

Local violence and transitions to marriage and cohabitation in Mexico

Mónica L. Caudillo¹  | Jaein Lee² 

¹Department of Sociology, University of Maryland, College Park, Maryland, USA

²Sociology Department, Gettysburg College, Gettysburg, Pennsylvania, USA

Correspondence

Mónica L. Caudillo, Department of Sociology, University of Maryland, College Park, College Park, MD 20742, USA.

Email: caudillo@umd.edu

Funding information

Eunice Kennedy Shriver National Institute of Child Health and Human Development, Grant/Award Number: P2C-HD041041; Maryland Population Research Center

Edited by: Maria Stanfors

Abstract

Objective: To assess whether local violence is associated with the timing and type of women's first union formation.

Background: Local violence may cause disruptions to marriage markets and psychological and behavioral changes that may affect union formation patterns.

Method: The authors exploited the variation in homicide rates caused by a shift in national drug-enforcement policy in Mexico in December 2006. Competing-risks Cox models and union histories from a nationally representative survey of women ($N = 33,292$) were used to assess whether a recent increase in violence was associated with the timing of the first union transition, which could be either marriage or cohabitation. Analyses were conducted separately by education level.

Results: A recent increase in the local homicide rate was associated with delayed first marriage formation for less educated women. Supplementary analyses suggested that a decrease in the number of employed men per women, as well as reduced social interaction due to fear of victimization could be plausible causal mechanisms. No statistically significant associations were found between a recent increase in violence and transitions to first cohabitation for the less educated, or with any first union transition for the moderately and more educated.

Conclusion: Among less educated women, a recent increase in violence was associated with a delayed entrance into marriage as a first union transition.

Implications: By increasing their barriers to marriage, local violence may contribute to the accumulation of disadvantage among disadvantaged women and families.

KEYWORDS

cohabitation, community, crime and delinquency, marriage, violence

This is an open access article under the terms of the [Creative Commons Attribution-NonCommercial-NoDerivs](https://creativecommons.org/licenses/by-nc-nd/4.0/) License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

© 2022 The Authors. *Journal of Marriage and Family* published by Wiley Periodicals LLC on behalf of National Council on Family Relations.

INTRODUCTION

Homicide and violent crime are a cause of profound disruptions to individual lives and community-level conditions throughout the world (UNODC, 2013). Between 2000 and 2017, criminal organizations were responsible for about 1 million deaths worldwide, which is equivalent to the number of deaths caused by all armed conflicts that took place in the world during the same period (UNODC, 2019). Despite the global prevalence of criminal violence, previous research on the association between violence and union formation has focused on conflict and war (Greenwood & Guner, 2008; Islam et al., 2016; Jayaraman et al., 2009; Neal et al., 2016; Shemyakina, 2009). Existing evidence has shown that armed conflict and war can disrupt women's union formation and fertility patterns (Neal et al., 2016; Shemyakina, 2013; Staveteig, 2011; Williams et al., 2012). However, these violent events are usually brought about by sociopolitical, cultural, and economic changes (Rieckmann, 2014) that are very different from the conditions surrounding violent crime. Therefore, we know little about how local homicide and violent crime may affect key life course transitions such as the formation of the first co-residential union. This study fills this gap in the literature using the case of Mexico, where a shift in national drug-enforcement policy prompted a so-called "War on Drugs" in December 2006, which caused a drastic increase in homicide rates. Specifically, we assess how the timing and nature of women's first union formation, either marriage or cohabitation, changes after a recent increase in homicide rates, and whether such associations vary by education level.

Illuminating the implications of local violence on life course transitions is critical to understanding its role in the long-term reproduction of inequality. This is especially true for the United States and Latin America since, as a region, the Americas have the highest homicide rates in the world (UNODC, 2019). Estimating the effect of local criminal violence is challenging because it is usually concentrated among low-SES individuals (UNODC, 2019). Disadvantaged populations have very distinctive life course patterns that make it difficult to separate the influence of SES background from that of exposure to other stressors. In addition, fluctuations in crime rates are usually very strongly associated with other plausible confounders, such as trends in inequality, poverty, and economic activity (Fajnzylber et al., 2002; Imbusch et al., 2011).

To overcome these challenges, we used the case of the Mexican War on Drugs (MWD), a militarized change in drug-enforcement policy that started in December 2006, which dramatically increased homicide rates in Mexico (Calderón et al., 2015). The initiative was based on direct military intervention in civilian spaces to fight drug-trade organizations, which sparked numerous armed conflicts (Guerrero-Gutiérrez, 2011). After a consistently declining homicide rate from 2000 to 2007, with a lowest point of 8 homicides per 100,000 people, the homicide rate increased sharply, reaching 18 in 2009 (INEGI, 2017). A crucial distinction in the Mexican case is that this unexpected increase in violence was primarily driven by a shift in law enforcement interventions (Osorio, 2015), rather than by changes in variables that are usually associated with crime, such as unemployment, poverty, or income inequality (Fajnzylber et al., 2002; UNODC, 2019). As a consequence, this policy-induced violence spikes in areas with heterogeneous levels of disadvantage. This allows us to evaluate their association with union formation across education levels. For these reasons, Mexico represents a useful case study to assess the relationship between local criminal violence and women's life course transitions.

Increasing local violence may affect union formation patterns through several pathways, which are likely to be more relevant for disadvantaged populations. Violence may rapidly decrease male marriageability by increasing men's risk of criminal involvement, and by hurting their ability to maintain a job given crime-driven economic decline. Fear and anxiety caused by violence may drive individuals to accelerate union formation to obtain emotional proximity. Alternatively, these psychological effects may lead individuals to reduce social interactions, which may prevent them from consolidating a romantic relationship and forming a co-residential union.

Using competing risks Cox models and individual pregnancy and union histories collected by the 2009 National Survey of Demographic Dynamics¹ (INEGI, 2009), we evaluated the association between local violence and women's first union formation, as either a marriage or cohabitation. Specifically, we assessed whether a recent increase in local violence impacts women's risk of transitioning directly to marriage, or to cohabitation as a first union, net of the pre-existing level of violence. To evaluate the plausibility of some of the potential causal mechanisms, we used aggregate census data to test the association between local homicide rates and employed men per women, and a national survey on crime victimization to assess changes in social interactions due to fear of victimization.

We found that among less educated women, a recent increase in local violence was associated with a lower rate of marriage as a first union. Evidence from supplementary analyses suggests that reduced male marriageability and restricted social interactions were plausible causal mechanisms linking increasing violence with delayed marriage among disadvantaged women. In contrast, a recent increase in violence was not associated with the transition to first marriage or cohabitation among moderately and more educated women, or with the transition to first cohabitation among the less educated. We discuss the possible implications of these findings for the wellbeing of women and families.

BACKGROUND

To our knowledge, there is no comprehensive theoretical framework that describes the links between local criminal violence and transitions to the first co-residential union. In this section, we suggest several potential pathways linking local violence to transitions to the first union formation based on previous research on related phenomena. We distinguish between the theoretical consequences of experiencing a recent increase in homicide rates versus a long-term, pre-existing high level of violence.

Increasing violence and union formation in the short term

A recent spike in violence could rapidly decrease male marriageability through several causal mechanisms. First, an increase in homicide rates may hurt the local economy and therefore men's ability to maintain a job (Carboni & Detotto, 2016; Detotto & Pulina, 2013). Since men are often expected to reach financial autonomy before being considered eligible as marriage partners (Guzzo, 2006), male job instability and shortages of employed men per women have been negatively associated with transitions to marriage (Guzzo, 2006; Harknett & McLanahan, 2004). Evidence on the heterogeneous effects of economic crises across socioeconomic levels (Ríos-Almodóvar & Carrillo-Regalado, 2014; Scarpetta et al., 2010) suggests that less-educated young men would be more likely than their more-educated counterparts to face unemployment after a violence-induced economic decline. Therefore, we would expect disadvantaged men to suffer the greatest losses in employment and marriage prospects after a violence spike.

A second mechanism is male criminal involvement. Globally, violent crime victims and perpetrators are concentrated among less-educated young men (South & Messner, 2000; UNODC, 2013). Violent crime involvement may carry a stigma that reduces men's attractiveness in the marriage market, partly due to fear of victimization from potential female partners. Consistently, previous studies have found that individuals with a criminal record are less likely to form co-residential unions, particularly if their crimes were violent (van Schellen et al., 2012; Zoutewelle-Terovan et al., 2016). In contrast to their less-educated counterparts, the marriage market conditions for more-educated women are plausibly less susceptible to the negative

effects of local violence, because more-educated men are generally at a lower risk of being crime victims or perpetrators, and because their jobs are potentially less vulnerable to violence-driven economic decline. Therefore, less-educated women may bear most of the burden of reduced male marriageability due to violence-driven unemployment and criminal involvement.

Increasing community violence is also linked to immediate psychological effects, such as fear of victimization (Lorenc et al., 2012; Villarreal & Yu, 2017). However, the evidence about the effect of life-threatening events on union formation is mixed. According to attachment theory, individuals may seek the proximity of others as a source of support, safety, and emotional comfort when they perceive danger or experience life-threatening circumstances (Bowlby, 1969; Cohan & Cole, 2002; Mikulincer & Shaver, 2003). Behaviorally, this would be reflected in accelerated transitions to union formation. Marriage, in particular, may offer access to a broader social support network, and a more stable social position in the face of violence-induced uncertainty, which may explain why marriage rates have been found to increase after some instances of armed conflict (Williams et al., 2012).

Alternatively, fear of victimization may drive individuals to drastically reduce their social interactions, which may hinder their ability to meet and maintain a relationship with a romantic partner. According to a nationally representative survey conducted in 2010 in Mexico, 52% of adults aged 18 or older reported that due to fear of crime victimization they had stopped going out of their homes at night, and 29% had stopped visiting family and friends (INEGI, 2011). Couples may be deterred from celebrating a marriage ceremony after a spike in violence, since organized crime attacks often target social gatherings (El Imparcial, 2021; El Mundo, 2010; El País, 2008). Furthermore, heightened stress and post-traumatic stress disorder (PTSD) caused by increasing violence may prevent individuals from forming and maintaining romantic relationships that may progress toward a cohabitation or marriage (Vogt et al., 2017). Overall, studies about psychological responses to stressors offer mixed predictions about whether they would accelerate or delay union formation.

Pre-existing high levels of violence and union formation in the long term

Although our study's focus is on the short-term implications of increasing violence for union formation, we offer a discussion of some potential long-term consequences. Because less-educated young men are globally overrepresented among homicide victims (UNODC, 2013), sustained high homicide rates could shrink the pool of potential partners for disadvantaged unpartnered women by decreasing sex ratios, understood as the number of men per women, in the long term (Guha-Sapir & D'Aoust, 2011; Jones & Ferguson, 2006). Lower sex ratios have been associated with a lower probability of getting married relative to being single (Guzzo, 2004; Saxena et al., 2004). Because lower sex ratios have also been shown to increase the probability of cohabiting relative to getting married (Guzzo, 2004), this pathway may result in an increased probability of cohabitation among the less educated in the long term.

High levels of violence could also hinder educational outcomes and derail future transitions to adulthood for younger generations. Exposure to violence and the proximity of gang activity have been shown to reduce test scores and increase absenteeism among lower secondary school adolescents in Mexico, possibly because of pressure to adopt a gang lifestyle (Jarillo et al., 2016). Several years ahead, this may result in earlier school dropout and lower educational attainment (Brown & Velásquez, 2017), and therefore reduced marriageability for disadvantaged young males who are preyed upon by gang recruiters. Transitioning to adulthood in an environment conducive to crime involvement may also promote a preference for cohabitation over marriage, since informal unions may be more permissive of criminal careers (Beijers et al., 2016; Forrest, 2014). In the long term, these factors may increase the prevalence of cohabitation and decrease the likelihood of marriage among younger generations.

In summary, a recent spike in local violence may delay marriage among disadvantaged populations by rapidly decreasing male marriageability through higher male unemployment and criminal involvement. In the short term, fear and trauma may drive individuals to seek emotional proximity and accelerate union formation, but these factors may also reduce and strain social interactions and prevent romantic relationships from evolving into informal unions or marriages. Particularly for disadvantaged groups, long term exposure to high levels of violence may reduce sex ratios and derail educational trajectories, which may increase the probability of cohabitation as a form of first union after several years.

The Mexican war on drugs, violence, and union formation in Mexico

Mexican President Felipe Calderón implemented a major shift in drug-enforcement policy in December 2006, which he defined as a “war on drugs.” This new strategy was based on using military troops to fight drug-trade criminal organizations in civilian population centers, with the main goal of capturing or killing their leaders (Calderón et al., 2015; Ríos, 2013). Direct military intervention sparked frequent armed confrontations between police forces, military troops, and organized crime in targeted cities and towns (Calderón et al., 2015; Osorio, 2015). After this policy change, the national homicide rate grew dramatically in Mexico, and was almost exclusively driven by male homicides. As shown in Figure 1, the male homicide rate went from 15 (per 100,000 males) in 2007 to 42 in 2010, after a decade of consistent decline. The risk of victimization followed a monotonic gradient across educational attainment, with less educated men having the highest homicide rates. All male education groups experienced a marked increase in homicide rates after the onset of the MWD, with the less educated having the largest spike in victimization (Figure 2).

The MWD not only caused drastic time-variation in homicide rates but also prompted the geographic expansion of violence. The capture or elimination of organized crime leaders fragmented criminal groups into multiple, smaller cells, which faced increased incentives to expand their illegal activities into new territories (Guerrero-Gutiérrez, 2011). This new scenario caused violent confrontations between multiplying numbers of criminal organizations over the control of cities and towns (Osorio, 2015). These conflicts were often accompanied by gruesome intimidation tactics, such as the public display of tortured or dismembered bodies next to threatening written messages directed at the public, the government, or other criminal organizations (Cerde

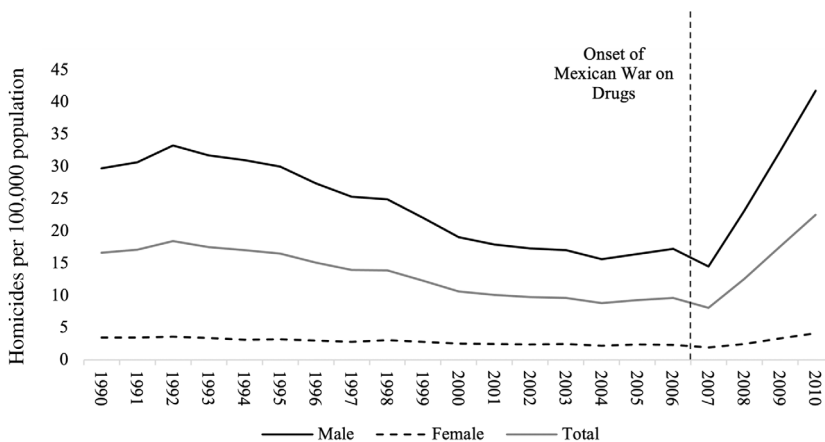


FIGURE 1 Homicide rate (per 100,000 people) in Mexico, 1990–2010. *Source:* Authors’ calculations with data from Vital Statistics (INEGI, 2019).

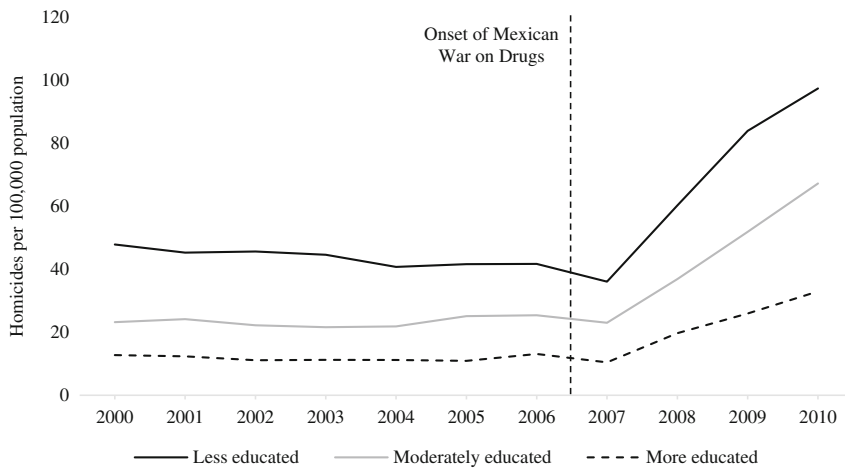


FIGURE 2 Homicide rate for males aged 15–39 (per 100,000) by education level in Mexico, 2000–2010. *Source:* Authors' calculations with data from Vital Statistics (INEGI, 2019).

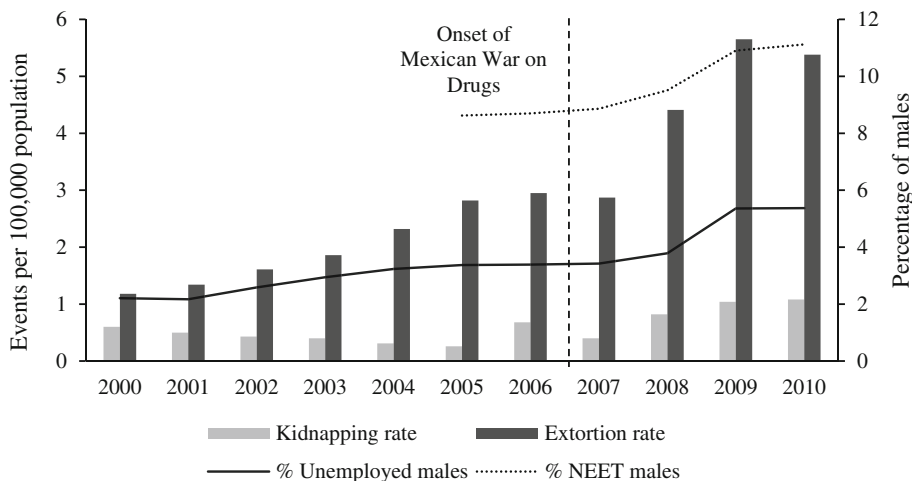


FIGURE 3 Percentage of unemployed males, percentage of male youth not in employment, education or training (NEET), and kidnapping and extortion rates per 100,000 population in Mexico, 2000–2010. *Source:* Unemployment and NEET data were obtained from The World Bank (2020). Crime rates were obtained from the Ministry of Citizen Security and Safety (SSPC, 2019). The denominator for the percentage of unemployed males is all males in the labor force. The denominator for the percentage male youth NEET is all males aged 15–24. Kidnapping and extortion rates are expressed as the number of events per 100,000 people.

Pérez et al., 2014). In the context of the MWD, local homicide rates, the use of brutal killing techniques, and the use of threatening messages all have been shown to negatively affect public mental health (Flores Martínez & Atuesta, 2018; Villarreal & Yu, 2017).

In addition, prompted by the need for greater resources to finance the war against the government and rival groups, criminal organizations increasingly targeted the civilian population by engaging in extortion, kidnapping for ransom, and human trafficking (Guerrero-Gutiérrez, 2011). As a result, the kidnapping and extortion rates grew substantially after 2007

and had nearly doubled by 2010 (Figure 3). The increase in criminal activities terrorized the population and incited changes in daily routines driven by fear of victimization (Vilalta, 2016).

Economic measures of low male marriageability, such as unemployment and the proportion of youth who were neither employed nor enrolled in school or training (NEET), were relatively stable before the onset of the MWD in December 2006 and increased shortly after it started (Figure 3). Although these treStudies have shown that the spike in violence resulting from the MWD decreased labor productivity (Cabral et al., 2016), and increased unemployment in affected areas (Robles et al., 2013), particularly for men (Tsaneva et al., 2019). In addition, in the war against the government and rival groups, criminal organizations increased their demand for human resources and aggressively courted, and sometimes forcibly recruited, disadvantaged young men (Brown & Velásquez, 2017; Gómez San Luis & Almanza Avendaño, 2016). The greater demand for human resources from criminal organizations and the deteriorating job market conditions driven by violence may have reduced the marriageability of many disadvantaged men. Because the rates of crime reporting and conviction are extremely low in Mexico, the trend in the incarceration rate did not change after the onset of the MWD (Zepeda Lecuona, 2013). Therefore, male imprisonment is unlikely to be a mediator linking violence to union formation in Mexico.

Marriage, cohabitation, and the wellbeing of women and children

Mexico is characterized by a dual union system in which cohabitation has traditionally been a substitute for marriage among some less-educated, indigenous, and rural populations (Heaton & Forste, 2007; Martin, 2002). In the last few decades, this country has witnessed a retreat from marriage accompanied by the diffusion of a new type of cohabitation, adopted across all SES and urbanization levels (Amador, 2016). As is the case in other countries, cohabitations in Mexico are substantially more unstable than marriages (Heaton & Forste, 2007), and evidence from Mexico and the United States suggests that children fare better when living with married parents compared with single or cohabiting parents (Brown, 2010; Schmeer, 2013). Because cohabiting couples in Mexico are more likely than married couples to live with relatives, usually the man's family (Esteve et al., 2012), female cohabitators are also more vulnerable to verbal, physical, and economic violence instigated by this living arrangement (Agoff et al., 2007).

Although at least part of the advantages of marriage for women and children may be explained by selectivity in terms of SES, education, or attitudes, the social and economic costs of leaving a marital union are generally greater than those of dissolving a cohabitation, which promotes more stability among marriages. To the extent that family instability and fathers' absence have detrimental effects on children's wellbeing (Cavanagh & Fomby, 2019; McLanahan et al., 2013), barriers to more stable union structures such as marriage may contribute to the accumulation and intergenerational transmission of disadvantage.

DATA AND METHODS

To conduct our event-history analysis, we reconstructed women's marriage, cohabitation, and birth histories using the 2009 National Survey of Demographic Dynamics² (ENADID), conducted in Mexico. The ENADID is a nationally representative survey that provides retrospective marital and pregnancy information for 100,515 women who were 15–55 years of age at the time of interview. The ENADID asked respondents the month and year in which each of their childbirths occurred, and the month and year in which their first unions, either marriage or cohabitation, started. The survey also asks for respondents' municipality of residence during the interview year, 1 year before, and 5 years before the interview. This allows us to identify

women's municipality of residence from May of 2004 to May of 2009. This period encompasses 2.5 years before and 2.5 years after 2007, the year when homicide rates spiked in Mexico after a consistent downward trend since the mid-90s (see Figure 1). We assume that respondents who did not report a change of residence in those three points in time were exposed to the homicide rates in their reported municipality throughout the observation period. We used the union histories in the ENADID to build a person-months data set and created a categorical outcome that captured the occurrence and nature of the first union formation, which could be a marriage or a cohabitation.

We excluded respondents that migrated to another municipality or state during our observation window (6665, or 7% of all women). This was important to ensure that we can correctly match respondents to the homicide rates and socioeconomic conditions in their municipalities over time. We further excluded women who had missing educational attainment information (287, or 0.3% of all respondents), or incomplete information in their union (3776 or 4% of all respondents) and pregnancy histories (2359 or 2% of all respondents). To be sure that women were at risk of entering their first union during the observation period, we further restricted the sample to the 33,292 women who had not transitioned to their first union formation or pregnancy and who were age 30 or younger at the beginning of the observation period (May 2004). This sample selection encompassed cohorts 1974–1994 and ensured that women who had not yet formed their first union and thus remained in our sample by the end of our observation period (May 2009) were 35 years old or younger. Union formation in Mexico is nearly universal and characterized for occurring at youthful ages—the median age was 21 for women born in years 1970–1979 and has remained fairly stable across cohorts (Fussell, 2005; Kroeger et al., 2015). Therefore, our aim was to exclude atypical cases of very late or foregone first union formation. Nonetheless, the results of our analyses were robust to expanding this age limit to 45 years (results not shown, available upon request). We included pregnancy in our restriction criteria because the timing of transitions to first union and first pregnancy are closely related in Mexico (Fussell, 2005).

We used homicide counts per municipality and month based on geographic and sociodemographic information in death certificates. These vital statistics were systematized and made available by the National Institute of Statistics and Geography (INEGI, 2019). According to an analysis of data comparability, completeness, timeliness, and internal and external consistency conducted by the United Nations Office of Drugs and Crime, Mexico produces good quality homicide data (UNODC, 2019). Furthermore, formal comparisons with reported offenses have shown that in Mexico, vital statistics collected by INEGI register the greatest quantity of homicides (Atuesta et al., 2019), since they are not affected by underreporting of criminal activities, or by state-level differences in the legal definition of homicide (Torche & Villarreal, 2014).

Our analytical strategy was designed to evaluate the association between a recent increase in local homicide rates and the first union formation, while accounting for pre-existing local violence levels. To measure exposure to local violence, we matched monthly homicide counts at the municipality level to the person-months dataset derived from the ENADID survey. We used these monthly homicide counts to calculate the total number of homicides that occurred across each set of 12 consecutive months, which generated a moving count of yearly homicides. The estimated population size in each municipality and year was used to calculate moving yearly homicide rates. Population denominators were obtained from the Census and Population Counts conducted in 2000, 2005, and 2010, and interpolated the years in-between. When a 12-month period encompassed two calendar years, we estimated the corresponding moving population denominator using the average population size in those 2 years, weighted by the number of months corresponding to each calendar year.

For each person-month, we created a binary predictor to measure whether violence was increasing, as opposed to decreasing or stable, over the previous 2 years. The process to code this key predictor was as follows. First, we calculated the homicide rate for the year

immediately prior (A), covering the period from month $t-1$ to month $t-12$, where t was the current month in our person-months dataset. Second, we calculated the homicide rate 2 years in the past (B), covering the period from month $t-13$ to month $t-24$. Then, we obtained the absolute change in violence over the previous 2 years by subtracting B from A . We created a binary predictor of absolute change in violence that equals 1 when such difference was a positive number >1 homicide per 100,000 people, to indicate that violence increased. This predictor equals 0 when the subtraction described above rendered a negative difference or a positive difference <1 , which indicates that violence was either decreasing or relatively stable. We also calculated the homicide rate (per 100,000 people) 3 years in the past (month $t-25$ to month $t-36$), and 4 years in the past (month $t-37$ to month $t-48$). We used the average of these two homicide rates to measure the pre-existing level of community violence.

As an alternative measure of change in violence, we calculated the percentage represented by the recent change in homicide rates ($A-B$) relative to the pre-existing level of violence, as defined above. This measure allowed us to classify person-months according to the change in violence they recently experienced relative to the previously recorded level. We grouped person-months into three categories: no change or decrease, increase of up to 50%, and increase of more than 50% relative to the pre-existing level of violence. All models simultaneously included measures of a recent increase in homicide rates and previous, long-term violence levels. Because the correlation between the level and change indicators is extremely low (<0.05), multicollinearity is not a concern.

We used competing-risks Cox models to assess the impact of exposure to local violence on women's first union formation, which can either be a marriage or a cohabitation. Our outcome of interest is measured by a three-category variable, that identifies whether a woman entered a cohabitation, got married, or did not experience a first union formation in any month. Once any of these events occurred for a respondent, any future person-months were excluded from the analysis, because the woman was no longer "at risk" of experiencing the first transition. In other words, our key dependent variable is right-censored. Cox models acknowledge that the risk of transitioning to a marriage or cohabitation varies across the life course, while not assuming any particular functional form to this variation (Allison, 2014). In competing-risks Cox models, the hazard rate is the instantaneous risk of experiencing the event of interest in month t , given that none of the other competing events has occurred (Cleves et al., 2008). In other words, competing-risks Cox models estimate how covariates are associated to the risk of transitioning to first marriage or cohabitation separately, or cause-specific hazard. Competing-risks models were estimated for each type of event, marriage, and cohabitation, while censoring women who entered a union of the opposite type at the time of the formation of such union. We defined age 12 as the onset of risk of first union formation. Survey weights are used to render nationally representative estimates, and standard errors are clustered by municipality.

All models were stratified by education level. We followed the International Standard Classification of Education (ISCED) to classify women's educational attainment and counted years of education as grades approved since the start of primary school, which represents ISCED level 1 (UNESCO Institute for Statistics, 2021). We classified women into three categories: (a) less educated (6 years of education or less, equivalent to completed primary school or less), (b) moderately educated (7–9 years of education, equivalent to some or completed lower secondary school) and (c) more educated (more than 9 years of education, equivalent to some upper secondary school or more). We used this classification because men with 6 years of education or less are overrepresented among homicide victims, and also constitute the primary pool of potential partners for women with the same education level. Because 38% of respondents were younger than 19 at the time of interview, and thus too young to have completed at least 1 year of tertiary education, having over 9 years of education is the most adequate marker of higher SES in our sample. In addition, having completed lower secondary school represents the end of compulsory education in Mexico, and further educational attainment is associated with

a higher SES background (INEE, 2019). Table S1 shows a detailed description of equivalences between ISCED levels and the education systems in Mexico and the United States.

Several strategies were applied to account for potential confounders. First, we controlled for respondents' birth cohort, cumulative number of live births, and indigenous language in all our models. In models that pooled all education levels, we also controlled for education. Second, we stratified all models by each of the 32 states and federal districts in Mexico. This means that our models allowed for women in each state to have a unique "shape" in the hazard of experiencing a union formation throughout the life course, known as the baseline hazard. This accounts for differences in women's propensity to experience the transitions of interest across the life course that are due to state-specific customary practices, legislation, or public infrastructure. For instance, we would expect women who live in industrialized and liberal states to be more likely to enter a union at an older age. In contrast, women in rural and conservative states would be more likely to marry or cohabit at earlier ages. Our models also included a series of binary variables identifying four municipality-level poverty and rurality categories as measured in 2000 (very low, low, high, and very high).³ Municipalities are the smallest political units in Mexico and are similar to counties in the United States. Poverty and rurality categories shift the baseline hazards up or down to capture differences in the propensity to enter the first union across these groups of municipalities.

In addition, we introduced a series of municipality- and state-level time-varying socioeconomic indicators, made available by the National Institute of Statistics and Geography (INEGI, 2017) and the National Population Council (CONAPO, 2015). We lagged all time-varying covariates by 3 years so that they captured local conditions preceding recent increases in homicide rates, or potential confounders, rather than changes in local conditions driven by such spikes in violence, or mediators. Municipality-level indicators captured trends in the socioeconomic, sex, and age structure of the local population that preceded recent changes in homicide rates. These controls included population size in thousands, sex ratio (number of men aged 15–39 per 1000 women aged 15–34), as well as the percentages of local populations with no elementary school degree, with no electricity in their residences, and earning less than two minimum wages. All municipal controls were available for years when a Census or Population Count was conducted (2000, 2005, and 2010). Values for years in-between were interpolated. Finally, we also controlled for domestic and international migration, all of which were measured yearly at the state-level.⁴

In our Cox models, we included two versions of each of these lagged municipality- and state-level time-varying controls: the original "level" form, and also a "change" version, resulting from subtracting their value in two consecutive years.⁵ These change measures are important because they capture whether sociodemographic measures such as poverty were increasing or decreasing over a certain period. In contrast, the level variables capture whether local poverty (or any other characteristic) was low or high at a particular point in time. Together, the stratification of baseline hazards by state, the local poverty and rurality controls, and the time-varying local sociodemographic and economic predictors accounted for potential confounders preceding recent changes in homicide that might predict both spikes in violence and union formation patterns.

Potential causal mechanisms

We executed several types of exercises to assess the plausibility of some of the short-term causal mechanisms discussed in the Section 2. First, we tested the relevance of male marriageability as a causal mechanism using municipality-year data from the 2000 and 2010 Population Censuses (Minnesota Population Center, 2020) and from administrative data based on marriage certificates for the same years (INEGI, 2020). Using municipality fixed effects models, we estimated the association between homicide rates and the number of employed never married men aged 15–39 per never married women aged 15–34, which we used to measure male marriageability. Second, we estimated separate municipality fixed effects models where the outcome was the

local marriage rate for women aged 15–34 and the predictor of interest was employed men per women. The unit of analysis was the municipality, and models were estimated separately for less, moderately, and more educated populations. They all included year fixed effects and controlled for sex ratios (number of men aged 15–39 per 1000 women aged 15–34), the percentage of the population living in communities with <5000 people and the percentage with no elementary school degree in the municipality, as well as for net international and domestic migration rates in the state.

To evaluate whether restricted social interaction due to fear of crime might be a plausible causal mechanism linking violence to union formation, we used the 2011 National Survey of Victimization and Perception of Public Safety (INEGI, 2011), a nationally representative survey of adults in Mexico conducted in 2010. We estimated logistic regressions to evaluate whether women who learn about homicides and gang activity occurred in their local area stopped visiting family and friends due to fear of crime. Our models were restricted to women aged 15–34 and control for age and education. To assess heterogeneous responses by education level in these individual-level data, we interacted the awareness of homicides and gang activity with a categorical variable that identified whether women were less, moderately, or more educated.

RESULTS

Table 1 shows descriptive statistics at the person level for women in our dataset, focusing on union formation transitions that occurred during the observed period and time-invariant covariates. The first column shows that 10% of respondents transitioned to marriage and 13% of respondents transitioned to cohabitation during the study period. This column also shows that 12% of respondents had attained 6 years of education or less at the time of interview, whereas 33% had between 7 and 9 years of education, and 55% had more than 9 years of education. Our “less educated” category captures the most disadvantaged and plausibly the most vulnerable group of women in our sample. Less educated women were distributed across areas of different urbanization and poverty levels, with 46% living in urban and wealthy municipalities (69% for the moderately educated), and 32% living in “high” or “very high” poverty and rurality areas (15% for the moderately educated). About 83% of more educated women were concentrated in urban and wealthy municipalities, and 8% were living in “high” or “very high” poverty and rurality areas. About 71% of respondents belonged to cohorts born between 1986 and 1994.

Table 2 shows weighted descriptive statistics of the person-months data set used in our analysis, focusing on time-varying covariates. Estimates in the first column include person-months corresponding to all respondents. As expected, less-educated women were exposed to a slightly higher, but very similar pre-existing homicide rate level (10 homicides per 100,000 people) than the moderately and more educated (9 homicides per 100,000 people). While the less educated experienced an increase in the local homicide rate trend during 36% of their person-months, the more educated experienced such shock during 34% of their observed time. In terms of relative change in violence, 20% of less-educated women, 18% of moderately educated, and 16% of the more educated experienced a recent increase of more than 50% relative to the average pre-existing homicide rate in years $y-3$ and $y-4$. Overall, the exposure to high levels and increasing trends of homicide rates were very similar across education levels, which shows that local violence in Mexico reached populations of very diverse SES backgrounds during the observed period.

Recent change in violence

Table 3 shows competing-risks Cox models where the outcome is either the hazard of entering a first cohabitation or marriage for women of different educational attainments. Columns 2, 4,

TABLE 1 Descriptive statistics of women at risk of first union formation between May 2004 and May 2009 in Mexico, 2009 National Survey of Demographic Dynamics

	All	Less educated	Moderately educated	More educated
Transition to first union formation				
No transition	76.6	66.7	73.4	80.7
Cohabitation	13.1	21.9	16.8	9.0
Marriage	10.3	11.4	9.8	10.4
Women's characteristics				
Education				
≤6 years	12.0	100.0	0.0	0.0
7–9 years	32.7	0.0	100.0	0.0
>9 years	55.3	0.0	0.0	100.0
Indigenous language	4.4	15.1	4.7	2.0
Birth cohort				
1985 or earlier	29.3	35.3	17.7	34.9
1986–1990	37.8	33.3	29.0	44.0
1991–1995	32.9	31.4	53.3	21.2
Municipality-level characteristics				
Local poverty and rurality index				
Very low	73.8	46.2	69.3	82.5
Low	13.2	22.3	15.9	9.7
High	7.7	14.8	8.9	5.5
Very high	5.2	16.7	5.9	2.3
Respondents	33,292	3423	10,616	19,253

Note: “Less-educated women” comprise those who had completed elementary school or less (≤6 years). “Moderately educated women” were those who had some or completed lower secondary school (7–9 years). “More educated women” comprise those with some upper secondary school or more (>9 years).

6, and 8 in Table 3 show competing-hazards Cox models where the outcome is the risk of entering a marriage and the predictor of interest is the recent absolute change in violence. According to Model 4, a recent increase in violence was associated with a steep decrease in the hazard of first marriage among less-educated women. Those who experienced a recent increase in local violence experience an average reduction of 28% in their hazard of transitioning to marriage ($p < .05$) as first union. In contrast, the associations between a recent increase in homicide rates and marriage formation for moderately and more educated women were nonsignificant and close to null in magnitude.

To formally test whether increasing violence has heterogeneous associations with marriage formation by education level, we estimated a model that pooled all women and fully interacted covariates by education⁶ (see Model 1, Table S2). The increasing violence hazard ratio for the less educated was significantly different from that of the more educated ($p < .05$). We could not discard that a recent increase in violence was similarly associated with marriage formation for the less and moderately educated, because differences in their hazard ratios were not statistically significant (see Model 1, Table S2). Nonetheless, these supplementary tests supported the conclusion that a recent spike in violence has heterogeneous implications for the timing of the first marriage, which translated into delayed marriage formation for women of lower education but not for the more educated.

TABLE 2 Descriptive statistics of person-months corresponding to women at risk of first union formation between May 2004 and May 2009 in Mexico, time-varying covariates, 2009 National Survey of Demographic Dynamics

	All	Less educated	Moderately educated	More educated
Women's characteristics				
Cumulative live births				
None	98.0	96.9	97.7	98.4
1 or more	2.0	3.1	2.3	1.6
Municipality-level violence				
Recent absolute change in HR				
Decrease or stable trend	65.2	64.4	64.7	65.7
Increase	34.8	35.6	35.3	34.3
Recent change relative to pre-existing HR				
Decrease or no change	53.3	56.6	53.7	52.5
Increase of up to 50%	29.9	23.3	28.2	32.0
Increase of more than 50%	16.8	20.1	18.1	15.5
Pre-existing avg. homicide rate	8.9	9.6	8.8	8.8
Local sociodemographic characteristics (<i>y</i>-3)				
Population in thousands	442.1	256.6	404.1	496.8
% No elementary school	23.5	35.1	25.4	20.3
% No electricity	2.6	5.1	2.8	1.9
% Rural	25.4	45.7	29.7	19.4
% Low wage	45.3	57.3	47.4	41.9
Unemployment rate	3.4	2.9	3.3	3.5
Net international migration rate	-49.4	-62.3	-52.1	-45.6
Net domestic migration rate	1.1	-3.5	1.5	1.7
Men aged 15-39 per 1000 women aged 15-34	1177.7	1177.4	1186.2	1173.5
Person-months	1,700,603	161,986	495,029	1,043,588

Note: "Less educated women" comprise those who had completed elementary school or less (≤ 6 years). "Moderately educated women" were those who had some or completed lower secondary school (7-9 years). "More educated women" comprise those with some upper secondary school or more (> 9 years).
Abbreviation: HR, homicide rate.

Columns 1, 3, 5, and 7 in Table 3 present competing-risks Cox models where the outcome is the hazard of entering a cohabitation for women of different educational attainments. According to these models, a recent increase in homicides had no statistically significant association with the hazard of cohabitation for women of any education level. Because we did find statistically significant associations with marriage formation for the less educated, in supplementary analyses we formally compared the increasing violence hazard ratios in marriage and cohabitation models for this group.⁷ We found that the marriage-cohabitation differences in increasing violence hazard ratios are statistically significant for the less educated ($p < .05$) (see Table S3). These results further supported the notion that recent increases in violence affect marriage formation, but not cohabitation, among the less educated.

To test the robustness of our findings to the use of an alternative measure of change in violence, Table 4 shows analogous competing-risks models that use the *relative* increase in violence as the predictor of interest. Similar to results in Table 3, Model 4 in Table 4 shows that among less educated women, an increase of more than 50% relative to the pre-existing homicide rate reduced the hazard of marriage by about 34% ($p < .05$), compared with those who experienced a decrease or no

TABLE 3 Hazard ratios from competing-risks cox models using absolute change in local violence to predict first union formation for women in Mexico, by union type and educational attainment, 2009 National Survey of Demographic Dynamics

	All		Less educated		Moderately educated		More educated	
	Cohab. 1	Marr. 2	Cohab. 3	Marr. 4	Cohab. 5	Marr. 6	Cohab. 7	Marr. 8
Municipality-level violence								
Recent absolute change in HR (Ref: Decrease or stable trend)								
Increase	0.925	0.933	0.944	0.716*	0.935	0.915	0.883	1.012
Pre-existing avg. homicide rate	1.007**	0.998	1.012*	1.007	1.007	1.003	1.005	0.987
Women's characteristics								
Education (Ref: ≤6 years)								
7–9 years	0.970	1.467***						
>9 years	0.312***	0.856						
Indigenous language	1.148	1.137	1.277	1.136	0.907	1.080	1.396	0.914
Cumulative live births (Ref: None)								
1 or more	2.810***	1.059	1.919**	0.689	2.616***	1.056	4.600***	1.189
Local sociodemographic characteristics								
Poverty and rurality index (Ref: Very low)								
Low	0.921	0.909	1.003	0.612*	0.916	1.120	0.782	0.968
High	0.862	0.706	1.261	0.436*	0.710	0.892	0.754	0.747
Very high	0.836	0.468*	1.754	0.255**	0.552	0.549	0.678	0.331**
Yearly change in local characteristics (y-3)								
Population in thousands								
	0.995	0.999	0.980*	1.015	1.003	0.988*	0.997	1.001
	0.719***	0.765**	0.914	0.925	0.727*	0.689*	0.635**	0.746*

TABLE 3 (Continued)

	All		Less educated		Moderately educated		More educated	
	Cohab. 1	Marr. 2	Cohab. 3	Marr. 4	Cohab. 5	Marr. 6	Cohab. 7	Marr. 8
% No elementary school								
% No electricity	0.971	0.911	1.092	0.950	0.832*	0.868	0.955	0.884
% Low wage	0.985	0.976	0.981	0.964	0.966	1.023	1.008	0.954
Men aged 15–39 per 1000 women aged 15–34	1.002	1.003	1.000	0.995	1.002	1.007*	1.001	1.002
Net international migration rate	0.959***	0.947***	0.953***	0.959**	0.959***	0.950***	0.966***	0.944***
Net domestic migration rate	1.078	0.974	1.061	1.395	1.015	0.891	1.121	0.953
N (person-months)	1,700,603	1,700,603	161,986	161,986	495,029	495,029	1,043,588	1,043,588

Note: * $p < .05$; ** $p < .01$; *** $p < .001$. "Less educated women" comprise those who had completed elementary school or less (≤ 6 years). "Moderately educated women" were those who had some or completed lower secondary school (7–9 years). "More educated women" comprise those with some upper secondary school or more (>9 years). Hazard ratios for age at start of observation window and all controls indicating yearly levels in municipality-level characteristics are not shown to preserve space. Sample restricted to person-months corresponding to women at risk of first union formation between May 2004 and May 2009 in Mexico. Standard errors clustered by municipality. Abbreviation: HR, homicide rate.

TABLE 4 Hazard ratios from competing-risks cox models using relative change in local violence to predict first union formation for women in Mexico, by Union Type and Educational Attainment, 2009 National Survey of Demographic Dynamics

	All		Less educated		Moderately educated		More educated	
	Cohab. 1	Marr. 2	Cohab. 3	Marr. 4	Cohab. 5	Marr. 6	Cohab. 7	Marr. 8
Municipality-level violence								
Recent change relative to pre-existing HR (Ref: Decrease or no change)								
Increase of up to 50%	0.964	0.991	1.130	1.050	0.966	0.930	0.915	1.027
Increase of more than 50%	0.891	0.880	0.789	0.657*	0.944	0.899	0.850	0.940
Pre-existing Avg. Homicide Rate	1.007*	0.997	1.011*	1.005	1.007	1.003	1.004	0.986
Women's characteristics Education (Ref: ≤=6 years)								
7–9 years	0.970	1.466***						
> 9 years	0.311***	0.855						
Indigenous language	1.146	1.134	1.263	1.145	0.909	1.077	1.393	0.910
Cumulative live births (Ref: None)								
1 or more	2.807***	1.058	1.928**	0.681	2.612***	1.054	4.605***	1.192
Local sociodemographic characteristics								
Poverty and rurality index (Ref: Very low)								
Low	0.924	0.912	1.014	0.621*	0.916	1.122	0.783	0.968
High	0.864	0.706	1.256	0.447*	0.711	0.897	0.759	0.739
Very high	0.842	0.470*	1.770	0.271**	0.555	0.555	0.685	0.328**
Yearly change in local characteristics (y-3)								
Population in thousands	0.995	0.999	0.980*	1.015	1.003	0.988*	0.997	1.000
% No elementary school	0.720***	0.766**	0.915	0.934	0.727*	0.691*	0.638**	0.747*
% No electricity	0.972	0.913	1.094	0.957	0.832*	0.868	0.956	0.885
% Low wage	0.986	0.976	0.984	0.959	0.966	1.023	1.008	0.955
Men aged 15–39 per 1000 women aged 15–34	1.002	1.003	1.000	0.995	1.002	1.007*	1.001	1.002
Net international migration rate	0.959***	0.947***	0.952***	0.959***	0.959***	0.950***	0.966***	0.944***
Net domestic migration rate	1.079	0.980	1.096	1.442	1.015	0.889	1.118	0.959
N (person-months)	1,700,603	1,700,603	161,986	161,986	495,029	495,029	1,043,588	1,043,588

Note: * $p < .05$; ** $p < .01$; *** $p < .001$. "Less educated women" comprise those who had completed elementary school or less (≤6 years). "Moderately educated women" were those who had some or completed lower secondary school (7–9 years). "More educated women" comprise those with some upper secondary school or more (>9 years). Hazard ratios for age at start of observation window, sex ratios, and all controls indicating yearly levels in municipality-level characteristics are not shown to preserve space. Sample restricted to person-months corresponding to women at risk of first union formation between May 2004 and May 2009 in Mexico. Standard errors clustered by municipality. Abbreviation: HR, homicide rate.

change in local violence. Mirroring results in Table 3, a relative increase in violence did not have statistically significant associations with the transition to first marriage for moderately and more educated women, or with the transition to first cohabitation for women of any education level.

Pre-existing violence level

All models controlled for the average pre-existing homicide rate to account for heterogeneity preceding violence spikes during the Mexican War on Drugs. We did not find statistically significant associations between pre-existing homicide rates and the transition to first marriage for any education group (see Tables 3 and 4). For the less educated, the pre-existing homicide rate level had a very small but positive association with the hazard of transitioning to cohabitation as a first union in Table 3 (HR = 1.012, $p < .05$) and Table 4 (HR = 1.011, $p < .05$). However, after conducting a formal test of differences, we found no evidence that such association with cohabitation varied across education groups (Model 2, Table S2).

Control variables

In both marriage and cohabitation models, and for all education groups, an increasing trend in the net international migration rate 3 years in the past was associated with lower hazards of union formation, net of local sex ratios, and socioeconomic characteristics, which is consistent with previous studies (White & Potter, 2013). An increasing trend in the total municipality population was in turn associated with a lower risk of cohabitation as a first union for the less educated, and a lower risk of a direct transition to marriage for the moderately educated. An increasing trend in the percentage of residents without elementary school was associated with delayed first union formation—both marriage and cohabitation—for moderately and more educated women. These associations might reflect the response of these groups to potentially reduced pools of marriageable partners in their communities.

Our results suggest that a recent spike in violence reduced the chance that less educated women would have a direct transition to marriage. Overall, recent changes in violence were not associated with the hazard of marriage for moderately and more educated women, regardless of whether an absolute or relative measure of change was used. Pre-existing homicide rate levels were not associated with the hazard of marriage for women of any education level. However, we found evidence that in communities with a high pre-existing violence level women may have a slightly higher risk of cohabiting as a type of first union.

TABLE 5 Municipality fixed effects models using change in local violence to predict the ratio of employed men per women in Mexican municipalities, 2000–2010

	Employed men per 1000 women		
	Less educated	Moderately educated	More educated
Homicide rate (per 1000)	−110.137***	−48.947***	−45.938***
<i>N</i> (municipality-years)	4798	4664	4609

Note: * $p < .05$; ** $p < .01$; *** $p < .001$. Data was obtained from the 2000 and 2010 Censuses and Vital Statistics made available by INEGI (2020). “Employed men per women” is the number of never married employed men aged 15–39 per 1000 never married women aged 15–34. Homicide rates are calculated per 1000 population. All models control for year fixed effects, sex ratios, and the percentage population living in communities with <5000 people, and with no elementary school degree, as well as for net international and domestic migration rates. Observations are weighted by municipality population size in 2000. Standard errors are clustered by municipality.

TABLE 6 Municipality fixed effects models using the ratio of employed men per 1000 women to predict marriages per 1000 women in Mexican municipalities, 2000–2010

	Marriages per 1000 women		
	Less educated	Moderately educated	More educated
Employed men per 1000 women	0.020***	0.003	0.001
<i>N</i> (municipality-years)	4798	4664	4609

Note: * $p < .05$; ** $p < .01$; *** $p < .001$. Data was obtained from the 2000 and 2010 Censuses and Vital Statistics made available by INEGI (2020). “Employed men per women” is the number of employed never married men aged 15–39 per 1000 never married women aged 15–34. Marriage rates are calculated per 1000 never married women, and are restricted to ages 15–34. All models control for year fixed effects, sex ratios, and the percentage population living in communities with <5000 people, and with no elementary school degree, as well as for net international and domestic migration rates. Observations are weighted by municipality population size in 2000. Standard errors are clustered by municipality.

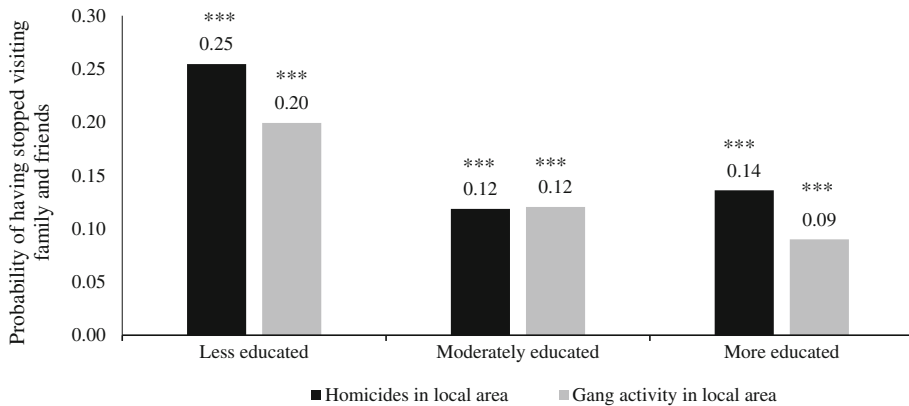


FIGURE 4 Change in women’s probability of stopping visits to family or friends after learning about the occurrence of homicides and gang activity in the local area, by educational attainment, 2011 National Survey of Victimization and Perception of Public Safety. Note: * $p < .05$; ** $p < .01$; *** $p < .001$. Bars show changes in the predicted probabilities of having stopped visiting family or friends as a strategy to prevent crime victimization, after learning about homicides (or gang activity) that occurred in the local area. Estimates were obtained from two separate logistic regressions where the predictors of interest were either perception of homicides or perception of gang activity, interacted by education level. Both models control for age and are restricted to women aged 18–34. Data from the 2011 National Survey of Victimization and Perception of Public Safety (INEGI, 2011) were collected in 2010.

Exploration of potential causal mechanisms

In supplementary analyses, we tested the plausibility of male marriageability as a causal pathway by measuring it as the number of employed men per women. Table 5 shows results from municipality fixed effects models where employed men per 1000 women are the outcome and the homicide rate per 1000 people is the predictor of interest. An increase of 1 homicide per 1000 people between 2000 and 2010 was associated with about 110 fewer employed men per 1000 women for the less educated ($p < .001$). In turn, it was associated with only 49 and 46 fewer employed men for moderately and more educated populations ($p < .001$), respectively. Table 6 shows municipality fixed effects models that test the second part of this potential causal pathway and estimate the association between employed men per 1000 women and marriages per 1000 women. Whereas a decrease of employed men per 1000 women was associated with a lower marriage rate for the less educated ($p < .001$), the association between employed men per women and marriage was not statistically significant for moderately and more educated populations. Models in Tables 5 and 6 were based on changes between 2000 and 2010, but it is

possible that any violence-driven delay in marriage could be partially overcome in the medium or long term. Therefore, these estimates are conservative and likely represent lower bounds. Nonetheless, they are consistent with a scenario in which increasing violence brings about losses in marriageability for disadvantaged men, and such losses lead to reduced marriage rates for disadvantaged women.

In a second set of supplementary analyses, we evaluated the potential role of fear of victimization. Figure 4 shows changes in the predicted probability of stopping visits to family or friends after learning about the occurrence of homicides or gang activity in the local area for less, moderately, and more educated women. These estimates were produced in two separate logistic regressions where each of the criminal activity indicators was interacted by education. Compared with moderately and more educated women, the less educated were about twice more likely to stop seeing family and friends due to fear of victimization after learning about homicides and gang activity in their local area. The associations between crime and social behavior were statistically significant within all education groups ($p < .001$), and the differences in the associations for moderately and more educated women relative to the less educated were statistically significant as well ($p < .05$) (stars not shown in graph). These findings suggest that a reduction in social interactions due to fear of victimization is another plausible pathway linking increasing local violence to delayed union formation, and that such a pathway would be again more relevant for less educated women.

DISCUSSION

Despite the widespread prevalence of criminal violence across multiple world regions, and the fact that homicide has been declared a global public health problem (UNODC, 2013), there is scarce theoretical and empirical work on how exposure to local violence may impact key life course transitions, such as the first union formation. The scant existing evidence, based on partially comparable events, such as war, armed conflict, and natural disasters, has rendered mixed findings about whether life-threatening disruptions to social contexts may accelerate or delay union formation (Cohan & Cole, 2002; Hamamatsu et al., 2014; Neal et al., 2016; Shemyakina, 2013; Staveteig, 2011).

This study assessed the association between recent increases in local violence and the timing and nature of women's first union formation, including the competing probabilities that first unions were marriages or cohabitations. We used the case of the War on Drugs in Mexico, a militarized approach to drug enforcement that began in December 2006, which dramatically increased homicide rates in the country after more than a decade of consistent decline. As a consequence, and in contrast to other national contexts in which violence is often circumscribed to impoverished neighborhoods, populations of all education levels experienced increasing local homicide rates in Mexico during the observed period. For this reason, this country offers a very useful case to test for and identify heterogeneous implications of community violence across women of different education levels.

Our results suggest that local violence was strongly associated with the union formation transitions of less educated women. For these women, a recent increase in the local homicide rate was associated with a lower risk of getting married directly, as a first union transition. In contrast, we found that neither increasing nor pre-existing levels of violence were associated with the timing of marriage among more educated women. This is consistent with disadvantaged women being the most vulnerable to the social and economic consequences of local violence.

We explored potential causal mechanisms linking recently increasing violence to union formation patterns. In the short term, we expected an increase in violence to reduce male marriageability by increasing male unemployment and risk of criminal involvement. In supplementary analyses, we found support for the hypothesis that a recent spike in violence rapidly deteriorates

local marriage markets for less educated women. Our findings showed that an increase in violence was associated with a reduction in the number of employed men per women at the municipality level, and that a decrease in employed men per women was associated with lower marriage rates. According to our analyses, this pathway was primarily relevant for less educated populations. This is consistent with previous evidence of negative economic consequences of violence in the context of the MWD (Ajzenman et al., 2015; Cabral et al., 2016). These findings suggest that an increase in local violence hurts the marriageability of disadvantaged young men, which may increase the barriers to marriage for less educated young women.

In the short term, we also expected spikes in violence to induce psychological responses such as fear of victimization and anxiety, which may affect the quantity of social interactions and the quality of romantic relationships. Our supplementary analyses showed that women in Mexico were more likely to drastically reduce their social interactions after learning about homicides or gang activity that occurred in their local area, and this behavioral response was the largest among the less educated. This is consistent with previous studies showing that poor and less educated individuals feel more vulnerable to crime victimization, possibly because they have fewer resources to afford protective measures (Hicks & Brown, 2013). Restricting social interactions may hinder women's ability to meet a potential marriage partner, and to participate in the courtship process or to consolidate a romantic relationship that may lead to marriage. Furthermore, the social processes leading to marriage and the marriage ceremony itself require a broad array of social contact and relations with networks much broader than the romantic dyad. Therefore, reduced social interactions due to fear of victimization could be another plausible pathway linking increasing violence to delayed marriage formation among disadvantaged women. Although conducting a formal mediation analysis to test these hypothesized causal mechanisms is beyond the scope of this article, we believe that these supplementary analyses offer valuable insights into potential reasons why union formation patterns could be disrupted after a spike in violence.

Our findings suggest that recent surges in homicide rates were not associated with changes in first cohabitation for less-educated women, which indicates that they did not immediately enter informal unions as a response to violence-related delays in marriage formation. We found evidence suggesting that long-term exposure to high levels of violence (3–4 years ago) was associated with a slightly higher risk of entering a cohabitation among less educated women. However, we were unable to reject the null hypothesis that other education groups were similarly affected.

Our study faces several limitations. Although our analyses incorporate multiple strategies to account for potential confounders, such as controlling for individual characteristics and trends in local sociodemographic conditions, our results should be interpreted as associations and not as causal effects. Furthermore, our analytical strategy is primarily designed to assess short-term responses to spikes in violence and is based on a relatively brief observation window surrounding the onset of the MWD. Although associations with long-term violence levels are explored, long-term homicide rates in our data primarily reflect violence occurred before the law enforcement change in 2006. To the extent that such violence was qualitatively different from post-2006 violence, the associations between long-term violence and union formation in our analyses may not necessarily reflect what would happen after multiple years of sustained violence following the onset of the MWD, a policy that continues to this day. Longer data series are needed to evaluate long-term associations between local violence and union formation in Mexico throughout the most recent decade.

Future studies should also analyze whether the delay in marriage formation identified in our analysis is temporary, and whether it leads to initiating childbearing within a cohabiting union or as a single parent instead. To the extent that violence disrupts first union formation patterns and the family structures where children are born and raised, it is likely to contribute to the intergenerational transmission and accumulation of disadvantage in Mexico. Marriage is associated

with greater family stability and better health and economic outcomes for women and children, compared with cohabitation and single motherhood (Brown, 2010; Schmeer, 2013). Even though at least part of this association may be explained by selectivity in terms of SES or attitudes, marital unions pose greater costs of dissolution compared with cohabitations, which likely promotes greater stability. In turn, family stability is linked to desirable outcomes for children (Cavanagh & Fomby, 2019). By hindering marriage transitions for less-educated women, local violence may reinforce and reproduce patterns of inequality in communities affected by criminal violence.

The findings and theoretical framework developed in this study may also help us understand how family structures change when there are spikes in criminal violence in other national contexts. The Americas have suffered from a persistently high homicide rate since the early 1990s, and represent the most violent region in the world, well above conflict-ridden areas such as Africa (UNODC, 2019). Countries like Colombia, Brazil, El Salvador, Honduras, and Venezuela have experienced high levels and dramatic increases in homicide rates in the last three decades that are similar or greater than those seen in Mexico. Violence in the Americas, as is also the case in Mexico, is substantially driven by organized crime, and both victimization and perpetration are heavily concentrated among disadvantaged young men. To the extent that this type of local violence reduces the probability that women will directly transition to marriage as a first union, this homicide epidemic might be an overlooked factor contributing to changing marriage patterns in Latin America, which have been extensively documented elsewhere (Lesthaeghe & Esteve, 2016).

Beyond contemporary Latin America, the findings in this study may also help scholars make sense of the potential implications for marriage markets and union formation in contexts and time periods that have witnessed sudden spikes in criminal violence. Eastern Europe after the collapse of the Soviet Union, or the United States during the crack epidemic are both examples of drastically increasing homicide rates owing to sudden shifts in economic and political structures (Stamatel, 2009), and in the organization of illicit drug-markets (Blumstein et al., 2000), correspondingly. Given their potential to hinder marriage formation among disadvantaged women, fluctuations in violent crime may have contributed to shape union transitions in regions and historical contexts that have suffered from drastic upsurges in homicide rates and other types of violence. Nonetheless, further research is needed to improve our understanding of the consequences that violence may have on family formation, life course trajectories, and the intergenerational transmission of disadvantage across the globe.

ACKNOWLEDGMENTS

We gratefully acknowledge support from the Eunice Kennedy Shriver National Center for Child Health and Human Development Grant P2C-HD041041, Maryland Population Research Center. We are also grateful to Lawrence Wu, Paula England, Florencia Torche Andrés Villarreal, Julia Behrman, Abigail Weitzman, and José A. Ortiz for their helpful comments on previous versions of this manuscript.

ORCID

Mónica L. Caudillo  <https://orcid.org/0000-0003-1309-3253>

Jaemin Lee  <https://orcid.org/0000-0002-4575-5285>

ENDNOTES

¹ *Encuesta Nacional de la Dinámica Demográfica.*

² *Encuesta Nacional de la Dinámica Demográfica.*

³ We created four local poverty and rurality categories, based on quartiles from an index. The index was constructed using the first factor in a principal component analysis of a series of socioeconomic indicators measured in 2000:

- percentages of illiterate population; population without elementary school; employed population earning less than twice the minimum wage; inhabitants living in households without drain network, without plumbing, without electricity, with dirt floor, with overcrowding; and population living in localities with fewer than 5000 inhabitants.
- ⁴ The value of municipality- and state-level controls is the same for all the months in one calendar year, because these values (observed and interpolated) were only available on a yearly basis.
- ⁵ For instance, for the percentage of illiterate population, the “level” version would capture the percentage of illiterate residents in the municipality in any given year, whereas the “change” version would result from subtracting the percentage in the previous year from the percentage in the current year.
- ⁶ Because it is equivalent to estimating separate models for each education group, a fully interacted model allows for the association between every covariate and union formation to vary according to women’s education level. Fully interacted models provide a substantially superior fit to the data compared to pooled models in which only violence measures are interacted by education, as indicated by AIC and BIC.
- ⁷ We estimated parametric versions of regressions for the less educated in Table 3 using an exponential distribution for the baseline hazard, because Cox models do not allow us to test differences in coefficients across models. Cox models are preferable over parametric models because they do not assume a particular functional form for the baseline hazard (Allison, 2014), but parametric models are useful for supplementary analyses such as this one. The parametric models produced hazard ratios that were very close to those from our Cox models for less educated women.

REFERENCES

- Agoff, C., Herrera, C., & Castro, R. (2007). The weakness of family ties and their perpetuating effects on gender violence: A qualitative study in Mexico. *Violence Against Women, 13*(11), 1206–1220. <https://doi.org/10.1177/1077801207307800>
- Ajzenman, N., Galiani, S., & Seira, E. (2015). On the distributive costs of drug-related homicides. *The Journal of Law and Economics, 58*(4), 779–803. <https://doi.org/10.1086/685075>
- Allison, P. D. (2014). *Event history and survival analysis: Regression for longitudinal event data* (Vol. 46). SAGE Publications.
- Amador, J. P. (2016). Continuity and change of cohabitation in Mexico: Same as before or different anew. *Demographic Research, 35*, 1245–1258. <https://doi.org/10.4054/DemRes.2016.35.42>
- Atuesta, L. H., Siordia, O. S., & Lajous, A. M. (2019). The “war on drugs” in Mexico: (official) database of events between December 2006 and November 2011. *Journal of Conflict Resolution, 63*(7), 1765–1789. <https://doi.org/10.1177/0022002718817093>
- Beijers, J., van Prooijen, J. W., & Bijleveld, C. (2016). To marry a thief? Crime type as a deterrent to cohabitation. *Journal of Experimental Criminology, 12*(1), 159–165. <https://doi.org/10.1007/s11292-016-9253-3>
- Blumstein, A., Rivara, F. P., & Rosenfeld, R. (2000). The rise and decline of homicide—And why. *Annual Review of Public Health, 21*(1), 505–541. <https://doi.org/10.1146/annurev.publhealth.21.1.505>
- Bowlby, J. (1969). *Attachment and Loss: Volume I: Attachment* (pp. 1–401). The Hogarth Press and the Institute of Psycho-Analysis.
- Brown, R., & Velásquez, A. (2017). The effect of violent crime on the human capital accumulation of young adults. *Journal of Development Economics, 127*, 1–12. <https://doi.org/10.1016/j.jdeveco.2017.02.004>
- Brown, S. L. (2010). Marriage and child well-being: Research and policy perspectives. *Journal of Marriage and Family, 72*(5), 1059–1077. <https://doi.org/10.1111/j.1741-3737.2010.00750.x>
- Cabral, R., Mollick, A. V., & Saucedo, E. (2016). Violence in Mexico and its effects on labor productivity. *The Annals of Regional Science, 56*(2), 317–339. <https://doi.org/10.1007/s00168-016-0741-1>
- Calderón, G., Robles, G., Díaz-Cayeros, A., & Magaloni, B. (2015). The beheading of criminal organizations and the dynamics of violence in Mexico. *Journal of Conflict Resolution, 59*(8), 1455–1485. <https://doi.org/10.1177/0022002715587053>
- Carboni, O. A., & Detotto, C. (2016). The economic consequences of crime in Italy. *Journal of Economic Studies, 43*, 122–140. <https://doi.org/10.1108/JES-07-2014-0121>
- Cavanagh, S. E., & Fomby, P. (2019). Family instability in the lives of American children. *Annual Review of Sociology, 45*, 493–513. <https://doi.org/10.1146/annurev-soc-073018-022633>
- Cerda Pérez, P. L., Alvarado Pérez, J. G., Jr., & Cerda Pérez, M. C. E. (2014). Narco mensajes, inseguridad y violencia: Análisis heurístico sobre la realidad mexicana. *Historia y Comunicación Social, 18*, 839–853. https://doi.org/10.5209/rev_HICS.2013.v18.44286
- Cleves, M., Gould, W., Gould, W. W., Gutierrez, R., & Marchenko, Y. (2008). *An introduction to survival analysis using Stata* (2nd ed.). Stata Press.
- Cohan, C. L., & Cole, S. W. (2002). Life course transitions and natural disaster: Marriage, birth, and divorce following hurricane Hugo. *Journal of Family Psychology, 16*(1), 14–25. <https://doi.org/10.1037/0893-3200.16.1.14>

- CONAPO. (2015). Basic demographic indicators 1990–2010 (indicadores demográficos básicos 1990–2010). http://www.conapo.gob.mx/es/CONAPO/Proyecciones_Datos
- Detotto, C., & Pulina, M. (2013). Does more crime mean fewer jobs and less economic growth? *European Journal of Law and Economics*, 36(1), 183–207. <https://doi.org/10.1007/s10657-012-9334-3>
- El Imparcial. (2021). Grupo armado irrumpe en boda; secuestra a novio y mata a novia. <https://www.elimparcial.com/mexico/Grupo-armado-irrumpe-en-boda-secuestra-a-novio-y-mata-a-novia-20200112-0117.html>
- El Mundo. (2010). Matan a 16 futbolistas en una fiesta en Ciudad Juárez. <https://www.elmundo.es/america/2010/01/31/mexico/1264959349.html>
- El País. (2008). Una fiesta familiar acaba en masacre al norte de México. https://elpais.com/internacional/2008/08/19/actualidad/1219096804_850215.html
- Esteve, A., García-Román, J., & Lesthaeghe, R. (2012). The family context of cohabitation and single motherhood in Latin America. *Population and Development Review*, 38(4), 707–727. <https://doi.org/10.1111/j.1728-4457.2012.00533.x>
- Fajnzylber, P., Lederman, D., & Loayza, N. (2002). What causes violent crime? *European Economic Review*, 46(7), 1323–1357. [https://doi.org/10.1016/S0014-2921\(01\)00096-4](https://doi.org/10.1016/S0014-2921(01)00096-4)
- Flores Martínez, I., & Atuesta, L. H. (2018). Mourning our dead: The impact of Mexico's war on drugs on citizens' depressive symptoms. *International Journal of Drug Policy*, 60, 65–73. <https://doi.org/10.1016/j.drugpo.2018.07.004>
- Forrest, W. (2014). Cohabitation, relationship quality, and desistance from crime. *Journal of Marriage and Family*, 76(3), 539–556. <https://doi.org/10.1111/jomf.12105>
- Fussell, E. (2005). Measuring the early adult life course in Mexico: An application of the entropy index. *Advances in Life Course Research*, 9, 91–122. [https://doi.org/10.1016/S1040-2608\(04\)09004-5](https://doi.org/10.1016/S1040-2608(04)09004-5)
- Gómez San Luis, A. H., & Almanza Avendaño, A. M. (2016). Impacto del narcotráfico en jóvenes de Tamaulipas, México: Drogas e inseguridad. *Revista de Psicología*, 34(2), 445–472. <https://doi.org/10.18800/psico.201602.009>
- Greenwood, J., & Guner, N. (2008). Marriage and divorce since world war II: Analyzing the role of technological progress on the formation of households. *NBER Macroeconomics Annual*, 23(1), 231–276. <https://doi.org/10.1086/593087>
- Guerrero-Gutiérrez, E. (2011). Security, drugs, and violence in Mexico: A survey. In 7th North American forum, Washington DC.
- Guha-Sapir, D., & D'Aoust, O. (2011). Demographic and health consequences of civil conflict. World Development Report Background Papers. <http://hdl.handle.net/10986/9083>
- Guzzo, K. B. (2004). How do marriage market conditions affect entrance into cohabitation vs. marriage? *Social Science Research*, 35, 332–335. <https://doi.org/10.1016/j.ssresearch.2004.05.005>
- Guzzo, K. B. (2006). The relationship between life course events and union formation. *Social Science Research*, 35(2), 384–408. <https://doi.org/10.1016/j.ssresearch.2005.06.002>
- Hamamatsu, Y., Inoue, Y., Watanabe, C., & Umezaki, M. (2014). Impact of the 2011 earthquake on marriages, births and the secondary sex ratio in Japan. *Journal of Biosocial Science*, 46(6), 830–841. <https://doi.org/10.1017/S0021932014000017>
- Harknett, K., & McLanahan, S. S. (2004). Racial and ethnic differences in marriage after the birth of a child. *American Sociological Review*, 69(6), 790–811. <https://doi.org/10.1177/000312240406900603>
- Heaton, T. B., & Forste, R. (2007). Informal unions in Mexico and the United States. *Journal of Comparative Family Studies*, 38(1), 55–69. <https://doi.org/10.3138/jcfs.38.1.55>
- Hicks, S., & Brown, S. (2013). Perceptions of risk: A review of the effects of individual and community-level variables on perceptions of risk. *International Review of Victimology*, 19(3), 249–267. <https://doi.org/10.1177/0269758013492753>
- Imbusch, P., Misse, M., & Carrión, F. (2011). Violence research in Latin America and the Caribbean: A literature review. *International Journal of Conflict and Violence*, 5(1), 87–154. <https://doi.org/10.4119/ijcv-2851>
- INEE. (2019). La educación obligatoria en México, Informe 2019. Instituto Nacional para la Evaluación de la Educación. <https://www.inee.edu.mx/wp-content/uploads/2019/04/P11245.pdf>
- INEGI. (2009). Encuesta Nacional de la Dinámica Demográfica (ENADID) 2009. <https://www.inegi.org.mx/programas/enadid/2009/>
- INEGI. (2011). National Survey of Victimization and Perception of Public Security 2011. <https://en.www.inegi.org.mx/programas/envipe/2011/>
- INEGI. (2017). Sistema Estatal y Municipal de Bases de Datos (SIMBAD). <http://www.inegi.org.mx>
- INEGI. (2019). Mortalidad. <https://inegi.org.mx/temas/mortalidad/>
- INEGI. (2020). Nupcialidad: Relación divorcios-matrimonios. https://inegi.org.mx/temas/nupcialidad/default.html#Informacion_general
- Islam, A., Ouch, C., Smyth, R., & Wang, L. C. (2016). The long-term effects of civil conflicts on education, earnings, and fertility: Evidence from Cambodia. *Journal of Comparative Economics*, 44(3), 800–820. <https://doi.org/10.1016/j.jce.2015.05.001>

- Jarillo, B., Magaloni, B., Franco, E., & Robles, G. (2016). How the Mexican drug war affects kids and schools? Evidence on effects and mechanisms. *International Journal of Educational Development, 51*, 135–146. <https://doi.org/10.1016/j.ijedudev.2016.05.008>
- Jayaraman, A., Gebreselassie, T., & Chandrasekhar, S. (2009). Effect of conflict on age at marriage and age at first birth in Rwanda. *Population Research and Policy Review, 28*(5), 551–567. <https://doi.org/10.1007/s11113-008-9116-3>
- Jones, J. H., & Ferguson, B. (2006). The marriage squeeze in Colombia, 1973–2005: The role of excess male death. *Biodemography and Social Biology, 53*(3–4), 140–151. <https://doi.org/10.1080/19485565.2006.9989123>
- Kroeger, R. A., Frank, R., & Schmeer, K. K. (2015). Educational attainment and timing to first union across three generations of Mexican women. *Population Research and Policy Review, 34*(3), 417–435. <https://doi.org/10.1016/j.ijedudev.2016.05.008>
- Lesthaeghe, R., & Esteve, A. (2016). *Cohabitation and marriage in the Americas: Geo-historical legacies and new trends*. Springer Nature. <https://doi.org/10.1007/978-3-319-31442-6>
- Lorenc, T., Clayton, S., Neary, D., Whitehead, M., Petticrew, M., Thomson, H., Cummins, S., Sowden, A., & Renton, A. (2012). Crime, fear of crime, environment, and mental health and wellbeing: Mapping review of theories and causal pathways. *Health & Place, 18*(4), 757–765. <https://doi.org/10.1016/j.healthplace.2012.04.001>
- Martin, T. C. (2002). Consensual unions in Latin America: Persistence of a dual nuptiality system. *Journal of Comparative Family Studies, 35*–55, 35–55. <https://doi.org/10.3138/jcfs.33.1.35>
- McLanahan, S., Tach, L., & Schneider, D. (2013). The causal effects of father absence. *Annual Review of Sociology, 39*, 399–427. <https://doi.org/10.1146/annurev-soc-071312-145704>
- Mikulincer, M., & Shaver, P. R. (2003). The attachment behavioral system in adulthood: Activation, psychodynamics, and interpersonal processes. *Advances in Experimental Social Psychology, 35*, 56–152. [https://doi.org/10.1016/S0065-2601\(03\)01002-5](https://doi.org/10.1016/S0065-2601(03)01002-5)
- Minnesota Population Center. (2020). *Integrated public use microdata series, International: Version 7.3 [dataset]*. IPUMS. <https://doi.org/10.18128/D020.V7.3>
- Neal, S., Stone, N., & Ingham, R. (2016). The impact of armed conflict on adolescent transitions: A systematic review of quantitative research on age of sexual debut, first marriage and first birth in young women under the age of 20 years. *BMC Public Health, 16*(1), 225.
- Osorio, J. (2015). The contagion of drug violence: Spatiotemporal dynamics of the Mexican war on drugs. *Journal of Conflict Resolution, 59*(8), 1403–1432. <https://doi.org/10.1177/0022002715587048>
- Rieckmann, J. (2014). Violent conflicts increase the risk of domestic violence in Colombia. *DIW Economic Bulletin, 4*(12), 23–26.
- Rios, V. (2013). Why did Mexico become so violent? A self-reinforcing violent equilibrium caused by competition and enforcement. *Trends in Organized Crime, 16*(2), 138–155. <https://doi.org/10.1007/s12117-012-9175-z>
- Ríos-Almodóvar, J. G., & Carrillo-Regalado, S. (2014). El empleo calificado y no calificado en la manufactura de México ante la crisis de 2009. *Economía, Sociedad y Territorio, 14*(46), 687–714.
- Robles, G., Calderón, G., & Magaloni, B. (2013). The economic consequences of drug trafficking violence in Mexico. Poverty and Governance Series Working Paper, Stanford University.
- Saxena, P. C., Kulczycki, A., & Jurdi, R. (2004). Nuptiality transition and marriage squeeze in Lebanon: Consequences of sixteen years of civil war. *Journal of Comparative Family Studies, 35*(2), 241–258. <https://doi.org/10.3138/jcfs.35.2.241>
- Scarpetta, S., Sonnet, A., & Manfredi, T. (2010). Rising youth unemployment during the crisis: How to prevent negative long-term consequences on a generation? OECD Social, Employment and Migration Working Papers, No. 106.
- Schmeer, K. K. (2013). Family structure and child anemia in Mexico. *Social Science & Medicine, 95*, 16–23. <https://doi.org/10.1016/j.socscimed.2012.10.028>
- Shemyakina, O. (2009). The marriage market and Tajik armed conflict. Brighton, UK: Households in Conflict Network (HiCN). Working Paper, 66.
- Shemyakina, O. (2013). Patterns in female age at first marriage and Tajik armed conflict. *European Journal of Population, 29*(3), 303–343. <https://doi.org/10.1007/s10680-013-9289-2>
- South, S. J., & Messner, S. F. (2000). Crime and demography: Multiple linkages, reciprocal relations. *Annual Review of Sociology, 2*, 83–106. <https://doi.org/10.1146/annurev.soc.26.1.83>
- SSPC. (2019). Tasas por cada 100 mil habitantes 1997-2017: Formato del Comité Interinstitucional de Estadística e Informática de Seguridad Pública (CIEISP)—Metodología anterior. Secretaría de Seguridad y Protección Ciudadana. <https://www.gob.mx/sesnsp/acciones-y-programas/datos-abiertos-de-incidencia-delictiva>
- Stamatel, J. P. (2009). Correlates of national-level homicide variation in post-communist East-Central Europe. *Social Forces, 87*(3), 1423–1448. <https://doi.org/10.1353/sof.0.0179>
- Staveteig, S. E. (2011). Genocide, nuptiality, and fertility in Rwanda and Bosnia-Herzegovina (Doctoral dissertation). UC Berkeley.
- The World Bank. (2020). Data Bank. <https://data.worldbank.org/>
- Torche, F., & Villarreal, A. (2014). Prenatal exposure to violence and birth weight in Mexico: Selectivity, exposure, and behavioral responses. *American Sociological Review, 79*(5), 966–992. <https://doi.org/10.1177/0003122414544733>

- Tsaneva, M., Rockmore, M., & Albohmoed, Z. (2019). The effect of violent crime on female decision-making within the household: Evidence from the Mexican war on drugs. *Review of Economics of the Household*, 17(2), 615–646. <https://doi.org/10.1007/s11150-018-9418-0>
- UNESCO Institute for Statistics. (2021). ISCED Mappings. United Nations Educational, Scientific, and Cultural Organization. <http://uis.unesco.org/en/isced-mappings>
- UNODC. (2013). *Global study on homicide: Trends, contexts, data*. United Nations Office on Drugs and Crime. https://www.unodc.org/documents/gsh/pdfs/2014_GLOBAL_HOMICIDE_BOOK_web.pdf
- UNODC. (2019). Global study on homicide. United Nations Office on Drugs and Crime. <https://www.unodc.org/unodc/en/data-and-analysis/global-study-on-homicide.html>
- van Schellen, M., Poortman, A.-R., & Nieuwbeerta, P. (2012). Partners in crime? Criminal offending, marriage formation, and partner selection. *Journal of Research in Crime and Delinquency*, 49(4), 545–571. <https://doi.org/10.1177/0022427811414197>
- Vilalta, C. J. (2016). Does the Mexican war on organized crime mediate the impact of fear of crime on daily routines? *Crime & Delinquency*, 62(11), 1448–1464. <https://doi.org/10.1177/001128714541208>
- Villarreal, A., & Yu, W.-H. (2017). Crime, fear, and mental health in Mexico. *Criminology*, 55(4), 779–805. <https://doi.org/10.1111/1745-9125.12150>
- Vogt, D., Smith, B. N., Fox, A. B., Amoroso, T., Taverna, E., & Schnurr, P. P. (2017). Consequences of PTSD for the work and family quality of life of female and male U.S. Afghanistan and Iraq war veterans. *Social Psychiatry and Psychiatric Epidemiology*, 52(3), 341–352. <https://doi.org/10.1007/s00127-016-1321-5>
- White, K., & Potter, J. E. (2013). The impact of outmigration of men on fertility and marriage in the migrant-sending states of Mexico, 1995–2000. *Population Studies*, 67(1), 83–95. <https://doi.org/10.1080/00324728.2012.721518>
- Williams, N. E., Ghimire, D. J., Axinn, W. G., Jennings, E. A., & Pradhan, M. S. (2012). A micro-level event-centered approach to investigating armed conflict and population responses. *Demography*, 49(4), 1521–1546. <https://doi.org/10.1007/s13524-012-0134-8>
- Zepeda Lecuona, G. (2013). *Situación y desafíos del sistema penitenciario mexicano*. México Evalua. <https://www.mexicoevalua.org/situacion-y-desafios-del-sistema-penitenciario-en-mexico/>
- Zoutewelle-Terovan, M., van der Geest, V., Liefbroer, A. C., & Bijleveld, C. (2016). The influence of criminal offending on union formation and union dissolution for disadvantaged individuals. *Advances in Life Course Research*, 28, 31–40. <https://doi.org/10.1016/j.alcr.2015.08.001>

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Caudillo, M. L., & Lee, J. (2023). Local violence and transitions to marriage and cohabitation in Mexico. *Journal of Marriage and Family*, 85(2), 345–369. <https://doi.org/10.1111/jomf.12890>