Moving for Good:
Educational Gains from Leaving Violence Behind

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Motivation

- Exposure to community violence has detrimental effects on children's educational trajectories.
- One mitigation strategy is out-migration to safer areas.
- Migration involves significant costs:
  - up-front relocation expenses
  - forgone earnings
  - assimilation costs in the new location
- Students who switch schools may experience learning losses as they adjust to a new school environment.

This paper

Research question: What is the effect of moving out of violent environments on academic performance?

Context: Mexico's war on drugs

Variation: Timing of moving, level of violence, and education quality in origin and destination municipalities

Identification: Difference-in-differences research design/Student-level panel of movers

Contribution: Use violence-induced migration as a quasi-exogenous shock to study how moving out to safe areas affects students' academic performance.

Contribute to the literature on migration from disadvantaged areas on individual outcomes[1]

Advantages of our setting:

- Data targets the universe of movers before and after the move... control for [un]observable time-invariant individual characteristics.

- We document how the academic achievement of violence-exposed students changes considering the violence level in the destination area.

- Migration happens in a context with a centralized educational system (differently from refugee literature, movers do not need to adjust to a new language, education system, or to significant cultural changes).

[1] (i.e., Sanbonmatsu et al., 2006; Chetty et al., 2016; Kling et al., 2007; Clampet-Lundquist and Massey, 2008; Ludwig et al., 2013; Deryugina, Kawano, Levitt 2018; Deryugina and Molitor, 2020; Chyn, 2018; Haltiwanger et al., 2020, Collins and Wanamaker, 2014; Boustan, 2016; Black et al., 2015; Johnson and Taylor, 2019; Chetty and Hendren, 2018)

Empirical challenges in identifying causal effects for movers

- Non-randomness of moving:
  i. Increased violence affects the decision to move and test scores directly.
  ii. Movers and non-movers differ in [un]observed characteristics.

What do we do?

- Compare only movers.
- Large and unanticipated increase in local violence.
- Comparisons of test scores before and after moving for the same student [relative to movers from other safe areas in the same destination school].

Data

- **Low-stakes exam (ENLACE):** Census data from 2008 to 2013.
  - Longitudinal data on students' test scores from 3rd to 6th grade.
  - Enrollment in elementary school is universal.
  - Identify school of enrollment in elementary (public & private).
  - Student migration across municipalities and states in Mexico.

- **Municipality homicide rates:** Calculated from death certificates (number of deaths registered as presumed homicides) and population counts from the National Population Council (CONAPO).

We focus on elementary school children enrolled in grades 3 through 6 who have moved to safe municipalities.

The War on Drugs and Local Violence

In December 2006 president Calderón declared a war on drugs

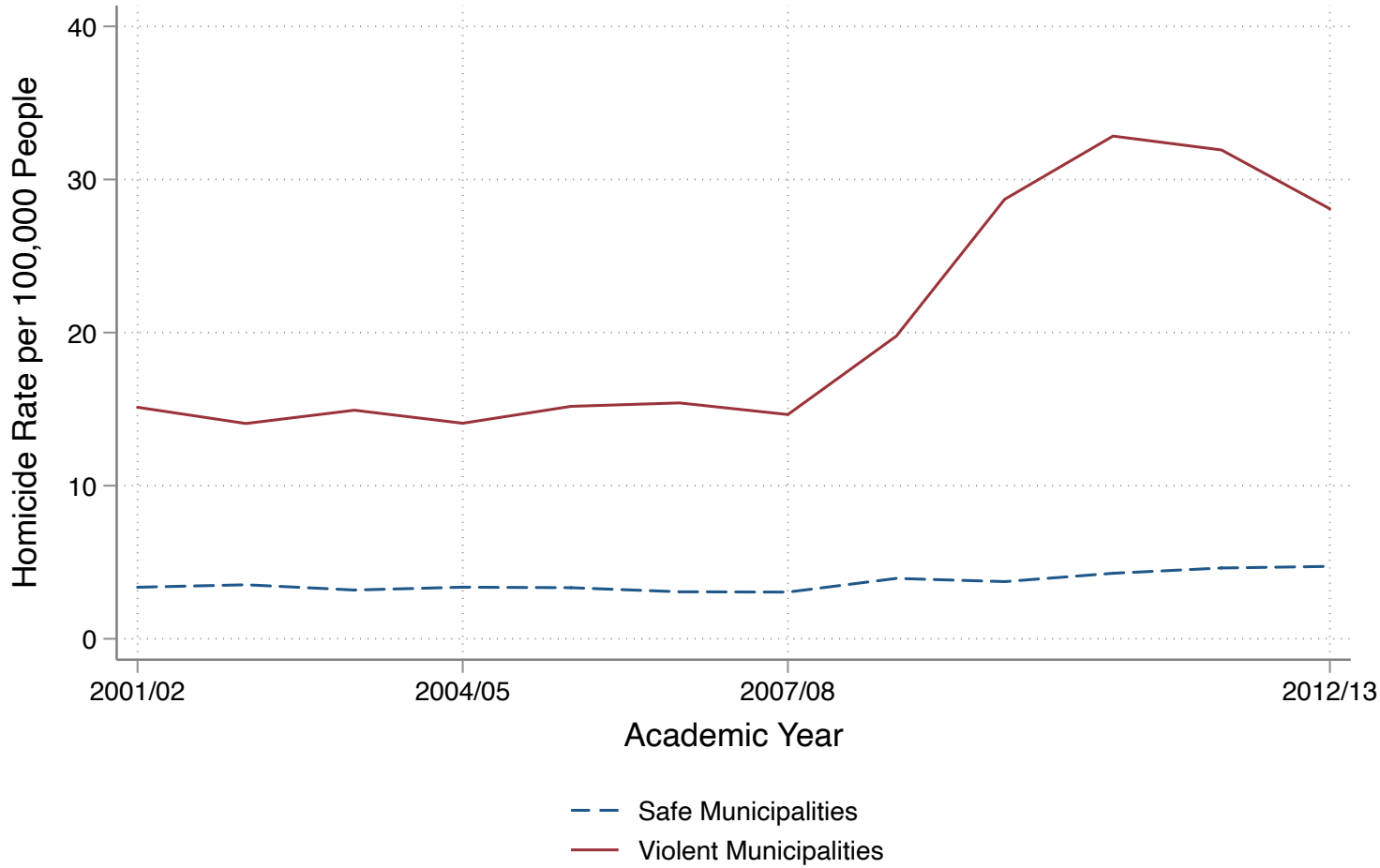
- Homicide rates (per 100,000 people) more than doubled between 2006 and 2012 in Mexico (from 10 to 23). This led to a decline in life expectancy for men.

- The increase in violence was heterogeneous across municipalities $\rightarrow$ Identification

- Definitions:
  1. A municipality is classified as **safe** if its annual homicide rate was always below a critical threshold between 2005/06 and 2012/13 (19.38 homicides per 100,000 people).[2]
  2. **Violent** otherwise.

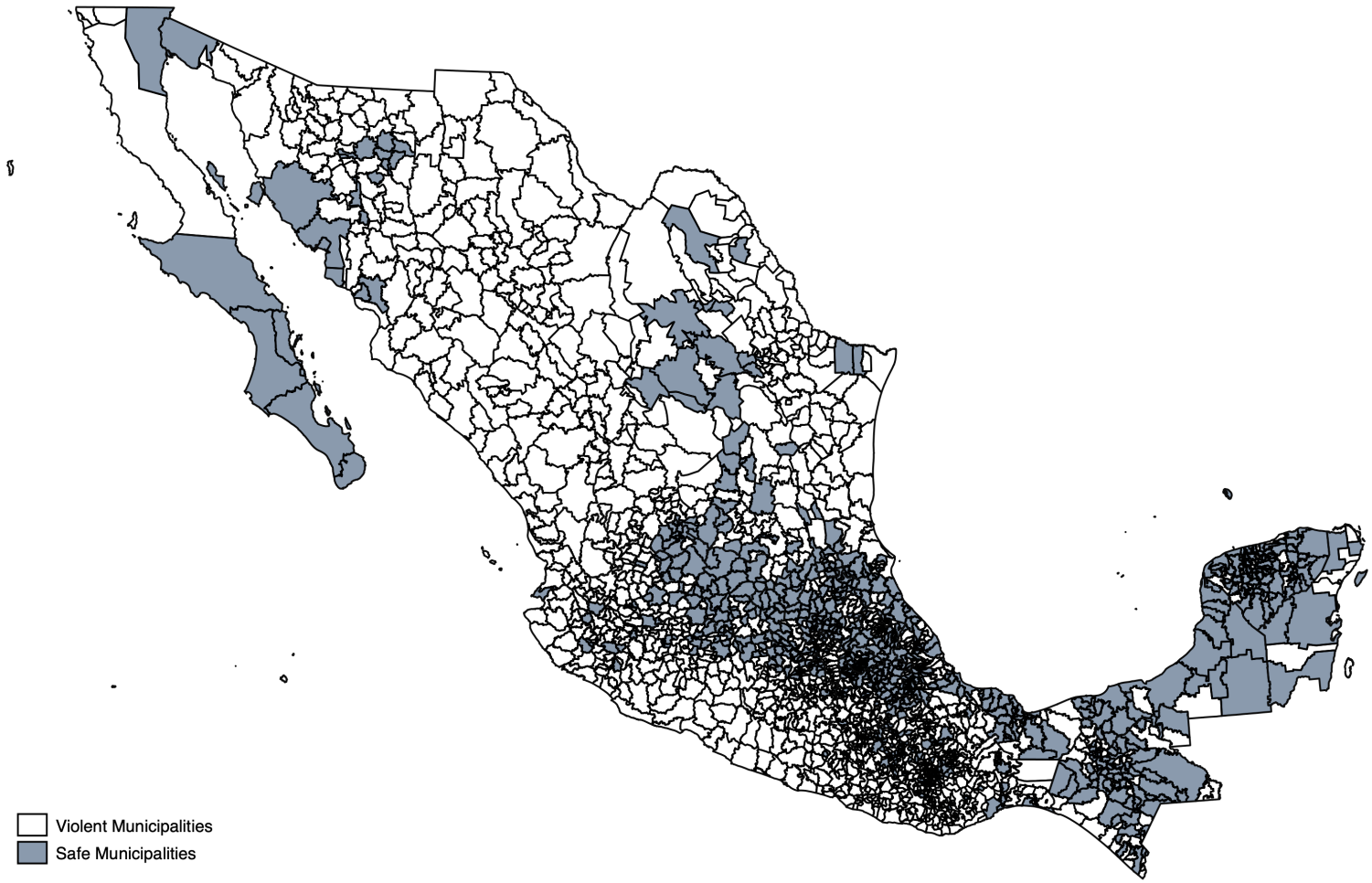
[2] Median of the student distribution. Results are robust to other, more strict or more lenient thresholds.

The War on Drugs and Local Violence (Annualized Monthly Rate)



Homicide rates in safe municipalities are slightly lower than in the U.S in the same period

Geographic Distribution of Safe Municipalities



Identification Strategy

$$TS_{isgt} = \alpha_i + \lambda_{gy} + \gamma_{gt} + \eta_{s_d t} + \sum_{j \neq -1} \beta_j 1(t = j) \Delta Safety_{m_o m_d t} + \epsilon_{isgt}$$

- α_i, λ_{gy}, γ_{gt}, and $\eta_{s_d t}$ are student, grade-by-academic year, grade-by-year relative to moving, and relative year by school of destination FEs, respectively;
- $\Delta Safety_{m_o m_d t}$ measures the (standardized) pre-migration difference of the seven-year average in homicide rates in the municipality of origin relative to the destination municipality;

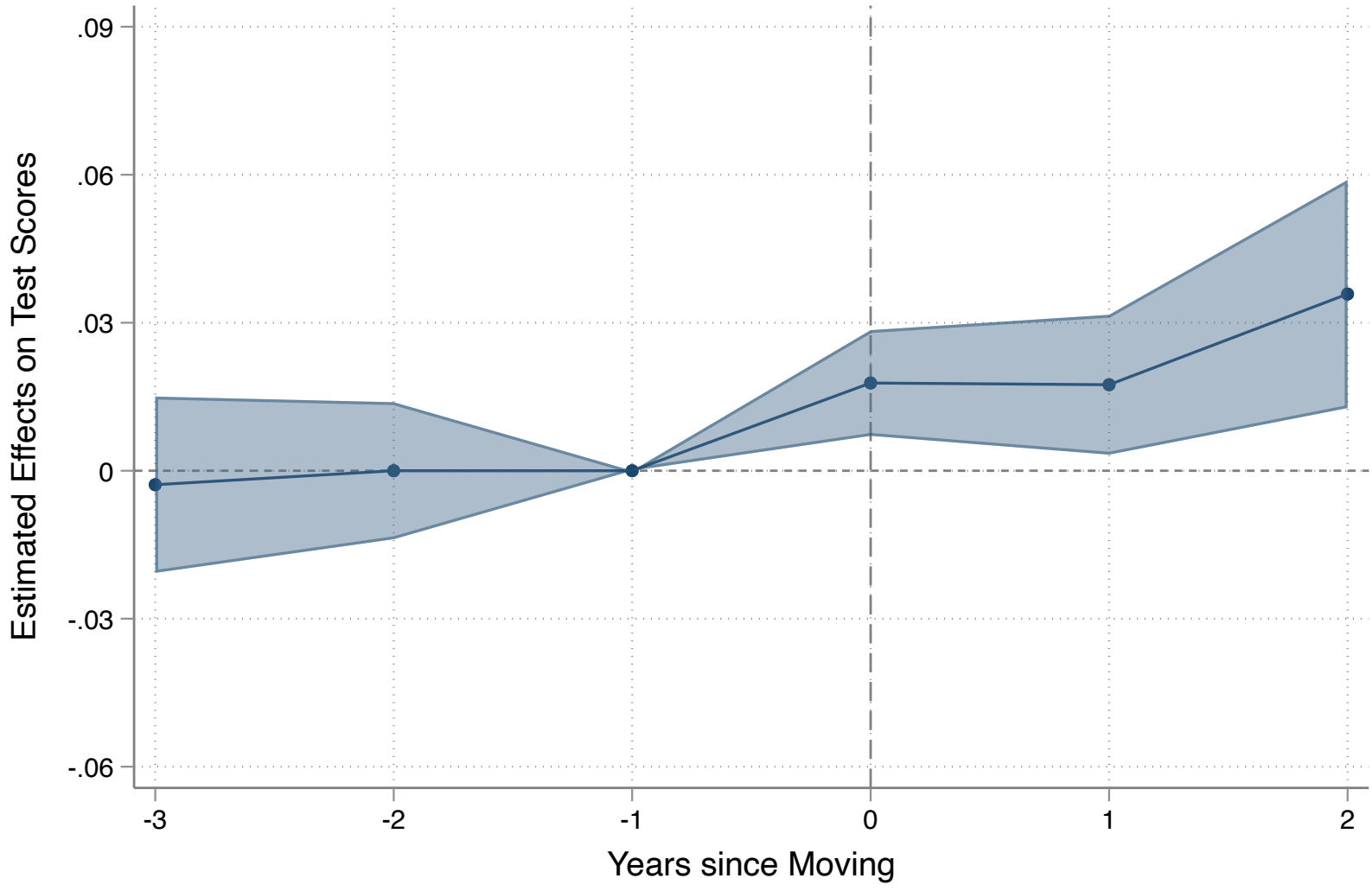
β_j recovers the effects on test scores of a one standard deviation increase in safety ($\Delta Safety_{m_o m_d t}$) j years after moving, relative to the mean across all movers.

Standard errors are clustered at the student level.

Estimated Effects of Moving on Test Scores

	(1)	(2)	(3)
Year of move $\times \Delta Safety_{im_o m_d t}$	0.016***	0.019***	0.018***
	(0.005)	(0.005)	(0.005)
1 year after $\times \Delta Safety_{im_o m_d t}$	0.015**	0.018**	0.018**
	(0.007)	(0.007)	(0.007)
2 years after $\times \Delta Safety_{im_o m_d t}$	0.034***	0.038***	0.036***
	(0.012)	(0.012)	(0.012)
Year of move $\times \Delta Score_{im_d m_o}$		0.109***	
		(0.018)	
1 year after $\times \Delta Score_{im_d m_o}$		0.103***	
		(0.022)	
2 years after $\times \Delta Score_{im_d m_o}$		0.125***	
		(0.032)	
Year of move $\times \Delta Score_{is_d s_o}$			0.325***
			(0.010)
1 year after $\times \Delta Score_{is_d s_o}$			0.346***
			(0.012)
2 years after $\times \Delta Score_{is_d s_o}$			0.342***
			(0.017)
N	240022	240022	239289

Estimated Effects on Test Scores (β_j)



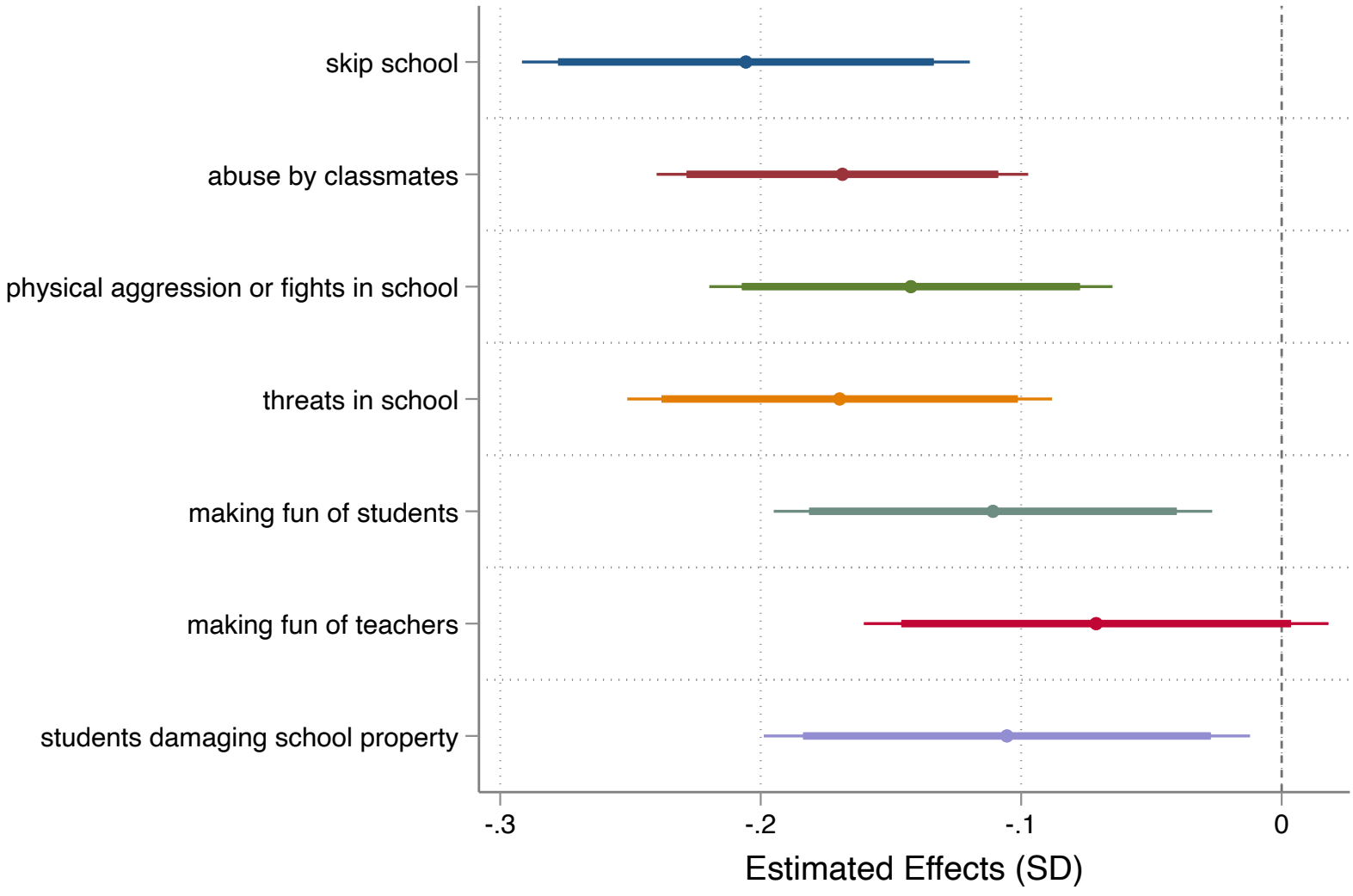
Mechanisms

A sample of students taking the ENLACE exam answers a context questionnaire with questions regarding attendance, bullying, and school environment. Answers: Never to always (0-4).

- How often do you skip school?
- How often do you receive physical aggression from your classmates?
- How often are there physical aggression or fights in your school?
- How often are there threats in your school? How often do students make fun of other students?
- How often do students make fun of teachers?
- How often do students damage school property?

We standardize the outcome for each academic year to have a mean of zero and a standard deviation of one.

Estimated Effects on Attendance Behavior, Bullying, and School Environment



Robustness

- Change the threshold of the definition of safe: The safer the municipality of destination, the larger the effect.

- Change the years of exposure to 1, 2, ..., 7 years prior to moving: The longer the exposure to local violence before migration, the greater the effects of moving to safe municipalities.

- Use stacked DiD: Results are robust to staggered treatment.

- Relax the symmetry and linearity assumption: Cannot rule them out.

Takeaways

- We provide causal evidence on the returns to migration, focusing on violence as a push factor and safety as a pull factor.
- We find that improvements in safety following migration lead to higher test scores, with larger gains for students who were exposed to violence for longer periods prior to moving.
- We provide suggestive evidence that these increases in test scores are driven by increases in school attendance, reductions in bullying, and improvements in the school environment after moving.
- Our results highlight the importance of neighborhood safety on children's human capital accumulation.

Thank you!

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