Killing Our Future:
The Long-Term and Intergenerational Effects of School Shootings on Labor-Market Outcomes

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April 29, 2022

Abstract

In the past 50 years, almost one million U.S. students have been present on school grounds during a shooting. This paper examines the long-term and intergenerational effects of school shootings on earnings, educational attainment, and mobility. I find that exposure to a school shooting decreases survivors' hourly wage by 20.8% and these effects persist over their lifetime. Furthermore, I show that the effect of school shootings lasts even beyond the initially treated and has detrimental effects on their children. I find that having shooting-exposed parents decreases children's hourly wage by 18.8%.

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1 Introduction

School shootings have become an unceasing nightmare for the American public. Almost a million students were on school grounds during a shooting in the past 50 years. Over 600 schools have experienced a shooting since 1970, and there were over 1,200 casualties. While school shootings have taken place in many countries across the world, they are ubiquitous in the United States, where their occurrence has been attributed to widespread firearm access (Borum et al., 2010).

Much like other traumatic events, school shootings too have far-reaching consequences for the victims. Rossin-Slater et al. (2020) demonstrate that exposure to school shootings bear severe mental effects on the exposed youth. Antidepressant use amongst the youth increases by over 20% in the two years following a shooting. Using student-level data from California, Beland and Kim (2016) show that exposure to shootings negatively affects students' grades. Additionally, they find that homicidal shootings significantly decrease students' school enrollment, and those who are enrolled deliver lower test results. Finally, recent simultaneous work of Cabral et al. (2021) reveals that shootings at Texas public schools affect the likelihood of high school and college graduation negatively. Additionally, they find a decrease in survivors' earnings at ages 24-26.

This paper adds to this work and investigates the long-term and intergenerational effects of school shootings on earnings, educational attainment, and mobility. In a first step, I show that school shootings have detrimental effects on survivors' outcomes, using United States-wide data from the Panel Study of Income Dynamics (PSID) between the years 1970 and 2009 combined with school shootings data from the K-12 School Shootings Database. I use a difference in differences (DiD) framework, comparing the average change over time in the outcome variable for those in the

shooting districts to the average change over time for those in neighboring districts. The treatment group involves two age cohorts: individuals exposed to shootings at school and individuals too old to be exposed. The control group consists of the same two age cohorts in neighboring districts. My baseline results show that individuals who are exposed to a shooting have 20.8% lower hourly earnings at age 30. These findings are robust to an extensive set of robustness checks. Further analysis indicate that lower hourly earnings persist over the survivors' life course and they never catch up with non-exposed individuals. In addition, I show that shootings affect minorities disproportionately and exacerbate the income gap for black people.

Next, I present evidence suggesting that educational attainment, labor market participation, and geographic mobility mechanisms explain a part of the lower hourly earnings of survivors. First, I find a strong adverse effect of school shootings on education outcomes. On average, survivors receive four months less education; they are 7% less likely to graduate from high school and 20% less likely to earn a college degree. Second, I find adverse effects of shootings on labor market outcomes on the intensive and extensive margin. Overall, I find that a survivor works on average 5% fewer hours (conditional on employment) and is 30% more likely to be unemployed at age 30. Third, I investigate the effects of school shootings on geographic mobility. Findings suggest that survivors are less likely to move out of the locations where they were exposed to shootings, consequently ruining chances of increased economic potential in the future. The last mechanism I look at is school district spending. I find no statistically significant impact on education spending and, therefore, conclude that changes to school districts' fiscal priorities cannot be a mechanism that explains the results. I assess each mechanism's potential contribution to lowering earnings using the results from Psacharopoulos and Patrinos (2018) and Chyn (2018). I find that a significant fraction of the lower earnings cannot be explained by the mechanisms

considered in this paper, leaving trauma as one of the possible remaining explanations to be discovered by future research.

In the second step, I investigate the effect of school shootings on the children of the exposed. Using an analogous DiD framework, I find that school shootings bring a 18.8% decrease in the earnings of children with shooting-exposed parents. Again, I demonstrate that educational attainment and geographic mobility likely explain a large part of the lower earnings of children with exposed parents. First, children with exposed parents, on average, receive six months less education than children of parents that were not exposed. They are also 20% less likely to graduate from high school. Second, I find that children with shooting-exposed parents are less likely to move to a better neighborhood, hindering their future economic opportunities. The results indicate that school shootings trigger persistence in educational outcomes and lack of geographic mobility. Considering the importance of geographic mobility on educational attainment and adult economic outcomes of children who moved and that the effects of neighborhood exposure are largest in childhood years, one can argue that geographic mobility's contribution to lower earnings is larger for the children of exposed than the initially exposed. Indeed, benchmarking on Chetty and Hendren (2018), I find that geographic mobility explains about a fifth of the decrease in the hourly earnings of children with shooting-exposed parents.

This study contributes primarily to three important strands of literature. First, it adds to the growing yet small literature on the effects of school shootings. Poutvaara and Ropponen (2010) study how high school students react to the news of a school shooting in Finland. They find that affected male students performed worse in the national high-school matriculation exams. Using student-level data from California, Beland and Kim (2016) look at schools' test scores, enrollment, number of teachers, graduation, attendance, and suspension rates at schools that experienced a

shooting. They find that shootings decrease the enrollment rates and test scores in math and English standardized tests.

Simultaneous work by Cabral et al. (2021) examines the impact of exposure to gun violence at Texas public schools on survivors' human capital attainment and economic well-being. They find that exposed students are more likely to be absent and repeat a grade and less likely to graduate from high school. Furthermore, following survivors from Texas public schools for 12 years, they find a 13.5% decrease in annual wages of a survivor at ages 24-26. Simultaneous work by Deb and Gangaram (2021) examines the impact of school shootings on survivors' health and human capital outcomes. Utilizing data from Behavioral Risk Factors Surveillance from 2003-2012, they report evidence that survivors experience declines in health and well-being, engage in risky behaviors, and have worse education and labor market outcomes. My work complements these studies and substantially advances the literature by using a larger sample spanning the entire U.S. over four decades, investigating the effect on wages over survivors' life cycle, exploring mechanisms as to why the shootings lower earnings, and looking at consequences of lower wages on the survivor. Furthermore, I show that the effect of school shootings persists even beyond the initially treated and has detrimental effects on the second generation. To the best of my knowledge, I am the first to study the effect of school shootings on the second generation affected by the shootings through their parents.

Second, the findings of this study contribute to the literature on neighborhood effects and intergenerational mobility. Chetty et al. (2014b), Chetty et al. (2014a), and Chetty and Hendren (2015) demonstrate the effects of residential segregation, income inequality and social capital, or in general neighborhood on earnings and mobility of individuals. Chetty and Hendren (2018) have recently shown that there are significant neighborhood exposure effects on intergenerational mobility. Specifically,

the adult incomes of children who moved converge to the adult incomes of children of permanent residents at the destination location at a rate of 4% per year of childhood exposure. Other recent papers have confirmed the findings of Chetty and Hendren (2018) in different country settings (Deutscher (2020) and Laliberté (2021)). This research strand shows that geographic mobility plays an important role in educational attainment and adult economic outcomes of children who moved. I contribute to this literature by showing that being exposed to shootings or having shooting-exposed parents negatively affects one's geographic mobility, potentially creating persistent poverty traps on the exposed and their children.

Third, the evaluation of mechanisms of the effect of school shootings on the second generation contributes to the growing literature analyzing the causal effects of parental education on children's educational attainment. The commonly used identification strategy to account for the endogeneity of parental education is to either provide an exogenous source of variation that changes the educational distribution of parents without directly affecting their children or account for genetic effects by comparing adopted and biological children or twins (Carneiro et al. (2004), Oreopoulos et al. (2006), Björklund et al. (2006)). I advance this strand of literature by exploring school shootings as an exogenous shock to parental education that does not directly affect children's education. If school shootings become more frequent at the same rate as in the past, this could be a significant driver of the parent-children education link.

Lastly, I make contributions to several other strands of literature. Previous research found the amount and quality of education, beliefs, preferences, personality and mental health as important factors that determine the level of earnings of an individual (Hoekstra (2009), Wiswall and Zafar (2015), Biasi et al. (2019), Patnaik et al. (2020), Bowles et al. (2001)). This study advances the literature by being among

the first to consider school shootings as a determinant for earnings and career choices. Specifically, I find that survivors are less likely to choose careers that commonly require a college degree. Furthermore, this study contributes to the literature on the effects of school district spending. Hyman (2017) and Jackson et al. (2016) document the positive effects of consistent school spending on educational attainment and wages. This study is among the first to study the effects of school shootings on school district finances and finds that total per-pupil spending increases by 232$ following a shooting.

The paper proceeds as follows: Section 2 describes the data, Section 3 describes the empirical strategy and discusses exposure and the identifying assumption. Section 4 documents the effect of school shootings on the initially exposed. Section 5 provides evidence on the underlying mechanisms. Section 6 reports the effect of school shootings on the second generation and discusses the underlying mechanisms. Section 7 concludes.

2 Data

2.1 School Shootings

I use the Center for Homeland Defense and Security (CHDS) K-12 school shooting database. This database consists of a comprehensive account of more than 1,500 gun-related incidents in K-12 education in the United States. It compiles and cross-references all existing data on shootings through an independent review of associated references.[1] The cross-referenced data is investigated to account for discrepancies

[1]Data is currently being collected on school shootings by government agencies including the US Secret Service, FBI, and the Department of Education; media or advocacy groups including The Washington Post, CNN, Gun Violence Archive, Everytown for Gun Safety, Education Weekly, and

such as school name, location, date, and the number of victims. The database is extensive as it covers every gun-related incident from 1970 to today, and it is continuously updated as new incidents occur.[2]

I use data on school shootings that span the years 1970 to 2009.[3] As I am interested in studying the effects of exposure to shootings on student outcomes, I limit the data to 635 shootings that occurred on a weekday, during school hours, and on school grounds. If there are shootings in any school district happening within the same year, then I consider them to be one event and sum up the casualties.[4] Figure A1 displays the geographic distribution of these school shootings in the United States. Figure A2 presents the time series characteristics of the number of incidents and deaths per year during the analysis period. It shows that both the greatest number of incidents and highest number of casualties were recorded in the 1990s.

2.2 Longitudinal Individual Data

I use the public and restricted dataset from the Panel Study of Income Dynamics (PSID), produced and distributed by the Survey Research Center, Institute for Social Research, University of Michigan, Ann Arbor, MI (2020). Being the longest-running longitudinal household survey globally, the PSID began in 1968 with a nationally representative sample of American individuals and families and currently has infor-

Mother Jones; and websites or blogs including Angels of Columbine, Wikipedia, schoolshooting-database.com, and schoolshootingtracker.com.

[2]The K-12 School Shooting Database documents when a gun is brandished, is fired, or a bullet hits school property for any reason, regardless of the number of victims, time of day, or day of week.

[3]I only use the data until 2009 because an individual exposed at age 18 will reach age 29 (the lowest age at which I measure the outcome variables) by 2017, which is the last wave of the Panel Study of Income Dynamics that I use in my analysis.

[4]Out of 665 districts in the dataset, a total of 10 districts have 2 incidents, 7 districts have 3 incidents, and 2 districts have 4 incidents in the same year.

mation on more than 75,000 individuals.[5] After the initial 1968 interview, families and individuals were interviewed each year until 1997. After 1997, the survey was conducted biyearly. The PSID follows individuals over time, even when they leave their household and form a new one. The spouse and children of such individuals are also included in the survey.

The PSID collects data on family and individual level variables such as employment, income, wealth, expenditures, health, marriage, education, and geospatial identifiers. Many of the outcome variables studied in this paper come from the PSID: labor income, business income, hours worked, employment, years of education completed, occupation, and house value. Furthermore, the PSID provides pre-determined individual-level variables that I use for controls in the regression analysis: gender and race of the respondent and other family members, educational achievements of the respondent's father and mother, employment details of respondent's father, the income of respondent's parents during their childhood, and marital status of respondent's mother at their birth.

I use individual and family level variables provided by the PSID to create additional outcome variables for an individual. Hourly earnings are calculated annually as the ratio of total earnings and hours worked.[6] High school and college degree dummy variables are derived from years of education completed. Unemployment and self-employment are obtained from the employment variable of the PSID and are both dummy variables. I construct these variables for each observation between the ages of 29 and 31 by selecting the first available value.[7] Following a similar specification to Jackson et al. (2016), I choose the age bracket around 30 as individuals are mostly

[5]The PSID sample remains representative of the national sample of American individuals and families (Fitzgerald et al., 1998).

[6]A detailed description of how these variables are created can be found in Appendix C.

[7]I use age bins between 29 and 31 to maximize the available number of observations as the PSID is only conducted biyearly after 1997.

out of college by this age.

I obtain geospatial information from the PSID at the Census block level. There are over seven million Census blocks in the United States, and a block contains on average 600 people. I use the geographic coordinates that link individuals to their Census block during childhood and match their residential locations to the school district boundaries at the time they attended K-12 education. After merging this data with the K-12 school shootings data, I can identify the individuals studying in a shooting school district at the time of the shooting.

2.3 Supplementary Data

I compiled data on school district spending and revenue components from the Common Core of Data (CCD) and the Historical Database on Individual Government Finances (INDFIN) to understand if school district finances act as a mechanism that mediates the main outcome variable that is hourly earnings. In the same analysis, I use control variables at the school district level, namely, population estimates, median household income, per capita income, number of people living in poverty, and other demographic variables such as race, sex, and age profiles that are obtained from the Decennial Census. Appendix B provides a detailed description of these datasets.

3 Empirical Strategy

3.1 Difference-in-Differences Approach

I estimate the effects of exposure to school shootings on earnings, education outcomes, income, geographic mobility, career choice, and the intergenerational transmission of these effects. To do so, I exploit variation in the geographic and temporal distribution of school shootings.

For each outcome variable I report, I estimate regression equations of the form:

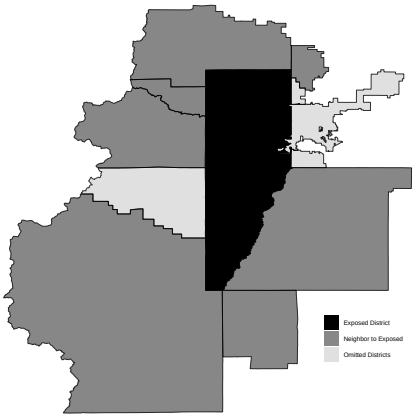
$$y_{idc,t+30} = \beta Exposed_{id,t+\tau} + \boldsymbol{X}_i'\gamma + \alpha_d + \delta_t + \eta_c + \varepsilon_{idc,t+30} \quad (1)$$

where $y_{idc,t+30}$ is the outcome variable for individual i at time t+30 who went to school in district d and currently lives in county c; t is the birth year; a shooting occurs at age τ, X_i are the pre-determined control variables for individual i such as race and gender of the respondent, the parental income of the respondent when growing up, educational achievements of respondents' mother and father, employment details of respondents' father, marital status of respondents' mother at birth and time since exposure to the shooting.[8] To partial out the effects of time-invariant variables, I use school district and birth year fixed effects, respectively, α_d, and δ_t in equation (1).[9] In some specifications, I control for the county of residence (at age 30) fixed effects, namely, η_c in equation (1). As the county of residence at age 30 can also be considered an outcome, or an endogenous control, I do not use it in my preferred specification but only as an additional robustness check to capture the effect of the current residential location of the individual. To account for correlation in the error term between observations, I cluster standard errors at the school district level. The parameter of interest is β which yields the estimated effect of exposure to a school shooting.

[8]In some analyses, I use outcome variables measured at different times (and not necessarily $t + 30$). If not otherwise specified, a variable is calculated for $t + 30$. Furthermore, school district boundaries (and ids) change over time. To account for it, I first create a block, tract, county, and state to districts crosswalks for each year and merge them with the PSID data. Then, to obtain one single ID for each district, I merge crosswalks from each year with the 2010 crosswalk.

[9]National Center for Education Statistics district identifiers for each district are from 2010. Finally, I do not include individual fixed effects because I do not observe the relevant outcome variables before exposure. Therefore, exposure never varies within an individual.

Figure 1. Jefferson County School District R-1 and Neighbors



The exposed district, Jefferson County School District R-1, is shown in black. Neighboring districts included in the analysis are shown in dark grey. The rest of the neighboring districts (shown in light grey) are omitted from the analysis since they later experienced a shooting themselves.

3.2 Exposure

I define an individual as *exposed* if they were at a relevant school-going age in a shooting district at the time of the shooting. For instance, consider the Columbine High School massacre (Jefferson County School District R-1, Colorado) in 1999 that resulted in 13 deaths and 24 injured. In this example, portrayed in Figure 1, an individual would be defined as *exposed* if they were between ages 14 and 18 and going to school at Jefferson County School District R-1 in Colorado in 1999. Then, *pre-exposed* is defined as an individual who is *too old to be exposed* at the time of the shooting in the shooting district.[10]

For control groups, I utilize data from the individuals of the same age as

[10]For instance, an individual would be defined as *pre-exposed* if they were 19 and older, and residing at Jefferson County School District R-1 (shown in Figure 1) at the time of the Columbine High School massacre.

exposed and pre-exposed in a district adjacent to the shooting district. From the neighboring districts, I omit the districts that had a shooting themselves at a different time.[11] Furthermore, I only include the neighbors within the same state to account for variation in firearm laws.[12] Figure 1 shows the neighboring districts of Jefferson County School District R-1 that are included in the analysis. The control groups are 14 to 18-year-old students and individuals who were 19 and older in the neighboring districts in 1999.

I define exposure based on living in a school district at the time of the shooting. Enrollment to a public school is based on residency. The enrollment rule says that a student should attend a school closest to their residential address within the school district. However, some states handle this rule flexibly, allowing students to change schools within their school district. Therefore, the school choice of some students within the district is not identifiable based on their residential address. However, inter-district student transfers are strictly controlled, only allowed in exceptional circumstances, and sometimes subject to tuition fees.[13] Naturally, the effects of school shootings will be the most severe for the students of exposed schools. However, the effects may extend beyond those directly exposed to shootings in the school district. Even low-level exposure, experienced by the students in schools other than the directly exposed school within the same school district, has been shown to result in substantial trauma after a shooting (Orcutt et al., 2014). Students in a school district

[11] Furthermore, I omit the neighboring districts that had shootings outside of school property and after school hours and weekends. Districts neighboring more than one shooting district are omitted from the control group.

[12] The largest variation in gun laws arises from state-level legislation (Siegel et al., 2017).

[13] As stated above, in some cases inter-district transfer of students are allowed, however, I use alternative specifications where I only include the districts that do not allow inter-district transfers and find similar results to the main results. Table A1 shows the estimation results with districts that do not allow transfers.

regularly interact via multi-school busing, extracurricular activities, and athletics competitions. The district-wide connection of students is likely to carry the trauma beyond the exposed school. It results in anticipation of victimization that spreads anxiety within the district student population (Cook, 2020).[14] Therefore, it would be conceivable that the effects of school shootings at the school district level are not substantially weaker than the effects of shootings at the school level. Thus, I consider exposure at the school district level to be comparable to exposure at the school level.[15]

3.3 Identifying Assumption

The necessary assumption to obtain causal effects of school shootings on students is that absent a shooting, the educational achievements, labor market, and other outcomes would have developed similarly between exposed and neighboring districts. Thus, nothing jointly determines exposure to the shooting and outcomes, conditional on fixed effects and controls.

[14]It is less likely that trauma extends beyond the school district borders since the interaction between the student population due to activities such as multi-school busing, extracurricular activities, and athletics competitions are mostly limited to the school district border.

[15]Table A2 shows the effect of exposure on hourly earnings interacted with the land area of the school district. All columns show an insignificant effect of the interaction on the outcome variable. This implies that bigger school districts do not experience a differential response suggesting that the school district is an adequate comparison. Furthermore, the magnitude of the results is not much different than that of Cabral et al. (2021) who study the effects of shootings at the school level. The event study plot Figure A8 shows the effect of school shootings on hourly earnings for the subsample of districts that have a different number of schools. The effect is statistically significant, negative, and comparable for the different subsample of districts. Finally, Table A3 presents coefficient estimates of the effect of shootings for the urban, suburban, and rural school districts. The effect for each subgroup is statistically significant and negative.

The estimation results would be biased if the occurrence of a shooting was correlated to a (potentially unobserved) variable that also influenced the outcome variables. Hypothetically, suppose a shooter deliberately chose to commit the act in a district because of deteriorating economic conditions. In that case, these poor economic conditions might also lead to lower wages for the district's residents in the future. To understand the potential differences between school districts, I compare the district characteristics of exposed and neighboring districts before the shooting. Table A4 presents the mean of school district characteristics for shooting, neighboring and all districts prior to shootings. Shooting and neighboring districts vary along some crucial dimensions, namely, shooting districts have a lower ratio of white residents, a higher number of individuals with poor parental income, and fewer individuals with college-educated fathers. They vary, however, among substantially fewer dimensions than the universe of all school districts. However, this is only a concern if the differences across districts cause a differential response in the outcome variable after the shooting. Nevertheless, I control for these observables.

To reduce remaining concerns arising from the differences in school district characteristics, I perform the following robustness checks. First, I exploit variation only from districts where shootings took place by comparing exposed with pre-exposed individuals. Using this sample, I find statistically significant and negative effects of school shootings on earnings of survivors that are similar in size to the main specification (see Table A17). Second, using a nearest-neighbor matching procedure, I match control school districts that are similar on the set of observable characteristics displayed in Table A4 to the shooting districts. For each shooting district, nearest neighbor matching algorithm identifies and selects the control districts based on the aforementioned school district level characteristics (measured prior to shootings). The first matching specification includes control districts that are selected from

the set of all school districts in the U.S. excluding the shooting districts. Table A7 presents the results of this estimation. The coefficients are negative and statistically significant, and the preferred specification in column (5) is higher in magnitude than column (5) of Table 1. The second matching specification includes control districts that are selected from the set of neighboring districts. Table A8 shows the results of this estimation. The coefficients are negative and statistically significant, and similar to that of Table 1.[16]

Finally, I show that the outcome variables followed similar trends in shooting and neighboring districts prior to shootings to ascertain that the estimates are not due to pre-treatment divergence in trends. As discussed in detail in Section 4.2, the event study plots indicate that the estimates are not due to pre-treatment divergence in trends. Further, I estimate the effects using alternative specifications to assess if the estimates are sensitive to different definitions of exposure and composition of districts. Extensive sets of sensitivity analyses confirm the robustness of the findings.

4 The Effect of School Shootings on the Exposed

4.1 Results

Results of estimating equation (1) are displayed in Table 1, with each column representing a separate regression with a different set of fixed effects and control variables. The main coefficient of interest β from equation (1), represents the percentage difference in hourly earnings of exposed individuals between non-exposed individuals

[16]Table A5 presents the mean of school district characteristics for shooting and control districts where the control districts are selected from the set of all districts using a nearest neighbor matching procedure. Table A6 presents the mean of school district characteristics for shooting and control districts where the control districts are selected from the set of neighboring districts using a nearest neighbor matching procedure.

compared to individuals in the same age group in the neighboring districts at age bracket 30.[17] Column (1) shows a significant negative effect of exposure to shootings on earnings of exposed individuals controlling for birth year and district fixed effects. Columns (2)-(5) gradually add sets of controls that I refer as individual controls, father controls, mother controls and time since exposure.[18] Finally, column (6) adds county of current residence fixed effects. The effect sizes in columns (1)-(6) are all of similar magnitude and statistically significant.

The more conservative and preferred specification in column (5) gives the model with the complete set of controls, and birth year and school district fixed effects. The results indicate that individuals exposed to a shooting when they were studying have 20.8% lower hourly earnings around age 30 compared to non-exposed individuals around the same age.[19] The magnitude of results is comparable to that of Cabral et al. (2021) who find that survivors' of shootings in Texas have 13.5% lower annual earnings at age 25. Furthermore, I examine heterogeneous effects of shootings by race, gender and parental income. Table A10 shows the results of this estimation. I find that black people are significantly more affected than white people. Also, school shootings have a significantly larger negative effect on students with well-off parents than students who had poor parents when growing up. Finally, the results show that both genders are affected by the shootings significantly and in similar magnitudes.

[17] The outcome variable is the hyperbolic sine transformation (IHS) of hourly earnings to account for the skewness of the earnings data.

[18] As one can see in Table 1 individual controls are parental income, gender and race; father controls are father employment and education; mother controls are mother education and the marital status of the mother at respondents' birth; time since exposure is the number of years passed since exposure.

[19] To alleviate the concerns that unemployed individuals entirely drive this effect, I estimate the effect again by omitting unemployed individuals. Table A9 presents the results. The subsample of employed individuals endures 9.5% lower earnings when they are exposed to a school shooting.

Table 1: Effects of School Shootings on Survivors' Earnings

	Dependent variable:					
	Hourly Earnings (IHS) at Age 30					
	(1)	(2)	(3)	(4)	(5)	(6)
Exposed	−0.239***	−0.227***	−0.220***	−0.224***	−0.208***	−0.210***
	(0.063)	(0.063)	(0.066)	(0.066)	(0.068)	(0.068)
Parent Income (Poor)		−0.134***	−0.094**	−0.080**	−0.085**	−0.078*
		(0.040)	(0.039)	(0.039)	(0.039)	(0.040)
Gender (Male)		0.026	0.017	0.011	0.005	0.014
		(0.034)	(0.033)	(0.032)	(0.033)	(0.034)
Race (White)		0.395***	0.332***	0.279***	0.255***	0.244***
		(0.055)	(0.055)	(0.054)	(0.053)	(0.054)
Father Employment (Unemployed)			−0.033	−0.030	−0.026	−0.061
			(0.072)	(0.073)	(0.075)	(0.080)
Father Education (College)			0.134*	0.090	0.092	0.096
			(0.076)	(0.075)	(0.076)	(0.078)
Mother Education (College)				0.221***	0.224***	0.195**
				(0.075)	(0.074)	(0.077)
Marital Status of Mother at Birth (Married)				0.373**	0.320**	0.389***
				(0.148)	(0.150)	(0.149)
Time Since Exposure					0.002	0.001
					(0.002)	(0.002)
School District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Current County Fixed Effects	No	No	No	No	No	Yes
Mean Hourly Earnings	11.906	11.906	11.906	11.906	11.906	11.906
Number of Treated Individuals	1,214	1,214	1,214	1,214	1,214	1,214
Number of Clusters	954	954	954	954	954	954
Observations	5,701	5,701	5,701	5,701	5,701	5,701

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variable is the inverse hyperbolic sine transformation of the hourly earnings of an individual at age 30. Exposed, the reported independent variable, defines an individual at a relevant school-going age in a shooting district at the time of the shooting. Included control variables are parental income, gender, race, father employment, father education, mother education, marital status of the mother at birth, and time since exposure. Birth year and school district fixed effects are included. The mean of Hourly Earnings shows the dependent variable's mean for the neighboring group before the shooting. Standard errors are clustered at school district level: *p<0.1; **p<0.05; ***p<0.01

Subsequently, I examine the effect of school shootings on survivors' life-long earnings. Table A11 further suggests that the hourly earnings of exposed individuals do not recover from the effect of shootings in the longer term. The effect of shootings on the hourly earnings of survivors remains negative until they are of age 50 (although the coefficient is not significant for every age group, likely due to a smaller number of observations). I calculate a $\$201,800$ reduction in the lifetime earnings per shooting-exposed individual.[20] Additionally, the hourly earnings of survivors do not grow to the same extent as the hourly earnings of non-exposed individuals. The difference between the percentage increase in hourly wages of exposed and non-exposed individuals can be seen in Figure A3. The figure shows that the percentage increase in hourly earnings of non-exposed individuals remains higher than that of exposed individuals during their life course.

In addition, exposure to shootings harms individuals' upward income mobility. Figure A4 presents the probabilities to reach the top half and remain at the bottom half of the U.S. income distribution. Exposed individuals are 38% less likely to reach the top 10% and almost 66% more likely to stay at the bottom 10% of the distribution (see also Table A12).[21]

Being exposed to shootings at school further affects individuals' career choices, health, and household outcomes. Table A13 displays the effects of school shootings on survivors' occupational decisions. Mainly, the table fails to detect significant differences between exposed and non-exposed individuals in terms of career choice. However, column (6) shows that survivors are 32.8% more likely to choose professions that do not require a college degree. Next, Table A14 presents the results of

[20] Using the effects for age groups presented in Table A11, I first calculate the average reduction in hourly earnings of an individual for each age group. Second, assuming a 40 hour work-week and a 50 week work-year, I reach the total reduction in lifetime earnings of a shooting-exposed individual.

[21] Table A12 displays the effect of shootings on income distribution with similar results.

the effect of shootings on health outcomes. Columns (1) and (2) show a positive yet insignificant change in survivors' mental health status and antidepressant consumption, and column (3) shows a detrimental yet insignificant change in survivors' overall health status. Although the results lack precision due to a low number of treated individuals, they point in the same direction as Rossin-Slater et al. (2020), who find that exposure to school shootings increases antidepressant use in exposed youth. Furthermore, columns (4) to (6) imply that the survivors are more likely to smoke and consume alcohol and have higher BMIs. All of these results confirm the findings of Deb and Gangaram (2021) that show an increase in the number of drinking days, risk of smoking daily, and deterioration of overall health status and mental health.

Lastly, Table A15 present the effects of shootings on household outcomes such as house value, ownership, family size, marital status, weeks of vacation taken in a year, and level of life satisfaction. The results indicate that survivors, on average, own houses worth less than the houses of non-exposed individuals, have larger families, are more likely to be married, and take less vacation.

4.2 Robustness Checks

The identifying assumption requires the outcomes to have evolved similarly in the absence of shootings between shooting and neighboring districts. To investigate this requirement, I estimate an event study where I regress hourly earnings on *exposed district* for a sub-sample of ages. As one can see from Figure 2, the difference in hourly earnings between exposed and non-exposed districts is not statistically significant for pre-shooting periods (shown on the right in light grey)[22] Furthermore, in addition to

[22]Although not statistically significant, the results show a negative effect for the age group 19-21. This might create concerns about grade-repeaters and their treatment status. To reduce these

being imprecise, the estimates are sometimes positive, sometimes negative for the pre-shooting period, thus not giving a clear tendency; however, they are always negative and significant for those of relevant age. This result indicates that the estimates are not due to pre-treatment divergence in trends.[23]

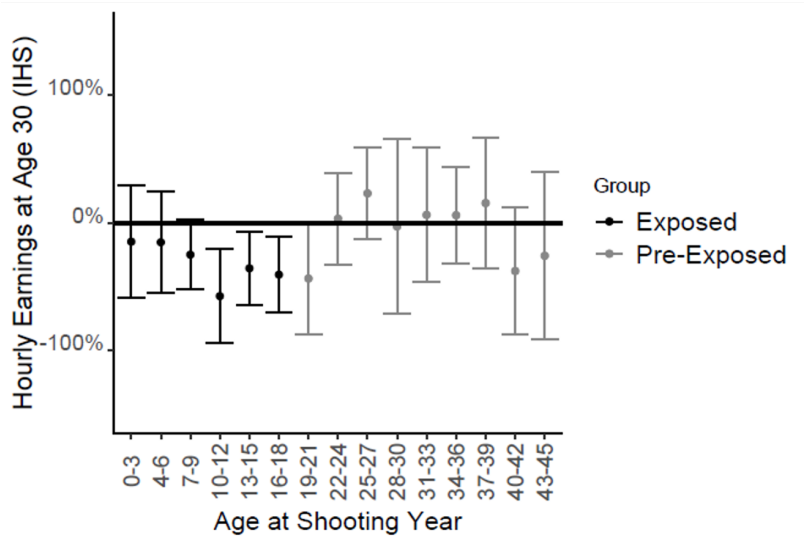
Further, I estimate the effects using alternative specifications to assess if the estimates are sensitive to different definitions of exposure and composition of districts. First, I estimate the results using only exposed and pre-exposed groups (omitting the neighboring districts) to investigate if the decrease in hourly earnings were due to a possible positive shock on earnings in neighboring districts. The results of this estimation can be seen in Table A17. The coefficients in columns (1) to (6) are significant and similar in magnitude to columns (1) to (6) of Table 1. Second, I compare exposed and neighboring districts only after the shooting period to understand if the decrease in hourly earnings resulted from a possible negative shock on earnings for the pre-exposed group in the shooting district. Table A18 displays the results of this estimation. The effect size in the preferred specification is similar to column (5) of Table 1.

Then, I limit the shootings to the ones that happened after school hours and weekends (see Table A19). If survivors' hourly earnings decrease due to being exposed to shootings, then one should expect little association between these shootings and the outcome. As one would expect, the effects are smaller and not significant. Lastly, to address selective migration, I change the definition of individuals who are included in the control group to *anyone that has ever lived in the neighboring district*. The results

concerns, I omit the age group 19-21 from the analysis. Table A16 present the results of this estimation. The coefficients in columns (1) to (6) are significant and similar in magnitude to columns (1) to (6) of Table 1.

[23]Figure A5 shows an event study plot analogous to Figure 2 but for years of completed education as the outcome variable confirming the inference of Figure 2.

Figure 2. The Effect of School Shootings on the Hourly Earnings of Different Age Groups



This figure shows the hourly earnings of individuals who are exposed to school shootings in different age bins. Each point reports the coefficients and confidence intervals from separate regressions following the estimation strategy shown in equation (1). The outcome variable is the inverse hyperbolic sine transformation of the hourly earnings of an individual at age 30. Exposed, shown in dark grey, represents the individuals in age groups that are at school-going age. Pre-exposed, shown in light grey, represents the individuals too old to be exposed at the time of the shooting. Included control variables are parental income, gender, race, father employment, father education, mother education, marital status of the mother at birth, and time since exposure. Birth year and school district fixed effects are included. Standard errors are clustered at the school district level.

are shown in Table A20. Once again, the estimates throughout all the columns are significant, albeit smaller in size than the main table. These results provide additional affirmation that the effect of shootings is not due to pre-trends or correlated shocks but that there is a direct effect of shootings on the exposed individuals.

Finally, one might be concerned that labor markets in exposed and neighboring districts would be subject to similar shocks. To alleviate this concern, I estimate the effects again by this time clustering the standard errors at the *district cluster* and state level.[24] Table A21 presents the estimates with standard errors clustered at the district cluster level. Similarly, Table A22 presents the estimates with standard errors clustered at the state level. For both of these tables, the presented coefficient estimates are statistically significant. Furthermore, I change the level of geographic fixed effect to control for the average differences across district clusters instead of districts in Table A23.[25] The preferred specification in column (5) shows a 24.6% decrease in the hourly earnings of exposed individuals at age 30 compared to non-exposed individuals around the same age. Lastly, in Figure A6, I report regression estimates where I leave states out of the sample one at a time to show that anyone particular state does not drive the results. Overall, placebo regressions, different sample definitions, removing single states from the sample, and alternative clustering techniques confirm the robustness of the findings.

[24] I define a *district cluster* as the exposed district and the cluster of neighboring districts around it. There are no overlapping district clusters as districts neighboring more than one shooting district are omitted from the control group.

[25] Table A24 shows the estimates with district cluster fixed effects and standard errors clustered at the district level.

4.3 Discussion

School shootings affect survivors in more than one aspect. Contemporaneous studies of Cabral et al. (2021), Deb and Gangaram (2021), and Levine and McKnight (2021) present evidence that shooting-exposed students show increased absence rates and likelihood of chronic absenteeism, worse test scores and lower likelihoods of graduation.[26] Rossin-Slater et al. (2020), Deb and Gangaram (2021), and Levine and McKnight (2021) show that shootings have detrimental effects on survivors' physical and mental health outcomes. As discussed in section 4.1, the results of the effect of shootings on several health outcomes examined in this paper obtain evidence confirming the findings of the aforementioned studies.

Furthermore, complementary work by Cabral et al. (2021) examines the effects of school shootings on survivors' earnings. They find a 13.5% decrease in survivors' annual wages at age 25. There are some differences between this study and Cabral et al. (2021) in terms of level of treatment, duration and age at which the outcome variables are measured. Cabral et al. (2021) examines the effects of school shootings on earnings at age 25 at the school level. Column (1) of Table A11 gives a more comparable estimate to Cabral et al. (2021) presenting the estimates of the effect of shootings on earnings at age 25. It shows that school shootings lower the hourly earnings of 25-year-olds by 11.2% percent. As one would expect, this is a more conservative estimate than Cabral et al. (2021) where the level of treatment is the exposed school.

Following Levine and McKnight (2020), I group shootings into four mutually exclusive categories: suicides, personally-targeted, crime-related, and other.[27] For

[26] In section 5.1, I confirm their results by showing that exposed students are 7% less likely to graduate from high school and 20% less likely to obtain college degrees.

[27] CHDS provides more detailed classifications in their data. Using those classifications, I group escalation of the dispute, anger over grade/suspension/discipline, bullying, domestic disputes with

each shooting category, Table A25 presents the effect on hourly earnings at age 30. While all of the coefficients are negative, the ones for personally-targeted and crime-related shootings are significant. The effect of crime-related shootings is the largest in magnitude, followed by personally-targeted shootings. The results confirm those of Levine and McKnight (2020) and Cabral et al. (2021).

The effects of school shootings may differ in itself hinging on the size of trauma they create. One might expect a stronger effect if there were more casualties. Levine and McKnight (2021) and Deb and Gangaram (2021) both look at the effect of more than one death in their analysis. Therefore, I investigate the effect of heterogeneity in casualties in Table A26. The effect is negative and significant for both shootings with zero and a positive number of deaths. However, the effect size is larger for those shootings that did not result in any deaths. Although this may initially seem counter-intuitive, the reason could be explained by school district spending (discussed further in Section 5.4). The school districts with fatalities spend more on students' education and support mitigating the detrimental effects of school shootings on survivors.[28]

a targeted victim, and murder to form *personally-targeted shootings*; gang-related, hostage stand-offs, illegal drug-related, and robberies to form *crime-related shootings*; and mental health-related, intentional property damage, officer-involved shooting, racial, self-defense, accidental, and unknown to form *other shootings*. *Suicides* are a group of its own.

[28]Levine and McKnight (2021), and Yang and Gopalan (2021) document an increase in per-pupil school district spending after a shooting. Table A33 shows the results of an event study conducted to investigate the effect of school shootings on different components of school district spending. I observe an increase in all categories following a shooting, although the coefficients are not significant. Figure A7 display that the spending increases for shootings with a higher number of deaths. I will discuss the effects of school shootings on school district finances further in section 5.4.

5 Mechanisms

Having established the effects of school shootings on several individual outcomes within exposed districts, I advance to discover the mechanisms that could drive these results. One potential mechanism is education. The positive effect of education on future earnings is well established. Therefore, if school shootings affect the survivors' education, one can expect that education mechanism can explain a part of the lower earnings. Consequently, the direct consequences of education, namely, labor market participation, can be considered a mechanism.

Furthermore, school shootings might affect school district spending. Jackson et al. (2016) document that a 10% increase in per-pupil spending each year for all years of K-12 education leads to about 7% higher wages in adulthood. Hence, if the school shootings directly affect school district spending, then spending could also be a potential mechanism. Finally, grounding on the novel neighborhood effects literature, I suspect geographic mobility to be a mechanism. Chyn and Katz (2021) find that childhood neighborhoods affect long-run labor market outcomes for adults. Consequently, not having to move out of the exposed district might influence the earnings in adulthood.

5.1 Education

I start by investigating the relationship between school shootings and educational outcomes. Results of estimating equation (1) the academic achievements are shown in Table 2, with each column representing separate dependent variables of different educational achievements. All of the estimates are negative and significant, implying a strong adverse effect of school shootings on education outcomes.

As presented in column (1), a survivor gets, on average, about four months less

education. A reason for the shortened education duration might be the increase in students' absence rate following a shooting. Cabral et al. (2021) show that shooting-exposed students have an increased absence rate and are more likely to be chronically absent. They also observe an increase in the likelihood of grade repetition for exposed students. Altogether, this might lead to a decrease in high school completion. Columns (2) and (3) show that survivors are 7% less likely to graduate from high school and 20% less likely to obtain college degrees, respectively. Degree completion does have a direct effect through years of completed education and an indirect effect through labor market participation on earnings.[29]

The findings can be benchmarked to Psacharopoulos and Patrinos (2018), who find the average global return to a year of schooling to be 9% a year. I conduct a back-of-the-envelope calculation based on the estimates of Table 1. I find that the decrease in the years of schooling due to school shootings explains approximately 12.4% of the decrease in hourly earnings. Next, benchmarking on the Annual Social and Economic Supplements report by the Census Bureau, I calculate that approximately a quarter of the lower earnings is explained by not getting a college degree due to school shootings.[30]

Having shown that school shootings affect student educational outcomes, I explore heterogeneity in these estimates across students' race, gender, and parental income. First, Table A27 presents the heterogeneous effects on years of schooling

[29]National Center of Education Statistics states that higher educational attainment is associated with higher median earnings for 25- to 34-year-olds who worked full time. For example, in 2019, the median earnings of those with a master's or higher degree ($70,000) were 26% higher than those with a bachelor's degree ($55,700). The median earnings of those with a bachelor's degree were 59% higher than the earnings of those who completed high school ($35,000).

[30]U.S. Department of Commerce, Census Bureau, Current Population Survey (CPS), Annual Social and Economic Supplement, 2011 through 2020; and previously unpublished tabulations. See Digest of Education Statistics 2020. https://nces.ed.gov/programs/coe/indicator/cba

Table 2: Effects of School Shootings on Survivors' Educational Achievements

	Dependent variable:		
	Years of Schooling	High School Degree	College Degree
	(1)	(2)	(3)
Exposed	-0.386^{**}	-0.061^{***}	-0.042^{**}
	(0.163)	(0.014)	(0.020)
School District Fixed Effects	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes
Control Variables	Yes	Yes	Yes
Mean Dependent Variable	12.784	0.840	0.206
Number of Treated Individuals	1,214	1,214	1,214
Number of Clusters	954	954	954
Observations	5,701	5,701	5,701

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variables are years of completed education, high school degree, and college degree. Exposed, the reported independent variable, defines an individual who was at a relevant school going age in a shooting district at the time of the shooting. Included control variables are parental income, gender, race, father employment, father education, mother education, marital status of mother at birth and time since exposure. Birth year and school district fixed effects are included. The mean of dependent variable shows the dependent variables' mean for the neighboring group before the shooting. Standard errors are clustered at school district level: *p<0.1; **p<0.05; ***p<0.01

completed across the aforementioned categories. Exposed individuals seem to suffer from decreased years of schooling across all sub-groups except for race. Second, Table A28 display the results for high school degree. It is noteworthy that the coefficients are all negative and statistically significant. Finally, Table A29 shows the heterogeneity analysis for having a college degree. For females, the effect of shootings on a college degree is the most severe. Psacharopoulos and Patrinos (2018) argue that education for women should be a priority as private returns to education for women exceed returns to schooling for men by 2%. Again, benchmarking on this study, back-of-the-envelope calculations show that the decrease in the years of schooling due to school shootings explains 15.3% percent of the decrease in hourly earnings for women.

5.2 Labor Market Participation

One can argue that labor market outcomes are a direct consequence of education levels. Well-educated workers usually have higher wages and wage growth and lower unemployment rates than workers with lower levels of educational achievements.[31] The previous section showed that school shootings have a significant impact on the educational attainment of survivors; therefore, in this section, I investigate their

[31] Workers with higher levels of education have much better labor market outcomes than workers with lower education levels. National Center for Education Statistics documents that in 2020, 43 percent of high school dropouts aged 25 to 34 were unemployed compared with unemployment rates of 31 percent for high school diploma graduates and 14 percent for workers with a bachelor's degree or higher. Earnings of employees also differ according to education levels. High school graduates earn 20 percent more than high school dropouts; college graduates earn 60 percent more than only high school degree holders. The earning gaps increase with time since wage growth is also positively correlated with educational attainment. Among 45 to 49-year-old employees, high school graduates earn 27 percent more than dropouts, and college graduates earn 95 percent more than high school graduates. https://nces.ed.gov/programs/coe/indicator/cbc

effects on several labor market outcomes.

Results of estimating equation (1) for labor market outcomes are presented in Table 3, with each column representing separate dependent variables of different labor market outcomes. Column (1) shows that exposed individuals work on average 5% fewer hours in a year than their counterparts. Furthermore, from column (2), one can see that survivors are 32.8% more likely to be unemployed at age 30. Coefficients in columns (3) and (4), although not significant at conventional levels, point in the direction that exposed individuals are less likely to be self-employed, and they earn half as much as non-exposed individuals from businesses.

School shootings might impact labor market outcomes besides their direct effect on educational attainment, possibly through a trauma mechanism. It was previously shown that trauma caused by a violent event brings higher levels of risk aversion in victims and affects risk-taking behavior in economic contexts. (Callen et al. (2014), Moya (2018)). The results found in columns (3) and (4) of Table 3 suggest that this might also be true for the case of school shootings. Self-employment has been found to be associated with higher levels of risk-taking, implying that a lack of it could be related to risk aversion in shooting-exposed individuals.[32] Although the results are statistically insignificant, Table 3 suggests that the share of self-employed individuals decreases with exposure to shootings indicating that the amount of business income earned from self-employment also decreases.

5.3 Mobility

Recent work have shown that place of residence matters (Chetty et al. (2016), Nakamura et al. (2016), Chyn (2018), Chyn and Katz (2021)). Chetty et al. (2016) find

[32] Wang et al. (2010), and Nieß and Biemann (2014) both find that high levels of risk-taking positively predicts the decision to become self-employed.

Table 3: Effects of School Shootings on Survivors' Labor Force Participation

	Dependent variable:			
	Hours Worked	Unemployed	Self-Employed	Business Income
	(1)	(2)	(3)	(4)
Exposed	−81.461*	0.047**	−0.024	−308.29
	(46.282)	(0.018)	(0.015)	(241.67)
School District Fixed Effects	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes
Control Variables	Yes	Yes	Yes	Yes
Mean of Dependent Variable	1,836	0.155	0.081	499.934
Number of Treated Individuals	1,214	1,214	1,214	1,214
Number of Clusters	954	954	954	954
Observations	4,649	5,139	5,701	5,701

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variables are hours worked, unemployment, self-employed, and business income. Exposed, the reported independent variable defines an individual at a relevant school-going age in a shooting district at the time of the shooting. Included control variables are parental income, gender, race, father employment, father education, mother education, marital status of the mother at birth, and time since exposure. Birth year and school district fixed effects are included. The mean of dependent variable shows the dependent variables' mean for the neighboring group before the shooting. Standard errors are clustered at school district level: *p<0.1; **p<0.05; ***p<0.01

substantial positive effects of *Moving to Opportunity* on adult earnings and the likelihood of attending college for children. Furthermore, studying the demolitions in Chicago that led residents to relocate to lower-poverty neighborhoods, Chyn (2018) show that future labor market and criminal outcomes for displaced children have significantly improved. Finally, Chyn and Katz (2021) find that childhood neighborhoods affect long-run labor market outcomes for adults. Based on the findings of this literature, any negative effects of school shootings on geographic mobility would conceivably mediate the lower earnings of shooting survivors.

I investigate the effects of school shootings on geographic mobility. Table 4 shows the probability for an exposed individual of moving away from the exposed geographic location following a shooting. Columns (1), (3), and (5) show the probabilities of moving to a district, county, and state, respectively, that has a higher median household income than the current residential location for the survivor. Columns (2), (4), (6) show the probabilities of moving to a district, county, and state that is in the top 25% in terms of household income, where these locations are ordered by their median household income. The coefficient is negative throughout the columns and significant for column (2) and columns (4)-(6). There is some evidence (although not statistically significant) that survivors do not move into higher-income areas, but this is particularly the case (and statistically significant) for the wealthy areas.[33]

[33]Table A30 shows the probability of an individual moving away from the shooting-exposed district to any other district (and not necessarily to a better neighborhood). The table fails to detect any significant differences in the probabilities of relocating between survivors and non-exposed individuals. Table A31 shows the probability of an individual moving to a college district after high school. A college district is defined as a school district with a college (two or more year institutions) or university (four year institutions) within its boundaries. The preferred specification in column (5) finds a negative yet statistically insignificant effect in the probability of moving to a college district. Table A32 shows the probability of an individual moving to an university district after high school. A university district is defined as a school district with a university (four year institutions) within

It is helpful to understand how does lack of geographic mobility reflects on earnings. Recent literature show that young individuals disproportionately benefit from moving to better neighborhoods (Chetty et al. (2016), Chetty and Hendren (2018), Chyn (2018), Chyn and Katz (2021) and Nakamura et al. (2016)). Considering school shootings affect young people, one would expect them to benefit the most from moving. However, the results show that they are less likely to move relative to unexposed individuals. The findings can be benchmarked to Chyn (2018), who finds that individuals who are displaced (to better neighborhoods) due to the demolition of houses in Chicago earn 16% more annually. Back-of-the-envelope calculations show that a decrease in mobility caused by school shootings explains a 10% decrease in lower earnings of survivors.

As discussed in Section 4.1, column (6) of Table 1 includes the county of residence (at age 30) fixed effects to capture the effect of the current residential location of the individual. However, one can see from Table 1 that it does not meaningfully change the magnitude of the effect, meaning that there is considerable scope for other factors. One of the factors that may contribute to the lack of geographic mobility of survivors is reported in Table A15. The results show that survivors have, on average, larger families, are more likely to be married and bear children at a younger age than unexposed individuals.

5.4 School District Spending

Current research of Yang and Gopalan (2021) and Levine and McKnight (2021) show that school districts react to shootings by increasing per-pupil spending following a

its boundaries. The preferred specification in column (5) finds a statistically significant negative effect in the probability of moving to a university district. More specifically, a shooting exposed individual is 6% less likely to move to a university district after high school.

Table 4: Effects of School Shootings on Survivors' Geographic Mobility

	Dependent variable:					
	Probability to Move					
	Higher Median HH Income District	Top 25% Median HH Income District	Higher Median HH Income County	Top 25% Median HH Income County	Higher Median HH Income State	Top 25% Median HH Income State
	(1)	(2)	(3)	(4)	(5)	(6)
Exposed	−0.031	−0.043**	−0.015	−0.030*	−0.029*	−0.016
	(0.029)	(0.019)	(0.026)	(0.019)	(0.017)	(0.012)
School District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Mean of Dependent Variable	0.238	0.047	0.198	0.037	0.112	0.036
Number of Treated Individuals	1,214	1,214	1,214	1,214	1,214	1,214
Number of Clusters	954	954	954	954	954	954
Observations	5,701	5,701	5,701	5,701	5,701	5,701

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variables are higher median household income district, top 10 percent median household income district, higher median household income county, top 10 percent median household income county, higher median household income state, and top 10 percent median household income state. Exposed, the reported independent variable defines an individual at a relevant school-going age in a shooting district at the time of the shooting. Included control variables are parental income, gender, race, father employment, father education, mother education, marital status of the mother at birth, and time since exposure. Birth year and school district fixed effects are included. The mean of dependent variable shows the dependent variables' mean for the neighboring group before the shooting. Standard errors are clustered at school district level: *p<0.1; **p<0.05; ***p<0.01

shooting. Although Levine and McKnight (2021) do not find a statistically significant impact of school shootings on overall school district spending, they document a positive effect on spending on student support services. On the other hand, Yang and Gopalan (2021) find that shootings increase per-pupil spending by $250, and most spending increases occur in support services and capital projects. It is natural to assume that public school spending will affect student outcomes. In fact, Jackson et al. (2016) show that an increase in per-pupil education spending leads to higher completed years of education, higher wages, and a reduction in the likelihood of adult poverty. More specifically, they find that a 10% increase in per-pupil education spending each year for all 12 years of public school leads to around 7% higher wages in adulthood. Therefore, if per-pupil spending increases following a shooting, this finding could be considered a potentially alleviating mechanism on the effects of school shootings on earnings.

I first start with estimating the effect of school shootings on different components of school district per-pupil spending, such as total spending, spending on elementary and secondary education, instruction spending, spending on support services, total salaries and salaries of instruction staff. I follow an estimation strategy that is analogous to that shown in equation (1) but focusing on an interaction between *Exposed*, defined at district-year level, and an indicator for post-period while controlling for year and district fixed effects. To be able to interpret the coefficients as percentage changes in per-pupil spending, I use the inverse hyperbolic sine transformation for the spending components.

Table A33 displays the results of this estimation. The table fails to detect significant differences across all per-pupil spending categories except for total per-pupil spending. Similar to Yang and Gopalan (2021), I find that total per-pupil spending increases by $232 following a shooting.[34] Although statistically insignificant,

[34]Table A34 shows the effect of school shootings on several school district revenue elements,

I find an increase in per-pupil school spending on education. Therefore, following Jackson et al. (2016), school district spending on education appears not to explain the lower earnings of survivors. However, had the coefficient of per-pupil spending on education been statistically significant, one would expect that the reduction of hourly earnings to be dampened. In this case, the true effect of shootings on earnings would have been larger considering the alleviating effect of increased per-pupil school spending on education.

6 The Effect of School Shootings on the Children of the Exposed

6.1 Main Results

Having found that school shootings significantly affect surviving individuals, I examine whether they have subsequent effects on survivors' children. The estimation strategy is analogous to that of equation (1) but includes additional parent birth year and parent high school district fixed effects, and *Exposed* is now defined as *having an exposed parent*. Furthermore, parental income, father and mother controls are replaced with grandparent income, grandfather and grandmother controls to avoid endogeneity. If the child has two exposed parents, then I use controls from the father's side of the family.

Table 5 displays the estimation results for the hourly earnings, years of completed education, probability of getting college and high school degrees for the chil-

namely, total revenue, federal revenue, state revenue, and local revenue. Again, to interpret the coefficients as percentage changes in per-pupil revenue, I measure the revenue components as inverse hyperbolic sine transformation. Confirming Yang and Gopalan (2021), I also find a statistically significant increase in federal revenues of the school district after a shooting incident.

Table 5: Effects of School Shootings on Survivors' Children Earnings and Educational Achievements

	Dependent variable:					
Panel A	Hourly Earnings (IHS)			Years of Schooling		
	(1)	(2)	(3)	(4)	(5)	(6)
Exposed Parent	-0.374^{***}	-0.161^{***}	-0.188^{**}	-1.729^{***}	-1.234^{***}	-0.581^{***}
	(0.001)	(0.005)	(0.088)	(0.003)	(0.015)	(0.112)
Mean of Dependent Variable	26.905	26.905	26.905	12.773	12.773	12.773
Number of Treated Individuals	45	45	45	45	45	45
Clusters	127	127	127	127	127	127
Observations	1,951	1,951	1,951	1,951	1,951	1,951
Panel B	College Degree			High School Degree		
	(7)	(8)	(9)	(10)	(11)	(12)
Exposed Parent	-0.018^{***}	-0.016^{***}	-0.011	-0.219^{***}	-0.208^{***}	-0.180^{***}
	(0.001)	(0.002)	(0.008)	(0.003)	(0.003)	(0.034)
Mean of Dependent Variable	0.256	0.256	0.256	0.848	0.848	0.848
Number of Treated Individuals	45	45	45	45	45	45
Number of Clusters	127	127	127	127	127	127
Observations	1,951	1,951	1,951	1,951	1,951	1,951
Parent School District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Parent Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Control Variables	No	Yes	Yes	No	Yes	Yes
School District Fixed Effects	No	No	Yes	No	No	Yes
Birth Year Fixed Effects	No	No	Yes	No	No	Yes

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variables are inverse hyperbolic sine transformation of hourly earnings at age 30, years of completed education, college degree, and high school degree. Exposed parent, the reported independent variable, defines an individual who has shooting-exposed parents. Included control variables are grandparent income, gender, race, grandfather employment, grandfather education, grandmother education, marital status of grandmother at birth, and time since parent's exposure. Parent birth year, parent school district, birth year, and school district fixed effects are included. The mean of dependent variable shows the dependent variables' mean for the neighboring group before the shooting. Standard errors are clustered at parent school district level: $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

dren of the exposed individuals. Each column represents a separate regression with different sets of control variables and fixed effects for the aforementioned outcome variables.[35] The main coefficient of interest represents the percentage difference in hourly earnings of children of exposed individuals compared to the children of non-exposed individuals at age bracket 30. Column (1) shows a statistically significant negative effect of having an exposed parent on earnings of children with shooting-exposed parents controlling for parent birth year and parent school district fixed effects. Column (2) adds several sets of controls: individual controls, grandfather controls, grandmother controls, and time since exposure. Finally, column (3) adds school district and birth year fixed effects. Column (3) shows that having an exposed parent leads to a decrease of 18.8% in children's future earnings. Recall that the comparable specification in column (5) of Table 1 report a 20.8% decrease in the hourly earnings of initially exposed individuals. This implies very little intergenerational decay on the effects of school shootings.

Similar to the initially exposed, having a shooting-exposed parent also affects children's future income mobility. Table A37 presents the estimation results. The results indicate that children with exposed parents are significantly less likely to experience upward income mobility. Children with shooting-exposed parents are 20% less likely to reach the top 10% and 170% more likely to fall in the bottom 10% of the U.S. income distribution. This suggests that the exposure of one's parents to school shootings has a sizeable effect on how high one is likely to rise or how low one may fall in the income distribution.

[35]Detailed description of how these variables are created can be found in Appendix C.

6.2 Mechanisms

Section 6.1 provided evidence that school shootings affect not only the exposed first generation but also the following generation. To understand the mechanisms behind the persistence of the effect, I further examine the effect of school shootings on children's educational attainment and geographic mobility.

The remaining columns on Table 5 display several variables on educational attainment. Columns (4) to (6), (7) to (9), and (10) to (12) present the results of years of completed education, college degree, and high school degree, respectively. For years of completed education, the preferred specification, which controls for all sets of observables and fixed effects, is shown in column (6). It shows that having an exposed parent leads to a six months decrease in years of completed education. In other words, children of exposed parents have about six months less education than children of not exposed parents in the same sample. In contrast, shooting-exposed parents have seen a four months decrease in years of completed education due to shootings. One possible explanation for why the effect size is bigger for children can be that some parents are exposed to shootings after they have already completed a lot of education, whereas, children are affected by their shooting-exposed parents for their whole education.

Furthermore, the preferred specification for the outcome variable college degree in column (9) shows a statistically insignificant but negative effect on the likelihood of exposed children to earn a college degree. Finally, the preferred specification for the outcome variable high school degree in column (12) finds that children with shooting-exposed parents are 20% less likely to graduate from high school. On the other hand, Table 2 shows that initially exposed individuals are 7% less likely to graduate from high school and 20% less likely to obtain college degrees, respectively. The effect size for children is similar to that of parents in all of the estimated specifi-

cations. This is striking as the effect seems to be enduring across generations rather than decay. Benchmarking the findings to Psacharopoulos and Patrinos (2018), I find that the decrease in the years of schooling due to having shooting-exposed parents explains about a fifth of the decline in adult hourly earnings of children.

Another mechanism that can explain the lower earnings of children might be parental education. Researchers have long debated the causal effects of parental income and education on educational attainment. They find a significant positive impact of parent education on children's educational attainment (Carneiro et al. (2004), Oreopoulos et al. (2006) and Björklund et al. (2006)). Combined with the effects of shootings on children's education, these findings suggest that parent education affects children's future income through children's educational attainment. Therefore, parent educational attainment lessened due to school shootings can possibly explain lower adult earnings of children.

Next, I investigate the effect of school shootings on children's geographic mobility. Table 6 shows the results of this estimation. The outcome variables are the probabilities of children with exposed parents to reside in neighborhoods with higher median incomes than the initially exposed geographic locations. Column (1) shows that children of exposed parents are 44.7% less likely to move to school districts with wealthier residents. Similarly, column (2) presents a 15% decrease in the likelihood of children with exposed parents moving to counties with higher median incomes. The probability of moving to a higher median state, shown in column (3), has the same sign as the previous outcome variables but is statistically insignificant due to limited mobility between states. Overall, the results demonstrate that children with shooting-exposed parents are less likely to move to a better neighborhood.

Recent research have shown that there are significant neighborhood exposure effects on intergenerational mobility (Chetty and Hendren (2018), Chetty and

Hendren (2018), Chetty et al. (2018), Deutscher (2020) and Laliberté (2021)).[36] Furthermore, both Chetty et al. (2018), and Chyn (2018) have found substantial positive effects of better neighborhoods on adult earnings for younger children than teenagers. Thus, increased childhood exposure to better neighborhood environments generates beneficial impacts on long-run economic outcomes. Therefore, lack of geographic mobility can even be a greater driver of lower earnings of children with exposed parents. In light of the intergenerational mobility literature, I benchmark the results on Chetty and Hendren (2018). I find that mobility explains about 20% the decrease in the adult hourly earnings of children with shooting-exposed parents.[37]

Thus far, the results have indicated that the same underlying mechanisms as the first part of the analysis, namely, education and geographic mobility, can partly explain the effects on the second generation. Another possible explanation for lower earnings can be the trauma passed to the second generation from their shooting-exposed parents.[38] Childhood trauma and mental disorders are associated with reduced income in adulthood. The association is reported to be due to increased unemployment and decreased earnings among the employed (Kawakami et al., 2012). Childhood trauma may impact adult earnings through two channels; adult mental health and educational attainment. School absences may be a mechanism for mental health to affect education, which is affected positively due to school shootings. However, educational attainment is not the only mechanism that leads to future income. Adults who had childhood trauma may be less able to work hard as adults (Smith, 2004).

[36] Chetty and Hendren (2018) and Chetty et al. (2018) have also shown that there are large exposure effects for college attendance, marriage outcomes, teenage birth rates, and incarceration.

[37] Chyn and Katz (2021) provide an excellent discussion on the mechanisms that might mediate the impacts of childhood neighborhoods on long-run outcomes.

[38] The intergenerational effects of trauma have been reported in the literature, especially regarding war experiences such as the Holocaust (Danieli (1998) and Lev-Wiesel (2007)).

Table 6: Effects of School Shootings on Second Generation Geographic Mobility

	Dependent variable:		
	Probability to Move		
	Higher Median HH Income District	Higher Median HH Income County	Higher Median HH Income State
	(1)	(2)	(3)
Exposed	-0.089^{***}	-0.025^{**}	-0.021
	(0.010)	(0.011)	(0.020)
School District Fixed Effects	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes
Control Variables	Yes	Yes	Yes
Mean of Dependent Variable	0.199	0.165	0.083
Number of Treated Individuals	45	45	45
Number of Clusters	127	127	127
Observations	1,951	1,951	1,951

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variables are higher median household income district, higher median household income county, and higher median household income state. Exposed parent, the reported independent variable, defines an individual who has shooting-exposed parents. Included control variables are grandparent income, gender, race, grandfather employment, grandfather education, grandmother education, marital status of grandmother at birth, and time since parent's exposure. Fixed effects are included: parent birth year, parent school district, and birth year and school district. The mean of dependent variable shows the dependent variables' mean for the neighboring group before the shooting. Standard errors are clustered at parent school district level: *p<0.1; **p<0.05; ***p<0.01

6.3 Children Development Outcomes

Having an exposed parent affects more than children's earnings and educational attainment, and it does so even before they reach adult ages. According to Table A35, children with exposed parents perceive themselves to have lower math ability compared to their classmates; that is, they believe that they perform worse in mathematical tasks.[39] Moreover, they assign a lower self-value to themselves than their unexposed counterparts.[40] Trzesniewski et al. (2006) report that low self-value, or self-esteem, during childhood predicts negative real-world consequences during adulthood. The authors show that children with low self-esteem experience worse economic prospects than children with high self-esteem in adulthood. More specifically, they find that children with low self-esteem are 12.3% more likely to experience long-term unemployment and 15% percent less likely to get higher education. This finding might be a helpful interpretation of the persistence of the effect on the second generation.

Table A36 displays the results of the effects of having a shooting-exposed parent on children's future plans. The results indicate that these children have lower aspirations and expectations at school, and they talk about the future less than children of not exposed parents. Similar to self-esteem, childhood aspirations are a major driving force in the career development of young individuals. Studies suggest that childhood aspirations are linked to adult earnings; that is, children with higher aspirations earn more in adulthood than children with low aspirations (Schoon and

[39]The data for tables Table A36 and Table A35 are obtained from PSID Child Development Supplement. The variables school aspirations and school expectations are available for the years 2002, 2007 and 2014. The variables talk with mother, talk with father and talk with friends are available for the years 2002 and 2007. The variables math ability, reading ability and global self-concept are available for the years 1997, 2002, 2007 and 2014. These variables are not available for the initially treated.

[40]Self-value can be defined as a person's overall subjective sense of personal worth or value.

Parsons (2002), and Ashby and Schoon (2010)). Again, this finding is helpful when interpreting the results for children with exposed parents. Lower child aspirations are another factor that contributes to the lower earnings of children in adulthood. It might be another explanation for why the effect seems to endure rather than decay across generations.

7 Conclusion

In the light of the persistently growing rate of school shootings in the United States, understanding the short and long-term causal effects of shootings on students' outcomes is imperative for mitigating against the harms on survivors and society.

This paper presents empirical evidence that school shootings have long-term and intergenerational effects on educational attainment, earnings, and geographic mobility using comprehensive longitudinal data from the Panel Study of Income Dynamics. I study the effects of shootings that occurred during school hours and on school grounds at American public schools between 1970 and 2009, exploiting the variation in these shootings' geographic and temporal distribution.

The results demonstrate that shooting-exposed students face reductions in their human capital accumulation and detrimental effects on their labor market outcomes. More specifically, being exposed to shootings during early education harms future earnings; the survivors have 20.8% lower hourly earnings at age 30. Notably, the analyses further paint a foreboding picture for the survivors. The findings indicate that the lower hourly earnings persist over the survivors' life course, and they never catch up with non-exposed individuals. Furthermore, the results show that individuals who are exposed to a shooting during their K-12 education have impaired educational attainment; they are 7% less likely to graduate from high school and 20% less likely to earn a college degree.

Similarly, the labor market participation of survivors is adversely affected. Survivors work on average 5% fewer hours (conditional on employment) and are 30% more likely to be unemployed at age 30. Further debilitating to the economic prospects of survivors, exposure to the shootings harm mobility. The results indicate that survivors were considerably less likely to move out of the shooting-exposed locations, which undoubtedly limits their future economic potentials.

Finally, and perhaps most strikingly, the effect of school shootings persist even beyond the initially treated and have harmful effects on the second generation. The results indicate that school shootings trigger persistence in educational outcomes and lack of geographic mobility. Children with shooting-exposed parents have poorer educational attainment, adult earnings, and mobility. These children, on average, receive six months less education than children of parents that were not exposed. They are also 10% less likely to graduate from high school. In addition, I find that children with shooting-exposed parents are less likely to move to a better neighborhood, hindering their future economic opportunities.

Overall, this paper underscores the extent and the pervasiveness of the damage school shootings inflict on the lives of survivors. These long-term findings suggest that current interventions to counteract the effect of school shootings are not sufficient. Future research avenues regarding this area can include investigations into means that can help the students affected by gun violence at their schools overcome their trauma associated with school shootings or increase geographic mobility for the survivors and their families.

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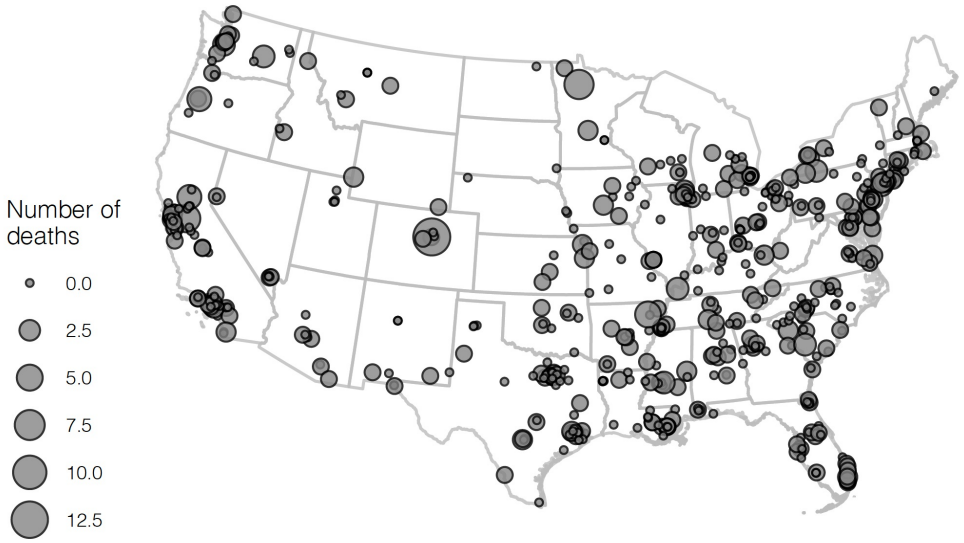
A Appendix

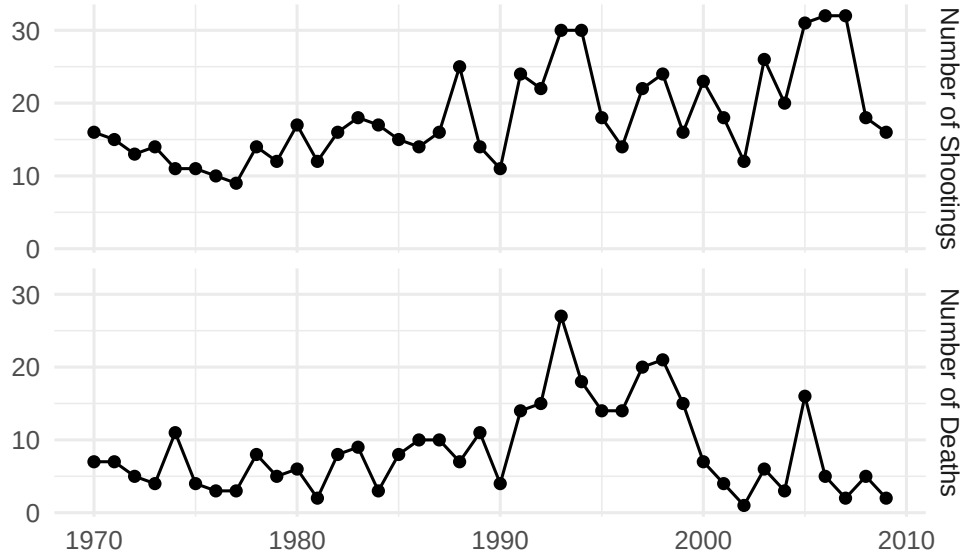
A.1 Appendix Figures and Tables

Figure A1. School Shootings in the United States 1970-2009



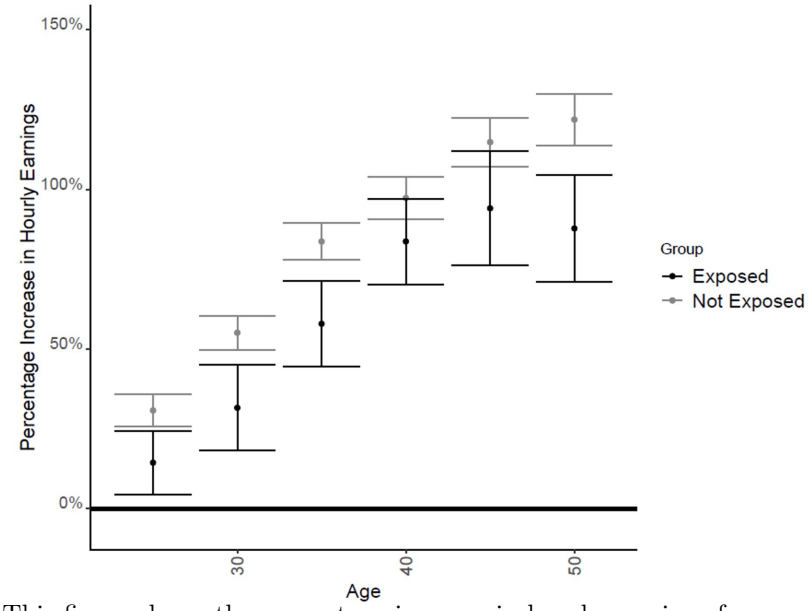
Note: This figure shows a map of the locations of the 635 shootings that occurred on a weekday, during school hours, and on school grounds at United States public schools between the years 1970 and 2009. The data on school shootings are compiled from the Center for Homeland Defense and Security (CHDS) K-12 school shooting database.

Figure A2. School Shootings in the United States 1970-2009



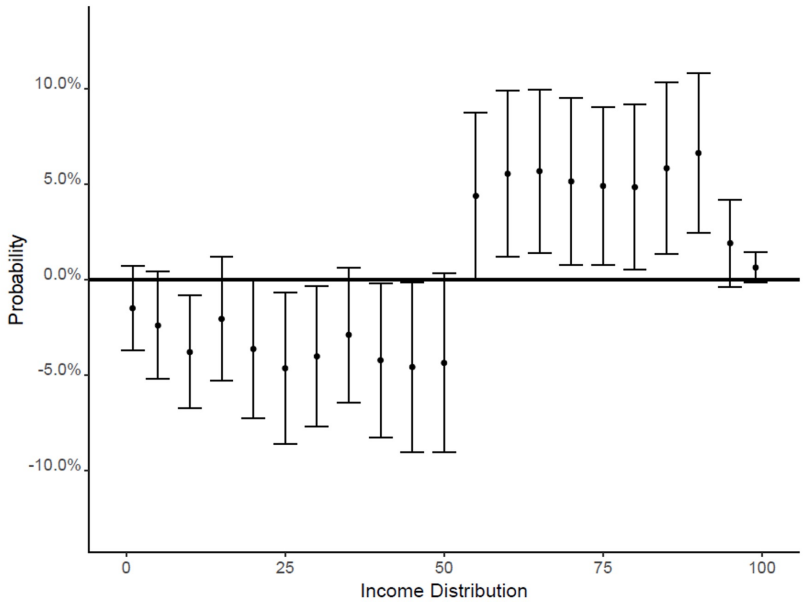
Note: This figure is a time series of the 635 shootings that occurred on a weekday, during school hours, and on school grounds at United States public schools between 1970 and 2009. The panel on top shows the time series plot of the number of shootings that occurred each year. The panel at the bottom shows the time series plot of the number of deaths that occurred each year. The data on school shootings are compiled from the Center for Homeland Defense and Security (CHDS) K-12 school shooting database.

Figure A3. Effects of School Shootings on Survivors' Life-Long Earnings



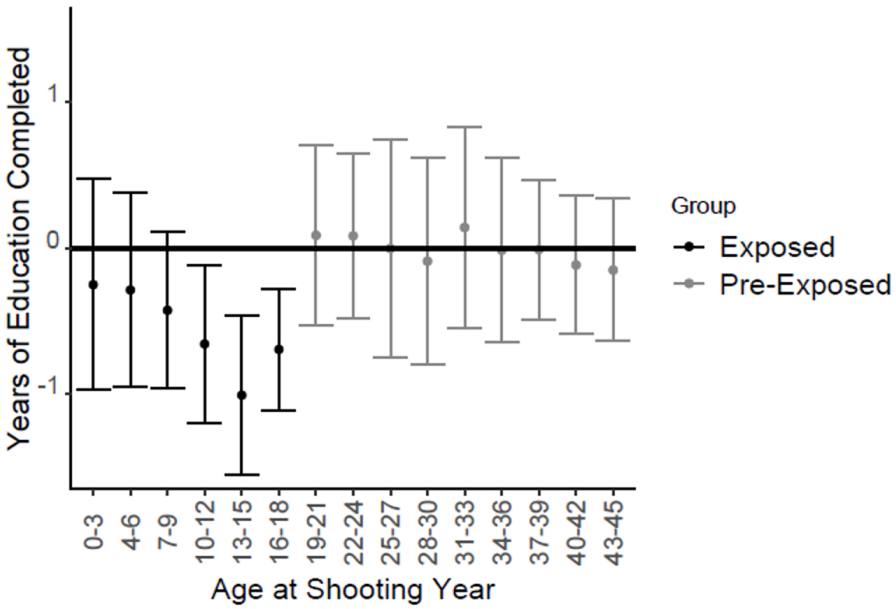
Note: This figure shows the percentage increase in hourly earnings for exposed and not exposed individuals at different age groups. The coefficients reported are from a regression analogous to equation (1) where Exposed is interacted with age groups 25, 30, 35, 40, 45, and 50. The base group is age 20. Light grey points and confidence intervals show the percentage increase in the hourly earnings of not exposed individuals compared to age 20. Dark grey points and confidence intervals show the percentage increase in the hourly earnings of exposed individuals compared to age 20.

Figure A4. Income Distribution



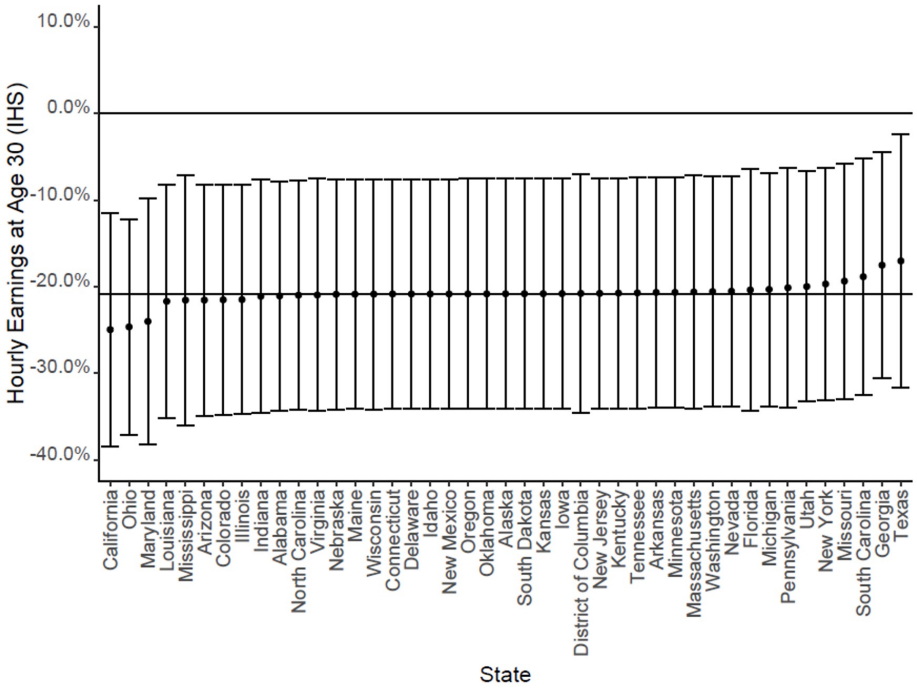
Note: This figure shows the income distribution of exposed individuals. Each point and confidence interval is obtained from a separate regression analogous to equation (1) where the outcome variables are probabilities of reaching top 1 percent, top 5 percent, top 10 percent, top 15 percent, top 20 percent, top 25 percent, top 30 percent, top 35 percent, top 40 percent, top 45 percent, top 50 percent, bottom 45 percent, bottom 40 percent, bottom 35 percent, bottom 30 percent, bottom 25 percent, bottom 20 percent, bottom 15 percent, bottom 10 percent, bottom 5 percent and bottom 1 percent.

Figure A5. The Effects of School Shootings on Education for Different Age Groups



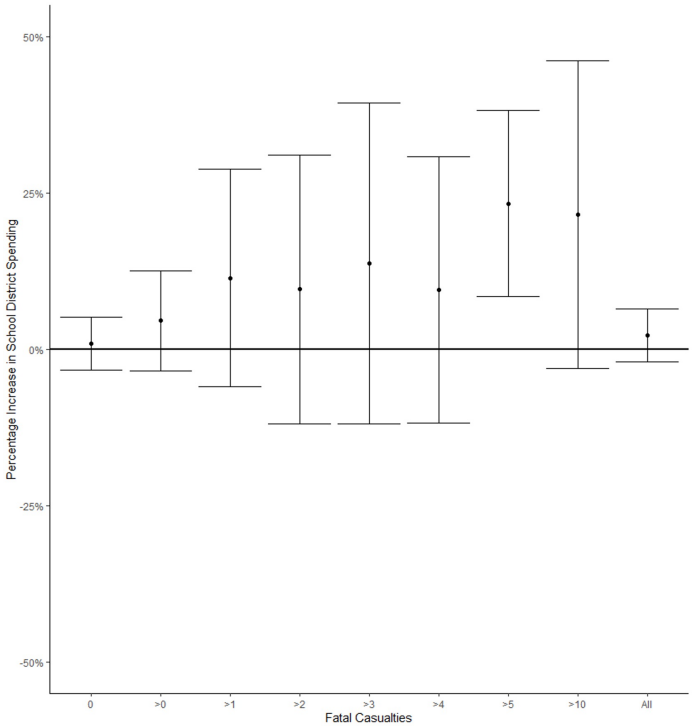
Note: Years of schooling of individuals who are exposed to school shootings in different age bins. Each point reports the coefficients and confidence intervals from different regressions following the estimation strategy shown in equation (1). The outcome variable is the years of education completed by an individual at age 30. Exposed, shown in dark grey, represents the individuals who were in age groups that are at school-going age. Pre-exposed, shown in light grey, represents the individuals who are too old to be exposed at the time of the shooting. Included control variables are parental income, gender, race, father employment, father education, mother education, marital status of the mother at birth, and time since exposure. Birth year and school district fixed effects are included. Standard errors are clustered at the school district level.

Figure A6. Leave One Out Plot



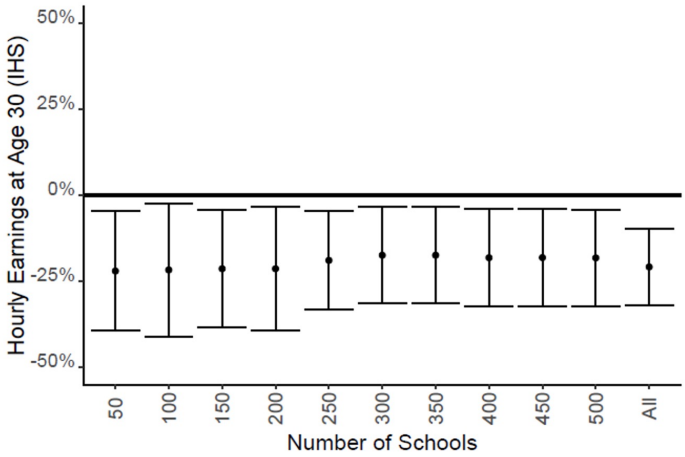
Note: This figure plots the coefficients (black circles) and confidence intervals from regressions of Exposed on inverse hyperbolic sine transformation of hourly earnings at age 30. All individuals inside a given state (shown on the horizontal axis) are excluded from the sample in each regression. The estimated coefficient from the baseline specification is shown with a solid black line.

Figure A7. The Effect of Casualties on School District Support Spending



Note: This figure shows the coefficients (black circles) and confidence intervals from regressions of Exposed District on school district spending for a different number of fatal casualties. The shooting sample is restricted to the number of fatal casualties shown on the horizontal axis in each regression.

Figure A8. The Effect of School Shootings on Hourly Earnings for Different Number of Schools in a District



Note: This figure shows the coefficients (black circles) and confidence intervals from regressions of Exposed on the inverse hyperbolic sine transformation of hourly earnings at age 30 for a subsample of districts with a different number of schools shown on the x-axis.

Table A1: Effects of School Shootings on Survivors' Earnings - No Transfer Allowed

	Dependent variable:					
	Hourly Earnings (IHS) at Age 30					
	(1)	(2)	(3)	(4)	(5)	(6)
Exposed	−0.413**	−0.393**	−0.385**	−0.358**	−0.248*	−0.245
	(0.170)	(0.160)	(0.153)	(0.157)	(0.149)	(0.159)
Parent Income (Poor)		−0.126	−0.119	−0.103	−0.154	−0.186
		(0.147)	(0.148)	(0.150)	(0.136)	(0.154)
Gender (Male)		−0.070	−0.079	−0.071	−0.053	−0.043
		(0.076)	(0.080)	(0.084)	(0.077)	(0.076)
Race (White)		0.480***	0.426**	0.382**	0.287	0.285
		(0.175)	(0.190)	(0.186)	(0.192)	(0.202)
Father Employment (Unemployed)			0.179	0.168	0.208	0.210
			(0.293)	(0.277)	(0.270)	(0.286)
Father Education (College)			0.316	0.237	0.204	0.187
			(0.289)	(0.299)	(0.365)	(0.389)
Mother Education (College)				0.232	0.193	0.243
				(0.189)	(0.181)	(0.207)
Marital Status of Mother at Birth (Married)				0.726*	0.567	0.549
				(0.413)	(0.396)	(0.414)
Time Since Exposure					0.016**	0.016**
					(0.006)	(0.007)
School District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Current County Fixed Effects	No	No	No	No	No	Yes
Mean Hourly Earnings	10.526	10.526	10.526	10.526	10.526	10.526
Number of Treated Individuals	269	269	269	269	269	269
Number of Clusters	66	66	66	66	66	66
Observations	846	846	846	846	846	846

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variable is the inverse hyperbolic sine transformation of the hourly earnings of an individual at age 30. Exposed, the reported independent variable, defines an individual at a relevant school-going age in a shooting district at the time of the shooting. Included control variables are parental income, gender, race, father employment, father education, mother education, marital status of the mother at birth, and time since exposure. Birth year and school district fixed effects are included. The mean of Hourly Earnings shows the dependent variable's mean for the neighboring group before the shooting. The sample is restricted to the states that do not allow inter-district student transfer. Those states are Alabama, Alaska, District of Columbia, Maryland, North Carolina, Virginia. Standard errors are clustered at school district level: *p<0.1; **p<0.05; ***p<0.01

Table A2: Effects of School Shootings on Survivors' Earnings with Land Area

	Dependent variable:					
	Hourly Earnings (IHS) at Age 30					
	(1)	(2)	(3)	(4)	(5)	(6)
Exposed	−0.278***	−0.270***	−0.258***	−0.270***	−0.283***	−0.265***
	(0.084)	(0.085)	(0.087)	(0.086)	(0.086)	(0.086)
Exposed*LandArea	0.071	0.079	0.071	0.084	0.138	0.104
	(0.123)	(0.123)	(0.129)	(0.128)	(0.128)	(0.131)
Individual Controls	No	Yes	Yes	Yes	Yes	Yes
Father Controls	No	No	Yes	Yes	Yes	Yes
Mother Controls	No	No	No	Yes	Yes	Yes
Time Since Exposure	No	No	No	No	Yes	Yes
School District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Current County Fixed Effects	No	No	No	No	No	Yes
Mean Hourly Earnings	11.906	11.906	11.906	11.906	11.906	11.906
Number of Treated Individuals	1,214	1,214	1,214	1,214	1,214	1,214
Number of Clusters	954	954	954	954	954	954
Observations	5,701	5,701	5,701	5,701	5,701	5,701

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variable is the inverse hyperbolic sine transformation of the hourly earnings of an individual at age 30. Exposed, the reported independent variable, defines an individual at a relevant school-going age in a shooting district at the time of the shooting. Exposed*LandArea is the interaction between Exposed and the land area of school districts. Included control variables are parental income, gender, race, father employment, father education, mother education, marital status of the mother at birth, and time since exposure. Birth year and school district fixed effects are included. The mean of Hourly Earnings shows the dependent variable's mean for the neighboring group before the shooting. Standard errors are clustered at school district level: *p<0.1; **p<0.05; ***p<0.01

Table A3: Effects of School Shootings on Survivors' Earnings with Urbanicity

	Dependent variable:		
	Urban	Suburban	Rural
	(1)	(2)	(3)
Exposed	-0.208^{***}	-0.209^{*}	-0.188^{**}
	(0.077)	(0.104)	(0.089)
School District Fixed Effects	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes
Control Variables	Yes	Yes	Yes
Mean Dependent Variable	11.148	13.080	11.895
Number of Treated Individuals	1,051	155	8
Number of Clusters	661	206	87
Observations	3,922	1,556	223

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variable is the inverse hyperbolic sine transformation of hourly earnings at age 30. Exposed, the reported independent variable, defines an individual at a relevant school-going age in a shooting district at the time of the shooting. Columns (1), (2) and (3) present the coefficient estimate for the urban, suburban, and rural school districts, respectively. Included control variables are parental income, gender, race, father employment, father education, mother education, marital status of the mother at birth, and time since exposure. Birth year and school district fixed effects are included. The mean of Hourly Earnings shows the dependent variable's mean for the neighboring group before the shooting. The mean of Hourly Earnings shows the dependent variable's mean for the neighboring group before the shooting. Standard errors are clustered at school district level: *p<0.1; **p<0.05; ***p<0.01

Table A4: Mean of School District Characteristics

	Shooting Districts	Neighboring Districts	All Districts	p-value (1)-(2)	p-value (1)-(3)
	(1)	(2)	(3)	(4)	(5)
Median Income	22,776	24,038	29,871	0.149	0.000
Unemployment Rate	0.066	0.065	0.062	0.137	0.000
Fraction Black	0.157	0.149	0.134	0.226	0.000
Fraction White	0.567	0.584	0.611	0.000	0.000
Fraction Race-Other	0.276	0.267	0.255	0.054	0.000
Fraction Female	0.542	0.542	0.526	0.736	0.000
Fraction Parent Income (Poor)	0.484	0.471	0.424	0.085	0.000
Fraction Mother Marital Status (Married)	0.308	0.313	0.354	0.102	0.000
Fraction Mother College Degree	0.037	0.038	0.042	0.167	0.000
Fraction Mother High School Degree	0.286	0.291	0.343	0.116	0.000
Fraction Father College Degree	0.049	0.052	0.054	0.016	0.000
Fraction Father High School Degree	0.231	0.238	0.272	0.220	0.000
Number of Students per School	661.554	704.079	701.196	0.502	0.531
Number of Schools	65.238	59.127	59.542	0.488	0.517

Note: Mean of school district characteristics. Column (1) shows the mean of school district characteristics for the shooting district, column (2) shows the means for neighboring districts, and column (3) shows the means for all districts. All variables are measured prior to the school shootings. Column (4) compares the means of columns (1) and (2), and column (5) compares the means of columns (2) and (3).

Table A5: Mean of School District Characteristics - All Set of Districts

	Shooting Districts	Matched Districts	p-value (1)-(2)
	(1)	(2)	(3)
Median Income	29,883	28,592	0.732
Unemployment Rate	0.067	0.062	0.142
Fraction Black	0.163	0.128	0.243
Fraction White	0.724	0.821	0.133
Fraction Race-Other	0.224	0.182	0.116
Fraction Female	0.490	0.502	0.130
Fraction Parent Income (Poor)	0.273	0.326	0.537
Fraction Mother Marital Status (Married)	0.717	0.814	0.202
Fraction Mother College Degree	0.121	0.116	0.934
Fraction Mother High School Degree	0.545	0.605	0.516
Fraction Father College Degree	0.041	0.047	0.873
Fraction Father High School Degree	0.455	0.558	0.262
Number of Students per School	634.440	718.828	0.293
Number of Schools	63.737	24.233	0.000

Note: Mean of school district characteristics. Column (1) shows the mean of school district characteristics for the shooting district and column (2) shows the means for matched districts. All variables are measured prior to the school shootings.

Table A6: Mean of School District Characteristics - Neighboring Set of Districts

	Shooting Districts	Matched Districts	p-value (1)-(2)
	(1)	(2)	(3)
Median Income	30,654	28,593	0.603
Unemployment Rate	0.072	0.063	0.139
Fraction Black	0.144	0.128	0.588
Fraction White	0.723	0.820	0.133
Fraction Race-Other	0.223	0.182	0.117
Fraction Female	0.489	0.502	0.130
Fraction Parent Income (Poor)	0.241	0.326	0.331
Fraction Mother Marital Status (Married)	0.747	0.814	0.390
Fraction Mother College Degree	0.152	0.116	0.579
Fraction Mother High School Degree	0.633	0.605	0.762
Fraction Father College Degree	0.051	0.047	0.920
Fraction Father High School Degree	0.481	0.558	0.420
Number of Students per School	634.440	768.066	0.133
Number of Schools	67.772	24.231	0.000

Note: Mean of school district characteristics. Column (1) shows the mean of school district characteristics for the shooting district and column (2) shows the means for matched districts. All variables are measured prior to the school shootings.

Table A7: Effects of School Shootings on Survivors' Earnings - Matching Using All Set of Districts

	Dependent variable:					
	Hourly Earnings (IHS) at Age 30					
	(1)	(2)	(3)	(4)	(5)	(6)
Exposed	−0.270***	−0.252***	−0.249**	−0.256**	−0.256**	−0.269***
	(0.096)	(0.098)	(0.099)	(0.100)	(0.099)	(0.100)
Parent Income (Poor)		−0.130**	−0.081	−0.072	−0.072	−0.059
		(0.066)	(0.066)	(0.065)	(0.065)	(0.061)
Gender (Male)		0.044	0.042	0.034	0.034	0.042
		(0.044)	(0.043)	(0.043)	(0.043)	(0.043)
Race (White)		0.331***	0.309***	0.295***	0.295***	0.272**
		(0.091)	(0.096)	(0.100)	(0.100)	(0.107)
Father Employment (Unemployed)			0.124	0.119	0.120	0.044
			(0.119)	(0.118)	(0.119)	(0.123)
Father Education (College)			0.164	0.110	0.111	0.019
			(0.154)	(0.153)	(0.152)	(0.153)
Mother Education (College)				0.358***	0.358***	0.327**
				(0.125)	(0.125)	(0.131)
Marital Status of Mother at Birth (Married)				0.079	0.079	0.130
				(0.157)	(0.157)	(0.158)
Time Since Exposure					−0.001	−0.001
					(0.003)	(0.003)
School District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Current County Fixed Effects	No	No	No	No	No	Yes
Mean Hourly Earnings	12.369	12.369	12.369	12.369	12.369	12.369
Number of Treated Individuals	540	540	540	540	540	540
Number of Clusters	594	594	594	594	594	594
Observations	2,898	2,898	2,898	2,898	2,898	2,898

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variable is the inverse hyperbolic sine transformation of the hourly earnings of an individual at age 30. Exposed, the reported independent variable, defines an individual at a relevant school-going age in a shooting district at the time of the shooting. Included control variables are parental income, gender, race, father employment, father education, mother education, marital status of the mother at birth, and time since exposure. Birth year and school district fixed effects are included. The control group consists of districts selected by the nearest neighbor matching algorithm from all set of school districts. The mean of Hourly Earnings shows the dependent variable's mean for the neighboring group before the shooting. Standard errors are clustered at school district level: *p<0.1; **p<0.05; ***p<0.01

Table A8: Effects of School Shootings on Survivors' Earnings - Matching Using Neighboring Set of Districts

	Dependent variable:					
	Hourly Earnings (IHS) at Age 30					
	(1)	(2)	(3)	(4)	(5)	(6)
Exposed	−0.230**	−0.208**	−0.203*	−0.208**	−0.209**	−0.221**
	(0.101)	(0.102)	(0.104)	(0.105)	(0.104)	(0.105)
Parent Income (Poor)		−0.153**	−0.124*	−0.118	−0.118	−0.117
		(0.075)	(0.072)	(0.073)	(0.073)	(0.072)
Gender (Male)		0.066	0.066	0.055	0.055	0.062
		(0.053)	(0.052)	(0.051)	(0.051)	(0.054)
Race (White)		0.329***	0.306***	0.281**	0.282**	0.274**
		(0.105)	(0.113)	(0.117)	(0.118)	(0.135)
Father Employment (Unemployed)			−0.041	−0.034	−0.031	−0.084
			(0.118)	(0.120)	(0.119)	(0.127)
Father Education (College)			0.194	0.125	0.126	0.048
			(0.147)	(0.147)	(0.146)	(0.157)
Mother Education (College)				0.356***	0.358***	0.359***
				(0.119)	(0.120)	(0.125)
Marital Status of Mother at Birth (Married)				0.156	0.156	0.213*
				(0.130)	(0.131)	(0.128)
Time Since Exposure					−0.001	−0.002
					(0.003)	(0.004)
School District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Current County Fixed Effects	No	No	No	No	No	Yes
Mean Hourly Earnings	12.070	12.070	12.070	12.070	12.070	12.070
Number of Treated Individuals	459	459	459	459	459	459
Number of Clusters	479	479	479	479	479	479
Observations	2,540	2,540	2,540	2,540	2,540	2,540

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variable is the inverse hyperbolic sine transformation of the hourly earnings of an individual at age 30. Exposed, the reported independent variable, defines an individual at a relevant school-going age in a shooting district at the time of the shooting. Included control variables are parental income, gender, race, father employment, father education, mother education, marital status of the mother at birth, and time since exposure. Birth year and school district fixed effects are included. The control group consists of districts selected by the nearest neighbor matching algorithm from neighboring set of school districts. The mean of Hourly Earnings shows the dependent variable's mean for the neighboring group before the shooting. Standard errors are clustered at school district level: *p<0.1; **p<0.05; ***p<0.01

Table A9: Effects of School Shootings on Survivors' Earnings for Employed

	Dependent variable:					
	Hourly Earnings (IHS) at Age 30					
	(1)	(2)	(3)	(4)	(5)	(6)
Exposed	−0.109***	−0.101**	−0.112***	−0.104***	−0.095**	−0.091**
	(0.040)	(0.039)	(0.040)	(0.040)	(0.041)	(0.041)
Parent Income (Poor)		−0.063**	−0.045	−0.033	−0.049*	−0.046
		(0.030)	(0.030)	(0.030)	(0.027)	(0.028)
Gender (Male)		0.018	0.019	0.014	0.006	0.011
		(0.024)	(0.024)	(0.023)	(0.024)	(0.024)
Race (White)		0.249***	0.217***	0.185***	0.179***	0.162***
		(0.039)	(0.040)	(0.039)	(0.040)	(0.042)
Father Employment (Unemployed)			−0.061	−0.055	−0.059	−0.065
			(0.057)	(0.058)	(0.061)	(0.059)
Father Education (College)			0.115**	0.095	0.097	0.103*
			(0.058)	(0.059)	(0.061)	(0.058)
Mother Education (College)				0.086	0.086	0.043
				(0.056)	(0.056)	(0.057)
Marital Status of Mother at Birth (Married)				0.300***	0.302***	0.332***
				(0.104)	(0.108)	(0.101)
Time Since Exposure					0.001	0.001
					(0.001)	(0.001)
School District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Current County Fixed Effects	No	No	No	No	No	Yes
Mean Hourly Earnings	13.533	13.533	13.533	13.533	13.533	13.533
Number of Treated Individuals	922	922	922	922	922	922
Number of Clusters	921	921	921	921	921	921
Observations	4,649	4,649	4,649	4,649	4,649	4,649

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variable is the inverse hyperbolic sine transformation of the hourly earnings of an individual at age 30. Exposed, the reported independent variable, defines an individual at a relevant school-going age in a shooting district at the time of the shooting. Included control variables are parental income, gender, race, father employment, father education, mother education, marital status of the mother at birth, and time since exposure. Birth year and school district fixed effects are included. Unemployed individuals are omitted from the sample. The mean of Hourly Earnings shows the dependent variable's mean for the neighboring group before the shooting. Standard errors are clustered at school district level: *p<0.1; **p<0.05; ***p<0.01

Table A10: Effects of School Shootings on Survivors' Earnings by Heterogeneity

	Dependent variable:					
	Hourly Earnings (IHS) at Age 30					
	Parent Income		Race		Gender	
	Poor	Well-off	White	Black	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)
Exposed	−0.182	−0.421***	−0.188	−0.222***	−0.222**	−0.196**
	(0.115)	(0.142)	(0.108)	(0.082)	(0.088)	(0.082)
School District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Mean Hourly Earnings	9.512	14.012	14.891	8.652	11.702	12.137
Number of Treated Individuals	561	281	376	772	631	583
Number of Clusters	462	470	772	299	719	682
Observations	2,309	1,303	2,472	2,950	2,985	2,716

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variable is the inverse hyperbolic sine transformation of the hourly earnings of an individual at age 30. Exposed, the reported independent variable, defines an individual at a relevant school-going age in a shooting district at the time of the shooting. Column (1) restricts the sample to individuals with poor parental income, column (2) to individuals with well-off parental income, column (3) restricts the sample to white people, column (4) to black people, column (5) restricts the sample to females and column (6) to males. Included control variables are gender, race, father employment, father education, mother education, marital status of the mother at birth and time since exposure for columns (1) and (2); parental income, gender, father employment, father education, mother education, marital status of the mother at birth and time since exposure for columns (3) and (4), and parental income, race, father employment, father education, mother education, marital status of the mother at birth and time since exposure for columns (5) and (6). Birth year and school district fixed effects are included. The mean of Hourly Earnings shows the dependent variable's mean for the neighboring group before the shooting. Standard errors are clustered at school district level: *p<0.1; **p<0.05; ***p<0.01

Table A11: Effects of School Shootings on Survivors' Life-Long Earnings

	Dependent variable:					
	Hourly Earnings (IHS)					
	Age 25	Age 30	Age 35	Age 40	Age 45	Age 50
	(1)	(2)	(3)	(4)	(5)	(6)
Exposed	-0.112^{**}	-0.191^{***}	-0.214^{***}	-0.092	-0.164^{*}	-0.297^{***}
	(0.051)	(0.068)	(0.068)	(0.068)	(0.091)	(0.086)
School District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Mean Hourly Earnings	9.540	11.190	15.481	18.441	22.270	28.093
Number of Treated Individuals	1,962	1,414	999	696	444	349
Number of Clusters	1,119	981	856	722	568	443
Observations	7,871	6,429	4,867	3,650	2,555	1,920

Note: Each column reports coefficients and standard errors (in brackets) from the two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variable is the inverse hyperbolic sine transformation of the hourly earnings of an individual at age groups 25, 30, 35, 40, 45, and 50. The base group is age 20. Exposed, the reported independent variable, defines an individual at a relevant school-going age in a shooting district at the time of the shooting. Included control variables are parental income, gender, race, father employment, father education, mother education, marital status of the mother at birth, and time since exposure. Birth year and school district fixed effects are included. The mean of Hourly Earnings shows the dependent variable's mean for the neighboring group before the shooting. Standard errors are clustered at school district level: *p<0.1; **p<0.05; ***p<0.01

Table A12: Effects of School Shootings on Survivors' Income Distribution

	Dependent variable:								
	Income Distribution								
	Top 1%	Top 5%	Top 10%	Top 25%	Top 50%	Bottom 25%	Bottom 10%	Bottom 5%	Bottom 1%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Exposed	−0.015	−0.024*	−0.038**	−0.047**	−0.044*	0.048**	0.066***	0.019	0.006
	(0.011)	(0.014)	(0.015)	(0.020)	(0.024)	(0.021)	(0.021)	(0.012)	(0.004)
School District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean Percentile	0.010	0.050	0.100	0.250	0.500	0.250	0.100	0.050	0.010
Number of Treated Individuals	1,214	1,214	1,214	1,214	1,214	1,214	1,214	1,214	1,214
Number of Clusters	954	954	954	954	954	954	954	954	954
Observations	5,701	5,701	5,701	5,701	5,701	5,701	5,701	5,701	5,701

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variables are the probabilities of reaching top 1, top 5, top 10, top 25, top 50 percent, or staying at the bottom 25, bottom 10, bottom 5, and bottom 1 percent of the income distribution. Exposed, the reported independent variable, defines an individual at a relevant school-going age in a shooting district at the time of the shooting. Included control variables are parental income, gender, race, father employment, father education, mother education, marital status of the mother at birth, and time since exposure. Birth year and school district fixed effects are included. Standard errors are clustered at school district level: *p<0.1; **p<0.05; ***p<0.01

Table A13: Effects of School Shootings on Survivors' Occupational Choices

	Dependent variable:					
	Armed	Teacher	Community	Service	Creative	Non-College
	(1)	(2)	(3)	(4)	(5)	(6)
Exposed	−0.005	−0.008	−0.005	−0.007	−0.006	0.024**
	(0.003)	(0.005)	(0.003)	(0.009)	(0.004)	(0.010)
School District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Mean of Dependent Variable	0.006	0.018	0.005	0.067	0.008	0.073
Number of Treated Individuals	3	17	3	84	5	105
Number of Clusters	809	809	809	809	809	809
Observations	5,139	5,139	5,139	5,139	5,139	5,139

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variables are dummies that correspond to an occupation category: armed occupations, teaching occupations, community service occupations, creative occupations, and occupations that do not require a college degree. Exposed, the reported independent variable, defines an individual at a relevant school-going age in a shooting district at the time of the shooting. Included control variables are parental income, gender, race, father employment, father education, mother education, marital status of the mother at birth, and time since exposure. Birth year and school district fixed effects are included. The mean of dependent variable shows the dependent variable's mean for the neighboring group before the shooting. Standard errors are clustered at school district level: *p<0.1; **p<0.05; ***p<0.01

Table A14: Effects of School Shootings on Survivors' Health Outcomes

	Dependent variable:					
	Antidep. Cons.	Psy. Problem	Health Status	Smoking	Alcohol Cons.	BMI
	(1)	(2)	(3)	(4)	(5)	(6)
Exposed	0.006	0.004	−0.067	0.057*	0.024	0.767**
	(0.006)	(0.008)	(0.050)	(0.029)	(0.041)	(0.436)
School District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Mean of Dependent Variable	0.009	0.035	1.835	0.243	0.307	28.614
Number of Treated Individuals	1,214	1,214	588	619	619	532
Number of Clusters	954	954	954	663	663	606
Observations	5,701	5,701	5,701	2,527	2,527	2,233

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variables are antidepressant consumption, psychological problems, health status, smoking, alcohol consumption, and body-mass index. Exposed, the reported independent variable, defines an individual at a relevant school-going age in a shooting district at the time of the shooting. Included control variables are parental income, gender, race, father employment, father education, mother education, marital status of the mother at birth, and time since exposure. Birth year and school district fixed effects are included. The mean of dependent variable shows the dependent variable's mean for the neighboring group before the shooting. Standard errors are clustered at school district level: *p<0.1; **p<0.05; ***p<0.01

Table A15: Effects of School Shootings on Survivors' Household Outcomes

	Dependent variable:					
	House Value	House Ownership	Family Size	Marital Status	Weeks Vacation	Life Satisfaction
	(1)	(2)	(3)	(4)	(5)	(6)
Exposed	−223.913**	−0.012	0.171*	0.066**	−0.425*	0.029
	(97.923)	(0.024)	(0.101)	(0.030)	(0.226)	(0.033)
School District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Mean of Dependent Variable	200,851	0.559	3.288	0.577	1.383	0.622
Number of Treated Individuals	581	581	581	581	1,214	1,214
Number of Clusters	678	678	678	678	954	954
Observations	3,189	3,189	3,189	3,189	5,701	5,701

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variables are house value, house ownership, family size, weeks of vacation, and life satisfaction. Outcome variables, house value, house ownership, family size and marital status are measured at age 40. Exposed, the reported independent variable, defines an individual at a relevant school-going age in a shooting district at the time of the shooting. Included control variables are parental income, gender, race, father employment, father education, mother education, marital status of the mother at birth, and time since exposure. Birth year and school district fixed effects are included. The mean of dependent variable shows the dependent variable's mean for the neighboring group before the shooting. Standard errors are clustered at school district level: *p<0.1; **p<0.05; ***p<0.01

Table A16: Effects of School Shootings on Survivors' Earnings - Age Group 19-21 Omitted

	Dependent variable:					
	Hourly Earnings (IHS) at Age 30					
	(1)	(2)	(3)	(4)	(5)	(6)
Exposed	−0.239***	−0.226***	−0.217***	−0.221***	−0.209***	−0.203***
	(0.063)	(0.063)	(0.065)	(0.066)	(0.068)	(0.069)
Parent Income (Poor)		−0.136***	−0.091**	−0.076*	−0.086**	−0.079**
		(0.040)	(0.039)	(0.040)	(0.039)	(0.040)
Gender (Male)		0.025	0.013	0.008	0.003	0.013
		(0.034)	(0.033)	(0.032)	(0.033)	(0.035)
Race (White)		0.397***	0.325***	0.274***	0.244***	0.235***
		(0.056)	(0.055)	(0.054)	(0.053)	(0.055)
Father Employment (Unemployed)			−0.007	−0.002	−0.004	−0.047
			(0.074)	(0.074)	(0.076)	(0.081)
Father Education (College)			0.160**	0.116	0.113	0.116
			(0.074)	(0.073)	(0.074)	(0.075)
Mother Education (College)				0.212***	0.219***	0.185**
				(0.075)	(0.073)	(0.077)
Marital Status of Mother at Birth (Married)				0.374**	0.319**	0.389**
				(0.150)	(0.151)	(0.152)
Time Since Exposure					0.003	0.001
					(0.002)	(0.002)
School District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Current County Fixed Effects	No	No	No	No	No	Yes
Mean Hourly Earnings	11.923	11.923	11.923	11.923	11.923	11.923
Number of Treated Individuals	1,214	1,214	1,214	1,214	1,214	1,214
Number of Clusters	948	948	948	948	948	948
Observations	5,416	5,416	5,416	5,416	5,416	5,416

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variable is the inverse hyperbolic sine transformation of the hourly earnings of an individual at age 30. Exposed, the reported independent variable, defines an individual at a relevant school-going age in a shooting district at the time of the shooting. Included control variables are parental income, gender, race, father employment, father education, mother education, marital status of the mother at birth, and time since exposure. Birth year and school district fixed effects are included. The mean of Hourly Earnings shows the dependent variable's mean for the neighboring group before the shooting. Standard errors are clustered at school district level: *p<0.1; **p<0.05; ***p<0.01

Table A17: Effects of School Shootings on Survivors' Earnings - Shooting District

	Dependent variable:					
	Hourly Earnings (IHS) at Age 30					
	(1)	(2)	(3)	(4)	(5)	(6)
Exposed	−0.187**	−0.174**	−0.186**	−0.182**	−0.146*	−0.155**
	(0.082)	(0.084)	(0.081)	(0.078)	(0.075)	(0.072)
Parent Income (Poor)		−0.152***	−0.085*	−0.060	−0.061	−0.071
		(0.049)	(0.044)	(0.044)	(0.045)	(0.046)
Gender (Male)		0.086*	0.070	0.057	0.046	0.057
		(0.047)	(0.047)	(0.046)	(0.048)	(0.050)
Race (White)		0.475***	0.348***	0.290***	0.259***	0.230***
		(0.066)	(0.065)	(0.065)	(0.068)	(0.069)
Father Employment (Unemployed)			−0.094	−0.086	−0.069	−0.121
			(0.111)	(0.107)	(0.109)	(0.127)
Father Education (College)			0.238**	0.213**	0.227**	0.193*
			(0.097)	(0.092)	(0.094)	(0.100)
Mother Education (College)				0.205**	0.219**	0.188*
				(0.103)	(0.094)	(0.105)
Marital Status of Mother at Birth (Married)				0.455**	0.367*	0.474***
				(0.189)	(0.193)	(0.178)
Time Since Exposure					0.005**	0.004
					(0.002)	(0.002)
School District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Current County Fixed Effects	No	No	No	No	No	Yes
Mean Hourly Earnings	10.811	10.811	10.811	10.811	10.811	10.811
Number of Treated Individuals	1,214	1,214	1,214	1,214	1,214	1,214
Number of Clusters	552	552	552	552	552	552
Observations	2,988	2,988	2,988	2,988	2,988	2,988

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variable is the inverse hyperbolic sine transformation of hourly earnings at age 30. Exposed, the reported independent variable, defines an individual at a relevant school-going age in a shooting district at the time of the shooting. Included control variables are parental income, gender, race, father employment, father education, mother education, marital status of the mother at birth, and time since exposure. Birth year and school district fixed effects are included. The mean of Hourly Earnings shows the dependent variable's mean for the shooting group before the shooting. The sample is restricted to districts that are exposed to a school shooting (exposed and pre-exposed groups). Standard errors are clustered at school district level: *p<0.1; **p<0.05; ***p<0.01

Table A18: Effects of School Shootings on Survivors' Earnings - Without Pre-Exposed

	Dependent variable:					
	Hourly Earnings (IHS) at Age 30					
	(1)	(2)	(3)	(4)	(5)	(6)
Exposed	−0.210***	−0.197***	−0.189**	−0.198***	−0.196***	−0.197***
	(0.071)	(0.071)	(0.073)	(0.074)	(0.074)	(0.075)
Parent Income (Poor)		−0.144***	−0.093**	−0.074*	−0.079*	−0.068
		(0.045)	(0.044)	(0.044)	(0.045)	(0.047)
Gender (Male)		0.042	0.029	0.023	0.013	0.020
		(0.038)	(0.036)	(0.035)	(0.037)	(0.037)
Race (White)		0.379***	0.315***	0.250***	0.227***	0.221***
		(0.064)	(0.063)	(0.063)	(0.063)	(0.064)
Father Employment (Unemployed)			−0.025	−0.020	−0.016	−0.051
			(0.078)	(0.080)	(0.082)	(0.088)
Father Education (College)			0.133	0.072	0.077	0.091
			(0.087)	(0.087)	(0.089)	(0.096)
Mother Education (College)				0.279***	0.279***	0.243***
				(0.084)	(0.084)	(0.090)
Marital Status of Mother at Birth (Married)				0.346**	0.291*	0.382**
				(0.155)	(0.158)	(0.155)
Time Since Exposure					0.002	0.002
					(0.002)	(0.002)
School District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Current County Fixed Effects	No	No	No	No	No	Yes
Mean Hourly Earnings	13.276	13.276	13.276	13.276	13.276	13.276
Number of Treated Individuals	1,214	1,214	1,214	1,214	1,214	1,214
Number of Clusters	599	599	599	599	599	599
Observations	3,044	3,044	3,044	3,044	3,044	3,044

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variable is the inverse hyperbolic sine transformation of hourly earnings at age 30. Exposed, the reported independent variable, defines an individual at a relevant school-going age in a shooting district at the time of the shooting. Included control variables are parental income, gender, race, father employment, father education, mother education, marital status of the mother at birth, and time since exposure. Birth year and school district fixed effects are included. The mean of Hourly Earnings shows the dependent variable's mean for the neighboring group. The sample is restricted to shooting and neighboring districts in periods following a shooting (pre-periods are not included). Standard errors are clustered at school district level: *p<0.1; **p<0.05; ***p<0.01

Table A19: Effects of School Shootings on Survivors' Earnings - After Hours and Weekends

	Dependent variable:					
	Hourly Earnings (IHS) at Age 30					
	(1)	(2)	(3)	(4)	(5)	(6)
Exposed	−0.062	0.041	−0.055	−0.084	−0.094	−0.057
	(0.213)	(0.209)	(0.206)	(0.206)	(0.205)	(0.205)
School District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Individual Controls	No	Yes	Yes	Yes	Yes	Yes
Father Controls	No	No	Yes	Yes	Yes	Yes
Mother Controls	No	No	No	Yes	Yes	Yes
Time Since Exposure	No	No	No	No	Yes	Yes
Current County Fixed Effects	No	No	No	No	No	Yes
Mean Hourly Earnings	12.953	12.953	12.953	12.953	12.953	12.953
Number of Treated Individuals	108	108	108	108	108	108
Number of Clusters	369	369	369	369	369	369
Observations	1,487	1,487	1,487	1,487	1,487	1,487

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variable is the inverse hyperbolic sine transformation of hourly earnings at age 30. Exposed, the reported independent variable, defines an individual at a relevant school-going age in a shooting district at the time of the shooting. Included control variables are parental income, gender, race, father employment, father education, mother education, marital status of the mother at birth, and time since exposure. Birth year and school district fixed effects are included. The mean of Hourly Earnings shows the dependent variable's mean for the neighboring group before the shooting. The sample is restricted to shootings that happened on after school hours and weekends. Standard errors are clustered at school district level: *p<0.1; **p<0.05; ***p<0.01

Table A20: Effects of School Shootings on Survivors' Earnings - Alternative Control Group

	Dependent variable:					
	Hourly Earnings (IHS) at Age 30					
	(1)	(2)	(3)	(4)	(5)	(6)
Exposed	−0.121*	−0.107*	−0.121*	−0.121*	−0.127**	−0.126**
	(0.066)	(0.064)	(0.062)	(0.062)	(0.064)	(0.063)
Parent Income (Poor)		−0.121***	−0.089*	−0.081*	−0.080*	−0.075
		(0.046)	(0.046)	(0.046)	(0.046)	(0.047)
Gender (Male)		0.057*	0.050	0.043	0.043	0.041
		(0.032)	(0.030)	(0.031)	(0.030)	(0.031)
Race (White)		0.369***	0.326***	0.298***	0.296***	0.282***
		(0.068)	(0.065)	(0.066)	(0.066)	(0.068)
Father Employment (Unemployed)			−0.022	−0.041	−0.045	−0.062
			(0.091)	(0.093)	(0.093)	(0.096)
Father Education (College)			0.095	0.068	0.063	0.083
			(0.078)	(0.080)	(0.080)	(0.079)
Mother Education College				0.131	0.134*	0.095
				(0.081)	(0.081)	(0.085)
Marital Status of Mother at Birth (Married)				0.309*	0.311**	0.349**
				(0.159)	(0.158)	(0.155)
Time Since Exposure					0.003*	0.004*
					(0.002)	(0.002)
School District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Current County Fixed Effects	No	No	No	No	No	Yes
Mean Hourly Earnings	12.882	12.882	12.882	12.882	12.882	12.882
Number of Treated Individuals	943	943	943	943	943	943
Number of Clusters	849	849	849	849	849	849
Observations	5,102	5,102	5,102	5,102	5,102	5,102

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variable is the inverse hyperbolic sine transformation of hourly earnings at age 30. Exposed, the reported independent variable, defines an individual at a relevant school-going age in a shooting district at the time of the shooting. Included control variables are parental income, gender, race, father employment, father education, mother education, marital status of the mother at birth, and time since exposure. Birth year and school district fixed effects are included. The mean of Hourly Earnings shows the dependent variable's mean for the neighboring group before the shooting. The control group includes anyone that has ever lived in the neighboring district. Standard errors are clustered at school district level: *p<0.1; **p<0.05; ***p<0.01

Table A21: Effects of School Shootings on Survivors' Earnings - District Cluster

	Dependent variable:					
	Hourly Earnings (IHS) at Age 30					
	(1)	(2)	(3)	(4)	(5)	(6)
Exposed	−0.239***	−0.227***	−0.220***	−0.224***	−0.208***	−0.210***
	(0.069)	(0.070)	(0.073)	(0.072)	(0.076)	(0.077)
Parent Income (Poor)		−0.134***	−0.094**	−0.080*	−0.085*	−0.078*
		(0.048)	(0.046)	(0.047)	(0.047)	(0.046)
Gender (Male)		0.026	0.017	0.011	0.005	0.014
		(0.033)	(0.032)	(0.032)	(0.033)	(0.034)
Race (White)		0.395***	0.332***	0.279***	0.255***	0.244***
		(0.059)	(0.058)	(0.061)	(0.060)	(0.062)
Father Employment (Unemployed)			−0.033	−0.030	−0.026	−0.061
			(0.089)	(0.090)	(0.089)	(0.090)
Father Education (College)			0.134*	0.090	0.092	0.096
			(0.081)	(0.082)	(0.083)	(0.087)
Mother Education (College)				0.221***	0.224***	0.195**
				(0.076)	(0.076)	(0.080)
Marital Status of Mother at Birth (Married)				0.373**	0.320**	0.389**
				(0.147)	(0.148)	(0.155)
Time Since Exposure					0.002	0.001
					(0.002)	(0.002)
School District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Current County Fixed Effects	No	No	No	No	No	Yes
Mean Hourly Earnings	11.906	11.906	11.906	11.906	11.906	11.906
Number of Treated Individuals	1,214	1,214	1,214	1,214	1,214	1,214
Number of Clusters	288	288	288	288	288	288
Observations	5,701	5,701	5,701	5,701	5,701	5,701

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variable is the inverse hyperbolic sine transformation of hourly earnings at age 30. Exposed, the reported independent variable, defines an individual at a relevant school-going age in a shooting district at the time of the shooting. Included control variables are parental income, gender, race, father employment, father education, mother education, marital status of the mother at birth, and time since exposure. Birth year and school district fixed effects are included. The mean of Hourly Earnings shows the dependent variable's mean for the neighboring group before the shooting. Standard errors are clustered at the district cluster level (a district cluster is the exposed district and the cluster of neighboring districts around it): *p<0.1; **p<0.05; ***p<0.01

Table A22: Effects of School Shootings on Survivors' Earnings - State Cluster

	Dependent variable:					
	Hourly Earnings (IHS) at Age 30					
	(1)	(2)	(3)	(4)	(5)	(6)
Exposed	−0.239***	−0.227***	−0.220***	−0.224***	−0.208**	−0.210**
	(0.077)	(0.077)	(0.078)	(0.079)	(0.081)	(0.079)
Parent Income (Poor)		−0.134***	−0.094***	−0.080**	−0.085**	−0.078**
		(0.036)	(0.034)	(0.035)	(0.034)	(0.037)
Gender (Male)		0.026	0.017	0.011	0.005	0.014
		(0.036)	(0.034)	(0.033)	(0.035)	(0.038)
Race (White)		0.395***	0.332***	0.279***	0.255***	0.244***
		(0.055)	(0.046)	(0.051)	(0.052)	(0.056)
Father Employment (Unemployed)			−0.033	−0.030	−0.026	−0.061
			(0.059)	(0.061)	(0.063)	(0.070)
Father Education (College)			0.134*	0.090	0.092	0.096
			(0.069)	(0.068)	(0.071)	(0.074)
Mother Education (College)				0.221***	0.224***	0.195**
				(0.073)	(0.072)	(0.080)
Marital Status of Mother at Birth (Married)				0.373**	0.320*	0.389**
				(0.154)	(0.167)	(0.162)
Time Since Exposure					0.002	0.001
					(0.002)	(0.002)
School District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Current County Fixed Effects	No	No	No	No	No	Yes
Mean Hourly Earnings	11.906	11.906	11.906	11.906	11.906	11.906
Number of Treated Individuals	1,214	1,214	1,214	1,214	1,214	1,214
Number of Clusters	43	43	43	43	43	43
Observations	5,701	5,701	5,701	5,701	5,701	5,701

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variable is the inverse hyperbolic sine transformation of hourly earnings at age 30. Exposed, the reported independent variable, defines an individual at a relevant school-going age in a shooting district at the time of the shooting. Included control variables are parental income, gender, race, father employment, father education, mother education, marital status of the mother at birth, and time since exposure. Birth year and school district fixed effects are included. The mean of Hourly Earnings shows the dependent variable's mean for the neighboring group before the shooting. Standard errors are clustered at state level: *p<0.1; **p<0.05; ***p<0.01

Table A23: Effects of School Shootings on Survivors' Earnings - District Cluster Fixed Effects

	Dependent variable:					
	Hourly Earnings (IHS) at Age 30					
	(1)	(2)	(3)	(4)	(5)	(6)
Exposed	−0.362***	−0.283***	−0.273***	−0.262***	−0.246***	−0.239***
	(0.058)	(0.058)	(0.059)	(0.060)	(0.063)	(0.065)
Parent Income (Poor)		−0.122***	−0.093**	−0.084*	−0.092**	−0.093**
		(0.046)	(0.044)	(0.044)	(0.044)	(0.046)
Gender (Male)		0.056	0.049	0.043	0.037	0.041
		(0.037)	(0.037)	(0.036)	(0.036)	(0.038)
Race (White)		0.460***	0.402***	0.345***	0.327***	0.332***
		(0.049)	(0.052)	(0.052)	(0.053)	(0.055)
Father Employment (Unemployed)			−0.030	−0.049	−0.046	−0.050
			(0.093)	(0.093)	(0.095)	(0.098)
Father Education (College)			0.143*	0.100	0.102	0.099
			(0.082)	(0.083)	(0.084)	(0.086)
Mother Education (College)				0.175**	0.177**	0.172**
				(0.079)	(0.078)	(0.082)
Marital Status of Mother at Birth (Married)				0.409***	0.360***	0.392***
				(0.135)	(0.134)	(0.139)
Time Since Exposure					0.002	0.002
					(0.003)	(0.003)
School District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Current County Fixed Effects	No	No	No	No	No	Yes
Mean Hourly Earnings	11.906	11.906	11.906	11.906	11.906	11.906
Number of Treated Individuals	1,214	1,214	1,214	1,214	1,214	1,214
Number of Clusters	954	954	954	954	954	954
Observations	5,701	5,701	5,701	5,701	5,701	5,701

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variable is the inverse hyperbolic sine transformation of hourly earnings at age 30. Exposed, the reported independent variable, defines an individual at a relevant school-going age in a shooting district at the time of the shooting. Included control variables are parental income, gender, race, father employment, father education, mother education, marital status of the mother at birth, and time since exposure. Birth year and district cluster fixed effects are included. The mean of Hourly Earnings shows the dependent variable's mean for the neighboring group before the shooting. Standard errors are clustered at school district level: *p<0.1; **p<0.05; ***p<0.01

Table A24: Effects of School Shootings on Survivors' Earnings - District Cluster Fixed Effects with District Cluster Std Errors

	Dependent variable:					
	Hourly Earnings (IHS) at Age 30					
	(1)	(2)	(3)	(4)	(5)	(6)
Exposed	−0.362***	−0.283***	−0.273***	−0.262***	−0.246***	−0.239***
	(0.049)	(0.047)	(0.048)	(0.049)	(0.052)	(0.052)
Parent Income (Poor)		−0.122**	−0.093**	−0.084*	−0.092*	−0.093**
		(0.047)	(0.046)	(0.046)	(0.047)	(0.047)
Gender (Male)		0.056*	0.049	0.043	0.037	0.041
		(0.030)	(0.030)	(0.030)	(0.031)	(0.031)
Race (White)		0.460***	0.402***	0.345***	0.327***	0.332***
		(0.051)	(0.050)	(0.052)	(0.053)	(0.054)
Father Employment (Unemployed)			−0.030	−0.049	−0.046	−0.050
			(0.093)	(0.094)	(0.094)	(0.097)
Father Education (College)			0.143*	0.100	0.102	0.099
			(0.077)	(0.079)	(0.081)	(0.081)
Mother Education (College)				0.175**	0.177**	0.172**
				(0.073)	(0.071)	(0.071)
Marital Status of Mother at Birth (Married)				0.409***	0.360***	0.392***
				(0.128)	(0.129)	(0.132)
Time Since Exposure					0.002	0.002
					(0.004)	(0.004)
School District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Current County Fixed Effects	No	No	No	No	No	Yes
Mean Hourly Earnings	11.906	11.906	11.906	11.906	11.906	11.906
Number of Treated Individuals	1,214	1,214	1,214	1,214	1,214	1,214
Number of Clusters	288	288	288	288	288	288
Observations	5,701	5,701	5,701	5,701	5,701	5,701

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variable is the inverse hyperbolic sine transformation of hourly earnings at age 30. Exposed, the reported independent variable, defines an individual at a relevant school-going age in a shooting district at the time of the shooting. Included control variables are parental income, gender, race, father employment, father education, mother education, marital status of the mother at birth, and time since exposure. Birth year and district cluster fixed effects are included. The mean of Hourly Earnings shows the dependent variable's mean for the neighboring group before the shooting. Standard errors are clustered at district cluster level: *p<0.1; **p<0.05; ***p<0.01

Table A25: Effects of School Shootings on Survivors' Earnings by Shooting Types

	Dependent variable:			
	Hourly Earnings (IHS) at Age 30			
	Suicides	Personally Targeted	Crime Related	Other
	(1)	(2)	(3)	(4)
Exposed	−0.277	−0.250***	−0.461**	−0.367
	(0.501)	(0.092)	(0.210)	(0.240)
School District Fixed Effects	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes
Control Variables	Yes	Yes	Yes	Yes
Mean Hourly Earnings	10.418	9.993	13.458	12.885
Number of Treated Individuals	22	494	155	102
Number of Clusters	128	380	192	254
Observations	364	2,070	547	746

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variable is the inverse hyperbolic sine transformation of hourly earnings at age 30. Exposed, the reported independent variable, defines an individual at a relevant school-going age in a shooting district at the time of the shooting. Columns (1)-(4) restrict the sample to different types of shootings, namely, suicides, personally targeted, crime-related, and other. Included control variables are parental income, gender, race, father employment, father education, mother education, marital status of the mother at birth, and time since exposure. Birth year and school district fixed effects are included. The mean of Hourly Earnings shows the dependent variable's mean for the neighboring group before the shooting. Standard errors are clustered at school district level: *p<0.1; **p<0.05; ***p<0.01

Table A26: Effects of School Shootings on Survivors' Earnings by Casualties

	Dependent variable:		
	Hourly Earnings (IHS) at Age 30		
	All	No Deaths	Death>0
	(1)	(2)	(3)
Exposed	-0.208^{***}	-0.304^{***}	-0.177^{**}
	(0.068)	(0.101)	(0.078)
School District Fixed Effects	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes
Control Variables	Yes	Yes	Yes
Mean Hourly Earnings	11.906	14.163	11.143
Number of Treated Individuals	1,214	230	984
Number of Clusters	954	886	301
Observations	5,701	3,727	1,974

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variable is the inverse hyperbolic sine transformation of hourly earnings at age 30. Exposed, the reported independent variable, defines an individual at a relevant school-going age in a shooting district at the time of the shooting. Column (1) presents the coefficient estimate for the whole sample. Columns (2) and (3) restrict the sample to shootings with no deaths and the number of deaths larger than zero, respectively. Included control variables are parental income, gender, race, father employment, father education, mother education, marital status of the mother at birth, and time since exposure. Birth year and school district fixed effects are included. The mean of Hourly Earnings shows the dependent variable's mean for the neighboring group before the shooting. The mean of Hourly Earnings shows the dependent variable's mean for the neighboring group before the shooting. Standard errors are clustered at school district level: *p<0.1; **p<0.05;

Table A27: Effects of School Shootings on Survivors' Educational Achievements by Heterogeneity

	Dependent variable:					
	Years of Schooling					
	Parent Income		Race		Gender	
	Poor	Well-off	White	Black	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)
Exposed	−0.233*	−0.660*	−0.445*	−0.332	−0.396**	−0.483*
	(0.121)	(0.367)	(0.257)	(0.221)	(0.168)	(0.272)
School District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Mean Years of Schooling	12.213	13.273	13.481	12.056	13.010	12.529
Number of Treated Individuals	561	281	176	972	631	583
Number of Clusters	460	470	769	297	719	682
Observations	2,309	1,303	2,472	2.950	2,985	2,716

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variable is years of education completed. Exposed, the reported independent variable, defines an individual at a relevant school-going age in a shooting district at the time of the shooting. Column (1) restricts the sample to individuals with poor parental income, column (2) to individuals with well-off parental income, column (3) restricts the sample to white people, column (4) to black people, column (5) restricts the sample to females and column (6) to males. Included control variables are gender, race, father employment, father education, mother education, marital status of the mother at birth and time since exposure for columns (1) and (2); parental income, gender, father employment, father education, mother education, marital status of the mother at birth and time since exposure for columns (3) and (4), and parental income, race, father employment, father education, mother education, marital status of the mother at birth and time since exposure for columns (5) and (6). Birth year and school district fixed effects are included. The mean of Years of Schooling shows the dependent variable's mean for the neighboring group before the shooting. Standard errors are clustered at school district level: *p<0.1; **p<0.05; ***p<0.01

Table A28: Effects of School Shootings on Survivors' Educational Achievements by Heterogeneity

	Dependent variable:					
	High School Degree					
	Parent Income		Race		Gender	
	Poor	Well-off	White	Black	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)
Exposed	−0.069***	−0.098**	−0.074***	−0.064***	−0.063***	−0.086***
	(0.024)	(0.040)	(0.031)	(0.021)	(0.022)	(0.029)
School District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Mean High School Degree	0.777	0.891	0.901	0.779	0.867	0.811
Number of Treated Individuals	561	281	176	972	631	583
Number of Clusters	460	470	769	297	719	682
Observations	2,309	1,303	2,472	2.950	2,985	2,716

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variable is high school degree. Exposed, the reported independent variable, defines an individual at a relevant school-going age in a shooting district at the time of the shooting. Column (1) restricts the sample to individuals with poor parental income, column (2) to individuals with well-off parental income, column (3) restricts the sample to white people, column (4) to black people, column (5) restricts the sample to females and column (6) to males. Included control variables are gender, race, father employment, father education, mother education, marital status of the mother at birth and time since exposure for columns (1) and (2); parental income, gender, father employment, father education, mother education, marital status of the mother at birth and time since exposure for columns (3) and (4), and parental income, race, father employment, father education, mother education, marital status of the mother at birth and time since exposure for columns (5) and (6). Birth year and school district fixed effects are included. The mean of High School Degree shows the dependent variable's mean for the neighboring group before the shooting. Standard errors are clustered at school district level: *p<0.1; **p<0.05; ***p<0.01

Table A29: Effects of School Shootings on Survivors' Educational Achievements by Heterogeneity

	Dependent variable:					
	College Degree					
	Parent Income		Race		Gender	
	Poor	Well-off	White	Black	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)
Exposed	−0.026	−0.040	−0.079	−0.012	−0.061**	−0.047*
	(0.025)	(0.051)	(0.049)	(0.020)	(0.027)	(0.027)
School District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Mean College Degree	0.128	0.274	0.302	0.105	0.204	0.208
Number of Treated Individuals	561	281	176	972	631	583
Number of Clusters	460	470	769	297	719	682
Observations	2,309	1,303	2,472	2.950	2,985	2,716

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variable is college degree. Exposed, the reported independent variable, defines an individual at a relevant school-going age in a shooting district at the time of the shooting. Column (1) restricts the sample to individuals with poor parental income, column (2) to individuals with well-off parental income, column (3) restricts the sample to white people, column (4) to black people, column (5) restricts the sample to females and column (6) to males. Included control variables are gender, race, father employment, father education, mother education, marital status of the mother at birth and time since exposure for columns (1) and (2); parental income, gender, father employment, father education, mother education, marital status of the mother at birth and time since exposure for columns (3) and (4), and parental income, race, father employment, father education, mother education, marital status of the mother at birth and time since exposure for columns (5) and (6). Birth year and school district fixed effects are included. The mean of College Degree shows the dependent variable's mean for the neighboring group before the shooting. Standard errors are clustered at school district level: *p<0.1; **p<0.05; ***p<0.01

Table A30: Effects of School Shootings on Probability to Move

	Dependent variable:					
	Probability to Move at Age 30					
	(1)	(2)	(3)	(4)	(5)	(6)
Exposed	−0.013	−0.008	−0.015	−0.018	0.014	0.003
	(0.026)	(0.026)	(0.025)	(0.025)	(0.020)	(0.022)
Parent Income (Poor)		−0.061***	−0.039**	−0.035**	−0.039**	−0.022
		(0.018)	(0.018)	(0.018)	(0.019)	(0.016)
Gender (Male)		−0.049***	−0.050***	−0.052***	−0.053***	−0.052***
		(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
Race (White)		0.127***	0.108***	0.107***	0.097***	0.093***
		(0.036)	(0.035)	(0.035)	(0.034)	(0.029)
Father Employment (Unemployed)			0.118***	0.113***	0.105***	0.108***
			(0.037)	(0.036)	(0.038)	(0.035)
Father Education (College)			0.064**	0.042	0.048	0.047
			(0.031)	(0.031)	(0.032)	(0.031)
Mother Education (College)				0.156***	0.141***	0.116***
				(0.036)	(0.033)	(0.032)
Marital Status of Mother at Birth (Married)				−0.069	−0.088	−0.015
				(0.067)	(0.070)	(0.039)
Time Since Exposure					0.001	0.001
					(0.001)	(0.001)
School District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Current County Fixed Effects	No	No	No	No	No	Yes
Mean Probability to Move	0.514	0.514	0.514	0.514	0.514	0.514
Number of Treated Individuals	1,214	1,214	1,214	1,214	1,214	1,214
Number of Clusters	954	954	954	954	954	954
Observations	5,701	5,701	5,701	5,701	5,701	5,701

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variable is the probability of an individual to relocate to another school district at age 30. Exposed, the reported independent variable, defines an individual at a relevant school-going age in a shooting district at the time of the shooting. Included control variables are parental income, gender, race, father employment, father education, mother education, marital status of the mother at birth, and time since exposure. Birth year and school district fixed effects are included. The mean of Probability to Move shows the dependent variable's mean for the neighboring group before the shooting. Standard errors are clustered at school district level: *p<0.1; **p<0.05; ***p<0.01

Table A31: Effects of School Shootings on Probability to Move to a College District

	Dependent variable:					
	Probability to Move to a College District					
	(1)	(2)	(3)	(4)	(5)	(6)
Exposed	−0.073**	−0.066**	−0.065**	−0.067**	−0.038	−0.038
	(0.032)	(0.031)	(0.031)	(0.031)	(0.029)	(0.030)
Parent Income (Poor)		−0.023**	−0.019*	−0.020*	−0.021*	−0.022*
		(0.011)	(0.012)	(0.012)	(0.012)	(0.012)
Gender (Male)		−0.028***	−0.026***	−0.027***	−0.027***	−0.026***
		(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Race (White)		0.045**	0.042*	0.045**	0.045**	0.048**
		(0.022)	(0.022)	(0.022)	(0.022)	(0.022)
Father Employment (Unemployed)			0.079***	0.080***	0.080***	0.078***
			(0.022)	(0.023)	(0.024)	(0.024)
Father Education (College)			0.062***	0.056**	0.055**	0.054**
			(0.022)	(0.023)	(0.024)	(0.024)
Mother Education (College)				0.035	0.027	0.024
				(0.025)	(0.025)	(0.025)
Marital Status of Mother at Birth (Married)				−0.019	−0.025	−0.031
				(0.031)	(0.032)	(0.032)
Time Since Exposure				0.001	0.001	
					(0.001)	(0.001)
School District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Current County Fixed Effects	No	No	No	No	No	Yes
Mean Probability to Move	0.164	0.164	0.164	0.164	0.164	0.164
Number of Treated Individuals	2,109	2,109	2,109	2,109	2,109	2,109
Number of Clusters	1,179	1,179	1,179	1,179	1,179	1,179
Observations	8,611	8,611	8,611	8,611	8,611	8,611

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variable is the probability of an individual to relocate to a college district after high school. A college district is defined as a school district with a college (two or more year institutions) or university (four year institutions) within its boundaries. Exposed, the reported independent variable, defines an individual at a relevant school-going age in a shooting district at the time of the shooting. Included control variables are parental income, gender, race, father employment, father education, mother education, marital status of the mother at birth, and time since exposure. Birth year and school district fixed effects are included. The mean of Probability to Move shows the dependent variable's mean for the neighboring group before the shooting. Standard errors are clustered at school district level: *p<0.1; **p<0.05; ***p<0.01

Table A32: Effects of School Shootings on Probability to Move to a University District

	Dependent variable:					
	Probability to Move to a University District					
	(1)	(2)	(3)	(4)	(5)	(6)
Exposed	−0.096***	−0.089***	−0.083***	−0.085***	−0.059**	−0.058**
	(0.031)	(0.031)	(0.031)	(0.031)	(0.029)	(0.029)
Parent Income (Poor)		−0.020*	−0.016	−0.017	−0.018	−0.019
		(0.011)	(0.011)	(0.011)	(0.011)	(0.012)
Gender (Male)		−0.021***	−0.021***	−0.021***	−0.021***	−0.019***
		(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Race (White)		0.054***	0.050**	0.055***	0.054***	0.058***
		(0.020)	(0.020)	(0.021)	(0.020)	(0.021)
Father Employment (Unemployed)			0.049**	0.050**	0.049**	0.048**
			(0.020)	(0.021)	(0.022)	(0.022)
Father Education (College)			0.056***	0.051**	0.050**	0.049**
			(0.020)	(0.020)	(0.021)	(0.021)
Mother Education (College)				0.030	0.022	0.018
				(0.023)	(0.023)	(0.023)
Marital Status of Mother at Birth (Married)				−0.026	−0.032	−0.037
				(0.029)	(0.029)	(0.029)
Time Since Exposure					0.001	0.001
					(0.001)	(0.001)
School District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Current County Fixed Effects	No	No	No	No	No	Yes
Mean Probability to Move	0.078	0.078	0.078	0.078	0.078	0.078
Number of Treated Individuals	2,109	2,109	2,109	2,109	2,109	2,109
Number of Clusters	1,179	1,179	1,179	1,179	1,179	1,179
Observations	8,611	8,611	8,611	8,611	8,611	8,611

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variable is the probability of an individual to relocate to a university district after high school. A university district is defined as a school district with a university within its boundaries. Exposed, the reported independent variable, defines an individual at a relevant school-going age in a shooting district at the time of the shooting. Included control variables are parental income, gender, race, father employment, father education, mother education, marital status of the mother at birth, and time since exposure. Birth year and school district fixed effects are included. The mean of Probability to Move shows the dependent variable's mean for the neighboring group before the shooting. Standard errors are clustered at school district level: *p<0.1; **p<0.05; ***p<0.01

Table A33: Effects of School Shootings on School District Spending

	Dependent variable:					
	Total Expenditures	Education	Instruction	Support Services	Salaries	Instruction Salaries
	(1)	(2)	(3)	(4)	(5)	(6)
Exposed	0.026*	0.020	0.015	0.016	0.018	0.005
	(0.015)	(0.014)	(0.014)	(0.017)	(0.013)	(0.014)
School District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Mean of Dependent Variable	8919.172	7488.757	4509.56	2664.056	4603.543	3124.403
Number of Treated Districts	6,324	6,324	6,324	6,324	6,324	6,324
Number of Clusters	2,254	2,254	2,254	2,254	2,254	2,254
Observations	65,897	65,897	65,897	65,897	65,897	65,897

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the school district year. The outcome variables are total expenditures, education expenditures, instruction expenditures, support services expenditures, salaries, and instruction salaries. Exposed, the reported independent variable, defines a school district that has experienced a shooting. Control variables are population density, white population ratio, unemployment rate, college educated population ratio, gender ratio and median household income. Year and school district fixed effects are included. The mean of dependent variable shows the dependent variables' mean for the neighboring group before the shooting. Standard errors are clustered at school district level: *p<0.1; **p<0.05; ***p<0.01

Table A34: Effects of School Shootings on School District Revenue

	Dependent variable:			
	Total	Federal	State	Local
	(1)	(2)	(3)	(4)
Exposed	0.019	0.191***	−0.031	−0.019
	(0.014)	(0.029)	(0.023)	(0.030)
School District Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Control Variables	Yes	Yes	Yes	Yes
Mean of Dependent Variable	8871.846	683.472	4022.403	4165.764
Number of Treated Districts	6,324	6,324	6,324	6,324
Number of Clusters	2,254	2,254	2,254	2,254
Observations	65,897	65,897	65,897	65,897

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the school district year. The outcome variables are total revenues, federal revenues, state revenues, and local revenues. Exposed, the reported independent variable defines a school district that has experienced a shooting. Control variables are population density, white population ratio, unemployment rate, college educated population ratio, gender ratio and median household income. Year and school district fixed effects are included. The mean of dependent variable shows the dependent variables' mean for the neighboring group before the shooting. Standard errors are clustered at school district level: *p<0.1; **p<0.05; ***p<0.01

Table A35: Effects of School Shootings on Survivors' Children Self-Concept

	Dependent variable:		
	Math Ability	Reading Ability	Global Self-Concept
	(1)	(2)	(3)
Exposed Parent	-0.574^{***}	-0.507^{**}	-0.630^{***}
	(0.183)	(0.207)	(0.185)
School District Fixed Effects	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes
Control Variables	Yes	Yes	Yes
Mean of Dependent Variable	3.917	4.285	2.960
Number of Treated Individuals	2,459	2,459	2,459
Number of Clusters	341	341	341
Observations	10,091	10,091	10,091

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variables are math ability self-concept, reading ability self-concept, and global self-concept. Exposed parent, the reported independent variable, defines an individual who has shooting-exposed parents. Included control variables are grandparent income, gender, race, grandfather employment, grandfather education, grandmother education, marital status of grandmother at birth, and time since parent's exposure. Fixed effects are included: parent birth year, parent school district, and birth year and school district. The mean of dependent variable shows the dependent variables' mean for the neighboring group before the shooting. Standard errors are clustered at parent school district level: *p<0.1; **p<0.05; ***p<0.01

Table A36: Effects of School Shootings on Survivors' Children's Future Plans

	Dependent variable:				
	School Aspirations	School Expectations	Talk with Mother	Talk with Father	Talk with Friends
	(1)	(2)	(3)	(4)	(5)
Exposed Parent	-0.342^{*}	-0.417^{***}	-0.405	-0.305^{*}	-0.357^{**}
	(0.193)	(0.124)	(0.277)	(0.174)	(0.167)
Mean of Dependent Variable	2.629	2.493	2.875	2.577	2.943
Number of Treated Individuals	1,643	1,643	911	911	911
Number of Clusters	340	340	295	295	295
Observations	5,323	5,323	3,140	3,140	3,140

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variables are school aspirations, school expectations, talk about future with their mother, talk about future with their father and talk about future with their friends. Exposed parent, the reported independent variable, defines an individual who has shooting-exposed parents. Included control variables are grandparent income, gender, race, grandfather employment, grandfather education, grandmother education, marital status of grandmother at birth, and time since parent's exposure. Fixed effects are included: parent birth year, parent school district, and birth year and school district. The mean of dependent variable shows the dependent variables' mean for the neighboring group before the shooting. Standard errors are clustered at parent school district level: *p<0.1; **p<0.05; ***p<0.01

Table A37: Effects of School Shootings on Survivors' Children's Earnings

	Dependent variable:				
	Income Distribution				
	Top 10%	Top 25%	Top 50%	Bottom 25%	Bottom 10%
	(1)	(2)	(3)	(4)	(5)
Exposed Parent	−0.028	−0.007	−0.099***	0.115***	0.170***
	(0.020)	(0.026)	(0.019)	(0.015)	(0.019)
Mean Percentile	0.100	0.250	0.500	0.250	0.100
Number of Treated Individuals	45	45	45	45	45
Number of Clusters	127	127	127	127	127
Observations	1,951	1,951	1,951	1,951	1,951

Note: Each column reports coefficients and standard errors (in brackets) from a two-way fixed effects regression displayed in equation (1). The unit of observation is the individual. The outcome variables are the probability of reaching top 10, top 25, top 50 percent or staying at the bottom 25, and bottom 10 percent of the income distribution. Exposed parent, the reported independent variable, defines an individual who has shooting-exposed parents. Included control variables are grandparent income, gender, race, grandfather employment, grandfather education, grandmother education, marital status of grandmother at birth, and time since parent's exposure. Fixed effects are included: parent birth year, parent school district, and birth year and school district. The mean of dependent variable shows the dependent variables' mean for the neighboring group before the shooting. Standard errors are clustered at parent school district level: *p<0.1; **p<0.05; ***p<0.01

B Supplementary Data

B.1 School District Finance Survey

I compiled data on school district spending and revenue from the Common Core of Data (CCD) and the Historical Database on Individual Government Finances (INDFIN). INDFIN contains school district finance data annually for a sub-sample of school districts from 1967 and 1970 through 1991. The CCD School District Finance Survey provides the rest of the data, from 1991 to today, for all school districts in the United States. I merge these to get a dataset on school district finances from 1967-2019.

I use the spending and revenue variables common in both datasets, namely, total revenue of the school district in a given year; total federal, state, and local revenues in that year. The total revenue of a school district is the sum of federal, state, and local funding. Local funding largely comes from local property taxes. Federal funding, accounting for about 10 percent of total school district revenues, target mostly low-income student groups. State funding is based on specific variables according to a formula and is less likely to adjust to district-specific shocks such as school shootings.

On the spending side, the variables are total expenditures of a school district in a given year; total current expenditures for elementary and secondary education; total current expenditures on instruction; total current expenditures on support services; total staff salaries; and salaries of instruction staff in that year. Total current expenditures for elementary and secondary education is the sum of total current expenditures on instruction, total current expenditures on support services, and total current expenditures on other elementary and secondary education.

B.2 Decennial Census Data

Census data on the United States' population is collected by the United States Census Bureau every ten years, in years ending in zero. I obtain variables on population estimates, median household income, per capita income, number of people living in poverty, and other demographics such as race, sex, and age. The data is reported at the tract level (larger than Census blocks) and includes every Census from 1970 to 2010. I further calculate population density from these variables. I aggregate the aforementioned variables to the school district level according to the land area share of a tract on the district it occupies and merged with school district finance survey using the crosswalk created by Chetty et al. (2018).[41]

[41] I use the crosswalk from Chetty et al. (2018) Table 9: Neighborhood Characteristics by Census Tract. The crosswalk identifies each Census tract by state, county, and tract (2010 FIPS) and provides corresponding school district identifiers. Codebook for Table 9 can be found at https://opportunityinsights.org/wp-content/uploads/2019/07/Codebook-for-Table-9.pdf

C Explanation of Variables

- Table 1

  - **Hourly Earnings:** Hourly earnings is a numeric variable that represents the hourly earnings of an individual. It is the ratio of total labor income to hours worked in a year. Total labor income is the sum of labor, farm, business, and asset incomes. Labor income represents the individual's earnings from wages or salaries and takes values between 0 and 9,999,997. Farm income represents the individual's earnings from farming and takes the values between -999,997 and 9,999,99. Business income represents the individual's earnings from the labor part of business income from unincorporated businesses and takes the values between 0 and 9,999,997. Asset income represents the individual's earnings from the asset part of business income from unincorporated businesses and takes the values between -999,997 and - 9,999,997. Hours worked represent the total annual work hours of the individuals. It takes the values between 0 and 5,824. This variable is obtained from the PSID and is available for the years 1968-2019.
  - **Parent Income:** Parent income is a nominal variable that takes values 1, 3, and 5 where 1 corresponds to poor, 3 to average, and 5 to pretty well-off. It represents the economic situation of the individual's parents when they were growing up. This variable is obtained from the PSID and is available for the years 1968-2019.
  - **Gender:** Gender is a nominal variable that takes the value 1 if the individual is male and 2 if the individual is female. This variable is obtained from the PSID and available for the years 1968-2019.
  - **Race:** Race is a nominal variable that takes values between 1 and 7. The

value 1 corresponds to White, 2 corresponds to Black, 3 corresponds to American Indian or Alaska Native, 4 corresponds to Asian, 5 corresponds to Native Hawaiian or Pacific Islander and 7 corresponds to other races. This variable is obtained from the PSID and available for the years 1968-2019.

– **Father Employment:** Father employment is a nominal variable that takes values between 10 and 9,999 (in the latest wave) with different occupation categories corresponding to different value ranges. The occupations covered in this variable management occupations; business and financial operations occupations; computer and mathematical occupations; architecture and engineering occupations; life, physical and social science occupations; community and social services occupations; legal occupations; education, training and library occupations; arts, design, entertainment, sports and media occupations; healthcare practitioners and technical occupations; healthcare support occupations; protective service occupations; food preparation and serving related occupations; building and grounds cleaning and maintenance occupations; personal care and service occupations, sales and related occupations; office and administrative support occupations; farming, fishing and forestry occupations; construction and extraction occupations; installation, maintenance, and repair occupations; production occupations; transportation and material moving occupations; military specific occupations and unemployed. The variable represents the individual's father's usual occupation when they were growing up. This variable is obtained from the PSID and available for the years 1968-2019.

– **Father Education:** Father education is a nominal variable that takes values between 1 and 8 where value 1 corresponds to 0-5 grades, 2 corre-

sponds to 6-8 grades, 3 corresponds to 9-11 grades, 4 corresponds to 12 grades (completed high school), 5 corresponds to 12 grades plus nonacademic training, 6 corresponds to 13-14 years (some college), 7 corresponds to 15-16 years (college BA) and 8 corresponds to 17 years (graduate work). The variable represents the level of education that an individual's father completed. This variable is obtained from the PSID and available for the years 1968-2019.

- **Mother Education:** Mother education is a nominal variable that takes values between 1 and 8 where value 1 corresponds to 0-5 grades, 2 corresponds to 6-8 grades, 3 corresponds to 9-11 grades, 4 corresponds to 12 grades (completed high school), 5 corresponds to 12 grades plus nonacademic training, 6 corresponds to 13-14 years (some college), 7 corresponds to 15-16 years (college BA) and 8 corresponds to 17 years (graduate work). The variable represents the level of education that an individual's mother completed. This variable is obtained from the PSID and available for the years 1974-2019.
- **Marital Status of Mother at Birth:** Marital status of mother at birth is a nominal variable that takes values between 1 and 9 where 1 corresponds to married, 2 corresponds to never married, 3 corresponds to widowed, 4 corresponds to divorced, 5 corresponds to separated, 7 corresponds to other, 8 and 9 correspond to NA. The variable represents the marital status of mother at the time of individual's birth. This variable is obtained from the PSID and available for the years 1985-2019.
- **Time Since Exposure:** Time since exposure is a continuous variable that measures the number of years that have passed between the shooting year and the year that individual is at age 30. For the individuals that are

in pre-shooting period (pre-exposed in shooting districts and pre-exposed in neighboring districts) it can take negative values. This is on purpose not set to zero as to not assume a functional form on the variable.

- Table 2
  - **Years of Schooling:** Years of completed education variable represent the actual grade of school completed; e.g., a value of 08 indicates that this individual completed the eighth grade by the time of the interview. It takes values between 0 and 17. This variable is obtained from the PSID and available for the years 1968-2019.
  - **High School Degree:** High school degree dummy takes the value 1 if the individual has a high school degree, in other words, if they have more than 12 years of completed education, and 0 otherwise. This variable is obtained from the PSID and available for the years 1968-2019.
  - **College Degree:** College degree dummy takes the value 1 if the individual has a college degree, in other words, if they have more than 16 years of completed education, and 0 otherwise. This variable is obtained from the PSID and available for the years 1968-2019.
- Table 3
  - **Hours Worked:** Hours worked is a continuous variable that takes values between 1 and 5,824. The values for this variable represent individual's total annual work hours on all jobs including overtime the last year. This variable is obtained from the PSID and available for the years 1968-2019.
  - **Unemployed:** Unemployed is a dummy variable that takes the value 1 if the individual is unemployed and 0 otherwise. This variable is obtained

from the PSID and available for the years 1968-2019.

- **Self-Employed:** Self-employed is a dummy variable that takes the value 1 if the individual is self-employed and 0 otherwise. This variable is obtained from the PSID and available for the years 1968-2019.
- **Business Income:** Business income is a continuous variable that takes values between -999,997 and 19,999,994. It is the sum of labor part of business income and asset part of business income from unincorporated businesses. This variable is obtained from the PSID and available for the years 1970-2019.

- Table 4
  - **Higher Median Household Income District:** Higher median household income district is a dummy variable that takes the value 1 if the individual has moved to a school district that has a higher median household income than the individual's original residential school district and 0 otherwise. Median household income variable for each tract is obtained from the decennial census and aggregated to the school district level according to the land area share of a tract on the school district it occupies obtained from the tract to school district crosswalk by Chetty et al. (2018).
  - **Top 10 percent Median Household Income District:** Higher median household income district is a dummy variable that takes the value 1 if the individual has moved to a school district that is in the top 10 percent of the income distribution and 0 otherwise. Median household income variable for each tract is obtained from the decennial census and aggregated to the school district level according to the land area share of a tract on the school district it occupies obtained from the tract to school district

crosswalk by Chetty et al. (2018).

- **Higher Median Household Income County:** Higher median household income county is a dummy variable that takes the value 1 if the individual has moved to a county that has a higher median household income than the individual's original residential county and 0 otherwise. Median household income variable for each county is obtained from the decennial census.
- **Top 10 percent Median Household Income County:** Higher median household income county is a dummy variable that takes the value 1 if the individual has moved to a county that is in the top 10 percent of the income distribution and 0 otherwise. Median household income variable for each county is obtained from the decennial census.
- **Higher Median Household Income State:** Higher median household income state is a dummy variable that takes the value 1 if the individual has moved to a state that has a higher median household income than the individual's original residential state and 0 otherwise. Median household income variable for each state is obtained from the decennial census.
- **Top 10 percent Median Household Income State:** Higher median household income state is a dummy variable that takes the value 1 if the individual has moved to a state that is in the top 10 percent of the income distribution and 0 otherwise. Median household income variable for each state is obtained from the decennial census.

- Table 5
  - **Grandfather Employment:** Analogous to father employment, grandfather employment is a nominal variable that takes values between 10 and

9,999 (in the latest wave) with different occupation categories corresponding to different value ranges. It is the same variable as father employment however this time the value corresponding to the individual's grandfather is utilized. The variable represents the individual's grandfather's usual occupation when their parent was growing up. This variable is obtained from the PSID and available for the years 1968-2019.

- **Grandfather Education:** Analogous to father education, grandfather education is a nominal variable that takes values between 1 and 8 where value 1 corresponds to 0-5 grades, 2 corresponds to 6-8 grades, 3 corresponds to 9-11 grades, 4 corresponds to 12 grades (completed high school), 5 corresponds to 12 grades plus nonacademic training, 6 corresponds to 13-14 years (some college), 7 corresponds to 15-16 years (college BA) and 8 corresponds to 17 years (graduate work). It is the same variable as father education however this time the value corresponding to the individual's grandfather is utilized. The variable represents the level of education that an individual's grandfather completed. This variable is obtained from the PSID and available for the years 1968-2019.
- **Grandmother Education:** Analogous to mother education, grandmother education is a nominal variable that takes values between 1 and 8 where value 1 corresponds to 0-5 grades, 2 corresponds to 6-8 grades, 3 corresponds to 9-11 grades, 4 corresponds to 12 grades (completed high school), 5 corresponds to 12 grades plus nonacademic training, 6 corresponds to 13-14 years (some college), 7 corresponds to 15-16 years (college BA) and 8 corresponds to 17 years (graduate work). It is the same variable as mother education however this time the value corresponding to the individual's grandmother is utilized. The variable represents the level of

education that an individual's grandmother completed. This variable is obtained from the PSID and available for the years 1974-2019.

  - **Marital Status of Grandmother at Birth:** Analogous to marital status of mother at birth, marital status of grandmother at birth is a nominal variable that takes values between 1 and 9 where 1 corresponds to married, 2 corresponds to never married, 3 corresponds to widowed, 4 corresponds to divorced, 5 corresponds to separated, 7 corresponds to other, 8 and 9 correspond to NA. The variable represents the marital status of grandmother at the time of individual's parent's birth. This variable is obtained from the PSID and available for the years 1985-2019.

- Table 6

  - **Higher Median Household Income District:** Higher median household income district is a dummy variable that takes the value 1 if the individual is born in a school district that has a higher median household income than the individual's parent's original residential school district (during their study) and 0 otherwise. Median household income variable for each tract is obtained from the decennial census and aggregated to the school district level according to the land area share of a tract on the school district it occupies obtained from the tract to school district crosswalk by Chetty et al. (2018).

  - **Higher Median Household Income County:** Higher median household income county is a dummy variable that takes the value 1 if the individual is born in a county that has a higher median household income than the individual's parent's original residential county (during their study) and 0 otherwise. Median household income variable for each county is

obtained from the decennial census.

  - **Higher Median Household Income State:** Higher median household income state is a dummy variable that takes the value 1 if the individual is born in a state that has a higher median household income than the individual's parent's original residential state (during their study) and 0 otherwise. Median household income variable for each state is obtained from the decennial census.

- Table A2

  - **Land Area:** Land area is a continuous variable that represents the total land area that a school district covers. I use the crosswalk from Chetty et al. (2018) Table 9: Neighborhood Characteristics by Census Tract. The crosswalk identifies each Census tract by state, county, and tract (2010 FIPS) and provides corresponding school district identifiers. Census tract and school district definitions are from 2010. I aggregate the land area (that is given at tract level) to the school district level.

- Table A12

  - **Income Distribution:** Income distribution is an interval variable that represents the individual's location in income distribution. Income distribution is calculated by first ordering the hourly earnings (at age 30) of individuals in the PSID data, then ranking the orders and finally creating dummy variables for top 1 percent, top 5 percent, top 10 percent, top 15 percent, top 20 percent, top 25 percent, top 30 percent, top 35 percent, top 40 percent, top 45 percent, top 50 percent, bottom 45 percent, bottom 40

percent, bottom 35 percent, bottom 30 percent, bottom 25 percent, bottom 20 percent, bottom 15 percent, bottom 10 percent, bottom 5 percent and bottom 1 percent according to the rankings.

- Table A13

  - **Armed:** Armed variable is derived from the occupation variable in the PSID. Occupation is a nominal variable that takes values between 10 and 9,999 (in the latest wave) with different occupation categories corresponding to different value ranges. The occupations covered in this variable management occupations; business and financial operations occupations; computer and mathematical occupations; architecture and engineering occupations; life, physical and social science occupations; community and social services occupations; legal occupations; education, training and library occupations; arts, design, entertainment, sports and media occupations; healthcare practitioners and technical occupations; healthcare support occupations; protective service occupations; food preparation and serving related occupations; building and grounds cleaning and maintenance occupations; personal care and service occupations, sales and related occupations; office and administrative support occupations; farming, fishing and forestry occupations; construction and extraction occupations; installation, maintenance, and repair occupations; production occupations; transportation and material moving occupations; military specific occupations and unemployed. This variable is obtained from the PSID and available for the years 1968-2019. Armed is a dummy variable that takes the value 1 if the individual had an occupation in military or protective services and 0 otherwise.

– **Teacher:** Teacher variable is derived from the occupation variable in the PSID. This variable is obtained from the PSID and available for the years 1968-2019. Teacher is a dummy variable that takes the value 1 if the individual had an occupation in education and 0 otherwise. Teacher category includes pre-school teacher, elementary school teacher, secondary school teacher and special education teacher.

– **Community:** Community variable is derived from the occupation variable in the PSID. This variable is obtained from the PSID and available for the years 1968-2019. Community is a dummy variable that takes the value 1 if the individual had an occupation in social work and 0 otherwise.

– **Service:** Service variable is derived from the occupation variable in the PSID. This variable is obtained from the PSID and available for the years 1968-2019. Service is a dummy variable that takes the value 1 if the individual had an occupation in transportation, sales occupations, personal care, food service or cleaning and maintenance, and 0 otherwise.

– **Creative:** Creative variable is derived from the occupation variable in the PSID. This variable is obtained from the PSID and available for the years 1968-2019. Creative is a dummy variable that takes the value 1 if the individual had an occupation in arts and sports, computer, engineering or media and 0 otherwise.

– **Non-College:** Non-college variable is derived from the occupation variable in the PSID. This variable is obtained from the PSID and available for the years 1968-2019. Non-college is a dummy variable that takes the value 1 if the individual belongs to one of the occupation categories that arguably does not require a college degree, namely, admin support, construction, farming, repair and maintenance, production, cleaning and

maintenance, food service or personal care, and 0 otherwise.

- Table A14

  - **Antidepressant Consumption:** Antidepressant consumption is a dummy variable that takes the value of 1 if the individual is taking tranquilizers, antidepressants or pills for nerves, and 0 otherwise. This variable is obtained from the PSID and available for the years 2011-2019.
  - **Psychological Problems:** Psychological problems is a dummy variable that takes the value of 1 if the individual were ever diagnosed with any emotional, nervous or psychiatric problems, and 0 otherwise. This variable is obtained from the PSID and available for the years 2005-2019.
  - **Health Status:** Health status is an ordered variable that takes the values 1, 2, 3, 4 and 5 where 1 corresponds to poor, 2 to fair, 3 to good, 4 to very good and 5 to excellent health. This variable is obtained from the PSID and available for the years 1986-2019.
  - **Smoking:** Smoking is a dummy variable that takes the value 1 if the individual smokes cigarettes and 0 otherwise. This variable is obtained from the PSID and available for the years 1999-2019.
  - **Alcohol Consumption:** Alcohol consumption is a dummy variable that takes the value 1 if the individual ever drinks any alcoholic beverages such as beer, wine, or liquor, and 0 otherwise. This variable is obtained from the PSID and available for the years 1999-2019.
  - **BMI:** Body Mass Index is calculated according to the following formula: BMI = (Weight in pounds / (Height in inches) x (Height in inches)) x 703. Weight in pound and height in inches are obtained from the PSID and available for the years 1999-2019.

- Table A15

  - **House Value:** House value is a numeric variable that represents the present value of the individual in dollars. It may take values between 0 and 9,999,996. If the answer of the individual to this question is 0, this means that the individual does not own a house. This variable is obtained from the PSID and available for the years 1968-2019.
  - **House Ownership:** House ownership is a dummy variable that takes the value of 1 if the individual owns a house, and 0 otherwise. This dummy variable is derived from the variable above (house value). House value is obtained from the PSID and available for the years 1968-2019.
  - **Family Size:** Family size is a numeric variable that represents the actual number of persons in the family unit. It takes values between 1 to 20. House value is obtained from the PSID and available for the years 1968-2019.
  - **Weeks Vacation:** Weeks vacation is a numeric variable that represents the actual number of reported weeks of vacation or time off taken by the individual. It takes values between 0 to 52. A 0 means that the individual did not report any vacation in terms of weeks; did not work for money in the last year; took no vacation or time off. This variable is obtained from the PSID and available for the years 2003-2019.
  - **Life Satisfaction:** Life satisfaction is an ordered variable that takes the values 1, 2, 3, 4 and 5 where 1 corresponds to completely satisfied, 2 to very satisfied, 3 to somewhat satisfied, 4 to not very satisfied and 5 to not at all satisfied. This variable is obtained from the PSID and available for the years 2009-2019.

- Table A25
  - **Suicides:** Suicides represent a category of school shootings. It is obtained from the CHDS K-12 school shooting database.
  - **Personally Targeted:** Personally targeted shootings represent a category of school shootings. It consists of shootings classified as escalation of dispute, anger over grade/suspension/discipline, bullying, domestic disputes with a targeted victim, and murder. It is obtained from the CHDS K-12 school shooting database.
  - **Crime Related:** Crime related shootings represent a category of school shootings. It consists of shootings classified as gang-related, hostage standoffs, illegal drug related, and robberies. It is obtained from the CHDS K-12 school shooting database.
  - **Other:** Other shootings represent a category of school shootings. It consists of shootings classified as mental health-related, intentional property damage, officer-involved shooting, racial, self-defense, accidental, and unknown shootings. It is obtained from the CHDS K-12 school shooting database.
- Table A33
  - **Total Expenditures:** Total expenditures is a continuous variable that represents the total expenditures of a school district in a year. Total expenditures is the sum of total current expenditures of elementary/secondary education, total non-elementary/secondary expenditures, total capital outlay expenditures, payments to state governments, payments to local governments, payments to other school systems, interest on debt, payments to private schools and payments to charter schools. This variable

is obtained from the CCD and the INDFIN and available for the years 1967-2020.

- **Education:** Education is a continuous variable that represents the education expenditures of a school district in a year. Education represents the total current expenditures for elementary/secondary education and is the sum of total current instruction expenditures, total current support services expenditures, and total current other elementary/secondary expenditures. This variable is obtained from the CCD and the INDFIN and available for the years 1967-2020.
- **Instruction:** Instruction is a continuous variable that represents the instruction expenditures of a school district in a year. Instruction represents the total current instruction expenditures. This variable is obtained from the CCD and the INDFIN and available for the years 1967-2020.
- **Support Services:** Support services is a continuous variable that represents the expenditures of a school district on support services in a year. Support services represents the total current support services expenditures. This variable is obtained from the CCD and the INDFIN and available for the years 1967-2020.
- **Salaries:** Salaries is a continuous variable that represents the salary expenditures of a school district in a year. Salaries represent the total salaries that is the sum of instruction salaries, support services salaries and food services salaries. This variable is obtained from the CCD and the INDFIN and available for the years 1967-2020.
- **Instruction Salaries:** Instruction salaries is a continuous variable that represents the salary expenditures of a school district on instruction in a year. Instruction salaries represent the salaries spent on instruction. This

variable is obtained from the CCD and the INDFIN and available for the years 1967-2020.

- Table A34

  - **Total Revenue:** Total revenues is a continuous variable that represents the total revenues of a school district in a year. Total revenues is the sum of total federal revenue, total state revenue and total local revenue. This variable is obtained from the CCD and the INDFIN and available for the years 1967-2020.
  - **Federal Revenue:** Federal revenue is a continuous variable that represents the total federal revenue of a school district in a year. Federal revenue is the sum of individuals with disabilities education act, math, science and teacher quality, safe and drug free schools, vocational and tech education, bilingual education, child nutrition act, impact aid and Indian education. This variable is obtained from the CCD and the INDFIN and available for the years 1967-2020.
  - **State Revenue:** State revenue is a continuous variable that represents the total state revenue of a school district in a year. State revenue is the sum of general formula assistance, staff improvement programs, special education programs, compensatory and basic skills programs, bilingual education programs, gifted and talented programs, vocational education programs, school lunch programs, capital outlay and debt services programs, and transportation programs. This variable is obtained from the CCD and the INDFIN and available for the years 1967-2020.
  - **Local Revenue:** Local revenue is a continuous variable that represents the total local revenue of a school district in a year. Local revenue is

the sum of parent government contributions, property taxes, general sales taxes, public utility taxes, individual and corporate income taxes, tuition fees from pupils and parents, transportation fees, school lunch, textbook sales, district activity receipts, student fees, other sales and services, rents and royalties, sale of property, interest earnings, fines and forfeits, private contributions, and NCES local revenue and Census Bureau State Revenue. This variable is obtained from the CCD and the INDFIN and available for the years 1967-2020.

- Table A35

  - **Math Ability:** Math ability is a continuous variable that takes values between 1 and 7. Math ability represents the individual's ability self-concept in math score. It is the average of math skill gen rate, math skill in context of peers, math skill compared to other skills, achievements in math in the past year, learning something new in math, difficulty in math, usefulness of math, importance of math, interest in math, and interest in math scores. The lowest value reflects the worst math ability and vice versa. This variable is obtained from the PSID child development supplement and available for the years 1997, 2002, 2007, and 2014.
  - **Reading Ability:** Reading ability is a continuous variable that takes values between 1 and 7. Reading ability represents the individual's ability self-concept in reading score. It is the average of reading skill gen rate, reading skill in context of peers, reading skill compared to other skills, achievements in reading in the past year, learning something new in reading, difficulty in reading, usefulness of reading, importance of reading, interest in reading, and interest in reading scores. The lowest value re-

flects the worst reading ability and vice versa. This variable is obtained from the PSID child development supplement and available for the years 1997, 2002, 2007, and 2014.

  - **Global Self-Concept:** Global self-concept is a continuous variable that takes values between 1 and 5. Global self-concept represents the individual's global self-concept scale score. The lowest value reflects the lowest global self-concept and vice versa. This variable is obtained from the PSID child development supplement and available for the years 1997, 2002, 2007, and 2014.

- Table A36

  - **School Aspirations:** School aspirations is a nominal variable that takes values between 1 and 8 where 1 corresponds to leave high school before graduation, 2 corresponds to graduate from high school, 3 corresponds to graduate from a 2-year community college, 4 corresponds to graduate from a vocational school, 5 corresponds to attend a 4-year college, 6 corresponds to graduate from a 4-year college, 7 corresponds to get more than 4 years of college and 8 corresponds to do something else. School aspirations variable represents how far the individual would like to go in their education. This variable is obtained from the PSID child development supplement and available for the years 2002, 2007, and 2014.

  - **School Expectations:** School expectations is a nominal variable that takes values between 1 and 8 where 1 corresponds to leave high school before graduation, 2 corresponds to graduate from high school, 3 corresponds to graduate from a 2-year community college, 4 corresponds to graduate from a vocational school, 5 corresponds to attend a 4-year col-

lege, 6 corresponds to graduate from a 4-year college, 7 corresponds to get more than 4 years of college and 8 corresponds to do something else. School expectations variable represents how far the individual would like to go in their education. This variable is obtained from the PSID child development supplement and available for the years 2002, 2007, and 2014.

- **Talk with Mother:** Talk with mother is a nominal variable that takes values between 1 and 6 where 1 corresponds to not in the last month, 2 corresponds to once or twice, 3 corresponds to about once a week, 4 corresponds to about two or three days a week, 5 corresponds to almost every day and 6 corresponds to every day. Talk with mother represents how often the individual talks with their mother about their plans for their future education and work. This variable is obtained from the PSID child development supplement and available for the years 2002 and 2007.
- **Talk with Father:** Talk with father is a nominal variable that takes values between 1 and 6 where 1 corresponds to not in the last month, 2 corresponds to once or twice, 3 corresponds to about once a week, 4 corresponds to about two or three days a week, 5 corresponds to almost every day and 6 corresponds to every day. Talk with father represents how often the individual talks with their father about their plans for their future education and work. This variable is obtained from the PSID child development supplement and available for the years 2002 and 2007.
- **Talk with Friends:** Talk with friendsis a nominal variable that takes values between 1 and 6 where 1 corresponds to not in the last month, 2 corresponds to once or twice, 3 corresponds to about once a week, 4 corresponds to about two or three days a week, 5 corresponds to almost every day and 6 corresponds to every day. Talk with friends represents

how often the individual talks with their friends about their plans for their future education and work. This variable is obtained from the PSID child development supplement and available for the years 2002 and 2007.