Violence in Mexico, Return Intentions, and the Integration of Mexican Migrants in the US

Reem Zaiour*

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Abstract

This paper studies how violence due to the war on drugs in Mexico affects the social and economic integration of Mexican migrants in the United States. I combine detailed administrative data on Mexican migrants' municipal origins with US Census data on their naturalization, intermarriage, and economic behavior. To instrument for violence in Mexican municipalities, I use the interaction of the pre-war geographic distribution of drug trade organizations within Mexico and cocaine supply shocks originating in Colombia. Focusing on migrants who arrived in the US before the war on drugs, I find that violence significantly increases their propensity to naturalize and marry US citizens, particularly naturalized Mexicans. The marriage effects are larger for recent and less educated migrants and are more pronounced in areas where migratory networks are concentrated. However, I find no evidence of significant changes in labor market behavior or human capital accumulation. Overall, these results reflect a decrease in migrants' intentions to return to Mexico. Analysis using the Mexican Census suggests a reduction in return migration flows to municipalities experiencing heightened violence, which supports this mechanism.

Keywords: Violence, US-Mexico Migrants, Integration, Return Migration

JEL codes: J15, F22, O15, K42

*Economics, University of California Davis. Email: rzaiour@ucdavis.edu. Website: www.reemzaiour.com.
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1 Introduction

The question of whether migrants fully integrate in their host societies – economically and culturally – remains a subject of ongoing public debate in advanced economies, including the United States. Seminal contributions by Chiswick (1978) and Borjas (1985) documented a large initial earnings gap between migrants and comparable natives. While this gap has narrowed over time, the rate of convergence has slowed since the 1980s (Borjas, 2015). Notably, recent cohorts of Mexican migrants, the largest migrant group in the US, exhibit a rapid convergence in employment rates but not wages with their native counterparts, along with consistently low naturalization and intermarriage rates (Peri and Rutledge, 2021; Gonzalez-Barrera, 2017; Ordway, 2017).[1]

As a result, there is a growing focus on how characteristics and policies at the destination affect the integration process.[2] However, limited evidence exists regarding the significance of local *home country* conditions. These conditions are likely to be relevant, since they might influence migrants' intended duration of stay in the destination, consequently affecting their investment in destination-specific skills (Adda et al., 2022; Dustmann, 1993, 1999). As an increasing proportion of migrants in developed countries originate from developing nations that often face conflicts, economic crises, or natural disasters (IMF, 2020), gaining a comprehensive understanding of these impacts is important.

In this paper, I study the impact of violence in Mexican source regions on the integration of Mexican migrants in the United States.[3] Home country violence can affect migrant integration through two primary channels. First, migrants often leave family members in Mexico, who directly face the consequences of violence. In response, migrants may intensify skill acquisition to enhance their labor productivity and send more remittances, while psychological distress may hinder their overall productivity, economic integration, and effective engagement in the host society. Second, violence in the source regions of migrants can change their intended duration of stay in the destination country. Typically, Mexicans in the US are economic migrants with the choice to remain in the US or return to Mexico. This decision is a function of local conditions of violence, mortality risks, and economic prospects. Heightened violence in the home country can reduce its appeal, prompting migrants to stay longer in the destination. Consequently, they may

[1] Naturalization refers to the process in which a foreign citizen obtains US citizenship, upon fulfilling the prerequisites outlined in the Immigration and Nationality Act. It expands migrants' access to labor markets, and has been shown to increase their income and home ownership and foster their social and political integration (Bratsberg et al., 2002; Gathmann and Garbers, 2023; Hainmueller et al., 2015, 2017). Additionally, previous literature indicates that intermarriage plays a significant role in promoting integration by facilitating language acquisition and expansion of social networks (Chi and Drewianka, 2014; Meng and Gregory, 2005; Meng and Meurs, 2009).

[2] For a comprehensive overview, see Becker and Ferrara (2019), Brell et al. (2020), and Foged et al. (2022b).

[3] Throughout the paper, I use "Mexicans," "Mexican migrants," and "Mexican-born individuals" interchangeably to refer to this population. I also refer to Mexican source regions as Mexican municipios (e.g., municipalities), which are similar to US counties.

develop stronger social connections and invest in human capital essential for integration, such as language (Bleakley and Chin, 2004, 2010; Foged et al., 2022a; Foged and Van der Werf, 2023; Kossoudji, 1988). Alternatively, they may plan an earlier return to assist their families in Mexico. Motivated by these channels, I explore various dimensions of migrant integration, including labor force participation, human capital accumulation, civil integration assessed through naturalization, and cultural integration, as captured by intermarriage.

Studying the impact of home country conditions on the assimilation of migrants at the destination presents two main challenges. The first lies in the available data, which typically include migrants' country of origin and location at destination, but lack granular subnational origin details. This limitation generally restricts researchers to leverage cross-country variations in home country conditions (Dustmann et al., 2023). I overcome this issue using administrative data from the Matrícula Consular de Alta Seguridad (MCAS) identification cards program. These data provide the distribution of municipal origins of Mexican migrants in each US commuting zone, allowing me to exploit local variations in violence within Mexico, down to the municipal level. This is important because the conditions relevant to the integration of migrants and their return decisions are often specific to their city or region of origin where they have deeper connections.

The second challenge pertains to identifying the causal effect of home country conditions, which is complicated by the self-selection of migrants arriving from different countries and/or time periods. For instance, if violence is a driver of migration, its effect on the integration of those who moved combines the contemporaneous effect of violence and the effect of selection at time of departure. I address this challenge in two ways. First, my empirical strategy leverages the setting of the war on drugs in Mexico, which was unexpectedly launched by President Felipe Calderón in December 2006. Afterwards, the homicide rate increased by 150% between 2007 and 2012, exhibiting substantial spatial variation within the country. Second, using the American Community Survey (2006-2012), I focus on a sample of Mexicans who migrated to the US before the war on drugs, to avoid selecting those who likely moved due to violence.[4] Thus, I examine the impact of conditions in Mexico on the contemporaneous outcomes of Mexicans who were already in the US at the onset of the war.

Using the Matrícula Consular data, I construct my main independent variable, the *homicide shock*, which is a continuous annual measure of the exposure of Mexican migrants in each US commuting zone to violence in their municipios of origin. Specifically, it is a weighted average of the homicide rates in Mexican source municipios, with the weights determined by the contemporaneous shares of migrants in the commuting zone who originate from each source municipio. One

[4]Specifically, I select a sample of non-institutionalized working-age Mexican-born individuals who migrated to the US between 2000 and 2006. These individuals were not directly exposed to the war on drugs and are economic migrants who have been in the US for a maximum of thirteen years by 2012, the last year of my analysis period.

concern in directly estimating the effect of the homicide shock is that it might be correlated with other time-varying factors, introducing omitted variable bias. For example, fluctuations in homicide rates across Mexican municipios over time may coincide with economic shocks that could simultaneously affect the outcomes of Mexican migrants in the US.

To address this endogeneity, I employ an instrumental variable that interacts three components. First, I use the 2006 pre-war municipal shares of migrants in a commuting zone. These shares vary across commuting zones due to historical migratory networks that are not impacted by violence related to the war on drugs (Caballero et al., 2021; Munshi, 2003). Second, the instrument leverages the pre-war geographic distribution of drug trade organizations (DTOs) across Mexican municipios. Only fifteen percent of municipios had DTO presence before the war on drugs. These municipios experienced a disproportionate increase in violence, as Calderón's strategy targeted cartel leadership and triggered retaliatory actions and internal conflicts within DTOs. The third component exploits exogenous temporal cocaine supply shocks, that stem from intensified cocaine seizures in Colombia after 2005. These seizures reduced cocaine supply reaching Mexico, altering rent opportunities and further escalating violence (Castillo et al., 2020). I construct the instrument at the commuting zone-year level by interacting the 2006 municipal shares with an indicator for DTO presence between 2004 and 2006 in a municipio, and the yearly cocaine supply shock.[5] I provide evidence that confirms the instrument's validity and demonstrates its lack of correlation with pre-existing trends in migrant integration outcomes before the war on drugs.

I find that violence in Mexican migrants' source regions is positively associated with their propensity to naturalize in the US. Migrants exposed to a one standard deviation increase in the homicide shock experience a 43 percent increase in the naturalization rate relative to the baseline, 2006, mean. I also find an increase in the likelihood of marriage. Particularly, violence in Mexico increases the propensity of migrants to marry US citizens by 2.5 percentage points, a 29% increase relative to the baseline mean. Upon analyzing the nationality of the citizen spouse, the results mainly show a rise in marriages to Mexican-born naturalized citizens rather than to US-born natives. This suggests that, when proxied by intermarriage patterns, migrants' cultural integration seems to remain stable. I show that these results are robust to different sample choices and are not driven by local conditions that may be correlated with the characteristics of migrants.

The analysis also reveals differential impacts of violence depending on the characteristics of the migrants. For instance, the effects of violence on marriage are more evident among the group of immigrants who have spent the least time in the US (0-3 years). This is consistent with existing work showing that migrants in their initial years of migration have the highest return migration

[5]This instrument resembles a shift-share instrument, where a common shock – cocaine supply in this case – is distributed across commuting zones through cross-sectional variation in the municipal origins of migrants. It's also akin to a difference-in-difference setting, comparing migrants from municipios with DTOs to those without in years of high cocaine supply shocks to low ones.

rates, and thus could be more responsive to conditions in their home country (Akee and Jones, 2019). On the other hand, the effect of violence on naturalization seems to be driven by migrants who lived in the US for about 7-10 years, which in many cases coincides with the eligibility period for naturalization following permanent residency. Taken together, these findings demonstrate that regardless of their length of stay, migrants are making destination-specific investments in response to violence in their source regions. However, the exact nature of these investments depends on the available opportunities at a given time. Longer-tenure migrants who meet the criteria for naturalization pursue this path, while shorter-tenure migrants opt for alternative investments that can accelerate their path to naturalization in the future. Furthermore, I find that the effects of violence on marriage to US citizens are larger for individuals with lower education levels, who have limited avenues for remaining in the US aside from family-based migration pathways. I also provide evidence suggesting that the effects of violence are more pronounced in areas in the US with concentrated migrant networks, which facilitate information sharing.

On the other hand, my results show no effects of violence on employment rates, hours worked, and hourly wages of migrants. There are also no measurable effects on human capital accumulation, such as schooling or language proficiency. The 2SLS point estimates are close to zero, and the 95 percent confidence intervals rule out large changes in these outcomes. Given that economic integration and human capital accumulation could be impacted by violence through two opposing channels – one potentially enhancing productivity and the other, a psychological channel, potentially hindering it – it is plausible that this dynamic contributes to the estimated null effects on these outcomes.

Overall, the positive impact of violence on the naturalization and marriage of migrants reflects their desire to establish permanency in the US. I argue that the main mechanism driving the results is a reduction in the intentions of migrants to return to their home country. To further explore this channel, I use data from the Mexican Census (2010) to estimate the effect of violence in Mexico on actual return migration flows. The results suggest that municipios exposed to heightened violence exhibit a reduction in the rate of return migration, albeit not significantly. A limitation of this analysis is that the Mexican Census excludes the years of peak violence, namely 2011 and 2012.

This paper mainly contributes to the literature on migrants' economic and social integration in host societies. While a sparse body of research has explored the effects of home country conditions on migrants, it has only focused on macroeconomic factors in migrants' home countries, leveraging cross-country variations (Albert and Monras, 2022; Dustmann et al., 2023; Nekoei, 2013).[6]

[6]Specifically, these papers look at fluctuations in inflation, exchange rates, and GDP. These factors particularly affect the reservation wage of migrants through their effects on price levels in the destination relative to the origin. Another strand of literature focuses on the impact of home country macroeconomic conditions on mental health and well-being of migrants (Akay et al., 2017; Nguyen and Connelly, 2018; Nguyen and Duncan, 2020). Given that this literature exploits variation across different countries, it is challenging to isolate which specific aspects of a country

My paper makes several contributions to the existing literature. First, it provides an innovative examination of how home country *violence*, which is growing in prevalence in the developing world (United Nations, 2023), can impact migrants' *social* as well as *economic* integration at the destination. Second, instead of leveraging variation across countries of origin, the paper exploits within-country variation by using the Matrícula Consular data in a novel manner. This approach provides more precise estimates of the effects of localized home conditions, and accounts for the fact that individuals are generally more informed about and influenced by conditions in their specific regional areas of origin than by the aggregate conditions in their entire country of origin. Third, the paper explores the international diffusion of a shock occurring in Mexico on the outcomes of individuals in the US through migratory networks. In this regard, it adds to recent work that has used Consular data to investigate the effects of shocks in the opposite direction (Caballero, 2022; Caballero et al., 2021; Pearson, 2023; Tian et al., 2022).

This paper also engages with the literature that studies the interaction between return intentions, the permanency of migration, and migrant behavior. Numerous studies have distinguished between temporary and permanent migration (Adda et al., 2022; Chiswick and Miller, 1993; Dustmann, 2000; Dustmann and Mestres, 2010).[7] Notably, Cortes (2004) illustrates this distinction by comparing the assimilation trajectory of refugees, who cannot return to their home country, with that of economic migrants in the US. While refugees initially face larger economic disparities, they later experience faster earnings growth due to stronger incentives to invest in language. However, refugees effectively represent an extreme case of permanent migration. In contrast, I focus on a group of non-refugee economic migrants who still respond to localized violence shocks occurring in their municipios of origin. This is important because integration policies typically do not target this group, even though it could benefit them once they have decided to stay at the destination.

Broadly, my findings contribute to the growing literature on the impacts of violence in Mexico. Prior studies have documented adverse effects on various outcomes of individuals residing in Mexico, including birth weights (Brown, 2018), labor force participation of females, and the earnings of males (Velásquez, 2020; Dell, 2015). My paper departs from this literature by focusing on the spillovers of violence in Mexico on individuals residing outside of Mexico. Additionally, while some work has studied the effects of local violence on emigration from Mexico, my paper presents the first evidence on the effects on return migration.[8]

The rest of the paper is organized as follows: Section 2 elaborates on the setting of Mexico and

(e.g., inflation, GDP) are directly impacting the outcomes of migrants.

[7]For a comprehensive overview of how the temporariness of migration could affect the assimilation of migrants and their response to policies in the destination, see Dustmann and Görlach (2016).

[8]A sizeable body of literature has examined the effect of violence on emigration. This literature has yielded conflicting results in the context of Mexico (Basu and Pearlman, 2017; Orozco-Aleman and Gonzalez-Lozano, 2018; Rios, 2014). Clemens (2021) focuses on the setting of Central America, showing an increase in migration of unaccompanied minors due to violence. To my knowledge, this is the first paper to look at return migration.

the war on drugs. Section 3 describes the data sources used to construct the treatment and the outcome variables. In Section 4, I introduce the empirical strategy and argue for the validity of the instrumental variable approach. The results are presented in Section 5, followed by a discussion on their robustness in Section 6. In Section 7, I provide evidence on the mechanisms driving the main results. Finally, I conclude in Section 8.

2 Background

Mexico's Cartel Drug Trade. For decades, Mexico has grappled with the persistent challenge of drug production and trafficking. Its proximity to the United States, the world's largest consumer of cocaine (UNODC, 2007), along with its weak institutions have fostered the growth of Mexican drug trafficking organizations (DTOs), which have found significant financial incentives in this illicit trade.

During the 1980s and 1990s, DTOs were in their formative stages, establishing their presence across various regions in Mexico (Lindo and Padilla-Romo, 2018). Initially, the government allocated certain regions for each DTO to conduct their operations. However, the situation soon spiraled out of control, as some DTOs began to fragment, split over leadership disputes, and compete for territorial dominance. By 2006, the Mexican drug market was primarily dominated by five major DTOs and alliances: Gulf, Juárez, La Familia, Sinaloa/Beltrán-Leyva, and Tijuana. They covered 15 percent of Mexican municipios.

While Mexican drug cartels engage in the production of various illicit substances, including cannabis, heroin, and amphetamines, drug-trafficking activities, particularly of cocaine produced in Colombia, account for the majority of their profits. Mexico serves as a major transit point for illicit drugs bound for the United States and other destinations. By the 1990s, approximately 90% of the cocaine destined for the US was smuggled through the US-Mexico border (Bonner, 2010).[9]

Mexico's War on Drugs. Before 2005, Mexico's primary approach to combat drug trafficking was centered around crop eradication programs, which proved largely ineffective. However, a sudden policy shift occurred in 2006 when President Felipe Calderón of the National Action Party (PAN) took office and declared war on drug trade organizations. This decision was unexpected, as Calderón, who won the presidential election by a narrow margin, had not made security a major focus of his campaign (Castañeda and Aguilar, 2012). Calderón's strategy aimed to confront drug cartels through eradication of drug crops, drug confiscation, and destabilization of cartels by capturing, incarcerating, or eliminating their major leaders, an approach known as the kingpin

[9] Until the 1980s, Andean countries transported cocaine to the United States by way of the Caribbean. Nevertheless, as American law enforcement increased their efforts, traffickers began to transport drugs by crossing the US-Mexico border (Kilmer et al., 2010).

strategy. He initiated joint military operations with states, starting in the state of Michoacán in December 2006. These law enforcement operations eliminated crucial leaders of prominent drug cartels, either through arrests or confrontations that led to their demise (Lindo and Padilla-Romo, 2018). Throughout his six-year tenure as president, Calderón apprehended a total of 25 drug lords (Coscia and Gutiérrez-Romero, 2023) and extradited a peak of 587 criminal suspects to the US (Bonner, 2010).

The start of the war on drugs saw a significant increase in the national homicide rate in Mexico. As shown in Figure 1, Mexico's homicide rate remained relatively stable and low until 2006.[10] However, starting in 2007, the average homicide rate increased from 11 per 100,000 to its first peak of 25 per 100,000 in 2012 – an almost 150 percent increase. An important feature of this violence is its spatio-temporal variation, with not all municipios experiencing the same timing and intensity of violence escalation. Figure 2 illustrates this variation in the homicide rate across Mexican municipios over four different years. Prior to the war on drugs, in 2006, the majority of municipios exhibited low levels of violence. In 2008, the northern part of the country was most affected, but by 2012, violence had spread widely, affecting regions in the west and northeast that previously had no connection to the drug war.

While a significant proportion of the victims of violence were individuals who worked in the drug trade, officials and law enforcement personnel, women, children, and journalists also suffered from targeted violence and acts of torture (Molzahn et al., 2012). Table A1 in the Appendix provides a breakdown of homicides in Mexico by the victims' demographic characteristics. Between 2007 and 2012, 10.6 percent of the victims were female, and 9.1 percent of them were children under the age of 15.[11]

Various studies have attempted to identify the reasons behind the surge in violence during the first period of the war on drugs (2007-2012). Some argue that Calderón's military operations played a significant role, creating power vacuums that resulted in conflicts within and between drug cartels (Dell, 2015; Guerrero-Gutiérrez, 2011; Lindo and Padilla-Romo, 2018).[12] Drug cartels then resorted to using violence to terrorize the public and force the government to back down. All along, they relied on kidnappings, extortions, and thefts that directly target the civilian population

[10]There was a small uptick in homicides between 2005 and 2006 driven by disputes between different branches of cartels in the state of Michoacán. Nonetheless, the national homicide rate remained low.

[11]These figures are obtained through author's calculations using mortality data obtained from INEGI. A total of 120,560 individuals died of homicide in Mexico between 2007 and 2012 inclusive.

[12]Dell (2015), comparing municipios where Calderón's party (PAN) won the mayor election by a small margin to municipios in which PAN lost, finds that a PAN win significantly increased drug-related homicides. This suggests that PAN policies played a role in triggering the increase in violence. Lindo and Padilla-Romo (2018) focus specifically on the kingpin strategy adopted by Calderón's government, and exploit variation in the geographic distribution of DTOs as well as the timing of high-level DTO captures. They find that the kingpin captures led to an increase in the homicide rate of the municipios where the capture occurred and to a smaller but significant degree in other municipios where the kingpin's DTO had a presence.

in order to fund their fight against rival cartels and the military.

After 2012, the average homicide rate in Mexico dropped. This decrease followed a change in the administration's approach, which involved two military operations aimed at dismantling the trafficking capabilities of the Gulf and Zetas cartels, rather than confronting kingpins (Coscia and Gutiérrez-Romero, 2023). However, the decrease in violence was short-lived. After Calderón, President Enrique Peña Nieto took office and once again altered the security policy, apprehending and eliminating a greater number of drug lords than in the past. This led to more conflicts over the control of territories, raising the homicide rate again in 2016 as shown in Figure 1.

Given the complexity and evolving nature of the war, this paper primarily focuses on examining the short-term impacts of violence in Mexico. As such, the analysis is limited to data up to year 2012 (the shaded region of Figure 1). The initial period of violence during the Calderón administration was more sudden, exogenous, and understood than the later periods when DTOs spread and changed locations. Therefore, I can more accurately account for the sources of violence during the initial period in my identification strategy.

3 Data

This paper aims to investigate the effects of violence in Mexico on Mexican migrants in the US. To achieve this, the analysis requires information on violence within Mexico, the source regions of US Mexican migrants, and their respective outcomes. In addition, establishing credible identification requires isolating variations of violence from the characteristics of the migrants themselves. Consequently, the analysis combines data from five main sources.

3.1 Mexico's Violence and Drug Trade

Homicide Rate. I use annual homicide rates as a proxy for violence in Mexican municipios. I obtain data on all homicides that occurred in Mexico from mortality records published by the National Institute of Statistics and Geography (INEGI). These records encompass all death certificates issued between 2000 and 2012. Within each death entry, I observe demographic characteristics, such as age and sex, as well as the date of death, the municipio where it occurred, and its cause. I specifically identify cases where the recorded cause of death was classified as a homicide.[13] I then compile the total number of homicides for each Mexican municipio and year. To compute the homicide rate per 100,000 persons, HR_{mt}, I divide the number of homicides in a given municipio m and year t by the municipio's population in 2005 per 100,000 persons. I obtain the population

[13]The INEGI homicides data have been validated by NGOs and news outlets, which found an increase in violence consistent with official numbers.

data from the Mexican Census of Population and Housing (2005).

While alternative measures, such as kidnappings, extortions, and property crimes, could also reflect violence in a municipio, they are susceptible to high levels of measurement error due to underreporting. For example, there may be instances where individuals are reluctant to report kidnappings or property crimes to the police due to fear of retaliation. In contrast, homicides are harder to conceal and less prone to be underreported, addressing this concern (Brown, 2018; Velásquez, 2020). Homicides also have the advantage of uniform classification across municipios. This implies that the differences observed across space reflect actual changes in violence, rather than differences in crime classification.

On the other hand, some studies have used drug-related homicides as a more relevant measure of drug trade violence in Mexico (Dell, 2015). The National Council of Public Security collected these data from December 2006 to October 2011 based on police and news reports, classifying instances where civilians were killed and at least one party was linked to the drug trade. I do not use this measure for several reasons. First, my analysis spans 2006 to 2012, and drug-related homicides data are not available for the entire period. Second, the council may have changed how they classify drug-related homicides over time in an attempt to shape public perception of the war on drugs, introducing measurement error (Hope, 2012; Lindo and Padilla-Romo, 2018).[14] Third, my primary interest lies in the overall crime environment in a municipio. While I use the war on drugs as a quasi-experiment driving violence, the overall homicide rate better captures the overall perception of safety and fear.[15] Nonetheless, it has been shown that the variation in the overall homicide rate matches that of drug-related homicides gathered by the government (Heinle et al., 2015).

Indeed, homicides in a municipio are strongly associated with other crimes within the same locality. To illustrate this, I obtain data on other crimes, such as kidnappings, extortion, and theft, between 2011 and 2017 from the National Public Security System of the Mexican government.[16] In Appendix Table A2, I present the correlations between the number of homicides and thefts, extortions, property dispossessions, kidnappings, and rape in a municipio. All these measures

[14] One potential concern is that events related to the war on drugs could also impact the classification of violent deaths as homicides. In such a scenario and assuming constant reporting of mortality, there would likely be increases in deaths by accidents or suicides as well. To explore this possibility, Figure A1 in the Appendix displays the annual trends in deaths by homicides, suicides, and accidents in Mexico. While homicides sharply increased after 2007, suicides and accidents did not show the same trend. If homicides were misreported as other violent deaths, then the figure would have shown a comparable increase in the latter two categories. However, the data do not support this possibility.

[15] Velásquez (2020) shows a strong correlation between changes in the homicide rate and fear of assault and perceptions of safety.

[16] These data are publicly available for the 2011-2017 time period only, and were obtained from the Executive Secretariat of the National Public Security System of the Government of Mexico (link). While it would have been ideal to incorporate drug-related homicides into this exercise, I could not obtain access to these data, as they are highly confidential.

of crime are highly correlated with the number of homicides, with coefficients above 0.5 and predominantly between 0.6 and 0.7. As expected, the correlation is lowest for kidnappings (0.53), likely due to underreporting due to fear of harm to the victims.

Drug Trade Organizations. I obtain information on the geographic distribution of drug trade organizations (DTOs) within Mexico from Coscia and Rios (2012), who are the first to provide such data. To identify the presence and characteristics of DTOs, Coscia and Rios (2012) use newspapers as a main source, focusing on the nine largest and most important drug trade organizations. They develop a web-scrapping mechanism that uses clear query terms and a framework called MOGO (making order using Google as an oracle) to track the annual presence of DTOs across municipios between 1990 and 2010. The authors validate their procedure by assessing its accuracy in identifying the areas of operation of governors. While they provide data starting in 1990, the authors caution that information before 2004 may not be as reliable.

In my paper, I define each drug trade organization's area of operation using the 2004-2006 data, which capture the geographic distribution of the drug trade organizations before the onset of the war on drugs. I focus on the five major cartels that were dominant at that time: Sinoloa-Beltrán-Leyva, Tijuana, Gulf, Juárez, and La Familia. I generate a dummy variable that indicates whether the municipio had at least one of these drug trade organizations in any of the three years. Only 371 out of 2,457 or 15 percent of total municipios had a DTO in 2004-2006. Among those, 208 municipios (8.4 percent) had only one DTO, 90 (3.6 percent) had two, and 73 (3 percent) had three or more.

Cocaine Seizures in Colombia. In the following sections, I discuss how cocaine seizures in Colombia contributed to the escalation of violence in Mexico. I obtain data on cocaine seized by Colombian forces from 2000 to 2012 from Colombia's Ministry of Justice and Law (Ministry of Justice and Law, 2022). These data comprise the total kilograms (KG) of cocaine seized annually across Colombia. Additionally, I gather data on the annual land area used for coca cultivation in Colombia (in Hectares) from the International Narcotics Control Strategy Reports of the US Department of State (United States Department of State Bureau of International Narcotics and Law Enforcement Affairs, 2016). Using these datasets, I construct a normalized measure of cocaine seizures in Colombia as the annual amount of cocaine seized by Colombian forces per unit area of coca cultivated land in the country.

3.2 Migrant Municipal Origins

To identify the source regions of Mexican migrants in the US at the municipal-level, I use administrative data from the Matrícula Consular de Alta Seguridad (MCAS) identity cards program.

This program was designed to encourage Mexican immigrants in the US to register at their local consulates and receive a consular ID card. The program's only requirement is that applicants provide a birth certificate or passport and proof of residency in the relevant consular area (Albert and Monras, 2022). Any Mexican-born migrant, regardless of their immigration status in the US, is eligible to obtain the card. The card can be used in opening a bank account, renting an apartment, or sending money abroad. In some states, it also allows migrants to obtain a driver's license (Daniele et al., 2023). Notably, the card holds particular appeal for undocumented immigrants who often lack access to other forms of identification. According to Caballero et al. (2018), nearly 38% of the Mexican-born population in the US holds a valid MCAS card each year, with 70 to 80 percent of the cardholders assumed to be undocumented (Massey et al., 2010). The card remains valid for five years and can be renewed upon expiration or in case of the cardholder's relocation.

The Consular card records crucial information for measuring migration networks. Specifically, the card indicates the destination address in the US and the Mexican municipio of birth for each cardholder. In this paper, I use aggregate tabulations of the MCAS dataset, which provide the total number of Matrícula cards issued to Mexicans in the US each year between 2006 and 2012 at the municipio-of-origin and US county-of-residence level. Additionally, I am able to differentiate between cards issued for the first time and renewals in my dataset, which is important to precisely measure contemporaneous migrant networks. Most cards are first issuances, with renewals accounting for approximately 17 percent of the total cards issued in a given year on average. I use MCAS data from 2006 to 2012 in my analysis, as security changes in earlier years have affected the data's consistency and quality.

I map the MCAS data to the Mexican municipio - US commuting zone level. Subsequently, I compute contemporaneous migrant network weights which reflect the share of migrants from each source municipio m located in a US commuting zone (CZ) j during a given year t. The network measure links Mexican municipios impacted by violence with their network-connected communities in the US. Formally, the network measure is defined as follows:

$$NTWK_{jmt} = \frac{s_{jmt}}{S_{jt}} \tag{1}$$

where s_{jmt} is the total number of new Matrícula cards issued for migrants from municipio m who reside in CZ j in year t. S_{jt} is the total number of Matrícula cards issued in CZ j for migrants from all municipios, or simply, $\sum_m s_{jmt}$.

The Matrícula data offer a unique and comprehensive coverage of migration patterns between small subnational geographic levels. Prior, migration patterns could only be observed at the subnational level in one of these entities, as US data record only subnational geographies within the

US, while Mexican data offer sub-geographies within Mexico.[17]

While the MCAS provide substantial advantages compared to previous data sources, its limitation stems from it being a voluntary program, where individuals opt to obtain the card. Nonetheless, I provide evidence supporting the accuracy of the MCAS data in mapping migrant networks. Specifically, I discuss and confirm the data's quality in depicting the temporal pattern of Mexican migration and in capturing the destinations and origins of Mexican migrants in the US (Appendix B.1, Figure B1 and Figure B2). Several studies have used the MCAS data to capture the bilateral stock of migrants (e.g., Allen et al., 2018; Bhandari et al., 2021; Caballero, 2022; Caballero et al., 2021; Tian et al., 2022). Increasingly, the data are being employed to measure flows of Mexican migration (Daniele et al., 2023).

3.3 Outcomes and Sample

To observe migrants' outcomes, I use individual-level data from the 2006-2012 American Community Surveys (ACS), obtained through IPUMS (Ruggles et al., 2023). Th ACS survey is a large nationally representative repeated cross-section, that does not selectively sample individuals based on their legal status. The smallest geographic identifier in the data is the Public Use Microdata Area (PUMA). Using crosswalks from David Dorn, I map each individual's PUMA to their commuting zone (Autor and Dorn, 2013; Autor et al., 2019).[18] I begin the analysis in 2006, as the Matrícula data are available from that year onward.

The ACS has a rich battery of questions indicating civil, cultural, educational, and economic integration. As a measure of civil and political integration, I focus on naturalization using a question that distinguishes between birthright citizenship and naturalization of foreign-born individuals. Additionally, I look at marriage incidence and marriage to US citizens. The latter indicates the migrant's marital link to a US citizen, irrespective of the spouse's origin (whether US-born or naturalized foreign-born). As discussed later in the paper, these measures proxy for return intentions and the desire to establish permanent residency in the US. To assess cultural integration, I examine migrants' intermarriage behavior categorizing it into three patterns: married to Mexican-born,

[17]The two previous data sources used to study migratory networks were the Mexican Migration Project (MMP) and the Encuesta sobre Migracion en la Frontera Norte (EMIF). However, the MMP suffers from representation problems as it only covers a small number of mostly rural Mexican communities (Massey and Zenteno, 2000). The EMIF has a small sample size, records the Mexican state rather than the municipio of origin, and only records the intended destination in the US rather than the actual one.

[18]Although conducting the analysis at the smallest geographic level possible (PUMA) would offer more variation in the treatment, I choose to conduct the analysis at the commuting zone level (CZ). The MCAS data are initially available at the county level. Since PUMAs can be part of or an aggregation of counties, mapping the MCAS data from county to PUMA level may introduce significant noise to the data, especially in the former case. On the other hand, a commuting zone is consistently an aggregation of counties, simplifying the process of summing the Matrícula cards to a higher geographic level. As it is also possible to map PUMAs to CZs in the American Community Survey data, I opt for this approach. I then link each individual to their treatment variable based on their commuting zone.

married to other foreign-born migrants, or married to US-born natives.

A substantial body of literature has used intermarriage as an indicator of cultural assimilation (e.g., Alba and Golden, 1986; Angrist, 2002; Chi and Drewianka, 2014; Duncan and Trejo, 2011; Furtado and Song, 2015; Meng and Gregory, 2005; Pagnini and Morgan, 1990; Wildsmith et al., 2003). A limitation of this measure is that it reflects both the migrant's choice of spouse and the constraint of requiring the other party's agreement to marry, highlighting the challenge of capturing cultural assimilation through survey data.

To analyze human capital accumulation, I consider years of education, school enrollment, and two measures of English fluency: one indicating poor English proficiency (either not speaking English or speaking it but not well) and another showing whether Spanish is the primary language spoken at home. I also observe migrants' labor market behavior, encompassing labor force participation, employment status, hours worked, and hourly wage. More details on these measures are available in Data Appendix C.1.

I restrict my sample to non-institutionalized Mexican-born individuals between the ages of 18 and 65 who migrated to the US before the war on drugs, between 2000 and 2006.[19] I focus on this specific cohort of Mexicans for several reasons. First, I avoid the concerns of varying time-of-arrival effects of the war on drugs, the direct effect of violence exposure on migrant behavior, and the effect of selection. This cohort arrived in the US before the war on drugs, which began in 2007, so they were not directly exposed to the violence in Mexico and did not migrate due to the war either. Second, the literature suggests that the longer the migrants stay in the destination, the less likely they are to return, with the highest return migration rate occurring within ten years of migration (Nekoei, 2013). Since I am concerned with changes in return intentions as a potential channel, I choose a cohort that has been in the US for a maximum of 13 years by 2012, as this group is likely the most affected. Finally, by focusing on one migration cohort, I avoid problems associated with changing composition or "quality" of cohorts across time (e.g., Borjas, 2015; Chiswick, 1978; Lubotsky, 2007; Orrenius and Zavodny, 2005). In the context of Mexico, Peri and Rutledge (2021) document the changing compositions of immigrants across cohorts, emphasizing the importance of considering a homogeneous group. Therefore, by focusing on one cohort who migrated before the war on drugs, I ensure that the individuals were exposed to relatively similar and stable home country conditions before 2006.

[19]The year of migration variable in the ACS is obtained through a retrospective question that records the latest year when the migrant entered to live in the United States. One potential concern is that migrants may not accurately recall their exact year of arrival, which could introduce errors into the sample. Grieco et al. (2018) demonstrate that recall bias increases with the number of years since migration, and that under-counting may occur for individuals who migrated in the survey year but were not captured by the survey. My analysis focuses on migrants who have been in the US for a minimum of one year to a maximum of 13 years. Specifically, except for those who arrived in 2006, all individuals in the sample arrived before the survey year. This approach helps avoid selection bias due to the characteristics of new immigrants.

Next, I apply further sample restrictions to ensure the comparability of different commuting zones in the analysis. Specifically, I only include commuting zones with a Mexican population above the 50th percentile of the distribution in the pre-period (averaging 2000, 2005, and 2006) and with at least one Mexican-born individual in each year of the analysis between 2006 and 2012 (balanced sample).[20] Moreover, I require each commuting zone to have issued at least one Matrícula card in 2006. These restrictions allow me to focus on areas where Mexicans have established networks before the war on drugs.

To assess the external validity of the sample included in my analysis, I present summary statistics for three distinct groups using the 2006-2012 ACS surveys in Table 1. Column (1) presents the average characteristics for the entire sample of working-age non-institutionalized Mexicans. In column (2), I focus on the cohort who migrated between 2000 and 2006. Finally, column (3) provides statistics for individuals included in my analysis, after further restricting the sample to balanced commuting zones that have a population of Mexicans above the median.

Table 1 shows that the analysis sample is not substantially different in terms of observables from the full population of Mexicans in the US. However, a higher percentage of individuals in the analysis sample report poor English attainment (68.8 percent versus 48.8 percent in the full sample), as they have spent less time on average in the US (6.5 years versus 19 years in the full sample). Importantly, naturalization rates are generally low among Mexicans. Only 25 percent of the full Mexican population was naturalized between 2006 and 2012 (column 1). The naturalization rate is even substantially lower for the 2000-2006 cohort (5.2 percent, columns 2 and 3). Across the three columns, almost 45 percent of migrants originate from municipios that had a drug trade organization during 2004-2006. Overall, given the choice of the cohort, the individuals have spent less time in the US, are less naturalized, and are less assimilated in terms of language.

3.4 Supplementary Data

Mexican Census. To elaborate on the return intentions mechanism, I leverage publicly available individual-level data from the 2010 Mexican Census, obtained via IPUMS International (Minnesota Population Center, 2020). This dataset, with its migration supplement, provide information on the migration patterns of Mexicans. Since the data are representative at the municipio-level, I use them to compute return migration flows.

The survey asks respondents about their country of residence five years prior to the Census year and records their year of return to Mexico. I calculate the return migration rate as the number of working-age return migrants from the US to each Mexican municipio divided by the municipio's population in 2005. It is important to note that this measure misses people who moved to the US

[20] In Section 6, I relax these restrictions and demonstrate the robustness of the results to different population cutoffs.

and returned to Mexico within the five years period.

Unfortunately, the 2015 Mexican Census does not include a migration supplement that allows observing which year an individual returned to Mexico. Other data sources used to study return migration, such as the Encuesta Nacional de la Dinámica Demográfica, are only representative at the Mexican state level. Consequently, my analysis of Mexicans' migratory behavior using the Mexican Census is limited to data available from 2006 to the year 2010, covering 2,259 Mexican municipios (92 percent of total).

Finally, to control for immigration enforcement in the analysis, I use data on enforcement policies at the commuting-zone and yearly levels from East et al. (2023). These policies include Secure Communities programs, E-verify laws, and 287(g) agreements.

4 Empirical Framework

4.1 Exposure to Violence While in the US

The main aim of this paper is to estimate the effect of violence in the source regions of migrants on their integration. As mentioned in section 3.3, I focus on a sample of Mexican-born migrants who migrated to the US before the war on drugs, which means that their exposure to violence is indirect.

Ideally, one would want to have information on the municipio-of-origin of each individual migrant to assign them the corresponding municipio's annual homicide rate as a treatment variable. However, such information is not available in any administrative or survey data source. As an alternative approach, I turn to the detailed tabulations provided by the MCAS data to observe migrants' municipal origins and compute contemporaneous network weights – the share of migrants from a specific source municipio in every commuting zone. These weights reflect the distribution of migrants' source municipios for each US destination commuting zone.[21]

Subsequently, I construct my main independent variable, the *Homicide Shock*. This variable represents a continuous measure of exposure for Mexicans in each US commuting zone to violence in Mexico. It is a weighted average of the homicide rates in migrants' source municipios, interacting the network weight of each municipio with the it's annual homicide rate. In essence, the homicide shock reflects the homicide rate in an "average" Mexican source municipio. To illustrate, I calculate the homicide shock, HS_{jt}, for each commuting zone j in calendar year t using this formula:

[21]The network weights are measured contemporaneously to capture the most current distribution of migrants' sources, which is most likely to be influenced by the prevailing and contemporaneous violence.

$$HS_{jt} = \sum_{m} NTWK_{mjt} \times HR_{mt} \tag{2}$$

where NTWK$_{mjt}$ represent the contemporaneous network weights, calculated as $\frac{s_{mjt}}{S_{jt}}$ (equation 1). HR$_{mt}$ is the annual homicide rate per 100,000 persons of municipio m in year t.

Figure A2 illustrates the spatial variation of the homicide shock across US commuting zones at four points between 2006 and 2012. In 2006, the exposure was generally low across most commuting zones, but after 2008, the homicide shock increased in intensity with significant geographic variation. The temporal trend of the homicide shock also aligns with that of the homicide rate in Mexico. Specifically, the homicide shock increases from 13.3 homicides per 100,000 persons in 2006 to 30.6 homicides per 100,000 in 2012, with an average of 22 homicides per 100,000.

After constructing the homicide shock, I assign it to each migrant in the ACS based on their commuting zone and calendar year. Then, I estimate the following equation:

$$Y_{ijt} = \alpha + \beta HS_{jt} + \alpha_j + \alpha_t + \alpha_{ysm} + \gamma_1 X_{ijt} + \gamma_2 Z_{jt} + \epsilon_{ijt} \tag{3}$$

Y$_{ijt}$ represent the outcomes of interest for individual i in commuting zone j at year t, where $t \in$ [2006-2012]. The homicide shock, HS$_{jt}$ is a continuous measure of each commuting zone's exposure to violence occurring in Mexico. I include a set of individual-level control variables, X$_{ijt}$, such as age, sex, and education indicators. Z$_{jt}$ is a vector of controls at the commuting zone level. As the study covers a time period when immigration enforcement policies were significantly fluctuating, I control for the presence of Secure Communities programs, E-verify laws, and 287(g) agreements in the commuting zone. In addition, I add Bartik-style measures of labor demand to account for changing economic conditions after the 2008 recession.[22]

I include commuting zone fixed effects, α_j, to account for any time-invariant unobserved heterogeneity at the commuting zone level. Furthermore, I include year fixed effects, α_t, to control for national shocks that are common to all commuting zones and can impact migrants' return intentions and assimilation. Finally, my preferred specification also includes years since migration fixed effects, α_{ysm}, since migrants who have spent varying years in the US may exhibit different unobservable characteristics that affect their outcomes. I cluster the standard errors at the commuting zone level to account for potential error correlations among individuals within the same commuting zone (Cameron and Miller, 2015).

I normalize the homicide shock measure to have a mean of zero and standard deviation of one

[22]These measures are constructed following Watson (2013) and East et al. (2023), and are calculated separately for four groups: US-born, foreign-born, low-educated, and high-educated. Specifically, for each demographic group g, industry d, commuting zone j, and year t, the following equation is computed: Bartik$_{jt}$ = $\sum_d \frac{Emp_{gdj,2005}}{Emp_{gj,2005}} \times NationalEmp_{dt}$, where Emp represents total working-age employment. The results are not sensitive to excluding these controls and are available upon request.

in all specifications. The main coefficient of interest, β, captures the effect of a one standard deviation increase in the homicide shock. A main source of variation in the homicide shock across commuting zones arises from the fact that different Mexican municipios experienced violence at different times due to the nature of the war on drugs. If the variation of the homicide shock were distributed randomly across years and commuting zones, the OLS model of equation 3 would estimate the causal impact of violence. However, this is unlikely to hold for several reasons.

First, although the homicide shock is occurring in Mexico, and the migrants are residing in the US, the location of violence within Mexico is likely not random and might be correlated with other factors in the municipio. In this regard, both migrants and non-migrants (stayers) from a specific municipio-of-origin may share unobserved characteristics, such as socio-economic background, educational attainment, or cultural traits, that affect the occurrence of violence and the outcomes of interest, introducing omitted variable bias. For example, if migrants from lower socioeconomic backgrounds exert more effort to assimilate or stay in the US, and, simultaneously, are more likely to originate from areas experiencing more violence, the estimated effect of violence exposure on outcomes would be biased upwards. Conversely, violent areas may be those that have a collective or communal culture with stronger family ties. In such cultures, individuals are less mobile and experience lower labor market outcomes, which can hinder individuals from assimilating even if they migrate (Alesina et al., 2015). In this case, the bias could be downwards.

Second, the two components of the homicide shock (contemporaneous network weights and the homicide rates) could be affecting each other, leading to simultaneity bias. A spike in the homicide rate could drive people to migrate into different destinations, changing their networks, while migration from the municipio could reduce violence as individuals leave and avoid conflict. Lastly, reverse causality is possible, where migrants who are more assimilated and economically better off in the US send more remittances to their municipio of origin, leading to more violence as cartels try to extract that financial resource. The direction of bias here depends on whether more (less) assimilated migrants send more (less) remittances, which could positively (negatively) impact violence.

Therefore, OLS estimates are prone to significant potential bias, though ascertaining the direction of this bias is challenging. To address these concerns, I use an instrumental variable approach, fixing the network at its 2006 level and exploiting plausibly exogenous variation in violence that is not correlated with the outcomes of interest.

4.2 Instrumental Variable Approach

The instrumental variable exploits identifying variation from three sources: (1) spatial variation in the distribution of source municipios of migrants across commuting zones, (2) geographic variation

in the locations of drug trade organizations within Mexico, and (3) temporal variation in cocaine seizures in Colombia. In the following subsections, I provide a detailed explanation of the intuition behind these components.

4.2.1 Migrants' Municipal Origins

The homicide shock outlined in equation 2 incorporates a network weight component, designed to transmit the violence shock from Mexico to the US. These network weights specifically capture the distribution of source municipios of Mexicans in every US commuting zone.

Importantly, the distribution of migrant's municipal origins varies across commuting zones due to distinct migratory patterns of source municipios in Mexico. These municipios have network ties with different US destinations because of historical accidents that established migratory routes. Then, migratory networks lowered migration costs, which in turn made it more likely that future migrants from the same municipios would continue to travel to the same US destinations, reinforcing established patterns (Carrington et al., 1996; Jaeger, 2000; Munshi, 2003).[23]

As discussed in section 4.1, the network component included in the homicide shock is contemporaneous. This could be problematic due to simultaneity bias, as current networks might be influenced by the ongoing war in Mexico. To address this concern, I fix the network at its 2006 pre-war value in the instrument. Given that recent variation in location patterns can be highly explained by past migration patterns, this approach mitigates endogeneity concerns while allowing for accurate predictions of future networks.

4.2.2 Geographic Variation

To capture the geographic variation in violence within Mexico, I exploit the cross-sectional distribution of drug trade organizations (DTOs) across Mexican municipios before the war on drugs (2004-2006), using data from Coscia and Rios (2012). I specifically rely on the pre-war distribution because the location of DTOs after the onset of the war on drugs may be endogenous, influenced by the war itself. I consider a municipio to have presence of drug trade organizations if it had at least one DTO in any of the three years. Only 15 percent of municipios in my sample had DTO presence prior to the war on drugs. In Figure 3, I indicate these municipios in dark blue. The figure shows that there is considerable geographic variation in the location of these municipios.

Interestingly, the origin and location of these DTOs are linked to Chinese migration in the early 20th century (Coscia and Gutiérrez-Romero, 2023; Murphy and Rossi, 2020).[24] Following the US

[23] Munshi (2003), using data from the Mexican Migration Project, finds that Mexican communities typically send migrants to three different destination areas in the US. According to that data, 90% of each source region's migrants end up in the same destination region.

[24] The location of Chinese migrants in the 1930s significantly predicts the current locations of drug cartels. Murphy

restrictions on Chinese migration, many Chinese migrants settled in Mexico instead. Some brought with them the resources for opium production and consumption, and initiated the first trade routes to the US.

Importantly, after the war on drugs, municipios with DTOs disproportionately experienced a large increase in violence. In Figure 4, I show the trend from 2000 to 2012 in the average homicide rate for two groups, municipios with DTOs (blue line) and municipios without DTOs (red line). Before 2007, municipios with DTO presence exhibited a slightly higher homicide rate, possibly due to drug cartels engaging in illicit activities as well as drug-related operations to generate revenue. However, both groups had a stable and parallel trend in the homicide rate. Starting in 2007, the homicide rate diverges between the two groups, with a significant increase in municipios with DTO presence.

As explained in section 2, multiple factors contributed to this surge in violence. Prominently, the kingpin strategy implemented by the Calderón administration is considered a major reason (Dell, 2015; Lindo and Padilla-Romo, 2018). These kingpin captures resulted in power vacuums that led to fights between and within DTOs, causing them to splinter or branch into other DTOs. Furthermore, DTOs often used violence to intimidate both the government and the public. Consequently, the increase in the homicide rate also reflects a general environment of fear and insecurity. In fact, areas with DTO presence show higher levels of fear of victimization, even among citizens not primarily targeted by violence (Gutierrez-Romero, 2016).

4.2.3 Temporal Variation

Another factor that contributed to the spike of violence in Mexico after 2007 is intensified cocaine seizures by the Colombian government, which reduced cocaine supply in drug markets. Although cocaine is cultivated in countries like Bolivia and Peru, the majority of cocaine dominating the US market – 73 percent – is produced in Colombia (National Drug Control Agency, 2015). In contrast, Mexico is not a source country of cocaine. Mexico's drug cartels purchase most of their cocaine from Colombia, and then smuggle it across the border to the US. While Mexican cartels produce other drugs, a substantial proportion of their profits during the 2000s came from trafficking drugs to the US, especially cocaine (Kilmer et al., 2010).

Similar to Mexico, Colombia has repeatedly attempted to combat drug production. Figure 5 shows the annual cocaine seizures normalized by the area of coca cultivated land in Colombia. Since 2000, there has been a concerted effort to increase cocaine seizures in Colombia, as evidenced by an increase in the measure to almost 1.3 kg per hectare in 2004, followed by a decrease until 2006. In that period, eradication strategies targeted coca crops to disrupt cocaine supply

and Rossi (2020) use the presence of Chinese migrants in the 1930s as an instrumental variable for cartel presence. Their analysis documents that the historical presence of Chinese migrants serves as a strong predictor of the latter.

chains. Due to intense public scrutiny in the mid-2000s, the government altered its approach, dismantling cocaine manufacturing facilities and transportations. Consequently, cocaine seizures became more effective, increasing from 0.78 kg per hectare in 2007 to 1.71 kg per hectare in 2012.

The escalation of cocaine seizures in Colombia led to a reduction in cocaine supply available to Mexican cartels after 2006. This reduction caused scarcity in the market, subsequently driving up retail prices of cocaine.[25] Notably, the situation further escalated violence in Mexico, particularly in areas where DTOs operate as they clashed over limited rent opportunities. Castillo et al. (2020) establish a clear link between the intensified cocaine seizure efforts by the Colombian government and the surge in violence within Mexico. Therefore, I incorporate cocaine supply shocks originating in Colombia in the instrument to account for the temporal variation in violence in Mexico.

One concern is that the intensity of Colombian cocaine seizures is correlated with changes in conditions in Mexico or is a result of cooperation with Mexican forces. Two facts alleviate this concern. First, Figure 5 shows that attempts to seize cocaine in Colombia existed before the Mexican war on drugs, but they were not as successful as in the period post-2007. Second, this concern is eliminated in the analysis of Castillo et al. (2020). The authors argue that the variation in cocaine seizures is more closely aligned with politics and funding in Colombia. They also find that the success of cocaine seizures in Colombia depends on chance and is not correlated with the seizure rate in Mexico, ensuring no cooperation between Mexico and Colombia during that time.[26] Therefore, the spike in violence due to the cocaine supply shock is plausibly exogenous to socioeconomic factors in Mexico.

The last two subsections explain two determinants of violence within Mexico that will be incorporated in the instrument. To verify their relevance, I investigate whether the interaction of these two components predicts the intensity of the homicide rate in Mexico. Specifically, I estimate the following model:

$$HR_{mt} = \alpha + \beta DTO_{m,2004-2006} \times Col_t^{Cocaine} + \alpha_m + \alpha_t + \epsilon_{mt} \tag{4}$$

where HR_{mt} is the homicide rate of municipio m in year t, such that t $\in$ [2006, 2012]. $\text{DTO}_{m,2004-2006}$ is an indicator of DTO presence between 2004 and 2006, and $\text{Col}_t^{Cocaine}$ is the cocaine supply shock. In my preferred specification, I add municipio fixed effects, α_m, and year fixed effects, α_t, but I show the results while adding these gradually. The standard errors are clustered at the

[25] Mexican cartels did not replace that supply with drugs from other sources. When Colombian cocaine seizures increased, cocaine seizures in Mexico decreased, implying that Colombian cocaine seizures decrease the cocaine supply in Mexico, and that supply wasn't replaced by drugs from other sources (Castillo et al., 2020).

[26] Specifically, Castillo et al. (2020) estimate the relationship between cocaine seizures and other anti-drug policies in Colombia, such as seizures of chemical precursors and destruction of cocaine labs. They find that the different policies are not correlated and do not move together, indicating that seizures do not capture a change in cocaine production and demand that originate in Mexico.

municipio level. Both the interaction and the homicide rate are normalized to have a mean of zero and a standard deviation of one.

Table A3 in the Appendix indicates that the presence of a DTO in a municipio interacted with the cocaine shock has a strong predictive power of the municipio's homicide rate across all specifications. The coefficients range between 0.12 and 0.26 and are statistically significant at the 1 percent level. In the preferred specification (column 4), a one standard deviation increase in the interaction term is associated with a 0.175 standard deviation increase in the homicide rate. The F-statistic lies between 32.4 and 77.25.

4.3 Instrument and Validity Diagnostics

Using all the three sources of variation, I construct the instrument for each commuting zone j and year t in the following way:

$$IV_{jt} = \sum_{m} NTWK_{mj,2006} \times DTO_{m,2004-2006} \times Col_{t}^{Cocaine} \tag{5}$$

where $\text{NTWK}_{mj,2006}$ is the 2006 share of migrants in CZ j that are from source municipio m.[27] $\text{DTO}_{m,2004-2006}$ is an indicator showing whether the municipio had at least one DTO before the war on drugs between 2004-2006. Both the networks and the DTO component are defined using their pre-war values, thereby minimizing any confounding effects. $Col_{t}^{Cocaine}$ measures the annual amount of cocaine seized by Colombian forces normalized by the area of coca cultivated land in Colombia.

The key exclusion restriction for the validity of the instrument (IV) is that it is not correlated with unobserved factors specific to a commuting zone that could affect the outcomes at the same time. Specifically, the instrument should not predict changes in migrant integration through channels unrelated to the homicide shock or to violence in source regions of migrants. There are two main threats to this identification strategy. First, the instrument could potentially alter the composition of Mexican migrants arriving in the US, which may impact their integration prospects and violate the exclusion restriction. As previously discussed, I focus solely on the sample of Mexican migrants who arrived in the US before the war on drugs (2000-2006) in my analysis, which addresses this concern. Second, it is possible that migrants originating from municipios with DTOs may have been on a different integration trend before the war on drugs. These migrants are the ones who later experience persistent violence over time, affecting their outcomes in the post-war period. In this section, I conduct checks that address this possibility and argue for the validity of the exclusion

[27] The share is calculated as follows: $\frac{m_{mj,2006}}{M_{j,2006}}$, where the numerator is the number of Matrícula cards issued to migrants in 2006 in CZ j who are from source municipio m, and the denominator is the total number of cards issued in CZ j in 2006, which is calculated as $\sum_m m_{mj,2006}$.

restriction.

The instrument used in this paper can be seen as having a non-standard shift-share structure, interacting two main parts. The cross-sectional part – share, which is itself an interaction of the pre-war municipio network weights with an indicator of DTO presence – reflects the pre-war share of migrants who originate from municipios that had any DTO presence. The second part – shift – corresponds to the cocaine supply shock, which only varies temporally.[28] In the standard shift-share literature, it is argued that either the shares (Goldsmith-Pinkham et al., 2020) or the shifts (Borusyak et al., 2022) that are not correlated with the error term allow for consistent estimation.

In my setting, the cocaine supply shock is plausibly exogenous, as the success of cocaine seizures is correlated with funding and policies in Colombia and, to a large extent, is random. Therefore, the shock is not correlated with Mexican policies and is not co-determined by the outcomes of Mexican migrants in the US. However, this shock is common for all Mexican municipios, and is distributed across the US commuting zones through the shares. Thus, my approach relies on both the variation in and the exogeneity of the shares (Goldsmith-Pinkham et al., 2020). This fact is further motivated by the pre-2007 period of low and stable violence in Mexico, followed by differential spikes in municipios' violence depending on DTO presence, effectively resembling a difference-in-difference setting (Figure 4).

As a result, a sufficient condition for consistent estimation requires that past population shares of migrants from municipios with DTOs in commuting zones are uncorrelated with the error term. In my setting, this condition is likely to hold as distinct source municipios send migrants to destinations based on reinforced migratory networks. Nonetheless, I further validate the design by scrutinizing the cross-sectional component of the IV.

First, I investigate whether there are systematic integration differences between migrants in high and low exposure areas by examining the baseline characteristics of these two groups in 2006. A high (low) exposure commuting zone is one that has a share of migrants from municipios with DTOs that is above (below) the 50th percentile. Table A4 and Table A5 present the summary statistics of high (column 1) and low exposure areas (column 2) in 2006, as well as the statistical difference between the two (column 3). This analysis only focuses on the cohort of interest and helps in pointing out any level differences between migrants from low and high exposed regions before the war on drugs.

As shown in Table A4, migrants in both areas are similar in terms of years since migration. However, in high exposure areas, migrants are, on average, 1.4 years older and 4 percentage points (p.p.) less likely to be male, with these differences being significant at the 1 percent and 5 percent levels, respectively. In addition, high exposure areas have a 3.8 p.p. higher proportion of migrants

[28] This is the main distinction that sets it apart from a standard shift-share IV. Unlike having a separate shift for each Mexican municipio, here I have a common external shock that affects all municipios simultaneously.

with less than a high school degree ($p < 0.1$) and a 4.2 p.p. lower proportion of migrants who hold a high school degree or the equivalent ($p < 0.05$). I control for these characteristics in the main analysis.

Turning to the outcome baseline differences between the two groups, Table A5 shows no differences in naturalization, with both columns indicating an extremely low naturalization rate ranging from 5 to 5.7 percent. However, migrants in high exposure areas have a 6 p.p. higher marriage rate, and a 6.8 p.p. higher rate of marrying other Mexicans. The lower employment rate and fewer working hours for migrants in high exposed areas might be due to the higher proportion of Mexican females, who generally have lower employment rates than males. Migrants' labor force participation and language attainability do not differ significantly between the two areas. Overall, there is no discernible pattern indicating that Mexicans in high or low exposure areas differ in terms of assimilation.

To corroborate this conclusion, I plot the pre-trends in average outcomes over time for commuting zones above and below the median value of the cross-sectional component of the instrument in Figure A3 of the Appendix. I do not restrict the sample based on the year of migration to avoid substantial compositional changes in the pre-period (2000, 2005, 2006).[29] The limitation of this analysis is the lack of data covering years 2001-2004, which adds noise into the conclusions. The figures reveal that the two groups do not exhibit any clear differential pretrends in the main outcomes, which suggests that exposure to violence is not correlated with the observable characteristics of migrants. Second, no particular changes are observed during the recession around 2008, which reassures that the latter is not driving the results or causing any structural breaks. Third, after 2007, outcomes such as marriage and marriage to Mexicans show a divergence in yearly trends between high and low exposure areas.

Most importantly, I confirm the independence of the instrument from pre-existing trends in migrants' integration by examining the correlation of the instrument with the 2000-2006 trends of my key outcomes. To do this, I regress the 2000-2006 change in the outcomes' means on the change in the instrument during the post period (2007-2012). Specifically, I run the following long-difference regression:

$$\Delta Y_{j,2000-2006} = \beta \sum_{m} NTWK_{jm,2006} \times DTO_{m,2004-2006} \times \frac{Col^{cocaine}_{2012}}{Col_{2007}} + \gamma Z_{j,2000-2006} + \epsilon_j \quad (6)$$

[29]Here, I use the full sample of working-age Mexican-born and non-institutionalized individuals residing in commuting-zones with a population above the 50th percentile, without restricting the sample by years of immigration. If I further restrict the sample to individuals who migrated between 2000 and 2006, each year would strictly capture a different cohort. Ideally, I would have preferred to include the years 2001-2004 in this analysis, but a major limitation of this exercise is that the ACS data for these years do not contain an individual's PUMA, making it impossible to crosswalk each person's location to a commuting zone.

where Δ $Y_{j,2000-2006}$ represents the difference in the commuting zone's outcome mean between years 2006 and 2000. I add controls for the 2000 to 2006 changes in the Bartik measures of labor demand and immigration enforcement, as well as the average demographic characteristics in the commuting zone during the pre-period. The regression is weighted by the 2006 commuting zone Mexican population.[30]

Figure 6 displays the estimates of the above regression on each lagged outcome, along with the corresponding 95% confidence intervals. The majority of the estimated coefficients are statistically insignificant and are precise zeros. The estimates for working and participating in the labor force are slightly larger, but still not statistically significant. Reassuringly, these results are consistent with my main identifying assumption that the instrument is not correlated with pre-2006 lagged outcome trends. In addition, the results imply that the identification hinges on the post-2007 surge in violence.

Finally, a potential concern is that the Colombian cocaine supply shock could also have a trickle-down effect on US drug markets, leading to increased violence among drug distributors in the US. If, for any reason, this violence is concentrated in areas with high (or low) numbers of migrants from municipios with DTOs, that would violate the exclusion restriction. To address this issue, I examine the effect of the homicide shock on drug arrests in commuting zones included in my sample using data from the Uniform Crime Reporting Program, obtained from Kaplan (2021). The drug arrests pertain to offenses related to drug possession and drug sales. I describe the data in Appendix B.2 and report the results in Table B1. Notably, I find no significant effects of the homicide shock on drug sale or possession arrests. To the extent that drug arrests serve as a proxy for drug-related violence, these findings suggest that the homicide shock had no significant effect on the latter in the US.

4.4 First Stage Results

In this section, I assess the instrument's power by examining its correlation with the homicide shock.[31] The first-stage estimates reported in Table 2 suggest that the instrument is a strong predictor of the homicide shock across commuting zones. The coefficients are statistically significant at the 1 percent level across all specifications and increase in magnitude as more controls are added. Controlling for commuting zone and year fixed effects, the estimated coefficient in column (5) shows that a one standard deviation increase in the instrument is associated with a 1.017 standard deviation increase in the homicide shock. This translates to a 55.4% increase in the homicide

[30] The results are not sensitive to weighting using the average Mexican population in the pre-period (2000, 2005, 2006) or not weighting at all. These results are available upon request.

[31] Specifically, I run the following model: $HS_{jt} = \alpha + \beta\ IV_{jt} + \alpha_j + \alpha_t + \alpha_{ysm} + \gamma_1\ X_{ijt} + \gamma_2\ Z_{jt} + \epsilon_{ijt}$. I include the same controls as in equation 3 and cluster the standard errors at the commuting zone level. I also normalize the instrument and HS variables to have a mean of zero and a standard deviation of one.

shock relative to its mean when the instrument increases by a standard deviation (which is equivalent to 0.21 units relative to a mean of 0.63). The magnitude of the coefficient and the power of the instrument remain stable in my preferred specification that includes years since migration fixed effects (column 6). The first-stage Kleibergen-Paap F-statistic is 12.46, reassuringly larger than the standard rule of thumb value of 10 (Staiger and Stock, 1997; Stock and Yogo, 2005). Using the Montiel Olea and Pflueger (2013) IV test, the effective first-stage F-statistics is 20.3, which is higher than the critical value of 15 for a 20% worst case bias but slightly lower than the critical value of 23.1 for a 10% worst case bias.

While the instrument remains strong ($F > 10$), its predictive power is relatively weaker on the US side than on the Mexican (Table A3). This could be attributed to changes in the network destinations of Mexicans after the war on drugs, as discussed in section 4.1. In the next section, I employ the two-stage least squares (2SLS) estimator to estimate the second-stage results.[32] To ensure robustness, I construct Anderson-Rubin confidence intervals (Andrews et al., 2019; Lee et al., 2022), and provide estimates using the Limited Information Maximum Likelihood (LIML) method. The LIML estimator is an alternative to the 2SLS estimator that reduces finite sample bias when dealing with weak instruments (Cameron and Trivedi, 2005).

5 Results

In this section, I present the main results of the analysis. All specifications include individual controls, commuting zone level controls, years, commuting zone and years since migration fixed effects. Both the instrument and the homicide shock are normalized, so the coefficients are interpreted as the percentage point change in outcomes per standard deviation increase in the homicide shock (which corresponds to almost 12 homicides per 100,000). The average homicide shock is 22, almost double its standard deviation. Over the sample period, the homicide shock surged from 10 to 30 homicides per 100,000 between 2006 and 2012, or roughly by 1.66 standard deviations.[33]

5.1 Naturalization and Intermarriage

Table 3 reports the OLS (left panel) and 2SLS (right panel) estimates of the effects of violence on three dummy variables: naturalization, marriage, and marriage to US citizens. The latter is an indicator of marriage to US citizens, regardless of their country of birth, whether they are US-born natives or naturalized foreign-born individuals.

[32] According to Angrist and Kolesár (2023), in the just-identified case, 2SLS is approximately (median) unbiased even with a weak IV.

[33] For comparison, the US homicide rate in 2014 stood at 7.8 per 100,000 (CDC/National Center for Health Statistics, 2022). In Louisiana, the most violent state, the homicide rate was 11.7 per 100,000.

The OLS estimates in columns (1) to (3) indicate a positive and significant association between the homicide shock and the three outcomes. In particular, a standard deviation increase in violence in the average sending municipio is associated with a 0.3 percentage point (p.p.) increase in the likelihood of naturalization, a 1 p.p. increase in the likelihood of marriage, and a 0.6 p.p. increase in the likelihood of marriage to US citizens.[34]

The 2SLS estimates in columns (4) to (6) indicate a similar behavioral response but are larger in magnitude, implying that the OLS estimates are downward biased. Specifically, the estimated coefficient of column (4) shows that a one standard deviation increase in the homicide shock leads to a 1.7 p.p. increase in the likelihood of naturalization, a 43% increase relative to the baseline mean in 2006 for the Mexican cohort under study ($p < 0.05$). Additionally, the likelihood of marriage increases by 2.8 percentage points. In particular, a one standard deviation increase in the homicide shock raises the propensity to marry a US citizen by 2.5 p.p., a 29% increase relative to the baseline mean ($p < 0.01$).[35]

Next, I further explore the impact of violence on the intermarriage patterns of Mexicans in the US, which is a proxy of their cultural integration. To do so, I examine whether Mexicans who marry US citizens are more inclined to marry someone from a similar country of origin, focusing on three mutually exclusive outcomes: marriage to US-born natives, marriage to naturalized non-Mexican foreign-born individuals, and marriage to naturalized Mexicans.[36]

The results, presented in Table 4, indicate that the OLS estimates are close to zero and statistically insignificant (columns 1 and 2), except for the estimated effect on the likelihood of marriage to naturalized Mexicans (column 3). However, the 2SLS estimates imply a 1.1 p.p. increase in the likelihood of marriage to US-born natives relative to a baseline mean of 4.6 percent for a standard deviation increase in the homicide shock ($p < 0.1$). On the other hand, the propensity to marry a naturalized Mexican increases by 1.5 p.p., a 40% increase relative to a baseline mean of 3.7 percent ($p < 0.01$). The fact that both of these estimates are positive indicates that the citizenship of the

[34]Note that to observe the characteristics of the spouse, they should be present in the household. Therefore, if an individual is married but their spouse is absent, their outcome of being married to a US citizen cannot be observed, resulting in fewer observations in columns (3) and (6). In Appendix Table A6, I further divide marriages by the presence of the spouse in the household. The results suggest an increase in the incidence of both types of marriages.

[35]The measure of marriage to US citizens in this context is a stock measure. The increase could indicate either an increase in new marriages to US citizens, an increase in naturalization among individuals within existing marriages, or a decrease in divorces amongst marriages with US citizens. In Appendix B.3, I try to unpack each of these channels. The results suggest that the observed increase in marriages to US citizens primarily stems from an increase in new marriages with US citizens. It is influenced to a lower extent by heightened naturalization within existing marriages, while changes in marriage stability do not appear to be a factor. A main limitation of this exercise is that the information regarding the years of marriage and naturalization is only available starting from 2008.

[36]Instead of solely focusing on the nationality of US citizen spouses, I also examine the effect on marriage by spouse nationality, regardless of their citizenship status in Table A7 of the Appendix, focusing on: marriage to US-born natives, marriage to non-Mexican foreign-born individuals, and marriage to Mexicans. The results show a decrease in marriage to non-Mexican foreign-born individuals and an increase in marriage to Mexicans, that are not statistically significant.

spouse is important, irrespective of their particular nationality.[37]

Overall, these findings suggest that an increase in violence in migrants' source regions leads to a rise in civil integration, as evident from increased naturalization, and a rise in marriages to US citizens among Mexican migrants. Marriage to US citizens offers a clear pathway for migrants to adjust their status and become permanent residents. This option is available to them through family-based migration, even if they are undocumented.[38] Taken together, these results point to a reduction in the intentions of migrants to return. While Mexicans exposed to heightened violence are increasingly marrying US citizens, it seems that their cultural integration is stable, as the effects are more pronounced for marrying a Mexican compared to marrying a US-born native.

5.2 Human Capital and Labor Market Responses

The results from the previous section indicate that an increase in violence in source municipios makes Mexican migrants more likely to pursue naturalization and marry US citizens. As migrants' intentions to permanently stay in the destination change, they tend to invest more in destination-specific human capital (Adda et al., 2022; Cortes, 2004). Additionally, the increase in naturalization may lead to improved labor market outcomes for naturalized individuals, granting them access to formal and broader labor markets (Bratsberg et al., 2002). In this section, I investigate whether Mexican migrants have altered their behavior along these margins, examining outcomes related to human capital accumulation and economic integration.

Table 5 reports OLS (left panel) and 2SLS estimates (right panel) of the effect of violence on migrants' educational attainment and English language acquisition. Estimates of both panels reveal no evidence that violence in migrants' source regions affected their years of education or likelihood of attending school. I find similar null results on the effect of violence on self-reported English proficiency. In column (7), the estimated coefficient on the likelihood that a migrant reports speaking English poorly is negative, suggesting that migrants English language acquisition is improving, albeit insignificantly. In terms of magnitudes, the 95 percent confidence interval

[37] An interesting question is if alongside the rise in marriages, there is also a parallel increase in cohabitation between partners. Cohabitation reflects a desire to establish roots in the US, even though it lacks the legal implications associated with permanent residency. ACS data do not allow tracing whether migrants who entered into marriage were previously in a cohabiting arrangement. Yet, in Table B3, I explore the effect of the homicide shock on overall cohabitation and elaborate on them in Appendix B.4. The results suggest a decrease in cohabitation, which might indicate a flow from cohabitation to marriage.

[38] Undocumented migrants may obtain permanent legal status by marrying a US citizen if they initially entered the country legally and subsequently overstayed their visas or through visa waiver programs. The majority of undocumented migrants fulfill this condition. DACA recipients, on the other hand, can adjust their status through Advance Parole after marrying US citizens. However, if undocumented migrants do not meet any of these criteria, they would need to leave the US and apply for a waiver through US consulates in their home country, potentially facing a re-entry bar of 3-10 years. Nonetheless, individuals are able to apply for and obtain a waiver while remaining in the United States if they can demonstrate that their absence would cause "extreme and unusual hardship" to a US citizen (i.e. their spouse).

on the estimated coefficient on English proficiency ranges from -0.0331 to 0.0158. The lower bound of the confidence interval implies that a standard deviation increase in the homicide shock plausibly leads to a 3.3 percentage point decrease in the likelihood of reporting speaking English better, which is a 4.2 percent decrease relative to the baseline mean.

Similarly, column (8) shows a non-significant negative association between violence and speaking Spanish as the main language at home. The confidence interval of the estimated coefficient on the dominance of Spanish at home is also narrow, ranging from -0.0089 to 0.00852. The left edge of the confidence interval reflects a 0.89 p.p. reduction, which is quite small in magnitude relative to the baseline mean of 97 percent. Overall, the confidence intervals are sufficiently narrow to reject modest changes migrants' language proficiency. Furthermore, these null effects persist for sub-groups of different ages, sexes, or years since migration (Appendix B.5, Figure B3 and Figure B4).

Next, I examine the impact of violence in migrants' source municipios on their labor supply and hourly wages in Table 6. The 2SLS estimates suggest that violence is positively related to the likelihood of participating in the labor force (column 5), the likelihood of working (column 6), and hours worked (column 7). These effects, however, are also small in magnitude and statistically insignificant. The 2SLS point estimates are close to zero, and the 95 percent confident intervals rule out large changes in labor market outcomes. For example, the range of the estimated coefficient on employment spans +/- 0.02, which implies that at most (least), violence caused an increase (decrease) in the likelihood of employment by 2 p.p. (2.8 percent relative to a baseline mean of 69 percent). An exception is the marginally significant effect on hourly wages, which shows an increase by \$0.9 for a standard deviation increase in the homicide shock ($p < 0.1$). I find no heterogeneous impacts for individuals in different age groups, years since migration, or sexes (Appendix B.5, Figure B5 and Figure B6).

The results from this section suggest that violence in source municipios had no measurable effects on human capital accumulation or labor supply among Mexican migrants.[39] In section 7, I elaborate more on the channels that could be opposing each other, producing null effects.

5.3 Magnitudes

So far, the results indicate that per standard deviation (unit) increase in the "average" sending municipio's homicide rate, there is an increase of: a 43 (3.58) percent in naturalization, 29 (2.41) percent in marriage to US citizens, 23 (1.91) percent in marriage to US-born natives, and 40 (3.33) percent in marriage to naturalized Mexicans, relative to baseline means.

Though the increase in naturalization is large, it's partly due to the very low baseline mean. Only

[39] In Appendix B.6, I provide additional results on fertility for completeness.

3.9 percent of the Mexican cohort under study had naturalized in 2006. In fact, Mexican naturalization rates remain consistently low, despite being primary recipients of green cards. Among eligible Mexican lawful immigrants, only 42% pursued US citizenship by 2015 (Gonzalez-Barrera, 2017). This rate is the lowest compared to other immigrant groups, due to limited English proficiency, proximity to the US, time constraints, and application costs, with considerable potential for expansion (Rosenbloom and Batalova, 2022). Notably, my findings reveal that local home country conditions also factor into the naturalization decision.

To gauge the role of home country conditions, I compare it to other interventions that have influenced this outcome. For instance, in a randomized controlled trial, Hainmueller et al. (2018) randomly assign a voucher of $680 to cover the application costs, yielding a 41% rise in naturalization application rates. Similarly, Yasenov et al. (2019) evaluate a 2010 USCIS fee waiver reform of $680, which boosted the naturalization rate by 1.5 percentage points among low-income eligible immigrants. My estimate is directly comparable to the latter, implying an effect akin to a $680 naturalization cost reduction. Examining another treatment, Amuedo-Dorantes and Lopez (2021) estimate that an additional interior immigration enforcement initiative per year led to a 13% increase in naturalization for Mexican legal permanent residents. In comparison, my finding corresponds to introducing around 3 enforcement initiatives annually.

Regarding the impact on marriage to US citizens, several studies explore the influence of immigration enforcement. For instance, Bansak and Pearlman (2022) examine the effect of deportations from the Secure Communities program on the marriage patterns of immigrant women. They find that deportations are associated with an increase in exogamous marriage of Mexican women to natives. Additionally, Amuedo-Dorantes et al. (2020) find that a standard deviation increase in enforcement raises the likelihood of Mexican non-citizens marrying US citizens by 3%.

6 Selection and Robustness

6.1 Selection

Since the ACS is a repeated cross-sectional survey, one threat to the validity of the results is selective return migration or attrition from the sample, which could alter the cohort's composition over time. To gauge for this issue, I formally check whether the sample's composition changes across years.

First, I examine whether the size of the cohort under study changes in terms of units who answered the survey. I also weight the units by each person's survey weight to examine the total population of the cohort in each survey year. If there is selective attrition, return migration, or even aging out of the sample, the cohort would shrink in size. Table A8 provides these numbers. The

first row shows that the number of surveyed units in the cohort is relatively steady and fluctuates between 19,000 and 22,000 across the years. The second row shows that the weighted units or the total population of the cohort follows a similar trend as the first row.[40]

I also perform a test where I replicate the baseline regression of equation 3 with the outcomes being the characteristics of the migrants in the sample. Specifically, I estimate the effect of the homicide shock on the age, sex, educational attainment, and years spent in the US, including commuting zone and year fixed effects. The 2SLS estimates are presented in Table A9, indicating that violence does not affect the age or educational composition of the sample. Only one characteristic out of eight seems to respond to violence, which is the likelihood of the respondent being a male. For a one standard deviation increase in the homicide shock, the likelihood of the latter increases by 3.5 percentage points.

To summarize, the analysis indicates that violence does not significantly impact the sample's composition. These results show that the main findings are not driven by a selective change in respondents' characteristics.

6.2 Robustness Checks

In this section, I perform multiple tests to ensure the robustness of my findings on the following main outcomes: naturalization, marriage, marriage to US citizens, marriage to US-born individuals, marriage to Mexicans, and marriage to naturalized Mexicans.

6.2.1 Alternative IV Estimators and Confidence Interval Computation

First, as discussed in section 4.4, there are potential concerns related to weak instrument identification when relying on the rule of thumb that the F-statistic should be greater than 10. If the instrument estimation is weak, it may introduce bias in the estimates. To address this concern, rather than relying on the first-stage F-statistic, I construct Anderson-Rubin confidence intervals, which are a weak-identification robust confidence set that are valid even with weak instruments (Anderson and Rubin, 1949). I report these intervals in the second row of Table A10 of the Appendix. Additionally, I provide the Limited Information Maximum Likelihood (LIML) estimates along with their corresponding standard errors in the third row of the table. The 2SLS confidence intervals, computed using standard asymptotic theory, are reported in the first row for comparison. The Anderson-Rubin confidence intervals for all the main estimates show only marginal widening and remain closely aligned with the standard limits. Reassuringly, the LIML estimates also closely resemble the 2SLS estimates.

[40] In Appendix B.7, I show the yearly trends in the size, in units and in population, of the cohort for each commuting zone (Figure B7). There does not seem to be any obvious attrition affecting the cohort in the US, but the figures are noisy.

6.2.2 Direct Spillovers of the Mexican War on Drugs

Second, areas with high exposure to the homicide shock are often those located at the border with Mexico, particularly in Texas and Arizona (Figure A2). One concern is that Mexicans in these areas might be directly exposed to the repercussions of the war on drugs, given their proximity to drug trade routes. Additionally, migrants who live on the border could more likely be circular migrants, implying both direct and indirect exposure to violence. To mitigate potential confounding effects, I exclude the eleven US commuting zones sharing a border with Mexico from the analysis. Panel A of Table A11 shows that the results hold, are larger in magnitude, and are more precise.

6.2.3 Network Construction

Third, since the security requirements for issuing Matrícula cards changed in 2006, this may introduce noise and measurement error into the 2006 network weights used in the IV. To address this, I follow the previous literature using MCAS data, which aggregates the 2006 and 2007 data to construct initial network weights.[41] I report the results, which are consistent with the main findings, in panel B of Table A11.

Relatedly, it is worth noting that while most US states accepted the Matrícula consular as valid identification cards, Arizona prohibited their use in 2011 (Associated Press, 2021), and issued relatively few of them compared to the eligible Mexican population. Arizona's stricter immigration policies may also influence migrants' mobility and their decisions regarding naturalization and marriage. Thus, there is a potential for high measurement error in the network weights of Arizona. I replicate the analysis after dropping all the commuting zones in Arizona.[42] The results, presented in panel C of Table A11, demonstrate the robustness of the estimates.

6.2.4 Falsification Test

Another concern is the possibility that specific conditions within commuting zones, consistently correlated with factors affecting overall migrants' naturalization or marriage, could be driving the findings. To investigate this, I conduct a placebo exercise, replicating the main analysis using a sample of Central American migrants with similar observables characteristics to Mexicans. Since they do not originate from Mexican source municipios experiencing violence, I should observe null effects. The 2SLS estimates in panel D of Table A11 indeed show null effects of the homicide shock on the outcomes of Central Americans. Among the six estimated coefficients, only one is statistically significant at the 5 percent level, namely the likelihood of marriage to Mexicans.

[41] The war on drugs began in December 2006, particularly in the state of Michoacán. It can be argued that the rest of the country remained untreated by 2007. Consequently, the approach of combining the 2006 and 2007 data to create initial IV network weights is fairly unproblematic in terms of potential endogeneity concerns in my context.

[42] I map each commuting zone to a state using crosswalks provided by David Dorn (Autor and Dorn, 2013).

This suggests that the influence of violence in Mexican source regions operates primarily through Mexican networks rather than being driven by other institutional or labor market conditions in commuting zones that may be correlated with the observed outcomes.

6.2.5 Sample Selection

As mentioned in section 3.3, my main analysis uses commuting zones that have at least one Mexican in every year and more than the 50th percentile of the pre-period Mexican population. In Table A12, I illustrate the robustness of the results to varying sample definitions. Panels A and B lower and raise the Mexican population cutoffs to the 25th and 75th percentiles, respectively, while still ensuring balanced commuting zones. Panels C, D, and E present results for all three population cutoffs: 25th, 50th, and 75th, respectively, without requiring balanced commuting zones. Across all panels, the samples remain limited to Mexican-born working-age non-institutionalized individuals who migrated between 2000 and 2006. The results are robust to changes in the sample selection criteria in all panels.

6.2.6 Multiple Inference Adjustment

Finally, my analysis covers a large number of outcomes, which increases the probability of at least one false rejection due to simultaneous inference. To address this issue, I implement four different multiple inference adjustments, including: Bonferroni correction, sharpened false discovery rates (Anderson, 2008), Romano-Wolf stepdown adjusted p-values, and randomization inference p-values (Young, 2019, 2020). A comprehensive explanation of these methods is presented in Appendix B.8. The significance of the majority of the estimates remains robust when subjected to different inference adjustments, often at lower conventional levels (Table B5).

7 Mechanisms

This paper has demonstrated that Mexican migrants in the US respond to violence in their home regions by increasing their rate of naturalization and marriage to US citizens. This response is observed among migrants who arrived in the US before the onset of the war on drugs (pre-2006), effectively ruling out direct exposure to violence or selection into immigration due to the war on drugs as the primary driving factors. This section explores alternative channels for the observed changes in migrant behavior.

7.1 Emotional and Familial Channels

One explanation for these findings could be migrants' emotional or altruistic connections to their home country, given their relatively short time (up to 13 years) in the US. The deteriorating conditions in their home country might affect their mental well-being (Akay et al., 2017; Nguyen and Connelly, 2018), potentially reducing their productivity or employment. Another possibility involves family connections, as migrants often maintain close ties with family members in Mexico, who may directly experience the negative economic and psychological consequences of violence. For instance, if their families face economic challenges, migrants may increase their productivity to offset any financial losses and send more remittances. In this case, results would manifest as higher employment, hours worked, or hourly wages.

The results in Table 6 indicate no significant changes in employment, neither at the extensive margin (likelihood of working) nor at the intensive margin (hours worked), with only a marginally significant effect on hourly wages, suggesting minor changes in productivity. This raises the possibility that the proposed channels may not be operational. Alternatively, the opposing effects of these channels on productivity and employment may be canceling each other out, leading to null effects.

To assess the psychological channel, I examine the extent to which migrants are disproportionately impacted by violence that is unrelated to the drug war. If the emotional toll of the war is the main mechanism, I anticipate observing amplified effects in the case of such homicides. Lacking information about a homicide's direct drug war connection, I construct distinct homicide shocks using incidents involving women and the elderly as victims, as they are less likely to be directly involved.[43] As shown in Figure A4, there are no significant differences in the effects of these homicide shocks. This implies that the impact of violence in the source region remains consistent regardless of the victim's identity or their connection to the drug war.

Unfortunately, I lack information about migrants' family status, making it challenging to isolate the family channel. However, considering that Mexican males are more inclined to migrate alone, leaving families behind in Mexico, this mechanism implies that male migrants should be more affected by violence compared to females. To explore this, I perform a heterogeneity analysis by individuals' sex in Figure A5. I find no substantial differences between males and females.[44]

The family channel also might manifest in increased migration from Mexico to the US, either through family reunification or more broadly. To explore this possibility, I estimate the effect of violence on family reunifications using ACS data, which track whether new Mexicans joined

[43] Naturally, there is a strong correlation between the overall homicide rate, homicide rate among females, and homicide rate among the elderly in a Mexican municipio. The correlation coefficient between the first two is 0.44, and the correlation between the overall homicide rate and the elderly homicide rate is 0.36.

[44] When exploring the employment effects by sex in Figure B5, I find that while males experience a reduction in the likelihood of employment and in hours worked, these results are not significant.

households of older migrants after 2006. The household-level analysis reveals no rise in family reunifications in response to increased violence (Table A13). Instead, column (1) shows a significant decrease in the total number of migrants joining households after 2006. In column (2), a one standard deviation increase in the homicide shock corresponds to a 5.5 percentage point decrease in the likelihood of any family member joining ($p < 0.01$).[45]

7.2 Return Intentions

An alternative explanation is the reduction in migrants' return intentions.[46] Mexican-born migrants in the US are primarily temporary economic migrants who decide between remaining in the US or returning to Mexico. The surge in violence in Mexico along with migrants' fear of victimization might have made returning to the origin less appealing. The rise in naturalization and marriages to US citizens among migrants is consistent with this mechanism, indicating a preference to remain in the US. Specifically, marriage to US citizens often provides a direct path to obtaining permanent residency, avoiding quotas, lotteries, and employment-based visa requirements.

To explore this mechanism, I conduct two heterogeneity analyses. First, I divide migrants into four groups based on their time in the US: 0-3 years, 4-6 years, 7-10 years, and 11-12 years (Figure A6). Literature suggests that recent immigrants are more likely to consider return migration, as they haven't yet established deep roots. Indeed, the effects of the homicide shock on marriages to US citizens and naturalized Mexicans are more pronounced among immigrants with the shortest duration (0-3 years). Interestingly, the impact on naturalization is mainly driven by the group that has been in the US for 7-10 years, which corresponds with the eligibility period required for naturalization of permanent residents.

Second, I examine the impact of the homicide shock based on education levels, categorizing individuals as low-educated (high school degree or less) or high-educated (some college education or a college degree). The results in Figure A7 indicate that the effects on marriages to US citizens, US-born individuals, and naturalized Mexicans are larger among low-educated individuals. This aligns with the fact that higher-educated individuals can explore multiple pathways to remain in

[45] I also examine the impact of violence on broader Mexican immigration in Table A14. In column (1), I find the number of working-age Mexican migrants who have arrived in the US within the past year at the commuting zone-year level. Additionally, I calculate the Mexican immigration rate by dividing the number of Mexican arrivals by the commuting zone's population in 2005 (multiplied by 100) in column (2). In column (3), I use data from the Mexican Census, elaborated on in Appendix C.2, to compute emigration flows from Mexico to the US at the Mexican municipio-yearly level. The 2SLS estimates suggest no significant change in immigration from Mexico to the US due to violence during this time period. Column (3) shows a decrease in emigration from Mexico to the US, that is also not significant. In Table A15, I examine whether the composition of the newly arrived migrants is changing due to violence. I find no discernible effects.

[46] Historically, return migration rates for Mexican migrants have been high, but they have been declining, dropping from around 40 percent between 2002 and 2005 (Ambrosini and Peri, 2012) to 30 percent by 2019 (Campos-Vazquez and Lara, 2012).

the US, such as work visas, while those with lower education often rely on family-based migration.

The heterogeneity in the effects of the homicide shock reveals that migrants respond to violence in their source regions by making destination-specific investments, regardless of their duration of stay. However, the type of investment chosen depends on the opportunities they have at a given time. Those have spent enough time in the US to meet the naturalization criteria opt for that route, whereas migrants with shorter stays explore alternative investments that can expedite their future naturalization.

Finally, I use the Mexican Census data (2010) to estimate the effect of violence on actual return migration to Mexico in Table A16. The estimate of column (4) indicates that higher violence levels in Mexican municipios are associated with a reduced rate of return migration from the US to Mexico. This effect is not statistically significant due to the limitations of the data. Mainly, the available data cover only the years 2005-2010 and do not include the two years of highest violence intensity (2011 and 2012). Nevertheless, these results could still suggest a decrease in return intentions.

In summary, the findings do not strongly support emotional responses or family connections as primary drivers of the results. Instead, the suggestive evidence strongly indicates a reduction in return intentions as the main channel.

7.3 Shock Transmission

A question remains about how the homicide shock is transmitted from Mexico to the US. I propose that this transmission occurs through information and attention spread via migratory networks. To confirm this, I conduct a heterogeneity analysis based on the homogeneity of a commuting zone's migrant networks.[47] I classify commuting zones as homogeneous if they receive migrants from a number of sending municipios lower than the 90th percentile. In these zones, migrant networks are more concentrated, increasing the likelihood that migrants connect with others from the same source region and share information. Essentially, the salience of the homicide shock is amplified in such homogeneous commuting zones, so I expect the effects to be more pronounced in these areas.

Figure A8 present the results of this heterogeneity analysis. While both groups exhibit a similar response regarding marriage to US citizens, the effects on marriages are more prominent in

[47] Detailed statistics on the concentration of migrant networks across commuting zones can be found in Table A17 in the Appendix. This table provides statistics of the proportion of migrants within commuting zones originating from the same municipio, as well as the number of sending municipios for each commuting zone. These statistics indicate that migrant networks in my sample are less concentrated compared to the full sample of commuting zones, since they have a higher threshold of Mexicans by construction. On average, 1.9% of migrants within a commuting zone originate from the same Mexican municipio, with a standard deviation of 6.2%. The average commuting zone receives migrants from 266 sending municipios, with a median of 141 sending municipios.

homogeneous commuting zones. Interestingly, the effects on marriage to US-born individuals are only significant in non-homogeneous commuting zones, potentially reflecting interactions between migrants and non-Mexican residents in these areas where networks are not concentrated. In contrast, the effects on marriage to Mexicans and naturalized Mexicans are larger in homogeneous commuting zones, where migrant networks are stronger.

8 Conclusion

As the influx of migrants at the US southern border has surged in recent years, so too has the political debate regarding the potential for these migrants to effectively integrate into the cultural and economic fabric of the country. In this paper, I emphasize migrants' home country conditions as a determinant of their integration. Specifically, I investigate the impact of violence due to the war on drugs in Mexico on the civil, social, and economic integration of Mexican migrants, the largest migrant group in the US, between 2006 and 2012.

To link migrants with their municipal origins, I use administrative data from the Matrícula Consular program. I then identify exogenous variation in violence across Mexican municipios using an instrumental variable approach. The latter leverages the pre-war cross-sectional distribution of drug trade organizations across Mexico, as well as cocaine supply shocks resulting from seizures in Colombia. This method allows me to exploit localized variations in violence within Mexico, which hold greater relevance for migrants' decisions compared to country-wide conditions.

The results reveal that violence in Mexican source regions increases the likelihood of naturalization and marriage incidence among Mexican migrants. Notably, there is a rise in the propensity to marry US citizens, primarily driven by unions with naturalized Mexicans rather than US-born natives. This impact on marriage is particularly pronounced among recent migrants and those with lower levels of education. I provide evidence indicating that a decrease in migrants' return intentions is the main channel driving the results. This conclusion is supported by analysis using Mexican Census data, which suggests a decline in actual return migration flows. On the other hand, I find no measurable impact of violence on labor market outcomes or the accumulation of human capital among migrants. These null effects hold across age groups, genders, and educational levels, and could be attributed to competing productivity and psychological channels.

My findings document that migrants, especially those with lower educational attainment, turn to marrying US citizens as a means of securing permanent residency. This trend holds implications for the ongoing policy debate on family-based migration. Numerous administrations have advocated for a transition from a family-based migration system to one that prioritizes merit, or alternatively, for raising the requirements of the merit-based system.[48] If such a policy shift were to occur,

[48]This was particularly pronounced during the Trump administration (Holland and Rampton, 2019).

lower-skilled individuals will have limited opportunities to gain legal status, making marriage to US citizens even more appealing if visas for spouses remain unchanged. Since many of these migrants enter such marriages while being undocumented, this raises questions about whether the current requirements for legal status adjustment should be reconsidered.

Overall, the paper's findings hold important ramifications for host countries accommodating migrants from conflict-affected regions. In the short term, economic migrants such as Mexicans, when confronted with adverse conditions in their home countries, attempt to establish permanence in the US, but do not automatically adjust their economic and human capital integration. While refugees are often recognized as individuals settling permanently in the host country, prompting policy efforts to expedite their integration, economic migrants, even when originating from countries with similar challenges, typically do not receive similar forms of assistance (Garcia et al., 2022; Hamlin, 2021). Therefore, host countries aiming for the successful integration of their migrant populations should recognize that the need to facilitate integration becomes more urgent when source countries of migrants are grappling with challenges, reducing the likelihood of their return. In such cases, host nations may consider implementing policies that offer educational and training opportunities to these economic migrants. Given that a large proportion of migrants originate from low and middle-income countries facing conflicts or economic hardships, concerns about integration will become increasingly pressing, calling for such policies (World Bank, 2023).

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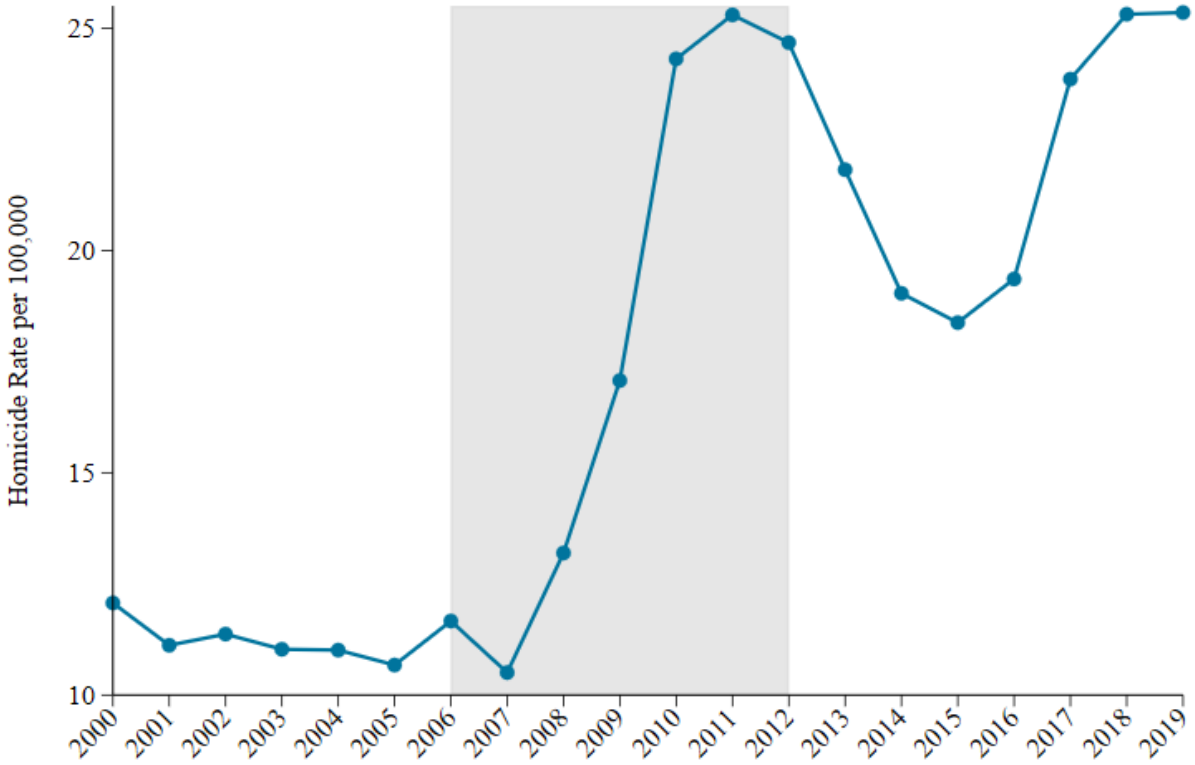
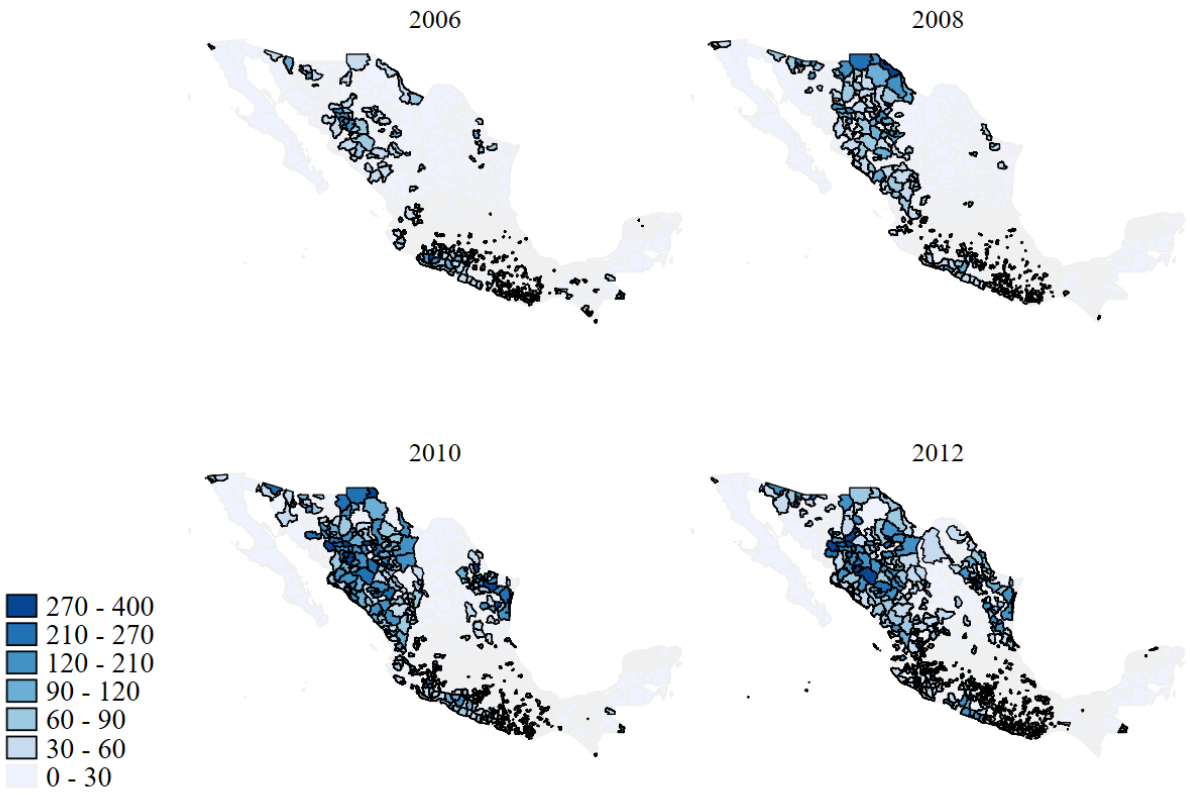
9 Figures and Tables

Figure 1: Annual Homicide Rate in Mexico, 2000-2019



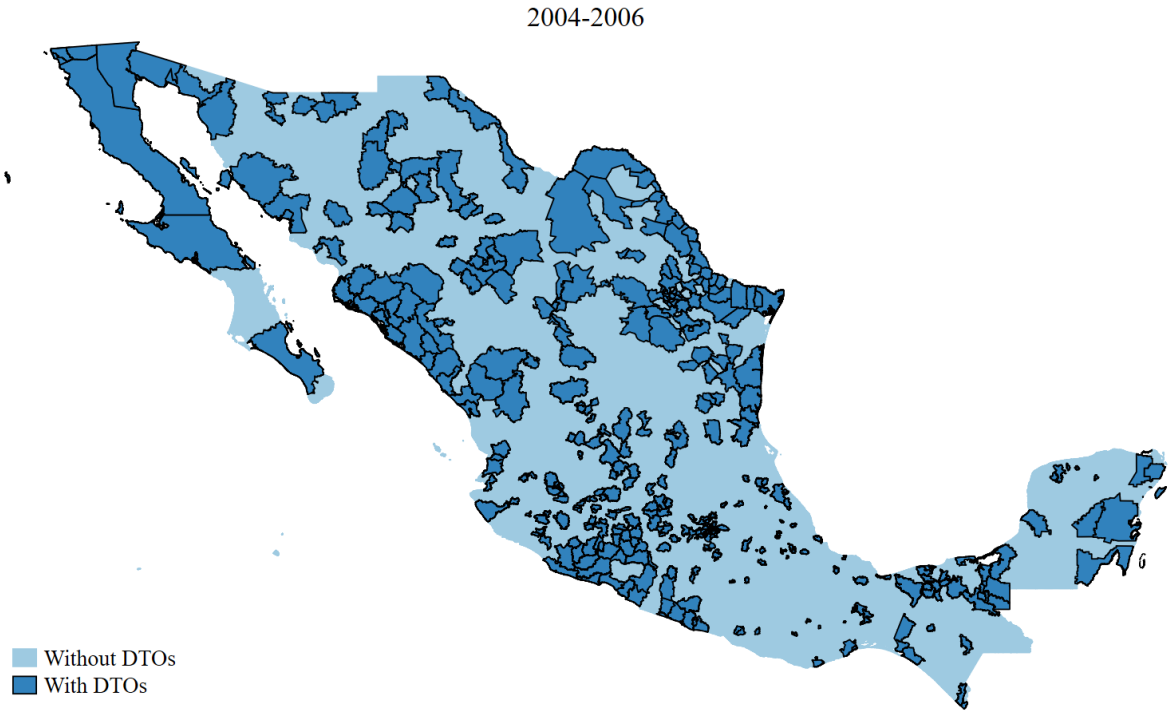
Notes: This figure displays the average annual homicide rate across Mexican municipios by year. Each municipio's homicide rate is calculated as its yearly number of homicides divided by the municipio's 2005 population per 100,000. The shaded region represents the time period covered in the analysis, 2006-2012. Data Source: INEGI, 2000-2019.

Figure 2: Annual Homicide Rate in Mexican Municipios



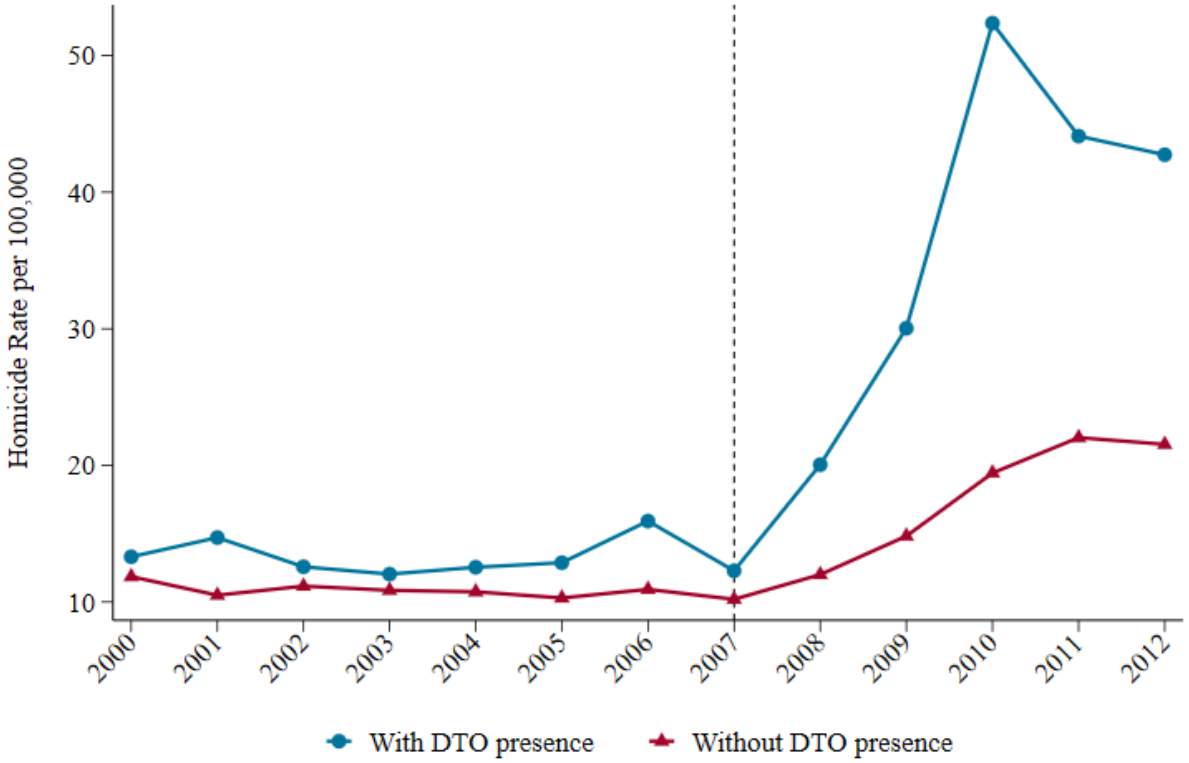
Notes: This figure displays maps of the distribution of the annual homicide rate per 100,000 persons across Mexican municipios by year. Data Source: INEGI, 2006-2012.

Figure 3: Geographic Distribution of Drug Trade Organizations across Mexico



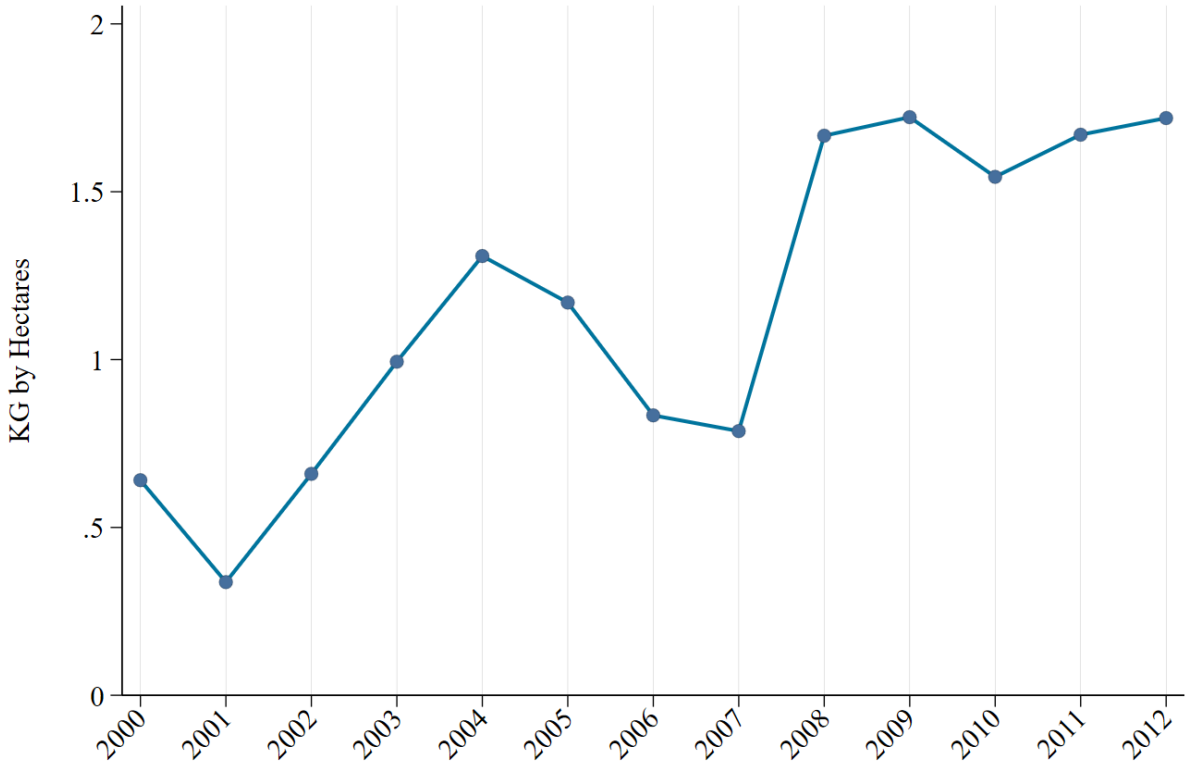
Notes: This figure illustrates the geographic distribution of Drug Trade Organizations (DTOs) in Mexican municipios between 2004 and 2006. Municipios colored in dark blue are those that had at least one DTO present in any of these three years, while municipios colored in light blue indicate those that had no DTOs during this time period. Data Source: Coscia and Rios (2012).

Figure 4: Yearly Trend in Homicide Rates Across Mexican Municipios by DTO Presence



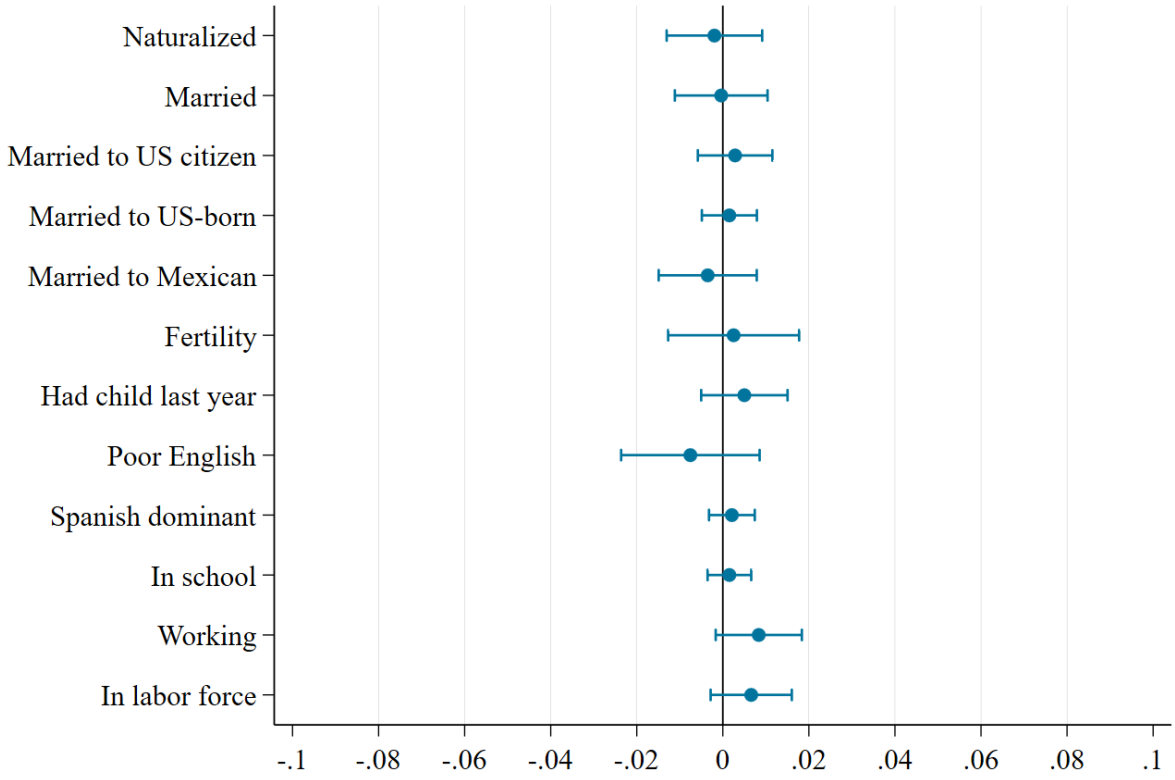
Notes: This figure shows the yearly trend in the average homicide rate per 100,000 across two group of municipios. The blue line represents the trend for municipios with any DTO presence between 2004 and 2006. The red line represents the trend for municipios with no DTO presence. The dashed vertical line marks the start of the war on drugs by Calderón's administration in 2007.

Figure 5: Annual Cocaine Seizures per Total Coca Cultivated Land in Colombia



Notes: This figure shows the yearly trend in the total amount of cocaine seizures (KG) in Colombia normalized by the total Coca crop cultivated land (Hectares) in Colombia. Data Source: Colombia's Ministry of Justice and Law & International Narcotics Control Strategy Reports of the US Department of State, 2000-2012.

Figure 6: Effect of the Instrument on Lagged Change in Outcomes (2000-2006)



Notes: This figure plots the estimates and the 95 percent confidence intervals of the change in the instrument regressed on the lagged changes in outcomes between 2000 and 2006 (equation 6). Each row presents output from a separate regression. The instrument is normalized to have a mean of zero and standard deviation of one. Controls include the average age, the proportion of males, the proportion of individuals with less than a high school degree, the proportion with a high school degree, the proportion with some college education, as well as changes in the Bartik demand shock and changes in immigration enforcement. Each regression is weighted by the commuting zone's 2006 Mexican population. The sample is restricted to working-age Mexican-born non-institutionalized individuals, without a restriction based on their year of migration. The data are aggregated at the commuting zone level, focusing on those with a population of Mexicans above the 50th percentile and those that are balanced to match the main analysis, yielding 367 commuting zones.

Table 1: Summary Statistics, ACS 2006-2012

	(1) Full Mexican Population	(2) 2000-2006 Cohort	(3) Analysis Sample
Age	39.064	31.559	31.565
	(11.700)	(9.532)	(9.536)
Male	0.539	0.559	0.558
	(0.498)	(0.496)	(0.497)
Less than a high school degree	0.547	0.577	0.577
	(0.498)	(0.494)	(0.494)
High school degree or the equivalent	0.262	0.284	0.284
	(0.440)	(0.451)	(0.451)
Some college education	0.134	0.091	0.091
	(0.340)	(0.288)	(0.288)
College degree or more	0.057	0.048	0.048
	(0.233)	(0.214)	(0.214)
In School	0.053	0.050	0.051
	(0.224)	(0.219)	(0.219)
Spanish Primary Language	0.959	0.971	0.972
	(0.199)	(0.167)	(0.166)
Poor English	0.488	0.686	0.688
	(0.500)	(0.464)	(0.463)
Years since migration	18.900	6.451	6.453
	(11.544)	(2.861)	(2.860)
Naturalized	0.247	0.052	0.052
	(0.431)	(0.223)	(0.222)
Married	0.614	0.523	0.522
	(0.487)	(0.499)	(0.500)
Married to US citizen	0.238	0.108	0.107
	(0.426)	(0.311)	(0.310)
Married to US-born	0.101	0.058	0.057
	(0.302)	(0.234)	(0.232)
Married to Mexican	0.470	0.415	0.416
	(0.499)	(0.493)	(0.493)
Married to Naturalized Mexican	0.126	0.046	0.046
	(0.332)	(0.210)	(0.210)
Married to Non-Mexican Fborn	0.022	0.013	0.013
	(0.148)	(0.114)	(0.114)
Had a child last year	0.069	0.129	0.129
	(0.254)	(0.335)	(0.335)
Employed	0.697	0.679	0.678
	(0.459)	(0.467)	(0.467)
In labor force	0.749	0.741	0.740
	(0.434)	(0.438)	(0.438)
Hourly wage	10.646	8.029	8.025
	(52.120)	(21.043)	(21.177)
Homicide Shock	26.453	21.894	21.932
	(11.784)	(12.088)	(12.083)
Share from Municipio with DTO	0.460	0.444	0.444
	(0.092)	(0.093)	(0.091)
Observations	1494104	153030	141270

Standard errors in parentheses.

Notes: This table presents the summary statistics using data from the 2006-2012 ACS surveys. Column (1) provides the summary statistics for the full sample of working-age non-institutionalized Mexicans. Column (2) further restricts the sample to those that migrated between 2000 and 2006. Finally, column (3) presents the summary statistics of the main sample used in the analysis, obtained after further restricting the sample to commuting zones with a population of Mexicans above the 50th percentile and those balanced (available in every year between 2006 and 2012).

Table 2: First Stage Effect of the Instrument on the Homicide Shock

	(1)	(2)	(3)	(4)	(5)	(6)
IV_{jt}	0.578***	0.428***	0.425***	0.618***	1.017***	1.016***
	(0.088)	(0.097)	(0.070)	(0.178)	(0.288)	(0.288)
Observations	141270	141270	141270	141270	141270	141270
R-sq.	0.403	0.500	0.766	0.574	0.808	0.808
F-excl. instrument	43.462	19.632	37.076	12.069	12.452	12.467
Mean HS	21.932	21.932	21.932	21.932	21.932	21.932
S.D. HS	12.083	12.083	12.083	12.083	12.083	12.083
Mean IV	0.630	0.630	0.630	0.630	0.630	0.630
S.D. IV	0.219	0.219	0.219	0.219	0.219	0.219
Controls	N	Y	Y	Y	Y	Y
CZ FE	N	N	Y	N	Y	Y
Year FE	N	N	N	Y	Y	Y
YSM FE	N	N	N	N	N	Y

Standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: This table presents the first stage results using OLS estimation and individual-level data from the ACS. The dependent variable is the homicide shock (HS) of each commuting zone j in year t. The independent variable is the instrument specified in equation 5, IV_{jt}. Both the HS and the instrument are normalized to have mean zero and unit variance. Controls include age, sex, and indicators of educational attainment, as well as measures for immigration enforcement and Bartik-style measures of labor demand. The standard errors are clustered at the commuting zone level in all specifications. The sample is restricted to working-age non-institutionalized Mexicans who migrated between 2000 and 2006, within a balanced sample of commuting zones that have a Mexican population higher than the 50th percentile.

Table 3: Effect of Violence on Naturalization and Marriage

	OLS			2SLS		
	(1) Naturalized	(2) Married	(3) Married to US citizen	(4) Naturalized	(5) Married	(6) Married to US citizen
Homicide Shock	0.003**	0.010***	0.006*	0.017**	0.028**	0.025***
	(0.001)	(0.004)	(0.003)	(0.007)	(0.014)	(0.007)
Observations	141270	141270	132832	141270	141270	132832
Mean Y - Baseline	0.039	0.515	0.086	0.039	0.515	0.086
Mean Y - Overall	0.052	0.522	0.107	0.052	0.522	0.107
Mean HS	21.93	21.93	22.10	21.93	21.93	22.10
S.D. HS	12.08	12.08	12.18	12.08	12.08	12.18

Standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: This table presents the OLS and 2SLS estimates of the effect of the homicide shock on naturalization, marriage, and marriage to US citizens. All outcomes are dummy variables. Both the HS and the instrument are normalized to have mean zero and unit variance. In all specifications, controls include age, sex, educational attainment, measures for immigration enforcement, and Bartik-style measures of labor demand. Additionally, I include commuting zone, year, and years since migration fixed effects and cluster the standard errors at the commuting zone level. The sample is restricted to working-age non-institutionalized Mexicans who migrated between 2000 and 2006, and to a balanced sample of commuting zones that have a Mexican population higher than the 50th percentile. The baseline mean represents the outcomes' means in 2006.

Table 4: Effect of Violence on Marriage to Citizens by Spouse Nationality

	OLS			2SLS		
	(1) Married to US-born	(2) Married to Naturalized Non-Mexican F.born	(3) Married to Naturalized Mexican	(4) Married to US-born	(5) Married to Naturalized Non-Mexican F.born	(6) Married to Naturalized Mexican
Homicide Shock	0.002	-0.000	0.005***	0.011*	-0.001	0.015***
	(0.002)	(0.000)	(0.001)	(0.006)	(0.001)	(0.004)
Observations	132832	132832	132832	132832	132832	132832
Mean Y - Baseline	0.046	0.002	0.037	0.046	0.002	0.037
Mean Y - Overall	0.057	0.004	0.046	0.057	0.004	0.046
Mean HS	22.10	22.10	22.10	22.10	22.10	22.10
S.D. HS	12.18	12.18	12.18	12.18	12.18	12.18

Standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: This table presents the OLS and 2SLS estimates of the effect of the homicide shock on marriage to US citizens by the spouse's nationality. The outcomes are mutually exclusive dummy variables, indicating marriage to a US-born native (columns 1 and 4), marriage to a naturalized non-Mexican foreign-born (columns 2 and 5), and marriage to a naturalized Mexican migrant (columns 3 and 6). Both the HS and the instrument are normalized to have mean zero and unit variance. In all specifications, controls include age, sex, educational attainment, measures for immigration enforcement, and Bartik-style measures of labor demand. Additionally, I include commuting zone, year, and years since migration fixed effects and cluster the standard errors at the commuting zone level. The sample is restricted to working-age non-institutionalized Mexicans who migrated between 2000 and 2006, and to a balanced sample of commuting zones that have a Mexican population higher than the 50th percentile. The baseline mean represents the outcomes' means in 2006.

Table 5: Effect of Violence on Human Capital Accumulation

	OLS				2SLS			
	(1) Years of Education	(2) In School	(3) Poor English	(4) Spanish Dominant	(5) Years of Education	(6) In School	(7) Poor English	(8) Spanish Dominant
Homicide Shock	-0.004	-0.003*	0.005	-0.002	0.095	-0.002	-0.009	-0.000
	(0.033)	(0.001)	(0.005)	(0.001)	(0.103)	(0.006)	(0.012)	(0.004)
Observations	141270	141270	141270	141270	141270	141270	141270	141270
Mean Y - Baseline	9.288	0.050	0.769	0.971	9.288	0.050	0.769	0.971
Mean Y - Overall	9.491	0.051	0.688	0.972	9.491	0.051	0.688	0.972
Mean HS	21.932	21.932	21.932	21.932	21.932	21.932	21.932	21.932
S.D. HS	12.083	12.083	12.083	12.083	12.083	12.083	12.083	12.083

Standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: This table presents the OLS and 2SLS estimates of the effect of the homicide shock on education outcomes. Except for years of education, all outcomes are dummy variables. Both the HS and the instrument are normalized to have mean zero and unit variance. In all specifications, controls include age, sex, measures for immigration enforcement, and Bartik-style measures of labor demand. Additionally, I include commuting zone, year, and years since migration fixed effects and cluster the standard errors at the commuting zone level. The sample is restricted to working-age non-institutionalized Mexicans who migrated between 2000 and 2006, and to a balanced sample of commuting zones that have a Mexican population higher than the 50th percentile. The baseline mean represents the outcomes' means in 2006.

Table 6: Effect of Violence on Labor Supply

	OLS				2SLS			
	(1) In Labor Force	(2) Working	(3) Hours Worked	(4) Hourly Wage	(5) In Labor Force	(6) Working	(7) Hours Worked	(8) Hourly Wage
Homicide Shock	0.007***	0.005**	0.406***	0.221*	0.009	0.001	0.249	0.901*
	(0.002)	(0.002)	(0.111)	(0.113)	(0.010)	(0.011)	(0.450)	(0.528)
Observations	141270	141270	141270	141270	141270	141270	141270	141270
Mean Y - Baseline	0.739	0.691	30.291	7.818	0.739	0.691	30.291	7.818
Mean Y - Overall	0.7405	0.6785	28.7720	8.0249	0.7405	0.6785	28.7720	8.0249
Mean HS	21.932	21.932	21.932	21.932	21.932	21.932	21.932	21.932
S.D. HS	12.083	12.083	12.083	12.083	12.083	12.083	12.083	12.083

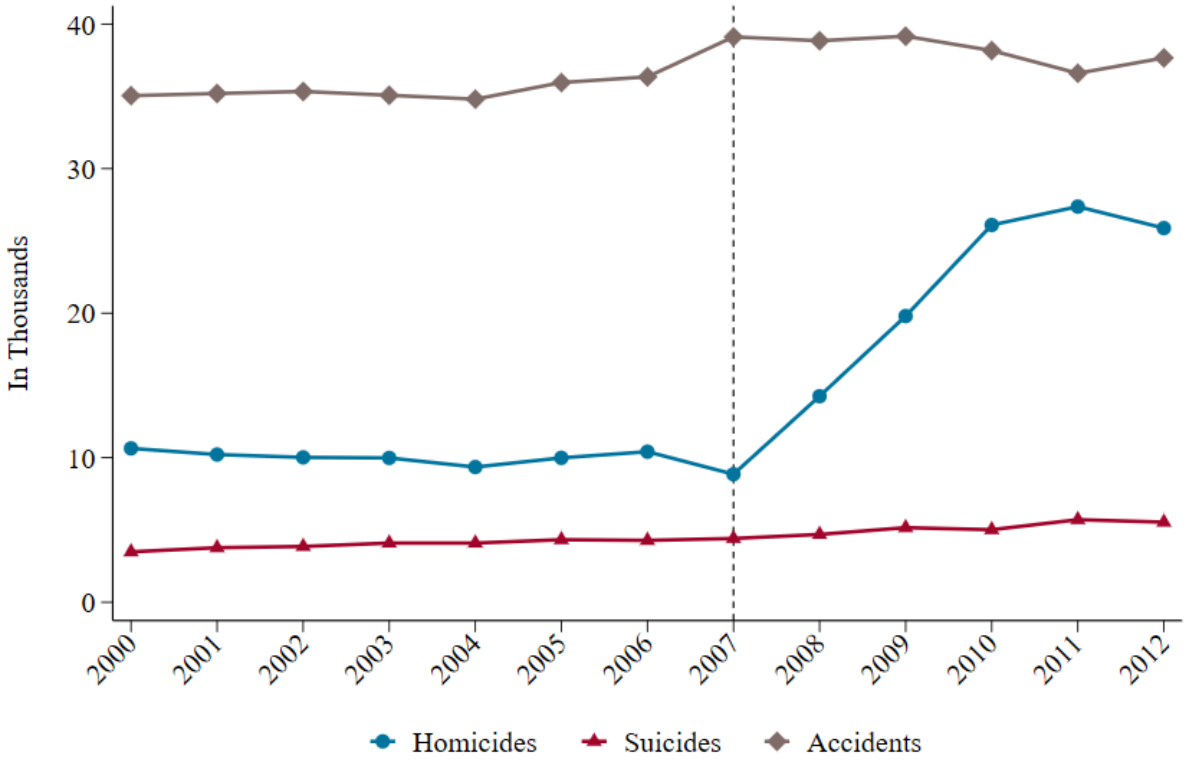
Standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: This table presents the OLS and 2SLS estimates of the effect of the homicide shock on labor market outcomes. Except for hours worked and hourly wage, outcomes are dummy variables. Hours worked and hourly wages include zeros. Both the HS and the instrument are normalized to have mean zero and unit variance. In all specifications, controls include age, sex, educational attainment, measures for immigration enforcement, and Bartik-style measures of labor demand. Additionally, I include commuting zone, year, and years since migration fixed effects and cluster the standard errors at the commuting zone level. The sample is restricted to working-age non-institutionalized Mexicans who migrated between 2000 and 2006, and to a balanced sample of commuting zones that have a Mexican population higher than the 50th percentile. The baseline mean represents the outcomes' means in 2006.

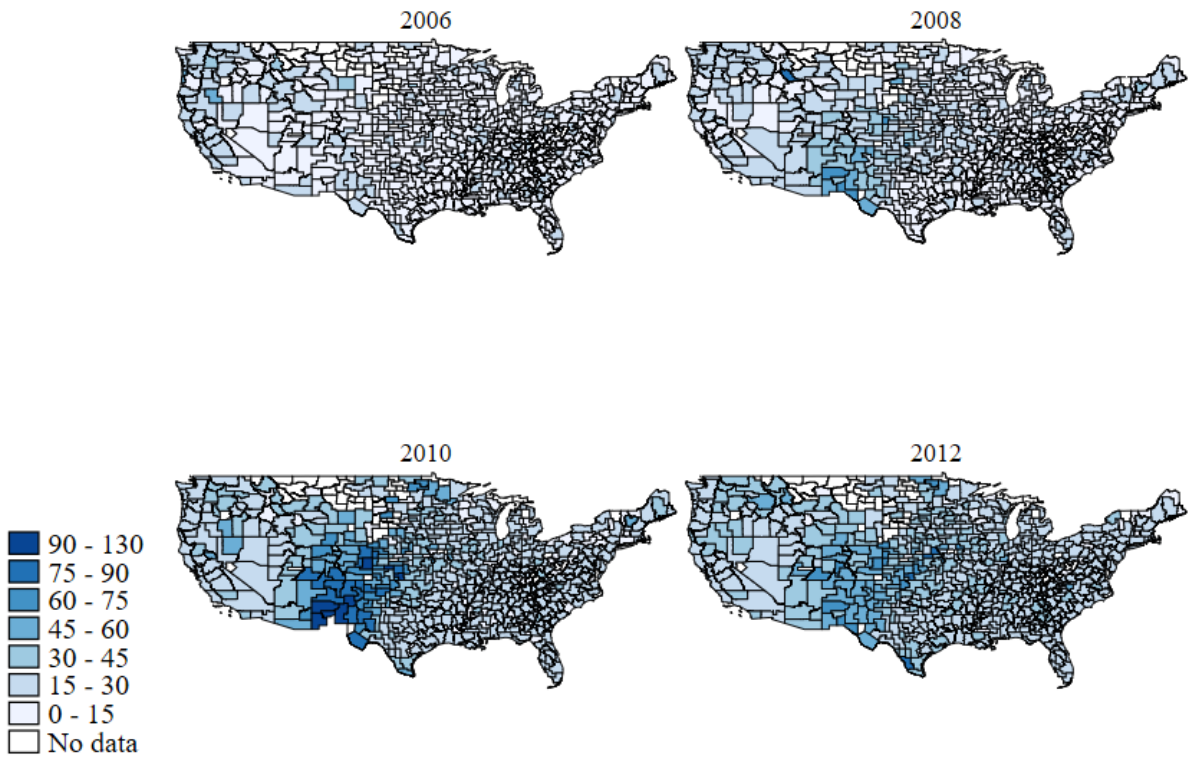
A Supplementary Figures and Tables

Figure A1: Annual Violent Deaths in Mexico by Cause of Death



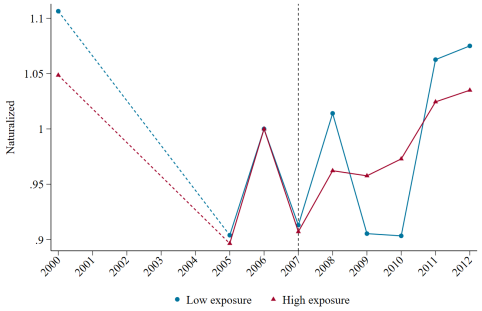
Notes: This figure displays the total number of deaths due to homicides (blue line), suicides (red line) and violent accidents (brown line) in Mexico by year. The dashed vertical line marks the start of the war on drugs by Calderón's administration in 2007. Data Source: INEGI, 2000-2012.

Figure A2: Annual Homicide Shock in US Commuting Zones

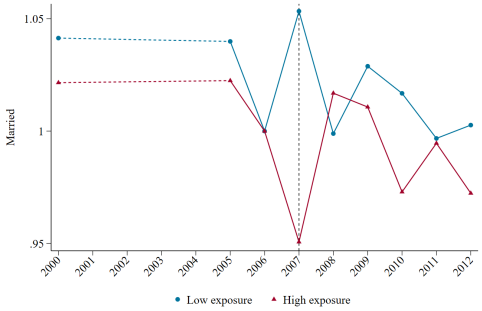


Notes: This figure displays maps of the distribution of the annual homicide shock across US commuting zones by year. The homicide shock is interpreted as the homicide rate per 100,000 persons in an "average" Mexican source municipio.

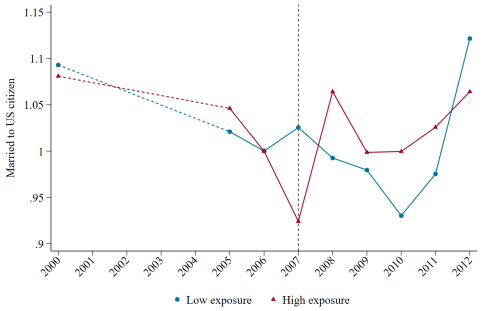
Figure A3: Outcome Means in High vs. Low Exposure Areas, 2000-2012



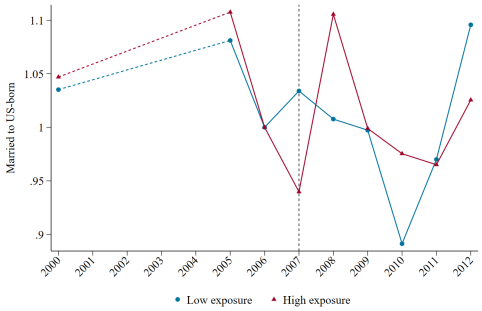
(a) Naturalized



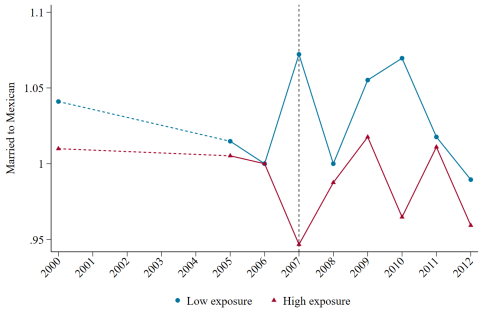
(b) Married



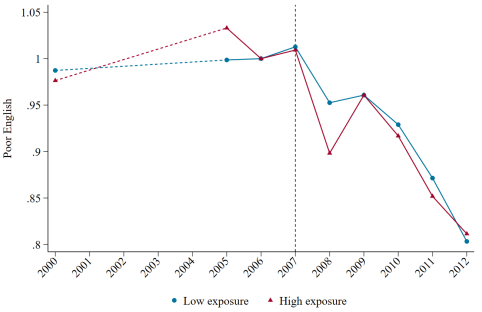
(c) Married to US- citizen



(d) Married to US-born

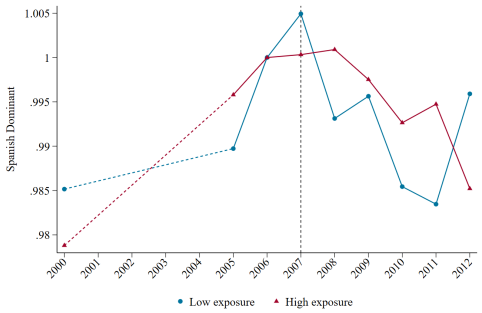


(e) Married to Mexican

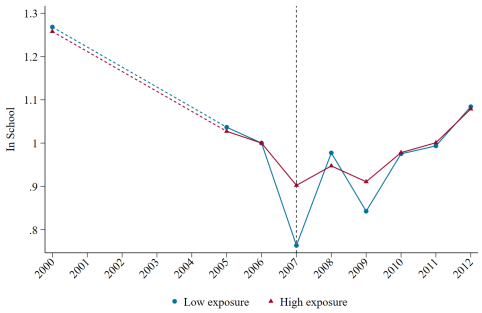


(f) Poor English

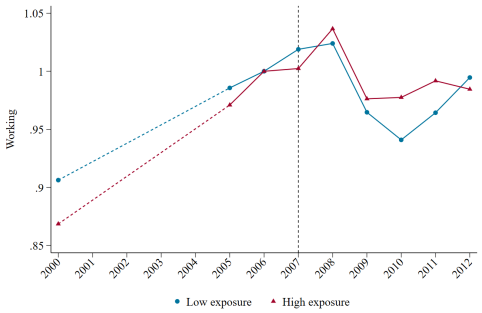
Figure A3: Outcome Means in High vs. Low Exposure Areas, 2000-2012



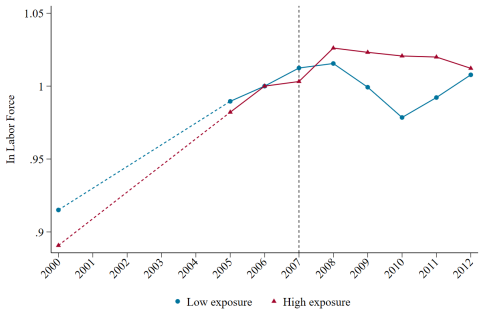
(g) Spanish dominant language



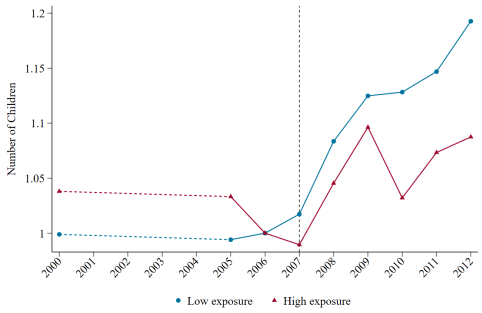
(h) In school



(i) Working



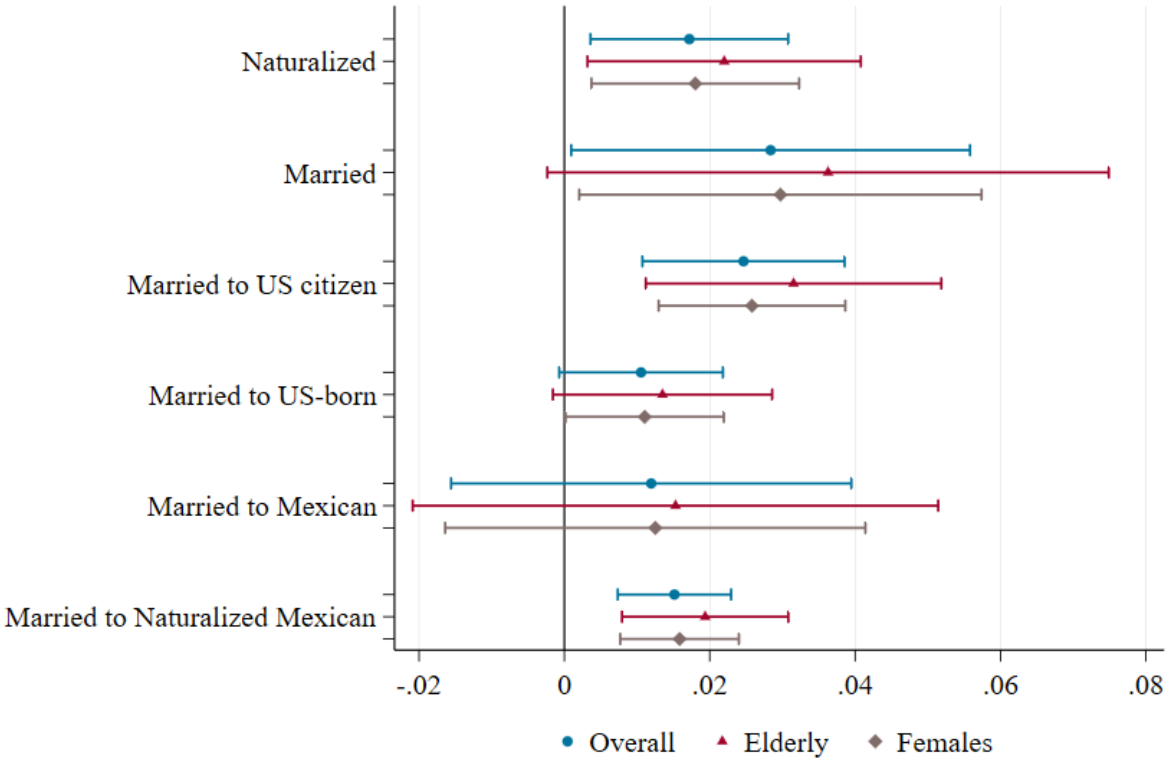
(j) In labor force



(k) Number of children

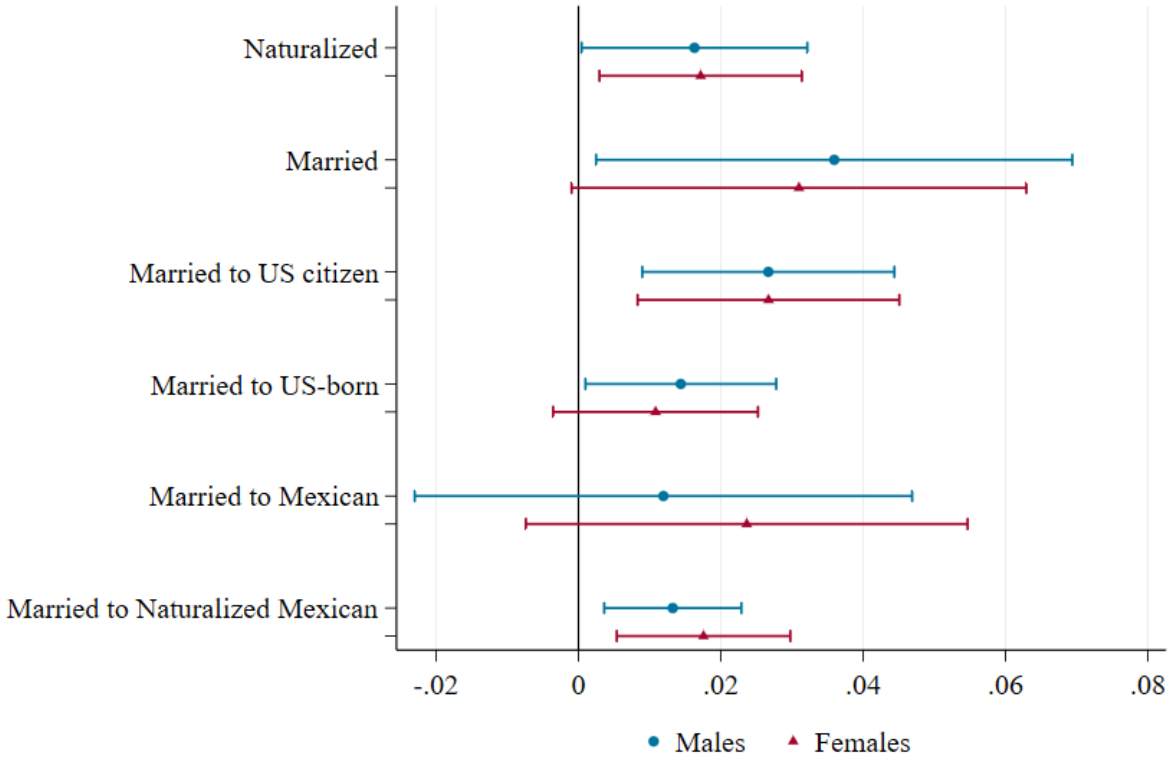
Notes: These figures plot the average outcomes in commuting zones with low exposure (in blue) versus high exposure (in red) to the homicide shock. High exposure areas are defined as commuting zones that have a share of migrants from municipios with DTO presence above the 50th percentile. Low exposure areas are commuting zones that have a share of migrants from municipios with DTOs less than the 50th percentile. All values are standardized to one in 2006, which is the last year of the pre-period. ACS data for years 2001-2004 are not available, so the time trend during this period is dotted. The sample is restricted to working-age non-institutionalized Mexican-born individuals present and to commuting zones that have a Mexican population above the 50th percentile and that are balanced. The dashed vertical line marks the start of the war on drugs by Calderón's administration in 2007.

Figure A4: Heterogeneity Analysis by Distinct Homicide Shocks



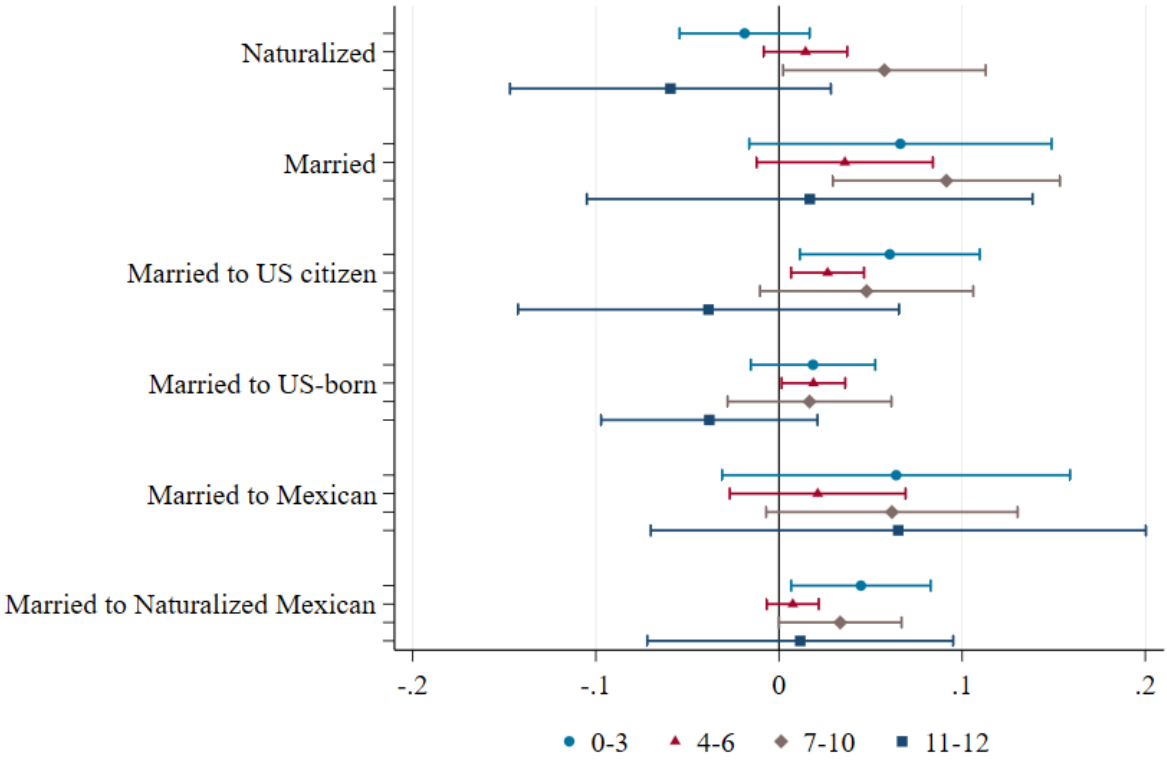
Notes: This figure plots the 2SLS estimates and the 95 percent confidence intervals of the effect of three distinct homicide shocks on the main outcomes. The first is an aggregate or overall homicide shock, which is used in the main analysis and derived from the overall homicide rate. The second only uses homicides among the elderly population, while the third incorporates female homicides exclusively. Both the HS and the instrument are normalized to have mean zero and unit variance. In all specifications, controls include age, sex, educational attainment, measures for immigration enforcement, and Bartik-style measures of labor demand. Additionally, I include commuting zone, year, and years since migration fixed effects and cluster the standard errors at the commuting zone level. The sample is restricted to working-age non-institutionalized Mexicans who migrated between 2000 and 2006, and to a balanced sample of commuting zones that have a Mexican population higher than the 50th percentile.

Figure A5: Heterogeneity Analysis by Sex



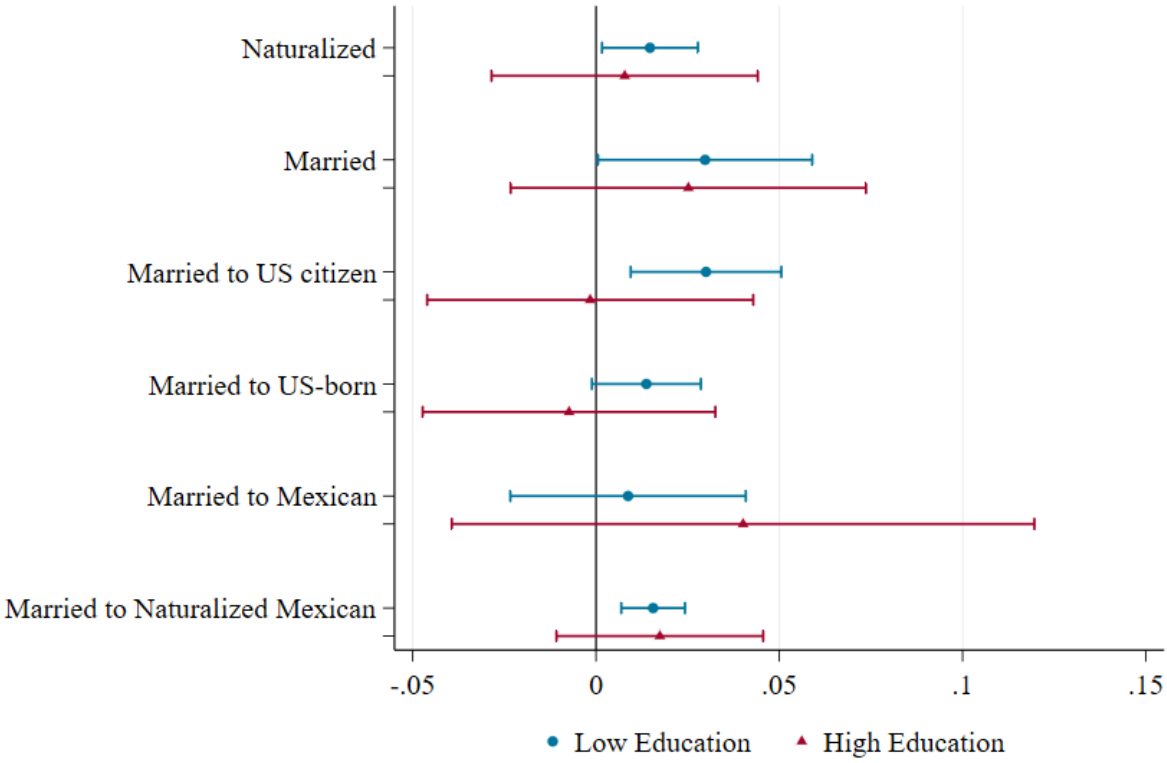
Notes: This figure plots the 2SLS estimates and the 95 percent confidence intervals of the differential effect of the homicide shock on the main outcomes by sex. Both the HS and the instrument are normalized to have mean zero and unit variance. In all specifications, controls include age, sex, educational attainment, measures for immigration enforcement, and Bartik-style measures of labor demand. Additionally, I include commuting zone, year, and years since migration fixed effects and cluster the standard errors at the commuting zone level. The sample is restricted to working-age non-institutionalized Mexicans who migrated between 2000 and 2006, and to a balanced sample of commuting zones that have a Mexican population higher than the 50th percentile.

Figure A6: Heterogeneity Analysis by Years Since Migration



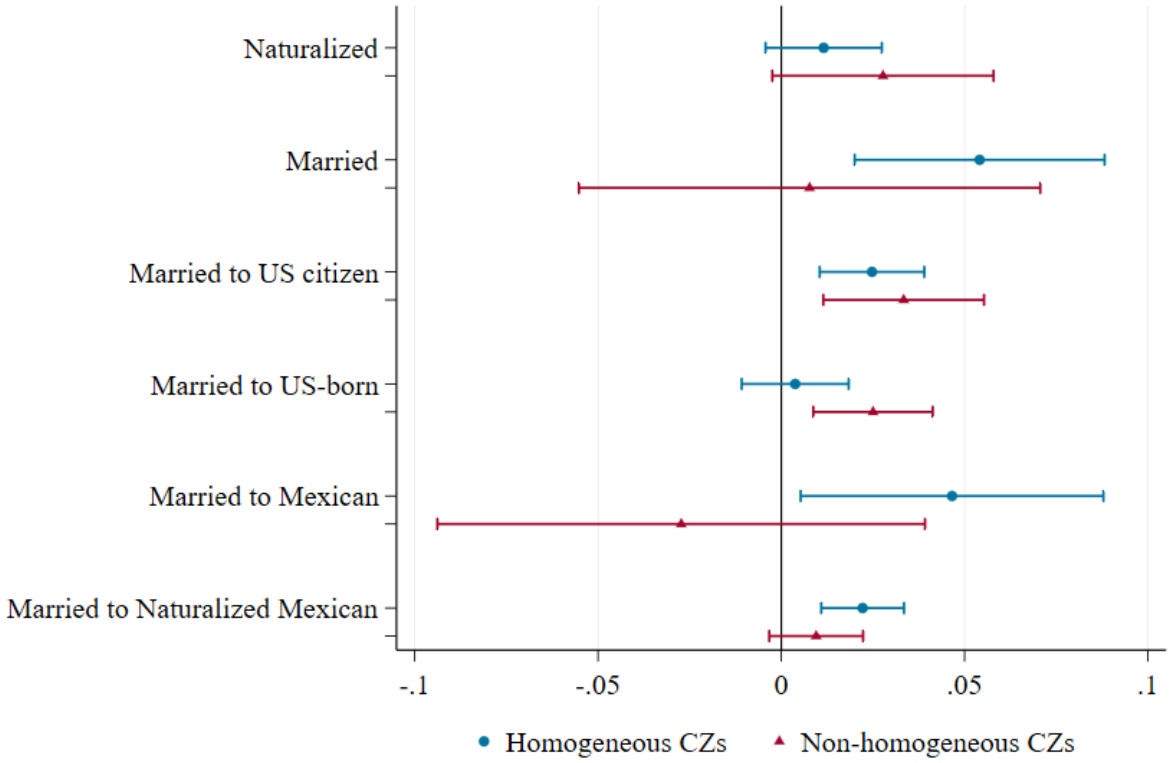
Notes: This figure plots the 2SLS estimates and the 95 percent confidence intervals of the differential effect of the homicide shock on the main outcomes by years since migration. Both the HS and the instrument are normalized to have mean zero and unit variance. In all specifications, controls include age, sex, educational attainment, measures for immigration enforcement, and Bartik-style measures of labor demand. Additionally, I include commuting zone, year, and years since migration fixed effects and cluster the standard errors at the commuting zone level. The sample is restricted to working-age non-institutionalized Mexicans who migrated between 2000 and 2006, and to a balanced sample of commuting zones that have a Mexican population higher than the 50th percentile.

Figure A7: Heterogeneity Analysis by Educational Attainment



Notes: This figure plots the 2SLS estimates and the 95 percent confidence intervals of the differential effect of the homicide shock on the main outcomes by educational attainment. Low education refers to people with a high school degree or less, while high education refers to those with some college education or a college degree. Both the HS and the instrument are normalized to have mean zero and unit variance. In all specifications, controls include age, sex, educational attainment, measures for immigration enforcement, and Bartik-style measures of labor demand. Additionally, I include commuting zone, year, and years since migration fixed effects and cluster the standard errors at the commuting zone level. The sample is restricted to working-age non-institutionalized Mexicans who migrated between 2000 and 2006, and to a balanced sample of commuting zones that have a Mexican population higher than the 50th percentile.

Figure A8: Heterogeneity Analysis by Commuting Zones' Network Concentration



Notes: This figure plots the 2SLS estimates and the 95 percent confidence intervals of the differential effect of the homicide shock on the main outcomes by the network homogeneity within each commuting zone. Commuting zones are considered homogeneous when the number of sending municipios of migrants fall below the 90th percentile. Both the HS and the instrument are normalized to have mean zero and unit variance. In all specifications, controls include age, sex, educational attainment, measures for immigration enforcement, and Bartik-style measures of labor demand. Additionally, I include commuting zone, year, and years since migration fixed effects and cluster the standard errors at the commuting zone level. The sample is restricted to working-age non-institutionalized Mexicans who migrated between 2000 and 2006, and to a balanced sample of commuting zones that have a Mexican population higher than the 50th percentile.

Table A1: Observable Characteristics of Victims of Homicides in Mexico (2006-2012)

	(1) Number of Homicides	(2) Share Female	(3) Share Married	(4) Share Age < 15	(5) Share $15 \leq$ Age ≤ 44	(6) Share $45 \leq$ Age ≤ 64	(7) Share Age ≥ 65
2007	8,848	12.36	2.38	5.13	69.90	19.38	5.58
2008	14,230	10.24	1.76	4.27	73.79	17.35	4.58
2009	19,753	10.02	1.55	22.98	60.38	13.49	3.15
2010	25,968	9.60	1.36	4.73	77.20	14.76	3.32
2011	27,090	10.89	1.47	8.28	73.63	14.70	3.39
2012	24,671	11.41	1.71	7.69	73.50	15.11	3.71
Total (2007-2012)	120,560	10.61	1.61	9.10	71.95	15.25	3.70

Notes: Column (1) present the total number of homicides that occurred in Mexico by year. Columns (2) to (6) show the summary statistics describing the victims of the homicides in percent.

Table A2: Correlation between Homicides and Other Crimes in Mexican Municipios

	(1) Theft	(2) Extortion	(3) Property/ Land Dispossession	(4) Kidnappings	(5) Rapes
Correlation	0.695	0.612	0.611	0.534	0.709
Observations	17,087	17,087	17,087	17,087	17,087

Notes: Each column shows the correlation between homicides and the specified crime occurring in a Mexican municipio between 2011 and 2017. The data on crimes other than homicide are only available for years 2011-2017. Data Source: Executive Secretariat of the National Public Security System of the Government of Mexico, 2011-2017.

Table A3: Effect of DTO Presence and Cocaine Shocks on Violence in Mexico

	(1)	(2)	(3)	(4)
$DTO_{m,2004-2006} * Col_t^{Cocaine}$	0.121***	0.260***	0.114***	0.175***
	(0.017)	(0.030)	(0.017)	(0.031)
Observations	17087	17087	17087	17087
R-sq	0.0148	0.3394	0.0266	0.3498
F-excl. instrument	48.983	77.256	43.059	32.409
Mean HR	18.102	18.102	18.102	18.102
S.D. HR	51.615	51.615	51.615	51.615
Mean IV	0.210	0.210	0.210	0.210
S.D. IV	0.526	0.526	0.526	0.526
Municipio FE	N	Y	N	Y
Year FE	N	N	Y	Y

Standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: This table presents the first stage results using OLS estimation. The dependent variable is the homicide rate (HR) per 100,000 persons for a municipio m in year t. The independent variable (IV) is an indicator for DTO presence in municipio m between 2004 and 2006 interacted with the cocaine supply shock (equation 4). Both the dependent and the independent variable are normalized to have mean zero and unit variance. The standard errors are clustered at the municipio-level in all specifications.

Table A4: Pre-War On Drugs Migrant Characteristics in High vs. Low Exposure Areas (2006)

	(1) High Exposure Areas	(2) Low Exposure Areas	(3) Difference
Age	31.393	29.958	1.435***
	(4.339)	(4.052)	(0.452)
Male	0.546	0.586	-0.040**
	(0.154)	(0.165)	(0.017)
Years since Migration	3.616	3.616	0.000***
	(0.742)	(0.795)	(0.083)
Less than a high school degree	0.613	0.575	0.038*
	(0.181)	(0.195)	(0.020)
High school degree or the equivalent	0.258	0.300	-0.042**
	(0.133)	(0.172)	(0.017)
Some college education	0.071	0.079	-0.008
	(0.100)	(0.129)	(0.012)
College degree or more	0.058	0.046	0.012
	(0.090)	(0.095)	(0.010)
Years of Education	8.949	9.120	-0.171
	(1.617)	(1.652)	(0.176)
Share Mexican	0.042	0.015	0.027***
	(0.045)	(0.017)	(0.004)
Share from Mun with DTO	0.500	0.329	0.171***
	(0.093)	(0.060)	(0.008)
Observations	172	173	

Standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: This table presents the demographics characteristics of high exposure areas (column 1) and low exposure areas (column 2) in 2006. High exposure areas are defined as commuting zones that have a share of migrants from municipios with DTO presence above the 50th percentile. Low exposure areas are commuting zones that have a share of migrants from municipios with DTOs less than the 50th percentile. Finally, Column (3) calculates the difference between statistics reported in columns (1) and (2) and reports the standard error of that difference, clustered at the commuting-zone level. The sample is restricted to commuting zones that have a Mexican population above the 50th percentile and are balanced (available in every year between 2006 and 2012) to match the main analysis.

Table A5: Pre-War On Drugs Migrant Characteristics in High vs. Low Exposure Areas (2006)

	(1) High Exposure Areas	(2) Low Exposure Areas	(3) Difference
Naturalized	0.057	0.049	0.009***
	(0.074)	(0.077)	(0.008)
Married	0.608	0.548	0.060***
	(0.167)	(0.202)	(0.020)
Married to US-born	0.079	0.078	0.001**
	(0.110)	(0.130)	(0.013)
Married to US citizen	0.156	0.142	0.014***
	(0.137)	(0.187)	(0.018)
Married to Mexican	0.479	0.411	0.068***
	(0.172)	(0.192)	(0.020)
Working	0.643	0.678	-0.035**
	(0.143)	(0.165)	(0.017)
In Labor Force	0.701	0.721	-0.021***
	(0.129)	(0.160)	(0.016)
Hours Worked	29.588	30.858	-1.270*
	(6.318)	(6.769)	(0.705)
Hourly Wage	7.595	7.846	-0.251
	(7.747)	(6.600)	(0.775)
In School	0.044	0.044	-0.000*
	(0.048)	(0.057)	(0.006)
Spanish Primary Language	0.944	0.952	-0.007
	(0.098)	(0.089)	(0.010)
Nonfluent in English	0.716	0.730	-0.014**
	(0.169)	(0.154)	(0.017)
Observations	172	173	

Standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: This table presents the average outcomes of high exposure areas (column 1) and low exposure areas (column 2) in 2006. High exposure areas are defined as commuting zones that have a share of migrants from municipios with DTO presence above the 50th percentile. Low exposure areas are commuting zones that have a share of migrants from municipios with DTOs less than the 50th percentile. Finally, Column (3) calculates the difference between statistics reported in columns (1) and (2) and reports the standard error of that difference, clustered at the commuting-zone level. The sample is restricted to commuting zones that have a Mexican population above the 50th percentile and are balanced (available in every year between 2006 and 2012) to match the main analysis.

Table A6: Effect of Violence on Marriage by Spouse Presence

	OLS		2SLS	
	(1) Spouse Present	(2) Spouse Absent	(3) Spouse Present	(4) Spouse Absent
Homicide Shock	0.006	0.005*	0.015	0.013**
	(0.004)	(0.002)	(0.013)	(0.007)
Observations	141270	141270	141270	141270
Mean Y - Baseline	0.414	0.102	0.414	0.102
Mean Y - Overall	0.452	0.070	0.452	0.070
Mean HS	21.93	21.93	21.93	21.93
S.D. HS	12.08	12.08	12.08	12.08

Standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: This table presents the OLS and 2SLS estimates of the effect of the homicide shock on marriage by spouse presence. In columns (1) and (3), the outcome is a dummy variable that takes 1 if the individual is married and their spouse is present in the household. In columns (2) and (4), the outcome is a dummy variable that takes 1 if the individual is married and their spouse is absent. Both the HS and the instrument are normalized to have mean zero and unit variance. In all specifications, controls include age, sex, educational attainment, measures for immigration enforcement, and Bartik-style measures of labor demand. Additionally, I include commuting zone, year, and years since migration fixed effects and cluster the standard errors at the commuting zone level. The sample is restricted to working-age non-institutionalized Mexicans who migrated between 2000 and 2006, and to a balanced sample of commuting zones that have a Mexican population higher than the 50th percentile. The baseline mean represents the outcomes' means in 2006.

Table A7: Effect of Violence on Marriage by Spouse Nationality

	OLS			2SLS		
	(1) Married to US-born	(2) Married to non-Mexican F.born	(3) Married to Mexican	(4) Married to US-born	(5) Married to non-Mexican F.born	(6) Married to Mexican
Homicide Shock	0.002	-0.001	0.007*	0.011*	-0.003	0.012
	(0.002)	(0.001)	(0.004)	(0.006)	(0.002)	(0.014)
Observations	132832	132832	132832	132832	132832	132832
Mean Y - Baseline	0.046	0.009	0.405	0.046	0.009	0.405
Mean Y - Overall	0.057	0.013	0.416	0.057	0.013	0.416
Mean HS	22.10	22.10	22.10	22.10	22.10	22.10
S.D. HS	12.18	12.18	12.18	12.18	12.18	12.18

Standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: This table presents the OLS and 2SLS estimates of the effect of the homicide shock on marriage by spouse nationality. The outcomes are mutually exclusive dummy variables, indicating marriage to a US-born native (columns 1 and 4), marriage to a non-Mexican foreign-born migrant (column 2 and 5), and marriage to a Mexican-born migrant (columns 3 and 6). Both the HS and the instrument are normalized to have mean zero and unit variance. In all specifications, controls include age, sex, educational attainment, measures for immigration enforcement, and Bartik-style measures of labor demand. Additionally, I include commuting zone, year, and years since migration fixed effects and cluster the standard errors at the commuting zone level. The sample is restricted to working-age non-institutionalized Mexicans who migrated between 2000 and 2006, and to a balanced sample of commuting zones that have a Mexican population higher than the 50th percentile. The baseline mean represents the outcomes' means in 2006.

Table A8: Population Estimates of the 2000-2006 Migration Cohort

	ACS Survey Year						
	2006	2007	2008	2009	2010	2011	2012
2000-2006 Cohort Units	19,063	20,110	19,100	19,906	20,952	20,280	21,859
2000-2006 Cohort Population	2,415,697	2,552,350	2,454,908	2,390,712	2,513,292	2,455,322	2,423,205

Notes: This table presents estimates of the population used in the main sample of analysis, consisting of working-age non-institutionalized Mexicans who migrated between 2000 and 2006. The sample is further restricted to a balanced set of commuting zones with a Mexican population higher than the 50th percentile. The first row shows the number of units in every ACS survey year, and the second row shows the population obtained through weighting the units by their personal survey weights.

Table A9: Effect of Violence on Sample Composition

	(1) Age	(2) Male	(3) Less than HS degree	(4) HS degree	(5) Some college	(6) College degree	(7) Yrs since Migration
Homicide Shock	-0.080	0.035***	-0.008	0.000	0.009	-0.002	0.043
	(0.198)	(0.012)	(0.013)	(0.012)	(0.006)	(0.004)	(0.050)
Observations	141270	141270	141270	141270	141270	141270	141270
Mean Y - Baseline	30.088	0.597	0.582	0.291	0.076	0.050	3.556
Mean Y - Overall	31.565	0.558	0.577	0.284	0.091	0.048	6.453
Mean HS	21.932	21.932	21.932	21.932	21.932	21.932	21.932
S.D. HS	12.083	12.083	12.083	12.083	12.083	12.083	12.083
CZ FE	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y

Standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: This table presents the 2SLS estimates of the effect of the homicide shock on migrants' observable characteristics. Both the HS and the instrument are normalized to have mean zero and unit variance. In all specifications, I control for measures of immigration enforcement and Bartik-style measures of labor demand. Additionally, I include commuting zone and year fixed effects, and cluster the standard errors at the commuting zone level. The sample is restricted to working-age non-institutionalized Mexicans who migrated between 2000 and 2006, and to a balanced sample of commuting zones that have a Mexican population higher than the 50th percentile. The baseline mean represents the outcomes' means in 2006.

Table A10: Alternative IV Estimators and Confidence Interval Computation

	(1) Naturalized	(2) Married	(3) Maried to US citizen	(4) Married to US-born	(5) Married to Mexican	(6) Married to Naturalized Mexican
2SLS estimates	0.017**	0.028**	0.0246***	0.0105*	0.0119	0.0151***
	(0.007)	(0.014)	(0.007)	(0.06)	(0.0139)	(0.004)
	[0.0037, 0.0307]	[0.0031, 0.0175]	[0.0108, 0.0385]	[-0.0007, 0.0217]	[-0.0154, 0.0393]	[0.0074, 0.0229]
Anderson-Rubin CI	[0.0059, 0.04]	[0.00054, 0.067]	[0.013, 0.048]	[-0.0005, 0.0271]	[-0.02, 0.046]	[0.008, 0.0276]
LIML estimates	0.0171**	0.0283**	0.0246***	0.0105*	0.0119	0.01513***
	(0.0069)	(0.0139)	(0.0070)	(0.0057)	(0.0139)	(0.004)

Standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: In the first row, I report the 2SLS estimates of effect of the homicide shock on the main outcomes, along with their standard errors (in parenthesis) and confidence intervals (in brackets), computed using standard asymptotic theory. In the second row, I report the Anderson-Rubin confidence intervals. In the third row, I report the LIML estimates along with their standard errors. Both the HS and the instrument are normalized to have mean zero and unit variance. In all specifications, controls include age, sex, educational attainment, measures for immigration enforcement, and Bartik-style measures of labor demand. Additionally, I include commuting zone, year, and years since migration fixed effects and cluster the standard errors at the commuting zone level. The sample is restricted to working-age non-institutionalized Mexicans who migrated between 2000 and 2006, and to a balanced sample of commuting zones that have a Mexican population higher than the 50th percentile.

Table A11: Robustness Checks I - Spillovers, Network Construction, Falsification Test

	(1) Naturalized	(2) Married	(3) Married to US citizen	(4) Married to US-born	(5) Married to Mexican	(6) Married to Naturalized Mexican
Panel A: Excluding Bordering CZs						
Homicide Shock	0.021**	0.043*	0.040***	0.021***	0.017	0.020***
	(0.009)	(0.022)	(0.011)	(0.008)	(0.021)	(0.006)
Observations	130950	130950	122988	122988	122988	122988
Mean Y - Baseline	0.037	0.510	0.078	0.041	0.402	0.035
Mean Y - Overall	0.049	0.516	0.099	0.052	0.413	0.043
Mean HS	21.06	21.06	21.21	21.21	21.21	21.21
S.D. HS	9.31	9.31	9.33	9.33	9.33	9.33
Panel B: IV using 2006 & 2007 networks						
Homicide Shock	0.017**	0.031**	0.026***	0.012**	0.012	0.015***
	(0.007)	(0.014)	(0.007)	(0.006)	(0.014)	(0.004)
Observations	141270	141270	132832	132832	132832	132832
Mean Y - Baseline	0.039	0.515	0.086	0.046	0.405	0.037
Mean Y - Overall	0.052	0.522	0.107	0.057	0.416	0.046
Mean HS	21.93	21.93	22.10	22.10	22.10	22.10
S.D. HS	12.08	12.08	12.18	12.18	12.18	12.18
Panel C: Excluding Arizona						
Homicide Shock	0.016**	0.034**	0.026***	0.010*	0.020	0.017***
	(0.007)	(0.015)	(0.008)	(0.006)	(0.014)	(0.004)
Observations	135522	135522	127392	127392	127392	127392
Mean Y - Baseline	0.040	0.516	0.087	0.046	0.405	0.038
Mean Y - Overall	0.052	0.523	0.107	0.057	0.417	0.046
Mean HS	21.71	21.71	21.87	21.87	21.87	21.87
S.D. HS	12.07	12.07	12.17	12.17	12.17	12.17
Panel D: Falsification Test, Sample of Central Americans						
Homicide Shock	0.006	0.052	0.021	0.010	0.015**	0.003
	(0.013)	(0.033)	(0.013)	(0.009)	(0.006)	(0.004)
Observations	33742	33742	31284	31284	31284	31284
Mean Y - Baseline	0.039	0.382	0.069	0.036	0.016	0.003
Mean Y - Overall	0.059	0.400	0.086	0.038	0.027	0.004
Mean HS	19.71	19.71	19.82	19.82	19.82	19.82
S.D. HS	7.54	7.54	7.58	7.58	7.58	7.58

Standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: This table presents the 2SLS estimates of the effect of the homicide shock on the main outcomes. Both the HS and the instrument are normalized to have mean zero and unit variance. In all specifications, controls include age, sex, educational attainment, measures for immigration enforcement, and Bartik-style measures of labor demand. Additionally, I include commuting zone, year, and years since migration fixed effects and cluster the standard errors at the commuting zone level. The sample is restricted to working-age non-institutionalized Mexicans who migrated between 2000 and 2006, and to a balanced sample of commuting zones that have a Mexican population higher than the 50th percentile (except in Panel D). The baseline mean represents the outcomes' means in 2006. In Panel A, all commuting zones that are bordering Mexico (eleven) are dropped from the sample. In Panel B, the network weights of the instrument are constructed using the sum of the 2006 and 2007 Matrícula cards, rather than 2006 only. In Panel C, all commuting zones that are in the state of Arizona are excluded from the sample. Panel D shows the results of a falsification test, where the estimates pertain to the effect of the homicide shock on outcomes of working-age non-institutionalized Central Americans who migrated between 2000 and 2006.

Table A12: Robustness Checks II - Sample Sensitivity

	Naturalized	Married	Married to US citizen	Married to US-born	Married to Mexican	Married to Naturalized Mexican
Panel A: Balanced & 25th percentile population cutoff						
Homicide Shock	0.017**	0.028**	0.024***	0.010*	0.012	0.015***
	(0.007)	(0.014)	(0.007)	(0.006)	(0.014)	(0.004)
Observations	149443	149443	140463	140463	140463	140463
Mean Y - Baseline	0.039	0.516	0.087	0.047	0.405	0.037
Mean Y - Overall	0.052	0.522	0.108	0.058	0.415	0.046
Mean IV	21.91	21.91	22.07	22.07	22.07	22.07
S.D. IV	12.09	12.09	12.18	12.18	12.18	12.18
Panel B: Balanced & 75th percentile population cutoff						
Homicide Shock	0.0166**	0.0278**	0.0230***	0.00998*	0.0126	0.0141***
	(0.007)	(0.014)	(0.007)	(0.005)	(0.014)	(0.004)
Observations	125129	125129	117778	117778	117778	117778
Mean Y - Baseline	0.037	0.514	0.084	0.046	0.404	0.036
Mean Y - Overall	0.0511	0.521	0.107	0.0567	0.416	0.0461
Mean IV	22.04	22.04	22.21	22.21	22.21	22.21
S.D. IV	12.11	12.11	12.20	12.20	12.20	12.20
Panel C: Unbalanced & 25th percentile population cutoff						
Homicide Shock	0.0163**	0.0293**	0.0238***	0.0110*	0.0123	0.0140***
	(0.007)	(0.014)	(0.007)	(0.006)	(0.014)	(0.004)
Observations	151264	151264	142144	142144	142144	142144
Mean Y - Baseline	0.039	0.516	0.087	0.047	0.405	0.037
Mean Y - Overall	0.0522	0.522	0.108	0.0579	0.415	0.0463
Mean IV	21.89	21.89	22.06	22.06	22.06	22.06
S.D. IV	12.08	12.08	12.17	12.17	12.17	12.17
Panel D: Unbalanced & 50th percentile population cutoff						
Homicide Shock	0.0167**	0.0294**	0.0255***	0.0120**	0.0119	0.0147***
	(0.007)	(0.014)	(0.007)	(0.006)	(0.014)	(0.004)
Observations	141909	141909	133421	133421	133421	133421
Mean Y - Baseline	0.039	0.515	0.086	0.046	0.405	0.037
Mean Y - Overall	0.0519	0.522	0.108	0.0575	0.415	0.0462
Mean IV	21.92	21.92	22.09	22.09	22.09	22.09
S.D. IV	12.08	12.08	12.17	12.17	12.17	12.17
Panel E: Unbalanced & 75th percentile population cutoff						
Homicide Shock	0.017**	0.028**	0.023***	0.010*	0.013	0.014***
	(0.007)	(0.014)	(0.007)	(0.005)	(0.014)	(0.004)
Observations	125129	125129	117778	117778	117778	117778
Mean Y - Baseline	0.037	0.514	0.084	0.046	0.404	0.036
Mean Y - Overall	0.051	0.521	0.107	0.057	0.416	0.046
Mean IV	22.04	22.04	22.21	22.21	22.21	22.21
S.D. IV	12.11	12.11	12.20	12.20	12.20	12.20

Standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: This table presents the 2SLS estimates of the effect of the homicide shock on the main outcomes for different sample selections. In all specifications, controls include age, sex, educational attainment, measures for immigration enforcement, and Bartik-style measures of labor demand. Additionally, I include commuting zone, year, and years since migration fixed effects and cluster the standard errors at the commuting zone level. The baseline mean represents the outcomes' means in 2006. In all panels, the sample is restricted to working-age non-institutionalized Mexicans who migrated between 2000 and 2006. Panels A and B include commuting zones that are balanced, while Panels C, D, and E include unbalanced commuting zones. In Panels A and C, further restrictions are applied, including only those commuting zones with a Mexican population above the 25th percentile. Panels B and E include commuting zones with a Mexican population above the 75th percentile, and Panel D includes commuting zones with a population above the 50th percentile.

Table A13: Effect of Violence on Family Reunification

	(1) Total	(2) Any Member Joined	(3) Spouse Joined	(4) Relatives Joined	(5) Non-Relatives
Homicide Shock	-0.085***	-0.059***	-0.004	-0.035***	-0.029***
	(0.031)	(0.021)	(0.004)	(0.012)	(0.011)
Observations	45113	45113	45113	45113	45113
Mean Y - Baseline	0.000	0.000	0.000	0.000	0.000
Mean Y - Overall	0.133	0.094	0.015	0.059	0.029
Mean HS	23.22	23.22	23.22	23.22	23.22
S.D. HS	13.67	13.67	13.67	13.67	13.67

Standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: This table presents the 2SLS estimates of the effect of the homicide shock on family reunification. The outcome of column (1) is the total number of Mexicans joining households after 2006. Outcomes of columns (2)-(5) are indicator variables for whether any member, a spouse, or relatives joined households after 2006, respectively. Both the HS and the instrument are normalized to have mean zero and unit variance. In all specifications, controls include age, sex, educational attainment, measures for immigration enforcement, and Bartik-style measures of labor demand. Additionally, I include commuting zone, year, and years since migration fixed effects and cluster the standard errors at the commuting zone level. The analysis is conducted at the household-level. The sample is restricted to working-age non-institutionalized Mexicans who migrated between 2000 and 2006, and to a balanced sample of commuting zones that have a Mexican population higher than the 50th percentile. The baseline mean represents the outcomes' means in 2006.

Table A14: Effect of Violence on International Migration

	(1) New Arrivals	(2) Immigration Rate	(3) Emigration Rate
Homicide Shock	-240.727	0.000	
	(236.508)	(0.002)	
Homicide Rate			-0.136
			(0.118)
Observations	2415	2415	10402
Mean Y - Baseline	1,384.887	0.013	0.347
Mean Y - Overall	787.003	0.009	0.383
Mean HS / HR	21.84	21.84	15.32
S.D. HS / HR	13.98	13.98	40.33
CZ / Municipio FE	Y	Y	Y
Year FE	Y	Y	Y

Standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: This table presents the 2SLS estimates of the effect of the homicide shock on Mexican immigration from Mexico to the US. In column (1), the outcome is the number of new Mexican arrivals at the commuting zone-year level, calculated using the ACS. In column (2), the outcome is the number of Mexican arrivals (computed in column 1) divided by the commuting zone's population in 2005 (multiplied by 100). In column (3), the outcome is the number of Mexicans who migrated from the Mexican municipio to the US divided by the 2005 population of the municipio (multiplied by 100), calculated using the Mexican Census. In columns (1) and (2), both the HS and the instrument are normalized to have mean zero and unit variance. I control for immigration enforcement and Bartik-style measures of labor demand. I include commuting zone and year fixed effects and cluster the standard errors at the commuting zone level. The analysis is restricted to a balanced sample of commuting zones that have a Mexican population higher than the 50th percentile. In column (3), the endogenous variable is the municipio's homicide rate, and the instrument is the interaction of the DTO indicator and the cocaine supply shock. Both are normalized. I include municipio and year fixed effects, and cluster the standard errors at the municipio level. The baseline mean represents the outcomes' means in 2006.

Table A15: Effect of Violence on the Composition of New Migrants

	(1) Age	(2) Male	(3) Less than HS Degree	(4) HS Degree	(5) Some Dollege	(6) College Degree
Homicide Shock	0.359	0.019	-0.050	0.037	0.008	0.005
	(0.583)	(0.032)	(0.048)	(0.044)	(0.023)	(0.026)
Observations	14986	14986	14986	14986	14986	14986
Mean Y - Baseline	29.436	0.628	0.603	0.254	0.068	0.075
Mean Y - Overall	30.958	0.629	0.571	0.261	0.086	0.082
Mean HS	20.90	20.90	20.90	20.90	20.90	20.90
S.D. HS	15.23	15.23	15.23	15.23	15.23	15.23
CZ FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y

Standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: This table presents the 2SLS estimates of the effect of the homicide shock on the observable characteristics of newly arrived migrants. Both the HS and the instrument are normalized to have mean zero and unit variance. In all specifications, I control for measures of immigration enforcement and Bartik-style measures of labor demand. Additionally, I include commuting zone, year, and years since migration fixed effects and cluster the standard errors at the commuting zone level. The sample is restricted to working-age non-institutionalized Mexicans who migrated in the past year, and to a balanced sample of commuting zones that have a Mexican population higher than the 50th percentile. The baseline mean represents the outcomes' means in 2006.

Table A16: Effect of Violence on Return Migration using the Mexican Census

	(1) OLS	(2) 2SLS
Homicide Rate	0.009	-0.127
	(0.006)	(0.113)
Observations	10402	10402
Mean Y - Baseline	0.041	0.041
Mean Y - Overall	0.124	0.124
Mean HR	15.32	15.32
S.D. HR	40.33	40.33
Municipio FE	Y	Y
Year FE	Y	Y

Standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: This table presents the OLS (column 1) and 2SLS estimates (column 2) of the effect of the homicide rate on return migration flows at the Mexican municipio-year level. The endogenous variable is the municipio's homicide rate, and the instrument is the interaction of the DTO indicator and the cocaine supply shock. Both are normalized. In both columns, the outcome is the number of migrants who returned from the US to a Mexican municipio divided by the 2005 population of the municipio (multiplied by 100). Municipio and year fixed effects are added, and the standard errors are clustered at the municipio level in all regressions. The baseline mean represents the outcomes' means in 2006.

Table A17: Summary Statistics - Migrant Networks

	Full Sample CZs		Main Analysis CZs	
	(1) Network	(2) N Sending Municipios	(3) Network	(4) N Sending Municipios
Mean	0.111	145	0.019	266
SD	0.206	272	0.062	336
P25	0.006	9	0.003	63
P50	0.026	39	0.007	141
P90	0.333	390	0.034	731
Min	0	1	0	1
Max	1	2,212	1	2,212
N CZs	668	668	345	345

Notes: This table presents the summary statistics of migrant networks within US commuting zones in 2006. The left panel shows statistics for the full sample of commuting zones that issued Matrícula cards. The right panel focuses on statistics pertaining to commuting zones in the main analysis sample, which are balanced and have a Mexican population higher than the 50th percentile. Columns (1) and (2) show summary statistics related to network weights, i.e. the proportion of migrants originating from a municipio within a given commuting zone. Columns (2) and (3) show summary statistics concerning the count of source municipios from which migrants originate within each commuting zone.

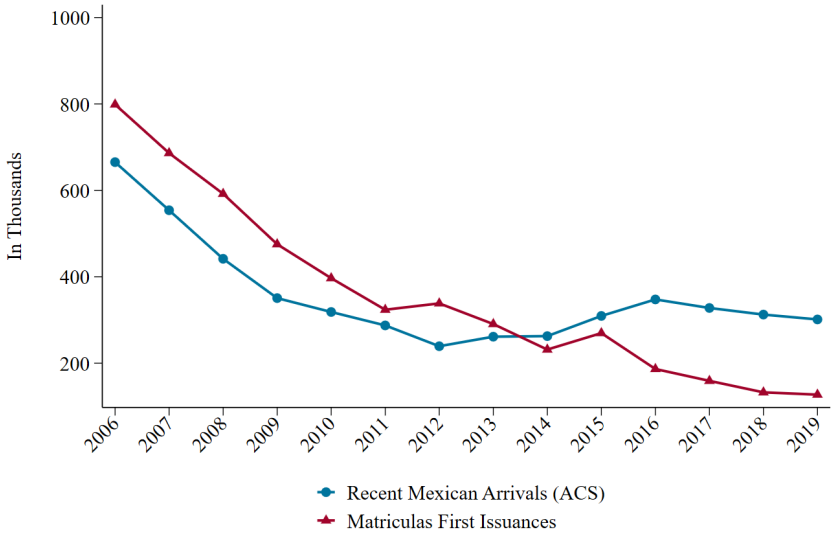
B Supplementary Analysis

B.1 Quality of MCAS Data

In this section, I provide additional results that show the validity of the Matrícula data. In Figure B1, I plot the yearly trend in first issuance Matrícula cards (in red) and recent Mexican arrivals obtained through the ACS (in blue). The two trends match each other within a margin of 200,000. Next, I show that the Matrícula data greatly captures the destinations of Mexicans in the US in Figure B2. Specifically, this figure is a scatter plot where I correlate the log share of Matrícula issuances between 2007 and 2011 with the log share of Mexican residents in the 2011 and 2012 ACS, for every US state. The figure shows a correlation that is very aligned with the dotted 45-degree line with an R-squared of 0.971.

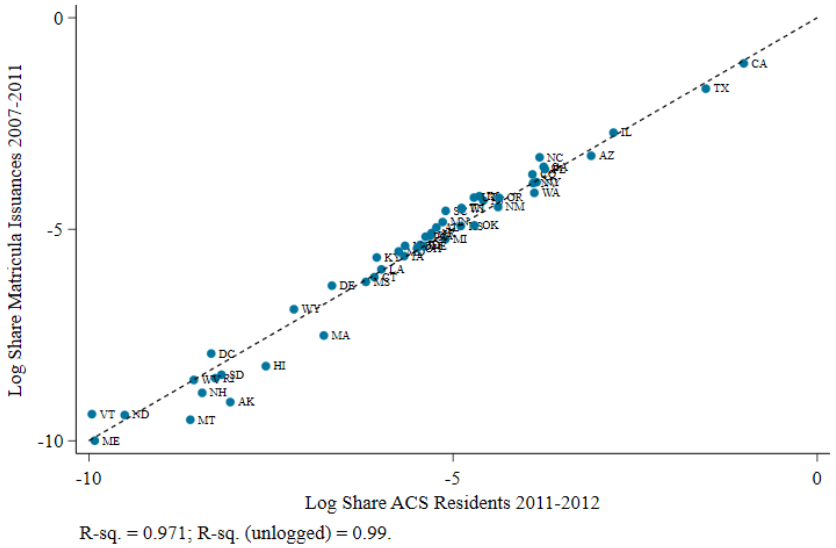
Figure B2 basically carries out an analysis similar to that of Caballero et al. (2018) but for subsequent time periods. Caballero et al. (2018) compare the Matrícula data with high-quality household surveys from the US and Mexico spatially. They find that the data closely match representative data on stocks of Mexican migrants. Specifically, they correlate the log number of cards issued in each US state between 2006 and 2010 with the log number of Mexican-born residents in the 2010 and 2011 American Community Surveys and find a high correlation between the American Community Survey (ACS) and the MCAS in capturing the distribution of Mexicans across US destinations (R-squared = 0.97). On the other hand, Caballero et al. (2018) find a high correlation between the Mexican Census and the MCAS in capturing the source municipios of Mexicans across Mexico. The study also highlights that different sending regions within the same Mexican state send migrants to different locations in the US. I do not replicate this analysis, as there are no data available for subsequent time periods.

Figure B1: Annual Number of Mexican Arrivals, MCAS vs. ACS



Notes: This figure displays the annual number of recent Mexican arrivals. The black line displays the yearly total number of Mexican migrants who have been in the US for less than a year, obtained from the American Community Survey. The blue line displays the yearly first Matrícula issuances.

Figure B2: Distribution of Mexican Migrants across US States: MCAS vs. ACS



Notes: This figure plots the distribution of Mexican-born migrants across US destinations, similar to Figure 1 of Caballero et al. (2018), but for a different time period. Each data point represents the logarithm of the share of individuals living in each US state from two datasets: the American Community Survey (ACS) sample, which includes Mexican-born individuals sampled in 2011 or 2012, and the MCAS data, comprising all identity cards issued during 2007–2011. These cards were valid during the 2010–2012 period covered by the ACS sample. The 45-degree line, indicating perfect agreement between the two data sources, is included as a reference. The R-squared corresponds to the specification shown in the figure, while the "unlogged" version applies to a comparison of raw unlogged shares.

B.2 Effect on Drug Violence in the US

To assess the effect of the homicide shock on drug violence in the US, I use data from the Uniform Crime Reporting Program on drug arrests. The drug arrests pertain to offenses related to drug possession and drug sales of substances such as cannabis, heroin, other drugs, or synthetic narcotics. These data are collected by the FBI and represent the monthly arrest records reported by various police agencies across the US.

There are a few issues with using county-level data, primarily because a police agency could operate in multiple counties. However, this problem does not apply to my study, as commuting zones span multiple counties, and there are no cases where an agency operates in multiple commuting zones. Another challenge is that not all agencies report data consistently throughout the year. Consequently, I perform the analysis using a balanced sample of commuting zones, which includes only agencies that report data for every month of every year, and an unbalanced sample, which includes all available data. I include commuting zone and year fixed effects, weight the estimates by the commuting zone population in 2006, and cluster the standard errors at the commuting zone level. Table B1 below presents the OLS and 2SLS results for the balanced sample (panel A) and the unbalanced sample (panel B).

Table B1: Effect of the Homicide Shock on Drug Arrests in the US

	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
	Drug Arrests	Drug Sales Arrests	Drug Possession Arrests	Drug Arrests	Drug Sales Arrests	Drug Possession Arrests
Panel A: Balanced Sample						
Homicide Shock	-491.656	-18.877	-475.822	-6512.491	-626.400	-5873.298
	(634.546)	(82.424)	(557.823)	(5754.595)	(781.939)	(4988.835)
Observations	1582	1582	1582	1582	1582	1582
Mean Y - Baseline	3,615.872	635.088	2,964.761	3,615.872	635.088	2,964.761
Mean Y - Overall	16600.621	2950.311	13625.627	16600.621	2950.311	13625.627
Panel B: Unbalanced Sample						
Homicide Shock	-9078.539	-789.711	-7272.219	-9078.539	-789.711	-7272.219
	(6616.292)	(876.495)	(5737.897)	(6616.292)	(876.495)	(5737.897)
Observations	2415	2415	2415	2415	2415	2415
Mean Y - Baseline	3,905.910	648.928	3,069.133	3,905.910	648.928	3,069.133
Mean Y - Overall	19454.102	3148.586	14800.394	19454.102	3148.586	14800.394
Mean HS	21.84	21.84	21.84	21.84	21.84	21.84
S.D. HS	13.98	13.98	13.98	13.98	13.98	13.98
CZ FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y

Standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: This table presents the OLS and 2SLS estimates of the effect of the homicide shock on the total number of drug arrests in the US (columns 1 and 4), obtained from the Uniform Crime Reporting Program (Kaplan, 2021). The latter includes arrests for drug sales (columns 2 and 5) and drug possession (columns 3 and 6). Both the HS and the instrument are normalized to have mean zero and unit variance. I include commuting zone and year fixed effects, weight the estimates by the commuting zone population in 2006, and cluster the standard errors at the commuting zone level in all regressions. In Panel A, the sample of commuting zones is balanced, including data from agencies that report every month of every year between 2006 and 2012. Panel B includes an unbalanced panel of commuting zones. The baseline mean represents the outcomes' means in 2006.

B.3 Effect on Marriage

In my paper, the marriage to US citizens is a stock measure, that could increase through different channels: either increase in new intermarriage to US citizens, increase in the share of naturalization among existing marriages, or an increase in the stability of marriages. As I find increases in marriage incidence, I cannot condition on marriage to examine changes in type of spouse. Instead, I rely on the questions in the ACS that identify the year of marriage and naturalization, which were only added after 2008. Consequently, this analysis has a much smaller sample size, almost by 32%.

Table B2 reports the effects of the homicide shock on the various channels that could increase marriage to US citizens. In column (1), I look at the effect of the homicide shock on recent marriages to US citizens, which suggests increases in new marriages. I find that the homicide shock leads to an increase in new marriages to US citizens and to naturalized Mexican-born individuals (column 2). To check whether there are increases in the share of US citizens among existing marriages, I then define an outcome that takes the value one if the individual was naturalized and married but have naturalized after marriage (column 3), the results show a slight decrease in this measure. The estimates as well as the baseline means presented in columns (1)-(3) are quite small in magnitude due to the data limitations. Finally, I find a very slight increase in divorce rates (column 5). While I cannot directly examine whether this affected those who were married to US citizens, it suggest a slight decrease in marriage stability.

Table B2: Effect of the Homicide Shock on the Stock of Marriages to US Citizens

	(1) Newly Married to US citizen	(2) Newly Married to Naturalized Mexican	(3) Naturalized after marriage	(4) Naturalized and Married to US citizen	(5) Divorced
Homicide Shock	0.001	0.001	-0.001	0.011***	0.002
	(0.003)	(0.001)	(0.004)	(0.004)	(0.004)
Observations	96803	96803	102097	132832	141270
Mean Y - Baseline	0.008	0.002	0.016	0.014	0.023
Mean Y - Overall	0.009	0.002	0.023	0.020	0.027
Mean HS	25.87	25.87	25.77	22.10	21.93
S.D. HS	12.36	12.36	12.30	12.18	12.08

Standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: This table presents the 2SLS estimates of the effect of the homicide shock on the channels through which the stock of marriages to US citizens could increase. All the outcomes are dummy variables. Both the HS and the instrument are normalized to have mean zero and unit variance. In all specifications, controls include age, sex, educational attainment, measures for immigration enforcement, and Bartik-style measures of labor demand. Additionally, I include commuting zone, year, and years since migration fixed effects and cluster the standard errors at the commuting zone level. The sample is restricted to working-age non-institutionalized Mexicans who migrated between 2000 and 2006, and to a balanced sample of commuting zones that have a Mexican population higher than the 50th percentile. In columns (1)-(3), the sample only includes years 2008-2012. The baseline mean represents the outcomes' means in 2006.

B.4 Effect on Cohabitation

One question is if the increase in marriage is driven by shifts from cohabitation to marriages, or whether there is an increase in cohabitation at the same time. An increase in the latter would reflect a desire to establish roots and social networks in the US, although it does not carry substantial legal benefits. In Table B3, the 2SLS effects of the homicide shock on cohabitation are presented. All of the outcomes are dummy variables. The results suggest a decrease in cohabitation, especially with other Mexicans. This might imply a transition from cohabitation to marriage. However, it is not possible to ascertain whether individuals who are entering into marriage were previously engaged in a cohabiting arrangement.

Table B3: Effect of the Homicide Shock on Cohabitation Patterns

	(1) Cohabitation	(2) W. US citizen	(3) W. US-born	(4) W. Mexican	(5) W. Naturalized Mexican
Homicide Shock	-0.022**	0.002	0.000	-0.022**	0.000
	(0.010)	(0.002)	(0.002)	(0.009)	(0.001)
Observations	141270	141270	141270	141270	141270
Mean Y - Baseline	0.060	0.009	0.005	0.051	0.003
Mean Y - Overall	0.086	0.013	0.009	0.072	0.004
Mean HS	21.93	21.93	21.93	21.93	21.93
S.D. HS	12.08	12.08	12.08	12.08	12.08

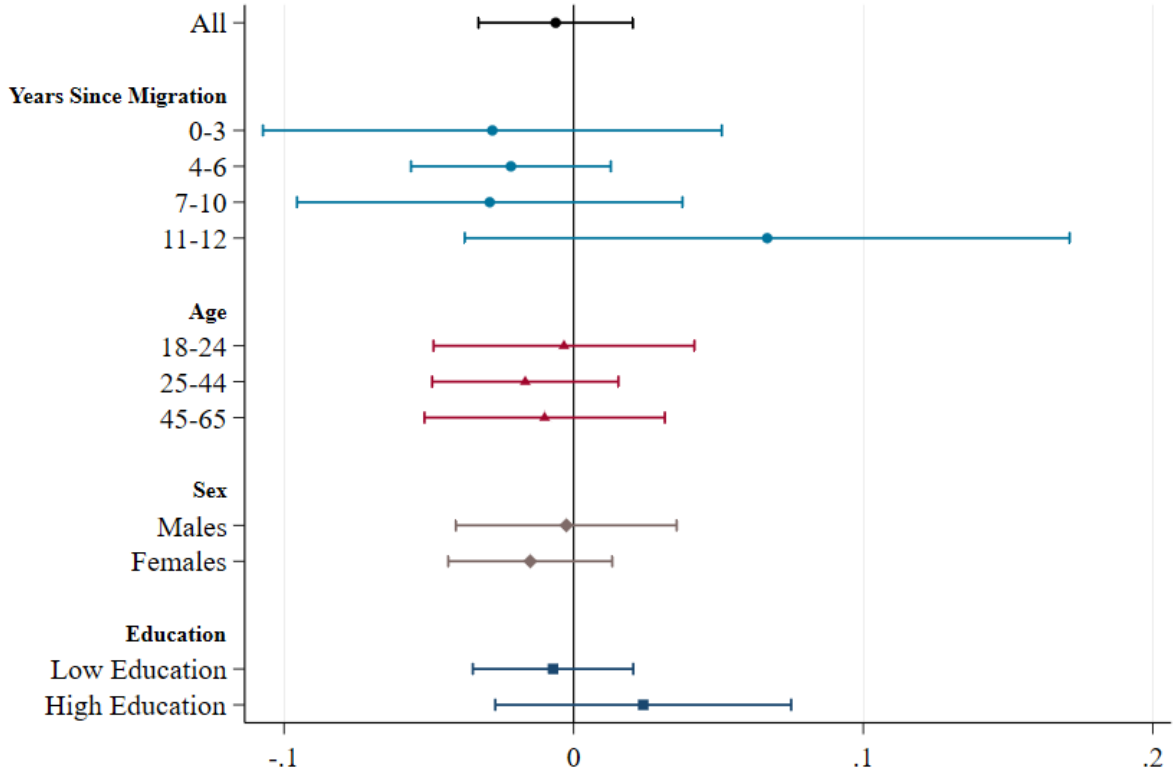
Standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: This table presents the 2SLS estimates of the effect of the homicide shock on cohabitation patterns. All the outcomes are dummy variables. Both the HS and the instrument are normalized to have mean zero and unit variance. In all specifications, controls include age, sex, educational attainment, measures for immigration enforcement, and Bartik-style measures of labor demand. Additionally, I include commuting zone, year, and years since migration fixed effects and cluster the standard errors at the commuting zone level. The sample is restricted to working-age non-institutionalized Mexicans who migrated between 2000 and 2006, and to a balanced sample of commuting zones that have a Mexican population higher than the 50th percentile. The baseline mean represents the outcomes' means in 2006.

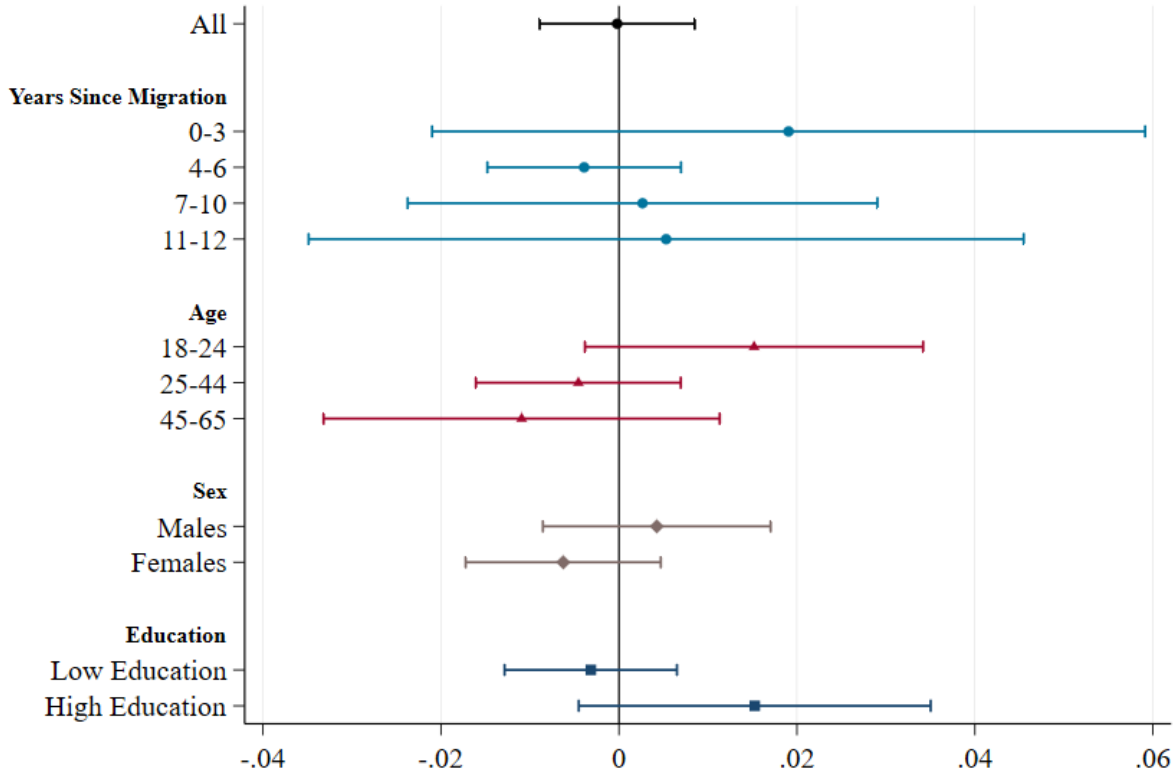
B.5 Heterogeneity of Education and Employment Effects

Figure B3: Differential Effects on English Proficiency



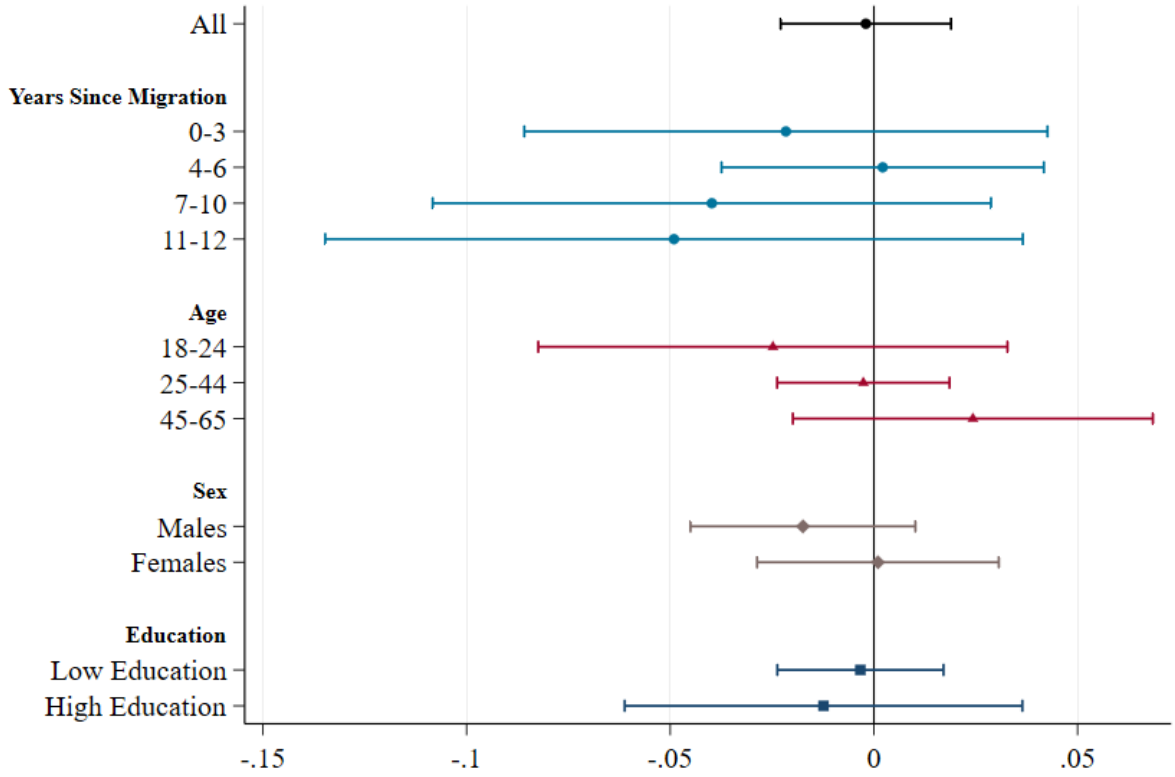
Notes: This figure plots the 2SLS estimates and the 95 percent confidence intervals of the differential effects of the homicide shock on English proficiency. Both the HS and the instrument are normalized to have mean zero and unit variance. In all specifications, controls include age, sex, measures for immigration enforcement, and Bartik-style measures of labor demand. Additionally, I include commuting zone, year, and years since migration fixed effects and cluster the standard errors at the commuting zone level. The sample is restricted to working-age non-institutionalized Mexicans who migrated between 2000 and 2006, and to a balanced sample of commuting zones that have a Mexican population higher than the 50th percentile.

Figure B4: Differential Effects on Dominant Language at Home



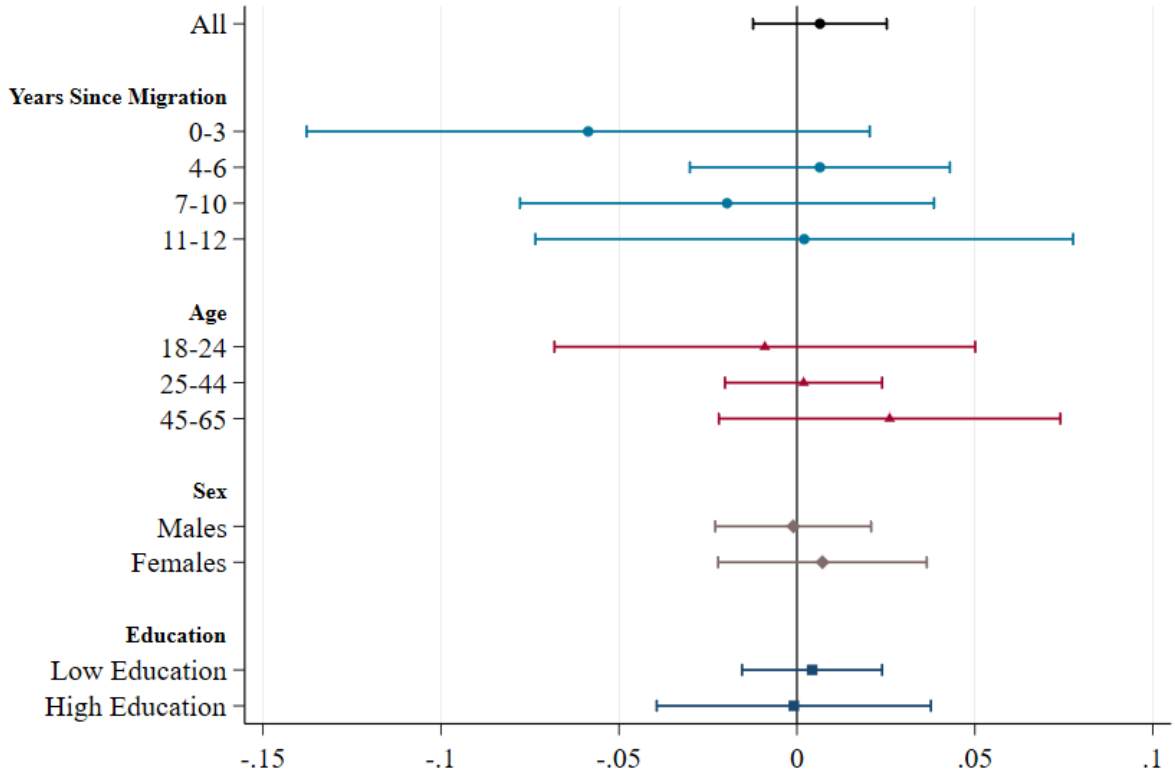
Notes: This figure plots the 2SLS estimates and the 95 percent confidence intervals of the differential effects of the homicide shock on Spanish as the dominant language at home. Both the HS and the instrument are normalized to have mean zero and unit variance. In all specifications, controls include age, sex, measures for immigration enforcement, and Bartik-style measures of labor demand. Additionally, I include commuting zone, year, and years since migration fixed effects and cluster the standard errors at the commuting zone level. The sample is restricted to working-age non-institutionalized Mexicans who migrated between 2000 and 2006, and to a balanced sample of commuting zones that have a Mexican population higher than the 50th percentile.

Figure B5: Differential Effects on Employment



Notes: This figure plots the 2SLS estimates and the 95 percent confidence intervals of the differential effects of the homicide shock on employment. Both the HS and the instrument are normalized to have mean zero and unit variance. In all specifications, controls include age, sex, educational attainment, measures for immigration enforcement, and Bartik-style measures of labor demand. Additionally, I include commuting zone, year, and years since migration fixed effects and cluster the standard errors at the commuting zone level. The sample is restricted to working-age non-institutionalized Mexicans who migrated between 2000 and 2006, and to a balanced sample of commuting zones that have a Mexican population higher than the 50th percentile.

Figure B6: Differential Effects on Labor Force Participation



Notes: This figure plots the 2SLS estimates and the 95 percent confidence intervals of the differential effects of the homicide shock on labor force participation. Both the HS and the instrument are normalized to have mean zero and unit variance. In all specifications, controls include age, sex, educational attainment, measures for immigration enforcement, and Bartik-style measures of labor demand. Additionally, I include commuting zone, year, and years since migration fixed effects and cluster the standard errors at the commuting zone level. The sample is restricted to working-age non-institutionalized Mexicans who migrated between 2000 and 2006, and to a balanced sample of commuting zones that have a Mexican population higher than the 50th percentile.

B.6 Effect on Fertility

I report the effects of the homicide shock on fertility for completeness here, as they are not central to the conclusions of the paper. I examine whether the fertility behavior of Mexican migrants changed after the war on drugs in Table B4.

To do so, I rely on two main variables in the ACS. First, I create a dummy variable that equals 1 if the migrant, specifically females aged 18 to 50, gave birth to a child in the last year (columns 1 and 4). Second, I examine the number of own children in the household. One concern with this measure in the ACS is that the survey counts the number of children in the household, rather than the number of children ever born to an individual. In this case, a decrease in the number of children could reflect an increase in the number of children aging out of the household, or an actual decrease in the number of children born into the household. As my aim is to examine the latter, I construct an analogous measure that counts the number of own children born in or after 2006 (columns 2 and 5). Since my analysis spans a short time period (7 years), any changes in this measure will only reflect changes in fertility. Using the latter, I create another dummy variable that takes the value one if the number of children born after 2006 is at least one (columns 3 and 6).

The 2SLS results indicate a negative effect of violence on the likelihood of female migrants giving birth to a child in the past year. However, there is a positive effect on the number of children and the likelihood of having children after 2006. These effects are very small in magnitude, close to zero, and not statistically significant.

Table B4: Effect of Violence on Fertility

	OLS			2SLS		
	(1) Had a child last year	(2) Number of Children (after 2006)	(3) Had Children (after 2006)	(4) Had a child last year	(5) Number of Children (after 2006)	(6) Had Children (after 2006)
Homicide Shock	0.001	-0.007	-0.003	-0.005	0.004	0.003
	(0.004)	(0.005)	(0.004)	(0.013)	(0.014)	(0.010)
Observations	62390	141270	141270	62390	141270	141270
Mean Y - Baseline	0.146	0.061	0.060	0.146	0.061	0.060
Mean Y - Overall	0.129	0.299	0.224	0.129	0.299	0.224
Mean HS	22.564	21.932	21.932	22.564	21.932	21.932
S.D. HS	12.338	12.083	12.083	12.338	12.083	12.083

Standard errors in parentheses.

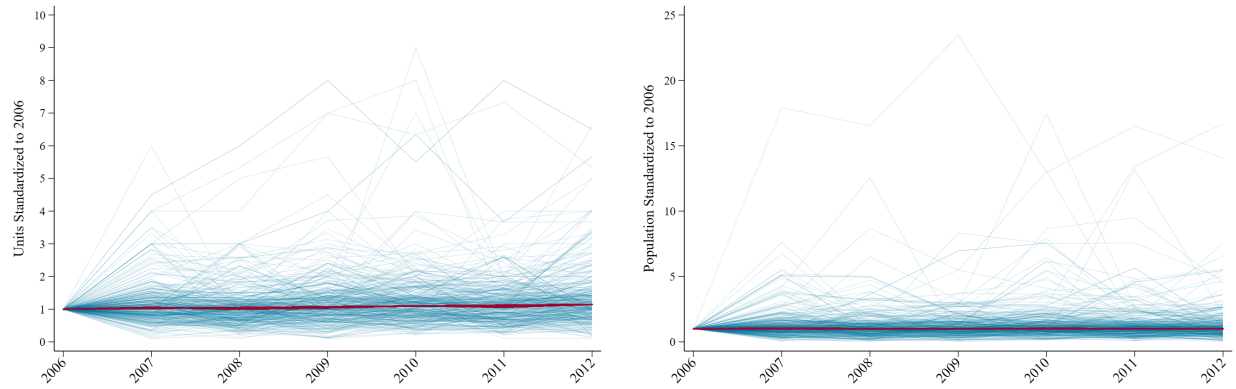
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: This table presents the OLS and 2SLS estimates of the effect of the homicide shock on fertility outcomes. Both the HS and the instrument are normalized to have mean zero and unit variance. In all specifications, controls include age, sex, educational attainment, measures for immigration enforcement, and Bartik-style measures of labor demand. Additionally, I include commuting zone, year, and years since migration fixed effects and cluster the standard errors at the commuting zone level. The sample is restricted to working-age non-institutionalized Mexicans who migrated between 2000 and 2006, and to a balanced sample of commuting zones that have a Mexican population higher than the 50th percentile. Columns (1) and (4) are restricted to females between the ages of 18 and 55. The baseline mean represents the outcomes' means in 2006.

B.7 Sample Attrition

Here, I examine the yearly trends in the size of the cohort for each commuting zone. The two panels of Figure B7 show the trend in units and in population respectively, where I standardize both measures to their level in 2006. The grey lines pertain to commuting zones, and the maroon line shows the average size across commuting zones in each year. While the trend in the size of the cohort is noisy across commuting zones, the average level is quite stable and does not fluctuate much over the years. Therefore, there does not seem to be any obvious attrition affecting the cohort in the US.

Figure B7: Yearly Population Estimates for the 2000-2006 Mexican Cohort Across Commuting Zones



(a) Units

(b) Population

Notes: Panel (a) shows the trend in the number of surveyed units in every ACS survey by commuting zone (in grey) and on average (in maroon). Panel (b) shows the trend in the total population in every ACS survey by commuting zone (in grey) and on average (in maroon). The sample is restricted to working-age non-institutionalized Mexicans who migrated between 2000 and 2006, and to a balanced sample of commuting zones that have a Mexican population higher than the 50th percentile.

B.8 Multiple Hypothesis Testing

With one treatment variable and six main outcomes, this probability equals 26.4% (1-0.95^6) when using a critical value of 5%. To address the issue of multiple hypothesis inference, I implement four different multiple inference adjustments, reported in Table B5.

In the first row, I provide the unadjusted p-values. In the second row, I report sharpened false discovery rates (FDR), known as q-values, using Anderson's (2008) procedure (Anderson, 2008). Sharpened FDR from Anderson's method provide the expected proportion of rejections that are

type I errors (false rejections), but they do not account for correlations among the p-values. Additionally, in the third row, I calculate Romano-Wolf stepdown adjusted p-values. The Romano-Wolf approach is similar to Bonferroni's but allows p-values to be correlated and produces less conservative adjusted p-values. I use Bonferroni's correction method to compute p-values in the fourth row, which controls for the probability of making any type I error (or the family-wise error rate FWER). Bonferroni's p-values are calculated by multiplying the unadjusted p-values with the number of outcomes and are the most conservative adjustment. This method does not consider any dependence among the outcomes. Finally, I compute randomization inference p-values based on Young (2019, 2020), which involve a joint test of the null hypothesis that no treatment has any effect. To compute all of these p-values, I use code provided by Anderson (2008) and McKenzie (2021).

Using Bonferroni's p-values, estimates on marriage and marriages to US-born are not significant anymore. However, using all other methods, the significance of the estimates remains robust, often at lower conventional levels. Importantly, I reject the null of complete irrelevance that reflects no effect of treatment using young p-values (column 7, $p < 0.01$).

Table B5: Robustness Checks III, Multiple Hypothesis Inference

Treatment: Homicide Shock	(1) Naturalized	(2) Married	(3) Maried to US citizen	(4) Married to US-born	(5) Married to Mexican	(6) Married to Naturalized Mexican	(7)
P-values	0.0134	0.0427	0.0006	0.0663	0.3941	0.0002	
Sharpened q-values	0.019	0.034	0.002	0.042	0.087	0.001	
Romano-Wolf FWER p-values	0.0099	0.0198	0.0099	0.0198	0.1584	0.0099	
Bonferroni p-values	0.08	0.25	0.0033	0.398	1	0.00095	
Young Westfall-Young Joint Test	0.0163	0.008	0.0019	0.0169	0.0296	0.0063	0.0073

Notes: This table presents p-values of the estimates on the main outcomes using four different multiple inference adjustments. In the first row, unadjusted p-values are provided. In the second row, sharpened false discovery rates (FDR), known as q-values, using Anderson's (2008) procedure, are reported. In the third row, I calculate Romano-Wolf stepdown adjusted p-values. In the fourth row, p-values computed using Bonferroni's correction method are reported. Finally, I compute randomization inference p-values based on Young (2019), which involves a joint test of the null hypothesis that no treatment has any effect (reported in column 7). To compute all of these p-values, I used code provided by Anderson (2008) and McKenzie (2021).

C Data Appendix

In this section, I provide additional information on the datasets, variables, and data sources used in the analysis.

C.1 American Community Survey

In the analysis using ACS data, I consider an individual to be US-born if they are born in US or any of the US outlying areas and territories (Guam, US Virgin Islands, Northern Marianas, and Commonwealth of Puerto Rico). A foreign-born individual is considered naturalized if they report that they are citizens through naturalization (using the *citizen* variable). That specifically means that the foreign-born individual has completed the naturalization process and is currently a US citizen. Accordingly, non-US citizens still include individuals who are legal permanent residents, green card holders, other non-naturalized immigrants, visitors to the US, undocumented immigrants, or immigrants on temporary visas. The ACS does not ask about the individuals' legal status, and thus I cannot differentiate between these groups.

Marriage is identified through the *marst* variable. An individual is considered married if they are married and the spouse is either present or absent. The presence of the spouse is identified by IPUMS through *sploc*, which identifies the spouse's location in the household. The spouse is considered present if they are reported as a member of the household, even if they may have been temporarily absent due to vacation, business, or hospitalization at the time of the enumeration. The spouse is considered absent if they do not live in the same household, or have another residence at a considerable distance from home due to employment or for any reason other than separation. In order to observe the characteristics of the spouse, the latter should be present in the household.

Marriage to a US citizen is a dummy variable equal to one if the individual marries a US citizen (either a US-born native or a naturalized foreign-born individual) and zero if the individual is married to a non-citizen or remains single.

Fertility is observed using the variables *nchild* and *fertyr*. The former counts the number of own children (of any age or marital status) **residing** with each individual. The latter asks whether the respondent had a child in the last year, and is only only asked for females between 15 and 50 regardless of marital status.

C.2 Mexican Census (2010)

Although I explain how I compute return migration flows in section 3.4, here I elaborate on how I compute emigration flows using the Mexican Census data for column 3 in Table A14. To compute emigration flows from the Mexican municipio to the US, I rely on the question that asks respon-

dents whether anyone in their household moved to the US during the last five years. The data then record the number of people who left the household to the US, along with information on the time of migration. Using this information, I calculate the emigration rate at the municipio-year level as the total number of working-age individuals who migrated from the municipio divided by the municipio's 2005 population (multiplies by 100). This measure provides a lower bound on the actual emigration rate, since it does not capture migration of the whole household, and it relies on the recollection of family members who stayed in Mexico.