

Terrorism, Mental Health, Risky Behaviors and Human Capital: Evidence from Iraq

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Working Paper No. 1440

December 2020

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First published in 2020 by
The Economic Research Forum (ERF)
21 Al-Sad Al-Aaly Street
Dokki, Giza
Egypt
www.erf.org.eg

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Abstract

This paper investigates the causal impact of terrorism on mental health, risky behaviors and human capital accumulation. Using a unique identification strategy by merging geocoded data on terrorism from the Global Terrorism Database (GTD) with unique data on young Iraqi individuals born between 1979-1999, the paper shows that individuals exposed to terror attacks in childhood are affected negatively in terms of mental health, and are more likely to engage in risky behavior (e.g., smoking and alcohol consumption). They are also less likely to finish compulsory and secondary education, compared to those who experienced terror at later stages of life. Heterogeneity analyses show that the negative impact on education attainment is more pronounced among boys and children of higher socio-economic background.

Keywords: Terrorism, Mental health, Risky behaviors, Human capital, Iraq.

JEL Classifications: D60, D72, D74, I31.

1 Introduction

Terrorism is a major negative externality with immense economic, social, and political consequences (Frey 2004). Besides destruction and loss of lives, mental health is one of the outcomes that are most negatively affected by terrorism (Metcalf et al. 2011). Terrorism generates a situation of fear and uncertainty which could negatively affect households' decisions to send children to school (Alfano and Görlach 2019). It also slows down the economic growth and negatively affect the economy (Abadie and Gardeazabal 2003; Abadie and Gardeazabal 2008; Valiño et al. 2010), which could push households into poverty and therefore increase the probability of school dropout and child labor.

A growing body of economic literature has investigated the impact of terror on mental health, subjective well-being, and other psychological outcomes.¹ Most of this literature focuses on one event and evaluates its consequences (e.g., Krueger 2007; Metcalfe et al. 2011; Elsayed and de Grip 2018; Clark et al., 2019). For example, Frey et al. (2009) investigate the impact of terror attacks in France and Northern Ireland on life satisfaction and Clark et al. (2019) investigate the impact of the 2013 Boston marathon bombing on the well-being of Americans. More recently, there has been studies employing high frequency data to investigate different outcomes of terror (e.g., Bryson and MacKerron, 2018).

The objective of this paper is to investigate the impact of terrorism on mental health, and individuals' adoption of risky behaviors in the Middle East and North Africa region (MENA) and explores whether the timing of exposure matters differentially by the two genders and socio-economic background. Compared to other parts of the world, the MENA region had the highest share of these attacks, accounting for about 20% of all terrorist events and 40% of

¹ There is also a growing body of literature on the issue in medicine, see for example Bleich et al. (2006), Henrich and Shahar (2013), and Hobfoll et al. (2011)

all fatalities between 1994-2013 (GTD 2019). However, short- and long-term economic and psychological consequences of terrorism in the region have not been sufficiently addressed in the literature. This is of particular importance to countries suffering from high levels of terrorism as education helps individuals escape poverty and improve their economic opportunity; and therefore helps countries avoid future instability (Blattman and Miguel 2010). Thus, guaranteeing the education of the young generation is of particular interest for conflict countries (Diwakar 2015). The rather general literature on the impact of armed conflict on education documents negative impacts of conflicts on human capital formation (e.g., Ichino and Winter-Ebmer 2004; Akresh and De Walque 2008; Justino 2011; Verwimp, and Van Bavel 2014; Justino et al. 2014; Buvinić et al. 2014; Bundervoet and Fransen 2018; Bertoni et al. 2019).

To estimate the causal impact of terror, the paper exploits the rich Global Terrorism Database (GTD) which provides coverage of all terrorist attacks that take place worldwide with details on their intensity, exact location, and characteristics, etc. and applies an identification strategy by merging geo-coded data on terrorism from GTD at the province/governorate level with unique data on young individuals in Iraq (The Iraqi National Youth Survey 2009). The setting for our analysis is Iraq, where there has been a stark increase in terrorist activity from 2003 onwards.

Focusing on the time period 2003-2009, the paper shows that being exposed to terrorism at younger age is associated with negative outcomes in terms of mental health, risky behaviors, and school dropout. The impact is unexpectedly more pronounced among boys and children of higher socio-economic family background. Despite being one of the top conflict regions for decades, only few studies address the MENA region and evaluate the impact of the armed

conflict on education (Brück et al 2019; Diwakar 2015) and child labor (Naufal et al. 2019).² Brück et al. (2019) investigated the effect of the Israeli–Palestinian conflict on education outcomes of Palestinian high school students in the West Bank during the Second Intifada (2000–2006). They show that the conflict reduced the probability of passing the final exam, the total test score, and the probability of being admitted to university. Diwakar (2015) merges the 2007 wave of the Iraq Household Socio-Economic Survey data with data on civilian deaths recorded by the Iraq Body Count database (IBC). Conflict exposure is measured by the number of deaths as a percentage of the population at the broad governorate level and number of conflict incidents. The findings of the paper suggest that increase in conflict is associated with a decrease in education for both genders, though, more pronounced for boys. Naufal et al. (2019) follow the same strategy of merging a household-level data (Iraq Multiple Indicator Cluster Survey) with the IBC data to study the impact on child labor. They show that the intensity of armed conflict is associated with a higher likelihood of entry into economic work sufficient to qualify as child labor, but is not associated with entry into household child labor.

Mental health and related adoption of risky behaviors could exacerbate the negative effects of conflict on education. However, this has not been sufficiently addressed in the literature. Two exceptions include Schiff et al. (2007) and Schiff (2006) who find that terrorism increases the likelihood of risky behavior like smoking and (excessive) use of alcohol, and that this effect is cross-culturally generalizable.

The findings of the paper are also in line with the literature on the impact of violence on human capital. For example, Akresh and De Walque (2008) document that school-age children exposed to the genocide in Rwanda experienced a drop in educational achievement of almost one-half year of completed schooling and are 15 percentage points less likely to

² Recently there has been a growing literature on the impact of forced migration, caused by conflict, on different outcomes for natives including education (Assad et al. 2018), labor market outcomes (Fallah et al. 2019), migration (El-mallakh and Wahba 2018) and housing (Alhawarin et al. 2019). For more details on the impact of forced migration, see Calderón-Mejía et al. (2015).

complete third or fourth grade. In the context of Nigeria, Bertoni et al. (2019) find that a one standard deviation increase in the number of fatalities caused by Boko Haram in the 5 km radius of the household reduces school enrollment probability by 3 percentage points, which translates into a 5% reduction of the mean.

The remainder of the paper is structured as follows. The next section explains the current literature related to violence its impact on mental health, risky behaviors and human capital accumulation. Section 2 describes the data and provides descriptive statistics. Section 3 presents and validates the empirical strategy. Section 4 discusses the impact of terrorism on mental health, risky behaviors and education, and finally Section 5 offers some concluding remarks.

2 Data and Descriptive Statistics

The data on terrorist attacks and their intensity come from the Global Terrorism Database (GTD), which is a unique open-source dataset collected by the National Consortium for the Study of Terrorism and Responses to Terrorism. It provides comprehensive information on terror events in the world from 1970 until present (LaFree and Dugan, 2007). The dataset applies a consistent definition of terrorism using three non-mutually exclusive criteria. Actions of violence are classified as terror attacks if (i) they have the intention to coerce, intimidate or publicize to larger audience, (ii) they stand outside international humanitarian law as reflected in the Additional Protocol to the Geneva Conventions of August 1949 and (iii) they have political, economic, religious or social motives. This definition excludes acts motivated by individual profit or unrelated to broader societal change. In particular, hate crimes or mass shooting which most often lack a clear political or social motivation are not included.

Iraq is one of the top countries in terms of number of terrorist attacks. Over the time period Jan 2003- May 2009, the country suffered from a total of 4,389 attacks with 20,582 victims lost their lives. Figure 1a shows the increase in the terror acts over the years across the world and in a number of selected countries and indicates that Iraq accounts for a large share of the recent increase in terrorist attacks. Figure 1b shows terrorism as a share of total deaths and similarly indicates an increase over years. Table 1 shows the intensity of terror over time. The table documents an increase in the number of terrorist attacks in Iraq which reached its peak in terms of number of incidents in 2008 with 1,104 attacks and in 2007 in terms of number of victims with 6,387 fatalities. The table also shows variations in the form of terrorist attacks with suicide bombings accounting for a large share ranging from 4% in 2009 to 27% of all attacks in 2005. Successful terrorist attacks represent the majority across the years.

These numbers mask heterogeneities across geographic regions. Figure 2 shows the variation in the number of terror incidents across Iraqi governorates over the time period 2003-2009. Four governorates account for the lion's share in the number of terrorist attacks, namely Baghdad, Diyala, Kirkuk, and Ninwa. The same pattern appears with the number of fatalities shown in Figure 3. There is also heterogeneity in the pattern of terrorism characteristics within these regions across time. Table A1 in the Appendix documents these variations.

The data on youth outcomes come from the Iraqi National Youth Survey (NYS), 2009 (OMADI 2017). The survey is an initiative by the Ministry of Youth and Sports in Iraq in cooperation with the Central Bureau of Statistics and the United Nations Population Fund (UNFPA), the NYS focuses heavily on key aspects of youth development for young people aged 10-30.

The two datasets are merged at the governorate level in order to study how being exposed to terror in childhood could shape one's mental health and attitudes towards risky behavior and education. The merged dataset contains information for a final sample of 14,217

observations for whom we have complete information on mental health, risky behaviors. For 7,823 information who are out of school, we investigate the impact of terrorism on the final education attainment.

Table 2 provides summary statistics of the different outcome variables, treatment variables as well as the covariates for the overall sample, the group that witnessed terror in their regions at childhood, and those that witnessed terror at later age.³ The table shows differences across the two groups with regard to the different variables. It is clear that those who witnessed terror in childhood have worse mental health, and are more likely to consume alcohol. Mental health standardized value for the treated group (childhood) is -0.08, while it is 0.22 for those in control group (adulthood). For alcohol consumption, 11% of those witnessed terror at childhood consumed alcohol at younger age vs 4% among those who experienced terror at older age. They are also more likely to drop compulsory education and not enroll in higher levels of education.⁴ Education outcomes are better for those who experienced terror only later in life with 51% of them manage to finish compulsory school and 30% finished secondary school vs. only 26% completion rate in the compulsory education and 7% completion rate in secondary education for the treated group.

3 Empirical Strategy

To estimate the impact of being exposed to terrorism at younger age on different outcomes, we estimate the following equation:

³ Given the intensity of terror in the country, almost everyone in the dataset was prone to terror at the governorate level. More refined data at the district could reveal variations in actual exposure to terror. The author together with ERF is in contact with the Central Bureau of Statistics in Iraq to obtain the district codes.

⁴ These difference could represent a threat to the identification strategy if they are correlated with the probability of experiencing terror at younger age. In Section 4 I empirically discuss this threat and show evidence that it is not a major concern for the identification.

$$O_{i,r} = \alpha + \beta \text{Error}_{i,r} + X_{i,r}\gamma + \theta_r + \varepsilon_{i,r} \quad (1)$$

where $O_{i,r}$ is the outcome variable of interest for individual i in region (governorate) r . *Error*, is a measure of being exposed to terror at younger age (below 16) vs being exposed to terror at older age. It is estimated by three alternative measures: (1) A dummy variable that takes the value 1 if the individual was exposed to terrorist attack in his/her governorate of residence before the age of 16, and zero otherwise; (2) The intensive margin of the number of massive terrorist attacks experienced up to the age of 16 in the individual's governorate, and (3) the age at which the respondent witnessed his/her first terrorist attack in the governorate of residence.

Region fixed effects θ_r are included in the model to capture any potential variations in the intensity and/or type of terror. The model in addition contains a vector of covariates γ including gender, age, parent's education and household size. Table A2 in the Appendix provides the definition for the different outcome and treatment variables.

4 Mental Health and Education Outcomes

Being exposed to terror at young age could be non-random and could be reflecting some other variations in observable characteristics that affect the outcome variables of mental health, engaging in risky behaviors, or education outcomes. The descriptive statistics in Table 2 showed variations in observable characteristic between the treatment and control groups. These difference could represent a threat to the identification strategy if they are correlated with the probability of experiencing terror at younger age. To test this possibility, and before evaluating the impact of terrorism on the outcomes of interest, I run a balancing test by regressing individuals' experiencing terror at younger vs older age on a number of observable characteristics. Figure 4 clearly shows that treatment probability appears to be as close to random as possible, since the balancing test rejects any statistical difference with respect to

observable individual characteristics between treated and control groups. This gives strong evidence validating the paper's empirical strategy. Similar pattern appears in Figure 5 which shows the balancing test estimates for the intensive margin of the number of terror attacks witnessed at younger age.

Table 3 shows the coefficients of Equation 1 for the mental health (Column 1), risky behaviors (Columns 2 and 3) and education (Columns 4 and 5). Three measures of exposition to terror are used: a dummy variable for being exposed to terror as child, the number of terrorist attacks the individual experienced as a child, and finally the age of the first exposure to terror. The table shows that while the incidence of being exposed to terror has no direct impact on mental health, risky behaviors tend to be affected. The probability to engage in smoking and alcohol consumption in childhood increases by 1.4 and 1.6 percentage points. Education also seems to be negatively affected by terrorism. While the likelihood to finish compulsory school was not affected, the probability to finish secondary school decreased by 8.5 percentage points in response to terror.

To test the impact of intensity of terror, we estimate the effects of the logged number of terrorist attacks witnessed at childhood on the same outcome variable. The table shows that mental health is reduced by about 0.06 of a standard deviation in response to a 1% increase in the intensity of terror experienced before the age of 16. Also smoking and alcohol consumption increased by 0.6 and 0.5 percentage points respectively in response to a one-percent increase in terror attacks. Both compulsory and secondary education are negatively affected by the intensity of terrorism and they decline by 2.2 and 3.9 percentage points in response to one percent increase in terror activity.

The table also shows the effect of the age at which the individual was exposed to terrorism. The earlier an individual is exposed to terror, the more negative the effect is. One-year older age for the time of exposing to terror is associated with an increase of mental health by 0.09

standard deviations, as well as a reduction in the probability of smoking and alcohol consumption by 0.7 and 3.1 percentage points respectively. The probability to finish education (both compulsory and secondary) also increased the later the exposition to terrorism takes. Table A3 in the Appendix tests the potential non-linearity by cutting the age at which individuals witnessed terror into four age categories: before 6, between 7 and 12, between 13 and 16, and above 16. Compared to the above 16 group, the groups that witnessed terror at early childhood are less likely to finish compulsory education while those who witnessed terror between 13 and 16 are less likely to finish secondary education. Smoking in response to terror is higher for the groups that experienced terror at between 7 and 12. Mental health seems to be surprisingly better for the groups that witnessed terror between 7 and 12 and between 13 and 16 relative to the group that experienced terror at age older than 16.

Table 4 shows the heterogeneity in terms of gender by interacting the gender dummy with terror indicators. The table shows that girls are more responsive to terror in terms of risky behaviors, although this pattern is not robust to the definition of intensive margin. However, boys are more responsive when it comes to education. All these patterns are not robust to the definition of intensive margin. Only mental health of girls is more negatively affected with the intensity of terror (measured by the log number of terrorist attacks) relative to boys. Similar pattern appears with the definition of the age at which individuals first exposed to terror. At younger ages, girls are more likely, relative to boys, to engage in risky behaviors but more likely to finish education.

Table 5 shows the heterogeneity pattern in terms of socio-economic background, defined by parent's education. High-socio economic background families are the ones with at least one educated parent while low-socio economic background families are the ones with both parents uneducated. The table shows that although children from lower socio-economic background

are generally faring worse especially in education, they are less likely to be affected by terrorism compared to those who are from better socio-economic background.

5 Concluding Remarks

There is a growing body of economic literature dealing with the impact of different forms of violence especially terrorism on subjective well-being and education. Only few of this work takes place in developing countries, especially in countries with high intensity of terror such as countries in the MENA region.

This paper has documented that terrorism witnessed at younger age has negative effects in terms of mental health, adopting risky behaviors and education. The context of the study is Iraq where the intensity of terror is extremely high. By merging data on the geographic intensity of terror at the governorate level with representative data on young individuals, the paper shows that being exposed to terror attacks at younger age (before 16) is associated with a drop in mental health, higher chance of engaging in risky behavior and lower education attainments. The negative impact on education is more pronounced among boys and those from higher-socio economic backgrounds. The findings suggest that violence could have negative implications on longer-term outcomes of people if they are exposed to it in younger age even when they live in countries known for extreme violence. This hints towards a cost of terror that goes beyond destruction and loss of lives. Policy makers in the area of education should pay extra attention to this topic, and resources should be allocated to tackle this challenge which could have long-term negative implications for the accumulation of human capital particularly in developing societies.

References

- Abadie, A. and Gardeazabal, J. (2003). The economic cost of conflict: A case study of the Basque Country. *American Economic Review*, 93, 113-132
- Abadie, A. and Gardeazabal, J. (2008). Terrorism and the World Economy, *European Economic Review*, 52 (1),1-27
- Akresh, R., & De Walque, D. (2008). Armed conflict and schooling: Evidence from the 1994 Rwandan genocide. The World Bank Policy Research Working Paper no. 4606
- Alfano, M., & Görlach, J. S. (2019). Terrorism, education, and the role of perceptions: Evidence from al-Shabaab attacks in Kenya, HiCN Working Paper 309.
- Assaad, R., Ginn, T., & Saleh, M. (2018). Impact of Syrian Refugees in Jordan on Education Outcomes for Jordanian Youth. No. 1214. Cairo, Egypt.
- Bleich, A., Gelkopf, M., Melamed, Y., & Solomon, Z. (2006). Mental health and resiliency following 44 months of terrorism: A survey of an Israeli national representative sample. *BMC medicine*, 4(1), 21.
- Bertoni, E., Di Maio, M., Molini, V., & Nistico, R. (2019). Education is forbidden: The effect of the Boko Haram conflict on education in North-East Nigeria. *Journal of Development Economics*, 141, 102249.
- Blattman, C., & Miguel, E. (2010). Civil war. *Journal of Economic Literature*, 48, 3–57.
- Brodeur, A. (2018). The effect of terrorism on employment and consumer sentiment: Evidence from successful and failed terror attacks. *American Economic Journal: Applied Economics*, 10(4), 246-82.
- Bryson, A. and G. MacKerron (2018): "How Does Terrorism Affect Individuals' Wellbeing?" IZA DP 11273.
- Bundervoet, T., & Fransen, S. (2018). The educational impact of shocks in utero: Evidence from Rwanda. *Economics & Human Biology*, 29, 88-101.
- Bundervoet, Tom, and Sonja Fransen. (2018). The educational impact of shocks in utero: Evidence from Rwanda." *Economics & Human Biology* 29: 88-101.
- Buvinić, M., Das Gupta, M., & Shemyakina, O. N. (2014). Armed conflict, gender, and schooling. *The World Bank Economic Review*, 28(2), 311-319.
- Calderón-Mejía, V., F. Cantú-Bazaldúa, and Y. Chaitani (2015). The socioeconomic impact of forced migration on host communities: challenges and opportunities for the Arab region. Economic and Social Commission For Western Asia (ESCWA), ESCWA/OES/2015/WP.5
- Clark, A., O. Doyle and E. Stancanelli (2019). The Impact of Terrorism on Well-being: Evidence from the Boston Marathon Terrorist Bombing, *Economic Journal*, forthcoming
- Condra, L. N., Long, J. D., Shaver, A. C., & Wright, A. L. (2018). The logic of insurgent electoral violence. *American Economic Review*, 108(11), 3199-3231.

- Diwakar, V. (2015). The effect of armed conflict on education: evidence from Iraq. *The Journal of Development Studies*, 51(12), 1702-1718.
- El-mallakh, N., & Wahba, J. (2018). Syrian Refugees and the Migration Dynamics of Jordanians: Moving in or Moving Out? No. 1191. Cairo, Egypt.
- Elsayed, A., & De Grip, A. (2018). Terrorism and the integration of Muslim immigrants. *Journal of Population Economics*, 31(1), 45-67.
- Fallah, B., Krafft, C., & Wahba, J. (2019). The Impact of Refugees on Employment and Wages in Jordan. *Journal of Development Economics*, 139(March), 203–216.
- Frey, B. S. (2004). *Dealing with terrorism: stick or carrot?* Edward Elgar Publishing.
- Frey, B.S., Luechinger, S. and Stutzer, A. (2009). The life satisfaction approach to valuing public goods: The case of terrorism. *Public Choice*, 138, 317-345
- Geneva Declaration Secretariat (2015). *Global burden of armed violence 2015: Every body counts*. Cambridge University Press.
- GTD. Global Terrorism Database (2019). <https://www.start.umd.edu/gtd/>
- Henrich, C. C., & Shahar, G. (2013). Effects of exposure to rocket attacks on adolescent distress and violence: A 4-year longitudinal study. *Journal of the American Academy of Child & Adolescent Psychiatry*, 52(6), 619-627.
- Hobfoll, S. E., Mancini, A. D., Hall, B. J., Canetti, D., & Bonanno, G. A. (2011). The limits of resilience: Distress following chronic political violence among Palestinians. *Social science & medicine*, 72(8), 1400-1408.
- Ichino, A., & Winter-Ebmer, R. (2004). The long-run educational cost of World War II. *Journal of Labor Economics*, 22, 57–87.
- Justino, P. (2011). Violent conflict and human capital accumulation. IDS Working Papers, 2011(379), 1-17.
- Justino, P., Leone, M., & Salardi, P. (2014). Short-and long-term impact of violence on education: The case of Timor Leste. *The World Bank Economic Review*, 28(2), 320-353.
- Kruger, A. (2007), *What Makes a Terrorist? Economics and the Roots of Terrorism*,
- LaFree, G., & Dugan, L. (2007). Introducing the global terrorism database. *Terrorism and political violence*, 19(2), 181-204.
- Metcalfe, R., N. Powdthavee, and P. Dolan (2011) Destruction and Distress: Using a Quasi-Experiment to Show the Effects of the September 11 Attacks on Mental Well-Being in the United Kingdom, *Economic Journal* 121 (550), F81.F103
- Naufal, G., Malcolm, M., & Diwakar, V. (2019). Armed conflict and child labor: evidence from Iraq. *Middle East Development Journal*, 11(2), 236-250.

OMADI (2018). Version 1.1 of Licensed Data Files. The Iraqi National Youth Survey, 2009, Cairo, Egypt: Economic Research Forum.

Schiff, M., Zweig, H., Benbenishty, R., Hasin, D. S. (2007). Exposure to terrorism and Israeli youths' cigarette, alcohol, and cannabis use. *American Journal of Public Health* 97 (10), pp. 1852–1858.

Schiff, Miriam (2006). Living in the shadow of terrorism: psychological distress and alcohol use among religious and non-religious adolescents in Jerusalem. *Social Science & Medicine*, 62 (9), pp. 2301–2312.

Valiño, A., M. Buesa, and T. Baumert (2010). The economics of terrorism: an overview of theory and applied studies, in M. Buesa and T. Baumert (Eds.), *The Economic Repercussions of Terrorism*. Oxford, UK: Oxford University Press, 3-35

Verwimp, P., & Van Bavel, J. (2014). Schooling, violent conflict, and gender in Burundi. *The World Bank Economic Review*, 28(2), 384-411.

Table 1: Profile of Terror in Iraq 2003-2009

	Total	2003	2004	2005	2006	2007	2008	2009
Total Numbers								
Number of Incidents	4,389	85	302	600	826	1,035	1,104	437
Number of Fatalities	20,582	346	2,117	3,349	4,579	6,387	2,863	941
Characteristics of incidents								
Share of Kidnappings	0.07 (0.22)	0.03 (0.18)	0.14 (0.32)	0.08 (0.20)	0.10 (0.27)	0.04 (0.22)	0.04 (0.14)	0.01 (0.08)
Share of Suicide Attacks	0.18 (0.32)	0.19 (0.38)	0.23 (0.38)	0.27 (0.37)	0.16 (0.30)	0.25 (0.33)	0.11 (0.22)	0.04 (0.14)
Share of Successful Attacks	0.97 (0.12)	0.93 (0.22)	0.97 (0.13)	0.98 (0.10)	0.99 (0.07)	1.00 (0.03)	0.95 (0.13)	0.94 (0.17)

Note: Author's calculations from GTD dataset. The numbers of 2009 are up to May (Just before the NYS was collected in June).

Table 2: Descriptive Statistics

	Total	Terror in childhood	Terror in adulthood	P difference
Attitude outcomes				
Mental health indicator	-0.00 (1.00) 14217	-0.08 (0.98) 6666	0.22 (1.01) 7551	0.00
Smoked at childhood	0.01 (0.12) 14217	0.01 (0.11) 6666	0.02 (0.14) 7551	0.10
Consumed alcohol at childhood	0.06 (0.24) 12849	0.11 (0.21) 5564	0.04 (0.32) 7285	0.00
Education outcomes (for non-students)				
Compulsory school finished	0.37 (0.48) 7823	0.26 (0.44) 1858	0.51 (0.50) 5965	0.00
Secondary school finished	0.17 (0.37) 7823	0.07 (0.25) 1858	0.30 (0.46) 5965	0.00
Treatment variables				
Age of First Exposure to Terror	13.06 (5.73) 14217	10.35 (3.76) 6666	20.89 (2.11) 7551	0.00
Experienced terror as child	0.74 (0.44) 14217	1.00 (0.00) 6666	0.00 (0.00) 7551	0.00
Number of witnessed attacks as child (standardized)	-0.00 (1.00) 13133	0.15 (1.12) 6666	-0.45 (0.03) 6467	0.00
Controls				
Female	0.47 (0.50) 14217	0.46 (0.50) 6666	0.47 (0.50) 7551	0.75
Father Finished Compulsory	0.35 (0.48) 14217	0.40 (0.49) 6666	0.23 (0.42) 7551	0.00
Father Finished Vocational/Diploma	0.23 (0.42) 14217	0.26 (0.44) 6666	0.14 (0.35) 7551	0.00
Father Finished Higher	0.14 (0.35) 14217	0.16 (0.37) 6666	0.09 (0.28) 7551	0.00
Mother Finished Compulsory	0.18 (0.38) 14217	0.21 (0.41) 6666	0.10 (0.30) 7551	0.00
Mother Finished Vocational/Diploma	0.09 (0.29) 14217	0.11 (0.31) 6666	0.06 (0.23) 7551	0.00
Mother Finished Higher	0.06 (0.23) 14217	0.06 (0.24) 6666	0.04 (0.19) 7551	0.01
Number of household members	7.41 (2.95)	7.48 (2.75)	7.21 (3.46)	0.00
Number of Observations	14217	6666	7551	

Note: Means, standard deviations and number of non-missing observations for each variable. Author's calculations from merged NYS and GTD datasets.

Table 3: Effect of terrorism on mental health, risky behaviors, and education

VARIABLES	(1) Mental health	(2) Smoke	(3) Alcohol	(4) Finished compulsory	(5) Finished secondary
Experienced terror as child	0.030 (0.062)	0.014** (0.005)	0.016* (0.009)	0.005 (0.020)	-0.085*** (0.018)
Number of attacks experienced as a child	-0.063** (0.022)	0.006*** (0.001)	0.005** (0.002)	-0.022** (0.008)	-0.039*** (0.006)
Age of first exposure to terror	0.090*** (0.010)	-0.007*** (0.001)	-0.031*** (0.002)	0.014** (0.005)	0.005 (0.005)
Observations	14,217	14,217	14,217	7,823	7,823
R-squared	0.128	0.020	0.102	0.206	0.202
Controls	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes

Note: Controls include a dummy variable for gender, age, father's level of education, mother's level of education, household size, and a dummy variable for the governorate. Robust standard errors clustered by governorate reported in parenthesis. *, **, and *** denote significance at the 1, 5, and 10 percent level, respectively.

Table 4: Effect of terrorism on mental health, risky behaviors, and education, role of gender

VARIABLES	(1) Mental health	(2) Smoke	(3) Alcohol	(4) Finished compulsory	(5) Finished secondary
Experienced terror as child * Female	0.018 (0.059)	0.018* (0.009)	0.115*** (0.026)	0.100*** (0.024)	0.089*** (0.022)
Experienced terror as child	0.021 (0.063)	0.006 (0.009)	-0.036** (0.014)	-0.042 (0.025)	-0.127*** (0.021)
Female	0.274*** (0.054)	-0.039*** (0.009)	-0.183*** (0.034)	-0.174*** (0.020)	-0.090*** (0.018)
Number of attacks experienced as a child * Female	-0.047** (0.020)	0.002 (0.003)	0.006 (0.008)	0.023* (0.012)	0.009 (0.008)
Number of attacks experienced as a child	-0.041 (0.030)	0.005*** (0.001)	0.003 (0.004)	-0.034*** (0.008)	-0.044*** (0.007)
Female	0.283*** (0.039)	-0.025*** (0.004)	-0.097*** (0.017)	-0.115*** (0.011)	-0.038*** (0.009)
Age of first exposure to terror * Female	0.003 (0.003)	-0.002*** (0.001)	-0.012*** (0.002)	-0.013*** (0.002)	-0.011*** (0.002)
Age of first exposure to terror	0.131*** (0.009)	0.006*** (0.001)	-0.027*** (0.001)	0.045*** (0.003)	0.032*** (0.002)
Female	0.241*** (0.049)	0.002 (0.006)	0.054*** (0.018)	0.092** (0.038)	0.133*** (0.027)
Observations	14,217	14,217	14,217	7,823	7,823
Controls	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes

Note: Controls include age, father's level of education, mother's level of education, household size, and a dummy variable for the governorate. Robust standard errors clustered by governorate reported in parenthesis. *, **, and *** denote significance at the 1, 5, and 10 percent level, respectively.

Table 5: Effect of terrorism on mental health, risky behaviors, and education, role of socio-economic background

VARIABLES	(1) Mental health	(2) Smoke	(3) Alcohol	(4) Finished compulsory	(5) Finished secondary
Experienced terror as child * Uneducated parents	0.015 (0.041)	0.007 (0.005)	0.023* (0.012)	0.139*** (0.030)	0.195*** (0.027)
Experienced terror as child	0.026 (0.061)	0.008 (0.006)	-0.004 (0.009)	-0.096*** (0.028)	-0.233*** (0.036)
Uneducated parents	0.034 (0.040)	0.001 (0.006)	-0.019 (0.012)	-0.217*** (0.027)	-0.192*** (0.028)
Number of attacks experienced as a child * Uneducated parents	-0.004 (0.015)	0.002** (0.001)	0.002 (0.003)	0.029*** (0.010)	0.052*** (0.018)
Number of attacks experienced as a child Uneducated parents	-0.058*** (0.019)	0.005*** (0.001)	0.004* (0.002)	-0.043*** (0.011)	-0.079*** (0.017)
Age of first exposure to terror * Uneducated parents	-0.004 (0.005)	-0.001** (0.000)	-0.002 (0.001)	-0.014*** (0.003)	-0.020*** (0.002)
Age of first exposure to terror Uneducated parents	0.121*** (0.008)	0.007*** (0.001)	-0.026*** (0.002)	0.053*** (0.004)	0.043*** (0.003)
Observations	14,217	14,217	14,217	7,823	7,823
Controls	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes

Note: Controls include a dummy variable for gender, age, household size, and a dummy variable for the governorate. Robust standard errors clustered by governorate reported in parenthesis. *, **, and *** denote significance at the 1, 5, and 10 percent level, respectively.

Figure 1: Trends of global terrorism

Figure 1a

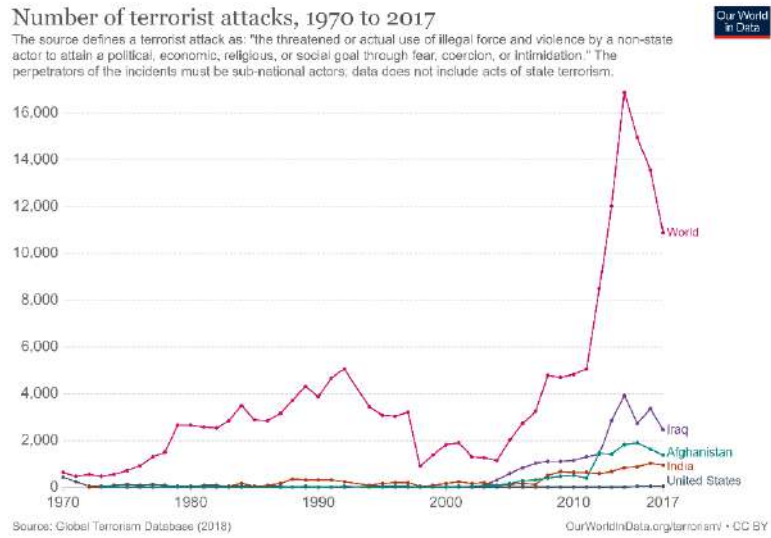
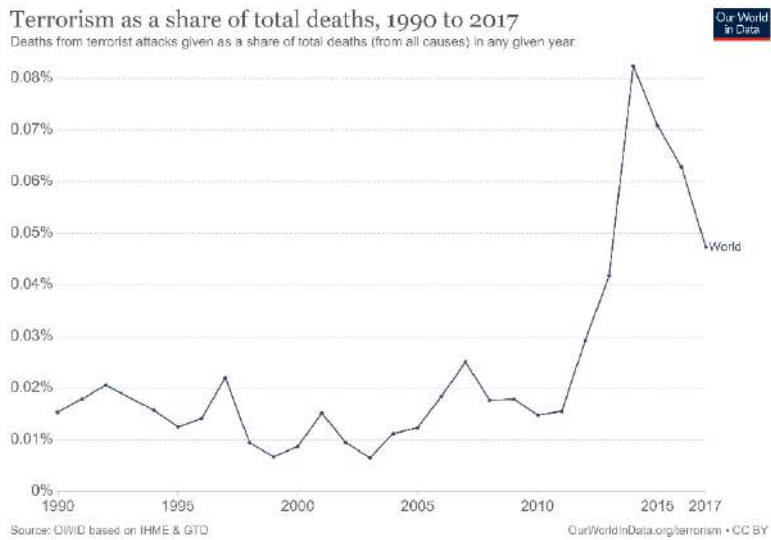
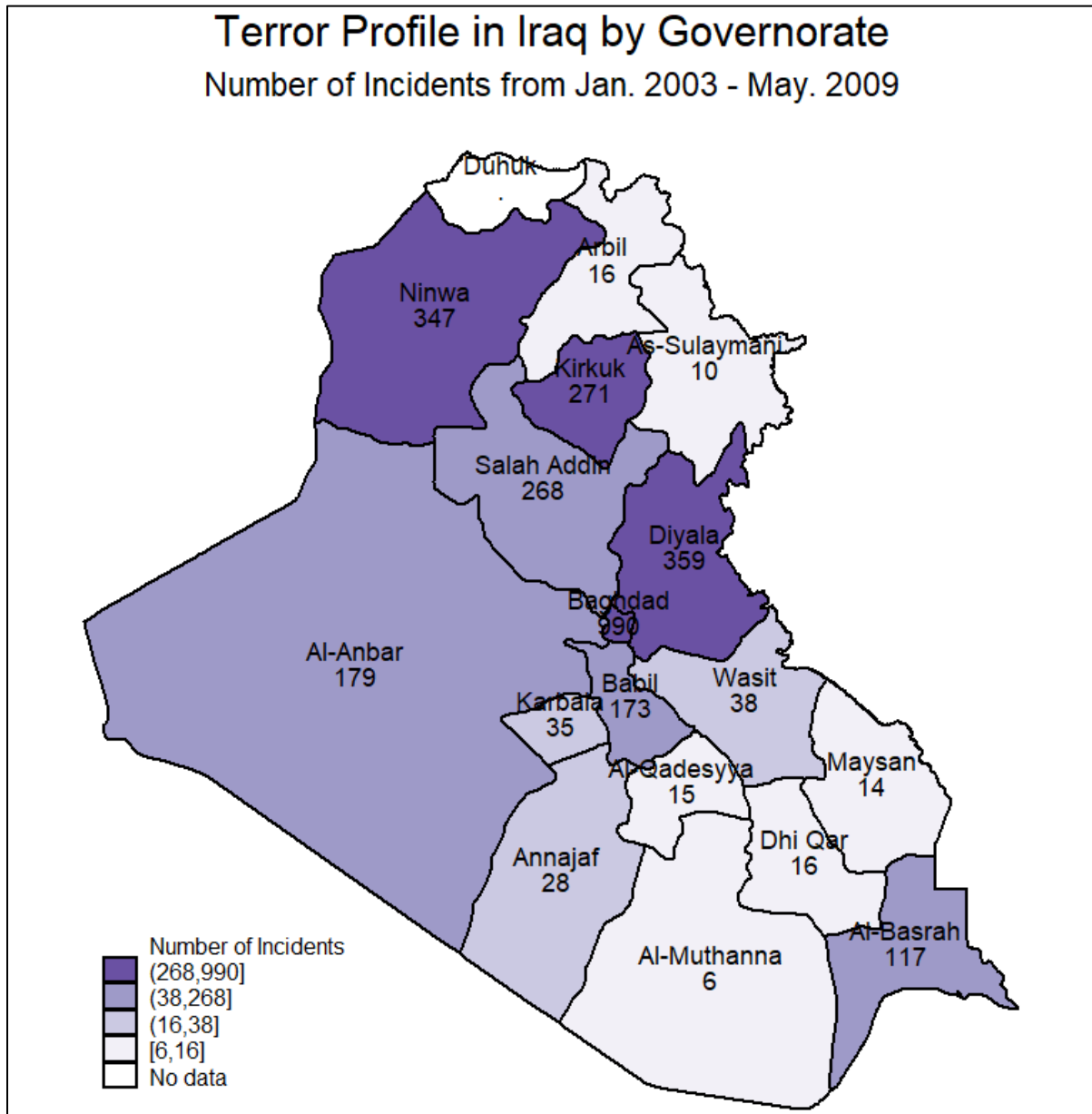


Figure 1b



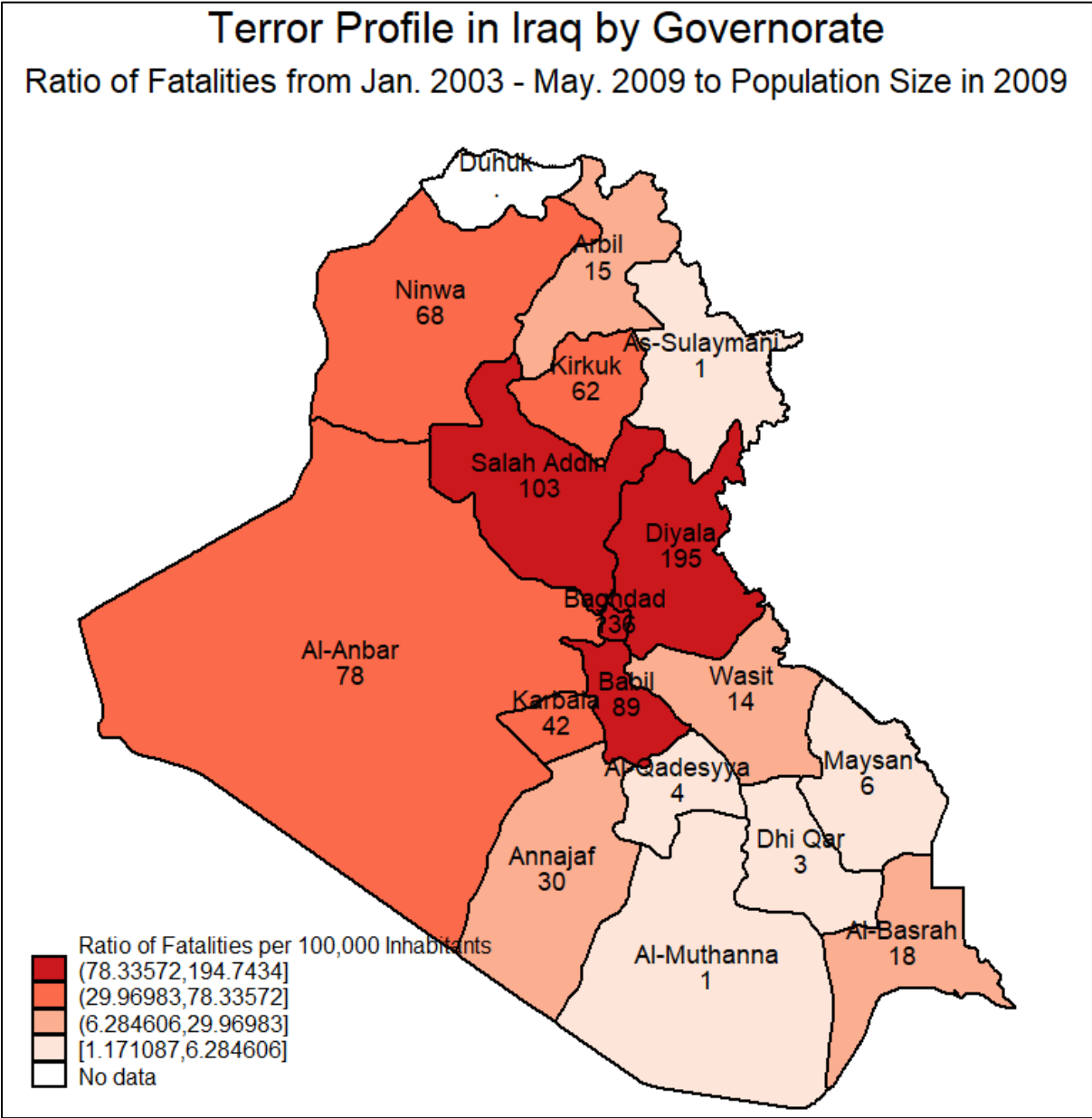
Source: Our World in data: <https://ourworldindata.org/>

Figure 2: Terror incidents in Iraq across regions, number of terror incidents



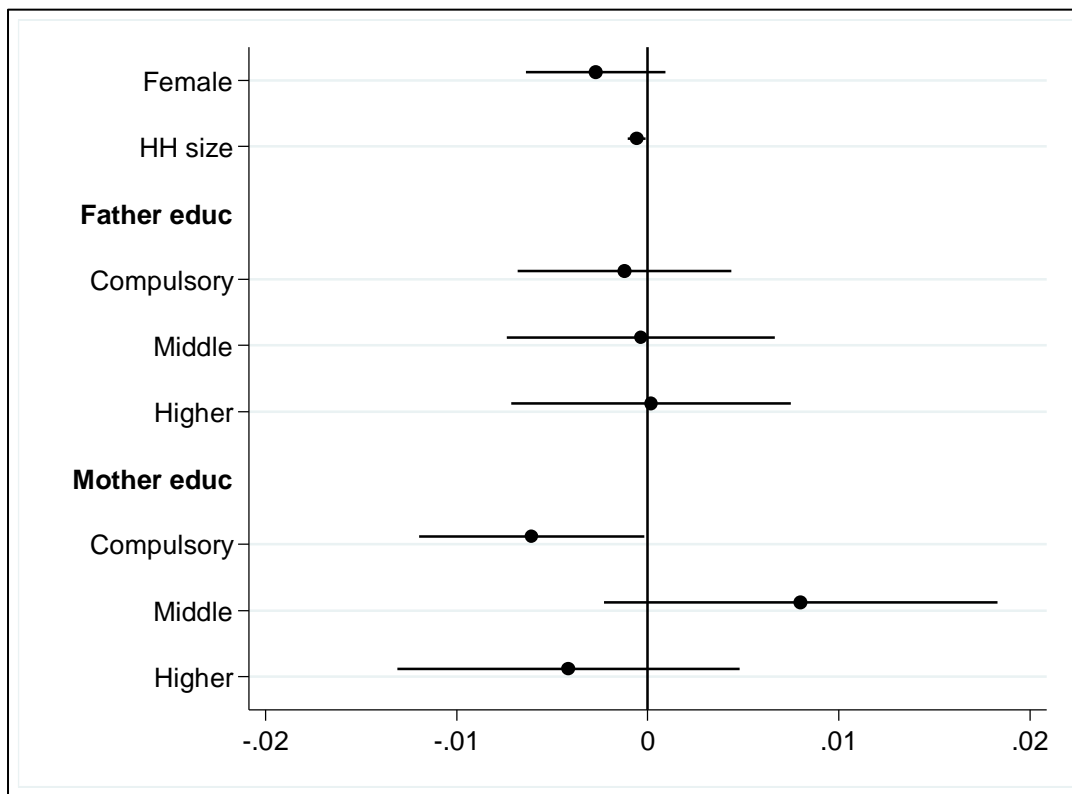
Note: Author's calculations from GTD.

Figure 3: Terror fatalities in Iraq across regions, number of fatalities by 100,000 inhabitants



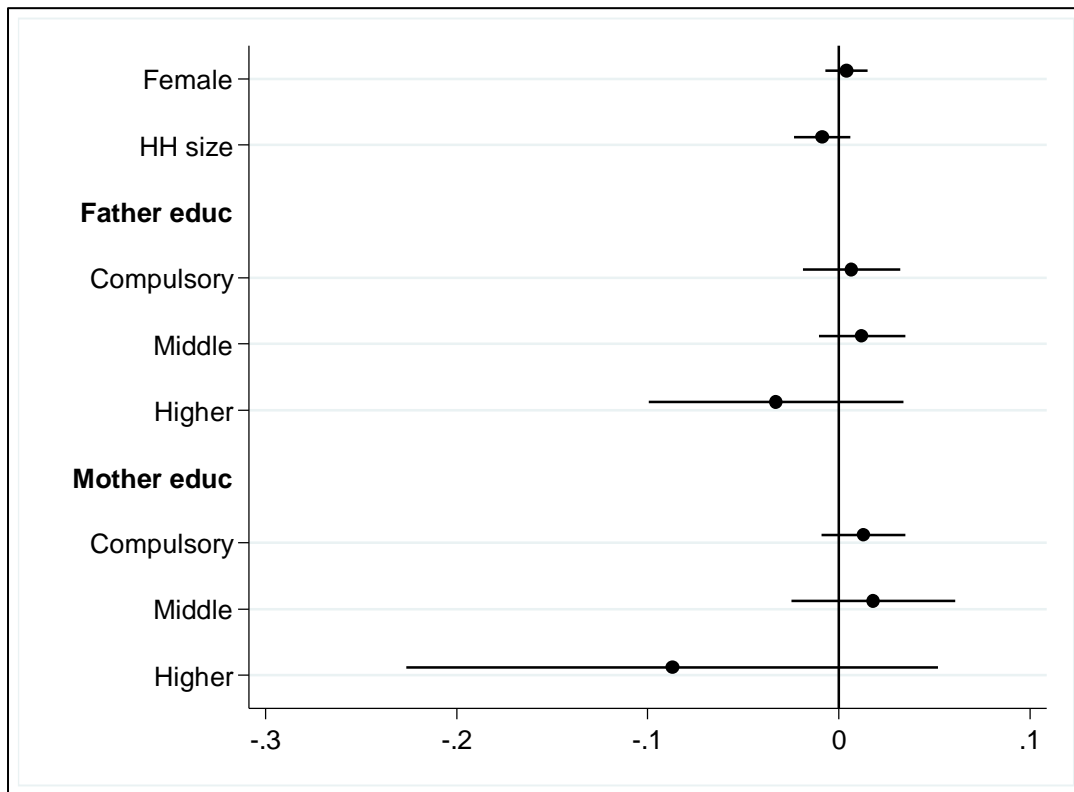
Note: Author’s calculations from GTD.

Figure 4: Balancing test, experiencing terror at younger age



Note: The figure displays the estimated coefficients and confidence intervals with a regression with the dependent variable is a dummy that takes the value of one if the individual experienced terror at young age (less than 16), and zero otherwise. The independent variables are displayed in the vertical axis. Standard errors clustered at the governorate level.

Figure 5: Balancing test, number of terror attacks experienced at younger age



Note: The figure displays the estimated coefficients and confidence intervals with a regression with the dependent variable is the logged value of the number of terror attacks experienced at young age (less than 16), and zero otherwise. The independent variables are displayed in the vertical axis. Standard errors clustered at the governorate level.

APPENDIX

Table A1: Daily Profile of Terror in Iraq by Governorate 2003-2009

	Average Daily Number of Incidents	Average Daily Number of Fatalities	Share of Kidnappings	Share of Suicide Attacks	Share of Successful Attacks
Governorate					
Total	1.87	8.78	0.07	0.18	0.97
	(2.55)	(20.71)	(0.22)	(0.32)	(0.12)
	[4389]	[20582]	[96]	[263]	[1395]
	2343	2343	1436	1436	1436
Al-Anbar	1.17	6.49	0.02	0.32	0.95
	(0.48)	(9.20)	(0.72)	(0.46)	(0.22)
	[210]	[1162]	[4]	[57]	[170]
	179	179	179	179	179
Al-Basrah	1.24	3.64	0.14	0.04	0.95
	(0.71)	(9.92)	(0.34)	(0.19)	(0.21)
	[145]	[426]	[16]	[5]	[112]
	117	117	117	117	117
Al-Muthanna	1.17	1.33	0.00	0.00	0.83
	(0.41)	(2.16)	(0.00)	(0.00)	(0.41)
	[7]	[8]	[0]	[0]	[5]
	6	6	6	6	6
Al-Qadesyya	7.20	3.20	0.00	0.07	0.93
	(0.26)	(5.02)	(0.00)	(0.26)	(0.26)
	[16]	[48]	[0]	[1]	[14]
	15	15	15	15	15
Annajaf	7.20	7.20	0.14	0.18	0.96
	(0.26)	(23.85)	(0.36)	(0.39)	(0.19)
	[30]	[366]	[4]	[5]	[27]
	28	28	28	28	28
Arbil	6.20	14.44	0.06	0.44	1.00
	(0.25)	(27.74)	(0.25)	(0.51)	(0.00)
	[17]	[231]	[1]	[7]	[16]
	16	16	16	16	16
As-Sulaymaniyya	1.00	10.20	0.10	0.20	0.90
	(0.00)	(2.13)	(0.32)	(0.42)	(0.32)
	[10]	[21]	[1]	[2]	[9]
	10	10	10	10	10
Babil	1.21	8.92	0.05	0.25	0.97
	(0.52)	(17.05)	(0.22)	(0.43)	(0.18)
	[209]	[1544]	[9]	[43]	[167]
	173	173	173	173	173
Baghdad	1.98	9.20	0.06	0.15	0.97
	(1.44)	(18.01)	(0.23)	(0.32)	(0.15)
	[1958]	[9109]	[56]	[144]	[963]
	990	990	990	990	990
Dhi Qar	6.20	2.88	0.19	0.00	0.94
	(0.25)	(6.83)	(0.40)	(0.00)	(0.25)
	[17]	[46]	[3]	[0]	[15]
	16	16	16	16	16
Diyala	1.47	7.44	0.06	0.17	0.98
	(0.88)	(11.83)	(0.26)	(0.35)	(0.12)
	[526]	[2670]	[20]	[59]	[353]

	359	359	359	359	359
Karbala	1.00	12.03	0.03	0.17	0.94
	(0.00)	(22.96)	(0.17)	(0.38)	(0.24)
	[35]	[421]	[1]	[6]	[33]
	35	35	35	35	35
Kirkuk	1.32	03.03	0.07	0.12	0.96
	(0.65)	(7.47)	(0.24)	(0.32)	(0.17)
	[357]	[820]	[18]	[34]	[262]
	271	271	271	271	271
Maysan	1.00	4.14	0.07	0.00	0.93
	(0.00)	(11.14)	(0.27)	(0.00)	(0.27)
	[14]	[58]	[1]	[0]	[13]
	14	14	14	14	14
Ninwa	1.35	6.08	0.05	0.21	0.95
	(0.65)	(22.90)	(0.21)	(0.39)	(0.19)
	[467]	[2109]	[18]	[73]	[331]
	347	347	347	347	347
Salah Addin	1.24	5.15	0.07	0.18	0.97
	(0.56)	(11.28)	(0.24)	(0.37)	(0.16)
	[332]	[1380]	[18]	[47]	[260]
	268	268	268	268	268
Wasit	3.20	4.29	0.08	0.05	0.95
	(0.16)	(11.11)	(0.27)	(0.23)	(0.23)
	[39]	[163]	[3]	[2]	[36]
	38	38	38	38	38

Daily means, standard deviations in parentheses, absolute totals in brackets and number of non-missing observations. Author's calculations from GTD dataset.

Table A2: Definitions of variables

Variables	Definition
Outcomes variables	
Mental health	- Indicator measuring general mental health. Calculated from six questions in the national youth survey asking about suffering from nervousness, too much sleep, tiredness, permanent headache, easy crying, and concentration problems. Choices are yes, somehow, and no, coded as 1, 2, 3 respectively. The indicator takes the mean of the answers, so possible values range from 1 to 3 where 1 is the worst, and 3 is the best. The indicator is standardized with a mean of zero and standard deviation of 1.
Smoked at young age	- Dummy variable indicating whether an individual smoked cigarettes/narjila before the age of 16.
Consumed alcohol at young age	- Dummy variable indicating whether an individual consumed alcohol before the age of 16.
Finished compulsory education	- Dummy variable indicating whether individual finished compulsory education (9 years of basic education).
Finished secondary education	- Dummy variable indicating whether individual finished high school (compulsory education + 3 years).
Treatment variables	
Age of First Exposure to Terror	- Age at which individual experienced a terrorist incident in their province for the first time.
Experienced terror as child	- Dummy variable indicating whether individual has experienced terrorism in their province as a child (before the age of 16).
Number of witnessed attacks as child (logged)	- Total number of terrorist incidents individual has experienced in their province as a child (log +1 conversion is used).

Table A3: Effect of terrorism on mental health, risky behaviors, and education for different ages of experiencing terror

VARIABLES	(1) Mental health	(2) Smoke	(3) Alcohol	(4) Finished compulsory	(5) Finished secondary
First experienced terror before the age of 6	0.072 (0.061)	0.012 (0.009)	-0.013 (0.023)	-0.196*** (0.058)	-0.032 (0.029)
First experienced terror between 7 and 12	0.091** (0.037)	0.019** (0.008)	0.003 (0.022)	-0.106*** (0.028)	-0.076*** (0.020)
First experienced terror between 13 and 16	0.100*** (0.027)	0.010* (0.005)	0.013 (0.013)	-0.029 (0.022)	-0.062*** (0.015)
First experienced terror after 16	Reference	Reference	Reference	Reference	Reference
Observations	14,217	14,217	14,217	7,823	7,823
Controls	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes

Note: Controls include a dummy variable for gender, age, father's level of education, mother's level of education, household size, and a dummy variable for the governorate. Robust standard errors clustered by governorate reported in parenthesis. *, **, and *** denote significance at the 1, 5, and 10 percent level, respectively.