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Suffering and smiling: What determines happiness among Nigerians?

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Abstract
Using the Wave 7 World Values Survey (WVS) dataset, this study examined the determinants of happiness among Nigerians with a focus on exposure to violent conflict, socioeconomic condition, religiosity, and self-rated health. The regression results showed that exposure to violent conflict reduced the likelihood of being happy, but socioeconomic condition and self-rated health were positively correlated with happiness. Religiosity, which was measured using the frequency of prayer, had no effect on happiness. The respondents' demographic attributes like gender, age, and marital status also had no effect on happiness.

Keywords
Happiness, Violent conflict, Heath, Poverty, Religiosity, Nigeria

JEL Classification
D74, I31, Z12

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1. Introduction

The Wave 7 World Values Survey (WVS) (Haerpfer et al. 2022; Inglehart et al. 2014), which was conducted in Nigeria in 2018, showed that 73 percent of Nigerians consider themselves to be happy. Although Nigeria ranked 95 out of 137 countries in the 2023 World Happiness Report, it was the eighth happiest country in Africa—ranking above countries that have higher levels of human development like Botswana, Morocco, and Tunisia (Helliwell et al. 2023; United Nations Development Program 2022). The high level of happiness among Nigerians is paradoxical because the country has poor socioeconomic performance and a high incidence of violent conflict. Data obtained from the Round 9 Afrobarometer survey (BenYishay et al. 2017) conducted in 2022 shows that 63 percent of Nigerians had gone without food at least "several times" during the previous year.[2] Political instability is also a nagging problem in the country, with Nigeria ranking 144 out of 163 countries in the 2023 Global Peace Index. Nigeria was also the ninth least peaceful country in Africa (Institute for Economics and Peace 2023). Nigerian music icon Fela Aníkúlápó Kuti, released a song in 1978 entitled, *shuffering and schmiling* (suffering and smiling), in which he referred to the tendency among Nigerians to maintain good spirits in the midst of suffering.[3] He also noted that Nigerians often sought solace in religion and in the afterlife, which made them more accepting of difficult socioeconomic circumstances caused by bad government. Agbo et al. (2012, p. 306) also observed that "Happiness as reported by Nigerians does not connote actual satisfaction with life but a psychological therapeutic intervention against negative feelings which they encounter every day."

Relying on the Wave 7 WVS dataset (Haerpfer et al. 2022; Inglehart et al. 2014), which is representative of Nigeria's population, this study seeks to examine the determinants of happiness with a particular focus on socioeconomic condition, religiosity, self-rated health, and exposure to violent conflict. While the first three variables were derived from the WVS dataset, the fourth is an

[2] To access the Afrobarometer survey dataset, visit: https://www.afrobarometer.org/
[3] The song is available on Fela's YouTube channel: https://www.youtube.com/watch?v=MZJLOqF2FLw

objective measure, that I developed by computing the total number of conflict incidents within a buffer with a radius of 40km around the respondents' dwellings. I was able to do that using QGIS software because I relied on the Wave 7 WVS dataset (Haerpfer et al. 2022; Inglehart et al. 2014) and the Uppsala Conflict Data Program's Georeferenced Event Dataset (UCDP-GED) (Davies et al. 2023; Sundberg & Melander 2013), both of which are geocoded. The regression results showed that socioeconomic condition and self-rated health were positively correlated with happiness, while exposure to violent conflict reduced the likelihood of being happy. Religiosity, which I measured using the frequency of prayer, had no statistically significant effect on happiness. Moreover, demographic attributes like age, gender, and marital status also had no effect on happiness. This study contributes to the broader literature on the determinants of subjective wellbeing, especially those with a quantitative tilt (e.g., Kijewski 2020; Mahamid & Berte 2020; Senasu & Singhapakdi 2017; Coupe & Obrizan 2016; Nozaki & Oshio 2016; Abdel-Khalek 2014; Francis & Fisher 2014).

The rest of this study is organized as follows: Section 2 reviews the literature on the determinants of happiness with particular focus on violent conflict, religiosity, socioeconomic condition, and self-rated health. It also states the hypotheses. Section 3 introduces the data, operationalizes the variables that will be used to estimate the regression models, and specifies the general form of the regression model. Section 4 presents the regression results and discusses them, while Section 5 summarizes the study and concludes.

2. Theoretical considerations

The concept of happiness is often used interchangeably with life satisfaction and subjective wellbeing. Deiner et al. (2009) alludes to the multidimensional nature of happiness when he observes that "Happiness can mean pleasure, life satisfaction, positive emotions, a meaningful life, or a feeling of contentment, among other concepts." (p. 68). Deiner et al. (2009a) assert that "what we call happiness seems to actually be comprised of frequent positive affect and infrequent negative affect." (p. 214). They further argue that happiness should be viewed in terms of the frequency of positive feelings rather than the intensity of positive feelings. This is because intense positive

feelings are difficult to measure, occur rather infrequently, and may also be associated with intense negative feelings. According to Veenhoven (2012), "happiness is the degree to which an individual judges the overall quality of his/her own life as a whole favorably. In other words, how much one likes the life one leads." (p. 66). Michelos (2017) likens happiness to life satisfaction and subjective wellbeing when he observes: "When people talk about satisfaction or happiness with their whole lives, they are typically referring to a relatively lasting, justified, good feeling and attitude about their lives." (p. 32). He goes on to note that "a theory of life satisfaction could be interpreted as a theory of happiness, and in general such theories would be theories of subjective well-being." (p. 32). According to Kekes (1982, p. 358) "Happiness has two aspects: one is an attitude, the other is a collection of episodes contributing to forming the attitude. The episodes are satisfactions derived from what one does and has. The attitude is satisfaction with one's life as a whole."

Violent conflict and happiness

Some studies have shown that violent conflict negatively impacts happiness. Coupe and Obrizan (2016) conducted a study in Ukraine where they found that the level of happiness among the population in the country's Eastern Region, which had directly experienced war, had declined compared to the pre-war level. Conversely, they found no significant difference between the pre- and post-war happiness levels among the population in other parts of the country that had not been directly exposed to war. In a qualitative study conducted among Palestinian teenagers living in internally displaced person (IDP) camps across the West Bank, Mahamid and Berte (2020) found that living under occupation and the experience of violence have a negative effect on happiness. Their interviews revealed that the belief that peace and freedom would someday prevail fostered hope among the participants and positively influenced their self-reported level of happiness. Manzanero et al. (2020) also conducted a study among Palestinian students who had been exposed to military violence. They found that traumatic memories, which caused emotional distress, were more salient than happy memories. Moreover, the participants "reported accessing traumatic

memories via recurrent thoughts, which are part of the intrusion cluster of trauma-related symptoms." (p. 923).

Analyzing survey data covering 507 undergraduate students in Eritrea, Kelifa et al. (2021) found that adverse childhood experiences (e.g., exposure to physical violence) had a negative impact on later health and wellbeing by eroding resilience and leading to depression. Relying on data collected from an online survey, Kaniasty et al. (2023) found that the ongoing war between Russia and Ukraine is having a negative effect on the psychological health of the Polish population, even though they are not directly affected by the violence. The negative effect has been particularly strong among those who have low trust in their own ability to deal with adversity and those who have low confidence in the government's ability to handle crisis situations. Using survey data collected after the 1991–1995 Bosnia War, Shemyakina and Plagnol (2013) found that the individual experience of violence during the war (e.g., the destruction of one's home) and the recollection of traumatic events from the war negatively affected subjective wellbeing. Hauber et al. (2021) conducted a study among 1,863 seniors over the age of eighty in Germany, in which they found that 42 percent of the respondents were still suffering from trauma associated with the Second World War (WWII). They also found a positive correlation between WWII-related trauma and depression. Relying on survey data covering 34 countries, Kijewski (2020) found that exposure to war has intergenerational effects: "[T]he negative effects of traumatic experiences during World War II on life satisfaction endure, continuing to influence generations born after the war." (p.1270). Combat exposure has also been found to positively correlate with PTSD among American veterans of the wars in Iraq and Afghanistan (Lapierre et al. 2007), among American veterans of the Vietnam War (Koenen et al. 2008), and among veterans of the Korean War (Ikin et al. 2020). PTSD, in turn, leads to low life satisfaction (Dezaki et al. 2021). The discussion so far leads to the first hypothesis that this study seeks to test:

H1a: *Exposure to violent conflict is negatively correlated with happiness*

Another strand of literature has shown that violence might have a positive effect on subjective wellbeing. Hariri (2008) has drawn attention to the concept of "combat flow," especially among soldiers, who experience improvements in their wellbeing and efficiency from engaging in combat roles. He also referred to the biographies of ex-combatants who described missing the experience of combat because of the *living-fully-in-the-moment* feeling it generated. Frey (2011, p. 230) observed that even though the concept of "combat flow" may raise an ethical dilemma, "To totally neglect these forms of happiness experienced in war is, however, a drastic solution not taking into account well documented feelings of happiness because they are illegitimate." In a similar vein, Nieto-Valdivieso (2017) conducted a study among females who had been part of guerrilla organizations in Colombia. She found that despite the discomforts that came along with being part of an insurgent group, "Most of the women interviewed do not narrate or interpret their period of participation in the guerrillas as traumatic, but talk about it as a joyful period of their lives fuelled by the revolutionary dream, and the promise of different futures." Some of the women even described their experiences while in the guerrilla organization as the happiest moments of their lives. Frey (2011) has pointed out that prolonged exposure to violent conflict and death could also prompt normalization among those who experience them, hence desensitizing people to such occurrences. Under such circumstances, conflict might not have a significant effect on happiness. Relying on data collected from 568 military veterans aged between 52 to 96 years in the US, Seligowski et al. (2012) found that combat exposure had no effect on life satisfaction. In another study covering about 3,000 war veterans in the US, Yang and Burr (2016) had a similar finding. To account for the mixed findings in the literature, I will test the following two variants of Hypothesis 1:

H1b: *Exposure to violent conflict is positively correlated with happiness*

H1c: *Exposure to violent conflict has no effect on happiness*

Religiosity and happiness

Some studies have shown that religiosity has a positive effect on happiness. Rusman et al. (2023) conducted a study in Indonesia where they found that people who reported high levels of religiosity also reported high levels of happiness. Analyzing survey data collected from over one thousand secondary school students in Australia, Francis and Fisher (2014) found a positive correlation between prayer and happiness. In a study conducted among adults in South Korea, You and Yoo (2016) found that those who said prayers of thanksgiving reported higher levels of happiness. Relying on data collected from 474 undergraduate students in the United Kingdom, Maltby et al. (1999) showed that the frequency of prayer was also positively correlated with happiness. French and Joseph (1999) also conducted a study among undergraduate students in the United Kingdom, in which they found that providing purpose in life was the main mechanism through which religiosity influenced happiness. Using data collected from 208 Christian Polish undergraduate students, Aghababaei and Błachnio (2014) found that religiosity led to increased happiness by giving people a sense of purpose in life.

Analyzing World Values Survey (WVS) data covering 79 countries, Okulicz-Kozaryn (2010) found that only forms of religiosity that fostered social capital led to happiness. This was because they satisfied the need to belong, which is innate in most people. He also stressed the need for the broader societal context to be taken into consideration in the analysis of individual religiosity: "Religious people are happier in religious nations. In other words, it is not only religiosity per se that makes people happy, but rather a social setting it offers." (p. 155). The positive effect of religiosity on happiness has been replicated among adolescents in Qatar (Abdel-Khalek 2014), among Muslim undergraduate students (Sahraian et al. 2013) and psychiatric outpatients (Dadfar et al. 2021) in Iran, among undergraduate students in Kuwait (Abdel-Khalek 2006), among the American population, especially those who are politically conservative (Bixter 2015), and among kindergarten children across fifteen countries (Pandya 2018). This leads to the second hypothesis that this study seeks to test:

H2a: *Religiosity is positively correlated with happiness*

Some studies have also found that religiosity has no effect on happiness. Lewis et al. (2000) conducted a study in Northern England among 64 Anglican priests and 74 members of the Anglican church, in which they found no association between religiosity and happiness. In another study conducted among Irish undergraduate students, Lewis (2002) found that religiosity, which he measured using the frequency of church attendance, had no effect on happiness. Analyzing the WVS data covering 43 European and Anglo-Saxon countries, Eichhorn (2012) found that individual religiosity had no statistically significant effect on happiness. He concluded that, "Instead of an intrinsic importance of individual religiosity, societal conformity mechanisms appear to be conducive to greater happiness levels." (p. 583). The null effect of religiosity on happiness has also been found among university students in Germany (Francis et al. 2003). Although Robbins et. al. (2008) found a positive correlation between the frequency of prayer and happiness among a sample of 131 undergraduate students in Wales, their result was not robust to the inclusion of control variables for respondents' personality. This leads to the second variant of Hypothesis 2 that this study seeks to test:

H2b: *Religiosity has no effect on happiness*

Socioeconomic condition and happiness

Some studies have shown that poor socioeconomic condition negatively affects happiness. In his seminal study, Easterlin (1974) showed that when measured at a given point in time, income was positively correlated with happiness; however, the positive correlation vanished when this relationship was examined over time. This phenomenon, which is called the Easterlin Paradox, occurs due to social comparison. As the general income of the population rises, so does their general wellbeing, which leaves relative income unchanged (Easterlin & O'Connor 2020). Analyzing WVS data from ten countries across Europe, Asia, Africa, and Latin America, Peiró (2006) found that income was positively correlated with happiness and life satisfaction. Huang (2013) conducted a study in urban China, where he found that poverty in terms of asset ownership

had a negative effect on happiness. Furthermore, he found that the negative effect was larger among households with low income than those with high income. In a study covering Japan, South Korea, and China, Nozaki and Oshio (2016) found a negative correlation between multidimensional poverty (i.e., in terms of health, schooling, income, and social protection) and perceived happiness. Mahamid and Berte (2020) conducted a qualitative study among Palestinian teenagers, in which they found that poor living conditions, especially housing conditions, was one of the main causes of sadness. Relying on data covering 21 emerging market economies, Kumari et al. (2020) found that economic growth had a positive effect on happiness. Analyzing WVS data covering over forty countries, Ball and Chernova (2008) found that both absolute income and relative income were positively correlated with happiness. The positive correlation between socioeconomic status and happiness has been found among the elderly (60 years and above) in Turkey (Ergin & Mandiracioglu 2015), among the South African population (Botha et al. 2018; Mahadea & Rawat 2008), among women aged 15 to 24 years in Nepal (He et al. 2018), among the German population (Ferrer-i-Carbonell 2005), among the Australian population (Saunders 1996), among young and middle-aged adults in the United States (Hsieh 2011), among the populations in five African countries (i.e., Nigeria, Zimbabwe, Ghana, Rwanda, and South Africa) (Adesanya et al. 2017), and among Europeans (Caporale et al. 2009). In this study, socioeconomic condition is measured using an index that captures not only income but also access to the necessities of life like shelter, food, and medicine when sick. I expect Nigerians who are in a good socioeconomic position to be more likely to be happy. This leads to the third hypothesis that this study seeks to test:

H3: *Socioeconomic condition is positively correlated with happiness*

Health and happiness

Some studies have found that being in good health has a positive effect on happiness. In a study conducted in Thailand, Senasu and Singhapakdi (2017) found that people who are satisfied with their health were more likely to be happy. Analyzing WVS survey data covering 15 countries from

five continents, Peiró (2006) found that people who were in poor health were more likely to be unhappy and dissatisfied with their lives. Palmore and Luikart (1972) conducted a study among 502 white Americans in which they found that self-reported health was the main predictor of life satisfaction. Relying on survey data covering the period from 1972 to 2018, Cobb et al. (2020) found that Americans who assessed their health positively were more likely to be happy. However, they found some nuances when they examined the racial dimension of their dataset: Whites who had rated their health positively were more likely to be happy, while blacks who rated their health status poorly were more likely to report being happy. Moreover, blacks who had rated their health positively were not necessarily happy. Explaining the *anomalous* finding among blacks, they observed: "In line with minorities' diminished returns, physical health may have lost some of its utility in generating happiness for Blacks compared to Whites." (p. 488). Analyzing data collected from 221 patients in the United States, Weech-Maldonado et al. (2017) found that both health literacy and better self-rated health increased the likelihood of being happy. The discussion so far leads to the fourth hypothesis that this study seeks to test:

H4a: *Better self-reported health is positively correlated with happiness*

Conversely, some studies have found that self-rated health has no effect on happiness. In a study conducted among undergraduate students in Kuwait, Abdel-Khalek (2006) found that self-rated health was a poor predictor of happiness. Perneger et al. (2004) also conducted a study among 1,257 university students in Switzerland in which they found no association between self-rated health and happiness. This leads to the second variant of Hypothesis 4 that this study seeks to test:

H4b: *Self-reported health has no effect on happiness*

3. Data and methodology

This study relies on the Wave 7 World Values Survey (WVS) (Haerpfer et al. 2022; Inglehart et al. 2014) dataset collected in Nigeria in 2018.[4] The dataset consists of 1,237 observations, with males

[4] To access the World Values Survey (WVS) dataset, visit: https://www.worldvaluessurvey.org/wvs.jsp

and females represented in the ratio 51:49. Respondents were at least 16 years old. Data were collected from all of Nigeria's 36 states, including the federal capital territory (i.e., Abuja). Out of Nigeria's 774 local government areas (LGAs) (i.e., municipalities), data were collected from 120 of them. The variables that will be used to estimate the regression models are discussed below. Table A1 in the appendix presents the summary statistics for these variables.

Operationalization of the variables

Dependent variable

Happiness. This measures the degree to which respondents feel happy. It was derived from the question, "Taking all things together, would you say you are '(1) not at all happy, (2) not very happy, (3) quite happy, (4) very happy.'" I treated "don't know" and "refused to answer" responses as missing observations. I applied this rule to all variables derived from the WVS dataset. For easy interpretation of the regression results, I inverted the ordinal values assigned to response categories so that higher (lower) values would denote a higher (lower) level of happiness. I also developed a binary version of the dependent variable where I coded the "quite happy" and "very happy" response categories as 1, and the "not happy at all" and "not very happy" response categories as zero. I used this to conduct a robustness check.

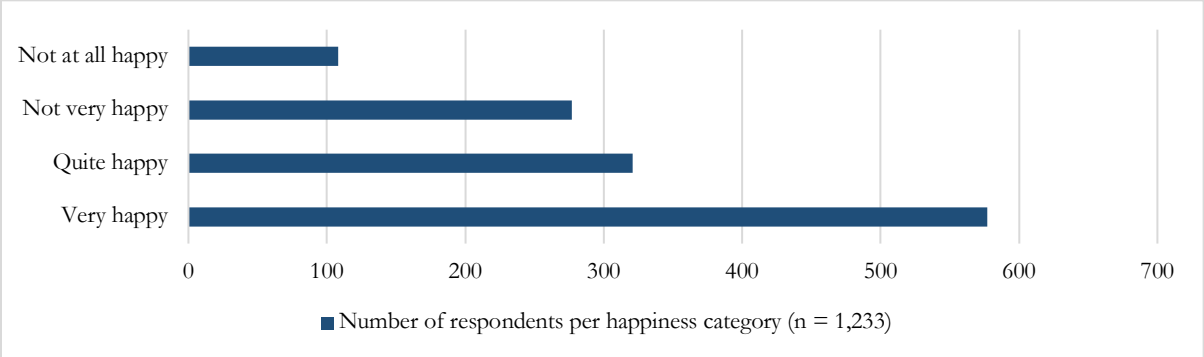

Figure 1: Distribution of happiness among Nigerians

Note: The y-axis shows the four ordinal categories of happiness. The x-axis shows the total number of respondents who belong to each of the categories.

Figure 1 shows that most Nigerians are happy. 47 percent of them chose the "very happy" response category, while 26 percent of them chose the "quite happy" response category. 27 percent of them chose either the "not very happy" or "not at all happy" response categories.

Explanatory variables

Violent conflict. This measures the total number of violent conflict incidents that occurred within the 40km buffer around the respondents' dwellings between 1989 to 2017. I was able to develop this variable using QGIS software because I relied on the World Values Survey (WVS) dataset and the Uppsala Conflict Data Program's Georeferenced Events Dataset (UCDP-GED) (Davies et al. 2023; Sundberg & Melander 2013), both of which are georeferenced.[5] Relying on information collected from news sources and non-governmental organization reports, the UCDP-GED records violent conflict incidents around the world that resulted in at least one fatality. In the UCDP-GED codebook, a conflict event is defined as "An incident where armed force was used by an organised actor against another organized actor, or against civilians, resulting in at least 1 direct death at a specific location and a specific date." (Högbladh 2023, p. 4). Besides providing information about the country and administrative units (i.e., admin 1 and 2) where the incidents occurred, the database also provides the specific longitude and latitude coordinates for each of the incidents.

I considered all the conflicts within the buffer between 1989 to 2017 because I am particularly interested in the cumulative effect of violent conflict. Some studies have shown that the effect of exposure to violent conflict persists over time (Hauber et al. 2021; Kijewski 2020). I chose the start date of 1989 because the UCDP-GED dataset is available beginning from that year. I dropped all the incidents that occurred after 2017 because the dependent variable—i.e., happiness—is measured in 2018. This lags the conflict variable, thus attenuating the potential problem of reverse causality.

[5] The UCDP-GED dataset considers only incidents that caused at least one fatality. To obtain the Uppsala Conflict Data Program's Georeferenced Events Dataset (UCDP_GED), visit: https://ucdp.uu.se/downloads/

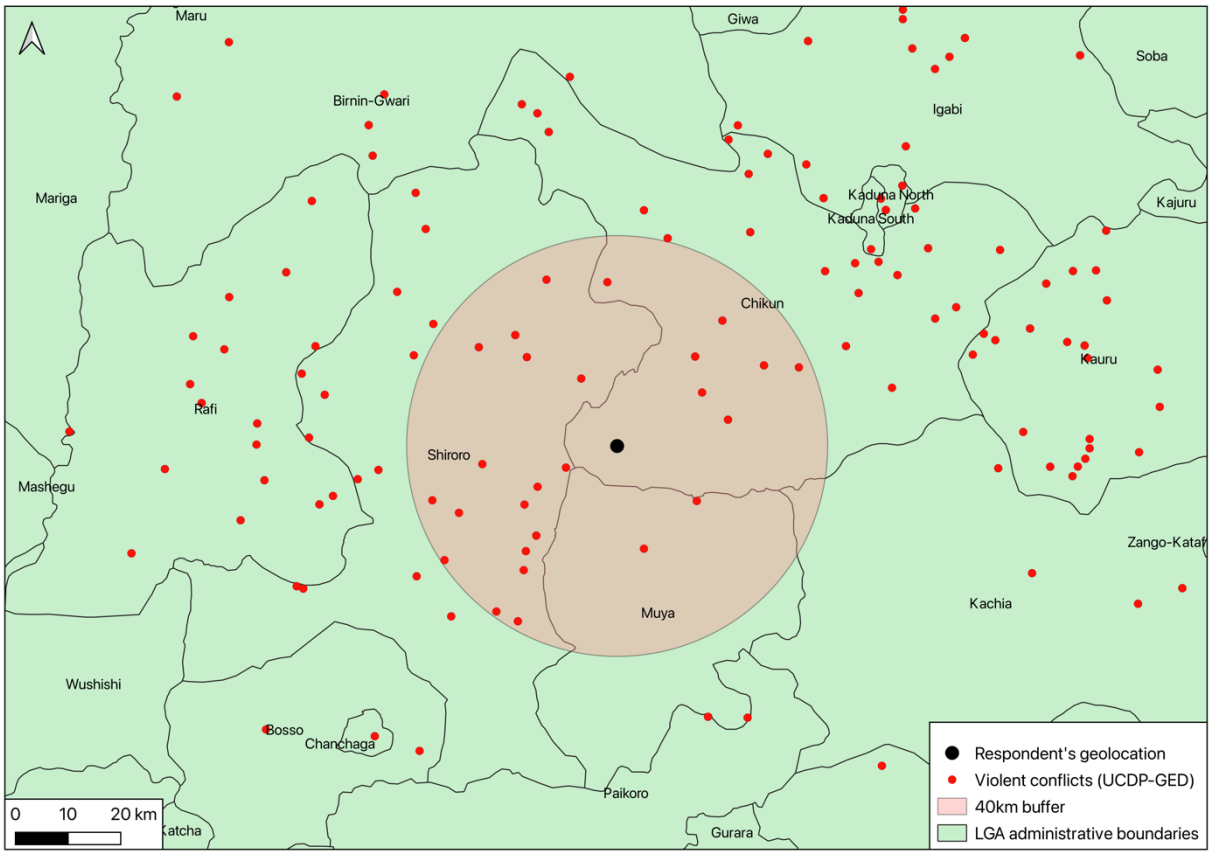

Figure 2: Measuring exposure to violent conflict

Note: The figure shows the geolocation of a hypothetical respondent and the 40km buffer round his/her dwelling. It also shows the local government area (LGA) (i.e., municipality) administrative boundaries and the geolocations of the violent conflict incidents. The shapefiles for Nigeria's administrative boundaries were developed by UNOCHA.

Measuring exposure to violent conflict using buffers is more efficient than using the local government area (LGA) (i.e., municipality) administrative boundaries. This is because using the latter unit assumes that respondents residing within the same municipality are equally exposed to violent conflict, which may not necessarily be the case. As shown in Figure 2, even though the respondent resides in Chikun LGA, incidents in Shiroro and Muya LGAs are closer to his/her dwelling than some incidents in Chikun where the respondent resides. Another limitation of the administrative boundaries is that they are not clearly defined in Nigeria, especially at the lower levels. The use of buffers mitigates these problems. 88 percent of the respondents had at least one conflict incident within the 40km. 50 percent of them had at least 10 incidents within the buffer.

Socioeconomic index. This is an additive indicator that measures the socioeconomic condition of the household to which the respondents belong. It was derived by combining the responses to

the following four questions: "In the last 12 months, how often have you or your family: (a) gone without enough food to eat, (b) Gone without needed medicine or treatment that you needed, (c) gone without a cash income, (d) Gone without a safe shelter over your head." The responses were measured on a scale with four ordinal categories ranging from "1 = often" to "4 = never."

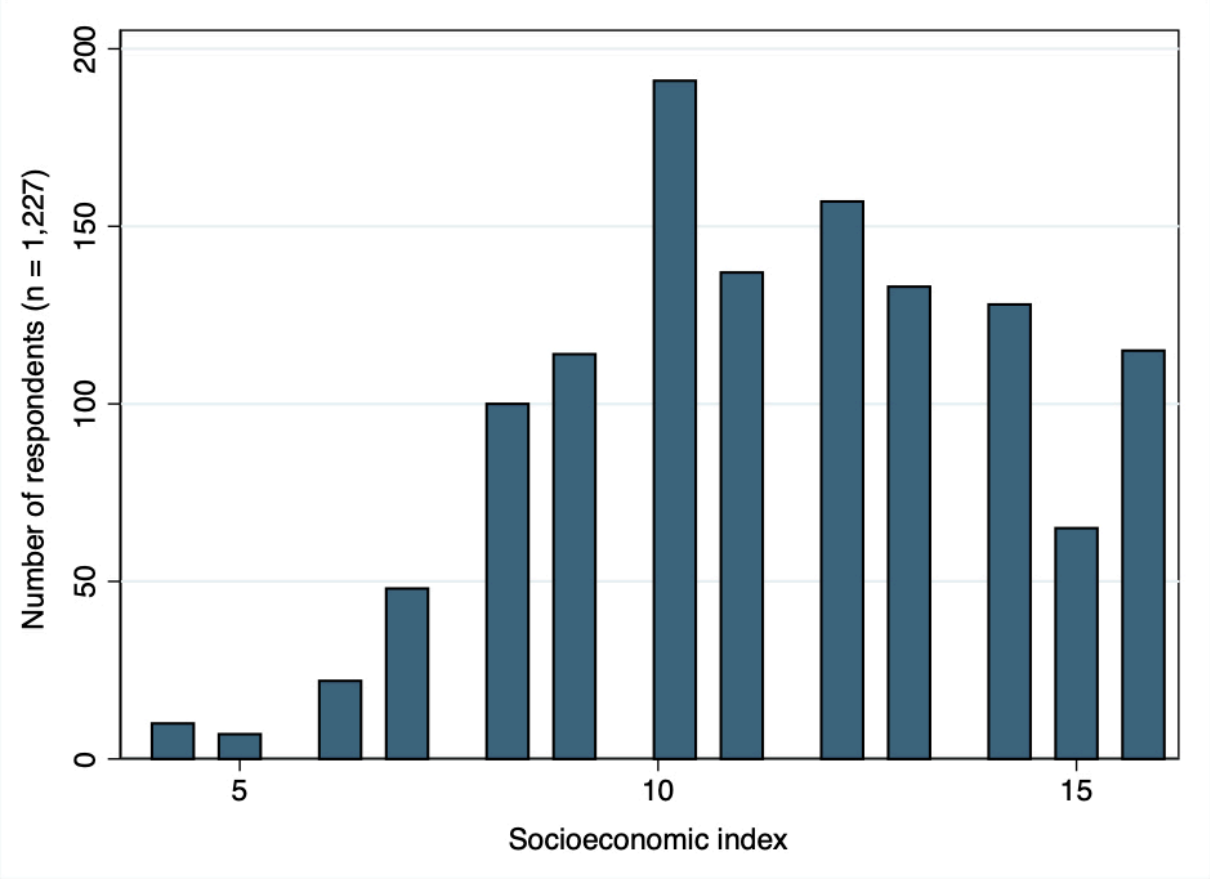

Figure 3: Distribution of socioeconomic condition among Nigerians

Note: The x-axis shows the socioeconomic index which ranges from 4 to 16. The y-axis shows the number of respondents associated with the index values.

The four items had a Cronbach Alpha statistic of 0.74, which shows internal reliability. The additive indicator ranged from 4 to 16, with 4 denoting the lowest level of socioeconomic condition and 16 the highest. Figure 3 shows that 24 percent of the respondents had socioeconomic index scores below 10. Only nine percent them had an index score of 16—i.e., they answered "never" to the four questions that make up the index.

Health. This measures the respondents' assessment of their health. It was derived from the question, "All in all, how would you describe your state of health these days? Would you say it is...

(1) very poor, (2) poor, (3) fair, (4) good, (5) very good." For easy interpretation of the regression results, I inverted the ordinal values assigned to response categories so that higher (lower) values would denote a higher (lower) level of self-reported health.

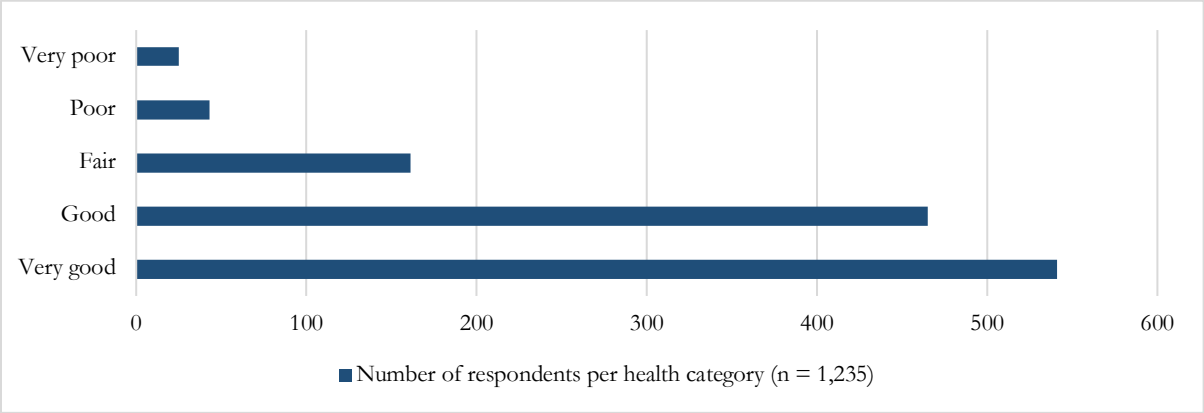

Figure 4: Distribution of self-reported health among Nigerians

Note: The y-axis shows the five ordinal categories of self-reported health. The x-axis shows the total number of respondents who belong to each of the categories.

Figure 4 shows that most Nigerians rate their health positively. 81 percent of the respondents reported that they were either in "good" or "very good" health, while only five percent of them report being in either "poor" or "very poor" health.

Prayer. This variable, which proxies religiosity, measures the frequency with which respondents pray. It was derived from the question, "Apart from weddings and funerals, about how often do you pray?" The responses were measured on a sale with eight ordinal categories ranging from "1 = never, practically never" to "8 = several times a day." For easy interpretation of the regression results, I inverted the ordinal values assigned to the response categories so that higher (lower) values would denote higher (lower) frequency of prayer. 84 percent of Nigerians pray several times a day.

Control variables

Communal poverty. This variable, which proxies the level of poverty at the communal level, measures the infant mortality rate within the 40km buffer around the respondents' dwellings. More specifically, it indicates the number of deaths in children under one year of age per 1,000 in the

year 2015. The infant mortality rate reflects the inability of the population in the community to meet their basic needs like food, potable drinking water, and access to health facilities, which they need to live decent lives. The raw dataset for infant mortality was obtained from Columbia University's Center for International Earth Science Information Network's (CIESIN) database.[6] Because the raw dataset for infant mortality is gridded, I computed the relevant statistics for the buffers using QGIS software.

Demographic covariates. This measures the respondents' age, gender, and marital status. Gender is a binary variable that takes the value of 1 if the respondent is male and 0 if female. Age is measured on a scale with six ordinal categories ranging from "1 = 16–24 years" to "6 = 65 and above." Marital status is a binary variable that takes the value of 1 if the respondent is married or has ever been married and 0 otherwise. I categorized respondents who were divorced, separated, or whose spouse had died as married because these do not necessarily do away with familial responsibility, especially if the union had produced offspring.

Analytical technique

The general form of the regression model can be expressed thus:

$$\gamma_t = \beta_0 + \beta_1 \varphi'_t + \beta_2 \mu'_t + \delta_t \quad (1)$$

Where γ_t is the dependent variable which measures self-reported happiness at time t, φ'_t is a vector of explanatory variables measuring exposure to violent conflict, socioeconomic condition, self-rated health, and religiosity, μ'_t is a vector of control variables measuring poverty at the communal level and the demographic attributes of the respondents, β_0 is the intercept, β_1 and β_2 denote the coefficients of the explanatory and control variables respectively, and δ_t is the error term. Since the dependent variable is measured on a scale with four ordinal categories, I estimated the model using ordered logit regression, which is based on maximum likelihood estimation (MLE).

[6] To access the raw infant mortality dataset, visit: https://sedac.ciesin.columbia.edu/data/set/povmap-global-subnational-infant-mortality-rates-v2-01

To attenuate the problem of multicollinearity, I added the variables into the regression models in a stepwise manner. This also prevents a scenario whereby the regression results are dependent on the inclusion of a certain combination of variables into the model.

4. Results and discussion

Table 1: Correlates of happiness among Nigerians (Ordered logit models)

Happiness$^{\Phi}$	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Violent conflict†	-0.002***				-0.001**	-0.001***
	(0.00)				(0.00)	(0.001)
Socioeconomic index		0.145***			0.094***	0.092***
		(0.02)			(0.022)	(0.022)
Health			0.791***		0.711***	0.705***
			(0.068)		(0.071)	(0.072)
Prayer				-0.114	-0.119	-00.177
				(0.114)	(0.132)	(0.137)
Age						0.05
						(0.053)
Marital status						-0.073
						(0.139)
Gender						-0.02
						(0.114)
Communal poverty†						0.016**
						(0.007)
Intercept 1	-2.465***	-0.751***	0.734***	-2.992***	0.716	1.79*
	(0.11)	(0.239)	(0.275)	(0.672)	(0.843)	(0.934)
Intercept 2	-1.093***	0.642***	2.222***	-1.643**	2.214***	3.288***
	(0.07)	(0.234)	(0.281)	(0.664)	(0.843)	(0.936)
Intercept 3	0.038	1.799***	3.462***	-0.537	3.473***	4.553***
	(0.061)	(0.24)	(0.297)	(0.661)	(0.848)	(0.941)
Observations	1233	1223	1231	1220	1209	1209
Pseudo R^2	0.006	0.018	0.057	0.00	0.065	0.067
Log pseudolikelihood	-1508.66	-1479.217	-1428.464	-1500.416	-1391.364	-1388.748
AIC statistic	3025.319	2966.433	2864.928	3008.831	2796.728	2799.497

Note: *Φ is the dependent variable, † denotes variables measured using buffers with a radius of 40km, robust standard errors are in parentheses, *** p<0.01, ** p<0.05, * p<0.10. All the models are estimated using ordered logit (Ologit) regression.*

In model 1, a baseline model where I considered only violent conflict, it carried a negative sign and was significant at the one percent level. This supports Hypothesis 1a which states that exposure to violent conflict reduces the likelihood of being happy. In model 2 where I considered only the socioeconomic index, it carried a positive sign and was significant at the one percent level. This supports Hypothesis 3 which states socioeconomic condition positively corelates with happiness. In model 3 where I considered only health, it carried a positive sign and was significant at the one percent level. This is consistent with Hypothesis 4a which states that being in good health increases the likelihood of being happy. In model 4 where I considered only prayer, it was statistically

insignificant. This supports Hypothesis 2b that religiosity has no effect on happiness. In model 5 where I included all the explanatory variables in the same model, the results were consistent with those reported in the preceding baseline models.

Model 6 shows that these results are robust to the inclusion of control variables for poverty at the communal level and the demographic attributes of the respondents. Interestingly, age, gender, and marital status were all statistically insignificant, which indicates that demographic characteristics have no effect on how happy Nigerians are. Communal poverty, which I proxied with the infant mortality rate within the 40km buffer, carried a positive sign and as significant at the five percent level. This suggests that people residing in poor communities are more likely to be happy. While this result might at first seem anomalous, given the positive correlation between the socioeconomic index and happiness, these two variables do not measure the same thing because they are aggregated at different levels. Suffice it to add that the results reported in Table 1 are robust to a binary operationalization of the dependent variable and the use of linear probability regression model (LPM) and logit regression as alternative estimation methods (see Table A2 in the appendix).

To better illustrate the effect sizes, I plotted the predicted probabilities for the baseline models (i.e., models 1, 2, 3, and 4) in Figure 5. A cursory look at the figure shows that the effect of the explanatory variables is most prominent on the "very happy" response category of the dependent variable. Panel A shows that a one unit increase in the number of violent conflict incidents within the 40km buffer around the respondents' dwellings reduces the probability of them being "very happy" by 0.06 percent and increases the probability of them being "not at all happy" by 0.02 percent. Panel B shows that a one unit increase in the socioeconomic index increases the probability of being "very happy" by 3.5 percent and reduces the probability of being "not at all happy" by 1.1 percent. Panel C shows that a one unit increase in self-reported health increases the probability of being "very happy" by 18 percent and reduces the probability of being

"not at all happy" by 5.9 percent. As shown in Panel D, where all the whiskers cross the horizontal axis at zero, prayer has no statistically significant effect on happiness.

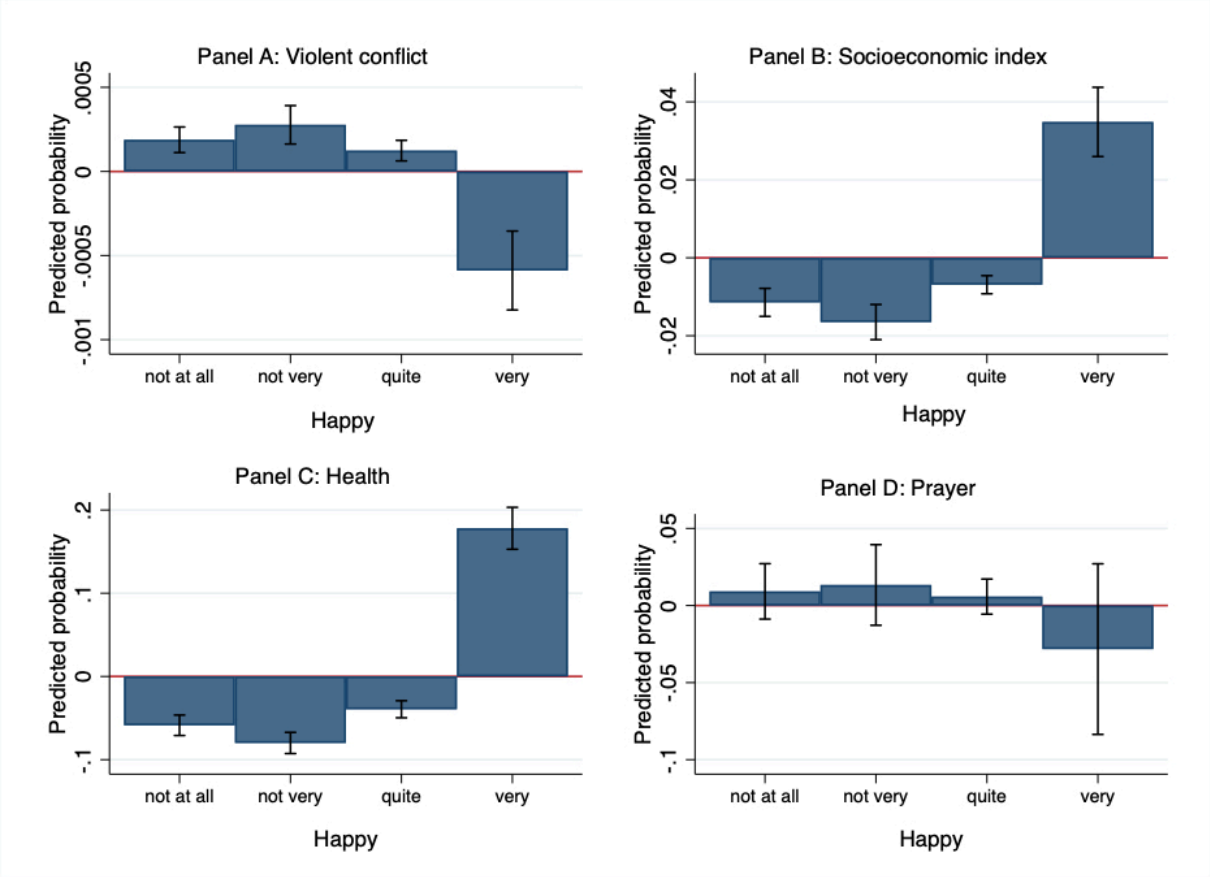

Figure 5: Average marginal effects of the explanatory variables on happiness

Note: Panels A, B, C, and D show the average marginal effects of violent conflict, socioeconomic condition, health, and prayer respectively on the four ordinal categories of the dependent variable which measures self-reported happiness. These results are based on the baseline regression models (i.e., models 1, 2, 3, and 4) reported in Table 1. Confidence intervals are at the 95 percent level.

5. Conclusion

This study examined the determinants of happiness among the Nigerian population with particular focus on self-rated health, socioeconomic condition, religiosity, and exposure to violent conflict. Better self-rated health and socioeconomic condition were positively correlated with happiness, while exposure to violent conflict reduced the likelihood of being happy. Religiosity, which was measured using the frequency of prayer, had no statistically significant effect on happiness. The respondents' demographic attributes like age, gender, and marital status also had no effect on happiness. These results suggest that if the Nigerian government intends to improve the subjective wellbeing of the population, it needs to pursue policies that reduce both the incidence of violent

conflict and socioeconomic deprivation among the population. It also needs to expand access to healthcare services, as this is crucial to the health of the population. Though these results are correlational, they still provide valuable insight into the determinants of happiness among Nigerians.

Conflict of interest

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References

Abdel-Khalek, A.M. (2014). Religiosity, health and happiness: Significant relations in adolescents from Qatar. *International Journal of Social Psychiatry*, 60(7): 656–661. https://doi.org/10.1177/0020764013511792

Abdel-Khalek, A.M. (2006). Happiness, health, and religiosity: Significant relations. *Mental Health, Religion & Culture*, 9(1): 85–97. https://doi.org/10.1080/13694670500040625

Adesanya A.O., Rojas, B.M., Darboe, A., & Beogo, I. (2017). Socioeconomic differential in self-assessment of health and happiness in 5 African countries: Finding from World Value Survey. *PLoS One*, 12(11): 1–12. https://doi.org/10.1371/journal.pone.0188281

Agbo, A., Nzeadibe, T., & Ajaero, C. (2012). Happiness in Nigeria: A socio-cultural analysis. In Selin, H., & Davey, G. (Eds.). *Happiness across cultures* (pp. 293–310). The Netherlands: Springer.

Aghababaei, N., & Błachnio, A. (2014). Purpose in life mediates the relationship between religiosity and happiness: Evidence from Poland. *Mental Health, Religion & Culture*, 17(8): 827–831. https://doi.org/10.1080/13674676.2014.928850

Ball, R., & Chernova, K. (2008). Absolute income, relative income, and happiness. *Social Indicators Research*, 88: 497–529. https://doi.org/10.2139/ssrn.724501

BenYishay, A., Rotberg, R., Wells, J., Lv, Z., Goodman, S., Kovacevic, L., & Runfola, D. (2017) *Geocoding Afrobarometer Rounds 1–6: Methodology & Data Quality*. AidData. http://geo.aiddata.org.

Bixter, M.T. (2015). Happiness, political orientation, and religiosity. *Personality and Individual Differences*, 72: 7–11. http://dx.doi.org/10.1016/j.paid.2014.08.010

Botha, F., Wouters, E., & Booysen, F. (2018). Happiness, socioeconomic status, and family functioning in South African households: A structural equation modelling approach. *Applied Research in Quality of Life*, 13: 947–989. https://doi.org/10.1007/s11482-017-9568-x

Caporale, G.M., Georgellis, Y., Tsitsianis, N., & Yin, Y.P. (2009). Income and happiness across Europe: Do reference values matter? *Journal of Economic Psychology*, 30(1): 42–51. https://doi.org/10.1016/j.joep.2008.06.004

Cobb, S., Javanbakht, A., Soltani, E.K., Bazargan, M., & Assari, S. (2020). Racial difference in the relationship between health and happiness in the United States. *Psychology Research and Behavior Management*, 481–490. https://doi.org/10.2147/PRBM.S248633

Coupe, T., & Obrizan, M. (2016). The impact of war on happiness: The case of Ukraine. *Journal of Economic Behavior & Organization*, 132: 228–242. https://doi.org/10.1016/j.jebo.2016.09.017

Dadfar, M., Lester, D., & Abdel-Khalek, A.M. (2021). Religiosity, happiness and suicidal behaviour: A cross-sectional comparative study in Iran. *Mental Health, Religion & Culture*, 24(2): 128–141. https://doi.org/10.1080/13674676.2020.1767554

Davies, S., Pettersson, T., & Öberg, M. (2023). Organized violence 1989–2022, and the return of conflict between states. Journal of peace research, 60(4), 691-708. https://doi.org/10.1177/00223433231185169

Deiner, E., Scollon, C.N., & Lucas, R.E. (2009). The evolving concept of subjective well-being: The multifaceted nature of happiness. In Deiner, E. (Ed.). *Assessing well-being: The collected works of Ed Deiner* (pp. 67–100). Heidelberg: Springer.

Deiner, E., Sandvik, E., & Pavot, W. (2009a). Happiness is the frequency, not the intensity, of positive versus negative affect. In Deiner, E. (Ed.). *Assessing well-being: The collected works of Ed Deiner* (pp. 213–232). Heidelberg: Springer.

Dezaki, Z.H., Eyni, S., & Kasbakhi, M.E. (2021). Life satisfaction of veterans with post-traumatic stress disorder: The predictive role of cognitive flexibility and alexithymia. *Annales Médico-psychologiques*, 179(10): 901–906. https://doi.org/10.1016/j.amp.2021.02.007

Easterlin, R.A. (1974). Does economic growth improve the human lot? Some empirical evidence. In David, P.A., & Reder, M.W. (Eds.). *Nations and households in economic growth: Essays in honor of Moses Abramovitz*. (pp. 89–125). London: Academic Press.

Easterlin, R.A., & O'Connor, K.J. (2020). The Easterlin Paradox (Discussion Paper No. 13923). Bonn: Institute for Labor Economics. https://doi.org/10.2139/ssrn.3743147

Eichhorn, J. (2012). Happiness for believers? Contextualizing the effects of religiosity on life-satisfaction. *European Sociological Review*, 28(5): 583–593. https://doi.org/10.1093/esr/jcr027

Ergin, I., & Mandiracioglu, A. (2015). Demographic and socioeconomic inequalities for self-rated health and happiness in elderly: the situation for Turkey regarding World Values Survey between 1990 and 2013. *Archives of Gerontology and Geriatrics*, 61(2): 224–230. https://doi.org/10.1016/j.archger.2015.06.011

Ferrer-i-Carbonell, A. (2005). Income and well-being: an empirical analysis of the comparison income effect. *Journal of Public Economics*, 89(5-6): 997–1019. https://doi.org/10.1016/j.jpubeco.2004.06.003

Francis, L.J., & Fisher, J.W. (2014). Prayer and personal happiness: a study among secondary school students in Australia. *Journal of Religious Education*, 62: 79–86. https://doi.org/10.1007/s40839-014-0010-5

Francis, L.J., Katz, Y.J., Yablon, Y., & Robbins, M. (2004). Religiosity, personality, and happiness: A study among Israeli male undergraduates. *Journal of Happiness Studies*, 5: 315–333. https://doi.org/10.1023/b:johs.0000048460.35705.e8

Francis, L.J., Ziebertz, H.G., & Lewis, C.A. (2003). The relationship between religion and happiness among German students. *Pastoral Psychology*, 51: 273–281. https://doi.org/10.1023/A:1022529231234

French, S., & Joseph, S. (1999). Religiosity and its association with happiness, purpose in life, and self-actualisation. *Mental Health, Religion & Culture*, 2(2): 117–120. https://doi.org/10.1080/13674679908406340

Frey, B.S. (2011). Peace, war, and happiness: Bruder Klaus as wellbeing facilitator. *International Journal of Wellbeing*, 1(2): 226–234. https://doi.org/10.5502/ijw.v1i2.5

Hauber, D., Kaspar, R., & Zank, S. (2021). WWII traumatic events, subjective well-being and valuation of life in the very old. *Zeitschrift fur Gerontologie und Geriatrie*, 54(Suppl 2): 126–131. https://doi.org/10.1007/s00391-021-01906-7

Harari, Y.N. (2008). Combat flow: Military, political, and ethical dimensions of subjective well-being in war. *Review of General Psychology*, 12(3): 253–264. http://dx.doi.org/10.1037/1089-2680.12.3.253

He, Z., Cheng, Z., Bishwajit, G., & Zou, D. (2018). Wealth inequality as a predictor of subjective health, happiness and life satisfaction among Nepalese women. *International Journal of Environmental Research and Public Health*, 15(12): 1 – 11. https://doi.org/10.3390/ijerph15122836

Haerpfer, C., Inglehart, R., Moreno, A., Welzel, C., Kizilova, K., Diez-Medrano, J., Lagos, M., Norris, P., Ponarin, E., & Puranen, B. (2022). *World Values Survey: Round Seven – Country-Pooled Datafile Version 4.0*. Madrid, Spain & Vienna, Austria: JD Systems Institute & WVSA Secretariat.

Helliwell, J.F., Layard, R., Sachs, J.D., De Neve, J.E., Aknin, L.B., & Wang, S. (Eds.). (2023). *World Happiness Report 2023*. New York: Sustainable Development Solutions Network. https://worldhappiness.report/ed/2023/. (Accessed December 28, 2023).

Högbladh, S. (2023). UCDP GED codebook version 23.1. Department of Peace and Conflict Research, Uppsala University. https://ucdp.uu.se/downloads/ged/ged231.pdf. (Accessed January 6, 2023).

Hsieh, C.M. (2011). Money and happiness: Does age make a difference? *Ageing & Society*, 31(8): 1289–1306. https://doi.org/10.1017/s0144686x10001431

Huang, J. (2013). Asset poverty and happiness in urban China. *China Journal of Social Work*, 6(2): 163–176. https://doi.org/10.1080/17525098.2013.797361

Ikin, J.F., Creamer, M.C., Sim, M.R., & McKenzie, D.P. (2010). Comorbidity of PTSD and depression in Korean War veterans: Prevalence, predictors, and impairment. *Journal of Affective Disorders*, 125(1-3): 279–286. https://doi.org/10.1016/j.jad.2009.12.005

Inglehart, R., Haerpfer, C., Moreno, A., Welzel, C., Kizilova, K., Diez-Medrano, J., Lagos, M., Norris, P., Ponarin, E., & Puranen, B. (2014). *World Values Survey: Round Six – Country-Pooled Datafile Version*: Madrid: JD Systems Institute. https://www.worldvaluessurvey.org/WVSDocumentationWV6.jsp. (Accessed December 21, 2023).

Institute for Economics and Peace (2023). *Global Peace Index 2023: Measuring Peace in a Complex World*. Sydney: IEP. https://www.visionofhumanity.org/wp-content/uploads/2023/06/GPI-2023-Web.pdf. (December 28, 2023).

Kaniasty, K., Baran, M., Urbańska, B., Boczkowska, M., & Hamer, K. (2023). Sense of danger, sense of country's mastery, and sense of personal mastery as concomitants of psychological distress and subjective well-being in a sample of Poles following Russia's invasion of Ukraine: Prospective analyses. *Applied Psychology: Health and Well-Being*, 1–19. https://doi.org/10.1111/aphw.12483

Kekes, J. (1982). Happiness. *Mind*, 91(263): 358–376. https://doi.org/10.1093/mind/xci.363.358

Kelifa, M.O., Yang, Y., Carly, H., Bo, W., & Wang, P. (2021). How adverse childhood experiences relate to subjective wellbeing in college students: The role of resilience and depression. *Journal of Happiness Studies*, 22: 2103–2123. https://doi.org/10.1007/s10902-020-00308-7

Kijewski, S. (2020). Life satisfaction sixty years after World War II: The lasting impact of war across generations. *Applied Research in Quality of Life,* 15(5): 1253–1284. https://doi.org/10.1007/s11482-019-09726-z

Koenen, K.C., Stellman, S.D., Sommer Jr, J.F., & Stellman, J.M. (2008). Persisting posttraumatic stress disorder symptoms and their relationship to functioning in Vietnam veterans: A 14-year follow-up. *Journal of Traumatic Stress*, 21(1): 49–57. https://doi.org/10.1002/jts.20304

Kumari, N., Sahu, N.C., Sahoo, D., & Kumar, P. (2022). Impact of socioeconomic conditions on happiness: Evidence from emerging market economies. *Journal of Public Affairs*, 22: 1–15. https://doi.org/10.1002/pa.2782

Lapierre, C.B., Schwegler, A.F., & LaBauve, B.J. (2007). Posttraumatic stress and depression symptoms in soldiers returning from combat operations in Iraq and Afghanistan. *Journal of Traumatic Stress*, 20(6): 933–943. https://doi.org/10.1002/jts.20278

Lewis, C.A. (2002). Church attendance and happiness among Northern Irish undergraduate students: No association. *Pastoral Psychology*, 50(3): 191–195. https://doi.org/10.1023/A:1012948704485

Lewis, C.A., Maltby, J., & Burkinshaw, S. (2000). Religion and happiness: Still no association. *Journal of Beliefs and Values*, 21(2): 233–236. https://doi.org/10.1080/713675504

Mahadea, D., & Rawat, T. (2008). Economic growth, income and happiness: An exploratory study. *South African Journal of Economics*, 76(2): 276–290. https://doi.org/10.1111/j.1813-6982.2008.00181.x

Mahamid, F., & Berte, D.Z. (2020). Happiness, sadness, and hope for the future in narratives of Palestinian refugee children. *International Journal of Mental Health and Addiction*, 18(6): 1638–1651. https://doi.org/10.1007/s11469-020-00303-2

Maltby, J., Lewis, C.A., & Day, L. (1999). Religious orientation and psychological well-being: The role of the frequency of personal prayer. *British Journal of Health Psychology*, 4(4): 363–378. https://doi.org/10.1348/135910799168704

Manzanero, A.L., Fernández, J., Gómez-Gutiérrez, M.D.M., Álvarez, M.A., El-Astal, S., Hemaid, F., & Veronese, G. (2020). Between happiness and sorrow: Phenomenal characteristics of autobiographical memories concerning war episodes and positive events in the Gaza Strip. *Memory Studies*, 13(6): 917–931. https://doi.org/10.1177/1750698018818221

Michelos, A.C. (2017). *Connecting the quality of life theory to health, well-being and education: The selected works of Alex C. Michelos*. Cham: Springer International Publishing AG

Nieto-Valdivieso, Y.F. (2017). The joy of the militancy: happiness and the pursuit of revolutionary struggle. *Journal of Gender Studies*, 26(1): 78–90. https://doi.org/10.1080/09589236.2016.1243045

Nozaki, K., & Oshio, T. (2016). Multidimensional poverty and perceived happiness: Evidence from China, Japan and Korea. *Asian Economic Journal*, 30(3): 275–293. https://doi.org/10.1111/asej.12094

Okulicz-Kozaryn, A. (2010). Religiosity and life satisfaction across nations. *Mental Health, Religion & Culture*, 13(2): 155–169. https://doi.org/10.1080/13674670903273801

Palmore, E., & Luikart, C. (1972). Health and social factors related to life satisfaction. *Journal of Health and Social Behavior*, 13(1): 68–80. https://doi.org/10.2307/2136974

Pandya, S.P. (2018). Prayer lessons to promote happiness among kindergarten school children: A cross-country experimental study. *Religious Education*, 113(2): 216–230. https://doi.org/10.1080/00344087.2017.1393181

Peiró, A. (2006). Happiness, satisfaction and socio-economic conditions: Some international evidence. *The Journal of Socio-Economics*, 35(2): 348–365. https://doi.org/10.1016/j.socec.2005.11.042

Perneger, T.V., Hudelson, P.M., & Bovier, P.A. (2004). Health and happiness in young Swiss adults. *Quality of Life Research*, 13: 171–178. https://doi.org/10.1023/b:qure.0000015314.97546.60

Robbins, M., Francis, L.J., & Edwards, B. (2008). Prayer, personality and happiness: A study among undergraduate students in Wales. *Mental Health, Religion and Culture*, 11(1): 93–99. https://doi.org/10.1080/13674670701702548

Rusman, A.A., Hashim, I.H., & Zaharim, N.M. (2023). Examining the relationship between religiosity and happiness in Medan, Indonesia: The mediating role of self-control, self-regulation, and life satisfaction. *Asian Social Work and Policy Review*, 17(1): 27–38. https://doi.org/10.1111/aswp.12267

Sahraian, A., Gholami, A., Javadpour, A., & Omidvar, B. (2013). Association between religiosity and happiness among a group of Muslim undergraduate students. *Journal of Religion and Health*, 52: 450–453. https://doi.org/10.1007/s10943-011-9484-6

Saunders, P. (1996). Income, health and happiness. *Australian Economic Review*, 29(4): 353–366. https://doi.org/10.1111/j.1467-8462.1996.tb00941.x

Seligowski, A.V., Pless Kaiser, A., King, L.A., King, D.W., Potter, C., & Spiro III, A. (2012). Correlates of life satisfaction among aging veterans. *Applied Psychology: Health and Well-Being*, 4(3): 261–275. https://doi.org/10.1111/j.1758-0854.2012.01073.x

Senasu, K., & Singhapakdi, A. (2017). Determinants of happiness in Thailand: The moderating role of religiousness. *Journal of Human Behavior in the Social Environment*, 27(4): 270–290. https://doi.org/10.1080/10911359.2017.1279580

Shemyakina, O.N., & Plagnol, A.C. (2013). Subjective well-being and armed conflict: Evidence from Bosnia-Herzegovina. *Social Indicators Research*, 113: 1129–1152. https://doi.org/10.1007/s11205-012-0131-8

Sundberg, R., and Melander, E. (2013). Introducing the UCDP georeferenced event dataset. *Journal of Peace Research*, 50(4): 523–532. https://doi.org/10.1177/0022343313484347

United Nations Development Program (2022). *Human Development Report 2021/2022: Uncertain times, unsettled lives: Shaping our future in a transforming world.* New York: United Nations Development Program. https://hdr.undp.org/system/files/documents/global-report-document/hdr2021-22pdf_1.pdf. (Accessed December 28, 2023).

Veenhoven, R. (2012). Happiness, also known as "life satisfaction" and "subjective well-being." In Land, K.C., Michalos, A.C., & Sirgy, M.J. (Eds.). *Handbook of social indicators and quality of life research*. Heidelberg: Springer.

Weech-Maldonado, R., Miller, M.J., & Lord, J.C. (2017). The relationships among socio-demographics, perceived health, and happiness. *Applied Research in Quality of Life*, 12: 289–302. https://doi.org/10.1007/s11482-017-9517-8

Yang, M.S., & Burr, J.A. (2016). Combat exposure, social relationships, and subjective well-being among middle-aged and older veterans. *Aging & Mental Health*, 20(6): 637–646. https://doi.org/10.1080/13607863.2015.1033679

You, S., & Yoo, J. E. (2016). Prayer and subjective well-being: The moderating role of religious support. *Archive for the Psychology of Religion*, 38(3): 301–315. https://doi.org/10.1163/15736121-12341328

Appendix

Table A1: Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
Happiness$^{\Phi}$	1233	3.109	0.996	1	4
Violent conflict†	1237	39.196	87.922	0	577
Socioeconomic index	1227	11.415	2.732	4	16
Health	1235	4.177	0.927	1	5
Prayer	1224	5.788	0.562	1	6
Communal poverty†	1237	90.529	8.143	77.835	100
Age	1237	2.315	1.237	1	6
Marital status	1237	0.596	0.491	0	1
Gender	1237	0.512	0.5	0	1

Note: *Φ is the dependent variable, † denotes variables measured using buffers with a radius of 40km.*

Table A2: Robustness check using binary dependent variable and different estimation methods

Happiness$^{\Phi}$	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Violent conflict†	-0.001***				-0.00***	0.00***	-0.002***
	(0.00)				(0.00)	(0.00)	(0.001)
Socioeconomic index		0.029***			0.018***	0.018***	0.102***
		(0.005)			(0.005)	(0.005)	(0.027)
Health			0.141***		0.123***	0.122***	0.598***
			(0.014)		(0.015)	(0.015)	(0.075)
Prayer				-0.021	-0.022	-0.03	-0.17
				(0.024)	(0.025)	(0.026)	(0.161)
Age						0.004	0.024
						(0.012)	(0.066)
Marital status						-0.001	-0.003
						(0.031)	(0.175)
Gender						0.011	0.063
						(0.025)	(0.142)
Communal poverty†						0.002	0.015*
						(0.002)	(0.009)
Constant	0.754***	0.393***	0.14**	0.851***	0.146	-0.031	-2.991***
	(0.014)	(0.056)	(0.061)	(0.139)	(0.162)	(0.19)	(1.133)
Estimation method	LPM	LPM	LPM	LPM	LPM	LPM	Logit
Observations	1233	1223	1231	1220	1209	1209	1209
R-squared	0.017	0.032	0.086	0.001	0.107	0.109	
Pseudo R^2							0.091
Log pseudolikelihood							-644.145
AIC statistic	1484.641	1454.866	1393.958	1490.018	1348.75	1353.924	1306.29

Note: *Φ is the dependent variable, † denotes variables measured using buffers with a radius of 40km, robust standard errors are in parentheses, *** p<0.01, ** p<0.05, * p<0.10. Except for model 7 which is estimated using logit regression, all the regressions are estimated using linear probability model (LPM).*