Subjective Well-Being and Armed Conflict: Evidence from Bosnia-Herzegovina

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Published in: Social Indicators Research. 113(3), pp. 1129-1152 (2013)
Final version available at: http://dx.doi.org/10.1007/s11205-012-0131-8

Abstract

We analyze survey data from Bosnia and Herzegovina collected after the 1992-1995 Bosnian War to answer the following questions: How does individual subjective well-being evolve in the post-conflict period? Does exposure to conflict have an important role in determining one's post-war experiences? Our identification strategy relies on regional and individual-level variation in exposure to the conflict. Individual war-related trauma has a negative, significant, and lasting impact on subjective well-being. The effect is stronger for those displaced during the war. Municipality-level conflict measures are not significantly associated with subjective well-being once municipality fixed effects are accounted for.

Keywords: Bosnia-Herzegovina, civil war, well-being
JEL Classifications: D1,J1, N4, P2, P5

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1. Introduction

The recent capture and trial of the Bosnian Serb wartime commander, General Ratko Mladic, has stirred many old wounds of the 1992-1995 Bosnian War. A BBC article refers to the emotional problems of a Dutch peacekeeper stationed in Srebrenica during the Bosnian War, who observed, but was unable to prevent, violence perpetrated by Bosnian Serbs under General Ratko Mladic in 1995.[1]Without a doubt, civil war is a traumatizing experience that impacts the lives of affected populations in multiple ways, ranging from material losses to psychological trauma.[2] It is therefore likely that those individuals who were exposed to war in the past have lower levels of well-being than those who were not — even many years after the end of the conflict.

In this paper, we analyze the extent to which individuals recover psychologically from civil conflict by examining their subjective well-being after the 1992-1995 war in Bosnia and Herzegovina. Subjective well-being measures are increasingly being used to assess well-being in populations. For instance, a recent report commissioned by former French President Nicolas Sarkozy indicates that quality of life measures, such as satisfaction with life, are almost as important as conventional economic indicators for measuring the well-being of nations (Stiglitz, Sen and Fitoussi, 2009; Easterlin, 2010).

In particular, we seek to answer the following question: What is the effect of civil war on people's subjective well-being, and how does it evolve in the post-conflict period?[3] To this end,

[1] "Mladic shuns 'monstrous' charges. "June 3, 2011. http://www.bbc.co.uk/news/world-europe-13636210 (Accessed: June 3, 2011).
[2] Cesur, Sabia and Tekin (2011) estimate that the health care costs of soldiers who experienced the combat-induced post-traumatic stress disorder amount to at least 1.5 billion U.S. dollars. We are not aware of similar attempts to evaluate the costs of war-induced stress for civilians.
[3] Studies that explore the relationship between war-induced stress and long-term health outcomes of former soldiers find a strong negative relationship between the two (e.g. Costa and Kahn, 2010; Blattman and Annan 2010;Cesur, Sabia and Tekin, 2011).

we use panel and cross-sectional data from two nationally representative surveys of households and individuals in Bosnia and Herzegovina (henceforth, BiH) – the 2001/2002/2003 and 2004 Living in Bosnia and Herzegovina survey (henceforth, Living in BiH) and the 1998 and 2001 World Values Surveys (henceforth, WVS).

Our study contributes to the growing literature on the effects of armed conflict on the welfare of populations, with a number of recent studies exploring the link between conflict exposure and child health (e.g., Akresh, Verwimp, and Bundervoet, 2011; Bundervoet, Verwimp and Akresh, 2009; Mansour and Rees, forthcoming; Minoiu and Shemyakina, 2012), labor market (Blattman and Annan, 2010; Kondylis, 2010) and education (Akresh and de Walque, 2010; Shemyakina, 2011; Swee, 2011). It is more specifically related to recent work on the effects of the 1992-1995 war in BiH on individual outcomes. Do and Iyer (2009) study the effects of the Bosnian War on mental health and find that war-displaced individuals were more likely to report high levels of distress in the early period of the war than those who were not displaced. However, these differences disappear over time. Ringdalet al. (2008) study war experiences and war-related distress in Bosnia and Herzegovina and find lower levels of war-related distress for Serbs and Croats compared to Bosniaks. The authors attribute this effect to the higher number of war victims among Bosniaks. Using conflict-related deaths as an instrument for displacement status, Kondylis (2010) documents a large, negative, and significant effect of displacement on the probability of being employed in post-war BiH. Swee (2011) investigates the relationship between exposure to conflict and school attainment of individuals of school age during the war and finds that young people living in municipalities with a high number of conflict-related deaths were less likely to complete secondary schooling – a result that is consistent with other studies (e.g. Shemyakina, 2011). Our paper further contributes to the

literature that studies the effect of economic and social disturbances on individual subjective well-being in the long run such as recessions and political change (Easterlin, 2009; Di Tella, MacCulloch, & Oswald, 2003; Sanfey & Teksoz, 2007), or terrorism (Frey, Luechinger, & Stutzer, 2004; Frey, Luechinger, & Stutzer, 2007). These studies conclude that the negative effects of such events on subjective well-being typically exceed the decrease in utility from pure economic losses. Civil war is a particularly large shock because it not only disrupts economic activity, increases unemployment and reconfigures institutions by decreasing the level of trust (Cassar, Grosjean and Whitt 2011; Rohner, Thoenig and Zilibotti, 2011), but also inflicts personal losses on individuals, such as deaths in the family, displacement and injury. Several recent studies however show a positive association between exposure to war and pro-social behavior such as participation in political activities (Blattman, 2009; Bellows and Miguel, 2009), and increased altruism in an experimental framework (Voors et al. 2011).

The literature on civil war and subjective well-being is, not surprisingly, very sparse due to the limited availability of adequate data sources. To our knowledge, our study is among the first to examine the impact of armed conflict on subjective well-being using micro-level data. An earlier cross-country study by Welsch (2008) estimates the monetary equivalent of the unhappiness caused by civil conflict using macroeconomic data. The author finds, among other things, a significant negative effect of the number of conflict victims on happiness. In contrast to Welsch, our analysis employs micro-level data on individuals and also incorporates municipality-level data such as the casualty rate. We are further interested in the extent to which people adapt – in terms of subjective well-being – to war-related experiences over time. Numerous studies have shown that individual well-being often changes after significant life events, but partial or complete adaptation to the initial level of well-being often occurs (e.g.

Lucas, 2007).[4] Furthermore, adaptation to negative events takes place more slowly (Frijters, Johnston, & Shields, 2008). As the majority of these studies focus on life events such as marriage, unemployment, and widowhood, the impact of extraordinary events such as civil conflicts has rarely been examined.

The remainder of this paper is structured as follows. Section 2 describes the armed conflict in BiH. Section 3 describes the data and main explanatory variables. The regression model and regression results are presented in Section 4. Finally, Section 5 puts the findings in context and lays out the conclusions.

2. The Bosnian War

The Bosnian War, also known as the War in BiH, took place between March 1992 and November 1995. It started with the declaration of independence by BiH from the Yugoslav Federation on February 29, 1992, which led the renegade Bosnian Serbian army under the leadership of Radovan Karadzic,[5] with the support of the Serbian government and the Serb-controlled Yugoslav National Army, to attack large areas of the Republic of BiH. The war took on an ethnic character where Serbian and Croat forces were deemed responsible for planning ethnic cleansing of multi-ethnic municipalities of BiH to create mono-ethnic communities (Burg and Shoup, 2000). For instance, in Prijedor in Bosnia, about 47 percent of Bosnian Muslim residents went missing by 1995, and many are thought to have been killed (from a total of 120,000 among which the elite and community leaders were especially targeted (Mulaj, 2003: 424)).

[4] "Hedonic adaptation", a term often used in the psychology literature, is also known as habituation.
[5] Starting in 1992, an informal army of Bosnian Serbs, that was created by Radovan Karadzic with the support of Bogdan Milosevic, and Serbian nationalists started attacking areas in BiH with the purpose of creating mono-ethnic areas only for Serbs. (Source: http://www.balkandevelopment.org/edu_bos.html, accessed: October 13, 2011.)

By 1996 the population of BiH decreased by about 43 percent from 4.6 million people in 1991 (Levinson, 1998). More than 100,000 were killed and over a quarter of the pre-war population was internally displaced(Kondylis, 2010). By 2009, the population of BiH had returned to its pre-war level (Central Intelligence Agency, 2009).

The ethnic cleansing led to a differential impact of the war across the main ethnic groups in BiH, namely Bosniaks, Serbs, and Croats. The Bosniaks were hardest hit by the conflict, accounting for 83.3 and 53.8 percent respectively of the killed and missing persons (Tabeau and Bijak, 2005; Research and Documentation Center (RDC), Sarajevo, 2009). Ethnic cleansing divided communities along ethnic lines so that by 1995-1996 Bosniaks, Serbs, and Croats lived relatively separately. Levinson (1998: 16) notes that "Serbs refused to let Croats or Bosnians return to Serb-held territory, and attempts to do so have been met by forcible evictions."

The Dayton agreement created the current structure of present-day BiH. It is a state comprised of two entities, the Bosniak-Croat Federation (henceforth, the Federation) and Republica Srpska. Most of the municipalities in the Federation are now ethnically homogeneous (Bisogno and Chong, 2002; Whitt and Wilson, 2007).

3. Data and Variables

3.1 Data

We employ two datasets in our analysis. The first combines data from the third and fourth waves of the World Values Survey (henceforth, WVS) for BiH.[6] The third wave (1994-1999) was conducted in February 1998, less than three years after the end of the war, and is thus more likely to capture people's experiences in the immediate aftermath of the war. Respondents were selected by stratified random sampling, with the stratification criteria being region and urban

[6] BiH was not surveyed in the first two waves of the WVS, nor in the most recent fifth wave.

versus rural type of residence. The resulting sample closely matches the composition of the population – based on the 1991 census[7] –with regards to rural versus urban residence and ethnic composition (WVS, 1998). The fourth wave was conducted in December 2001. The WVS is a repeated cross-section, so we can only assess the subjective well-being of a representative sample of the population at two points spaced three years apart. We expect to observe an upward trend in the levels of subjective well-being between 1998 and 2001 as individuals had time to recover from some of the negative effects of war.

Our second and main dataset is the Living in Bosnia and Herzegovina Survey[8] (henceforth, Living in BiH), a longitudinal survey conducted in 2001, 2002, 2003, and 2004. The data were collected through the joint efforts of the World Bank, UNDP, the Government of Japan and UK DfiD, the Agency for Statistics of Bosnia and Herzegovina, the Federal Office of Statistics and the Republika Srpska Institute of Statistics. A total of 5,402 households (about 9,400 individuals) were interviewed in 2001 (World Bank, 2001). The master sample for the 2001 survey was designed by experts from Statistics Sweden, and was based on a full enumeration of households in selected municipalities. Out of 146 municipalities, 14 were chosen in the Federation of BiH and 11 in Republica Srpska. The original 146 municipalities were classified as urban, rural, or mixed based on the 1991 population census (World Bank 2001: pp. 6-7). Our analysis uses the 2002, 2003, and 2004 surveys since the 2001 wave did not include data on subjective well-being.

The longitudinal nature of the Living in BiH surveys allows us to look at changes in subjective well-being within persons. The surveys also include information on individuals' pre- and post-war municipality of residence, which is crucial for our estimation strategy.

[7] The shortcoming of these data is that the 1991 census likely does not reflect the true composition of the population after the war due to war-related displacements and deaths.
[8] It is also known as the Living Measurement Standards Study (LSMS) survey for Bosnia and Herzegovina.

We employ municipality-level casualty data from the database prepared for the Bosnian Book of Dead Project 1991-1995 by the RDC in Sarajevo.[9] The Bosnian Book of Dead contains individual-level data on persons killed and missing between 1991 and 1995. The database contains information on victims' municipality of birth, ethnicity, gender, age, and whether the individual was a civilian or a soldier. As mentioned, we also use individual-level exposure to conflict-related violence from the Living in BiH data. We should note that as in many studies of armed conflict, our analysis is limited to a sample of those who survived the war and those who did not emigrate from the country.

3.2 Variables

Subjective well-being

Our dependent variable is a commonly used indicator of subjective well-being, namely satisfaction with life overall. In the WVS respondents were asked "All things considered, how satisfied are you with your life as a whole these days?" with possible answers ranging from 1 (dissatisfied) to 10 (satisfied). The sample average is 5.60 (Appendix Table 1). Similarly, in the Living in BiH survey the question wording was "How dissatisfied or satisfied are you with your life overall?" with 1 (dissatisfied) and 7 (satisfied). The sample averages are 4.30, 4.61 and 4.44 for the 2002, 2003 and 2004 samples respectively (Appendix Table 2).

Measures of Conflict Exposure

We use several municipality and individual-level measures to proxy an individual's exposure to violence during the war. The first two municipality-level measures are based on the RDC data and explore linear and non-linear effects of exposure to violence. Our first measure is

[9] Do and Iyer (2009), Kondylis (2010) and Swee (2011) used the RDC dataset in combination with the Living in BiH data to study the effect of exposure to armed conflict in BiH on individual outcomes.

the municipality-level casualty rate which we calculate, like Kondylis (2010) and Swee (2011), by dividing the number of persons killed or missing in a municipality at the end of the war by the number of people who lived in the same municipality in 1991 (henceforth, casualty rate). We then match the casualty rate with the individual data from the Living in BiH survey with the respondents' place of residence in 1991. Our second measure exploits a potential non-linearity in the effect of exposure to violence by dividing the casualty rate into three equal categories: high, medium, and low. We set "High"=1 if the casualty rate is greater than 2.10 percent, "Low"=1 if the casualty rate is less than 1.665 percent, and "Medium" for the rate in between.[10]

The second proxy of municipality-level exposure is the extent of damage to the stock of housing units as of 1995. The third proxy is the number of internally displaced persons and refugees in a municipality.[11] These proxies are scaled by 1991 population levels according to census data collected by the Socialist Federal Republic of Yugoslavia (SFRY). The municipality-level proxy variables are assigned to individuals based on their pre-war municipality of residence in BiH.

Additionally, we use two individual-level measures of exposure to armed conflict from the Living in BiH survey. The first individual-level measure of conflict exposure is based on responses to the following question: "Does your accommodation have any of the following problems?" with the category of interest being "War Damage" in 2002, the first year in which this variable is available.[12]

The second measure concerns recollection of war-related trauma based on the response to the question: "During the last week did you constantly recall the most painful events you

[10] Choosing other cut-off points, e.g. as in Swee (2009), or dividing the casualty rate into high and low categories with cut-offs at 2% and 4% for the high rate does not have an impact on our regression estimates.
[11] These data were collected by Swee (2011) from the UNCHR documents.
[12] Wave 2, Module b2, q. 39e; Wave 3, Module c2, q. 39f; Wave 4, Module d2, q.39f.

experienced during the war?"[13], with options ranging from 1 "not at all" to 4 "extremely often." This variable is only available in the 2001/2003/2004 Living in BiH surveys and as the SWB measures are only available in the 2002/2003/2004 surveys, the analysis of the effects of war-related trauma on SWB is only possible using the 2003 and 2004 surveys. In the 2003 and 2004 surveys the distribution of answers to the "war-trauma" question across categories was remarkably close. 7.1 and 7.2 percent of individuals in 2003 and 2004 respectively stated that they recalled traumatic events very often, 14.7 percent in both surveys responded "quite a bit", and 42.2 and 42.3 percent said they did not think about it. For these years, the correlation coefficient between war-related trauma and the municipality-level casualty rate is 0.085 (significant at the 1 percent level), which suggests that the former variable is a reasonable proxy for conflict-related events.

The correlation matrix for all measures of conflict exposure is reported in Table 1. The correlation coefficients range from 0.247 (significant at the 1 percent level) for an individual's report in 2002 that his/her housing unit was damaged during the war and the proportion of housing units damaged in an individual's pre-war municipality of residence, to a correlation coefficient of 0.02 (not statistically significant) between the latter measure and the number of displaced individuals registered at the municipality of residence. All correlation coefficients except for one are statistically significant at the 1 percent level.

In the descriptive analysis, we also use respondents' ethnicity as a proxy for conflict exposure because it is the only marker of the potential exposure to violence available in both the WVS and Living in BiH data.[14] The WVS data do not contain municipality-level identifiers and

[13] Living in BiH, Waves 3 and 4, Module 4, q. 48.
[14] A similar strategy was used by Schindler and Brück (2011) who used ethnicity markers from a survey conducted in Rwanda before the 1994 genocide to identify potential Tutsi victims and match them to those who reported deaths on children or close relatives during the 1994 genocide in the post-genocide survey.

thus cannot be matched with municipality-level conflict exposure variables or information on individual-level war trauma. Nevertheless, the WVSs were collected in the immediate aftermath of the war and hence these data are very useful in this data scarce environment.

We recognize that while individuals within each ethnic group had different war-related experiences, the ethnic groups had somewhat different levels of exposure to conflict. Figure 1 shows the number of killed and missing persons by region of residence as a percentage of the population in 1991. First, Bosniaks as an ethnic group lost a larger percentage of their pre-war population compared to Serbs and Croats. Out of 97,207 killed and missing persons during the 1992-1995 conflict, 65.8 percent were of Bosnian ethnic origin, 26.6 percent were Serbs and 8 percent were Croats (RDC, Sarajevo, 2009). Among 39,684 killed and missing civilians 83.3 percent were Bosniaks, 10.3 percent Serbs, and 5.5 percent Croats. A similar pattern is noted for killed and missing soldiers, of which 53.8 percent were Bosniaks, 36.2 percent Serbs, and 9.8 percent Croats.

Second, due to ethnic cleansing, Bosnia and Herzegovina experienced significant war-induced displacement and migration which in turn led to the creation of ethnic clusters. While both Bosniaks and Serbs were more likely to be displaced by the conflict than Croats (Tuathail & Dahlman, 2004: p. 460), displacement affected Republika Srpska to a greater extent than it did the Federation (Bisogno and Chong, 2002). Third, post-war economic outcomes differed along ethnic lines and were partly influenced by the economic standing of the neighboring regions of the newly created ethnic clusters. Republika Srpska, where many Serbs settled after the war, borders relatively poor Serbia, while Croatian-dominated cantons border a wealthier Croatia (Bisogno and Chong, 2002). Moreover, international assistance was allocated unequally to regions in BiH, with Republika Srpska receiving only 30 percent of the reconstruction aid funds

and the rest being allocated to the Federation (Bisogno and Chong, 2002). Further, Serbs may have lost their dominant position in Bosnian official life (Abazović et al., 2007), which may have had an effect on their overall satisfaction with life by changing their perception of available opportunities. All these facts suggest that the impact of the Bosnian War differed across ethnic groups.

Preliminary Observations

Figure 2 depicts the mean overall life satisfaction scores of the three major ethnicities between 1998 and 2004. The satisfaction scores are derived from the two data sets described above; one which contains information for 1998 and 2001 (WVS) and the other for 2002-2004 (Living in BiH). Although almost the same question was asked in both surveys, the scales are somewhat different and the satisfaction scores are therefore not directly comparable. However, the data from both datasets suggest that Serbs were initially significantly less satisfied with their lives than Bosniaks and Croats. Nonetheless, over time Serbs became on average more satisfied and in 2004 their level of satisfaction was similar to that of Bosniaks. Note, though, that in the regression analysis of the determinants of subjective-well being presented in the following section, ethnic origin is not statistically significantly associated with one's satisfaction with life once municipality-level fixed effects are accounted for.

Ideally, we would like to compare people's pre-and post-war evaluations of their life satisfaction. However, due to data limitations this is not possible. The starting point in our analysis is the 3rd wave of the WVS that was conducted in BiH in February of 1998. Thus, we may be comparing life satisfaction scores that were already lower than their pre-war levels. The data suggest that while there were significant differences in subjective well-being among the

three main ethnic groups in BiH in 1998, these differences became smaller over time. Thus, our next step is to test whether these differences in subjective well-being can be attributed to differences in war-related experiences measured by the municipality-level measures of exposure to conflict and by self-reported war-related experiences, while controlling for observable life circumstances and demographic characteristics.

4. Model Specification and Empirical Results

4.1 Model

We estimate a series of equations using the Living in BiH data in order to acquire a better understanding of the factors affecting people's satisfaction with life and the significance of war experiences. We hypothesize that self-reported life satisfaction is a function of individual and municipality-specific variables. Thus, we estimate Equation 1:

$$S_{ijt} = f(X_{ijt}, Z_{jt}, \varepsilon_{ijt}), \quad (1)$$

where S_{ijt} is a vector of satisfaction scores at time *t* of individual *i* who lived in municipality *j* during the war, X_{ijt} is a matrix of individual-specific variables, Z_{jt} is a matrix of municipality specific variables, and ε_{ijt} is a vector of idiosyncratic errors.

Our independent variables of interest in these regressions are the municipality-level variables measuring the intensity of armed conflict in the individual's pre-war municipality of residence, and the individual-level indicators for exposure to conflict such as living in a war-damaged house and remembering war-related traumatic events. Similar to previous studies on the determinants of life satisfaction, we control for the following individual-level characteristics: gender, marital status, income group, employment, education, and age (e.g., Frey and Stutzer,

2002).We further account for an individual being unemployed.[15] Ethnicities include Bosniak, Serb, Croat and other ethnic group.[16] We also include a variable that denotes satisfaction with one's health on a scale from 1 to 7 with seven being the highest level of satisfaction.

4.2 Regression Results: Repeated Cross-Section Estimation

We focus our regression analysis on the Living in BiH data as the WVS data do not include individual and municipality-level measures of conflict exposure.[17]All regressions include the following individual-level covariates: ethnicity dummies, an indicator for the respondent being male, age, age squared, marital status indicator variables, employment level and self-reported health status.[18]

First, we estimate a set of cross-sectional baseline regressions in which we regress an individual's self-reported satisfaction with life on the individual-level covariates. All regressions include fixed effects at the municipality of residence level to control for unobserved heterogeneity within communities.

In Table 2 we report the results of the baseline specification separately for the 2002, 2003 and 2004 survey waves for two samples. First, we estimate regressions for all individuals aged 15 and above at the time of the survey. Second, we restrict the sample to individuals who

[15] We also estimated regressions that include dummy variables for all types of employment status (as listed in Appendix Table 1). The estimated coefficient is statistically significant only for the dummy variable denoting unemployment.
[16] In the regressions we use Bosniak and "other ethnic group" as the reference category. The "other ethnic group" category is very small and we are unable to include municipality fixed effects in the regressions due to insufficient number of observations if we were to include an indicator for "other ethnic group status" in the regression,
[17] The regression estimates received from the baseline model on the pooled WFS data indicate a similar effect of socio-economic and demographic characteristics on one's satisfaction with life to those yielded using the Living in BiH data (not reported).
[18] Household income is conventionally added to the regression equation in the analysis of life satisfaction. The comprehensive measures of household income and consumption are only available in the 2001 and 2004 surveys and life satisfaction data are available only in 2002, 2003 and 2004 surveys; thus we do not have panel data on household income or consumption.

reported having stayed in the same place of residence since before the start of the war (never displaced).[19] The estimated coefficients with respect to individual characteristics indicate that satisfaction with own health is positively related to life satisfaction, while unemployment status is statistically significantly negatively correlated with it (significant at the 1 percent level). This result mirrors findings from previous studies of the unemployed (e.g. Clark and Oswald, 1994; Winkelmann and Winkelmann, 1998). Satisfaction with life decreases with age and is lower for males. Married individuals are more content with their lives than the rest of the sample (significant at the 1 percent level) while divorced individuals report the lowest level of satisfaction with life. The estimated coefficients on the ethnic group dummies are not statistically significant in any of the regressions. An individual's satisfaction with one's health has a positive and statistically significant effect on her overall satisfaction with life.[20]

Next, in Table 3 we sequentially add to the baseline model our municipality (Models 1-4) and individual-level exposure-to-conflict variables (Models 5-6).As in Table 2, the results are reported for the whole sample and for those individuals who were not displaced during the war. The municipality-level conflict measures are matched to the individual's pre-war municipality of residence that was reported in the 2002 Living in BiH survey wave. The regression results in Models 1-4 indicate that none of the municipality-level conflict-intensity variables are statistically significantly associated with an individual's life satisfaction level. The estimation results from Model 5 suggest that individuals whose houses were damaged during the war had lower life satisfaction in 2002 (significant at the 10 percent level). The negative association between life satisfaction and damage to one's dwelling in 2002 is also observed for the 2003 and

[19] We also estimated a set of regressions for the sample of individuals who did not move during their lifetime and the results are very similar (not reported).

[20] As a robustness check, we estimated the set of baseline regressions for the sample of individuals who were age 16 and above at the start of the war in 1992. Again, the results are similar to the ones reported in Table 4.

2004 waves for all sub-samples, although the coefficients are not precisely estimated (Table 3, Model 5). The estimation results from Model 6, where we add the recent recollection by an individual of her traumatic war experiences as a proxy for her exposure to conflict, suggest that there is a statistically significant and negative association between such trauma and life satisfaction. For each one level increase in the intensity of war-related trauma, which is scaled between zero and three, an individual's life satisfaction decreases by 0.291 and 0.320 units for the full sample estimates for the 2003 and 2004 surveys respectively (significant at the 1 percent level). For the sample of non-displaced individuals, the estimated coefficients on war trauma are of a similar magnitude.

As an additional robustness check, we also perform the same set of estimations for the sample of individuals who were aged 16 and above at the start of the war in 1992, assuming that younger individuals were somewhat sheltered from war experiences by their families. These results are reported in Table 4 and mirror the full sample regression results, albeit the estimated coefficients on the war-intensity variables in Models 5 and 6 are somewhat smaller, indicating that these who were relatively young during the conflict (under 16 years of age when the war started) were affected by the conflict to a slightly larger extent than adults, which is plausible as these young individuals were of school age during the war and may have suffered loss in their schooling attainment (Swee, 2011), and thus, a reduced satisfaction with life later on.

4.3 Regression Results: Panel Data Estimation

As we found that one's experiences of war trauma have a significant effect on one's subjective well-being, we want to test whether the negative impact of war-related experiences on subjective well-being decreases over time by exploiting the longitudinal nature of the data. We

include in the regressions only two measures of conflict: the municipality-level casualty rate (as the main measure of municipality-level exposure to conflict) and an individual's report of recollection of traumatic war experiences. The first measure is time-invariant as it is based on an individual's residence in 1992 and cannot be included in the analysis as a level variable. Thus, to examine its effect over time, we include in the regressions the interactions of this time-invariant measure with the survey wave. All regressions include individual and survey wave fixed effects to account for the time trend and for the differences among individuals in their outlook.

In Table 5 we report results of baseline regressions for those eligible to be interviewed at the time of the survey (full sample -- Col. 1) and the subsample of those aged 16 and above in 1992 (Col. 3). Then, we restrict these two samples to the individuals who were never displaced during the war (Col. 2 and 4). The estimated coefficients on the survey dummy variables show that in 2003 life satisfaction increases compared to 2002. The estimated coefficient on the 2004 survey dummy is negative indicating a set-back but is statistically significant only for the subsample of those who were never displaced (Col. 2). An individual's unemployment status is again an important determinant of one's life satisfaction (significant at the 1 percent level). Satisfaction with one's health also has a significant and positive impact on one life satisfaction. Both coefficients are smaller in magnitude than those in Table 2, reflecting that in the regressions in Table 2 we estimate differences across persons in the sample while in Table 6 we focus on differences within the same person over several years. Being married likewise is significantly and positively associated with life satisfaction. The regression coefficients also show that Serbs report greater life satisfaction in 2003 and 2004 than in 2002, indicating a possible improvement in economic and social status.

In Table 6, we add to the baseline models two measures of conflict exposure that we discussed above. The coefficient estimates on the interactions between the municipality-level casualty rate and the survey wave dummies suggest that for all subsamples, life satisfaction declined in 2004 compared to 2002 in the municipalities with a higher casualty rate (Table 6, Panel A). The estimated coefficients are rather small in absolute value, yet statistically significant at the 10 percent level. Unfortunately, we do not have other municipality-level variables that we could include as controls for economic conditions. As it is possible that municipalities with higher levels of casualties also have poorer economic conditions as a result of the war, the observed result should be interpreted with caution.

In Table 6, Panel B we present results from the baseline regression model where we add the categorical variable 'war trauma' which measures how often an individual recalled war-related experiences in the week prior to the survey. We further include the interaction term between war trauma and the indicator variable that is equal to one if an observation came from the 2004 survey. The estimated coefficient on the 'war-trauma' variable is negative and statistically significant at the 1 percent level in all models, indicating that for each unit increase in the intensity of recollecting these traumatic experiences, one's satisfaction with life declines by about 0.170 and by 0.176 units for the full sample and for these aged 16 and above in 1992 respectively (Col. 1 and 3). This result points towards persistence of war trauma. As the estimate for the full sample is lower than the one for the sample restricted to those aged 16 and above in 1992, we can infer that war trauma had a more profound impact on individuals who were at least 16 years old when the Bosnian conflict started as compared to children and adolescents. The coefficients' estimates from the panel data (about 0.170) are lower than those from the cross-section sample (about 0.290). This difference can be explained by the use of person-specific

fixed effects in the panel regressions and by the likely differences in the composition of the panel and cross-sectional samples. The impact of recalling war-related events is lower in 2004 compared to 2003, although the coefficient is statistically significant only for the sample aged 16 and above in 1992 (Panel B, Col. 3). The estimated coefficients for the subsamples of those who were never displaced (the full sample and those aged 16 and above in 1992) are lower in absolute value than those for the non-restricted subsamples, suggesting that the full sample results are likely to be driven by the negative experiences of those who were displaced during the war.

5. Discussion and Conclusion

Our study is one of the first to analyze life satisfaction over a period of several years in Bosnia and Herzegovina, which was afflicted by a violent armed conflict during 1992-1995. We estimate the effect of exposure to armed conflict on individual satisfaction with life while controlling for other individual-level covariates using longitudinal data for Bosnia and Herzegovina. The study employs several measures of regional and individual exposure to the war. As displacement during wars is typically large and Bosnia and Herzegovina was no exception with 1.3 million people who left their places of residence (UNHCR, 1999), it is important to account for it in the analysis. The survey data used in our analysis have information on each individual's community of residence at the start of the war, thus allowing us to assign to each respondent municipality-level variables of exposure to conflict based on his or her place of residence in 1992.

Our cross-sectional regressions with fixed effects at the community level show that life satisfaction scores are not statistically significantly associated with the exposure to armed conflict measured at one's municipality of residence during the war. In both panel and cross-

sectional regressions, individual-level measures of exposure to conflict – such as residence in homes damaged by the war and recent recollection of traumatic war events –show a strong negative association with one's subjective well-being. As we do not have data on pre-war life satisfaction, we cannot judge whether individuals fully revert back to previous levels of well-being. However, we can evaluate, using panel regressions with fixed effects at the individual level, whether the effect of war-related experiences on subjective well-being declines over time. The cross-sectional and panel regression estimates with war trauma as the main independent variable of interest show that the impact of such trauma does not fade with the passage of time in the full and never displaced samples. When we restrict the sample to those aged 16 and above in 1992, the results show that in 2004 compared to 2003 the effect of trauma was smaller, but the net effect is comparable to the full sample estimates.

Our study contributes to the literature on the effect of armed conflict on microeconomic outcomes such as accumulation of health and education, economic decision making by households and political participation by individuals affected by war (see a review by Blattman and Miguel, 2010). We also add to the literature that tackles the broader question of the long-term impact of significant events on subjective well-being. These studies conclude that the negative effects of events such as recession, transition from a command to a market economy, civil conflict or terrorism on happiness typically exceed the decrease in utility from pure economic losses (Deaton, 2011; Di Tella, MacCulloch and Oswald, 2003; Easterlin, 2009; Frey, Luechinger and Stutzer, 2004; Frey, Luechinger and Stutzer, 2007; Sanfey and Teksoz, 2007; Welsch, 2008). Our analysis further complements studies that examine how individuals adapt to significant life events over time (e.g. Frijters, Johnston and Shields, 2008; Lucas, 2007). In the panel regressions, the effect of municipality-level war-induced casualty rate on subjective well-

being is negative and statistically significant when interacted with the dummy variable for the 2004 survey wave, however, the effect of the increase in this covariate is very small compared to the effect of individual level war trauma. Thus, our results confirm that an individual's well-being is significantly influenced by his or her experiences of civil war. Moreover, the observed loss in subjective well-being that could be attributed to individual conflict exposure remains stable and persistent over time for different subsamples.

Our main data sources are likely to suffer from survivorship and migration bias because the sample population only includes those who survived the war and remained in BiH. Thus, the analysis is conditional on surviving the conflict which is a common limitation of micro-level conflict studies. Although both surveys used in our analysis, the WVS and the Living in BiH survey, are in several respects representative of the 1991 population as described by the census, it is likely that the true composition of the population changed during the war, where the most affected may have migrated to other countries or died. Our results should therefore be evaluated in light of this potential bias and are likely to underestimate the true impact of the conflict. For example, it is possible that conflict survivors are more resilient as was noticed in Cambodia by Zimmer et al. (2006). Further, we should note that the subjective well-being of emigrants, a selective sample, would undoubtedly be affected by their migration experience and adjustment to a new country (Kim, 2011). For example, in Germany permanent migrants experienced an increase in their well-being in the year of migration and the subsequent years (Fuchs-Schündeln and Schündeln, 2009).

The present analysis contains important messages for policymakers. We would like to highlight three aspects. First, there is a significant upward trend in life satisfaction scores after the war, which indicates that gradual adaptation and psychological healing are taking place.

Second, unemployment and satisfaction with one's health appear to have a strong and significant impact on overall life satisfaction, as also shown in previous studies. Unemployment is an indirect effect of the conflict, as war-displaced persons in Bosnia and Herzegovina were much more likely to be unemployed than the non-displaced (Kondylis, 2010). Third, as the effect of war-induced trauma is higher for the displaced as indicated by the estimates for the full sample and the sample of those who were not displaced, war-induced displacement could be a factor that is partially explaining the negative effects of war trauma. Thus, one policy recommendation is to help people return to their original places of residence whenever possible. When this is not feasible, the government could invest in creating a sense of community that was lost because of displacement and war. Well-integrated residents may be more likely to catch up with forgone educational opportunities and find employment, which would also significantly contribute to their well-being. Fourth, individual war-related trauma has a statistically significant negative effect on one's subjective well-being even eight years after the end of the war, suggesting that psychological counseling services may be useful for the population and that flares of depression may be associated with events that stir painful memories. Thus, it is possible that targeted policy interventions can further enhance well-being in post-war Bosnia and Herzegovina.

Concluding, we would like to suggest a few directions for future research. First, it would be interesting to examine how post-traumatic stress caused by war-experiences affects the labor market outcomes for civilians.[21] Another line of research could examine the effect of war-related parental stress on children's outcomes such as health, education and social adaptation. This line of research would reveal to what extent war may even influence generations that were not directly affected by war by impacting the characteristics and behavior of their parents. Overall,

[21] A recent study finds that an increase in crime in Mexico had a negative effect on individuals' mental health and subsequently on their labor market outcomes (Michaelsen, 2011).

we believe that the analysis of measures of subjective well-being in war-affected regions can substantially contribute to our understanding of post-conflict outcomes and should be further pursued.

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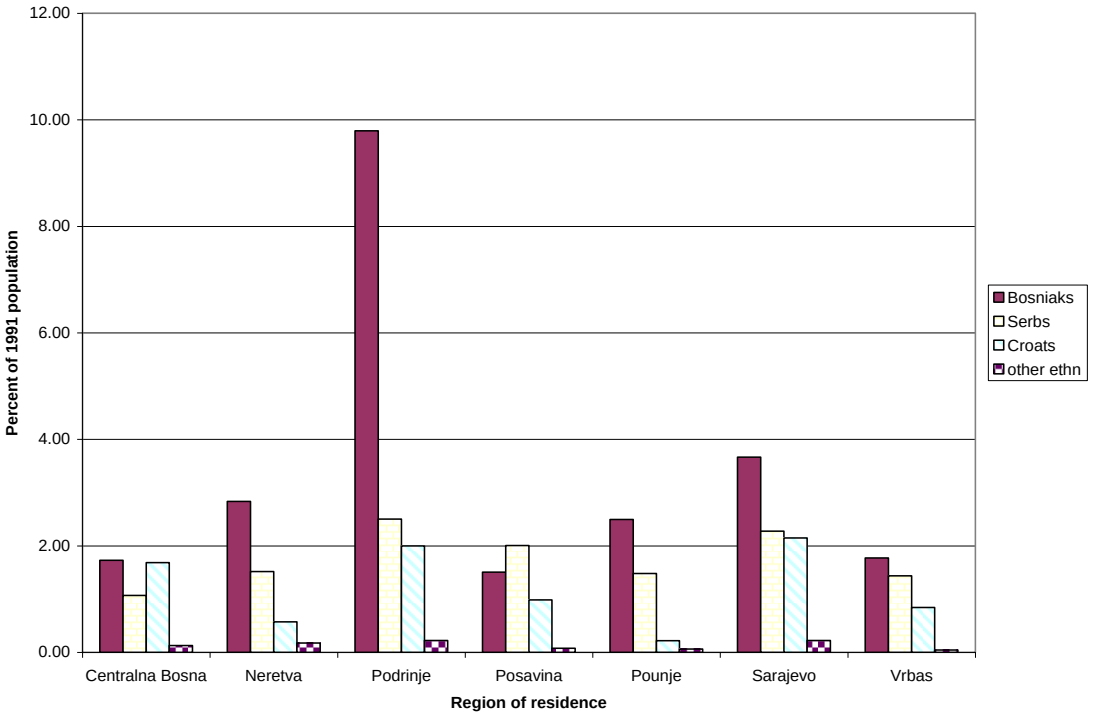
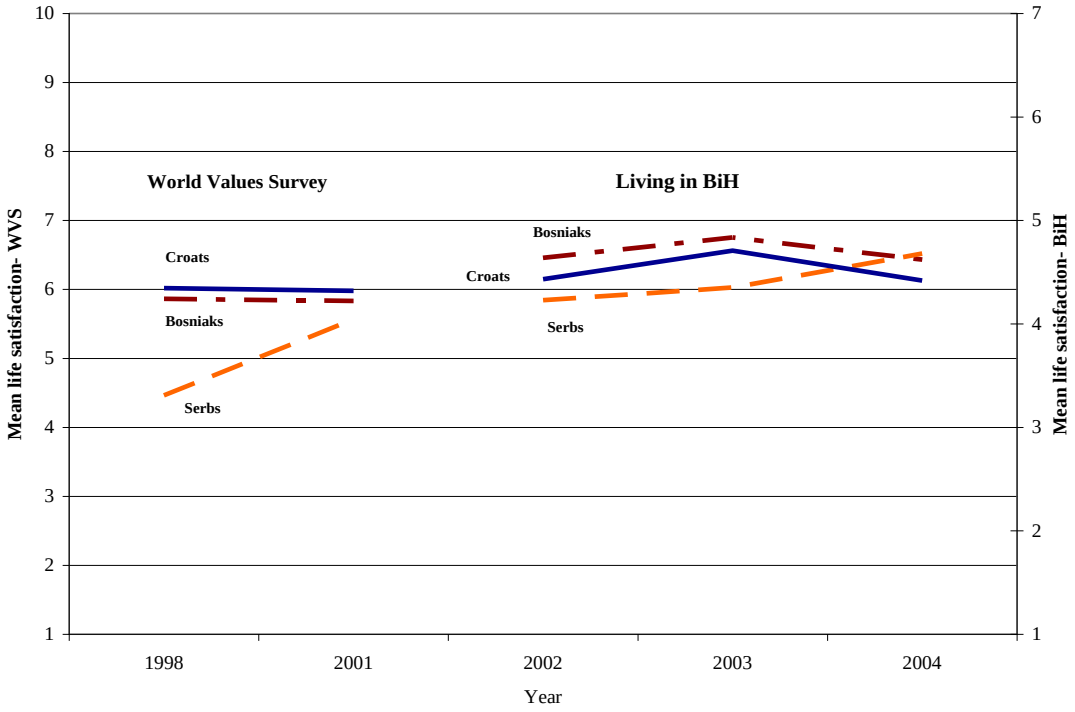
Figure 1 - 1992-1995 Bosnian War casualties by victim's region of residence



Source: Casualties data from the Research and Documentation Center (Sarajevo, 2009). Population data from the 1991 Census for Bosnia and Herzegovina.

Figure 2 - Life satisfaction among all ethnic groups in Bosnia and Herzegovina, 1999-2004



Source: WVS for Bosnia and Herzegovina (1998, 2001) and Living in BiH (2002, 2003, 2004).

Table 1 – Correlation matrix for measures of conflict exposure

	N killed/ missing persons in municipality/ population 1991	Proportion of housing units damaged, 1995	Registered displaced pop-n in 1992/pop-n 1991	War damage to an individual's residence in 2002	Level of war trauma (wave specific)
N killed/missing persons in municip./pop-n 1991[1]	1				
Proportion of housing units damaged, 1995[1]	0.124*	1			
Registered displaced pop-n in 1992/pop-n 1991[1]	0.108*	0.002	1		
War damage to an individual's residence in 2002[2]	0.086*	0.247*	0.04*	1	
Level of war trauma (wave specific)[2]	0.045*	0.074*	0.116*	0.074*	1

Source: 1) as described in section 3; 2)Living in BiH, 2001/2002/2003/2004.

Table 2 – Baseline regressions: determinants of satisfaction with life. Cross-sectional data regressions.

	Panel A: all sample			Panel B: never displaced		
	Wave 2002	Wave 2003	Wave 2004	Wave 2002	Wave 2003	Wave 2004
	(1)	(2)	(3)	(4)	(5)	(6)
Serb	-0.040	-0.107	-0.062	0.130	-0.145	-0.008
	(0.113)	(0.079)	(0.082)	(0.139)	(0.110)	(0.124)
Croat	-0.224*	0.039	0.040	-0.132	-0.057	-0.011
	(0.133)	(0.146)	(0.161)	(0.115)	(0.167)	(0.206)
Male	-0.076***	-0.097***	-0.099***	-0.059**	-0.110***	-0.095***
	(0.025)	(0.025)	(0.032)	(0.024)	(0.026)	(0.032)
Age	-0.023***	-0.024***	-0.026***	-0.024**	-0.024**	-0.023**
	(0.008)	(0.007)	(0.008)	(0.009)	(0.010)	(0.010)
Age squared	0.000***	0.000***	0.000***	0.000***	0.000**	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Unemployed	-0.531***	-0.579***	-0.540***	-0.567***	-0.579***	-0.571***
	(0.065)	(0.072)	(0.075)	(0.059)	(0.085)	(0.083)
Married	0.242***	0.254***	0.361***	0.219**	0.236***	0.330***
	(0.082)	(0.082)	(0.073)	(0.087)	(0.083)	(0.081)
Widowed	0.083	-0.004	0.054	0.043	-0.062	0.028
	(0.078)	(0.127)	(0.090)	(0.085)	(0.099)	(0.085)
Divorced	-0.292*	-0.287**	-0.231*	-0.205	-0.328**	-0.222
	(0.149)	(0.135)	(0.130)	(0.147)	(0.129)	(0.148)
Rating of own health	0.353***	0.353***	0.400***	0.359***	0.347***	0.390***
	(0.026)	(0.018)	(0.027)	(0.030)	(0.024)	(0.032)
Constant	3.129***	3.487***	2.817***	3.106***	3.591***	2.847***
	(0.244)	(0.186)	(0.298)	(0.268)	(0.271)	(0.358)
N	7164	6745	6288	5395	5131	4775
R squared	0.17	0.22	0.21	0.17	0.21	0.20

Note: p<0.05, ** p<0.01, *** p<0.001. Age group: 15 and above. Reference categories: Bosniak (Muslim) and other ethnic group, "other employment status than unemployed", "Single". All regressions include municipality of residence fixed effects with robust standard errors.
Source: Living in BiH (2002, 2003, and 2004).

Table 3 – Cross-sectional data regressions: the effect of conflict exposure measures on satisfaction with life.

	Panel A: full sample			Panel B: never displaced		
	Wave 2002	Wave 2003	Wave 2004	Wave 2002	Wave 2003	Wave 2004
	(1)	(2)	(3)	(4)	(5)	(6)
Model 1						
N killed/missing persons in municip./pop-n 1991	0.080	-1.593	0.252	2.277	-0.661	7.228
	(1.334)	(1.267)	(1.091)	(4.225)	(5.863)	(4.347)
N	6978	6506	6068	5275	4957	4611
R squared	0.16	0.21	0.21	0.17	0.20	0.20
Model 2						
Casualties rate, middle tertile	0.189	-0.102	-0.133	0.089	-0.029	0.054
	(0.312)	(0.345)	(0.235)	(0.283)	(0.307)	(0.190)
Casualties, highest tertile	0.001	-0.065	-0.048	0.065	0.073	0.193
	(0.268)	(0.334)	(0.231)	(0.210)	(0.271)	(0.156)
N	6978	6506	6068	5275	4957	4611
R squared	0.16	0.21	0.21	0.17	0.20	0.20
Model 3						
Proportion of housing units damaged, 1995	-0.051	-0.468	-0.28	0.048	-0.344	-0.092
	(0.287)	(0.352)	(0.295)	(0.280)	(0.358)	(0.244)
N	6978	6506	6068	5275	4957	4611
R squared	0.16	0.21	0.21	0.17	0.20	0.20
Model 4						
Registered displaced pop-n in 1992/pop-n 1991	-0.328	-0.84	-0.096	3.003	-0.049	2.323
	(1.284)	(0.742)	(0.866)	(2.775)	(3.718)	(2.365)
N	6978	6506	6068	5275	4957	4611
R squared	0.16	0.21	0.21	0.17	0.20	0.20
Model 5						
War damage to an individual's residence in 2002	-0.192*	-0.123	-0.114	-0.143	-0.06	-0.077
	(0.113)	(0.084)	(0.091)	(0.124)	(0.098)	(0.104)
N	7157	6739	6282	5393	5129	4773
R squared	0.17	0.22	0.21	0.17	0.21	0.20
Model 6						
Level of war trauma (wave specific)		-0.291***	-0.320***		-0.286***	-0.323***
		(0.043)	(0.049)		(0.049)	(0.067)
N		6738	4807		5128	3727
R squared		0.24	0.24		0.23	0.24

Notes: p<0.05, ** p<0.01, *** p<0.001. Age group: 15 and above at the time of the specific survey wave (Living in BiH 2002, 2003 or 2004). All conflict exposure variables in Models 1-3 are assigned to the individual based on his/her municipality of residence before the start of the war in 1992. "Never displaced" individual did not report being displaced during the war. All regressions include municipality of current residence fixed effects with robust standard errors clustered at the municipality level. Reference categories: Bosniak (Muslim) and other ethnic group, "other employment status than unemployed", "Single". All models include controls for ethnic group, a male dummy variable, age, age squared, and satisfaction with one's health, unemployment and marital status. Indicator for high casualty rate is equal to one if the casualty rate is greater than 2.1 percent, indicator for low casualty rate is equal to one if the casualty rate is less than 1.667 percent (reference category Model 2), and the indicator for medium casualty rate is the casualty rate in between.

Data source: conflict measures: as described in Section 3. Individual data: Living in BiH (2002/2003/2004).

Table 4 – Cross-sectional data regressions: the effect of conflict exposure measures on satisfaction with life, sample of individuals aged 16 and above in 1992.

	Panel A: full sample			Panel B: never displaced		
	Wave 2002	Wave 2003	Wave 2004	Wave 2002	Wave 2003	Wave 2004
	(4)	(5)	(6)	(4)	(5)	(6)
Model 1						
N killed/missing persons in municip./pop-n 1991	0.621	-0.374	0.303	2.164	-1.941	4.913
	(1.418)	(1.735)	(1.402)	(3.157)	(3.472)	(4.306)
N	5673	5303	4950	4295	4048	3818
R squared	0.16	0.21	0.21	0.16	0.20	0.21
Model 2						
Casualties rate, middle tertile	0.198	-0.055	-0.097	0.239	0.179	0.232
	(0.216)	(0.263)	(0.182)	(0.306)	(0.227)	(0.183)
Casualties, highest tertile	-0.016	-0.081	-0.055	0.143	0.106	0.222
	(0.239)	(0.300)	(0.212)	(0.293)	(0.233)	(0.195)
N	5673	5303	4950	4295	4048	3818
R squared	0.16	0.21	0.21	0.16	0.20	0.21
Model 3						
Proportion of housing units damaged, 1995	-0.125	-0.391	-0.323	0.222	-0.269	0.018
	(0.277)	(0.299)	(0.254)	(0.297)	(0.343)	(0.230)
N	5673	5303	4950	4295	4048	3818
R squared	0.16	0.21	0.21	0.16	0.20	0.21
Model 4						
Registered displaced pop-n in 1992/pop-n 1991	-0.182	0.015	-0.166	2.647	-0.087	-0.308
	(1.309)	(0.965)	(0.949)	(2.451)	(3.489)	(2.373)
N	5673	5303	4950	4295	4048	3818
R squared	0.16	0.21	0.21	0.16	0.20	0.21
Model 5						
War damage to an individual's residence in 2002	-0.208*	-0.120	-0.095	-0.147	-0.042	-0.049
	(0.113)	(0.084)	(0.092)	(0.119)	(0.105)	(0.111)
N	5731	5403	5038	4311	4105	3877
R squared	0.17	0.21	0.21	0.16	0.20	0.21
Model 6						
Level of war trauma (wave specific)		-0.284***	-0.311***		-0.273***	-0.306***
		(0.045)	(0.049)		(0.050)	(0.065)
N		5402	3878		4104	3060
R squared		0.24	0.25		0.23	0.25

Notes: p<0.05, ** p<0.01, *** p<0.001. Age group: 16 and above at the time of the survey. All conflict exposure variables in Models 1-3 are assigned to the individual based on his/her municipality of residence before the start of the war in 1992. "Never displaced" individual did not report being displaced during the war. Reference categories: Bosniak (Muslim) and other ethnic group, "other employment status than unemployed", "Single". All regressions (Models) include municipality of current residence fixed effects with robust standard errors clustered at the municipality level. All models include controls for ethnic group, a male dummy variable, age, age squared, and satisfaction with one's health, unemployment and marital status. Indicator for high casualty rate is equal to one if the casualty rate is greater than 2.1 percent, indicator for low casualty rate is equal to one if the casualty rate is less than 1.667 percent (reference category Model 2), and the indicator for medium casualty rate is the casualty rate in between.
Data source: as for Table 3.

Table 5 –Baseline regressions: determinants of satisfaction with life. Panel data estimations.

	Panel A: Full sample		Panel B: Age 16+ in 1992	
	All	never displaced	All	never displaced
	(1)	(2)	(3)	(4)
Wave 2003	0.162***	0.180***	0.153***	0.168***
	(0.034)	(0.038)	(0.040)	(0.044)
Wave 2004	-0.049	-0.117**	-0.01	-0.075
	(0.048)	(0.052)	(0.057)	(0.062)
Serb* wave 2003	0.124***	0.075	0.131***	0.079
	(0.042)	(0.048)	(0.047)	(0.054)
Serb* wave 2004	0.112**	0.165***	0.102**	0.146**
	(0.045)	(0.054)	(0.050)	(0.060)
Croat* wave 2003	-0.01	-0.077	0.003	-0.055
	(0.068)	(0.074)	(0.075)	(0.082)
Croat* wave 2004	-0.128*	-0.114	-0.134	-0.11
	(0.075)	(0.086)	(0.083)	(0.095)
Age	-0.062**	-0.051	-0.066	-0.007
	(0.029)	(0.032)	(0.046)	(0.053)
Age squared	0.001***	0.001**	0.001**	0
	(0.000)	(0.000)	(0.000)	(0.000)
Unemployed	-0.243***	-0.262***	-0.254***	-0.264***
	(0.040)	(0.049)	(0.049)	(0.062)
Married	0.465***	0.474***	0.320**	0.397***
	(0.113)	(0.125)	(0.134)	(0.141)
Widowed	0.111	0.045	0.022	0.018
	(0.138)	(0.152)	(0.147)	(0.159)
Divorced	0.153	0.228	0.076	0.189
	(0.156)	(0.169)	(0.166)	(0.179)
Rating of own health	0.241***	0.245***	0.246***	0.247***
	(0.011)	(0.013)	(0.012)	(0.013)
Constant	3.577***	3.358***	4.023***	2.454
	(0.864)	(0.912)	(1.423)	(1.568)
N	20686	15694	16499	12547
R-squared	0.07	0.08	0.08	0.08

Note: p<0.05, ** p<0.01, *** p<0.001. Full sample - those aged 15 and above at the time of the survey. "Never displaced" – individual did not report being displaced during the war. Reference categories: Bosniak (Muslim) and other ethnic group, "other employment status than unemployed", "Single". All regressions include municipality of residence fixed effects with robust standard errors.
Source: Living in BiH (2002, 2003, and 2004).

Table 6 – Panel data estimations: the effect of conflict exposure measures on satisfaction with life.

Panel A: Number of killed/missing persons in a municipality of residence at the start of the war weighted by the municipality-level population in 1991

	Full sample		Age 16+ in 1992	
	All	never displaced	All	never displaced
	(1)	(2)	(3)	(4)
Wave 2003	0.156***	0.211***	0.149***	0.199***
	(0.038)	(0.042)	(0.045)	(0.049)
Wave 2004	-0.003	-0.075	0.039	-0.031
	(0.051)	(0.057)	(0.061)	(0.068)
N killed/missing persons in municip./pop-n 1991*Wave2003	0.002	-0.011*	0.002	-0.01
	(0.006)	(0.006)	(0.006)	(0.006)
N killed/missing persons in municip./pop-n 1991*Wave2004	-0.018***	-0.015**	-0.017***	-0.015*
	(0.006)	(0.007)	(0.006)	(0.008)
N	20686	15694	16499	12547
R squared	0.08	0.08	0.08	0.08

Panel B: Individual war trauma

	Full sample		Age 16+ in 1992	
	All	never displaced	All	never displaced
	(1)	(2)	(3)	(4)
Wave 2004	-0.296***	-0.320***	-0.253***	-0.252***
	(0.081)	(0.044)	(0.048)	(0.053)
Level of war trauma	-0.170**	-0.150***	-0.176***	-0.153***
	(0.067)	(0.036)	(0.032)	(0.039)
Level of war trauma* wave 2004	0.053	0.031	0.066**	0.037
	(0.037)	(0.033)	(0.029)	(0.035)
N	11561	9068	9437	7296
R squared	0.11	0.12	0.11	0.12

Note: p<0.05, ** p<0.01, *** p<0.001. Full sample - those aged 15 and above at the time of the survey. "Never displaced" – individual did not report being displaced during the war. Reference categories: Bosniak (Muslim) and other ethnic group, "other employment status than unemployed", "Single". All regressions include municipality of residence fixed effects with robust standard errors. All models include controls for ethnic group, age, age squared, satisfaction with one's health, unemployment and marital status.
Source: Panel A: Living in BiH (2002, 2003, 2004). Panel B: Living in BiH (2003/2004).

Appendix Table 1 – Summary Statistics, WVS 1998 and 2001

Variable	Obs	Mean	Std. Dev.	Min	Max
Satisfaction with life (1-10)	2347	5.60	2.30	1	10
Satisfied with own health (1-5)	2343	3.74	0.91	1	5
Ethnic group					
Bosniak	2339	0.50	0.50	0	1
Serb	2339	0.33	0.47	0	1
Croat	2339	0.17	0.38	0	1
Wave 1998	2350	0.50	0.50	0	1

Source: WVS 1998 and 2001 for Bosnia and Herzegovina.

Appendix Table 2 - Summary Statistics, Living in BiH, 2002, 2003 and 2004 waves

	Wave 2002		Wave 2003		Wave 2004	
Variable	N	Mean	N	Mean	Obs	Mean
Satisfaction with life (1-7)	7399	4.30	7183	4.61	7074	4.44
Bosniak	7393	0.45	6898	0.44	6574	0.44
Serb	7393	0.44	6898	0.44	6574	0.45
Croat	7393	0.09	6898	0.09	6574	0.08
Other ethnic group	7393	0.02	6898	0.02	6574	0.02
Male	7204	0.48	7167	0.48	6920	0.48
Age	7396	44.35	7178	44.50	6919	44.67
Unemployed	7391	0.18	7178	0.17	7068	0.18
Single	7399	0.26	7183	0.26	7074	0.25
Married	7399	0.61	7183	0.60	7074	0.61
Widowed	7399	0.11	7183	0.12	7074	0.12
Divorced	7399	0.02	7183	0.02	7074	0.02
Satisfaction with health (1-7)	7393	4.64	7182	4.81	7069	4.85
War trauma (0 - never, 3 - quite often)	na	na	7175	0.87	5352	0.87

Source: Age group: 15 and above. Living in BiH, 2002, 2003 and 2004 waves. Authors' calculations.