



Assessing the Impact of Community Violence on Marriage and Fertility: The Case of Mexico

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Homicide is highly concentrated in a particular intersection of class, age and gender

- Recognized as “a leading worldwide public health problem” by the UN World Health Assembly (CDC 2009).
- Highly concentrated in unequal, **impoverished communities** around the world (Krug et al. 2002).
- Globally, **79%** of homicide victims and **95%** of homicide perpetrators are men (UNODC 2013).
- In the US, the homicide rate for **young Black males** (ages 10-24) is almost **twice as high** as the global rate for males in the same age range (CDC 2013).

How may high local homicide rates impact union formation and fertility?

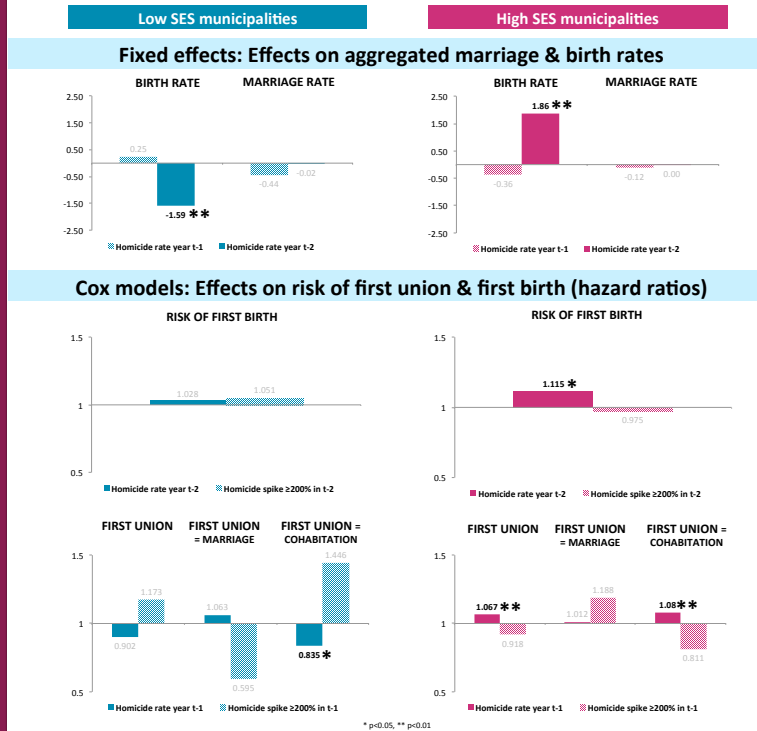
The effect of exposure to local homicide rates on women’s union formation and fertility may be driven by the following causal mechanisms:

	Union formation	Fertility
Economic decline	+ Increased gains from union formation	- Lower desire for children
Smaller pool of desirable male partners	- Lower opportunities to find a suitable partner	+ Increase in pregnancies as a strategy to secure a partner
Psychological effects	+ Higher desire to form a family as a source of emotional support	+ Higher desire for children as a source of positive meaning
Out-migration	? Economic shocks / Sex ratios	? Economic shocks / Sex ratios

Why is Mexico an adequate case study?

- Big country:** 32 states, 2,500 municipalities, 112 million population.
- High variation in homicide rates:**
 - State-level variation in homicide rates that in 2010 went from **182 in Chihuahua** to **2 in Yucatán** (per 100,000 people). Much like having **Honduras** and **Finland** in the same dataset.
 - Variation across time, from **8 to 23** across a 10-year span.

How does exposure to local homicide rates impact union formation and fertility for Mexican women of ages 15-19?



Evidence of causal mechanisms involved: economic decline and smaller pool of partners

- In **high SES municipalities**, an increase in homicide rates is associated with an increase in the % population living in overcrowding (p<0.01).
- In **low SES municipalities**, an increase in homicide rates is associated with a decrease in the % males 15-29 who are employed (p<0.01), a decrease in the ratio of males 15-29 to women 15-19 (p<0.01), and an increase in the % population without elementary school (p<0.01).
- In Mexico, increases in homicide rates led to sizeable decreases in housing prices, which were concentrated among poor population (Ajzenman, Galiani and Seira 2014).



Two different methods and data sources

Fixed effects: Effects on aggregated marriage & birth rates

DATA: Municipality-level panel data 2004-2012. Official records on number of marriages and births, measured yearly, at the municipal level.

METHOD: Fixed effects

- Municipality FE:** Control for time-invariant characteristics of municipalities and states that could be explaining homicide rates and would otherwise induce bias.
- Year FE:** Control for unobserved trends in homicide, without assuming a functional form.
- Time-varying municipality-level controls** (3-year lag), accounting for population size, % illiterate, % with no elementary school, % with no sewer system, % with no water, % with no electricity, % living in overcrowding, % low wage, % with dirt floor, % in rural communities, and sex ratios for age-groups 10-14, 15-19, 20-24, 25-29, 30-34. At the state level, net domestic and international migration, and unemployment rates.

OUTCOMES (municipality level):

- Marriage rate** = (Marriages of women 15-19 in year t / Women 15-19 in year t)*100,000
- Birth rate** = (Births to women 15-19 in year t / Women 15-19 in year t)*100,000

MAIN PREDICTORS:

- Local Homicide Rate** (per 100,000) in year t-1 and t-2

Cox model: Effects on age at first union & first birth

DATA: Person-months dataset of women 15-19 years old, using National Survey of Demographic Dynamics (ENADID) 2009, matched to monthly local homicide rates.

Period of observation: May 2004-May 2009, for which we know residence location.

Focus on women who did not migrate in this period, and who did not have the event of interest before May 2004.

METHOD: Cox regression

- Calculates effects of exposure to homicides on risk of having the event of interest at any month of age, given that it has not happened yet.

- Model does not assume functional form for baseline hazard (risk of having event when all covariates = 0).
- Same controls than FE models (2-year lag), plus birth cohort and state dummy variables.

OUTCOME (individual level):

- Event** = 1 if first union (marriage or cohabitation) / first birth happened in month m, 0 otherwise.

MAIN PREDICTORS:

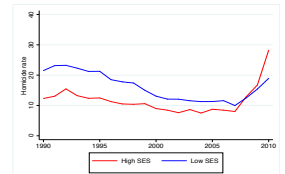
- Local Homicide Rate** (per 100,000) in year t-1
- Spike in Local Homicide Rate** = 1 if homicide rate in year t-1 was at least 200% higher than the average homicide rate in reference period (1999-2003), and 0 otherwise.

Different effects of homicide across urbanization levels?

The consequences of exposure to violence may be different across **local development and urbanization levels (SES)**. Variation in:

- Population density
- Spatial concentrations of poverty
- Social capital
- Rule of law
- Culture and values towards violence

Average homicide rate by municipality SES 1990-2010



In a nutshell...

- For women of ages 15-19, demographic responses to violence differ by local development and urbanization levels (SES).
- In **low SES communities**, exposure to local violence reduces overall birth rates and is associated with lower risk of first union formation through cohabitation.
- Opposite effects in **high SES communities**, where exposure to violence increases birth rates, and is associated with increases the risk of first birth and the risk of first union formation through cohabitation.
- For this particular age group, no effects were found on marriage rates or risk of first marriage.