Exposure to Violence and Migration from Mexico to the United States

Scott J. South[1] · Katherine Trent[2] · Soojin Han[3]

Abstract

Longitudinal data from the Mexican Family Life Survey, in conjunction with aggregated vital statistics and census data, are used to examine how Mexican adults' experiences of violent victimization and perceptions of personal safety, as well as the homicide rate in their local community, are associated with the likelihood that they migrate to the USA. Multilevel logistic regression analyses provide suggestive evidence that Mexicans who report being recent victims of violence and who perceive a recent deterioration in their personal safety are more likely than others to migrate to the USA. The association between perceived deterioration in personal safety and the probability of migrating to the USA is particularly strong among residents of urban areas. We find no evidence that a generalized fear of crime or exposure to a high municipality-level homicide rate is associated with USA-bound migration.

Keywords Violence · Victimization · Homicide · Mexico · Immigration

✉ Scott J. South
ssouth@albany.edu

Katherine Trent
ktrent@albany.edu

Soojin Han
shan6@albany.edu

1 Department of Sociology and Center for Social and Demographic Analysis, University at Albany, State University of New York, Albany, NY 12222, USA

2 Department of Sociology and Center for Social and Demographic Analysis, University at Albany, State University of New York, Albany, NY 12222, USA

3 Department of Sociology, University at Albany, State University of New York, Albany, NY 12222, USA

Introduction

Although the number of Mexicans migrating to the USA has declined over recent years (Gonzalez-Barrera, 2015; Villarreal, 2014) and the net flow may have even reversed (Passel et al., 2012), the size of this migration stream remains substantial. Between 2009 and 2014, approximately 870,000 Mexicans moved to the USA (Gonzalez-Barrera, 2015). As of 2018, about 11.2 million USA residents were immigrants from Mexico, accounting for one-quarter of all immigrants (Budiman, 2020). Countless studies have explored the determinants of migration from Mexico to the USA, focusing primarily on economic drivers, including strategies related to household risk diversification (e.g., Stark & Bloom, 1985), and social capital, particularly in the form of social networks (e.g., Massey & Espinosa, 1997).

Less often studied has been the role played by crime and violence in Mexico. Exposure to violent crime has also been thought to stimulate emigration as Mexicans attempt to escape violence by fleeing to ostensibly safer communities in the USA (e.g., Arceo-Gómez, 2012; Orozco-Aleman & Gonzalez-Lozano, 2018; Rios Contreras, 2014). Journalistic reports frequently note a concern with real or potential violent victimization among Mexicans and Central Americans who are attempting to immigrate to the USA (Gamboa et al., 2018; Hernández, 2021; Semple, 2019; Villagran & Carranza, 2020). Yet, few studies have rigorously and directly assessed the impact of exposure to violence on the likelihood that Mexicans migrate to the USA, and those that have done so have generated conflicting findings (e.g., Alvarado & Massey, 2010; Chort & de la Rupelle, 2016).

The purpose of this paper is to examine the impact of exposure to violence on the likelihood that Mexican adults migrate to the USA. The analysis uses data from two waves of the Mexican Family Life Survey (MxFLS) in conjunction with aggregated data from the 2000 Mexican population census and spatially-referenced official homicide statistics. We go beyond prior studies in this area in two main ways. First, we incorporate individuals' reports of both actual violent victimization experiences and the perceived probability of victimization while also including community-level measures of the frequency of homicide. Second, we explore whether the effect of exposure to violence on the likelihood of migrating to the USA varies by individual characteristics such as gender and household composition and by geographic region. To our knowledge, this analysis is the first individual-level assessment of the effect of exposures to multiple sources of violence on migration from Mexico to the USA.

Background

Several theoretical perspectives guide inquiry into the determinants of international migration. Neoclassical economics, focusing predominantly on labor migrants, emphasizes spatial disparities in labor supply and demand (Borjas,

1999) and migrants' desire to maximize income (Todaro, 1969). The new economics of labor migration school views international migration as a strategy for migrant-sending households to diversify risk and address relative deprivation, among other purposes (Stark & Bloom, 1985). Social capital theory stresses potential and actual migrants' information about, and assistance to and from, actors in their social networks, particularly prior migrants and other household and community members (Garip, 2008; Massey & Espinosa, 1997). The accretion of social capital via migration may trigger a process of cumulative causation in which migration streams become self-reinforcing (Fussell & Massey, 2004; Massey, 1990; Massey et al., 1994). Still other perspectives stress how immigration nests within a global system of interdependencies shaped by broad historical developments (Portes & Böröcz, 1989). The relative impact of the drivers of international migration identified by these perspectives might vary by historical period and regional experiences of prior migration (Garip, 2017).

As noted by Massey et al. (1993), extant theories of international migration, while typically not logically inconsistent, are difficult to compare and contrast, largely because they operate at different levels of analysis. Moreover, some theories are designed mainly to explain the onset of transnational migration while other theories are devoted primarily to explain its continuation or, in rare cases, cessation. What is noteworthy for the purposes of this analysis is that none of the most commonly cited theories of international migration pay much heed to issues of crime and violence, even though as noted above popular media accounts often cite the desire to escape violence as an essential motivation for migrating to the USA.

As with general theories of migration (e.g., Lee, 1966), most if not all theories of international migration acknowledge, at least implicitly, both push and pull factors. One potential push factor is the desire to escape exposure to crime and violence. Crime and migration have long been recognized to be intertwined (South & Messner, 2000), and USA-based studies find that experiences of criminal victimization and perceptions of violence often propel residential mobility and neighborhood out-migration (Leibbrand et al., 2021; Rosen, 2017; Xie & McDowall, 2014). Morrison (1993) has called for the incorporation of political violence factors into traditional migration models, particularly for the study of internal movement in Central and South America. For the most part, however, the potential impact of exposure to crime and violence on migration from Mexico to the USA has been under-theorized and under-researched. It is unclear whether any impact of crime on emigration operates at the individual or aggregate level, if actual experiences of violent victimization or the perceived fear of crime matter more, and if such effects might vary by characteristics such as gender or potential migrants' geographic region of origin.

Prior Research

Prior studies of the impact of crime and violence on migration from Latin America to the USA have generated mixed results. In one of the first studies of this issue, Stanley (1987) finds the number of political murders is a significant positive predictor of Salvadoran migration to the USA. More recently, both Arceo-Gómez (2012)

and Rios Contreras (2014) find that high levels of drug-related violence in Mexican states significantly increase migration to the USA. Massey et al. (2014) find that the level of civil violence is positively associated with first undocumented trip from Central America to the USA. Clemens (2017) finds that high regional homicide rates in Honduras, El Salvador, and Guatemala are positively associated with the number of USA apprehensions of child migrants from these areas. Several studies report that residents of Latin America who were recent victims of crime are more likely than nonvictims to express an intention to migrate internationally (Hiskey et al., 2018; Roth et al., 2022; Wood et al., 2010). Nieri et al. (2012) find that among youth in Guanajuato, Mexico, those who had experienced violent victimization were more likely than nonvictims to plan to migrate to the USA, though they were no more likely to desire to do so. In a highly aggregated analysis of state-to-state migration flows between Mexico and the USA, Chort and de la Rupelle (2016) find that high rates of homicide generally propel out-migration from Mexican border states. Importantly, however, the positive association between homicide rates and out-migration is reversed in non-border states.

Other studies also serve to question the existence and universality of the effect of violence on emigration. Alvarado and Massey (2010) find that high rates of homicide are positively associated with emigration to the USA from Nicaragua, but not from Mexico, Costa Rica, or Guatemala. In these latter countries, increasing rates of lethal violence serve to deter migration to the USA. Massey et al. (2020) find that the municipality-level homicide rate is negatively associated with undocumented migration to the United States. Similarly, Basu and Pearlman (2017) find only limited evidence that high homicide rates are associated with emigration rates from Mexican municipalities. Orozco-Aleman and Gonzalez-Lozano (2018) find that the municipal homicide rate is positively associated, but the homicide rate on route (within and across Mexican states) is negatively associated, with a proxy measure for the Mexico-to-USA migration rate based on intentions to cross. Arenas et al. (2008) find that while Mexican residents of urban areas who had been recently victimized are more likely than urban nonvictims to move to the USA, the reverse pattern holds for residents of rural areas. Martinez (2014) finds that Mexican women crime victims are more likely than nonvictims to move domestically but not internationally.

Studies of international migrants' stated motivations for migrating also serve to question the importance of exposure to crime and violence. Although the desire to flee crime and violence appears as a more common motivation for moving to the USA in journalistic reports (e.g., Gamboa et al., 2018; Semple, 2019; Villagran & Carranza, 2020), these motivations are much less prominent in systematic scholarly investigation (e.g., Asad & Garip, 2019; Naugler & Conroy, 2020). In these latter accounts, actual or potential migrants are more likely to cite economic and familial-based reasons than reasons related to personal safety as their rationale for emigrating.

Wide differences in data sources, levels of analysis, and other features of research design make it difficult to reconcile these conflicting findings. The current analysis extends these earlier studies by using nationally-representative longitudinal survey data of Mexican residents, modeling simultaneously the effect of both actual victimization experiences and community-level rates of violence on the likelihood of

migrating to the USA. At the individual level, the analysis incorporates both objective measures of victimization and perceptual measures of violence, including fear of crime and perceived recent changes in personal safety. And the analysis allows for heterogeneity in the effects of violence on emigration from Mexico to the USA, examining whether the effects of exposure to violence vary by individuals' gender, household composition, and geographic region of origin.

Hypotheses

Individuals' exposure to crime and violence encompasses several dimensions, each of which could independently affect the decision to migrate from the area of origin. First, individuals may be motivated to move out of the origin area—and to a presumably safer community—because of actual experiences of violent victimization. Having been a victim of violence likely increases the perceived risk of subsequent victimization and thus serves as a motivation to move. Violent victimization might threaten not only individuals' physical safety but also their economic wellbeing. In the context of this study, this reasoning leads us to hypothesize that Mexicans who report recently having been a victim of violence will be more likely than nonvictims to move to the USA (Hypothesis 1).

This hypothesis is not self-evident for several reasons. Individuals who are most likely to be victims of violent crime may also be those with the lowest levels of human, financial, and social capital required to migrate to the USA, and these resources may be eroded further by violent victimization. Moreover, crime victims who are motivated to move may decide to migrate internally within Mexico rather than to the USA, particularly if they do not perceive the USA to be a comparatively safer environment than their origin community. Internal migration likely entails lower psychic and financial costs than migration to the USA. And in extreme cases, victims may even migrate to a country other than the USA.

Secondly, individuals may be motivated to move from their community of origin if they perceive a high likelihood of being victimized, even if they have not themselves been victimized. Perceptions of violent risk may operate independently of, and even be only loosely tied to, objective risks of victimization (Fernandez-Dominguez, 2020). Generalized perceptions of risk may also matter if potential migrants fear for the safety of other family members or significant others even if they perceive a low risk of victimization for themselves. Accordingly, we hypothesize that Mexicans who report an elevated fear of crime will be more likely than others to migrate to the USA (Hypothesis 2).

Third, what might matter most for individuals' migration decision-making are perceptions of recent *changes* in victimization risk. Believing that one's personal safety has recently worsened may trigger the desire to move to a safer community. The perception that public and personal safety has recently deteriorated may signal further increases in victimization risk in the future and propel out-migration even independently of the perceived risk of victimization at a given point in time. We thus hypothesize that Mexicans who perceive a recent decline in personal safety will be more likely than others to migrate to the USA (Hypothesis 3).

Fourth, individuals may be motivated to move mainly, and perhaps only, when they are exposed to exceedingly serious violence such as homicide. High rates of homicide in the local community likely signal grave risks to individuals and their family members. In the case of Mexico, high homicide rates in the local geographic area have been thought to operate as a unique and powerful incentive to move from the community of origin (Chort & de la Rupelle, 2016; Orozco-Aleman & Gonzalez-Lozano, 2018). We hypothesize that a high homicide rate in the local geographic area will increase the likelihood that Mexicans migrate to the USA (Hypothesis 4).

Any impact of exposure to violence on the likelihood of moving to the USA might be especially pronounced among particular subgroups of potential migrants. For example, sex differences in both physical vulnerability and responsibilities to other family members may lead women to respond more than men to fear of crime or high community homicide rates. Somewhat similarly, given children's physical vulnerability, members of households with children may be especially likely to migrate to the USA when exposed to high levels of violence at the community level (Hamilton & Bylander, 2021). Arenas et al. (2008) speculate that violence is less likely to propel emigration from rural areas than urban areas because victimizations in rural areas result in a comparatively greater loss of material assets that would otherwise be used to facilitate USA-bound migration.

The effect of exposure to violence on the likelihood of relocating to the USA might vary by regional origin, with the effect stronger among residents of states that border the USA than residents of states in the interior of Mexico. The concentration of crime and violence in some of Mexico's northern border cities is well documented (Shirk, 2014), and this violence has been linked to cross-border movement. For example, a recent study by Orraca-Romano and Vargas-Valle (2020) finds the homicide rate in northern border municipalities of Mexico is negatively associated with cross-border commuting for work. The authors suggest that the decline in commuting in the face of violence reflects increased emigration to the USA—a conclusion consistent with research on emigration from Mexican border states to the USA (Orraca-Romano & Vargas-Valle, 2020).

Geographic proximity to the USA, along with social relationships with family and others living there, might better enable residents of border states to respond to a fear of victimization by emigrating to the USA. More generally, a higher concentration of transborder ties among residents of border states may facilitate migrating in response to high community homicide rates. Violence in border states may be perpetrated primarily by drug-trafficking organizations, and these forms of violence may provide special impetus to migrate. High rates of violence in non-border states could actually deter migration because potential migrants would be exposed to substantial physical risks en route to the USA (Chort & de la Rupelle, 2016; Orozco-Aleman & Gonzalez-Lozano, 2018). Overall, this line of reasoning suggests that the impact of exposure to violence on migration to the USA may be particularly pronounced among women, among members of

households with children, and among residents of urban areas and border states (Hypothesis 5).

Data and Methods

Data for this analysis come from three sources: the Mexican Family Life Survey (MxFLS), Mexican vital statistics data, and the 2000 Mexican population census. The MxFLS is a multi-thematic survey of a nationally-representative sample of Mexican households and their members (Rubalcava & Teruel, 2006). The first wave of data, comprised of a sample of 8,441 households and about 35,000 individuals (including children), was collected in 2002. Surveyed households are distributed across 136 of Mexico's 2438 municipalities. A follow-up survey was conducted in 2005–2006.

For several reasons, the MxFLS is well-suited to examining the possible impact of exposure to violence on the likelihood that Mexicans will migrate to the USA. First, substantial effort was made to track respondents interviewed at wave 1 who moved to the USA by wave 2. Protocols included, but were not limited to, making multiple contacts with the original households to determine who has left, providing material incentives to participate in the survey, employing interview teams in both Mexico and the USA, and relying on social networks to locate USA-based migrants (Teruel et al., 2012). The second wave of the MxFLS was able to interview 91 percent of the wave 1 respondents who were determined to have moved to the USA.

Second, the first wave of the MxFLS contains a rich battery of questions related to incidents of violent victimization, perceptions of likely future victimization, and fear of crime. The use of the indicators from the wave 1 survey ensures that experiences and perceptions of violence are measured prior to the measurement of migration to the USA.

Third, the MxFLS provides geocodes at the municipality level that allow for aggregate measures of homicide and other areal predictors of migration to be attached to the individual MxFLS wave 1 records. We draw on official homicide rates from Mexican vital statistics (INEGI, 2021) and aggregated measures from the 2000 Mexican population census to create municipality-level measures of possible drivers of Mexican emigration to the USA.[1]

Sample Selection

We select MxFLS respondents who were between the ages of 15 and 64 as of the first wave and who were administered the questionnaire module on criminal victimization ($N = 17{,}946$). Missing data on the other covariates reduces the sample size to 17,779.[2]

---

[1] In Mexico, municipalities are the second-level administrative division after states. As elements of administrative and political geography, Mexican municipalities are roughly similar to USA counties.

[2] Because so few observations are lost to missing data, we employ listwise deletion rather than imputation.

Dependent Variable

Following other studies that have used the MxFLS to examine the determinants of migration to the USA (e.g., Arenas et al., 2008; Hamilton, 2015), we use the second wave of the MxFLS to measure whether adult respondents moved to the USA and stayed, or planned to stay, there for at least one year. The dependent variable is a binary indicator of whether the MxFLS respondent had moved to the USA between the first and second waves. Of the 17,779 MxFLS respondents in our effective sample, 495 (2.8%) had moved to the USA by the second wave.

Independent Variables

Our focal independent variables are measures of exposure to violence, measured at both the individual and municipality level, and individuals' perceptions of violence. In the wave 1 interview the MxFLS adult respondents were asked whether "you have ever been assaulted, robbed, or have you been a victim of any violent incident, out of your household, plot, or business?" Questions were then asked about the four most recent victimization incidents, including the date and type (robbery or assault, fight, sexual harassment or abuse, kidnapping, and other) of the incident.[3] From this information, we tally the number of victimizations reported by the respondent that occurred during the current calendar year (2002) and the preceding two calendar years (2000 and 2001) and construct a dummy variable distinguishing victims from nonvictims.

The MxFLS respondents were also queried about their fear of being victimized by violence. Respondents were asked their level of concern about "being attacked or assaulted," with possible response categories of (1) very scared, (2) scared, (3) a little scared, and (4) do not feel scared. Separate questions were asked about their level of fear during the day and during the night. We average the responses to these two questions, and then reverse code the responses so that high values indicate a greater fear of being a victim of violence. Respondents were also asked about how safe they feel relative to five years prior to the survey, with possible response categories of "safer," "(as) safe," and "less safe." Our measure of perceived change in safety contrasts respondents who feel as safe as they did five years prior with respondents who feel safer and respondents who feel less safe.

From Mexican vital statistics data we construct a municipality-level homicide rate. To enhance the stability of the rate, we average the number of deaths attributable to intentional homicide reported in 1999, 2000, and 2001 and then divide this figure by the 2000 municipality population size (and multiply by 100,000).

The models include an array of established correlates of international migration. Our selection of variables is guided by prior MxFLS-based studies of the determinants of moving to the USA (Arenas et al., 2008; Hamilton, 2015). All individual-level and household-level covariates are measured using data from wave 1 of the

---

[3] The vast bulk of these incidents—over 90%—fall into the category of "robbery or assault." The infrequency of victimization from other offenses precludes disaggregating this measure by offense type.

MxFLS. Respondent's age is measured in years. Sex is a dummy variable scored 1 for females. A separate dummy variable distinguishes married or cohabiting respondents from unmarried respondents. The measure of respondent's educational attainment consists of four categories tapping their highest years of completed schooling: no formal schooling, some schooling but less than high school, high school completion, and some college. Ethnicity contrasts self-identified indigenous people with the majority. Employment status is measured by a dummy variable indicating whether the respondent worked for pay in the 12 months preceding the interview. Previous migration experience is measured by a dummy variable indicating whether the respondent had ever moved from the municipality they resided in at age 12.

Three covariates are measured at the household level. Household size is the count of all members of the household. A dummy variable distinguishes households that contain a child younger than 15 years old from childless households. Household income is the sum of all adult household members' annual income from earnings, social programs, and monetary transfers, logged to reduce skewness. We note that controlling for respondents' employment, education, and income might be especially important in assessing the relationship between actual and perceived exposure to violence and USA-bound migration because such characteristics might suppress the association. Respondents with few resources might be particularly likely to be victims, while a deficit of some types of resources may inhibit emigration.

To capture differences in the likelihood of moving to the USA across Mexican geographic areas, we distinguish between respondents originating in rural versus urban areas, with the latter defined as localities of 2500 or more inhabitants. We also include a dummy variable that distinguishes municipalities in a Mexican state that borders the USA (Baja California, Sonora, Chihuahua, Coahuila, Nuevo León, and Tamaulipas) from other municipalities. Using the data from the 10.5% public use sample of the 2000 Mexican census (Minnesota Population Center, 2019), we compute the municipality-level average monthly household income, measured in thousands of pesos.

Analytic Strategy

Evaluating the impact of the municipality-level variables, including the homicide rate, necessitates taking into account the multilevel nature of the data. The data structure consists of 17,779 respondents nested within 136 municipalities. The number of respondents per municipality ranges from 27 to 777 with an average of 131. Given this structure, we estimate a series of multilevel, random-intercept logistic regression models (Guo & Zhao, 2000). Multilevel models adjust for the clustering of observations within higher-order units (here, municipalities) and ensure that the standard errors of the regression coefficients are based on the proper degrees of freedom. Models are estimated using Stata's melogit procedure (StataCorp., 2005).

As suggested above, the impact of exposure to violence on the likelihood of migrating to the USA might vary by other characteristics, including respondent's gender, household composition, and geographic context. Accordingly, after

presenting the results for the full sample, we present the results disaggregated by selected respondent characteristics.

Results

Table 1 presents descriptive statistics for all variables used in the analysis, separately for migrants to the USA and nonmigrants. Reports of violent victimization are rare, and differences between migrants and nonmigrants in the indicators of exposure to violence are modest. Proportionally more migrants than nonmigrants report having been a victim of violence in the preceding three years—6.1% versus 5.1%—but the difference is small and statistically nonsignificant. As with victimization, fear of crime is overall low, with means falling about midway between the category of "do not feel scared" and "feel a little scared." Moreover, on average migrants report a slightly but significantly lower level of fear (1.536) than do nonmigrants (1.646).

Somewhat similarly, and also contrary to our hypotheses, migrants are less likely than nonmigrants to feel that their personal safety has deteriorated over the five years prior to the initial survey, although the differences are neither large nor statistically significant: 24% of migrants feel less safe versus 26% of nonmigrants. Also contrary to expectations, the homicide rate of municipalities initially inhabited by the USA-bound migrants (11.428) is lower than the homicide rate of municipalities inhabited by nonmigrants (12.127), although again the difference is small and nonsignificant.

Of course, Mexican migrants to the USA are likely to differ from nonmigrants in numerous ways that might confound or suppress an effect of exposure to violence on migration. Indeed, Table 1 shows some pronounced differences between migrants and nonmigrants on the model covariates. Unsurprisingly, migrants tend to be much younger than the nonmigrants, and they are more likely to be male and less likely to be married or cohabiting. Migrants are less likely than nonmigrants to have attained at least a high school education (20.4% versus 25.3%). Perhaps surprisingly, however, Mexican migrants to the USA are less likely than nonmigrants to have previous migration experience.

Compared to nonmigrants, migrants come from larger households that are more likely to contain at least one child. On average, migrants' household income is markedly lower than that of nonmigrants.

Table 1 also reveals sharp geographic differences between migrants and nonmigrants. Migrants are less likely than nonmigrants to have lived at the first interview wave in an urban area (40.2% versus 59.0%) and in a state that borders the USA (9.7% versus 22.5%). The municipalities initially inhabited by migrants tend to have lower household incomes than the municipalities inhabited by nonmigrants.

Table 2 presents the results of the multilevel logistic regression analysis. Model 1 includes as predictors the dummy variable for whether the respondent has been a victim of violence during the prior three years and the full battery of controls. Looking first at the controls, the odds of migrating to the USA decline significantly with age and are significantly lower for women than for men. Respondents with some college education are significantly less likely than respondents with some formal schooling but less than a high school education to

Table 1 Descriptive statistics for variables used in analysis of migration to the USA: Mexican Family Life Survey 2002 and 2005/06

	Migrants		Nonmigrants		P-value for difference
	Prop./mean	SD	Prop./mean	SD	
Exposure to violence					
Violent victimization R reports a violent victimization between 2000 and 2002 (1=yes)	0.061		0.051		ns
Fear of crime Rs average of feeling scared of being attacked or assaulted during the day and night (1=do not feel scared; 2=a little scared; 3=scared; 4=very scared)	1.536	0.904	1.646	0.922	<0.01
Perceived change in safety					
Feels safer R feels safer compared to 5 years ago (1=yes)	0.251		0.220		ns
Feels as safe R feels as safe compared to 5 years ago (1=yes)	0.507		0.520		
Feels less safe R feels less safe compared to 5 years ago (1=yes)	0.242		0.260		
Municipality homicide rate Average municipality homicide rate 1999–2001 per 100,000	11.428	11.286	12.127	17.330	ns
Other individual characteristics					
Age Rs age in years	25.064	9.999	34.421	13.618	<0.001
Female R is female (1=yes)	0.410		0.565		<0.001
Married R is married or cohabiting (1=yes)	0.380		0.620		<0.001
Educational attainment					
No education R has no formal education (1=yes)	0.030		0.072		<0.001
Less than high school R attended but did not complete high school (1=yes)	0.766		0.675		
High school R completed high school but no college (1=yes)	0.172		0.158		
College R attended college (1=yes)	0.032		0.095		
Indigenous ethnicity R belongs to indigenous ethnic group (1=yes)	0.143		0.120		ns
Employed R is currently working (1=yes)	0.574		0.551		ns
Previous migration experience R moved out of municipality of residence since age 12 prior to 2002 (1=yes)	0.222		0.278		<0.01
Household characteristics					
Household size Number of persons in Rs household	5.784	2.308	5.000	2.153	<0.001
Household has children Rs household contains a child younger than 15 (1=yes)	0.758		0.697		<0.01

Table 1 (continued)

	Migrants		Nonmigrants		P-value for difference
	Prop./mean	SD	Prop./mean	SD	
Household income					
Rs household income (ln)	7.643	4.471	8.798	3.967	<0.001
Other areal characteristics					
Urban					
R lives in locality greater than 2500 population (1=yes)	0.402		0.590		<0.001
US border state					
Rs state of residence borders USA (1=yes)	0.097		0.225		<0.001
Municipality mean income					
Mean monthly household income (in 1000s) in Rs municipality	3.716	1.805	5.084	2.075	<0.001
N	495		17,284		

Sample consists of MxFLS respondents' ages 15 to 64 in 2002

Table 2 Multilevel logistic regression analysis of migration to the USA: Mexican Family Life Survey 2002 and 2005/06

	Model 1			Model 2			Model 3			Model 4		
	b	se	OR	b	se	OR	b	se	OR	b	se	OR
Exposure to violence												
Violent victimization	0.357†	0.209	1.429									
Fear of crime				−0.037	0.059	0.963						
Perceived change in safety												
Feels safer							0.099	0.123	1.105			
Feels as safe (ref.)							–	–	–			
Feels less safe							0.244*	0.122	1.276			
Municipality homicide rate										−0.010	0.008	0.990
Other individual characteristics												
Age	−0.065**	0.006	0.937	−0.065**	0.006	0.937	−0.065**	0.006	0.937	−0.065**	0.006	0.937
Female	−0.632**	0.109	0.532	−0.627**	0.111	0.534	−0.655**	0.110	0.520	−0.641**	0.109	0.527
Married	−0.226†	0.132	0.798	−0.226†	0.132	0.798	−0.223†	0.132	0.800	−0.229†	0.132	0.796
Educational attainment												
No education	−0.461	0.286	0.630	−0.467	0.286	0.627	−0.454	0.286	0.635	−0.464	0.286	0.629
Less than high school (ref.)	–	–		–	–		–	–		–	–	
High school	−0.084	0.137	0.919	−0.077	0.137	0.926	−0.090	0.137	0.914	−0.077	0.137	0.925
College	−0.721**	0.269	0.486	−0.703**	0.269	0.495	−0.728**	0.269	0.483	−0.708**	0.269	0.493
Indigenous ethnicity	−0.189	0.187	0.828	−0.184	0.187	0.832	−0.179	0.187	0.836	−0.183	0.187	0.833
Employed	0.369**	0.115	1.447	0.373**	0.115	1.452	0.369**	0.115	1.447	0.373**	0.115	1.453
Previous migration experience	0.398**	0.125	1.488	0.402**	0.125	1.495	0.402**	0.125	1.496	0.404**	0.125	1.498
Household characteristics												
Household size	0.066**	0.024	1.068	0.066**	0.024	1.068	0.066**	0.024	1.068	0.066**	0.024	1.068
Household has children	−0.040	0.134	0.961	−0.036	0.134	0.964	−0.042	0.134	0.959	−0.038	0.134	0.963
Household income	−0.041**	0.012	0.959	−0.041**	0.012	0.960	−0.042**	0.012	0.959	−0.041**	0.012	0.959

Table 2 (continued)

	Model 1			Model 2			Model 3			Model 4		
	b	se	OR	b	se	OR	b	se	OR	b	se	OR
Other areal characteristics												
Urban	0.104	0.218	1.109	0.121	0.218	1.128	0.111	0.218	1.118	0.099	0.217	1.104
US border state	−0.500	0.314	0.606	−0.521[†]	0.313	0.594	−0.504	0.313	0.604	−0.514[†]	0.310	0.598
Municipality mean income	−0.327**	0.067	0.721	−0.320**	0.067	0.726	−0.326**	0.067	0.722	−0.331**	0.066	0.719
Constant	−0.361			−0.319			−0.407			−0.195		
N	17,779			17,779			17,779			17,779		
Log-likelihood	−1853.556			−1854.707			−1852.932			−1854.045		

The sample includes respondents aged 15–64. All models include a random intercept for municipality ($n = 136$)

[†] $p < 0.10$; * $p < 0.05$; ** $p < 0.01$

migrate to the USA. Net of the effects of the other predictors, respondents who are currently employed and who have migrated in the past are significantly more likely than their nonemployed and previously nonmobile counterparts to move to the USA.

Members of larger households are more likely than others to migrate to the USA, although whether the household contains a young child does not appear to significantly affect the odds of moving. Household income is significantly and inversely associated with the odds of migrating to the USA. Of the areal predictors, only the municipality mean household income is significantly associated with the odds of migrating to the USA. Residents of municipalities with higher incomes are significantly less likely than residents of municipalities characterized by lower incomes to move to the USA.

Of central importance is the coefficient for violent victimization. The coefficient is positive and statistically significant, though only at a borderline level ($b=0.357$, $p<0.10$). Being a victim of violence is estimated to increase the odds of moving to the USA by about 43 percent, net of the controls. However, the difference in the odds of migrating between victims and nonvictims should be interpreted somewhat cautiously, as the sample contains only 30 respondents who were both victims and who migrated to the USA. With this caveat, Model 1 of Table 2 provides suggestive evidence for Hypothesis 1.[4]

Model 2 of Table 2 estimates the net effect of respondent's reported fear of violent crime on the likelihood of migrating to the USA. Contrary to Hypothesis 2, the coefficient for perceived fear of being attacked or assaulted is negative, albeit quite weak and not statistically significant. It does not appear the respondents who are more fearful of being physically assaulted are more likely than other respondents to subsequently migrate to the USA.

Model 3 examines the effect of respondent's perceived change in physical safety over the previous five years. Respondents who believe that they have become less safe over time are significantly more likely than respondents who believe their safety has not changed (the reference category) to move to the USA. Net of the effects of the other predictors, the odds of migrating to the USA for respondents who feel less safe are about 28% higher than the corresponding odds for respondents who perceived no change in their physical safety. However, the propensity to migrate among respondents who believe that they have become safer over time does not differ significantly from respondents who perceive no change in their safety. These results provide a mixed but generally positive evaluation of Hypothesis 3 which stated that a perceived deterioration in physical safety drives Mexicans to migrate to the USA.

Finally, Model 4 of Table 2 includes as the focal predictor the municipality homicide rate. The coefficient for the homicide rate is negative, small, and statistically nonsignificant, thus providing no support for Hypothesis 4 which posited that exposure to high rates of extreme violence in the local community motivates Mexicans to migrate to the USA.

---

[4] Treating violent victimization as a continuous count rather than as a dichotomous indicator yields a coefficient that is significant at conventional levels ($b=0.222$, $p<0.05$).

Figure 1 illustrates the strength of the associations between perceived change in safety and the likelihood of moving to the USA. This figure shows the average adjusted probabilities (Williams, 2012) of moving to the USA for respondents who felt that their personal safety had improved, remained the same, or worsened over the past five years. These simulated probabilities are derived from Model 3 of Table 2.

Figure 1 shows that the difference in the probability of migrating to the USA between respondents who feel that their personal safety has deteriorated over the past five years and those who perceive no change is nontrivial, but not overwhelming. The average predicted probability that respondents who perceive that they are less safe than five years ago move to the USA is 0.034, compared to 0.027 for respondents who perceive no change in their personal safety. The probability of moving to the USA among respondents who feel that they had become safer over time (0.030) falls between these two groups.

Subgroup Differences

As suggested above by Hypothesis 5, it is reasonable to expect that the effects of exposure to violence on the subsequent likelihood of migrating to the USA may be particularly pronounced among certain subgroups of potential Mexican migrants. The models shown in Table 3 re-estimate Models 2–4 of Table 2 separately for women and men, members of households with and without children, urban and rural residents, and
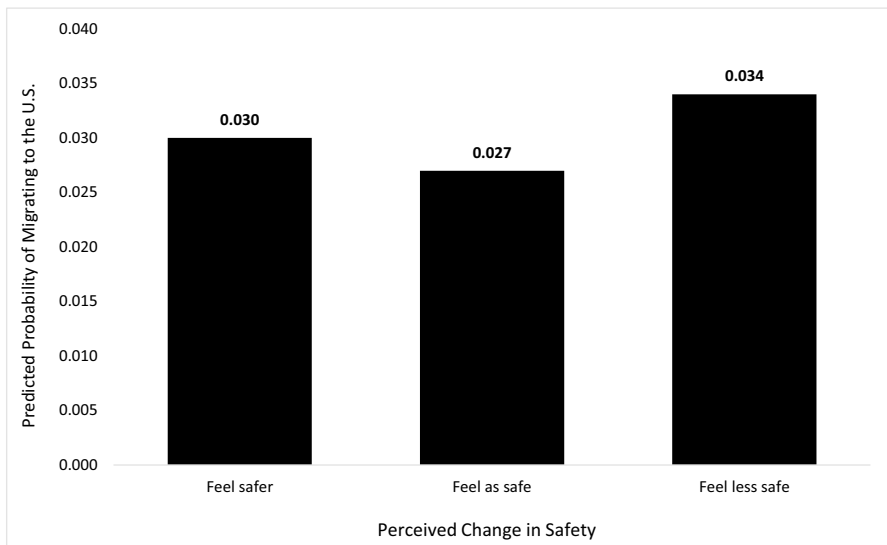

Fig. 1 Average adjusted probabilities of migrating to the USA by perceived change in safety: Mexican Family Life Survey 2002 and 2005/06

inhabitants of border state and non-border states.[5] Each of these disaggregated models includes the full set of controls that were included in the Table 2 models.[6]

As shown in Panel A of Table 3, gender differences in the relationships between the three dimensions of exposure to crime and the likelihood of migrating to the USA are small. For neither gender are the associations between fear crime or the municipality homicide rate and the odds of emigrating statistically significant. And while women are somewhat more likely than men to migrate in response to perceiving a deterioration in their personal safety, the difference in the magnitude of the coefficients is modest.

As shown in Panel B, the impact of exposure to violence on the likelihood of migrating to the USA also does not appear to be stronger among households containing children than among childless households. Likely owing in large part to the reduced sample sizes in the subgroup analyses, most of the coefficients for the exposure to violence measures are statistically nonsignificant among respondents in both types of households.

Panel C of Table 3 disaggregates the regression models by respondents' urban/rural status as of the first wave of the MxFLS. Among residents of urban areas, perceived deterioration in physical safety emerges as a significant positive predictor of migrating to the USA, with the odds of migrating for those who feel that their physical safety has deteriorated over the past five years 60 percent higher than the odds for those who feel their physical safety remains unchanged. At the same time, however, among urban residents perceived fear of crime is inversely associated (at a borderline significance level) with the odds of emigrating, underscoring the finding that potential migrants respond more to *changes* in perceived safety than to the level of perceived safety. Moreover, the association between the municipality homicide rate and the odds of migrating to the USA is nonsignificant for both urban and rural residents.

In Panel D of Table 3 the models are disaggregated by whether or not the respondent initially resided in a Mexican state that borders the USA. Neither region-of-origin groups stands out as being particularly responsive to the measures of exposure to violence. The coefficient for fear of crime and the municipality homicide rate are all nonsignificant for both groups. The coefficient for a perceived decline in safety ("feels less safe") is somewhat larger for residents of border states than for residents of nonborder states, but it is estimated more precisely for the latter group.

Overall, then, there is on balance little support for Hypothesis 5, which suggested that the effect of exposure to violence on the likelihood of migrating to the USA might be especially strong for some subgroups of potential migrants. With the exception of the association between perceived change in personal safety and the odds of migrating among urban residents, no subgroup of respondents appears unusually responsive to the exposure-to-violence measures.

---

[5] We do not disaggregate Model 1 of Table 2 because there are too few respondents who were both victims and migrants to support a subgroup analysis.

[6] Because our objective here is to identify particular subgroups of respondents for whom exposure to violence triggers migration to the USA, we do not formally test for the statistical significance of the difference across subgroups in the strength of the association between the measures of violent exposure and migration.

Table 3 Multilevel logistic regression analysis of migration to the United States by selected characteristics: Mexican Family Life Survey 2002 and 2005/06

	Model 1			Model 2			Model 3		
	b	se	OR	b	se	OR	b	se	OR
Panel A									
Women									
Exposure to violence	0.046	0.075	1.047						
Fear of crime									
Perceived change in safety									
Feels safer				0.243	0.188	1.274			
Feels as safe (ref.)				–	–	–			
Feels less safe				0.347[†]	0.181	1.416			
Municipality homicide rate							−0.011	0.009	0.990
N	9965			9965			9965		
Log-likelihood	−853.988			−852.148			−853.443		
Men									
Exposure to violence	−0.136	0.098	0.873						
Fear of crime									
Perceived change in safety									
Feels safer				0.014	0.164	1.014			
Feels as safe (ref.)				–	–	–			
Feels less safe				0.224	0.169	1.251			
Municipality homicide rate							−0.012	0.010	0.988
N	7814			7814			7814		
Log-likelihood	−1001.415			−1001.525			−1001.635		
Panel B									
Households with children									
Exposure to violence									

Table 3 (continued)

	Model 1			Model 2			Model 3		
	b	se	OR	b	se	OR	b	se	OR
Fear of crime	−0.055	0.068	0.947						
Perceived change in safety									
Feels safer				0.094	0.141	1.099			
Feels as safe (ref.)				–	–	–			
Feels less safe				0.179	0.141	1.196			
Municipality homicide rate							−0.011	0.008	0.989
N	12,416			12,416			12,416		
Log-likelihood	−1405.248			−1404.748			−1404.645		
Households without children									
Exposure to violence									
Fear of crime	0.005	0.121	1.005						
Perceived change in safety									
Feels safer				0.105	0.250	1.110			
Feels as safe (ref.)				–	–	–			
Feels less safe				0.467[†]	0.249	1.596			
Municipality homicide rate							−0.012	0.011	0.988
N	5363			5363			5363		
Log-likelihood	−456.975			−455.250			−456.290		
Panel C									
Urban									
Exposure to violence									
Fear of crime	−0.169[†]	0.089	0.845						
Perceived change in safety									
Feels safer				0.239	0.185	1.270			

Table 3 (continued)

	Model 1			Model 2			Model 3		
	b	se	OR	b	se	OR	b	se	OR
Feels as safe (ref.)				–		–			
Feels less safe				0.469**	0.179	1.598			
Municipality homicide rate							−0.007	0.008	0.993
N	10,393			10,393			10,393		
Log-likelihood	−854.258			−852.712			−855.753		
Rural									
Exposure to violence									
Fear of crime	0.076	0.080	1.079						
Perceived change in safety									
Feels safer				0.012	0.165	1.012			
Feels as safe (ref.)				–	–	–			
Feels less safe				0.084	0.170	1.088			
Municipality homicide rate							−0.010	0.010	1.000
N	7386			7386			7386		
Log-likelihood	−988.137			−988.453			−988.127		
Panel D									
US border states									
Exposure to violence									
Fear of crime	0.172	0.159	1.188						
Perceived change in safety									
Feels safer				0.170	0.365	1.185			
Feels as safe (ref.)				–	–	–			
Feels less safe				0.394	0.357	1.483			
Municipality homicide rate							−0.007	0.010	0.993

Table 3 (continued)

	Model 1			Model 2			Model 3		
	b	se	OR	b	se	OR	b	se	OR
N	3,805			3,805			3,805		
Log-likelihood	−238.717			−238.682			−238.994		
Non-US border states									
Exposure to violence									
Fear of crime	−0.066	0.064	0.936						
Perceived change in safety									
Feels safer				0.104	0.131	1.110			
Feels as safe (ref.)				–	–	–			
Feels less safe				0.230†	0.130	1.258			
Municipality homicide rate							−0.010	0.011	0.990
N	13,840			13,840			13,840		
Log-likelihood	−1593.805			−1592.791			−1593.914		

The sample includes respondents aged 15–64. All models include a random intercept for municipality (n = 136)

†$p < 0.10$; *$p < 0.05$; **$p < 0.01$

Additional Analyses

We performed several additional analyses with these data. First, we examined whether *changes* in the homicide rate affect the likelihood of migrating to the USA. The results presented above suggest that Mexicans' propensity to migrate to the USA does not respond to their static fear of crime or to the concurrent level of the homicide rate but that it does respond to recent changes in their perceived physical safety. This finding raises the possibility that recent *increases* in the homicide rate may propel Mexicans to move to the USA. We examined this possibility by constructing municipality-level homicide rates for 1995, analogous to the rates for 2000, and estimating models using the 1995 to 2000 *change* in the homicide rate as the focal independent variable. The coefficient for the change in the homicide rate was quite small and fell far from statistical significance.

Second, we explored evidence of statistical suppression. At the bivariate level (Table 1), migrants are actually *less* likely than nonmigrants to believe that they are less safe than they were five years prior. Yet, when other predictors of migration to the USA are controlled (Table 2), the association between perceived change in safety and the likelihood of migrating to the USA reverses direction, with respondents who feel less safe more likely to emigrate than those who perceive no change in their safety. The difference between the bivariate and multivariate-adjusted associations raises the question as to which confounders might be suppressing the relationship between perceived change in physical safety and the likelihood of migrating to the USA. Learning which variables suppress these associations might help inform further efforts to model the effect of exposure to violence on international migration, both in Mexico and elsewhere.

To examine this issue, we estimated models that include only perceived change in safety as an independent variable, and we then added one at a time the individual, household, and areal characteristics that serve primarily as controls. The most important confounders in this regard are respondent's age and sex. Older respondents and women are more likely than younger respondents and men to perceive that their physical safety has deteriorated over the past five years, and older respondents and women are also less likely than younger respondents and men to migrate to the USA. Consequently, controlling for respondents' age and sex causes the coefficient for perceived deterioration in physical safety (the dummy variable labeled "feels less safe") to become positive in the regression analysis shown in Table 2.

Third, we examined whether the victimization experiences of other household members might drive an individual to migrate to the USA. We created a new variable measuring the number of violent victimizations of all other adult household members and included in the regression models this variable as a predictor along with the count of respondents' own victimizations. We did not observe a significant effect of other household members' victimization experience on the respondent's likelihood of moving to the USA, suggesting that individuals are motivated to migrate mainly, and perhaps exclusively, by their own victimization experiences.

Fourth, we tested for whether the effects of the exposure to violence measures on the probability of migrating to the USA vary by household income or previous

migration experience, as the latter variables may indicate greater access to financial and/or social capital. However, we found no evidence that the effect of any of the exposure-to-violence measures on migration to the USA varies significantly by these characteristics.

Discussion and Conclusion

Despite historical ebbs and flows, the migration of Mexicans to the United States remains substantial, with Mexican immigrants constituting roughly 25 percent of the total USA immigrant population (Budiman, 2020). Prior research on the determinants of migration from Mexico to the USA has focused largely on the influence of economic factors and social capital. Theories of international migration, including from Mexico to the United States, rarely emphasize exposure to violence, or the desire to escape violence, as motivations to emigrate, although such reasons are often prevalent in journalistic accounts and public discourse. Our analysis provides a rare individual-level, longitudinal assessment of the impact of exposure to violence, as well as perceptions of the risk of violent victimization, on the likelihood that Mexicans migrate to the USA. Understanding the role of exposure to violence in the migration process is important to more accurately gauge its significance relative to other factors and to better inform immigration policies, particularly those related to asylum petitions.

Our analysis draws on two waves of data from the Mexican Family Life Survey (MxFLS), along with municipality-level data derived from Mexican vital statistics and the 2000 Mexican population census. Results from multilevel regression analysis provide a mixed assessment of the degree to which exposure to violence motivates Mexicans to migrate to the USA. We find suggestive evidence that respondents who report being recent victims of violence and who perceive a recent deterioration in personal safety are more likely than others to migrate to the USA. The magnitude of the ostensible effect of exposure to violence on USA-bound migration is not overwhelming but neither is it trivial, especially considering the rather short migration interval—about three years—examined. However, contrary to two of the hypotheses guiding our analysis, we find no significant associations between individuals' generalized fear of crime or the community-level homicide rate and the likelihood of migrating to the USA. The association between perceived change in personal safety and migration appears particularly strong among urban residents but—contrary to our hypothesis—not among women, members of households with children, or inhabitants of border states.

To the extent that perceptions of victimization risk matter for understanding Mexican migration to the United States, it appears that recent *changes* in these perceptions are more important than the level of perceived risk. A perceived deterioration in personal safety appears to influence the decision to migrate to the USA, but a level of perceived crime that may be considered "typical" does not motivate a move. Perhaps individuals grow accustomed to a given level of victimization risk, and only a noticeable change to that risk elicits a migration response.

We also find that the effect on migration of a change in perceived safety is particularly strong among Mexican residents of urban areas. This strong effect could perhaps be a function of the type of crime most common in these geographic areas. Drug-related crimes, including homicide and kidnapping, may be more concentrated in urban areas, and perceptions of these crimes may be especially influential in driving migration to the USA (Arceo-Gómez, 2012; Basu & Pearlman, 2017; Chort & de la Rupelle, 2016; Rios Contreras, 2014). Exposure to violence in rural areas may be less consequential for motivating USA-bound migration both because victimizations in these areas may deprive residents of the resources needed to emigrate (Arenas et al., 2008) and because high levels of crime in these areas signal a higher likelihood of actual or perceived exposure to victimization en route to the USA (Chort & de la Rupelle, 2016).

Future research on the impact of exposure to violence on Mexican migration to the USA might benefit from addressing some of the limitations of this study. As noted above, we observe few respondents who both report being victimized and who moved to the USA, rendering our conclusions about this association tentative. This small cell size prevents a subgroup analysis of the effect of actual victimization experience on migration. The MxFLS also lacks detailed measures of exposure to violence. The MxFLS data do not distinguish between drug-related crimes and more commonplace street crimes, and the relative infrequency of crimes other than robbery and assault prevents a fine-grained disaggregation by type of offense. Incorporating measures of violence perpetrated specifically by criminal organizations might enhance research on how exposure to violence propels emigration. Exposure to nonlethal forms of violence in the local community might matter as much or even more than exposure to high homicide rates. Emigrating to escape political violence might bear on whether asylum-seekers have a "credible fear" of persecution should they be forced to return to their home country.

The MxFLS data also register only violent incidents that occur outside of the victim's home. Consequently, our analysis cannot directly examine the impact of domestic violence on Mexican women's propensity to migrate to the USA. Identifying the precise temporal lag between exposure to violence and migratory response is also important. Although we did not find that the victimization experiences of other adult household members drive individuals to migrate, such effects might depend on the nature of the relationship among household members. For example, adult sons might be motivated to migrate if their fathers had been victimized. Incorporating information on family members who have moved to the USA might also prove valuable; Mexicans with relatives already living in the United States might be viewed as financially attractive victims of crime—for example, due to their receipt of remittances—and may be more likely themselves to emigrate. Future research might profit by collecting more detailed data on experiences of violent victimization in order to develop more comprehensive accounts of how exposure to crime and violence drives Mexican migration to the USA.

We note as well that the period covered by our study is characterized by comparatively low homicide rates (and perhaps other forms of violence) relative to more recent years (Villarreal & Yu, 2017). Perhaps this comparatively nonviolent nationwide climate made citizens less disturbed by individual experiences of violent

victimization and hence less likely to migrate in response to violent exposures compared to the more recent period of markedly higher homicide rates. Future research might benefit from exploring potential temporal variation in the association between exposure to violence and Mexicans' migration to the USA.

Future research on the impact of exposure to violence on emigration to the USA might extend the geographic scope of our analysis beyond the Mexican context. Immigration to the USA from the Northern Triangle countries of El Salvador, Guatemala, and Honduras remains substantial, and public narratives report that potential immigrants from this region often cite the desire to escape gang-related and political violence as a motive for relocating (e.g., Gamboa et al., 2018). The impact of exposure to violence, as captured by both objective and perceptual reports, might be especially robust among residents of Central American regions where many manifestations of violence are rampant (Alvarado & Massey, 2010; Hiskey et al., 2018).

The decision to migrate from Mexico to the USA is driven by multifaceted considerations, both proximate and distal to the move itself (Garip, 2017). In addition to longstanding emphases on economic motivations, social networks, and historical legacies, recent explanations have begun to focus on factors such as climate change (Hunter et al., 2013; Hunter & Simon, 2023) and migration policy (de Haas et al., 2019; Massey, 2015). The analysis presented here suggests a role for a prosaic concern with physical safety. Exposure to violence, including both actual victimization and perceived changes in safety, may serve as a push factor that motivates Mexicans to migrate to the USA. The desire to reduce exposure to violence should perhaps be included among the panoply of factors that shape Mexicans' calculus regarding the decision to emigrate and may well deserve a more prominent role in explanations for international migration in other geographic and social contexts.

Declarations

References

Alvarado, S. E., & Massey, D. S. (2010). Search of peace: Structural adjustment, violence, and international migration. *The ANNALS of the American Academy of Political and Social Science, 630*, 137–161.

Arceo-Gómez, E. O. (2012). *Drug-related violence and forced migration from Mexico to the United States (MPRA Paper 44529)*. University Library of Munich.

Arenas, E., Conroy, H., & Nobles, J. (2008). *Recent trends in internal and international Mexican migration: Evidence from the Mexican Family Life Survey (Working paper CCPR-2008-034)*. California Center for Population Research, University of California—Los Angeles.

Asad, A. L., & Garip, F. (2019). Mexico-U.S. migration in time: From economic to social mechanisms. *The ANNALS of the American Academy of Political and Social Science, 684*, 60–84.

Basu, S., & Pearlman, S. (2017). Violence and migration: Evidence from Mexico's drug war. *IZA Journal of Development and Migration, 7*(18), 1–29. https://doi.org/10.1186/s40176-017-0102-6

Borjas, G. J. (1999). The economic analysis of immigration. *Handbook of Labor Economics, 3*, 1697–1760.

Budiman, A. (2020). *Key findings about U.S. immigrants (Report)*. Pew Research Center.

Chort, I., & de la Rupelle, M. (2016). Determinants of Mexico-U.S. outward and return migration flows: A state-level panel data analysis. *Demography, 53*, 1453–1476.

Clemens, M. A. (2017). *Violence, development, and migration waves: Evidence from Central American child migrant apprehensions (Working Paper 459)*. Center for Global Development.

de Haas, H., Czaika, M., Flahaux, M.-L., Mahendra, E., Natter, K., Vezzoli, S., & Villares-Varela, M. (2019). International migration: Trends, determinants, and policy effects. *Population and Development Review, 45*, 885–922.

Fernandez-Dominguez, A. O. (2020). Effect of actual and perceived violence on internal migration: Evidence from Mexico's drug war. *IZA Journal of Development and Migration, 11*(8), 1–27. https://doi.org/10.2478/izajodm-2020-0008

Fussell, E., & Massey, D. S. (2004). The limits to cumulative causation: International migration from Mexican urban areas. *Demography, 41*, 151–171.

Gamboa, S., Atencio, M., & Gutierrez, G. (2018). Why are so many migrants crossing the U.S. border? It often starts with an escape from violence in Central America. *NBC New*s. Retrieved January 19, 2021 from https://www.nbcnews.com/storyline/immigration-border-crisis/central-america-s-violence-turmoil-keeps-driving-families-u-s-n884956

Garip, F. (2008). Social capital and migration: How do similar resources lead to divergent outcomes? *Demography, 45*, 591–617.

Garip, F. (2017). *On the move: Changing mechanisms of Mexico-U.S. migration*. Princeton University Press.

Gonzalez-Barrera, A. (2015). *More Mexicans leaving than coming to the US (Report)*. Pew Research Center.

Guo, G., & Zhao, H. (2000). Multilevel modeling for binary data. *Annual Review of Sociology, 26*, 441–462.

Hamilton, E. R. (2015). Gendered disparities in Mexico-U.S. migration by class, ethnicity, and geography. *Demographic Research, 32*, 533–542. https://doi.org/10.4054/DemRes.2015.32.17

Hamilton, E. R., & Bylander, M. (2021). The migration of children from Mexico to the USA in the early 2000s. *Population Research and Policy Review, 40*, 337–361.

Hernández, A. R. (2021). Immigrants are crossing the U.S. Mexico border in large numbers. *Washington Post*. Retrieved December 22, 2021 from https://www.washingtonpost.com/nation/2021/03/27/migrant-families-children-border/

Hiskey, J. T., Córdova, A., Malone, M. F., & Orcés, D. M. (2018). Leaving the devil you know: Crime victimization, US deterrence policy, and the emigration decision in Central America. *Latin American Research Review, 53*, 429–447.

Hunter, L. M., Murray, S., & Riosmena, F. (2013). Rainfall patterns and U.S. migration from rural Mexico. *International Migration Review, 47*, 874–909.

Hunter, L. M., & Simon, D. H. (2023). Time to mainstream the environment into migration theory? *International Migration Review, 57,* 5–35.

INEGI (National Institute of Statistics and Geography). (2021). https://en.www.inegi.org.mx/temas/mortalidad/.

Lee, E. S. (1966). A theory of migration. *Demography, 3*, 47–57.

Leibbrand, C., Gabriel, R., Hess, C., & Crowder, K. (2021). When push comes to shove: Local violence and residential mobility among families. *Journal of Marriage and Family, 83*, 1249–1267.

Martinez, J. N. (2014). Beyond networks: Health, crime, and migration in Mexico. *International Journal of Population Research, 2014*, 971739. https://doi.org/10.1155/2014/971739

Massey, D. S. (1990). Social structure, household strategies, and the cumulative causation of migration. *Population Index, 56*, 3–26.

Massey, D. S. (2015). A missing element in migration theories. *Migration Letters, 12*, 279–299.

Massey, D. S., Arango, J., Hugo, G., Kouaouci, A., Pellegrino, A., & Taylor, J. E. (1993). Theories of international migration: a review and appraisal. *Population and Development Review, 19*(*3*), 431–466.

Massey, D. S., Durand, J., & Pren, K. A. (2014). Explaining undocumented migration to the U.S. *International Migration Review, 48*, 1028–1061.

Massey, D. S., Durand, J., & Pren, K. A. (2020). Lethal violence and migration in Mexico: An analysis of internal and international moves. *Migraciones Internacionales, 11*, 1–20. https://doi.org/10.33679/rmi.v1i1.2282

Massey, D. S., & Espinosa, K. E. (1997). What's driving Mexico-U.S. migration? A theoretical, empirical, and policy analysis. *American Journal of Sociology, 102*, 939–999.

Massey, D. S., Goldring, L., & Durand, J. (1994). Continuities in transnational migration: An analysis of nineteen Mexican communities. *American Journal of Sociology, 99*, 1492–1533.

Minnesota Population Center. (2019). *Integrated Public Use Microdata Series, International: 2000 Mexican Census [Data set]*. University of Minnesota. https://doi.org/10.18128/D020.V7.2

Morrison, A. R. (1993). Violence or economics: What drives internal migration in Guatemala? *Economic Development and Cultural Change, 41*, 817–831.

Naugler, A. N., & Conroy, S. J. (2020). Motivations for Mexican-US migration: Does the economy matter? *Journal of Borderlands Studies, 35*, 641–655.

Nieri, T., Hoffman, S., Marsiglia, F. F., & Kulis, S. S. (2012). Interpersonal violence and its association with US migration desires and plans among youths in Guanajuato, Mexico. *Journal of International Migration and Integration, 13*, 365–381.

Orozco-Aleman, S., & Gonzalez-Lozano, H. (2018). Drug violence and migration flows, lessons from the Mexican drug war. *The Journal of Human Resources, 53*, 717–749.

Orraca-Romano, P. P., & Vargas-Valle, E. D. (2020). Drug-related violence and the decline in the number of Mexican cross-border workers. *Review of Development Economics, 24*, 485–502.

Passel, J. S., Cohn, D., & Gonzalez-Barrera, A. (2012). *Net migration from Mexico falls to zero—and perhaps less (Report)*. Pew Research Center.

Portes, A., & Böröcz, J. (1989). Contemporary immigration: Theoretical perspectives on its determinants and modes of incorporation. *International Migration Review, 23*, 606–630.

Rios Contreras, V. (2014). The role of drug-related violence and extortion in promoting Mexican migration: Unexpected consequences of a drug war. *Latin American Research Review, 49*, 199–217.

Rosen, E. (2017). Horizontal immobility: How narratives of neighborhood violence shape housing decisions. *American Sociological Review, 82*, 270–296.

Roth, B., Huffman, A., & Brame, R. (2022). Too afraid to stay: Measuring the relationship between criminal victimization in Central America and the intent to migrate. *Crime & Delinquency, 68*, 684–706.

Rubalcava, L., & Teruel, G. (2006). *User's guide for the Mexican Family Life Survey first wave*. Mexican Family Life Survey. Retrieved from http://www.mxfls.uia.mx

Semple, K. (2019). Violence drives a swell in Mexican migration. *New York Times*. Retrieved January 19, 2021 from https://www.nytimes.com/2019/12/07/world/americas/mexico-border-migration-asylum.html

Shirk, D. A. (2014). A tale of two Mexican border cities: The rise and decline of drug violence in Juarez and Tijuana. *Journal of Borderlands Studies, 29*, 481–502.

South, S. J., & Messner, S. F. (2000). Crime and demography: Multiple linkages, reciprocal relations. *Annual Review of Sociology, 26*, 83–106.

Stanley, W. D. (1987). Economic migrants or refugees from violence? A time-series analysis of Salvadoran migration to the United States. *Latin American Research Review, 22*, 132–154.

Stark, O., & Bloom, D. E. (1985). The new economics of labor migration. *American Economic Review, 75*, 173–178.

StataCorp. (2005). *Stata statistical software: Release 9.0*. Stata Corporation.

Teruel, G., Rubalcava, L., & Arenas, E. (2012). Migration in the Mexican Family Life Survey. In A. Cuecuecha & C. Pederzini (Eds.), *Migration and remittances from Mexico: Trends, impacts, and new challenges* (pp. 15–35). Lexington Books.

Todaro, M. P. (1969). A model of labor migration and urban unemployment in less developed countries. *American Economic Review, 59*, 138–148.

Villagran, L., & Carranza, R. (2020). After Trump targeted Central American migrants, violence and fear drive more Mexicans to USA. *USA Today*. Retrieved January 19, 2021 from https://www.usatoday.com/story/news/nation/2020/02/29/mexicans-majority-us-border-arrests-under-trump-immigration/4879779002/

Villarreal, A. (2014). Explaining the decline in Mexico-U.S. migration: The effect of the Great Recession. *Demography, 51*, 2203–2228.

Villarreal, A., & Yu, W.-H. (2017). Crime, fear, and mental health in Mexico. *Criminology, 55*, 779–805.

Williams, R. (2012). Using the margins command to estimate and interpret adjusted predictions and marginal effects. *The Stata Journal, 12*, 308–331.

Wood, C. H., Gibson, C. L., Ribeiro, L., & Hamsho-Diaz, P. (2010). Crime victimization in Latin America and intentions to migrate to the United States. *International Migration Review, 44*, 3–24.

Xie, M., & McDowall, D. (2014). Impact of victimization on residential mobility: Explaining racial and ethnic patterns using the National Crime Victimization Survey. *Criminology, 52*, 553–587.