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Deportations and departures: Undocumented Mexican immigrants' return migration during three presidential administrations

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This study examines changes in the sociodemographic patterns of deportation and voluntary return of undocumented immigrants from the United States to Mexico during three US presidential administrations (2001 to 2019) with different immigration policies. Most previous studies examining these migration flows for the United States as a whole have relied exclusively on counts of deportees and returnees, thereby ignoring changes over the past 20 y in the characteristics of the undocumented population itself, i.e., the population at risk of deportation or voluntary return. We estimate Poisson models based on two data sources that permit us to compare changes in the sex, age, education, and marital status distributions of both deportees and voluntary return migrants with the corresponding changes in the undocumented population during the Bush, Obama, and Trump administrations: the Migration Survey on the Borders of Mexico-North (Encuesta sobre Migración en las Fronteras de México-Norte) for counts of deportees and voluntary return migrants and the Current Population Survey's Annual Social and Economic Supplement for estimated counts of the undocumented population living in the United States. We find that whereas disparities by sociodemographic characteristics in the likelihood of deportation generally increased beginning in Obama's first term, sociodemographic disparities in the likelihood of voluntary return generally decreased over this period. Despite heightened antiimmigrant rhetoric during the Trump administration, the changes in deportation and voluntary return migration to Mexico among the undocumented during Trump's term were part of a trend that began early in the Obama administration.

migration | documentation status | United States | Mexico

Immigration policy and immigrant integration are subjects of intense political debate in the United States. Restricting border access and deporting* undocumented immigrants from the United States have been major policy goals for several presidential administrations, albeit with differences in populations targeted for deportation (1). Between 2001 and 2019, an average of 893,000 people were deported annually, varying from 1.5 million in 2001 to 387,000 in 2017. Van Hook, Morse, Capps, and Gelatt (2) estimated that the total number of undocumented immigrants in the United States in 2005 to 2018 ranged from 9.1 to 12.2 million with 50% probability and from 7.0 to 15.7 million with 95% probability.

These deportations of thousands of people each year come at a tremendous human cost to immigrants and their families (3–5), and a financial cost to the federal budget. They also create a climate of fear and mistrust in immigrant communities both for immigrants and US-born citizens (6). Knock-on effects include immigrants not reporting labor law violations and crime and delaying health care, for fear of apprehension (7–9). Yet, we know relatively little about the characteristics of deportees or variations in the risks of deportation, which are likely to be large.

The major obstacle in investigating the risk of deportation has been lack of data. The US Department of Homeland Security (DHS) makes public only aggregate annual counts of deportations by country of nationality, criminal status,[†] and location of apprehension. Most analyses of deportation rely on these aggregate count data. In one of the few studies to take the population at risk of deportation into account, Moinester uses data from Syracuse University's TRAC project (<https://trac.syr.edu/>) and estimates of the noncitizen population by state from the American Community Survey to examine geographic variations in US Immigration and Customs Enforcement (ICE) detention rates and detention outcomes (e.g., pretrial release, deportation, participation in the “voluntary departure” program) in 2008 and 2009, controlling for gender, country of origin, legal status at US entry, and the

Significance

Despite dramatic differences in immigration policy across the Bush, Obama, and Trump administrations, sociodemographic correlates of rates of deportation and of voluntary return migration of undocumented immigrants either remained relatively constant or were part of an ongoing trend since the 1990s that accelerated during the Obama era and continued into the Trump administration. Although the Trump administration maintained a high level of antiimmigrant rhetoric targeting all undocumented individuals for removal, fewer immigrants were deported annually than during the Obama administration. We find little evidence that the Trump administration's rhetoric and heightened enforcement efforts succeeded in motivating a more diverse group of undocumented immigrants to leave voluntarily for Mexico.

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The authors declare no competing interest.

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*We use deportation to include both US DHS terms “removals” and “returns,” unless otherwise noted. See definitions below.
[†]Whether a deportee is classified as having a criminal conviction by the DHS Office of Immigration Statistics.

charge leading to the detention (10). Her results show large variation between states in detention rates and deportation, net of individual characteristics.

In this paper, we investigate the relative risks of deportation within the undocumented population between 2001 and 2019. While Moinester (10) examines the operation of the ICE apprehension and detention system in 2008 to 2009 for all nationalities, our focus is on changes in the relative risks of deportation by individual sociodemographic characteristics faced by undocumented Mexican migrants in the United States between 2001 and 2019, i.e., during three presidential administrations espousing very different policies. Our analysis includes all deportations across the Mexican border regardless of type (see below) or the agency involved in the deportation. We focus on Mexican-origin undocumented immigrants for two reasons. First, although Wassink and Massey show that Mexican labor migration to the United States has shifted from predominantly undocumented to predominantly documented migration in recent years (11), almost half of the undocumented population in the United States is of Mexican origin (12), and Mexicans continue to be the largest single national origin group deported every year. Second, our data on deported individuals come from the Migration Survey on the Borders of Mexico North (Encuesta sobre Migración en las Fronteras de México-Norte or EMIF-N), conducted by El Colegio de la Frontera Norte (COLEF) in Mexico which focuses on migration flows of Mexican nationals. To calculate the population at risk of deportation, we employ data from the Current Population Survey (CPS)'s Annual Social and Economic Supplement (ASEC) and an imputation strategy to estimate the probability that ASEC respondents are undocumented immigrants.

We compare the relative risks of deportation with those for voluntary return migration by undocumented immigrants to Mexico. Immigrants choose to move back to their countries of birth for numerous reasons, including job opportunities, family obligations, and preferences. However, during periods of heightened antiimmigrant rhetoric, public antagonism, and stricter immigration enforcement, rates of return migration and the characteristics of undocumented immigrants returning voluntarily are likely to change. In fact, some politicians support stricter immigrant enforcement because they believe it will encourage voluntary return migration by undocumented immigrants (13–15).

Our results provide a picture of which groups of Mexican-origin undocumented immigrants were more likely to be deported and to return to Mexico voluntarily, and how these patterns changed between 2001 and 2019.

Deportations—2001 to 2019

The deportation process varies markedly among apprehended undocumented immigrants—from immediate expulsion to lengthy predeportation detention and legal proceedings (10). DHS distinguishes between two types of deportations: 1) removals (compulsory expulsions from the United States based on a removal order), and 2) returns (expulsions from the United States without a removal order of Mexican or Canadian nationals, which, for clarity, we refer to as “DHS returns”). Removal orders subject undocumented migrants to legal consequences if they attempt to reenter the United States. As *SI Appendix, Figs. S1 and S2* show for all foreign and Mexican nationals, respectively, DHS returns were much more common than removals until the increasing criminalization of undocumented immigration of the past 30 y. The EMIF data include Mexican nationals arriving in Mexico through both removals and DHS returns. We refer to both groups collectively as deportees.

Immigration enforcement and deportation policy changed substantially from 2001 to 2019. In 1996, legislation increased militarization of the US–Mexico border, reduced due process rights, allowed indefinite detention of non-US citizens, and permitted collaboration with local authorities on immigration enforcement (16). The Bush administration came into office in 2001 with favorable attitudes toward migrants and immigration reform, but the 9/11 attacks led to stricter enforcement, initially focused on Muslim-majority countries. The newly created DHS deployed many of the unused provisions of the 1996 act, and greatly increased funding for enforcement (17). An increasing proportion of deportees were expelled through removal orders rather than through DHS returns (i.e., without a removal order) to try to discourage deportee reentry in the future. *SI Appendix, Fig. S1* shows that DHS returns were the primary form of deportation during this period, although removals increased in the second Bush term.

During the Obama presidency, net migration to the United States from Mexico became negative (more people migrated to Mexico from the United States than vice versa) for the first time in many decades (18) due to the great recession in the United States, better economic opportunity in Mexico, and other factors. However, the number of immigrants from Central America began to increase dramatically, increasing pressure on the administration. Two main emphases in this administration were: 1) continuing to increase the ratio of removals to DHS returns to deter new immigration attempts and 2) greater focus on the removal of recent migrants and those with criminal convictions, rather than on the more general undocumented population (19).

The Trump administration was elected on a strongly antiimmigrant platform and maintained a high level of antiimmigrant rhetoric. Through hundreds of executive actions, Trump substantially altered the US immigration system (20) and created a climate of uncertainty and fear among undocumented immigrants (3, 21). Rather than targeting specific groups as in previous administrations, Trump prioritized all undocumented people as apprehension and removal targets (20). Immigration enforcement appeared to be more random and aggressive. The insistence on removal orders for deportation clogged immigration courts even more than under Obama, contributing to lengthy detentions of large numbers of immigrants in prison conditions prior to deportation. Many other measures tightened border enforcement and made entry into the United States extremely difficult, particularly during the COVID-19 pandemic (22, 23).

Although immigration law and enforcement are federal responsibilities, variation in state policy also affected undocumented immigrant apprehension and may have affected voluntary return migration. An early example was Arizona's 2010 law which included multiple measures to increase immigration enforcement (24). Several other states subsequently adopted proenforcement, antiimmigrant laws, while others identified themselves as sanctuary states. States also diverged markedly, particularly during the Trump administration, in their willingness to cooperate with DHS/ICE enforcement efforts through 287(g) and other programs (25, 26).

Voluntary Return Migration to Mexico—2001 to 2019

We also examine moves to Mexico by undocumented migrants which do not involve expulsion by US authorities, which we refer to as “voluntary return migration.” Note that this group differs from the DHS returns discussed above and from apprehended migrants classified as “voluntary returns” who have agreed with

authorities after their apprehension to leave the United States. Although “return migration” may not be an appropriate term for migrants who were born in Mexico but lived the rest of their lives in the United States, the term is commonly used to describe migrants moving to their country of birth.

Historically, Mexican workers migrated to jobs in the United States when they needed additional income and then returned to Mexico after earning it. Circular migration began to decline in the 1990s and was seriously disrupted by militarization of the border and greater border enforcement (27). As a consequence, an increasing proportion of undocumented Mexican immigrants decided to remain in the United States long term (28). At the same time, Mexican migration to the United States began to decline in the early 2000s and return migration to Mexico rose. Since 2010, the number of Mexican immigrants (including those undocumented) has declined substantially (18, 29), although there has been a small increase in the past few years (30). Recent Mexican immigrants are more likely to have legal status and less likely to be undocumented than in the past (11).

Relatively little is known about the characteristics of voluntary return migrants to Mexico compared to those of the Mexican-origin undocumented population in the United States and how these characteristics changed over time. Based on the changing national political climate, policies, and economic fluctuations of the 2001 to 2019 period, we expect that during the Obama administration, undocumented immigrants with criminal convictions and recent immigrants were more likely to be deported. By contrast, we expect that the Trump administration deported a broader range of immigrants since it sought to cast a wider net. We also anticipate that the Trump administration’s antiimmigrant rhetoric led a more diverse group to voluntarily leave the United States for Mexico.

Results

We estimate relative rates of deportation for undocumented immigrants between 2001 and 2019 by sociodemographic characteristics. These estimates are based on Poisson models of counts of undocumented Mexicans arriving in Mexico from the United States (from EMIF-N) with controls for the number of undocumented Mexicans residing in the United States (from ASEC) for each of the four characteristics—age, sex, education, and marital status. Relative rates are estimated separately for deportees and for voluntary return migrants. Because of likely underreporting of unknown magnitude of both undocumented migrants and the undocumented population, we do not present absolute rates. Instead, we calculate average relative rates over the entire period of 2001 to 2019 as well as relative rates in each presidential term during this timeframe (relative to a defined reference group for a given characteristic or a presidential term). The coefficients for the estimated models are shown in *SI Appendix, Table S1*.

Echoing patterns from prior studies (31), men, young adults, and those with less education comprised an overwhelming majority of deportees and voluntary returns throughout the study period (Table 1, panels A and B). Compared to deportees or voluntary returnees, the undocumented population (Table 1, panel C) was more likely to be female, older, more educated and married or cohabiting.

Poisson models that included only the main effects of the covariates confirmed the pattern of higher rates of both deportation and voluntary returns among men compared to women, younger compared to older adults, less educated compared to adults with at least a high school degree, and married or cohabiting compared to single adults (Table 2). Sex differences were particularly large;

between 2001 and 2019, men were deported at 6.2 times the rate of women and returned to Mexico voluntarily at 7.1 times the rate of women.

Relative rates of deportation (Fig. 1*A*) and voluntary returns (Fig. 1*B*) by US presidential term, based on Poisson models that included interactions between the covariates and presidential terms, are presented graphically. As shown in Fig. 1*A*, disparities in deportation for most covariates increased steadily during or after the Bush administration. The rise in the male–female ratio between the Bush and Obama administrations is notable, and ongoing increases in age disparities accelerated during the Trump administration.

Fig. 1*B* provides the corresponding estimates for voluntary returns to Mexico. Differences in relative risk of voluntary return migration by sex, age, and education generally declined over the past few presidential terms, and, with the exception of the large decline in the male–female ratio, the changes were modest.

Expanding the exclusion criteria from migrants with US stays shorter than seven days to those with US stays shorter than 1 mo resulted in very similar estimates of relative rates of deportation and voluntary return (*SI Appendix, Table S4 and Figs. S6 and S7*).

As described earlier, Obama administration policy emphasized deportation of migrants with criminal backgrounds and recent US arrivals. Using aggregate annual data from DHS, we examined the proportion of removals[‡] of all Mexican nationals who had criminal convictions. As shown in *SI Appendix, Fig. S3*, this proportion increased during the first Obama term, subsequently declined, and rose steadily during the Trump administration, but the proportion of removals with criminal backgrounds never exceeded 52%. Moinester (10) shows that as ICE removals in the interior United States increased between 2003 and 2011, the proportion with no conviction or only a misdemeanor conviction increased; after a refocus in 2011 on immigrants who committed serious crimes, the proportion with felony convictions increased. Neither the DHS data nor the survey data permit us to examine whether the Obama administration’s focus on deportation of new arrivals was successful. Among deportees in EMIF-N, the median time in the United States prior to deportation decreased during the Obama administration, but this finding does not take into account potential changes in the composition of the total US-resident Mexican-origin undocumented population.

Discussion

The finding that Mexican undocumented immigrants are disproportionately male, young, and have relatively little education has been previously observed (31) and is supported by our estimates (Table 1, panel C). Using Poisson models that control for characteristics of the undocumented population, we demonstrate that these same groups have considerably higher risks of deportation and of voluntary return than their respective counterparts. However, whereas these sociodemographic disparities generally widened among deportees since the first Obama term, relative risks for voluntary returnees generally declined over this period.

The Obama administration implemented measures enabled in prior legislation including greater cooperation between DHS/ICE and local law enforcement. During Obama’s first term, more than 20 states adopted 287(g) Taskforce agreements that deputized local law enforcement to detain undocumented immigrants. The administration also implemented the Secure Communities program that mandated that all law enforcement agencies share data with ICE. The emphasis on migrants with criminal backgrounds,

[‡]DHS returns (expulsions from the United States without a removal order) are not included in *SI Appendix, Fig. S3*.

Table 1. Characteristics of EMIF and ASEC samples by US presidential terms (%)

	First Bush term 2001 to 2004	Second Bush term 2005 to 2008	First Obama term 2009 to 2012	Second Obama term 2013 to 2016	Trump term 2017 to 2019	All periods 2001 to 2019
Panel A: deportations*						
Observations	1,884	3,548	13,775	9,646	6,378	35,231
Sex (%)						
Female	13.2	12.4	10.7	10.6	10.7	11.0
Male	86.8	87.6	89.3	89.4	89.3	89.0
Age (%)						
18 to 31	67.7	61.0	52.5	51.3	52.0	53.7
32 to 45	27.8	32.8	39.3	39.4	39.0	38.0
46 to 59	4.5	6.2	8.2	9.3	9.0	8.3
Education (%)						
Less than high school	81.4	80.4	77.6	75.2	72.7	76.5
High school degree or more	18.6	19.6	22.4	24.8	27.3	23.5
Marital status (%)						
Married or cohabitating	51.8	56.0	61.6	53.3	51.7	56.5
Single	48.2	44.0	38.4	46.7	48.3	43.5
Panel B: voluntary returns of undocumented immigrants†						
Observations	5,179	5,954	7,101	3,972	2,460	24,667
Sex (%)						
Female	6.3	6.2	10.1	13.2	20.0	9.8
Male	93.7	93.8	89.9	86.8	80.0	90.2
Age (%)						
18 to 31	64.0	61.7	56.4	47.0	28.0	54.9
32 to 45	31.0	32.1	36.1	37.1	37.5	34.4
46 to 59	5.0	6.1	7.6	15.9	34.5	10.7
Education (%)						
Less than high school	85.9	85.1	77.7	73.8	66.0	79.4
High school degree or more	14.1	14.9	22.3	26.2	34.0	20.6
Marital status (%)						
Married or cohabitating	40.0	41.0	39.2	40.7	33.8	39.5
Single	60.0	59.0	60.8	59.3	66.2	60.5
Panel C: undocumented US residents‡						
Observations	14,490	16,924	16,533	14,498	9,060	71,505
Sex (%)						
Female	43.5	43.8	45.1	46.1	47.1	44.9
Male	56.5	56.2	54.9	53.9	52.9	55.1
Age (%)						
18 to 31	53.2	46.9	37.1	29.3	23.2	39.3
32 to 45	38.5	41.8	45.8	48.3	47.3	44.1
46 to 59	8.3	11.3	17.1	22.3	29.5	16.6
Education (%)						
Less than high school	66.5	62.6	60.3	57.6	52.0	60.5
High school degree or more	33.5	37.4	39.7	42.4	48.0	39.5
Marital status (%)						
Married or cohabitating	66.6	69.7	72.6	72.7	73.5	70.8
Single	33.4	30.3	27.4	27.3	26.5	29.2

*Counts of deportees were aggregated from EMIF-N, and values were weighed to represent the distribution of migrants in the sampling frame.

†Counts of voluntary return migrants were aggregated from EMIF-N voluntary return migrant files, and values were weighed using analytical weights to represent the distribution of migrants in the sampling frame. Respondents with missing documentation status were imputed using multiple imputation. Values were averages across the 10 imputed datasets. See [SI Appendix, S1](#) for details.

‡Counts of undocumented immigrants living in the United States were estimated from the ASEC of the CPS using Hall, Greenman, and Farkas' methodology. See [SI Appendix, S1](#) for details. Values were weighed using analytical weights to represent the noninstitutionalized national population of the United States.

Table 2. Relative rates of deportation and voluntary returns of undocumented immigrants from the United States to Mexico compared to reference groups (2001 to 2019)

	Model 1 Deportations	Model 2 Voluntary returns
Sex		
Male	6.166	7.079
Female	(Reference group)	
Age		
18 to 31	3.647	2.060
32 to 45	2.066	1.219
46 to 59	(Reference group)	
Education		
Less than high school	2.670	2.680
High school degree or more	(Reference group)	
Marital status		
Single	1.505	1.201
Married or cohabitating	(Reference group)	

Counts of deportees and voluntary return migrants were aggregated from EMIF-N. Counts of undocumented immigrants living in the United States were estimated from the ASEC of the CPS using Hall, Greenman, and Farkas' methodology. See *SI Appendix, S1* for details. Values were estimated using Poisson regression models and all are significant at the 0.001 level. Both models include year as controls.

who are often male and younger (32), plus the cooperation of local law enforcement, may have contributed to our finding of an increase in the relative risk of deportation for these groups during the Obama years.

The Trump administration targeted all undocumented immigrants regardless of criminal convictions or duration in the United States. However, our results provide little evidence that the Trump administration succeeded in deporting a more diverse group of undocumented immigrants than the prior administration. In fact, relative risks of deportation increased during this period for young adults and those with less education—two groups that already faced higher deportation risks than others. There is also little support for our expectation that the heightened antiimmigrant rhetoric would decrease sociodemographic differentials in voluntarily return migration to Mexico. The relative risk for each covariate declined among voluntary returnees during Trump's administration, but these declines were part of a downward trend that began in the first Obama term.

Our analysis showed that deportation continued to be highly selective in terms of sociodemographic characteristics during Trump's term. Trump renewed the 287(g) and Secure Communities programs through executive orders, aggressively pushed expansion and acceleration of removal procedures, and regularly used threats and highly derogatory rhetoric about Mexicans and undocumented immigrants (20). Yet, fewer immigrants were deported annually during Trump's term compared to the Obama era (*SI Appendix, Fig. S2*). State and local policy actions may have put a significant brake on DHS' apprehension and deportation activities late in Obama's second term and particularly during the Trump era. A number of states, counties, and other local jurisdictions imposed restrictions on their law enforcement agencies' ability to cooperate with ICE. For example, by 2019, numerous counties with large immigrant populations across 23 states had policies to refuse ICE detainer requests (33).

Starting in the Obama administration, new policies at the federal and state levels expanded benefits to undocumented immigrants. Deferred Action for Childhood Arrivals (DACA), created by an executive order in 2012, shielded eligible undocumented immigrants who first entered the United States before age 16 from deportation (34). The overwhelming majority (81%) of approximately 700K DACA recipients were born in Mexico, more than half were women, and they were in their mid-20s on average (35). The increasing access to public services for immigrants in some states continued during the Trump administration despite its attempts to terminate DACA and other programs (36). States' adoption of integrative immigration policies (e.g., publicly funded prenatal care for undocumented women, access to drivers' licenses) disproportionately benefitted undocumented immigrants who were female, were under 40, and had a high school degree (34) and may have added to their incentives to stay in the United States.

Our results show significant changes since 2001 in the socio-demographic characteristics among both the Mexican-origin undocumented population in the United States and voluntary return migrants (Table 1). By 2019, both groups had higher proportions of females, middle-aged adults, and high school graduates than in earlier years. For the undocumented population, much of this change likely occurred because of declines in the circular migration system, described above. Stronger border enforcement beginning in the late 1990s meant fewer new arrivals, but, ironically, also fewer returns to Mexico by undocumented immigrants because future reentry to the United States was so difficult and/or departure might increasingly lead to arrest (27). Thus, many undocumented migrants have remained in the United States, completed more education, married, and become older (12).

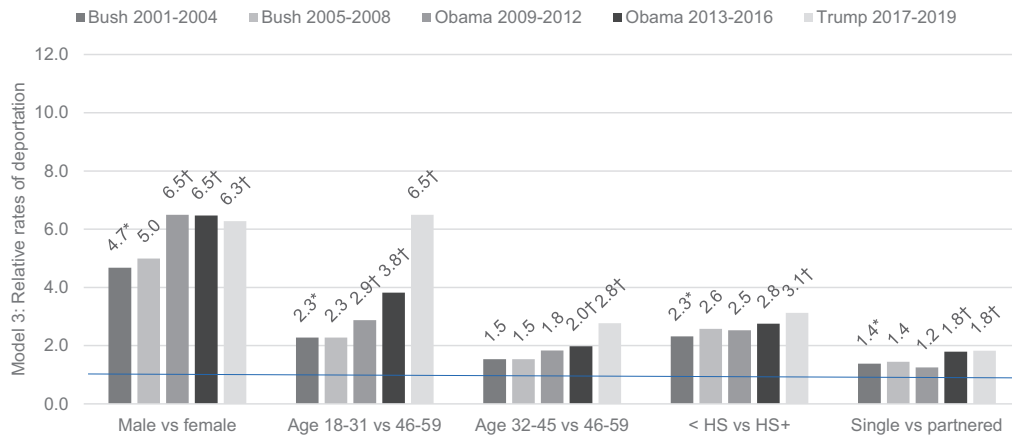
While the relative risks for voluntary return migrants continue to be higher for males and those who are younger, single, and more poorly educated, a slightly more diverse group of migrants voluntarily returned to Mexico in recent years. Although increased enforcement and antiimmigrant rhetoric may have played a role, the great recession and poorer employment opportunities in the United States and an increasingly stable economy in Mexico (37) may have been more important in providing incentives for more educated migrants, families, and migrants regardless of age and sex to move to Mexico. The Trump administration's harsher enforcement and antiimmigrant rhetoric do not appear to have motivated a more diverse group of undocumented immigrants to leave voluntarily for Mexico. Instead, our analysis shows that the shifts which occurred were part of a longer-term trend. Recent evidence also suggests that the absolute number of Mexican immigrants arriving in the United States was roughly the same in 2013 to 2018 as in 2009 to 2014, rather than lower (30) as some antiimmigrant groups had hoped.

Our study has several important limitations. Despite their strengths, the EMIF-N data represent migrants crossing only at the sampled land crossings and do not contain data on documentation status at the time of US departure nor on removal orders. Data on criminal convictions are available only for part of the period. Estimates of undocumented status in the ASEC may incorrectly classify authorized immigrants as undocumented. Nonetheless, unlike almost all prior research, this study controls for changes in the undocumented population and examines relative rates, rather than simply counts, of deportation and voluntary returns.

Materials and Methods

Data. Our analysis combines two data sources: 1) estimates from EMIF-N (38, 39) of Mexican citizens crossing the border to Mexico from the United States and

Panel A. Deportations



Panel B. Voluntary returns

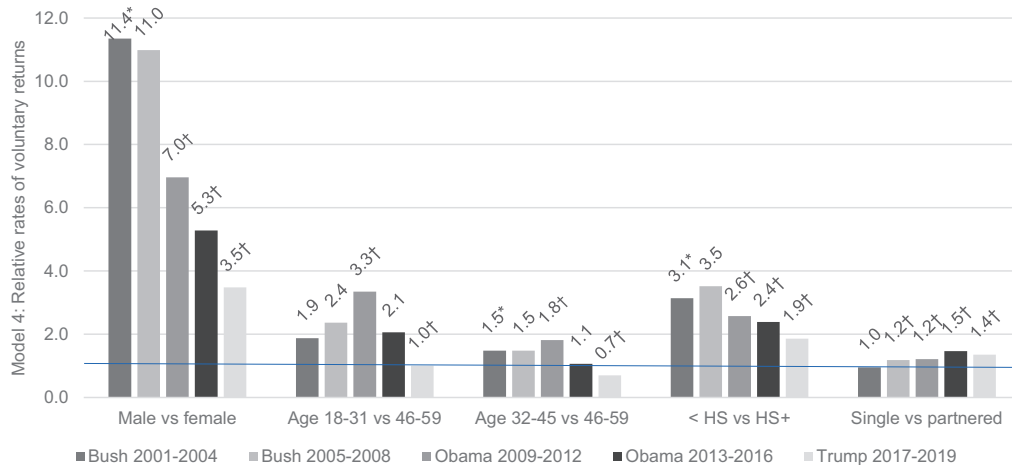


Fig. 1. Relative rates of deportation (A) and voluntary returns (B) compared to reference group by US presidential term. Notes: *indicates significance relative to reference group (female, aged 46 to 59, high school degree or more, married/cohabitating) at the 0.005 level. †indicates significance relative to reference period (Bush 2001 to 2004 term) at the 0.005 level. < HS denotes those without a high school degree. HS+ denotes those with a high school degree or more. Partnered includes those married or cohabitating. Counts of deportees and voluntary return migrants were aggregated from EMIF-N. Counts of undocumented immigrants living in the United States were estimated from the ASEC of the CPS using Hall, Greenman, and Farkas' methodology. See *SI Appendix, S1* for details. Values were estimated using two Poisson regression models that interacted key coefficients with presidential term and controlled for year. Values in A were calculated from model 3 and values in B were calculated from model 4. The first Bush term (2001 to 2004) serves as the reference period in all interaction models. Relative rates of 1.0 indicate no difference from the reference group or period. See *SI Appendix, S1* for full models with tests of significance.

2) estimates from the CPS's ASEC (40) of the undocumented population in the United States. We limited our analytical samples from both EMIF-N and ASEC to undocumented adults aged 18 to 59 who were born in Mexico. Both data sources produced weighted annual counts from 2001 to 2019.

EMIF-N is designed to estimate international migration between Mexico and the United States and examine the characteristics of migrants and the migration experience. It is based on a geographic and temporal sampling frame. EMIF-N adapts its sampling frame to changing migration patterns, and the survey investigators estimate that its frame captures between 90% and 95% of all migration between the two countries (41). Flowcharts in *SI Appendix, Figs. S4 and S5* summarize EMIF-N's sample selection procedure.

Using the EMIF-N, we derived the characteristics of Mexican migrants entering Mexico by land from the United States, due to both deportation by US federal authorities and voluntary return migration to Mexico. We did not include migrants who traveled by air as they were most likely to have entered the United States with documentation, and deportation via air to Mexico is uncommon (42). For comparability, we also excluded voluntary returns by air. We aggregated deportees and voluntary returns separately into 456 combination groups by sex (female, male), age (18 to 31, 32 to 45, 46 to 59), education (less than high school, high school degree or more), marital status (married/cohabiting, single), and calendar year. To ensure that the numerators of our rates (from EMIF-N) were consistent with the denominators (from ASEC), we first restricted our EMIF-N sample to

undocumented migrants aged 18 to 59 y who stayed in the United States for at least 7 d. This restriction eliminated migrants who were turned away at the US-Mexico border and reduced repeated border crossings within a short time span. We then dropped an additional 94 deportees and 176 voluntary returnees due to missing characteristics. EMIF-N respondents are defined as undocumented in this analysis if they entered the United States without authorization on this particular journey. No information is available on change in immigration status after entry. About 12% of voluntary returns had missing documentation status on US entry. We imputed these observations using multiple imputation by chained equations (*SI Appendix*), yielding a final sample of 35,231 deportees and 24,667 undocumented voluntary returns⁵ from the EMIF-N survey data.

To derive the denominators, we applied an approach similar to Hall, Greenman, and Farkas' (43) method each year from 2001 to 2019 and identified a total of 71,505 undocumented Mexican adults aged 18 to 59 from the ASEC (*SI Appendix*). The ASEC's target population is the civilian noninstitutionalized population of the United States selected through a probability sample of housing units including hotels and group quarters. Migration researchers have previously used the ASEC to estimate the undocumented population in the United States (12). As with EMIF, we aggregated the ASEC observations into 456 combination groups by age, sex, education, marital status, and year.

⁵Based on imputed documentation status averaged across 10 imputed datasets.

Neither data source provided estimates of total counts. EMIF-N's survey design did not account for migrants who crossed at border locations outside the sampling frame and researchers have noted that EMIF-N consistently produced counts below levels reported by DHS (41, 44). The ASEC also likely produced undercounts of the undocumented population in the United States (45, 46). Thus, our analysis relied on EMIF-N's and ASEC's probability-based sampling to determine the characteristics of deportees and voluntary returns relative to the characteristics of the undocumented Mexican population living in the United States—rather than on absolute rates. This approach assumes that the key demographic characteristics of those who were in the surveys did not systematically differ from those who were not. EMIF-N remains the only survey of migrant flows at US–Mexico transit points and its response bias is likely small in the undocumented working-age population that is the focus of this study (44).

Analytical Strategy. We estimated Poisson models to obtain relative rates of deportation and voluntary return migration by specified characteristics. Poisson models, which estimate counts of events with adjustment for exposure, permit us to test for differences in distributions between the numerator (deportees and voluntary return migrants) and the denominator (undocumented immigrants living in the United States). We have not calculated baseline rates (i.e., absolute rates) since these are sensitive to varying assumptions of coverage errors in the two datasets. The first set of models examined relative rates of deportation (model 1) and voluntary return migration (model 2) associated with age, sex, education, and marital status and included single calendar years as controls. The second set of models (models 3 and 4) included the variables in the first set plus interactions

between sociodemographic characteristics and 4-y periods to estimate how the relative rates changed across five presidential terms between 2001 and 2019. Negative binomial models did not result in a better fit than Poisson models.

Data, Materials, and Software Availability. Previously published data were used for this work (38, 40).

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