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War and Subjective Well-Being: Evidence from Yemen

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Abstract: This article examines the impact of the Yemeni civil war on subjective well-being (SWB). Analyzing the relationship between regional war intensity and SWB for the period 2015–2023, while accounting for personal characteristics and regional fixed effects, we find a significant negative association between changes in fatality counts within a governorate and changes in SWB. In addition, the more recent political violence in a region, the stronger its negative effect on SWB.

Keywords: war; subjective well-being; Yemen

JEL Classification: I31; R10

1 Introduction

Globally, the number of armed conflicts has been increasing in recent years (ACLED 2024). Exposure to conflict -including violence and death- has a profound, pervasive and enduring impact on individuals and societies. It affects not only physical safety but also health, economic stability and psychological wellbeing. Research on mental health highlights the relationship between conflict and post-traumatic stress (Helpman et al. 2015), depression and anxiety (Kurapov et al. 2023). Moreover, armed conflict directly impacts economic insecurity as people can lose their home and main source of income, and the resulting displacement can disrupt social and community structures including social networks and schooling. War also destroys infrastructure and cultural heritage and can lead to an institutional breakdown and erosion of social trust, resulting in feelings of insecurity and fear. Even when wars end, people can be left with a psychological trauma that can last for years, as has been shown in

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the case of the Balkan war in Bosnia-Herzegovina (Shemyakina and Plagnol 2013) and World War II (Kijewski 2020).[1]

Despite the intuitive assumption that armed conflict has a considerable negative impact on subjective well-being (SWB), the amount of research that has examined the relationship between the two has remained relatively thin on the ground (Frey 2018; Coupe and Obrizan 2024). The main reasons for the absence of a large literature on war and SWB is the fact that it is difficult to conduct surveys in times of war in general and war zones in particular (Coupe and Obrizan 2024).[2]

Existing studies demonstrate and estimate the broader impact of war that goes beyond the loss of human lives and Gross Domestic Product. Focusing on battle-related deaths in civil wars for 21 countries, Welsch (2008) estimated that the loss of one life due to civil conflict is equivalent to a reduction in national income per capita of about $108,000 when measured through its impact on SWB.

Other studies that address the relationship between war and SWB tend to focus on specific conflicts. The study by Ford et al. (2022) on conflict in Southern Thailand shows that village-level conflict reduces happiness by about 0.15 points (on a 0–10 scale), while Hussein et al. (2025) find for Sudan that the raw difference in SWB scores between people living in a conflict zone and people not living in a conflict zone is 12 points (on a 0–100 scale). Coupe and Obrizan (2016) obtain that in Ukraine overall happiness was at most 5 % lower in 2015, the year of the Crimean war. However, the researchers also found that the impact of war was more substantial in the directly affected areas compared to the rest of Ukraine, herewith concluding direct exposure to war seems to be more detrimental to SWB than indirect exposure to war. The importance of direct exposure is also highlighted in the work of Gokmen and Yakovlev (2018), who report that the Russo-Georgian war in 2008 and the Russo-Ukrainian conflict in 2014 led to short-term declines in SWB among ethnic minorities in Russia, especially recent migrants and those living near the conflict zones. These SWB losses were not driven by economic hardship but likely by psychological factors such as fear and feelings of safety. Generally, the importance of direct exposure is underlined by the fact that several studies that have examined SWB in war-torn countries have found only limited effects of war on SWB (Dias et al. 2025).

In this article, we build on existing literature by examining the relationship between regional exposure to war and SWB in Yemen, an area in the world that has received only limited attention (Burger and Arampatzi 2025). The conflict between Yemen's government and the Houthi movement started in 2014 with the Houthi

1 Yet, the literature in conclusive and other articles on e.g. the holocaust and the Kosovo war have found no long-term effects on well-being.

2 In a similar way, existing literature on mental health, including stress and depression remains also relatively limited and relies on student samples (Limone et al. 2022; Pavlova et al. 2024).

takeover of the capital city Sanaa and has resulted in a humanitarian crisis. A comprehensive historical overview of the war is provided by Lackner (2022). By December 2024, the civil war has resulted in over 150,000 deaths due to military action (ACLED 2025) and many more have died from indirect causes. A recent report of the UNCHR mentions that over 4.5 million Yemeni (14 % of the population) are internally displaced, while over 18 million people (over 50 % of the population) are in need of humanitarian assistance (UNHCR 2025). Yet, there are considerable regional differences in the intensity of the conflict, with the eastern provinces in Yemen have been less affected than in the rest of the country (ACLED 2025). Although the Yemen war is fought in both cities and rural areas, 68 % of conflict incidents have taken place in more rural environments (Semnani and Lennard 2019).

To address the above complexities, we exploit variation in casualties within governates in Yemen over time to gauge the impact of war intensity on SWB. We do not only explore the impact of casualties in the own region, but also at how casualties in surrounding regions affect SWB. Our article contributes to existing literature in several ways. First, our research provides a spatial analysis employing varying levels of exposure, constructed on the basis of spatial proximity to conflict by exploring spatial variations in war intensity within different governates of Yemen over time. Key advantages of our approach is that it allows to control for time-invariant differences between regions, while also accounting for broader trends that impact all regions equally. Second, we look at adaptation effects by also taking recency of conflict into account. By leveraging natural variation in timing our approach examines how people adapt to exposure to armed conflict. Third, to the best of the authors' knowledge, this is the first paper examining the relationship between war and SWB in the context of the Yemen civil war.

2 Data and Methodology

2.1 Participants

In this study, we draw on data from the Gallup World Poll (2015–2023), comprising 7,086 individuals. Data were collected across seven waves through face-to-face interviews; no surveys were conducted in 2020 or 2021. The Gallup World Poll covers citizens in 21 of Yemen's 22 governorates, with the island governorate of Socotra excluded in all waves due to its small size and remoteness. For similar reasons, other regions were not surveyed in particular years. Sampling weights were used to correct for unequal selection probability and nonresponse.

To ensure interviewer safety, primary sampling units selected in the first stage were frequently substituted with comparable units within the same province. This

was particularly pronounced during 2016–2018, when nearly half of the original units had to be replaced due to escalating conflict. The sample also includes a substantial share of internally displaced people. Although face-to-face interviews could not be conducted in active war zones, many respondents nonetheless lived under the pervasive threat of violence during these years. Consequently, we acknowledge that the effects of war on SWB may be underestimated based on our sample.

2.2 Variables

Subjective well-being (SWB) is measured using the Cantril ladder question (Cantril 1965): *Please imagine a ladder, with steps numbered from 0 at the bottom to 10 at the top. The top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time?* The Cantril ladder is an evaluative measure of well-being that is used as headline indicator in the World Happiness Report (Helliwell et al. 2025).

2.2.1 Regional Conflict Intensity

To assess conflict intensity across regions, we use data from the Armed Conflict Location & Event Data Project (ACLED; Raleigh et al. 2023) via the Yemen Conflict Observatory (ACLED 2025). Regional conflict intensity is measured as the number of political violence-related fatalities occurring within the resident's governorate during the month of the survey. Political violence fatalities include all deaths resulting from politically motivated violence, such as battles, remote violence (e.g. explosions), and violence against civilians. ACLED provides fatality counts for each recorded event. These figures are then aggregated by time period and by region to generate overall estimates of conflict intensity. As control, we also re-estimate our baseline model using a dummy variable capturing severe conflict intensity that takes the value of 1 if the number of fatalities in a certain region in a certain period are higher than where 75 % of the data points lie. To capture potential recency and adaptation effects, we also analyze how subjective well-being (SWB) relates to political violence fatalities during the six- and three-month periods before survey completion.

2.2.2 Control Variables

In our analysis, we account for variables that could confound the relationship between war and subjective well-being (SWB). That is, we account for factors that

precede both war (via sample composition) and SWB (as outlined in Bartram 2021). Specifically, we control for gender, age, educational attainment, marital status, household size, rural versus urban residence, and geographic region. Alongside our control variables, we incorporate region and year fixed effects to capture time-invariant regional differences and to account for common trends affecting all regions uniformly. Our goal is to adjust for the structure of the sample and demographic shifts over time, while avoiding the inclusion of variables that may act as mediators in the relationship between war and SWB. Supplementary Material A1 provides an overview of the variables included in the analysis.

2.3 Econometric Estimations

To examine the relationship between war and SWB, we specify a simple reduced-form subjective well-being equation, which we estimate using Ordinary Least Squares (OLS):

$$SWB_{ijt} = \Omega Fatalities_{jt} + \mu_j + \varepsilon_{ijt}, \quad (1)$$

where SWB_{ijt} is the reported SWB score of individual *i* residing in region (governate) *j* at time *t*, $Fatalities_{jt}$ the number of fatalities over the past months, $Control_{ijt}$ is a vector of the control variables for individual *i*, μ_j are region fixed effects, μ_t are time fixed effects, and ε it is the residual error. Hence, in our preferred model, we look at the variation in war intensity within regions over time.

A problem of this approach is that governates differ in size and wars do typically not respect regional borders. As a robustness check, we therefore not only examine the number of fatalities in the home region, but also include fatalities in neighboring regions by calculating a market potential measure, where we estimate the number of fatalities in the home region and surrounding regions (at a distance of 100 km).

3 Empirical Results

3.1 Descriptive Statistics

Figure 1 shows the number of fatalities and the development of subjective well-being (SWB) in Yemen over time. The intensity of the war in Yemen has declined markedly in recent years, particularly following the United Nations-mediated truce in 2022. Despite this ceasefire and the reduction of large-scale fighting, the conflict has not fully ended but continues at a lower intensity. Fatalities peaked in 2015 and 2018, the same period during which SWB levels were at their lowest. There are considerable

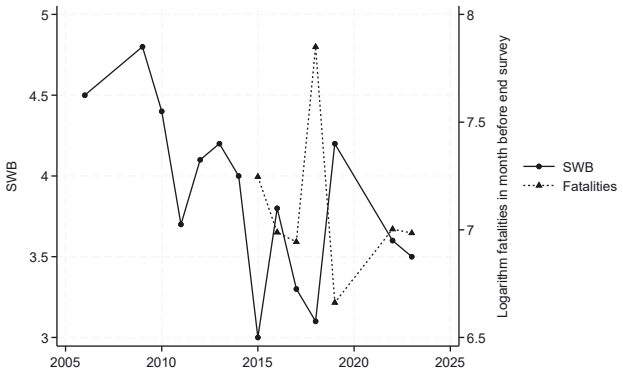

Figure 1: Development of fatalities in month before and SWB over time.

variations in the number of casualties across time. SWB declined during periods of intense conflict but had already been decreasing prior to the onset of the civil war. In this regard, previous research has also shown that declines in SWB can precede and predict social and political turmoil (Arampatzi et al. 2018). Statistics provided in Supplementary Material B confirm that there is substantial variation in conflict intensity and SWB across and within Yemeni regions over time.

3.2 Main Findings

Table 1 presents our main findings. On average, an increase of 1,000 regional fatalities is associated with a decline in subjective well-being (SWB) of more than one point. The results remain robust when we include demographic control variables[3] (Table 1, Column 2) and when we additionally control for region and year fixed effects (Table 1, Column 3), with the estimated effect only slightly reduced. Thus, even when focusing solely on within-region variation over time, we find a substantial negative impact of regional war intensity on SWB. The effect is substantial: comparing the effect of war intensity on SWB with the correlation between income and SWB before the war shows that an increase in war intensity by 1,000 fatalities is comparable to an annual income loss of 2,200–3,600 dollars, which was 2–3 times the average GDP per capita in Yemen in 2012.

As a robustness check, we additionally included several variables that are commonly controlled for in SWB research but are likely endogenous in this context:

3 Descriptive statistics for the control variables can be found in Supplementary Material A2.

Table 1: Relationship between regional war intensity past month and SWB.

	(1)	(2)	(3)	(4)	(5)
War intensity own governate past month (1000s fatalities)	−1.04 (0.19)**	−0.90 (0.19)**	−0.87 (0.31)**	−0.61 (0.30)*	
Severe war intensity past month (0/1)					−0.40 (0.12)**
Female		20.49 (0.07)**	0.46 (0.07)**	0.38 (0.08)**	0.46 (0.07)**
Age		−0.01 (0.00)**	−0.01 (0.00)**	−0.01 (0.00)**	−0.01 (0.00)**
Tertiary education		0.69 (0.12)**	0.76 (0.12)**	0.54 (0.12)**	0.77 (0.12)**
Married		−0.13 (0.10)	−0.09 (0.10)	−0.08 (0.10)	−0.09 (0.10)
Widowed/Divorced/Separated		−0.36 (0.18)*	−0.33 (0.17)*	−0.24 (0.16)	−0.34 (0.17)*
Household size		0.05 (0.01)**	0.04 (0.01)**	0.06 (0.01)**	0.04 (0.01)**
Small town or village		0.07 (0.10)	−0.37 (0.10)**	−0.39 (0.10)**	−0.35 (0.10)**
Large city		0.13 (0.09)	0.10 (0.11)	0.03 (0.11)	0.11 (0.11)
Poorest 60 %				−0.92 (0.07)**	
Unemployed				−0.41 (0.12)**	
Out of workforce				−0.08 (0.09)	
Health problems				−0.17 (0.10)	
1					
Number of observations	7,086	7,086	7,086	7,086	7,086
Region fixed effects	NO	NO	YES	YES	YES
Year fixed effects	NO	NO	YES	YES	YES

Robust standard errors in parentheses **p < 0.01; *p < 0.05.

income, employment status, and health problems.[4] In regression-based causal analyses, it is generally advisable to avoid adjusting for variables that may act as mediators of the treatment effect. In our case, these variables can plausibly lie on the causal pathway between war intensity and SWB. For example, exposure to conflict can lead to the loss of a household's main source of income, making income and employment status consequences of war. Adjusting for them would therefore attenuate the estimated effect of war intensity on SWB. At the same time, poverty has been linked to both the likelihood of conflict (e.g. Ikejiaku 2012) and levels of SWB (e.g. Welsch and Biermann 2019), making income a potential confounder as well. To account for this ambiguity, we included these potentially endogenous controls as a robustness check in Model 4 of Table 1. The main conclusions remain unchanged, though the effect size of war intensity is reduced. Yet, given these conceptual complexities, we retain Model 3 as our preferred baseline specification.

To further examine the sensitivity of our results to the definition of conflict intensity, we first re-estimated our baseline model using severe conflict intensity dummy (Table 1, Column 5). When governorates experience an episode of severe war intensity in the past month, defined as being in the top 25 % of the distribution across the study period (more than 560 fatalities in a given month), average SWB decreases by approximately 0.40 points. Subsequently, we explored several alternative definitions of war intensity. First, we replace regional war intensity over the past months with a measure of regional war intensity over the past three or six months (Table 2, Columns 1 and 2). The main effect decreases considerably with time in both estimations. This indicates that when the same number of fatalities is distributed over a longer period, implying lower war intensity, the effect on SWB diminishes. Second, we also consider fatalities in both the region itself and its neighboring regions (within a distance of 100 km) to account for spatial proximity to conflict (Table 2, Columns 3–5). Our main result holds: the stronger the war intensity, the stronger the effect on SWB.

Finally, we examined whether the 'SWB war penalty' fell disproportionately on specific groups. We found no moderating effects of gender, age, education, marital status, or place of residence. Only household size emerged as a significant moderator: individuals in larger households experienced a stronger decline in SWB as war intensity increased. This pattern aligns with the idea that the impact of war is amplified by heightened concern for the safety and wellbeing of relatives (Frey 2011), but further research is needed to verify this claim.[5]

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4 see Supplementary Material A1 for a definition of these control variables.

5 These additional results are available upon request. The effect of increased war intensity is more than twice as large for households with more than 10 members ($b = -1.41$, $p < 0.01$) compared with households of up to 10 members ($b = -0.71$, $p = 0.02$). Note that in Yemen, most people live with extended family members under one roof or in close proximity.

Table 2: Regional war intensity and SWB – robustness checks.

	(1) Fatalities past 3 months	(2) Fatalities past 6 months	(3) Fatalities past month	(4) Fatalities past 3 months	(5) Fatalities past 6 months
War intensity own governate (1000s fatalities)	−0.42 (0.10)**	−0.14 (0.05)**			
War intensity own and nearby governates (1000s fatalities)			−1.37 (0.21)**	−0.60 (0.08)**	−0.27 (0.04)**
1					
Number of observations	7,086	7,086	7,086	7,086	7,086
Control variables	YES	YES	YES	YES	YES
Region fixed effects	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES

Robust standard errors in parentheses **p < 0.01.

4 Concluding Remarks

In this study, we examined how regional war intensity shapes SWB in Yemen after the start of the civil war. By exploiting within-region variation over time and applying spatial econometric techniques, we were able to capture both direct and spillover effects of conflict. Our findings reveal that higher regional war intensity, measured by the number of fatalities within a region, significantly reduces SWB.

These findings highlight the profound psychological and social toll of armed conflict and likely underestimate its true magnitude, given the challenges of conducting surveys in areas with severe violence and the need to protect interviewer safety. As a result, respondents could only be reached in or near conflict-affected regions rather than in the zones of highest insecurity. Future research should examine more closely how direct exposure to war, including displacement, loss of housing or income, and the threat or reality of losing loved ones, shapes well-being, perceptions of safety, and the emotional burdens of fear and grief. It should also investigate how individuals recover from or adapt to wartime trauma over time. Such insights are essential for policies and interventions that build resilience and support post-conflict recovery.

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