Obstacles on the Road to School: The Impacts of Mobility Restrictions on Educational Performance

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Online Appendix

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A. Study Stream and Exam Scores

The subject and exam scores in the *Tawjihi General Examination* (TGE) vary across study streams. Table A.1 illustrates how the exam subjects differ by study stream. For example, exam subjects of Arts students are: Islamic education (maximum grade: 100), Arabic (300), English, (280), History (120), Mathematics (100), Geography (100), and Scientific culture (100). The total score is calculated by summing the grades for the following subjects: Arabic, English, History, Mathematics, and the highest two grades between two of the remaining subjects (Geography, Islamic education, and Scientific culture). The total maximum exam score is 1000. Although only two of the remaining optional subjects contribute to the final score, the student must pass each individual subject to pass the TGE.

For science students, the subjects and maximum grade are as follows: Islamic education (100), Arabic (200), English (200), Mathematics (240), Physics (160), Chemistry (100) and Biology (100). The total score is calculated by summing the grades for the following subjects: Arabic, English, Mathematics, Physics, and the highest score of any other two subjects (Islamic education, Chemistry, Biology).

Since different study streams place different weights on each of these subjects when computing the overall exam score, we normalize the score in each subject by the maximum score achievable in that stream so that the maximum score is 100% for each subject in each stream. We then standardize all scores to have mean zero and unit variance, separately by study stream and year.

Table A.1.: Calculation of total score by stream of study

Stream of study	Subjects examined	Maximum score	Part of final score
(1)	(2)	(3)	(4)
Art	Islamic education	100	
(Adabi)	Arabic	300	Yes
	English	280	Yes
	History	120	Yes
	Mathematics	100	Yes
	Scientific culture	100	
Science	Islamic education	100	
(Elmi)	Arabic	200	Yes
	English	200	Yes
	Mathematics	240	Yes
	Physics	160	Yes
	Chemistry	100	
	Biology	100	
Commerce	Islamic education	100	
(Tejari)	Arabic	100	Yes
	English	100	Yes
	Mathematics	100	
	Accounting	150	Yes
	Administration	150	Yes
	Economics	100	
	Finance	100	Yes
	Financial application	100	Yes
	Practical training	100	Yes
Agriculture	Islamic education	100	
(Zera'i)	Arabic	100	Yes
	English	100	Yes
	Farm management	100	Yes
	Chemistry	100	
	Biology	100	
	General agricultural sciences	100	Yes
	Private agricultural sciences	200	Yes
	Practical training	200	Yes
Manufacturing	Islamic education	100	
(Sena'i)	Arabic	100	Yes
	English	100	Yes
	Mathematics	100	
	Physics	100	
	Industrial drawing	200	Yes
	Industry science	200	Yes
	Practical training	200	Yes

Notes: This table describes the list of study streams for students in the data. Within each stream (column 1), students sit exams for each subject in column (2). The maximum score for each subject depends on the stream (column 3). The overall score for students in that stream by summing the scores of the compulsory subjects (denoted by "yes" in column 4) and the highest two grades of the remaining two subjects.

B. Data Appendix

B.1 Main Data Sources

The main data sources used in our study include:

- Education data: This provides information on student exam scores from 2000–2006. We link this data to information on schools. This forms the basis of our analysis. Our main sample focuses on state school students between 17 and 19 years old when they took the TGE. We restrict our sample to state-school students for two reasons. First, most West Bank students (roughly 75% in our sample) attend state schools and therefore they are the most representative student group. Second, many students attending private schools in fact enrol to sit for the TGE via "private-study" centres. Details of these private-study centres are not consistently collected by the MoEHE. We restrict our sample to students between 17 and 19 years old to limit the likelihood of having repeated test takers in our sample.
- Mobility restrictions data: The GIS data on the location of barriers over time is used to construct measures of the barriers within 10 km away from the school locality centroid and the barrier matrix. We match year t measures of mobility restrictions to year t education data.
- Fatalities data: This provides information on the number of fatalities per month in each locality. Lagged measures of fatalities (12 months prior to the exam) are matched to the test score data.

B.2 Additional Data Sources

In our baseline analysis, we use the following data source to construct locality-level conflict and policy-related controls:

- Settlements data: This contains information on the location of Israeli settlements in the West Bank and its population size. Physical proximity between Israeli settlements and Palestinian localities may affect political attitudes and the intensity of conflict (Calì and Miaari, 2018). Furthermore, since physical barriers tend to be constructed near settlements, Palestinian localities situated near Israeli settlements tend to face more mobility restrictions than those that are located further away. This data allows us to calculate the road distance between the settlement and various Palestinian localities. Using this information, we construct measures of the population size (in 100s) of Israeli settlements within 10 km of the locality centre.

In our robustness checks, we also use the following data sources:

- Prisoners data: This contains information on the number of residents in each locality who are prisoners held in Israeli jails for security reasons in a given year. This data is provided by the Palestinian Ministry of Prisoners.
- House demolitions: This data provides information on house demolition orders for each Palestinian locality. Most house demolitions in the West Bank are enforced by the IDF as a counter-insurgency security measure.
- Separation wall: This data provides information on the length of the separation wall between Israel and the West Bank. The data is available for every other year; for years with missing data, we use linear interpolation to compute the length of the wall. The length of the separation wall varies over time for localities near the wall. For localities far from the wall, this variable remains at zero.
- Palestinian labor force survey: This is a representative rotating quarterly household panel survey of Palestinians living in the West Bank and Gaza Strip. Households are surveyed four times over six quarters. The survey collects information on employment, school attendance, years of completed education of household members aged 15 and above. This is used to construct locality-level socio-economic variables (e.g. average hourly wage)
- Palestinian census: We use the 1997 and 2007 Palestinian census, aggregated to the locality-year level, to understand rates of internal mobility and check for endogenous mobility.

B.3 Data on Psychological Wellbeing

Lastly, we also use The Survey on the Impact of the Israeli Measures on the Well-being of the Palestinian Children, Women and the Palestinian Household (2001) to provide descriptive evidence on the psychological wellbeing of children in the West Bank (Table D.4). This survey was conducted by the Palestinian Central Bureau of Statistics. The target population consists of all Palestinian households that usually reside in the West Bank and Gaza Strip, excluding persons living in institutions such as prisons. We focus on households residing in the West Bank to be consistent with the rest of our data. This section provides some information about the survey.

- Sample size: A random stratified cluster sample composed of 3,393 households of which 2,301 in the West Bank and 1,092 in Gaza Strip was selected to represent the target population. The sample included enumeration areas close to clashes, settlements, and Israeli checkpoints. It also covered areas close to military exposure (shelling, shooting, uprooting of trees, land drifting, etc.)
- Data collection: Data collection took place between April 11 2001 to May 15 2001.

- Response rate: The number of completed interviews was 90% in the West Bank.

The questions we use to measure cognitive, psychological, and behavioural problems are:

- Cognitive: Does X suffer from a lack of concentration?
- Emotional: Which of the following psychological/emotional problems suffered by X? (a) Feelings of hopelessness and frustration, (b) Anger and nervous breakdown, (c) None of the above.
- Behavioural: Which of the following behavioural problems suffered by X? (a) Tendency to violence, (b) Tendency to screaming, (c) Tendency to beat/imprecate others, (d) None of the above.

C. Additional Tables

Table C.1: Evolution of number of checkpoints over the sample period

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Year	Total # checkpoints	Total # localities	Localities with increase in # CP within 10 km		Localities with decrease in # CP within 10 km		Change in # CP within 10 km	
			Number	%	Number	%	Average (if increase)	Average (if decrease)
2000	35	187	16	8.56%	2	1.07%	1	-1
2001	45	196	20	10.20%	5	2.55%	2	-1
2002	69	210	46	21.90%	2	0.95%	2	-2
2003	69	226	0	0.00%	0	0.00%	0	0
2004	48	240	14	5.83%	70	29.17%	3	-2
2005	70	259	44	16.99%	0	0.00%	2	0
2006	74	271	29	10.70%	1	0.37%	1	-2

Notes: This table depicts the evolution of checkpoints in the West Bank over our sample period. Column (2) presents the total number of checkpoints. Column (3) presents the total number of localities. Columns (4) and (5) respectively present the number and percentage of localities that saw an increase in the number of checkpoints within 10 km from the locality center. Columns (6) and (7) respectively present the number and percentage of localities that saw a decrease in the number of checkpoints within 10 km from the locality center. Columns (8) and (9) respectively present the average change in the number of checkpoints across localities that saw an increase and decrease in the number of checkpoints.

Table C.2: Correlation between mobility restrictions and lagged locality-level variables

	(1)	(2)	(3)
	Dep var: Number of CPs within 10 km		
A. Lagged conflict/policy variables			
Fatalities (100s)	0.391	0.398	2.009
	(2.954)	(2.502)	(2.716)
Prisoners (100s)		0.039	0.020
		(0.042)	(0.027)
House demolitions		0.020	-0.672***
		(0.040)	(0.102)
Length of separation wall (km)		-0.090***	-0.101**
		(0.026)	(0.043)
Israeli settlement present	1.283***	1.416***	2.078***
within 10 km (0 or 1)	(0.293)	(0.319)	(0.662)
B. Lagged socio-economic variables			
Ln hourly wage			0.543
			(0.505)
% Unemployed			0.036
			(0.023)
% 17-19 y/o attending school			0.006
			(0.012)
% Employed in Israel/Israeli settlements			0.042**
			(0.018)
% Male			-0.010
			(0.048)
% Married			0.013
			(0.032)
Dep var mean	2.00	2.00	2.00
Dep var SD	2.54	2.54	2.54
Locality fixed effects	Y	Y	Y
Year fixed effects	Y	Y	Y
Number of localities	260	260	193
Observations	1,309	1,309	856

Notes: All regressions include locality and year fixed effects. The regression in column (3) has fewer observations as not all localities have sociodemographic information available in the Palestinian Labor Force Survey. Column (3) is weighted by the number of locality residents aged 15 or above. Standard errors in parentheses, clustered at the locality level. * $p<0.10$ ** $p<0.05$ *** $p<0.01$.

Table C.3: Student sample selection

	(1)	(2)	(3)	(4)
	Sample selection		Endogenous mobility	
	Number of TGE takers	% Dropouts	Move (any reason)	Move (study)
A. Mobility restrictions				
>= 1 CP within 10 km	1.975	0.002	-0.011	-0.002
	(1.89)	(0.00)	(0.02)	(0.01)
B. Other conflict variables				
Fatalities (100s)	3.609	0.005	-0.027	-0.008
	(17.19)	(0.01)	(0.02)	(0.00)
Dep var mean	50.93	0.03	0.24	0.01
Dep var SD	54.90	0.03	0.20	0.03
Locality fixed effects			Y	Y
School fixed effects	Y	Y		
Year fixed effects	Y	Y	Y	Y
Number of schools/localities	543	543	696	696
Observations	2,886	2,886	1,213	1,213

Notes: In column (1), the dependent variable is the number of TGE takers within a school. In column (2), the dependent variable is the percentage of dropouts within a school. Columns (3) and (4) use data from the 1997 and 2007 Palestinian census. In column (3), the dependent variable is the proportion of 15–19-year-olds who have ever changed locality of residence for any reason. In column (4), the dependent variable is the proportion of 15–19-year-olds who have ever changed locality of residence for reasons related to studying. All regressions include controls for population size of Israeli settlements within 10 km of the locality (in 100s). Standard errors in parentheses, clustered at the locality level. * $p<0.10$ ** $p<0.05$ *** $p<0.01$.

Table C.4: Reverse causality

	(1)	(2)	(3)	(4)	(5)	(6)
	Dep var: Number of CPs within 10 km					
A. Educational outcomes						
% Pass	-0.002		-0.005			
	(0.005)		(0.006)			
Lagged % Pass		0.002	0.002			
		(0.005)	(0.005)			
Exam score				-0.008		-0.128
				(0.202)		(0.256)
Lagged exam score					0.034	0.028
					(0.205)	(0.211)
B. Other conflict/policy variables						
Fatalities (100s)	-1.419	-2.506	-2.534	-1.408	-2.496	-2.521
	(5.298)	(5.699)	(5.704)	(5.299)	(5.700)	(5.708)
Dep var mean	2.00	2.00	2.00	2.00	2.00	2.00
Dep var SD	2.54	2.54	2.54	2.54	2.54	2.54
Locality fixed effects	Y	Y	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y	Y	Y
Number of localities	276	260	260	276	260	260
Observations	1,589	1,309	1,309	1,589	1,309	1,309

Notes: This table presents estimates from locality-year level specifications that regress the number of checkpoints on locality average academic outcomes, fatalities, and the size of the Israeli population within 10 km of the locality center (in 100s). All regressions include locality and year fixed effects. Standard errors in parentheses, clustered at the locality level. * $p<0.10$ ** $p<0.05$ *** $p<0.01$.

Table C.5: Separate regressions - Impact of checkpoints (CPs) near school vs. Fatalities near school

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Pass		Overall score		Math		Arabic	
A. Mobility restrictions								
>= 1 CP within 10 km	-0.011		-0.039***		-0.060***		-0.012	
	(0.007)		(0.015)		(0.013)		(0.011)	
B. Other conflict variables								
Fatalities (100s)		-0.071***		-0.112**		-0.046		-0.091**
		(0.018)		(0.052)		(0.098)		(0.037)
Dep var mean	0.73	0.73	64.19	64.19	63.37	63.37	66.54	66.54
Dep var SD	0.44	0.44	20.79	20.79	25.88	25.88	21.39	21.39
Student controls	Y	Y	Y	Y	Y	Y	Y	Y
School controls	Y	Y	Y	Y	Y	Y	Y	Y
School fixed effects	Y	Y	Y	Y	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y	Y	Y	Y	Y
Number of schools	543	543	543	543	542	542	543	543
Number of school localities	276	276	276	276	275	275	276	276
Observations	146,973	146,973	146,973	146,973	146,299	146,299	146,973	146,973

Notes: This table presents estimated coefficients from equation (1) where the obstacle of interest are checkpoints. Scores expressed in standard deviations normalized by study stream and year. All regressions include the following controls: population size of Israeli settlements within 10 km of school locality (in 100s), student controls (gender, religion, year of birth, study branch) and school controls (number of classrooms, number of students, number of teachers). All regressions include school and academic year fixed effects. Standard errors in parentheses, clustered at the school locality level. * $p<0.10$ ** $p<0.05$ *** $p<0.01$.

Table C.6: Impact of additional checkpoints (CPs) near school

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Pass		Overall score		Math		Arabic	
A. Mobility restrictions								
# CP within 10 km	-0.001*		-0.006***		-0.010***		-0.003**	
	(0.001)		(0.002)		(0.002)		(0.001)	
1 CP within 10km		-0.003		-0.012		-0.021		0.005
		(0.007)		(0.018)		(0.017)		(0.013)
2-4 CP within 10km		-0.010		-0.027		-0.045**		0.004
(50th-75th percentile)		(0.007)		(0.019)		(0.022)		(0.014)
>=5 CP within 10km		-0.019***		-0.073***		-0.104***		-0.039***
(>=75th percentile)		(0.007)		(0.017)		(0.017)		(0.014)
B. Other conflict variables								
Fatalities (100s)	-0.071***	-0.070***	-0.113**	-0.106*	-0.048	-0.039	-0.091*	-0.079
	(0.017)	(0.019)	(0.056)	(0.062)	(0.060)	(0.060)	(0.053)	(0.061)
Dep var mean	0.73	0.73	64.19	64.19	63.37	63.37	66.54	66.54
Dep var SD	0.44	0.44	20.79	20.79	25.88	25.88	21.39	21.39
Student controls	Y	Y	Y	Y	Y	Y	Y	Y
School controls	Y	Y	Y	Y	Y	Y	Y	Y
School fixed effects	Y	Y	Y	Y	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y	Y	Y	Y	Y
Number of schools	543	543	543	543	542	542	543	543
Number of school localities	276	276	276	276	275	275	276	276
Observations	146,973	146,973	146,973	146,973	146,299	146,299	146,973	146,973

Notes: Scores expressed in standard deviations normalized by study stream and year. All regressions include the following controls: population size of Israeli settlements within 10 km of school locality (in 100s), student controls (gender, religion, year of birth, study branch) and school controls (number of classrooms, number of students, number of teachers). All regressions include school and academic year fixed effects. Standard errors in parentheses, clustered at the school locality level. * $p<0.10$ ** $p<0.05$ *** $p<0.01$.

Table C.7: Impact of CPs near school on by stream of study

	(1) Pass	(2) Overall score	(3) Math	(4) Arabic
A. Mobility restrictions				
>= 1 checkpoint within 10 km	-0.013**	-0.030**	-0.057***	-0.007
	(0.006)	(0.015)	(0.014)	(0.012)
>= 1 checkpoint within 10km X Science	0.005	-0.038*	-0.012	-0.024
	(0.009)	(0.021)	(0.019)	(0.018)
B. Other conflict variables				
Fatalities (100s)	-0.069***	-0.113*	0.014	-0.093
	(0.022)	(0.063)	(0.080)	(0.059)
Fatalities (100s) X Science	-0.013	-0.005	-0.214***	0.008
	(0.036)	(0.053)	(0.062)	(0.051)
Dep var mean (Art/Vocational)	0.68	59.79	59.85	60.71
Dep var SD (Art/Vocational)	0.47	20.64	26.97	20.61
Dep var mean (Science)	0.88	77.16	73.71	83.74
Dep var SD (Science)	0.33	15.02	18.89	12.54
Student controls	Y	Y	Y	Y
School controls	Y	Y	Y	Y
School fixed effects	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y
Number of schools	543	543	542	543
Number of school localities	276	276	275	276
Observations	146,973	146,973	146,299	146,973

Notes: This table presents estimated coefficients from equation (1), modified by interacting the conflict variables with an indicator that equals 1 if the student is in the Science stream. The omitted category are students in the Arts or Vocational stream. The same set of control variables and fixed effects are included as in the baseline equation. All regressions include school and academic year fixed effects. Standard errors in parentheses, clustered at the school locality level. * p<0.10 ** p<0.05 *** p<0.01.

Table C.8: Impact of other barriers (e.g. roadblocks, earth mounds, gates) near school

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Pass		Overall score		Math		Arabic	
A. Mobility restrictions								
>= 1 other barrier	-0.010	-0.004	-0.029	-0.008	-0.027	0.006	-0.012	-0.006
within 10 km	(0.008)	(0.008)	(0.019)	(0.019)	(0.018)	(0.019)	(0.017)	(0.016)
>= 1 checkpoint within 10 km		-0.010*		-0.038***		-0.062***		-0.011
		(0.006)		(0.014)		(0.014)		(0.009)
B. Other conflict variables								
Fatalities (100s)	-0.070***	-0.072***	-0.109**	-0.117**	-0.043	-0.055	-0.089**	-0.092**
	(0.019)	(0.018)	(0.055)	(0.055)	(0.098)	(0.072)	(0.037)	(0.044)
Dep var mean	0.73	0.73	64.19	64.19	63.37	63.37	66.54	66.54
Dep var SD	0.44	0.44	20.79	20.79	25.88	25.88	21.39	21.39
Student controls	Y	Y	Y	Y	Y	Y	Y	Y
School controls	Y	Y	Y	Y	Y	Y	Y	Y
School fixed effects	Y	Y	Y	Y	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y	Y	Y	Y	Y
Number of schools	543	543	543	543	542	542	543	543
Number of school localities	276	276	276	276	275	275	276	276
Observations	146,973	146,973	146,973	146,973	146,299	146,299	146,973	146,973

Notes: This table presents estimated coefficients from equation (1) where the obstacle of interest are other barriers (e.g. roadblocks, earth mounds, gates). Scores expressed in standard deviations normalized by study stream and year. All regressions include the following controls: population size of Israeli settlements within 10 km of school locality (in 100s), student controls (gender, religion, year of birth, study branch) and school controls (number of classrooms, number of students, number of teachers). All regressions include school and academic year fixed effects. Standard errors in parentheses, clustered at the school locality level. * $p<0.10$ ** $p<0.05$ *** $p<0.01$.

Table C.9: Baseline regression with additional conflict measures near school

	(1) Pass	(2) Overall score	(3) Math	(4) Arabic
A. Mobility restrictions				
>= 1 checkpoint within 10km	-0.012**	-0.041***	-0.059***	-0.010
	(0.005)	(0.015)	(0.014)	(0.011)
B. Other conflict variables				
Fatalities (100s)	-0.076***	-0.133**	-0.085	-0.117**
	(0.019)	(0.056)	(0.073)	(0.047)
Prisoners (100s)	-0.000	-0.001	-0.001	-0.001**
	(0.000)	(0.000)	(0.000)	(0.000)
House demolitions	-0.002	-0.004*	0.000	-0.001
	(0.001)	(0.002)	(0.002)	(0.001)
Length of separation wall (km)	-0.001	-0.003	-0.003	-0.001
	(0.001)	(0.003)	(0.003)	(0.003)
Dep var mean	0.73	64.19	63.37	66.54
Dep var SD	0.44	20.79	25.88	21.39
Student controls	Y	Y	Y	Y
School controls	Y	Y	Y	Y
School fixed effects	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y
Number of schools	543	543	542	543
Number of school localities	276	276	275	276
Observations	146,973	146,973	146,299	146,973

Notes: This table presents estimated coefficients from equation (1) where the obstacle of interest are checkpoints. Additional conflict/policy control variables are included in the baseline regression. Scores expressed in standard deviations normalized by study stream and year. All regressions include the following controls: population size of Israeli settlements within 10 km of school locality (in 1000s), student controls (gender, religion, year of birth, study branch) and school controls (number of classrooms, number of students, number of teachers). All regressions include school and academic year fixed effects. Standard errors in parentheses, clustered at the school locality level. * $p<0.01$ ** $p<0.05$ *** $p<0.01$.

Table C.10: Baseline regression with additional locality controls

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Pass		Overall score		Math		Arabic	
A. Mobility restrictions								
>= 1 checkpoint within 10km	-0.010	-0.010	-0.042**	-0.041**	-0.061***	-0.059***	-0.013	-0.013
	(0.006)	(0.006)	(0.016)	(0.017)	(0.014)	(0.015)	(0.012)	(0.012)
B. Other conflict variables								
Fatalities (100s)	-0.063***	-0.064***	-0.093*	-0.089	-0.051	-0.045	-0.069	-0.063
	(0.018)	(0.020)	(0.056)	(0.057)	(0.076)	(0.078)	(0.047)	(0.046)
C. Lagged socioeconomic characteristics								
Log hourly wage rate		-0.000		0.002		0.016		-0.010
		(0.012)		(0.032)		(0.028)		(0.025)
% Unemployed		0.025		0.024		0.036		0.060
		(0.055)		(0.135)		(0.153)		(0.098)
% Working in Israel/Israeli settlements		-0.000		-0.001		-0.001		-0.000
		(0.000)		(0.001)		(0.001)		(0.001)
% Male		0.002*		0.002		0.001		-0.001
		(0.001)		(0.003)		(0.002)		(0.002)
% Married		-0.000		0.001		0.000		0.000
		(0.001)		(0.001)		(0.001)		(0.001)
Dep var mean	0.73	0.73	64.19	64.19	63.37	63.37	66.54	66.54
Dep var SD	0.44	0.44	20.79	20.79	25.88	25.88	21.39	21.39
Student controls	Y	Y	Y	Y	Y	Y	Y	Y
School controls	Y	Y	Y	Y	Y	Y	Y	Y
School fixed effects	Y	Y	Y	Y	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y	Y	Y	Y	Y
Number of schools	433	433	433	433	433	433	433	433
Number of school localities	199	199	199	199	199	199	199	199
Observations	124,250	124,250	124,250	124,250	124,209	124,209	124,250	124,250

Notes: This table presents estimated coefficients from equation (1) where the obstacle of interest are checkpoints. Additional lagged locality level controls (derived from the Palestinian Labor Force Survey) are included to the baseline regression. Scores expressed in standard deviations normalized by study stream and year. All regressions include the following controls: population size of Israeli settlements within 10 km of school locality (in 1000s), student controls (gender, religion, year of birth, study branch) and school controls (number of classrooms, number of students, number of teachers). The sample size is smaller than the baseline sample size because not all localities have information on socioeconomic variables in the Palestinian Labor Force Survey. All regressions include school and academic year fixed effects. Standard errors in parentheses, clustered at the school locality level. * $p<0.01$ ** $p<0.05$ *** $p<0.01$.

Table C.11: Impact of checkpoints (CPs) of varying distances from school locality

	(1) Pass	(2) Overall score	(3) Math	(4) Arabic
A. Mobility restrictions				
>= 1 CP within 0-10 km	-0.010*	-0.036***	-0.057***	-0.011
	(0.005)	(0.014)	(0.013)	(0.010)
>= 1 CP within 10-20 km	-0.013*	-0.022	-0.027	-0.010
	(0.007)	(0.020)	(0.024)	(0.014)
>= 1 CP within 20-30 km	-0.016*	-0.073***	-0.077**	-0.045***
	(0.009)	(0.024)	(0.033)	(0.014)
>= 1 CP within 30-40 km	-0.018	-0.042	-0.011	-0.029
	(0.016)	(0.035)	(0.025)	(0.023)
>= 1 CP within 40-50 km	-0.000	-0.022	-0.007	-0.015
	(0.012)	(0.036)	(0.032)	(0.029)
B. Other conflict variables				
Fatalities (100s)	-0.071***	-0.110**	-0.044	-0.088**
	(0.015)	(0.044)	(0.066)	(0.043)
Dep var mean	0.73	64.18	63.37	57.78
Dep var SD	0.44	20.79	25.88	22.55
Student controls	Y	Y	Y	Y
School controls	Y	Y	Y	Y
School fixed effects	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y
Number of schools	542	542	541	542
Number of school localities	276	276	275	276
Observations	147,916	147,916	147,241	147,916

Notes: ">= 1 CP within X-Y km" is a binary variable that equals 1 if there is one or more checkpoints within X-Y km of the locality center and 0 otherwise. Scores expressed in standard deviations normalized by study stream and year. All regressions include the following controls: population size of Israeli settlements within 10 km of school locality (in 100s), student controls (gender, religion, year of birth, study branch) and school controls (number of classrooms, number of students, number of teachers). All regressions include school and academic year fixed effects. Standard errors in parentheses, clustered at the school locality level. * $p<0.10$ ** $p<0.05$ *** $p<0.01$.

Table C.12: Impact of checkpoints (CPs) near school among schools present for over 5 years

	(1) Pass	(2) Overall score	(3) Math	(4) Arabic
A. Mobility restrictions				
>= 1 CP within 10 km	-0.010*	-0.039***	-0.060***	-0.012
	(0.006)	(0.014)	(0.013)	(0.010)
B. Other conflict variables				
Fatalities (100s)	-0.066***	-0.104*	-0.045	-0.085*
	(0.019)	(0.059)	(0.075)	(0.048)
Dep var mean	0.74	64.48	63.76	66.76
Dep var SD	0.44	20.71	25.79	21.33
Student controls	Y	Y	Y	Y
School controls	Y	Y	Y	Y
School fixed effects	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y
Number of schools	369	369	368	369
Number of school localities	209	209	208	209
Observations	137,055	137,055	136,386	137,055

Notes: This table presents estimated coefficients from equation (1) where the obstacle of interest are checkpoints, using the sample of students who attend schools that are in the sample for at least 5 years. Scores expressed in standard deviations normalized by study stream and year. All regressions include the following controls: population size of Israeli settlements within 10 km of school locality (in 100s), student controls (gender, religion, year of birth, study branch) and school controls (number of classrooms, number of students, number of teachers). All regressions include school and academic year fixed effects. Standard errors in parentheses, clustered at the school locality level. * $p<0.10$ ** $p<0.05$ *** $p<0.01$.

D. Additional Results for the Barrier Matrix Specification

D.1 Traversing vs. Non-Traversing Students

Estimates of β^{bm} in equation (2) are identified using the sample of students who live and study in different localities. One concern is that traversing and non-traversing students may differ in unobservable ways. Table D.1 presents estimates from a specification that regresses an indicator that equals 1 if the student lives and studies in different localities and zero otherwise on the following variables: an indicator that equals 1 if there are no schools in the student's home locality in that year and zero otherwise, demographic characteristics (female, Muslim), stream of study (science, vocational), and an indicator for whether they pass their exam. The coefficients on these variables indicate that the strongest predictor for whether students traverse localities to attend school is whether there is a school in their home locality. There is also some evidence that Science stream and Vocational stream students are more likely to live and study in different localities, indicating that some students may have to travel further to attend a school where their stream of study is available. There is no evidence that students who are more likely to pass the exam are more likely to live and study in different localities.

Table D.1: Predictors of students' traversing status

	(1)	(2)	(3)
	Dependent variable = 1 if live and study in different localities; = 0 otherwise		
No school in home locality	0.748***	0.749***	0.749***
	(0.004)	(0.004)	(0.004)
Female		0.003	0.003
		(0.002)	(0.002)
Muslim		-0.004	-0.004
		(0.012)	(0.012)
Science stream		0.046***	0.045***
		(0.003)	(0.003)
Vocational stream		0.102***	0.101***
		(0.004)	(0.004)
Pass exam			0.004
			(0.003)
Dep var mean	0.32	0.32	0.32
Dep var SD	0.47	0.47	0.47
Observations	146,973	146,973	146,973

Notes: The dependent variable is an indicator that takes on a value of 1 if the student lives and studies in different localities (traversing students) and zero otherwise. The variable "no school" is an indicator that equals 1 if there are no schools in the student's home locality in that year. All regressions include year indicators. Standard errors in parentheses, clustered at the school locality level. * p<0.10 ** p<0.05 *** p<0.01.

D.2 Identification Assumptions

There are several threats that may affect whether β^{bm} in equation (2) can be interpreted as the impact of encountering one or more checkpoints on educational outcomes. First, the key assumption for the OLS estimate of β^{bm} in the barrier matrix specification to capture the causal effect of mobility restrictions on educational performance is that the probability that student i encounters (at least) one checkpoint on the road to school is independent of the potential outcomes of that student, conditional on time-invariant home locality confounders, time-invariant school-locality confounders, distance travelled to school, time-specific confounders, and observable student and school characteristics. Therefore, potential threats to identification include time-varying unobservable student and locality characteristics. We address the concern of time-varying unobservable locality characteristics in Table D.2.

Second, there may be measurement error in E_{hlt}, the indicator for whether the student crosses at least one checkpoint on the shortest route to school. Students who live and study in the same locality may still encounter barriers on the way to school; however, our method sets the distance travelled to zero and therefore the number of barriers faced to zero.[1] Students who live and study in different localities are unlikely to be able to avoid checkpoints given the way checkpoints are positioned in the West Bank and thus measurement error is less of a concern for this group (see Section 2 of the main manuscript).

Existing literature demonstrates that in the case of univariate regressions with measurement error in the independent binary variable E_{hlt}, the coefficient would be attenuated (Aigner, 1973). However, for multivariate regressions such as equation (2), the direction of bias is harder to establish. Unfortunately, without observing the exact path that the student took to school, it is difficult to quantify the size of this bias.

[1] This phenomenon is common for students living in localities in the district of Hebron. See https://www.unicef.org/stories/finding-way-school-state-palestine. [Last accessed: 3 September 2021]

D.3 Additional Tables for Barrier Matrix Specification

Table D.2: Impact of encountering CP on road to school using alternative fixed effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Pass		Overall score		Math		Arabic	
A. Mobility restrictions								
Encounters checkpoint	-0.015**	-0.009	-0.060***	-0.042**	-0.042***	-0.043**	-0.041***	-0.035**
	(0.007)	(0.009)	(0.017)	(0.020)	(0.015)	(0.020)	(0.012)	(0.015)
B. Other conflict variables								
Fatalities (School locality)		-0.059**		-0.100*		-0.017		-0.079**
		(0.025)		(0.060)		(0.090)		(0.037)
Fatalities (Home locality)		0.006		0.054		0.045		0.014
		(0.023)		(0.053)		(0.069)		(0.035)
Dep var mean	0.73	0.73	64.19	64.19	63.37	63.37	66.54	66.54
Dep var SD	0.44	0.44	20.79	20.79	25.88	25.88	21.39	21.39
Student controls	Y	Y	Y	Y	Y	Y	Y	Y
School controls	Y	Y	Y	Y	Y	Y	Y	Y
Home locality X Year fixed effects	Y		Y		Y		Y	
School locality X Year fixed effects	Y		Y		Y		Y	
Year fixed effects		Y		Y		Y		Y
Home-School locality pair FE		Y		Y		Y		Y
Observations	146,973	146,973	146,973	146,973	146,299	146,299	146,973	146,973
Number of school localities	276	276	276	276	275	275	276	276

Notes: This table presents estimated coefficients from equation (2) where the obstacle of interest are checkpoints. Scores expressed in standard deviations normalized by study stream and year. All regressions include the following controls: population size of Israeli settlements within 10 km of school and home locality (in 100s), student controls (gender, religion, year of birth, study branch) and school controls (number of classrooms, number of students, number of teachers). Standard errors in parentheses, clustered at the home-school locality pair level. * $p<0.10$ ** $p<0.05$ *** $p<0.01$.

Table D.3: Impact of encountering other barriers (e.g. roadblocks, earth mounts, and gates) on road to school

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Pass		Overall score		Math		Arabic	
A. Mobility restrictions								
Encounters other barrier	-0.005	-0.007	-0.014	-0.021	-0.004	-0.009	-0.012	-0.015
	(0.006)	(0.006)	(0.014)	(0.014)	(0.014)	(0.014)	(0.011)	(0.010)
B. Other conflict variables								
Fatalities (School locality)	-0.059**	-0.081***	-0.104*	-0.166***	-0.030	-0.097	-0.078**	-0.105***
	(0.024)	(0.023)	(0.060)	(0.055)	(0.090)	(0.074)	(0.037)	(0.039)
Fatalities (Home locality)	0.007	0.013	0.057	0.077	0.057	0.075	0.012	0.021
	(0.022)	(0.022)	(0.052)	(0.050)	(0.068)	(0.062)	(0.035)	(0.035)
Dep var mean	0.73	0.73	64.19	64.19	63.37	63.37	66.54	66.54
Dep var SD	0.44	0.44	20.79	20.79	25.88	25.88	21.39	21.39
Student controls	Y	Y	Y	Y	Y	Y	Y	Y
School controls	Y	Y	Y	Y	Y	Y	Y	Y
Home locality fixed effects	Y	Y	Y	Y	Y	Y	Y	Y
School locality fixed effects	Y	Y	Y	Y	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y	Y	Y	Y	Y
School fixed effects		Y		Y		Y		Y
Number of home localities	420	420	420	420	420	420	420	420
Number of school localities	276	276	276	276	275	275	276	276
Observations	146,649	146,649	146,649	146,649	145,978	145,978	146,649	146,649

Notes: This table presents estimated coefficients from equation (2) where the obstacle of interest are other barriers (roadblocks, earth mounds, gates). Scores expressed in standard deviations normalized by study stream and year. All regressions include the following controls: population size of Israeli settlements within 10 km of school and home locality (in 100s), student controls (gender, religion, year of birth, study branch) and school controls (number of classrooms, number of students, number of teachers). All regressions include home locality, school locality, and academic year fixed effects. Standard errors in parentheses, clustered at the home-school locality pair level. * $p<0.10$ ** $p<0.05$ *** $p<0.01$.

Table D.4: Psychological wellbeing (2001)

	(1) All	(2) CP = 0	(3) CP >= 1	(4) Difference
Concentration problems	0.46	0.46	0.46	0.000
Hopeless/Anger	0.59	0.57	0.61	-0.035
Violence	0.28	0.24	0.32	-0.083***
Observations	1,512	713	799	

Source: The Survey on the Impact of the Israeli Measures on the Well-being of the Palestinian Children, Women, and the Palestinian Households (2001). See Appendix B for more information on this survey.

Notes: Sample includes students aged 12–17 living in the West Bank enrolled in school. Column (1) presents means for the entire sample. Column (2) presents means for students living in localities with no checkpoints within 10 km of their home locality. Column (3) presents means for students living in localities with one or more checkpoints. Column (4) present difference in means between columns (2) and (3). * $p<0.10$ ** $p<0.05$ *** $p<0.01$.

References

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