

# The Long Shadow of Armed Conflict on Children's Outcomes in Turkey

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# Motivation

- ✓ The 2022 World Bank Report predicts that between two-thirds and three-quarters of extreme poor people will live in conflict settings by 2030.
- ✓ The Arab Spring, the prolonged wars in Syria and Iraq, many countries in the Middle East and Africa
- ✓ Armed conflicts have devastating consequences
- ✓ Macro level studies suggest rapid catch-up growth.
- ✓ However, *childhood exposure* to the armed conflicts still inflict direct and external long-term costs on survivors.

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# Motivation

- ✓ Among survivors, children may be especially adversely affected given the **age-specific aspects of many human capital investments.**
  - ✓ **Children's education:** destruction of school inputs, change in family structure, deterioration of economic means in the household.
  - ✓ **Children's future health:** malnutrition, maternal stress and trauma, pollution, outbreaks of infectious diseases, destruction of health facilities and loss of health personnel.
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# Motivation

- ✓ **Children's future labor market outcomes:** education and health and deterioration of the economic opportunities.
  - ✓ **Intergenerational effects on birthweight and early childhood health outcomes:** mother's and father's exposure to warfare
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# This Paper

- ✓ We will provide causal evidence on the long-term consequences of the armed conflict in Turkey, which started in the early 1980s, on children's outcomes.
  - ✓ Our focus would be:
    - ✓ **Educational Attainment Outcomes** (years of schooling, primary and secondary school completion, high school graduation)
    - ✓ **Labor Market Outcomes** (formal and informal employment, earnings, skill levels, sector of employment)
    - ✓ **Intergenerational Effects** (school attendance, progress through school, years of schooling, educational attainment)
    - ✓ Physical vs. Human Capital Loss?
    - ✓ Spatial Analysis?
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# Previous Studies

## ✓ **Macro \ Regional Level Studies**

Miguel and Roland, 2005; Brakman, Garretsen and Schramm, 2004; David and Weinstein, 2002; Ben-David and Papell, 1995.

## ✓ **Micro Level Studies—Education**

Akbulut-Yuksel, 2014; Shemyakina, 2010; Akresh and de Walque, 2008; Ichino and Winter-Ebmer, 2004; Kibris, 2015

## ✓ **Micro Level Studies—Height**

Akbulut-Yuksel, 2014, 2017; Akbulut-Yuksel and Yuksel, 2017; Bundervoet, Verwimp and Akresh, 2007b; Akresh, Verwimp and Bundervoet, 2007a

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# Previous Studies

- ✓ **Micro Level Studies—Mental Health**  
Akbulut-Yuksel et al. (2022); Sigal (2019)
  - ✓ **Micro Level Studies—Labor Market Outcomes**  
Galdo (2013); Akbulut-Yuksel (2014)
  - ✓ **Intergenerational Effects**  
Akresh et al. (2021); Phadera (2021)
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# PKK Conflict in Turkey

- PKK (Partiya Karkerên Kurdistan/Kurdistan Workers' Party) was formally established as a Marxist/Radical Kurdish Nationalist group on 27 October 1978 by Abdullah Ocalan.
  - Mission: Establish an independent Kurdish state in Southeastern Turkey, Northern Iraq and Northeastern Syria.
  - PKK started its terrorist attacks in 1978 in Eruh-Semdinli and since then the insurgencies targeted mainly Kurdish-populated Eastern and Southeastern regions of Turkey.
  - Abdullah Ocalan escaped Syria shortly before the military coup of 12 September 1980, which led PKK attacks to stop until the civilian regime resumed in 1983.
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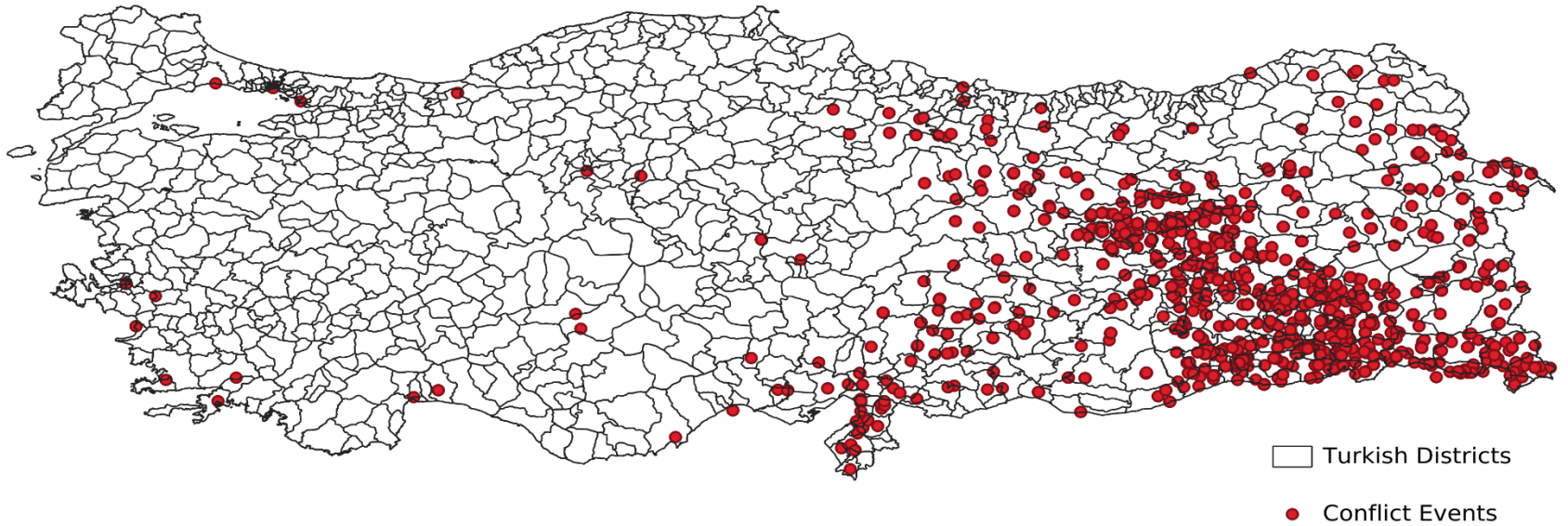


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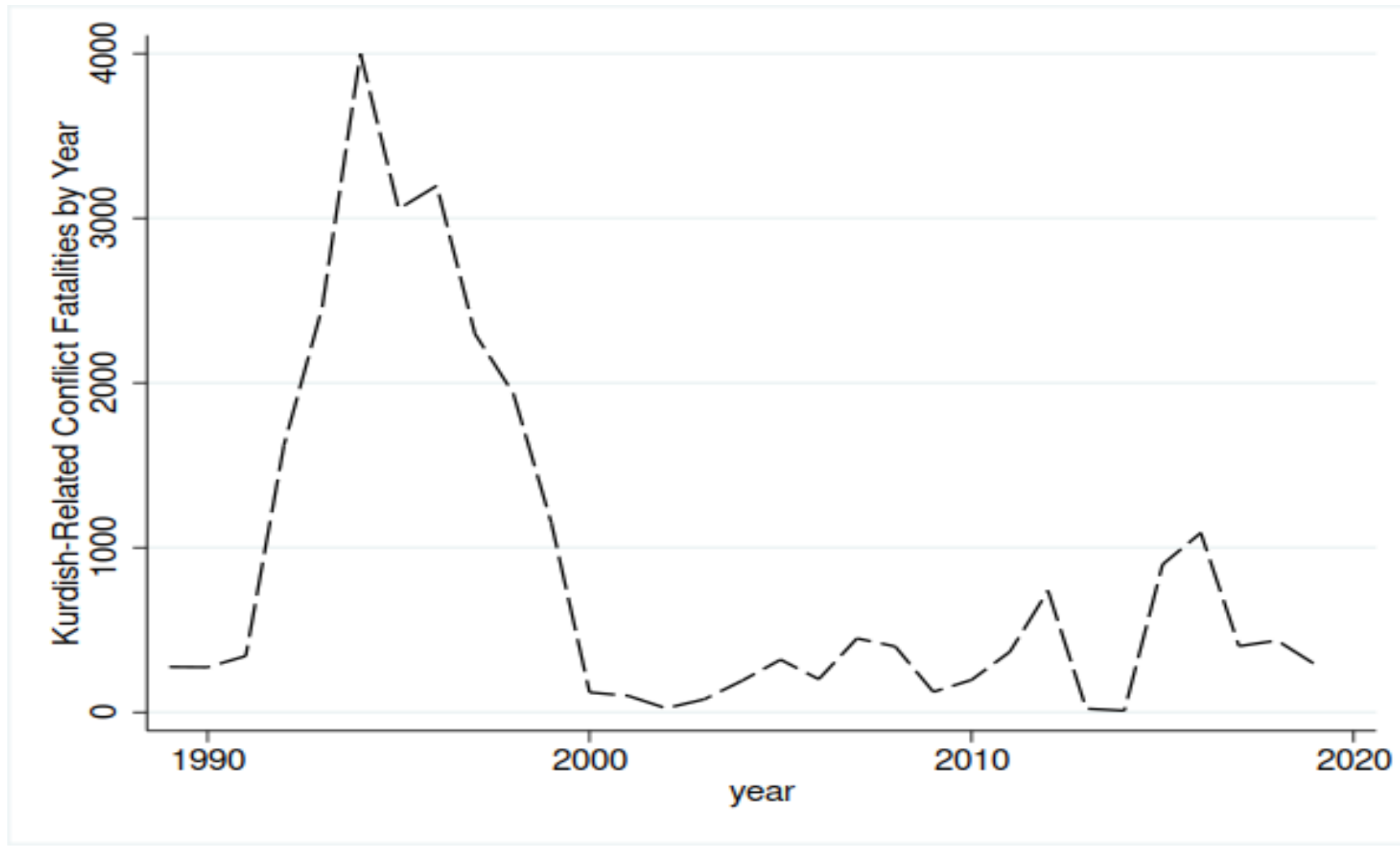
# PKK Conflict in Turkey

- It is reported that between 1984 and 2008, 32,000 militants, 6,500 security force members and 5,700 civilians were killed in PKK terrorist activities.
  - In 1999, Abdullah Ocalan, was captured in Kenya.
  - Following his arrest, Ocalan declared his desire to establish a peace initiative with the Turkish government on Kurdish issues and announced a cease-fire which lasted only until 2004.
  - Between March 1993 and August 2010, PKK announced seven cease-fires of which the longest lasted 4 years and 9 months (Sept. 1999 - Jun. 2004) and the shortest lasted only 2 months (Dec. 1995 - Jan 1996).
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# PKK Conflict in Turkey



# PKK Conflict in Turkey



# Estimation Framework

$$\text{Outcome}_{ipt} = \alpha + \beta (\text{Conflict}_{ipt}) + \delta_p + \pi_t + \Omega X_{ipt} + \varepsilon_{ipt}$$

- Outcome<sub>ipt</sub> is the outcomes for individual *i* of province *p* born in year *t*.
  - Conflict<sub>ipt</sub> is the childhood exposure in province *p* in year *t* (the cumulative exposure between 7-19 years of age for education and labor market outcomes)
  - δ<sub>*p*</sub> is province fixed effects; π<sub>*t*</sub> is the year of birth fixed effects
  - X<sub>ipt</sub> includes a vector of controls for gender, urban\rural residence, mother's educational attainment dummies, father's educational attainment dummies, and age at the time of the survey year, and regional time trends.
  - The standard errors are also clustered by province.
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# Potential Confounding Factors

- I. Omitted Variable Bias
  - II. Parallel Trend Assumption
  - II. Change in the Composition of the Population
  - III. Conflict-induced Displacement/ Later Life Internal Migration
  - IV. Differential Infant and Adult Mortality
  - V. Differential Wartime Fertility
  - VI. Control groups (esp. Istanbul and 3 big cities)
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# Data

- We rely on two sources to measure conflict intensity and conduct all our analysis with both of these datasets.
  - Global Terrorism Database – all terror related incidences in Turkey between 1970-2018.
  - For each event, the exact date, location at the province level, perpetrator group name, number of fatalities, number of wounded and value of property damage (in USD) are reported.
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# Data

- TPCONED (Kibris, 2021) - an open-source dataset on the fatal events of the armed conflict between PKK and the Turkey that took place on Turkish soil
  - Covers incidents between 1984 and 2018.
  - For each event, the exact date, location at the town level, number of Turkish Military and PKK casualties are reported.
  - It contains detailed information on 7,063 conflict events with 17,308 PKK casualties and 7,514 state casualties over 1984–2018.
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# Data

- 2003, 2008, 2013 and 2018 waves of the Turkish Demographic Health Survey (DHS).
  - Women's complete socioeconomic status as well as data on their health and birth histories and their partners.
  - Information on various education outcomes such as years of schooling, educational attainment, the highest degree completed
  - Migration histories of the respondents: we utilize migration histories in DHS and carefully match individuals with the actual residence at each age.
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# Labor Force Surveys

- We use the nationally representative Household Labor Force Survey (HLFS) that have been collected annually since 1988 by the Turkish Statistical Institute (TurkStat).
  - We use surveys between 2005 and 2018.
  - HLFS contains demographic information of all members in the households, and includes labor market status, occupation, wages, hours of work, and job search information for individuals that are 15 years old and older.
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# Labor Force Surveys

- Our employment outcomes consist of labor force participation, occupation, skill levels.
  - We also separately analyze informal versus formal employment.
  - Informal workers are identified in the sample using the question “Are you registered with the Social Security Institution?”
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# Exposure to Conflict Measures

- We match each individuals with its total exposure to conflict during 7-19 years of age for education and labor market outcomes
  - We use 3 indicators for conflict intensity by province and year
    - Number of fatalities and injured (from GTD)
    - Value of property damage (from GTD)
    - Number of fatalities and injured (from TPCONED Database)
  - Normalize these conflict measures with population
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# Educational Outcomes

Table 1. Effect of Conflict on Educational Outcomes

	Years of Schooling	Educational Attainment	Primary School Degree	Middle School Degree	High School Degree
	(1)	(2)	(3)	(4)	(5)
<b>Panel A: All Sample</b>					
Human Loss	-1.4445*** (0.3832)	-0.5933*** (0.1696)	-0.0967* (0.0485)	-0.1609*** (0.0525)	-0.1234** (0.0521)
Property Loss	0.0006 (0.0006)	0.0003 (0.0003)	0.0000 (0.0000)	0.0001 (0.0001)	0.0000 (0.0001)
Female	0.0166 (0.1568)	-0.2060** (0.0778)	-0.0515*** (0.0126)	-0.0901*** (0.0186)	0.0330** (0.0134)
Urban	0.9364*** (0.1527)	0.3949*** (0.0669)	0.0229** (0.0092)	0.1247*** (0.0191)	0.1060*** (0.0170)
Adjusted R-squared	0.341	0.283	0.114	0.252	0.321
Observations	11242	11246	11246	11246	10834
Mean Dependent Variable	8.285	3.564	0.956	0.697	0.402
Mean Human Loss	0.081	0.081	0.081	0.081	0.081
Mean Property Loss	54.527	54.507	54.507	54.507	55.569

Notes: Standard errors clustered by provinces are shown in parentheses. Asterisks denote significance levels (\*=.10, \*\*=.05, \*\*\*=.01). Each column is from a separate regression with province and birth year fixed effects and survey year indicators.

# Educational Outcomes, Females Only

Table 1B. Effect of Conflict on Educational Outcomes

	Years of Schooling	Educational Attainment	Primary School Degree	Middle School Degree	High School Degree
	(1)	(2)	(3)	(4)	(5)
<b>Panel B: Female Only</b>					
Human Loss	-2.0087*** (0.5227)	-0.5736*** (0.1914)	-0.0924 (0.0683)	-0.1843*** (0.0615)	-0.1200 (0.0731)
Urban	1.1151*** (0.2727)	0.5127*** (0.1067)	0.0503** (0.0218)	0.1332*** (0.0286)	0.1411*** (0.0298)
Adjusted R-squared	0.427	0.41	0.238	0.368	0.369
Observations	3856	3856	3856	3856	3637
Mean Dependent Variable	8.331	3.465	0.917	0.647	0.435
Mean Human Loss	0.080	0.080	0.080	0.080	0.080

Notes: Standard errors clustered by provinces are shown in parentheses. Asterisks denote significance levels

(\*=.10, \*\*=.05, \*\*\*=.01). Each column is from a separate regression with province and birth year fixed effects and survey year indicators.

# Educational Outcomes, Males Only

Table 1C. Effect of Conflict on Educational Outcomes

	Years of Schooling	Educational Attainment	Primary School Degree	Middle School Degree	High School Degree
	(1)	(2)	(3)	(4)	(5)
<b>Panel C: Male Only</b>					
Human Loss	-1.1683** (0.5429)	-0.5836** (0.2465)	-0.0507 (0.0434)	-0.1554** (0.0654)	-0.0618 (0.0768)
Urban	0.8795*** (0.1432)	0.3534*** (0.0632)	0.0116 (0.0071)	0.1237*** (0.0201)	0.1073*** (0.0183)
Adjusted R-squared	0.33	0.253	0.074	0.224	0.321
Observations	7386	7390	7390	7390	7129
Mean Dependent Variable	8.262	3.616	0.976	0.723	0.385
Mean Human Loss	0.081	0.081	0.081	0.081	0.081

Notes: Standard errors clustered by provinces are shown in parentheses. Asterisks denote significance levels (\*=.10, \*\*=.05, \*\*\*=.01). Each column is from a separate regression with province and birth year fixed effects and survey year indicators.

# Educational Outcomes: Heterogeneity

**Table 2. Effect of Conflict on Educational Outcomes: Heterogeneity**

	Years of Schooling	Educational Attainment	Primary School Degree	Middle School Degree	High School Degree
	(1)	(2)	(3)	(4)	(5)
<b>Panel A: Drop Istanbul</b>					
Human Loss	-1.1892*** (0.4104)	-0.4695** (0.1801)	-0.0938* (0.0484)	-0.1276** (0.0531)	-0.1022* (0.0553)
Adjusted R-squared	0.329	0.296	0.127	0.27	0.309
Observations	10091	10095	10095	10095	9717
<b>Panel B: Drop Istanbul, Ankara and Izmir</b>					
Human Loss	-1.0307** (0.4024)	-0.4494** (0.1789)	-0.0908* (0.0480)	-0.1158** (0.0535)	-0.0845 (0.0575)
Adjusted R-squared	0.329	0.296	0.127	0.27	0.309
Observations	10091	10095	10095	10095	9717
<b>Panel C: Drop Marmara and Aegean Regions</b>					
Human Loss	-1.3611*** (0.3209)	-0.4818*** (0.1629)	-0.0907* (0.0487)	-0.1399*** (0.0500)	-0.1310** (0.0646)
Adjusted R-squared	0.336	0.318	0.137	0.3	0.313
Observations	8400	8404	8404	8404	8093

Notes: Standard errors clustered by provinces are shown in parentheses. Asterisks denote significance levels (\*=.10, \*\*=.05, \*\*\*=.01). Each column is from a separate regression with province and birth year fixed effects and survey year indicators.

# Alternative Conflict Measures

Table 3. Effect of Conflict on Educational Outcomes: Alternative Measures

	Years of Schooling	Educational Attainment	Primary School Degree	Middle School Degree	High School Degree
	(1)	(2)	(3)	(4)	(5)
<b>Panel A: Total Number of Casualties</b>					
Total Deaths	-0.2355** (0.1148)	-0.0894*** (0.0275)	-0.0165*** (0.0042)	-0.0194* (0.0098)	-0.0132 (0.0125)
Adjusted R-squared	0.328	0.265	0.126	0.238	0.312
Observations	4778	4780	4780	4780	4513
<b>Panel B: Total Number of Turkish Military Forces Casualties</b>					
TMF Deaths	-0.8670** (0.3268)	-0.3354*** (0.0813)	-0.0619*** (0.0117)	-0.0835*** (0.0287)	-0.0457 (0.0350)
Adjusted R-squared	0.328	0.265	0.126	0.238	0.312
Observations	4778	4780	4780	4780	4513
<b>Panel C: Total Number of PKK Casualties</b>					
PKK Deaths	-0.3105* (0.1649)	-0.1171*** (0.0390)	-0.0215*** (0.0063)	-0.0239* (0.0136)	-0.0177 (0.0182)
Adjusted R-squared	0.328	0.265	0.125	0.237	0.312
Observations	4778	4780	4780	4780	4513

Notes: Standard errors clustered by provinces are shown in parentheses. Asterisks denote significance levels (\*=.10, \*\*=.05, \*\*\*=.01). Each column is from a separate regression with province and birth year fixed effects and survey year indicators.



# Labor Market Outcomes

**Table 4. Effect of Conflict on Labor Market Outcomes**

	Formal Employment	Informal Employment	Log Hourly Wage	Skill Level	Employment in Agriculture	Employment in Manufacturing
	(1)	(2)	(3)	(4)	(5)	(6)
Human Loss	-0.1012*** (0.0354)	0.0307 (0.0293)	0.0087 (0.0919)	-0.4625*** (0.1340)	0.0333 (0.0488)	-0.0782*** (0.0277)
Female	-0.2873*** (0.0127)	-0.0951*** (0.0119)	-0.0962*** (0.0291)	-0.3676*** (0.0462)	-0.0093 (0.0087)	-0.1210*** (0.0146)
Urban	0.0590*** (0.0049)	-0.1332*** (0.0126)	0.1657*** (0.0133)	0.6735*** (0.0435)	-0.2986*** (0.0169)	0.0411*** (0.0055)
Adjusted R-squared	0.274	0.136	0.257	0.098	0.233	0.084
Observations	1550311	1550311	683240	1142151	2218945	2218945
Mean Outcome	0.177	0.129	6.707	2.281	0.115	0.095
Mean Human Loss	0.043	0.043	0.040	0.035	0.041	0.041

Notes: Standard errors clustered by nuts-2 are shown in parentheses. Asterisks denote significance levels (\*=.10, \*\*=.05, \*\*\*=.01). Each column is from a separate regression with nuts-2 and birth year fixed effects and survey year indicators.

# Labor Market Outcomes, Females Only

Table 4B. Effect of Conflict on Labor Market Outcomes

	Formal Employment	Informal Employment	Log Hourly Wage	Skill Level	Employment in Agriculture    Manufacturing	
	(1)	(2)	(3)	(4)	(5)	
<b>PANEL B: Females Only</b>						
Human Loss	-0.0403** (0.0177)	0.0387 (0.0362)	-0.0983 (0.1645)	-0.3300* (0.1689)	0.0424 (0.0436)	-0.0158 (0.0278)
Urban	0.0327*** (0.0035)	-0.1373*** (0.0155)	0.2376*** (0.0263)	0.8821*** (0.0440)	-0.2888*** (0.0220)	0.0163*** (0.0021)
Adjusted R-squared	0.073	0.143	0.226	0.171	0.249	0.027
Observations	957117	957117	162559	321642	1154087	1154087
Mean Outcome	0.052	0.078	6.630	1.958	0.109	0.040
Mean Human Loss	0.044	0.044	0.039	0.031	0.042	0.042

Notes: Standard errors clustered by nuts-2 are shown in parentheses. Asterisks denote significance levels (\*=.10, \*\*=.05, \*\*\*=.01). Each column is from a separate regression with nuts-2 and birth year fixed effects and survey year indicators.

# Labor Market Outcomes, Males Only

Table 4C. Effect of Conflict on Labor Market Outcomes

	Formal Employment	Informal Employment	Log Hourly Wage	Skill Level	Employment in Agriculture	Employment in Manufacturing
	(1)	(2)	(3)	(4)	(5)	(6)
<b>PANEL C: Males Only</b>						
Human Loss	-0.2126*** (0.0673)	0.0595** (0.0275)	0.0169 (0.0943)	-0.5175*** (0.1513)	0.0278 (0.0573)	-0.1428*** (0.0394)
Urban	0.1003*** (0.0098)	-0.1316*** (0.0101)	0.1519*** (0.0115)	0.5770*** (0.0481)	-0.3091*** (0.0163)	0.0676*** (0.0098)
Adjusted R-squared	0.235	0.104	0.281	0.062	0.23	0.07
Observations	593194	593194	520681	820509	1064858	1064858
Mean Outcome	0.377	0.211	6.731	2.408	0.121	0.154
Mean Human Loss	0.040	0.040	0.040	0.037	0.039	0.039

Notes: Standard errors clustered by nuts-2 are shown in parentheses. Asterisks denote significance levels (\*=.10, \*\*=.05, \*\*\*=.01). Each column is from a separate regression with nuts-2 and birth year fixed effects and survey year indicators.

# Labor Market Outcomes: Heterogeneity

Table 5. Effect of Conflict on Labor Market Outcomes: Heterogeneity

	Formal Employment	Informal Employment	Log Hourly Wage	Skill Level	Employment in Agriculture Manufacturing	
	(1)	(2)	(3)	(4)	(5)	(6)
<b>Panel A: Drop Istanbul</b>						
Human Loss	-0.1259*** (0.0336)	0.0054 (0.0231)	-0.0701* (0.0374)	-0.4301*** (0.1099)	-0.0124 (0.0241)	-0.0973*** (0.0290)
Adjusted R-squared	0.271	0.141	0.253	0.103	0.214	0.082
Observations	1,348,446	1,348,446	573,875	1,002,191	1,939,416	1,939,416
<b>Panel B: Drop Istanbul, Ankara and Izmir</b>						
Human Loss	-0.1267*** (0.0385)	0.0077 (0.0226)	-0.0750* (0.0383)	-0.4681*** (0.1156)	-0.0019 (0.0217)	-0.1021*** (0.0317)
Adjusted R-squared	0.267	0.146	0.241	0.112	0.202	0.086
Observations	1,174,145	1,174,145	476,295	870,255	1,683,781	1,683,781
<b>Panel C: Drop Marmara and Aegean Regions</b>						
Human Loss	-0.0853*** (0.0199)	0.0017 (0.0247)	-0.0126 (0.0444)	-0.2700*** (0.0864)	-0.009 (0.0287)	-0.0542*** (0.0134)
Adjusted R-squared	0.256	0.156	0.256	0.101	0.21	0.055
Observations	891,965	891,965	353,822	647,040	1,282,586	1,282,586

Notes: Standard errors clustered by nuts-2 are shown in parentheses. Asterisks denote significance levels (\*=.10, \*\*=.05, \*\*\*=.01). Each column is from a separate regression with nuts-2 and birth year fixed effects and survey year indicators.

# Alternative Conflict Measures

Table 6. Effect of Conflict on Labor Market Outcomes: Alternative Measures

	Formal Employment	Informal Employment	Log Hourly Wage	Skill Level	Employment in Agriculture    Manufacturing	
	(1)	(2)	(3)	(4)	(5)	(6)
<b>Panel A: Number of Total Casualties</b>						
Total Deaths	-0.0014 (0.0049)	0.0200*** (0.0071)	-0.0112 (0.0169)	-0.0354 (0.0225)	-0.0173 (0.0094)	-0.0126*** (0.0027)
Adjusted R-squared	0.256	0.144	0.24	0.111	0.246	0.068
Observations	873,066	873,066	314,589	576,799	1,204,468	1,204,468
<b>Panel B: Number of Turkish Military Forces Casualties</b>						
TMS Deaths	-0.0122 (0.0185)	0.0735** (0.0349)	-0.0569 (0.0573)	-0.1353 (0.0943)	-0.0654 (0.0437)	-0.0493*** (0.0110)
Adjusted R-squared	0.267	0.146	0.241	0.112	0.202	0.086
Observations	1,174,145	1,174,145	476,295	870,255	1,683,781	1,683,781
<b>Panel C: Number of PKK Casualties</b>						
PKK Deaths	-0.0011 (0.0064)	0.0270*** (0.0084)	-0.0131 (0.0231)	-0.047 (0.0288)	-0.0231* (0.0116)	-0.0165*** (0.0037)
Adjusted R-squared	0.256	0.144	0.24	0.111	0.246	0.068
Observations	873,066	873,066	314,589	576,799	1,204,468	1,204,468

Notes: Standard errors clustered by nuts-2 are shown in parentheses. Asterisks denote significance levels (\*=.10, \*\*=.05, \*\*\*=.01). Each column is from a separate regression with nuts-2 and birth year fixed effects and survey year indicators.

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# Conclusion

School-aged children exposed to more armed conflict:

- ✓ Have lower educational attainment in adulthood (less years of schooling, lower likelihood of completing primary and middle school)
  - ✓ Have adverse labor market outcomes (higher informal employment, lower formal employment, lower skill levels, less likely to be employed in manufacturing sector)
  - ✓ We also find that the long-term effects of physical capital loss is rather limited, while the human capital effects prevail.
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## Conclusion

- ✓ Unaccounted long-term cost of armed conflicts
  - ✓ The number of children living in territories or countries in armed-conflict or emerging from war has been escalating over the last few decades (Østby et al., 2020).
  - ✓ Conflicts account for 80% of all humanitarian needs.
  - ✓ Policies that prioritize the child--essential not only to improve the wellbeing of the wartime children and their children, who are also impacted by warfare, but also to facilitate peacekeeping operations.
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Thank you for comments and suggestions

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