. 9, Kluwer Academic Publishers.
- E. Tabeau, P. Ekamper, C. Huisman and A. Bosch (1999), Improving overall mortality forecasts by analysing cause-of-death, period and cohort effects in trends. *European Journal of the Population*, Vol. 15, No. 2.
- P. Ekamper, F. van Poppel, and E. Tabeau (1999), Leven dankzij 150 jaar sterftedaling. (Life gained thanks to 150 years of mortality decline). *Demos*, Vol. 15(3), pp. 17–20.
- E. Tabeau and A. Tabeau (1998), Heligman-Pollard model in the dynamic parameterization and target projections of Dutch mortality. *Studia Demograficzne*, Vol. 131, No. 2.
- E. van Imhoff and E. Tabeau (1998), Why a parametrized survival function does not give a reliable life table. *Studia Demograficzne*, Vol. 131, No. 1.

- J. Wolleswinkel-Van den Bosch, F. van Poppel, E. Tabeau, and J. Mackenbach (1998), Mortality decline in the Netherlands in the period 1850-1992: A turning point analysis. *Social Science and Medicine*, Vol. 47, No. 4, pp. 429-443.
- E. Tabeau (1997), Lange termijn perspectieven voor levensverwachting: een literatuurverkenning. (Prospects for life expectancy in the Netherlands based on empirical research). In: A. van den Berg Jeths (ed.): *Volksgezondheid Toekomst Verkenning 1997*. Deel VII: Gezondheid en zorg in de toekomst. (Dutch) National Institute of Public Health and the Environment (RIVM). Elsevier/De Tijdstroom.
- E. Tabeau (1997), Theorieën over de menselijke levensduur: een literatuurverkenning. (Theoretical concepts on longevity issues: A review). In: A. van den Berg Jeths (ed.): *Volksgezondheid Toekomst Verkenning 1997*. Deel VII: Gezondheid en zorg in de toekomst. RIVM. Elsevier/De Tijdstroom.
- E. Tabeau (1997), Grenzen aan de ouderdom. (Limits of the senescence). *DEMOS*, no. 13/9 (Oct/Nov), NIDI.
- E. Tabeau and C. Huisman (1997), Trendextrapolatie van de sterfte naar doodsoorzaken 1994-2015. (Trend extrapolation of mortality by cause of death 1994-2015). In: A. van den Berg Jeths (ed.): *Volksgezondheid Toekomst Verkenning 1997*. Deel VII: Gezondheid en zorg in de toekomst. RIVM. Elsevier/De Tijdstroom.
- E. Tabeau (1996), Mortality in Poland since 1950. *POPFAM 1996*, NIDI-CBGS Publications, the Netherlands.
- E. Tabeau (1996), Mortality in Poland in 1989-93: A response to economic reforms? *Studia Demograficzne*, 1-2 (123-124), Poland.
- F. van Poppel, E. Tabeau, and F. Willekens (1996), Trends and sex differentials in Dutch mortality since 1850: Insights from a cohort- and period-perspective. *Genus*, Vol. LII, No.3-4, Italy.
- E. Tabeau (1994), Changing definitions in infant mortality: A case study of the Netherlands, 1843-1991. *Bevolking en Gezin*, No. 1/1994. The Netherlands.
- E. Tabeau, and F. van Poppel (1994), Some remarks on the usefulness of Polish post-war complete life tables. *Studia Demograficzne*, No. 1/1994. Poland.
- E. Tabeau (1992), Modelling probabilities of death from cardiovascular diseases. In: W. Hanke, I. Szadkowska-Stanczak, E. Tabeau: *Causes of high mortality of working-age males in Poland: Sample survey 1987-1989*. Monographs and Working Papers of the Warsaw School of Economics, No.26/346, ISD, Warsaw, Poland.

Book Reviews:

- E. Tabeau, 1999: Between Zeus and the Salmon. The biodemography of longevity, by K. Wachter and C. Finch (eds.). Book review. *The European Journal of Population*, Vol. 15, pp. 200-202.

ANNEX 6.2 – PROFESSIONAL QUALIFICATIONS OF ARVE HETLAND (AH) - DEMOGRAPHER

AH completed the university programme of undergraduate courses in mathematics and computer science and obtained the Bachelor degree (cand. mag.) from the University of Oslo in 1993. As part of his (on-going) Master (M.Sc.) programme he has taken courses in Logic, Rewriting Systems and Compiler Design. He also

attended the 7th International Summer School in Jyväskylä, Finland, 1997, with lectures by prof. Juha Alho, on Stochastic Population Projections.

AH was employed at Statistics Norway from February 1994 to August 2000 and from August 2001 to August 2002, (first in the IT Section and from September 1995 in the Division for Social and Demographic Research), where he was responsible for software development for a household micro simulation project and for official Norwegian population projections. He helped produce and publish the official population projections in 1996 and 1999. From 1998 to 2001 he worked on a research project funded by the Norwegian Research Council, in which he applied probabilistic methods to population projections. AH was the main software developer in this project, and also co-authored several scientific papers related to the project.

From August 2000 to August 2001 AH was affiliated with by SafetyCable AS, a Norwegian company specialised in solutions for computer theft prevention. In his position there he supervised the company's software projects, acted as network manager, and contributed to the management of the company. From May 2001 until his employment at ICTY, he was also a member of the board of SafetyCable.

AH has been employed as a Demographer in the Demographic Unit at the office of the Prosecutor, ICTY, The Hague, since August 2002, and has been working on analysing new data sources to be incorporated in the unit's database project.

AH is a computer programming expert, with experience in C, C++, Java, Simula and SAS and working knowledge of Pascal, SML, VB, Lisp, Perl, HTML, and several scripting languages. AH is also familiar with many software tools (MS Word, MS Excel, MS PowerPoint, MS Access, OpenOffice, ArcView, SAS, LaTeX), operating systems (all MS Windows platform, Linux (Certified Professional), BSD-derivatives), and PC and networking hardware. AH speaks and writes Norwegian (native tongue) and English, and can speak some German.

Selected Publications and Research Papers

- Nico Keilman, Dinh Quang Pham, and Arve Hetland, 2002, "Why population forecasts should be probabilistic - illustrated by the case of Norway", *Demographic Research* Vol. 6, Article 15, 28 May 2002 pp. 409-453, The Max Planck Institute for Demographic Research, Rostock, Germany, (<http://www.demographic-research.org/volumes/vol6/15/>)
- Nico Keilman, Dinh Quang Pham, and Arve Hetland, 2001, "Norway's Uncertain Demographic Future", *Social and Economic Studies* 105, Statistics Norway, Oslo, (http://www.ssb.no/english/subjects/02/03/sos105_en/)
- Helge Brunborg and Arve Hetland, 2001, "Population Projections 1999-2050 - National and Regional Figures", *Official Statistics of Norway (NOS 693)*, Statistics Norway, Oslo, (http://www.ssb.no/english/subjects/02/03/nos_folkfram_en/arkiv/nos_c693_en/)
- Nico Keilman and Arve Hetland, 1999, Simulated confidence intervals for future period and cohort fertility. Conference paper presented at the Joint ECE-EUROSTAT work session on Demographic Projections. Perugia, Italy, 3-7 May 1999.

**ETHNIC COMPOSITION,
INTERNALLY DISPLACED PERSONS AND REFUGEES
FROM 47 MUNICIPALITIES OF
BOSNIA AND HERZEGOVINA,
1991 TO 1997-98**

Ewa Tabeau, Marcin Żółtkowski, Jakub Bijak, Arve Hetland
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4 April 2003

**EXPERT REPORT FOR THE CASE OF
SLOBODAN MILOŠEVIĆ (IT-02-54)**



1. Objective and Scope

This report contains demographic figures regarding the ethnic composition *in*, as well as minimum numbers of internally displaced persons (IDPs) and refugees (REFs) *from*, 47 selected municipalities in Bosnia and Herzegovina (hereafter: MILOŠEVIĆ case area), related to the MILOŠEVIĆ case (IT-02-54), in the years 1991 and 1997. In addition to these two major figures, we also present estimates of the unknown overall numbers of IDPs and refugees for the MILOŠEVIĆ case area and summary statistics for the entire Bosnia and Herzegovina. Tables reviewing results at the municipal level are provided in Annex A to this report (A1 to A6), whereas Annex B (B1 to B6) contains a description of data sources. Annex C (C1 and C2) summarizes methods applied in this study and finally Annex D (D1 to D4) professional qualifications of the authors.

Table 1. Overview of Data Sources Used for this Report

Source	Collection Period	Responsible Institution	Source Size (Persons)	Included Population	Not Included Population	Collected Items (Variables)	Limitations
Population Census	1-15 April 1991	Statistical Office of SRBH	4.4 million	All residents in BH and citizens of BH working abroad with their family members	Individuals omitted due to errors or oversight, post-census immigrants	Full name, name of father, date and place of birth, sex, ID number (JMB), locality and municipality of residence in 1991, ethnicity, religion, etc.	Errors in variables, missing data, duplicates
Voters Register	1997-1998	OSCE	2.7 million	Individuals eligible to vote who had registered	Individuals younger than 18, those not registered, those who died during the conflict	Full name, name of father, date of birth, sex, ID number (JMB), municipality of residence in 1991 and 1997 etc.	Errors in variables, missing data, duplicates
Database of Displaced Persons and Refugees (DDPR)	2000	UNHCR Government of BH	583,816	Applicants for assistance (i.e. 1992-95 IDPs) and their family members still registered in 2000	Individuals who did not apply, those who returned home, those who died during the conflict	Full name, name of father, date of birth, sex, ID number (JMB), relationship to the applicant, municipality of current residence, etc.	Errors in variables, missing data, duplicates

For the purpose of this report individual records of information about the population of Bosnia and Herzegovina were analysed for two years, 1991 (the 1991 population census, see Table 1) and 1997-98 (OSCE voters register, Table 1). These two years are studied here, even though the indictment period started in March 1991 and ended in December 1995. For the period after March 1991 until December 1995 we do not possess sources that could be used

for complex analyses such as those discussed in this report. Such sources do not exist. A brief overview of limited statistics available for the years 1993 and 1995 is attached in Annex A (A5), where we list the available population numbers for few municipalities from the MILOŠEVIĆ case area. These statistics were collected during the conflict by authorities of the present day Republika Srpska. We refer to these numbers in Section 5 of this report (Summary of Major Results).

Noteworthy, some comparisons are also made between the 1997-98 voters-based statistics of IDPs (the demographic unit (DU) statistics) and government figures for 2000 (see DDPR, Table 1). The 2000 data are official statistics of the government of Bosnia and Herzegovina and were collected and processed under UNHCR auspices in the years from 1992 until 2000. More information about this source is available from Annex B (B6).

The sources used for this report are large and generally reliable (see Annex B). Deficiencies of the sources and their impact on the results presented in this report have been identified and are briefly addressed below and more extensively in Annex B (B1 to B6).

In statistical practice, population census is the largest and most complete source of information about the population in a country. The 1991 population census covered the entire population of Bosnia and Herzegovina as of 31 March 1991. It resulted in a total number of 4,4 million individuals in Bosnia in 1991. The information about individuals was obtained in face-to-face interviews based on a census questionnaire designed in a uniform way for the whole country, i.e. former Yugoslavia. Methodological preparations, organization, carrying out of the census, as well as data quality control are discussed in an expert statement attached in Annex B3 of this report. The statement was provided by statistical authorities from Sarajevo who were directly involved in the 1991 census since its very beginning (i.e. since around 1984), had access to important documents related to the census and were therefore capable to most closely assess the reliability of the census.

Major deficiencies of the census are (scanning-related) spelling mistakes in the names and unfinished quality control of data items (due to unstable political situation in 1991 and the 1992-95 conflict). In Annex B2 we extensively explain how we dealt with these and other data problems in the census. In our opinion, data-related problems do not discredit the census as a powerful source of information about the pre-conflict population in Bosnia and Herzegovina and the census can be reliably used in producing statistics as those presented in this report.

Other problems related to the census are those resulting from inclusion in the census of the population temporarily residing overseas (some 234,213 persons out of 4,377,032, i.e. 5.4% of the census population). This population is included in official census statistics produced and published by local statistical authorities, and is therefore also included in our 1991 and 1997 figures. The inclusion of the population abroad could produce a bias in the 1991 ethnic composition of small areas, such as for example settlements. We investigated this bias for all municipalities in Bosnia and Herzegovina and it turned out to be fairly acceptable, with all but three municipalities retaining the same ethnic composition for both *de facto* (i.e. the actual ~~0291-5506~~) and *de jure* (i.e. the actual and temporary abroad) population (see Annex B4).

The inclusion of the population abroad could also have impact on the numbers of out-of-

country voters (OCV), whom we report as refugees in 1997-98 (see Annex B4). Some 87% of OCV from Bosnia and Herzegovina left the country *after the census* (the so-called post-census emigration) and did not return home until 1997-98. The remaining 13% resided abroad in 1991 (the pre-census emigration) and remained there after the census in March 1991. If there were no war in Bosnia and Herzegovina the pre-census émigrés would perhaps have returned, but they registered to vote in 1997-98 still as out-of-country. We therefore believe that all out-of-country voters *may and should* be considered as refugees.

Note that the fractions of the post- and pre-census émigrés (87% and 13%) were obtained only for those voters who registered in countries *other* than the former Yugoslav republics. In 1997-98 five of the former republics had the status of countries: Bosnia and Herzegovina, Croatia, FRY, Macedonia and Slovenia. The Bosnian voters registered in 1997-98 in Croatia or FRY (and to a lesser extent in Macedonia and Slovenia) resided all in Bosnia in 1991, and systematically traveled for work to other Yugoslav republics (predominantly to Croatia or FRY). The fact that in 1991 they resided in Bosnia and in 1997-98 in Croatia or FRY implies that they must be considered as refugees. If the voters registered in Croatia or FRY were included in the estimation of the above mentioned fractions, then the respective estimates would be: 91.2% (instead of 87%) of the 1997-98 voters being the post-census emigration, and 8.8% (instead of 13%) of the voters being the pre-census emigration. In both situations, the bias of including the pre-census émigrés in the numbers of generally displaced persons (IDPs and refugees) is approximately at most 5% for the whole country, which is a widely accepted error level in statistic.

The 1997-98 voters register is a large sample of, practically, the 1997-98 population of eligible voters of Bosnia and Herzegovina (i.e. age 18 or more years at the elections). All voters who registered to vote in 1997 and in 1998, are covered in this source. We merged the two voters registers (1997 and 1998) in one (1997-98). The overlap of these two lists is large. Only about 150,000 records are new in 1998 (1st registration in 1998). All other records reported in the 1998 register are also covered in the 1997 register. While merging the registers, we included all records from 1997 (1st registration in 1997) and additionally the new records from 1998 (150,000 records from the 1st registration in 1998). In most cases, the 1998 records appeared to cover municipalities where the registration was less complete in 1997. The total size of the merged 1997-98 voters register is 2,674,506 records and it mainly covers the year 1997.

Note that the voters register cannot be used to estimate the overall population size in 1997 or 1998, the population was certainly larger than the 2,7 million voters covered in the register. However, it can be safely used in producing statistics *characterizing* the ethnic composition in 1997-98 and internally displaced persons and refugees as of 1997-98. All absolute numbers obtained from the register are “at least” numbers, which is related to the incompleteness of this source. All relative measures (i.e. percentages) can be extrapolated over the entire population and can be seen as reliable.

Voters register has some deficiencies as those discussed for the census (e.g. spelling mistakes, incomplete or missing JMB – personal identification number etc.). The deficiencies can be corrected in the same way as done for the census (Annex B5).

The two types of individual records, i.e. records from the census and from the voters register, have been linked together through a complex matching process. In this process the vast majority of individuals included in the voters register (about 80%) have been found in the 1991 population census. Out of the total of 2,674,506 voters' records, some 2,125,999 records (i.e. exactly 79.5%) have been linked, of which 319,405 records were reported as out-of-country and 1,805,419 as in the country. The linked data formed the basis for all analyses completed for this report. Linking of the 1991 census and the 1997-98 voters register made it possible to include all census items for every voter matched. Thus, for all those 1997-98 voters who have been linked with the census, we could use records of ethnicity reported in the 1991 census, and also their municipality of residence in 1991.

All analyses are made by ethnicity, obtained from exactly the same definition for both analyzed years, for 1991 and also for 1997-98. The definition we applied is the one used in the questionnaire of the 1991 population census, where ethnicity was a self-reported response to an open-ended question. In the original census forms, the citizens of Bosnia and Herzegovina mentioned several hundreds of ethnic categories. We re-grouped these categories into four major clusters: those who reported themselves as Muslims, Croats or Serbs were regarded as members of these particular groups, all remaining categories, including Yugoslavs, were taken together as Others.

With regard to the definition of internally displaced persons, the 1991 and 1997-98 municipality of residence were compared for each person studied. If an individual resided in 1991 in a different municipality than the municipality where he/she registered to vote in 1997-98 elections, than the person was considered internally displaced. Comparisons were made for post-Dayton municipalities, which involved creating a new variable, post-Dayton municipality, for all individuals reported in the census. This task was largely successfully completed and in the end only a small number of settlements split between the political entities, RS and FBH, had to be excluded from the analysis.

Refugees were persons who in 1991 were reported in the population of Bosnia and Herzegovina (including those temporarily residing abroad) and who in 1997-98 registered to vote in countries different than Bosnia. There were approximately 300,000 out-of-country voters who satisfied this criterion. Some were excluded from refugees' statistics due to unsuccessful matching with the census or lacking value of the post-Dayton municipality for 1991 (split settlement problem).

Note that our definitions of internally displaced persons and refugees are statistical, not legal. As such the numbers of IDPs and refugees presented in this report should be seen as approximations of the actual true figures. Note also that obtaining the true figures is in our view an impossible task due to limited existing sources of information and fragmentary information contained in these sources.

Not to forget, Section 3.5 of this report is a comparison of our OSCE-based statistics of IDPs in 1997-98 with those produced by the UNHCR and Bosnian government for the year 2000. The UNHCR and BH government database (DDPR) can be seen as legal, for it has been developed as a registration system of all IDPs and refugees in Bosnia for the purpose of providing them with social benefits and compensations for lost property. The DDPR-based

statistics describe the IDPs as of the year 2000, unlike the OSCE-based figures that relate to 1997-98. Nevertheless, we found many similarities between these two sources. Both sources are also much lower than the actual 1992-95 true figures.

The *main* results presented in this report are the following:

- Absolute and relative size of a given ethnic group in the entire MILOŠEVIĆ case area and MILOŠEVIĆ case - related municipalities in Bosnia and Herzegovina: status as of 1991 and 1997-98. Exclusively individuals born before 1980. Municipal borders as of 1997. **(Summary Table 1, Annex A1)**
- A minimum number of internally displaced persons (IDPs) and refugees from the MILOŠEVIĆ case area and MILOŠEVIĆ case - related municipalities in Bosnia and Herzegovina: status as of 1997-98, by municipality of residence in 1991. Based on the minimum numbers, fractions of IDPs and refugees among a given ethnic group and among the total number of all IDPs and refugees traced in 1997-98 are included as well. Exclusively individuals born before 1980. Municipal borders as of 1997. **(Summary Table 2, Annex A2)**
- An estimate of the unknown overall number of internally displaced persons (IDPs) and refugees from MILOŠEVIĆ case area and MILOŠEVIĆ case - related municipalities in Bosnia and Herzegovina: status as of 1997-98, by municipality of residence in 1991. Exclusively individuals born before 1980. Municipal borders as of 1997. This analysis has indicative character. **(Summary Table 3, Annex A3)**

Annex A contains complete data tables, at a municipal level, prepared for this report. The tables refer only to the municipalities belonging to the MILOŠEVIĆ case area. We made three main data tables. Tables 1 to 3, Annexes A1 to A3, are available for every ethnic group (i.e. Muslims, Croats, Others and Serbs). In Annex A, we present however in total 5 tables. In addition to Tables 1 to 3, Annex A4 contains figures from the DDPR database, i.e. UNHCR and BH government statistics of IDPs and refugees in Bosnia in 2000. Only statistics for those at age 18+ during the 1997-98 elections (directly comparable with our statistics) are shown. Annex 5 is an overview of ethnic composition in selected municipalities in 1993 and 1995 (based on RS sources).

Details of the sources and methods applied in this report can be found in Annex B and C, respectively. In Annex D, professional qualifications of the authors are summarized.

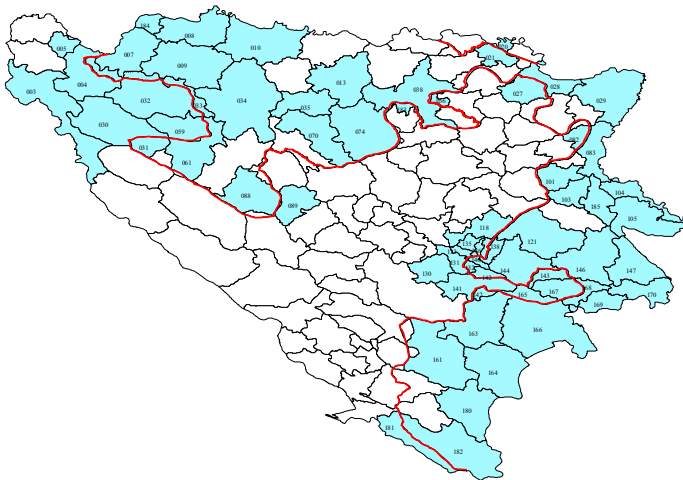
In Sections 2 to 4 below, we present our major findings. Section 5 is an executive summary of the main findings discussed in this report. The MILOŠEVIĆ case area is introduced below.

In 1991 Bosnia and Herzegovina consisted of 109 municipalities (hereafter pre-war municipalities). The Dayton Peace Accords of 1995 divided the country into two political entities, the Republika Srpska (hereafter RS) and the Federation of Bosnia and Herzegovina (hereafter the Federation), and introduced a new classification of municipalities. Many municipalities stayed the same as they were in 1991, but many new ones were also established. The inter-entity boundary line has split several pre-war municipalities into two parts; with one

part belonging to RS and one to the Federation. In the Dayton Accords, the status of a regular municipality was assigned to each of these parts. Several smaller areas that contested a territory between 1992 and 1995, were also given such status. After the war, each municipality (hereafter post-Dayton municipality) was given a numeric code ranging from 1 to 185. A number of codes remained blank (36) with no particular area assigned to these codes. The actual number of post-Dayton municipalities is 149 (as of 1997, according to the OSCE classification scheme).

For the purposes of this study, the MILOŠEVIĆ case area is defined as the following (pre-Dayton) municipalities: Banja Luka, Bihać, Bijeljina, Bileća, Bosanska Dubica, Bosanska Gradiška, Bosanska Krupa, Bosanski Novi, Bosanski Petrovac, Bosanski Šamac, Bratunac, Brčko, Čajniče, Čelinac, Doboј, Donji Vakuf, Foča, Gacko, Goražde, Kalinovik, Ključ, Kotor Varoš, Nevesinje, Prijedor, Prnjavor, Rogatica, Rudo, Sanski Most, Sarajevo – Centar, Sarajevo – Hadžići, Sarajevo – Ilidža, Sarajevo – Ilijaš, Sarajevo - Novi Grad, Sarajevo - Novo Sarajevo, Sarajevo - Pale, Sarajevo – Stari Grad, Sarajevo - Trnovo, Sarajevo - Vogošća, Sokolac, Srebrenica, Šekovići, Šipovo, Teslić, Trebinje, Višegrad, Vlasenica, and Zvornik. For split municipalities all relevant components are included, i.e. all those post-Dayton municipalities are analysed that together constitute the area of a given pre-Dayton municipality.

Figure 1. Reference map of Bosnia and Herzegovina and the MILOŠEVIĆ Case Area



Note: The numbers mentioned in Figure 1 are OSCE municipal codes. Names of the MILOŠEVIĆ case municipalities are included in Annex B

Figure 1 shows the map of Bosnia and Herzegovina divided into post-Dayton municipalities in their 1997 borders. The division of the country into two political entities, RS and the Federation, is also shown on this map. The municipalities that are studied in this report are indicated with a blue colour (see below). They form the MILOŠEVIĆ case region as studied here.

2. Ethnic Composition in 1991 and 1997-98¹

2.1 Ethnic Composition of the MILOŠEVIĆ Case Area, 1991 and 1997-98

In this section changes in the ethnic composition are discussed for the entire MILOŠEVIĆ case area, and the RS-FBH divide of the area, from 1991 to 1997-98. Absolute and relative numbers are shown, the 1991-97 change is expressed quantitatively. Table 2 and Figure 1 attached below are used in the discussion in this section. Note that all results discussed in Sections 2.1 to 2.4 are samples taken from the summary Table 1 attached in Annex A1.

Table 2. Ethnic Composition of the MILOŠEVIĆ Case Area, 1991 versus 1997-98, Absolute Numbers and Percentages, Exclusively Individuals Born Before 1980, Municipal Borders as of 1997

MILOŠEVIĆ Case Area					
Ethnicity	1991	1997-98	1991	1997-98	1991-97 (%)
Serbs	785,553	517,320	43.6	59.0	35.4
Muslims	720,325	276,678	39.9	31.5	-21.0
Croats	140,918	25,741	7.8	2.9	-62.4
Others	156,463	57,383	8.7	6.5	-24.6
Total	1,803,259	877,122	100.0	100.0	0.0
RS Part of MILOŠEVIĆ Case Area					
Ethnicity	1991	1997-98	1991	1997-98	1991-97 (%)
Serbs	587,307	506,695	53.7	91.3	70.1
Muslims	344,803	7,933	31.5	1.4	-95.5
Croats	79,127	7,002	7.2	1.3	-82.5
Others	83,180	33,352	7.6	6.0	-20.9
Total	1,094,417	554,982	100.0	100.0	0.0
FBH Part of MILOŠEVIĆ Case Area					
Ethnicity	1991	1997-98	1991	1997-98	1991-97 (%)
Serbs	198,246	10,625	28.0	3.3	-88.2
Muslims	375,522	268,745	53.0	83.4	57.5
Croats	61,791	18,739	8.7	5.8	-33.3
Others	73,283	24,031	10.3	7.5	-27.8
Total	708,842	322,140	100.0	100.0	0.0

For the purpose of the estimating the ethnic composition before and after the conflict in Bosnia and internally displaced persons and refugees, we used the 1991 population census

¹ Throughout this report we occasionally use the “1997” label for the merged 1997-98 voters register (especially in charts and tables). The reason for this is that the merged register contains only approximately 150,000 records from 1998, all other records are from 1997. It is therefore fairly acceptable to consider the 1997-98 register as

and 1997-98 voters register. The two sources are generally very large and reliable, with only minor deficiencies. The census practically covers the entire population of Bosnia in 1991, i.e. all persons staying in the country as well as those residing temporarily abroad at the critical moment of 31 March 1991. All ages are covered. Missing entries in the census were likely extremely infrequent. The report on the census completion authored by Nora Selimović, a member of the republic census commission in 1991, attached in Annex B3, includes no mention of the issue. The major deficiency is related to frequent spelling mistakes in the names, which imply that matching of the census with the voters register is not perfect (less than 100%). The (achieved) matching rate of about 80% (in relation to the voters register) means that 80% of the records from the voters register had been matched with census records. Only these 80% of voters' records could be used in the analysis of ethnic composition, internally displaced persons and refugees. The remaining 20% had to be excluded. Thus, spelling mistakes in the census reduced the size of the voters' population by 20 percent (from 2.7 to about a bit more than 2 million). The voters' population studied here consists, however, for the entire Bosnia and Herzegovina of approximately 2 million individuals, which is almost 60% of the estimated 3.4 million in total in 1995 (UN, *World Population Prospects*, 1998 edition). According to the UN projections, about 2.5 million were at age 18 or more years in 1995, thus the 2-million population of voters equals approximately 80% of the entire population at age 18+ living in Bosnia in 1995.

In the working version of the 1991 BH census, which has been systematically used in the demographic unit, there are in total 4,377,032 records. The population eligible to vote in 1997-98 elections was smaller and equaled 3,565,703 individuals in 1991. Of this number, about 75% individuals registered to vote and were reported in the merged 1997-98 voters register, where the number of unique records is 2,674,506. Whereas the census population is complete (i.e. practically covers the entire population of Bosnia in 1991), the number of registered voters can only be seen as a large sample representing the 1997-98 population living in the country. While it is difficult to precisely estimate how large the sample is, it is clear that we deal with a large and reliable source.

Using these two sources, the 1991 census and 1997-98 voters register, we estimated the population residing in the MILOŠEVIĆ case area in 1991 and 1997-98 and analyzed the ethnic composition of this population in both years (Table 2 and Figure 1). Only individuals who would become 18 years of age or older in 1997-98 were included in the analysis. Those at age 0 to 17 years are excluded from all statistics discussed in this report.

The size of the 1991 (18+) population of the MILOŠEVIĆ case area was 1,803,259 persons, and of the 1997-98 population 877,122 persons. The decline of the population size cannot be seen as the actual change. A large portion of the decline is related to the incompleteness of the voters register, which does not cover the entire population but a fraction of it (like 80%, OSCE estimates). Both sources allow however for obtaining reliable relative measures of the ethnic composition, i.e. percentages. Moreover, percentages can be safely extrapolated over the entire population. For these reasons we focus on percentages and only occasionally refer to absolute figures.

Before the war, in 1991, about 43.6% of the population in the MILOŠEVIĆ case area were the Serbs, 39.9% Muslims and 7.8% Croats. The remaining ethnic groups contained 8.7% of the population. The ethnic composition was mixed, with two majority groups, the Serbs and the Muslims, represented at a relatively similar percent, and in terms of absolute numbers these two groups comprised, respectively, 785,553 and 720,325 persons each. The ratio of the Serbs to the Muslims was 1 to 0.92 in 1991 (less than one Muslim (0.92) per one Serb). For the Croats (there were 140,918 of them living in the MILOŠEVIĆ case area in 1991) the ratio was 1 to 0.18.

In 1997-98 the ethnic composition in the MILOŠEVIĆ case area comprised 59% Serbs, 31.5% Muslims, 2.9% Croats and 6.5% Others. The Serbs became the absolute majority group, and the fractions of other ethnic groups declined, the share of Croats declined most, by some 62.4 percent. The absolute size of the Serb population reported in the voters register was 517,320 individuals while of the Muslim population was 276,678 persons. The ratio between the Serbs and the Muslims was 1 (Serb) to 0.53 (Muslim) in 1997-98. The respective ratio for the Croats was 1 to 0.05 in the same period. The Croat population reported in the voters register was only 25,741 persons.

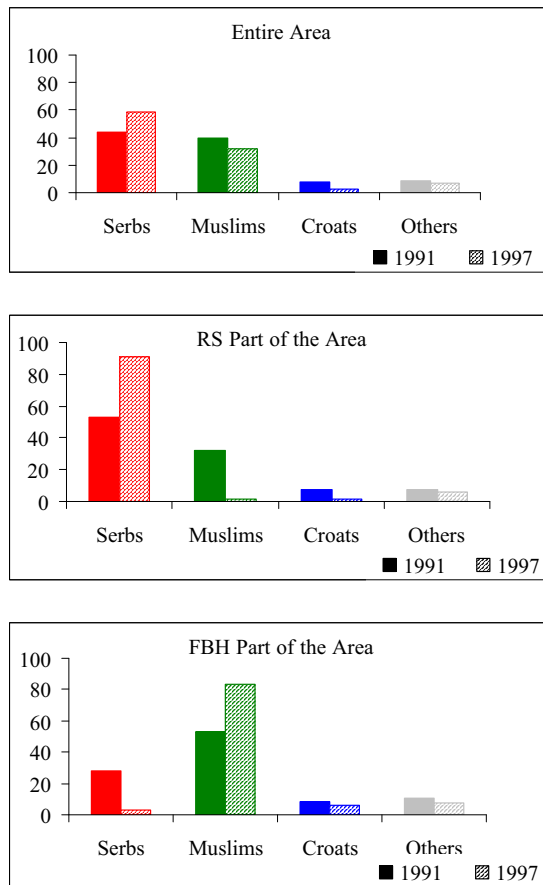
For the whole MILOŠEVIĆ case area, a considerable decline in the fraction of Muslims, Croats and Others (-21 %, -62%, and -24.6%) and an increase in the fraction of Serbs (+35.4 %) are clearly seen. The largest absolute losses occurred to the Muslims, the second largest ethnic group in 1991. Their size dropped from 720,325 in 1991 to (at least) 276,678 in 1997-98, i.e. by 443,647 persons. This drop can be seen as an upper limit of the overall decline among the 18+ population of Muslims, as those who registered in the 1997-98 elections were a sample of all Muslims living in the MILOŠEVIĆ case area in 1997-98. Increasing the 1997-98 sample of Muslim voters by 20% (from 276,678 to 332,014) would result in obtaining an estimated actual decline of the Muslim population by 388,311 persons (instead of 443,647). The upper estimates of the declines for Croats and Others were, respectively, 115,177 and 99,080 persons (and the estimated actual declines: 110,029 and 87,603).

The above mentioned patterns in the ethnic composition are illustrated graphically in Figure 1, which also includes two sub-parts of the MILOŠEVIĆ case area, the RS part (Republika Srpska) and the FBH part (Federation of Bosnia and Herzegovina). Note that the vast majority of the MILOŠEVIĆ case area belongs to Republika Srpska (43 out of 69 post-Dayton municipalities, 1,094,417 individuals in 1991), and only 26 municipalities (708,842 individuals in 1991) are located in the Federation of Bosnia and Herzegovina.

For the Croats and Others the patterns are similar in both RS and FBH parts. The patterns identified for Serbs and Muslims are opposite in each part of the area. In the RS part a large decline in the fraction of Muslims and a considerable increase in the fraction of Serbs are seen, while the opposite pattern is obtained for the FBH part of the area. Obviously the Muslim population disappeared from the RS municipalities of the MILOŠEVIĆ case area and the Serb population from the FBH part. Many Muslims went to municipalities located in the Federation, whereas the Serb population moved out from the FBH part of the MILOŠEVIĆ

case area and went to the RS municipalities. These two processes, together with out-migration from Bosnia and deaths, implied that the Muslim population in the RS part of the area declined by about 95.5% in 1997-98 compared with 1991, and the Serb population in the FBH part declined by 88.2 per cent in this period. In absolute terms, only 7,933 Muslims were identified in the RS part in 1997-98 as compared with 344,803 Muslims living there in 1991. In the FBH part, some 10,625 Serbs registered in 1997-98 compared with 198,246 Serbs living here in 1991. In absolute terms, under the assumption that the election participation rates were the same for Muslims and Serbs, the decline of the Muslim population was much more dramatic than the decline of Serbs.

Figure 1. Ethnic Composition of the MILOŠEVIĆ Case Area, 1991 versus 1997-98



Summing up, even though in relative terms the changes in RS and FBH parts of the MILOŠEVIĆ case area were not different for both the Muslims (-95.5% in RS) and the Serbs (-88.2% in FBH), in absolute terms the losses of the Muslim population were much higher than the losses of the Serbs population in the MILOŠEVIĆ case area.

2.2 Ethnic Composition of Seven Selected Municipalities from the MILOŠEVIĆ Case Area, 1991 and 1997-98

In Section 2.2 we continue discussing changes in the ethnic composition by focussing on seven selected municipalities (hereafter the MILOŠEVIĆ case-7 area), all located at the eastern border of Bosnia and Serbia, and representing the most affected municipalities in the MILOŠEVIĆ case area. The municipalities comprise Bijeljina (RS), Bratunac (RS), Brčko (RS, FBH), Foča (RS, FBH), Srebrenica (RS), Višegrad (RS) and Zvornik (RS, FBH). Note that three municipalities were split after the war, Brčko, Foča, and Zvornik. We therefore analyze not seven but in fact ten municipalities, seven belonging to the RS part of the MILOŠEVIĆ case-7 area and three belonging to the FBH part.

Table 3 (M - Muslims, C - Croats, S – Serbs and O-Others) and Figure 2 (a - non-split municipalities and b – split municipalities) summarize the changes in these municipalities.

Table 3M. Percent of Muslims in the Population of MILOŠEVIĆ Case-7 Area, Status as of 1991 and 1997-98, Individuals Born before 1980, Municipal Borders as in 1997

Municipality	1991 Population			1997-98 Sample Population			1991-97 Change in % of Muslims (Percent)
	All Ethnicities	Muslims	% Muslims	All Ethnicities	Muslims	% Muslims	
MILOŠEVIĆ Case-7 Area	327,549	159,189	48.6	155,441	15,939	10.3	-78.9
of which:							
- Republika Srpska (RS)	286,401	137,457	48.0	138,767	2,130	1.5	-96.8
- The Federation of BH (FBH)	41,148	21,732	52.8	16,674	13,809	82.8	+56.8
1. Bijeljina (RS)	81,650	24,314	29.8	55,807	1,429	2.6	-91.4
2. Bratunac (RS)	26,369	16,284	61.8	10,852	10	0.1	-99.9
3. Brčko:							
- Rahić / Ravne (Brčko Federation) (FBH)	25,632	10,877	42.4	12,871	10,023	77.9	+83.5
- Brčko (RS)	47,294	20,309	42.9	20,752	546	2.6	-93.9
4. Foča:							
- Foča (FBH)	4,261	2,932	68.8	457	454	99.3	+44.4
- Foča / Srinje (RS)	30,247	14,559	48.1	12,091	6	0.0	-99.9
5. Srebrenica (RS)	29,198	21,361	73.2	7,442	7	0.1	-99.9
6. Višegrad (RS)	17,883	11,178	62.5	9,241	3	0.0	-99.9
7. Zvornik:							
- Sapna (FBH)	11,255	7,923	70.4	3,346	3,332	99.6	+41.5
- Zvornik (RS)	53,760	29,452	54.8	22,582	129	0.6	-99.0

Table 3C. Percent of Croats in the Population of MILOŠEVIĆ Case-7 Area, Status as of 1991 and 1997-98, Individuals Born before 1980, Municipal Borders as in 1997

Municipality	1991 Population			1997-98 Sample Population			1991-97 Change in % of Croats (Percent)
	All Ethnicities	Croats	% Croats	All Ethnicities	Croats	% Croats	
MILOŠEVIĆ Case-7 Area	327,549	19,806	6.0	155,441	3,282	2.1	-65.1
of which:							
- Republika Srpska (RS)	286,401	9,068	3.2	138,767	1,026	0.7	-76.6
- The Federation of BH (FBH)	41,148	10,738	26.1	16,674	2,256	13.5	-48.2
1. Bijeljina (RS)	81,650	448	0.5	55,807	375	0.7	+22.5
2. Bratunac (RS)	26,369	38	0.1	10,852	42	0.4	+168.6
3. Brčko:							
- Rahić / Ravne (Brčko Federation) (FBH)	25,632	10,727	41.9	12,871	2,256	17.5	-58.1
- Brčko (RS)	47,294	8,337	17.6	20,752	394	1.9	-89.2
4. Foča:							
- Foča (FBH)	4,261	0	0.0	457	0	0.0	na
- Foča / Srinje (RS)	30,247	84	0.3	12,091	41	0.3	+22.1
5. Srebrenica (RS)	29,198	35	0.1	7,442	34	0.5	+281.1
6. Višegrad (RS)	17,883	30	0.2	9,241	60	0.6	+287.0
7. Zvornik:							
- Sapna (FBH)	11,255	11	0.1	3,346	0	0.0	-100.0
- Zvornik (RS)	53,760	96	0.2	22,582	80	0.4	+98.4

Table 3S. Percent of Serbs in the Population of MILOŠEVIĆ Case-7 Area, Status as of 1991 and 1997-98, Individuals Born before 1980, Municipal Borders as in 1997

Municipality	1991 Population			1997-98 Sample Population			1991-97 Change in % of Serbs (Percent)
	All Ethnicities	Serbs	% Serbs	All Ethnicities	Serbs	% Serbs	
MILOŠEVIĆ Case-7 Area	327,549	129,394	39.5	155,441	129,051	83.0	+110.2
of which:							
- Republika Srpska (RS)	286,401	121,576	42.4	138,767	129,014	93.0	+119.0
- The Federation of BH (FBH)	41,148	7,818	19.0	16,674	37	0.2	-98.8
1. Bijeljina (RS)	81,650	49,654	60.8	55,807	50,843	91.1	+49.8
2. Bratunac (RS)	26,369	9,588	36.4	10,852	10,529	97.0	+166.8
3. Brčko:							
- Rahić / Ravne (Brčko Federation) (FBH)	25,632	3,329	13.0	12,871	36	0.3	-97.8
- Brčko (RS)	47,294	12,199	25.8	20,752	18,159	87.5	+239.2
4. Foča:							
- Foča (FBH)	4,261	1,280	30.0	457	0	0.0	-100.0
- Foča / Srbinje (RS)	30,247	14,558	48.1	12,091	11,623	96.1	+99.7
5. Srebrenica (RS)	29,198	7,205	24.7	7,442	7,169	96.3	+290.4
6. Višegrad (RS)	17,883	5,837	32.6	9,241	8,861	95.9	+193.8
7. Zvornik:							
- Sapna (FBH)	11,255	3,209	28.5	3,346	1	0.0	-99.9
- Zvornik (RS)	53,760	22,535	41.9	22,582	21,830	96.7	+130.6

Table 3O. Percent of Others in the Population of MILOŠEVIĆ Case-7 Area, Status as of 1991 and 1997-98, Individuals Born before 1980, Municipal Borders as in 1997

Municipality	1991 Population			1997-98 Sample Population			1991-97 Change in % of Others (Percent)
	All Ethnicities	Others	% Others	All Ethnicities	Others	% Others	
MILOŠEVIĆ Case-7 Area	327,549	19,160	5.8	155,441	7,169	4.6	-21.2
of which:							
- Republika Srpska (RS)	286,401	18,300	6.4	138,767	6,597	4.8	-25.6
- The Federation of BH (FBH)	41,148	860	2.1	16,674	572	3.4	+64.1
1. Bijeljina (RS)	81,650	7,234	8.9	55,807	3,160	5.7	-36.1
2. Bratunac (RS)	26,369	459	1.7	10,852	271	2.5	+43.5
3. Brčko:							
- Rahić / Ravne (Brčko Federation) (FBH)	25,632	699	2.7	12,871	556	4.3	+58.4
- Brčko (RS)	47,294	6,449	13.6	20,752	1,653	8.0	-41.6
4. Foča:							
- Foča (FBH)	4,261	49	1.1	457	3	0.7	-42.9
- Foča / Srbinje (RS)	30,247	1,046	3.5	12,091	421	3.5	+7
5. Srebrenica (RS)	29,198	597	2.0	7,442	232	3.1	+52.5
6. Višegrad (RS)	17,883	838	4.7	9,241	317	3.4	-26.8
7. Zvornik:							
- Sapna (FBH)	11,255	112	1.0	3,346	13	0.4	-61.0
- Zvornik (RS)	53,760	1,677	3.1	22,582	543	2.4	-22.9

In 1991 the total population size in the MILOŠEVIĆ case-7 area was 327,549 individuals (only the eligible 1997-98 voters), of which some 48.6% (159,189) were Muslims, 39.5% (129,394) Serbs, 6% (19,806) Croats and 5.8% (19,160) were Others. The Muslims were the majority group (not the absolute majority though). They were the majority not only in the area as a whole, but also in eight out of the ten municipalities. In six municipalities, the Muslims were the absolute majority in 1991: in Bratunac (61.8%), Foča-FBH (68.8), Srebrenica (73.2%), Višegrad (62.5%), Zvornik-RS (54.8%) and Zvornik/Sapna-FBH (70.4%). In Brčko-FBH (42.4%) and Brčko-RS (42.9) the Muslims were a majority group with the difference to the second largest group (i.e. the Serbs) higher than 5 percent. Regarding the two remaining municipalities, in Bijeljina the Serbs were the absolute majority (60.8%) and in Foča-RS the ethnic composition was mixed (48.1% Serbs and exactly the same fraction of Muslims). In Foča as a whole, however, the Muslims were in majority (50.7%) and the Serbs were the second largest ethnic group and had some 45.9% of the (18+) population in 1991.

In 1997-98 the ethnic composition of the MILOŠEVIĆ case-7 area was opposite to that in

1991, even more dramatically so for single municipalities. Generally speaking, in the whole area we observe a shift from the Muslim majority (48.6%) in 1991 to a Muslim minority (10.3%) in 1997-98 and from the Serb minority (39.5%) in 1991 to the absolute majority of Serbs (83%) in 1997-98. The decline in the share of Muslims in the population of MILOŠEVIĆ case-7 area was 78.9 percent, whereas the increase in the fraction of Serbs 110.2 percent.

The fractions of Croats (2.1% in 1997-98; some 65.1% decline) and Others (4.6% in 1997-98; about 21.2% decline) in the population declined as well, but to a lower extent than the fraction of Muslims (-78.9% in 1997-98).

The absolute size of the population in the area of the ten municipalities reported in 1997-98 was 155,441 individuals (327,549 in 1991), with Serbs being the largest group (129,051) and Muslims the second largest but with only 15,939 persons. There were also 3,282 Croats in the area and 7,169 Others. It is striking that the 1997-98 sample population of Serbs (129,051) was almost the same as the entire Serb population reported in 1991 in this area (129,394 individuals). The absolute size of the Muslim population in 1997-98 was only 15,939 out of 159,189 individual reported in these municipalities in the 1991 census (about ten times less).

The ratio of Serbs to Muslims in the MILOŠEVIĆ case-7 area changed from 1 to 1.23 in 1991 (about 12 Muslims per every 10 Serbs) to 1 to 0.12 in 1997-98 (about 1.2 Muslims per 10 Serbs).

A closer inspection of the results for single municipalities proves that profound changes occurred to the Muslims. The Muslims had almost disappeared from all seven RS municipalities of the MILOŠEVIĆ case-7 area by 1997-98. This finding is unquestionable in absolute and relative terms. Only few single persons of the Muslim ethnicity were identified in 1997-98 in the municipalities of Bratunac (10 persons), Foča (RS, 6), Srebrenica (7) and in Višegrad (3). In the largest Muslim populations in the RS municipalities of the area in 1991, in Bijeljina the decline was from 24,314 Muslims in 1991 to 1,429 ethnic Muslims in 1997-98, in Brčko (RS) from 20,309 to 546, and most dramatically in Srebrenica from 21,361 Muslims in 1991 to 7 ethnic Muslims in 1997-98. In relative terms, in 1997-98 the fraction of Muslims in the RS municipalities of the MILOŠEVIĆ case-7 area was from 0% to maximally 2.6% of the 1997-98 population and compared with 1991 declined about 91.4 to 99.9 percent.

In the three FBH municipalities of the area the fraction of Muslims increased on average by 56.8 percent in 1997-98 compared with 1991.

The changes obtained for Croats and Others were less profound than the changes for Muslims, which partly can be explained by the smaller size of these ethnic groups at the outbreak of the conflict in 1991.

Figure 2a. Ethnic Composition in Seven Selected Municipalities, 1991 versus 1997-98
Non-Split Municipalities

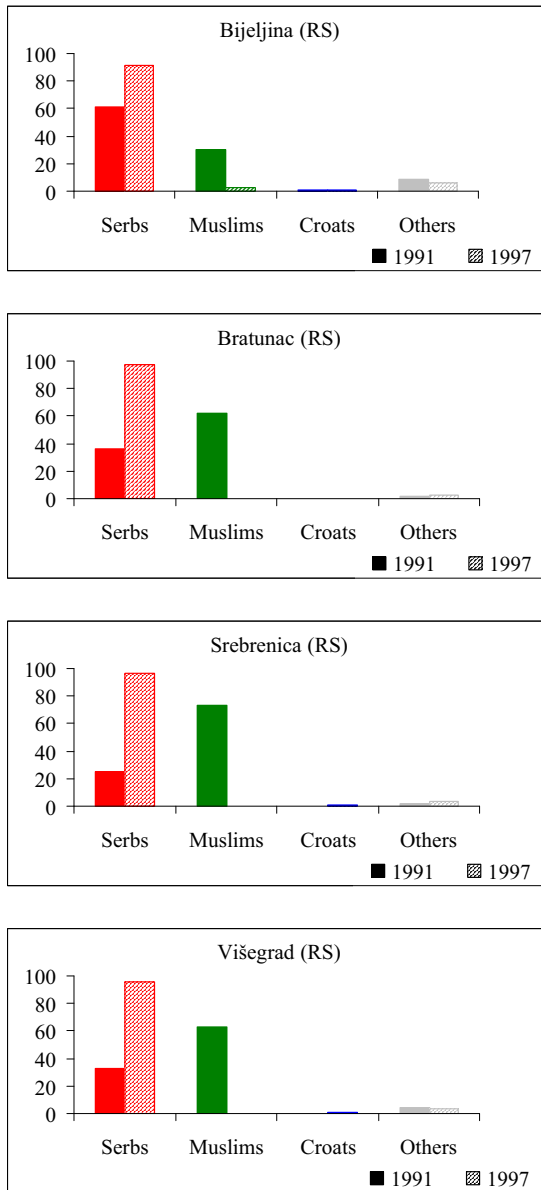
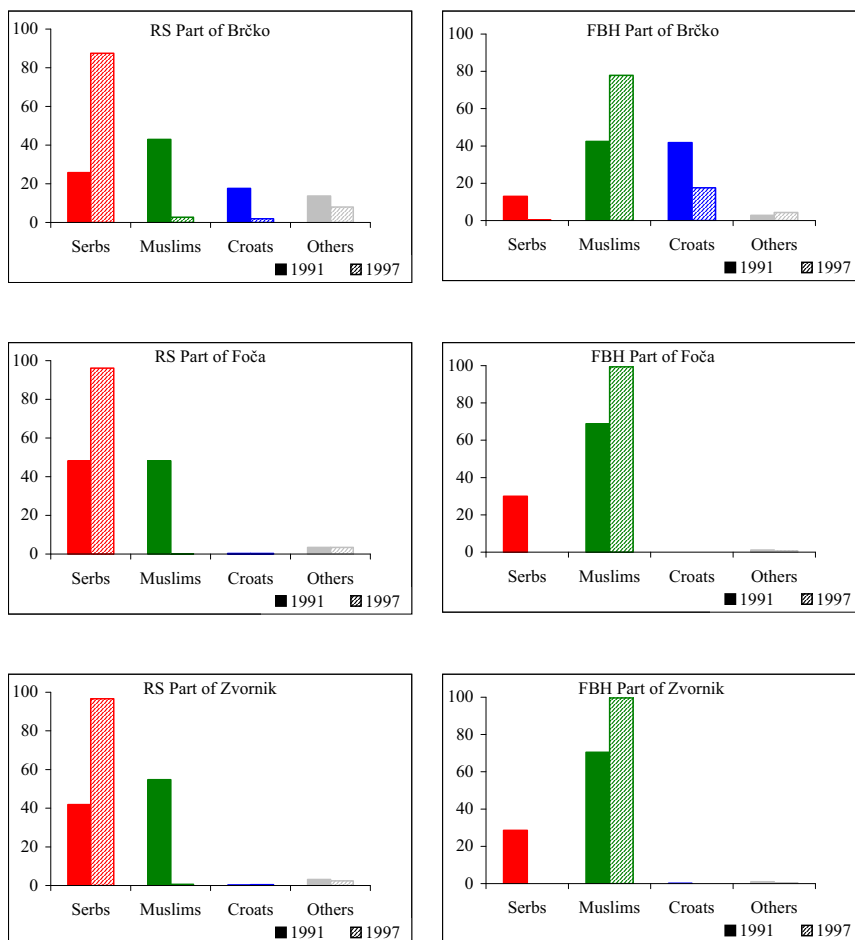


Figure 2b. Ethnic Composition in Seven Selected Municipalities, 1991 versus 1997-98
Split Municipalities



Note also that the Serbs, who in 1991 were in majority in only one of the seven RS municipalities in the MILOŠEVIĆ case-7 area, in Bijeljina, after the war, in 1997-98, became the absolute majority in all seven municipalities. In Bijeljina (91.1% in 1997-98), Bratunac (97%), Brčko (RS, 87.5%), Foča (RS, 96.1%), Srebrenica (96.3%), Višegrad (95.9%) and Zvornik (RS, 96.7%) the fraction of Serbs increased, compared with 1991, at least by 49.8% (Bijeljina) up to 290.4% (Srebrenica) in 1997-98.

The dramatic changes in the ethnic composition discussed in this section cannot be ascribed to demographic, socio-economic or lifestyle-related causes determining the course and magnitude of population development.

2.3 A Comparison of the Ethnic Composition of Bosnia and Herzegovina, MILOŠEVIĆ Case Area, and Seven Selected Municipalities, 1991 and 1997-98

Section 2.3 is concentrated on showing the changes in the ethnic composition in the MILOŠEVIĆ case area in the context of changes observed for the whole Bosnia and Herzegovina on one hand, and for the seven selected most affected municipalities on the other hand. In comparisons, relative figures (i.e. percentages) will be used, absolute numbers are included to illustrate the samples used in the analysis. Results in Table 4 (a - absolute numbers and b – percentages) form the basis for discussion and reference.

The samples of 1997-98 voters used in the analysis of ethnic composition in Section 2, and of internally displaced persons and refugees in Section 3, are large and reliable (Table 4a). The 1997-98 population of voters constituted about 50.6% of the 1991 census population of Bosnia and Herzegovina, with the RS part of Bosnia being represented by 50% sample of voters and the FBH part by a 50.9% sample. For MILOŠEVIĆ case area these figures were the following: 48.4% (entire area), 50.7% (RS) and 45.4 percent (FBH). Obviously, the voters register represents large fractions of the census population eligible to vote in 1997-98 elections. The above-mentioned numbers were obtained from the linked records, thus the actual sample of voters (linked and unlinked records) is even larger.

Note also that the relative size of the MILOŠEVIĆ case (and case-7) area is comparable in both period studied, 1991 and 1997-98. In 1991, the population of the MILOŠEVIĆ case area comprised approximately 50.6% of the population of Bosnia and Herzegovina eligible to vote in 1997-98 elections, and in 1997-98 about 48.6% of the (18+) population of Bosnia obtained from the voters register. Thus, despite of the different absolute population size in 1991 and 1997-98, in relative terms the MILOŠEVIĆ case area comprises a similar fraction of the population of the whole country.

The same figures for the MILOŠEVIĆ case-7 area were, respectively 9.2% in 1991 and 8.6% in 1997-98, again, very close.

The changes in the ethnic composition of the entire Bosnia and Herzegovina between 1991 and 1997-98 were paradoxically not very large (Table 4b and Figure 3 below) and the composition remained mixed in 1997-98 as it used to be in 1991. Until 1997-98 the fraction of ethnic Muslims and Serbs increased slightly, by 7.7 and 9.7%, respectively, whereas the fractions of Croats and Others declined by 24.5 and 26.1 percent. The changes observed for the entire country resulted from changes in all places in Bosnia, especially in RS and FBH parts of the country, which often had an opposite profile. Generally, in Republika Srpska a sharp decline of the fraction of Muslims and Croats occurred between 1991 and 1997-98 (to a lesser extent Others as well), and the Serb population increased in relative terms. In the Federation of Bosnia and Herzegovina the Serb population relatively declined (to a lesser extent a decline is also seen for Croats and Others), while the fraction of Muslims increased.

Table 4a. Ethnic Composition of the 18+ Population of Bosnia and Herzegovina, and Two MILOŠEVIĆ Case Areas, 1991 versus 1997-98, Absolute Numbers

Bosnia and Herzegovina			MILOŠEVIĆ Case Area			MILOŠEVIĆ Case-7 Area		
Ethnicity	1991	1997-98	Ethnicity	1991	1997-98	Ethnicity	1991	1997-98
Serbs	1,147,904	637,321	Serbs	785,553	517,320	Serbs	129,394	129,051
Muslims	1,505,893	820,844	Muslims	720,325	276,678	Muslims	159,189	15,939
Croats	630,895	241,008	Croats	140,918	25,741	Croats	19,806	3,282
Others	281,011	104,969	Others	156,463	57,383	Others	19,160	7,169
Total	3,565,703	1,804,142	Total	1,803,259	877,122	Total	327,549	155,441
RS Part of Bosnia and Herzegovina			RS Part of MILOŠEVIĆ Case Area			RS Part of MILOŠEVIĆ Case-7 Area		
Ethnicity	1991	1997-98	Ethnicity	1991	1997-98	Ethnicity	1991	1997-98
Serbs	735,021	615,758	Serbs	587,307	506,695	Serbs	121,576	129,014
Muslims	376,880	8,552	Muslims	344,803	7,933	Muslims	137,457	2,130
Croats	128,490	7,871	Croats	79,127	7,002	Croats	9,068	1,026
Others	98,950	37,944	Others	83,180	33,352	Others	18,300	6,597
Total	1,339,341	670,125	Total	1,094,417	554,982	Total	286,401	138,767
FBH Part of Bosnia and Herzegovina			FBH Part of MILOŠEVIĆ Case Area			FBH Part of MILOŠEVIĆ Case-7 Area		
Ethnicity	1991	1997-98	Ethnicity	1991	1997-98	Ethnicity	1991	1997-98
Serbs	412,883	21,563	Serbs	198,246	10,625	Serbs	7,818	37
Muslims	1,129,013	812,292	Muslims	375,522	268,745	Muslims	21,732	13,809
Croats	502,405	233,137	Croats	61,791	18,739	Croats	10,738	2,256
Others	182,061	67,025	Others	73,283	24,031	Others	860	572
Total	2,226,362	1,134,017	Total	708,842	322,140	Total	41,148	16,674

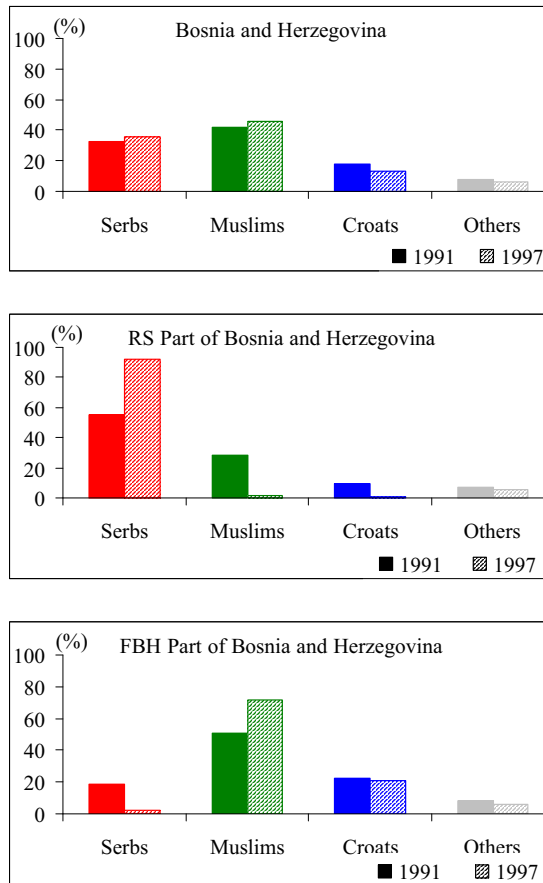
Table 4b. Ethnic Composition of the 18+ Population of Bosnia and Herzegovina, Two MILOŠEVIĆ Case Areas, 1991 versus 1997-98, Percentages

Bosnia and Herzegovina				MILOŠEVIĆ Case Area				MILOŠEVIĆ Case-7 Area			
Ethnicity	1991	1997-98	1991-97 (%)	Ethnicity	1991	1997-98	1991-97 (%)	Ethnicity	1991	1997-98	1991-97 (%)
Serbs	32.2	35.3	9.7	Serbs	43.6	59.0	35.4	Serbs	39.5	83.0	110.2
Muslims	42.2	45.5	7.7	Muslims	39.9	31.5	-21.0	Muslims	48.6	10.3	-78.9
Croats	17.7	13.4	-24.5	Croats	7.8	2.9	-62.4	Croats	6.0	2.1	-65.1
Others	7.9	5.8	-26.2	Others	8.7	6.5	-24.6	Others	5.8	4.6	-21.2
Total	100.0	100.0	0.0	Total	100.0	100.0	0.0	Total	100.0	100.0	0.0
RS Part of Bosnia and Herzegovina				RS Part of MILOŠEVIĆ Case Area				RS Part of MILOŠEVIĆ Case-7 Area			
Ethnicity	1991	1997-98	1991-97 (%)	Ethnicity	1991	1997-98	1991-97 (%)	Ethnicity	1991	1997-98	1991-97 (%)
Serbs	54.9	91.9	67.4	Serbs	53.7	91.3	70.1	Serbs	42.4	93.0	119.0
Muslims	28.1	1.3	-95.5	Muslims	31.5	1.4	-95.5	Muslims	48.0	1.5	-96.8
Croats	9.6	1.2	-87.8	Croats	7.2	1.3	-82.5	Croats	3.2	0.7	-76.6
Others	7.4	5.7	-23.4	Others	7.6	6.0	-20.9	Others	6.4	4.8	-25.6
Total	100.0	100.0	0.0	Total	100.0	100.0	0.0	Total	100.0	100.0	0.0
FBH Part of Bosnia and Herzegovina				FBH Part of MILOŠEVIĆ Case Area				FBH Part of MILOŠEVIĆ Case-7 Area			
Ethnicity	1991	1997-98	1991-97 (%)	Ethnicity	1991	1997-98	1991-97 (%)	Ethnicity	1991	1997-98	1991-97 (%)
Serbs	18.5	1.9	-89.7	Serbs	28.0	3.3	-88.2	Serbs	19.0	0.2	-98.8
Muslims	50.7	71.6	41.3	Muslims	53.0	83.4	57.5	Muslims	52.8	82.8	56.8
Croats	22.6	20.6	-8.9	Croats	8.7	5.8	-33.3	Croats	26.1	13.5	-48.2
Others	8.2	5.9	-27.7	Others	10.3	7.5	-27.8	Others	2.1	3.4	62.1-5523
Total	100.0	100.0	0.0	Total	100.0	100.0	0.0	Total	100.0	100.0	0.0

Because the ethnic composition of the entire country changed in relative terms very little from

1991 to 1997-98, it is obvious that the changes observed for the MILOŠEVIĆ case area would be extreme when compared with those in Bosnia. To avoid such an impression we therefore concentrate on comparable changes observed in RS and FBH parts of Bosnia and of the MILOŠEVIĆ case (and case-7) area.

Figure 3. Ethnic Composition in Bosnia and Herzegovina, 1991 versus 1997-98



We first compare the three RS areas shown in Tables 4a and 4b: Republika Srpska, the RS part of the MILOŠEVIĆ case area and the RS part of the MILOŠEVIĆ case-7 area.

Typically, in all RS areas huge increases of the Serb population and large declines in the population of ethnic Muslims and Croats (to a lesser extent of Others too) are seen in the period from 1991 to 1997-98. The highest increase of the fraction of Serbs occurred in the MILOŠEVIĆ case-7 area, 119%. The absolute size of the Serb population obviously increased in this area as well (from 121,576 in 1991 to 129,014 in 1997-98). The fraction of the Serb population in the MILOŠEVIĆ case area increased by 70.1% in 1997-98 compared

with 1991 and was the second highest, while the increase in the whole RS was by 67.4% and was the lowest among the three RS areas.

In all three RS areas the population of ethnic Muslims, Croats and Others declined from 1991 to 1997-98 in both relative and also absolute terms. The decline of the Muslim population was the highest among the three ethnic groups. The decline in the MILOŠEVIĆ case-7 area (96.8%) was the highest compared with the declines in Republika Srpska (95.5%) and in RS part of the MILOŠEVIĆ case area (95.5%). All these declines were extremely high. In all three RS areas the fraction of Muslims dropped from about 28% in BH, or 31.5% in MILOŠEVIĆ case area and 48.0% in seven municipalities, in 1991 to 1.3 to 1.5 % in 1997-98, and the absolute numbers of Muslims became 2,130 out of 137,457 in the MILOŠEVIĆ case-7 area, and 7,933 out of 344,803 in the entire MILOŠEVIĆ area. In Republika Srpska the size of the Muslim population was 376,880 in 1991 and only 8,552 Muslims were identified in 1997-98. For the Croats similar but less dramatic patterns emerged. The Others were least affected of the three analyzed ethnic groups.

If the FBH parts of the three areas are compared, we first of all notice an increase of the fraction of Muslims (57.5% and 56.8% respectively in the MILOŠEVIĆ case and MILOŠEVIĆ case-7 areas, 41.3% in the Federation of Bosnia and Herzegovina). There had been no increases of the absolute size of the Muslim population in any FBH area. Secondly, also declines in the fractions of Serbs, Croats and Others are seen. The most affected were the Serbs, whose fractions dropped by 98.8% (MILOŠEVIĆ case-7 area), 88.2% (MILOŠEVIĆ case area), and 89.7% (the Federation of Bosnia and Herzegovina). The decline was larger in the MILOŠEVIĆ case-7 area (98.8%) than in the whole Federation (89.7%) or the whole MILOŠEVIĆ case area (88.2%). The fraction of Others dropped in the MILOŠEVIĆ case area as much as in the entire Federation (27.7%), but increased in the MILOŠEVIĆ case-7 area (64.1%).

The MILOŠEVIĆ case areas can be most meaningfully compared with Republika Srpska. This comparison is summarised below.

- The RS parts of the MILOŠEVIĆ case areas is where the Muslim and Croat populations experienced most declines. The fraction of Muslims declined by 95.5 and 96.8%, and of Croats by 82.5 and 76.6%, in the MILOŠEVIĆ case and MILOŠEVIĆ case-7 areas, respectively. The decline observed in the fraction of Muslims and Croats in the entire Republika Srpska was 95.5 and 87.8 percent. Thus, the fraction of Muslims declined most in the MILOŠEVIĆ case-7 area (by 96.8%) and of Croats in RS (by 87.8%).
- Generally, in the RS areas where the fraction of Muslims (or Croats) was relatively higher in 1991, the decline of the fraction obtained for 1997-98 was proportionally higher too.
- Not only fractions but also the absolute population size of Muslims and Croats declined in all three RS areas. The absolute numbers of Muslims became 2,130 out of 137,457 in the MILOŠEVIĆ case-7 area, and 7,933 out of 344,803 in the entire MILOŠEVIĆ area. In Republika Srpska the size of the Muslim population was 376,880 in 1991 and only 8,552 Muslims were identified in 1997-98. For the Croats similar but less dramatic patterns emerged.

- The relative size of the population of Serbs increased in all three RS areas (by 70.1% in MILOŠEVIĆ case area, 119% in MILOŠEVIĆ case-7 area, and 67.4% in Republika Srpska). In MILOŠEVIĆ case-7 area, the absolute size of the Serb population increased in addition to the increase in the fraction of Serbs (from 121,576 in 1991 to 129,014 in 1997-98).

All in all, a dramatic shift occurred in the ethnic composition of all three RS areas, most profoundly in the RS part of MILOŠEVIĆ case-7 area.

2.4 Summary of Changes in the Ethnic Composition of the MILOŠEVIĆ Case Area: Ethnic Majority Maps for 1991 and 1997-98

Section 2.4 summarizes changes in the ethnic composition by discussing ethnic majority in MILOŠEVIĆ case area in 1991 and 1997-98 (Figure 4a and 4b).

Figure 4a. Ethnic Majority of the MILOŠEVIĆ Case Area: 1991

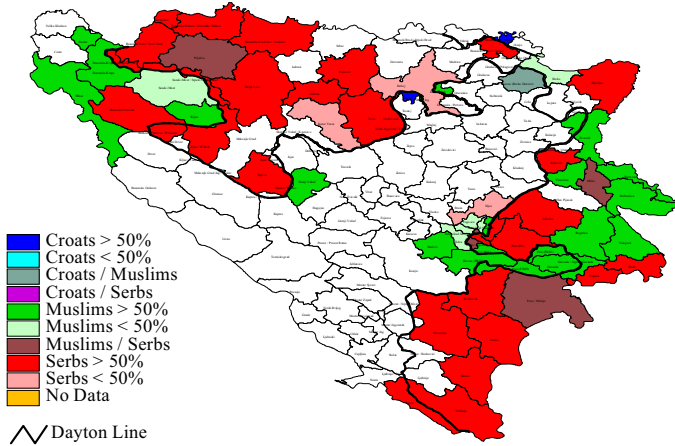
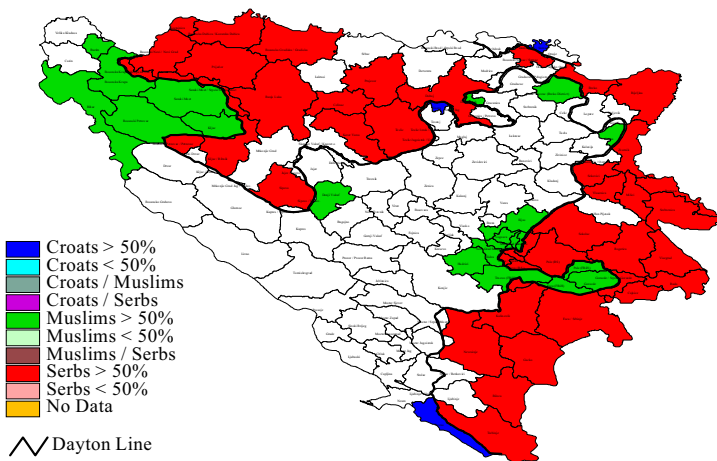


Figure 4b. Ethnic Majority of the MILOŠEVIĆ Case Area: 1997-98



The above maps (Figures 4a and 4b) show the ethnic majority in the population residing in the municipalities belonging to the MILOŠEVIĆ area in 1991 and 1997-98. Dark, intensive colours (green, red and blue) denote an absolute majority group (fractions equal 50 % or more). Light green, red or blue is associated with a domination of one ethnic group with the fraction lower than 50% but the difference to the second largest ethnic group being bigger than 5 per cent point. Combinations of colours denote a mixed ethnic composition, for instance brown (maroon) is associated with ethnic Muslims residing together with ethnic Serbs and purple with Croats mixed with Serbs.

In 1991, considerable numbers of ethnic Non-Serbs populated several municipalities in Republika Srpska. In particular, we observe:

- a mixed ethnic composition of Muslims and Serbs in Prijedor, Milići, Foča and Sarajevo Ilidža, (maroon on the 1991 map),
- a majority of Muslims in Zvornik, Vlasenica, Bratunac, Srebrenica, Rogatica, Višegrad, Gorazde, Brčko, and Sarajevo Trnovo (green on the 1991 map).

In 1997-98, in all these (and in all other RS) municipalities ethnic Serbs dominated in the population at more than 50 %, and almost all Non-Serbs moved out, mostly into the Federation of Bosnia and Herzegovina or other countries, or died. Note, the Serb-majority municipalities remained dominated by ethnic Serbs at more than 50 % in both years, in 1991 and also in 1997-98.

An opposite pattern could be expected for the FBH part of the MILOŠEVIĆ area. And indeed, one can see it for (just) three municipalities, Bosanski Petrovac, Sarajevo Ilijaš and Ravno, that became Muslims-dominated in 1997-98 and used to have a Serb majority or a mixed ethnic composition in 1991.

3. Minimum Numbers of Internally Displaced Persons and Refugees, Status as of 1997-98

3.1 Minimum Numbers of Internally Displaced Persons and Refugees from the MILOŠEVIĆ Case Area, Status as of 1997-98

In this section we discuss minimum (i.e. “at least”) numbers of internally displaced persons (IDPs) and refugees (REFs) from MILOŠEVIĆ case area. The numbers have been produced at the demographic unit and are based on the 1991 census and the 1997-98 voters register.

First of all, we explain how an IDP and a REF are defined in our study. Our definitions are based on measuring changes in place of residence of individuals between 1991 and 1997-98. For IDPs the “places” compared in 1991 and 1997-98 are post-Dayton municipalities in Bosnia and Herzegovina. For REFs the “places” compared in 1991 and 1997-98 are countries (BH versus the rest of the world), including the newly recognised states separated from the former Federal Socialist Republic of Yugoslavia, such as Croatia, Federal Republic of Yugoslavia, Slovenia and Macedonia. Note that no formal definitions of an internally displaced person or a refugee were used. The analysis is based on statistical concepts that can be merely seen as approximations of the IDPs and REFs defined by legal definitions.

Tables 5, 6 and 7, and Figures 5 and 6 contain the following statistics:

- The 1991 population originating from the MILOŠEVIĆ case area by place of registration to vote in 1997-98 (absolute numbers and percentages, by ethnicity, Table 5 and Figure 5a, b)
 - Including: Ethnic composition of IDPs/Refugees
 - Including: Fraction of IDPs/Refugees within a given ethnic group in 1997-98
- The 1991 population originating from the MILOŠEVIĆ case area by displacement status (Non-IDPs, IDPs, and Refugees; absolute numbers and percentages, by ethnicity, Table 6 and Figure 6)
- Refugees from the 1991 population originating from the MILOŠEVIĆ case area by country of residence in 1997-98 (absolute numbers and percentages, by ethnicity, Table 7)

Note that all results discussed in Sections 3.1 to 3.5 are included in the summary Tables 2 and 4 in Annexes A2 and A4, respectively.

Table 5. The 1997-98 Voters Originating from the MILOŠEVIĆ Case Area by Place of Registration to Vote

Registration to Vote	Serbs	Muslims	Croats	Others	All
Numbers					
- At 1991 Residence	347,771	196,937	22,425	45,348	612,481
- Not at 1991 Residence	115,411	231,830	29,581	23,151	399,973
Total Number	463,182	428,767	52,006	68,499	1,012,454
(Row) Percentages					
- At 1991 Residence	56.8	32.2	3.7	7.4	100.0
- Not at 1991 Residence	28.9	58.0	7.4	5.8	100.0
(Row) Total	45.7	42.3	5.1	6.8	100.0
(Column) Percentages					
- At 1991 Residence	75.1	45.9	43.1	66.2	60.5
- Not at 1991 Residence	24.9	54.1	56.9	33.8	39.5
(Column) Total	100.0	100.0	100.0	100.0	100.0

Table 5 and Figures 5a and 5b summarize the findings related to internally displaced persons and refugees from the MILOŠEVIĆ case area. The approach applied to obtain these numbers takes the 1991 population born before 1980 (i.e. persons eligible to vote in the 1997-98 elections) from the MILOŠEVIĆ case area as a starting point². Many individuals from this population were identified in the 1997-98 voters register. The 1997-98 location of all identified individuals was obtained as their municipality of registration. The 1997-98 voters registered either in their 1991 municipality of residence (i.e. in domestic municipalities), or in other municipalities in Bosnia or in foreign countries. Voters who registered in domestic municipalities are considered as non-displaced in 1997-98. Those who registered in municipalities other than domestic are taken as internally displaced persons (IDPs). Finally, individuals registered in countries other than Bosnia and Herzegovina, including Croatia, Slovenia, Macedonia and the Federal Republic of Yugoslavia, are listed as refugees. The two latter groups, IDPs and REFs, are jointly termed generally displaced.

In Table 5 and Figures 5a and 5b the 1997-98 population originating from the MILOŠEVIĆ case area is shown by their location in 1997-98. Only two major groups are distinguished: individuals at 1991 residence, i.e. in domestic municipalities, and individuals not at 1991

² Note that there is a difference between the 1997-98 actual population residing in an area and the 1997-98 population originating from this area (i.e. living here in 1991). The actual population includes all individuals who actually resided in the area in 1997-98, thus including domestic and new individuals. The original population from this area comprises individuals who lived in this area in 1991, irrespective of where they lived in 1997-98. The size of these two populations is usually different. For the MILOŠEVIĆ case area the size of the actual population was 877,122 in 1997-98, and of the original population was 1,012,454 in 1997-98. The figures are obtained from the 1997-98 voters register.

residence, i.e. all generally displaced persons (IDPs and REFs jointly).

As shown in Section 2.1 the size of the 1991 population residing in the MILOŠEVIĆ case area was 1,803,259 individuals (those born before 1980 and therefore eligible to vote in the 1997-98 elections; see Table 2). Out of this population we were able to trace 1,012,454 persons in the 1997-98 voters register (about 56.1%, Table 5). The remaining 43.9% included those who either registered to vote but we could not link them with the census, or who did not register for various reasons, died of natural or violent causes, or went missing. Among those identified (1,012,454) almost 400,000 persons (specifically 399,973) were found not at 1991 residence, i.e. were either internally displaced or refugees. In relative terms, about 39.5% of the population who used to reside in the MILOŠEVIĆ case area in 1991, were found at residence different than their domestic municipalities in 1997-98.

The size of the generally displaced population in 1997-98 (399,973 persons) should be seen as a minimum (or “at least”) number. The reasons of this include the fact that our sample of voters used for the analysis is incomplete, and also that returnees from the period from 1996 and 1997 (until September) are excluded from our statistics. Even though this size is a minimum, it is almost 400,000 persons, or 39.5% of the 1997-98 population.

Knowing that the minimum size of all IDPs and REFs from Bosnia and Herzegovina estimated as of 1997-98 is 715,534 persons, it becomes obvious that the generally displaced persons from the MILOŠEVIĆ case area comprise about 55.9% of the figure for the whole country.

The ethnic distribution included in Table 5 (rows) indicates that in absolute terms the ethnic Muslims were the largest group who left their homes after 1991 and were still displaced in 1997-98 (231,830 individuals, or 58% of all generally displaced persons from the MILOŠEVIĆ case area). The largest group of non-displaced population were the ethnic Serbs in 1997-98 (347,771, or 56.8% of all non-displaced persons).

In absolute terms, the Croats were displaced to a lesser extent than the Muslims, some 29,581 of them are reported in Table 5 as “not at 1991 residence” (7.4% of all generally displaced). This is related mainly to the smaller size of the Croat population originating from the MILOŠEVIĆ case area. In 1991, there were only 140,918 Croats reported in the census in the MILOŠEVIĆ case area, whereas the population of Muslims comprised 720,325 individuals and of Serbs 785,553 persons (all born before 1980).

In relative terms (columns), it is clear that both the Muslims and the Croats were affected by displacement in almost the same degree, 54.1% of Muslims and 56.9% of Croats originating from the MILOŠEVIĆ case area are reported in Table 5 as generally displaced in 1997-98. The fraction of displaced Serbs is much lower, 24.9%, and most Serbs (75.1%) are reported at their 1991 residence in 1997-98.

In order to visualise the statistics from Table 5 graphically, Figures 5a and 5b are displayed.

Figure 5a. The 1997-98 Voters Originating from the MILOŠEVIĆ Case Area by Place of Registration to Vote

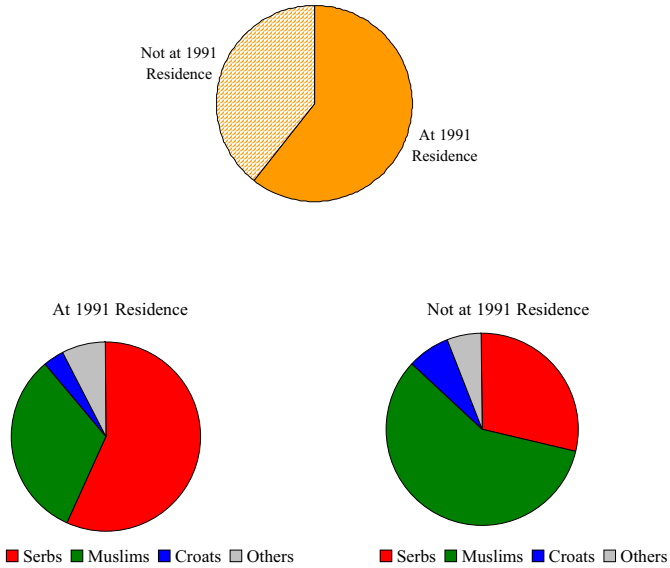


Figure 5b. The 1997-98 Voters Originating from the MILOŠEVIĆ Case Area by Place of Registration to Vote

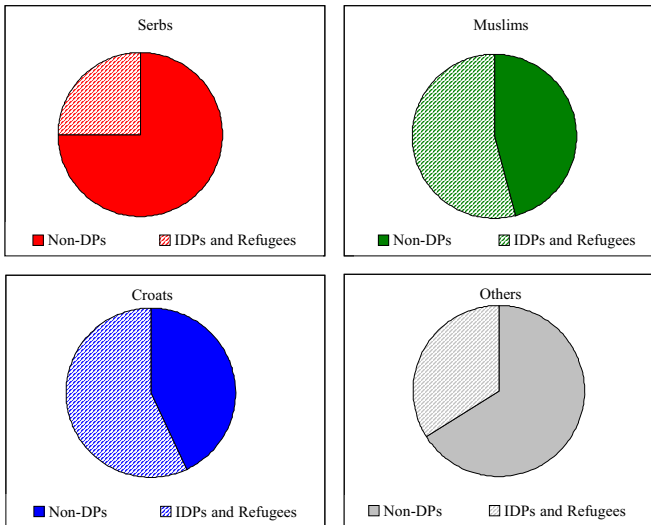


Table 6. The 1997-98 Voters Originating from the MILOŠEVIĆ Case Area by Displacement Status and Ethnicity

Ethnicity	Non-DPs	IDPs	Refugees	Total
Serbs	347,771	88,756	26,655	463,182
Muslims	196,937	119,991	111,839	428,767
Croats	22,425	6,518	23,063	52,006
Others	45,348	9,789	13,362	68,499
Total	612,481	225,054	174,919	1,012,454
Serbs	75.1	19.2	5.8	100.0
Muslims	45.9	28.0	26.1	100.0
Croats	43.1	12.5	44.3	100.0
Others	66.2	14.3	19.5	100.0
Total	60.5	22.2	17.3	100.0

Among the voters originating from the MILOŠEVIĆ case area (1,012,454 identified in 1997-98), 225,054 persons were internally displaced and 174,919 persons were refugees. The IDPs comprised some 22.2% of the 1997-98 population of voters and REFs 17.3 percent. The remaining 612,481 persons (60.5%) were non-displaced. In absolute terms the Muslims and Serbs were most frequently represented among IDPs and also REFs. This conclusion is, however, not necessarily the same in relative terms, i.e. when the absolute numbers of IDPs and REFs are related to the population size of the Muslims and Serbs identified in the 1997-98 voters register.

In relative terms, the displacement status distribution varied strongly among the ethnic groups. Among the Muslims and Croats only 45.9% and 43.1% of their respective population were non-displaced, whereas among the Serbs and Others these fractions were equal, respectively, 75.1% and 66.2 percent. Some 54.1% and 56.9% of the Muslim and Croat populations was generally displaced (as compared with 24.9% Serb GDPs and 33.8% Other GDPs). Among the Muslims there were 119,991 IDPs (28% of the Muslim population in 1997-98) and 111,839 refugees (26.1% of the 1997-98 Muslim population). The absolute size of the Muslim IDPs and Muslim REFs was the highest among all ethnic groups. Among the Croats 6,518 individuals were internally displaced (12.5% of the Croat population in 1997-98) and 23,063 were refugees (44.3%).

An overview of the 1997-98 displacement status, given separately for every ethnic group in Figure 6, shows at a glance that the Muslims and Croats were displaced much more frequently than the Serbs and Others. Among the Muslims, IDPs were approximately equally frequent as REFs. Among the Croats REFs were more frequent than IDPs (and than the non-displaced population). Table 7 confirms that some 96.3% of the Muslim refugees from the MILOŠEVIĆ case area (107,720 out of 111,839) lived in 1997-98 in countries outside the region of the former SFRY. A majority of the Croat refugees (15,469 out of 23,063; 67.1%) lived however in Croatia in 1997-98.

Figure 6. The 1997-98 Voters Originating from the MILOŠEVIĆ Case Area by Displacement Status and Ethnicity

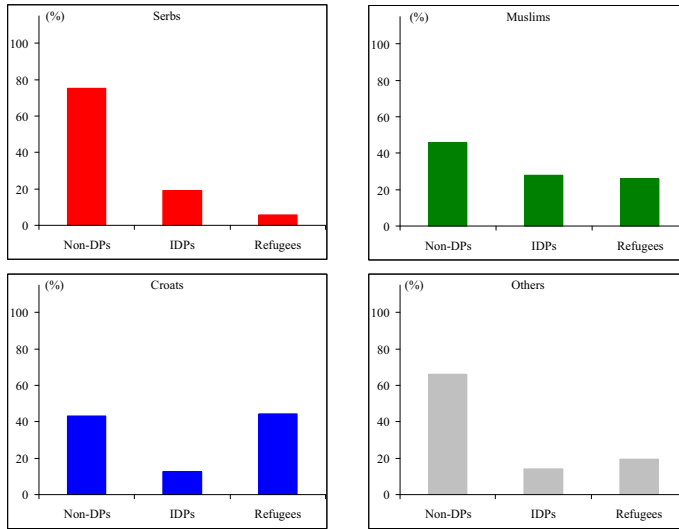


Table 7. The 1997-98 Refugees Originating from the MILOŠEVIĆ Case Area by Country of Registration and Ethnicity

Ethnicity	Croatia		FRY		Other Countries		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Serbs	231	0.9	23,146	86.8	3,278	12.3	26,655	100.00
Muslims	3,426	3.1	693	0.6	107,720	96.3	111,839	100.00
Croats	15,469	67.1	338	1.5	7,256	31.5	23,063	100.00
Others	1,479	11.1	3,048	22.8	8,835	66.1	13,362	100.00
Total	20,605	na	27,225	na	127,089	na	174,919	na

3.2 Minimum Numbers of Internally Displaced Persons and Refugees from Seven Selected Municipalities, Status as of 1997-98

Section 3.2 is devoted to internally displaced persons and refugees from seven selected municipalities in the MILOŠEVIĆ case area. The results are included in Tables 8M (Muslims), 8C (Croats), 8S (Serbs), and 8O (Others). The 1997-98 population reported in these tables is the so-called “original”, i.e. it is the part of the 1991 population from a given municipality that had been found in the 1997-98 voters register. Depending on the municipality of registration, persons were classified as either non-displaced (those registered in their domestic municipalities) or as internally displaced (those elsewhere in Bosnia than in domestic municipalities), or as refugees (those registered abroad).

Table 8 shows the entire population of a given ethnicity as identified in the 1997-98 voters register and, of this population, those who were internally displaced or refugees in 1997-98. These two categories are shown together.

More results for every municipality are available from Annex A6.

Table 8M. Minimum Numbers of Internally Displaced Muslims and Muslim Refugees from MILOŠEVIĆ Case - 7 Area, Status as of 1997-98

Municipality of Residence in 1991	Total Population Identified in 1997-98			Muslim Population Identified in 1997-98			Percentage of Muslims Among IDPs and Refugees
	All	IDPs and Refugees	Percentage	All	IDPs and Refugees	Percentage	
MILOŠEVIĆ Case-7 Area	174,955	89,903	51.4	86,111	77,443	89.9	86.1
of which:							
- Republika Srpska (RS)	159,358	82,523	51.8	76,074	74,092	97.4	89.8
- The Federation of BH (FBH)	15,597	7,380	47.3	10,037	3,351	33.4	45.4
1. Bijeljina (RS)	48,180	14,151	29.4	14,117	12,725	90.1	89.9
2. Bratunac (RS)	13,760	8,964	65.1	8,438	8,434	100.0	94.1
3. Brčko:							
- Ratičić / Ravne (Brčko Federation) (FBH)	8,120	3,094	38.1	4,379	875	20.0	28.3
- Brčko (RS)	24,676	15,765	63.9	12,255	11,792	96.2	74.8
4. Foča:							
- Foča (FBH)	2,058	1,731	84.1	1,413	1,088	77.0	62.9
- Foča / Srinje (RS)	18,623	8,985	48.2	8,516	8,512	100.0	94.7
5. Srebrenica (RS)	13,891	10,654	76.7	9,730	9,726	100.0	91.3
6. Višegrad (RS)	10,850	7,053	65.0	6,799	6,798	100.0	96.4
7. Zvornik:							
- Sapna (FBH)	5,419	2,555	47.1	4,245	1,388	32.7	54.3
- Zvornik (RS)	29,378	16,951	57.7	16,219	16,105	99.3	95.0

Table 8M contains minimum numbers of displaced persons and refugees, and related indicators, for the Muslims from seven most affected municipalities in the MILOŠEVIĆ case area. In total there were at least 77,443 generally displaced persons of Muslim ethnicity out of 86,111 Muslims identified in 1997-98 of those reported as living in the MILOŠEVIĆ case-7 area in 1991. Thus, almost 90% of the Muslim population from the MILOŠEVIĆ case-7 area were still displaced in 1997-98. For the municipalities located in RS part of the area, this fraction was even higher and equalled 97.4 percent.

Almost 100% of the Muslim population from the RS municipalities of Bratunac, Foča – Srinje, Srebrenica and Višegrad was found generally displaced. The Muslim IDPs and REFs from the RS municipalities of Bijeljina, Brčko, and Zvornik were less frequent, i.e. from 90.1 to 99.3 percent, which fractions are still extremely high.

Table 8C. Minimum Numbers of Internally Displaced Croats and Croat Refugees from MILOŠEVIĆ Case - 7 Area, Status as of 1997-98

Municipality of Residence in 1991	Total Population Identified in 1997-98			Croat Population Identified in 1997-98			Percentage of Croats Among IDPs and Refugees
	All	IDPs and Refugees	Percentage	All	IDPs and Refugees	Percentage	
MILOŠEVIĆ Case-7 Area	174,955	89,903	51.4	4,608	2,557	55.5	2.8
of which:							
- Republika Srpska (RS)	159,358	82,523	51.8	2,515	1,929	76.7	2.3
- The Federation of BH (FBH)	15,597	7,380	47.3	2,093	628	30.0	8.5
1. Bijeljina (RS)	48,180	14,151	29.4	216	31	14.4	0.2
2. Bratunac (RS)	13,760	8,964	65.1	21	9	42.9	0.1
3. Brčko:							
- Rahić / Ravne (Brčko Federation) (FBH)	8,120	3,094	38.1	2,093	628	30.0	20.3
- Brčko (RS)	24,676	15,765	63.9	2,164	1,851	85.5	11.7
4. Foča:							
- Foča (FBH)	2,058	1,731	84.1	0	0	na	0.0
- Foča / Srbinje (RS)	18,623	8,985	48.2	44	15	34.1	0.2
5. Srebrenica (RS)	13,891	10,654	76.7	17	8	47.1	0.1
6. Višegrad (RS)	10,850	7,053	65.0	16	3	18.8	0.0
7. Zvornik:							
- Sapna (FBH)	5,419	2,555	47.1	0	0	na	0.0
- Zvornik (RS)	29,378	16,951	57.7	37	12	32.4	0.1

Table 8C makes it clear that the Croat population originating from the MILOŠEVIĆ case-7 area and reported in 1997-98 in the voters register was very small (4,608). Some 2,557 persons out of 4,608 from this area were generally displaced (55.5%). Again for the RS part of the area this fraction was much higher (76.7%), and for Brčko (RS) it was 85.5 percent (1,851 IDPs and REFs out of 2,164 in total). For remaining municipalities the fractions, and absolute numbers, are much lower.

Table 8S. Minimum Number of Internally Displaced Serbs and Serb Refugees from MILOŠEVIĆ Case - 7 Area, Status as of 1997-98

Municipality of Residence in 1991	Total Population Identified in 1997-98			Serb Population Identified in 1997-98			Percentage of Serbs Among IDPs and Refugees
	All	IDPs and Refugees	Percentage	All	IDPs and Refugees	Percentage	
MILOŠEVIĆ Case-7 Area	174,955	89,903	51.4	76,727	6,172	8.0	6.9
of which:							
- Republika Srpska (RS)	159,358	82,523	51.8	73,421	2,881	3.9	3.5
- The Federation of BH (FBH)	15,597	7,380	47.3	3,306	3,291	99.5	44.6
1. Bijeljina (RS)	48,180	14,151	29.4	31,012	395	1.3	2.8
2. Bratunac (RS)	13,760	8,964	65.1	5,130	415	8.1	4.6
3. Brčko:							
- Rahić / Ravne (Brčko Federation) (FBH)	8,120	3,094	38.1	1,533	1,518	99.0	49.1
- Brčko (RS)	24,676	15,765	63.9	7,504	479	6.4	3.0
4. Foča:							
- Foča (FBH)	2,058	1,731	84.1	628	628	100.0	36.3
- Foča / Srbinje (RS)	18,623	8,985	48.2	9,559	294	3.1	3.3
5. Srebrenica (RS)	13,891	10,654	76.7	3,923	771	19.7	7.2
6. Višegrad (RS)	10,850	7,053	65.0	3,822	118	3.1	1.7
7. Zvornik:							
- Sapna (FBH)	5,419	2,555	47.1	1,145	1,145	100.0	44.8
- Zvornik (RS)	29,378	16,951	57.7	12,471	409	3.3	2.4

Table 8S indicates that in 1997-98 the total number of generally displaced Serbs was 6,172 out of (the identified) 76,727 Serbs residing in the MILOŠEVIĆ case-7 area in 1991. The fraction of generally displaced Serbs was about 8 percent in 1997. In the FBH part of the area the fraction of displaced Serbs (IDPs and REFs) was 99.5 percent (3,291 out of 3,306; 99% in Rahić Ravne, and 100% in Foča and Sapna). In the RS municipalities of the area, the fractions are much lower (3.9%).

Table 8O. Minimum Number of Internally Displaced Others and Other Refugees from MILOŠEVIĆ Case - 7 Area, Status as of 1997-98

Municipality of Residence in 1991	Total Population Identified in 1997-98			Other Population Identified in 1997-98			Percentage of Others Among IDPs and Refugees
	All IDPs and Refugees	Percentage	Percentage	All IDPs and Refugees	Percentage	Percentage	
MILOŠEVIĆ Case-7 Area	174,955	89,903	51.4	7,509	3,731	49.7	4.2
of which:							
- Republika Srpska (RS)	159,358	82,523	51.8	7,348	3,621	49.3	4.4
- The Federation of BH (FBH)	15,597	7,380	47.3	161	110	68.3	1.5
1. Bijeljina (RS)	48,180	14,151	29.4	2,835	1,000	35.3	7.1
2. Bratunac (RS)	13,760	8,964	65.1	171	106	62.0	1.2
3. Brčko:							
- Rahić / Ravne (Brčko Federation) (FBH)	8,120	3,094	38.1	115	73	63.5	2.4
- Brčko (RS)	24,676	15,765	63.9	2,753	1,643	59.7	10.4
4. Foča:							
- Foča (FBH)	2,058	1,731	84.1	17	15	88.2	0.9
- Foča / Sribinje (RS)	18,623	8,985	48.2	504	164	32.5	1.8
5. Srebrenica (RS)	13,891	10,654	76.7	221	149	67.4	1.4
6. Višegrad (RS)	10,850	7,053	65.0	213	134	62.9	1.9
7. Zvornik:							
- Sapna (FBH)	5,419	2,555	47.1	29	22	75.9	0.9
- Zvornik (RS)	29,378	16,951	57.7	651	425	65.3	2.5

Finally, Table 8O reports the minimum numbers of generally displaced persons of Other ethnicity. In 1997-98, there were 3,731 IDPs and REFs out of 7,509 persons of Other ethnicity originating from the MILOŠEVIĆ caes-7 area (49.7%). Foča (FBH), Sapna (FBH) and Srebrenica (RS) are characterised by the highest levels of displacement.

3.3 A Comparison of Minimum Numbers of Internally Displaced Persons and Refugees from Bosnia and Herzegovina, MILOŠEVIĆ Case Area, and Seven Selected Municipalities, Status as of 1997-98

Section 3.3 is a comparison of internally displaced persons and refugees from the MILOŠEVIĆ case area, with those from seven selected municipalities and from Bosnia and Herzegovina (Table 9a and 9b). Absolute and relative numbers are shown.

Table 9a. An Overview of Internally Displaced Persons and Refugees from Bosnia and Herzegovina, MILOŠEVIĆ Case Area, and Seven Selected Municipalities, Status as of 1997-98, Age 18+ in 1997, Absolute Numbers

Bosnia and Herzegovina			MILOŠEVIĆ Case Area			MILOŠEVIĆ Case-7 Area		
Ethnicity	IDPs and Refugees	Total Population	Ethnicity	IDPs and Refugees	Total Population	Ethnicity	IDPs and Refugees	Total Population
Serbs	231,851	667,271	Serbs	115,411	463,182	Serbs	6,172	76,727
Muslims	329,154	959,036	Muslims	231,830	428,767	Muslims	77,443	86,111
Croats	112,046	312,416	Croats	29,581	52,006	Croats	2,557	4,608
Others	42,483	126,749	Others	23,151	68,499	Others	3,731	7,509
Total	715,534	2,065,472	Total	399,973	1,012,454	Total	89,903	174,955
RS Part of Bosnia and Herzegovina			RS Part of MILOŠEVIĆ Case Area			RS Part of MILOŠEVIĆ Case-7 Area		
Serbs	19,686	435,468	Serbs	14,645	352,424	Serbs	2,881	73,421
Muslims	203,210	211,266	Muslims	186,179	193,674	Muslims	74,092	76,074
Croats	39,495	45,869	Croats	20,482	26,176	Croats	1,929	2,515
Others	14,473	43,232	Others	11,577	36,870	Others	3,621	7,348
Total	276,864	735,835	Total	232,883	609,144	Total	82,523	159,358
FBH Part of Bosnia and Herzegovina			FBH Part of MILOŠEVIĆ Case Area			FBH Part of MILOŠEVIĆ Case-7 Area		
Serbs	212,165	231,803	Serbs	100,766	110,758	Serbs	3,291	3,306
Muslims	125,944	747,770	Muslims	45,651	235,093	Muslims	3,351	10,037
Croats	72,551	266,547	Croats	9,099	25,830	Croats	628	2,093
Others	28,010	83,517	Others	11,574	31,629	Others	110	161
Total	438,670	1,329,637	Total	167,090	403,310	Total	7,380	15,597

Table 9a shows the absolute size of the 1997-98 population of internally displaced persons and refugees from the three areas. The IDPs and REFs from the MILOŠEVIĆ case area comprised 399,973 individuals out of at least 715,534 such persons from Bosnia (as of 1997-98), thus, some 55.9% of all Bosnian GDPs (IDPs and REFs). The relatively small area of seven municipalities (MILOŠEVIĆ case-7 area) was the departure for at least 89,903 GDPs, that is 12.6% of all Bosnian GDPs.

For the Muslims from the MILOŠEVIĆ case area, their share of IDPs and REFs in the country total of the Muslim IDPs and REFs was higher than the 55.9% level calculated for all ethnic groups together. For the Muslims, the fraction of GDPs from the MILOŠEVIĆ case area in the Muslim GDPs of the entire Bosnia was 70.4% (231,830 out of 329,154), clearly much higher than 55.9% mentioned for all ethnic groups together. All other ethnic groups were characterized by lower fractions (Croats: 26.4%, Serbs: 49.8%, and Others: 54.5) than the country average of 55.9 percent.

A similar result was obtained for the MILOŠEVIĆ case-7 area (the fractions were as follows: 12.6% – all ethnicities, 23.5% - Muslims, 2.7% - Serbs, 2.3% - Croats, and 8.8% - Others).

Table 9b. An Overview of Internally Displaced Persons and Refugees from the MILOŠEVIĆ Case Area, Seven Selected Municipalities and Bosnia and Herzegovina, Status as of 1997-98, Age 18+ in 1997, Percentages

Bosnia and Herzegovina			MILOŠEVIĆ Case Area			MILOŠEVIĆ Case-7 Area		
Ethnicity	% IDPs and Refugees		Ethnicity	% IDPs and Refugees		Ethnicity	% IDPs and Refugees	
	One Group	Among All IDPs & Refugees		One Group	Among All IDPs & Refugees		One Group	Among All IDPs & Refugees
Serbs	34.7	32.4	Serbs	24.9	28.9	Serbs	8.0	6.9
Muslims	34.3	46.0	Muslims	54.1	58.0	Muslims	89.9	86.1
Croats	35.9	15.7	Croats	56.9	7.4	Croats	55.5	2.8
Others	33.5	5.9	Others	33.8	5.8	Others	49.7	4.2
Total	34.6	100.0	Total	39.5	100.0	Total	51.4	100.0
RS Part of Bosnia and Herzegovina			RS Part of MILOŠEVIĆ Case Area			RS Part of MILOŠEVIĆ Case-7 Area		
Serbs	4.5	7.1	Serbs	4.2	6.3	Serbs	3.9	3.5
Muslims	96.2	73.4	Muslims	96.1	79.9	Muslims	97.4	89.8
Croats	86.1	14.3	Croats	78.2	8.8	Croats	76.7	2.3
Others	33.5	5.2	Others	31.4	5.0	Others	49.3	4.4
Total	37.6	100.0	Total	38.2	100.0	Total	51.8	100.0
FBH Part of Bosnia and Herzegovina			FBH Part of MILOŠEVIĆ Case Area			FBH Part of MILOŠEVIĆ Case-7 Area		
Serbs	91.5	48.4	Serbs	91.0	60.3	Serbs	99.5	44.6
Muslims	16.8	28.7	Muslims	19.4	27.3	Muslims	33.4	45.4
Croats	27.2	16.5	Croats	35.2	5.4	Croats	30.0	8.5
Others	33.5	6.4	Others	36.6	6.9	Others	68.3	1.5
Total	33.0	100.0	Total	41.4	100.0	Total	47.3	100.0

Ethnic composition of IDPs and Refugees from the three areas is shown in Table 9b and Figure 7a to 7c. For the whole areas (Figure 7a) the same pattern is obtained for all three areas, with Muslims representing the largest group among all IDPs and REFs, Serbs the second largest, Croats third and Others fourth. The fraction of Muslim IDPs and REFs was apparently higher for both MILOŠEVIĆ case areas (especially for MILOŠEVIĆ case-7 area) than the fraction for the whole Bosnia. The fraction of Serb IDPs and REFs was the highest for the whole Bosnia and much lower for both MILOŠEVIĆ case areas (especially for MILOŠEVIĆ case-7 area). Thus, the pattern for Serbs was opposite to that for Muslims. The patterns for Croats and Others were similar to the Serbian pattern.

Figure 7a. Ethnic Composition of Internally Displaced Persons and Refugees from Bosnia and Herzegovina, MILOŠEVIĆ Case Area, and Seven Selected Municipalities, Status as of 1997-98: *Entire Areas*

Figure 7b. Ethnic Composition of Internally Displaced Persons and Refugees from Bosnia and Herzegovina, MILOŠEVIĆ Case Area, and Seven Selected Municipalities, Status as of 1997-98: *RS Parts of the Areas*

Figure 7c. Ethnic Composition of Internally Displaced Persons and Refugees from Bosnia and Herzegovina, MILOŠEVIĆ Case Area, and Seven Selected Municipalities, Status as of 1997-98: *FBH Parts of the Areas*

Figure 7a. Entire Areas

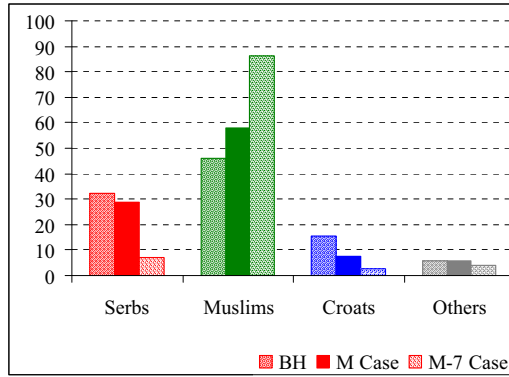


Figure 7b. RS Parts of the Areas

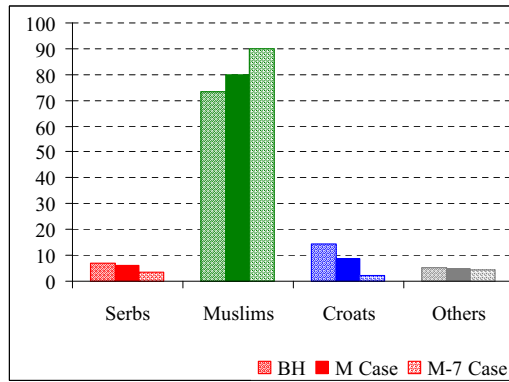
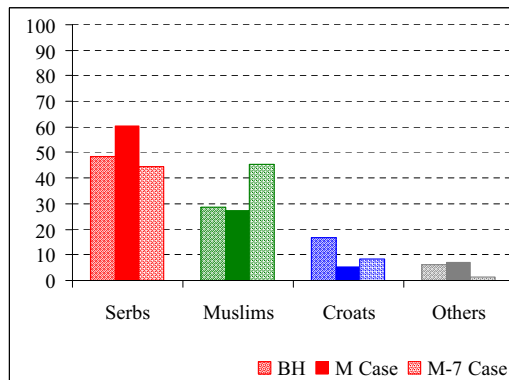


Figure 7c. FBH Parts of the Areas



A striking result can be seen for Republika Srpska parts of the three areas (Figure 7b), where the Muslims are the largest and almost only group among all internally displaced persons and refugees. For Republika Srpska the fraction of Muslims among all GDPs was 73.4%, while for the RS part of the MILOŠEVIĆ case area it was 79.9% and for the RS part of the MILOŠEVIĆ case-7 area it was 89.8 percent.

Finally, the fraction of (1997-98) IDPs and (1997-98) REFs among a given ethnic group shows the most meaningful patterns, especially for the Muslims and Croats (Table 9b and Figure 8a to 8c). For the entire areas and both these ethnic groups the fractions for the MILOŠEVIĆ case areas are much higher than the fraction for the entire Bosnia (for Muslims: 34.3% (BH), 54.1% (M case) and 89.9% (M case-7), for Croats: 35.9%, 56.9%, and 55.5%, respectively). For Others the fraction for Bosnia and MILOŠEVIĆ case area are very similar (33.5 and 33.8%), while the fraction for the MILOŠEVIĆ case-7 area is much higher (49.7%).

For the entire areas, the fraction of IDPs and REFs among the Serbs was generally the lowest of all ethnic groups in 1997. This result is particularly clear for both MILOŠEVIĆ case areas, for Bosnia only minor differences are seen between the Serbs, Muslims, Croats and Others. When the Serb fractions are compared for the three areas, the fractions for the MILOŠEVIĆ case areas are lower than the fraction for Bosnia.

Figure 8a. Fraction of Internally Displaced Persons and Refugees from Bosnia and Herzegovina, MILOŠEVIĆ Case Area and MILOŠEVIĆ Case-7 Area, among a Given Ethnic Group, Status as of 1997-98, *Entire Areas*

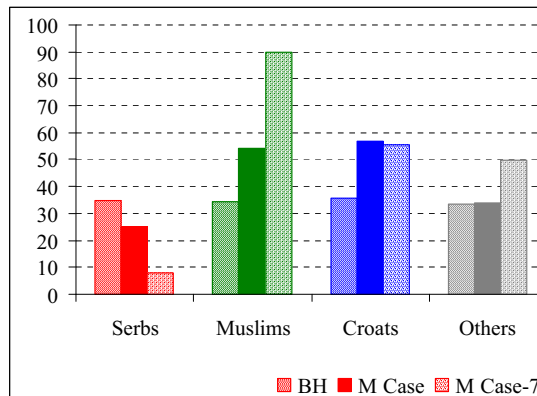


Figure 8b. Fraction of Internally Displaced Persons and Refugees from Bosnia and Herzegovina, MILOŠEVIĆ Case Area and MILOŠEVIĆ Case-7 Area, among a Given Ethnic Group, Status as of 1997-98, *RS parts of the Areas*

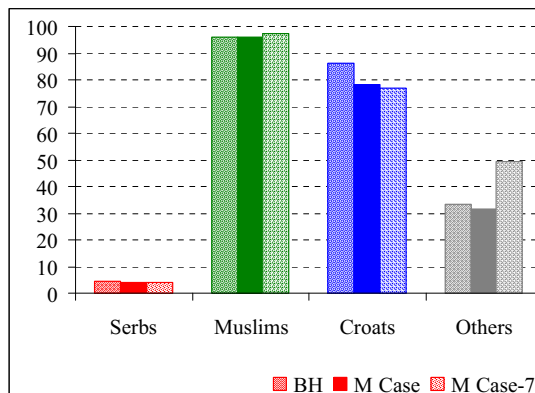


Figure 8c. Fraction of Internally Displaced Persons and Refugees from Bosnia and Herzegovina, MILOŠEVIĆ Case Area and MILOŠEVIĆ Case-7 Area, among a Given Ethnic Group, Status as of 1997-98, *FBH parts of the Areas*

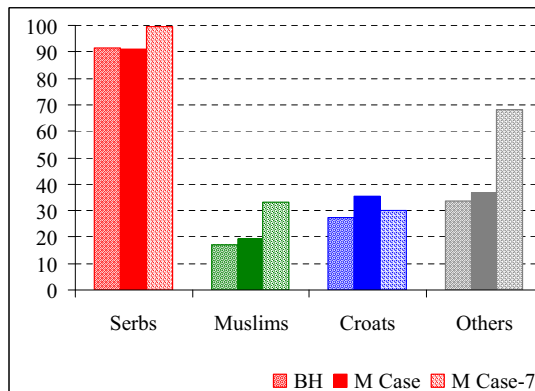
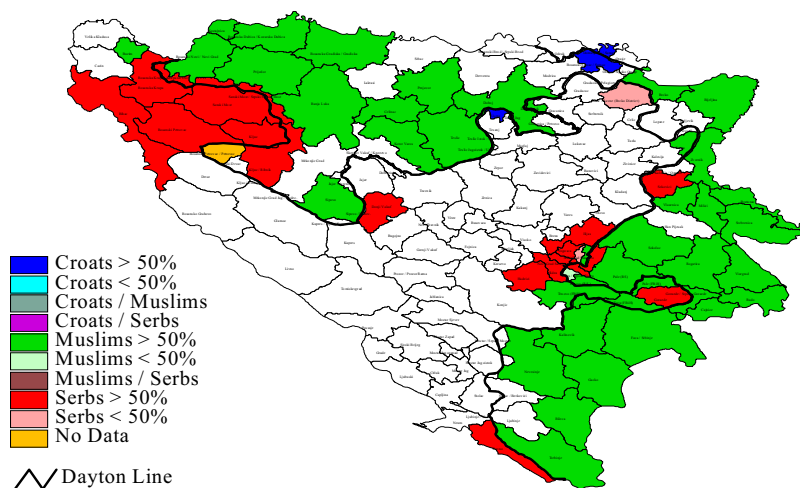


Figure 8b shows the pattern obtained for the RS parts of the three areas. In this case, the fraction of IDPs and REFs in the total 1997 population of a given ethnicity is extremely high for Muslims, Croats, and Others, thus all but the Serbs. Differences between the areas, i.e. Bosnia and MILOŠEVIĆ case areas are small.

3.4 Summary of Geographic Patterns of Internally Displaced Persons and Refugees from the MILOŠEVIĆ Case Area: Ethnic Majority Map for IDPs and Refugees, Status as of 1997-98

In this section we give a summary of patterns of internally displaced persons and refugees from the MILOŠEVIĆ case area. The data used in the analysis are minimum numbers. Discussion is illustrated by maps: ethnic majority map for IDPs and REFs, status as of 1997-98, and maps of the fraction of IDPs and REFs among a given ethnic group reported in the 1997-98 voters register.

Figure 9. Ethnic Majority Map of IDPs and Refugees Originating from the MILOŠEVIĆ Case Area, Status as of 1997-98



The above map is made following the same principles as the ethnic majority maps of the 1991 and 1997-98 population living in the MILOŠEVIĆ case area in Section 2.4. If among all IDPs and REFs from a given municipality one ethnic group was represented at more than 50%, than this ethnic group is marked with dark red, green, blue or grey. If the share of a given group was less than 50% and the difference to the second largest group was more than 5%, than the group was marked with light red, green, blue or grey. Combinations of ethnic groups are shown as mixed compositions using colours indicated in the legend in Figure 9.

In the vast majority of municipalities of the MILOŠEVIĆ case area, the Muslims were the majority among all internally displaced persons and refugees from a given municipality in 1997-98. In the RS part of the MILOŠEVIĆ case area, the Muslims were the majority in all but 7 municipalities (out of which 6 had a Serb majority and one Croat). The Serb IDPs and REFs were the majority in municipalities located in FBH, especially in the north-west of the country and in the Sarajevo area.

Figure 10. Fraction of IDPs and Refugees among the Muslim Population Originating from the MILOŠEVIĆ Case Area, Status as of 1997-98

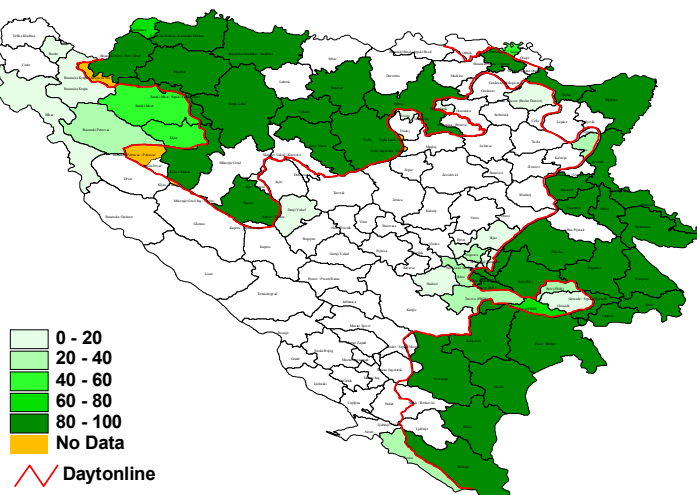


Figure 11. Fraction of IDPs and Refugees among the Croat Population Originating from the MILOŠEVIĆ Case Area, Status as of 1997-98

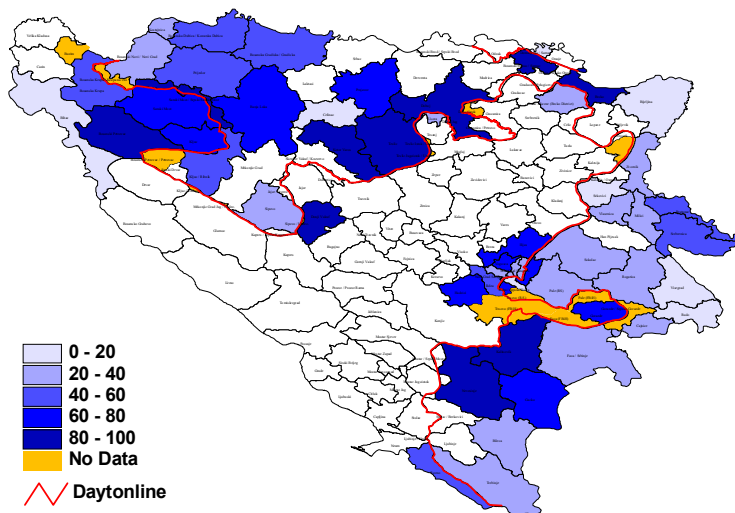


Figure 12. Fraction of IDPs and Refugees among the Serb Population Originating from the MILOŠEVIĆ Case Area, Status as of 1997-98

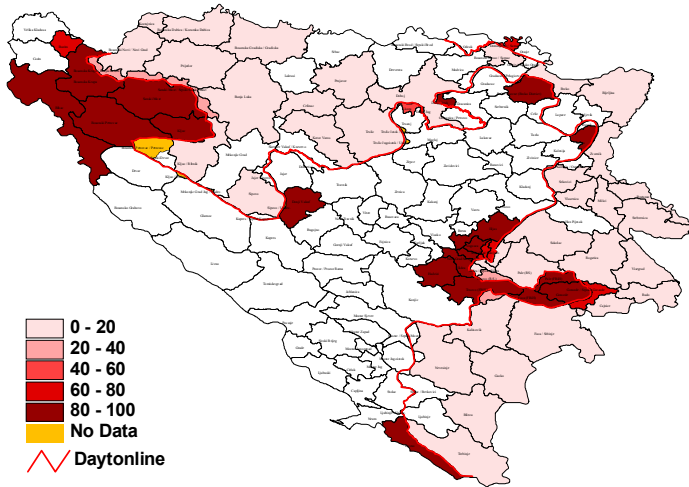
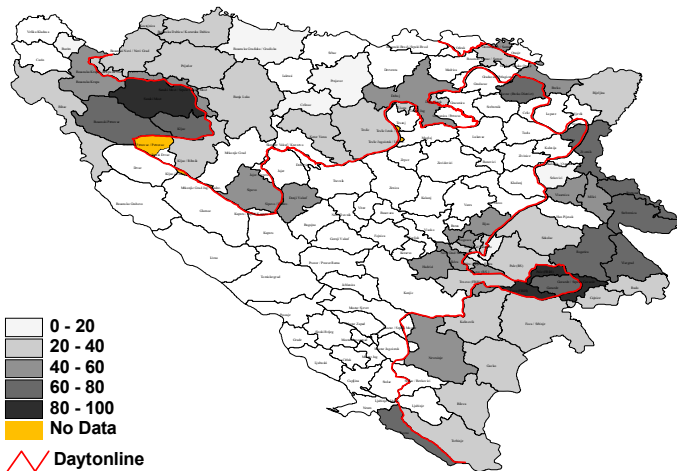


Figure 13. Fraction of IDPs and Refugees among the Other Population Originating from the MILOŠEVIĆ Case Area, Status as of 1997-98



Each of the maps 10 to 13 shows the fraction of internally displaced persons and refugees among all individuals of a given ethnicity originating from a given municipality, that were

found in the 1997-98 voters register. The maps are largely self-explanatory. In the legend to the maps we see that five intervals are used to show the fraction: the lowest is 0 to 20% and the highest 80 to 100 percent. The value of 90% (interval 80-100) indicates, for example, that 90% of the population that resided in a given municipality in 1991 and was later found in the 1997-98 voters register, was outside their 1991 domestic municipalities.

The map for the Muslims consistently shows that almost all municipalities from the MILOŠEVIĆ case area, especially from the RS part of the area, were characterised by extremely high percentage of IDPs and REFs in the 1997-98 Muslim population, almost always from the interval 80 to 100 percent. This in fact means that 80 to 100% of the Muslim population originating from this territory fled during the conflict and were still displaced in 1997-98.

The map for the Croats is less dramatic, but still we can see large groups of municipalities in the north-west of the MILOŠEVIĆ case area (around Bosanski Petrovac), and more to the east (Kotor Varoš, Teslić, and Doboј), as well as Bosanski Šamac, Brčko, and east to Mostar (Kalinovik, Gacko, Nevesinje), where the fraction of Croatian GDPs was at least 40 to 80%.

3.5 A Comparison of Geographic Patterns of Internally Displaced Persons Obtained from Two Independent Sources

In this section, a comparison of geographic patterns of internally displaced persons is made using data obtained from two independent sources: DU statistics based on the 1997-98 Voters Register, and UNHCR and official BH government statistics based on the Re-registration Project conducted in Bosnia in the year 2000. The UNHCR and BH government data (DDPR) are thoroughly discussed in Annex B6. It is the largest existing source of information about displaced persons and refugees in Bosnia and Herzegovina. It contains approximately 570,000 records that were collected by local authorities in Bosnia already during the conflict, and later until the year 2000. The database reports numbers of IDPs and refugees in Bosnia as of 2000. Refugees are mainly Croatian Serbs who moved into Bosnia, they are therefore excluded from this analysis. Below only displaced persons are studied. Note that the status of the two sources discussed in this section is as of 1997-98 (OSCE voters register) and 2000 (UNHCR and BH government).

We proceed in this section by discussing the DDPR first. Then, we compare absolute numbers from the two sources and prove that the minimum numbers produced by DU for 1997-98 (OSCE voters register) are generally lower for Muslims and Serbs than the official DDPR statistics of IDPs for the year 2000. For Croats and Other the DU numbers are higher than DDPR statistics. We also compare the geographic patterns of IDPs in the perspective of the two sources. The OSCE- and UNHCR-BH- based maps are displayed showing the fraction of IDPs (of a given ethnicity) from a given municipality of origin. The conclusion is that the two sources show much similarities.

The Database of Displaced Persons and Refugees (DDPR) is an official registration system of internally displaced persons and refugees in Bosnia and Herzegovina established by UNHCR and the government of Bosnia and Herzegovina. It covers the whole territory of the country and can serve to produce official statistics of displaced persons (IDPs) and refugees in Bosnia and Herzegovina for municipalities, settlements or any other required area (e.g. towns or villages).

The database was established by UNHCR together with local authorities. Individual records of information about IDPs and refugees were collected in BH municipalities already during the conflict. After the war ended, the records were centralised, under the lead of UNHCR, in a database. Two most obviously used versions of the database are from 1998 and 2000. The 2000 version is an improved and up-dated version of the 1998 collection and is based on records obtained in the so-called re-registration project conducted by UNHCR together with municipal and state authorities. In this project, the status of all displaced persons and refugees in Bosnia and Herzegovina was checked and, if necessary, revised. The 2000 version, available at the demographic unit, reports persons who in the year 2000 were still registered as displaced from their pre-war homes and needed a durable solution. 0291-5547

The database contains information about 583,816 persons. Among them it also includes about 60,000 persons born after 1 April 1991. These persons have been excluded from our analysis.

For about 1/3 of the persons reported in DDPR, for the so-called applicants (191,954 persons), the available information is very complete. For the remaining 2/3 (i.e. families of the applicants: 391,862 persons), the information is more limited, and assumptions or linked information are needed to process the data. The quality of the data seems overall good, although there are some shortcomings, such as in particular ethnicity is only reported for the applicants, not for their family members. Ethnicity might be however extrapolated using family relations, i.e. ethnicity of the applicant is used for all family members.

Table 10. Absolute Numbers of Internally Displaced Persons from Bosnia and Herzegovina Based on the 1997-98 OSCE Voters Register and on the 2000 UNHCR and Bosnian Government Registration of IDPs and Refugees

Place of Residence in 1991	OSCE – 1997-98		UNHCR & BH Government - 2000	
	No IDPs	% IDPs	No IDPs	% IDPs
	Serbs		Serbs	
MILOŠEVIĆ Case Area	88,756	49.3	96,871	49.1
- Republika Srpska (RS)	7,780	4.3	6,838	3.5
- The Federation of BH (FBH)	80,976	45.0	90,033	45.6
	Muslims		Muslims	
MILOŠEVIĆ Case Area	119,991	70.8	132,348	80.1
- Republika Srpska (RS)	101,791	60.1	115,005	69.6
- The Federation of BH (FBH)	18,200	10.7	17,343	10.5
	Croats		Croats	
MILOŠEVIĆ Case Area	6,518	17.8	3,672	13.0
- Republika Srpska (RS)	2,412	6.6	1,353	4.8
- The Federation of BH (FBH)	4,106	11.2	2,319	8.2
	Others		Others	
MILOŠEVIĆ Case Area	9,789	51.3	980	62.5
- Republika Srpska (RS)	3,532	18.5	401	25.6
- The Federation of BH (FBH)	6,257	32.8	579	36.9
Total	225,054	na	233,871	na

Table 10 contains an overview of the statistics obtained from the OSCE and UNHCR-BH databases. As the OSCE-based figures refer to 1997-98 and the UNHCR-BH figures to the year 2000, the two sources must provide different absolute numbers. Generally, because of returns, the 1997-98 figures should be higher than 2000 figures. However, the fraction of IDPs from the MILOŠEVIĆ case area among all IDPs from Bosnia, should be similar. The fractions are shown in Table 10 for every ethnic group separately. Thus, for example the value of 49.3% obtained for the Serb IDPs from the OSCE voters register, means that the share of Serb IDPs from the MILOŠEVIĆ case area in the total number of Serb IDPs from Bosnia was 49.3 percent. A similar fraction (49.1%) was obtained for the Serb IDPs from the UNHCR-BH database.

Generally, Table 10 shows that for the Muslims, the most affected ethnic group, the OSCE-based number of IDPs from the MILOŠEVIĆ case area (119,991) is considerably lower than

the UNHCR-BH- based number (132,348). This confirms the conservative nature of our estimate of the IDPs from the MILOŠEVIĆ case area and proves that instead of 119,991 we can easily speak about 132,348 internally displaced persons. For the RS part of the area, some 115,005 IDPs can be mentioned based on DDPR, instead of 101,791 IDPs obtained from the OSCE voters register. Thus, the Muslim IDPs from the RS part are the main source for the large difference between the two sources.

A similar pattern can be seen for the Serb IDPs, with the FBH part of the area being the major source for the difference between the OSCE and UNHCR-BH figures.

For the Croats and Others the figures obtained from the OSCE voters register are considerably higher (as expected) than the figures based on the UNHCR-BH database. This finding suggests that likely the two ethnic groups encountered less difficulties while returning to their homes than the Muslims and Serbs. The returns of the Muslims and Serbs were far less successful, especially of Muslims from RS and Serbs from FBH.

A look at the percentage distribution of IDPs within ethnic groups clearly confirms that the percentages of the IDPs from the MILOŠEVIĆ case area are similar in both sources. Thus, the relative size of IDPs that departed from the MILOŠEVIĆ case area is consistent in both sources. The maps attached below show the geographic distribution of IDPs from the MILOŠEVIĆ case area more specifically for municipalities.

Figures 14 to 21 are four pairs of maps, each pair related to one ethnic group. The two maps in each pair are based on two compared sources, the OSCE (upper map) and UNHCR-BH (lower map) databases. Each pair of maps uses the same scale for both the upper and the lower map. The scale, called “natural breaks”, is the default of the ArcView mapping tool used to produce these maps. The method of natural breaks identifies breakpoints by looking for groupings and patterns inherent in the data. Jenk’s optimisation method, that minimises the variation within each class, is used as a statistical formula for scaling.

We applied a two-step procedure for making the maps. In the first step the scale for every map was defined automatically by ArcView (as default). In the second step, for each pair of compared maps we used one the same scale, the one of the two ArcView default scales that was broader.

For every pair of two compared maps, one obtained from OSCE data and one based on the UNHCR-BH database, we clearly notice a very high degree of similarity. The two sources produced for every ethnic group almost the same geographic pattern of IDPs. The maps confirm that irrespective of the source used in the analysis, the largest departure regions (i.e. municipalities) remain the same for every ethnic group in both sources.

For Muslims, the largest departure regions were: Prijedor and Banja Luka, Teslić and Doboj, and a number of municipalities located at the eastern border of Bosnia with Serbia, i.e. Brčko, Bijeljina, Vlasenica, Zvornik, Sreberenica, Višegrad, Rogatica, and Foča. All these municipalities are located in Republika Srpska part of the MILOŠEVIĆ case area.

For Croats, Teslić (RS), Doboj (RS), Brčko (RS), and Sarajevo region (Ilidža and Novi Grad, in FBH) were the largest departure areas.

Serbs departed mainly from the north-west of the MILOŠEVIĆ area (Sanski Most, Bosanska Krupa, Bosanski Petrovac, Ključ, and Bihać), and from the Sarajevo region (Novi Grad, Ilidža, Ilijaš), as well as from Brčko, Srebrenica, and Goražde. The municipalities are all located in the Federation of Bosnia and Herzegovina.

The largest departure regions for Others were Sanski Most, Banja Luka, Donj Vakuf, Doboj, Teslić, Sarajevo region, Brčko, Bijeljina, Zvornik, Bratunac, Goražde, and Foča. Some of these municipalities are located in Rs and some in FBH.

Figure 14. Geographical Distribution of Muslim IDPs Originating from the MILOŠEVIĆ Case Area, Status as of 1997-98, Based on OSCE Statistics (Voters Register), Percentages

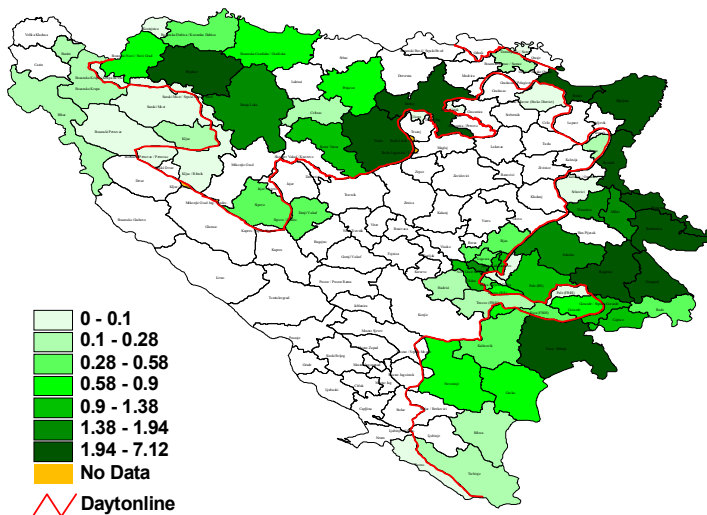


Figure 15. Geographical Distribution of Muslim IDPs Originating from the MILOŠEVIĆ Case Area, Status as of 2000, Based on UNHCR and BH Government Statistics (DDPR), Percentages

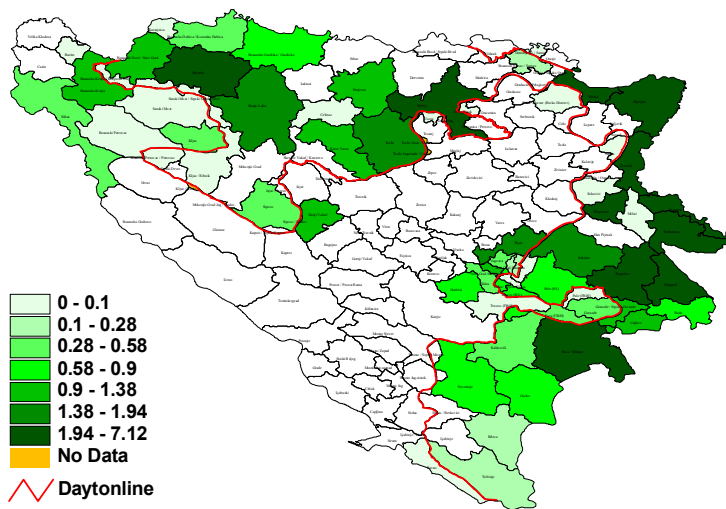


Figure 16. Geographical Distribution of Croat IDPs Originating from the MILOŠEVIĆ Case Area, Status as of 1997-98, Based on OSCE Statistics (Voters Register), Percentages

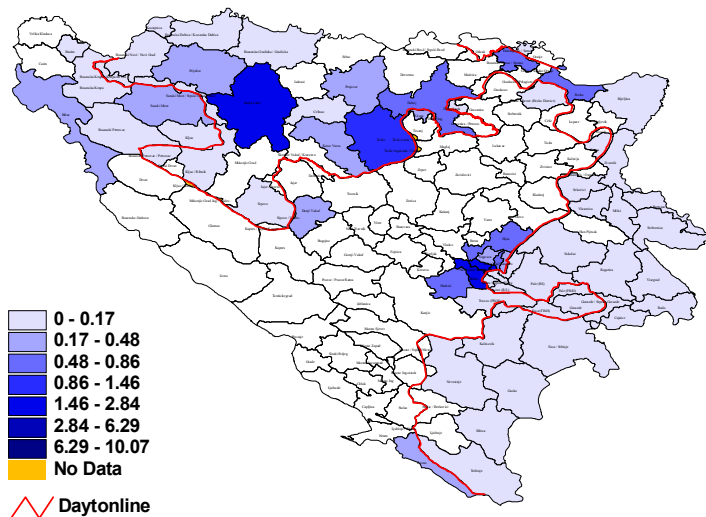


Figure 17. Geographical Distribution of Croat IDPs Originating from the MILOŠEVIĆ Case Area, Status as of 2000, Based on UNHCR and BH Government Statistics (DDPR), Percentages

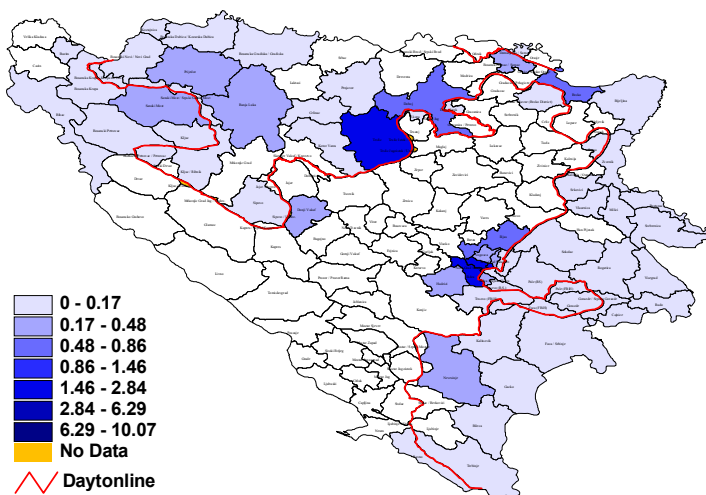


Figure 18. Geographical Distribution of Serb IDPs Originating from the MILOŠEVIĆ Case Area, Status as of 1997-98, Based on OSCE Statistics (Voters Register), Percentages

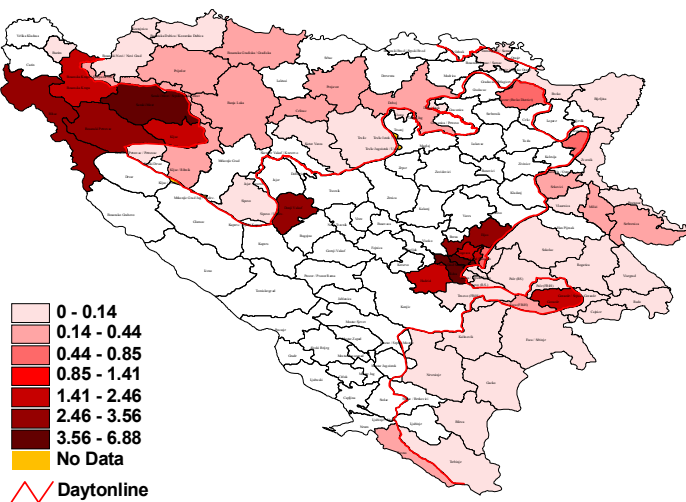


Figure 19. Geographical Distribution of Serb IDPs Originating from the MILOŠEVIĆ Case Area, Status as of 2000, Based on UNHCR and BH Government Statistics (DDPR), Percentages

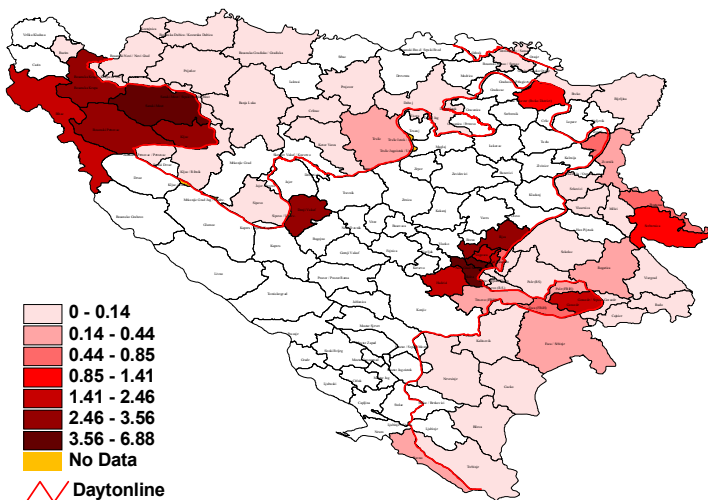


Figure 20. Geographical Distribution of Others IDPs Originating from the MILOŠEVIĆ Case Area, Status as of 1997-98, Based on OSCE Statistics (Voters Register), Percentages

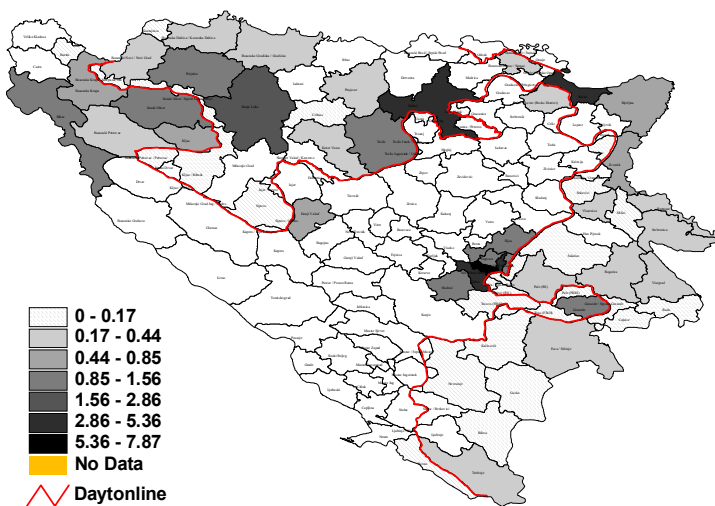
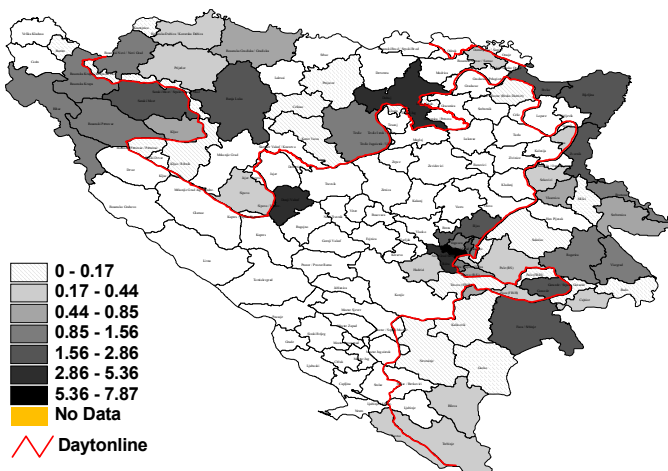


Figure 21. Geographical Distribution of Others IDPs Originating from the MILOŠEVIĆ Case Area, Status as of 2000, Based on UNHCR and BH Government Statistics (DDPR), Percentages



4. An Estimated Overall Number of Internally Displaced Persons and Refugees as of 1997-98

In Section 4 estimated numbers of IDPs and refugees for the whole MILOŠEVIĆ case area, by ethnicity and municipality, are discussed and a comparison of the estimated numbers with the minimum numbers is shown. A summary table is included (Table 11) that contains these two types of figures for the whole MILOŠEVIĆ case area.

Table 11. Estimated Overall Number of Internally Displaced Persons and Refugees from the MILOŠEVIĆ case area, with 95% Confidence Intervals and OSCE Minimum Number, Persons Born after 1980, Status as of 1997-98

Residence in 1991	Estimate (overall)	Lower Limit	Upper Limit	OSCE (minimum)
		Serbs		Serbs
MILOŠEVIĆ Case Area	204,646	202,437	206,855	115,411
- Republika Srpska (RS)	25,390	23,896	26,883	14,645
- The Federation of BH (FBH)	179,256	178,541	179,972	100,766
		Muslims		Muslims
MILOŠEVIĆ Case Area	403,566	401,053	406,080	231,830
- Republika Srpska (RS)	329,869	329,101	330,637	186,179
- The Federation of BH (FBH)	73,697	71,951	75,443	45,651
		Croats		Croats
MILOŠEVIĆ Case Area	83,859	81,795	85,922	29,581
- Republika Srpska (RS)	62,373	61,285	63,461	20,482
- The Federation of BH (FBH)	21,485	20,509	22,461	9,099
		Others		Others
MILOŠEVIĆ Case Area	53,583	51,094	56,046	23,151
- Republika Srpska (RS)	26,522	25,139	27,906	11,577
- The Federation of BH (FBH)	27,061	25,956	28,140	11,574
		All		All
MILOŠEVIĆ Case Area	745,653	740,323	750,984	399,973
- Republika Srpska (RS)	444,154	441,456	446,853	232,883
- The Federation of BH (FBH)	301,499	298,868	304,131	167,090

The estimated overall numbers of the IDPs and refugees were obtained using a classical statistical method of sampling proportions (W.G. Cochran, 1977). The method applies the theorem stating that the sample proportion p ($p=a/n$; proportion of IDPs and REFS in the population of 1997-98 voters) is an unbiased estimate of the population proportion P ($P=A/N$; proportion of IDPs and REFS in the 1991 census population). In this case, the estimate of the unknown overall size of the population of all IDPs and refugees (A) can be obtained by

multiplying the sample proportion (p), by the size of the census population (N). Confidence intervals can be calculated by applying the formulas explained in Annex C2.

The estimated overall number of internally displaced persons and refugees of all ethnicities from the MILOŠEVIĆ case area is **745,653** persons (the minimum number is 399,973). This number has a 95% confidence interval (CI) from 740,323 to 750,984. This interval contains the unknown true number of all IDPs and refugees with a high degree of certainty. If, for example, the estimation would be made 100 times on the basis of 100 samples drawn separately, then the estimates obtained from 95 samples would result in (point) estimates contained in the above mentioned interval. Thus, the probability of the true number *not* belonging to the confidence interval is small (5%).

The estimated overall number of Muslim IDPs and refugees from the MILOŠEVIĆ case area, **403,566** (CI: 401,053 to 406,080), is the major component of the total obtained for all ethnic groups. The estimated number of Serb IDPs and refugees is the second largest, **204,646** (CI: 202,437 to 206,855). Note that the estimated number of Serb IDPs and refugees is approximately a half of the number obtained for Muslims. The estimated numbers of Croat and Other IDPs and refugees, **83,859** (CI: 81,795 to 85,922) and **53,583** (CI: 51,094 to 56,046) are respectively third and fourth components of the overall total.

Note that the majority of the (estimated) IDPs and refugees of the Muslim and Croat ethnicity originated from the area of Republika Srpska, whereas those of the Serb ethnicity from the area of the Federation of Bosnia and Herzegovina. The estimated number of IDPs and refugees of Other ethnicity indicates that they originated in approximately the same degree from RS and FBH.

5. Summary of Major Results

The objective of this report was to present reliable statistics on internally displaced persons and refugees relevant to the indictment period and indictment area of the MILOŠEVIĆ case - Bosnia and Herzegovina. The indictment period is wide, from March 1991 to December 1995, and the indictment area is large. The MILOŠEVIĆ case area comprised 47 out of 109 pre-war municipalities in Bosnia and Herzegovina located in the west-north, middle north, east, and central Bosnia. The 47 municipalities covered approximately 50% (specifically 49.3%) of the Bosnian population living in the country before the conflict. Out of 4,377,033 persons registered in the 1991 population census in the territory of Bosnia and Herzegovina, some 2,159,629 resided in the MILOŠEVIĆ case area. The scope of this report is therefore extremely broad.

At the same time, data sources required for analyses as those presented in this report are extremely scarce, especially for the conflict period. The 1992-95 conflict in Bosnia is an example of a humanitarian emergency, in which a large civilian population was affected by war and cruel attempts to restructure the ethnic composition of the population, leading to large-scale population displacements, deterioration of living conditions, severe health problems, and increased mortality. In humanitarian emergency situations, regular statistical sources are unavailable and a variety of substitute sources are used instead (National Research Council (2001)). Administrative records, community estimations, international aid records, household surveys, mapping and photography, and camp registrations are few examples of the sources suggested for use in humanitarian emergencies (National Research Council (2002), for Refugees (1994), and Sphere Project (2000)).

For this report we identified and acquired several large information sources, which not only fully satisfy the demands of population assessment in humanitarian emergencies, but also meet general requirements of sources used under peace. The sources we studied in this report were the following:

- the population census conducted in Bosnia in 1991,
- the 1997-98 voters register established and maintained by the Organisation for Security and Co-operation in Europe (OSCE),
- the registration of internally displaced persons and refugees in Bosnia set up by UNHCR and kept going by the BH government, status as of 2000.

Individual records were collected and analysed in our study, not summary statistics. In addition to the above-mentioned individual-level sources, two sets of aggregate figures were acquired, both compiled by the authorities of Republika Srpska:

- the List of Citizens Who Have Moved Out and Into the Area of Banja Luka Sector, Status as of 1993,
- the Overview of Data on the Size and Ethnic Composition of the Population in Banja Luka Sector, Status as of 1991 and 1995.

We studied and compared all these sources and produced the results discussed in this report. We only studied the population at age 18 or more years (as of 1997–98), for no individual data were available on those at age from birth to 17 years for the post-conflict period.

In order to estimate the numbers of internally displaced persons and refugees, individual records from the 1991 population census and from the 1997–98 voters register have been linked. This means that persons registered in the 1997–98 voters register were searched for in the census data files, and were found for about 80% of registered voters. Having matched the records of the same persons in the census and in the voters register, we compared their place of residence (expressed as a post-Dayton municipality) in 1991 and in 1997–98. (In 1997–98, place of registration to vote was taken as an approximation of the place of residence at that time, again post-Dayton municipalities were studied). All persons that reported the same place of residence in both studied periods were considered non-displaced, persons reporting different places of residence in 1991 and 1997–98 were considered as displaced (internally displaced or refugees). Note that the voters register contained records of voters registered in countries different than Bosnia, which gave us the opportunity to include the refugees in our study. We studied the changes of place of residence by ethnicity, defined as reported in the 1991 census. Minimum (or “at least”) numbers of internally displaced persons and refugees were produced (Section 3), as well as estimates of the unknown overall totals of IDPs and REF (Section 3).

All analyses were carried out for the whole country, Bosnia and Herzegovina, such that we were able to produce statistics on displaced persons and refugees for all municipalities in Bosnia. We were therefore also able to compare the results obtained for the MILOŠEVIĆ case area with the results for any other territory in Bosnia. In our report, we compared the figures for the MILOŠEVIĆ case area with those for Bosnia and with those for seven selected, most affected municipalities in the MILOŠEVIĆ case area.

The ethnic composition of internally displaced persons and refugees was summarised for municipalities in the ethnic majority maps reporting the status as in 1997–98.

Thanks to the matching, we were also able to discuss changes in the ethnic composition of the population from the MILOŠEVIĆ case area from 1991 to 1997–98 (Section 2). We have done this for municipalities, and also aggregated the municipal-level results for the whole MILOŠEVIĆ case area, seven selected municipalities, as well as for Bosnia and Herzegovina. Again comparisons of the three areas were made.

The ethnic majority maps for 1991 and 1997–98 showed changes in the ethnic composition of the population in the municipalities of the MILOŠEVIĆ case area.

Finally, we also compared our figures on ethnic composition and IDPs and refugees with other independent sources (RS and BH sources). Annex A5 contains the results of the comparison with RS sources. In Annex A5 we attached 16 tables, each table related to one municipality. The following municipalities are included: Banja Luka, Bihać, Bosanska Dubica, Bosanska Gradiška, Bosanska Krupa, Bosanski Novi, Bosanski Petrovac, Čelinac, Donj Vakuf, Ključ, Kotor Varoš, Prijedor, Prnjavor, Sanski Most, Šipovo, and Teslić. The 16 municipalities are common in the MILOŠEVIĆ case area and in two population surveys, that

the authorities of Republika Srpska conducted in 1993 and 1995 on the territory of the Banja Luka region.

The 1993 survey was conducted in May, 1993, by the Security Service Centre for Banja Luka Sector, which was a part of the Ministry of Interior of Republika Srpska. The document that contains the results of this survey is titled: List of Citizens Who Have Moved out and into the Area Covered by the Sector. It comprises information about the population who moved out or moved in the Sector, by ethnicity (Muslims, Croats and Serbs are distinguished) and municipality (21 municipalities from the Banja Luka Sector are included). The numbers listed in the document, are approximate, some are unavailable. It is possible, that the information presented in this document, was collected by using methods such as fax or telephone queries, or summary reports obtained from local administration organs in Republika Srpska. Despite of this impression, the statistical authorities of Republika Srpska confirmed that the survey was conducted by municipal census commissions in accordance with instructions for organisation and execution of the census (letter no. 2167-1/2002, of 13 September 2003, from Slavko Šobot, director of the RS Statistical Office in Banja Luka to ICTY).

Having noted that the 1993 RS survey is approximate, it is still useful to compare the figures of the “moved out” population with our data on displaced persons and refugees. For Muslims the 1993 numbers are available for 11 municipalities from the MILOŠEVIĆ case area (11 is about 4.3 times less than 47 municipalities in the MILOŠEVIĆ case area), and for Croats for 10 municipalities (4.7 times less than 47). The 1993 statistics indicate a large population outflow from the Banja Luka Sector. Some 156,420 Muslims and some 5,200 Croats are reported in the 1993 survey as moved out of the Sector. The minimum numbers of displaced persons and refugees, status as of 1997-98, presented in this report, i.e. 231,830 Muslims and 29,581 Croats, seem to be conservative (i.e. relatively low) compared with the figures from the 1993 survey. Our minimum figures cover 47 municipalities and refer to a much later period of 1997-98 (thus, returns are not counted). A simple extrapolation of the 1993 figures based only on the spatial coverage of both types of statistics and intended for illustrative purposes (extrapolated out-migration of Muslims: 672,606 (= 156,420 times 4.3), and of Croats: 24,440 (= 5,200 times 4.7)), indicates that the scale of the population movements in the MILOŠEVIĆ case area, especially of Muslims, in the first years of the conflict could have been enormous.

The 1995 survey was conducted by the Centre for the State Security Department of the Ministry of Interior in Banja Luka, likely in January-February 1995. (The document ERN B003-1169-B003-1183, reporting results of the survey, is from February 1995). The document gives an overview of the 1991 and 1995 figures on the absolute and relative size of five ethnic groups (Serbs, Muslims, Croats, Yugoslavs and Others) in 25 municipalities in the Banja Luka region (Banja Luka, Bosanska Gradiška, Kneževo, Čelinac, Kotor Varoš, Laktaši, Prnjavor, Srbac, Prijedor, Bosanska Dubica, Sanski Most, Bosanski Novi, Bosanska Krupa, Mrkonjić Grad, Jajce, Šipovo, Srbobran (= Donj Vakuf), Kupres, Ključ, Drvar, Grahovo, Glamoč, Bosanski Petrovac, Bihać-Ripač, Teslić). Some 16 out of the 25 municipalities belong to the MILOŠEVIĆ case area. The figures for 1995 are approximate.

For the 16 municipalities from the MILOŠEVIĆ case we compared the 1995 figures on the ethnic composition, expressed in relative terms (as percentages), with the 1997-98 figures obtained from the OSCE voters register (see Annex A5). For the municipalities, which has been split in the Dayton Peace Accords, such as Bosanska Krupa or Sanski Most, the RS parts of these municipalities were included for 1997-98. Despite of the fact that in 1995 the complete population was shown and in 1997-98 only those at age 18+, a very high degree of consistency has been obtained between these two sets of figures. For example, the fraction of Serbs reported by RS authorities in Bosanska Krupa municipality in 1995 was 100%, no other ethnic groups were indicated, whereas in the 1997-98 OSCE-based figures some 99.5% of Serbs are shown, and 0.1% of Muslims and 0.4% of Others. The overview of ethnic composition in 16 municipalities from the Banja Luka region overlapping with the MILOŠEVIĆ case area in 1995 and 1997-98 clearly confirms the patterns reported in our independent study, and therefore increases the reliability of our results.

Specific conclusions of the major analyses discussed in Sections 2, 3 and 4 are listed below.

Section 2.1: Ethnic Composition of the MILOŠEVIĆ Case Area, 1991 and 1997-98

- Two large populations were studied here, both living in the MILOŠEVIĆ case area, in 1991 and in 1997-98:
- Using the 1991 population census, we have identified 1,803,259 individuals at age 12 or more years in 1991. This was the population of all individuals eligible to vote in the 1997-98 elections, who were registered in Bosnia at the critical moment of the 1991 census.
- Using the 1997-98 voters register, we have identified 877,122 individuals - registered voters in the MILOŠEVIĆ case area. The vast majority of the 877,122 voters are a sample of the 1991 population of 1,803,259 of eligible voters, some of them moved into the MILOŠEVIĆ case area from other territories in Bosnia.
- Both populations, 1991 and 1997-98, are extremely large and results obtained on the basis of these two sources are generally reliable.
- The difference between the two populations equals 926,137 persons (1,803,259-877,122). It largely describes the population losses in the MILOŠEVIĆ case area between 1991 and 1997-98, but also it includes the unmatched and unregistered voters.
- If the 1997-98 sample of voters is increased by 20% to correct for records of the unmatched voters (877,122*1.2), and subsequently by 25% to correct for unregistered voters ((877,122*1.2)*1.25), the difference with the 1991 population of eligible voters becomes smaller, and equals approximately 487,576 individuals.
- The above-mentioned difference of 487,576 individuals describes population losses in the MILOŠEVIĆ case area between 1991 and 1997-98, i.e. those who migrated out of their domestic municipalities in the MILOŠEVIĆ case area, or out of Bosnia and moved to other countries, or who were killed, went missing or died of natural causes. The out-

migration is most certainly the largest component of the losses.

- The population loss of 487,576 persons, is an “at least” number. The actual loss was likely higher, because returns are excluded from our statistics, and because the voters’ records do not cover those at age below 18 years.
- Based on these two sources we estimated that the fraction of every Non-Serb ethnic group declined between 1991 and 1997-98, especially the fraction of Croats dropped by about 62.4%, of Muslims by 21% and Others by 24.6 percent. The fraction of Serbs increased by about 35.4 percent. Thus, a major shift occurred in the ethnic composition of the MILOŠEVIĆ case area. From a joint majority of Serbs (43.6%) and Muslims (39.9%) observed in 1991, the MILOŠEVIĆ case area became largely a single-ethnicity territory dominated by Serbs in 1997-98 (59%).
- In the table attached below the absolute declines are reported for every ethnic group.

Table 12. Absolute Declines in the Population Size in the MILOŠEVIĆ Case Area, 1991 vs. 1997-98

Ethnicity	Diff - Raw	Diff - Corr	91Pop18+	%Loss
Serbs	268,233	9,573	785,553	1.2
Muslims	443,647	305,308	720,325	42.4
Croats	115,177	102,307	140,918	72.6
Others	99,080	70,389	156,463	45.0
Total	926,137	487,576	1,803,259	27.0

The raw difference (Diff - Raw) refers to the difference between the size of the 1991 population of eligible voters and the 1997-98 sample of voters, not corrected for unmatched and unregistered voters (the 1997-98 sample is as reported in Table 2 in Section 2.1). The corrected difference (Diff-Corr) is between the size of the 1991 population of eligible voters and the 1997-98 sample of voters corrected for unmatched (20% increase) and unregistered (25% increase) voters. Thus, this latter difference can be seen as a rough approximation of minimum population losses.

In absolute terms, the most dramatic decline occurred to the Muslim population, who counted approximately 305,308 persons less in 1997-98 than in 1991 (42.4% loss). The population size of Croats and Others declined considerably in 1997-98 as well, by about 102,307 Croats (72.6% loss) and 70,576 Others (45% loss) less than in 1991. The population of Serbs also declined, but only by about 9,573 persons (1.2% loss).

Section 2.2: Ethnic Composition of Seven Selected Municipalities, 1991 and 1997-98

- In Section 2.2 we discussed changes in the ethnic composition in seven selected municipalities located at the eastern border of Bosnia and Serbia, and representing the most affected municipalities in the MILOŠEVIĆ case area (hereafter: the MILOŠEVIĆ

case-7 area). The municipalities comprise Bijeljina (RS), Bratunac (RS), Brčko (RS, FBH), Foča (RS, FBH), Srebrenica (RS), Višegrad (RS) and Zvornik (RS, FBH). Note that three of the seven municipalities were split after the war, Brčko, Foča, and Zvornik. We therefore analysed in fact ten municipalities, seven belonging to the RS part of the MILOŠEVIĆ case area and three belonging to the FBH part.

- A closer inspection of the results for single municipalities proves that profound changes occurred to the Muslims (Table 3M). The Muslims had almost disappeared from all seven RS municipalities of the MILOŠEVIĆ case-7 area by 1997-98. This finding is unquestionable in absolute and relative terms. Only few single persons of the Muslim ethnicity were identified in 1997-98 in the municipalities of Bratunac (10 persons), Foča (RS, 6), Srebrenica (7) and in Višegrad (3). The largest Muslim populations in the RS municipalities of the MILOŠEVIĆ case-7 area comprised, in 1991, Bijeljina, Brčko, and Srebrenica. In Bijeljina the decline was from 24,314 Muslims in 1991 to 1,429 ethnic Muslims in 1997-98, in Brčko (RS) from 20,309 to 546, and most dramatically in Srebrenica from 21,361 Muslims in 1991 to 7 ethnic Muslims in 1997-98. In relative terms, in 1997-98 the fraction of Muslims in the RS municipalities of the MILOŠEVIĆ case-7 area equalled from 0% to maximally 2.6% of the 1997-98 population and compared with 1991 declined by about 91.4 to 99.9 percent.
- The changes obtained for Croats (Table 3C) and Others (Table 3O) were less profound than the changes for Muslims, which partly can be explained by the smaller size of these ethnic groups at the outbreak of the conflict in 1991.
- The Serbs, who in 1991 were in majority in only one of the seven RS municipalities in the MILOŠEVIĆ case-7 area, in Bijeljina, after the war, in 1997-98, became the absolute majority in all seven municipalities (Table 3S). In Bijeljina (91.1% in 1997-98), Bratunac (97%), Brčko (RS, 87.5%), Foča (RS, 96.1%), Srebrenica (96.3%), Višegrad (95.9%) and Zvornik (RS, 96.7%) the fraction of Serbs increased, compared with 1991, at least by 49.8% (Bijeljina) up to 290.4% (Srebrenica) in 1997-98.

Section 2.3: Ethnic Composition of Bosnia and Herzegovina, MILOŠEVIĆ Case Area, and Seven Selected Municipalities, 1991 and 1997-98

- The RS parts of the MILOŠEVIĆ case areas is where the Muslim and Croat populations experienced most declines. The fraction of Muslims declined by 95.5 (and 96.8%), and of Croats by 82.5 (and 76.6%) in the MILOŠEVIĆ case area (in the MILOŠEVIĆ case-7 area). The decline observed in the fraction of Muslims and Croats in the entire Republika Srpska was 95.5 and 87.8 percent. Thus, the fractions of Muslims and Croats declined in the MILOŠEVIĆ case area to a similar degree as overall in Republika Srpska.
- Not only the fractions, but also the absolute population size of Muslims and Croats declined in all three RS areas. The absolute numbers of Muslims became 7,933 out of 344,803 in the entire MILOŠEVIĆ area, and 2,130 out of 137,457 in the MILOŠEVIĆ case-7 area. In Republika Srpska the size of the Muslim population was 376,880 in 1991 and only 8,552 Muslims were identified in 1997-98. For the Croats similar but less

dramatic patterns emerged.

- The relative size of the population of Serbs increased in all three RS areas (by 70.1% in MILOŠEVIĆ case area, 119% in MILOŠEVIĆ case-7 area, and 67.4% in Republika Srpska). The declines in the absolute size of the Serb population were not considerable in 1997-98. In MILOŠEVIĆ case-7 area, the absolute size of the Serb population even increased in addition to the increase in the fraction of Serbs (from 121,576 in 1991 to 129,014 in 1997-98).
- All in all, a dramatic shift occurred in the ethnic composition of all three RS areas, most profoundly in the RS part of MILOŠEVIĆ case-7 area.

Section 2.4: Ethnic Majority Maps for 1991 and 1997-98

- In 1991, considerable numbers of ethnic Non-Serbs (in particular Muslims) populated several municipalities in Republika Srpska. In particular, we observed:
 - a majority of Muslims in Zvornik, Vlasenica, Bratunac, Srebrenica, Rogatica, Višegrad, Goražde, Brčko, and Sarajevo Trnovo,
 - a mixed ethnic composition of Muslims and Serbs in Prijedor, Milići, Foča and Sarajevo Ilidža.
- In 1997-98, in all these (and in all other RS) municipalities ethnic Serbs dominated in the population at more than 50 %, and almost all Non-Serbs moved out, mostly into the Federation of Bosnia and Herzegovina or other countries, or died. Note, the Serb-majority municipalities remained dominated by ethnic Serbs at more than 50 % in both years, in 1991 and also in 1997-98.

Section 3.1: Minimum Numbers of IDPs and REFs from the MILOŠEVIĆ Case Area, Status as of 1997-98

- The size of the 1991 population residing in the MILOŠEVIĆ case area was 1,803,259 individuals (those born before 1980 and therefore eligible to vote in the 1997-98 elections; see Table 2). Out of this population we were able to trace 1,012,454 persons in the 1997-98 voters register (about 56.1%, Table 5). The remaining 43.9% included those who either registered to vote but we could not link them with the census, or who did not register for various reasons, died of natural or violent causes, or went missing. Among those identified (1,012,454) almost 400,000 persons (specifically 399,973) were found not at 1991 residence, i.e. were either internally displaced or refugees. In relative terms, about 39.5% of the population who used to reside in the MILOŠEVIĆ case area in 1991, were found at residence different than their domestic municipalities in 1997-98.
- The size of the generally displaced population in 1997-98 (399,973 persons) should be seen as a minimum (or “at least”) number. The reasons for this include the fact that our sample of voters used for the analysis is incomplete, and also that returnees in the period from 1996 and 1997 (until September) are excluded from our statistics. Even though this

size is a minimum, it is almost 400,000 persons, or 39.5% of the 1997-98 population.

- Knowing that the minimum size of all IDPs and REFs from Bosnia and Herzegovina estimated as of 1997-98 is 715,534 persons, it becomes obvious that the generally displaced persons from the MILOŠEVIĆ case area comprise about 55.9% of the figure for the whole country.
- In absolute terms, the ethnic Muslims were the largest group who left their homes after 1991 and were still displaced in 1997-98 (231,830 individuals, or 58% of all generally displaced persons from the MILOŠEVIĆ case area; see Table 5). The largest group of non-displaced population were the ethnic Serbs in 1997-98 (347,771, or 56.8% of all non-displaced persons).
- In absolute terms, the Croats were displaced to a lesser extent than the Muslims, some 29,581 of them are reported in Table 5 as “not at 1991 residence” (7.4% of all generally displaced). This is related mainly to the smaller size of the Croat population originating from the MILOŠEVIĆ case area. In 1991, there were only 140,918 Croats reported in the census in the MILOŠEVIĆ case area, whereas the population of Muslims comprised 720,325 individuals and of Serbs 785,553 persons (all born before 1980).
- In relative terms, it is clear that both the Muslims and the Croats were affected by displacement in almost the same degree, 54.1% of Muslims and 56.9% of Croats originating from the MILOŠEVIĆ case area are reported in Table 5 as generally displaced in 1997-98. The fraction of displaced Serbs is much lower, 24.9%, and most Serbs (75.1%) are reported at their 1991 residence in 1997-98.

Section 3.2: Minimum Numbers of IDPs and REFs from Seven Selected Municipalities, Status as of 1997-98

- In total there were at least 77,443 generally displaced persons of Muslim ethnicity out of 86,111 Muslims identified in 1997-98 of those reported as living in the MILOŠEVIĆ case-7 area in 1991. Thus, almost 90% of the Muslim population from the MILOŠEVIĆ case-7 area were still displaced in 1997-98. For the municipalities located in RS part of the area, this fraction was even higher and equalled 97.4 percent.
- Almost 100% of the Muslim population from the RS municipalities of Bratunac, Foča – Srbinje, Srebrenica and Višegrad was found generally displaced. The Muslim IDPs and REFs from the RS municipalities of Bijeljina, Brčko, and Zvornik were less frequent, i.e. from 90.1 to 99.3 percent, which fractions are still extremely high.
- The fraction of Croats reported generally displaced in 1997-98 in the total population of Croats identified in 1997-98 was considerable as well, 55.5%, lower though than the fraction for Muslims. Most of the displaced Croats were from the Bihać area.

Section 3.3: Minimum Numbers of IDPs and REFs from Bosnia and Herzegovina, MILOŠEVIĆ Case Area and Seven Selected Municipalities, Status as of 1997-98

- The IDPs and REFs from the MILOŠEVIĆ case area comprised at least 399,973 individuals out of at least 715,534 such persons from Bosnia (as of 1997-98), thus, some 55.9% of all Bosnian GDPs (IDPs and REFs). The relatively small area of seven municipalities (MILOŠEVIĆ case-7 area) was the departure for at least 89,903 GDPs, that is 12.6% of all Bosnian GDPs.
- For the Muslims from the MILOŠEVIĆ case area, their share of IDPs and REFs in the country total of the Muslim IDPs and REFs was higher than the 55.9% level calculated for all ethnic groups together. For the Muslims, the fraction of GDPs from the MILOŠEVIĆ case area in the Muslim GDPs of the entire Bosnia was 70.4% (231,830 out of 329,154), clearly much higher than 55.9% mentioned for all ethnic groups together. All other ethnic groups were characterized by lower fractions (Croats: 26.4%, Serbs: 49.8%, and Others: 54.5) than the country average of 55.9 percent.

Section 3.4: Ethnic Majority Maps of IDPs and REFs, Status as of 1997-98

- In the vast majority of municipalities of the MILOŠEVIĆ case area, the Muslims were the majority group among all internally displaced persons and refugees from a given municipality in 1997-98. In the RS part of the MILOŠEVIĆ case area, the Muslims were the majority in all but 7 municipalities (some 43 out of 69 post-Dayton municipalities in the MILOŠEVIĆ case area, belonged to Republika Srpska). The Serb IDPs and REFs were the majority in municipalities located in FBH, especially in the north-west of the country and in the Sarajevo area.
- Almost all municipalities from the MILOŠEVIĆ case area, especially from the RS part of the area, were characterised by an extremely high percentage of IDPs and REFs in the 1997-98 Muslim population, almost always between 80 to 100 percent. This in fact means that 80 to 100% of the Muslim population originating from this territory fled during the conflict and were still displaced in 1997-98.
- The results for the Croats is less dramatic, but still we can see large groups of municipalities in the north-west of the MILOŠEVIĆ case area (around Bosanski Petrovac), and more to the east (Kotor Varoš, Teslić, and Doboj), as well as Bosanski Šamac, Brčko, and east to Mostar (Kalinovik, Gacko, Nevesinje), where the fraction of Croatian GDPs was at least 40 to 80%.

Section 3.5: Geographic Patterns of IDPs Based on Two Independent Sources

- In this section, a comparison of geographic patterns of internally displaced persons is made using data obtained from two independent sources: DU statistics based on the 1997-98 Voters Register, and UNHCR and official BH government statistics based on the Re-registration Project conducted in Bosnia in the year 2000. The latter source is the largest

existing database on internally displaced persons and refugees in Bosnia and Herzegovina. It contains approximately 570,000 records that were collected by local authorities in Bosnia already during the conflict, and later until the year 2000. The database reports numbers of IDPs and refugees in Bosnia as of 2000. Refugees are mainly Croatian Serbs who moved into Bosnia, they are therefore excluded from this report. Only displaced persons were studied here. The status of the two sources discussed in Section 3.5 is as of 1997-98 (OSCE voters register) and 2000 (UNHCR and BH government).

- A look at the percentage distribution of IDPs within ethnic groups clearly confirms that the percentages of the IDPs from the MILOŠEVIĆ case area are similar in both sources. Thus, the relative size of IDPs that departed from the MILOŠEVIĆ case area is highly consistent in both sources.
- For Muslims, the largest departure regions were: Prijedor and Banja Luka, Teslić and Doboj, and a number of municipalities located at the eastern border of Bosnia with Serbia, i.e. Brčko, Bijeljina, Vlasenica, Zvornik, Srebrenica, Višegrad, Rogatica, and Foča. All these municipalities are located in Republika Srpska part of the MILOŠEVIĆ case area.
- For Croats, Teslić (RS), Doboj (RS), Brčko (RS), and Sarajevo region (Ilidža and Novi Grad, in FBH) were the largest departure areas.
- Serbs departed mainly from the north-west of the MILOŠEVIĆ area (Sanski Most, Bosanska Krupa, Bosanski Petrovac, Ključ, and Bihać), and from the Sarajevo region (Novi Grad, Ilidža, Ilijaš), as well as from Brčko, Srebrenica, and Goražde. The municipalities are all located in the Federation of Bosnia and Herzegovina.
- The largest departure regions for Others were Sanski Most, Banja Luka, Donj Vakuf, Doboj, Teslić, Sarajevo region, Brčko, Bijeljina, Zvornik, Bratunac, Goražde, and Foča. Some of these municipalities are located in RS and some in FBH.

Section 4: An Estimated Overall Number of IDPs and REFs as of 1997-98

- The estimated overall number of internally displaced persons and refugees of all ethnicities from the MILOŠEVIĆ case area is **745,653** persons (the minimum number is 399,973). This number has a 95% confidence interval (CI) from 740,323 to 750,984. This interval contains the unknown true number of all IDPs and refugees with a high degree of certainty. If, for example, the estimation would be made 100 times on the basis of 100 samples drawn separately, then the estimates obtained from 95 samples would result in (point) estimates contained in the above mentioned interval. Thus, the probability of the true number not belonging to the confidence interval is small (5%).
- The estimated overall number of Muslim IDPs and refugees from the MILOŠEVIĆ case area, **403,566** (CI: 401,053 to 406,080, the minimum number is **231,830**), is the major component of the total obtained for all ethnic groups. The estimated number of Serb IDPs and refugees is the second largest, **204,646** (CI: 202,437 to 206,855, the minimum number: **115,411**). Note that the estimated number of Serb IDPs and refugees is approximately a half of the number obtained for Muslims. The estimated numbers of

Croat and Other IDPs and refugees, **83,859** (CI: 81,795 to 85,922, the minimum number: **29,581**) and **53,583** (CI: 51,094 to 56,046, the minimum number: **23,151**) are respectively third and fourth components of the overall total.

Sources:

Database containing records from The 1991 Population Census for Bosnia and Herzegovina, Federal Institute for Statistics (FIS), Sarajevo

Database containing records from The 1997 and 1998 Voters Registers, Organisation for Security and Co-operation in Europe (OSCE)

Database containing records of Internally Displaced Persons and Refugees in Bosnia and Herzegovina (DDPR), (2000), State Ministry for Human Rights and Refugees, Sarajevo, and UNHCR, Regional Office for Bosnia and Herzegovina, Sarajevo

Stanovništvo Bosne i Hercegovine, Narodnosni sastav po naseljima, (1995), Republika Hrvatska. Državni Zavod za Statistiku. Zagreb, Travanj 1995

The 1993 RS Survey: The list of citizens who have moved out and into the area covered by the sector, Banja Luka SNB /National Security Service/ Sector, Banja Luka, May 1993. ERN: B009-8148-B009-8153

The 1995 RS Survey: Overview of data on the number and ethnic structure of population according to municipalities in the area of the Banja Luka RDB /State Security Department/ Centre for 1991 and 1995, Banja Luka, February 1995. ERN: B003-1169-B003-1183

References:

W.G. Cochran (1977), *Sampling Techniques*, 3rd edition. John Wiley & Sons, New York, Chichester, Brisbane, Toronto, Singapore

National Research Council (2001), *Forced Migration and Mortality. Roundtable on Demography of Forced Migration*. H.E. Reed and Ch.B. Keely (eds.), Committee on Population, Commission on Behavioural and Social Sciences and Education, Washington, D.C., National Academy Press, ISBN: 0-309-07334-0. Chapter by Ch.B. Keely, H.E. Reed and R.J. Waldman (2001), Understanding Mortality Patterns in Complex Humanitarian Emergencies (p.1).

), *Refugee Health: An Approach in Emergency Situations*. London, Macmillan Education Ltd.

National Research Council (2002), *Demographic Assessment Techniques in Complex Humanitarian Emergencies. Summary of a Workshop*, H.E. Reed (rap.), Committee on Population, Commission on Behavioural and Social Sciences and Education, Washington, D.C., National Academy Press, ISBN: 0-309-08497-0 (p.2)

Sphere Project (2000), *Humanitarian Charter and Minimum Standards in Disaster Response*.

Geneva, Sphere Project.

United Nations, (1999), *World Population Prospects*. The 1998 Revision. Department of Economic and Social Affairs, Population Division. New York.

United Nations High Commissioner for Refugees (UNHCR), (1998), *A regional strategy for sustainable return of those displaced by conflict in the former Yugoslavia. Report presented to the Steering Board of the Peace Implementation Council on 9 June 1998*. Available from the UN High Commissioner for Refugees, Sarajevo Office (<http://www.unhcr.ba>)

United Nations High Commissioner for Refugees (UNHCR), (1994), *Registration: A Practical Guide for Field Staff*. Geneva: United Nations High Commissioner for Refugees.

ANNEX A. REVIEW OF THE RESULTS AT THE MUNICIPAL LEVEL

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Annex A1. Muslims

Table 1M. Continued

Municipality	1991 Population		1997-98 Sample Population		1991-97 Change in % of Muslims (Percent)		
	All Ethnicities	% Muslims	All Ethnicities	% Muslims	All Ethnicities	% Muslims	
11. Bratunac (RS)	26,369	16,284	61.8	10,852	10	0.1	-99.9
12. Brečko:							
- Rahić / Ravne (Brečko Federation) (FBH)	25,632	10,877	42.4	12,871	10,023	77.9	+83.5
- Brečko (RS)	47,294	20,309	42.9	20,752	546	2.6	-93.9
13. Čajniče (RS)	7,526	3,346	44.5	3,327	1	0.0	-99.9
14. Čelinač (RS)	15,323	1,154	7.5	8,449	69	0.8	-89.2
15. Doboj:							
- Doboj - Istok (FBH)	7,401	7,199	97.3	5,242	5,175	98.7	+1.5
- Doboj - Jug (FBH)	2,658	2,475	93.1	1,518	1,451	95.6	+2.7
- Doboj (RS)	78,118	23,406	30.0	38,775	239	0.6	-97.9
- Usora (FBH)	8,120	1,743	21.5	1,951	54	2.8	-87.1
16. Donji Vakuf (FBH)	19,499	10,647	54.6	7,148	6,940	97.1	+77.8
17. Foča:							
- Foča (FBH)	4,261	2,932	68.8	457	454	99.3	+44.4
- Foča / Stribinje (RS)	30,247	14,559	48.1	12,091	6	0.0	-99.9
18. Gacko (RS)	8,785	3,014	34.3	5,455	4	0.1	-99.8
19. Goražde:							
- Goražde (FBH)	26,957	18,301	67.9	14,864	14,600	98.2	+44.7
- Goražde / Šipsko Goražde (RS)	3,952	3,094	78.3	2,583	0	0.0	-100.0
20. Kalmovik (RS)	3,712	1,156	31.1	2,332	3	0.1	-99.6
21. Kijev:							
- Kijev (FBH)	22,980	13,725	59.7	6,384	6,197	97.1	+62.5
- Kijev / Ribnik (RS)	8,142	365	4.5	4,250	4	0.1	-97.9
22. Kotor Varoš (RS)	29,304	8,790	30.0	8,758	475	5.4	-81.9
23. Nevesinje (RS)	12,117	2,434	20.1	9,179	5	0.1	-99.7

Annex A1. Muslims

Table 1M. Continued

Municipality	1991 Population		1997-98 Sample Population		1991-97 Change in % of Muslims	
	All Ethnicities	Muslims	All Ethnicities	Muslims	% Muslims	(Percent)
24. Prijedor (RS)	94,028	40,075	39,248	397	1.0	-97.6
25. Prnjavor (RS)	40,171	5,934	20,677	236	1.1	-92.3
26. Rogatica (RS)	18,281	10,851	7,239	3	0.0	-99.9
27. Rudo (RS)	9,813	2,699	5,026	2	0.0	-99.9
28. Sanski Most:						
- Sanski Most (FBH)	44,857	22,148	16,341	15,586	95.4	+93.2
- Sanski Most / Srpski Sanski Most (RS)	5,436	682	1,411	3	0.2	-98.3
29. Sarajevo - Centar (FBH)	67,228	32,995	36,394	26,109	71.7	+46.2
30. Sarajevo - Hadžići (FBH)	19,498	12,190	10,542	9,954	94.4	+51.0
31. Sarajevo - Ilidža:						
- Ilidža (FBH)	49,709	22,555	21,822	18,332	84.0	+85.1
- Ilidža / Srpska Ilidža (RS)	5,875	831	8,332	9	0.1	-99.2
32. Sarajevo - Ilijaš (FBH)	20,718	8,411	6,926	6,300	91.0	+124.1
33. Sarajevo - Novi Grad (FBH)	112,618	55,789	55,527	44,413	80.0	+61.5
34. Sarajevo - Novo Sarajevo:						
- Novo Sarajevo / Srpsko Novo Sarajevo (RS)	2,282	154	4,596	3	0.1	-99.0
- Novo Sarajevo (FBH)	78,652	28,187	36,002	24,995	69.4	+93.7
35. Sarajevo - Pale:						
- Pale (FBH)	1,384	963	369	369	100.0	+43.7
- Pale (RS)	12,433	2,658	13,464	10	0.1	-99.7
36. Sarajevo - Stari Grad:						
- Stari Grad Sarajevo (FBH)	41,224	32,435	22,198	19,655	88.5	+12.5
- Stari Grad Sarajevo / Srpski Stari Grad (RS)	1,112	121	1,331	1	0.1	-99.3

Annex A1. Muslims

Table 1M. Continued

Municipality	1991 Population		1997-98 Sample Population		1991-97 Change in % of Muslims	
	All Ethnicities	% Muslims	All Ethnicities	% Muslims	All Ethnicities	(Percent)
37. Sarajevo - Trnovo:						
- Trnovo (FBH)	2,689	2,182	1,798	1,780	99.0	+22.0
- Trnovo (RS)	3,233	1,873	1,804	5	0.3	-99.5
38. Sarajevo - Vogosća (FBH)	19,970	9,872	10,157	9,338	91.9	+86.0
39. Sokolac (RS)	13,072	4,250	8,476	2	0.0	-99.9
40. Srebrenica (RS)	29,198	21,361	7,442	7	0.1	-99.9
41. Šekovići (RS)	7,943	263	4,463	1	0.0	-99.3
42. Šipovo (RS)	12,936	2,341	5,575	5	0.1	-99.5
43. Teslić (RS)	48,539	10,184	21,048	668	3.2	-84.9
44. Trebinje:						
- Ravno (FBH)	1,676	15	288	6	2.1	+132.8
- Trebinje (RS)	24,412	4,533	17,194	59	0.3	-98.2
45. Višegrad (RS)	17,883	11,178	9,241	3	0.0	-99.9
46. Vlasenica:						
- Vlasenica (RS)	13,273	7,681	7,396	16	0.2	-99.6
- Milići (RS)	13,370	6,580	3,761	0	0.0	-100.0
47. Zvornik:						
- Sappia (FBH)	11,255	7,923	3,346	3,332	99.6	+41.5
- Zvornik (RS)	53,760	29,452	22,582	129	0.6	-99.0

Annex A1. Croats

Table 1C. Percent of Croats in the Population of MILOŠEVIĆ Case Area, Status as of 1991 and 1997-98
Individuals Born before 1980, Municipal Borders as in 1997

Municipality	1991 Population		1997-98 Sample Population		1991-97 Change in % of Croats (Percent)	
	All Ethnicities	% Croats	All Ethnicities	% Croats	% Croats	% Croats
MILOŠEVIĆ Case Area	1,803,259	140,918	877,122	25,741	2.9	-62.4
of which:						
- Republika Srpska (RS)	1,094,417	79,127	554,982	7,002	1.3	-82.5
- The Federation of BH (FBH)	708,842	61,791	322,140	18,739	5.8	-33.3
1. Banja Luka (RS)	165,140	25,043	86,456	2,245	2.6	-82.9
2. Bihać (FBH)	59,637	4,893	26,905	2,046	7.6	-7.3
3. Bijeljina (RS)	81,650	448	55,807	375	0.7	+22.5
4. Bičeća (RS)	10,867	34	7,557	20	0.3	-15.4
5. Bosanska Dubica / Kozarska Dubica (RS)	26,734	437	13,403	114	0.9	-48.0
6. Bosanska Gradiška / Gradiška (RS)	50,644	2,999	27,040	402	1.5	-74.9
7. Bosanska Krupa:						
- Bosanska Krupa (FBH)	29,073	117	11,198	25	0.2	-44.5
- Buzim (FBH)	12,630	5	6,491	0	0.0	-100.0
- Bosanska Krupa / Krupa na Uni (RS)	4,478	10	980	0	0.0	-100.0
8. Bosanski Novi:						
- Bosanski Novi / Novi Grad (RS)	29,663	223	12,809	76	0.6	-21.1
- Kostajnica (RS)	5,252	146	1,959	22	1.1	-59.6
9. Bosanski Petrovac:						
- Bosanski Petrovac (FBH)	13,270	44	3,415	11	0.3	-2.9
- Petrovac (RS)	264	2	205	0	0.0	-100.0
10. Bosanski Šamac:						
- Domaljevac - Šamac (FBH)	5,266	4,973	1,986	1,891	95.2	+8
- Bosanski Šamac / Šamac (RS)	21,786	6,493	11,657	156	1.3	-95.5

Annex A1. Croats

Table 1C. Continued

Municipality	1991 Population		1997-98 Sample Population		1991-97 Change in % of Croats (Percent)
	All Ethnicities	% Croats	All Ethnicities	% Croats	
11. Bratunac (RS)	26,369	38	10,852	42	+168.6
12. Brečko:					
- Rahić / Ravne (Brečko Federation) (FBH)	25,632	10,727	12,871	2,256	17.5
- Brečko (RS)	47,294	8,337	20,752	394	-89.2
13. Čajniče (RS)	7,526	5	3,327	4	+81.0
14. Čelinač (RS)	15,323	72	8,449	26	-34.5
15. Doboj:					
- Doboj - Istok (FBH)	7,401	7	5,242	0	-100.0
- Doboj - Jug (FBH)	2,658	85	1,518	25	1.6
- Doboj (RS)	78,118	9,006	38,775	571	-87.2
- Usora (FBH)	8,120	6,004	1,951	1,846	+28.0
16. Donji Vakuf (FBH)	19,499	563	7,148	28	-86.4
17. Foča:					
- Foča (FBH)	4,261	0	457	0	na
- Foča / Stribnje (RS)	30,247	84	12,091	41	+22.1
18. Gacko (RS)	8,785	21	5,455	15	+15.0
19. Goražde:					
- Goražde (FBH)	26,957	74	14,864	14	-65.7
- Goražde / Šipsko Goražde (RS)	3,952	3	2,583	10	+410.0
20. Kalmovik (RS)	3,712	16	2,332	4	-60.2
21. Kijev:					
- Kijev (FBH)	22,980	290	6,384	33	-59.0
- Kijev / Ribnik (RS)	8,142	10	4,250	5	-4.2
22. Kotor Varoš (RS)	29,304	8,243	8,758	120	-95.1
23. Nevesinje (RS)	12,117	158	9,179	17	-85.8

Annex A1. Croats

Table 1C. Continued

Municipality	1991 Population		1997-98 Sample Population		1991-97 Change in % of Croats	
	All Ethnicities	% Croats	All Ethnicities	% Croats	(Percent)	
24. Prijedor (RS)	94,028	5,556	39,248	969	2.5	-58.2
25. Prnjavor (RS)	40,171	1,518	20,677	226	1.1	-71.1
26. Rogatica (RS)	18,281	18	7,239	25	0.3	+250.7
27. Rudno (RS)	9,813	5	5,026	9	0.2	+251.4
28. Sanski Most:						
- Sanski Most (FBH)	44,857	2,414	16,341	276	1.7	-68.6
- Sanski Most / Srpski Sanski Most (RS)	5,436	1,274	1,411	37	2.6	-88.8
29. Sarajevo - Centar (FBH)	67,228	4,921	36,394	1,996	5.5	-25.1
30. Sarajevo - Hadžići (FBH)	19,498	644	10,542	135	1.3	-61.2
31. Sarajevo - Ilidža:						
- Ilidža (FBH)	49,709	5,836	21,822	1,294	5.9	-49.5
- Ilidža / Srpska Ilidža (RS)	5,875	83	8,332	70	0.8	-40.5
32. Sarajevo - Ilijaš (FBH)	20,718	1,505	6,926	222	3.2	-55.9
33. Sarajevo - Novi Grad (FBH)	112,618	7,982	55,527	2,902	5.2	-26.3
34. Sarajevo - Novo Sarajevo:						
- Novo Sarajevo / Srpsko Novo Sarajevo (RS)	2,282	15	4,596	33	0.7	+9.2
- Novo Sarajevo (FBH)	78,652	7,999	36,002	2,949	8.2	-19.5
35. Sarajevo - Pale:						
- Pale (FBH)	1,384	1	369	0	0.0	-100.0
- Pale (RS)	12,433	112	13,464	86	0.6	-29.1
36. Sarajevo - Stari Grad:						
- Stari Grad Sarajevo (FBH)	41,224	1,002	22,198	369	1.7	-31.6
- Stari Grad Sarajevo / Srpski Stari Grad (RS)	1,112	4	1,331	7	0.5	+46.2

Annex A1. Croats

Table 1C. Continued

Municipality	1991 Population		1997-98 Sample Population		1991-97 Change in % of Croats (Percent)	
	All Ethnicities	Croats	All Ethnicities	% Croats	% Croats	(Percent)
37. Sarajevo - Trnovo:						
- Trnovo (FBH)	2,689	0	1,798	0.0	1	na
- Trnovo (RS)	3,233	15	1,804	0.5	10	+19.5
38. Sarajevo - Vogosća (FBH)	19,970	922	10,157	4.6	143	-69.5
39. Sokolac (RS)	13,072	17	8,476	0.1	26	+135.9
40. Srebrenica (RS)	29,198	35	7,442	0.1	34	+281.1
41. Šekovići (RS)	7,943	8	4,463	0.1	4	-11.0
42. Šipovo (RS)	12,936	27	5,575	0.2	12	+3.1
43. Teslić (RS)	48,539	8,044	21,048	16.6	463	-86.7
44. Trebinje:						
- Ravno (FBH)	1,676	772	288	46.1	277	+108.8
- Trebinje (RS)	24,412	409	17,194	1.7	156	-45.8
45. Višegrad (RS)	17,883	30	9,241	0.2	60	+287.0
46. Vlasenica:						
- Vlasenica (RS)	13,273	26	7,396	0.2	32	+120.9
- Milići (RS)	13,370	7	3,761	0.1	4	+103.1
47. Zvornik:						
- Sappra (FBH)	11,255	11	3,346	0.1	0	-100.0
- Zvornik (RS)	53,760	96	22,582	0.2	80	+98.4

Annex A1. Serbs

**Table 1S. Percent of Serbs in the Population of MILOŠEVIĆ Case Area, Status as of 1991 and 1997-98
Individuals Born before 1980, Municipal Borders as in 1997**

Municipality	1991 Population		% Serbs	All Ethnicities	1997-98 Sample Population		% Serbs	1991-97 Change in % of Serbs (Percent)
	All Ethnicities	Serbs			Serbs	% Serbs		
MILOŠEVIĆ Case Area	1,803,259	785,553	43.6	877,122	517,320	59.0	+35.4	
of which:								
- Republika Srpska (RS)	1,094,417	587,307	53.7	554,982	506,695	91.3	+70.1	
- The Federation of BH (FBH)	708,842	198,246	28.0	322,140	10,625	3.3	-88.2	
1. Banja Luka (RS)	165,140	90,331	54.7	86,456	72,042	83.3	+52.3	
2. Bihać (FBH)	59,637	12,296	20.6	26,905	356	1.3	-93.6	
3. Bijeljina (RS)	81,650	49,654	60.8	55,807	50,843	91.1	+49.8	
4. Bičeća (RS)	10,867	8,789	80.9	7,557	7,258	96.0	+18.8	
5. Bosanska Dubica / Kozarska Dubica (RS)	26,734	18,642	69.7	13,403	12,125	90.5	+29.7	
6. Bosanska Gradiška / Gradiška (RS)	50,644	30,617	60.5	27,040	23,929	88.5	+46.4	
7. Bosanska Krupa:								
- Bosanska Krupa (FBH)	29,073	9,206	31.7	11,198	31	0.3	-99.1	
- Buzim (FBH)	12,630	78	0.6	6,491	4	0.1	-90.0	
- Bosanska Krupa / Krupa na Uni (RS)	4,478	2,690	60.1	980	975	99.5	+65.6	
8. Bosanski Novi:								
- Bosanski Novi / Novi Grad (RS)	29,663	18,154	61.2	12,809	11,962	93.4	+52.6	
- Kostajnica (RS)	5,252	3,431	65.3	1,959	1,688	86.2	+31.9	
9. Bosanski Petrovac:								
- Bosanski Petrovac (FBH)	13,270	9,967	75.1	3,415	23	0.7	-99.1	
- Petrovac (RS)	264	261	98.9	205	203	99.0	+2	
10. Bosanski Šamac:								
- Domaljevac - Šamac (FBH)	5,266	186	3.5	1,986	12	0.6	-82.9	
- Bosanski Šamac / Šamac (RS)	21,786	11,716	53.8	11,657	10,667	91.5	+70.2	

Annex A1. Serbs

Table 1S. Continued

Municipality	1991 Population		1997-98 Sample Population		1991-97 Change in % of Serbs (Percent)	
	All Ethnicities	% Serbs	All Ethnicities	% Serbs	All Ethnicities	% Serbs
11. Bratunac (RS)	26,369	9,588	10,852	10,529	97.0	+166.8
12. Brečko:						
- Rahić / Ravne (Brečko Federation) (FBH)	25,632	3,329	12,871	36	0.3	-97.8
- Brečko (RS)	47,294	12,199	20,752	18,159	87.5	+239.2
13. Čajniče (RS)	7,526	3,986	3,327	3,236	97.3	+83.6
14. Čelinač (RS)	15,323	13,551	8,449	8,117	96.1	+8.6
15. Doboj:						
- Doboj - Istok (FBH)	7,401	87	5,242	3	0.1	-95.1
- Doboj - Jug (FBH)	2,658	15	1,518	0	0.0	-100.0
- Doboj (RS)	78,118	39,053	38,775	35,851	92.5	+84.9
- Usora (FBH)	8,120	115	1,951	11	0.6	-60.2
16. Donji Vakuf (FBH)	19,499	7,645	7,148	12	0.2	-99.6
17. Foča:						
- Foča (FBH)	4,261	1,280	457	0	0.0	-100.0
- Foča / Srinjje (RS)	30,247	14,558	12,091	11,623	96.1	+99.7
18. Gacko (RS)	8,785	5,561	5,455	5,317	97.5	+54.0
19. Goražde:						
- Goražde (FBH)	26,957	7,509	14,864	28	0.2	-99.3
- Goražde / Šipsko Goražde (RS)	3,952	794	2,583	2,431	94.1	+368.4
20. Kalmovik (RS)	3,712	2,448	2,332	2,276	97.6	+48.0
21. Kijev:						
- Kijev (FBH)	22,980	8,323	6,384	11	0.2	-99.5
- Kijev / Ribnik (RS)	8,142	7,686	4,250	4,207	99.0	+4.9
22. Kotor Varoš (RS)	29,304	11,506	8,758	7,867	89.8	+128.8
23. Nevesinje (RS)	12,117	9,339	9,179	9,030	98.4	+27.6

Annex A1. Serbs

Table 1S. Continued

Municipality	1991 Population		1997-98 Sample Population		1991-97 Change in % of Serbs (Percent)	
	All Ethnicities	% Serbs	All Ethnicities	% Serbs	All Ethnicities	% Serbs
24. Prijedor (RS)	94,028	40,825	39,248	34,930	89.0	+105.0
25. Prnjavor (RS)	40,171	28,765	20,677	18,632	90.1	+25.8
26. Rogatica (RS)	18,281	7,095	7,239	7,075	97.7	+151.8
27. Rudo (RS)	9,813	6,875	5,026	4,901	97.5	+39.2
28. Sanski Most:						
- Sanski Most (FBH)	44,857	18,408	16,341	36	0.2	-99.5
- Sanski Most / Srpski Sanski Most (RS)	5,436	3,338	1,411	1,337	94.8	+54.3
29. Sarajevo - Centar (FBH)	67,228	14,542	36,394	2,525	6.9	-67.9
30. Sarajevo - Hadžići (FBH)	19,498	5,262	10,542	114	1.1	-96.0
31. Sarajevo - Ilidža:						
- Ilidža (FBH)	49,709	16,285	21,822	928	4.3	-87.0
- Ilidža / Srpska Ilidža (RS)	5,875	4,696	8,332	7,904	94.9	+18.7
32. Sarajevo - Ilijaš (FBH)	20,718	9,601	6,926	136	2.0	-95.8
33. Sarajevo - Novi Grad (FBH)	112,618	31,890	55,527	2,692	4.8	-82.9
34. Sarajevo - Novo Sarajevo:						
- Novo Sarajevo / Srpsko Novo Sarajevo (RS)	2,282	2,055	4,596	4,339	94.4	+4.8
- Novo Sarajevo (FBH)	78,652	26,313	36,002	2,906	8.1	-75.9
35. Sarajevo - Pale:						
- Pale (FBH)	1,384	407	369	0	0.0	-100.0
- Pale (RS)	12,433	9,195	13,464	12,866	95.6	+29.2
36. Sarajevo - Stari Grad:						
- Stari Grad Sarajevo (FBH)	41,224	3,566	22,198	476	2.1	-75.2
- Stari Grad Sarajevo / Srpski Stari Grad (RS)	1,112	975	1,331	1,294	97.2	+10.9

Annex A1. Serbs

Table 1S. Continued

Municipality	1991 Population		1997-98 Sample Population		1991-97 Change in % of Serbs (Percent)	
	All Ethnicities	Serbs	All Ethnicities	% Serbs	% Serbs	(Percent)
37. Sarajevo - Trnovo:						
- Trnovo (FBH)	2,689	462	1,798	17.2	0.2	-99.0
- Trnovo (RS)	3,233	1,272	1,804	39.3	95.6	+142.9
38. Sarajevo - Vogosëa (FBH)	19,970	7,406	10,157	37.1	2.8	-92.6
39. Sokolac (RS)	13,072	8,646	8,476	66.1	97.9	+48.0
40. Srebrenica (RS)	29,198	7,205	7,442	24.7	96.3	+290.4
41. Šekovići (RS)	7,943	7,442	4,463	93.7	97.8	+4.4
42. Šipovo (RS)	12,936	10,356	5,575	80.1	98.7	+23.2
43. Teslić (RS)	48,539	26,681	21,048	55.0	88.4	+60.8
44. Trebinje:						
- Ravno (FBH)	1,676	859	288	51.3	0.3	-99.3
- Trebinje (RS)	24,412	17,216	17,194	70.5	92.2	+30.8
45. Višegrad (RS)	17,883	5,837	9,241	32.6	95.9	+193.8
46. Vlasenica:						
- Vlasenica (RS)	13,273	5,194	7,396	39.1	96.8	+147.4
- Milići (RS)	13,370	6,550	3,761	49.0	96.8	+101.7
47. Zvornik:						
- Sapna (FBH)	11,255	3,209	3,346	28.5	0.0	-99.9
- Zvornik (RS)	53,760	22,535	22,582	41.9	96.7	+130.6

Annex A1. Others

Table 10. Percent of Others in the Population of MILOSEVIĆ Case Area, Status as of 1991 and 1997-98 Individuals Born before 1980, Municipal Borders as in 1997

Municipality	1991 Population		% Others	All Ethnicities	1997-98 Sample Population		% Others	1991-97 Change in % of Others (Percent)
	All Ethnicities	Others			Others	% Others		
MILOSEVIĆ Case Area	1,803,259	156,463	8.7	877,122	57,383	6.5	-24.6	
of which:								
- Republika Srpska (RS)	1,094,417	83,180	7.6	554,982	33,352	6.0	-20.9	
- The Federation of BH (FBH)	708,842	73,283	10.3	322,140	24,031	7.5	-27.8	
1. Banja Luka (RS)	165,140	25,469	15.4	86,456	10,334	12.0	-22.5	
2. Bihać (FBH)	59,637	4,624	7.8	26,905	1,536	5.7	-26.4	
3. Bijeljina (RS)	81,650	7,234	8.9	55,807	3,160	5.7	-36.1	
4. Bileća (RS)	10,867	509	4.7	7,557	270	3.6	-23.7	
5. Bosanska Dubica / Kozarska Dubica (RS)	26,734	2,475	9.3	13,403	1,006	7.5	-18.9	
6. Bosanska Gradiska / Gradiska (RS)	50,644	4,020	7.9	27,040	1,707	6.3	-20.5	
7. Bosanska Krupa:								
- Bosanska Krupa (FBH)	29,073	795	2.7	11,198	178	1.6	-41.9	
- Buzim (FBH)	12,630	135	1.1	6,491	43	0.7	-38.0	
- Bosanska Krupa / Krupa na Uni (RS)	4,478	54	1.2	980	4	0.4	-66.2	
8. Bosanski Novi:								
- Bosanski Novi / Novi Grad (RS)	29,663	1,475	5.0	12,809	592	4.6	-7.1	
- Kostajnica (RS)	5,252	259	4.9	1,959	70	3.6	-27.5	
9. Bosanski Petrovac:								
- Bosanski Petrovac (FBH)	13,270	499	3.8	3,415	120	3.5	-6.6	
- Petrovac (RS)	264	1	0.4	205	2	1.0	+157.6	
10. Bosanski Šamac:								
- Domaljevac - Šamac (FBH)	5,266	100	1.9	1,986	37	1.9	-1.9	
- Bosanski Šamac / Šamac (RS)	21,786	1,671	7.7	11,657	614	5.3	-31.3	

Annex A1. Others

Table 10. Continued

Municipality	1991 Population		1997-98 Sample Population		1991-97 Change in % of Others	
	All Ethnicities	% Others	All Ethnicities	% Others	All Ethnicities	(Percent)
11. Bratunac (RS)	26,369	459	10,852	271	2.5	+43.5
12. Brečko:						
- Rahić / Ravne (Bosnian Federation) (FBH)	25,632	699	12,871	556	4.3	+58.4
- Brečko (RS)	47,294	6,449	20,752	1,653	8.0	-41.6
13. Čajniče (RS)	7,526	189	3,327	86	2.6	+2.9
14. Čelinač (RS)	15,323	546	8,449	237	2.8	-21.3
15. Doboj:						
- Doboj - Istok (FBH)	7,401	108	5,242	64	1.2	-16.3
- Doboj - Jug (FBH)	2,658	83	1,518	42	2.8	-11.4
- Doboj (RS)	78,118	6,653	38,775	2,114	5.5	-36.0
- Usora (FBH)	8,120	258	1,951	40	2.1	-35.5
16. Donji Vakuf (FBH)	19,499	644	7,148	168	2.4	-28.8
17. Foča:						
- Foča (FBH)	4,261	49	457	3	0.7	-42.9
- Foča / Stribinje (RS)	30,247	1,046	12,091	421	3.5	+7
18. Gacko (RS)	8,785	189	5,455	119	2.2	+1.4
19. Goražde:						
- Goražde (FBH)	26,957	1,073	14,864	222	1.5	-62.5
- Goražde / Šipsko Goražde (RS)	3,952	61	2,583	142	5.5	+256.2
20. Kalmovik (RS)	3,712	92	2,332	49	2.1	-15.2
21. Kijev:						
- Kijev (FBH)	22,980	642	6,384	143	2.2	-19.8
- Kijev / Ribnik (RS)	8,142	81	4,250	34	0.8	-19.6
22. Kotor Varoš (RS)	29,304	765	8,758	296	3.4	+29.5
23. Nevesinje (RS)	12,117	186	9,179	127	1.4	-9.9

Annex A1. Others

Table 10. Continued

Municipality	1991 Population		1997-98 Sample Population		1991-97 Change in % of Others (Percent)
	All Ethnicities	% Others	All Ethnicities	% Others	
24. Prijedor (RS)	94,028	7,572	39,248	2,952	7.5
25. Prnjavor (RS)	40,171	3,954	20,677	1,583	7.7
26. Rogatica (RS)	18,281	317	7,239	136	1.9
27. Rudo (RS)	9,813	234	5,026	114	2.3
28. Sanski Most:					
- Sanski Most (FBH)	44,857	1,887	16,341	443	2.7
- Sanski Most / Srpski Sanski Most (RS)	5,436	142	1,411	34	2.4
29. Sarajevo - Centar (FBH)	67,228	14,770	36,394	5,764	15.8
30. Sarajevo - Hadžići (FBH)	19,498	1,402	10,542	339	3.2
31. Sarajevo - Ilidža:					
- Ilidža (FBH)	49,709	5,033	21,822	1,268	5.8
- Ilidža / Srpska Ilidža (RS)	5,875	265	8,332	349	4.2
32. Sarajevo - Ilijaš (FBH)	20,718	1,201	6,926	268	3.9
33. Sarajevo - Novi Grad (FBH)	112,618	16,957	55,527	5,520	9.9
34. Sarajevo - Novo Sarajevo:					
- Novo Sarajevo / Srpsko Novo Sarajevo (RS)	2,282	58	4,596	221	4.8
- Novo Sarajevo (FBH)	78,652	16,133	36,002	5,152	14.3
35. Sarajevo - Pale:					
- Pale (FBH)	1,384	13	369	0	0.0
- Pale (RS)	12,433	468	13,464	502	3.7
36. Sarajevo - Stari Grad:					
- Stari Grad Sarajevo (FBH)	41,224	4,221	22,198	1,698	7.6
- Stari Grad Sarajevo / Srpski Stari Grad (RS)	1,112	12	1,331	29	2.2

Annex A1. Others

Table 10. Continued

Municipality	1991 Population		1997-98 Sample Population		1991-97 Change in % of Others	
	All Ethnicities	Others	All Ethnicities	Others	% Others	% Others
37. Sarajevo - Trnovo:						
- Trnovo (FBH)	2,689	45	1,798	14	1.7	0.8
- Trnovo (RS)	3,233	73	1,804	65	2.3	3.6
38. Sarajevo - Vogošća (FBH)	19,970	1,770	10,157	396	8.9	3.9
39. Sokolac (RS)	13,072	159	8,476	150	1.2	1.8
40. Srebrenica (RS)	29,198	597	7,442	232	2.0	3.1
41. Šekovići (RS)	7,943	230	4,463	92	2.9	2.1
42. Šipovo (RS)	12,936	212	5,575	58	1.6	1.0
43. Teslić (RS)	48,539	3,630	21,048	1,314	7.5	6.2
44. Trebinje:						
- Ravno (FBH)	1,676	30	288	4	1.8	1.4
- Trebinje (RS)	24,412	2,254	17,194	1,124	9.2	6.5
45. Višegrad (RS)	17,883	838	9,241	317	4.7	3.4
46. Vlasenica:						
- Vlasenica (RS)	13,273	372	7,396	189	2.8	2.6
- Milići (RS)	13,370	233	3,761	40	1.7	1.1
47. Zvornik:						
- Sapna (FBH)	11,255	112	3,346	13	1.0	0.4
- Zvornik (RS)	53,760	1,677	22,582	543	3.1	2.4

Annex A2. Muslims

Table 2M. A Minimum Number of Internally Displaced Persons and Refugees from MILOŠEVIĆ Case Area: The Muslims Status as of 1997-98, Individuals Born before 1980, Municipal Borders as in 1997

Municipality of Residence in 1991	Total Population Identified in 1997		Muslim Population Identified in 1997-98		Percentage of Muslims Among IDPs and Refugees
	All	IDPs and Refugees	All	IDPs and Refugees	
MILOŠEVIĆ Case Area	1,012,454	399,973	428,767	231,830	54.1
of which:					
- Republika Srpska (RS)	609,144	232,883	193,674	186,179	79.9
- The Federation of BH (FBH)	403,310	167,090	235,093	45,651	27.3
1. Banja Luka (RS)	83,267	21,473	12,894	11,121	86.2
2. Bihać (FBH)	34,008	8,992	26.4	1,908	8.3
3. Bijeljina (RS)	48,180	14,151	14,117	12,725	90.1
4. Bileća (RS)	6,904	1,168	964	956	99.2
5. Bosanska Dubica / Kozarska Dubica (RS)	16,052	3,643	3,204	3,048	95.1
6. Bosanska Gradiska / Gradiska (RS)	29,977	8,223	7,851	6,858	87.4
7. Bosanska Krupa:					
- Bosanska Krupa (FBH)	15,562	6,731	9,916	1,269	12.8
- Bažim (FBH)	6,758	472	6,694	453	6.8
- Bosanska Krupa / Krupa na Uni (RS)	1,339	430	0	0	na
8. Bosanski Novi:					
- Bosanski Novi / Novi Grad (RS)	17,549	6,238	5,845	5,689	97.3
- Kostajnica (RS)	2,732	778	772	593	76.8
9. Bosanski Petrovac:					
- Bosanski Petrovac (FBH)	8,110	6,870	1,805	626	34.7
- Petrovac (RS)	0	0	0	0	na
10. Bosanski Šamac:					
- Bosanski Šamac (FBH)	1,968	347	4	2	50.0
- Domaljevac - Šamac (RS)	12,004	3,809	1,096	884	80.7
- Bosanski Šamac / Šamac (RS)					23.2

Annex A2. Muslims

Table 2M. Continued

Municipality of Residence in 1991	Total Population Identified in 1997		Muslim Population Identified in 1997-98		Percentage of Muslims		
	All	IDPs and Refugees	All	IDPs and Refugees	Among IDPs	and Refugees	
11. Bratunac (RS)	13,760	8,964	65.1	8,438	8,434	100.0	94.1
12. Brčko:							
- Rahić / Ravne (Bričko Federation) (FBH)	8,120	3,094	38.1	4,379	875	20.0	28.3
- Brčko (RS)	24,676	15,765	63.9	12,255	11,792	96.2	74.8
13. Čajniče (RS)	5,266	2,432	46.2	2,269	2,269	100.0	93.3
14. Čelinač (RS)	8,912	1,017	11.4	644	575	89.3	56.5
15. Doboj:							
- Doboj - Istok (FBH)	3,817	436	11.4	3,778	419	11.1	96.1
- Doboj - Jug (FBH)	1,356	335	24.7	1,307	314	24.0	93.7
- Doboj (RS)	47,945	20,266	42.3	15,150	14,995	99.0	74.0
- Usora (FBH)	2,450	659	26.9	55	5	9.1	0.8
16. Donji Vakuf (FBH)	13,737	7,139	52.0	7,817	1,406	18.0	19.7
17. Foča:							
- Foča (FBH)	2,058	1,731	84.1	1,413	1,088	77.0	62.9
- Foča / Srbijne (RS)	18,623	8,985	48.2	8,516	8,512	100.0	94.7
18. Gacko (RS)	5,463	2,034	37.2	1,924	1,922	99.9	94.5
19. Gorazde:							
- Gorazde (FBH)	17,856	7,507	42.0	12,489	2,356	18.9	31.4
- Gorazde / Srpsko Gorazde (RS)	2,221	2,121	95.5	1,924	1,924	100.0	90.7
20. Kalinovik (RS)	2,339	736	31.5	616	614	99.7	83.4
21. Kluč:							
- Kluč (FBH)	13,561	8,676	64.0	8,433	3,678	43.6	42.4
- Kluč / Ribnik (RS)	3,909	513	13.1	21	19	90.5	3.7
22. Kotor Varoš (RS)	14,833	7,424	50.1	5,034	4,561	90.6	61.4
23. Nevesinje (RS)	7,286	1,720	23.6	1,447	1,445	99.9	84.0

Annex A2. Muslims

Table 2M. Continued

Municipality of Residence in 1991	Total Population Identified in 1997		Muslim Population Identified in 1997-98		Percentage of Muslims Among IDPs and Refugees	
	All	Percentage	All	Percentage	Among IDPs	Among Refugees
24. Prijedor (RS)	49,019	21,964	19,658	19,290	98.1	87.8
25. Prnjavor (RS)	20,991	4,299	3,312	3,087	93.2	71.8
26. Rogatica (RS)	11,662	7,098	6,846	6,843	100.0	96.4
27. Rudo (RS)	5,741	1,696	1,628	1,627	99.9	95.9
28. Sanski Most:						
- Sanski Most (FBH)	23,608	16,210	12,620	5,565	44.1	34.3
- Sanski Most / Srpski Sanski Most (RS)	1,585	660	90	89	98.9	13.5
29. Sarajevo - Centar (FBH)	38,266	10,712	21,838	3,390	15.5	31.6
30. Sarajevo - Hadžići (FBH)	13,490	4,777	9,096	906	10.0	19.0
31. Sarajevo - Ilidža:		0				na
- Ilidža (FBH)	29,903	15,344	15,156	3,766	24.8	24.5
- Ilidža / Srpska Ilidža (RS)	3,822	948	546	545	99.8	57.5
32. Sarajevo - Ilijaš (FBH)	13,443	8,227	5,777	1,132	19.6	13.8
33. Sarajevo - Novi Grad (FBH)	65,976	24,542	37,172	5,912	15.9	24.1
34. Sarajevo - Novo Sarajevo:						
- Novo Sarajevo / Srpsko Novo Sarajevo (RS)	717	36	3	3	100.0	8.3
- Novo Sarajevo (FBH)	42,870	17,843	18,605	3,650	19.6	20.5
35. Sarajevo - Pale:						
- Pale (FBH)	426	212	335	121	36.1	57.1
- Pale (RS)	8,359	1,936	1,652	1,648	99.8	85.1
36. Sarajevo - Stari Grad:						
- Stari Grad Sarajevo (FBH)	24,972	5,495	20,791	3,539	17.0	64.4
- Stari Grad Sarajevo / Srpski Stari Grad (RS)	563	50	10	10	100.0	20.0

Annex A2. Muslims

Table 2M. Continued

Municipality of Residence in 1991	Total Population Identified in 1997		Muslim Population Identified in 1997-98		Percentage of Muslims Among IDPs and Refugees
	All	Percentage	All IDPs and Refugees	Percentage	
37. Sarajevo - Trnovo:					
- Trnovo (FBH)	1,518	682	1,251	426	34.1
- Trnovo (RS)	2,419	1,711	1,423	1,421	99.9
38. Sarajevo - Vogošća (FBH)	13,235	6,930	7,028	1,454	20.7
39. Sokolac (RS)	8,921	2,994	2,775	2,775	100.0
40. Srebrenica (RS)	13,891	10,654	9,730	9,726	100.0
41. Šekovići (RS)	4,347	512	157	156	99.4
42. Šipovo (RS)	7,270	2,004	1,431	1,426	99.7
43. Teslić (RS)	25,417	8,955	6,202	5,538	89.3
44. Trebinje:					
- Ravno (FBH)	823	572	9	3	33.3
- Trebinje (RS)	16,103	3,382	2,869	2,823	98.4
45. Višegrad (RS)	10,850	7,053	6,799	6,798	100.0
46. Vlasenica:					
- Vlasenica (RS)	7,463	4,402	4,181	4,171	99.8
- Milići (RS)	7,389	3,688	3,162	3,162	100.0
47. Zvornik:					
- Sapna (FBH)	5,419	2,555	4,245	1,388	32.7
- Zvornik (RS)	29,378	16,951	16,219	16,105	99.3

Annex A2. Croats

Table 2C. A Minimum Number of Internally Displaced Persons and Refugees from MILOŠEVIĆ Case Area: The Croats Status as of 1997-98, Individuals Born before 1980, Municipal Borders as in 1997

Municipality of Residence in 1991	Total Population Identified in 1997		Croats Population Identified in 1997-98		Percentage of Croats	
	All	IDPs and Refugees	All	IDPs and Refugees	Among IDPs	Among Refugees
MILOŠEVIĆ Case Area	1,012,454	399,973	39.5	52,006	56.9	7.4
of which:						
- Republika Srpska (RS)	609,144	232,883	38.2	26,176	78.2	8.8
- The Federation of BH (FBH)	403,310	167,090	41.4	25,830	35.2	5.4
1. Banja Luka (RS)	83,267	21,473	25.8	8,633	76.0	30.5
2. Bihać (FBH)	34,008	8,992	26.4	2,269	10.0	2.5
3. Bijeljina (RS)	48,180	14,151	29.4	216	14.4	0.2
4. Bičeća (RS)	6,904	1,168	16.9	14	21.4	0.3
5. Bosanska Dubica / Kozarska Dubica (RS)	16,052	3,643	22.7	183	41.0	2.1
6. Bosanska Gradiska / Gradiska (RS)	29,977	8,223	27.4	873	58.4	6.2
7. Bosanska Krupa:						
- Bosanska Krupa (FBH)	15,562	6,731	43.3	43	48.8	0.3
- Bažim (FBH)	6,758	472	7.0	0	na	0.0
- Bosanska Krupa / Krupa na Uni (RS)	1,339	430	32.1	0	na	0.0
8. Bosanski Novi:						
- Bosanski Novi / Novi Grad (RS)	17,549	6,238	35.5	88	27	30.7
- Kostajnica (RS)	2,732	778	28.5	35	13	37.1
9. Bosanski Petrovac:						
- Bosanski Petrovac (FBH)	8,110	6,870	84.7	21	17	81.0
- Petrovac (RS)	0	0	na	0	na	na
10. Bosanski Šamac:						
- Domaljevac - Šamac (FBH)	1,968	347	17.6	1,921	317	16.5
- Bosanski Šamac / Šamac (RS)	12,004	3,809	31.7	2,465	2,348	95.3
						61.6

Annex A2. Croats

Table 2C. Continued

Municipality of Residence in 1991	Total Population Identified in 1997		Croat Population Identified in 1997-98		Percentage of Croats Among IDPs and Refugees	
	All	Percentage	All	Percentage	Among IDPs and Refugees	Among IDPs and Refugees
11. Bratunac (RS)	13,760	8,964	65.1	42.9	9	0.1
12. Brčko:						
- Rahić / Ravne (Bričko Federation) (FBH)	8,120	3,094	38.1	30.0	628	20.3
- Brčko (RS)	24,676	15,765	63.9	85.5	1,851	11.7
13. Čajniče (RS)	5,266	2,432	46.2	33.3	1	0.0
14. Čelinač (RS)	8,912	1,017	11.4	20.0	6	0.6
15. Doboј:						
- Doboј - Istok (FBH)	3,817	436	11.4	na	0	0.0
- Doboј - Jug (FBH)	1,356	335	24.7	52.0	13	3.9
- Doboј (RS)	47,945	20,266	42.3	85.1	2,857	14.1
- Usora (FBH)	2,450	659	26.9	26.9	627	95.1
16. Donji Vakuf (FBH)	13,737	7,139	52.0	89.7	244	3.4
17. Foča:						
- Foča (FBH)	2,058	1,731	84.1	na	0	0.0
- Foča / Srbinije (RS)	18,623	8,985	48.2	34.1	15	0.2
18. Gacko (RS)	5,463	2,034	37.2	61.5	8	0.4
19. Gorazde:						
- Gorazde (FBH)	17,856	7,507	42.0	64.1	25	0.3
- Gorazde / Srpsko Gorazde (RS)	2,221	2,121	95.5	na	0	0.0
20. Kalinovik (RS)	2,339	736	31.5	83.3	5	0.7
21. Kluč:						
- Kluč (FBH)	13,561	8,676	64.0	71.2	74	0.9
- Kluč / Ribnik (RS)	3,909	513	13.1	50.0	2	0.4
22. Kotor Varoš (RS)	14,833	7,424	50.1	95.6	2,362	31.8
23. Nevesinje (RS)	7,286	1,720	23.6	87.1	54	3.1

Annex A2. Croats

Table 2C. Continued

Municipality of Residence in 1991	Total Population Identified in 1997		Croat Population Identified in 1997-98		Percentage of Croats Among IDPs and Refugees	
	All	IDPs and Refugees	All	IDPs and Refugees	Percentage	Percentage
24. Prijedor (RS)	49,019	21,964	1,889	1,051	55.6	4.8
25. Prnjavor (RS)	20,991	4,299	534	345	64.6	8.0
26. Rogatica (RS)	11,662	7,098	10	3	30.0	0.0
27. Rudno (RS)	5,741	1,696	1	0	0.0	0.0
28. Sanski Most:						
- Sanski Most (FBH)	23,608	16,210	554	370	66.8	2.3
- Sanski Most / Srpski Sanski Most (RS)	1,585	660	149	122	81.9	18.5
29. Sarajevo - Centar (FBH)	38,266	10,712	2,459	653	26.6	6.1
30. Sarajevo - Hadžići (FBH)	13,490	4,777	377	248	65.8	5.2
31. Sarajevo - Ilidža:		0				na
- Ilidža (FBH)	29,903	15,344	2,851	1,606	56.3	10.5
- Ilidža / Srpska Ilidža (RS)	3,822	948	55	34	61.8	3.6
32. Sarajevo - Ilijaš (FBH)	13,443	8,227	745	532	71.4	6.5
33. Sarajevo - Novi Grad (FBH)	65,976	24,542	4,202	1,489	35.4	6.1
34. Sarajevo - Novo Sarajevo:						
- Novo Sarajevo / Srpsko Novo Sarajevo (RS)	717	36	2	0	0.0	0.0
- Novo Sarajevo (FBH)	42,870	17,843	4,211	1,390	33.0	7.8
35. Sarajevo - Pale:						
- Pale (FBH)	426	212	0	0	na	0.0
- Pale (RS)	8,359	1,936	61	18	29.5	0.9
36. Sarajevo - Stari Grad:						
- Stari Grad Sarajevo (FBH)	24,972	5,495	454	130	28.6	2.4
- Stari Grad Sarajevo / Srpski Stari Grad (RS)	563	50	3	2	66.7	4.0

Annex A2. Croats

Table 2C. Continued

Municipality of Residence in 1991	Total Population Identified in 1997		Croat Population Identified in 1997-98		Percentage of Croats Among IDPs and Refugees	
	All	Percentage	All	Percentage	All	Percentage
37. Sarajevo - Trnovo:						
- Trnovo (FBH)	1,518		682	44.9	0	na
- Trnovo (RS)	2,419		1,711	70.7	5	50.0
38. Sarajevo - Vogošća (FBH)	13,235		6,930	52.4	293	69.4
39. Sokolac (RS)	8,921		2,994	33.6	3	27.3
40. Srebrenica (RS)	13,891		10,654	76.7	8	47.1
41. Šekovići (RS)	4,347		512	11.8	0	0.0
42. Sipovo (RS)	7,270		2,004	27.6	4	28.6
43. Teslić (RS)	25,417		8,955	35.2	2,059	83.2
44. Trebinje:						
- Ravno (FBH)	823		572	69.5	194	44.5
- Trebinje (RS)	16,103		3,382	21.0	74	39.8
45. Višegrad (RS)	10,850		7,053	65.0	3	18.8
46. Vlasenica:						
- Vlasenica (RS)	7,463		4,402	59.0	3	21.4
- Milići (RS)	7,389		3,688	49.9	1	25.0
47. Zvornik:						
- Sapna (FBH)	5,419		2,555	47.1	0	na
- Zvornik (RS)	29,378		16,951	57.7	12	32.4

Annex A.2. Serbs

Table 25. A Minimum Number of Internally Displaced Persons and Refugees from MILOŠEVIĆ Case Area: The Serbs Status as of 1997-98, Individuals Born before 1980, Municipal Borders as in 1997

Municipality of Residence in 1991	Total Population Identified in 1997		Serb Population Identified in 1997-98		Percentage of Serbs Among IDPs and Refugees	
	All	IDPs and Refugees	All	IDPs and Refugees	Percentage	Percentage
MILOŠEVIĆ Case Area	1,012,454	399,973	463,182	115,411	24.9	28.9
of which:						
- Republika Srpska (RS)	609,144	232,883	352,424	14,645	4.2	6.3
- The Federation of BH (FBH)	403,310	167,090	110,758	100,766	91.0	60.3
1. Banja Luka (RS)	83,267	21,473	25.8	1,278	2.5	6.0
2. Bihać (FBH)	34,008	8,992	26.4	6,308	94.8	70.2
3. Bijeljina (RS)	48,180	14,151	29.4	395	1.3	2.8
4. Bileća (RS)	6,904	1,168	16.9	157	2.8	13.4
5. Bosanska Dubica / Kozarska Dubica (RS)	16,052	3,643	22.7	266	2.3	7.3
6. Bosanska Gradiska / Gradiska (RS)	29,977	8,223	27.4	490	2.5	6.0
7. Bosanska Krupa:						
- Bosanska Krupa (FBH)	15,562	6,731	43.3	5,275	99.6	78.0
- Bažim (FBH)	6,758	472	7.0	10	76.9	2.1
- Bosanska Krupa / Krupa na Uni (RS)	1,339	430	32.1	429	32.1	99.8
8. Bosanski Novi:						
- Bosanski Novi / Novi Grad (RS)	17,549	6,238	35.5	287	2.6	4.6
- Kostajnica (RS)	2,732	778	28.5	132	7.3	17.0
9. Bosanski Petrovac:						
- Bosanski Petrovac (FBH)	8,110	6,870	84.7	6,076	99.7	88.4
- Petrovac (RS)	0	0	na	0	na	na
10. Bosanski Šamac:						
- Domaljevac - Šamac (FBH)	1,968	347	17.6	22	75.9	6.3
- Bosanski Šamac / Šamac (RS)	12,004	3,809	31.7	323	4.2	8.5

Table 2S. Continued

Municipality of Residence in 1991	Total Population Identified in 1997		Serb Population Identified in 1997-98		Percentage of Serbs Among IDPs and Refugees	
	All	Percentage	All	Percentage	All	Percentage
11. Bratunac (RS)	13,760	8,964	65.1	415	8.1	4.6
12. Brčko:						
- Rahić / Ravne (Brekó Federatíon) (FBH)	8,120	3,094	38.1	1,518	99.0	49.1
- Brčko (RS)	24,676	15,765	63.9	479	6.4	3.0
13. Čajniče (RS)	5,266	2,432	46.2	133	4.6	5.5
14. Čelinac (RS)	8,912	1,017	11.4	388	4.9	38.2
15. Doboј:						
- Doboј - Istok (FBH)	3,817	436	11.4	10	90.9	2.3
- Doboј - Jug (FBH)	1,356	335	24.7	3	100.0	0.9
- Doboј (RS)	47,945	20,266	42.3	1,007	3.8	5.0
- Usora (FBH)	2,450	659	26.9	11	52.4	1.7
16. Donji Vakuf (FBH)	13,737	7,139	52.0	5,319	99.8	74.5
17. Foča:						
- Foča (FBH)	2,058	1,731	84.1	628	100.0	36.3
- Foča / Sbinje (RS)	18,623	8,985	48.2	294	3.1	3.3
18. Gacko (RS)	5,463	2,034	37.2	79	2.3	3.9
19. Gorazde:						
- Gorazde (FBH)	17,856	7,507	42.0	4,791	99.5	63.8
- Gorazde / Srpsko Gorazde (RS)	2,221	2,121	95.5	176	64.0	8.3
20. Kalinovik (RS)	2,339	736	31.5	104	6.2	14.1
21. Kluč:						
- Kluč (FBH)	13,561	8,676	64.0	4,694	99.8	54.1
- Kluč / Ribnik (RS)	3,909	513	13.1	484	12.6	94.3
22. Kotor Varoš (RS)	14,833	7,424	50.1	368	5.3	5.0
23. Nevesinje (RS)	7,286	1,720	23.6	188	3.3	10.9

Annex A.2. Serbs

Table 28. Continued

Municipality of Residence in 1991	Total Population Identified in 1997		Serb Population Identified in 1997-98		Percentage of Serbs Among IDPs and Refugees	
	All	Percentage	All	Percentage	Among IDPs and Refugees	Among IDPs and Refugees
24. Prijedor (RS)	49,019	21,964	44.8	642	2.7	2.9
25. Prnjavor (RS)	20,991	4,299	20.5	657	4.2	15.3
26. Rogatica (RS)	11,662	7,098	60.9	162	3.5	2.3
27. Rudno (RS)	5,741	1,696	29.5	49	1.2	2.9
28. Sanski Most:						
- Sanski Most (FBH)	23,608	16,210	68.7	9,710	99.8	59.9
- Sanski Most / Srpski Sanski Most (RS)	1,585	660	41.6	426	32.8	64.5
29. Sarajevo - Centar (FBH)	38,266	10,712	28.0	5,097	68.3	47.6
30. Sarajevo - Hadžići (FBH)	13,490	4,777	35.4	3,356	96.9	70.3
31. Sarajevo - Ilidža:		0				na
- Ilidža (FBH)	29,903	15,344	51.3	8,824	91.1	57.5
- Ilidža / Srpska Ilidža (RS)	3,822	948	24.8	324	10.4	34.2
32. Sarajevo - Ilijaš (FBH)	13,443	8,227	61.2	6,244	98.0	75.9
33. Sarajevo - Novi Grad (FBH)	65,976	24,542	37.2	14,709	85.2	59.9
34. Sarajevo - Novo Sarajevo:						
- Novo Sarajevo / Srpsko Novo Sarajevo (RS)	717	36	5.0	32	4.5	88.9
- Novo Sarajevo (FBH)	42,870	17,843	41.6	10,271	78.8	57.6
35. Sarajevo - Pale:						
- Pale (FBH)	426	212	49.8	90	100.0	42.5
- Pale (RS)	8,359	1,936	23.2	177	2.8	9.1
36. Sarajevo - Stari Grad:						
- Stari Grad Sarajevo (FBH)	24,972	5,495	22.0	1,344	75.0	24.5
- Stari Grad Sarajevo / Srpski Stari Grad (RS)	563	50	8.9	38	7.0	76.0

Table 2S. Continued

Municipality of Residence in 1991	Total Population Identified in 1997		Serb Population Identified in 1997-98		Percentage of Serbs	
	All	IDPs and Refugees	All	IDPs and Refugees	Among IDPs	and Refugees
37. Sarajevo - Trnovo:						
- Trnovo (FBH)	1,518	682	44.9	250	100.0	36.7
- Trnovo (RS)	2,419	1,711	70.7	262	27.7	15.3
38. Sarajevo - Vogošća (FBH)	13,235	6,930	52.4	4,719	94.7	68.1
39. Sokolac (RS)	8,921	2,994	33.6	192	3.2	6.4
40. Srebrenica (RS)	13,891	10,654	76.7	771	19.7	7.2
41. Šekovići (RS)	4,347	512	11.8	345	8.4	67.4
42. Sipovo (RS)	7,270	2,004	27.6	525	9.2	26.2
43. Teslić (RS)	25,417	8,955	35.2	829	5.5	9.3
44. Trebinje:						
- Ravno (FBH)	823	572	69.5	365	100.0	63.8
- Trebinje (RS)	16,103	3,382	21.0	181	1.5	5.4
45. Višegrad (RS)	10,850	7,053	65.0	118	3.1	1.7
46. Vlasenica:						
- Vlasenica (RS)	7,463	4,402	59.0	156	5.0	3.5
- Milići (RS)	7,389	3,688	49.9	478	11.5	13.0
47. Zvornik:						
- Sapna (FBH)	5,419	2,555	47.1	1,145	100.0	44.8
- Zvornik (RS)	29,378	16,951	57.7	409	3.3	2.4

Annex A2. Others

**Table 20. A Minimum Number of Internally Displaced Persons and Refugees from MILOŠEVIĆ Case Area: The Others
Status as of 1997-98, Individuals Born before 1980, Municipal Borders as in 1997**

Municipality of Residence in 1991	Total Population Identified in 1997		Other Population Identified in 1997-98		Percentage of Others	
	All	IDPs and Refugees	All	IDPs and Refugees	Among IDPs	Among Refugees
MILOŠEVIĆ Case Area	1,012,454	399,973	39.5	23,151	33.8	5.8
of which:						
- Republika Srpska (RS)	609,144	232,883	38.2	11,577	31.4	5.0
- The Federation of BH (FBH)	403,310	167,090	41.4	11,574	36.6	6.9
1. Banja Luka (RS)	83,267	21,473	25.8	11,590	21.7	11.7
2. Bihać (FBH)	34,008	8,992	26.4	2,005	27.3	6.1
3. Bijeljina (RS)	48,180	14,151	29.4	2,835	35.3	7.1
4. Biče (RS)	6,904	1,168	16.9	259	52	4.5
5. Bosanska Dubica / Kozarska Dubica (RS)	16,052	3,643	22.7	1,150	254	7.0
6. Bosanska Gradiska / Gradiska (RS)	29,977	8,223	27.4	1,855	365	4.4
7. Bosanska Krupa:						
- Bosanska Krupa (FBH)	15,562	6,731	43.3	328	189	2.8
- Bažim (FBH)	6,758	472	7.0	51	9	1.9
- Bosanska Krupa / Krupa na Uni (RS)	1,339	430	32.1	3	1	0.2
8. Bosanski Novi:						
- Bosanski Novi / Novi Grad (RS)	17,549	6,238	35.5	745	235	3.8
- Kostajnica (RS)	2,732	778	28.5	109	40	5.1
9. Bosanski Petrovac:						
- Bosanski Petrovac (FBH)	8,110	6,870	84.7	189	151	2.2
- Petrovac (RS)	0	0	na	0	0	na
10. Bosanski Šamac:						
- Domaljevac - Šamac (FBH)	1,968	347	17.6	14	6	1.7
- Bosanski Šamac / Šamac (RS)	12,004	3,809	31.7	703	254	6.7

Annex A2. Others

Table 20. Continued

Municipality of Residence in 1991	Total Population Identified in 1997		Other Population Identified in 1997-98		Percentage of Others	
	All	IDPs and Refugees	All	IDPs and Refugees	Among IDPs and Refugees	Among IDPs and Refugees
11. Bratunac (RS)	13,760	8,964	171	106	62.0	1.2
12. Brčko:						
- Rahić / Ravne (Bričko Federation) (FBH)	8,120	3,094	115	73	63.5	2.4
- Brčko (RS)	24,676	15,765	2,753	1,643	59.7	10.4
13. Čajniče (RS)	5,266	2,432	99	29	29.3	1.2
14. Čelinač (RS)	8,912	1,017	259	48	18.5	4.7
15. Doboj:						
- Doboj - Istok (FBH)	3,817	436	11.4	7	25.0	1.6
- Doboj - Jug (FBH)	1,356	335	24.7	5	23.8	1.5
- Doboj (RS)	47,945	20,266	3,050	1,407	46.1	6.9
- Usora (FBH)	2,450	659	42	16	38.1	2.4
16. Donji Vakuf (FBH)	13,737	7,139	317	170	53.6	2.4
17. Foča:						
- Foča (FBH)	2,058	1,731	17	15	88.2	0.9
- Foča / Srbijne (RS)	18,623	8,985	504	164	32.5	1.8
18. Gacko (RS)	5,463	2,034	83	25	30.1	1.2
19. Gorazde:						
- Gorazde (FBH)	17,856	7,507	514	335	65.2	4.5
- Gorazde / Srpsko Gorazde (RS)	2,221	2,121	22	21	95.5	1.0
20. Kalinovik (RS)	2,339	736	43	13	30.2	1.8
21. Ključ:						
- Ključ (FBH)	13,561	8,676	322	230	71.4	2.7
- Ključ / Ribnik (RS)	3,909	513	31	8	25.8	1.6
22. Kotor Varoš (RS)	14,833	7,424	399	133	33.3	1.8
23. Nevesinje (RS)	7,286	1,720	81	33	40.7	1.9

Annex A2. Others

Table 20. Continued

Municipality of Residence in 1991	Total Population Identified in 1997		Other Population Identified in 1997-98		Percentage of Others Among IDPs and Refugees	
	All	IDPs and Refugees	All	IDPs and Refugees	Percentage	Percentage
24. Prijedor (RS)	49,019	21,964	3,402	981	28.8	4.5
25. Prnjavor (RS)	20,991	4,299	1,593	210	13.2	4.9
26. Rogatica (RS)	11,662	7,098	133	90	67.7	1.3
27. Rudno (RS)	5,741	1,696	80	20	25.0	1.2
28. Sanski Most:						
- Sanski Most (FBH)	23,608	16,210	700	565	80.7	3.5
- Sanski Most / Srpski Sanski Most (RS)	1,585	660	49	23	46.9	3.5
29. Sarajevo - Centar (FBH)	38,266	10,712	6,506	1,572	24.2	14.7
30. Sarajevo - Hadžići (FBH)	13,490	4,777	553	267	48.3	5.6
31. Sarajevo - Ilidža:		0				na
- Ilidža (FBH)	29,903	15,344	2,213	1,148	51.9	7.5
- Ilidža / Srpska Ilidža (RS)	3,822	948	113	45	39.8	4.7
32. Sarajevo - Ilijaš (FBH)	13,443	8,227	548	319	58.2	3.9
33. Sarajevo - Novi Grad (FBH)	65,976	24,542	7,338	2,432	33.1	9.9
34. Sarajevo - Novo Sarajevo:						
- Novo Sarajevo / Srpsko Novo Sarajevo (RS)	717	36	7	1	14.3	2.8
- Novo Sarajevo (FBH)	42,870	17,843	7,014	2,532	36.1	14.2
35. Sarajevo - Pale:						
- Pale (FBH)	426	212	1	1	100.0	0.5
- Pale (RS)	8,359	1,936	255	93	36.5	4.8
36. Sarajevo - Stari Grad:						
- Stari Grad Sarajevo (FBH)	24,972	5,495	1,934	482	24.9	8.8
- Stari Grad Sarajevo / Srpski Stari Grad (RS)	563	50	5	0	0.0	0.0

Annex A2. Others

Table 20. Continued

Municipality of Residence in 1991	Total Population Identified in 1997		Other Population Identified in 1997-98		Percentage of Others	
	All	IDPs and Refugees	All	IDPs and Refugees	Among IDPs	and Refugees
37. Sarajevo - Trnovo:						
- Trnovo (FBH)	1,518	682	44.9	6	35.3	0.9
- Trnovo (RS)	2,419	1,711	70.7	23	57.5	1.3
38. Sarajevo - Vogošća (FBH)	13,235	6,930	52.4	464	58.0	6.7
39. Sokolac (RS)	8,921	2,994	33.6	24	28.6	0.8
40. Srebrenica (RS)	13,891	10,654	76.7	149	67.4	1.4
41. Šekovići (RS)	4,347	512	11.8	11	12.6	2.1
42. Sipovo (RS)	7,270	2,004	27.6	49	53.3	2.4
43. Teslić (RS)	25,417	8,955	35.2	529	31.4	5.9
44. Trebinje:						
- Ravno (FBH)	823	572	69.5	10	76.9	1.7
- Trebinje (RS)	16,103	3,382	21.0	304	25.3	9.0
45. Višegrad (RS)	10,850	7,053	65.0	134	62.9	1.9
46. Vlasenica:						
- Vlasenica (RS)	7,463	4,402	59.0	72	54.1	1.6
- Milići (RS)	7,389	3,688	49.9	47	56.0	1.3
47. Zvornik:						
- Sapna (FBH)	5,419	2,555	47.1	22	75.9	0.9
- Zvornik (RS)	29,378	16,951	57.7	425	65.3	2.5

Annex A3. Muslims

Table 3M. An Estimate of the Overall Number of Internally Displaced Persons and Refugees from MILOŠEVIĆ Case Area: The Muslims Status as of 1997-98, Individuals Born before 1980, Municipal Borders as in 1997

Municipality of Residence in 1991	Estimated Number of all DPs		Estimated Number of Muslims DPs	
	Estimate	95% Confidence Interval	Estimate	95% Confidence Interval
MILOŠEVIĆ Case Area	745,653	740,323	403,566	401,053
of which:				
- Republika Srpska (RS)	444,154	441,456	329,869	329,101
- The Federation of BH (FBH)	301,499	298,868	73,697	71,951
1. Banja Luka (RS)	47,811	47,546	20,956	20,857
2. Bihac (FBiH)	16,539	16,414	3,127	3,043
3. Bijeljina (RS)	25,165	25,033	21,917	21,839
4. Bileća (RS)	1,875	1,846	1,522	1,517
5. Bosanska Dubica / Kozarska Dubica (RS)	6,084	6,021	4,928	4,904
6. Bosanska Gradiska / Gradiska (RS)	14,679	14,557	11,363	11,303
7. Bosanska Krupa:				
- Bosanska Krupa (FBiH)	12,107	12,013	2,426	2,340
- Bužim (FBiH)	924	869	840	789
- Bosanska Krupa / Krupa na Uni (RS)	882	823	0	na
8. Bosanski Novi:				
- Bosanski Novi / Novi Grad (RS)	10,562	10,504	9,549	9,523
- Kostajnica (RS)	1,486	1,438	1,088	1,059
9. Bosanski Petrovac:				
- Bosanski Petrovac (FBiH)	11,327	11,284	957	922
- Bosanski Petrovac (RS)	0	na	0	na
10. Bosanski Šamac:				
- Domaljevac - Šamac (FBiH)	1,008	934	4	1
- Bosanski Šamac / Šamac (RS)	8,815	8,740	1,537	1,508
				1,566

Annex A3. Muslims

Table 3M. Continued

Municipality	Estimated Number of all DPs		Estimated Number of Muslims DPs	
	Estimate	95% Confidence Interval	Estimate	95% Confidence Interval
11. Bratunac (RS)	17,353	17,297	16,276	16,271
12. Brčko:				
- Rabić / Ravne (Brčko Federation) (FBiH)	9,132	8,911	2,173	2,074
- Brčko (RS)	31,300	31,149	19,542	19,499
13. Čajniče (RS)	3,586	3,566	3,346	3,346
14. Čelinač (RS)	1,805	1,756	1,854	1,012
15. Doboј:				
- Doboј - Istok (FBiH)	904	851	798	749
- Doboј - Jug (FBiH)	674	630	595	555
- Doboј (RS)	35,388	35,254	23,167	23,144
- Usora (FBiH)	1,931	1,769	158	27
16. Donji Vakuf (FBiH)	10,393	10,338	1,915	1,868
17. Foča:				
- Foča (FBiH)	3,581	3,534	2,258	2,211
- Foča / Sribinje (RS)	15,369	15,325	14,552	14,548
18. Gacko (RS)	3,208	3,186	3,011	3,008
19. Gorazde:				
- Gorazde (FBiH)	11,672	11,594	3,452	3,382
- Gorazde / Srpsko Gorazde (RS)	3,660	3,624	3,094	3,094
20. Kalinovik (RS)	1,345	1,326	1,152	1,149
21. Ključ:				
- Ključ (FBiH)	14,960	14,864	5,986	5,896
- Ključ / Ribnik (RS)	1,322	1,248	330	285
22. Kotor Varoš (RS)	16,706	16,621	7,964	7,918
23. Nevesinje (RS)	2,952	2,919	2,431	2,428

Annex A3. Muslims

Table 3M. Continued

Municipality	Estimated Number of all DPs		Estimated Number of Muslims DPs	
	Estimate	95% Confidence Interval	Estimate	95% Confidence Interval
24. Prijedor (RS)	45,688	45,536	39,325	39,271
25. Prnjavor (RS)	8,248	8,148	5,531	5,497
26. Rogatica (RS)	11,312	11,283	10,846	10,843
27. Rudo (RS)	2,839	2,816	2,697	2,695
28. Sanski Most:				
- Sanski Most (FBiH)	31,264	31,107	9,767	9,641
- Sanski Most / Srpski Sanski Most (RS)	2,881	2,778	674	661
29. Sarajevo - Centar (FBiH)	19,929	19,737	5,122	5,030
30. Sarajevo - Hadžići (FBiH)	7,413	7,348	1,214	1,176
31. Sarajevo - Ilidža:				
- Ilidža (FBiH)	26,343	26,191	5,605	5,516
- Ilidža / Srpska Ilidža (RS)	1,476	1,441	829	828
32. Sarajevo - Ilijaš (FBiH)	12,829	12,756	1,648	1,600
33. Sarajevo - Novi Grad (FBiH)	44,492	44,262	8,873	8,753
34. Sarajevo - Novo Sarajevo:				
- Novo Sarajevo / Srpsko Novo Sarajevo (RS)	256	226	154	154
- Novo Sarajevo (FBiH)	34,720	34,494	5,530	5,436
35. Sarajevo - Pale:				
- Pale (FBiH)	768	728	348	308
- Pale (RS)	3,110	3,081	2,652	2,648
36. Sarajevo - Stari Grad:				
- Stari Grad Sarajevo (FBiH)	9,533	9,403	5,521	5,422
- Stari Grad Sarajevo / Srpski Stari Grad (RS)	192	178	121	121

Annex A3. Muslims

Table 3M. Continued

Municipality	Estimated Number of all DPs		Estimated Number of Muslims DPs	
	Estimate	95% Confidence Interval	Estimate	95% Confidence Interval
37. Sarajevo - Trnovo:				
- Trnovo (FBiH)	1,221	1,183	743	706
- Trnovo (RS)	2,272	2,252	1,870	1,869
38. Vogošća (FBiH)	10,720	10,642	2,042	1,992
39. Sokolac (RS)	4,574	4,551	4,250	4,250
40. Srebrenica (RS)	23,187	23,119	21,352	21,346
41. Šekovići (RS)	917	872	261	259
42. Šipovo (RS)	3,402	3,347	2,333	2,328
43. Teslić (RS)	18,392	18,252	9,094	9,045
44. Trebinje:				
- Ravno (FBiH)	1,231	1,206	5	2
- Trebinje (RS)	5,457	5,407	4,460	4,448
45. Višegrad (RS)	11,889	11,839	11,176	11,174
46. Vlasenica:				
- Vlasenica (RS)	8,128	8,091	7,663	7,655
- Milići (RS)	7,469	7,425	6,580	6,580
47. Zvornik:				
- Sapna (FBiH)	5,885	5,807	2,591	2,514
- Zvornik (RS)	31,110	31,037	29,245	29,220

Table 3C. An Estimate of the Overall Number of Internally Displaced Persons and Refugees from MILOŠEVIĆ Case Area: The Croats Status as of 1997-98, Individuals Born before 1980, Municipal Borders as in 1997

Municipality of Residence in 1991	Estimated Number of all DPs		Estimated Number of Croats DPs	
	Estimate	95% Confidence Interval	Estimate	95% Confidence Interval
MILOŠEVIĆ Case Area	745,653	740,323	83,859	81,795
of which:				
- Republika Srpska (RS)	444,154	441,456	62,373	61,285
- The Federation of BH (FBH)	301,499	298,868	21,485	20,509
1. Banja Luka (RS)	47,811	47,546	19,024	18,841
2. Bihac (FBiH)	16,539	16,414	492	447
3. Bijeljina (RS)	25,165	25,033	64	49
4. Bileća (RS)	1,875	1,846	7	1
5. Bosanska Dubica / Kozarska Dubica (RS)	6,084	6,021	179	155
6. Bosanska Gradiska / Gradiska (RS)	14,679	14,557	1,752	1,669
7. Bosanska Krupa:				
- Bosanska Krupa (FBiH)	12,107	12,013	57	43
- Bužim (FBiH)	924	869	0	na
- Bosanska Krupa / Krupa na Uni (RS)	882	823	0	na
8. Bosanski Novi:				
- Bosanski Novi / Novi Grad (RS)	10,562	10,504	68	52
- Kostajnica (RS)	1,486	1,438	54	34
9. Bosanski Petrovac:				
- Bosanski Petrovac (FBiH)	11,327	11,284	36	30
- Bosanski Petrovac (RS)	0	na	0	na
10. Bosanski Šamac:				
- Domaljevac - Šamac (FBiH)	1,008	934	821	756
- Bosanski Šamac / Šamac (RS)	8,815	8,740	6,185	6,142
				6,228

Table 3C. Continued

Municipality	Estimated Number of all DPs		Estimated Number of Croats DPs			
	Estimate	95% Confidence Interval	Estimate	95% Confidence Interval		
11. Bratunac (RS)	17,353	17,297	17,409	11	22	
12. Brčko:						
- Rabić / Ravne (Brčko Federation) (FBiH)	9,132	8,911	9,353	3,219	3,030	3,408
- Brčko (RS)	31,300	31,149	31,452	7,131	7,025	7,237
13. Čajniče (RS)	3,586	3,566	3,606	2	0	4
14. Čelinač (RS)	1,805	1,756	1,854	14	6	22
15. Doboј:						
- Doboј - Istok (FBiH)	904	851	958	0	na	na
- Doboј - Jug (FBiH)	674	630	718	44	30	58
- Doboј (RS)	35,388	35,254	35,523	7,662	7,576	7,748
- Usora (FBiH)	1,931	1,769	2,093	1,614	1,530	1,699
16. Donji Vakuf (FBiH)	10,393	10,338	10,449	505	490	520
17. Foča:						
- Foča (FBiH)	3,581	3,534	3,628	0	na	na
- Foča / Sribinje (RS)	15,369	15,325	15,413	29	20	37
18. Gacko (RS)	3,208	3,186	3,231	13	9	16
19. Goražde:						
- Goražde (FBiH)	11,672	11,594	11,751	47	40	55
- Goražde / Srpsko Goražde (RS)	3,660	3,624	3,697	0	na	na
20. Kalinovik (RS)	1,345	1,326	1,365	13	9	17
21. Ključ:						
- Ključ (FBiH)	14,960	14,864	15,055	206	186	227
- Ključ / Ribnik (RS)	1,322	1,248	1,395	5	1	9
22. Kotor Varoš (RS)	16,706	16,621	16,792	7,876	7,820	7,932
23. Nevesinje (RS)	2,952	2,919	2,985	138	127	148

Annex A3. Croats

Table 3C. Continued

Municipality	Estimated Number of all DPs		Estimated Number of Croats DPs	
	Estimate	95% Confidence Interval	Estimate	95% Confidence Interval
24. Prijedor (RS)	45,688	45,536	3,091	2,990
25. Prnjavor (RS)	8,248	8,148	981	931
26. Rogatica (RS)	11,312	11,283	5	2
27. Rudno (RS)	2,839	2,816	0	na
28. Sanski Most:				
- Sanski Most (FBiH)	31,264	31,107	1,612	1,529
- Sanski Most / Srpski Sanski Most (RS)	2,881	2,778	1,043	969
29. Sarajevo - Centar (FBiH)	19,929	19,737	1,307	1,246
30. Sarajevo - Hadžići (FBiH)	7,413	7,348	424	404
31. Sarajevo - Ilidža:				
- Ilidža (FBiH)	26,343	26,191	3,287	3,211
- Ilidža / Srpska Ilidža (RS)	1,476	1,441	51	45
32. Sarajevo - Ilijaš (FBiH)	12,829	12,756	1,075	1,040
33. Sarajevo - Novi Grad (FBiH)	44,492	44,262	2,828	2,749
34. Sarajevo - Novo Sarajevo:				
- Novo Sarajevo / Srpsko Novo Sarajevo (RS)	256	226	0	0
- Novo Sarajevo (FBiH)	34,720	34,494	2,640	2,562
35. Sarajevo - Pale:				
- Pale (FBiH)	768	728	0	na
- Pale (RS)	3,110	3,081	33	24
36. Sarajevo - Stari Grad:				
- Stari Grad Sarajevo (FBiH)	9,533	9,403	287	256
- Stari Grad Sarajevo / Srpski Stari Grad (RS)	192	178	3	1

Annex A3. Croats

Table 3C. Continued

Municipality	Estimated Number of all DPs		Estimated Number of Croats DPs	
	Estimate	95% Confidence Interval	Estimate	95% Confidence Interval
37. Sarajevo - Tmovo:				
- Tmovo (FBiH)	1,221	1,183	0	na
- Tmovo (RS)	2,272	2,252	8	5
38. Vogošća (FBiH)	10,720	10,642	640	610
39. Sokolac (RS)	4,574	4,551	5	2
40. Srebrenica (RS)	23,187	23,119	16	10
41. Šekovići (RS)	917	872	0	0
42. Šipovo (RS)	3,402	3,347	8	3
43. Teslić (RS)	18,392	18,252	6,689	6,591
44. Trebinje:				
- Ravno (FBiH)	1,231	1,206	344	320
- Trebinje (RS)	5,457	5,407	163	141
45. Višegrad (RS)	11,889	11,839	6	2
46. Vlasenica:				
- Vlasenica (RS)	8,128	8,091	6	2
- Milići (RS)	7,469	7,425	2	0
47. Zvornik:				
- Sapna (FBiH)	5,885	5,807	0	na
- Zvornik (RS)	31,110	31,037	31	20

Annex A3. Serbs

Table 3S. An Estimate of the Overall Number of Internally Displaced Persons and Refugees from MILOŠEVIĆ Case Area: The Serbs Status as of 1997-98, Individuals Born before 1980, Municipal Borders as in 1997

Municipality of Residence in 1991	Estimated Number of all DPs		Estimated Number of Serbs DPs	
	Estimate	95% Confidence Interval	Estimate	95% Confidence Interval
MILOŠEVIĆ Case Area	745,653	740,323	204,646	202,437
of which:				
- Republika Srpska (RS)	444,154	441,456	25,390	23,896
- The Federation of BH (FBH)	301,499	298,868	179,256	178,541
1. Banja Luka (RS)	47,811	47,546	2,302	2,219
2. Bihac (FBiH)	16,539	16,414	11,657	11,612
3. Bijeljina (RS)	25,165	25,033	632	594
4. Bileća (RS)	1,875	1,846	243	221
5. Bosanska Dubica / Kozarska Dubica (RS)	6,084	6,021	431	399
6. Bosanska Gradiska / Gradiska (RS)	14,679	14,557	773	732
7. Bosanska Krupa:				
- Bosanska Krupa (FBiH)	12,107	12,013	9,166	9,155
- Bužim (FBiH)	924	869	60	43
- Bosanska Krupa / Krupa na Uni (RS)	882	823	864	816
8. Bosanski Novi:				
- Bosanski Novi / Novi Grad (RS)	10,562	10,504	479	445
- Kostajnica (RS)	1,486	1,438	249	221
9. Bosanski Petrovac:				
- Bosanski Petrovac (FBiH)	11,327	11,284	9,936	9,927
- Bosanski Petrovac (RS)	0	na	0	na
10. Bosanski Šamac:				
- Domaljevac - Šamac (FBiH)	1,008	934	141	114
- Bosanski Šamac / Šamac (RS)	8,815	8,740	489	459

Table 3S. Continued

Municipality	Estimated Number of all DPs		Estimated Number of Serbs DPs	
	Estimate	95% Confidence Interval	Estimate	95% Confidence Interval
11. Bratunac (RS)	17,353	17,297	776	727
12. Brčko:				
- Rabić / Ravne (Brčko Federation) (FBiH)	9,132	8,911	3,296	3,284
- Brčko (RS)	31,300	31,149	779	737
13. Čajniče (RS)	3,586	3,566	183	167
14. Čelinač (RS)	1,805	1,756	659	618
15. Doboј:				
- Doboј - Istok (FBiH)	904	851	79	65
- Doboј - Jug (FBiH)	674	630	15	15
- Doboј (RS)	35,388	35,254	1,490	1,439
- Usora (FBiH)	1,931	1,769	60	37
16. Donji Vakuf (FBiH)	10,393	10,338	7,628	7,622
17. Foča:				
- Foča (FBiH)	3,581	3,534	1,280	1,280
- Foča / Sribinje (RS)	15,369	15,325	448	418
18. Gacko (RS)	3,208	3,186	128	110
19. Gorazde:				
- Gorazde (FBiH)	11,672	11,594	7,473	7,464
- Gorazde / Srpsko Gorazde (RS)	3,660	3,624	508	472
20. Kalinovik (RS)	1,345	1,326	152	136
21. Ključ:				
- Ključ (FBiH)	14,960	14,864	8,309	8,302
- Ključ / Ribnik (RS)	1,322	1,248	965	909
22. Kotor Varoš (RS)	16,706	16,621	611	573
23. Nevesinje (RS)	2,952	2,919	308	281

Annex A3. Serbs

Table 3S. Continued

Municipality	Estimated Number of all DPs		Estimated Number of Serbs DPs	
	Estimate	95% Confidence Interval	Estimate	95% Confidence Interval
24. Prijedor (RS)	45,688	45,536	1,089	1,036
25. Prnjavor (RS)	8,248	8,148	1,215	1,154
26. Rogatica (RS)	11,312	11,283	246	224
27. Rudo (RS)	2,839	2,816	84	69
28. Sanski Most:				
- Sanski Most (FBiH)	31,264	31,107	18,363	18,350
- Sanski Most / Srpski Sanski Most (RS)	2,881	2,778	1,096	1,030
29. Sarajevo - Centar (FBiH)	19,929	19,737	9,932	9,825
30. Sarajevo - Hadžići (FBiH)	7,413	7,348	5,098	5,080
31. Sarajevo - Ilidža:				
- Ilidža (FBiH)	26,343	26,191	14,840	14,782
- Ilidža / Srpska Ilidža (RS)	1,476	1,441	490	460
32. Sarajevo - Ilijaš (FBiH)	12,829	12,756	9,407	9,387
33. Sarajevo - Novi Grad (FBiH)	44,492	44,262	27,170	27,056
34. Sarajevo - Novo Sarajevo:				
- Novo Sarajevo / Srpsko Novo Sarajevo (RS)	256	226	93	68
- Novo Sarajevo (FBiH)	34,720	34,494	20,726	20,594
35. Sarajevo - Pale:				
- Pale (FBiH)	768	728	407	407
- Pale (RS)	3,110	3,081	255	234
36. Sarajevo - Stari Grad:				
- Stari Grad Sarajevo (FBiH)	9,533	9,403	2,673	2,623
- Stari Grad Sarajevo / Srpski Stari Grad (RS)	192	178	68	54

Table 3S. Continued

Municipality	Estimated Number of all DPs		Estimated Number of Serbs DPs	
	Estimate	95% Confidence Interval	Estimate	95% Confidence Interval
37. Sarajevo - Tmovo:				
- Tmovo (FBiH)	1,221	1,183	462	462
- Tmovo (RS)	2,272	2,252	352	334
38. Vogošća (FBiH)	10,720	10,642	7,011	6,984
39. Sokolac (RS)	4,574	4,551	274	253
40. Srebrenica (RS)	23,187	23,119	1,416	1,356
41. Šekovići (RS)	917	872	626	584
42. Šipovo (RS)	3,402	3,347	948	897
43. Teslić (RS)	18,392	18,252	1,469	1,405
44. Trebinje:				
- Ravno (FBiH)	1,231	1,206	859	859
- Trebinje (RS)	5,457	5,407	263	242
45. Višegrad (RS)	11,889	11,839	180	161
46. Vlasenica:				
- Vlasenica (RS)	8,128	8,091	258	234
- Milići (RS)	7,469	7,425	756	718
47. Zvornik:				
- Sapna (FBiH)	5,885	5,807	3,209	3,209
- Zvornik (RS)	31,110	31,037	739	692
				786

Table 30. An Estimate of the Overall Number of Internally Displaced Persons and Refugees from MILOŠEVIĆ Case Area: The Others
 Status as of 1997-98, Individuals Born before 1980, Municipal Borders as in 1997

Municipality of Residence in 1991	Estimated Number of all DPs		Estimated Number of Others DPs	
	Estimate	95% Confidence Interval	Estimate	95% Confidence Interval
MILOŠEVIĆ Case Area	745,653	740,323	53,583	51,094
of which:				
- Republika Srpska (RS)	444,154	441,456	26,522	25,139
- The Federation of BH (FBH)	301,499	298,868	27,061	25,956
1. Banja Luka (RS)	47,811	47,546	5,529	5,388
2. Bihac (FBiH)	16,539	16,414	1,264	1,196
3. Bijeljina (RS)	25,165	25,033	2,552	2,452
4. Bileća (RS)	1,875	1,846	102	85
5. Bosanska Dubica / Kozarska Dubica (RS)	6,084	6,021	547	503
6. Bosanska Gradiska / Gradiska (RS)	14,679	14,557	791	738
7. Bosanska Krupa:				
- Bosanska Krupa (FBiH)	12,107	12,013	458	425
- Bužim (FBiH)	924	869	24	13
- Bosanska Krupa / Krupa na Uni (RS)	882	823	18	-16
8. Bosanski Novi:				
- Bosanski Novi / Novi Grad (RS)	10,562	10,504	465	431
- Kostajnica (RS)	1,486	1,438	95	77
9. Bosanski Petrovac:				
- Bosanski Petrovac (FBiH)	11,327	11,284	399	376
- Bosanski Petrovac (RS)	0	na	0	na
10. Bosanski Šamac:				
- Domaljevac - Šamac (FBiH)	1,008	934	43	18
- Bosanski Šamac / Šamac (RS)	8,815	8,740	604	559

Table 30. Continued

Municipality	Estimated Number of all DPs		Estimated Number of Others DPs	
	Estimate	95% Confidence Interval	Estimate	95% Confidence Interval
11. Bratunac (RS)	17,353	17,297	285	258
12. Brčko:				
- Rahić / Ravne (Brčko Federation) (FBiH)	9,132	8,911	444	387
- Brčko (RS)	31,300	31,149	3,849	3,759
13. Čajniče (RS)	3,586	3,566	55	44
14. Čelinač (RS)	1,805	1,756	101	82
15. Doboji:				
- Doboji - Istok (FBiH)	904	851	27	12
- Doboji - Jug (FBiH)	674	630	20	6
- Doboji (RS)	35,388	35,254	3,069	2,982
- Usora (FBiH)	1,931	1,769	98	63
16. Donji Vakuf (FBiH)	10,393	10,338	345	320
17. Foča:				
- Foča (FBiH)	3,581	3,534	43	37
- Foča / Srebijne (RS)	15,369	15,325	340	310
18. Gacko (RS)	3,208	3,186	57	43
19. Goražde:				
- Goražde (FBiH)	11,672	11,594	699	667
- Goražde / Srpsko Goražde (RS)	3,660	3,624	58	54
20. Kalinovik (RS)	1,345	1,326	28	18
21. Ključ:				
- Ključ (FBiH)	14,960	14,864	459	436
- Ključ / Ribnik (RS)	1,322	1,248	21	11
22. Kotor Varoš (RS)	16,706	16,621	255	230
23. Nevesinje (RS)	2,952	2,919	76	61

Annex A3. Others

Table 30. Continued

Municipality	Estimated Number of all DPs		Estimated Number of Others DPs	
	Estimate	95% Confidence Interval	Estimate	95% Confidence Interval
24. Prijedor (RS)	45,536	45,841	2,183	2,098
25. Prnjavor (RS)	8,148	8,348	521	470
26. Rogatica (RS)	11,283	11,342	215	195
27. Rudo (RS)	2,816	2,863	59	40
28. Sanski Most:				
- Sanski Most (FBiH)	31,107	31,422	1,523	1,479
- Sanski Most / Srpski Sanski Most (RS)	2,881	2,983	67	50
29. Sarajevo - Centar (FBiH)	19,929	19,737	3,569	3,454
30. Sarajevo - Hadžići (FBiH)	7,413	7,478	677	631
31. Sarajevo - Ilidža:				
- Ilidža (FBiH)	26,191	26,496	2,611	2,532
- Ilidža / Srpska Ilidža (RS)	1,441	1,511	106	87
32. Sarajevo - Ilijaš (FBiH)	12,756	12,901	699	663
33. Sarajevo - Novi Grad (FBiH)	44,492	44,721	5,620	5,482
34. Sarajevo - Novo Sarajevo:				
- Novo Sarajevo / Srpsko Novo Sarajevo (RS)	256	285	8	-7
- Novo Sarajevo (FBiH)	34,720	34,945	5,824	5,688
35. Sarajevo - Pale:				
- Pale (FBiH)	768	808	13	na
- Pale (RS)	3,110	3,139	171	152
36. Sarajevo - Stari Grad:				
- Stari Grad Sarajevo (FBiH)	9,533	9,663	1,052	992
- Stari Grad Sarajevo / Srpski Stari Grad (RS)	192	206	0	0

Table 30. Continued

Municipality	Estimated Number of all DPs		Estimated Number of Others DPs	
	Estimate	95% Confidence Interval	Estimate	95% Confidence Interval
37. Sarajevo - Tmovo:				
- Tmovo (FBiH)	1,221	1,183	16	8
- Tmovo (RS)	2,272	2,252	42	34
38. Vogošća (FBiH)	10,720	10,642	1,027	982
39. Sokolac (RS)	4,574	4,551	45	35
40. Srebrenica (RS)	23,187	23,119	403	373
41. Šekovići (RS)	917	872	29	16
42. Šipovo (RS)	3,402	3,347	113	97
43. Teslić (RS)	18,392	18,252	1,140	1,081
44. Trebinje:				
- Ravno (FBiH)	1,231	1,206	23	18
- Trebinje (RS)	5,457	5,407	571	533
45. Višegrad (RS)	11,889	11,839	527	480
46. Vlasenica:				
- Vlasenica (RS)	8,128	8,091	201	176
- Milići (RS)	7,469	7,425	130	110
47. Zvornik:				
- Sapna (FBiH)	5,885	5,807	85	70
- Zvornik (RS)	31,110	31,037	1,095	1,047

Annex A4. Muslims

Table 4M. Geographic Distribution of Muslim Internally Displaced Persons Born before 1980 from MILOŠEVIĆ Case Area as Reported by OSCE and UNHCR and BH Government Sources, Municipal Borders as in 1997

Municipality of Residence in 1991	OSCE - 1997-98 No of IDPs	% of IDPs	UNHCR and BH Government - 2000 No of IDPs	% of IDPs
MILOŠEVIĆ Case Area	119,991	70.8	132,348	80.1
of which:				
- Republika Srpska (RS)	101,791	60.1	115,005	69.6
- The Federation of BH (FBH)	18,200	10.7	17,343	10.5
1. Banja Luka (RS)	2,636	1.6	2,867	1.7
2. Bihać (FBH)	333	0.2	861	0.5
3. Bijeljina (RS)	4,187	2.5	7,268	4.4
4. Bileća (RS)	214	0.1	231	0.1
5. Bosanska Dubica / Kozarska Dubica (RS)	507	0.3	795	0.5
6. Bosanska Gradiška / Gradiška (RS)	1,006	0.6	1,137	0.7
7. Bosanska Krupa:				
- Bosanska Krupa (FBH)	371	0.2	1,945	1.2
- Bužim (FBH)	264	0.2	1	0.0
- Bosanska Krupa / Krupa na Uni (RS)	0	0.0	3	0.0
8. Bosanski Novi:				
- Bosanski Novi / Novi Grad (RS)	1,507	0.9	2,283	1.4
- Kostajnica (RS)	158	0.1	80	0.0
9. Bosanski Petrovac:				
- Bosanski Petrovac (FBH)	94	0.1	77	0.0
- Petrovac (RS)	0	0.0	0	0.0
10. Bosanski Šamac:				
- Domaljevac - Šamac (FBH)	2	0.0	0	0.0
- Bosanski Šamac / Šamac (RS)	375	0.2	289	0.2

Annex A.4. Muslims

Table 4M. Continued

Municipality of Residence in 1991	OSCE - 1997-98		UNHCR and BH Government - 2000	
	No of IDPs	% of IDPs	No of IDPs	% of IDPs
11. Bratunac (RS)	6,550	3.9	7,934	4.8
12. Brčko:				
- Rahić / Ravne (Brčko Federation) (FBH)	98	0.1	140	0.1
- Brčko (RS)	7,424	4.4	6,144	3.7
13. Čajniče (RS)	1,740	1.0	1,710	1.0
14. Čelinac (RS)	196	0.1	158	0.1
15. Doboj:				
- Doboj - Istok (FBH)	121	0.1	31	0.0
- Doboj - Jug (FBH)	202	0.1	0	0.0
- Doboj (RS)	9,969	5.9	9,483	5.7
- Usora (FBH)	3	0.0	0	0.0
16. Donji Vakuf (FBH)	514	0.3	1,973	1.2
17. Foča:				
- Foča (FBH)	914	0.5	584	0.4
- Foča / Srinje (RS)	6,580	3.9	7,503	4.5
18. Gacko (RS)	1,417	0.8	1,420	0.9
19. Gorazde:				
- Gorazde (FBH)	1,027	0.6	773	0.5
- Gorazde / Srpsko Gorazde (RS)	1,815	1.1	1,924	1.2
20. Kalinovik (RS)	588	0.3	740	0.4
21. Ključ:				
- Ključ (FBH)	181	0.1	738	0.4
- Ključ / Ribnik (RS)	17	0.0	13	0.0
22. Kotor Varoš (RS)	1,966	1.2	2,034	1.2
23. Nevesinje (RS)	1,210	0.7	1,077	0.7

Annex A4. Muslims

Table 4M. Continued

Municipality of Residence in 1991	OSCE - 1997-98		UNHCR and BH Government - 2000	
	No of IDPs	% of IDPs	No of IDPs	% of IDPs
24. Prijedor (RS)	4,881	2.9	5,511	3.3
25. Prijavor (RS)	1,452	0.9	1,648	1.0
26. Rogatica (RS)	6,086	3.6	6,357	3.8
27. Rudo (RS)	828	0.5	1,007	0.6
28. Sanski Most:				
- Sanski Most (FBH)	123	0.1	64	0.0
- Sanski Most / Srpski Sanski Most (RS)	48	0.0	62	0.0
29. Sarajevo - Centar (FBH)	1,602	0.9	448	0.3
30. Sarajevo - Hadžići (FBH)	408	0.2	1,334	0.8
31. Sarajevo - Ilidža:				
- Ilidža (FBH)	1,804	1.1	869	0.5
- Ilidža / Srpska Ilidža (RS)	510	0.3	1,248	0.8
32. Sarajevo - Ilijaš (FBH)	857	0.5	3,211	1.9
33. Sarajevo - Novi Grad (FBH)	3,278	1.9	1,559	0.9
34. Sarajevo - Novo Sarajevo:				
- Novo Sarajevo / Srpsko Novo Sarajevo (RS)	3	0.0	144	0.1
- Novo Sarajevo (FBH)	2,093	1.2	1,073	0.6
35. Sarajevo - Pale:				
- Pale (FBH)	118	0.1	104	0.1
- Pale (RS)	1,563	0.9	1,495	0.9
36. Sarajevo - Stari Grad:				
- Stari Grad Sarajevo (FBH)	2,309	1.4	450	0.3
- Stari Grad Sarajevo / Srpski Stari Grad (RS)	10	0.0	51	0.0

Annex A4. Muslims

Table 4M. Continued

Municipality of Residence in 1991	OSCE - 1997-98		UNHCR and BH Government - 2000	
	No of IDPs	% of IDPs	No of IDPs	% of IDPs
37. Sarajevo - Trnovo:				
- Trnovo (FBH)	417	0.2	133	0.1
- Trnovo (RS)	1,348	0.8	1,264	0.8
38. Sarajevo - Vogošća (FBH)	774	0.5	961	0.6
39. Sokolac (RS)	2,622	1.5	2,783	1.7
40. Srebrenica (RS)	8,002	4.7	10,304	6.2
41. Šekovići (RS)	102	0.1	73	0.0
42. Šipovo (RS)	913	0.5	756	0.5
43. Teslić (RS)	3,726	2.2	3,129	1.9
44. Trebinje:				
- Ravno (FBH)	0	0.0	0	0.0
- Trebinje (RS)	288	0.2	373	0.2
45. Višegrad (RS)	4,717	2.8	5,572	3.4
46. Vlasenica:				
- Vlasenica (RS)	3,057	1.8	6,230	3.8
- Milići (RS)	2,641	1.6	135	0.1
47. Zvornik:				
- Sapna (FBH)	293	0.2	14	0.0
- Zvornik (RS)	8,932	5.3	11,770	7.1

Annex A4. Croats

Table 4C. Geographic Distribution of Croat Internally Displaced Persons Born before 1980 from MILOŠEVIĆ Case Area as Reported by OSCE and UNHCR and BH Government Sources, Municipal Borders as in 1997

Municipality of Residence in 1991	OSCE - 1997-98 No of IDPs	% of IDPs	UNHCR and BH Government - 2000 No of IDPs	% of IDPs
MILOŠEVIĆ Case Area	6,518	17.8	3,672	13.0
of which:				
- Republika Srpska (RS)	2,412	6.6	1,353	4.8
- The Federation of BH (FBH)	4,106	11.2	2,319	8.2
1. Banja Luka (RS)	781	2.1	131	0.5
2. Bihać (FBH)	69	0.2	18	0.1
3. Bijeljina (RS)	4	0.0	1	0.0
4. Bileća (RS)	2	0.0	2	0.0
5. Bosanska Dubica / Kozarska Dubica (RS)	10	0.0	5	0.0
6. Bosanska Gradiška / Gradiška (RS)	31	0.1	10	0.0
7. Bosanska Krupa:				
- Bosanska Krupa (FBH)	12	0.0	8	0.0
- Bužim (FBH)	0	0.0	0	0.0
- Bosanska Krupa / Krupa na Uni (RS)	0	0.0	0	0.0
8. Bosanski Novi:				
- Bosanski Novi / Novi Grad (RS)	5	0.0	5	0.0
- Kostajnica (RS)	6	0.0	0	0.0
9. Bosanski Petrovac:				
- Bosanski Petrovac (FBH)	8	0.0	19	0.1
- Petrovac (RS)	0	0.0	0	0.0
10. Bosanski Šamac:				
- Domaljevac - Šamac (FBH)	31	0.1	6	0.0
- Bosanski Šamac / Šamac (RS)	283	0.8	84	0.3

Annex A4. Croats

Table 4C. Continued

Municipality of Residence in 1991	OSCE - 1997-98		UNHCR and BH Government - 2000	
	No of IDPs	% of IDPs	No of IDPs	% of IDPs
11. Bratunac (RS)	2	0.0	2	0.0
12. Brčko:				
- Rahić / Ravne (Brčko Federation) (FBH)	26	0.1	15	0.1
- Brčko (RS)	221	0.6	160	0.6
13. Čajniče (RS)	0	0.0	0	0.0
14. Čelinac (RS)	2	0.0	0	0.0
15. Doboј:				
- Doboј - Istok (FBH)	0	0.0	8	0.0
- Doboј - Jug (FBH)	2	0.0	0	0.0
- Doboј (RS)	266	0.7	203	0.7
- Usora (FBH)	76	0.2	48	0.2
16. Donji Vakuf (FBH)	102	0.3	60	0.2
17. Foča:				
- Foča (FBH)	0	0.0	25	0.1
- Foča / Srinje (RS)	8	0.0	2	0.0
18. Gacko (RS)	4	0.0	5	0.0
19. Gorazde:				
- Gorazde (FBH)	16	0.0	7	0.0
- Gorazde / Srpsko Gorazde (RS)	0	0.0	1	0.0
20. Kalinovik (RS)	4	0.0	8	0.0
21. Ključ:				
- Ključ (FBH)	34	0.1	31	0.1
- Ključ / Ribnik (RS)	2	0.0	0	0.0
22. Kotor Varoš (RS)	83	0.2	28	0.1
23. Nevesinje (RS)	43	0.1	76	0.3

Annex A4. Croats

Table 4C. Continued

Municipality of Residence in 1991	OSCE - 1997-98 No of IDPs	% of IDPs	UNHCR and BH Government - 2000 No of IDPs	% of IDPs
24. Prijedor (RS)	106	0.3	75	0.3
25. Prijavor (RS)	75	0.2	15	0.1
26. Rogatica (RS)	2	0.0	1	0.0
27. Rudo (RS)	0	0.0	0	0.0
28. Sanski Most:				
- Sanski Most (FBH)	85	0.2	79	0.3
- Sanski Most / Srpski Sanski Most (RS)	33	0.1	4	0.0
29. Sarajevo - Centar (FBH)	278	0.8	120	0.4
30. Sarajevo - Hadžići (FBH)	182	0.5	78	0.3
31. Sarajevo - Ilidža:				
- Ilidža (FBH)	876	2.4	489	1.7
- Ilidža / Srpska Ilidža (RS)	27	0.1	60	0.2
32. Sarajevo - Ilijaš (FBH)	257	0.7	155	0.5
33. Sarajevo - Novi Grad (FBH)	888	2.4	432	1.5
34. Sarajevo - Novo Sarajevo:				
- Novo Sarajevo / Srpsko Novo Sarajevo (RS)	0	0.0	11	0.0
- Novo Sarajevo (FBH)	794	2.2	570	2.0
35. Sarajevo - Pale:				
- Pale (FBH)	0	0.0	2	0.0
- Pale (RS)	10	0.0	3	0.0
36. Sarajevo - Stari Grad:				
- Stari Grad Sarajevo (FBH)	77	0.2	30	0.1
- Stari Grad Sarajevo / Srpski Stari Grad (RS)	1	0.0	4	0.0

Table 4C. Continued

Municipality of Residence in 1991	OSCE - 1997-98		UNHCR and BH Government - 2000	
	No of IDPs	% of IDPs	No of IDPs	% of IDPs
37. Sarajevo - Trnovo:				
- Trnovo (FBH)	0	0.0	0	0.0
- Trnovo (RS)	1	0.0	3	0.0
38. Sarajevo - Vogošća (FBH)	122	0.3	119	0.4
39. Sokolac (RS)	2	0.0	0	0.0
40. Srebrenica (RS)	6	0.0	16	0.1
41. Šekovići (RS)	0	0.0	2	0.0
42. Šipovo (RS)	2	0.0	5	0.0
43. Tešlić (RS)	347	0.9	418	1.5
44. Trebinje:				
- Ravno (FBH)	171	0.5	0	0.0
- Trebinje (RS)	38	0.1	12	0.0
45. Višegrad (RS)	0	0.0	0	0.0
46. Vlasenica:				
- Vlasenica (RS)	1	0.0	0	0.0
- Milići (RS)	1	0.0	0	0.0
47. Zvornik:				
- Sapna (FBH)	0	0.0	0	0.0
- Zvornik (RS)	3	0.0	1	0.0

Annex A4. Serbs

Table 4S. Geographic Distribution of Serb Internally Displaced Persons Born before 1980 from MILOŠEVIĆ Case Area as Reported by OSCE and UNHCR and BH Government Sources, Municipal Borders as in 1997

Municipality of Residence in 1991	OSCE - 1997-98 No of IDPs	% of IDPs	UNHCR and BH Government - 2000 No of IDPs	% of IDPs
MILOŠEVIĆ Case Area	88,756	49.3	96,871	49.1
of which:				
- Republika Srpska (RS)	7,780	4.3	6,838	3.5
- The Federation of BH (FBH)	80,976	45.0	90,033	45.6
1. Banja Luka (RS)	606	0.3	19	0.0
2. Bihać (FBH)	4,442	2.5	4,859	2.5
3. Bijeljina (RS)	177	0.1	7	0.0
4. Bileća (RS)	67	0.0	0	0.0
5. Bosanska Dubica / Kozarska Dubica (RS)	131	0.1	7	0.0
6. Bosanska Gradiška / Gradiška (RS)	272	0.2	13	0.0
7. Bosanska Krupa:				
- Bosanska Krupa (FBH)	4,148	2.3	4,977	2.5
- Bužim (FBH)	2	0.0	0	0.0
- Bosanska Krupa / Krupa na Uni (RS)	338	0.2	8	0.0
8. Bosanski Novi:				
- Bosanski Novi / Novi Grad (RS)	164	0.1	45	0.0
- Kostajnica (RS)	118	0.1	0	0.0
9. Bosanski Petrovac:				
- Bosanski Petrovac (FBH)	4,849	2.7	4,895	2.5
- Petrovac (RS)	0	0.0	3	0.0
10. Bosanski Šamac:				
- Domaljevac - Šamac (FBH)	18	0.0	110	0.1
- Bosanski Šamac / Šamac (RS)	162	0.1	6	0.0

Table 4S. Continued

Municipality of Residence in 1991	OSCE - 1997-98 No of IDPs	% of IDPs	UNHCR and BH Government - 2000 No of IDPs	% of IDPs
11. Bratunac (RS)	171	0.1	1,064	0.5
12. Brčko:				
- Rahić / Ravne (Brčko Federation) (FBH)	1,433	0.8	1,709	0.9
- Brčko (RS)	148	0.1	241	0.1
13. Čajniče (RS)	81	0.0	198	0.1
14. Čelinac (RS)	281	0.2	0	0.0
15. Doboј:				
- Doboј - Istok (FBH)	8	0.0	30	0.0
- Doboј - Jug (FBH)	3	0.0	9	0.0
- Doboј (RS)	484	0.3	250	0.1
- Usora (FBH)	6	0.0	5	0.0
16. Donji Vakuf (FBH)	4,790	2.7	5,317	2.7
17. Foča:				
- Foča (FBH)	613	0.3	887	0.4
- Foča / Srinje (RS)	96	0.1	515	0.3
18. Gacko (RS)	41	0.0	2	0.0
19. Gorazde:				
- Gorazde (FBH)	3,647	2.0	3,919	2.0
- Gorazde / Srpsko Gorazde (RS)	141	0.1	21	0.0
20. Kalinovik (RS)	77	0.0	46	0.0
21. Ključ:				
- Ključ (FBH)	3,926	2.2	5,013	2.5
- Ključ / Ribnik (RS)	290	0.2	12	0.0
22. Kotor Varoš (RS)	196	0.1	11	0.0
23. Nevesinje (RS)	84	0.0	7	0.0

Annex A4. Serbs

Table 4S. Continued

Municipality of Residence in 1991	OSCE - 1997-98 No of IDPs	% of IDPs	UNHCR and BH Government - 2000 No of IDPs	% of IDPs
24. Prijedor (RS)	361	0.2	18	0.0
25. Prijavor (RS)	281	0.2	0	0.0
26. Rogatica (RS)	94	0.1	426	0.2
27. Rudo (RS)	28	0.0	106	0.1
28. Sanski Most:				
- Sanski Most (FBH)	7,297	4.1	9,838	5.0
- Sanski Most / Srpski Sanski Most (RS)	352	0.2	33	0.0
29. Sarajevo - Centar (FBH)	3,589	2.0	3,769	1.9
30. Sarajevo - Hadžići (FBH)	3,073	1.7	2,939	1.5
31. Sarajevo - Ilidža:				
- Ilidža (FBH)	7,407	4.1	7,510	3.8
- Ilidža / Srpska Ilidža (RS)	244	0.1	73	0.0
32. Sarajevo - Ilijaš (FBH)	5,571	3.1	6,172	3.1
33. Sarajevo - Novi Grad (FBH)	11,627	6.5	11,209	5.7
34. Sarajevo - Novo Sarajevo:				
- Novo Sarajevo / Srpsko Novo Sarajevo (RS)	26	0.0	25	0.0
- Novo Sarajevo (FBH)	7,566	4.2	8,927	4.5
35. Sarajevo - Pale:				
- Pale (FBH)	90	0.1	321	0.2
- Pale (RS)	103	0.1	10	0.0
36. Sarajevo - Stari Grad:				
- Stari Grad Sarajevo (FBH)	1,119	0.6	1,317	0.7
- Stari Grad Sarajevo / Srpski Stari Grad (RS)	34	0.0	17	0.0

Table 4S. Continued

Municipality of Residence in 1991	OSCE - 1997-98		UNHCR and BH Government - 2000	
	No of IDPs	% of IDPs	No of IDPs	% of IDPs
37. Sarajevo - Trnovo:				
- Trnovo (FBH)	245	0.1	403	0.2
- Trnovo (RS)	204	0.1	267	0.1
38. Sarajevo - Vogošća (FBH)	4,149	2.3	4,233	2.1
39. Sokolac (RS)	133	0.1	13	0.0
40. Srebrenica (RS)	273	0.2	1,726	0.9
41. Šekovići (RS)	264	0.1	53	0.0
42. Šipovo (RS)	246	0.1	51	0.0
43. Tešić (RS)	231	0.1	634	0.3
44. Trebinje:				
- Ravno (FBH)	362	0.2	581	0.3
- Trebinje (RS)	66	0.0	165	0.1
45. Višegrad (RS)	34	0.0	13	0.0
46. Vlasenica:				
- Vlasenica (RS)	78	0.0	179	0.1
- Milići (RS)	412	0.2	157	0.1
47. Zvornik:				
- Sapna (FBH)	996	0.6	1,084	0.5
- Zvornik (RS)	191	0.1	397	0.2

Annex A4. Others

Table 40. Geographic Distribution of Other Internally Displaced Persons Born before 1980 from MILOŠEVIĆ Case Area as Reported by OSCE and UNHCR and BH Government Sources, Municipal Borders as in 1997

Municipality of Residence in 1991	OSCE - 1997-98 No of IDPs	% of IDPs	UNHCR and BH Government - 2000 No of IDPs	% of IDPs
MILOŠEVIĆ Case Area	9,789	51.3	980	62.5
of which:				
- Republika Srpska (RS)	3,532	18.5	401	25.6
- The Federation of BH (FBH)	6,257	32.8	579	36.9
1. Banja Luka (RS)	410	2.1	26	1.7
2. Bihać (FBH)	298	1.6	17	1.1
3. Bijeljina (RS)	137	0.7	30	1.9
4. Bileća (RS)	24	0.1	3	0.2
5. Bosanska Dubica / Kozarska Dubica (RS)	42	0.2	3	0.2
6. Bosanska Gradiška / Gradiška (RS)	69	0.4	10	0.6
7. Bosanska Krupa:				
- Bosanska Krupa (FBH)	115	0.6	15	1.0
- Bužim (FBH)	8	0.0	0	0.0
- Bosanska Krupa / Krupa na Uni (RS)	0	0.0	0	0.0
8. Bosanski Novi:				
- Bosanski Novi / Novi Grad (RS)	65	0.3	22	1.4
- Kostajnica (RS)	8	0.0	0	0.0
9. Bosanski Petrovac:				
- Bosanski Petrovac (FBH)	77	0.4	17	1.1
- Petrovac (RS)	0	0.0	0	0.0
10. Bosanski Šamac:				
- Domaljevac - Šamac (FBH)	2	0.0	0	0.0
- Bosanski Šamac / Šamac (RS)	71	0.4	3	0.2

Table 40. Continued

Municipality of Residence in 1991	OSCE - 1997-98 No of IDPs	% of IDPs	UNHCR and BH Government - 2000 No of IDPs	% of IDPs
11. Bratunac (RS)	44	0.2	21	1.3
12. Brčko:				
- Rahić / Ravne (Brčko Federation) (FBH)	60	0.3	1	0.1
- Brčko (RS)	699	3.7	39	2.5
13. Čajniče (RS)	15	0.1	3	0.2
14. Čelinac (RS)	16	0.1	0	0.0
15. Doboј:				
- Doboј - Istok (FBH)	3	0.0	0	0.0
- Doboј - Jug (FBH)	2	0.0	0	0.0
- Doboј (RS)	656	3.4	47	3.0
- Usora (FBH)	3	0.0	0	0.0
16. Donji Vakuf (FBH)	105	0.6	65	4.1
17. Foča:				
- Foča (FBH)	13	0.1	4	0.3
- Foča / Srinje (RS)	71	0.4	30	1.9
18. Gacko (RS)	14	0.1	0	0.0
19. Gorazde:				
- Gorazde (FBH)	169	0.9	30	1.9
- Gorazde / Srpsko Gorazde (RS)	17	0.1	2	0.1
20. Kalinovik (RS)	13	0.1	2	0.1
21. Ključ:				
- Ključ (FBH)	140	0.7	9	0.6
- Ključ / Ribnik (RS)	7	0.0	0	0.0
22. Kotor Varoš (RS)	42	0.2	1	0.1
23. Nevesinje (RS)	22	0.1	1	0.1

Annex A4. Others

Table 40. Continued

Municipality of Residence in 1991	OSCE - 1997-98		UNHCR and BH Government - 2000	
	No of IDPs	% of IDPs	No of IDPs	% of IDPs
24. Prijedor (RS)	222	1.2	4	0.3
25. Prijavor (RS)	71	0.4	2	0.1
26. Rogatica (RS)	56	0.3	14	0.9
27. Rudo (RS)	10	0.1	2	0.1
28. Sanski Most:				
- Sanski Most (FBH)	236	1.2	38	2.4
- Sanski Most / Srpski Sanski Most (RS)	15	0.1	0	0.0
29. Sarajevo - Centar (FBH)	631	3.3	40	2.6
30. Sarajevo - Hadžići (FBH)	199	1.0	5	0.3
31. Sarajevo - Ilidža:				
- Ilidža (FBH)	716	3.8	47	3.0
- Ilidža / Srpska Ilidža (RS)	32	0.2	22	1.4
32. Sarajevo - Ilijaš (FBH)	208	1.1	32	2.0
33. Sarajevo - Novi Grad (FBH)	1,400	7.3	109	7.0
34. Sarajevo - Novo Sarajevo:				
- Novo Sarajevo / Srpsko Novo Sarajevo (RS)	1	0.0	5	0.3
- Novo Sarajevo (FBH)	1,280	6.7	103	6.6
35. Sarajevo - Pale:				
- Pale (FBH)	1	0.0	0	0.0
- Pale (RS)	70	0.4	5	0.3
36. Sarajevo - Stari Grad:				
- Stari Grad Sarajevo (FBH)	270	1.4	19	1.2
- Stari Grad Sarajevo / Srpski Stari Grad (RS)	0	0.0	1	0.1

Table 40. Continued

Municipality of Residence in 1991	OSCE - 1997-98		UNHCR and BH Government - 2000	
	No of IDPs	% of IDPs	No of IDPs	% of IDPs
37. Sarajevo - Trnovo:				
- Trnovo (FBH)	6	0.0	0	0.0
- Trnovo (RS)	16	0.1	9	0.6
38. Sarajevo - Vogošća (FBH)	290	1.5	21	1.3
39. Sokolac (RS)	17	0.1	0	0.0
40. Srebrenica (RS)	79	0.4	10	0.6
41. Šekovići (RS)	8	0.0	5	0.3
42. Šipovo (RS)	26	0.1	5	0.3
43. Teslić (RS)	188	1.0	14	0.9
44. Trebinje:				
- Ravno (FBH)	9	0.0	4	0.3
- Trebinje (RS)	64	0.3	5	0.3
45. Višegrad (RS)	47	0.2	15	1.0
46. Vlasenica:				
- Vlasenica (RS)	40	0.2	9	0.6
- Milići (RS)	15	0.1	0	0.0
47. Zvornik:				
- Sapna (FBH)	16	0.1	3	0.2
- Zvornik (RS)	113	0.6	31	2.0

ANNEX A5. REVIEW OF THE RESULTS AT THE MUNICIPAL LEVEL

Table 5. Population Change in Some Municipalities of the MILOŠEVIĆ Case Area between 1991, 1993 and 1995, Based on RS Sources

Banja Luka Municipality	1991		1993 Moved Out	1995		1997-98 (RS, 18+) %
	No.	%		No.	% (approx)	
Muslims	28558	14.6	data n/a	10000	6.4	2.1
Serbs	106826	54.6	data n/a	125000	80.6	83.3
Croats	29026	14.8	data n/a	10500	6.8	2.6
Yugoslavs and others	31282	16.0	data n/a	10000	6.4	12.0
Total	195692	100.0		155500	100.2	100.0

Bihač-Ripač Municipality	1991		1993 Moved Out	1995		1997-98 (RS, 18+) %
	No.	%		No.	% (approx)	
Muslims	46737	66.1	8000			na
Serbs	12689	17.9	200	4000	100.0	na
Croats	5580	7.9	0			na
Yugoslavs and others	5726	8.1	data n/a			na
Total number of inhabitants	70732	100.0		4000	100.0	na

Bosanska Dubica Municipality	1991		1993 Moved Out	1995		1997-98 (RS, 18+) %
	No.	%		No.	% (approx)	
Muslims	6440	20.4	4500	400	1.6	1.2
Serbs	21728	68.7	data n/a	24500	98.0	90.5
Croats	488	1.5	400	140	0.6	0.9
Yugoslavs and others	2950	9.4	data n/a			7.5
Total	31606	100.0		25040	100.2	100.1
Bosanska Gradiška Municipality	1991		1993 Moved Out	1995		1997-98 (RS, 18+)

	No.	%	No.	No. (approx)	% (approx)	% (approx)
Muslims	15851	26.4	9500-10000	3500	7.0	3.7
Serbs	35753	59.6	1000	45000	90.4	88.5
Croats	3417	5.7	1000	500	1.0	1.5
Yugoslavs and others	4953	8.2	data n/a	800	1.6	6.3
Total	59974	97.9		49800	100.0	100.0

Bosanska Krupa Municipality	1991		1993 Moved Out	1995		1997-98 (RS, 18+)
	No.	%	No.	No. (approx)	% (approx)	% (approx)
Muslims	43104	73.9	43300			0.1
Serbs	13841	23.7	4760	9000	100.0	99.5
Croats	139	0.2	143			0
Yugoslavs and others	1236	2.1	256			0.4
Total	58320	98.9		9000	100.0	100.0

Bosanski Novi Municipality	1991		1993 Moved Out	1995		1997-98 (RS, 18+)
	No.	%	No.	No. (approx)	% (approx)	% (approx)
Muslims	14040	33.7	13000	1513	4.8	2.4
Serbs	25101	60.2	data n/a	29040	92.8	92.4
Croats	403	1.0	40	245	0.8	0.7
Yugoslavs and others	2121	5.1	data n/a	521	1.7	4.5
Total	41665	99.0		31319	100.1	100.0

Bosanski Petrovac Municipality	1991		1993 Moved Out	1995		1997-98 (RS, 18+)
	No.	%	No.	No. (approx)	% (approx)	% (approx)
Muslims	3288	21.0	3200	50	0.3	0.0
Serbs	11694	74.9	100	14550	99.7	99.9
Croats	48	0.3	0			0.0
Yugoslavs and others	591	3.7	data n/a			1.0
Total	15621	98.9		14600	100.0	100.0
Čelinac Municipality	1991		1993 Moved Out	1995		1997-98 (RS, 18+)
	No.	%	No.	No. (approx)	% (approx)	% (approx)

Muslims	1446	7.7	data n/a	190	1.1	0.8
Serbs	16554	88.5	data n/a	17500	98.9	96.1
Croats	76	0.4	data n/a	15	0.1	0.3
Yugoslavs and others	637	3.4	data n/a			2.8
Total	18713	100.0		17705	100.1	100.0

Donj Vakuf Municipality	1991		1993 Moved Out	1995		1997-98 (RS, 18+) % (approx)
	No.	%		No.	% (approx)	
Muslims	13509	55.0	12970	81	0.9	na
Serbs	9533	38.8	data n/a	8884	98.7	na
Croats	682	2.8	480	32	0.4	na
Yugoslavs and others	820	3.4	data n/a	3	0	na
Total	24544	100.0		9000	100.0	na

Ključ Municipality	1991		1993 Moved Out	1995		1997-98 (RS, 18+) % (approx)
	No.	%		No.	% (approx)	
Muslims	17696	47.3	14-15000	1211	6.0	0.1
Serbs	18506	49.5	1000	18882	93.9	99.0
Croats	330	0.9	200	424	2.1	0.1
Yugoslavs and others	859	2.2	data n/a			0.8
Total	37391	99.9		20120	102.0	100.0

Kotor Varoš Municipality	1991		1993 Moved Out	1995		1997-98 (RS, 18+) % (approx)
	No.	%		No.	% (approx)	
Muslims	11090	30.1	data n/a	1800	10.7	5.4
Serbs	14056	38.1	data n/a	14000	83.3	89.8
Croats	10695	29.0	data n/a	1000	6.0	1.4
Yugoslavs and others	1012	2.7	data n/a			3.4
Total	36853	99.9		16800	100.0	100.0

Prijedor Municipality	1991		1993 Moved Out	1995		1997-98 (RS, 18+) % (approx)
	No.	%		No.	% (approx)	
Muslims	49351	43.9	42000	3600	5.4	1.0
Serbs	47581	42.3	data n/a	61000	92.3	89.0

Croats	6316	5.6	2000	1000	1.5	2.5
Yugoslavs and others	9295	8.2	data n/a	500	0.8	7.5
Total	112543	100.0		66100	100.0	100.0

Prnjavor Municipality	1991		1993 Moved Out	1995		1997-98 (RS, 18+) %
	No.	%		No.	No. (approx)	
Muslims	7143	15.2	2053	2500	5.4	1.1
Serbs	33508	71.2	data n/a	39040	84.9	90.1
Croats	1721	3.7	923	460	1.0	1.1
Yugoslavs and others	4683	9.9	data n/a	4000	8.7	7.7
Total	47055	100.0		46000	100.0	100.0

Sanski Most Municipality	1991		1993 Moved Out	1995		1997-98 (RS, 18+) %
	No.	%		No.	No. (approx)	
Muslims	28136	46.7	data n/a	3350	8.8	0.2
Serbs	25363	42.1	data n/a	33600	88.4	94.8
Croats	4322	7.2	data n/a	1050	2.8	2.6
Yugoslavs and others	2486	4.2	data n/a			2.4
Total	60307	100.2		38000	100.0	100.0

Šipovo Municipality	1991		1993 Moved Out	1995		1997-98 (RS, 18+) %
	No.	%		No.	No. (approx)	
Muslims	2965	19.0	2400	350	2.7	0.1
Serbs	12333	79.2	data n/a	12663	97.4	98.7
Croats	31	0.2	data n/a	30	0.2	0.2
Yugoslavs and others	250	1.6	data n/a	19	0.1	1.0
Total	15579	100.0		13062	100.4	100.0

Teslić Municipality	1991		1993 Moved Out	1995		1997-98 (RS, 18+) %
	No.	%		No.	No. (approx)	
Muslims	12802	21.4	data n/a	3765	9.3	3.2
Serbs	32962	55.1	data n/a	35500	87.4	88.4
Croats	9525	15.9	data n/a	1294	3.2	2.2
Yugoslavs and						

others	4565	7.6	data n/a	70	0.2	6.2
Total	59854	100.0		40629	100.1	100.0

Sources:

¹ The 1991 Census: Stanovništvo Bosne i Hercegovine, Narodnosni sastav po naseljima.

² The list of citizens who have moved out and into the area covered by the sector, Banja Luka SNB /National Security Service/ Sector, Banja Luka, May 1993. ERN: B009-8148-B009-8153

³ Overview of data on the number and ethnic structure of population according to municipalities in the area of the Banja Luka RDB /State Security Department/ Centre for 1991 and 1995, Banja Luka, February 1995. ERN: B003-1169-B003-1183

⁴ The 1997-98 statistics come from Table 1 in Annex 1 of this report. They were obtained from the OSCE voters register for 1997-98 and the 1991 population census.

ANNEX A6.1 BIJELJINA (RS)

In the period 1991–97 the share of Serbs in the Bijeljina (RS) population increased from 60.8% to 91.11%, i.e. by 49.8 per cent. In the same period the share of Muslims decreased from 29.8% to 2.6%, i.e. by 91.4 per cent and the share of Others decreased from 8.9% to 5.7%, i.e. by 36.1 per cent. The share of Croats in the Bijeljina (RS) population increased from 0.5% to 0.7%, i.e. by 22.5 per cent. The above results were obtained using records of those born before 1980. The actual population, i.e. all those who lived in Bijeljina (RS) in 1997, was used. The 1991 population was complete and the 1997 population was represented by a large sample (Voters Register).

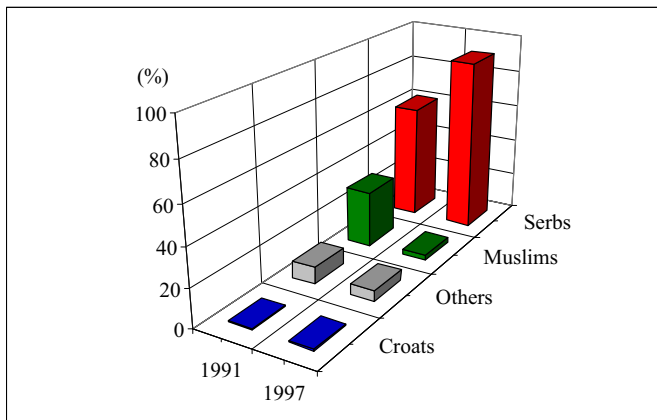
A6.1 Table 1. Ethnic Composition in Bijeljina (RS), 1991 versus 1997 Exclusively Individuals Born Before 1980, Actual Population

	All	Serbs	Muslims	Others	Croats
Numbers					
1991	81,650	49,654	24,314	7,234	448
1997	55,807	50,843	1,429	3,160	375
Per cent					
1991	100.0	60.8	29.8	8.9	0.5
1997	100.0	91.1	2.6	5.7	0.7
1991-1997 Change	na ⁾	+49.8	-91.4	-36.1	+22.5

⁾ na - not applicable

Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

A6.1 Figure 1. Ethnic Composition in Bijeljina (RS), 1991 vs. 1997, Actual Population



Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

Table 2 contains figures that refer to the individuals born before 1980 who resided in Bijeljina (RS) in 1991, were enumerated in the 1991 census, and also registered to vote in the 1997 elections. The individuals could register in Bijeljina (RS) or elsewhere, therefore Table 2 shows the domestic population who registered at Bijeljina (RS) and also the population registered outside the domestic municipality, i.e. persons considered as generally displaced from Bijeljina (RS). Among those generally displaced, we distinguish internally displaced persons (living elsewhere in Bosnia and Herzegovina in 1997) and refugees (living in foreign countries in 1997).

Of the whole post-war population originating from Bijeljina (RS) (i.e. the population residing there in 1991), at least 14,151 persons (29.4% of all identified survivors) were still displaced or refugees in 1997. Out of this total, some 395 were Serbs, 12,725 were Muslims, 31 were Croats and 1,000 were Others. Thus, there were 2.8% Serbs among all refugees and internally displaced persons from Bijeljina (RS), 89.9% Muslims, 0.2% Croats, and 7.1% Others.

From Table 2 we also see that, in 1997, there were 1.3% refugees and IDPs among Serb population from Bijeljina (RS), 90.1% refugees and IDPs among Muslim population, 14.4% refugees and IDPs among Croat population and 35.3% refugees and IDPs among Others.

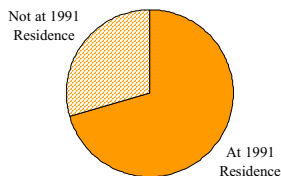
A6.1 Table 2. The 1997 Voters Originating from Bijeljina (RS) By Place of Registration

	All	Serbs	Muslims	Croats	Others
Numbers					
- At 1991 Residence	34,029	30,617	1,392	185	1,835
- Not at 1991 Residence	14,151	395	12,725	31	1,000
Total:	48,180	31,012	14,117	216	2,835
Percentages					
- At 1991 Residence	70.6	98.7	9.9	85.6	64.7
- Not at 1991 Residence	29.4	1.3	90.1	14.4	35.3
Total:	100.0	100.0	100.0	100.0	100.0

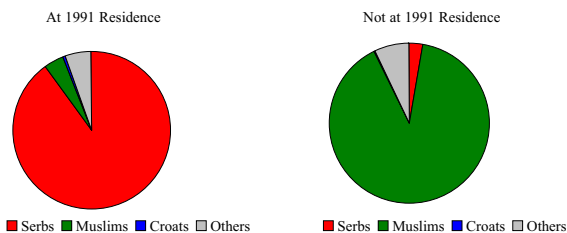
^{a)} *na - not applicable*

Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

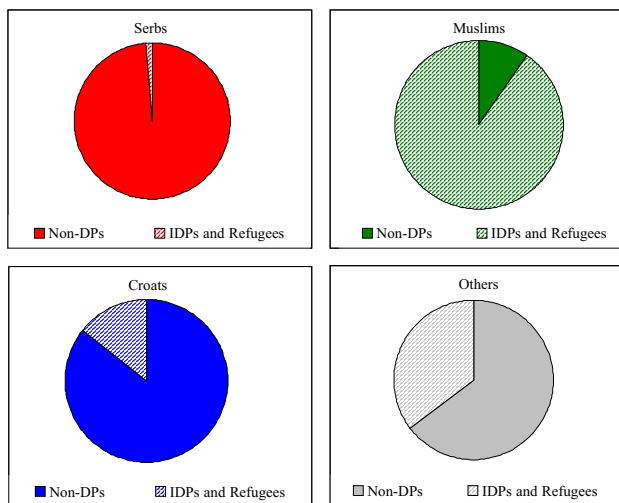
A6.1 Figure 2a. Proportion of 1997 Voters Originating from Bijeljina (RS) by Place of Registration to Vote in 1997



A6.1 Figure 2b. Ethnic Composition of 1997 Voters Originating from Bijeljina (RS) by Place of Registration to Vote in 1997



A6.1 Figure 2c. Proportion of IDPs and Refugees Originating from Bijeljina (RS), Status as of 1997 by Ethnicity



Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

Table 3 (a, b) shows the distribution of the 1997 population of voters, who used to live in Bijeljina (RS) also in 1991, by their place of registration to vote in 1997. The table makes a distinction between domestic population (Non-DPs), internally displaced persons (IDPs) and refugees (Ref). The most voters originating from Bijeljina (RS) were non-displaced persons and registered in the domestic municipality in 1997 (70.6% of the total; i.e. 34,029 out of 48,180). For the Serbs this fraction was higher and equalled 98.7 percent (30,617 individuals).

Some 20.0% of the 1997 voters originating from Bijeljina (RS) resided abroad in 1997 (9,646; mostly Muslims). Some 9.4% still resided in municipalities other than domestic in 1997 (4,505; mostly Muslims).

A6.1 Table 3a. The 1997 Voters Originating from Bijeljina (RS) By Ethnicity and Place of Registration to Vote in 1997 Absolute Numbers

Ethnicity	Non-DPs	IDPs	Refugees	Total
Serbs	30,617	177	218	31,012
Muslims	1,392	4,187	8,538	14,117
Croats	185	4	27	216
Others	1,835	137	863	2,835
Total	34,029	4,505	9,646	48,180

A6.1 Table 3b. The 1997 Voters Originating from Bijeljina (RS) By Ethnicity and Place of Registration to Vote in 1997, Percentages

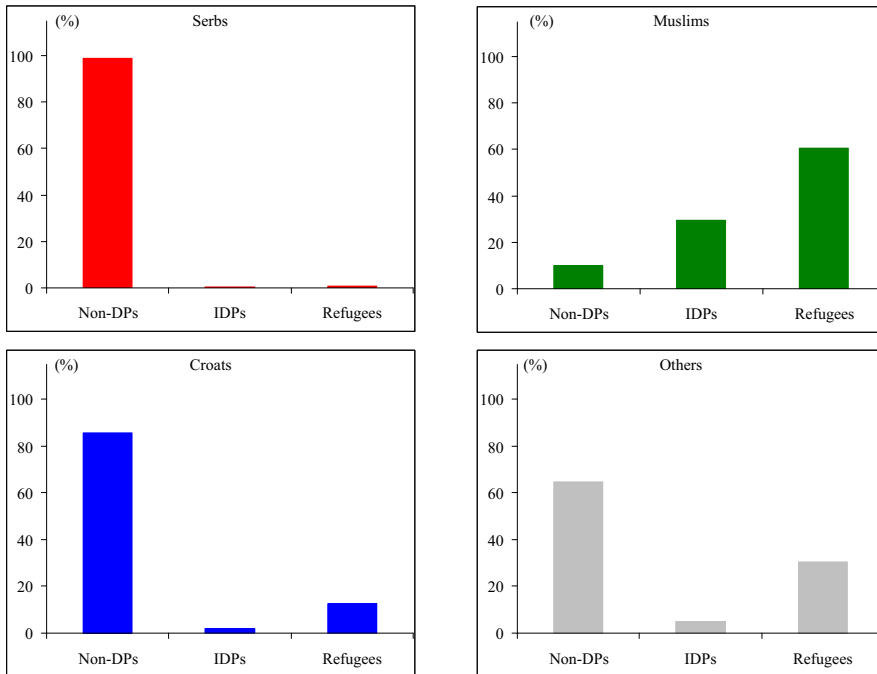
Ethnicity	Non-DPs	IDPs	Refugees	Total
Serbs	98.7	0.6	0.7	100.0
Muslims	9.9	29.7	60.5	100.0
Croats	85.6	1.9	12.5	100.0
Others	64.7	4.8	30.4	100.0
Total	70.6	9.4	20.0	100.0

A6.1 Table 3c. Refugees Originating from Bijeljina (RS) By Country of Registration and Ethnicity, Status as of 1997

Ethnicity	Croatia		FRY		Other Countries		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Serbs	1	0.5	74	33.9	143	65.6	218	100.00
Muslims	23	0.3	82	1.0	8,433	98.8	8,538	100.00
Croats	10	37.0	0	0.0	17	63.0	27	100.00
Others	2	0.2	29	3.4	832	96.4	863	100.00
Total	36	na	185	na	9,425	na	9,646	na

Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

A6.1 Figure 3. The 1997 Voters Originating from Bijeljina (RS) by Ethnicity and Place of Registration to Vote



Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

ANNEX A6.2 BRATUNAC (RS)

In the period 1991-97 the share of Muslims in the Bratunac (RS) population decreased from 61.8% to 0.1%, i.e. by 99.9 per cent. In the same period the share of Serbs increased from 36.4% to 97.0%, i.e. by 166.8 per cent and the share of Others increased from 1.7% to 2.5%, i.e. by 43.5 per cent. The share of Croats in the Bratunac (RS) population increased from 0.1% to 0.4%, i.e. by 168.6 per cent. The above results were obtained using records of those born before 1980. The actual population, i.e. all those who lived in Bratunac (RS) in 1997, was used. The 1991 population was complete and the 1997 population was represented by a large sample (Voters Register).

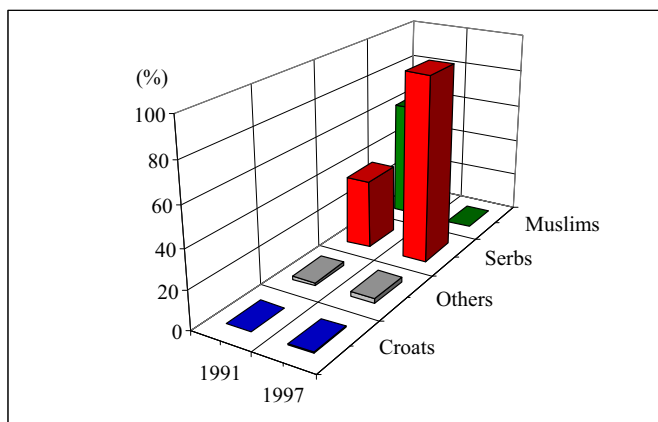
A6.2 Table 1. Ethnic Composition in Bratunac (RS), 1991 versus 1997 Exclusively Individuals Born Before 1980, Actual Population

	All	Muslims	Serbs	Others	Croats
Numbers					
1991	26,369	16,284	9,588	459	38
1997	10,852	10	10,529	271	42
Per cent					
1991	100.0	61.8	36.4	1.7	0.1
1997	100.0	0.1	97.0	2.5	0.4
1991-1997 Change	na ^{*)}	-99.9	+166.8	+43.5	+168.6

^{*)} na - not applicable

Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

A6.2 Figure 1. Ethnic Composition in Bratunac (RS), 1991 vs. 1997, Actual Population



Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

Table 2 contains figures that refer to the individuals born before 1980 who resided in Bratunac (RS) in 1991, were enumerated in the 1991 census, and also registered to vote in the 1997 elections. The individuals could register in Bratunac (RS) or elsewhere, therefore Table 2 shows the domestic population who registered at Bratunac (RS) and also the population registered outside the domestic municipality, i.e. persons considered as generally displaced from Bratunac (RS). Among those generally displaced, we distinguish internally displaced persons (living elsewhere in Bosnia and Herzegovina in 1997) and refugees (living in foreign countries in 1997).

Of the whole post-war population originating from Bratunac (RS) (i.e. the population residing there in 1991), at least 8,964 persons (65.1% of all identified survivors) were still displaced or refugees in 1997. Out of this total, some 415 were Serbs, 8,434 were Muslims, 9 were Croats and 106 were Others. Thus, there were 4.6% Serbs among all refugees and internally displaced persons from Bratunac (RS), 94.1% Muslims, 0.1% Croats, and 1.2% Others.

From Table 2 we also see that, in 1997, there were 8.1% refugees and IDPs among Serb population from Bratunac (RS), 100.0% refugees and IDPs among Muslim population, 42.9% refugees and IDPs among Croat population and 62.0% refugees and IDPs among Others.

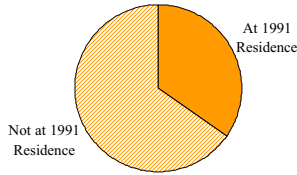
A6.2 Table 2. The 1997 Voters Originating from Bratunac (RS) By Place of Registration

	All	Serbs	Muslims	Croats	Others
Numbers					
- At 1991 Residence	4,796	4,715	4	12	65
- Not at 1991 Residence	8,964	415	8,434	9	106
Total:	13,760	5,130	8,438	21	171
Percentages					
- At 1991 Residence	34.9	91.9	0.0	57.1	38.0
- Not at 1991 Residence	65.1	8.1	100.0	42.9	62.0
Total:	100.0	100.0	100.0	100.0	100.0

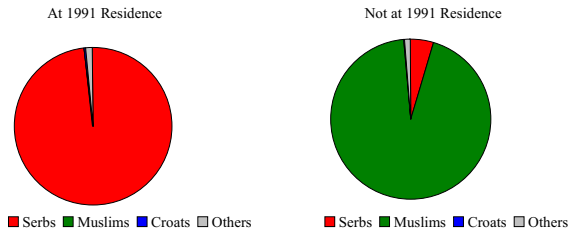
^{a)} na - not applicable

Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

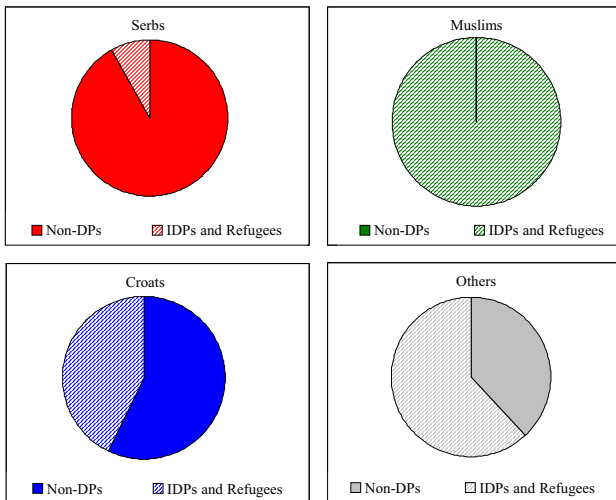
A6.2 Figure 2a. Proportion of 1997 Voters Originating from Bratunac (RS) by Place of Registration to Vote in 1997



A6.2 Figure 2b. Ethnic Composition of 1997 Voters Originating from Bratunac (RS) by Place of Registration to Vote in 1997



A6.2 Figure 2c. Proportion of IDPs and Refugees Originating from Bratunac (RS), Status as of 1997 by Ethnicity



Source: The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.

Table 3 (a, b) shows the distribution of the 1997 population of voters, who used to live in Bratunac (RS) also in 1991, by their place of registration to vote in 1997. The table makes a distinction between domestic population (Non-DPs), internally displaced persons (IDPs) and refugees (Ref). The most voters originating from Bratunac (RS) were internally displaced persons and registered in Bosnia and Herzegovina in the municipality different than domestic (49.2% of the total; i.e. 6,767 out of 13,760). For the Muslims this fraction was higher and equalled 77.6 percent (6,550 individuals). Some 34.9% of the voters still resided in the domestic municipality in 1997 (4,796; mostly Serbs). Some 16.0% of the 1997 voters originating from Bratunac (RS) resided abroad in 1997 (2,197; mostly Muslims).

A6.2 Table 3a. The 1997 Voters Originating from Bratunac (RS) By Ethnicity and Place of Registration to Vote in 1997 Absolute Numbers

Ethnicity	Non-DPs	IDPs	Refugees	Total
Serbs	4,715	171	244	5,130
Muslims	4	6,550	1,884	8,438
Croats	12	2	7	21
Others	65	44	62	171
Total	4,796	6,767	2,197	13,760

A6.2 Table 3b. The 1997 Voters Originating from Bratunac (RS) By Ethnicity and Place of Registration to Vote in 1997, Percentages

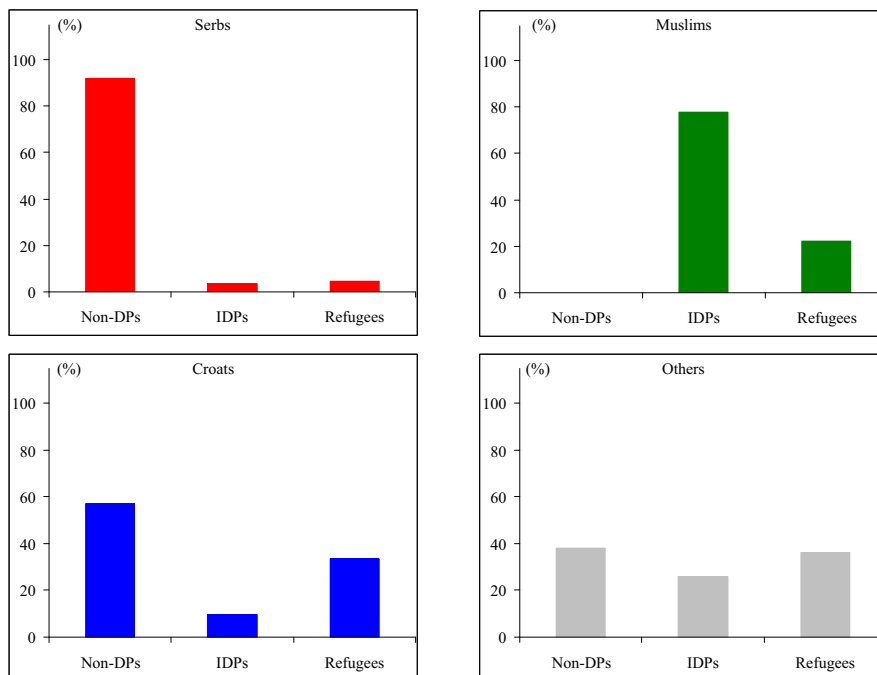
Ethnicity	Non-DPs	IDPs	Refugees	Total
Serbs	91.9	3.3	4.8	100.0
Muslims	0.0	77.6	22.3	100.0
Croats	57.1	9.5	33.3	100.0
Others	38.0	25.7	36.3	100.0
Total	34.9	49.2	16.0	100.0

A6.2 Table 3c. Refugees Originating from Bratunac (RS) By Country of Registration and Ethnicity, Status as of 1997

Ethnicity	Croatia		FRY		Other Countries		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Serbs	0	0.0	240	98.4	4	1.6	244	100.00
Muslims	13	0.7	14	0.7	1,857	98.6	1,884	100.00
Croats	0	0.0	3	42.9	4	57.1	7	100.00
Others	2	3.2	10	16.1	50	80.6	62	100.00
Total	15	na	267	na	1,915	na	2,197	na

Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

A6.2 Figure 3. The 1997 Voters Originating from Bratunac (RS) by Ethnicity and Place of Registration to Vote



Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

ANNEX A6.3 BRČKO - RAHIĆ (FBH)

In the period 1991-97 the share of Muslims in the Rahić (FBH) population increased from 42.4% to 77.87%, i.e. by 83.5 per cent. In the same period the share of Croats decreased from 41.9% to 17.5%, i.e. by 58.1 per cent and the share of Serbs decreased from 13.0% to 0.3%, i.e. by 97.8 per cent. The share of Others in the Rahić (FBH) population increased from 2.7% to 4.3%, i.e. by 58.4 per cent. The above results were obtained using records of those born before 1980. The actual population, i.e. all those who lived in Rahić (FBH) in 1997, was used. The 1991 population was complete and the 1997 population was represented by a large sample (Voters Register).

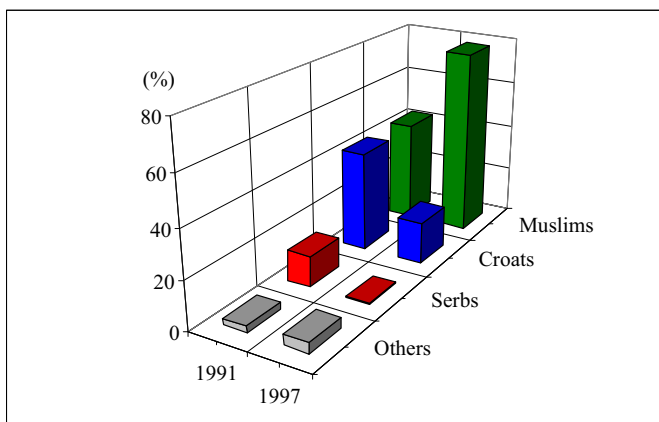
A6.3 Table 1. Ethnic Composition in Rahić (FBH), 1991 versus 1997 Exclusively Individuals Born Before 1980, Actual Population

	All	Muslims	Croats	Serbs	Others
Numbers					
1991	25,632	10,877	10,727	3,329	699
1997	12,871	10,023	2,256	36	556
Per cent					
1991	100.0	42.4	41.9	13.0	2.7
1997	100.0	77.9	17.5	0.3	4.3
1991-1997 Change	na ⁾	+83.5	-58.1	-97.8	+58.4

⁾ na - not applicable

Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

A6.3 Figure 1. Ethnic Composition in Rahić (FBH), 1991 vs. 1997, Actual Population



Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

Table 2 contains figures that refer to the individuals born before 1980 who resided in Rahić (FBH) in 1991, were enumerated in the 1991 census, and also registered to vote in the 1997 elections. The individuals could register in Rahić (FBH) or elsewhere, therefore Table 2 shows the domestic population who registered at Rahić (FBH) and also the population registered outside the domestic municipality, i.e. persons considered as generally displaced from Rahić (FBH). Among those generally displaced, we distinguish internally displaced persons (living elsewhere in Bosnia and Herzegovina in 1997) and refugees (living in foreign countries in 1997).

Of the whole post-war population originating from Rahić (FBH) (i.e. the population residing there in 1991), at least 3,094 persons (38.1% of all identified survivors) were still displaced or refugees in 1997. Out of this total, some 1,518 were Serbs, 875 were Muslims, 628 were Croats and 73 were Others. Thus, there were 49.1% Serbs among all refugees and internally displaced persons from Rahić (FBH), 28.3% Muslims, 20.3% Croats, and 2.4% Others.

From Table 2 we also see that, in 1997, there were 99.0% refugees and IDPs among Serb population from Rahić (FBH), 20.0% refugees and IDPs among Muslim population, 30.0% refugees and IDPs among Croat population and 63.5% refugees and IDPs among Others.

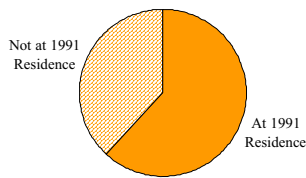
A6.3 Table 2. The 1997 Voters Originating from Rahić (FBH) By Place of Registration

	All	Serbs	Muslims	Croats	Others
Numbers					
- At 1991 Residence	5,026	15	3,504	1,465	42
- Not at 1991 Residence	3,094	1,518	875	628	73
Total:	8,120	1,533	4,379	2,093	115
Percentages					
- At 1991 Residence	61.9	1.0	80.0	70.0	36.5
- Not at 1991 Residence	38.1	99.0	20.0	30.0	63.5
Total:	100.0	100.0	100.0	100.0	100.0

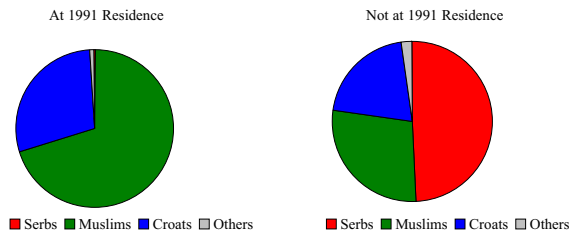
^{a)} *na - not applicable*

Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

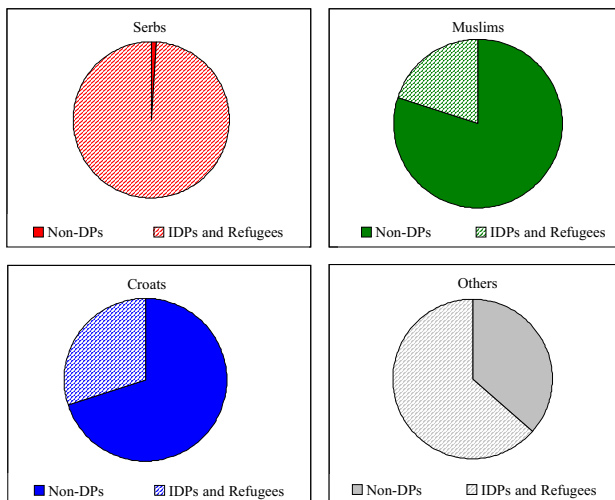
A6.3 Figure 2a. Proportion of 1997 Voters Originating from Rahić (FBH) by Place of Registration to Vote in 1997



A6.3 Figure 2b. Ethnic Composition of 1997 Voters Originating from Rahić (FBH) by Place of Registration to Vote in 1997



A6.3 Figure 2c. Proportion of IDPs and Refugees Originating from Rahić (FBH), Status as of 1997 by Ethnicity



Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

Table 3 (a, b) shows the distribution of the 1997 population of voters, who used to live in Rahić (FBH) also in 1991, by their place of registration to vote in 1997. The table makes a distinction between domestic population (Non-DPs), internally displaced persons (IDPs) and refugees (Ref). The most voters originating from Rahić (FBH) were non-displaced persons and registered in the domestic municipality in 1997 (61.9% of the total; i.e. 5,026 out of 8,120). For the Muslims this fraction was higher and equalled 80.0 percent (3,504 individuals).

Some 19.9% still resided in municipalities other than domestic in 1997 (1,617; mostly Serbs). Some 18.2% of the 1997 voters originating from Rahić (FBH) resided abroad in 1997 (1,477; mostly Muslims).

A6.3 Table 3a. The 1997 Voters Originating from Rahić (FBH) By Ethnicity and Place of Registration to Vote in 1997 Absolute Numbers

Ethnicity	Non-DPs	IDPs	Refugees	Total
Serbs	15	1,433	85	1,533
Muslims	3,504	98	777	4,379
Croats	1,465	26	602	2,093
Others	42	60	13	115
Total	5,026	1,617	1,477	8,120

A6.3 Table 3b. The 1997 Voters Originating from Rahić (FBH) By Ethnicity and Place of Registration to Vote in 1997, Percentages

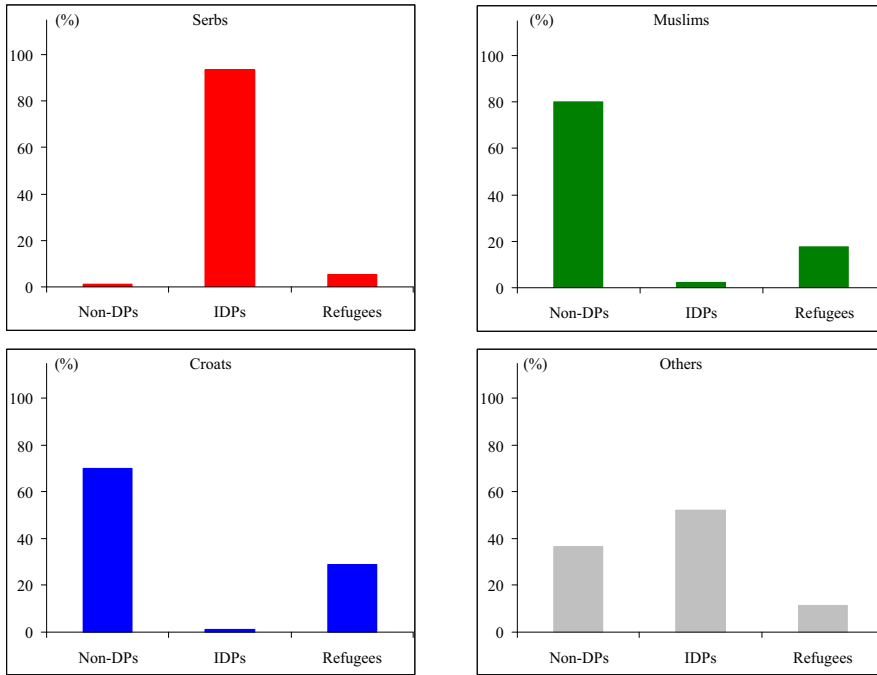
Ethnicity	Non-DPs	IDPs	Refugees	Total
Serbs	1.0	93.5	5.5	100.0
Muslims	80.0	2.2	17.7	100.0
Croats	70.0	1.2	28.8	100.0
Others	36.5	52.2	11.3	100.0
Total	61.9	19.9	18.2	100.0

A6.3 Table 3c. Refugees Originating from Rahić (FBH) By Country of Registration and Ethnicity, Status as of 1997

Ethnicity	Croatia		FRY		Other Countries		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Serbs	1	1.2	62	72.9	22	25.9	85	100.00
Muslims	17	2.2	13	1.7	747	96.1	777	100.00
Croats	102	16.9	2	0.3	498	82.7	602	100.00
Others	4	30.8	1	7.7	8	61.5	13	100.00
Total	124	na	78	na	1,275	na	1,477	na

Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

A6.3 Figure 3. The 1997 Voters Originating from Rahić (FBH) by Ethnicity and Place of Registration to Vote



Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

ANNEX A6.3 BRČKO (RS)

In the period 1991-97 the share of Muslims in the Brčko (RS) population decreased from 42.9% to 2.6%, i.e. by 93.9 per cent. In the same period the share of Serbs increased from 25.8% to 87.5%, i.e. by 239.2 per cent and the share of Croats decreased from 17.6% to 1.9%, i.e. by 89.2 per cent. The share of Others in the Brčko (RS) population decreased from 13.6% to 8.0%, i.e. by 41.6 per cent. The above results were obtained using records of those born before 1980. The actual population, i.e. all those who lived in Brčko (RS) in 1997, was used. The 1991 population was complete and the 1997 population was represented by a large sample (Voters Register).

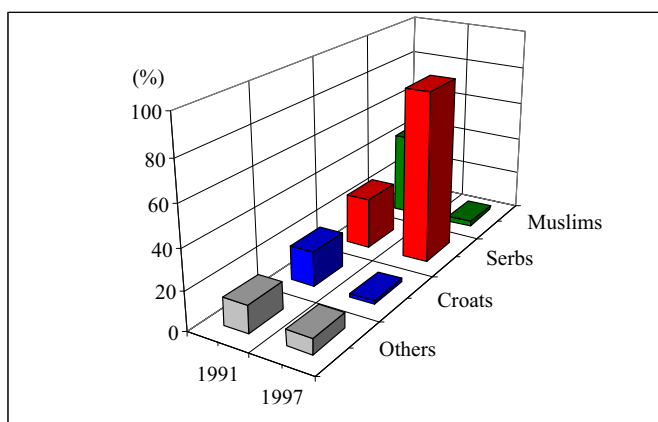
A6.3 Table 1. Ethnic Composition in Brčko (RS), 1991 versus 1997 Exclusively Individuals Born Before 1980, Actual Population

	All	Muslims	Serbs	Croats	Others
Numbers					
1991	47,294	20,309	12,199	8,337	6,449
1997	20,752	546	18,159	394	1,653
Per cent					
1991	100.0	42.9	25.8	17.6	13.6
1997	100.0	2.6	87.5	1.9	8.0
1991-1997 Change	na ^{*)}	-93.9	+239.2	-89.2	-41.6

^{*)} na - not applicable

Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

A6.3 Figure 1. Ethnic Composition in Brčko (RS), 1991 vs. 1997, Actual Population



Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

Table 2 contains figures that refer to the individuals born before 1980 who resided in Brčko (RS) in 1991, were enumerated in the 1991 census, and also registered to vote in the 1997 elections. The individuals could register in Brčko (RS) or elsewhere, therefore Table 2 shows the domestic population who registered at Brčko (RS) and also the population registered outside the domestic municipality, i.e. persons considered as generally displaced from Brčko (RS). Among those generally displaced, we distinguish internally displaced persons (living elsewhere in Bosnia and Herzegovina in 1997) and refugees (living in foreign countries in 1997).

Of the whole post-war population originating from Brčko (RS) (i.e. the population residing there in 1991), at least 15,765 persons (63.9% of all identified survivors) were still displaced or refugees in 1997. Out of this total, some 479 were Serbs, 11,792 were Muslims, 1,851 were Croats and 1,643 were Others. Thus, there were 3.0% Serbs among all refugees and internally displaced persons from Brčko (RS), 74.8% Muslims, 11.7% Croats, and 10.4% Others.

From Table 2 we also see that, in 1997, there were 6.4% refugees and IDPs among Serb population from Brčko (RS), 96.2% refugees and IDPs among Muslim population, 85.5% refugees and IDPs among Croat population and 59.7% refugees and IDPs among Others.

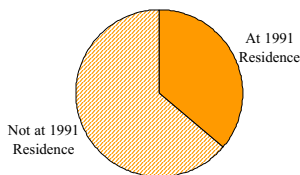
A6.3 Table 2. The 1997 Voters Originating from Brčko (RS) By Place of Registration

	All	Serbs	Muslims	Croats	Others
Numbers					
- At 1991 Residence	8,911	7,025	463	313	1,110
- Not at 1991 Residence	15,765	479	11,792	1,851	1,643
Total:	24,676	7,504	12,255	2,164	2,753
Percentages					
- At 1991 Residence	36.1	93.6	3.8	14.5	40.3
- Not at 1991 Residence	63.9	6.4	96.2	85.5	59.7
Total:	100.0	100.0	100.0	100.0	100.0

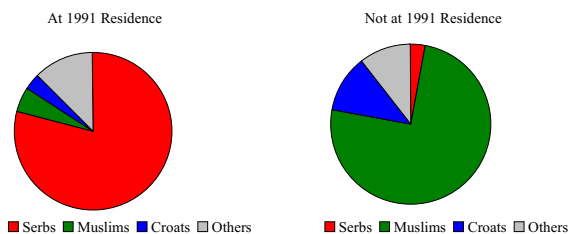
^{a)} *na - not applicable*

Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

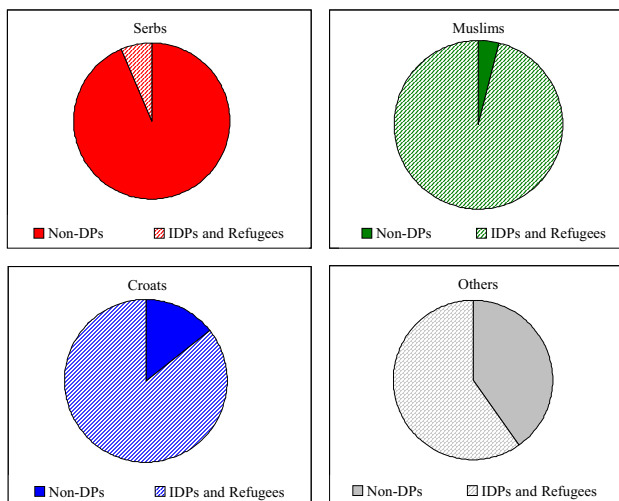
A6.3 Figure 2a. Proportion of 1997 Voters Originating from Brčko (RS) by Place of Registration to Vote in 1997



A6.3 Figure 2b. Ethnic Composition of 1997 Voters Originating from Brčko (RS) by Place of Registration to Vote in 1997



A6.3 Figure 2c. Proportion of IDPs and Refugees Originating from Brčko (RS), Status as of 1997 by Ethnicity



Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

Table 3 (a, b) shows the distribution of the 1997 population of voters, who used to live in Brčko (RS) also in 1991, by their place of registration to vote in 1997. The table makes a distinction between domestic population (Non-DPs), internally displaced persons (IDPs) and refugees (Ref). The most voters originating from Brčko (RS) were non-displaced persons and registered in the domestic municipality in 1997 (36.1% of the total; i.e. 8,911 out of 24,676). For the Serbs this fraction was higher and equalled 93.6 percent (7,025 individuals).

Some 34.4% still resided in municipalities other than domestic in 1997 (8,492; mostly Muslims). Some 29.5% of the 1997 voters originating from Brčko (RS) resided abroad in 1997 (7,273; mostly Muslims).

A6.3 Table 3a. The 1997 Voters Originating from Brčko (RS) By Ethnicity and Place of Registration to Vote in 1997 Absolute Numbers

Ethnicity	Non-DPs	IDPs	Refugees	Total
Serbs	7,025	148	331	7,504
Muslims	463	7,424	4,368	12,255
Croats	313	221	1,630	2,164
Others	1,110	699	944	2,753
Total	8,911	8,492	7,273	24,676

A6.3 Table 3b. The 1997 Voters Originating from Brčko (RS) By Ethnicity and Place of Registration to Vote in 1997, Percentages

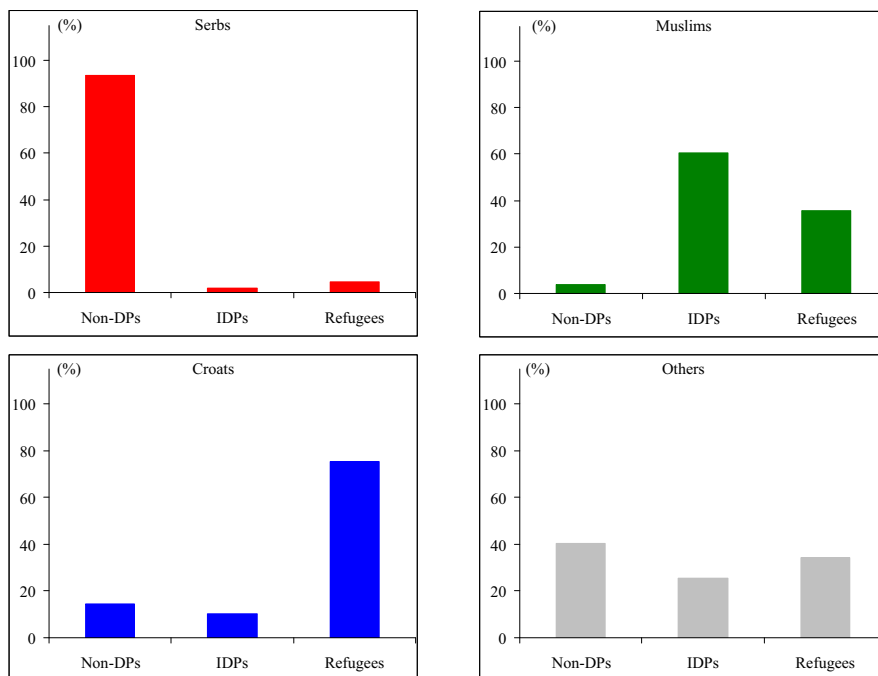
Ethnicity	Non-DPs	IDPs	Refugees	Total
Serbs	93.6	2.0	4.4	100.0
Muslims	3.8	60.6	35.6	100.0
Croats	14.5	10.2	75.3	100.0
Others	40.3	25.4	34.3	100.0
Total	36.1	34.4	29.5	100.0

A6.3 Table 3c. Refugees Originating from Brčko (RS) By Country of Registration and Ethnicity, Status as of 1997

Ethnicity	Croatia		FRY		Other Countries		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Serbs	8	2.4	195	58.9	128	38.7	331	100.00
Muslims	260	6.0	45	1.0	4,063	93.0	4,368	100.00
Croats	827	50.7	7	0.4	796	48.8	1,630	100.00
Others	90	9.5	97	10.3	757	80.2	944	100.00
Total	1,185	na	344	na	5,744	na	7,273	na

Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

A6.3 Figure 3. The 1997 Voters Originating from Brčko (RS) by Ethnicity and Place of Registration to Vote



Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

ANNEX A6.4 FOČA (FBH)

In the period 1991-97 the share of Muslims in the Foča (FBH) population increased from 68.8% to 99.34%, i.e. by 44.4 per cent. In the same period the share of Serbs decreased from 30.0% to 0.0%, i.e. by 100.0 per cent and the share of Others decreased from 1.1% to 0.7%, i.e. by 42.9 per cent. The share of Croats in the Foča (FBH) population was 0.0% and remained unchanged.

The above results were obtained using records of those born before 1980. The actual population, i.e. all those who lived in Foča (FBH) in 1997, was used. The 1991 population was complete and the 1997 population was represented by a large sample (Voters Register).

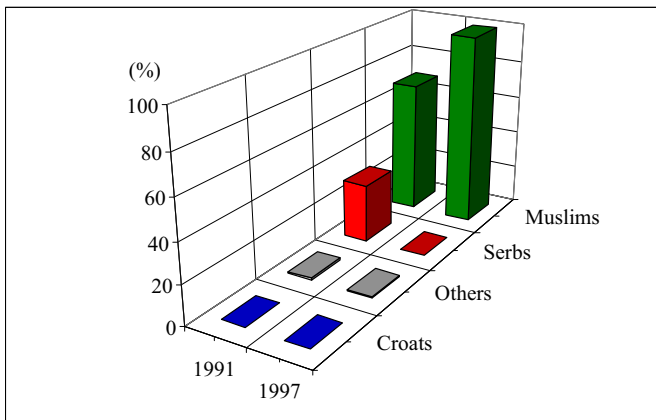
A6.4 Table 1. Ethnic Composition in Foča (FBH), 1991 versus 1997 Exclusively Individuals Born Before 1980, Actual Population

	All	Muslims	Serbs	Others	Croats
Numbers					
1991	4,261	2,932	1,280	49	0
1997	457	454	0	3	0
Per cent					
1991	100.0	68.8	30.0	1.1	0.0
1997	100.0	99.3	0.0	0.7	0.0
1991-1997 Change	na ⁾	+44.4	-100.0	-42.9	na

⁾ na - not applicable

Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

A6.4 Figure 1. Ethnic Composition in Foča (FBH), 1991 vs. 1997, Actual Population



Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

Table 2 contains figures that refer to the individuals born before 1980 who resided in Foča (FBH) in 1991, were enumerated in the 1991 census, and also registered to vote in the 1997 elections. The individuals could register in Foča (FBH) or elsewhere, therefore Table 2 shows the domestic population who registered at Foča (FBH) and also the population registered outside the domestic municipality, i.e. persons considered as generally displaced from Foča (FBH). Among those generally displaced, we distinguish internally displaced persons (living elsewhere in Bosnia and Herzegovina in 1997) and refugees (living in foreign countries in 1997).

Of the whole post-war population originating from Foča (FBH) (i.e. the population residing there in 1991), at least 1,731 persons (84.1% of all identified survivors) were still displaced or refugees in 1997. Out of this total, some 628 were Serbs, 1,088 were Muslims, were Croats and 15 were Others. Thus, there were 36.3% Serbs among all refugees and internally displaced persons from Foča (FBH), 62.9% Muslims, 0.0% Croats, and 0.9% Others.

From Table 2 we also see that, in 1997, there were 100.0% refugees and IDPs among Serb population from Foča (FBH), 77.0% refugees and IDPs among Muslim population, na% refugees and IDPs among Croat population and 88.2% refugees and IDPs among Others.

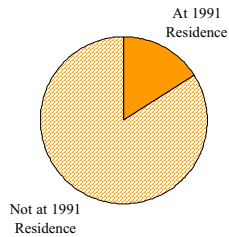
A6.4 Table 2. The 1997 Voters Originating from Foča (FBH) By Place of Registration

	All	Serbs	Muslims	Croats	Others
Numbers					
- At 1991 Residence	327	0	325	0	2
- Not at 1991 Residence	1,731	628	1,088	0	15
Total:	2,058	628	1,413	0	17
Percentages					
- At 1991 Residence	15.9	0.0	23.0	na	11.8
- Not at 1991 Residence	84.1	100.0	77.0	na	88.2
Total:	100.0	100.0	100.0	na	100.0

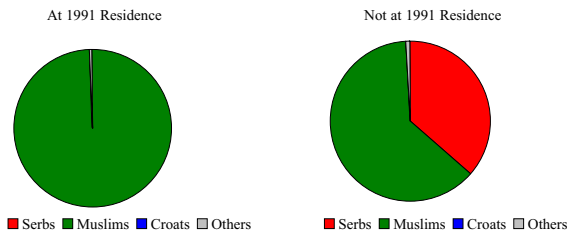
^{a)} na - not applicable

Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

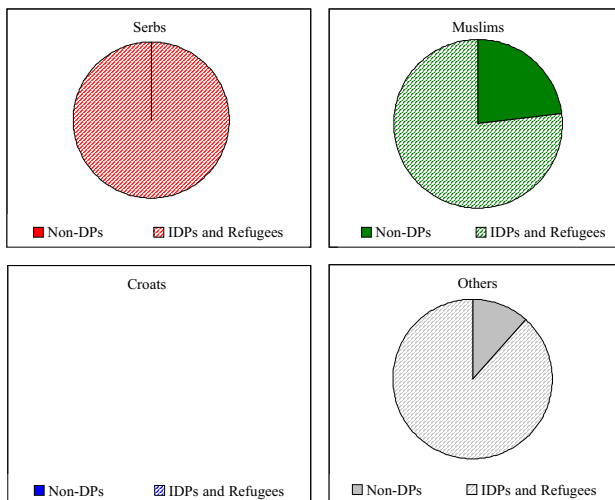
A6.4 Figure 2a. Proportion of 1997 Voters Originating from Foča (FBH) by Place of Registration to Vote in 1997



A6.4 Figure 2b. Ethnic Composition of 1997 Voters Originating from Foča (FBH) by Place of Registration to Vote in 1997



A6.4 Figure 2c. Proportion of IDPs and Refugees Originating from Foča (FBH), Status as of 1997 by Ethnicity



Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

Table 3 (a, b) shows the distribution of the 1997 population of voters, who used to live in Foča (FBH) also in 1991, by their place of registration to vote in 1997. The table makes a distinction between domestic population (Non-DPs), internally displaced persons (IDPs) and refugees (Ref). The most voters originating from Foča (FBH) were internally displaced persons and registered in Bosnia and Herzegovina in the municipality different than domestic (74.8% of the total; i.e. 1,540 out of 2,058). For the Croats this fraction was higher and equalled na percent (individuals). Some 15.9% of the voters still resided in the domestic municipality in 1997 (327; mostly Muslims). Some 9.3% of the 1997 voters originating from Foča (FBH) resided abroad in 1997 (191; mostly Muslims).

A6.4 Table 3a. The 1997 Voters Originating from Foča (FBH) By Ethnicity and Place of Registration to Vote in 1997 Absolute Numbers

Ethnicity	Non-DPs	IDPs	Refugees	Total
Serbs	0	613	15	628
Muslims	325	914	174	1,413
Croats	0	0	0	0
Others	2	13	2	17
Total	327	1,540	191	2,058

A6.4 Table 3b. The 1997 Voters Originating from Foča (FBH) By Ethnicity and Place of Registration to Vote in 1997, Percentages

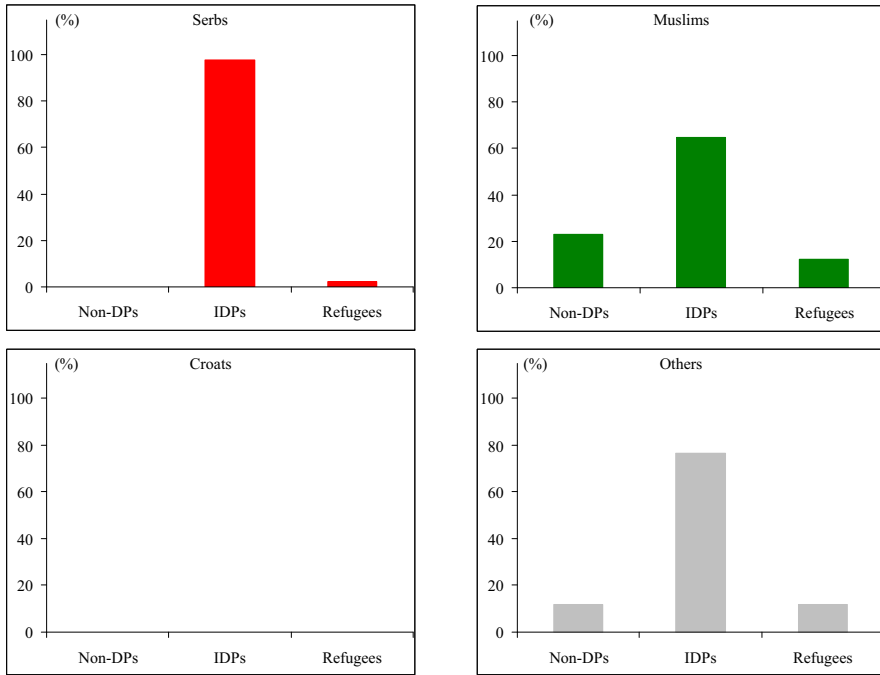
Ethnicity	Non-DPs	IDPs	Refugees	Total
Serbs	0.0	97.6	2.4	100.0
Muslims	23.0	64.7	12.3	100.0
Croats	na	na	na	na
Others	11.8	76.5	11.8	100.0
Total	15.9	74.8	9.3	100.0

A6.4 Table 3c. Refugees Originating from Foča (FBH) By Country of Registration and Ethnicity, Status as of 1997

Ethnicity	Croatia		FRY		Other Countries		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Serbs	0	0.0	15	100.0	0	0.0	15	100.0
Muslims	5	2.9	1	0.6	168	96.6	174	100.0
Croats	0	na	0	na	0	na	0	na
Others	0	0.0	0	0.0	2	100.0	2	100.0
Total	5	na	16	na	170	na	191	na

Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

A6.4 Figure 3. The 1997 Voters Originating from Foča (FBH) by Ethnicity and Place of Registration to Vote



Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

ANNEX A6.4 FOČA (RS)

In the period 1991-97 the share of Muslims in the Foča (RS) population decreased from 48.1% to 0.0%, i.e. by 99.9 per cent. In the same period the share of Serbs increased from 48.1% to 96.1%, i.e. by 99.7 per cent and the share of Others increased from 3.5% to 3.5%, i.e. by 0.7 per cent. The share of Croats in the Foča (RS) population increased from 0.3% to 0.3%, i.e. by 22.1 per cent.

The above results were obtained using records of those born before 1980. The actual population, i.e. all those who lived in Foča (RS) in 1997, was used. The 1991 population was complete and the 1997 population was represented by a large sample (Voters Register).

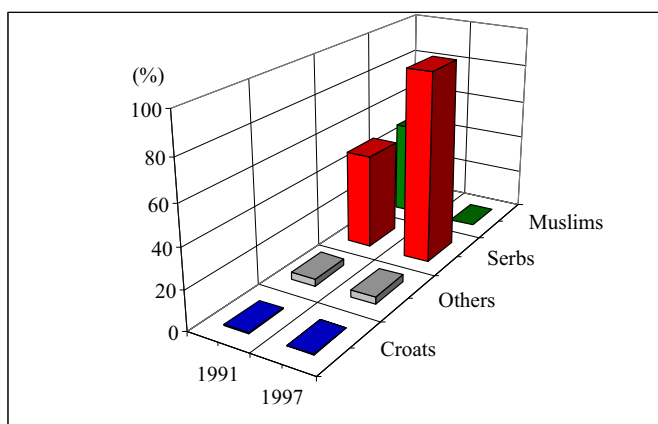
A6.4 Table 1. Ethnic Composition in Foča (RS), 1991 versus 1997 Exclusively Individuals Born Before 1980, Actual Population

	All	Muslims	Serbs	Others	Croats
Numbers					
1991	30,247	14,559	14,558	1,046	84
1997	12,091	6	11,623	421	41
Per cent					
1991	100.0	48.1	48.1	3.5	0.3
1997	100.0	0.0	96.1	3.5	0.3
1991-1997 Change	na ^{*)}	-99.9	+99.7	+0.7	+22.1

^{*)} na - not applicable

Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

A6.4 Figure 1. Ethnic Composition in Foča (RS), 1991 vs. 1997, Actual Population



Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

Table 2 contains figures that refer to the individuals born before 1980 who resided in Foča (RS) in 1991, were enumerated in the 1991 census, and also registered to vote in the 1997 elections. The individuals could register in Foča (RS) or elsewhere, therefore Table 2 shows the domestic population who registered at Foča (RS) and also the population registered outside the domestic municipality, i.e. persons considered as generally displaced from Foča (RS). Among those generally displaced, we distinguish internally displaced persons (living elsewhere in Bosnia and Herzegovina in 1997) and refugees (living in foreign countries in 1997).

Of the whole post-war population originating from Foča (RS) (i.e. the population residing there in 1991), at least 8,985 persons (48.2% of all identified survivors) were still displaced or refugees in 1997. Out of this total, some 294 were Serbs, 8,512 were Muslims, 15 were Croats and 164 were Others. Thus, there were 3.3% Serbs among all refugees and internally displaced persons from Foča (RS), 94.7% Muslims, 0.2% Croats, and 1.8% Others.

From Table 2 we also see that, in 1997, there were 3.1% refugees and IDPs among Serb population from Foča (RS), 100.0% refugees and IDPs among Muslim population, 34.1% refugees and IDPs among Croat population and 32.5% refugees and IDPs among Others.

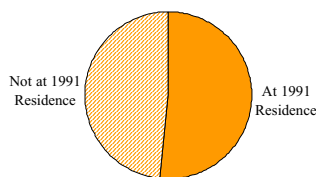
A6.4 Table 2. The 1997 Voters Originating from Foča (RS) By Place of Registration

	All	Serbs	Muslims	Croats	Others
Numbers					
- At 1991 Residence	9,638	9,265	4	29	340
- Not at 1991 Residence	8,985	294	8,512	15	164
Total:	18,623	9,559	8,516	44	504
Percentages					
- At 1991 Residence	51.8	96.9	0.0	65.9	67.5
- Not at 1991 Residence	48.2	3.1	100.0	34.1	32.5
Total:	100.0	100.0	100.0	100.0	100.0

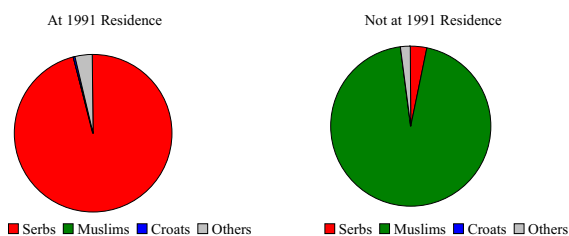
^{a)} *na - not applicable*

Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

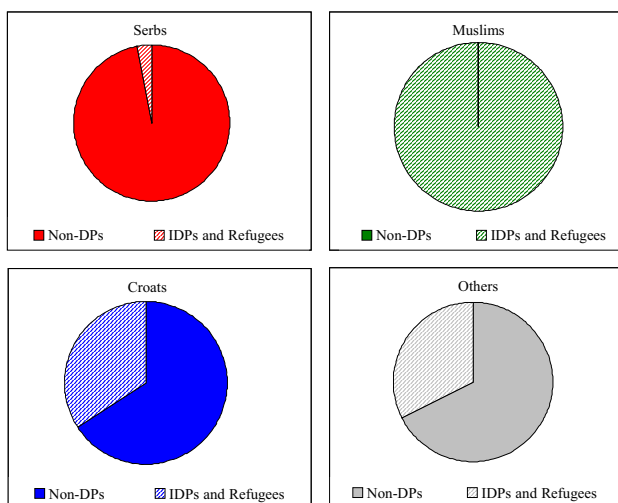
A6.4 Figure 2a. Proportion of 1997 Voters Originating from Foča (RS) by Place of Registration to Vote in 1997



A6.4 Figure 2b. Ethnic Composition of 1997 Voters Originating from Foča (RS) by Place of Registration to Vote in 1997



A6.4 Figure 2c. Proportion of IDPs and Refugees Originating from Foča (RS), Status as of 1997 by Ethnicity



Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

Table 3 (a, b) shows the distribution of the 1997 population of voters, who used to live in Foča (RS) also in 1991, by their place of registration to vote in 1997. The table makes a distinction between domestic population (Non-DPs), internally displaced persons (IDPs) and refugees (Ref). The most voters originating from Foča (RS) were non-displaced persons and registered in the domestic municipality in 1997 (51.8% of the total; i.e. 9,638 out of 18,623). For the Serbs this fraction was higher and equalled 96.9 percent (9,265 individuals). Some 36.3% still resided in municipalities other than domestic in 1997 (6,755; mostly Muslims). Some 12.0% of the 1997 voters originating from Foča (RS) resided abroad in 1997 (2,230; mostly Muslims).

A6.4 Table 3a. The 1997 Voters Originating from Foča (RS) By Ethnicity and Place of Registration to Vote in 1997 Absolute Numbers

Ethnicity	Non-DPs	IDPs	Refugees	Total
Serbs	9,265	96	198	9,559
Muslims	4	6,580	1,932	8,516
Croats	29	8	7	44
Others	340	71	93	504
Total	9,638	6,755	2,230	18,623

A6.4 Table 3b. The 1997 Voters Originating from Foča (RS) By Ethnicity and Place of Registration to Vote in 1997, Percentages

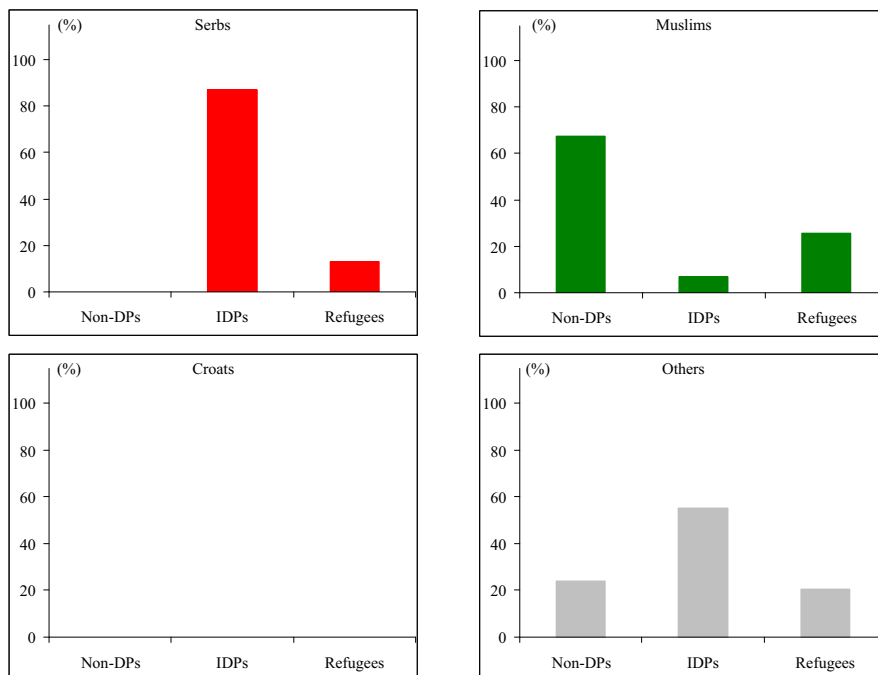
Ethnicity	Non-DPs	IDPs	Refugees	Total
Serbs	96.9	1.0	2.1	100.0
Muslims	0.0	77.3	22.7	100.0
Croats	65.9	18.2	15.9	100.0
Others	67.5	14.1	18.5	100.0
Total	51.8	36.3	12.0	100.0

A6.4 Table 3c. Refugees Originating from Foča (RS) By Country of Registration and Ethnicity, Status as of 1997

Ethnicity	Croatia		FRY		Other Countries		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Serbs	0	0.0	170	85.9	28	14.1	198	100.00
Muslims	23	1.2	38	2.0	1,871	96.8	1,932	100.00
Croats	0	0.0	0	0.0	7	100.0	7	100.00
Others	1	1.1	18	19.4	74	79.6	93	100.00
Total	24	na	226	na	1,980	na	2,230	na

Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

A6.7 Figure 3. The 1997 Voters Originating from Sapna (FBH) by Ethnicity and Place of Registration to Vote



Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

ANNEX A6.7 ZVORNIK (RS)

In the period 1991-97 the share of Muslims in the Zvornik (RS) population decreased from 54.8% to 0.6%, i.e. by 99.0 per cent. In the same period the share of Serbs increased from 41.9% to 96.7%, i.e. by 130.6 per cent and the share of Others decreased from 3.1% to 2.4%, i.e. by 22.9 per cent. The share of Croats in the Zvornik (RS) population increased from 0.2% to 0.4%, i.e. by 98.4 per cent. The above results were obtained using records of those born before 1980. The actual population, i.e. all those who lived in Zvornik (RS) in 1997, was used. The 1991 population was complete and the 1997 population was represented by a large sample (Voters Register).

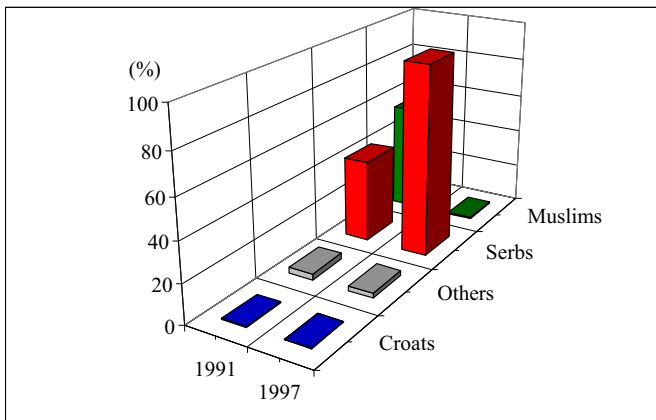
A6.7 Table 1. Ethnic Composition in Zvornik (RS), 1991 versus 1997 Exclusively Individuals Born Before 1980, Actual Population

	All	Muslims	Serbs	Others	Croats
Numbers					
1991	53,760	29,452	22,535	1,677	96
1997	22,582	129	21,830	543	80
Per cent					
1991	100.0	54.8	41.9	3.1	0.2
1997	100.0	0.6	96.7	2.4	0.4
1991-1997 Change	na ⁾	-99.0	+130.6	-22.9	+98.4

⁾ na - not applicable

Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

A6.7 Figure 1. Ethnic Composition in Zvornik (RS), 1991 vs. 1997, Actual Population



Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

Table 2 contains figures that refer to the individuals born before 1980 who resided in Zvornik (RS) in 1991, were enumerated in the 1991 census, and also registered to vote in the 1997 elections. The individuals could register in Zvornik (RS) or elsewhere, therefore Table 2 shows the domestic population who registered at Zvornik (RS) and also the population registered outside the domestic municipality, i.e. persons considered as generally displaced from Zvornik (RS). Among those generally displaced, we distinguish internally displaced persons (living elsewhere in Bosnia and Herzegovina in 1997) and refugees (living in foreign countries in 1997).

Of the whole post-war population originating from Zvornik (RS) (i.e. the population residing there in 1991), at least 16,951 persons (57.7% of all identified survivors) were still displaced or refugees in 1997. Out of this total, some 409 were Serbs, 16,105 were Muslims, 12 were Croats and 425 were Others. Thus, there were 2.4% Serbs among all refugees and internally displaced persons from Zvornik (RS), 95.0% Muslims, 0.1% Croats, and 2.5% Others.

From Table 2 we also see that, in 1997, there were 3.3% refugees and IDPs among Serb population from Zvornik (RS), 99.3% refugees and IDPs among Muslim population, 32.4% refugees and IDPs among Croat population and 65.3% refugees and IDPs among Others.

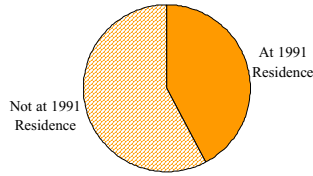
A6.7 Table 2. The 1997 Voters Originating from Zvornik (RS) By Place of Registration

	All	Serbs	Muslims	Croats	Others
Numbers					
- At 1991 Residence	12,427	12,062	114	25	226
- Not at 1991 Residence	16,951	409	16,105	12	425
Total:	29,378	12,471	16,219	37	651
Percentages					
- At 1991 Residence	42.3	96.7	0.7	67.6	34.7
- Not at 1991 Residence	57.7	3.3	99.3	32.4	65.3
Total:	100.0	100.0	100.0	100.0	100.0

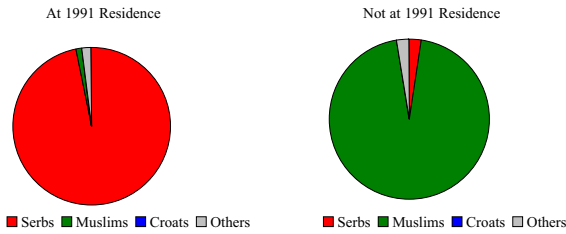
^{a)} *na - not applicable*

Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

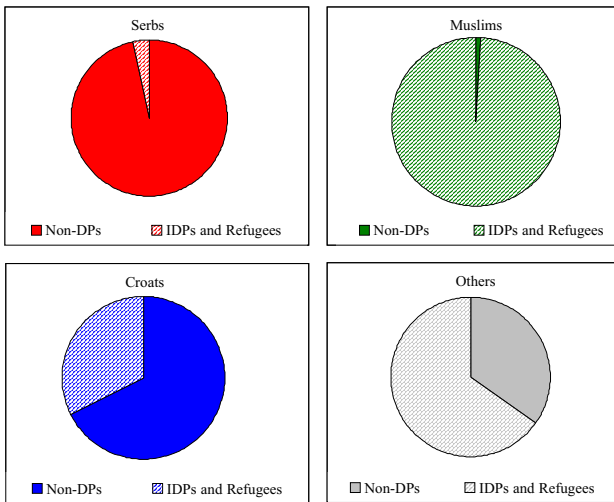
A6.7 Figure 2a. Proportion of 1997 Voters Originating from Zvornik (RS) by Place of Registration to Vote in 1997



A6.7 Figure 2b. Ethnic Composition of 1997 Voters Originating from Zvornik (RS) by Place of Registration to Vote in 1997



A6.7 Figure 2c. Proportion of IDPs and Refugees Originating from Zvornik (RS), Status as of 1997 by Ethnicity



Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

Table 3 (a, b) shows the distribution of the 1997 population of voters, who used to live in Zvornik (RS) also in 1991, by their place of registration to vote in 1997. The table makes a distinction between domestic population (Non-DPs), internally displaced persons (IDPs) and refugees (Ref). The most voters originating from Zvornik (RS) were non-displaced persons and registered in the domestic municipality in 1997 (42.3% of the total; i.e. 12,427 out of 29,378). For the Serbs this fraction was higher and equalled 96.7 percent (12,062 individuals).

Some 31.4% still resided in municipalities other than domestic in 1997 (9,239; mostly Muslims). Some 26.3% of the 1997 voters originating from Zvornik (RS) resided abroad in 1997 (7,712; mostly Muslims).

A6.7 Table 3a. The 1997 Voters Originating from Zvornik (RS) By Ethnicity and Place of Registration to Vote in 1997 Absolute Numbers

Ethnicity	Non-DPs	IDPs	Refugees	Total
Serbs	12,062	191	218	12,471
Muslims	114	8,932	7,173	16,219
Croats	25	3	9	37
Others	226	113	312	651
Total	12,427	9,239	7,712	29,378

A6.7 Table 3b. The 1997 Voters Originating from Zvornik (RS) By Ethnicity and Place of Registration to Vote in 1997, Percentages

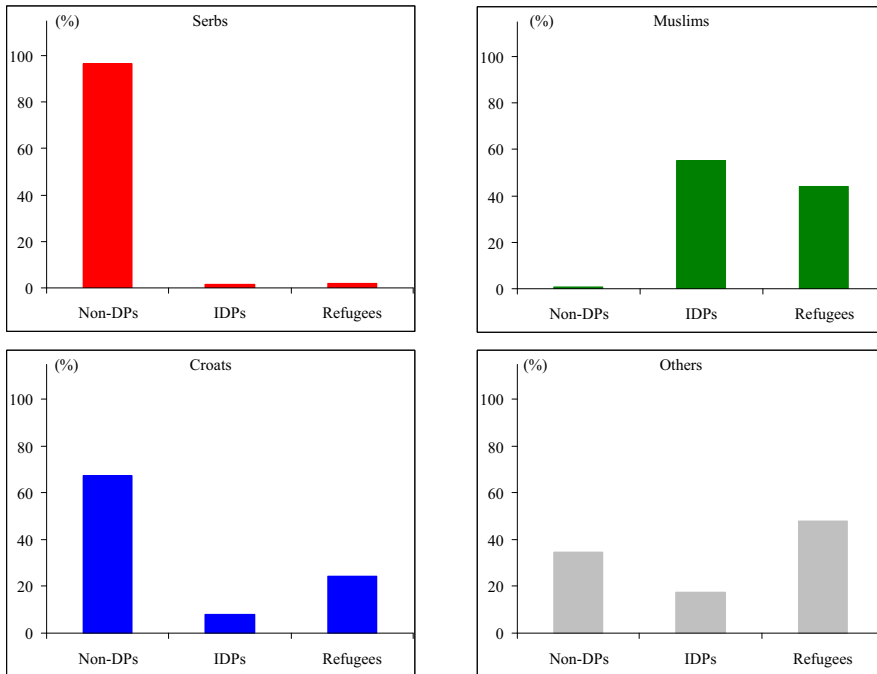
Ethnicity	Non-DPs	IDPs	Refugees	Total
Serbs	96.7	1.5	1.7	100.0
Muslims	0.7	55.1	44.2	100.0
Croats	67.6	8.1	24.3	100.0
Others	34.7	17.4	47.9	100.0
Total	42.3	31.4	26.3	100.0

A6.7 Table 3c. Refugees Originating from Zvornik (RS) By Country of Registration and Ethnicity, Status as of 1997

Ethnicity	Croatia		FRY		Other Countries		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Serbs	0	0.0	159	72.9	59	27.1	218	100.00
Muslims	48	0.7	88	1.2	7,037	98.1	7,173	100.00
Croats	1	11.1	0	0.0	8	88.9	9	100.00
Others	3	1.0	48	15.4	261	83.7	312	100.00
Total	52	na	295	na	7,365	na	7,712	na

Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

A6.7 Figure 3. The 1997 Voters Originating from Zvornik (RS) by Ethnicity and Place of Registration to Vote

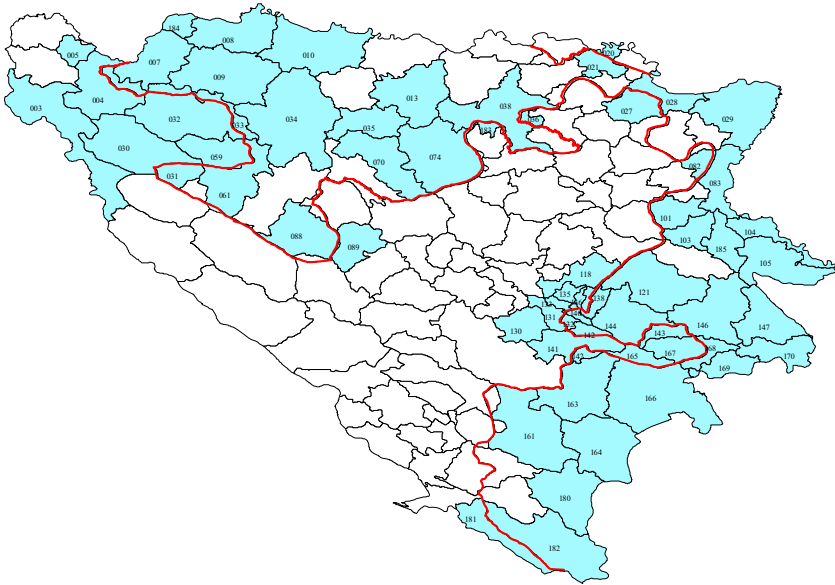


Source: *The 1991 Population Census for Bosnia and Herzegovina and the OSCE Voters Register 1997/98. Computation by the Demographic Unit, OTP.*

ANNEX B. OVERVIEW OF SOURCES

**ANNEX B1. MILOŠEVIĆ CASE AREA: REFERENCE MAP AND OSCE
MUNICIPAL CODES**

Figure 1(B1). Reference Map of Bosnia and Herzegovina and MILOŠEVIĆ Area



Note: The numbers mentioned in Figure 1(B1) are OSCE municipal codes. Names of the MILOŠEVIĆ municipalities are included in Scheme 1(B1) below

Scheme 1(B1). Names and OSCE codes of Post-Dayton Municipalities in Bosnia and Herzegovina

Code	Name	Entity	Code	Name	Entity
1	Velika Kladuša	FBiH	66	Jajce / Jezero	RS
2	Cazin	FBiH	67	Dobretići	FBiH
3	Bihac	FBiH	68	Skender Vakuf / Kneževo	RS
4	Bosanska Krupa	FBiH	70	Kotor Varoš	RS
5	Bužim	FBiH	74	Teslić	RS
6	Bosanska Krupa / Krupa na Uni	RS	75	Žepče	FBiH
7	Bosanski Novi / Novi Grad	RS	77	Zavidovići	FBiH
8	Bosanska Dubica / Kozarska Dubica	RS	78	Banovići	FBiH
9	Prijedor	RS	79	Zivinice	FBiH
10	Bosanska Gradiška / Gradiška	RS	80	Kalesija	FBiH
11	Laktaši	RS	81	Kalesija / Osmaci	RS
12	Srbac	RS	82	Sapna	FBiH
13	Prnjavor	RS	83	Zvornik	RS
14	Derventa	RS	84	Bosansko Grahovo / Grahovo	FBiH
16	Bosanski Brod / Srpski Brod	RS	85	Glamoč	FBiH
17	Odžak	FBiH	88	Šipovo	RS
18	Odžak / Vukosavlje	RS	89	Donji Vakuf	FBiH
20	Domaljevac - Šamac	FBiH	91	Travnik	FBiH
21	Bosanski Šamac / Šamac	RS	93	Zenica	FBiH
22	Orašje	FBiH	94	Kakanj	FBiH
23	Orašje / Srpsko Orašje	RS	95	Vareš	FBiH
24	Modriča	RS	96	Olovo	FBiH
25	Gradačac	FBiH	98	Kladanj	FBiH
26	Gradačac / Pelagićevo	RS	101	Šekovići	RS
27	Rahić / Ravne (Brčko Federation)	FBiH	103	Vlasenica	RS
28	Brčko	RS	104	Bratunac	RS
29	Bijeljina	RS	105	Srebrenica	RS
30	Bosanski Petrovac	FBiH	106	Livno	FBiH
31	Bosanski Petrovac / Petrovac	RS	107	Kupres	FBiH
32	Sanski Most	FBiH	108	Kupres / Srpski Kupres	RS
33	Sanski Most / Srpski Sanski Most	RS	109	Bugojno	FBiH
34	Banja Luka	RS	110	Gornji Vakuf	FBiH
35	Čelinac	RS	111	Novi Travnik	FBiH
36	Doboj - Istok	FBiH	112	Vitez	FBiH
37	Doboj - Jug	FBiH	113	Busovača	FBiH
38	Doboj	RS	114	Fojnica	FBiH
39	Tešanj	FBiH	115	Kiseljak	FBiH
42	Maglaj	FBiH	116	Visoko	FBiH
44	Gračanica	FBiH	117	Breza	FBiH
45	Gračanica / Petrovo	RS	118	Ilijaš	FBiH
47	Lukavac	FBiH	121	Sokolac	RS
49	Srebrenik	FBiH	123	Han Pijesak	RS
50	Tuzla	FBiH	124	Tomislavgrad	FBiH
52	Čelić	FBiH	125	Prozor / Prozor-Rama	FBiH
54	Lopare	RS	126	Jablanica	FBiH
55	Teočak	FBiH	127	Konjic	FBiH
56	Ugljevik	RS	129	Kreševo	FBiH
57	Drvar	FBiH	130	Hadžići	FBiH
58	Drvar / Srpski Drvar	RS	131	Iliđza	FBiH
59	Ključ	FBiH	132	Iliđza / Srpska Iliđza	RS
61	Ključ / Ribnik	RS	133	Novi Grad Sarajevo	FBiH
64	Mrkonjić Grad	RS	135	Vogošća	FBiH
65	Jajce	FBiH	136	Centar Sarajevo	FBiH

Scheme 1(B1) – continued

Code	Name	Entity
137	Stari Grad Sarajevo	FBiH
138	Stari Grad Sarajevo / Srpski Stari Grad	RS
139	Novo Sarajevo	FBiH
140	Novo Sarajevo / Srpsko Novo Sarajevo	RS
141	Trnovo (FBiH)	FBiH
142	Trnovo (RS)	RS
143	Pale (FBiH)	FBiH
144	Pale (RS)	RS
146	Rogatica	RS
147	Višegrad	RS
148	Posušje	FBiH
149	Grude	FBiH
150	Široki Brijeg	FBiH
151	Mostar Jug	FBiH
152	Mostar Jugoistok	FBiH
153	Mostar Jugozapad	FBiH
154	Mostar Sjever	FBiH
155	Mostar Stari grad	FBiH
156	Mostar Zapad	FBiH
157	Mostar Central District	FBiH
158	Mostar / Srpski Mostar	RS
161	Nevesinje	RS
163	Kalinovik	RS
164	Gacko	RS
165	Foča	FBiH
166	Foča / Srbinje	RS
167	Goražde	FBiH
168	Goražde / Srpsko Goražde	RS
169	Čajniče	RS
170	Rudo	RS
171	Ljubuški	FBiH
172	Čitluk	FBiH
173	Čapljina	FBiH
174	Neum	FBiH
176	Stolac	FBiH
177	Stolac / BerkovićI	RS
179	Ljubinje	RS
180	Bileća	RS
181	Ravno	FBiH
182	Trebinje	RS
183	Usora	FBiH
184	Kostajnica	RS
185	Milići	RS

ANNEX B2. THE 1991 POPULATION CENSUS FOR BOSNIA AND HERZEGOVINA

Our source of information on the pre-war population of the MILOŠEVIĆ AREA is the 1991 population census for Bosnia and Herzegovina. The census was taken from 1 to 30 April 1991 (with 31 March as the official census date), just before the outbreak of hostilities in the country, and covered the entire population of the country.

The census files contain one record for each enumerated person. These records include information on a large number of variables, such as the municipality and settlement of residence, name and surname, father's name, household sequential number, personal ID number, date and year of birth, sex, occupation, ethnicity, mother tongue, religion, educational attainment, and number of children born (for women only).

The overall data quality is good, except for frequent errors in the persons' names. These errors are mostly consequences of poor optical scanning of the original forms (for example misreading V for U, as in MVSIC) and no subsequent checking and editing. To correct the scanning errors we employed several strategies. First, computer software was developed and applied to detect combinations of letters that are impossible in the B/C/S language. The software used the B/C/S syntax in order to access the viability of combinations. The impossible combinations were corrected by eliminating the miss-shaped characters and inserting their most likely equivalents. Secondly, we developed correction tables to eliminate scanning mistakes from the names. The tables contained the actual names and their correct versions which both were used in a computer programme to produce suggestions regarding the corrections needed. Then, these suggestions were controlled manually to discard any wrong corrections produced by the software. The accepted corrections were then applied to the data. Native speakers of the B/C/S language who in addition were familiar with naming traditions in Bosnia and Herzegovina undertook all these tasks. Furthermore, we also developed and applied computer software that utilised household information to correct surnames within households. The software checked the correctness and consistency of family names within the same households. Household members, whose family name was different from the (correct) name of others in this particular household, received the correct name. For instance, if MUSIĆ was the correct surname in a household, the person enumerated as part of this household under the name MVSIC would become MUSIĆ.

A second data quality problem is that for a number of records the unique 13-digit personal ID number (*matični broj*, MB), introduced in the former Yugoslavia in 1981, is only partly available. The MB consists of date of birth (DOB, 7 digits), region of birth (2 digits), a sex-specific sequential number (3 digits), and a check digit (1 digit). For our needs the date of birth is essential, other components of the MB being of less value. The date of birth is missing

only for a few per cent of the 1991 population.

The census includes a variable that relates to the ethnicity of the enumerated individuals. This allows us to study the population in the context of the same ethnicity declaration in both years studied, in 1991 and also in 1997, for all those individuals whose records have been linked in the two data collections (in the 1991 census and 1997 voters register). The question on ethnicity in the census questionnaire was open-ended meaning that individuals could declare themselves as belonging to any ethnicity. The majority of the 1991 census population declared themselves as belonging to one of the three major ethnic groups in Bosnia and Herzegovina: Serbs, Muslims, or Croats. Other ethnic declarations in the 1991 census included Yugoslavs (relatively frequently), combinations of ethnicities, such as “Serb-Croat” or “Muslim-Serb” (infrequently), and other national (e.g. Vlach or Gypsies) or foreign (e.g. Hungarians) ethnicities (less frequently). Those who called themselves Yugoslavs, or by names combining two ethnicities, were often children from mixed marriages. The Yugoslavs did not feel they belonged to any particular ethnic group and frequently disliked ethnic categorisation.

All analyses presented in this report have been made for the four ethnic groups distinguished on the basis of ethnicity declarations from the 1991 census: Serbs, Muslims, Croats, and Others. The last group, Others, is a residual category and covers persons declaring themselves as Yugoslavs, combinations of ethnic groups, and other national or foreign ethnic groups.

The pre-war Bosnia and Herzegovina was divided into municipalities, *opština*, that were further broken down into sub-units called “settlements”. The number of pre-war municipalities was 109 whereas the number of settlements was 5829. The Dayton Accords divided some pre-war municipalities between the Federation and Republika Srpska resulting in a new division of the country into now 185 post-Dayton municipalities. The 1991 census information on the settlement of each person’s residence allowed us to look at the post-Dayton municipalities, and in particular separately at each part of the divided pre-war municipalities, in order to view population changes between 1991 and 1997.

The conversion scheme for the aggregation of settlements into post-Dayton municipalities was obtained from the OSCE Election Registration Office in Sarajevo and was used to group settlements into municipalities. A number of settlements were split between municipalities in the Federation and Republika Srpska. For the split settlements, we were unable to determine their post-Dayton municipality of residence. For the MILOŠEVIĆ municipalities this problem is generally small, except for few municipalities such as Bosanski Šamac and Odžak. For those municipalities a uniform (or fifty-fifty) distribution of the split-settlement-population was applied.

As mentioned above the settlement of residence was reported in the 1991 census, but was unavailable for about 2% of the census respondents due to the reasons explained below.

We acquired *two* sets of census files, each set contained 109 files (one file for one pre-war

municipality). The first set included a limited number of basic variables (15), but *no socio-economic items*, such as ethnicity and educational attainment. The second set contained all information collected on the census questionnaire (46 variables) except of two essential items, the place (i.e. settlement) and address of residence in 1991. Later enquiries revealed that the second set of files was virtually the same as the original census files. The first set of files was a copy of the census files prepared for OSCE in connection with the first post-war elections in 1996. For this purpose the place (i.e. settlements) of residence was included, derived from the code for enumeration area.

We had to merge the two census versions to include all variables in one set. During the merging we discovered that changes were made between the two versions, including deleting and adding records for some persons. In the latter case, the most recent version of the changed records was accepted. In addition, some cleaning of the data was done, in particular moving people who were recorded as being only temporarily present in a household. Finally, obvious duplicate records were removed. These procedures reduced the total number of records from 4,377,032 (second data set) to 4,298,896 (first data set). The second set contained 46 variables, the first set only 15. The 2% respondents with no settlement of residence were mainly the persons who were included in one set only and not in the other set and for whom individual links could not be established between the two sets of census files.

ANNEX B3. THE 1991 POPULATION CENSUS FOR BOSNIA AND HERZEGOVINA: METHODOLOGICAL PREPARATIONS, ORGANISATION AND CONDUCT³

ORGANISATION OF THE CENSUS

- Articles 13 and 14 of the Law on the Registration of the Population, Households, Dwellings and Agricultural Farms in 1991 (SFRY Official Gazette no. 3/90) designated the organisations and official organs which were to organise and conduct the 1991 population census in the former Yugoslavia. (Federal statistics organisations, federal administration organs, and federal organisations and organs in charge of the census in the republics and autonomous provinces).
- Article 2 of the Law on Organising and Conducting the Registration of the Population, Households, Dwellings and Agricultural Farms in 1991 and Census Financing (Socialist Republic of Bosnia and Herzegovina (SRBiH) Official Gazette no. 22/90) designated the organs which were to organise and conduct the census in Bosnia and Herzegovina in 1991. (Republican Statistical Office, municipal commissions and republican and municipal administration organs).
- Articles 4, 5, 6 and 7 of the Federal Law on the Registration of the Population in 1991 regulated which data was to be acquired during the census. Any republic of the former Yugoslavia was allowed to collect information in addition to the standard census questionnaire, if it was of particular interest to the republic. The Republics' Census Laws could regulate that. Bosnia and Herzegovina did not add supplementary questions to the census questionnaire.
- The Assembly of the Socialist Federal Republic of Yugoslavia (SFRY) adopted the Law on the Registration of the Population, Households, Dwellings and Agricultural Farms in 1991 at the session of the Federal Chamber on 17 January, 1990. The Assembly of the Socialist Republic of Bosnia and Herzegovina (SRBiH) adopted the Law on Organising and Conducting the Registration of the Population, Households, Dwellings and Agricultural Farms in 1991, and decided on the means for financing the census at the session of the Chamber of Associated Labour on 30 July, 1990, and at the session of the Chamber of Municipalities at 30 July, 1990.
- Article 20 of the Federal Census Law and Article 19 of the Republic Law instructed the

³ This section was written by *Nora Selimović*, Expert Advisor on Aggregation and Analysis of Data and Development of the Methodology in the Field of Demography in the Bosnia and Herzegovina Agency for

organisation in charge of statistics in the census to present a report to the Assembly upon completion of activities and census related tasks, as well as on the expenditure of financial means. This was to be done annually, by the end of March, for the previous year. Such reports were presented regularly.

- The Republican Statistical Office (RZS) conducted methodological and organisational preparations for conducting the 1991 census in Bosnia and Herzegovina. For that purpose, a Census Bureau was established in the Republican Statistical Office, consisting of 15 members - experts in census-related fields. The Bureau co-ordinated all census related activities. Several groups existed within the Census Bureau, each was responsible for conducting particular tasks as specified below:

Group 1 was responsible for plans of census enumeration areas for settlements (and parts of them), local communities, and municipalities, preparation of the lists P-8, P-9, and P-10, preliminary results for all territorial units starting from the census enumeration area up to the level of the republic.

Group 2 was responsible for printing all necessary material /such as questionnaires/ and its distribution to the municipal census commissions, and for storing the acquired census material.

Group 3 was responsible for census propaganda and contacts with municipal census commissions during the preparation of the census.

Group 4 was responsible for early registration of auxiliary forms, registration of individuals working for Yugoslav companies abroad, registration of individuals in penal-corrective facilities and of employees of the Secretariat of Internal Affairs.

Group 5 was responsible for financing the census, starting from preliminary cost calculations to cost realisation – preliminary calculations in municipalities, preparation of instructions, expense control, funding supply.

Group 6 was responsible for the preparation of manual and electronic processing of the census, recruitment and work premises.

Group 7 was responsible for the program for controlling the completeness of the acquired material, logical control and obtaining results.

Group 8 was responsible for selection of republican instructors, group leaders for the manual preparation of the data, automatic coding and processing of the data.

Group 9 was responsible for methodological aspects of the census: preparing and applying methodological guidelines (including additional instructions), guidelines for training of the interviewers (also called enumerators), requests for automatic data processing, selecting samples for response completeness and exactness control.

Municipal census commissions were the immediate organisers of the census in the municipalities, while the enumerators were the immediate executors of the census in the field. During the 1991 census, over 21,000 personnel were directly involved, out of which 17,467 were enumerators, 2,423 municipal instructors, 1,500 members of municipal census commissions, 124 republican instructors and a number of other associates. The republican instructors were employed by the RZS and were selected by the Census Bureau, while the municipal census commissions selected municipal instructors and enumerators for their municipalities. Details of selection procedures are explained on page 5 of “The Instruction for the Municipal Census Commissions”.

In the 1991 census in BiH there were 109 municipalities and 17,467 census enumeration areas. In each municipality a municipal census commission was formed, which was composed of a president and 8 to 14 members, depending on the size of a given municipality. There was at least one republican instructor in each municipality, while in larger municipalities there were two instructors (Tuzla, Zenica, Banja Luka, Mostar, Sarajevo Centar, Novi Grad, Novo Sarajevo, Ilidža...).

All personnel involved in the census (members of municipal census commissions, republican instructors and enumerators) were obliged to undergo special training. Training sessions were organised at several levels (for republican instructors, members of municipal census commissions and municipal instructors and finally for enumerators). The Census Bureau members conducted the training for republican instructors. Republican instructors held training sessions for the members of municipal census commissions and for municipal instructors, and then municipal instructors trained enumerators. All census personnel received written instructions for their work. Republican instructors received “The Methodology for Preparing, Organising and Conducting the Census”. Enumerators received “The Instruction for the Enumerator” and a sketch (plan) of the census enumeration area where they had to conduct the interviews. Municipal census commissions received “The Methodology and Additional Instruction for the Work of the Municipal Census Commissions”.

DATA COLLECTION METHODS

The basic data collection method in the 1991 census was the so-called face-to-face interview method, i.e. a method where the enumerator asked questions and then he/she wrote down the answers in the census questionnaire. Enumerators received training on the methodology of the census and explanations of certain questions, as well as on the system of reporting responses. Census questionnaires were prepared for optical reading (i.e. scanning) and therefore enumerators were obliged to take special care when writing down the responses.

The auxiliary form P-1/IN, designed for the BiH citizens temporarily working abroad and for their families, were completed by the citizens themselves (using the method of self-registration), while the enumerator was responsible for copying those forms into the forms foreseen for optical reading.

The guidelines given to the municipal census commissions regarding their tasks in relation to the self-completed forms conducted prior to the census were to be found in “The Instruction for the Work of the Municipal Census Commission” on page 11.

Page 30 of “The Methodology for Preparing and Conducting the Census” explains, in detail, why it was necessary to complete the self-registered forms prior to the proper census. Special instructions was prepared for completion of these forms. During the census, some items had to be defined more clearly, therefore additional instructions (five) were given in written form (those instructions were also presented in the attachment to the Methodology).

DATA SOURCES IN THE CENSUS

The responses recorded in the census questionnaires were mainly based on the statements made by the persons providing the enumerator with the data. It was not necessary to present documents to the enumerator for verification of responses. However, enumerators had the possibility to take data from documents, especially with regard to personal identification numbers, which could be obtained from the identity card, passport, birth certificate or from other personal documents.

For employed persons, the source of data regarding the personal identification number, level of education, occupation, work position, qualifications, as well as data about a given company, the code of the sub-group of activity and the identification number of the company, were taken from the company records maintained by that company for its employees. The companies were obliged to provide these items to each employee on the PL census auxiliary form before the census. During the interview the employees passed on the PL forms to the enumerator.

REGISTRATION OF PERSONS TEMPORARILY WORKING ABROAD

The aim of the census was to gather data on all Yugoslav citizens, both those staying in the country at the time of the census and those staying (working or otherwise) abroad at that time. Information on persons staying abroad was provided by the adult members of the family/household. If the entire household was abroad, then persons staying in the apartment at the time of the census, relatives or neighbours provided basic data about the absentees.

The Federal Statistical Office in co-operation with the Federal Secretariat for Foreign Affairs organised the registration of individuals abroad through diplomatic-consular representatives, and through clubs and associations of Yugoslav citizens abroad in order to include as many such individuals as possible.

For that purpose, 500,000 auxiliary forms (P-1/IN) were printed and distributed to these bodies. The completed P-1/IN forms were sent by the citizens themselves to the municipal census commissions, to the municipality of their permanent place of residence in Yugoslavia. That was done by March 20, 1991.

Because of the importance of the registration of individuals working abroad, the BiH Republican Statistical Office printed additional 100,000 auxiliary forms and distributed them to the municipal census commissions in all 109 municipalities in BiH. The additional forms were completed during visits of these individuals at their permanent residence in the period before the census. Precise guidelines on how to deal with these auxiliary forms were given on pages 11 and 12 of “The Instructions for the Work of the Municipal Census Commissions”.

The population staying abroad was included in the census results and the exact number of these individuals is known at any given time. Therefore, the population concept applied in the census is “**concept de jure**”.

INTERVIEWING

The enumerators and all other personnel engaged in the census acted following the guidelines described in “The Methodology for Preparing, Organising and Conducting the Census” and in “The Instruction for the Enumerator”.

Before interviewing, the enumerator (supervised by a member of the municipal census commission or a municipal instructor) was obliged to physically check the boundaries of his/her census enumeration area using a map and a description of boundaries.

One or more census enumeration areas make up a statistical area. Statistical areas are permanent statistical territorial units that cover the entire territory of the former Yugoslavia, including Bosnia and Herzegovina. The creation of a network of statistical areas in 1959 had two basic aims: first to ensure that the entire territory is covered in censuses (and other large surveys) and second, if needed, to enable the re-calculation of data from one to another political territorial division. Through statistical areas the settlements, municipalities and other socio-political communities are defined. Documentation was created for every statistical area when it was determined, and it contained a map and a description of the boundaries of the area. A revision of this documentation is conducted before every census (or other large surveys) in order to determine all changes that possibly occurred in the areas during the

intercensal period. After becoming acquainted with the boundaries of the enumeration area, the enumerator was obliged to prepare, together with the instructors, a plan of movement through the area, in order to avoid skipping units registered in the enumeration area.

The census was conducted in the period from 1 to 15 April, 1991, according to the situation at midnight of 31 March (the so-called “critical moment” of the census).

The enumerator, after completing the interviewing, was obliged to complete the census control form (Kontrolnik) by including preliminary results for a given enumeration area, and together with the census material (questionnaires), hand them over to the municipal instructor.

The municipal instructors examined the census material with each enumerator individually during the interviewing and also during the receipt of the census forms, by paying special attention to the completeness of the interviewing (by covering the entire census area), the completeness of answers to all questions and the exactness of preliminary results for the census area. When necessary, they returned the material to the enumerators for additional information and corrections. After receiving the material from all enumerators, the municipal instructors passed them on to the municipal census commission, which, upon receipt of the material from all instructors, was obliged to prepare preliminary results of the census in the census areas for the settlements and the municipality.

Thanks to the good organisation and great engagement of the municipal census commissions, the census was conducted in most municipalities without major problems, some minor difficulties that appeared were solved in good time. Therefore, we could conclude that the activities and tasks of the census were conducted in accordance with the Law on Organising the Census and methodological instructions. Good contact maintained between the Republican Statistical Office and the municipal census commissions certainly contributed to that (success) and this was achieved primarily through the republican instructors, and then by organising round the clock duty shifts in the Republican Office, whose employees maintained daily contacts with all municipal census commissions. In that manner all the problems were solved effectively, both of the methodological and the organisational nature.

THE PILOT CENSUS

A pilot census was carried-out in the BiH between April 1 and 10, 1988, in 10 selected census areas in six municipalities (Banja Luka, Bijeljina, Kiseljak, Mostar, Ilidža and Zenica). The enumerators conducted the census, while observers, municipal and republican instructors supervised their work. Three employees of the Federal Statistical Office participated in the pilot as observers. The Census Bureau members inspected all regions where the pilot census was carried-out, both during training and the census itself.

The experience gained during the pilot census served for preparing and improving the questionnaires and methodological instructions for the 1991 census.

PROCESSING AND PUBLISHING OF THE PRIMARY RESULTS OF THE CENSUS

The deadline for the municipal census commissions to prepare the preliminary results in settlements was 21 April, which then had to be handed over to the Republican Statistical Office by 22 April. The deadlines were generally adhered to. Several large municipalities were late in providing their materials, this however did not significantly influence the deadlines set up by the Republican Statistical Office. The material from the municipality of Kupres was not received in time, and therefore could not be included in the preliminary results.

The Republican Statistical Office After commenced control of the preliminary results as soon as they arrived from the municipalities. Thanks to the fast procedure, the cleaned preliminary results, prepared for municipalities and settlements, were published in special publications on 15 May, 1991. Data on the total number of inhabitants, households, dwellings and agricultural farms, the number of persons working abroad, as well as data on the livestock in municipalities and settlements were presented in these publications. The ethnic composition of the population in municipalities was also included. All publications were issued without the figures for the municipality of Kupres, which were additionally published at 10 September, 1991, after the quality-control was conducted.

In the municipality of Kupres census related activities were not completed within the legal deadline, above all due to the insufficient work of the municipal census commission, inconsistent usage of the methodology and, in particular, Article 2 of the Federal Census Law, which regulates which persons were to be included in the census.

The employees of the Republican Statistical Office visited the Municipality of Kupres on several occasions and attempted to solve the problems, so that the census could be completed within the legal deadline and preliminary results processed. Since the problems could not be solved because of disagreements in the municipal census commission, the Republican Statistical Office informed the Government of the Socialist Republic of Bosnia and Herzegovina about the problems that appeared during the census in this municipality. The representatives of the Republican Statistical Office took over the census material from the municipality of Kupres and placed it in special rooms where the work on the quality control of the census material could continue.

During the examination of the census material, important aberrations from the Methodology and the Census Law were revealed, in particular, a number of persons were registered as permanent citizens of the municipality of Kupres contrary to the methodology and the law. For the purpose of determining as objectively as possible the data on the population in this municipality, the Republican Statistical Office proposed to the municipal census commission to conduct a control census, which was not accepted.

After that, the Republican Statistical Office commenced enquiring into the places of residence

and citizenships for a certain number of individuals. A detailed examination of registration and de-registration of place of residence, citizenship and personal identification numbers of citizens (JMBG), obtained from the SRBiH Ministry of Internal Affairs, revealed that a number of persons who had been registered as residing in the municipality of Kupres had previously deregistered from this municipality. Also a number of persons had not registered their place of residence in this municipality, a number of persons had registered twice, some in two different settlements in the municipality of Kupres, or both in the municipality of Kupres and in the municipality of Bugojno. Some persons with changed surname had registered twice, one time under their old surname (maiden name) and second time under their new surname. Finally, a number of persons had been stripped off their SFRY, that is SRBiH, citizenship.

Keeping the above-mentioned considerations in mind, the census forms for 1,071 persons were excluded from the census material from the municipality of Kupres. It's worth mentioning that special attention was paid to the number of incorrect information items, therefore the decision to exclude a person from the census was only made when a number of information items regarding that person were incorrect.

The number of inhabitants in the municipality of Kupres was determined after the above-mentioned persons were excluded from the census material. Then the population size closely corresponded to the size expected by the Republican Statistical Office, based on demographic analyses (expert studies), and taking into consideration data on the natural and migratory movement of the population in this municipality.

QUALITY CONTROL OF THE DATA COLLECTED IN THE CENSUS

Pursuant to Article 1, Paragraph 3, of the Census Law ("SFRY Official Gazette", no. 3/90) between April 16 and 23, a statistical quality control of the completeness and exactness of the census data was conducted by randomly selecting 80 census areas in 49 municipalities (in 1991 there were 109 municipalities in BiH and 17,467 census areas). This type of control is the usual manner of determining data quality, it is based on scientific methods, as used in statistics all over the world. The control included re-collection of data from a number of registered units in chosen areas and re-completion of census questionnaires for randomly chosen households in those areas.

This was done based on special instructions for conducting data quality control. After the statistical control was finished, the newly collected data and the data collected during the proper census were matched and compared. It was then determined that there were no major aberrations between the two data sets.

At the 17th session of the SR Bosnia and Herzegovina Government, held on 25 March, 1991, at proposal by the Commission for Internal Politics, Judicature and Administration, a decision

was made that in the period between 14 and 20 April, 1991, the Republican Statistical Office should organise additional control of the data for all persons in respect to the following items: name and surname, father's name, the personal identification number, date of birth, place of residence, sex, nationality, mother tongue and religious affiliation.

Following this decision, the Republican Statistical Office prepared a bill on "Amendment to the Law on Organisation and Conduct of the Census", and printed special guidelines for the Control Census and distributed it to all municipalities. The Assembly of SR Bosnia and Herzegovina at the session of the Chamber of Citizens and the Chamber of Municipalities held on 22 April, 1991, regarding the proposal of the Government of SR Bosnia and Herzegovina on the Control Census, passed the following conclusion:

The bill on "Amendment to the Law on Organising and Conducting the Registration of the Population, Households, Dwellings and Agricultural Farms in 1991 and the Means for Financing the Census" *should not be included in the agenda* and the Republican Statistical Office should conduct the control census only in those regions, or municipalities, where omissions were found".

In accordance with the above-mentioned conclusion by the Assembly of the SRBiH, the Republican Statistical Office received nine requests for a control census. Four requests were received from municipal census commissions for the municipalities of Gruda, Prozor, Novi Grad and Srebrenica, five requests were submitted by political parties. For the municipalities of Nevesinje, Šipovo and Čajniče, the Party for Democratic Action sent the request for the control census, while for the municipalities of Novo Sarajevo and Prijedor the request was sent by the Serbian Democratic Party.

An expert commission was formed within the Republican Statistical Office composed of representatives of three nationalities, with the task of conducting the analysis of the preliminary results and based on that, to decide whether a control census should be conducted in these municipalities. After the examination of the census material and an expert demographic analysis, the commission decided, (and the Expert Group in the Republican Statistical Office accepted the proposal), that the results in the above-mentioned municipalities were in accordance with the natural and migratory movements of the population and that iteration of the census was unnecessary. The municipal census commissions were informed about this decision and given a detailed explanation.

PREPARATION OF THE CENSUS MATERIAL FOR PROCESSING

After the census material was gathered at the Republican Statistical Office, the preparation of this material for computer processing was organised, which included transfer of the data from questionnaires to electronic media. The data entry was conducted by scanning. Before the material was passed on to be entered, a manual preparation of the questionnaires took place.

The manual preparation was conducted on the basis of the Special Instructions for the Manual Preparation of the Census Material.

The preparation of the material and its entry through optical reading was completed by 12 December, 1991, which was in accordance with the planned timetable. In the Republican Statistical Office during the period from May to December, around 150 associates worked on the preparation and computerisation of the census material.

In order to prepare the census material for processing as effectively and qualitatively as possible, special software for coding items from census questionnaires was applied for the first time in this census. This phase was completed by the end of January 1992. Besides the employees of the Statistical Office, 40 associates were also engaged in these tasks.

CONTROL OF THE PROJECT AND LOGICAL CONTROL

After completion of data entry and automatic coding of items, control and corrections of the census material were conducted in two phases – control of the completeness and logical control. The control of the completeness was finished by the end of February 1992, and the Statistical Office published the final results of the census on the number of registered units in municipalities and inhabited areas as well as data on the national structure of the population, then on religious affiliation and mother tongue, as well as data on the number of persons working abroad and on the number of their family members (Statistical Bulletin no. 233, 234, 236 /probably 235/ and 236).

After the control of completeness, the logical control commenced. Logical control is a procedure for examining mutual logical (dis)harmony of responses to questions from the census forms. Corrections are included in this. In fact, this is only the final step in a number of logical controls of responses. It was foreseen that after this phase figures describing other structures of the population would be published, such as educational characteristics, social-economic position etc., as well as data on households, dwellings and agricultural farms.

With the aggression on Bosnia and Herzegovina in 1992, the processing of the census data ceased, therefore, the Statistical Office was unable to produce and publish all tables that had to be prepared according to the program of data processing. After the end of the military conflict, the Statistical Office managed to publish some more data in connection with the population and households (Statistical Bulletin no. 257, 271 and 272). The data on dwellings and agricultural farms were not published because this material never passed the phase of logical control.

CONCEPT DE JURE

During the 1991 census as well as during all post war censuses (1948, 1953, 1961, 1971, 1981), the population was registered according to the concept of a permanent population. The permanent population consists of persons who reside at a given location permanently, i.e. they have their permanent place of residence there, without taking into consideration whether at the time of the census (on the day March 31, 1991, at 24 hrs) they were at that location or were absent for any reason.

Persons temporarily working abroad, either for foreign employers or self-employed, as well as their family members who remain with them abroad, are registered as permanent citizens of the appropriate settlement in the country where their permanent place of residence is located.

The official data published on the population has passed all control phases, including the control for duplicates that was conducted on the level of each municipality.

Sarajevo, August 23, 2002

This section was written (originally in B/C/S) by **Nora Selimović**, Expert Advisor for Aggregation and Analysis of Data and the Development of the Methodology in the Field of Demography in the Bosnia and Herzegovina Agency for Statistics in Sarajevo.

Nora Selimović (NS) was born on 31 August, 1956, in Zenica. She graduated from the Faculty of Economics at the Sarajevo University on 30 June, 1979, and started working on 15 August, 1979, in the company ZPP (joint production and turnover) in Zenica. Since 12 December, 1980, she was employed at the Republican Statistical Office in Sarajevo in the Department of Population Statistics. In 1984, NS became Chief of the Department of Population Statistics. Since 1985, she worked on methodological preparations for the population census in 1991, as a member of the work group for the 1991 census methodology in the Federal Statistical Office in Belgrade and a member of the Census Bureau in the Republican Statistical Office in Sarajevo. She was involved in all census-related activities starting from methodological and organisational preparations up to producing census results. In October 1998, after the creation of the State Agency for Statistics in Bosnia and Herzegovina she commenced working in this institution. She is still employed there at present.

ANNEX B4. THE 1991 POPULATION CENSUS FOR BOSNIA AND HERZEGOVINA: POPULATION OVERSEAS

Summarised below are the results of the analysis of impact of pre-war emigration from Bosnia and Herzegovina on the *de facto* ethnic composition within the country in 1991 and on the estimated minimum number of refugees by 1998. The term 'pre-war emigration' is hereafter used for describing individuals, who temporarily resided abroad (in countries other than Yugoslavia) already by the time of 1991 population census. A person is considered a pre-war *émigré*, if her/his census record shows the value of the 'DUI' variable (length of the work/stay abroad, *dužina rada/boravka u inostranstvu*) other than '00'. This condition is fully consistent with another one, namely that the 'SDRZ' variable (country of work/stay abroad, *strana država rada/boravka*) is other than '000' – these two constraints may be used alternatively when extracting the data. Data used in this study were selected to ensure consistency with published sources covering the issue⁴, i.e. the duplicates additionally found by the Demographic Unit (approximately 8,500 in total for the whole census) were not excluded from the analysis. All analyses presented in this study are made for **pre-war** municipalities, due to split-settlement-conversion failures in some post-war (i.e. post-Dayton) municipalities, especially in Bosanski Šamac, Mostar, Odžak, Sarajevo-Ilidža, and Sarajevo-Trnovo. The analyses involving displaced persons and refugees were all conducted using only **matched** records (the 1997–98 voters register matched with the 1991 census).

The average share of persons staying abroad for the whole Bosnia and Herzegovina totalled ca. 5.4% (234,213 out of 4,377,032), however there were considerable differences between particular municipalities. And thus, the lowest shares of *émigrés* among the whole census population were observed for Kalinovik (0.3%) and Srebrenica (0.4%), while the highest – for Tomislavgrad (26.4%), Odžak (23.1%) and Livno (20.4%). The exact figures for all pre-war municipalities and ethnic groups are listed in Table 3(B4) at the end of this memo. Figures obtained from the PopDB are **fully** accordant with the 1994 publication of the R BiH State Office for Statistics⁵

Impact on the Ethnic Composition

⁴ Consistency issues are related to elimination of duplicates, which was only partly achieved by the statistical authorities in Bosnia. Duplicate control should be conducted by comparing records within municipalities and between municipalities. The "within municipality" control was completed by the Bosnian municipal census commissions in 1991 for all municipalities, and all found duplicates were deleted. The official census files do not contain duplicates within municipalities. The "between municipality" control had not been conducted by statistical authorities due to the outbreak of the 1992–95 conflict. Therefore, the Demographic Unit carried out a number of additional duplicate checks. Some 17,101 suspected records were identified on the basis of comparing first name, father's name, surname, and date of birth. Of these, some 8,506 records were flagged as duplicates. These records are normally excluded from studying the census data. Note that statistical authorities in Bosnia produced their official statistics without checking duplicates at the inter-municipal level. Therefore, small differences are usually seen in the figures produced locally in Bosnia and those produced at OTP.

⁵ Državni zavod za statistiku Republike Bosne i Hercegovine, *Građani R BiH na privremenom radu – boravku u inostranstvu, rezultati za republiku po opštinama*, Statistički Bilten (Statistical Bulletin) No. 235, Sarajevo, June 1994.

The impact of excluding persons working or staying abroad by 1991 from the whole pre-war census population on the ethnic composition of particular municipalities in general appeared to be limited. There were only **three** exceptional cases of pre-war municipalities, where the ethnic majority in 1991 appeared to be different for *de facto* and *de jure* population, i.e. when the population residing abroad was excluded (*de facto*) or respectively included (*de jure*) in the census population. In four other municipalities, the dominant group remained the same, but the type of majority changed, either from absolute (more than 50% of the dominant group) to relative (less than 50%), or from relative to absolute. All above-mentioned municipalities are listed below:

Table 1(B4). Municipalities where Ethnic Composition for *De Facto* and *De Jure* Population Differed Most Considerably

Municipality (code + name)	Ethnic Majority in 1991 <i>De Facto</i> Population	Ethnic Majority in 1991 <i>De Jure</i> Population
10138 Bosanski Šamac	Serb (relative majority)	Croats (relative majority)
10219 Busovača	Muslims (relative majority)	Croats (relative majority)
10774 Novi Travnik	Muslims (relative majority)	Croats (relative majority)
10324 Fojnica	Muslims (absolute majority)	Muslims (relative majority)
10472 Kiseljak	Croats (relative majority)	Croats (absolute majority)
10502 Ključ	Serbs (absolute majority)	Serbs (relative majority)
10707 Odžak	Croats (relative majority)	Croats (absolute majority)

The complete list of pre-war municipalities showing their ethnic composition for both *de facto* and *de jure* population (respectively, excluding and including the émigrés) is shown in Table 4(B4). In that table, the above-mentioned seven municipalities are highlighted grey.

Impact on the Out-Of-Country Voters 1998

Because of the existence of the population temporarily residing abroad in 1991, there might be a suspicion that the estimates of refugees produced by the Demographic Unit are inflated by including in DU statistics those voters who resided abroad already at the time of the 1991 census. This population group can be seen as pre-war emigration from Bosnia and Herzegovina, and thus, unrelated to the 1992-95 conflict. This issue is however questionable because, irrespective of when those persons left Bosnia, they had not returned until 1998, perhaps because of the conflict.

In order to investigate the impact of pre-war emigration from Bosnia and Herzegovina on the estimated minimum numbers of refugees by 1998, we examined the 1991 place of residence

of the out-of-country (OCV) voters reported in the 1998 voters register. In other words, we checked how many of the 1998 OCV voters left the country before the 1991 census (pre-census emigration) and how many of them left after the census (post-census emigration). The pre-census emigration can be seen as war-unrelated and the post-census can be considered as war-related.

Before completing the proper analysis, we investigated voters' place of registration in the 1998 elections: whether it took place in Bosnia and Herzegovina, in Croatia, in the FRY or in other countries. To ensure a better credibility of results, 55,341 individuals registered in Croatia and 54,624 registered in the FRY are excluded from the analysis. The reason for these exclusions was that these particular out-of-country voters were in fact in Bosnia and Herzegovina in 1991, even though they could be temporarily working or staying in present-day Croatia or FRY⁶. In the 1991 census they were reported as actually residing in Bosnia and Herzegovina, not abroad. In 1998 they registered to vote abroad, and thus according to our definition of refugees they have been post-census emigration to Croatia or Yugoslavia. Only the voters from countries other than the former Yugoslav republics are considered in tracing population movements, and only this category is hereafter referred to as 'Out-of-Country' voters.

The analysis showed, that for the whole country some 181,273 persons out of the overall number of 209,440 Out-of-Country voters (i.e. **86.6%**) were those who were post-census refugees (left the country after the 1991 census), while they actually resided in Bosnia and Herzegovina in 1991. In other words, only 28,167 of the 1998 Out-of-Country voters (i.e. **13.4%**) were those, who already stayed or worked abroad in 1991. This group can be seen as pre-census emigration. This leads to the conclusion, that on the country level the size of a bias related to including pre-war *émigrés* in the total number of refugees is not substantial.

For the particular ethnic groups it can be seen, that 63.8% of the Out-of-Country voters of a Serb ethnicity and 68.5% of the Croats are the post-census refugees, while the figures for

⁶ These voters who registered in Croatia or FRY should be considered as belonging to *de facto* population in 1991. A query on the VSP variable from the census (frequency of returns home while working or studying elsewhere in the former Yugoslavia: daily, weekly, less frequently, or unknown) has shown the following:

- Of those OCV voters from BH reported in 1998 in present-day Croatia (55,341 in total) only 3,117 voters systematically travelled in 1991 to other Yugoslav republics (2,650 to SR of Croatia). Of the 3,117 travellers, approximately 1,532 visited their homes less frequently than daily or weekly (excluding 115 invalid records). The vast majority of the 55,341 voters can be thus considered as *de facto* population (as they returned home daily or weekly).
- Of those OCV voters from BH reported in 1998 in present-day FRY (54,624 in total) only 1,265 voters systematically travelled in 1991 to other Yugoslav republics (308 to Serbia, 205 to Vojvodina, 175 to Croatia). Of the 1,265 travellers, approximately 784 visited their homes less frequently than daily or weekly (excluding 74 invalid records). The vast majority of the 54,624 voters can be therefore considered *de facto* population (as they returned home daily or weekly).

Summing up, by excluding the voters registered in 1998 in Croatia and FRY from the analysis discussed in this chapter, we substantially underestimated the fraction of post-census *émigrés* among all refugees, and automatically overestimated the fraction of pre-census emigration.

Muslims and Others are substantially higher, totalling 90.8 and 90.7%, respectively. Therefore, for the largest group of post-census (or war-time) refugees, i.e. the Muslims (74,3% of the total number of Out-of-Country voters), our figures seem to be least overestimated.

Regardless of the above-mentioned conclusions, significant differences could be observed at the municipal level. Five lowest fractions of post-census refugees (below 50%) were obtained for the municipalities of: Grude (18.0%), Posušje (22.0%), Lištica/Široki Brijeg (26.3%), Bosansko Grahovo (27.3%) and Čitluk (35.2%). The exact figures for all pre-war municipalities and ethnic groups are listed in Table 5(B4).

Note that the total minimum number of refugees and displaced persons reported in this study for the whole Bosnia and Herzegovina is 674,350 individuals. If some 28,167 pre-census émigrés are included in this total, then about 4.2 % of the total is questioned, which is less than the usually accepted error of 5 per cent. If the total of 28,167 persons is distributed proportionally to the fractions of ethnic groups among refugees, we obtain the following approximated numbers of pre-census refugees for each ethnic group⁷:

Serbs:	4,625	(2.1 % of all DPs and refugees)
Muslims:	14,563	(4.6 %)
Croats:	6,944	(6.6 %)
Others:	2,035	(5.3 %)

All in all, the impact of including the pre-census emigration in the minimum numbers of DPs and refugees is within the acceptable error. It is however not necessarily correct to assume that all these *émigrés* should be excluded from statistics of refugees.

A second issues investigated in this study attempts to answer what portion of the pre-census emigration returned to Bosnia and Herzegovina, but not to their pre-war residence, and therefore they are included in our statistics of displaced persons. One could argue that these particular returnees would inflate the DPs numbers estimated by the Demographic Unit (they were absent in BH during the 1991 census but present in BH - as DPs - in 1997/98).

The issue is related to the 1991 *émigrés*, who returned to Bosnia and Herzegovina and were found in the 1997/98 electoral lists as registered **within** the country, i.e. in one (not necessarily the same as pre-war) of the 149 new municipalities. Out of the total number of

⁷ The table attached in this footnote explains the calculations for the whole Bosnia:

Ethnicity	DPs and Refugees	Of which Refugees	Ethnicity of Refugees (%)	Bias Abs. Size	Bias Per cent
Serbs	217,283	48,350	0.164	4,625	0.021
Muslims	314,382	152,224	0.517	14,563	0.046
Croats	104,579	72,591	0.247	6,944	0.066
Others	38,106	21,267	0.072	2,035	0.053
Total	674,350	294,432	1.000	28,167	na

20,248 such records that were identified (i.e. the census records matched with the voter records having valid *REGMUN* codes), only some 1,742 (8.6%) appeared to be internally displaced, i.e. registered in post-war municipality which was different than the area, where they were enumerated during the 1991 census. Another 17,476 (86.2%) persons were registered in the same area as they were enumerated in 1991, while for the remaining 1,066 (5.3%) there is no information about their pre-war residence in terms of post-war municipalities, as they originate from the split settlements. The ethnic breakdown of these figures is given below:

Table 2(B4). Pre-Census Émigré Returns to Bosnia and Herzegovina by Ethnicity and Displacement Status in 1998

Émigré returns to BH	ALL	Serbs	Muslims	Croats	Others
TOTAL, <i>of which:</i>	20,284	7,936	5,113	6,468	767
- not displaced	17,476 (86.2%)	6,655 (83.9%)	4,383 (85.7%)	5,829 (90.1%)	609 (79.4%)
- displaced	1,742 (8.6%)	729 (9.2%)	554 (10.8%)	365 (5.6%)	94 (12.3%)
- unknown	1,066 (5.3%)	552 (7.0%)	176 (3.4%)	274 (4.2%)	64 (8.3%)

The main conclusion is, that as the vast majority of returns of pre-war émigrés to Bosnia and Herzegovina are not displaced persons, therefore the numbers of persons internally displaced presented in our demographic reports, i.e. without considering the pre-war residence abroad, are not substantially biased at all, especially at the country level. This conclusion remains valid for all ethnic groups (Serbs, Muslims, Croats and Others). Moreover, the numbers of these particular returnees are generally small and this is another reason that their impact cannot be considerable.

Table 3(B4). Population Temporarily Residing Abroad during the 1991 Census and Its Fraction in the Total Census Population, By Ethnicity and Municipality

Opstina	Opstina Name	Pop. IN	Pop. OUT	% OUT	% Serbs OUT	% Muslims OUT	% Croats OUT	% Others OUT
10014	BANOVIKA	26268	322	1.2%	1.8%	0.6%	2.2%	4.6%
10022	BANJA LUKA	186709	8983	4.6%	5.3%	1.7%	4.7%	4.6%
10049	BIHAC	66308	4424	6.3%	1.7%	7.1%	7.5%	8.3%
10057	BIJELJINA	89789	7199	7.4%	7.8%	3.6%	10.2%	17.7%
10065	BILECA	13140	144	1.1%	1.2%	1.0%	0.0%	0.1%
10073	BOSANSKA DUBICA	28566	3040	9.6%	7.9%	7.0%	6.6%	28.1%
10081	BOSANSKA GRADISKA	55887	4087	6.8%	6.3%	5.3%	10.3%	13.0%
10090	BOSANSKA KRUPA	54869	3451	5.9%	4.1%	6.3%	12.9%	12.7%
10103	BOSANSKI BROD	32088	2050	6.0%	5.1%	4.4%	6.8%	7.3%
10111	BOSANSKI NOVI	40518	1147	2.8%	1.7%	4.4%	7.7%	3.6%
10120	BOSANSKI PETROVAC	15005	616	3.9%	2.3%	5.8%	8.3%	25.3%
10138	BOSANSKI SAMAC	28743	4217	12.8%	8.0%	1.7%	18.4%	16.5%
10146	BOSANSKO GRAHOVO	7859	452	5.4%	5.3%	0.0%	8.4%	6.5%
10154	BRAUNAC	33073	546	1.6%	1.2%	1.8%	5.0%	2.3%
10162	BRCKO	76121	11506	13.1%	9.9%	4.7%	28.6%	17.4%
10189	BREZA	16969	348	2.0%	2.1%	1.4%	4.9%	6.2%
10197	BUGOJNO	43808	3081	6.6%	3.6%	4.0%	9.7%	16.9%
10219	BUSOVACA	17604	1275	6.8%	2.6%	2.3%	11.3%	5.5%
10227	CAZIN	58724	4685	7.4%	6.9%	7.3%	13.0%	13.0%
10235	CAJNICE	8874	82	0.9%	1.0%	0.7%	0.0%	2.2%
10243	CAPLJINA	26889	993	3.6%	1.0%	0.8%	5.4%	5.0%
10251	CELINAC	17652	1061	5.7%	5.5%	3.3%	7.9%	16.2%
10260	CITLUK	31168	1915	12.7%	0.0%	0.0%	12.4%	64.8%
10278	DERVENTA	52344	4145	7.3%	8.5%	1.8%	8.2%	6.0%
10286	DOBOJ	98096	4453	4.3%	4.4%	1.7%	8.1%	11.3%
10294	DONJI VAKUF	24124	420	1.7%	1.4%	1.4%	5.9%	7.4%
10308	TOMISLAVGRAD	22083	7926	26.4%	1.6%	5.7%	29.4%	31.7%
10316	FOCA	39821	692	1.7%	1.4%	1.6%	5.4%	6.6%
10324	FOJNICA	15121	1174	7.2%	4.5%	2.1%	14.5%	2.4%
10332	GACKO	10668	130	1.1%	1.1%	1.0%	0.0%	2.4%
10359	GLAMOC	12205	388	3.1%	2.5%	4.3%	8.2%	12.9%
10367	GORAZDE	36712	861	2.3%	1.7%	2.3%	3.8%	5.7%
10375	GORNJI VAKUF	22452	2729	10.8%	4.5%	5.7%	17.4%	18.4%
10383	GRACANICA	57289	1845	3.1%	3.0%	1.9%	5.3%	21.7%
10391	GRADACAC	51707	4874	8.6%	8.0%	2.6%	25.4%	29.8%
10405	GRUDE	14080	2278	13.9%	22.2%	0.0%	13.6%	55.6%
10413	HAN PIESAK	6250	98	1.5%	1.7%	1.2%	14.3%	3.2%
10421	JABLANICA	12306	385	3.0%	1.7%	0.2%	4.5%	15.9%
10430	JAICE	43542	1465	3.3%	1.8%	2.0%	5.3%	3.7%
10448	KAKANJ	53196	2754	4.9%	1.5%	1.7%	10.6%	10.3%
10456	KALESIJA	38833	2976	7.1%	9.5%	6.4%	17.1%	12.9%
10464	KALINOVIK	4655	12	0.3%	0.1%	0.5%	0.0%	0.0%
10472	KISELJAK	21477	2687	11.1%	1.9%	5.7%	15.0%	20.9%
10499	KLADANJ	15542	528	3.3%	2.6%	3.1%	0.0%	13.3%
10502	KLJUC	35823	1568	4.2%	3.1%	5.3%	5.2%	5.1%
10529	KONJIC	42206	3672	3.8%	0.5%	2.3%	8.4%	6.1%
10537	KOTOR VAROS	34379	2474	6.7%	3.7%	3.6%	13.9%	6.0%
10545	KRESEVO	6209	522	7.8%	5.9%	2.0%	9.1%	13.3%
10553	KUPRES	8416	1202	12.5%	10.2%	3.9%	17.0%	18.0%
10561	LAKTASI	27917	1915	6.4%	5.5%	2.0%	6.0%	15.5%
10570	LISTICA	23413	3747	13.8%	3.4%	11.1%	13.7%	41.0%
10588	LIVNO	32307	8293	20.4%	3.7%	4.0%	26.3%	13.2%
10596	LOPARE	28536	4001	12.3%	15.4%	5.1%	20.6%	30.5%
10600	LUKAVAC	55457	1613	2.8%	2.6%	1.9%	5.8%	9.5%
10618	LJUBINJE	4126	46	1.1%	1.0%	1.5%	2.6%	1.9%
10626	LJUBUSKI	23720	4620	16.3%	4.6%	1.0%	17.0%	27.5%
10634	MAGLAJ	41626	1762	4.1%	2.7%	2.9%	6.3%	14.0%
10642	MODRICA	31304	4309	12.1%	12.9%	2.3%	20.1%	16.9%
10669	MOSTAR	122071	4557	3.6%	1.2%	2.1%	6.6%	3.3%
10677	MRKONJIC GRAD	25680	1715	6.3%	6.4%	4.0%	5.8%	11.8%
10685	NEUM	3974	351	8.1%	0.0%	0.0%	9.0%	5.9%
10693	NEVESINJE	13886	562	3.9%	3.2%	5.2%	10.0%	11.9%
10707	ODZAK	23106	6950	23.1%	24.5%	2.5%	29.9%	27.9%
10715	OLOVO	16652	304	1.8%	1.7%	1.2%	7.4%	11.7%
10723	ORASIE	24683	3684	13.0%	4.8%	1.2%	15.8%	10.0%
10731	POSUSJE	14131	3003	17.5%	11.1%	13.3%	17.3%	39.1%
10740	PRJEDOR	106968	5575	5.0%	4.2%	5.3%	5.4%	6.5%
10758	PRNJAVOR	42377	4678	9.9%	10.5%	5.4%	5.4%	14.1%
10766	PROZOR	18040	1720	8.7%	0.0%	4.3%	11.2%	14.9%
10774	NOVI TRAVNIK	29570	1143	3.7%	0.9%	1.0%	7.0%	4.8%
10782	ROGATICA	21597	381	1.7%	1.7%	1.6%	10.5%	7.3%
10804	RUDO	11426	145	1.3%	1.2%	0.9%	0.0%	6.6%
10812	SANSKI MOST	55702	4605	7.6%	3.7%	9.6%	6.7%	26.9%

Note: Population 'IN' denotes persons having their 'DUI' variable equal '00' (or 'SDRZ' variable equal '000', equivalently), population 'OUT' – other cases, i.e. *émigrés* (those temporarily residing abroad).

Table 3(B4). - Continued

Opština	Opština Name	Pop. IN	Pop. OUT	% OUT	% Serbs OUT	% Muslims OUT	% Croats OUT	% Others OUT
10839	SARAJEVO-CENTAR	77749	1537	1.9%	1.1%	1.5%	2.5%	3.5%
10847	SARAJEVO-HADZICI	23850	350	1.4%	0.6%	1.4%	5.4%	3.6%
10855	SARAJEVO-ILIDZA	66295	1642	2.4%	1.2%	2.4%	4.9%	4.3%
10863	SARAJEVO-ILIJAS	24623	561	2.2%	1.8%	1.5%	5.7%	6.4%
10871	SARAJEVO-NOVI GRAD	134860	1756	1.3%	0.9%	1.2%	1.9%	2.0%
10880	SARAJEVO-NOVO SARAJEVO	93638	1451	1.5%	1.1%	1.6%	2.2%	1.9%
10898	SARAJEVO-PALE	16021	334	2.0%	1.7%	2.0%	3.1%	9.7%
10901	SARAJEVO-STARI GRAD	49779	965	1.9%	1.3%	1.7%	2.7%	3.8%
10910	SARAJEVO-TRNOVO	6927	64	0.9%	0.8%	0.7%	6.3%	8.8%
10928	VOGOSCA	24034	613	2.5%	1.7%	1.8%	5.6%	7.8%
10936	SKENDER VAKUF	18722	696	3.6%	4.0%	0.6%	2.7%	8.3%
10944	SOKOLAC	14570	313	2.1%	1.8%	2.4%	0.0%	11.0%
10952	SRBAC	19328	2512	11.5%	11.1%	8.8%	15.1%	18.5%
10979	SREBRENICA	36518	148	0.4%	0.5%	0.4%	0.0%	1.1%
10987	SREBRENIK	38373	2523	6.2%	11.3%	2.8%	16.1%	27.1%
10995	STOLAC	18070	611	3.3%	0.7%	1.5%	6.8%	7.8%
11002	SEKOVICI	9408	221	2.3%	1.7%	0.9%	12.5%	21.6%
11029	SIPOVO	14986	593	3.8%	3.5%	4.6%	9.7%	7.3%
11037	TESLIC	56412	3442	5.8%	5.3%	2.1%	10.5%	9.5%
11045	TESANJ	46311	2169	4.5%	3.6%	2.5%	11.4%	9.9%
11053	TITOV DRVAR	16944	182	1.1%	1.0%	0.0%	0.0%	2.4%
11061	TRAVNIK	66512	4235	6.0%	1.0%	2.1%	12.2%	6.0%
11070	TREBINJE	30739	257	0.8%	0.7%	1.1%	2.8%	0.7%
11088	TUZLA	127833	3785	2.9%	2.5%	1.1%	4.4%	5.9%
11096	UGLJEVIK	23948	1639	6.4%	8.0%	3.3%	10.7%	13.8%
11100	VARES	21789	414	1.9%	1.0%	0.7%	2.6%	3.4%
11118	VELIKA KLADUSA	50601	2307	4.4%	1.3%	4.2%	8.1%	10.7%
11126	VISOKO	45178	982	2.1%	1.0%	1.5%	7.1%	10.4%
11134	VISEGRAD	20636	563	2.7%	2.6%	2.4%	3.1%	6.6%
11142	VITEZ	26463	1396	5.0%	1.9%	0.9%	8.3%	9.8%
11169	VLASENICA	33161	781	2.3%	1.7%	2.1%	0.0%	17.9%
11177	ZAVIDOVICI	55879	1285	2.2%	1.5%	1.5%	4.9%	6.1%
11185	ZENICA	143080	2437	1.7%	1.3%	1.1%	3.1%	2.7%
11193	ZVORNIK	78048	3247	4.0%	5.2%	3.1%	13.9%	5.0%
11207	ZEPCE	21827	1139	5.0%	5.7%	2.4%	7.6%	7.3%
11215	ZIVINICE	53271	1512	2.8%	4.2%	1.7%	3.3%	14.4%
Total Bosnia and Herzegovina		4142819	234213	5.4%	4.4%	2.9%	12.0%	7.9%

Note: Population 'IN' denotes persons having their 'DUI' variable equal '00' (or 'SDRZ' variable equal '000', equivalently), population 'OUT' – other cases, i.e. *de facto émigrés* (those temporarily residing abroad).

Table 4(B4). Ethnic Composition in Pre-War Municipalities in Bosnia and Herzegovina
Estimated for *De Jure* and *De Facto* Population Reported in the 1991 Census

Opština	Opština Name	ALL Serbs	ALL Muslims	ALL Croats	ALL Others	Serbs in BH	Muslims in BH	Croats in BH	Others in BH
10014	BA NOVICI	17.0%	72.0%	2.1%	9.0%	16.9%	72.4%	2.0%	8.7%
10022	BANJA LUKA	54.5%	14.8%	14.8%	16.1%	54.1%	15.0%	14.8%	16.1%
10049	BIHAC	17.9%	66.0%	7.9%	8.2%	18.8%	65.4%	7.8%	8.0%
10057	BIJELJINA	59.1%	31.1%	0.5%	9.3%	58.9%	32.3%	0.5%	8.2%
10065	BILECA	80.0%	14.6%	0.3%	5.1%	79.9%	14.6%	0.3%	5.2%
10073	BOSANSKA DUBICA	68.7%	20.3%	1.5%	9.5%	69.9%	20.9%	1.6%	7.5%
10081	BOSANSKA GRADISKA	59.6%	26.4%	5.7%	8.3%	59.9%	26.8%	5.5%	7.8%
10090	BOSANSKA KRUPA	23.7%	73.9%	0.2%	2.2%	24.2%	73.6%	0.2%	2.0%
10103	BOSANSKI BROD	33.3%	12.0%	41.0%	13.7%	33.7%	12.2%	40.6%	13.5%
10111	BOSANSKI NOVI	60.2%	33.6%	1.0%	5.2%	60.9%	33.1%	0.9%	5.1%
10120	BOSANSKI PETROVAC	74.8%	21.0%	0.3%	3.9%	76.1%	20.6%	0.3%	3.0%
10138	BOSANSKI SAMAC	41.3%	6.8%	44.7%	7.2%	43.6%	7.6%	41.8%	6.9%
10146	BOSANSKI GRAHOVO	94.9%	0.1%	2.7%	2.2%	95.0%	0.2%	2.6%	2.2%
10154	BRATUNAC	34.1%	64.0%	0.1%	1.8%	34.3%	63.9%	0.1%	1.8%
10162	BRCKO	20.7%	44.0%	25.4%	10.0%	21.4%	48.3%	20.9%	9.4%
10189	BREZA	12.2%	75.5%	4.9%	7.3%	12.2%	76.0%	4.8%	7.0%
10197	BUGOJNO	18.5%	41.9%	34.2%	5.4%	19.1%	43.1%	33.0%	4.8%
10219	BUSOVACA	3.7%	48.1%	3.9%	3.4%	46.9%	45.7%	3.9%	3.9%
10227	CAZIN	1.2%	97.2%	0.2%	1.3%	1.2%	97.3%	0.2%	1.3%
10235	CAJNICE	52.6%	44.8%	0.1%	2.6%	52.5%	44.9%	0.1%	2.6%
10243	CAPLJINA	13.5%	27.2%	53.7%	5.6%	13.8%	28.0%	52.6%	5.5%
10251	CELINAC	88.5%	7.7%	0.4%	3.5%	88.7%	7.9%	0.4%	3.1%
10260	CITLIK	0.1%	0.7%	98.3%	0.9%	0.1%	0.8%	98.6%	0.4%
10278	DERVENTA	40.6%	12.5%	38.8%	8.1%	40.1%	13.3%	38.5%	8.2%
10286	DOBOJ	38.8%	40.1%	12.9%	8.2%	38.8%	41.2%	12.4%	7.6%
10294	DONJI VAKUF	38.8%	55.0%	2.8%	3.4%	39.0%	55.2%	2.7%	3.2%
10308	TOMISLAVGRAD	1.9%	10.5%	86.6%	1.0%	2.6%	13.4%	83.0%	1.0%
10316	FOCA	45.2%	51.2%	0.2%	3.4%	45.3%	51.2%	0.2%	3.2%
10324	FOJNICA	1.0%	49.2%	40.6%	9.2%	1.0%	51.9%	37.4%	9.7%
10332	GACKO	61.7%	35.6%	0.3%	2.3%	61.7%	35.7%	0.3%	2.3%
10359	GLAMOC	79.0%	17.9%	1.5%	1.7%	79.4%	17.7%	1.4%	1.5%
10367	GORAZDE	26.2%	69.9%	0.2%	3.7%	26.3%	69.9%	0.2%	3.5%
10375	GORNJI VAKUF	0.4%	55.8%	42.5%	1.3%	0.5%	59.0%	39.4%	1.2%
10383	GRACANICA	22.9%	71.9%	0.2%	5.0%	23.0%	72.8%	0.2%	4.0%
10391	GRADACAC	19.8%	59.6%	15.2%	5.4%	19.9%	63.5%	12.4%	4.1%
10405	GRUDE	0.1%	0.0%	99.1%	0.8%	0.0%	0.0%	99.5%	0.4%
10413	HAN PDESAK	57.9%	40.1%	0.1%	2.0%	57.8%	40.2%	0.1%	1.9%
10421	JABLANICA	4.0%	71.6%	18.1%	6.3%	4.1%	72.6%	17.8%	5.5%
10430	JAICE	19.2%	38.6%	35.1%	7.1%	19.5%	39.1%	34.4%	7.0%
10448	KAKANJ	8.8%	54.4%	29.6%	7.3%	9.1%	56.2%	27.8%	6.8%
10456	KALESIJA	18.3%	79.2%	0.1%	2.4%	17.8%	79.9%	0.1%	2.2%
10464	KALINOVIK	60.6%	36.7%	0.4%	2.3%	60.6%	36.7%	0.4%	2.3%
10472	KISELJAK	3.0%	40.4%	51.8%	4.8%	3.3%	42.9%	49.5%	4.3%
10499	KLADANJ	24.6%	72.2%	0.2%	3.0%	24.8%	72.3%	0.2%	2.7%
10502	KLJUC	49.5%	47.2%	0.9%	2.4%	50.1%	46.7%	0.9%	2.4%
10529	KONJIC	15.1%	54.2%	26.2%	4.4%	15.6%	55.1%	25.0%	4.3%
10537	KOTOR VAROS	38.1%	30.1%	29.0%	2.8%	39.4%	31.1%	26.8%	2.8%
10545	KRESEVO	0.5%	22.7%	69.8%	6.9%	0.5%	24.2%	68.8%	6.5%
10553	KUPRES	50.6%	8.3%	39.6%	1.4%	51.9%	9.2%	37.6%	1.4%
10561	LAKTASI	81.0%	1.4%	8.6%	9.0%	81.8%	1.4%	8.6%	8.1%
10570	LISTICA	0.5%	0.0%	98.9%	0.5%	0.6%	0.0%	99.0%	0.4%
10588	LIVNO	9.6%	14.2%	72.2%	3.9%	11.7%	17.1%	66.9%	4.3%
10596	LOPARE	56.1%	36.8%	3.9%	3.2%	54.1%	39.9%	3.5%	2.5%
10600	LUKAVAC	21.3%	66.6%	3.7%	8.4%	21.4%	67.2%	3.6%	7.8%
10618	LJUBINJE	89.8%	8.0%	0.9%	1.3%	89.9%	7.9%	0.9%	1.3%
10626	LJUBUSKI	0.2%	5.6%	92.2%	2.0%	0.3%	6.6%	91.4%	1.7%
10634	MAGLJAJ	30.7%	45.0%	19.3%	5.0%	31.1%	45.6%	18.8%	4.5%
10642	MODRICA	35.2%	29.1%	27.5%	8.2%	34.9%	32.4%	25.0%	7.7%
10669	MOSTAR	18.8%	34.5%	34.0%	12.7%	19.3%	35.1%	32.9%	12.7%
10677	MRKONJIC GRAD	76.8%	11.9%	7.8%	3.4%	76.7%	12.2%	7.8%	3.2%
10685	NEUM	4.8%	4.4%	87.7%	3.1%	5.2%	4.8%	86.8%	3.2%
10693	NEVESINJE	74.1%	22.9%	1.5%	1.5%	74.7%	22.6%	1.4%	1.4%
10707	ODZAK	18.9%	20.7%	54.3%	6.1%	18.8%	26.2%	49.5%	5.7%
10715	OLOVO	18.8%	74.9%	3.8%	2.5%	18.9%	75.3%	3.6%	2.3%
10723	ORASIE	14.9%	6.7%	75.1%	3.4%	16.3%	7.6%	72.6%	3.5%
10731	POSUSJE	0.1%	0.0%	99.0%	0.9%	0.1%	0.0%	99.2%	0.7%
10740	PRJEDOR	42.2%	43.8%	5.6%	8.3%	42.6%	43.6%	5.6%	8.2%
10758	PRNIAVOR	71.2%	15.2%	3.7%	10.0%	70.7%	15.9%	3.8%	9.5%
10766	PROZOR	0.2%	36.5%	62.0%	1.2%	0.2%	38.3%	60.3%	1.1%
10774	NOVI TRAVNIK	13.3%	37.8%	39.6%	9.3%	13.7%	38.9%	38.2%	9.2%
10782	ROGATICA	38.2%	60.0%	0.1%	1.7%	38.2%	60.1%	0.1%	1.6%
10804	RUDO	70.4%	27.1%	0.0%	2.5%	70.4%	27.2%	0.0%	2.4%
10812	SANSKI MOST	42.1%	46.6%	7.2%	4.2%	43.8%	45.6%	7.2%	3.3%

Note: Population 'in BH' denotes persons having their 'DUI' variable equal '00' (or 'SDRZ' variable equal '000', equivalently), i.e. *de facto* residing in BH in 1991, while the 'ALL' (de jure) population includes also persons temporarily residing (working or not) abroad.

Table 4(B4). Continued

Opstina	Opstina Name	ALL Serbs	ALL Muslims	ALL Croats	ALL Others	Serbs in BH	Muslims in BH	Croats in BH	Others in BH
10839	SARAJEVO-CENTAR	20.9%	49.8%	6.8%	22.5%	21.1%	50.0%	6.8%	22.1%
10847	SARAJEVO-HADZICI	26.3%	63.4%	3.1%	7.2%	26.5%	63.4%	3.0%	7.1%
10855	SARAJEVO-ILIDZA	36.8%	43.1%	10.2%	9.9%	37.3%	43.1%	9.9%	9.7%
10863	SARAJEVO-ILIJAS	45.0%	42.0%	6.9%	6.1%	45.1%	42.4%	6.6%	5.9%
10871	SARAJEVO-NOVI GRAD	27.5%	50.6%	6.5%	15.4%	27.6%	50.6%	6.4%	15.3%
10880	SARAJEVO-NOVO SARAJEVO	34.5%	35.4%	9.2%	20.8%	34.7%	35.4%	9.2%	20.7%
10898	SARAJEVO-PALE	69.0%	26.7%	0.8%	3.5%	69.3%	26.7%	0.8%	3.3%
10901	SARAJEVO-STARI GRAD	10.1%	77.4%	2.2%	10.3%	10.2%	77.5%	2.2%	10.1%
10910	SARAJEVO-TRNOVO	29.5%	68.2%	0.2%	2.1%	29.5%	68.4%	0.2%	1.9%
10928	VOGOSCA	35.7%	50.7%	4.3%	9.2%	36.0%	51.1%	4.2%	8.7%
10936	SKENDER VAKUF	68.3%	5.5%	24.6%	1.6%	68.0%	5.7%	24.8%	1.5%
10944	SOKOLAC	68.4%	30.2%	0.1%	1.3%	68.6%	30.1%	0.1%	1.2%
10952	SRBAC	88.7%	4.3%	0.6%	6.4%	89.1%	4.4%	0.6%	5.9%
10979	SREBRENICA	22.7%	75.2%	0.1%	2.1%	22.7%	75.2%	0.1%	2.1%
10987	SREBRENIK	13.0%	74.6%	6.7%	5.8%	12.3%	77.3%	6.0%	4.5%
10995	STOLAC	21.0%	43.1%	33.1%	2.8%	21.5%	43.9%	31.9%	2.7%
11002	SEKOVICI	93.6%	3.4%	0.1%	2.9%	94.1%	3.4%	0.1%	2.4%
11029	SIPOVO	79.1%	19.0%	0.2%	1.7%	79.4%	18.8%	0.2%	1.6%
11037	TESLIC	55.1%	21.3%	15.9%	7.7%	55.3%	22.2%	15.1%	7.4%
11045	TESANJ	6.3%	72.0%	18.4%	3.3%	6.4%	73.4%	17.1%	3.1%
11053	TITOV DRVAR	97.0%	0.2%	0.2%	2.7%	97.0%	0.2%	0.2%	2.6%
11061	TRAVNIK	11.0%	44.9%	36.9%	7.2%	11.6%	46.8%	34.4%	7.2%
11070	TREBENJE	68.9%	17.8%	4.0%	9.3%	69.0%	17.7%	3.9%	9.3%
11088	TUZLA	15.4%	47.4%	15.3%	22.0%	15.4%	48.2%	15.1%	21.3%
11096	UGLJEVIK	56.5%	39.5%	0.2%	3.7%	55.6%	40.8%	0.2%	3.4%
11100	VARES	16.4%	30.2%	40.4%	13.1%	16.5%	30.6%	40.1%	12.9%
11118	VELIKA KLADUSA	4.3%	91.0%	1.4%	3.3%	4.4%	91.1%	1.3%	3.1%
11126	VISOKO	16.2%	74.4%	4.1%	5.4%	16.3%	74.9%	3.9%	5.0%
11134	VISEGRAD	31.8%	63.5%	0.2%	4.5%	31.8%	63.7%	0.2%	4.3%
11142	VITEZ	5.4%	41.3%	45.4%	7.9%	5.5%	43.1%	43.9%	7.5%
11169	VLASENICA	42.3%	55.1%	0.1%	2.4%	42.6%	55.3%	0.1%	2.0%
11177	ZAVIDOVICI	20.4%	59.7%	13.2%	6.7%	20.5%	60.2%	12.9%	6.4%
11185	ZENICA	15.4%	55.2%	15.4%	14.0%	15.4%	55.5%	15.2%	13.9%
11193	ZVORNIK	38.0%	59.1%	0.2%	2.8%	37.5%	59.6%	0.1%	2.8%
11207	ZEPCE	9.9%	47.0%	39.6%	3.5%	9.8%	48.2%	38.5%	3.4%
11215	ZIVINICE	6.4%	80.2%	7.2%	6.2%	6.3%	81.1%	7.1%	5.5%
	Total Bosnia and Herzegovina	31.2%	43.4%	17.4%	8.1%	31.5%	44.5%	16.1%	7.8%

Note: Population 'in BH' denotes persons having their 'DUI' variable equal '00' (or 'SDRZ' variable equal '000', equivalently), i.e. *de facto* residing in BH in 1991, while the 'ALL' (*de jure*) population includes also persons temporarily residing abroad.

Table 5(B4). Fraction of Refugees Who Left Bosnia and Herzegovina after the 1991 Census Among the 1998 Out-of-Country Voters, By Municipality and Ethnicity

Opstina	Opstina Name	OC Voters '98	Refugees	% Refugees	% Ref. Serbs	% Ref. Muslims	% Ref. Croats	% Ref. Others
10014	BANOVICI	316	270	85.4%	64.0%	89.1%	63.6%	83.3%
10022	BANJA LUKA	10976	10903	98.3%	98.9%	90.3%	90.3%	95.7%
10049	BIHAC	1669	1081	64.8%	80.0%	64.6%	51.1%	72.7%
10057	BIJELJINA	9428	9068	96.2%	58.0%	96.8%	88.2%	96.3%
10065	BILECA	733	727	99.2%	80.0%	99.3%	100.0%	100.0%
10073	BOSANSKA DUBICA	2691	2443	90.8%	40.5%	93.3%	93.3%	80.1%
10081	BOSANSKA GRADISKA	6115	5681	92.9%	39.5%	94.8%	80.3%	89.2%
10090	BOSANSKA KRUPA	1338	961	71.8%	60.7%	71.5%	75.0%	91.2%
10103	BOSANSKI BROT	2345	2158	92.0%	82.0%	97.3%	83.6%	95.6%
10111	BOSANSKI NOVI	4491	4256	94.8%	70.0%	94.9%	100.0%	97.1%
10120	BOSANSKI PETROVAC	576	531	92.2%	34.8%	94.7%	100.0%	92.0%
10138	BOSANSKI SAMAC	1644	1302	79.2%	43.8%	97.6%	71.6%	92.1%
10146	BOSANSKO GRAHOVO	11	3	27.3%	0.0%	-	100.0%	100.0%
10154	BRATUNAC	1918	1780	92.8%	50.0%	92.7%	100.0%	100.0%
10162	BRCKO	7783	6514	83.7%	66.0%	91.4%	61.0%	92.6%
10189	BREZA	305	249	81.6%	93.3%	80.8%	83.9%	80.0%
10197	BUGOJNO	3555	2744	77.2%	87.7%	76.5%	77.4%	75.8%
10219	BUSOVACA	782	407	52.0%	100.0%	67.8%	56.7%	68.4%
10227	CAZIN	2225	1359	61.1%	80.0%	61.2%	50.0%	50.0%
10235	CAJNICE	529	513	97.0%	75.0%	97.1%	-	100.0%
10243	CAPLJINA	1163	1091	93.8%	90.9%	97.3%	56.8%	95.8%
10251	CELINAC	463	407	87.9%	51.2%	96.0%	100.0%	93.1%
10260	CITLUK	250	88	35.2%	100.0%	27.1%	83.3%	83.3%
10278	DERVENTA	3791	3364	88.7%	47.5%	98.4%	84.0%	95.7%
10286	DOBOJ	6791	6234	91.8%	62.9%	94.8%	81.2%	91.0%
10294	DONJI VAKUF	972	896	92.2%	72.7%	92.9%	86.2%	92.1%
10308	TOMISLAVGRAD	1534	778	50.7%	100.0%	90.9%	16.9%	45.5%
10316	FOCA	2214	2100	94.9%	78.6%	95.3%	85.7%	89.6%
10324	FOJNICA	540	390	72.2%	-	61.2%	74.7%	100.0%
10332	GACKO	512	500	97.7%	100.0%	97.6%	100.0%	100.0%
10359	GLAMOC	643	586	91.1%	47.8%	93.8%	40.0%	83.3%
10367	GORAZDE	1520	1341	88.2%	76.0%	88.3%	33.3%	97.8%
10375	GORNJI VAKUF	2026	1321	65.2%	100.0%	66.9%	63.7%	43.8%
10383	GRACANICA	1246	987	79.2%	66.7%	83.1%	100.0%	52.6%
10391	GRADACAC	1650	1099	66.6%	50.0%	76.9%	56.4%	58.4%
10405	GRUDE	172	31	18.0%	-	-	18.2%	0.0%
10413	HAN PJEŠAK	71	67	94.4%	-	94.3%	-	100.0%
10421	JABLANICA	323	264	81.7%	75.0%	83.6%	76.9%	70.8%
10430	JAJCE	4121	3731	90.5%	89.8%	91.6%	88.2%	95.2%
10448	KAKANJ	2104	1684	80.0%	86.4%	75.1%	81.3%	83.3%
10456	KALESIA	2370	1734	73.2%	46.7%	72.2%	100.0%	96.1%
10464	KALINOVIK	27	25	92.6%	-	92.6%	-	-
10472	KISELJAK	1019	692	67.9%	66.7%	75.6%	61.5%	53.3%
10499	KLADANI	454	346	76.2%	52.4%	77.4%	56.1%	77.3%
10502	KLJUC	3731	3321	89.0%	53.1%	89.5%	75.0%	90.3%
10529	KONJIC	1209	840	69.5%	100.0%	66.7%	69.5%	88.5%
10537	KOTOR VAROS	3307	2806	84.9%	62.5%	90.4%	71.6%	83.1%
10545	KRESEVO	239	149	62.3%	-	68.6%	59.7%	100.0%
10553	KUPRES	475	338	71.2%	72.0%	93.8%	56.1%	100.0%
10561	LAKTASI	205	153	74.6%	53.2%	94.1%	79.3%	76.5%
10570	LISTICA	429	113	26.3%	-	-	26.5%	0.0%
10588	LIVNO	1586	973	61.3%	92.9%	91.4%	27.4%	84.6%
10596	LOPARE	919	625	68.0%	39.3%	74.2%	62.5%	55.9%
10600	LUKAVAC	1095	872	79.6%	79.5%	80.8%	89.7%	70.8%
10618	LJUBINJE	43	39	90.7%	66.7%	92.3%	-	100.0%
10626	LJUBUSKI	875	619	70.7%	100.0%	100.0%	20.6%	87.5%
10634	MAGLJAJ	1375	1050	76.4%	70.0%	80.2%	64.0%	73.1%
10642	MODRICA	5040	4514	89.6%	48.6%	98.2%	68.0%	93.0%
10669	MOSTAR	7169	6477	90.3%	92.7%	94.6%	61.9%	96.6%
10677	MIRKONJIC GRAD	666	571	85.7%	34.4%	89.0%	81.0%	89.7%
10685	NEUM	50	31	62.0%	100.0%	100.0%	17.4%	100.0%
10693	NEVESINJE	267	201	75.3%	20.0%	78.6%	-	75.0%
10707	ODZAK	3037	2173	71.6%	38.0%	97.4%	48.5%	85.5%
10715	OLOVO	332	279	84.0%	66.7%	85.5%	78.1%	84.6%
10723	ORASIE	754	455	57.7%	76.9%	93.3%	51.0%	82.1%
10731	POSUSIE	182	40	22.0%	-	-	22.1%	0.0%
10740	PRIJEDOR	14987	14027	93.6%	61.0%	94.1%	82.6%	93.6%
10758	PRNJAVOR	1996	1638	82.1%	43.9%	90.7%	85.0%	76.6%
10766	PROZOR	1298	1028	79.2%	100.0%	89.7%	48.5%	100.0%
10774	NOVI TRAVNIK	862	663	76.9%	94.1%	83.9%	73.8%	81.2%
10782	ROGATICA	792	746	94.2%	100.0%	94.1%	100.0%	95.8%
10804	RUDO	741	730	98.5%	80.0%	98.8%	-	94.1%
10812	SANSKI MOST	6181	5226	84.5%	50.9%	86.2%	77.5%	60.3%

Note: 'Refugees' are persons having their 'DUI' variable equal '00' (or 'SDRZ' variable equal '000', equivalently), i.e. *de facto* resided in Bosnia and Herzegovina in 1991, but left the country after the 1991 census and registered as Out-of-Country (OC) Voters in the 1998 elections, i.e. being post-census refugees.

Table 5(B4). - Continued

Opština	Opština Name	OC Voters '98	Refugees	% Refugees	% Ref. Serbs	% Ref. Muslims	% Ref. Croats	% Ref. Others
10839	SARAJEVO-CENTAR	2539	2369	93.3%	96.7%	92.7%	94.8%	94.1%
10847	SARAJEVO-HADŽICI	595	522	87.7%	90.9%	86.5%	90.0%	100.0%
10855	SARAJEVO-ILIDZA	2693	2523	93.7%	96.9%	93.6%	92.4%	95.9%
10863	SARAJEVO-ILIJAS	464	419	90.3%	65.0%	90.8%	91.3%	95.6%
10871	SARAJEVO-NOVI GRAD	3517	3286	93.4%	91.8%	92.7%	94.5%	97.2%
10880	SARAJEVO-NOVO SARAJEVO	2414	2253	93.3%	92.9%	92.4%	92.9%	96.5%
10898	SARAJEVO-PALLE	131	106	80.9%	52.4%	84.7%	100.0%	100.0%
10901	SARAJEVO-STARI GRAD	1420	1262	88.9%	84.4%	88.9%	91.3%	89.3%
10910	SARAJEVO-TRNOVO	96	86	89.6%	100.0%	87.8%	100.0%	100.0%
10928	VOGOSCA	873	792	90.7%	81.3%	91.7%	86.4%	91.0%
10936	SKENDER VAKUF	277	219	79.1%	52.1%	100.0%	83.4%	41.7%
10944	SOKOLAC	138	101	73.2%	11.1%	78.4%	-	50.0%
10952	SRBAC	238	157	66.0%	31.6%	92.5%	100.0%	70.6%
10979	SREBRENICA	1745	1714	98.2%	85.7%	98.2%	100.0%	100.0%
10987	SREBRENIK	842	586	69.6%	61.0%	76.5%	43.9%	31.3%
10995	STOLAC	931	864	92.8%	100.0%	96.8%	49.4%	100.0%
11002	SEKOVICI	65	55	84.6%	33.3%	98.1%	-	0.0%
11029	SIPOVO	532	476	89.5%	60.0%	90.6%	100.0%	82.4%
11037	TESLIC	2894	2564	88.6%	62.7%	94.1%	81.6%	94.4%
11045	TESANJ	1618	1275	78.8%	82.4%	81.7%	70.7%	82.5%
11053	TITOV DRVAR	44	35	79.5%	75.0%	100.0%	-	100.0%
11061	TRAVNIK	2099	1512	72.0%	88.9%	72.7%	69.7%	89.4%
11070	TREBINJE	2686	2660	99.0%	75.0%	99.2%	92.9%	99.0%
11088	TUZLA	1904	1651	86.7%	87.9%	86.8%	83.9%	89.3%
11096	UGLJEVIK	1099	978	89.0%	60.0%	90.3%	100.0%	83.5%
11100	VARES	753	702	93.2%	88.2%	90.8%	93.0%	97.7%
11118	VELIKA KLADUSA	2043	1677	82.1%	83.3%	82.4%	80.0%	75.3%
11126	VISOKO	831	648	78.0%	92.0%	77.3%	80.0%	74.5%
11134	VISEGRAD	2154	2007	93.2%	63.6%	93.2%	100.0%	97.2%
11142	VITEZ	896	612	68.3%	71.4%	84.3%	61.0%	78.5%
11169	VLAZENICA	1703	1544	90.7%	71.4%	91.0%	100.0%	81.5%
11177	ZAVIDOVICI	1525	1325	86.9%	93.8%	89.4%	69.5%	83.3%
11185	ZENICA	2643	2275	86.1%	89.3%	81.3%	92.2%	86.7%
11193	ZVORNIK	8469	7946	93.8%	64.2%	93.9%	100.0%	98.9%
11207	ZEPCE	789	551	69.8%	84.2%	74.6%	62.0%	75.0%
11215	ZIVINICE	1032	888	86.0%	82.6%	85.4%	95.8%	75.6%
	Total Bosnia and Herzegovina	209440	181273	86.6%	63.8%	90.8%	68.5%	90.7%

Note: 'Refugees' are persons having their 'DUI' variable equal '00' (or 'SDRZ' variable equal '000', equivalently), i.e. *de facto* resided in Bosnia and Herzegovina in 1991, but left the country after the 1991 census and registered as Out-of-Country (OC) Voters in the 1998 elections, i.e. being post-census refugees.

ANNEX B. DATA SOURCES AND METHODS USED

ANNEX B5. THE 1997 OSCE VOTERS REGISTER

All post-Dayton elections in Bosnia and Herzegovina, including the one in 1997 and 1998, were conducted under the supervision of the Organisation for Security and Co-operation in Europe (OSCE). For the purpose of elections, OSCE established a register of persons eligible to vote, the so-called OSCE voters register (VR). Development of the register and data entry was conducted by the OSCE Office in Sarajevo.

Eligibility to vote is discussed in article IV of annex 3 of the Dayton Peace Accords: “Any citizen of Bosnia and Herzegovina aged 18 or older whose name appears on the 1991 census for Bosnia and Herzegovina shall be eligible, in accordance with electoral rules and regulations, to vote”. Registration stations were established in all municipalities of Bosnia and Herzegovina and in many foreign countries. Since the eligibility to vote in 1997 (and 1998) was based on a person’s presence in the 1991 census rolls, the voters register is a *subset* of the 1991 census. Every person in the voters register should be therefore also included in the census. However, some people could stay abroad during the census or were not enumerated for other reasons. If indeed such persons existed, this would only apply to an insignificant proportion of the population. Moreover, such persons could provide evidence of their eligibility and still had the possibility to vote.

Persons who wanted to vote in the 1997 (1998) local elections had to register first. The election registration form recorded the following basic items: surname, first name, sex, date of birth, and personal identification number (*matični broj*). The 1997 (1998) register contained also four items related to the location of voters in 1997 (1998) and 1991:

- Municipality of residence in 1991, as reported in the 1991 census;
- Municipality of residence in 1997 (1998), self-reported;
- Municipality or country where the registration took place in 1997 (1998);
- Municipality the person wanted to vote *for* in 1997 (1998).

Absentee registration and voting was permitted.

The municipality of registration is seen as a good indicator of the area where people actually lived when they registered. This variable can be therefore taken as an important source of statistical information about the *de facto* population living in Bosnia and Herzegovina in 1997 (1998). The various items on the municipalities where people lived and registered to vote in 1997 (1998) can be used to study changes in residence between 1991 and 1997 (1998). To be sure about the 1991 residence of the 1997 (1998) voters, we applied individual matching to link the data for 1991 with those for 1997 (1998).

The information contained in the 1997 (1998) voters register was made available to us by the OSCE. The data from the voters register show some of the same quality problems as the census. Although errors are generally less common in the 1997 (1998) voters register than in the 1991 census, deficiencies in names caused by optical scanning of the registration forms, often pose problems for the identification of persons. The names from the voters register, as those from the census, were all checked and corrected with various computer programs and manual procedures. This was again done with the assistance of native B/C/S speakers familiar with naming traditions in Bosnia and Herzegovina.

The registration to vote was voluntary, which implies that the register is only a *sample* of the post-war population, excluding those who did not register to vote because they were not interested, ill, too young, or too old. The number of persons who registered to vote in the 1997 elections was 2.56 million, about 150,000 new voters registered additionally in 1998. Thus, the overlap of the two registers was considerable. We merged the individual records from these two registers, and established a joint database of 2,674,506 records. Out of the 2.67 million records, about 2.13 million (i.e. 2,125, 999) voters were matched in our project with the 1991 population census. This gave a matching rate of 79.5 percent. Among the total of 2.13 million records, some 319,405 voters were reported as out-of-country and 1,805,419 as in the country. Some 1,175 records had a corrupted location code and were excluded from the analysis. We also checked duplicates and compared the merged voters register with the lists of dead that we have available at OTP for Bosnia and Herzegovina. Some 864 records were additionally excluded due to the possibility of being reported in mortality sources, and some 730 records were excluded from the analysis as possible duplicates. Note that the excluded records could only be verified with certainty, if more information would become available about the persons in question.

The total population of the country was approximately 4.3 million 1991, whereas an estimate of 3.4 million people was given for 1995 by the 1998 World Population Prospects (United Nations, 1999). It is clear that the 2.13 million voters constitute a large and reliable sample of the 18+ population. Its size is big enough to prevent errors related to the persons not registering to vote.

There have been allegations that some people registered fraudulently to vote, especially in the 1997 elections. This alleged fraud is believed to have been committed by persons who registered under false names for political reasons. This was investigated thoroughly for Srebrenica and no evidence of massive fraud in the registration of voters in 1997 was found.⁸

The next problem inherent to the 1997-98 voters register is the return of refugees and displaced persons. More specifically, the 1997-98 voters register would *under-estimate* the

⁸ Of 7,490 persons believed to have gone missing after the fall of the Srebrenica enclave, only 9 persons were found both in the lists of missing persons and in the 1997 and 1998 Voters' registers. See "Report on the Number of Missing and Dead from Srebrenica", by Helge Brunborg and Henrik Urdal, Office of the Prosecutor, ICTY, 12 February 2000.

number of persons who fled from their homes if many people returned to their pre-war place of residence before 1997–98.

The Dayton Peace Accords made it clear that the return of refugees and internally displaced persons from Bosnia and Herzegovina should be made possible. Since our post-war data was collected during 1997–98, some refugees or internally displaced persons could already have returned to their pre-war municipalities of residence. The impact of this problem is believed to be small for 1996–1997 as according to official statistics (see below) the returns of refugees and internally displaced persons to their pre-war homes were far from being completed in the period until 1997. Finally, if there were refugees or displaced persons that returned to their former locations, this would only decrease the number of displaced persons and refugees.

According to the 1998 estimates made by the UN High Commissioner for Refugees (UNHCR, UNHCR (1998)), within Bosnia and Herzegovina up to 820,000 people remained *displaced* from their pre-conflict homes in mid-1998, of whom 450,000 in the Federation of Bosnia and Herzegovina and 366,000 in the Republika Srpska. Furthermore, over 550,000 *refugees* from Bosnia and Herzegovina were still in need of a durable solution by mid-1998. The largest numbers of refugees from Bosnia and Herzegovina were hosted by Yugoslavia (i.e. by Serbia and Montenegro, 226,000) and Croatia (34,500), with smaller numbers in the former Yugoslav Republic of Macedonia (3,000) and Slovenia (4,500). Outside the former Yugoslavia, Germany and Switzerland hosted the highest numbers of refugees (in total 254,000).

According to the UNHCR Office in Sarajevo (<http://www.unhcr.ba> and personal communication with the Public Information Unit) the total number of returns of refugees and displaced persons to the Republika Srpska was 83,518 in 1996–97. Out of these persons, only 966 Muslims and 159 Croats returned to RS in 1996–97 (1.2% and 0.2% of the total returns, respectively). Almost everybody returning to RS during this period were Serbs, 82,306 (98.5%). In most cases, only internally displaced persons returned and not refugees. On the other hand, the total number of returns in the Federation was about 347,837 in 1996–97, out of which 291,024 (83.7%) were Bosnian Muslims (i.e. Bosniacs), 47,249 (13.6%) were Croats, and only 1013 (0.3%) Serbs.

All in all, several hundred thousand people returned home in 1996–97. However, comparing the number of 1996–97 returns with the total number of refugees and displaced who were still in need of a durable solution in 1998, one can see that the scale of returns was relatively low in 1996–97. Moreover, the RS entity was apparently still considered unsafe for Muslims and Croats in 1996–97, as these were mainly Serbs who returned to RS in this period. The situation in the Federation was opposite to that in RS. The ethnic structure of returns is an additional reason why the 1996–97 returns do not significantly change the general picture of ethnic changes in the war period. However, because of the problem mentioned above, the results presented in this report can only be taken as an estimate of the number displaced persons and refugees as observed in 1997 and not as an estimate of the total ethnic change in the years from 1991 to 1997.

ANNEX B. DATA SOURCES AND METHODS USED

ANNEX B6. DISPLACED PERSONS AND REFUGEES IN BOSNIA AND HERZEGOVINA REPORTED BY UNHCR AND BH GOVERNMENTAL SOURCES (DDPR)

The Database of Displaced Persons and Refugees (DDPR) is an official source of information coming from the government of Bosnia and Herzegovina and UNHCR. It covers the whole territory of the country and can serve to produce official statistics of internally displaced persons (IDPs) and refugees in Bosnia and Herzegovina for municipalities, settlements or any other required area (e.g. towns or villages).

The database was established by UNHCR together with local authorities. Individual records of information about IDPs and refugees were collected in BH municipalities already during the conflict. After the war ended, the records were centralised and structured in a database. The process of centralisation and database development was co-ordinated by UNHCR, while municipal authorities provided the input information for the database. Two most obviously used versions of the database are from 1998 and 2000. The 2000 version is an improved and up-dated version of the 1998 collection and is based on records obtained in the so-called re-registration project conducted by UNHCR together with municipal and state authorities. In this project, the status of all displaced persons and refugees in Bosnia and Herzegovina was checked and if necessary revised. The 2000 version, available at the demographic unit, reports persons who in the year 2000 were still registered as displaced from their pre-war homes and needed a durable solution. A copy of the DDPR was acquired from the State Ministry of Human Rights and Refugees (MHRR) in Sarajevo in Mid-August, 2002.

The database contains information about 583,816 persons. Among them it also includes about 60,000 persons born after 1 April 1991, which can not be matched against the census. For about 1/3 of the persons reported in DDPR the available information is very complete (the third actually made the application: 191,954 persons). For the remaining 2/3 (i.e. families of the applicants: 391,862 persons), the information is more limited, and assumptions or linked information are needed to process the data (e.g. ethnicity of applicant is used for all family members). The quality of the data seems overall quite good, although there are some problems, such as in particular the personal identification numbers (JMBs) are incomplete or invalid in about 1/4 of all cases.

The most important shortcoming of the database is that the information about family members is limited to names, date of birth, sex, kinship with applicant, and JMB. There is no information about place of birth or ethnicity for the family members. The only additional information is the work status and occupation for the spouse of the applicant, and the implied

information about current residence. Depending on the matching rate and purposes, information about pre-war residence might be linked from census.

Also ethnicity may be linked from census, although this would limit information available to those records that actually match. More generally, ethnicity might be induced from family relations, i.e. children get the same ethnicity as the head of household, for spouses and in-laws only an assumption of no inter-ethnic marriages will provide any additional information.

All in all, for about 190,000 records, the DDPR contains quite a lot of information. For the remaining ca. 390,000 records, the available information is more limited, and we have to make assumptions and/or link the information from other sources.

For purposes of information gathering all records related to applicants and their family members have been combined in one data table. Based on the combined table and on the assumption that all families have the same nationality as the family head, we obtained the following ethnic composition of DPs and refugees (not considering duplicates):

Table 1(B6). Absolute and Relative Number of Internally Displaced Persons and Refugees in Bosnia and Herzegovina by Ethnicity, Status as of 2000

Ethnicity	IDPs		Refugees		Total	
	Number	Percent	Number	Percent	Number	Percent
Muslims	247,378	44.3	27	0.1	247,405	42.4
Croats	41,913	7.5	73	0.3	41,986	7.2
Serbs	267,350	47.8	24,571	98.7	291,921	50.0
Others	2,280	0.4	224	0.9	2,504	0.4
Total	558,921	100.0	24,895	100.0	583,816	100.0

The vast majority of the persons registered are IDPs within BH, but some 25,000 persons are refugees from Croatia, obviously Croatian Serbs, currently *residing in* Bosnia. For purposes concerning BH, and in particular the MILOŠEVIĆ - Bosnia case, these refugees are excluded.

Note that the ethnic composition of refugees *from* Bosnia and Herzegovina is a different issue that has been estimated in this report on the basis of out-of-country voters reported in the 1997-98 voters register (see Table 2(B6) below). The out-of-country voters left Bosnia and moved abroad where they still resided at the time of the 1997 and 1998 elections.

Note also that the ethnic composition of internally displaced persons in Bosnia and Herzegovina and refugees from this country residing abroad are quite different too, which can be only partly ascribed to the differences between the sources. It seems that these two processes affected different ethnic groups. While Muslims were the absolute majority among refugees outside Bosnia, both the Muslims and the Serbs were two majority groups among the IDPs.

Table 2(B6). Ethnic Composition of Persons Displaced within Bosnia and Herzegovina and Refugees from the Country, Status as of 2000 (IDPs) and 1997-98 (REFs)

Ethnicity	Refugees from BH 1997-98	DPs in BH 2000
Muslims	51.0	44.3
Croats	24.8	7.5
Serbs	16.7	47.8
Others	7.5	0.4
Total	100.0	100.0

Matching against the census proved, as with most sources, possible. A test case using Prijedor and different matching criteria, showed a matching rate close to 80%. Matching directly against the 1997/98 voters register may also prove useful, and an initial, strict matching criterion matched at once 65% of all those born in 1980 or before.

There are some duplicates in the database, but the problem is quite limited. Based on initial testing, between 1.5% and 3% of all records are duplicates.

There are also some other relatively minor issues, like misspelled names, invalid date of births, and mismatch between JMB and reported sex and/or date of birth. Some of these issues can be, at least partially, addressed and corrected, others can not be fixed. However, the scopes of these problems are very limited.

Having assessed the overall quality of the DDPR as fairly satisfactory, in this report we present uncorrected statistics obtained by running queries in the original database. We believe that any improvements of the data would not significantly change the aggregate numbers as those discussed in Section 3.5.

ANNEX C. OVERVIEW OF METHODS OF THE ANALYSIS

ANNEX C1. DATA LINKING

Our analysis of changes in the ethnic composition of the MILOŠEVIĆ area is based on three variables with values specified for each individual: location before the war, location after the war, and ethnicity. The 1991 census contains information on ethnicity and location before the war, but not on the persons' location after the war. The 1997 voters register contains, on the other hand, the persons' post-war location, but neither the pre-war location nor ethnicity, the two latter variables being available only in the 1991 census. By combining these two data sets together into one set, we were able to make a joint analysis of the pre- and post-war population changes. Combining related data sets through individual linking has been used as the data reconstruction method in this study.

To link our data sets, we employed a multi-step procedure. Each step consisted of several comparisons between two sets of related individual-level data records. One record always describes one individual and is a collection of his/her characteristics on a number of items, such as for example the first name, family name, father's name, date of birth etc. All steps followed the same logic (see below). The differences between the steps were the slightly differing criteria used to match the records, and the fact that the population available for next possible matches shrank after each step. In other words, once a number of records had been matched in two related data sets, these records were excluded from the next round of matching. In the new step, the matching criterion applied was modified compared with the previous ones to capture new matches.

Each step consisted of three separate rounds. The first round was to identify the records in the voters register corresponding to the records in the census and to store the sequential numbers of these records in a table. Information common to both data sets was used to identify the corresponding records. The fields used in the matching were the following: first name, last name, personal ID number, date of birth, and municipality of residence. These fields in the records in the voters register were compared with the respective fields in the census records. For each record in the voters register that corresponded with one record in the census, the sequential numbers from each data set (i.e. source) were registered in a separate table. These combinations of sequential record numbers are called *matches*.

The second step concentrated on quality and consistency checks of the matches obtained. All matches were checked for duplicates to make sure that each record in the voters register had one and only one corresponding record in the census, and vice versa. Duplicates were deleted⁹. After duplicate checks and other quality control measures such as inspecting samples of the matched records visually, they were registered in the databases as final matches.

⁹ Note that duplicates are multiple matches and not multiple records. Deleting duplicates means deleting multiple

The third step was to register the approved matches in the data sets as links between records in the voters register and records in the census. The result from this process was that more than 2 million records out of the total of 2.56 million in the voters register were linked to corresponding records in the 1991 census.

The set of linked records forms the basis for our calculations involving the post-war population. The meaning of a link established between the voters register and the census is that a person whose records have been linked is identified as a *survivor*¹⁰. An identified survivor is known to be alive after the war since the person registered to vote in 1997. All references made to the post-war population of survivors refer to the set of individual records successfully linked in our procedures.

Because of the voluntary nature of the registration to vote any *absolute* number provided in this report is in fact a minimum estimate of the 1997 population, for example a minimum size of an ethnic group, population displacement, age and sex distribution etc. The actual absolute figures are higher due to the fact that some part of the population did not register to vote. If however, one considers the population of registered voters as a sample of the actual population, then the sample can be seen as extremely large and reliable. This is why the *relative* figures (i.e. fractions or percentages) are good measures of the actual distributions and can be safely used.

The voters register was used as the source of statistical information about the actual 1997 population in the country. For the registered voters their municipality of residence in 1997 is not explicitly reported in the register. The place of registration is however specified for each registered voter in all necessary detail. In the analyses that involved the 1997 population, we assumed that the place where a person registered to vote (i.e. the place of registration) was a good approximation of the location where the person actually lived in when he or she registered. The municipality where they registered to vote is then referred to as the voters' municipality of residence.

The persons eligible to vote in the 1997 elections had to be born before 1980. Consequently, all comparisons involving the 1997 voters on one hand and the 1991 census population on the second hand must be restricted to individuals who were born at the latest in 1979. All comparisons presented in this report are restricted to those who were 18 or more years of age in 1997. Birth cohorts¹¹ born after 1979 are excluded from the census data in our analyses (in the voters register no such persons should be registered). The final data set of the (18+) census population, who used to live in the MILOŠEVIĆ area before the war, includes 1,346,942 individuals (see Table 1a in Annex C). Some 645,872 individuals have been

links and not records that still remain available for the next round of matching.

¹⁰ Note that “a survivor” is a standard term used in the life table analysis in demography to denote a person who has not died until the age x years. The term does not have any negative connotations.

¹¹ A birth cohort is the group of people who were born the same year.

identified as voters who registered to vote in the MILOŠEVIĆ municipalities.

Linking of individual data is common in demography and statistics. Scandinavian countries have been applying this approach for about 30-40 years. An operational system of unique ID numbers is a prerequisite for such linking. If there exists no such system or the existing system is not fully operational, as in the countries of the former Yugoslavia, other data items have to be used, in particular first and family names and date of birth. Similar items are also often used in historical demography for linking parish records, census data and other individual data, in the so-called family reconstitution studies.

The linking approach, although well established and known to demographers, is not commonly used throughout the world. Sizeable populations, lack of consistent ID numbers, and strong privacy protection regulations make the individual linking rarely useable in many high-income countries. The method is rarely applied in low-income countries since these countries cannot afford the costs of highly skilled personnel and expensive equipment required for the individual linking approach. Moreover, most low-income countries cannot afford or are unable to keep systematic high-quality records of the population.

Nation-wide comparisons of populations between different periods or geographic locations are usually done without individual-level linking but by using cross-sectional aggregate (or macro) data. The macro-level approach is for instance commonly applied by official national and international statistical agencies to produce and compare basic demographic statistics, such as death and birth rates, nuptiality and migration statistics, and others. The usefulness of the macro approach is still great, as the large population size and the large numbers of demographic events observed guarantee a fair degree of reliability of the results.

We believe that for our purposes the individual linking approach is superior to the macro approach, but not only in the sense of accuracy of the aggregate level statistics showing the relative distributions of the population. Here the benefits can be minor. The real advantage of the individual linking approach is that we can follow the same individuals between the two years considered. It is the best approach for the reconstruction of the fate of the population. Moreover it is, generally believed that the individual linking approach yields highly reliable results. The only problems with this method are inherited from the deficiencies in the data quality, which have, however, been largely overcome in our project by quality checks and applying extensive procedures for data matching.

ANNEX C. OVERVIEW OF METHODS OF THE ANALYSIS

ANNEX C2. ESTIMATION OF NUMBERS OF DISPLACED PERSONS AND REFUGEES

The estimated overall numbers of the IDPs and refugees were obtained using a classical statistical method of sampling proportions (W.G. Cochran, 1977). The method applies the theorem stating that the sample proportion p ($p=a/n$; proportion (p) of IDPs and REFs (a) in the population of 1997-98 voters (n)) is an unbiased estimate of the population proportion P ($P=A/N$; proportion (P) of IDPs and REFs (A) in the 1991 census population (N)). In this case, the estimate of the unknown overall size of the population of all IDPs and refugees (A) can be obtained by multiplying the sample proportion (p), by the size of the census population (N). Confidence intervals can be calculated by applying the formulas explained below, towards the end of this Annex.

Note, that the estimation was made for every ethnic group separately at the municipal level, and, in the second step, a system of weights was used in order to produce consistent estimates for larger areas.

The following variables are available to estimate the number of internally displaced persons (IDPs) and refugees from the selected municipalities in Bosnia and Herzegovina:

- N_{ij} 1991 population size of i -th ethnic group ($i \in \{Serbs, Muslims, Croats, Others\}$) from j -th municipality,
- N_j Total 1991 population size of j -th municipality (sum of all N_{ij} values with respect to i),
- W_{ij} Share (weight) of the i -th ethnic group from j -th municipality in the total population of Bosnia and Herzegovina (N), calculated as:
- $$W_{ij} = N_{ij} / N = N_{ij} / \left(\sum_j N_j \right) = N_{ij} / \left(\sum_i \sum_j N_{ij} \right)$$
- W_j Share (weight) of the total population from j -th municipality in the total population of Bosnia and Herzegovina (N), calculated as $W_j = N_j / N$ (sum of all W_{ij} values with respect to i),
- n_{ij} 1997 number of identified survivors from i -th ethnic group originating from j -th municipality (post-war population sample size), of which:
- d_{ij} 1997 number of identified displaced survivors (including refugees) of i -th ethnic group originating from j -th municipality, i.e. number of persons registered to vote either in other municipalities or out of country (an observed value).
- p_{ij} fraction of persons displaced from the j -th municipality within the given i -th ethnic group (a random variable),
- \hat{p}_{ij} a point estimate of the p_{ij} , calculated as $\hat{p}_{ij} = d_{ij} / n_{ij}$.
- τ_{ij} number of persons of a given i -th ethnic group displaced from the j -th municipality, τ_{ij}

$= p_{ij} N_{ij}$ (a random variable): displacements from different municipalities and for different ethnic groups are assumed to be independent,
 $\hat{\tau}_{ij}$ a point estimate of the τ_{ij} , calculated as $\hat{\tau}_{ij} = \hat{p}_{ij} N_{ij}$.

For each municipality j , the numbers $d_{Serbs,j}$, $d_{Muslims,j}$, $d_{Croats,j}$, $d_{Others,j}$, represent therefore **minimum estimates** of numbers of persons displaced from this municipality, Serbs, Muslims, Croats and Others, respectively. The minimum estimate of the total number of persons displaced from this municipality (d_j) can be obtained as a simple sum: $d_j = d_{Serbs,j} + d_{Muslims,j} + d_{Croats,j} + d_{Others,j}$.

A **point estimate** of the overall number of refugees and DPs from i -th ethnic group ($i \in \{Serbs, Muslims, Croats, Others\}$) originating from j -th municipality ($\hat{\tau}_{ij}$) is calculated as¹²:

$$(1) \quad \hat{\tau}_{ij} = \frac{d_{ij}}{n_{ij}} \cdot N_{ij},$$

the standard error of its estimation being equal:

$$(2) \quad SE(\hat{\tau}_{ij}) = N_{ij} \cdot SE(\hat{p}_{ij}) = N_{ij} \cdot \sqrt{\frac{\frac{d_{ij}}{n_{ij}} \cdot \left(1 - \frac{d_{ij}}{n_{ij}}\right)}{n_{ij} - 1}} \cdot \sqrt{\frac{(N_{ij} - n_{ij})}{N_{ij}}} = \sqrt{\frac{\frac{d_{ij}}{n_{ij}} \cdot \left(1 - \frac{d_{ij}}{n_{ij}}\right)}{n_{ij} - 1}} \cdot \sqrt{(N_{ij} - n_{ij}) \cdot N_{ij}}.$$

The precision of estimation can be evaluated using the concept of **confidence intervals**. A confidence interval covers the unknown value of estimated number of refugees and displaced persons from i -th ethnic group originating from j -th municipality, with a certain probability, say $(1-\alpha)$. In the other words, we can be $(1-\alpha) \cdot 100\%$ confident that the true number of refugees and DPs is covered by the interval. Therefore, the narrower the confidence interval, the better the estimation. For large samples, the $(1-\alpha)$ confidence interval for $\hat{\tau}_{ij}$ can be obtained from the normal distribution as ranging from $\hat{\tau}_{ij} - u_{\alpha} \cdot SE(\hat{\tau}_{ij})$ to $\hat{\tau}_{ij} + u_{\alpha} \cdot SE(\hat{\tau}_{ij})$, where u_{α} is the quantile of rank $1 - \alpha / 2$ from the standard normal distribution.

A **point estimate** of the overall number of refugees and DPs originating from the j -th municipality ($\hat{\tau}_j$) is calculated in the following way:

$$(3) \quad \hat{\tau}_j = N_j \cdot \hat{p}_j = N_j \cdot \sum_i \hat{p}_{ij} \cdot \frac{W_{ij}}{W_j} = \frac{N_j}{W_j} \cdot \sum_i \hat{\tau}_{ij} \cdot \frac{W_{ij}}{N_{ij}} = N \cdot \sum_i \hat{\tau}_{ij} \cdot \frac{1}{N} = \sum_i \hat{\tau}_{ij},$$

where \hat{p}_j is the estimate of the fraction of persons displaced from the j -th municipality (which is a weighted average of estimated fractions for particular ethnic groups, with shares of these ethnic groups in the total census population used as weights), and the summation with respect to i involves *Serbs*, *Muslims*, *Croats* and *Others*. The standard error of $\hat{\tau}_j$ estimation is equal (following the assumption of independence of displacements for different ethnic groups):

¹² All equations follow William G. Cochran (1977), *Sampling Techniques*, 3rd edition. John Wiley & Sons, New York, Chichester, Brisbane, Toronto, Singapore. See Chapter 3, p. 50-53.

$$(4) \quad SE(\hat{\tau}_j) = \frac{N_j}{W_j} \cdot \sqrt{\sum_i (SE(\hat{p}_{ij}))^2 \cdot W_{ij}^2} = \frac{N_j}{W_j} \cdot \sqrt{\sum_i \frac{(SE(\hat{\tau}_{ij}))^2}{N_{ij}^2} \cdot W_{ij}^2} = N \cdot \sqrt{\sum_i (SE(\hat{\tau}_{ij}))^2 \frac{1}{N^2}} = \sqrt{\sum_i (SE(\hat{\tau}_{ij}))^2}$$

where the summation with respect to i involves *Serbs*, *Muslims*, *Croats* and *Others*. Again, for the large samples, the $(1-\alpha)$ confidence interval for $\hat{\tau}_j$ can be obtained from the normal distribution as ranging from $\hat{\tau}_j - u_\alpha \cdot SE(\hat{\tau}_j)$ to $\hat{\tau}_j + u_\alpha \cdot SE(\hat{\tau}_j)$. A similar analysis may be performed for a set of ethnic groups, e.g. for *non-Serbs*. The summation with respect to i involves in such cases only *Muslims*, *Croats* and *Others*.

To obtain the overall number of refugees and DPs ($\hat{\tau}_A$) originating from any of the municipalities within a certain set of municipalities A (where A can be for example a region, a political entity, the whole country, or it can be subjectively chosen), the summation with respect to j (i.e. for all municipalities $j \in A$) is required:

$$(5) \quad \hat{\tau}_A = \sum_{j \in A} \hat{\tau}_j \cdot$$

Similarly, it can be proven, that the standard error of $\hat{\tau}_A$ estimation is equal (assuming the independence of displacements from different municipalities):

$$(6) \quad SE(\hat{\tau}_A) = \sqrt{\sum_{j \in A} (SE(\hat{\tau}_j))^2}$$

The same procedure can be applied for obtaining estimates of numbers of refugees and DPs originating from any of the municipalities from the set A , for any particular (i -th) ethnic group, in equations (5) and (6) $\hat{\tau}_j$ is then to be replaced by $\hat{\tau}_{ij}$.

■

ANNEX D. QUALIFICATIONS AND EXPERIENCE OF THE AUTHORS

The report “Ethnic composition and displaced persons and refugees in 47 municipalities of Bosnia and Herzegovina, 1991 and 1997” (hereafter: MILOŠEVIĆ report) is a product of the joint effort of four researchers: Ewa Tabeau (ET) – project leader, and (alphabetically) Jakub Bijak, Arve Hetland and Marcin Żółtkowski (MZ), who completed this report as part of activities of the Demographic Unit – LRT, Office of the Prosecutor (OTP), ICTY. The activities concluded in the report were conducted in 2001 and 2002. ET is a senior researcher with extensive experience in demography and statistics, graduated in statistics and econometrics, and has a Ph.D. in mathematical demography. JB is a young professional, specialised in quantitative methods of statistics and econometrics, recently successfully graduated in mathematical demography, and with broad interest and already considerable experience in statistical methods and their applications in demography. AH is a senior computer scientist and mathematician, with extensive experience in large-scale individual-level data processing, computer programming, and generally in demography. MZ is a quantitative researcher and talented computer programmer, a statistician and economist, still studying mathematics and specialising in probabilistic theory. ET was involved in all stages of the report’s completion (data quality control and data processing, design of the analysis, selection of methods, interpretation of results, and writing the report); she was responsible for the analytical aspects of the MILOŠEVIĆ report. JB, AH, and MZ were engaged in data processing, quality controls, database development, writing computer programs, and also analysis. All authors contributed to writing of the text. The MILOŠEVIĆ report builds up on the work completed by other DU demographers, i.e. Helge Brunborg, Torkild Lyngstad, and Henrik Urdal, who were engaged in the OTP population project in the years 1998-2000.

The most significant expert and research reports prepared in the Demographic Unit and experts witness testimonies of DU demographers completed so far are listed below:

ANALYTICAL REPORTS PRODUCED BY THE DEMOGRAPHIC UNIT

- E. Tabeau and M. Żółtkowski, 2002, Demographic Consequences of the Conflict in the Municipality of Vlasenica, May-September 1992. Expert report prepared for the NIKOLIĆ case (IT-94-2-PT).
- E. Tabeau, 2002, Basic Demographic Characteristics and Socio-Economic Status of Missing and Killed Persons from the Municipality of Prijedor, 30.04-30.09.1992. Expert report prepared for the STAKIĆ case (IT-97-24).
- E. Tabeau, M., Żółtkowski, 2002, Ethnic Composition and Displaced Persons and Refugees in 37 Municipalities of Bosnia and Herzegovina, 1991 and 1997. Expert report prepared for the KRAJIŠNIK-PLAVŠIĆ case (IT-00-39&40).
- E. Tabeau, M. Żółtkowski and J. Bijak, 2002, Population Losses in the Siege of Sarajevo, 10 September 1992 to 10 August 1994. Expert report prepared for the GALIĆ case (IT-98-29-1), LRT/ET/100-02.

- E. Tabeau, J. Bijak, M. Duncker and M. Żótkowski, 2002, Demographic Analysis Project Sarajevo (DAPS), Overview of the Survey and Survey Statistics. OTP research report prepared for the GALIĆ case (IT-98-29-I), LRT/ET/043-02.
- E. Tabeau and J. Bijak, 2001, Changes in the Ethnic Composition of Bosanski Šamac and Odžak, 1991 and 1997. Expert report prepared for the SIMIĆ et al. case (IT-95-9), LRT/ET/208A-01.
- E. Tabeau and J. Bijak, 2001, Changes in the Ethnic Composition in the Municipality of Višegrad, 1991 and 1997. Expert report prepared for the LUKIĆ et al. case (IT-98-32-1), LRT/ET/229-01.
- E. Tabeau and J. Bijak, 2001, Missing and Killed Persons in the Autonomous Region of Krajina in 1992: Basic Demographic Characteristics, Timing and Location of Incidents. Expert report prepared for the BRĐANIN and TALIĆ case (IT-99-36), LRT/ET/077-02.
- E. Tabeau and J. Bijak, 2001, The Range of 1992-95 Mortality in Bosnia and Herzegovina. OTP research report, LRT/ET/332-01.
- J. Bijak and E. Tabeau, 2001, Fertility Differences between Ethnic Groups in BH and a Fertility-Based Simulation of the Population Development 1991-2010. OTP research report, LRT/JB/139-01.
- E. Tabeau, T. Lyngstad, and H. Brunborg, 2001, Changes in the Ethnic Composition of the Population in the Autonomous Region of Krajina from 1991 to 1997. Research report prepared for the case of the BRĐANIN & TALIĆ case (IT-99-36). ICTY, The Hague.
- H. Brunborg, T. Lyngstad, and E. Tabeau, 2001, Population changes in Prijedor from 1991 to 1997. Research report prepared for the case of KERATERM CAMP (IT-95-8). ICTY, The Hague.
- H. Brunborg and H. Urdal, 2000, Report on the Number of Missing and Dead from Srebrenica. Expert report prepared for the case of KRISTIĆ (IT-98-33). ICTY, The Hague

EXPERT TESTIMONIES OF OTP DEMOGRAPHERS

- E. Tabeau, in: STAKIĆ (IT-97-24, Prijedor), 23.09.2002
- E. Tabeau, in: GALIĆ (IT-98-29-I, Sarajevo), 30.07.2002
- E. Tabeau, in: STAKIĆ (IT-97-24, Prijedor), 24-25.07.2002
- E. Tabeau, in: GALIĆ (IT-98-29-I, Sarajevo), 22-23.07.2002
- E. Tabeau, in: SIMIĆ et al. (IT-95-9, Bosanski Šamac, Odžak), 10.07.2002
- E. Tabeau, in: LUKIĆ et al. (IT-98-32-1, Višegrad), 19.09.2001
- H. Brunborg, in: KRISTIĆ (IT-98-33), 15.06.2000

**SUMMARY OF PROFESSIONAL QUALIFICATIONS OF THE AUTHORS
(Project Leader Is Listed First, All Remaining Authors Follow In Alphabetical Order)**

**D1. PROFESSIONAL QUALIFICATIONS OF EWA TABEAU (ET) –
DEMOGRAPHER, PROJECT LEADER**

ET graduated in econometrics and statistics (M.Sc. degree, with the highest grade, 1981) and obtained her Ph.D. (with the highest grade, 1991) in mathematical demography at the Warsaw School of Economics. In 1983-1991 she was an academic teacher at the Warsaw School of Economics where she taught descriptive and mathematical statistics and demography to undergraduate courses. Thereafter, she moved to the Netherlands where she lives and works also at present. In the Netherlands she worked almost 10 years at the Dutch National Demographic Institute, where she was responsible for mortality research for the Netherlands and other European countries (see below). Since September 2000 she has been working as a demographer and project leader in the Demographic Unit at the Office of the Prosecutor, ICTY. During her employment at OTP, ET completed twelve expert reports and testified six times as an expert witness before the Tribunal for the Former Yugoslavia.

ET worked at the Netherlands Interdisciplinary Demographic Institute (NIDI) in The Hague (Dutch national demographic institute) from July 1991 to September 2000, most time as a senior researcher and project leader. Her responsibilities at NIDI included conducting and proposing demographic research regarding modeling and prediction of mortality and health processes in the Netherlands and other European countries. Modeling mortality by cause of death had become her first domain, and resulted in several widely recognized international publications. ET was invited, as an expert, by national and international organizations (e.g. Eurostat – Statistical Office of the European Union; ING Group - Life Insurance NL, Goldman & Sachs - Life Insurance USA, Statistics Netherlands, British Government Actuary's Department) to consult their projects involving issues of mortality and health development and prediction. She supervised young researchers completing their theses for the M.Sc. and Ph.D. degrees. International and national demographic journals invited her to review submitted papers.

ET had fellowships in the French (1995) and German (1990) National Demographic Institutes. She has links with demographers all over Europe, especially with those from Belgium, Czech Republic, Finland, France, Germany, Hungary, Italy, Netherlands, Norway, Poland, and United Kingdom. ET has excellent knowledge of several types of software. She speaks and writes Polish (native tongue), English, Dutch, and, to less extent, Russian and German.

ET has authored more than 90 research papers. Her record of selected recent papers includes: 3 monographs published internationally, 24 articles published in international and national journals, 14 conference papers presented at international conferences, and 52 research reports and working papers.

**ANNEX D2. PROFESSIONAL QUALIFICATIONS OF JAKUB BIJAK (JB) -
DEMOGRAPHER**

JB graduated in Quantitative Methods and Information Systems at the Warsaw School of Economics (WSE), where he obtained, with the outstanding grade, the M.Sc. degree for a thesis in the field of mathematical demography. Results of his dissertation have been invited for presentation at the European Population Conference in August 2003 and will also be published in the scientific journal of Polish demographers. In 1999 he was a junior guest researcher (a three-month fellowship) at the Netherlands Interdisciplinary Demographic Institute (NIDI) in The Hague. In 1999–2000 JB worked as a student assistant at the Institute of Statistics and Demography, WSE, where he taught statistics and advanced statistical methods to undergraduate courses. During 2001, he was a research assistant in the the Demographic Unit at the Office of the Prosecutor, ICTY. Since October 2002 he has been employed, as a young professional, at the Demographic Unit again. During his employment at OTP he co-authored 7 expert and research reports.

During his university education JB authored many excellent study research papers. As a student he attended several conferences for young researchers where he presented a number of interesting conference papers. He was a head of the Artificial Intelligence Research Group at WSE. He also participated in some (Polish and international) research projects related to demographic and economic aspects of society, and wrote several reports.

JB has outstanding knowledge of computer software (among others: MS Access, MS Excel, MapInfo, ArcView GIS, Statgraphics, SPSS, Statistica) and programming languages (Turbo Pascal, Visual Basic). He speaks and writes several languages (Polish, English, German, and to less extent Serbo-Croatian and Dutch).

ANNEX D3. PROFESSIONAL QUALIFICATIONS OF ARVE HETLAND (AH) - DEMOGRAPHER

AH completed the university programme of undergraduate courses in mathematics and computer science and obtained the Bachelor degree (cand. mag.) from the University of Oslo in 1993. As part of his (on-going) Master (M.Sc.) programme he has taken courses in Logic, Rewriting Systems and Compiler Design. He also attended the 7th International Summer School in Jyväskylä, Finland, 1997, with lectures by prof. Juha Alho, on Stochastic Population Projections.

AH was employed at Statistics Norway from February 1994 to August 1999 and from August 2000 to August 2001, (first in the IT Section and lastly in the Division for Social and Demographic Research), where he was responsible for software development for a household micro simulation project and for official Norwegian population projections. He helped produce and publish the official population projections in 1996 and 1999. From 1998 to 2001 he worked on a research project funded by the Norwegian Research Council, in which he applied probabilistic methods to population projections. AH was the main software developer in this project, and also co-authored several scientific papers related to the project.

From August 1999 to August 2000 AH was affiliated with by SafetyCable AS, a Norwegian company specialised in solutions for computer theft prevention. In his position there he supervised the company's software projects, acted as network manager, and contributed to the management of the company. From May 2001 until his employment at ICTY, he was also a member of the board of SafetyCable.

AH has been employed as a Demographer in the Demographic Unit at the office of the Prosecutor, ICTY, The Hague, since August 2001, and has been working on analysing new data sources to be incorporated in the unit's database project.

AH is a computer programming expert, with experience in C, C++, Java, Simula and SAS and working knowledge of Pascal, SML, VB, Lisp, Perl, HTML, and several scripting languages. AH is also familiar with many software tools (MS Word, MS Excel, MS PowerPoint, MS Access, OpenOffice, ArcView, SAS, LaTeX), operating systems (all MS Windows platform, Linux (Certified Professional), BSD-derivatives), and PC and networking hardware. AH speaks and writes Norwegian (native tongue) and English, and can speak some German.

ANNEX D4. PROFESSIONAL QUALIFICATIONS OF MARCIN ŻÓŁTKOWSKI (MZ) – DEMOGRAPHIC ASSISTANT

In 2001, MZ graduated in Banking and Finance at the Warsaw School of Economics in Poland (WSE, M.Sc. degree in Banking and Finance, with “excellent”, the highest grade), and also completed the Master programme of Quantitative Methods and Information Systems at WSE. He is now finishing mathematics at the Warsaw University (the 4th year; in 2002 having a leave of absence due to his employment at OTP), specialising in the probability theory. In 2001, MZ engaged in a Ph.D. programme in Financial Mathematics at WSE.

In 2000-2001 MZ worked as a student assistant in the Institute of Econometrics, WSE, where he taught econometrics and stochastic processes to undergraduate courses. In 2001-2002, he lectured “Capital and Monetary Markets” at the postgraduate programme in the International School of Managers in Warsaw. Since February 2002, he has been a research assistant in the Demographic Unit at the Office of the Prosecutor, ICTY, the Hague. During his employment in the Demographic Unit, OTP, he co-authored four expert and research reports and developed software for the analysis of demographic data.

In 1998-99, he was an active member of the Artificial Intelligence Research Group at WSE, organising and taking part in conferences on artificial intelligence.

MZ is an expert in computer programming (C/C++, Delphi, Pascal, VB, HTML, etc.), software (MS Access, MS Excel, MS Word, GIS and ArcView, SPSS, Statistica, Mathematica, Matlab, Maple, LaTeX, etc.), hardware and operating systems (Windows, Linux). MZ speaks and writes Polish (native tongue), English, German, and Russian.



**KILLINGS AND REFUGEE FLOW IN KOSOVO
MARCH – JUNE 1999**

A REPORT TO THE INTERNATIONAL CRIMINAL
TRIBUNAL FOR THE FORMER YUGOSLAVIA

Patrick Ball, Wendy Betts, Fritz Scheuren,
Jana Dudukovich, and Jana Asher

3 January 2002

**AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE
AMERICAN BAR ASSOCIATION
CENTRAL AND EAST EUROPEAN LAW INITIATIVE**



Executive Summary

This study presents the results of analyses of the statistical patterns of refugee flow and killings in Kosovo during the period March–June 1999. The data were drawn from the Albanian border guard registries of people entering Albania through the village of Morina; interviews conducted by the American Bar Association Central and East European Law Initiative (ABA/CEELI) and its partners; interviews conducted by Human Rights Watch (HRW); interviews conducted by the Organization for Security and Cooperation in Europe (OSCE); and records of exhumations conducted by international teams on behalf of the International Criminal Tribunal for the Former Yugoslavia (ICTY). These analyses describe the estimated total number of killings and estimated number of refugees leaving their homes over time and location.

This report finds that killings and refugee flow occurred in a regular pattern characterized by three phases. In each phase, a high volume of killing and refugee flow was followed by a much lower level of killing and refugee flow. These findings are then used to evaluate three possible explanations for the pattern.

- Action by the Kosovo Liberation Army (KLA) motivated Kosovars to leave their homes.
- Air attacks by the North Atlantic Treaty Organization (NATO) created local conditions that led to Kosovars being killed and leaving their homes.
- A systematic campaign by Yugoslav forces expelled Kosovar Albanians from their homes.

This study concludes the following:

- The patterns of both refugee flow and killings exhibit characteristics consistent with the existence of an external cause.
- Refugee flow and killings occurred in the same places at the same times, implying a common cause of both phenomena.
- Two of the hypotheses proposed to explain the patterns in killing and migration, KLA and NATO activity, are inconsistent with the observed patterns of refugee flow and killings.
- The statistical evidence is consistent with the hypothesis that Yugoslav forces conducted a systematic campaign of killings and expulsions.

Killings and Refugee Flow in Kosovo, March–June 1999: Analysis and Conclusions

1. Purpose of report

This study presents the results of analyses of the statistical patterns of refugee flow and killings in Kosovo during the period March–June 1999. This data analysis describes the estimated total number of deaths and estimated number of refugees leaving their homes over time and location. The objective of the analysis is to compare three hypotheses about what may have caused killings and refugee flow in order to conclude which hypotheses are contradicted, and which supported, by the analysis.

1.1. Hypotheses

The study first examines whether there was a regular structure in killings and refugee flow. Thus our first hypothesis is

- *Hypothesis 1:* Killings and refugee flow occurred in distinct patterns indicating the existence of a common cause of both phenomena.

If the data analysis supports Hypothesis 1, there are three possible explanations for the pattern.

- *Hypothesis 2.1:* Action by the Kosovo Liberation Army (KLA) motivated Kosovars to leave their homes, either directly because the KLA ordered people to leave, or indirectly because Kosovars fled fighting between KLA and Yugoslav forces.
- *Hypothesis 2.2:* Air attacks by the North Atlantic Treaty Organization (NATO) created local conditions that led to Kosovars being killed and leaving their homes. The NATO influence could either have been direct, because people were killed in airstrikes and others fled, or indirect, because *local* Yugoslav authorities responded to the airstrikes by killing Kosovars and forcing them from their homes.
- *Hypothesis 2.3:* A systematic campaign by Yugoslav forces drove Kosovar Albanians from their homes. Killings were used either to motivate the departures, or the killings were a result of the campaign.

Although there may be other explanations for regular patterns in killings and refugee movement, we consider these three to be the most likely. The hypotheses are distinct. Although they are not necessarily mutually exclusive, each of the hypotheses in 2.1–2.3 implies differing responsibility. It is beyond the capacity of statistical analysis to *prove* that any of these hypotheses is the definitive cause of the patterns seen in the two forms of violence. However, as will be seen, the data can be found to contradict some hypotheses while being consistent with other hypotheses.

1.2. Data and analysis

The data for this project came from several sources.

- *Refugee flow*: The analysis of refugee flow uses the Albanian border guard registries of people entering Albania through the village of Morina. Additional sources were used to transform the statistical patterns of people entering Albania into an analysis of people leaving their homes and becoming refugees.¹
- *Killings*: The data on killings were drawn from four sources: interviews conducted by the American Bar Association Central and East European Law Initiative (ABA/CEELI) and its partners; interviews conducted by Human Rights Watch (HRW); interviews conducted by the Organization for Security and Cooperation in Europe (OSCE); and records of exhumations conducted by international teams on behalf of the International Criminal Tribunal for the Former Yugoslavia (ICTY).

The statistical analysis of killings aggregates information from more than 15 000 interviews and exhumation reports.² The analysis includes a statistical estimate of the killings that were not reported to any of the four sources.³

1.3. Principal findings

This report finds:

- Killings and refugee flow occurred in a regular pattern characterized by three phases. In each phase, a high volume of killing and refugee flow was followed by a much lower level of killing and refugee flow. Killing and refugee flow tend to occur at the same times and places. We conclude that this pattern is consistent with Hypothesis 1;
- An estimated 10 356 Kosovar Albanians were killed;⁴

¹The refugee flow data are based primarily on the records maintained by Albanian government border guards. Additional administrative records from the United Nations High Commission for Refugees and the Albanian government, and survey data from several human rights organizations augmented the analysis of the border records. Note that this analysis does not include data from internally displaced persons who never crossed the border. Thus, the estimates do not represent overall totals of people leaving their homes. See Ball (2000).

²The direct results are presented in Appendix 2.

³In an effort to assure quality, all the data coding involving comparisons between data sources was done independently by two different people; their results were compared, and all differences were reviewed and reconciled by an author of the study.

⁴All of the statistical programming connected to the estimation of the results was done independently by two analysts using separate computers and different software, and their results were identical.

- Observed and estimated patterns are inconsistent with Hypotheses 2.1 and 2.2, KLA activity or NATO airstrikes. Patterns are consistent with Hypothesis 2.3, activities of Yugoslav forces.

Each of these findings is explained in the sections that follow.

2. Identifying a pattern

The structure of the patterns in both refugee flow and killings over the time period in question is the key component for the findings of the present study. In this context, a pattern means a series of distinctive, clearly non-random movements, trending upward and downward, in the volume of refugee flow and the number of people killed. Two or more patterns are considered to be similar if they exhibit similar high points and low points at the same (or nearly the same) times.

Statistically, it is implausible that patterns such as those indicated by the findings would result simply from ad hoc decision-making or random external causes. The correlated, nearly simultaneous variations in the social phenomena being measured (killings and refugee flow) in time and location strongly suggest a common, systematic cause of which the patterns are results.

The identification of a pattern does not by itself support or contradict Hypotheses 2.1, 2.2, or 2.3. It does, however, weigh against the claim that the killings and refugee flow were random. That is, the existence of a pattern strongly suggests that there was a common cause, and that the killings and refugee flow did not occur independently.

3. Statistical analysis of refugee flow

This section describes the departure of ethnic Albanians from Kosovo from late March to May 1999.⁵ Approximately 95% of the Kosovar Albanian refugees who entered Albania did so between 24 March and 11 May (Ball 2000, p.5). Analysis of the flow of these refugees during this period shows a pattern of surges followed by steep descents.

An earlier analysis of refugees' departures from their homes showed that from late March through late May 1999, ethnic Albanians left their homes in Kosovo in three distinct time periods, or phases (see Figure 1). These phases were: 24 March to 6 April; 7 April to 23 April; and 24 April to 11 May.⁶

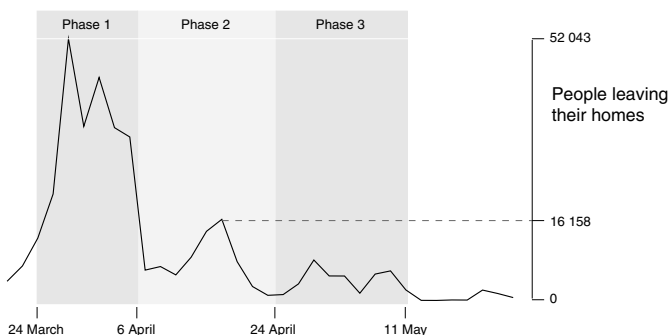
The essential characteristic of this phase structure is the presence of low points in the number of refugees leaving their homes on 6-8 April and 23-25 April, the phase transition dates.⁷ These low points are significant because they do not last for extended periods of time and are preceded and followed

⁵Although the analysis of killings covers the period 20 March - 22 June, the analysis of refugee movement ends in late May, for two reasons. First, the registries maintained by the Albanian border guards ended at that time. Second, anecdotal reports indicated that there was very little movement over the border after that time; this was later confirmed by surveys taken among residents in refugee camps in mid to late June.

⁶See Ball (2000). The three phases reflect the patterns of refugees departing their homes, not the patterns of refugees crossing the border. On any given day, slightly more than half of the refugees who crossed the border had left their homes earlier that same day. However, the remaining refugees crossing the border that day had been in transit for longer times. The transit delay was accounted for in the analysis of the data.

⁷The March - June period was aggregated into two-day intervals for this analysis. Aggregating the time to this level provided enough data at each time for the statistical analysis to stabilize; see

Figure 1: Estimated total refugee flow over time



by distinct peaks. In other words, during these two transition intervals, the incidence of people leaving their homes nearly ceases, compared to the high numbers observed during the phases.

As Figure 1 shows, during the 6-8 April phase transition, refugee flow falls to approximately 6 000 people, down from the phase one peak of slightly more than 52 000. During the 23-25 April phase transition, refugee flow falls to approximately 1 000 from the phase two peak of more than 16 000. The third phase sees refugee flow rising to two peaks of approximately 8 000 and 6 000 in early May, representing the last surges. Refugee flow declines to fewer than 100 people per two-day period after 11 May.

The extreme fluctuation between high and low points constitutes the pattern in the refugee flow. Migration that resulted from dispersed, decentralized causes would not show distinct separations between moments of high flow and moments of low flow. If the incidence of people leaving their homes occurred at random, there would be a more uniform distribution of numbers over time, with occasional small peaks. The extreme, well-defined surges observed in this analysis would not occur by chance. The mass exodus of Kosovar Albanians on this scale and in this pattern could only have been driven by a common cause.

4. Statistical analysis of killings

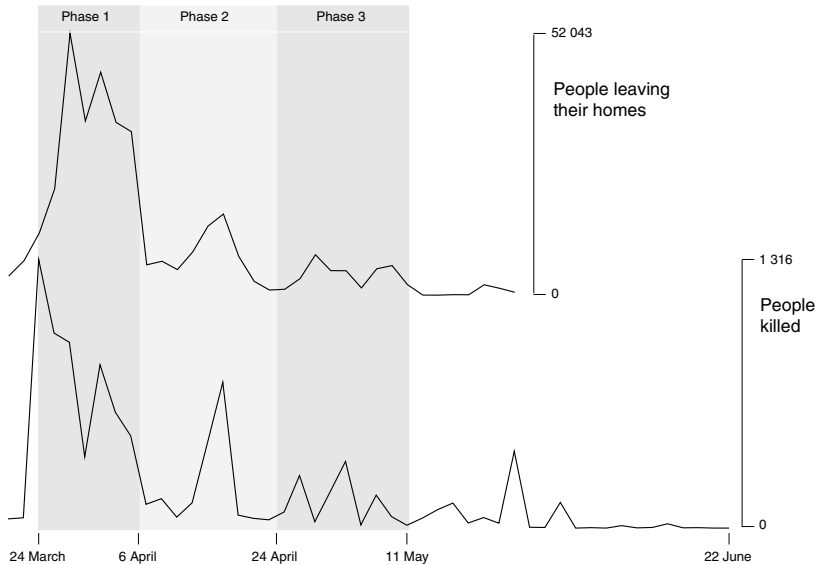
This section describes the number and pattern of killings that occurred in Kosovo from late March to mid-June 1999. Analysis of the data on killings finds that an estimated 10 356 Kosovo Albanian civilians were killed, and that the patterns of killing are similar to the pattern of refugee flow. As with refugee flow, we conclude that the statistical patterns of killings indicate that they resulted from a common cause.

4.1. Estimated total number of killings

Before studying when and where killings took place, it is necessary to first estimate the number of total killings that occurred during this time period. To make

Appendix 2. The value of the estimated number of killings or refugees plotted for a given time on the horizontal axis of the graph represents the number for the related two-day period.

Figure 2: Estimated total refugee migration and killings over time



this estimate, a series of steps was taken. First, the total number of individual victims, documented by name, was tabulated. All victims identified by name in one or more of the data sources were listed; descriptive information on the victims was compared in order to eliminate duplicates; and the total number of unique individuals was tallied.⁸ From approximately 10 000 victims reported by name, this process identified 4 400 unique individuals. The number 4 400 is not an estimate; it is the actual count of uniquely reported victims.

Second, because the victims identified in the data sources were not the only victims of killings, it was necessary to estimate the number of undocumented victims to determine the overall estimate of total number killed. This figure, 10 356, was generated by means of a widely-used demographic statistical technique known as “multiple systems estimation,” which depends on samples of the population.⁹ Because the overall estimate of 10 356 killed was generated from samples — and not from the (unknowable) perfect list of deaths — a margin of error must be computed. We estimate this interval to be 9 002 to 12 122. Note that the estimate and margin of error are consistent with estimates of killing victims in Kosovo in previous work by ABA and AAAS, as well as those in other, independent studies.¹⁰

⁸See Appendix 1 for a complete description of this process.

⁹See Appendix 2 for a complete description of this procedure.

¹⁰See ABA/AAAS (2000), PHR (1999), Spiegel and Salama (2000).

Figure 3: Regions of Kosovo



4.2. Killing patterns over time

When the estimated number of people killed is considered over time, using the same two-day intervals employed with the refugee flow data, the observed pattern of killings closely resembles the pattern of refugee flow. The analysis is shown in Figure 2.

The data show a peak in the number of killings in late March, and another peak in mid-April. Most noteworthy is that, similar to the refugee flow data, the incidence of killings fell to nearly zero on 6-7 April and again on 22-24 April. Thus, not only does the number of killings exhibit the same extreme contrasts between the high and low points as observed in refugee flow, these high and low points occur at the nearly the same times as those in refugee flow. These surges would not occur by chance, and we conclude that they are the result of a common cause.

4.3. Refugee flow and killings by geographic location

In addition to examining when refugee flow and killings happened, it is important to study where the events occurred. An analysis of the locations where the refugee flow originated, and the killings occurred, shows widespread patterns consistent with acts of violence associated with displacements.

When the number of people leaving their homes and the number of people killed are analyzed on a regional level, one can identify the extreme contrasts in high and low points following a phase pattern similar to that described above for the overall analysis (see Figures 4–7). Their relative patterns over time and space are similar. In all regions, the 6–7 and 22–24 April dates mark low points in both the flow of refugees and the number of people killed.

An earlier analysis of refugee flow observed that more than three-quarters of the refugees crossing into Albania during Phase 1 originated in the southern and western areas of Kosovo, while during Phase 2, more than three-quarters of refugees originated in the northern and eastern areas of Kosovo (Ball 2000). Figures 4–7 show that killings follow a similar pattern. Killings in the western and southern regions occur primarily during Phase 1; during later phases, there are relatively fewer killings in these two regions. In the northern and eastern regions, killings also occur during Phase 1. However, in these regions and unlike in the southern and western regions, there are also substantial numbers of people killed during Phase 2.¹¹

As these graphs show, not only do the patterns of refugee flow and killings share similar characteristics over time, the patterns are similar in different regions. Although when viewed in isolation local refugee movement and killings may look like a local response to a local cause, seen in the aggregate, statistical analysis reveals a pattern implying a common cause. In other words, the killings and the exodus of refugees occurred in the same places at roughly the same times. The analysis shows that these events occurred in similar patterns in each of the four regions. The analysis does not prove what caused either pattern, nor that one of the patterns caused the other. The analysis does show that acts of violence — killings — were associated in time and space with the refugee departures from their homes.

5. Examination of proposed hypotheses

As noted above, statistics do not prove that any particular process caused either refugee flow or mass killing patterns. However, analysis can show whether hypotheses are consistent with or contradicted by the statistical evidence. There have been three hypotheses about the causes of the patterns in refugee flow and killings. These three hypotheses are KLA activity, NATO airstrikes, or a systematic campaign conducted by Yugoslav forces.

It is possible to use statistical methods to examine the relationship between KLA activity or NATO airstrikes and the patterns described above. If KLA activity or airstrikes occur immediately before or during periods of high levels of killing and migration, these events may plausibly be the cause of the rise and fall

¹¹There is an anomalous point in the southern region (Figure 5) in late May. This estimate of more than 200 people killed in one two-day period results from fewer than 20 documented killings. Appropriately, this point also has a relatively high level of error associated with it, as shown in Appendix 2, Figure 12. As is clear in that figure, most points have modest errors which do not weaken the interpretation of the pattern. This point, however, has a sufficiently wide margin of error that the point may not be significantly different from zero.

Figure 4: Estimated total refugee migration and killings over time, northern region

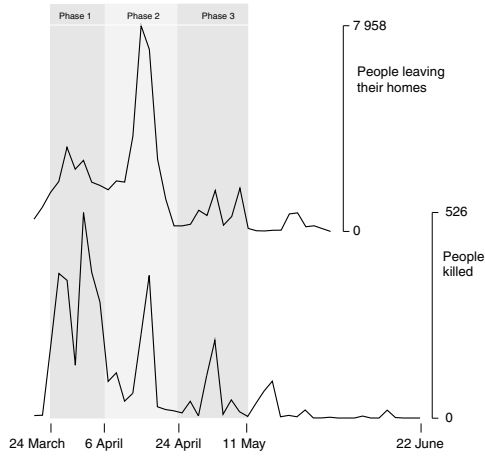


Figure 5: Estimated total refugee migration and killings over time, southern region

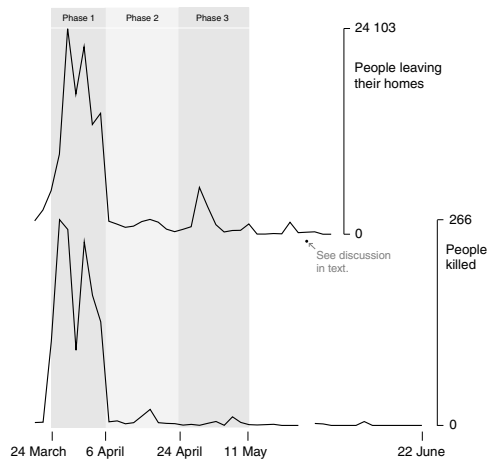


Figure 6: Estimated total refugee migration and killings over time, eastern region

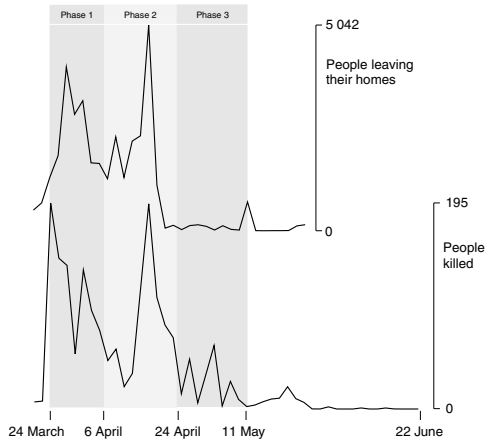


Figure 7: Estimated total refugee migration and killings over time, western region

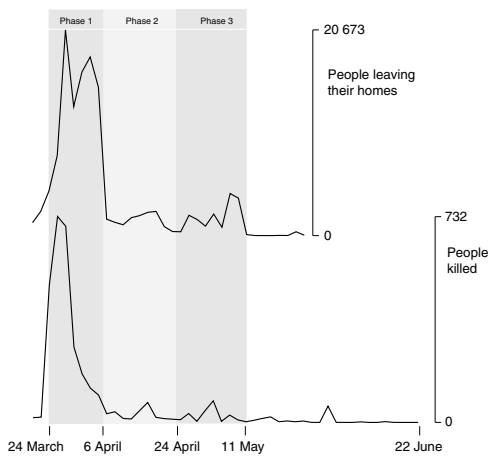


Figure 8: Timing of KLA attacks with killings and refugee flow

Timing	Killings	Percent	Refugee Flow	Percent
Preceded or coincided with peak	11	38%	10	34%
Followed peak	12	41%	11	38%
Inconclusive	6	21%	8	28%

pattern. However, if airstrikes and KLA activity do not precede the peaks in the number of killings and refugee flow, then the causal relationship should be questioned or rejected. An analysis of KLA activity and NATO airstrikes over time and place shows that neither occurred at the times and places necessary to be the primary cause of the refugee flow and killings.

To analyze the occurrence of KLA or NATO activity in relation to the pattern of killings and refugee flow, we used the following procedure. For each municipality in Kosovo, we listed chronologically, by two-day period, the numbers of refugees departing their homes, the number of reported killings, and the incidence of KLA and NATO activity.¹² For this analysis, KLA activity included both battles and isolated killings of Serbs. The two-day periods marking the peak for refugee flow and killings, respectively, were identified. If an incidence of KLA or NATO activity fell within the same period or in the two-day period preceding the peak, we concluded that the two events coincided. If there was no record of KLA or NATO activity at any point prior to the peak, we concluded that KLA or NATO activity occurred only after the peak. If an incidence of KLA or NATO activity occurred earlier than two days prior to the peak period, the municipality was counted as having an inconclusive pattern.

To test the conclusions drawn by this method, we used another statistical method to consider the joint correlations of KLA and NATO activity with refugee flow and killing patterns. The point is to use the second statistical technique to control for the correlation of KLA activity and NATO airstrikes with the quantity of killings and refugee flow, over time and space.

5.1. Kosovo Liberation Army activity

Information on KLA activity was obtained from interview accounts and a variety of non-governmental reports summarized and provided to this project by the ICTY.¹³ Using that information, the present study counted the number of reported battles between the KLA and Yugoslav forces occurring in each municipality over time. No effort was made to quantify the intensity of individual battles, but distinct engagements were counted separately. Isolated KLA attacks that resulted in the injury, disappearance, or deaths of ethnic Serbs were also tabulated by the number of casualties. These are counts of reported Serb casualties, not estimates. The data were insufficient for estimating the missing totals.

¹²Note that for this analysis, we used only the number of reported killings, not the estimated total number. The data are inadequate to make estimates at the municipality level. See Section 5.3 for an analysis using the estimated number of killings at the regional level.

¹³A summary of sources is provided in Appendix 3.

Figure 9: Timing of NATO airstrikes with killings and refugee flow

Timing	Killings	Percent	Refugee Flow	Percent
Preceded or coincided with peak	3	10%	9	31%
Followed peak	20	69%	13	45%
Inconclusive	6	21%	7	24%

As testing the hypotheses necessitates, reported KLA activity was plotted against killings and refugee flow for each of the 29 municipalities in Kosovo. The results of the analysis of timing are in Figure 8, which shows that in 11 of the 29 municipalities, 38%, KLA activity coincided with the overall peak in the number of killings, or it occurred within the two-day interval prior to the peak. In 12 of the municipalities, 41%, KLA activity either occurred only after the peak in number of killings or did not occur at all. In 6 municipalities, 21%, there is an inconclusive pattern.

Refugee flow has a similar pattern. In 10 municipalities, 34%, KLA activity coincided with the overall peak in number of refugee flow or occurred within the two-day interval prior to the peak. In 11 municipalities, 38%, KLA activity either occurred only after the peak in refugee flow or did not occur at all. In the remaining 8 municipalities, 28%, KLA activity occurred at points in time coinciding with other high points, low points, or interim points in the numbers of killings and refugee flow.

For KLA activity to have caused the pattern observed in killings and refugee flow, the instances of activity would have to precede the high points. However, this analysis shows that KLA activity followed the peaks in the killing and refugee numbers in more places than it preceded them. Thus, there is no clear cause and effect relationship between KLA activity and the pattern described here.

5.2. NATO airstrikes

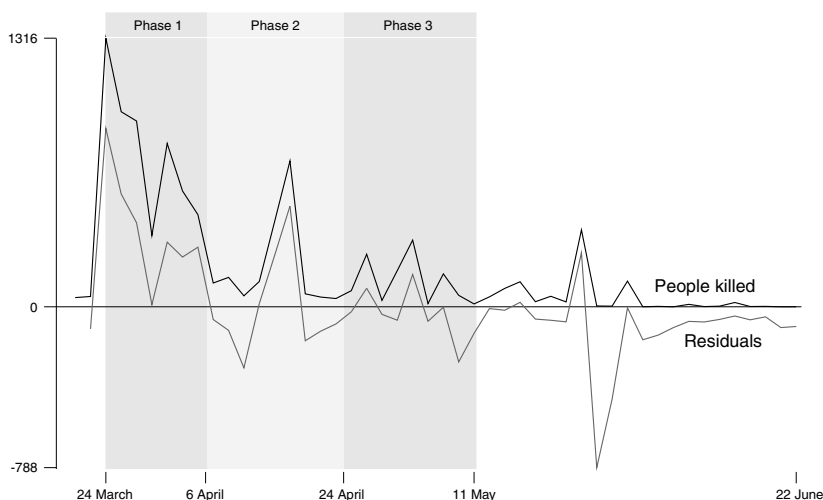
This analysis considers the number of NATO airstrikes, as reported by Yugoslav government sources.¹⁴ No effort was made to quantify the severity of each airstrike, but reports of different airstrikes were counted separately. Similar to KLA activity, reported airstrikes were plotted against killings and refugee flow for each of the 29 municipalities in Kosovo.

In only 3 of the 29 municipalities, 10%, did NATO airstrikes coincide with the overall peak in the number of killings, or occur within the two-day interval prior to the peak. In 20 municipalities, 69%, NATO airstrikes either occurred only after the peak in the number of killings or did not occur at all, and in 6 municipalities, 21%, the pattern was inconclusive.

The refugee flow pattern is not as lopsided, but it leads to the same conclusions. In 9 municipalities, 31%, NATO airstrikes coincided with the overall

¹⁴The Yugoslav government was the primary proponent of the claim that NATO airstrikes were responsible for the killings and refugee flow in Kosovo. Therefore, the strongest test of this hypothesis is to use the Yugoslav government's own information concerning when and where airstrikes occurred.

Figure 10: Estimated total killings and residuals over time



peak in number of refugee flow or occurred within the two-day interval prior to the peak. In 13 municipalities, 45%, NATO airstrikes either occurred only after the peak in the refugee flow or did not occur at all. In the remaining 7 municipalities, 24%, NATO airstrikes occurred at other times, coinciding with other high points, low points, or interim points in the killings and refugee flow.

One other noteworthy fact regarding NATO airstrikes was that during 2-4 April, attacks were greatly reduced due to bad weather.¹⁵ Yet this period, during which there were relatively few NATO airstrikes, includes substantial peaks in Kosovo-wide killings and refugee flow. As with the findings regarding data on the KLA, the analysis of data on NATO shows that the airstrikes more often followed the peaks in the killings and refugee numbers than preceded them. Therefore, the hypothesis that NATO airstrikes directly or indirectly caused the patterns in killing and refugee flow should be rejected.

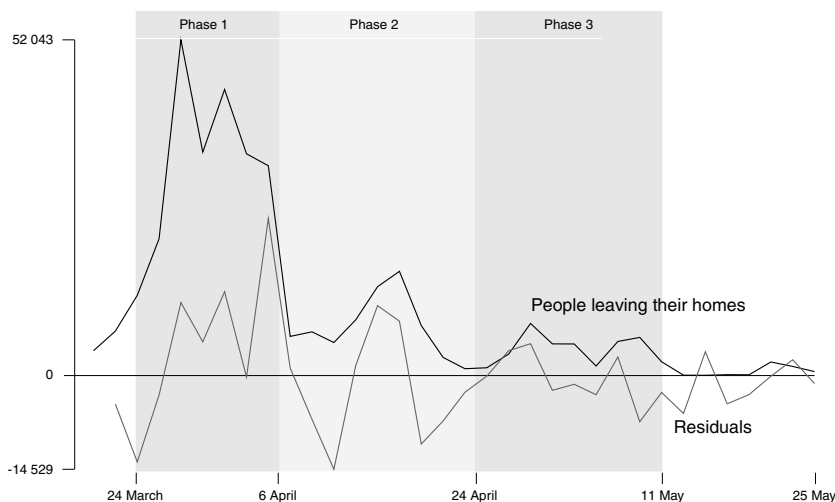
5.3. Effect of KLA activity and NATO airstrikes

In addition to the preceding analysis, the data were also aggregated to regional levels, and patterns over time in each of the four regions were analyzed jointly with the patterns of killings and refugee flow. The objective was to examine the pattern of killing net of the statistical correlation with KLA activity and NATO airstrikes.

In other words, this analysis looks at the joint effect of KLA and NATO activity by estimating the numbers of killings predicted by the statistical interaction of the KLA and NATO data, and subtracting that estimate from the original pattern. The result of the subtraction is called the “residual,” and it describes the

¹⁵UK Ministry of Defense Briefing, Deputy Chief of the Defense Staff, Sir John Day; available at <http://www.kosovo.mod.uk/brief040499.htm> as of 3 January 2001.

Figure 11: Estimated total refugee flow and residuals over times



pattern in killings and refugee flow that remains after the effect of the control variables (KLA and NATO activity) has been removed. The result of this analysis is shown in Figure 10.

In Figure 10, the upper line reproduces the total estimated number of deaths over time as seen in Figure 2. The lower line in Figure 10 is the same pattern controlling for the statistical influence of the KLA and NATO patterns.¹⁶ With the influence of the correlations with NATO airstrikes and KLA activity removed, the pattern of killings over time remains essentially the same. All of the peaks are the same, although some of the troughs are slightly exaggerated in the lower line.

The same analysis can be performed for refugee flow. The results are shown in Figure 11. As with killings, the pattern of the refugee flow, controlling for the correlations with the NATO and KLA patterns, is strongly similar to the original pattern. However, the statistical measures suggest that the KLA activity (but not NATO airstrikes) has a weak but noticeable relationship with the refugee flow pattern.¹⁷ The relationship is particularly evident at two points in time: during Phase 1 in the northern region, and during the Phase 1–Phase 2 transition in the eastern region. In these two regions at these two times, the pattern in the residual diverges from the pattern in the estimated refugee flow. Other than these exceptions, NATO and KLA activity have little influence on the pattern of refugee flow.

The analysis of patterns of killing and refugee flow while controlling for the influence of KLA activity and NATO airstrikes shows that while there may be

¹⁶For a more detailed discussion, including the underlying regression analysis, see Appendix 2.

¹⁷See Appendix 2, Figure 21 for a detailed analysis. Other points at which the estimates and residuals diverge occur when flow is near zero, and therefore are not meaningful.

occasional coincidences, the overall effect of KLA activity and NATO airstrikes does not much change the killing and refugee flow patterns. This provides further evidence to reject the hypotheses that KLA activity or NATO airstrikes caused the killings or refugee flow.

5.4. Yugoslav forces

Turning to the third hypothesis – that Yugoslav forces organized and implemented a systematic campaign of violence resulting in killings and refugee flow: the statistical analysis of correlations cannot prove that the Yugoslav forces were the external influence responsible for the observed patterns. However, the findings of this study are consistent with the hypothesis that action by Yugoslav forces was the cause of the killings and refugee flow.

In particular, one of the findings of this study shows a circumstantial link between Yugoslav army activities and the observed pattern in killings and refugee flow. The extreme decline in the number of killings and refugee flow observed during the period 6-7 April coincides with the unilateral ceasefire declared by the Yugoslav authorities in recognition of Orthodox Easter.¹⁸ During the period when Yugoslav forces ceased hostilities, the number of killings and refugee departures fell drastically. Further links could be drawn if Yugoslav troop movements could be shown to have occurred in the same patterns observed in killings and refugee flow. However, such analysis lay outside the scope of this study.

6. Summary of conclusions

Consistent with earlier analyses, the findings of this study show that killings and refugee flow occurred in distinct surges. Over time, the flow of refugees departing their homes originated from different regions of Kosovo, and the flow occurred in peak periods, separated by periods of much lower level flow. As Figure 2 shows, killing patterns over time track the refugee flow. Thus, the patterns of both refugee flow and killings exhibit characteristics consistent with the existence of an external cause. The observation that the two processes move together strengthens this finding.

This study has also analyzed the patterns of these two series over time and by region. When the overall estimates are compared at the regional level, a clear relationship remains between the patterns of refugee flow and killings. Thus, refugee flow and killings occurred in the same places at the same times, implying a common cause of both phenomena.

The analysis also shows that two of the hypotheses proposed to explain the patterns in killing and migration, KLA and NATO activity, are inconsistent with the observed patterns of refugee flow and killings. Both KLA and NATO activity occurred more frequently after the largest number of killings and highest levels of refugee flow than it did before the peaks. When controlling for the statistical effect of KLA activity and NATO airstrikes, the patterns of killing and refugee flow over time are substantially unchanged.

¹⁸ABC News reported a Yugoslav government statement that “[t]o honor the biggest Christian holiday, Easter, all actions of the army and police will stop in Kosovo against the terrorist organization KLA [Kosovo Liberation Army] starting April 6 at 8 p.m. [3 p.m. ET].” Orthodox Easter fell on Sunday 11 April 1999. See <http://abcnews.go.com/sections/world/DailyNews/kosovo.bombing990406.html> as of 3 January 2002.

The analysis is consistent with the hypothesis that Yugoslav authorities conducted a campaign of killings and expulsions. The Yugoslav government's Orthodox Easter ceasefire coincides exactly with a drastic reduction in killings and refugee movement, and this observation reinforces the agreement of the analysis with this hypothesis.

Each of these findings is consistent with the narrative accounts of the situation in Kosovo during this time period, reported by numerous nongovernmental organizations. The coherence of the phases, the close relationship between estimated number of killings and refugee flow, and their occurrence across broad regions of Kosovo each support the claim that there was a coordinated cause of violence against ethnic Albanians during the period March–June 1999.

Appendix 1: Data and Matching

1. Introduction

The present study is based on the collection of more than 62 000 reported deaths, of which approximately 52 000 were anonymous.¹⁹ The names of 9 569 people were reported to one or more organizations that collected information about killings in Kosovo during the period March–June 1999. Appendix 1 describes how we managed both anonymous and named reports of death. As will be seen, these two types of data represented quite different challenges.

This Appendix is divided into sections, beginning with the introduction (as Section 1). In Section 2, we describe the data collection procedures that generated the basic inputs for our work. Section 3 details the initial data editing steps to clean the data and prepare them for analysis. The next section (Section 4) describes our initial attempts to identify multiple reports of the same death. In Section 5 we describe how we reviewed the matching in a second round. The final data are summarized in the last section of Appendix 1 (Section 6).

2. Data sources

The data analyzed in this study were assembled from four sources: interviews conducted by the American Bar Association/Central and East European Law Initiative (ABA/CEELI), Human Rights Watch (HRW), and the Organization for Security and Cooperation in Europe (OSCE), as well as exhumation reports produced by a number of international teams on behalf of the International Criminal Tribunal for Former Yugoslavia (EXH). Overall project summaries are shown in Figure 1.

The first row summarizes collection efforts by ABA/CEELI. They conducted 1 674 interviews in which 5 089 incidents of killing were reported. They did their data collection in five countries. The final column in the figure indicates by the “yes” entry that the ABA/CEELI data gatherers all employed a standardized questionnaire.

More generally, for each source an “incident” could involve information on deaths of more than one person. In an interview, the witness might describe one or several such incidents. Thus, an incident was a report of a single person identified by name, or of an anonymous person or group of people who were not specifically identified.

Among the reported killings from a single data source, different witnesses often reported the deaths of the same victims. Some witnesses identified victims

¹⁹Data on an additional 18 000 anonymous deaths were available but were not included because of lack of time.

Figure 1: Summary of data sources

Project	Interviews	Incidents	Where	When	Qstn.
ABA/CEELI	1 674	5 089	Albania	May–Jun 1999	Yes
			Macedonia	May–Jun 1999	Yes
			USA	May–Jun 1999	Yes
			Poland	May–Jun 1999	Yes
			Yugoslavia	Aug 99–Aug 00	Yes
Exhumations	n/a	1 767	Kosovo	Jun 1999–Apr 2001	n/a
HRW	337	1 717	Albania	Mar–Jun 1999	No
			Macedonia	Mar–Jun 1999	No
			Kosovo	Jun–Dec 1999	No
OCSE	1 837	6 686	Albania	Mar–Jun 1999	Yes
			Macedonia	Mar–Jun 1999	Yes

specifically, listing each victim by his or her full first and last name,²⁰ age, and gender, as well as date and place of death.

Other victims were identified only anonymously. Some individual victims were reported, but without a specific name (“I saw the body of an old man”). Other victims were identified as members of groups (“I saw ten people dead in a pile by the side of the road”). Bodies that were exhumed but never identified are also included in this category. These victims are referred to as *groups* (even if there is only one victim in the “group”).

2.1. American Bar Association Central and East European Law Initiative (ABA/CEELI)

The sources of the 1 674 interviews which comprise the ABA/CEELI data varied by country of collection, with different partners in each. The countries where interviewing was done included Albania, Macedonia, the United States, Poland, and Kosovo, Yugoslavia.

Albania: ABA/CEELI conducted 35% of its interviews in Albania, where they partnered with a coalition of local Albanian non-governmental organizations (NGOs) called the Center for Peace through Justice. With the Center, ABA/CEELI conducted interviews in the refugee camps and among refugees in private homes throughout Albania. Data collection in Albania began in May 1999 and ended in August 1999. In the camps, interviewers sought interviewees tent by tent.

Macedonia: About 16% of the ABA/CEELI interviews were collected in Macedonia. The interviewees included Kosovars residing with host families throughout Macedonia, but the interviews were primarily collected in refugee camps. ABA/CEELI worked with a team of ethnic Albanian citizens of Macedonia to conduct these interviews. ABA/CEELI secured interviewees through referrals from humanitarian organizations, word of mouth, and advertising in local newspapers. In the camps, interviewers sought interviewees tent by tent. The Macedonia data collection began in May 1999 and ended in August 1999.

United States and Poland: American attorneys, working through interpreters, collected interviews from refugees housed on the military base in Fort Dix, New Jersey. ABA/CEELI recruited 10% of its interviews in Fort Dix, and interviewees

²⁰The terms “last name” and “surname” will be used as synonyms.

were found through advertising and word of mouth within the camp. U.S. data collection began in May 1999 and ended in July 1999. CEELI also collected a small number of interviews (4) from a refugee camp in Poland and received a small amount of interview information collected by the Kosovo Diplomatic Observer Mission in Poland.

Yugoslavia: ABA/CEELI partnered with two organizations in Kosovo to collect information after the Yugoslav withdrawal in June 1999; interviews taken in Kosovo account for 38% of the ABA/CEELI total. Data collection by the Center for Peace Through Justice began in August 1999 and ended in November 1999 and was undertaken in the following municipalities: Djakovica, Glogovac, Klina, Mitrovica, Pec, Podujevo, Pristina, Prizren, Orahovac, Suva Reka, Vucitrn, and a small number elsewhere in Kosovo. Additional data were collected by the Council for Defense of Human Rights and Freedoms. Their interviews began in July 2000 and ended in August 2000. Interviews were conducted by opening general collection points in the centers of the following towns: Gnjilane, Vucitrn, Kacanik, Urosevac, and Stimlje.

All interviews were conducted using a standardized questionnaire that allowed for a narrative description of events. The information on the questionnaire was then keyed into a database. The coding team paid particular attention to the precision of the dates expressed by the interviewees. Some dates were identified exactly, while other dates were identified relatively (“two weeks before we left our homes”), or approximately (“some time before the Serbs came”). The date precision coding was used later for the analysis of sensitivity of the findings to date reporting errors.²¹

For the statistical purposes of the present study, all of the data were re-categorized from the original database into new data structures. All data were recoded from their original formats into standard geographic classifications and date precision codes.

The ABA/CEELI data were processed in two parts: The first portion of ABA/CEELI data included the 634 interviews taken in Kosovo. These data were compared to and completely merged independently with the HRW, OSCE, and exhumation data as described in Section 4. The second set of ABA/CEELI data (comprised by the interviews conducted outside Kosovo) had been used in an earlier publication by ABA/CEELI and AAAS (2000). These 1 040 interviews were self-matched, then integrated with the entire dataset (which included data from OSCE, HRW, the exhumations, and the ABA/CEELI data in the first set). The second phase of ABA/CEELI work was done at the end of the inter-system matching process (see also Section 4 and Section 5).

2.2. Exhumations (EXH)

Exhumations were conducted in locations thought to contain graves of Kosovars killed during the months leading up to the Yugoslav withdrawal. Although exhumations were not evenly spread across Kosovo, exhumations were conducted in 24 of Kosovo's 29 municipalities. The total number of bodies exhumed and the number identified for each municipality are presented in Figure 2.

The exhumation data did not identify the date on which the victims had been killed, and so these data only have date identification when they match

²¹The results of the sensitivity analysis are covered in Appendix 2. We found that the substantive interpretation of the results is robust to the residual imprecision in dates due to reporting error or missing data.

Figure 2: Total number of bodies exhumed and percent identified, by municipality

Municipality	Total Exhumed	Percent Identified
Missing place	4	0.0%
Decani	54	9.3%
Dakovica	388	33.5%
Glogovac	421	39.4%
Gnjilane	54	83.3%
Dragas	1	0.0%
Istok	208	40.4%
Kacanik	142	69.0%
Klina	24	41.7%
Kosovo Polje	11	54.5%
Kamenica	8	100.0%
Mitrovica	149	50.3%
Lipljan	91	92.3%
Obilic	5	100.0%
Orahovac	368	40.8%
Pec	312	62.5%
Podujevo	90	72.2%
Pristina	357	21.0%
Prizren	510	21.6%
Srbica	343	64.1%
Stimlje	24	75.0%
Suva Reka	371	50.1%
Urosevac	22	77.3%
Vitina	8	100.0%
Vucitrn	246	61.0%
Total	4 211	45.4%

to victims in another data system (see Section 5). The place of the exhumation may or may not have been the place in which the victim was killed. Identifications were made carefully, and so the exhumation data were an especially important source to check for repetition of the same name. Many people in Kosovo have similar surnames, and it can be difficult to distinguish between people by last name alone.²²

2.3. Human Rights Watch (HRW)

From March to June 1999, HRW interviewed refugees as they left Kosovo. Of all the interviewees who gave statements to HRW, 25% were interviewed as they

²²The exhumation data provided a basic early reference for the matching issues we would encounter later. We thought initially that the names in the exhumation data were unique. In the end, while this did not prove true, the exhumation data still had the best record of identification of victims by name.

crossed the border into Albania or when they had settled in refugee camps or private homes; 11% were interviewed in Macedonia, and 3% in Montenegro.²³

From June through December 1999, HRW conducted interviews in Kosovo; 60% of the interviews given to HRW were conducted in Kosovo. The geographic regions within Kosovo were selected based on refugee reports of mass human rights violations and on reports of mass violations from sources other than refugees. Interviewees were selected for their knowledge of specific abuses inside the province. Interviews were conducted in the municipalities of Decani, Djakovica, Glogovac, Gnjilane, Istok, Kacanik, Kamenica, Klina, Kosovo Polje, Lipljan, Mitrovica, Orahovac, Pec, Podujevo, Pristina, Prizren, Orahovac, Suva Reka, Srbica, and Vucitrn.

All interviews were conducted to elicit open narratives of what the interviewee had seen. Standardized questionnaires were not used (HRW 2001). Despite not having used a standardized questionnaire, the interviews were rich sources of information about killings. They were coded and entered into a database. Coding for the present study was independent of the original HRW database and the statistical work presented earlier in HRW (2001).

2.4. Organization for Security and Cooperation in Europe (OSCE)

The OSCE Kosovo Verification Mission (OSCE-KVM) collected 1 837 interviews which mention one or more killings. The statements were taken from March through June 1999. The interviews were conducted in more than 90 distinct locations in Albania (37% of the interviews) and at least six locations in Macedonia (61% of the interviews). There was a small number of interviews (22) for which the place of interview was not noted. No information was gathered in Kosovo itself. OSCE-KVM interviewers opened offices in central locations near refugee gathering points (mostly camps), and interviewees came to give statements. The OSCE informed potential interviewees of the project through local non-governmental organizations, announcements in the press, and contact with local clinics or hospitals. Most of the interviews (over 80%) were conducted in refugee camps; the remainder of the interviews were collected in public gathering spaces or private homes.

OSCE-KVM used standardized interview forms similar to those used by ABA/CEELI. The information was then entered into a database, also similar to that used by the ABA. For our study, the data were independently recoded, as we did for HRW. The semi-structured OSCE interviews were reformatted to be compatible with the format we developed for use with the ABA/CEELI data.

3. Initial data editing

Although the data sets were all carefully compiled by each of the collecting organizations, considerable effort was required to standardize the data to formats that permitted us to determine which records identified the same victims. Two rounds of data editing were done. In the first round, we prepared the data to be matched. In the second round, additional edits refined the data and finalized the matches. This section describes the initial editing. Section 5 describes the final edits.

²³The percentages do not sum to 100% due to rounding.

3.1. Geographic coding

All places identified by interviewees were coded to specific geographic locations. Before matching, all the several geographic systems were made to agree with a single coding scheme. A coding scheme uses a *list* of place names. Since many places have the same name, a place list is not uniquely identified by names. Instead, a *code* is assigned to each distinct place. The codes were mapped to the latitude and longitude of the place to which they referred.

We began with the geographic structure described in Ball (2000) and ABA/AAAS (2000), using 29 municipalities. These structures omitted many places introduced in the new data acquired for the present study. The place list available at the online Humanitarian Community Information Centre (HCIC) linked place names to grid positions on a detailed atlas. The HCIC list was used to standardize place names.²⁴

All place codes were coded for latitude and longitude. A first pass used the U.S. National Imaging and Mapping Agency's (NIMA) Populated Place Locations list.²⁵ The NIMA list includes latitude and longitude. The NIMA list was linked to the HCIC list using place names. When names were ambiguous, we hand-linked the codes using municipality names and checking places on the HCIC map and a commercial map.²⁶ Using the HCIC list and map, as well as a commercial map, we developed computer routines that confirmed every place code's latitude and longitude against the grid coordinates in the HCIC map. Locations which did not fall in their grid coordinate were hand-plotted and rechecked.

Several cities and villages have the same names as municipalities. Given one of these names, it was not always possible to determine whether the municipality or the village was being described. Sometimes, too, the same place name occurred in more than one municipality (e.g., Drenovac is a city or village name in four municipalities: Orahovac, Decani, Pristina, and Klina). Finally, there were cases where no place coding could be assigned (e.g., "in the mountains").

Distances between locations were calculated using their latitude and longitude.²⁷ These distances were used to determine whether witnesses' conflicting reports of locations plausibly referred to the same place. Locations less than 10 kilometers distant from each other were routinely treated as the same location.²⁸

3.2. Name and gender editing

We consulted with native Albanians and several Internet-accessible Albanian name indices in order to help interpret the names reported in the data sources.

²⁴See www.reliefweb.int/hcic/ as of 10 October 2001. Note that the HCIC list includes the municipality of Malisevo which did not exist during the first two quarters of 1999. During the time of the conflict, Malisevo was part of four other municipalities.

²⁵See the NIMA GEOnet Names Server (GNS), found at <http://gnpswww.nima.mil/geonames/GNS/index.jsp> as of 3 January 2002.

²⁶Interestingly, we found more than 50 locations in the NIMA list for which the latitude and longitude were 25 or more km away from their plotted positions on several maps. When this occurred, the NIMA coordinates were rejected by our grid-square check which compared latitude/longitude positions against grid coordinates in the HCIC maps.

²⁷We used Haversine's Formula to calculate distances; see, e.g., <http://mathforum.org/dr.math/problems/longandlat.html>.

²⁸More distant locations were occasionally treated as the same; this occurred when far-apart places had the same name and might have been confused either by the witnesses or by the data coders. See Section 5.4 for examples.

Common misspellings of first and last names were corrected. First and last name reversals were detected and corrected either before or during matching. Some of the spellings were phonetic, having been recorded by individuals who did not speak Albanian, and others were obvious data entry errors.

Gender was given directly by the interviewee or it was coded from the first name (when a first name had been given). First names were cross-checked to be sure that the same first name was always assigned the same gender.²⁹

A search was made for identifiable Serb victims. Some of these were obvious, e.g., a designation such as “Serb Commander.” Others were identified by checking against a list of common first and last names for Serbs.³⁰ A total of 30 Serbs, identified by reference to the name lists, were dropped from the estimates.³¹

3.3. Date of death formatting

Data edits were performed to correct confusion caused by differences in the order in which day and month conventionally are entered by Europeans (day, month) and Americans (month, day). Other records had dates of death with out-of-range year values (e.g., “1990” and “2999” which were both reset to 1999). After editing, all dates were standardized to the ISO YYYY-MM-DD format.

Although labeled “date of death,” interview reports usually were a mixture of actual remembered incident dates and dates when bodies were seen. Therefore, the date given could have been later than the day that the death actually occurred.

When the original interviews were entered into the databases, the precision of the date information was coded as “exact,” “approximate,” “imprecise,” or “unknown.” The precision coding corresponds roughly to the degree of precision defined to the day, week, or month of the event, or no precision. As a result of matching records to other records, multiple dates were sometimes available for each record. The precision coding was used to select the “best” date, as described in subsection 5.2.³²

4. Initial data matching

It was our working hypothesis that each data system (except the exhumation data) could contain many duplicated reports of the same victim’s death. These duplicates, of course, had to be found prior to doing any analysis. The problem of duplicate records was divided into four subtasks: intra- and inter-system matching for individuals, and intra- and inter-system matching for groups.

Each identifiable individual record was first compared to the rest of the identifiable individual records in its dataset of origin. This process is called

²⁹A reviewer noted that some first names may be used by people of different genders. Since gender played a relatively small part of our matching logic, this editing rule cannot have significantly affected our matching.

³⁰For some of the resources we employed, see <http://www.kabalarians.com/male/serb-m.htm> and <http://toybox.flickr.com/onomastikon/Europe-Eastern/Former-Yugoslavia/Serbia/Surnames.htm>.

³¹Logically, an equally tiny fraction of the anonymous deaths would also be Serb victims. These numbers would be too small to affect the interpretation of our estimates. We have therefore ignored their effect.

³²As already noted, Appendix 2 examines the robustness that exists relative to known weaknesses in date reporting.

“intra-system matching” or “self-matching” because it matches a single data source to itself.³³

After each data source’s individual records were self-matched, the reports from each source were matched to those of every other source. We called the process “inter-system matching.” Named individuals in each system were compared to named individuals in every other system and matches were recorded. The primary variables employed to check for duplicates were name (first, last) and geographic location. Other information, such as date of death, age, or gender, were also considered in order to confirm or reject possible matches.

The same process of intra- and inter-system matching was then repeated for anonymous group data. Location and time were the two key variables used to bring potentially duplicative reports of anonymous killings together. Conceptually, reports of anonymous deaths could contain individuals who were identified by name in other reports. We found several ways to combine the individual and group data as described below. The approaches we considered provide a credible set of lower bounds on the total number of killings, which are described in Section 6. In Appendix 2, modeling approaches are described to improve on these lower bounds.

Although the matching process was computer-assisted, the decisions were made by people. Matching was done by a small team of carefully-trained coders supervised by one of the authors. During the second round of matching described in Section 5, other steps were taken to measure the quality of the matching.

4.1. Variables used for intra-system matching of individual records

The primary keys for identifying duplicate reports of the same individuals were last and first names. There were many common misspellings (or erroneous transcriptions) of certain names, including the following: Hysen, Hyseni, Iseni; Ymeraj, Imeraj; Krasniqi, Krasnici, Krasniki; Kuci, Kuki, Quki, Quci; Cake, Caka, Cakaj; and Loki, Loku. In general, “H” as the first letter was often omitted in the transcriptions of the interviews.

Last names beginning with certain letters often occurred in different combinations: K could be C or Q; Y and I were often confused; and Xh could be Gj or Sh. All of these combinations were routinely compared. In addition to the routine rules, less regular but obvious misspellings were sought involving similar-sounding letters in the middle of names. Over time, the coders became familiar with the variety of possible spellings for different names.

When records contained similar names, they were considered to be matches unless other information clearly distinguished them from each other. Information that might weigh against matching two records included the age and sex of the victims, and the dates and places of death. Ages were rarely useful since they were frequently approximate. However, when the ages differed by 20 or more years, it was assumed that the records were different; we theorized that two identically named victims of different ages were likely to be relatives. Information on the sex of the victim rarely differed, unless the first names did as well, because in earlier data editing stages, first names had been used to differentiate between the sexes.

³³The exhumation data were not checked for duplicates in this round because the records were assumed to be unique. In Section 5, we describe how this assumption was later changed, and some names were found to be duplicated.

Place of death was the most important additional information used to evaluate name matches. Records for which the names matched and the ages differed by less than 20 years were considered to be matched when the places were identical. In particular, if the places were in the same municipality or in adjoining municipalities, they were treated as a match.

4.2. Basic approach of intra-system matching of individual records

The record linkage literature offers many approaches for matching individuals in lists.³⁴ The complexity of the data described here, however, required us to use manual methods. As we learned from and edited the data, we were able to increase the automation of the process. Due to resource limitations, we were not able to quantify all the errors in the matching process such as was done in Belin and Rubin (1995). We relied instead on repeated rounds of computer-assisted matching that concluded with very few matches being found in the final passes of the last round. To minimize the impact of residual matching errors, we tried in all cases to err in the direction of too many matches, which would tend to decrease the estimates.

Within each dataset, records were matched by printing paper lists in a spreadsheet format. The lists were sorted on several variables: by place, then in a subsequent pass by last name–first name, then in another pass by first name–last name.³⁵ Although matchable records may sort to positions quite distant in one sort, they would appear close together in at least one of the other sort orders. For example, two records with identical first and last names would appear together on both name sorts. Two records with differently spelled last names but identical first names would appear together when sorted by first name. When found together the varying last names would be readily identifiable.

Using the multiple-sorting (or multiple-blocking) technique, coders identified blocks of records that were the same. The record with the best data (the best name spelling and most precise date and place location) was chosen. All the record numbers were grouped in a “circuit” and preserved for later analysis of the most likely date (as described in Section 5) for the final record.³⁶ This record was called the “key” record.³⁷

The technique changed as confidence in the coders increased. In the first part, three coders independently self-matched all the HRW data and the portion of the ABA data that consisted of the interviews conducted in Kosovo. After the HRW and the ABA self-matches were completed, the approach seemed sufficiently routine so that one coder could achieve results of almost as high a reliability as two or three. Therefore, only one coder self-matched the OSCE data and the second portion of the ABA data.

Although the process was routine, the match results were complex because they involved collapsing an indefinite and unpredictable number of records into one “key” record. Although errors were not always obvious, the internal consistency of the collapsed records could be assessed (see below).

For the HRW and ABA self-matches, the individual victims who were matched differently by the two coders were identified. The coders discussed the differ-

³⁴Two linkage conferences (1985 and 1997) were co-organized by one of the authors of the present study and provide access to this rich literature

³⁵See Scheuren (e.g., 1985) for more on the statistical properties of multiple blocking methods.

³⁶The use of the term “circuit” in Asher and Ball (2001) is different, but the analytic issues are similar.

³⁷See Appendix 2 for the use made of this information in sensitivity analysis.

ences and jointly developed a consensus list of matches.³⁸ Inter-coder agreement varied from between 75% and 90%. All coders' differences were reviewed and resolved by an author of this report.

For all self-matches, the structure of the match decisions was evaluated for its plausibility. In particular, for each system, each circuit containing two or more records was evaluated, comparing the key match fields for agreement. For each source, for each circuit containing more than one record, all the records were compared to the key record. For each of three fields (surname, date, and place), a count of how many records agreed with the key record was made.

Surnames The proportion of records within circuits which matched within the first 3 and 7 characters was tabulated. This comparison was done only for records with names at least 3 or 7 characters long. The last-name matches tended to be very close: considering the three datasets, between 85% and 95% of the matched records shared at minimum the first three letters. The records that do not share the first three letters of the last name are not necessarily mismatched. Arguably, the name-similarity index measures the rate of spelling or transcription variation among the original interviewers. We interpret the high rate of agreement as an indication that the names were most often matched to other similar names.

Dates The proximity in time of the self-matches was also considered. Between 79% and 84% of the precise dates on records matched in self matching were within one week of one another. Dates coded as approximate were not compared.

Locations With precise location codes, individuals in the self-matches had identical codes between 66% (OSCE) and 99% (HRW) of the time; by expanding the place comparison to places within 25 km of each other, an additional 28% of the OSCE matched records agreed on the place coding, raising the place-agreement rate to 94%.

Similar names, dates and places that do not match exactly may reflect differences in the witnesses' recollections — they are not necessarily coding errors. However, having high agreement on these measures suggests that records that had similar names, and that dates and places were appropriately matched when they were close in time or space. Records with dissimilarities were less often matched.

Our results from these initial intra-system matches of named individuals reduced by about one-third the number of records that went on to later steps. The duplicates found afforded us a way of improving the reporting of dates and learning more about Albanian name variations. Although this round did not find all the duplicates, it provided a foundation on which to begin the inter-system comparisons described in subsection 4.3.

As we will discuss in Section 5, later steps in the process made it possible to detect most of the remaining duplicates. There may have been a small amount of "overmatching," however, which would not be detectable in later steps and, hence might be a cause for concern. Overmatching can occur when records for two distinct individuals are linked in the self-matching step. There is no way to fix overmatching errors later in the process since the record for one of the individuals is not available. Overmatching has the effect of reducing the total

³⁸The individual coders' decisions were preserved for use in sensitivity analysis.

number of killings, and hence it tends to lead to underestimates of the total deaths.³⁹

4.3. Inter-system matching of individual records

Inter-system matching consisted of comparing each individual record in one data source (the “source”) with all of the possible matches in another data source (the “target”). As with the intra-system matching the work was all done manually. The possible records in the target database included all the individuals whose names began with the same letter (or one of the sound-alike letters described above). The spreadsheet approach used in the self-matching was replaced by custom software designed to facilitate matching decisions.⁴⁰

Each source dataset was divided into subsets. Each subset (called a “slice”) was a proportionally stratified (on date of death and region) random sample of the whole. Slices were designed to represent approximately one half-day’s work. Whenever a pair of coders finished the same slice, a supervisor compared their results and reviewed all disagreements with both coders. In this way, different coding styles were brought together, and subtle differences in coding practice were detected and eliminated. Coders were given one or more training slices, and their work was not accepted until they reached at least 90% agreement with the standard answers for the training slices. Coders whose work had low rates of agreement with the training slices were identified and they received additional training.

The unduplicated “key” records remaining after the self-matching step were the inputs to the inter-system matching. The match comparisons were made using the same rules as in subsection 4.1. Each record in each source was exposed to every record in each of the other three sources. The comparisons were not symmetrical. That is, if source A were compared to source B, source B was not then compared to source A (although for additional redundancy, occasional symmetric comparisons were made). Since at least two (and often more) coders made match decisions for each comparison, there are more than twice as many decisions as possible comparisons. Altogether there were 18 462 match decisions made, and the raw proportion of agreement overall for the decisions was 94%.

Even though the proportion of agreement among coders was quite high, there were some disagreements. An author of this study reviewed every disagreement among the coders and made the final decision.

As previously mentioned, the interviews taken by the ABA outside Kosovo were handled differently than the other sources. While the self-matched steps for this portion of the data were identical to those described in subsection 4.2, the inter-system matching was done after the other systems had been matched and merged. In all other respects, though, the steps were the same. The matches were performed independently by two different coders, and their decisions were compared. The inter-rater proportion of agreement was relatively lower for this portion of the matches (approximately 80%). However, as with all the matches, all disagreements were reviewed and resolved.

³⁹As noted elsewhere, when errors were unavoidable, we have elected to err in a direction that would lead to understating the number of killings.

⁴⁰The matching application was an HTML client which the coders accessed using web browsers. The application itself was written in PHP and MySQL running on a local intranet. Data were processed using Python and SQL, and the statistics and graphs were generated using Stata. The graphs were edited in Adobe Illustrator, and the text typeset using \LaTeX .

The initial inter-system matching noted areas in the data where additional checking was needed, notably for the exhumation data, but in other places as well. Interestingly, as with the self-matching round, the number of deaths was again reduced by about one third. In Section 5, we describe how we used what we learned to make the final match decisions for individual deaths.

4.4. Intra- and inter-system handling of anonymous group records

All of the matching described so far has compared named individual victims to other named victims. The sources, however, describe approximately seven times more victims anonymously in groups than individually by name. By its nature, anonymous group reporting has less information available for determining whether group reports uniquely match each other. After substantial analysis, we found that it is not possible to match individuals to groups within data systems, nor to match groups to other groups across data systems with sufficient reliability to model the missing information, as described in Appendix 2.

Nonetheless, there are several benefits from matching groups to each other and to individuals. First, matching records of all kinds provides additional information about the precision (or possible imprecision) of date and place identifications. If the most likely match for a given record (based on qualitative information in the notes fields, or a match by place while the date is different) is another record that is distant in time or space, this implies that one of the two records has imprecise date or place information. Second, by matching groups and individuals within systems, a basic lower bound for the number of killings missing from the identified list can be estimated.

The matching process for groups was as follows.

First, we self-matched group reports within each data source. Anonymous groups were collapsed within specific places and dates. That is, groups who were identified as killed in a particular location within approximately 10 days of each other were considered duplicates; wider date ranges were collapsed when the more distant dates were imprecise, or when narrative information available in the interview notes suggested that the incidents were the same. In nearly all village-level locations, there were very few groups, and they clustered at particular dates. After the group matches were made, all groups with more than one matching record were evaluated. Only 15 had dates spread more widely than 14 days apart. The “best” date was chosen using the same logic used for the individuals who were self-matched.

Second, individuals were matched to groups within each data system. The matching was done primarily by location and date, although in many cases additional information about the group aided the matching. Some otherwise unidentified records were noted “brother of victim 27,” or a group might be documented as “the X family.” Matching individuals to groups increased the information about the individual killings in some cases. For example, if the report of the individual killing did not have a specific date on which the killing occurred, an anonymous (group) report could provide a date. Even if the individual report contained date information, the group report was used to confirm the original.⁴¹

Third, individuals were matched to groups in other data sources. This process provided the same information-leveraging benefits described above.

⁴¹The additional dates were used in the evaluation of date precision. See Appendix 2.

Fourth, the group counts provide a method for examining the number of deaths that were unreported as individual records. With a count of the unique groups, we can evaluate whether the pattern of killings that were not reported as individuals is distributed uniformly or non-uniformly over space and time. This question is examined in detail in Appendix 2.

4.5. Merging anonymous group killings across systems

Approximately five times more victims were reported to the interviewing projects as members of anonymous groups than were reported by name.⁴² In this section, we describe how we use this information to explore the number of victims who were not identified by name.

After self-matching the groups, we determined that the level of duplication in the group data was high: the total reduction from the reported data to the unduplicated data was more than a factor of five. The unduplicated group records resulting from the match process were composed of one or several group records. Thus each record contained a distribution of group sizes that could be used to estimate its “best” size. Three sizes were estimated for each group. For an estimated minimum size, we took the smallest reported group size that was greater than the number of individuals matched to the group (within that data system). The median size was the median of all the sizes greater than the number of individuals matched to the group. The maximum size was the greatest reported size of any group in the circuit.

Sums over the group records by time and space are unduplicated within each data system. However, group counts cannot be directly summed across data systems because the group data were not matched across systems. We unduplicated the group counts by comparing the sum of group counts (using the minimum, median, and maximum counts) across the three systems. We chose the maximum of the three systems at each point, thereby assuming that the other two systems were completely matched to the largest one. This is the most conservative possible merging rule.

The resulting data are the estimated total anonymous killings over time and space, and they are used to evaluate the completeness of the unique individual records (see Section 6.3).

5. Refinements in data editing and matching

Once all the initial intra- and inter-system matching and editing decisions had been applied to the raw data, the combined dataset could be reviewed using information accumulated in the previous rounds. The review focused on match inconsistencies, on choosing the best variable to represent the entire set of matched records, on imputing for missing dates, on reassessing the exhumation data, on a general cleanup of spelling inconsistencies, and on other errors that were found in our initial work.

5.1. Inconsistent matches

Because of the way we matched targets to sources in the initial match, it is possible for records to match in inconsistent patterns across datasets. For example,

⁴²As previously mentioned, records on an additional 18 000 group deaths were available, but were not processed due to lack of resources.

consider three pairwise match decisions: $A1 \rightarrow B1$, $C1 \rightarrow A1$, and $B1 \rightarrow C2$. In this example, record $A1$ (from dataset A) was compared to dataset B and matched to record $B1$. In a separate match, record $C1$ was compared to dataset A and matched to record $A1$. In a third match, record $B1$ was compared to dataset C and matched to record $C2$.

When merged, records $A1$ and $B1$ seem to match both $C1$ and $C2$. If dataset C was properly self-matched, this is a contradiction. In total, there were 298 records like $C1$ and $C2$ were found. The solution was clear: in each of the pairs of overmatches, the matching pattern of one of the records had to be modified.

All of these contradictions were reviewed and resolved. There are two ways to resolve them: One possibility was that $C1$ and $C2$ should have been matched in the intra-system matching. In this case, one of the two records can simply be dropped from the analysis.⁴³ Eighty records were resolved this way. The second possibility is that either $C1$ or $C2$ was matched in error and should be unmatched; the remaining 218 overmatched records were resolved by separating them. In some cases, if the records were matched in error, there may have been a true match which was obscured by the erroneous match. These potentially missed matches were sought in the final editing step (see Section 5.4).

5.2. Choosing the “best” dates

Each record in the final dataset was a combination of all the records that matched to it. This combined record potentially has many dates to choose from. The selection of the “best” date proceeded as follows. First, we aggregated the matched records by date. Usually in a set of matched records, one date is much more common than other dates. We chose this date first, if possible. Among the remaining dates, we chose the date with the highest level of precision (defined by the most precise record within that circuit). If there was more than one date with that level of precision, we chose the date with the largest number of constituent records in the circuit. When there were ties (dates with the same precision and number of constituent records), we chose the earlier date. We reasoned that later dates were more likely the result of people having seen the bodies after the killing, rather than having seen the killing itself.

For 204 records with no date information, a “hot deck” procedure was employed to assign a date at random from a “donor” record that was geographically closest to the location of the record with the missing date.⁴⁴ Three dates were randomly selected from the potential donors, and copies of the original record were created with each of the sampled dates. The new records were each assigned a weight of 0.33.⁴⁵

⁴³Dropping a record means adding it to the circuit of matching records in the self-match. In this way, information in the “dropped” record is still available to the “kept” record.

⁴⁴“Hot decking” (e.g., Ford 1983) imputes missing information to a record by finding another record—a “donor” record—with non-missing information which is identical, or nearly so, in all other respects. Here we used geographic proximity to select the donor. To reduce the Monte Carlo error introduced by the imputations we first created potential “donor” groups of 60 records each, (in 85% of the 457 villages identified as locations of one or more killings we were able to find 60 or more valid records available within 10 km).

⁴⁵Again, as part of dampening the imputation error, dates were imputed to records three times, with a weight of 0.33 assigned to each resulting record. The motivation for this use of multiple imputation is set out in Oh and Scheuren (1983). We are not using multiple imputation in the sense described by Rubin (1987). In particular, our goal is not to try to calculate variances. The residual uncertainty arising from the imputation process is almost certainly small (see, e.g., Converse and

Some of the hot-decked dates were outside the date range of interest to this study (20 March–22 June). Those records (and their partial weights) were therefore excluded from the analysis.

The sensitivity of the estimates to the “best” date choice and the imputation are analyzed in Appendix 2. As Appendix 2 shows, the main statistical results are robust against uncertainties caused either by date inconsistencies or because in a small fraction of the cases, an imputation had to be made.

5.3. Exhumation data

In the initial editing and matching steps described in Sections 2 through 4 we had assumed that the exhumation data were unique by definition. That is, we assumed that there were no cases in which different remains were identified as the same victim. At this stage, we examined that assumption critically. Records with identical names, in which the place of death was the same village, and the ages were identical (or missing) were matched. However, even if the names were identical, but the ages were recorded and distinct, the records were not merged.

In all, 232 named exhumation records were self-matched in this way. This resulted in a net decrease of the total named, individual exhumation records by this number. We increased the number of anonymous deaths by the same amount with the reasoning that the exhumation reports documented two bodies, but the bodies had other forms of indirect identification that led to duplicate registration of the same individual.

5.4. Other edits of the final matches

When the entire dataset had been compiled, one of the authors spent five days reviewing it. In this process, she identified 329 match modifications, as well as 400 corrections to names, dates and places. The process was simple: sort the list by a key field (last name, first name, or place), and then scan the list looking for repetitions.⁴⁶

The 400 corrections were primarily corrections to variable name spellings. For example, one victim’s surname was “Pashi,” a clear misspelling of “Gashi.” Special attention was given to the first names and surnames that occurred only once, on the theory that these were likely misspellings.

At this stage, names, dates, and places that were clearly inconsistent across data systems were reconciled. For example, there were cases in which an entire family had been identified in one location in the exhumation data, but were reported by another source in an entirely different municipality. Checking the locations, we determined that these were not simply case of miscoding. We believe that they represent cases in which the bodies were buried in locations distant from the killings.

One of the most striking examples of this sort included the bodies of seven members of one family who were exhumed in Donja Sipasnica. Five of them were reported to the ABA/CEELI project as having been killed in Susica, 70

Scheuren 2001). Nonetheless, there is some possibility for residual bias, so the step of conducting sensitivity analyses (as in Appendix 2) seemed warranted. For this reason, we have also described all the significance testing and confidence intervals calculated in Appendix 2 and included in the body of the report as “nominal.”

⁴⁶In the cases of commonly misspelled first and last names, the list was arranged so that records with the common variant spellings appeared next to each other.

km distant. The remaining two family members were not identified in any of the interview-based datasets. All seven people were assigned to Susica. When records disagreed in the exhumations and the other datasets disagreed, the location from the interviews was used in preference to the exhumation location.

Some of the other checks were more complex. For example, we discovered additional matches which had been missed because they were coded to locations quite distant from one another. The coders did not originally match the records because the distance measure indicated that the places of death were far apart. When we reviewed the list, we discovered that the villages were in different municipalities but that they had the same names. For example, the villages of Pogradec (in Gnjilane) and Pogradec (in Klina) were confused, and different reports about the same victim were coded variously to the two locations. The coders rejected the match because the two villages are 83 km distant from each other. We found 5 cases of this sort.

Some records required more significant modifications. Once the complete name corrections were made, we found 153 records that should have been matched in the self-matching stages. Finally, 176 new matches were found after the editing. Each of these records was merged with its new links, increasing the number of sources in which they were found.

Although undetected duplicate records may still exist, we believe that there are now very few. After we finished the final review, we checked how many times we had missed a match that we should have caught using our initial matching rules. We found 97 new matches that theoretically could have been found under the original matching rules. This represents an error rate in our initial process of less than 2%. This low error is the reason we believe that after the final matching round described in this section, any remaining errors are negligible.

6. Final summary of data results

To summarize the results of the data management steps, we will look at the results achieved source-by-source for individual records. Second, we examine the results obtained by linkages across sources, again for individual killings. Third, we examine ways to combine anonymous killings with individual deaths.

6.1. Data handling by source for individual records

Earlier, in Figure 1 we provided counts of the inputs we obtained from each source. We now can summarize the number of killings of named individuals that result after both the initial and final intra-system matching steps. These results are shown in Figure 3.

The interview sources were reduced by 29%–51%, while the exhumation data were reduced by 11%. What Figure 3 does not show is the extent to which the matching and editing process improved the quality of information in all the data sources by leveraging information across matching records.

6.2. Data handling across sources for named, individual records

Another way we can summarize the results of our data handling is to look at the total number of individual deaths from all sources, after double counting has been eliminated. The number of unique individual records found in each

Figure 3: Individual counts from basic sources, gross total and net unduplicated counts

Dataset	Gross Individuals	Unduplicated Individuals
ABA/CEELI	2 800	1 528
EXH	2 155	1 910
HRW	966	685
OSCE	3 648	1 786

Figure 4: Number of individual victims of killing, by documentation status (including victims with imputed dates of death)

	ABA		EXH		OSCE		Total
	yes	no	yes	no	yes	no	
yes	27	32	42	123			
no	18	31	106	306			
yes	181	217	228	936			
no	177	845	1 131	n.a.			
Total							4 400

combination of matches is presented in Figure 4. It includes only records that had valid date information in the range 20 March to 22 June. Victims whose deaths occurred on dates before 20 March or after 22 June were not included.

The table indicates that of the total number of 4 400 individual deaths, relatively few victims were documented by three or four projects, as shown by the cells in the upper left. For example, only 27 victims were documented in all four data sources. This cell is at the upper left of the table, at the intersection of the “yes-yes” row and the “yes-yes” column.

Moving down and to the right, the cells show the values for progressively less frequently documented victims. For example, 1 131 victims were documented only in the exhumation data.⁴⁷ Figure 4 does not include an estimate for the “no-no-no-no” cell (shown as n.a.), that is, the number of people who were not individually documented by any of the four projects.

⁴⁷Victims with imputed dates are disproportionately in the cells with fewer matches. Records that had more matches had more opportunities to acquire date information, while more sparsely matched records had fewer opportunities to get date information. The way the imputations were done left some records with fractional values that are summed in the figure. The results were rounded to the nearest integer. For example, the “yes-yes-no-no” cell was rounded in this way from 176.66 to 177. The total reflects the rounded sum.

6.3. Evaluating the completeness of the individual data

The individual deaths must be underestimates. The “no-no-no” cell in Figure 4 above cannot be empty. There are several possible methods by which the number of killings that were not individually identified may be estimated. The anonymous group data provide the first indication that there is a substantial number of victims who were not documented among the named individuals.

The group estimate was compared to the individual estimate at each time and space point, as described in subsection 4.5. Again, taking the most conservative possible merging rule, we subtracted the sum of the individuals at each time-space point from the group sum at that point. This assumes that every documented individual was also documented as a member of an anonymous group. The result of the subtraction is a “net” group count, that is, the number of victims identified in anonymous groups that remain after all the fully identified individuals are removed. This can be interpreted as a minimum lower bound of the number of victims who were not documented as individuals. The minimum, median, and maximum net group counts are 2 755, 2 889, and 5 859, respectively.

When summed with the 4 400 individual victims, the group counts produce overall estimates ranging from 7 155 to 10 259. These values estimate the total number of documented victims. These estimates exclude victims who were not documented as groups or as individuals, and so these numbers still underestimate the total deaths. Other methods of estimating the total number of victims of killing are presented in Appendix 2.

Appendix 2: Statistical Methodology and Analysis

1. Introduction

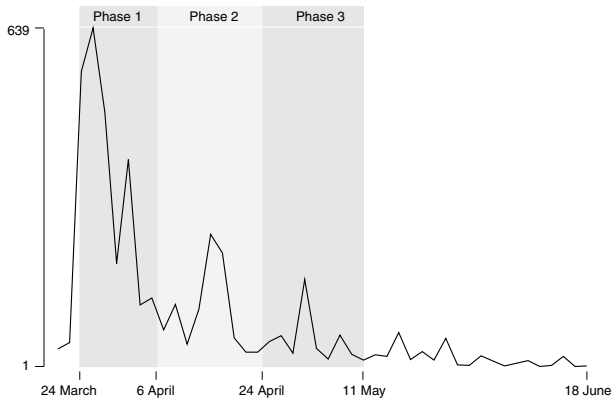
Appendix 1 of this study details the process by which a cross-classification table is created of counts of individual victims of killing in Kosovo during the period of March–June 1999. The total number of identified killings given in Appendix 1 is 4 400, and a range of estimates of the total number of killings based on documented killings of unidentified victims is given as 7 155 to 10 259. It is improbable that all killings were captured by the data collection process underlying these raw counts. For this reason, a suite of statistical methodologies is required to use the data described in Appendix 1 to estimate the most likely number of killings in Kosovo in March–June 1999. Appendix 2 describes, in detail, all of the statistical methodology required to produce the estimates used in the main body of this study and the logic used to choose the methodology.

The organizational structure of Appendix 2 is as follows. In Section 1.1, the limitations of the direct counts as a measure of total killings and the trends of killings over time and space are discussed. These limitations motivate the use of multiple systems estimation techniques to model the counts of killings over space and time. Sections 2.1 through 2.3 introduce several methods of multiple systems estimation modeling, and Section 2.4 discusses model selection procedures. Section 3 begins with an exploration into the validity for these data of the assumptions underlying the models described in Section 2. It continues into a collection of modeling procedures that both accounts for these assumptions and also results in a series of internally consistent estimates for different levels of temporal and spatial aggregation.⁴⁸

While this appendix mainly documents our thinking on ways to estimate deaths that were not reported, we also look at other modeling issues important to the hypotheses evaluated in the body of the study. Section 4 presents an analysis of the relationship between the killing counts and the NATO and KLA data. This appendix concludes, in Section 5, with a brief sensitivity analysis of the date of death reporting described in Appendix 1.

⁴⁸As a quality check on the estimate production process required for this study, software routines for all the estimation procedures discussed in Appendix 2 were independently created by Jana Asher using Splus 2000 and SAS Version 8 and Patrick Ball using Stata 7. The results were compared, and when there were differences, the routines were debugged until the results matched.

Figure 1: Documented killings over time



1.1. Limitations of direct observations

A direct estimate of killings documented in the four data sources used in this study is 4 400, and a direct interval estimate of the total number of killings is given as 7 155 to 10 259.⁴⁹ There is good reason to believe that these numbers do not represent an accurate count of the killings in Kosovo during this time period. These data were compiled from a collection of interview and exhumation data. Believing that all killings were documented by these sources assumes that all relevant bodies were exhumed and identified, or that all killings were witnessed and reported in the survivors' interviews, or that all killings were captured by at least one of these processes. This scenario is implausible.

Given that the data used to develop this study are incomplete, the question of how accurately they reflect the true patterns of killings over space and time arises. Figure 1 plots the 4 400 documented killings given in Figure 4 of Appendix 1 over time by two-day periods. Note that the characteristics of the estimated count time series presented in the main body of this study are clearly apparent in the time series of the raw counts given in Figure 1. The largest number of killings occur in Phase 1; the quantity declines sharply on 7 April, then rises again to a mid-April peak. After a decline to near zero 23-25 April, the series rises to several small peaks in early May.

This raw count series might be sufficient to substantiate the analysis made in the body of the report if it could be shown that the pattern over space and time of the "true" counts of killings in Kosovo during March–June 1999 is accurately reflected by the documented killings cross-classified in Figure 4 of Appendix 1. There is no way to directly compare the time series of the raw counts of killings to these "true" counts. We can, however, compare the group data counts described in Section 6.3 of Appendix 1 to the individual count data. As

⁴⁹The direct intervals are lower than they would have been had we had time to process 18 000 anonymous deaths reported on the ABA interviews done outside of Kosovo that we were unable to use. If we had been able to integrate these additional records, the directly observable lower bounds would have increased, bringing them even closer to the model estimate we chose.

the analysis of the net group data in Appendix 1 showed, there were many victims who were not documented as named individuals. If the distribution of the individual count data over space and time varies considerably from the distribution of the group data, it is likely that it could vary considerably from the distribution of the true number of killings as well.

A measure of the similarity of the distributions of the individual and group data is given by the absolute relative difference between the group and individual data counts:

$$\text{absolute relative difference} = \frac{|\text{group count} - \text{individual count}|}{\text{individual count}} \quad (1)$$

If the distributions over space and time for the individual and group counts are similar, we would expect the absolute relative differences defined in (1) to be constant, and the distribution of these absolute relative differences have a small standard deviation. In fact, if the absolute relative differences of the two-day regional counts are created, 114 of 192 are zero, indicating perfect agreement between the group and individual data.⁵⁰ The 78 remaining absolute relative differences, however, range from .01 to 48, with a median of .83, mean of 2.67, and standard deviation of 6.48. We conclude that the absolute relative differences are not constant, suggesting that the individual and group data counts by two-day period and region do not follow the same distribution. As a result, we must attempt to estimate the “true” counts of killings in order to support or contradict the hypotheses given in the main body of this study about the distribution of killings in Kosovo in March-June 1999. Section 2 presents the statistical technology required to do just that.

2. Methodological background

Multiple systems estimation, or multiple recapture estimation, has a long history that originates in the estimation of counts in wildlife populations. Basic capture-recapture modeling goes back to at least Peterson (1896) and has been used in a diverse set of fields, including epidemiology (see International Working Group, 1995a, 1995b), general population counts (see Sekar and Deming, 1949; also Hogan, 1993, and Anderson and Fienberg, 2001a), and, in the area of human rights, for estimation of the number of killings during the violence in Guatemala between 1960 and 1996 (Ball, 2000b).

2.1. Dual systems estimation

The simplest version of this methodology, dual systems estimation, occurs when two separately collected but incomplete lists of the members of a population are available. Dual systems estimation relies on three statistical assumptions. The first assumption is independence of the lists, which is described statistically as follows:

$$\Pr(\text{record } i \text{ on list } L_1 \mid \text{record } i \text{ on list } L_2) = \Pr(\text{record } i \text{ on list } L_1).$$

⁵⁰When the total of the group data was smaller than the total of the individual data, the relative difference was set to zero.

In other words, if the lists are independent, the presence of a person on one list does not predict the presence or absence of that person on the second list. The second assumption is homogeneity of the population being captured; in other words, that each member of the population has an identical capture probability for a given list. The final assumption is error-free matching across the lists.

If the three conditions described above are met, then dual systems estimation is a viable estimation technique for a total population count. Let x_{ij} , $i, j \in \{0, 1\}$, represent a count in a two-way cross-classification table of population counts for two lists, as follows:

		List 2		
		In	Out	Total
List	In	x_{11}	x_{10}	x_{1+}
	Out	x_{01}	x_{00}	x_{0+}
Total		x_{+1}	x_{+0}	$x_{++} = N$

Here x_{00} represents the count of members of the population that are not captured by either list, and “+” represents the summation of the counts over the lists (e.g., $x_{1+} = x_{11} + x_{10}$; $x_{+1} = x_{01} + x_{11}$). The goal is to estimate N , the total count of members of the population, and the traditional estimator for N is simply

$$\hat{N} = x_{10} + x_{01} + x_{11} + \left\lfloor \frac{x_{10}x_{01}}{x_{11}} \right\rfloor \quad (2)$$

where $\left\lfloor \frac{x_{10}x_{01}}{x_{11}} \right\rfloor$ is the integer produced by rounding $\frac{x_{10}x_{01}}{x_{11}}$. It can be shown that the estimator of \hat{N} given by (2) is derived by assuming the following identity holds:

$$\frac{x_{10}}{x_{00}} = \frac{x_{11}}{x_{01}}. \quad (3)$$

A problem arises in dual systems estimation if the underlying assumptions of independence of lists and homogeneity of capture probabilities are not valid. In that case, several alternative methods of estimation have been developed, but all rely on the addition of at least one more list to the system.

2.2. Triple systems estimation

While there is basically only one method of estimation in dual systems estimation, the addition of a list allows greater flexibility of modeling for triple systems estimation. In this subsection, several methods of triple systems estimation are explored. The first, due to Marks, Seltzer, and Krótki (1974), uses a combination of dual system estimators to determine \hat{N} . The second, taken from Bishop, Fienberg, and Holland (1975), is based on loglinear models. For completeness, triple systems estimation via full and quasi-symmetry models is briefly discussed. The underlying data structure is the same for all of these methods; triple systems estimation relies on a three-way cross-classification table of population counts formed as follows:

		List 3 In					List 3 Out		
		List 2					List 2		
		In	Out				In	Out	
List 1	In	x_{111}	x_{101}	x_{1+1}	List 1	In	x_{110}	x_{100}	x_{1+0}
	Out	x_{011}	x_{001}	x_{0+1}		Out	x_{010}	x_{000}	x_{0+0}
		x_{+11}	x_{+01}	x_{++1}			x_{+10}	x_{+00}	x_{++0}

In this notation, x_{000} is the count of those members of the population that are not included on any of the three lists, while each of the other seven counts are observable. Summing these seven counts as $n = x_{111} + x_{101} + x_{011} + x_{001} + x_{110} + x_{100} + x_{010}$ provides a minimum count for the population total. Finally, the unobserved total is $\hat{N} = n + x_{000}$.

Marks, Seltzer, and Krótki

Marks, Seltzer, and Krótki (1974) start by noting that within three systems, there are six possible dual system estimators: three created by taking only the records that exist within two of the three lists:

$$\hat{m}_{000} = \frac{x_{100}x_{010}}{x_{110}} \tag{4}$$

$$\hat{m}_{000} = \frac{x_{100}x_{001}}{x_{101}} \tag{5}$$

$$\hat{m}_{000} = \frac{x_{010}x_{001}}{x_{011}} \tag{6}$$

and three created by collapsing across two of the lists, thereby using all of the data to create the dual system estimate:

$$\hat{m}_{000} = \frac{x_{110}x_{001}}{x_{111}} \tag{7}$$

$$\hat{m}_{000} = \frac{x_{101}x_{010}}{x_{111}} \tag{8}$$

$$\hat{m}_{000} = \frac{x_{011}x_{100}}{x_{111}} \tag{9}$$

They go on to show that an overall estimate of the missing cell in the triple systems problem can be obtained by combining all six dual system estimators (4-6) and (7-9). The resulting equation for \hat{N} is as follows:

$$\hat{N} = n + \frac{x_{100}x_{010} + x_{100}x_{001} + x_{010}x_{001} + x_{110}x_{001} + x_{101}x_{010} + x_{011}x_{100}}{x_{110} + x_{101} + x_{011} + 3x_{111}} \tag{10}$$

Marks, Seltzer, and Krótki then suggest that (7-9) are more susceptible to list dependence than (4-6), due to the fact that in each of equations (4-6), the assumption of independence applies only to records that are reported in the two sources used in the estimator but are not reported in the third. This minor relaxation of the independence assumption makes the following estimate of \hat{N} more robust to dependency than (10):

$$\hat{N} = n + \frac{x_{100}x_{010} + x_{100}x_{001} + x_{010}x_{001}}{x_{110} + x_{101} + x_{011}} \tag{11}$$

Bishop, Fienberg, and Holland

An alternative triple systems approach is estimation of \hat{N} through loglinear modeling (e.g., Bishop, Fienberg, and Holland, 1975). In some data collection settings, loglinear modeling can better account for dependency than (11), as well as allow for reasonable sample standard error calculations and fit statistics. By creating a loglinear representation for the expected counts, $m_{ijk} = E(x_{ijk})$, a model for the observable cells is formed that is then projected to the unobserved cell. The form of this model is as follows:

$$\log(m_{ijk}) = u + u_{1(i)} + u_{2(j)} + u_{3(k)} + u_{12(ij)} + u_{13(ik)} + u_{23(jk)} \quad (12)$$

with constraints on the u -terms (e.g., that they add to zero across any subscript). (12) is the standard no-second order interaction model, or, in other words, the model that allows for dependency between pairs of lists but not three-way list dependency. Because there are only seven potentially observable cell counts available, this is the saturated triple system model that fits the data perfectly, i.e., the maximum likelihood estimates for the expected counts are $\hat{m}_{ijk} = x_{ijk}$.

Within this framework, reduced models can be fit to the data by removing parameters from (12). Typically, these parameters are removed carefully to ensure that the resulting loglinear model is hierarchical. In other words, higher order terms may only be included if the related lower order terms are also included, so that higher order parameters reflect only the higher order relationships between the lists (see Fienberg, 1978).

For any hierarchical loglinear model chosen, the expected cell values under the model are estimated and the resulting model is projected to the missing (0,0,0) cell. For both the saturated and the reduced models, the estimate of N , \hat{N} , is:

$$\hat{N} = n + \frac{\hat{m}_{111}\hat{m}_{100}\hat{m}_{010}\hat{m}_{001}}{\hat{m}_{110}\hat{m}_{101}\hat{m}_{011}}. \quad (13)$$

Bishop, Fienberg, and Holland (1975) give asymptotic variance equations,⁵¹ derived via the δ -method, for each \hat{N} derived via triple systems hierarchical loglinear models. These equations are used within this document to form approximate nominal⁵² 95 % confidence intervals for estimates derived from loglinear models for 3-way cross-classification tables.

Other models

Both the Marks, Seltzer, and Krótki model and the loglinear models account for dependencies across lists. They do not, however, account for heterogeneity

⁵¹In loglinear modeling, estimation of the standard errors assumes no missing data, no clustering of reports, and no matching error. However, the relative confidence interval lengths from alternative loglinear model estimates are expected to be robust to the small disturbances caused by these data blemishes. Nonetheless, the confidence intervals themselves, as calculated under the model, are too short. In our view, this limitation is not sufficient to be misleading.

⁵²The word "nominal" is used here because the confidence coefficient should be corrected when multiple comparisons are being made. Bonferroni adjustments, albeit generally conservative, would be one approach. Furthermore, we often visually and verbally compared two estimates or two series of estimates without remarking about unmeasured covariances which may exist.

of capture probabilities. One simple method for modeling this heterogeneity is the stratification of the target population by demographic characteristics (see Hogan, 1993). Another, model-based approach is the use of quasi-symmetry models (see Cressie and Holland, 1983, Fienberg and Meyer, 1983, Holland, 1990, Darroch et al., 1993, and Fienberg, Johnson, and Junker, 1999). A detailed technical explanation of these models for triple systems estimation can be found in Asher and Fienberg (2001). For the purposes of this document, it is sufficient to state that for triple systems estimation the partial quasi-symmetry models produce identical results to the six parameter loglinear models described above. As such, several quasi-symmetric models are used in the modeling procedure outlined in Section 3 of this appendix. Full quasi-symmetry models are not explored in this study, as capture heterogeneity is not believed to be identical across lists.

2.3. Multiple systems estimation

The hierarchical loglinear approach extends naturally to allow for the modeling of more intricate dependencies among 4 lists. If n is the sum of all records observed in all 4 lists combined, then:

$$\hat{N} = n + \frac{\hat{m}_{odd}}{\hat{m}_{even}}, \quad (14)$$

where \hat{m}_{odd} is a product of estimated expected cell values over all cells whose subscripts sum to an odd value, and \hat{m}_{even} is a product of estimated expected cell values over all cells whose subscripts sum to an even value. Formula (14) is just the generalization of formula (13), and as such is still the maximum likelihood estimate of the population total (see Fienberg, 1972).

For the 4-way multiple systems estimation models fitted in this document, interval estimates for \hat{N} are computed using the profile likelihood methods of Cormack (1992) via a program developed by Matthew Johnson of the Educational Testing Service. The profile likelihood estimate of the $1 - \alpha$ confidence set for N is defined to be

$$\{N : G^2(N - n) - G^2(\hat{N} - n) < \chi_{(1),1-\alpha}^2\}, \quad (15)$$

where G^2 is the model deviance, and $\chi_{(1),1-\alpha}^2$ is the $1 - \alpha$ quantile of a $\chi_{(1)}^2$ distribution. Because Splus's `glm()` function estimates the multinomial capture-recapture model using a Poisson likelihood, we must approximate the multinomial deviance, \hat{G}^2 , from the Poisson fit. We use an approximation suggested by Cormack (1992):

$$\hat{G}^2(z) = D(z) - \log \left\{ \frac{z^z (n+z)!}{(n+z)^{n+z} z!} \right\}, \quad (16)$$

where $D(z)$ is the model deviance for a loglinear Poisson model fit to the 2^J contingency table with z in the missing cell.

2.4. Model selection

With the exception of the Marks, Seltzer, and Krótki model, the fit of all models described in this section is typically assessed using one of the following two statistics:

$$X^2 = \sum \frac{(\text{Observed} - \text{Expected})^2}{\text{Expected}}, \text{ or}$$

$$G^2 = 2 \sum (\text{Observed}) \log\left(\frac{\text{Observed}}{\text{Expected}}\right).$$

Both of these statistics, the Pearson chi-square (X^2) and the deviance (G^2), have approximate χ^2 distributions on q degrees of freedom, where q is the number of cells in the cross-classification table minus the number of parameters fitted in the model.⁵³ Both statistics produce similar results; the Pearson chi-square statistic, however, is better known. Therefore, within this document, the Pearson chi-square will be used to assess the fit of the models attempted, and the deviance will be used in the development of some confidence intervals via profile likelihood methods.

In order to assess the fit of a loglinear model using the Pearson chi-square statistic, a balance needs to be struck between neither underfitting nor overfitting the data. This is done by only accepting models whose Pearson chi-square statistic, when compared to a χ^2 distribution of the appropriate number of degrees of freedom, yields a p-value within a set range. A standard lower cutoff for the p-value for the Pearson chi-square statistic is 0.05; models with p-values below this do not fit the data well and are abandoned. An appropriate upper cutoff, required to prevent overfitting, must also be determined within the context of the models available.

3. Methodology

The goals for the statistical analyses undertaken during this study are as follows:

1. Development of a global estimate of the number of killings.
2. Estimation of the number of killings within each of four regions for every 2-day time period between 20–21 March and 22–23 June.
3. Analysis of the relationship between number of killings for every two-day time period and KLA/NATO activity.

Developing the models and analyses required to fulfill these goals is complicated. The remainder of this section outlines, in order, the methodological steps followed to complete the creation of the estimates required to meet goals 1 and 2. Section 4 will address goal 3.

3.1. Exploratory data analysis

Exploratory data analysis in the context of multiple systems estimation takes two forms. The first is an exploration of possible list dependence and heterogeneity through direct analysis of characteristics of the lists. For example, by analyzing patterns of data collection over list, time, and space, we can hope

⁵³In the case of multiple systems estimation, the number of cells in the cross-classification table is 2^{J-1} where J is the number of lists; the x_{000} cell is considered to be a “structural zero” and therefore is not included in the calculation of degrees of freedom.

Figure 2: Percentage of documented killings, by data source and municipality

Region	ABA	EXH	HRW	OSCE
1	24.6	32.9	24.6	22.5
2	33.4	22.1	3.5	45.6
3	11.8	15.1	28.2	11.9
4	30.3	30.1	43.5	20.2

to gain some insight into the complexity of the modeling procedure required for estimation. The second is the comparison of several low-level saturated model multiple systems estimation results. We must be careful to clarify that these models, due to the fact that they are saturated, are not candidates for our estimation procedure. At this point, we are not interested in the value of the estimates produced during our analysis; we only wish to note the relationship of these estimates to each other. In this way the models fitted during this procedure are explanatory only and not confirmatory. Once this exploratory data analysis is complete, we will begin our estimation procedure.

Direct list analysis

In order to understand spatial and temporal heterogeneity for the four lists, we will analyze data collection patterns. Figure (2) presents patterns of data collection for each of the four lists over region.⁵⁴ The percentages represent the proportion of documented killings for a given list within each municipality or region. Note that the lists have distinctly different patterns of data collection; for example, HRW covers proportionately less of region 2 and proportionately more of region 4 than the other lists. This indicates that there is heterogeneity of the lists that may be addressed by stratifying by region.

A similar analysis can be performed in order to determine the patterns of data collection by list over time. Figure (3) presents patterns of data collection for each of the four lists over 2-day time periods, where the percentages represent the proportion of documented killings for a given list within each time period. The periods in the table represent breaks in time that are of interest to the main body of this study. Again, HRW appears to follow a different data collection distribution over time than the other lists, indicating heterogeneity that may be addressed by stratifying over time.

Exploratory dual and triple systems estimation

Dependence and heterogeneity of the lists can also be explored directly through the statistical machinery of multiple systems estimation. The $\binom{4}{2}$ pairs of lists can be used to form six dual systems estimates of the global number of killings by observing how closely they match each other. These six estimates are listed in Figure (4).

⁵⁴The structure of the data is important here, not its content. Therefore, the regions are referred to by number. The northern region is region 1; the eastern region is region 2; the southern region is 3; and the western region is 4.

Figure 3: Percentage of documented killings, by data source and 2-day time period

Time Period	ABA	EXH	HRW	OSCE
20 – 23 March	2.1	1.8	1.6	2.9
24 March – 5 April	59.4	57.8	67.1	54.5
7 – 23 April	21.0	23.0	11.1	27.7
25 April – 9 May	11.0	9.2	10.6	10.3
11 May – 18 June	6.6	8.5	9.4	4.4

Figure 4: Dual system estimates

	EXH	HRW	OSCE
ABA	7 245	9 689	5 970
EXH		6 777	7 135
HRW			5 461

Note that all but two of these estimates fall below $n = 7\,155$, the lowest estimate of the total number of documented killings. This suggests a great deal of positive dependence between the lists, forcing the number of killings that are recorded in both lists (in the x_{11} cell) higher, and therefore the overall estimate lower. The exceptions are the dual systems estimate produced using the two lists ABA and EXH, and the dual systems estimate produced using the two lists ABA and HRW. Additionally, there appears to be some variability between the estimates (they range from 5 461 to 9 689), suggesting heterogeneity of the underlying capture probabilities.

Looking at the $\binom{4}{3}$ saturated triple systems estimates may yield greater insight into the higher level dependencies between the lists. Figure 5 lists these estimates.

These results are somewhat more promising; the positive list dependencies evident in the dual systems estimation chart have disappeared, suggesting that the list dependencies are modeled well by two-way interaction terms. Note, however, that the ABA, EXH, and OSCE estimate is overly large compared to the rest of the estimates, suggesting some higher order negative dependencies

Figure 5: Triple and 4-way system estimates (saturated)

Lists	\hat{N}
ABA, EXH, HRW	11 818
ABA, EXH, OSCE	22 331
ABA, HRW, OSCE	12 252
EXH, HRW, OSCE	8 014
ABA, EXH, HRW, OSCE	12 565

for this set of systems, while the EXH, HRW, and OSCE estimate appears a little low, suggesting higher order positive dependencies among these lists.

Both the direct analysis of the patterns of data collection and the exploration of the patterns within the dual and triple system estimates suggest that there is a great deal of dependence and heterogeneity between the lists. It is therefore appropriate to explore complicated 4-way multiple systems estimation for the full cross-classification table presented in Figure 4 of Appendix 1. Section 3.2 describes the selection procedure used to determine the top level model for the global⁵⁵ count of killings.

3.2. Fitting and selection of a model for the total number of killings

There are 113 possible hierarchical loglinear models for the four-way cross classification table presented in Figure 4 of Appendix 1, but only nine of these yield a Pearson chi-square statistic with a p-value greater than 0.05. For completeness, these nine models are presented in Figure (6). The notation used to represent the models is as follows: interaction terms are presented as lists multiplied together; e.g., ABA*EXH*HRW represents a three-way interaction term of these lists. Because the models presented are hierarchical, each interaction term presented also represents its lower order terms; e.g., ABA*EXH*HRW represents the set of terms {ABA, EXH, HRW, ABA*EXH, ABA*HRW, EXH*HRW, and ABA*EXH*HRW}.

Five of the models (1-4 and 7) have p-values above .30, while the remaining four have p-values between .06 and .08. Choosing an upper cutoff for the p-value of .3, for the purpose of avoiding overfitting, seems logical given this fact. The task then remains to pick the best of the four remaining models (5, 6, 8, and 9). It is tempting to simply pick the model with the lowest Pearson chi-square statistic. Doing so, however, ignores another good measure of a model - parsimony, measured by the minimization of the number of parameters, or conversely the maximization of the degrees of freedom. Minimizing the Pearson X^2 will tend toward the tightest fitting, and therefore most complicated, models. As a compromise between the desire to pick the model that fits best and the desire for the simplest model possible, we choose as our "best" model the model with the minimal adjusted Pearson chi-square statistic, X^2/d , where d is the degrees of freedom. Using this statistic, the model chosen is (9), leading to a global estimate of 10 356 killings, with a 95% confidence interval of (9 002, 12 122). This model produces a conservative estimate, in that only one other model in Figure 6 produces a lower \hat{N} .

3.3. Aggregation of the cross-classification tables to account for sparseness

The next goal for this analysis is the estimation of the number of killings for each of 192 space/time points representing 48 two-day time periods and four geographical regions. For this to occur, the cells in Figure 4 of Appendix 1 must be disaggregated into 192 cross-classification tables. Attempting to perform this disaggregation, clearly proves to be problematic. Column 4 of Figure 7 lists the frequency of 2-day cross-classification tables with 0-15 zero cells. Note, as a rule of thumb, that the maximum number of zero cells that still allows for meaningful loglinear modeling for a four-way multiple systems estimate is 10;

⁵⁵The term "global" will be used for the remainder of this Appendix to refer to the total number of killings within Kosovo for the March-June 1999 time period.

Figure 6: Results for models of global count of killings

	Model	\hat{N}	Fit Statistics			Profile Likelihood	
			X^2	d	Pr.	Dev.	95% C.I.
1	ABA*EXH*HRW+ABA*EXH*OSCE+EXH*HRW*OSCE	13 760	0.6	1	0.434	0.603	(9 695, 20 752)
2	ABA*EXH*HRW+ABA*HRW*OSCE+EXH*HRW*OSCE	22 923	0.8	1	0.386	0.755	(18 122, 29 394)
3	ABA*EXH*OSCE+ABA*HRW*OSCE+EXH*HRW*OSCE	13 467	0.9	1	0.337	0.917	(9 030, 21 419)
4	ABA*EXH*OSCE+EXH*HRW*OSCE+ABA*HRW	12 845	1	2	0.603	1.014	(9 700, 17 979)
5	ABA*HRW*OSCE+EXH*HRW*OSCE+ABA*EXH	20 734	4.9	2	0.085	4.964	(16 813, 25 889)
6	ABA*EXH*HRW+EXH*HRW*OSCE+ABA*OSCE	20 550	5.4	2	0.068	5.269	(16 708, 25 585)
7	ABA*EXH*OSCE+EXH*HRW*OSCE	12 741	1.0	3	0.796	1.021	(10 202, 16 742)
8	ABA*OSCE*EXH+HRW*EXH+HRW*ABA+HRW*OSCE	9 824	7.2	3	0.065	7.063	(8 449, 11 632)
9	ABA*OSCE*EXH+HRW*OSCE+HRW*EXH	10 356	8.9	4	0.063	9.333	(9 002, 12 122)

X^2 = Pearson chi-square statistic, d = degrees of freedom, Pr. = p-value,

Dev. = Residual Deviance, C.I. = confidence interval.

Figure 7: Counts of zero cells for the 4-way tables

Count of Zero Cells	by Six-Day Period	by Four-Day Period	by Two-Day Period
0	3	1	0
1	0	2	2
2	5	5	5
3	1	2	3
4	2	2	2
5	5	5	3
6	7	4	4
7	4	7	11
8	4	9	11
9	4	7	16
10	3	4	13
11	3	5	11
12	2	5	11
13	10	10	14
14	5	14	35
15	6	14	51

this allows one non-zero count for each of the parameters of an independence model. Of the 192 2-day tables, 122 (64%) contain more than 10 zero cells. Additionally, the sparseness of the tables that allow multiple systems estimation but contain a large number of zeros could lead to distorted estimation.

Collapsing to the 24 four-day periods over the four regions yields 96 cross-classification tables; of these, 48 (50%) contain more than 10 zeros. Collapsing to the 16 six-day periods over the four regions yields 64 cross-classification tables; of these, 26 (41%) contain more than 10 zeros. Collapsing further will impede the analysis desired.

Another option to collapsing across time points is given by collapsing across lists. There are $\binom{4}{3}$ possible 3-way cross classification tables for each four-way cross-classification table. This yields three-way cross classification tables, each representing a 2-day interval, region, and “system” of lists. In this case, more than three zeros will impede loglinear modeling for triple system estimation. In Figure 8, the systems range between 117 and 142 tables with more than three zeros, yielding at least 70% of the total tables between the four systems as too sparse for triple systems estimation. This percentage is a little misleading, in that each space and time point is represented by four cross-classification tables (one for each list). The actual coverage of space/time points by these 768 tables may be significantly higher than 30%.

It appears that triple systems estimation at the 2-day by region level may be difficult, and a combination of reducing the cross-classification tables (from four-way to three-way) and collapsing across 2-day periods is necessary. Figures 9 and 10 give the zero counts for the cross-classification tables for four-day and six-day periods, respectively.

Collapsing to six-day periods within three-way cross-classification tables appears to be an acceptable solution to the sparseness of the data. Although there are still a large number of sparse cross-classification tables at this level of ag-

Figure 8: Counts of zero cells for 3-way tables (two day period)

Count of Zero Cells	ABA, EXH and HRW	ABA, EXH, and OSCE	ABA, HRW and OSCE	EXH, HRW and OCSE
0	10	29	7	12
1	4	14	9	6
2	16	15	13	13
3	20	17	22	16
4	25	17	28	27
5	26	14	20	17
6	35	34	39	33
7	56	52	54	64

Figure 9: Counts of zero cells for 3-way tables (four day period)

Count of Zero Cells	ABA, EXH and HRW	ABA, EXH, and OSCE	ABA, HRW and OSCE	EXH, HRW and OCSE
0	10	28	9	10
1	3	7	5	8
2	14	6	13	8
3	15	11	14	16
4	10	6	13	6
5	13	9	9	10
6	16	15	17	15
7	15	14	16	23

Figure 10: Counts of zero cells for 3-way tables (six day period)

Count of Zero Cells	ABA, EXH and HRW	ABA, EXH, and OSCE	ABA, HRW and OSCE	EXH, HRW and OCSE
0	10	23	9	11
1	3	7	6	8
2	13	4	10	7
3	10	7	11	10
4	4	2	5	2
5	11	9	7	6
6	6	6	9	11
7	7	6	7	9

gregation, the redundancy of the four three-way systems allows for most of the six-day time and region points to be estimable. The inestimable time and space points tend to occur later in the 96 day time range, where there is less interest in understanding the trends in the data. Additionally, collapsing the 2-day tables across region within three-way cross-classification tables will allow modeling at a finer level of time, thereby allowing a better understanding of the general temporal trends in the data. Two sets of estimates will therefore be created in Sections 3.4 and 3.5 of this appendix, then compared in Section 3.6.

3.4. Global model fitting across all temporal and spatial points

This analysis commenced with the production a global estimate of the number of killings, estimated via a four-way multiple systems estimation model fit to Figure 4 of Appendix 1. One option for modeling the counts at individual space/time points is to build a generalized linear model, in which parameters representing each unique space/time point, as well as the parameters associated with the chosen global multiple systems estimation model 9 from Figure 6, are estimated. This overall model will project the global model down to the disaggregated tables, allowing for an complete modeling procedure for the entire system of estimates.

To adjust for sparseness, the data are collapsed to six-day time points, and only the first 10 of these points are included.⁵⁶ The result is a 71 parameter model fit to the counts of killings, with a 70 column matrix of indicator variables serving as predictors. Although the results suggest interesting trends, the p-value for the Pearson X^2 statistic is insignificant. This lack of fit can be explained as follows: although the global model describes the disaggregated table well, it doesn't describe each space/time point well. The overall generalized linear model allows for one model of list interactions to describe the relationships between the lists for each space/time point; heterogeneity of space/time points causes this model to fail at a local level.

A solution is to allow the overall generalized linear model to contain list parameters for each space/time region; starting with a fully saturated matrix of 14 list parameters * 40 space/time points + 40 space/time indicators, a stepwise procedure can be applied to select the 40 models that best describe the 40 space/time points. This is equivalent to running 40 separate generalized linear models, except the fit statistic for the overall model measures the fit of the entire system, while the fit statistics for the 40 local models measure each fit individually. Clearly it is simpler to just run separate loglinear models for each space/time point. This piecewise multiple systems estimation procedure will be discussed in more detail in Section 3.5.

3.5. Piecewise modeling across temporal and spatial points

Due to the sparseness of the data, implementation of four-way multiple systems estimation models, even with data aggregated to six-day periods, will yield very few acceptable models in terms of fit. Collapsing to dual system estimates yields models for which there are no measures of fit and for which we know the assumptions of independence and homogeneity do not hold. The remaining solution - triple system estimation - contains its own complexities. There are

⁵⁶If all 16 6-day points are included in the modeling, the resulting estimates are "flat" (identical) for the last six time points.

$\binom{4}{3} = 4$ possible three-way systems, and within each system there are 8 possible models. The result is up to 32 models for each of 64 time and space points.

A choice rule must be developed by which a “best” model can be picked. The following sets of rules - one for two-day table models, and one for six-day by region table models - mirror the model selection procedure for the overall model, with one important difference: the selection of an upper cutoff for the p-value of the Pearson chi-square statistic. Moving the upper cutoff too high will result in models that overfit, but moving the cutoff lower eventually removes all the models for a particular time and/or spatial point. The upper cutoff for the p-values for each of the two sets of models is therefore chosen to be as small as possible while maximizing the number of space/time points that are estimated. For the six-day by region models, the p-value is 0.7, and for the two-day models, the p-value is 0.5.

The model choice rules for the two-day estimates are as follows:

- Remove all models for which $\hat{N} < x_{++++}$ (1132 out of 1408 models retained).
- Remove all models for which $\hat{N} > 10\ 356$ (974 out of 1132 models retained).⁵⁷
- Remove all models for which $p < .05$ (657 out of 974 models retained).
- Remove all models for which $p > .5$ (247 out of 657 models retained).
- Choose the model with the lowest adjusted Pearson chi-square statistic.
- If no such model exists, then $\hat{N} = x_{++++}$.

The model choice rules for the six-day by region estimates are as follows:

- Remove all models for which $\hat{N} < x_{++++}$ (1455 out of 1856 models retained).
- Remove all models for which $\hat{N} > 10\ 356$ (1 235 out of 1 455 models retained).
- Remove all models for which $p < .05$ (876 out of 1235 models retained).
- Remove all models for which $p > .7$ (381 out of 856 models retained).
- Choose the model with the lowest adjusted Pearson chi-square statistic.
- If no such model exists, then $\hat{N} = x_{++++}$.

3.6. Projection of 2-day time point series to 6-day time point series for each region

The goals outlined at the beginning of this section included the creation of estimates for each 2-day time period between 20-21 March and 22-23 June within each region. To this point, estimates for six-day periods within region have been created, and estimates for two-day periods aggregated over region have been created as well. A series of two day estimates for each region can be created from these two separate sets of estimates as follows:

⁵⁷10 356 is the global estimate for the number of killings; it is illogical to believe that any estimate of a single space-time point will be greater than this number.

- Each six-day estimate at the regional level maps to three two-day estimates at the global level. Let $t \in (1, 16)$ designate a six-day interval, and t_1 , t_2 , and t_3 designate the two-day intervals associated with t . Let \widehat{N}_{tr} designate the estimate for six-day interval t and region r . Finally, let $\widehat{N}_{t_j r}^*$ designate the estimate for the two-day interval t_j and region r .
- For the six-day estimate \widehat{N}_{tr} , create a proportion for each of the three two-day estimates as follows:

$$\widehat{p}_{t_i r} = \frac{\widehat{N}_{t_i r}^*}{\sum_{j=1}^3 \widehat{N}_{t_j r}^*}. \quad (17)$$

- Form a two-day estimate for time t_i , region r as follows:

$$\check{N}_{t_i r} = \widehat{N}_{tr} \widehat{p}_{t_i r}. \quad (18)$$

The resulting two-day estimates for region r represent a blend of information about the regional trend and the global trend in the data.

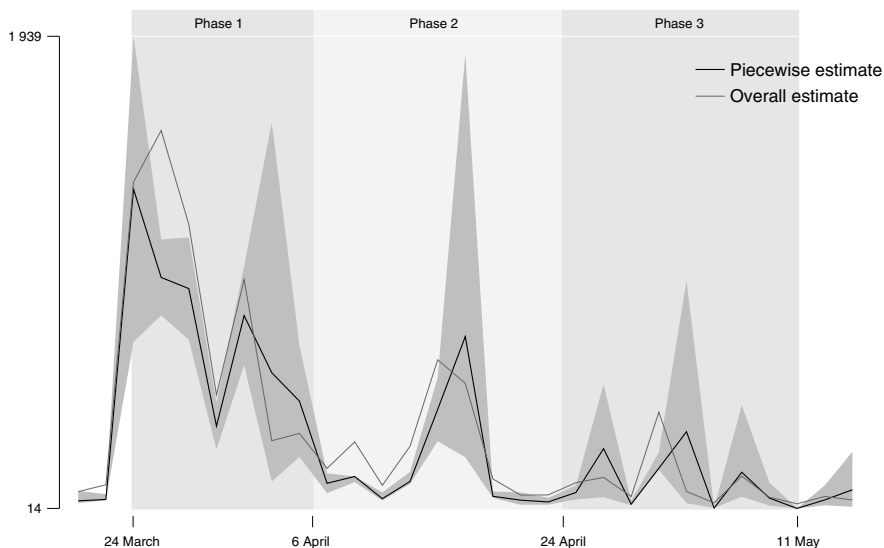
3.7. Comparison of results of global and piecewise modeling

In Figures 11 and 12, the piecewise and overall model estimates of killing counts, along with the confidence intervals for the piecewise estimates, are plotted together. There are two reassuring characteristics of these plots. The first is that the estimates derived from the overall model are quite similar to the estimates derived from the piecewise models; both suggest the same temporal trends in the form of waves of killings. The second is that the shape of the confidence bands, formed around the piecewise model estimates, maintain the shape of the curves formed by the estimates; taking any point in the confidence intervals as the true count of killings will not remove these trends.

Another reassuring characteristic of the results of the multiple forms of modeling procedures is how well the estimates track each other. Figure 13 shows several versions of aggregated estimates from the four different modeling procedures performed. The overall estimates of the total number of killings all fall within the confidence interval of the global model's estimate; some aggregated estimates fall quite close to 10 356. General trends across time appear similar for both the six-day period estimates aggregated across region and also the two-day period estimates aggregated across time. The system of models appears to work well.

As a final check of the quality of the modeling procedure developed for this study, the estimates produced within each modeling system are compared to the estimates produced by taking the average of the four triple-system Marks, Seltzer, and Krótki estimates given by equation (11). A count of the number of times the Marks, Seltzer, and Krótki estimate falls within the confidence interval of the piecewise estimate is given in Figure (14). The agreement between the two estimates appears to be better at lower levels of aggregation across space and time. This is not surprising; while the Marks, Seltzer, and Krótki model does account for some dependence between lists, it is not as flexible a tool as the hierarchical loglinear models. As such, it will perform better where heterogeneity is mild or not present.

Figure 11: Estimated killings over time, with nominal confidence interval



3.8. Analysis of relationship between original lists, complexity of models selected by the selection rule, and time and space

To this point, the focus of this appendix has been on the development of estimates of counts of killings. An interesting side analysis of the relationships between the lists is possible, however, because of the nature of the model selection procedure for the piecewise estimates. By performing this analysis and comparing it to the patterns given in Section 3.1, we can access how well the piecewise modeling procedure adjusts to patterns of spatial and temporal heterogeneity.

Figure 15 lists the source systems for each of the six day by region and two-day estimates. The first column of counts displays the number of estimates derived from each of the three systems of lists; the second column of counts displays the number of estimates to which that list contributed. Although each list appears to contribute to a roughly equivalent number of estimates, the ABA, EXH, OSCE system appears to yield the most estimates overall. This makes sense given the structure of the underlying lists. HRW employed a different data collection strategy, leading to a different across both time and space, adding heterogeneity to the list systems containing it. Also, Human Rights Watch relied on an investigative data collection strategy which creates a different set of individual capture probabilities than the enumerative strategy employed by the other organizations.⁵⁸

⁵⁸For more information on the effects of enumerative versus investigative data collection strategies, see Asher and Ball (2001).

Figure 12: Estimated killings with nominal confidence interval, by region over time (6-day periods plotted to the middle day of the period)

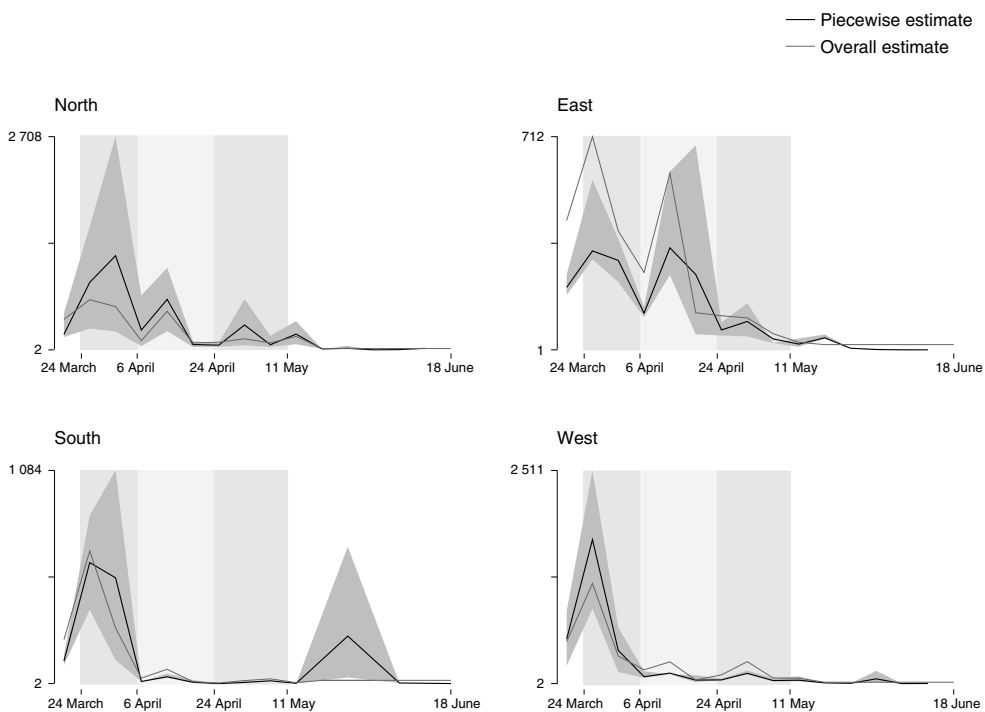


Figure 13: Comparison of estimates from different modeling procedures

Area	Piecewise Models			Overall Model
	Six Day Period			Direct GLM
	Within Region	Two Day Period	Global	
Global	10 548	9 375	10 356	10 004
Region 1	3 925			2 748
Region 2	1 827			2 863
Region 3	1 608			1 393
Region 4	3 188			3 000
20 March - 25 March	1 048	1 372		1 538
26 March - 31 March	3 502	2 322		3 203
1 April - 6 April	2 426	1 735		1 557
7 April - 12 April	472	280		571
13 April - 18 April	1 144	1 312		1 411
19 April - 24 April	373	227		271
25 April - 30 April	175	246		322
1 May - 6 May	542	479		526
7 May - 12 May	157	216		238
13 May - 18 May	266	538		178
19 May - 24 May	64	124		61
25 May - 30 May	275	357		62
31 May - 5 June	62	128		23
6 June - 11 June	13	13		13
12 June - 17 June	25	25		25
18 June - 23 June	2	2		2

Figure 14: Comparison of Marks, Seltzer, and Krótki estimates to estimates from different modeling procedures

Status of Marks, Seltzer, and Krótki Estimates	Piecewise Models		
	Six Day Period		
	Within Region	Two Day Period	Global
Below 95% C.I.	6	3	1
Within 95% C.I.	30	22	
Above 95% C.I.	10	10	
Missing/Inestimable	12	9	

Figure 15: Relationship between model selection criteria and lists

System 6-Day X Region	Models Selected	List	Models Selected
ABA,EXH,HRW	10	ABA	33
ABA,EXH,OSCE	14	EXH	37
ABA,HRW,OSCE	9	HRW	32
EXH,HRW,OSCE	13	OSCE	36
Total	46	Total out of 46	

System 2-Day	Models Selected	List	Models Selected
ABA,EXH,HRW	7	ABA	28
ABA,EXH,OSCE	13	EXH	27
ABA,HRW,OSCE	7	HRW	22
EXH,HRW,OSCE	8	OSCE	28
Total	35	Total out of 35	

Figure 16: Relationship between model selection criteria and lists by region

System (6-Day X Region)	Regions				Total	List	Regions				Total
	1	2	3	4			1	2	3	4	
ABA,EXH,HRW	2	2	3	3	10	ABA	8	10	8	7	33
ABA,EXH,OSCE	4	5	3	2	14	EXH	10	9	7	11	37
ABA,HRW,OSCE	2	3	2	2	9	HRW	8	7	6	11	32
EXH,HRW,OSCE	4	2	1	6	13	OSCE	10	10	6	10	36
Total	12	12	9	13	46	Total	36	36	27	39	138

Spatial and temporal dependencies of the list might be noticeable in the patterns of systems selected for the estimates within particular regions or time intervals. The following two tables, in order, show the counts of systems contributing to estimates by region and then time. Again, the counts of the number of estimates contributed to by each list is shown, as well as the number of estimates to which each list contributes. The 6 estimates to which EXH, HRW, OSCE contributes in Region 4 are especially interesting. Nearly half of this system's models are in Region 4, and half of the models in Region 4 are from this system. Also of interest is the pattern of the two HRW, OSCE systems over time; while the other systems roughly contribute more earlier in time and less over time, ABA, HRW, OSCE contribute more towards the middle of the time frame. These patterns reflect some of the spatial and temporal dependencies between the lists and further confirm the need for a flexible and complex modeling system.

A final measure of spatial and temporal dependencies between the lists is given in Figure 18. This set of counts by the number of parameters in the model indicates the complexity of the models for the estimates. While the 6-day by region estimates are evenly split between the most complicated model type and

Figure 17: Relationship between model selection criteria and lists by time point

System (2-Day)	3/20 to 4/6	4/7 to 4/24	4/25 to 5/12	5/13 to 5/30	5/31 to 6/17	Total
ABA,EXH,HRW	3	2	1	0	1	7
ABA,EXH,OSCE	5	2	3	3	0	13
ABA,HRW,OSCE	1	3	1	2	0	7
EXH,HRW,OSCE	1	2	3	2	0	8
Total	10	9	8	7	1	35

Figure 18: Complexity of models selected compared to aggregation level

Parameters in Model	6-Day X Region Models Selected	2-Day Models Selected
4	6	0
5	16	7
6	24	28
Total	46	35

the simpler model types, four-fifths of the 2-day estimates are derived from the most complicated model type.

The interpretation of this observation is relatively straightforward. The six-day by region estimates reflect a lower level of geography; within the smaller geographical units the relationships between the lists are less complicated than for the larger geographical units. In other words, by geographically “stratifying” the estimation areas, dependencies and heterogeneity are reduced. In the case of the 2-day estimates, however, list dependencies have not been “stratified” out, and the more complex models fit better.

4. Analysis of relationship between multiple systems estimation modeling results and KLA/NATO activity

To this point, all the statistical methodology and analyses described by this Appendix have directly related to the estimation of counts of killings. Only one additional statistical analysis is done using the estimates once they are created; this analysis will now be discussed.

In the main body of this study, the relationship between NATO air strikes on Kosovo, KLA activity within Kosovo, and patterns of killings and refugee migration is discussed. A statistical analysis technique by which these relationships can be understood better is simple linear regression using estimates of killings or migration flow within a particular spatial and temporal region as the dependent variable. Potential explanatory variables for the model include number of KLA battles within the spatial and temporal region, number of KLA killings within the spatial and temporal region, number of NATO air strikes within the spatial and temporal region, number of KLA battles within the previous spatial

and temporal region, number of KLA killings within the previous spatial and temporal region, and number of NATO air strikes within the previous spatial and temporal region. Dummy variables for regional effects can be used as independent variables as well, in order to control for the possibility of the activities in one region dominating the analysis.

Through a regression analysis using the variables described above, the association between the NATO and KLA activities and the Albanian migrations and killings can be assessed via the significance levels of the model and each individual parameter in the model. Figure (19) displays the results for four regression models; in the first and third the variables represent two-day periods for the whole country, in the second and fourth the variables represent six-day periods within regions. The significance level of the parameters is indicated by $\star = 0.05$, $\star\star = 0.01$, and $\star\star\star = 0.001$. For the regression models using killings as the dependent variable, the only significant parameters are for regional effects. In other words, the association between the KLA and NATO variables and the counts of killings is weak. This is confirmed by the low R^2 's for these two models of 0.253 and 0.147.

The regression models using migrations as the dependent variable, however, yield a different interpretation. In this case, there appears to be an association between KLA activity and migration; specifically, the association between KLA battles within the previous time period and migrations in the current time period appears to be significant. The R^2 's for both of these models are high, further confirming an association.

At this point, the regression results suggest that the pattern of NATO bombings in Kosovo over time is not significantly associated with the pattern of killings or migrations in Kosovo over time. The pattern of KLA activity, however, appears to be associated with the pattern of migration.

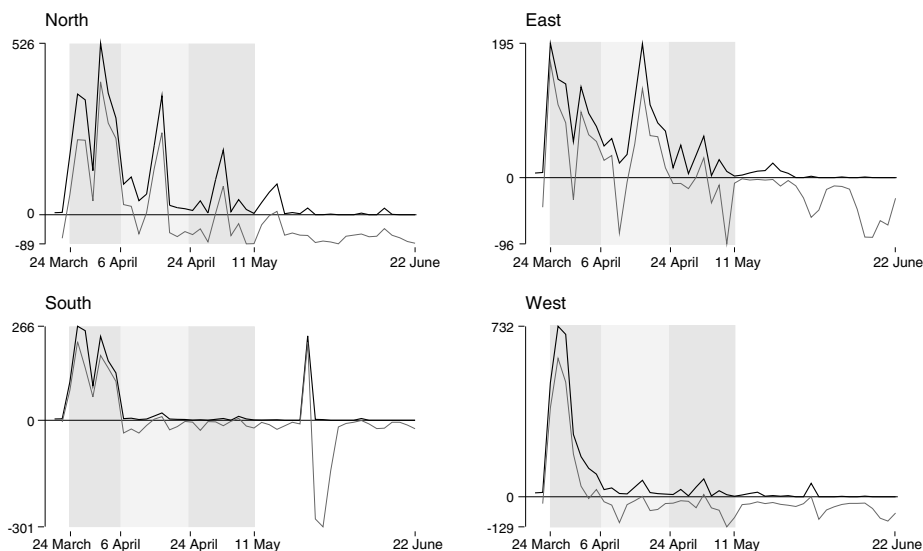
Further evidence of the lack of association of the KLA activity, NATO bombings, and killing patterns in Kosovo is given by a comparison of the residuals from each of the regressions described above to its dependent variable. If a regression model describes its dependent variable well, then the pattern of the residuals for that regression model will be random. If, however, the regression model does not describe its dependent variable well, then the residuals will follow the same pattern over time as the original dependent variable. Figures 20 and 21 display comparisons of the residuals for the models for which the dependent variables are killings and migrations within six-day period and region. In Figure 20, the residuals very closely track the estimated counts of killings closely, picking up clear trends in the data.

In Figure 21, the relationship between the residuals and migration flow is evident, but in but not as strong as the relationship between the residuals and killings for the previous model. This is not surprising given the better fit of the regression model for migration flows. However, the divergences between the series occur at only a few points. The residuals track the estimated values closely in the southern and western regions. In these regions, when the series diverge it is only because the residual is exaggerating a trend clearly present in the refugee flow series; this pattern is seen in the western region during the early part of Phase 2. In the northern and eastern regions, the series differ more strongly. But even in these regions, the mid-April peaks during Phase 2 are clearly similar in the refugee flow and residuals series. In the northern and

Figure 19: Regression coefficients

Explanatory Variables	Response Variables			
	Killings over Time	Killings over Time and Region	Refugee Flow over Time	Refugee Flow over Time and Region
Region 2		* -52.3 (20.4)		-721.4 (665.3)
Region 3		** -57.0 (21.3)		**3 017.8 (1 048.9)
Region 4		-34.4 (25.2)		-193.9 (862.5)
KLA (kill)	-1.1 (5.2)	1.6 (4.1)	*-634.9 (318.9)	-184.2 (130.8)
KLA (battle)	34.7 (32.1)	13.3 (12.2)	2 728.6 (1030.5)	**1 879.3 (583.2)
Lag-KLA (kill)	0.2 (4.4)	3.3 (3.4)	491.9 (384.4)	277.9 (167.1)
Lag-KLA (battle)	21.2 (17.7)	11.6 (11.9)	**2 794.3 (827.7)	***2 138.4 (633.7)
NATO	10.9 (11.1)	11.4 (6.7)	327.6 (390.3)	565.8 (379.7)
Lag-NATO	-4.8 (6.9)	-2.5 (4.1)	-28.0 (325.5)	29.2 (234.0)
Constant	83.9 (51.1)	**62.7 (19.9)	122.3 (3 933.2)	-484.8 (608.8)
R^2	0.3	0.1	0.7	0.5

Figure 20: Estimated total killings and residuals by region over time



eastern regions during Phase 1 and into the transition to Phase 2, the series contradict each other.

Our conclusions are as follows:

- Based on our analysis of these data, there is no evidence to support the theory that NATO bombings or KLA activity is associated with patterns of killings in Kosovo.
- There is some evidence that there is an association between KLA activity and migration patterns in the northern and eastern regions, especially during Phase 1.
- The association between KLA activity and migration flows does not fully explain the pattern of migration, especially in the western and southern regions.

5. Discussion

This appendix has presented the main modeling methods we employed. In this final section, a method of sensitivity analysis of the date of death reporting is explained, and summary conclusions for this appendix are given.

5.1. Sensitivity analysis of date of death reporting

As individual records were matched to other individuals and to groups, they accumulated dates. The choice of the "best" date is described in Appendix 1.

Figure 21: Estimated refugee flow and residuals by region over time

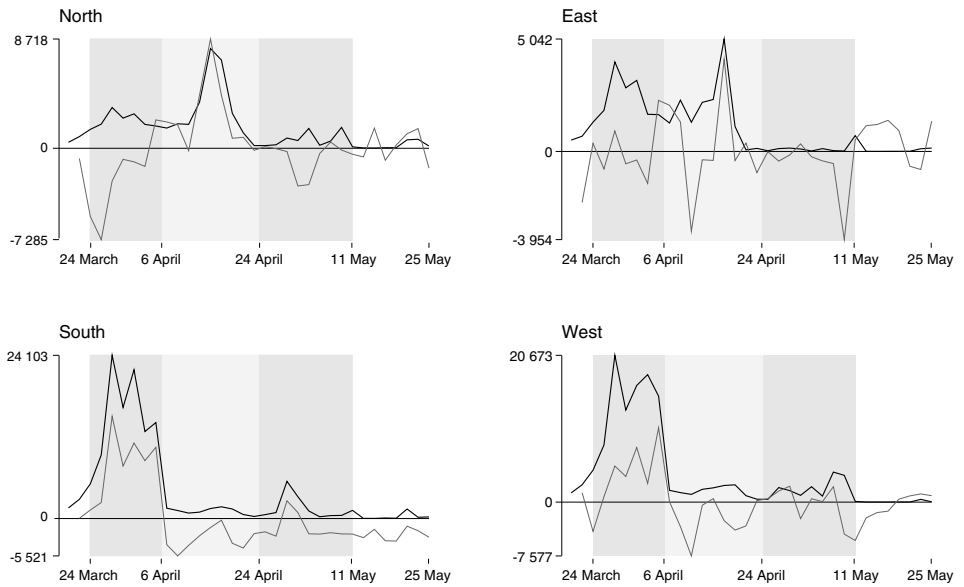
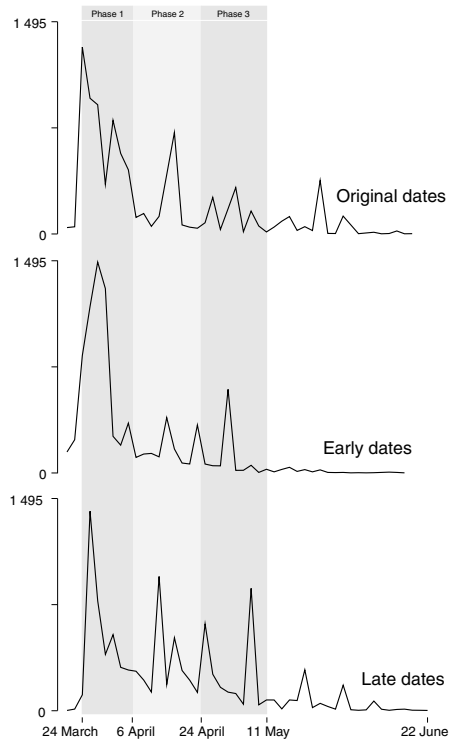


Figure 22: Estimated killings over time with alternative date assignments



Even with an appropriate choice of the best date, the “best” date might still occasionally be in error. Time is a central dimension of the hypotheses being tested. It is, therefore, useful to consider whether the substantive interpretation of the results is robust to different assumptions about the quality of the date information.

For the sensitivity analysis, plausible “early” and “late” dates were chosen as alternatives for each record. Dates were accumulated from all the group and individual records that matched each individual record, both in the self-matching, and the inter-system matching. Records that had 3 or more dates in their distribution took the dates at the 25th and 75th percentiles as the “early” and “late” dates. Records with 2 dates took those two dates as the early and late dates. The difference between the early and late dates defined a range.

Records with 1 or 0 dates were assigned a range by hotdecking; as before, the hotdecked records were matched by geographic location. The late and early dates for these records were plus and minus half the hotdecked range; the values were rounded up to the next integer. In this way, all records were perturbed by at least one day as we tried to maximize the impact of this test.

The resulting distribution of killings over time is shown in Figure 22. Perturbing the dates does affect how the curves are shaped. Shifting killings to earlier dates fills the late March and early April dates while taking quantity from the mid-April peak. Shifting killings to later dates moves them from the Phase 1 peaks to peaks in Phase 2 and Phase 3.

The most important finding from this analysis is that even this significant restructuring of how the dates are handled does not change the fundamental characteristics of the pattern over time. Both of the perturbed series have high peaks during the early or middle part of Phase 1. Both series show substantial declines during the 5–8 April phase transition, and each has a peak in the middle of Phase 2. The perturbed series disagree about exactly when the transition from Phase 2 to Phase 3 occurs: two days earlier (in the late and random series), or two days later in the early series.

If the peaks and troughs in the pattern of killing over time had been created by a particular date handling technique, then one or more of the perturbations would have shown a random pattern. If the reported dates had been widely dispersed, the ranges would have been wide enough that the perturbations would have smoothed over the “start and stop” pattern that characterized killings and refugee flow in Kosovo during March–June 1999. The observation that the smoothing did not occur is evidence that the estimation procedure is robust to imprecise reporting of the date of killings.

5.2. Summary of modeling conclusions

We began this appendix by posing the dilemma of how to estimate unobserved (or at least unreported) killings in order to estimate total deaths. The modeling presented in Appendix 2 convinces us that there were probably a little over 10 000 killings of Kosovar Albanians in the period 20 March to 22 June 1999. The largest direct estimate is comparable to this “best” model estimate, and different models produce similar estimates. We believe that we have made our case about the overall total number of killings and for the pattern of killings during the period in question. It is on this basis that we made the conclusions presented in the body of the report.

Appendix 3: Additional Sources on KLA and NATO Activity

Albanian Human Rights Group

Albanian Media

Belgrade Center for Human Rights

Center for Peace and Tolerance

Daily Telegraph

Danas

Egyptian National Community in Kosovo

European Community Monitor Mission

European Roma Rights Center

Federal Republic of Yugoslavia (FRY) Ministry of Defense

FRY Civil Defense Authorities

FRY Ministry of Foreign Affairs

FRY Ministry of Information

FRY, Aide-Memoire on the Use of Inhumane Weapons in the Aggression of the North Atlantic Treaty Organization Against the Federal Republic of Yugoslavia. Belgrade, 15 May 1999

Fund for the Humanitarian Right

The Guardian

Human Rights Board of Sandzak

Information Service of Church and National Assembly (Kosovo)

International Committee of the Red Cross

International Criminal Tribunal for the Former Yugoslavia

Koha Ditore

Kosovapress

Kosovar Media

Kosovo Verification Mission

Local Church Councils (Kosovo)

Los Angeles Times

NATO Operation Allied Force Update

Open Society Institute

Organization for Security and Cooperation in Europe

Organization of Families of Disappeared

Orthodoxy Press

Politika

Report by Bishop Artemije “List of Killed and Kidnapped Serbs.” Republic of Serbia Ministry of Internal Affairs

RTS TV Belgrade

Serbian Media

Serbian Orthodox Church

Serbian Unity Congress NewsBits

SVEDOK-Belgrade weekly

Tanjug

United Nations High Commission for Refugees

V.I.P. Daily News Report

References

- American Bar Association Central and East European Law Initiative and the American Association for the Advancement of Science. 2000. *Political Killings in Kosova/Kosovo, March-June 1999*. Washington, DC: American Bar Association Central and East European Law Initiative.
- Anderson, Margo and Stephen E. Fienberg. 2001a. *Who Counts? Census-Taking in Contemporary America*. Revised Paperback Edition. New York: Russell Sage Foundation.
- Anderson, Margo and Stephen E. Fienberg. 2001b. *Counting and estimation: Methodology for Improving the Quality of Censuses. The U.S. 2000 Census Adjustment Decision*. Paper presented at the International Conference on Quality in Official Statistics, Stockholm, Sweden, May 14-15, 2001.
- Asher, Jana and Patrick Ball. 2001. Understanding Human Rights Violation Data through the Analysis of Circuits. To appear in the *Proceedings of the American Statistical Association* (Social Statistics Section).
- Asher, Jana and Stephen E. Fienberg. 2001. Statistical Variations on an Administrative Records Census. To appear in the *Proceedings of the American Statistical Association* (Government Statistics Section).
- Ball, Patrick. 2000a. *Policy or Panic: The Flight of Ethnic Albanians from Kosovo, March–May 1999*. Washington D.C.: American Association for the Advancement of Science.
- Ball, Patrick. 2000b. The Guatemalan Commission for Historical Clarification: Intersample Analysis. Chapter 11 in *Making the Case: Investigating Large Scale Human Rights Violations using Information Systems and Data Analysis*, edited by Patrick Ball, Herbert Spierer, and Louise Spierer. Washington, DC: American Association for the Advancement of Science.
- Belin, Thomas R. and Donald B. Rubin. 1995. A Method for Calibrating False-Match Rates in Record Linkage. *Journal of the American Statistical Association*.
- Bishop, Yvonne M. M., Stephen E. Fienberg, and Paul H. Holland. 1975. *Discrete Multivariate Analysis: Theory and Practice*. Cambridge, MA: MIT Press.
- Converse, N. and F. Scheuren. 2001. Workarounds in Survey Data Handling. Submitted to the new *Journal of Data*.
- Cressie, Noel and Paul W. Holland. 1983. Characterizing the Manifest Probabilities of Latent Trait Models. *Psychometrika* 48: 129–141.
- Cormack, R. 1992. Interval Estimates for Mark-Recapture Studies of Closed Populations. *Biometrics* 48: 567–576.

- Cowan, Charles Douglas. 1984. The effects of misclassifications on estimates from capture-recapture studies. Ph.D. diss., George Washington University.
- Darroch, John N., Stephen E. Fienberg, Gary Glonek, F.V. Gary, and Brian W. Junker. 1993. A Three-Sample Multiple-Recapture Approach to Census Population Estimation with Heterogeneous Catchability. *Journal of the American Statistical Association* 88: 1137–1148.
- Fienberg, Stephen E. 1972. The multiple recapture census for closed populations and incomplete 2^k contingency tables. *Biometrika* 59: 591–603.
- Fienberg, Stephen E. 1980. *The Analysis of Cross-Classified Categorical Data*. Second Edition. Cambridge, MA: MIT Press.
- Fienberg, Stephen E., Matthew S. Johnson, and Brian W. Junker. 1999. Classical multilevel and Bayesian approaches to population size estimation using multiple lists. *Journal of the Royal Statistical Society, Series A* 162: 383–405.
- Fienberg, Stephen E., and Michael M. Meyer. 1983. Loglinear models and categorical data analysis with psychometric and econometric applications. *Journal of Econometrics* 22: 191–214.
- Ford, B. 1983. Hot Deck Imputation. Ch. 14 in vol. 2, part 4 of *Incomplete Data in Sample Surveys*, edited by William G. Madow, Harold Nisselson, and Ingram Olkin. New York: Academic Press.
- Hogan, Howard. 1993. The 1990 Post-Enumeration Survey: Operations and Results. *Journal of the American Statistical Association* 88: 1047–1060.
- Holland, Paul W. 1990. On the sampling theory foundations of item response theory models. *Psychometrika* 55: 577–601.
- Human Rights Watch. 2001. *Under Orders: War Crimes in Kosovo*. New York: Human Rights Watch.
- Independent International Commission on Kosovo. 2000. *The Kosovo Report: Conflict*International Response*Lessons Learned*. New York: Oxford University Press.
- International Working Group for Disease Monitoring and Forecasting. 1995a. Capture-recapture and multiple-record systems estimation, I: History and theoretical development. *American Journal of Epidemiology* 141: 1047–1058.
- International Working Group for Disease Monitoring and Forecasting. 1995b. Capture-recapture and multiple-record systems estimation, II: Applications in human diseases. *American Journal of Epidemiology* 141: 1059–1088.
- Marks, E.S., W. Seltzer, and K. J. Krótki. 1974. *Population Growth Estimation: A Handbook of Vital Statistics Measurement*. New York: The Population Council.
- Oh, H. and F. Scheuren. 1983. Weighting Adjustment for Unit Nonresponse. Chap. 13 in vol. 2, part 4 of *Incomplete Data in Sample Surveys*, edited by William G. Madow, Harold Nisselson, and Ingram Olkin. New York: Academic Press.

- Organization for Security and Cooperation in Europe. 1999. *Kosovo/Kosova As Seen As Told: An Analysis of the Human Rights Findings of the OSCE Kosovo Verification Mission October 1998 to June 1999*. Warsaw, Poland: OSCE Office for Democratic Institutions and Human Rights.
- Peterson, C. G. J. 1896. The yearly immigration of young plaice into the Limfjord from the German Sea. *Report of the Danish Biological Station to the Ministry of Fisheries* 6: 1–48.
- Physicians for Human Rights. 1999. *War Crimes in Kosovo: A Population-Based Assessment of Human Rights Violations of Kosovar Albanians by Serb Forces*. Boston: Physicians for Human Rights.
- Record Linkage Techniques. 1985. *Record Linkage Techniques – 1985 Proceedings of the Workshop on Exact Matching Methodologies*. Washington, DC: U.S. Internal Revenue Service, Statistics of Income Division.
- Record Linkage Techniques. 1997. *Record Linkage Techniques – 1997 Proceedings of An International Workshop and Exposition*. Washington, DC: Ernst and Young, LLP.
- Rubin, Donald B. 1987. *Multiple imputation for nonresponse in surveys*. New York: Wiley.
- Scheuren, F. 1985. Methodologic issues in linkage of multiple data bases. *Record Linkage Techniques – 1985 Proceedings of the Workshop on Exact Matching Methodologies*. Washington, DC: U.S. Internal Revenue Service, Statistics of Income Division.
- Sekar, C.C. and Deming, W.E. 1949. On a Method of Estimating Birth and Death Rates and the Extent of Registration. *Journal of the American Statistical Association*. 44:101-115.
- Spiegel, Paul B. and Peter Salama. 2000. War and Mortality in Kosovo, 1998–1999: An Epidemiological Testimony. *Lancet* 355: 2206–2211.
- Splus, Insightful Corporation. 2001. “Generalizing the Linear Model.” Ch. 12 in *S-PLUS 6 for Windows Guide to Statistics, Volume 1*. Seattle, WA: Insightful Corp.
- Stata Corporation. 2001. Section on generalized linear models in *Stata 7 Reference Manual*. Vol 1 A-G. College Station, TX: Stata Corporation.

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In 1999, Scott Carlson, Director of Central and East European Programs at ABA/CEELI, brought human rights organizations together to share their information regarding Kosovo and to benefit from their past experience in documenting human rights abuses. ABA/CEELI and AAAS published a report entitled *Political Killings in Kosovo/Kosova, March-June 1999* in 2000.

In April 1999, Patrick Ball and Fritz Scheuren of AAAS, with Fron Nazi of the East-West Management Institute and the Institute for Policy and Legal Studies began a study of the statistical patterns of refugee flows out of Kosovo. This work was published as *Policy or Panic: The Flight of Ethnic Albanians from Kosovo, March-May 1999*. Organizations and individuals who contributed time, data, and other assistance to these earlier projects include Physicians for Human Rights, the the Human Rights Center and the Department of Demography of the University of California-Berkeley, Fred Abrahams, Vasian Cepa, Blerina Kashari, Julia Belanger, Andrea Lako, Eric Stover, Dr. Sandra Eyster, Ilir Gocaj, and many others.

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Scholarly Review Panel

A number of people reviewed the report. An international review team was chaired by Dr. Helge Brunborg (Senior Research Fellow, Statistics Norway), and consisted of Dr. Ronald Lee (Professor of Economics and Demography, University of California-Berkeley); Dr. Francoise Seillier-Moiseiwitsch (Associate Professor of Statistics and Director of the Bioinformatics Research Center, University of Maryland-Baltimore County, and Chair, Human Rights Committee, American Statistical Association), Dr. Jean-Louis Bodin (Past President, International Statistics Institute); Dr. Carlo Malaguerra (Director General of the Swiss Federal Statistical Office-SFSO); Dr. Philippe Eichenberger (Head of the Department of Statistical Methods, SFSO); Dr. Beat Hulliger (Deputy Head of the Department of Statistical Methods, SFSO). The reviewers provided extensive comments on two preliminary drafts of the report.

A number of additional reviewers worked with us less formally. These included Dr. David Banks (U.S. Department of Transportation), Herbert F. Spirer (Adjunct Professor, Columbia University School of International and Public Affairs Human Rights Program), Louise Spirer (independent scholar), and Dr. Denise Albanese (Department of English, George Mason University).

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Authoring Organizations

AAAS Science and Human Rights Program

The Science and Human Rights Program of the American Association for the Advancement of Science (AAAS) seeks to protect the human rights of scientists and to bring the methods of science to human rights work. The Program develops and advances methods for human rights documentation and monitoring, fosters support for human rights among scientists, and conducts research on a variety of related issues. The Program's work is based on the premise that respect for human rights is essential to the conduct of science. For more information about the Program and its activities, visit <http://shr.aaas.org>.

ABA Central and East European Law Initiative

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The ABA/CEELI War Crimes Documentation Project (WCDDP) began in May 1999 with funding from the U.S. Agency for International Development and the U.S. State Department. The WCDDP has two objectives: 1) to assist efforts to investigate war crimes and prosecute perpetrators, and 2) to increase public awareness of war crimes, their prosecution, and the role of the International Criminal Tribunal for the former Yugoslavia (ICTY) in the process. On war crimes issues, ABA/CEELI has worked closely with several other nongovernmental organizations, including the Coalition for International Justice (CIJ), Chicago-Kent College of Law, and The Center for Peace Through Justice. For more information about ABA/CEELI and its activities, visit <http://www.abanet.org/ceeli/>.

Authors and Editors

Patrick Ball programmed the database, managed the quality control, and created statistical software, wrote portions of each section of the report, and provided overall direction. Wendy Betts wrote the body of the report and coordinated the coding of the ABA/CEELI and OSCE data. Fritz Scheuren provided statistical guidance and wrote Appendix 1. Jana Dudukovic managed the data clerks, oversaw the matching process, coded the KLA data, and contributed to Appendix 1. Jana Asher programmed statistical routines and wrote Appendix 2. Patrick Ball and Jana Asher developed the modeling procedures. All of the authors jointly edited the report.

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**REVISITING “KILLINGS AND
MIGRATION IN KOSOVO”
RESPONSES TO ADDITIONAL DATA AND ANALYSIS**

Patrick Ball, Meghan Lynch, Amelia Hoover
Human Rights Program of BENETECH Initiative

28 January 2007

**EXPERT REPORT PREPARED FOR THE
MILUTINOVIC ET AL. CASE (IT-0587)**

Executive Summary

In the following report on the causes of killings and refugee flow in Kosovo between March-June 1999, we confirm and expand upon the results presented in our 2002 analysis.

We describe a revised and expanded analysis of the potential causal relationship between KLA or NATO activity and peak periods of killing or refugee flow. We discuss how our coding scheme was intentionally conservative to provide the strongest possible test of the claims that the KLA or NATO was the primary cause of killings and refugee flow. As we show, with minimal, plausible assumptions, our conclusions would be even stronger.

We conclude by showing that the addition of new datasets on disappearances, the identification of human remains, and migration does not substantively change our prior results. With this report, we confirm our conclusions from 2002: we find that the data are inconsistent with the claim that the KLA or NATO could have been substantial causes of the killing and migration in Kosovo during the period March-June 1999.

Sequence of hypothetical causes and effects

Statistics do not prove that any particular process caused either refugee flow or mass killing patterns. However, analysis can show whether specific hypotheses are consistent with or contradicted by the statistical evidence.¹ In both the 2002 report and in the present report, we consider three hypotheses about the causes of observed patterns in refugee flow and killings. These three hypothesized causes are KLA activity, NATO airstrikes, or a systematic campaign conducted by

²This report quotes from and expands ideas from the report “Killings and Migration in Kosovo,” by Patrick Ball, Wendy Betts, Fritz Scheuren, Jana Dudukovic, and Jana Asher. Washington, DC: AAAS and ABA/CEELI, 3 January 2002. The current report was prepared by Patrick Ball, Meghan Lynch, and Amelia Hoover of the Human Rights Program of the Benetech Initiative.

¹This section quotes from and expands Section 5, pages 8-11, including Figures 8 and 9, from the 2002 report.

Yugoslav forces; because of available data, we are only able to consider directly the first two.

If KLA activity or NATO airstrikes occur immediately before or during periods of high levels of killing and migration, these events may plausibly be the cause of the rise and fall pattern. However, if airstrikes or KLA activity does not precede the peaks in the number of killings and refugee flow, then the causal relationship should be questioned or rejected. An analysis of KLA activity and NATO airstrikes over time and place shows that neither occurred at the times and places necessary to be the primary cause of the refugee flow and killings.

In 2002, we used the following procedure to analyze the occurrence of KLA or NATO activity in relation to the pattern of killings and refugee flow. For each municipality in Kosovo, we listed chronologically, by two-day period, the numbers of refugees departing their homes, the number of reported killings, and the incidence of KLA and NATO activity.² For this analysis, KLA activity included both battles and isolated killings of Serbs. The two-day periods marking the peaks for refugee flow and killings were identified. If an incidence of KLA or NATO activity fell within the same period or in the two-day period preceding the peak, we concluded that the two events coincided. If there was no record of KLA or NATO activity at any point prior to the peak, we concluded that KLA or NATO activity occurred only after the peak. If an incidence of KLA or NATO activity occurred earlier than two days prior to the peak period, the municipality was counted as having an inconclusive pattern.

Across municipalities, the current analysis again shows no discernible causal relationship between KLA or NATO activity and peaks in migration and confirmed deaths. Because the data coding process was automated for the 2007 analysis, the analysis reached slightly different conclusions about a few peaks. However, none of these recategorizations alters the conclusions.

The procedure used in the current report was analogous to the procedure followed in 2002. However, to further increase precision, the analysis was automated: all conclusions regarding the relationship

²Note that for this analysis, we used only the number of reported killings, not the estimated total number. The data are inadequate to make estimates at the municipality-by-two-day level. In Appendix Two of the 2002 report, we showed that estimation to adjust for underreporting changed the magnitude and relative importance of peaks. However, the adjustment did not substantially alter the pattern of peaks and troughs which is in question here. An analysis of the potential impact of alternative peaks is shown below.

between KLA or NATO activity and peaks in refugee flow and killing were machine-generated. As in 2002, we conducted four analyses for each of twenty-nine municipalities: we investigated (1) the relationship between peak refugee flow and KLA actions, (2) the relationship between the peak period for killings and KLA actions, (3) the relationship between peak refugee flow and NATO bombings, and (4) the relationship between the peak period for killings and NATO bombings.

In the first analysis (1), we calculated the peak two-day period for refugee flow in each municipality, and then determined whether KLA activity (as described in the 2002 report) occurred during that two-day period or the two-day period immediately preceding it. If so, then the peak was coded as “Coincides” with KLA actions. If, alternatively, KLA actions preceded the peak refugee flow by two periods or more, then the evidence was labeled “Inconclusive”: the data neither support nor refute hypotheses about the causal effect of KLA actions on refugee flow. Finally, if no KLA actions occurred prior to the period of peak refugee flow, then KLA actions could not have caused these peaks, and the evidence was coded as “No prior.” We repeated the analysis for each hypothetical causal relationship in each municipality. The results of this analysis are presented in Table 1.

Table 0.1: Coincidence of KLA and NATO actions with killing and migration

Municipality	KLA⇒kill	NATO⇒kill	KLA⇒migration	NATO⇒migration
Decani	Inconclusive	Coincides	Coincides	No prior
Djakovica	Coincides	Coincides	Inconclusive	Inconclusive
Glogovac	Inconclusive	No prior	Coincides	No prior
Gnjilane	No prior	Inconclusive	No prior	Coincides
Gora	No prior	No prior	No prior	No prior
Istok	Inconclusive	No prior	Inconclusive	Inconclusive
Kacanik	Inconclusive	No prior	Inconclusive	No prior
Klina	Inconclusive	Coincides	Coincides	No prior
Kosovo Polje	No prior	No prior	No prior	Inconclusive
Kosovska Kamenica	No prior	No prior	No prior	No prior
Kosovska Mitrovica	Coincides	No prior	Inconclusive	Coincides
Leposavic	No prior	No prior	No prior	No prior
Lipljan	Coincides	Inconclusive	Coincides	Inconclusive
Novo Brdo	No prior	No prior	No prior	No prior
Obilic	No prior	No prior	No prior	No prior
Orahovac	Coincides	No prior	Coincides	Coincides

Pec	Coincides	Coincides	Coincides	Coincides
Podujevo	Inconclusive	Inconclusive	Inconclusive	Coincides
Pristina	Coincides	Coincides	Coincides	Coincides
Prizren	Coincides	No prior	Coincides	Coincides
Srbica	Coincides	No prior	Inconclusive	Inconclusive
Stimlje	No prior	No prior	No prior	Coincides
Strpce	No prior	No prior	No prior	No prior
Suva Reka	Coincides	No prior	Coincides	No prior
Urosevac	No prior	No prior	Inconclusive	Coincides
Vitina	No prior	Inconclusive	No prior	Inconclusive
Vucitn	Coincides	No prior	Coincides	No prior
Zubin Potok	Inconclusive	Coincides	No prior	No prior
Zvecane	No prior	No prior	No prior	No prior

As noted above, the 2007 analysis is consistent with the conclusions of the original 2002 analysis. For both KLA and NATO, one or a few peaks have been recategorized, but the balance of categorizations remains similar. For example, while peak periods for killings were recoded as "Coincides" with NATO bombings in three municipalities, it is still the case that in 19 of 29 municipalities, no NATO activity preceded the peak period for confirmed deaths. Moreover, another three peaks have been recoded from "Inconclusive" to "No prior" or from "Coincides" to "Inconclusive," further weakening the case for the KLA and NATO hypotheses. We conclude that the evidence fails to support the hypotheses that either KLA or NATO actions could have been the primary cause of killings or migration.

In the graphs presented in the Appendix, KLA activity, NATO bombings, refugee flow, and killings are shown by municipality over time. Examining a few representative graphs illustrates the coding described above. Seven of the twenty-nine municipalities (Gora, Kosovska Kamenica, Leposavic, Novo Brdo, Obilic, Strpce, and Zvecane) experienced no KLA or NATO activity prior to the peak period of migration or killings, indicating that in these municipalities, the peaks in migration and killing could not have been caused by KLA or NATO activity. In Gora, for example, there was significant migration from the area (8246 refugees on the peak day), but no KLA or NATO activity reported. In Podujevo, it is more difficult to draw conclusions from the patterns: the peak of killings, for example, is before the greatest period of KLA activity, but the effect of KLA on killing is coded as inconclusive because some non-zero amount of KLA activity occurred before the peak of killings. The peak of migration occurs shortly after a NATO bombing, so we code that peak as coinciding with NATO activity. Note that "coinciding" measures

correlation rather than causation. We do not know what other events may have occurred at the same time, so the most we can infer from these data is that a NATO bombing occurred prior to a wave of migration. In Pristina, both KLA and NATO activity coincide with killings and refugee flow. Pristina experienced more NATO bombings (twelve) than any other municipality, and there were multiple KLA interactions with the police. However, these results are unsurprising because Pristina is the capital of Kosovo, the site of several military installations, and was consequently a center of KLA and NATO activity.

Re-evaluating the effect of the coding rules

Both the 2002 and 2007 analyses used “conservative” coding rules in order to give the KLA and NATO hypotheses the fairest possible test. That is, if there were any possibility that the KLA or NATO could have caused migration or killing, the municipality was coded as inconclusive or coinciding. The coding scheme that produced the categorization in the table above may have yielded excessively conservative results for three reasons.

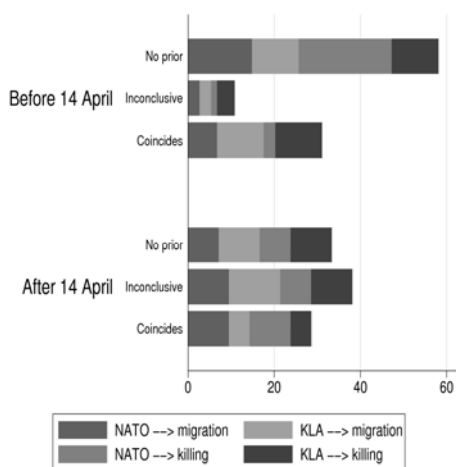
The first reason is timing. Peaks are labeled as inconclusive with respect to NATO or KLA effect on killing or migration if *any* KLA or NATO activity was observed prior to the peak. Peaks toward the end of the period are thus more likely to be labeled as inconclusive, even if the KLA or NATO activity was far removed from the peak in time. For example, in Decani the peak of killings occurs late in the period, while most KLA activity occurred very early in the time period. Although KLA activity is unlikely to have affected these later-observed peaks, the case is nonetheless categorized as inconclusive with regard to KLA effect on killings. The data demonstrate that the “inconclusive” category includes some municipalities in which the peak refugee flow or peak period of killings occurred much later (even months later) than KLA activity or NATO bombing. If our “inconclusive” coding rule had limited the time difference between KLA or NATO activity and peak refugee flows or killings, then several more municipalities would have been coded as “no prior.”

Indeed, “inconclusive” codings fall much more heavily in the second half of the period under analysis.³ If the length of time between

³Both the 2002 and the 2007 analyses considered 27 consecutive two-day periods in each of the 29 municipalities. The first half of this period begins 20 March and ends 13 April; the second half begins 14 April and ends 11 May.

putative cause and potential effect made no difference to the outcome of coding, we would expect to observe roughly equal proportions of "inconclusive" results in the first and second halves of our date range. However, this is clearly not the case (see Figure 1). Before 14 April, the fraction of all peaks that are categorized as inconclusive is approximately 10%, while it is nearly 40% for the peaks that occur after 14 April. As the period advances, there is more time available for KLA or NATO activity to have occurred earlier, thereby creating a possibly spurious "inconclusive" finding.

Figure 0.1: Percent Coded "Inconclusive" by Period



The second reason our coding scheme may have produced conservative results is that it considers only the *peak* of killings and migration. Some secondary or minor peaks provide further evidence of cases in which KLA or NATO activity did not affect killings or migration. In Stimlje, for example, a secondary peak of migration and of killings that both occur at the same time has no prior NATO or KLA activity. Even though the peak of migration in this graph coincides with a NATO bombing, a clear secondary peak does not coincide either with NATO or KLA activity. Similarly, in Urosevac, the peak of killing (29

reported dead) is followed shortly by another, secondary peak in killing (22 reported dead). No NATO or KLA activity was reported prior to either of the peaks; however, only one of the two peaks is counted as evidence that KLA and NATO activity were not the primary cause of killings and migration.

This analysis presents cases where peaks of migration and killing were preceded by NATO or KLA activity to see if positive evidence exists of NATO or the KLA's effect on killings and migration. However, we can also use negative evidence – looking at what did *not* occur. In addition to peaks of killings or migration not preceded by KLA or NATO activity, we can also look at periods of KLA or NATO activity not followed by killings or migration. For example, in Kosovo Polje, where two NATO bombings occur in the second half of the period (on 27 April and 9 May), no killings followed and extremely minimal migration is reported (of 11,502 total reported refugees from Kosovo Polje, only nine people left on or after 27 April). In Leposavic, there were three reported NATO airstrikes, none of which was closely followed by killing or migration. Urosevac provides a final example: out of 137 people reported killed during this time period, only four (2.9%) were killed after KLA activity began.

We conclude that the data are not consistent with the claim that either KLA or NATO activity could account for the timing or location of migration and killings. The patterns of killings and migration are widespread and systematic, but they do not consistently link to KLA or NATO activity, nor do KLA or NATO activity consistently link to the patterns of killing and migration. There are killings and migration unexplained by NATO and KLA activity, as well as NATO and KLA activity not followed by killings and migration. Therefore, some other factor is needed to explain the patterns of killings and migration in Kosovo during March-June, 1999.

Additional data from ICMP, ICRC, and OMPF

OTP made available datasets of identified human remains and persons missing from Kosovo. There were insufficient resources available to match the new datasets to the four datasets used in the earlier work in order to conduct further multiple systems estimation. However, we compared the ICMP, ICRC, and OMPF reported killings to the estimated total killings presented in the 2002 report; the results are shown in Figure 2 .

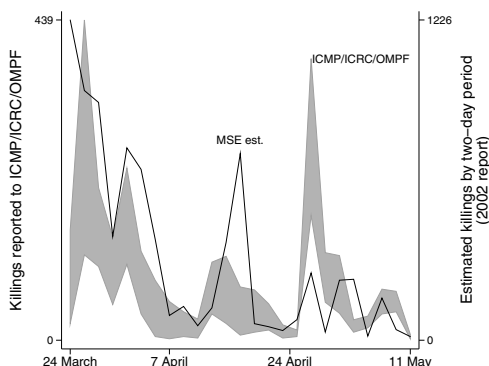


Figure 0.2: ICMP, ICRC, and OMPF reported deaths and disappearances, compared to estimates

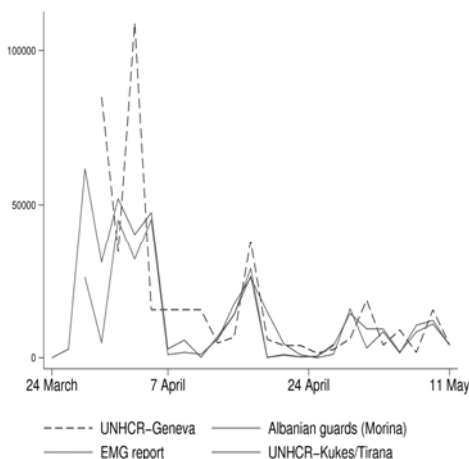
This graph presents the maximum and minimum of the ICMP, ICRC, and OMPF data for each two day period, compared to the multiple systems estimate from the 2002 report.⁴ Relative to the estimates, there are fewer deaths in any one of the new series, so the maximum reported number of killings in any two-day period was 439, contrasting with the peak of 1226 maximum estimated killings. However, the ICMP/ ICRC/ OMPF reported deaths follow a very similar pattern to the 2002 estimates. The characteristic three-phase cycle of the conflict can be seen in the three new series. The new series report that the later period saw a brief high point of killings; this peak was relatively less important in the estimates. To evaluate whether this pattern is significant would require a complete match of all seven datasets and subsequent re-estimation of the pattern over time. Nonetheless, the minor difference observed in early May does not affect the substantive interpretation of the pattern presented in the 2002 report. We therefore find that it is unlikely that including one or all of the new series would substantially change the estimates or interpretations made in 2002.

Additional data from UNHCR

OTP made available a file from UNHCR-Geneva containing daily reported totals of refugees from Kosovo under protection in neighboring countries. The graph below compares the UNHCR Geneva series data on refugees in Albania to three other sources: the Albanian border guards' daily registries, the totals reported by UNHCR in Kukes and in daily press conferences in Tirana, and the totals reported by the Albanian government Emergency Management Group.

⁴"Multiple systems estimation" is a technique which uses two or more independent sources of information about a process to project the *total* number of cases of that process. The utility of this method is that the number of cases that are never documented can be estimated so that the resulting analysis is not biased due to some cases being hidden. The method is widely used to correct censuses and estimate wildlife populations.

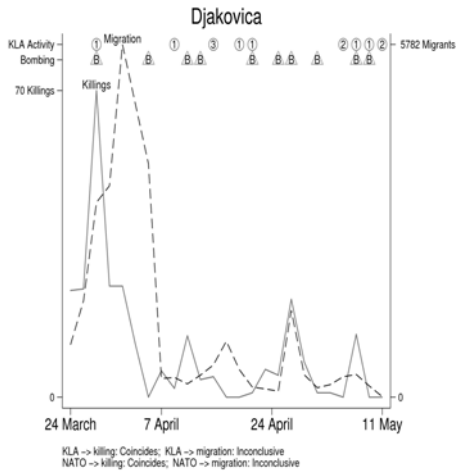
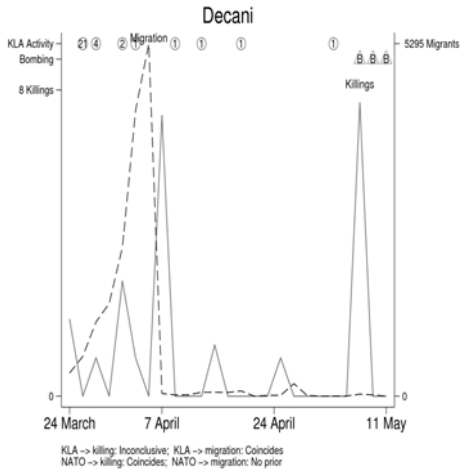
Figure 0.3: People leaving Kosovo, four sources

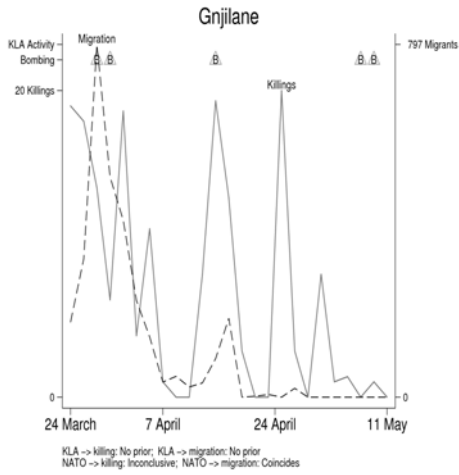
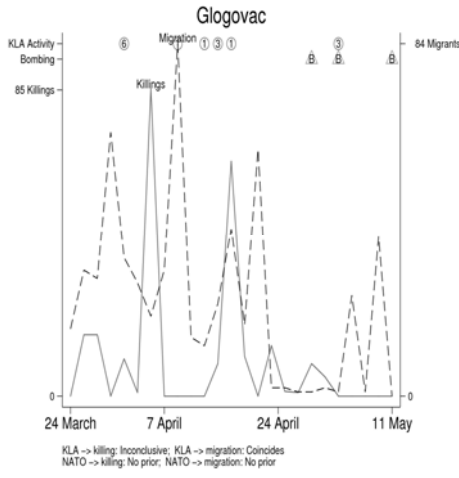


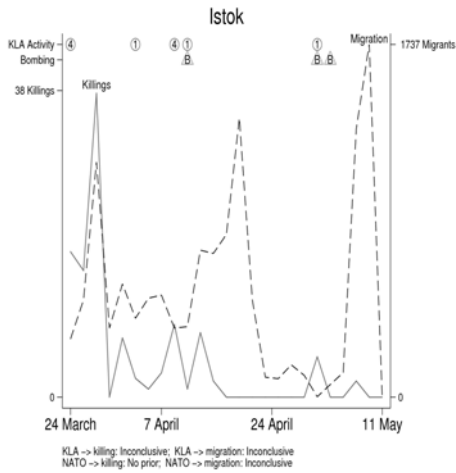
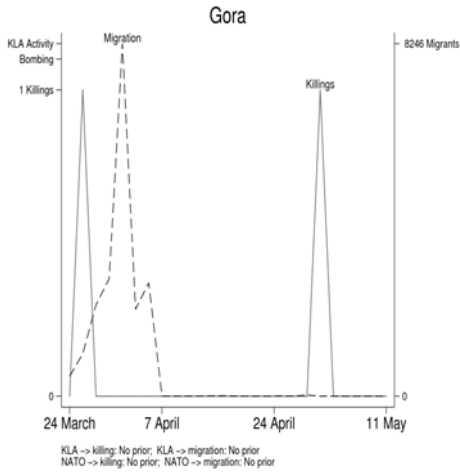
The series are substantially identical. The UNHCR-Geneva data tend to be episodic, as if the statistical reporting reached them only after several days. The characteristic three-phase rising and falling patterns coincide in all series. We conclude that adding the UNHCR-Geneva data to the 2002 analysis would not substantially change the statistical conclusions.

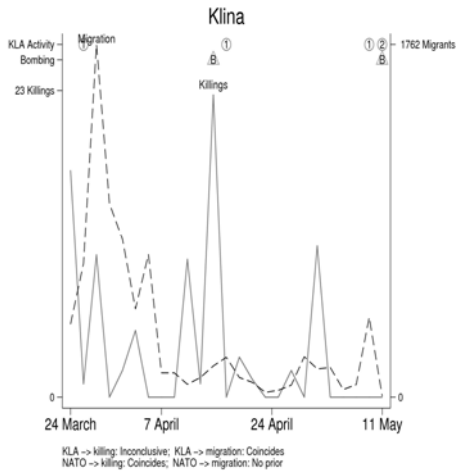
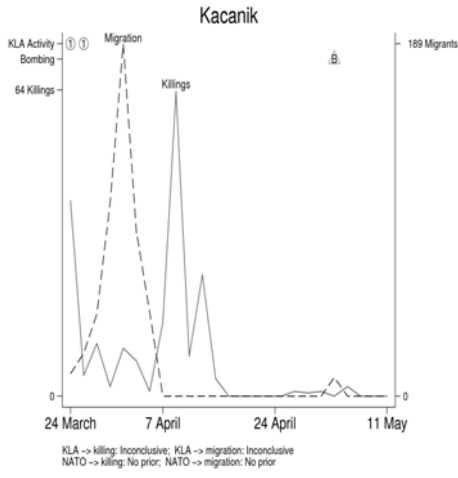
Appendix: Graphs of killing, migration, KLA and NATO activity, by municipality

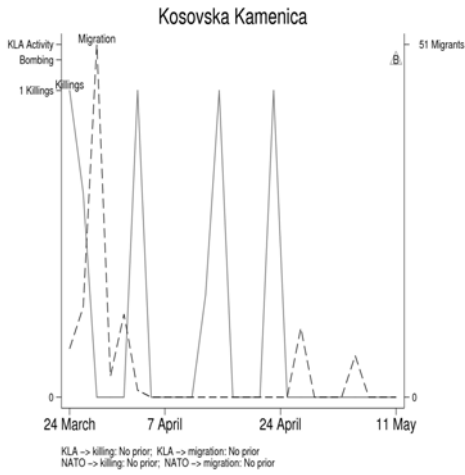
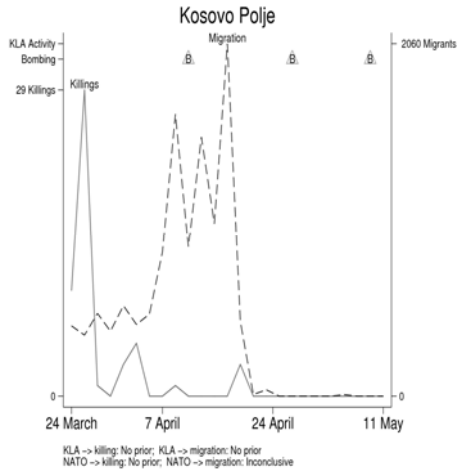
The graphs below show the two-day total reported killings, migration, KLA activity, and NATO airstrikes for each of Kosovo's 29 municipalities. Reported killings and migration are shown by lines on the graphs, with the peak of each series identified. The maximum numbers of killings and migrants are identified on the vertical axes. KLA activity is shown in circles across the top of the graph, with the number of reported incidents in each two-day period in the circle. NATO airstrikes are denoted by triangles enclosing the letter "B."

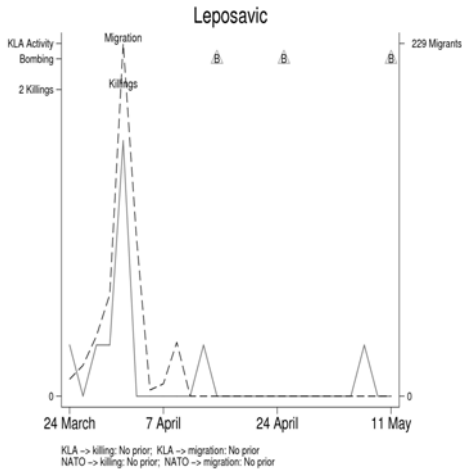
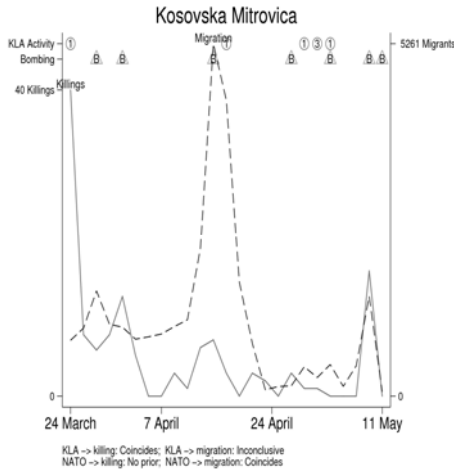


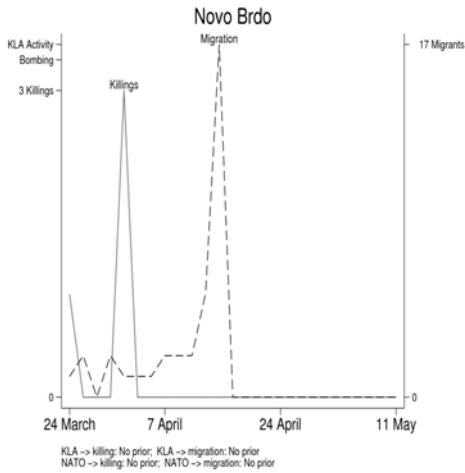
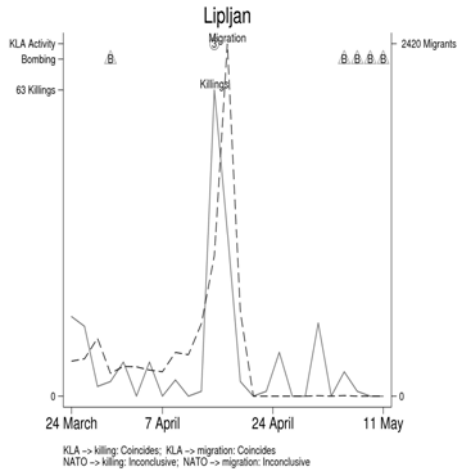


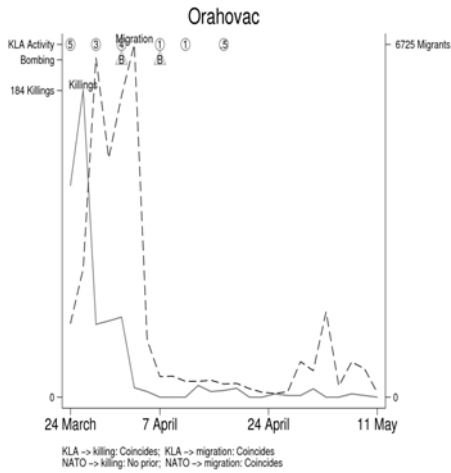
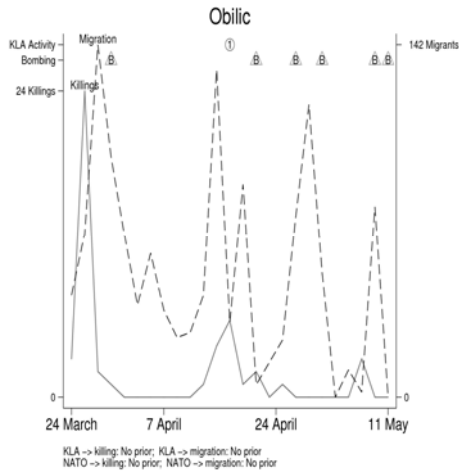


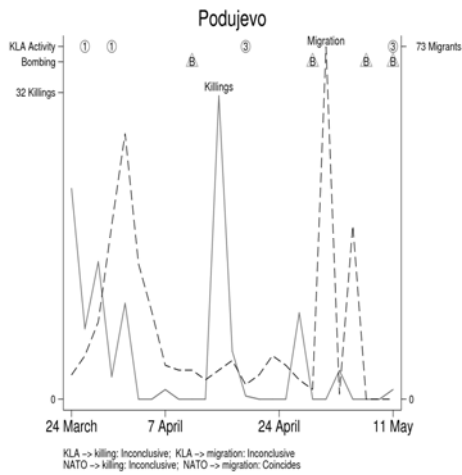
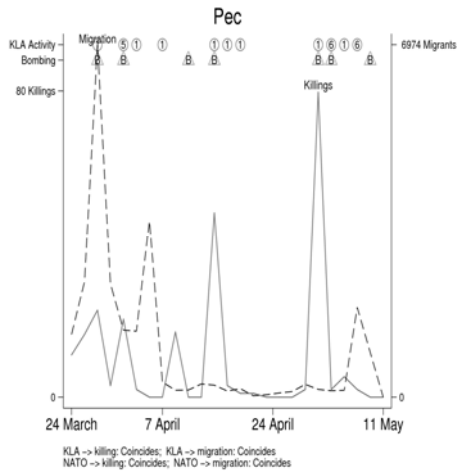


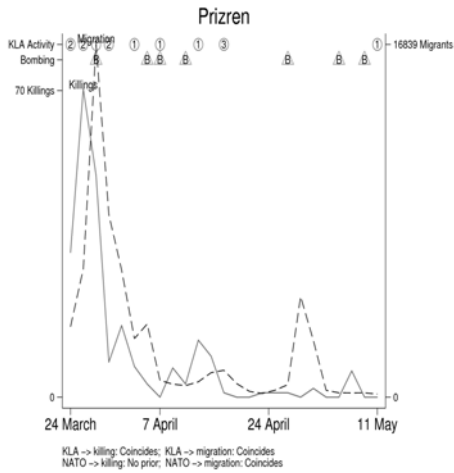
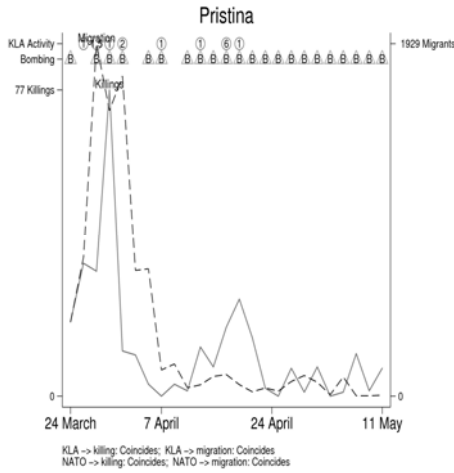


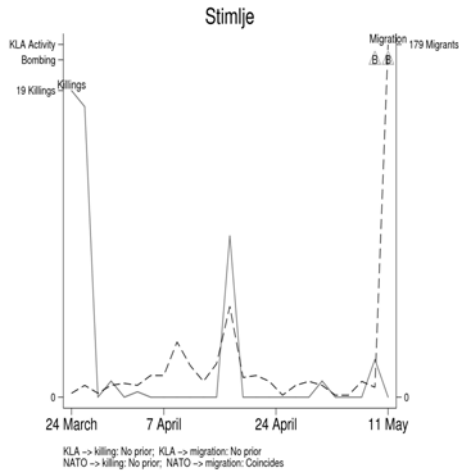
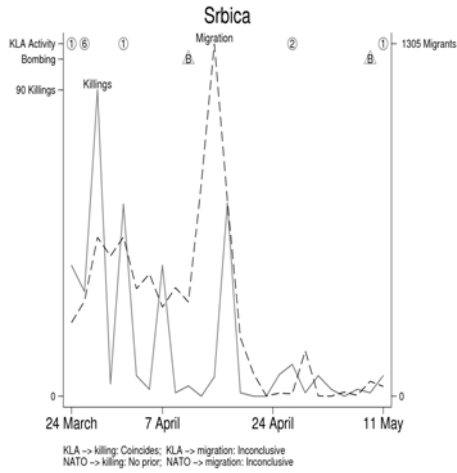


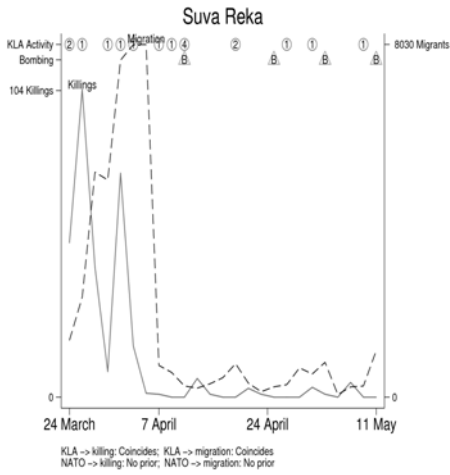
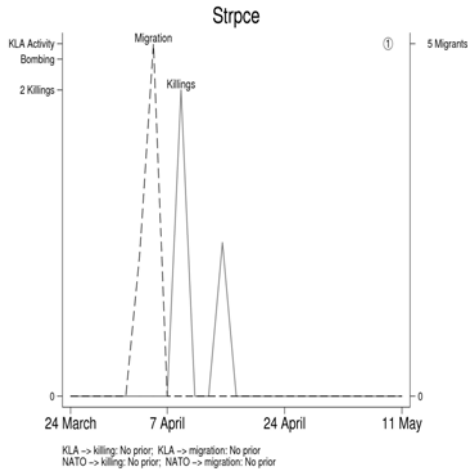


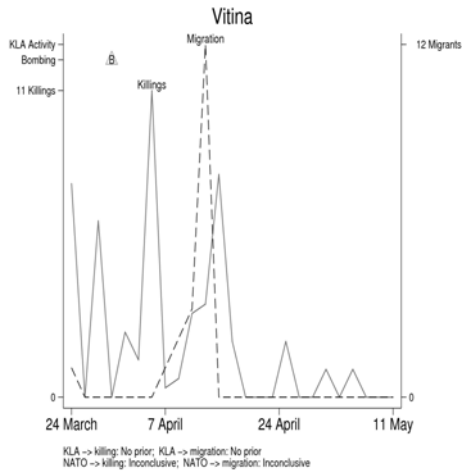
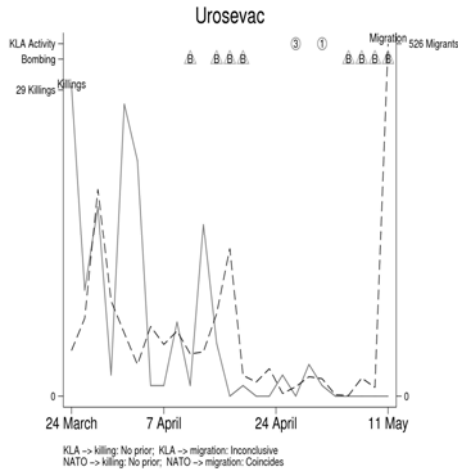


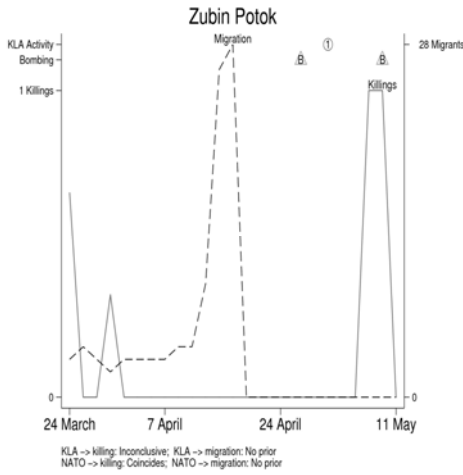
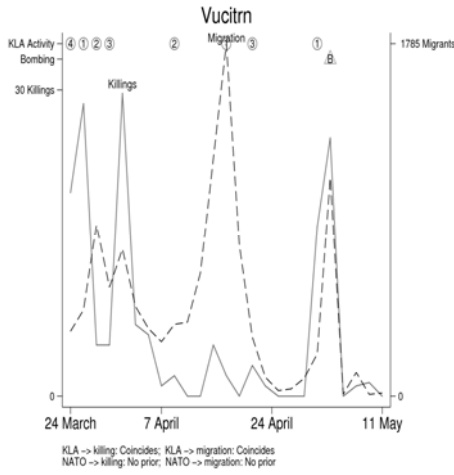


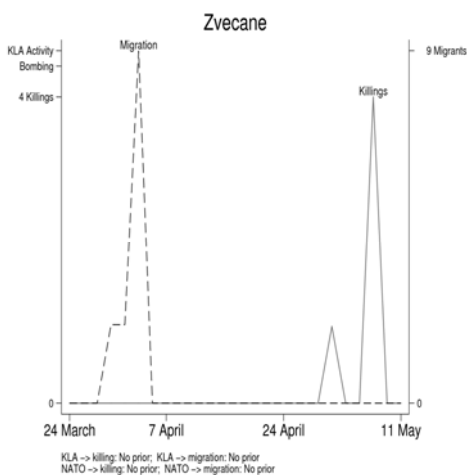












About the report

Patrick Ball, Meghan Lynch, and Amelia Hoover designed and conducted the statistical analysis and wrote this report. Benetech Field Statistician Romesh Silva and Professor Todd Landman of the University of Essex reviewed the material before submission to the ICTY.

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**REPORT ON THE SIZE
AND ETHNIC COMPOSITION
OF THE POPULATION OF KOSOVO**

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Summary

After a review of several sources and related literature in demography, it is my opinion that the population of Kosovo in the period preceding the conflict there in 1998-1999 was about 2,1 million, or between 2,0 and 2,2 million. Of this total, the percentage of ethnic Albanians would be about 83 per cent, or between 80 and 85 per cent, and that of ethnic Serbs about 10 per cent, or between 9 and 13 per cent, leaving persons in other ethnic groups at about 7 per cent.

There are several reasons for uncertainty about the size and ethnic composition of the population of Kosovo in the 1990s. The primary reason is that the 1991 census was boycotted by the Albanians. The second major reason is that there was substantial but not tabulated migration from and to Kosovo in the 1990s, of Albanians, Serbs and other nationalities. However, several estimates of the size and ethnic composition of the population have been made, and an assessment of their results and methods permit certain conclusions to be made about the population in Kosovo in the relevant period.

The Federal Statistical Office (or, FSO) of the Federal Republic of Yugoslavia (FRY) has itself estimated the size and composition of the population in 1991, based on a projection of the 1981 census population and on certain assumptions about the trends of fertility, mortality and migration since 1981. The FSO estimates, which seem quite reliable, show a total population of 1,956,000 in 1991, of which 82 per cent were ethnic Albanians, 10 per cent ethnic Serbs and 8 per cent others. These estimates are estimates of the *de jure* population, however, since they include people who are temporarily working abroad. The FSO has also estimated the *de facto* mid-year 1991 population at 1,935,000, only 33,000 lower than the *de jure* estimate for mid 1991.

It is more difficult to estimate the population size before the conflict in 1998-1999, because no census was conducted in the 1990s and because migration streams during the 1990s, which may have been significant, are not well recorded.

There are, however, two independent sets of estimates of the population shortly before the 1998-1999 conflict. The first set of estimates, made for 1997 by the FRY's Federal Statistical Office, found a *de jure* population of 2,188,000 and a *de facto* population of 2,166,000 during the relevant time period. FSO has also estimated the *de jure* population in mid 1998 at 2,222,000.

The second set of estimates, by a group of French demographers at the University of Montesquieu-Bordeaux, estimated that the *de facto* population of Kosovo on 1 October 1998 was between 2,044,000 and 2,131,000 people. This estimate was based on a large representative household survey conducted in Kosovo during November 1999-February 2000, in collaboration with the United Nations Population Fund, the International Organization for Migration, and the Statistical Office of Kosovo. The research conducted by these demographers included questions about temporarily absent household members. Responses to these questions also permitted the demographers to estimate that the population would have been 2,290,000 if there had been no such departures since 1981.

The *de facto* estimates for 1997 and 1998, 2,188 million (FSO) and 2.044-2.131 million (Blayo et al), are very close, both of them being slightly more than two million. These esti-

mates are probably the best that can be obtained since no accurate data exist, and permit conclusions to be drawn as to the population of Kosovo at the relevant time period.

There are also other estimates for 1998 and the preceding years, which were reviewed for this report. The Federal Secretariat of Information of the FRY estimate for 1998, 1,3 million total in Kosovo, of which 917,000 are Albanians, is markedly lower than other estimates for 1998. For this estimate to be correct an exceedingly high volume of net out migration would have had to take place, about 750,000 from mid 1997 to mid 1998. Thus, the estimate does not seem to be realistic. I do not know the basis for the estimate, however, but it would be highly unusual if the Federal Secretariat of Information had at its disposal migration and other data that another government institution, the Federal Statistical Office, would not have or be provided with to revise its own estimates.

Likewise, another estimate, by Islami (1997) for 1995, that the Kosovo population in 1997 was 2,2 million (probably also intended to be a *de facto* estimate), does not seem to be realistic, being very high.

Finally, the United Nations High Commissioner for Refugees (UNHCR) has also made a *de jure* estimate for 1998, probably for 31 March, as an extrapolation of the 1991 census population, arriving at 2,188,817. This figure is very close to the FSO *de jure* mid-year estimate for 1998, 2,220,000.

All of these three estimates also include the ethnic composition of the population, but as mentioned above the first two do not seem realistic. However, the UNHCR estimate offers a useful estimate of the ethnic composition. As the UNHCR estimate is *de jure*, it is likely that the *de facto* ethnic composition did not deviate very much from the *de jure* composition, since there probably was net out-migration of all ethnic groups from Kosovo in the 1990s.

On the basis of my review of several sources of population, the most reliable estimate of the ethnic distribution appears to be that of the UNHCR estimate, while the most reliable estimate of the total population appears to be that of the Blayo estimate. Thus, I find that there were between 1,708,000 and 1,780,000 Albanians, between 197,000 and 205,000 Serbs, and between 139,000 and 145,000 other nationalities in Kosovo in the first half of 1998. Or, since these numbers may appear to be more accurate than they may be in reality, I conclude that there were about 1,7 million Albanians, about 200,000 Serbs and about 140,000 people of other nationalities in Kosovo in 1998. This corresponds to 83 per cent Albanians, 10 per cent Serbs and 7 per cent other nationalities.

For this report, I have also looked at other aspects of the population development of Kosovo. I found that the population growth of Kosovo has been high but declining during the last half century and that this is likely to continue for the next 20 years, according to population projections made in 1996 by the Federal Statistical Office before the conflict in 1998–1999. The population movements in Kosovo in recent years have certainly changed the population prospects for the province, however.

Finally, I conclude that the major reason for the fast population growth has been the elevated fertility of the Kosovo Albanian population as compared to the Serb and other population groups, but the Albanian fertility is declining rapidly, however, just as in the rest of Europe.

1. Background

I have been asked by the Office of the Prosecutor (OTP) of the International Criminal Tribunal for the Former Yugoslavia (ICTY) to prepare a report on the size and ethnic composition of the population of Kosovo, before the conflict in 1998-1999. The report does not discuss population changes after 1998.

The sources of information for this report are set out in the list of references at the end of the report. Where appropriate, I have made specific references to sources or indicated the extent to which some sources were not available to me.

Because of the limited time available for writing this report, the difficulties in identifying and obtaining statistical and other publications, and also possible language limitations, it is possible that there are relevant publications and statistical sources that I have not been aware of or had access to. The possibility that some of these could have an affect on the findings and conclusions presented in this report cannot be excluded.

2. Introduction

The main statistical office of the Socialist Federal Republic of Yugoslavia (SFRY), and later of the Federal Republic of Yugoslavia (FRY), is located in Belgrade.¹ The Serbian name is *Savezni zavod za statistiku*, which is now translated into "Federal Statistical Office" (or, FSO), has previously also been translated as "Federal Institute for Statistics" (and this term is also used in this report). During the SFRY period there was also a statistical office in each of the six republics and the two autonomous provinces, Vojvodina and Kosovo (called Kosovo and Metohija by Serb authorities). The federal office was responsible for the design and planning of the various statistical activities and for publishing the results, whereas the republican and provincial statistical offices usually did the collection of the data and the data entry.

Population and Housing Censuses were taken in Yugoslavia in 1948, 1953, 1961, 1971, 1981, and 1991.² They were planned by the Federal Statistical Office in consultation with the republic/province offices.³ The enumeration forms were the same in all republics/provinces, except for language and alphabet. In some cases, however, "*the republican institutes were authorized by the federal Statistical Institute to make additional instructions*" for the enumerators. For the 1971 census this was done on the question of nationality - primarily on how those offices should handle responses relating to regional or local affiliation instead of nationality or ethnic affiliation (Federal Institute for Statistics 1974).

Ethnicity, or rather nationality in the sense of national belonging or affiliation (*nacionalna pripadnost*), has been recorded in all SFRY censuses: "... *the question on nationality was asked in the same way and basically the same classification was applied for the results presentation.*" (Federal Institute for Statistics 1974). Nationality has always been recorded through self-reporting in the censuses (Klopčić 2000). In 1971 it became possible for the respondents

¹ The information in this section regarding the Yugoslav organs that dealt with population statistics and demographics is based on material that is publicly available. This information is set out for background purposes only.

² "Prvi rezultati opstinama" (First results on municipalities), *Statistički bilten* no. 1890, Savezni zavod za statistiku, Belgrade 1991.

³ "*The work on the methodology and organization of the census were carried out by the services of the population statistics and industry and construction census of the Federal Institute for Statistics. The final solutions of the methodology were adopted in expert methodological group of the Federal Institute for Statistics in consultation with republican and provincial statistical institutes.*" (Federal Institute for Statistics 1974).

to express their nationality or ethnic affiliation without any predetermined categories, including the right *not* to state this.⁴

In my opinion, the Yugoslav censuses were conducted by professional statisticians according to recognized international methodologies. One of the 1971 census methodology publications, for example, mentions that when the draft questionnaire was compiled, use was made of the recommendations of the Conference of European Statisticians for the population and housing censuses around 1970 (Federal Institute for Statistics 1974).

The most serious problem with the results of the SFRY census in 1991 is the question of the impact of the boycott of it by Albanians in Central Serbia, Kosovo and Macedonia. Measures taken by the FSO to address this issue are described later in this report.

3. Problems in obtaining population estimates

The most common method to obtain estimates of the size and composition of a population is to conduct a population and housing census. Practically all countries in the world take censuses regularly, usually every ten years. Censuses present many challenges, being very large undertakings, to ensure high coverage and high-quality data.

De facto and de jure

At the outset, a consideration of the FSO's census results requires a brief explanation of certain principles of population statistics. One of these is the definition of the population to be enumerated. The two main concepts are the *de facto* and *de jure* population: "*The total population of a country may comprise either all usual residents of the country (de jure population) or all persons present in the country (de facto population) at the time of the census. For purposes of international comparisons, the de facto definition is recommended.*" (United Nations 1958). Strict conformity to either of these two simple concepts is rare, however (United Nations 1996).

The Yugoslav censuses appear to follow the *de jure* concept since the population is enumerated according to the "*principle of resident population*", although the term "*de jure*" is not used expressly.^{5,6} For the issues discussed in this report the most noteworthy part of the popu-

⁴ "*The data on ethnic nationality are the result of freely expressed ethnic nationality of population, respectively of parents (guardians) in the case of children under 10 in the censuses up to 1961, or under 15 years of age since the 1971 census.*" (Federal Statistical Office 1997)

⁵ "*In all six post war censuses the population was enumerated and the results shown by the principle of resident population. It means that every inhabitant had to be enumerated in the place of permanent residence, even when at the time of the Census he/she was absent from that place due to any reason (travel, education or field work, temporary work abroad, compulsory service in the Army, medical treatment, penal service, imprisonment, etc.). Data on these persons were furnished by their households. Accordingly, data on persons were included in the census results for the locality the persons was domiciled, regardless of whether this persons was in that or some other locality at the time of the Census.*" (Federal Statistical Office 2001). Emphasis added.

⁶ Federal Institute for Statistics (1974, p.22-23) notes in the section Persons engaged at temporary work abroad: "In the 1971 census as persons at temporary work abroad were considered the citizens of Yugoslavia who stayed abroad and worked there with a foreign employer's or on own-account. [...]"

Whether a work of an individual is to be considered as "temporary" was concluded on the basis of statement of those who provided the information (as a rule household members). The response "temporary" work was entered regardless of the duration stay of a responding person. The reason for this is that even persons when leaving for abroad, as well those who already found job abroad, often do not make a firm decision in respect of duration of their stay abroad. [...]"

Persons at temporary work are distributed in the tables of results in this book, according to age, ethnic nationality, literacy status, educational attainment and their activities prior to leaving the country in order to find a job abroad, in the same way as other population. However, in order to make possible the use of the census data

lation that is absent but nevertheless enumerated is “persons at temporary work abroad”. This is done “regardless of the duration of stay of a responding person” (Federal Institute for Statistics 1974). This is not strictly in conformance with the United Nations recommendations since persons temporarily in a country may be considered residents after some time and consequently be included in the census of that country as well. This makes international comparison difficult (UN 1996).

Data on temporarily absent workers are provided by the members of their households, as explained in footnote 5. This implies that such persons will only be included if there is a member of the household to report them in the census. Thus, if all household members have gone abroad there will be nobody to report them.⁷

Most tables on the Yugoslav population include temporarily absent persons. The Federal Statistical Office has, however, also published tables that show the population “in the country”, “Based on the projections of the number of Yugoslav citizens at temporary work abroad.” (FSO 1997). These statistics correspond closely to the *de facto* population concept. These FSO estimates, when compared with other FSO estimates, show that the difference between the *de jure* and *de facto* population counts for Kosovo are between 28,000 and 91,000 persons (1.7-4.6 per cent of the resident population) for the years for which I have found data, see table 6. These temporarily absent persons appear to include both Albanians and Serbs in other former Yugoslavia republics and outside Yugoslavia.⁸

The FSO estimates of the temporarily absent workers abroad, 28,000-91,000 people, are substantially lower than some other estimates of the number of Albanians living abroad: Malcolm (1998) writes that 368,000 Kosovo Albanians were living in Western European countries in 1993, whereas Islami (1997) estimated that about 500,000 Albanians from throughout the former Yugoslavia lived abroad in 1997 (cited by Grecic 1999). However, the estimates cited by Malcolm and Grecic include many Albanians who have become residents abroad, including many who emigrated with their entire households, leaving nobody to report their absence. Such persons would be counted in neither *de jure* nor *de facto* population estimates. Consequently, the estimates of the absent workers mentioned above need not be inconsistent with each other.

Population estimates

For years without population counts, such as those between censuses and after the most recent census, annual population numbers can be estimated.⁹ Several different methods can be used

on economic characteristics of population which lives and works in the country separately from the data on persons at temporary work abroad, these persons are not grouped into individual modalities of the characteristics “employment status” and “industry”, but are shown in summary figures as “persons at temporary work abroad”. Detailed data on these persons are published in Statistical bulletin, No. 679, published in August, 1971.”

⁷ Blayo et al. (2000) found that of those had been absent from Kosovo for more than a year in 1999, between 10 and 34 per cent had left with the whole household.

⁸ FSO (1997: 64) reports that there were 25,000 persons at temporary work abroad, including their family members in 1971 and 39,434 such persons in 1981. It is not clear, however, if these numbers include all persons temporarily absent from Kosovo or only persons absent from Kosovo who are outside SFRY.

⁹ Countries with good population registers that are updated regularly can derive register-based population statistics for any year. However, only a few countries in the world have registers good enough for this purpose, mainly the Nordic countries. Although a universal ID number (*matični broj*) was introduced in Yugoslavia in 1981, this was not used to derive statistics on the size and composition of the population. Some of the former Yugoslav republics have developed registers that can be used for this, in particular Slovenia, but not Serbia or the autonomous provinces of Vojvodina and Kosovo. The main difficulty is in updating a population register with data on births and deaths, and particularly with migrations, since moves are often not reported.

for this. The simplest is to extrapolate the growth rate of the population, but this does not take into account age structure dynamics and trends in birth, death and migration rates.

The most common method is to project the total population from one year to the next, adding births and in-migrations and subtracting deaths and out-migrations. This method, known as the natural increase method, assumes that there are statistics or reliable estimates of these events. Data on births and deaths are usually obtained through the so-called vital statistics system. Yugoslavia has had such a system for many years, like most countries. A problem is raised by the availability of data on migration, which are difficult to obtain, even if a system to register moves was established in SFRY 1988. Consequently, the Federal Statistical Office calculates its annual mid-year estimates of the total population by adding the *natural* growth for each year, that is the surplus of births over deaths.

This method for estimating annual population totals is inconvenient for estimating the population by age and sex. The so-called *cohort component method* is more appropriate for this. According to this method a population for an area is projected by age (cohort) and sex, taking the demographic components mortality, migration and fertility into account for each age group. It is most common to project five-year population groups by sex five years forward at a time, subtracting estimated numbers of deaths and out-migrations and adding in-migrations and births (to women in each age group). The Federal Statistical Office used this method to estimate the 1991 population in Kosovo, projecting the 1981 census population forward for ten years.

4. Migration

Migration to and from Kosovo is a highly political and contested issue. Before I present some data on this I would like to point out some essential aspects on the quantification of migration:

- It is usually very difficult to measure migration. Most countries do not have systems that require people to register moves in the same way as births and deaths are registered in vital statistics systems.
- Even if a country has established a system for registering migrations, like SFRY, people often do not report their moves, especially when they have no incentive to do so.
- Migration between urban and rural areas, and from less prosperous to more prosperous regions and countries is normal all over the world (unless migration is strictly controlled). This also occurred from the poorer to the richer Yugoslavian republics, provinces and municipalities. This factor contributed to out-migration from Kosovo.
- As a general principle, small (or large) net migration streams are normally the result of much larger gross migration stream in each direction.

There are many examples of migration streams to and from Kosovo in the literature, including migration of both Serbs and Albanians from Kosovo for economic reasons but also due to violence and persecution; migration into Kosovo from Albania; migration into Kosovo of Serbs from Croatia and Bosnia and Herzegovina during the war period 1992-1995, settlement of Serbs from Central Serbia in Kosovo, etc.

The contentious nature of this issue is illustrated by the contrasting views in the literature. Grecic (1999), for example, writes that 150,000 – 200,000 Serbs were forced to leave Kosovo between 1961 and 1981, whereas Malcolm (1998) writes that “*the most careful study of this issue concluded that there was a net emigration of between 80,000 and 100,000 between 1961 and 1981. This estimate is in line with evidence of the 1981 census, which found that 110,675*

people living in inner Serbia ... had moved there from Kosovo, of which 85,636 had come there in the period 1961-81.” (page 350).

The Federal Statistical Office does not regularly publish migration statistics in its statistical yearbooks, but it has done so in connection with its population projections, see table 1.¹⁰

Table 1. Average annual net out-migration from Kosovo

	Historical	Assumed for projections 1991-2021	
		Constant migration variant	Variable migration variant
1961-1971	3685		
1971-1981	5294		
1981-1991	6213		
1991-2001		7298	7161
2001-2011		8797	8182
2011-2021		10430	6683
Average annual crude net migration rate (per 1000)			
1961-1971	-3,3		
1971-1981	-3,7		
1981-1991	-3,5		
1991-2001		-3,4	-3,4
2001-2011		-3,4	-3,3
2011-2021		-3,4	-2,4

Source: Yugoslav Survey XXXVIII No. 1, 1997: 3-34

These figures are the result of migration streams out of Kosovo, both to other parts of Yugoslavia, including Central Serbia, and to foreign countries, as well as migration streams into Kosovo. The annual net migration figure of 6213 persons from Kosovo during 1981 -1991 implies a total net emigration of 62,000 during that 10-year period.

We notice from table 1 that the net migration rate from Kosovo, 0.3-0.4 per cent of the population per year for 1961-1991, is relatively modest. FSO assumed in 1996, when the population projections were made, that this level of net out-migration would continue during the 1990s and for the period 2001-2021.

Blayo et al. (2000) have estimated the impact of migration on the population of Kosovo, based on a representative survey of more than 40,000 persons from November 1999 to February 2000. The sample represents approximately 2.5 per cent of the population estimated in August 1999 by UNHCR, based on information from village authorities, 1,560,000. Because of the risk of overestimation by counting absent persons in certain villages and doubts about the intensity of returns by entire households, Blayo et al. bounded the UNHCR estimate by the interval 1.4-1,7 million.

The survey asked the sampled households to list all persons who were absent, finding that 12.3 per cent were absent at the time of the interview, which represents approximately 225,000 persons for all of Kosovo. About 62 per cent of these left before 1998. Blayo et al. note that “The figure of 225,000 does not cover all persons absent from Kosovo, because it does not include those belonging to household in which all members left Kosovo, leaving no one to report their absence.” By combining the 1981 census data with vital statistics data and subtracting the UNHCR 1999 estimate, the authors found that between 611,000 and 911,000 left Kosovo during 1981-1999. Breaking this number down to when they left, they arrived at

¹⁰ FSO does publish, however, statistics on displaced persons and inter-republic migration, but not migration to other countries.

an estimate of the total population present in Kosovo on 1 October 1998 of 2,044,000 - 2,131,000.

Without any emigration since 1981 the population would have been 2,290,000, according to Blayo et al. The difference between this figure and their estimates for the population on 1 October 1998, amounting to between 159,000 and 246,000, would represent migration between 31.03.1981 and 01.10.1998.¹¹

5. The 1991 population census for Kosovo

The 1991 population census for all republics of SFRY was conducted from 1st to 15th April 1991, with 31 March 1991 as the census (reference) day (Savezni zavod za statistiku 1991). In all municipalities of Kosovo and Metohija as well as the Bujanovac and Preševo municipalities in Central Serbia, "... the majority of the Albanian population boycotted the census, so the actual data on its size are not available"¹². To compensate for this the FRY statistical office in Belgrade estimated the size of the Albanian population on the basis of the 1981 census results taking into account, then, population changes during the intercensal period 1981-1991, using the cohort component method described in section 3.¹³

The estimated population numbers for 1991 were published in the 3rd volume of the 1991 census publications for each of the about 1400 localities (*naselje*, "inhabited area") and 31 municipalities (*opština*) for every nationality.¹⁴ Volume 17 of the 1991 series explains the methodology and gives more detailed results, including the population by age and sex (Savezni zavod za statistiku 1997).

Table 2 shows my summary of these numbers for the municipalities of Kosovo, called Kosovo and Metohija in the publication. I have calculated the number of "Others" as the total population for each municipality less the number of ethnic Albanians and ethnic Serbs. Ethnic Albanians were the majority population in 25 of the 31 municipalities, ethnic Serbs in five (Leposavić, Novo Brdo, Štrpce, Zubin Potok and Zvečan) and Muslims in one (Gora).

The table shows that, according to the estimates made by the Federal Statistical Office, the total population size of Kosovo in 1991 was 1,96 million.¹⁵ Of these 194,000 (9.9 per cent) were Serbs, 1,6 million (81.6 per cent) were Albanians, and 166,000 (8.5 per cent) were

¹¹ There is a difference of 21,000 between this range, 159,000-246,000, and the range given by Blayo et al. for the number of absent people who left before 1 October 1998, 180,000-267,000. It is not clear to me whether this difference is due to an error or whether there is a conceptual difference.

¹² Savezni zavod za statistiku (1993). Translation provided by OTP.

¹³ "The estimated size of the population of the Albanian nationality by municipalities was calculated as the difference between the estimated total population (on the basis of an adopted hypothesis on birth and death rates as well as the migration balance in terms of age and sex in the 1981-1991 period) and enumerated (popisanog), or more precisely, enumerated and estimated "non-Albanian" population (the population of other ethnic affiliation, and the population who failed to choose, or rather state, their nationality, or declared themselves Yugoslavs or stated their religious affiliation). Exceptionally, the size of the Albanian population in the Gora, Zvečan, Zubin Potok, Leposavić, Novo Brdo and Štrpce municipalities was estimated on the basis of a specially adopted hypothesis about its birth and death rates as well as the migration balance in the period between the 1981 and 1991 census." From "Methodological explanations" in Savezni zavod za statistiku (1993). Translation provided by OTP. The six municipalities that are referred to in the last sentence are municipalities with a non-Albanian majority, see table 1.

¹⁴ From "Preface" in Savezni zavod za statistiku (1993). Translation provided by OTP.

¹⁵ Slightly different estimates have been published for the Kosovo population in 1991, for example, 1,966,436 in *Population projections 1991-2021 (Federal statistical office, Belgrade 1996)*. The differences may be due to revisions after the first preliminary figures were published or a mixture of *de jure* and *de facto* population numbers.

"other nationalities" (including Yugoslavs and not declared). The largest of the "other" groups were Muslims (66,189 - 3.4%), Roma (Gypsies) (45,745 - 2.3%), Montenegrins (20,365 - 1.0%), Turks (10,445 - 0.5%) and Croats (8,062 - 0.4%). There were only 3,457 (0.2%) Yugoslavs.

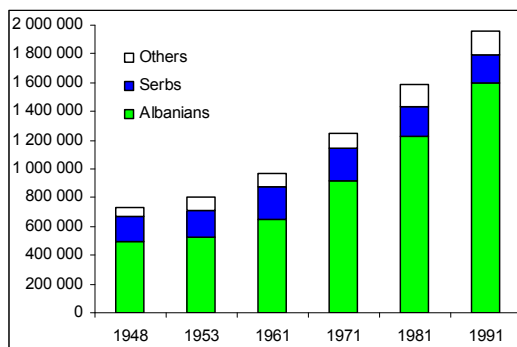
Table 2. Population of Kosovo 31 March 1991 by municipality and ethnicity

Opština	Population size			Per cent distribution			
	Total	Serb	Albanian	Other	Serb	Albanian	Other
Dečani	49000	188	47669	1143	0.4	97.3	2.3
Đakovica	115097	1751	106868	6478	1.5	92.9	5.6
Glogovac	53618	23	53562	33	0.0	99.9	0.1
Gnjilane	103675	19370	79357	4948	18.7	76.5	4.8
Gora	17574	60	941	16573	0.3	5.4	94.3
Istok	57261	5968	43910	7383	10.4	76.7	12.9
Kačanik	38010	223	37368	419	0.6	98.3	1.1
Klina	52266	5209	43248	3809	10.0	82.7	7.3
Kosovo Polje	35570	8445	20142	6983	23.7	56.6	19.6
Kosovska Kamenica	52152	12762	38096	1294	24.5	73.0	2.5
Kosovska Mitrovica	104885	9482	82837	12566	9.0	79.0	12.0
Leposavić	16395	14299	951	1145	87.2	5.8	7.0
Lipljan	69451	9713	53730	6008	14.0	77.4	8.7
Mališevo	47817	475	47318	24	1.0	99.0	0.1
Novo Brdo	4611	2666	1845	100	57.8	40.0	2.2
Obilić	31627	5490	20971	5166	17.4	66.3	16.3
Opolje	21861	0	21844	17	0.0	99.9	0.1
Orahovac	59877	3795	55033	1049	6.3	91.9	1.8
Peć	127796	7815	96441	23540	6.1	75.5	18.4
Podujevo	92946	1118	91005	823	1.2	97.9	0.9
Priština	199654	26893	154990	17771	13.5	77.6	8.9
Prizren	178723	10911	135674	32138	6.1	75.9	18.0
Srbica	55471	713	54437	321	1.3	98.1	0.6
Štimlje	23506	971	21716	819	4.1	92.4	3.5
Štrpce	12712	8138	4300	274	64.0	33.8	2.2
Suva Reka	64530	3001	61230	299	4.7	94.9	0.5
Uroševac	113668	8314	100144	5210	7.3	88.1	4.6
Vitina	57290	7002	45078	5210	12.2	78.7	9.1
Vučitrn	80644	5522	71354	3768	6.8	88.5	4.7
Zubin Potok	8479	6282	2079	118	74.1	24.5	1.4
Zvečan	10030	7591	1934	505	75.7	19.3	5.0
Total	1956196	194190	1596072	165934	9.9	81.6	8.5

Source: Table "Stanovništvo prema nacionalnoj pripadnosti", page 226-275 in Savezni zavod za statistiku (1993).

6. Population by ethnicity from previous censuses

Figure 1, which is based on table 3, shows the results from all Yugoslav post World War II population censuses, 1948-1991, for the ethnic composition of the population of Kosovo, as published by the Federal Statistical Office of SFRY. We notice that the proportion of Albanians has been growing throughout this period, from 68.7 per cent in 1948 to 77.4 per cent in 1981. From 1981 to 1991 the Albanian majority grew from 77 to 82 per cent, according to the FSO estimates, while the proportion of Serbs declined from 13 to 9 per cent. The proportion of other nationalities did not change much.

Figure 1. Population of Kosovo by ethnicity, according to population censuses 1948–1991**Table 3. Population of Kosovo by ethnicity according to censuses 1948–1991**

	1948 31 March	1953 31 March	1961 31 March	1971 31 March	1981 31 March	1991 31 March
Albanians	498 242	524 559	646 605	916 168	1,226,736	1,596,072
Serbs	171 911	189 869	227 016	228 264	209,497	194,190
Others	57 667	93 713	90 367	99 261	148,207	165,934
Total	727 820	808 141	963 988	1 243 693	1,584,440	1,956,196

Annual population growth since previous census

	2.1%	2.2%	2.5%	2.4%	2.1%
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Per cent distribution

Albanians	68.5 %	64.9 %	67.1 %	73.7 %	77.4 %	81.6 %
Serbs	23.6 %	23.5 %	23.5 %	18.4 %	13.2 %	9.9 %
Others	7.9 %	11.6 %	9.4 %	8.0 %	9.4 %	8.5 %
Total	100 %	100 %	100 %	100 %	100 %	100 %
Source	SZS 1989	SZS 1989	SZS 1989	SZS 1989	FSO 1997	FSO 1997

The 1981 census is regarded as the last census for Kosovo with full participation of all population groups. I am aware, however, that the 1981 and 1971 censuses have faced some criticism (Grecic 1999).¹⁶ The criticism of the 1981 census, which appears to be based on information provided by the Federal Secretariat of Information (1998), seems to focus on the lack of cooperation between the Kosovo authorities and “*the statistical organs of the Republic*”, but there is no explanation of why and how this affected the results. Furthermore, Grecic discusses the results from the censuses in neighbouring Macedonia in 1991 and 1994 and concludes, but not convincingly, that there was a similar overestimate of Albanians in both Kosovo and Macedonia in 1991. Finally, he finds it implausible that the number of Albanians grew 1.7 times faster in Kosovo than in Macedonia from 1948 to 1981 and that the “*entire population growth of the Gypsies and Turks in the Province was ascribed to Albanians*”.

It is difficult to see that this, even if it were the case, may have had much significance. According to the censuses the total number of Roma (Gypsies) and Turks in Kosovo grew from 12,545 in 1948 to 46,639 in 1981, while the number of Albanians grew from 498,242 to 1,226,736 (Savezni Zavod za Statistiku 1989 and FSO 1997). The number of Roma and Turks

¹⁶ The Federal Statistical Office (1997:7) alludes to the debate on this: “*The 1991 Census was successfully implemented*” (one did not get involved with the justification of the remarks on received results of the 1981 Census especially the ones pertaining to the over assessment of the data about the number of the population of Albanians nationality) “*The authors made important resignation from this fact only when they were setting up the hypothesis for drafting of the assessment of the agricultural population.*” Translation provided by OTP.

is both much less and growing much faster than the Albanians in this period (272 and 146 per cent, respectively).

Grecic's reasoning, which is based on indirect arguments, is difficult to follow and does not seem to be based on solid demographic data and accepted methodology. Thus, I do not find his conclusions very reliable. The same is the case for the estimates made by the Federal Secretariat of Information, to which Grecic refers, but to which I have not had access.

7. Other population estimates for the 1990s

Table 4 shows estimates for 1995 and 1998 made by other institutions than the Federal Statistical Office. Estimates have been made for 1995 by Huizi Islami (1997), and for 1998 by UNHCR (1999), Federal Secretariat of Information (1998), and Blayo et al. (2000).

The numbers in the first column, which were made by Islami (1997, quoted by Grecic 1999), give an Albanian population of fully 1.96 million in 1995, 89.1 per cent of the total population. This number does not seem realistic. It is difficult to see how the Albanian population could have grown that fast from 1991 to 1995, i.e. at 5.1 per cent per year. This growth is greater than in any previous period, see table 3.

Table 4. Population estimates for Kosovo for 1995 and 1998

	1995 Date not known	1998a Probably 31 March	1998b Mid 1998	1998c 1 October
Albanians	1 960 000	1 829 119	917 000	
Serbs	140 000	210 943	221 000	
Others	100 000	148 755	240 980	
Total	2 200 000	2 188 817	1 378 980	2,044,000- 2,131,000
Per cent distribution				
Albanians	89,1 %	83,6 %	66,5 %	
Serbs	6,4 %	9,6 %	16,0 %	
Others	4,5 %	6,8 %	17,5 %	
Total	100 %	100 %	100 %	
Source	Islami 1997	UNHCR 1999	Federal Secretariat of Information 1998	Blayo et al. 2000

The 1998a estimates were made by UNHCR for each village in March 1999. The UNHCR (1999) report says: "*Population figures are extrapolated from 1981 and 1991 census data. As the 1991 census was boycotted by the ethnic Albanian population and the extrapolation does not take into account large numbers of ethnic Albanians known to have moved overseas in recent years, these figures should be considered as a guide only and not necessarily accurate.*" Further explanation is given by Steven Wolfson of UNHCR: "... *the difference between the 1981 and 1991 was taken and used to calculate a proportional change to 1998. The exception to this is where an ethnic group showed a decrease between 1981 and 1991; in this case the 1991 estimates was left unchanged.*" (Letter to OTP dated 21 June 2002).

Thus, UNHCR has done a simple extrapolation.¹⁷ The dynamics caused by the age structure, fertility and mortality differences etc. have not been taken into account, as was done by the FSO for their 1991 estimates and in their population projections for 1991-2021, where they

¹⁷ There is a small problem in that the UNHCR report left out the numbers for some localities in the totals for 12 of the 31 municipalities (12,486 persons altogether). This is probably due to an error but it does not affect the overall size and composition of the estimates. I have included the corrected totals in all tables and graphs in this report.

made assumptions about the likely trends in fertility mortality and migration during the nineties and later, see section 8. Another limitation on the accuracy of the UNHCR estimates is that migration out of (and into) Kosovo was not included, due to lack of data. This implies that the UNHCR estimate of the total population in 1998, 2,188,817, is a *de jure* estimate. As such it is very close to the FSO *de jure* estimate for mid 1997.

The next estimate for 1998, called 1998b, has been published by the Federal Secretariat of Information (1998, quoted by Grecic 1999). I have no information about the basis for this. The estimate does not seem very reliable, however, as it implies an unprecedented annual decline of the total population from 1991 to 1998 by 5.5 per cent and of the Albanian population by 7.9 per cent. This estimate is highly inconsistent with all estimates for the 1990s made by the Federal Statistical Office as well as by other institutions, see figure 2.

Thus, both the 1995 and the 1998b estimates of the population of Kosovo by ethnicity seem to be unrealistic.¹⁸ I have, however, not had access to the original publications and the methodology and data that these estimates have been based on.

The last estimate of the 1998 total population in table 4, 1998c, was made by Blayo et al. (2000), discussed in section 4 above. As previously note, they found that between 180,000 and 267,000 people had left Kosovo between 31 March 1981 and 1 October 1998, which resulted in a population on 1 October 1998 of between 2,044,000 and 2,131,000. This is slightly less than the UNHCR estimate for 1998 (which is probably for 31 March 1998). Without the departures from Kosovo the population would have been 2,290,000, according to Blayo et al.

Table 5. Population growth per year, based on censuses and other estimates

	Based on population censuses					Based on other estimates					
	1948-1953	1953-1961	1961-1971	1971-1981	1981-1991	1981-1995	1981-1998a	1981-1998b	1991-1995	1991-1998a	1991-1998b
Albanians	1.0%	2.6%	3.5%	2.9%	2.6%	3.3%	2.9%	-2.1%	5.1%	1.9%	-7.9%
Serbs	2.0%	2.2%	0.1%	-0.9%	-0.8%	-2.9%	0.0%	0.4%	-8.2%	1.2%	1.8%
Others	9.7%	-0.5%	0.9%	4.0%	1.1%	-2.8%	0.0%	3.5%	-12.7%	-1.6%	5.3%
Total	2.1%	2.2%	2.5%	2.4%	2.1%	2.3%	2.3%	-1.0%	2.9%	1.6%	-5.0%

8. Development of the total Kosovo population since 1948

In addition to census results the Federal Office of Statistics publishes estimates of the mid-year population for each republic and province. I have located such estimates for almost every year since 1948. These estimates appear to have been made using the natural increase method explained in section 3. Generally, the estimates exclude internal and external migration, according to FSO (1997: 58), thus corresponding to the *de jure* population concept used in the censuses. These estimates are shown in the second column of table 6.

¹⁸ In a discussions of the conflict between Albanians and Serbs in Kosovo in the 1980s Judah (1997: 152) writes: "In the 1980s, however, the bitterest statistics war was waged over the question of population and emigration." and "Although both sides question the official statistics when they do not suit their arguments, they both use them, for example the census returns, when they do"

Table 6. Estimates of the total population of Kosovo, 1948-1998

Year	De jure population	De facto population: excl. citizens at temporary work abroad	Difference between <i>de jure</i> and <i>de facto</i> population	Type and date of estimate	Source
1948	727,820			Census, 31 March	SZS 1989
1952	793,000			Mid-year estimate	SGJ 1991
1953	808,141			Census, 31 March	SZS 1989
1953	813,000			Mid-year estimate	SGJ 1991
1954	832,000			Mid-year estimate	SGJ 1991
1955	842,000			Mid-year estimate	SY Y 1997
1957	873,000			Mid-year estimate	SPB 2001
1958	890,000			Mid-year estimate	SGJ 1991
1959	921,000			Mid-year estimate	SGJ 1991
1960	944,000			Mid-year estimate	SGJ 1991
1961	963,988			Census, 31 March	SZS 1989
1961	972,000			Mid-year estimate	SGJ 1991
1962	997,000			Mid-year estimate	SGJ 1991
1963	1,021,000			Mid-year estimate	SGJ 1991
1964	1,046,000			Mid-year estimate	SGJ 1991
1965	1,082,000			Mid-year estimate	SY Y 1997
1966	1,101,000			Mid-year estimate	SGJ 1991
1967	1,131,000			Mid-year estimate	SGJ 1991
1968	1,159,000			Mid-year estimate	SGJ 1991
1969	1,189,000			Mid-year estimate	SGJ 1991
1970	1,220,000			Mid-year estimate	SGJ 1991
1971	1,243,693			Census, 31 March	SZS 1989
1971	1,254,000			Mid-year estimate	SGJ 1991
1972	1,291,000			Mid-year estimate	SGJ 1991
1973	1,329,000			Mid-year estimate	SGJ 1991
1974	1,367,000			Mid-year estimate	SGJ 1991
1975	1,405,000	1,377,000	28,000	Mid-year estimate	SY Y 1997
1976	1,446,000			Mid-year estimate	SGJ 1991
1977	1,487,000			Mid-year estimate	SGJ 1991
1978	1,526,000			Mid-year estimate	SGJ 1991
1979	1,566,000			Mid-year estimate	SGJ 1991
1980	1,553,000			Mid-year estimate	SGJ 1991
1981	1,584,440			Census, 31 March	SZS 1989
1981	1,595,000			Mid-year estimate	SGJ 1991
1982	1,635,000			Mid-year estimate	SGJ 1991
1983	1,676,000			Mid-year estimate	SGJ 1991
1984	1,717,000			Mid-year estimate	SGJ 1991
1985	1,760,000	1,701,000	59,000	Mid-year estimate	SY Y 1997
1986	1,803,000			Mid-year estimate	SGJ 1991
1987	1,848,000			Mid-year estimate	SPB 2001
1988	1,894,000	1,818,000	76,000	Mid-year estimate	SY Y 1997
1989	1,939,000	1,857,000	82,000	Mid-year estimate	SY Y 1997
1990	1,987,000	1,896,000	91,000	Mid-year estimate	SY Y 1997
1991	1,956,196			Census est., 31 March	SY Y 1997
1991	1,968,000	1,935,000	33,000	Mid-year estimate	SY Y 1997
1992	2,008,000	1,943,000	65,000	Mid-year estimate	SY Y 1997
1993	2,044,000	1,977,000	67,000	Mid-year estimate	SY Y 1997
1994	2,079,000	2,011,000	68,000	Mid-year estimate	SY Y 1997
1995	2,115,000	2,046,000	69,000	Mid-year estimate	SY Y 1997
1996	2,151,000	2,100,000	51,000	Mid-year estimate	SY Y 1997
1997	2,188,000	2,116,000	72,000	Mid-year estimate	SY Y 1998
1998	2,222,000			Mid-year estimate	SPB 2001
1995		2,200,000		De facto? Date not known	Islami 1997
1998a	2,188,817			31 March?	UNHCR 1999
1998b		1,378,000		De facto? Mid-year	Federal Secretariat of Information 1998, cited by Grecic 1999
1998c		2,044,000 low 2,131,000 high		1 October	Blayo et al. (2000)

SGJ: Statistički Godišnjak Jugoslavije (Statistical Yearbook of Yugoslavia)

SZS: Savezni zavod za statistiku (Federal Institute for Statistics / Federal Statistical Office)

SY Y: Statistical Yearbook of Yugoslavia

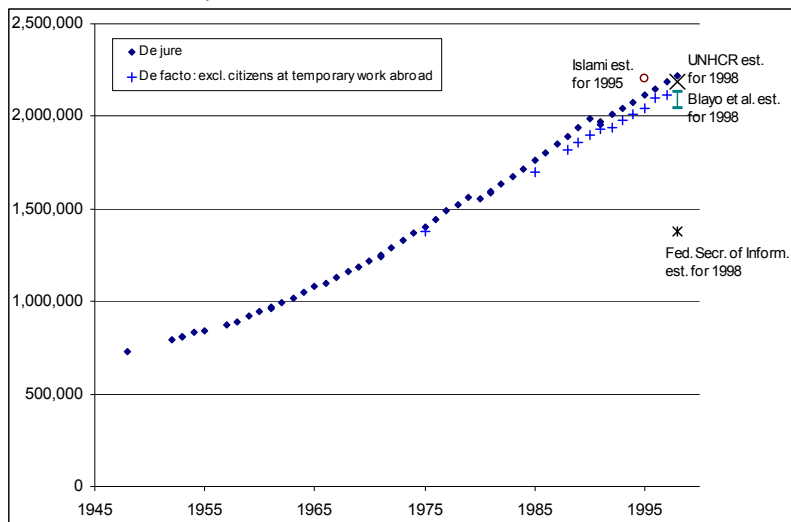
SPB: Statistical Pocket Book

However, FSO has also made estimates of the population "in the country", which are "Based on the projections of Yugoslav citizens at temporary work abroad" (FSO 1997: 64). This corresponds to the *de facto* population concept. These estimates have also been included in table 6 and figure 2 below, together with the independent estimates for 1995 and 1998 discussed above.¹⁹

Note that the FSO numbers are consistent with each other, i.e. both census and midyear estimates. The UNHCR estimate for 1998 also seems consistent with the FSO estimates, whereas the Federal Secretariat of Information estimate is far off the trend that the Kosovo population growth has been exhibiting during the last fifty years, whether migration is included or not.

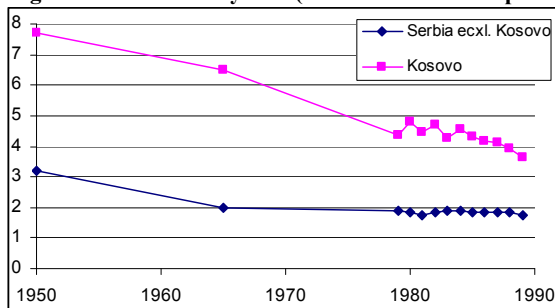
The difference between the FSO *de jure* estimate for 1998, 2.2 million, and the Federal Secretariat of Information estimate for 1998, which appears to be an estimate of the *de facto* population, is more than 800,000. This difference is very large, 758,000, greater than in the previous year, and it is not likely that all of this can be explained by migration in the course of only one year, from the middle of 1997 to the middle of 1998.

Figure 2. Total population of Kosovo according to official censuses and mid-year estimates for 1948–1998, and other estimates for 1995 and 1998



According to the FSO estimates, from 1981 to 1991 the total population of Kosovo grew by 2.1 per cent per year on average. The Serb population declined by 0.8 per cent per year, whereas the Albanian population increased by 2.6 per cent per year. These growth rates are within the plausible range. The decline of the Serb population is most probably due to net out-migration from Kosovo. The fertility levels in both Central Serbia and Kosovo have been declining to a low level as in the rest of Europe, see figure 3, but it is not likely that the fertility level of Serbs in Kosovo already was already so low as to cause population decline.

¹⁹ To be accurate the census figures refer to 1 March and the mid-year estimates to 30 June, but this difference would not be visible in this graph. The dates of reference for two of the independent estimates for 1998 are not known.

Figure 3. Total fertility rate (number of children per woman) in Serbia and Kosovo,

Source: *Demografska statistika 1989*, Savezni zavod za statistiku, Beograd 1991.

The relatively high growth of the Albanian population, more than 2 per cent per year, is primarily due to a large surplus of births over deaths. This growth is consistent with the demographic development of a population that has not completed the demographic transition, i.e. it has a relatively high but declining fertility level and a relatively low but still declining mortality level. Table 4 shows that the growth rate has been declining in recent decades.

The total fertility rate (TFR) for Kosovo, i.e. the expected number of children per woman, declined from about 6.5 in 1961 to 3.5 in 1991 and was assumed to be 3.15-3.25 for the period 1991-1996 in the FSO population projections for 1991-2021. (See below for more on the FSO population projections. This is about twice the level of TFR assumed for Central Serbia and Vojvodina, 1.63-1.77, which is at the current Western European level. The life expectancy in Kosovo also changed considerably since the 1960s, and is assumed to be only slightly lower than in Central Serbia and Vojvodina. The projections publication shows a youthful population pyramid for Kosovo, which is an indication of high but declining fertility in the last two decades (Federal Statistical Office and University of Belgrade 1996).

9. Discussion of the ethnic composition of the population of Kosovo

The best source for data on the ethnic composition of the population of Kosovo is the population censuses. They show that there has been a gradual increase in the proportion of Albanians from 68.5 per cent in 1948 to 81.6 per cent in 1991, except for a small decline from 1948 to 1953, see figure 4. For Serbs there has been a uniform decline, from 23.6 per cent in 1948 to 9.9 per cent in 1991. As explained above, the ethnic composition set out in the 1991 census derives from a FSO projection, because the census was boycotted by ethnic Albanians. The FSO estimates for 1991 yields a smooth increase in the proportion of Albanians from 1981 to 1991, as is the case for the previous periods. The growth of the proportion of Albanians relative to Serbs is both due to higher fertility among Albanians than among Serbs in Kosovo and to net out-migration of Serbs.

Figure 4. Proportion of Albanians and Serbs of the Kosovo population, according to censuses 1948-1991 and independent estimates for 1995 and 1998

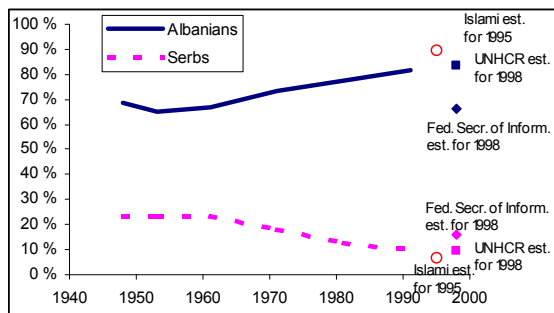


Figure 4 also includes other estimates, of which I found the Islami and Federal Secretariat of Information estimates to be unrealistic, as discussed above. The UNHCR estimates, on the other hand, are a smooth continuation of previous trends.

It has been claimed that the 1981 census overestimated the number of Albanians, but the increase from 73.7 to 77.4 per cent during the period 1971-1981 seems plausible, given the high fertility level of the Albanians in Kosovo.

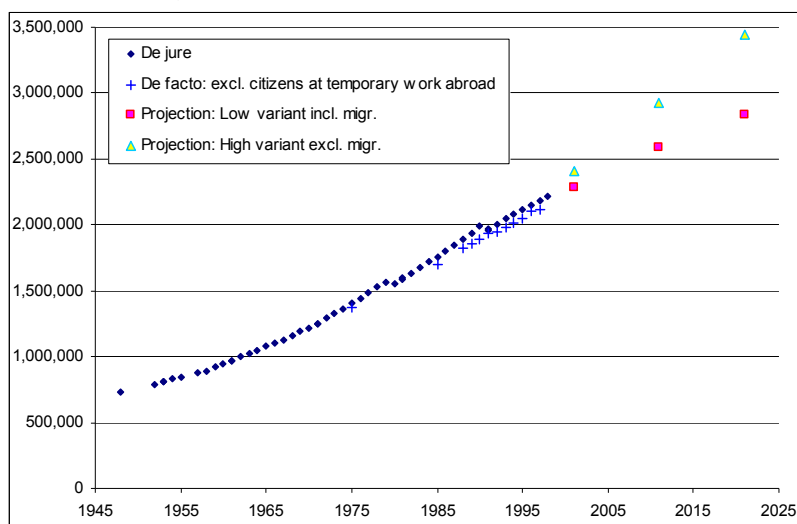
My conclusion is that the proportion of ethnic Albanians in Kosovo in 1998 is probably close to the UNHCR estimate of 83.6 per cent. It is certainly lower than the Islami estimate of 89.1 per cent (for 1995) and higher than the Federal Secretariat of Information of 66.5 per cent. The proportion is most probably also higher than the proportion found in previous censuses, due to the high natural growth of the Albanian population. Even if the 1981 results may have overestimated the number of Albanians - although I have no information about the magnitude of this - the proportion in 1998 is almost certainly higher than the 1971 proportion of 73.7 per cent due to the trends in population and growth rates of the different ethnic groups as reflected in the (S)FRY's censuses and population estimates.

It is difficult to give a *range* of plausible values of the proportion of ethnic Albanians in 1991. According to all available estimates, including those I find implausible, the range could be between 67 and 90 per cent. A more realistic range would probably be between 80 and 85 per cent, taking into consideration trends in population and growth rates as reflected in the (S)FRY's censuses and population estimates, as well the more reliable independent population assessments. A plausible range for the proportion of ethnic Serbs in Kosovo in 1998 is probably between 9 and 13 per cent.

10. Population projections

For this report, I have also looked at population projections for FRY, including Kosovo, made by the Federal Statistical Office and the Demographic Research Centre of the University of Belgrade in 1996. The projections are made for each republic and province of FRY by age and sex, but not by ethnicity. The projections are based on the 1991 enumerated (or estimated) population and an application of the cohort component method, as explained in section 3 above. Several different variants were made, based on different assumptions about the future trends of these demographic components. Figure 4 shows, together with the FSO estimates for the past, the two most extreme variants, i.e. the low variant with migration and the high variant without migration.

Figure 5. De jure, de facto and projected total population of Kosovo, 1948-2021 (Federal Statistical Office)



The population of Kosovo was in 1996 projected to grow to between 2.28 and 2.38 million in 2001 if there is migration, and to between 2.36 and 2.41 million if there is no migration. In both cases a continued high but declining population growth is projected, i.e. a continuation of the development in the previous decades. Both variants exhibit a growing population, but the growth is significantly lower in the low variant, primarily because it assumes very low future fertility. The migration assumption is based on the observed and estimated migration balance in previous periods. In the projections it is assumed that the migration balance will reach the highest level in the first part of the projection period, i.e. 1991-2001, and then decline. For Kosovo it is assumed that a negative migration balance will continue throughout the projection period 1991-2021. Still, the population will continue to grow, due to the relatively high fertility level. The events in 1998-1999 have dramatically changed the degree of realism of these projections, but it is nevertheless interesting to see how the Federal Statistical Office assessed the population trends in the middle of the 1990s.

Thus, the estimates and projections made by the Federal Statistical Office in the 1990s are consistent with the estimates made by UNHCR and Blayo et al., which indicate that the total population of Kosovo in 1998 was slightly above 2 million.

References

Blayo, Chantal, Christophe Bergouignan, Marine Llopart, Nicodème Okobo and Nancy Stiegler (2000): "Demographic, social, economic situation and reproductive health in Kosovo following the 1999 conflict. Results of a household survey November 1999 - February 2000." Institute of Demographic Studies of the University Montesquieu-Bordeaux IV (IEDUB), United Nations Population Fund, Statistical Office of Kosovo, and International Organization for Migration.

Federal Institute for Statistics (1974): Population and Housing Census 1971. Population. Ethnic, educational and economic characteristics of population and households according to number of persons. Results by communes. Book VI. Belgrade. (In English, French and Russian.)

Federal Secretariat of Information (1998): *The Autonomous Province of Kosovo and Metohija. Facts*. Belgrade. Quoted by Grecic (1999).

Federal Statistical Office [FSO](1997): *Statistical Yearbook of Yugoslavia 1997*. Beograd.

Federal Statistical Office [FSO](2001): *Statistical Yearbook of Yugoslavia 2001*. Beograd.

Federal Statistical Office and University of Belgrade (1996): Population Projections of the Federal Republic of Yugoslavia 1991–2021. Belgrade.

Grecic, Vladimir (1999) "Kosova and Metohija migration issues at the end of the 20th century", Institute of International Politics and Economics, Belgrade, FR Yugoslavia. Presented at the International Studies Association 40th Annual Convention, Washington, D.C., February 16–20, 1999. Available at <http://www.ius.bg.ac.yu/apel/materijali/migration.html>.

Islami, Huizi (1997): *Dimenzioni demografik i ceshtjes se Kosoves*. Prishtine.

Judah, Tim (1997): *The Serbs: History, Myth & the Destruction of Yugoslavia*. New Haven and London: Yale University Press.

Klopčić, Vera (2000): "Reflection of the processes of ethnic self identification in official statistics." Paper presented at the IAOS (International Association for Official Statistics) Conference on Statistics, Development and Human Rights, Montreux, 4–8 September 2000.

Malcolm, Noel (1998): *Kosovo. A Short History*. London: Papermac.

Savezni zavod za statistiku (1982): "Nacionalni sastav stanovništva po opštinama. Prethodni rezultati. Prvi rezultati." (National population structure for municipalities. Preliminary results. First results), *Statistički brodj* 1278. Beograd.

Savezni zavod za statistiku (1989): "Jugoslavija 1918–1988. Statistički godišnjak." (Yugoslavia 1918–1988. Statistical Yearbook) Beograd.

Savezni zavod za statistiku (1991): "Prvi rezultati opštinama" (First results on municipalities). *Statistički bilten brodj* 1890, Beograd.

Savezni zavod za statistiku (1993): *Nacionalna pripadnost. Detalja klasifikacija* (Ethnic affiliation. Detailed classification), Vol. 3, Popis '91 Stanovništvo. Beograd.

Savezni zavod za statistiku (1997): Procenje za Kosovo i Metohiju. Podaci po naseljima i opštinama., Vol. 17, Popis '91 Stanovništvo. Beograd.

UNHCR [United Nations High Commissioner for Refugees] (1999): Kosovo Village List. GIS Unit. UNHCR FO, Pristina, 09 March 1999.

UNHCR / OSCE [United Nations High Commissioner for Refugees / Organisation for Security and Cooperation in Europe]: "Second Assessment of the Situation of Ethnic Minorities in Kosovo". Available at <http://www.fas.org/man/dod-101/ops/docs99/990906-minorities.htm>

United Nations [UN] (1958). *Multilingual Demographic Dictionary, English Section*. Department of Economic and Social Affairs, Population Studies, No. 29 (United Nations publication, Sales No. E.58.XIII.4). Available at http://millenniumindicators.un.org/unsd/mi/mi_dict_xrxx.asp?def_code=107.

United Nations ŠUNĆ (1996). *Demographic Yearbook*. Forty-sixth issue. Department for Economic and Social Information and Policy Analysis. (United Nations publication, Sales No. E./F.96 XIII.1). New York

BIOGRAPHY OF EWA TABEAU

Ewa Tabeau graduated in econometrics and statistics (M.Sc. degree, with the highest grade, 1981) and obtained her Ph.D. in mathematical demography (with the highest grade, 1991) at the Warsaw School of Economics (WSE; i.e. the Economic University of Warsaw). During her career she spent eight years teaching statistics and demography at WSE. The next nine years she was a researcher at the Dutch Interdisciplinary Demographic Institute in The Hague (NIDI), with modeling and forecasting of mortality by cause of death and analysis of prospects for life expectancy and longevity being her main research domains. She was then also invited, as an expert, by organizations such as Eurostat – Statistical Office of the European Union; ING Group - Life Insurance NL, Goldman & Sachs - Life Insurance USA, Statistics Netherlands, British Government Actuary's Department, to consult their projects involving issues of mortality and health development and prediction.

Since 2000, Ewa Tabeau has been the project leader of the Demographic Unit at the Office of the Prosecutor (OTP), International Criminal Tribunal for the former Yugoslavia (ICTY), in The Hague, where she has studied demographic consequences of the conflicts in the former Yugoslavia and provided crime statistics to trials and investigations at the OTP. The main subjects of her research included statistics and estimates on war-related deaths (killed, missing, exhumed, identified etc.), wounded persons, and on internally displaced persons and refugees. During her employment at the OTP, she completed about 30 expert reports including, among others, the reports prepared for the Slobodan Milošević (Bosnia), Vojislav Šešelj (Vojvodina), Biliana Plavšić (Bosnia), Momčilo Krajišnik (Bosnia), general Stanislav Galić (the siege of Sarajevo), general Dragomir Milošević (the siege of Sarajevo), Vidoje Blagojević et al. and Vujadin Popović et al. (Srebrenica), Radoslav Brdjanin and Momir Talić, Jadranko Prlić et al. (Herzeg-Bosnia) cases etc., and she testified many times as an expert witness before the Tribunal.

Ewa Tabeau authored 5 monographs published internationally, 27 articles published in international and national journals, 23 conference papers presented at international conferences, and more than 50 research reports and working papers.

She supervised researchers completing their M.Sc. and Ph.D. dissertations, and acted as peer reviewer for scientific journals and publishers, such as for example the European Journal of Population, Journal of Peace Research, Mathematical Population Studies, Springer, Thela Thesis etc.

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