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Endogamous Marriage among Immigrant Groups: The Impact of Deportations under Secure Communities*

Cynthia Bansak[†] and Sarah Pearlman[‡]

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Abstract

We investigate the impact of removals under the Secure Communities (SC) program on the marriage patterns of immigrant women living in the U.S. where endogamous marriage is the dominant form of partnership. We focus on enforcement by MSA and country of origin and find evidence that deportations increase overall marriage rates, *increase* the likelihood of endogamous marriage, *decrease* rates of exogamous marriage to immigrants from other countries and have indeterminate effects on marriage to natives. When examining channels for behavioral responses, we find evidence pointing towards the desire to mitigate the risk of deportation through the increased importance of networks.

Keywords: Immigration Enforcement, Marriage, Endogamy, Secure Communities

JEL Codes: J13, J15, K37

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1 Introduction

In this paper we examine if increased immigration enforcement affects the marriage incidence and patterns of immigrant women residing in the U.S. We focus on Secure Communities (SC), a federal program which began in 2008 and aimed to expedite the removal of individuals with criminal records. The program led to a large increase in deportations, almost all of which were young and middle-age men.¹ These removals likely had a larger impact on immigrant women from similar origin countries, as endogamous, or intra-ethnic marriage is the dominant form of partnership among first, and in some cases, second generation immigrants in the U.S. (Angrist 2002, Kalmijn and Van Tubergen 2010, Foad 2018) For example, according to the American Community Survey (ACS), 67% of foreign born women who live with their spouse are married to someone from the same country of origin (see Table 1). Meanwhile only 11% are married to an immigrant from another country and 22% are married to a native.

How immigrant women responded to higher levels of deportations in terms of the incidence of marriage is unclear, as there could be shifts in both the supply of men and the demand by women for partnerships. On the supply side, there would clearly be negative supply side shocks as a result of deportations. However, there could be offsetting increases in supply if some non-citizen men were induced to enter the marriage market. This could occur if Secure Communities discouraged deporting families, in which case marriage might provide security, and if networks became more important for those facing increased uncertainty. For the same reasons, there could also be increases in demand for marriage among foreign born women. *A priori*, thus, it is unclear how much marriage incidence will change, if at all.

It also is unclear how the composition of marriages might change. On the one hand, endogamous marriage could decrease if deportations reduce co-ethnic networks, the size of which several papers find to be a strong determinant of endogamous partnership (Kalmijn 1998, Chiswick and Houseworth 2008, Kalmijn and Van Tubergen 2010, Choi and Tienda

¹For example, of the SC removals that took place from 2008 to 2017, 95.8% were men and approximately 81.6% were between the ages of 18 and 40 (TRAC Syracuse).

2017, Foad 2018). Endogamous marriage also could decline and inter-ethnic, or exogamous, marriage rise if immigrant women find naturalized citizen or native-born men more desirable due to their legal status, which may provide a faster track to legal permanent residency and improved employment prospects (Smith Kelly 2010, Meng and Gregory 2005, Furtado and Theodoropoulos 2010). There is some empirical evidence of such a response. For example, Wang and Wang (2012) find that intermarriage increases after 9/11 in the U.S. while Amuedo-Dorantes, Wang and Arroyo (2020) find that marriage to natives increases for immigrant men and women when immigration policy becomes more restrictive.

On the other hand, endogamous marriage might rise for several reasons. First, the ability to become a legalized immigrant through marriage is difficult, particularly for unauthorized individuals (American Immigration Council 2016.)². Thus for many foreign born women managing heightened insecurity by marrying a native is not a feasible option. Instead, marriage to a co-ethnic may provide immediate safety and reassurance in the face of increased uncertainty. There is evidence that fear among immigrant populations and their descendants rose in the face of Secure Communities (Alsan and Yang 2018), and the literature on networks and homophily- or interacting with people who are similar to you- supports the idea that fear could prompt changes in networks amongst a risk averse population. For example, Kovarik and van der Leij (2014) find that risk aversion leads individuals towards more closely knit networks, while Kets and Sandroni (2019) find that homophily arises out of a desire to reduce strategic uncertainty about others' actions.³ Increasing deportation risk also may make co-ethnic networks more valuable for families with young children (Amuedo-Dorantes and Arenas-Arroyo 2019).

Given the theoretical ambiguity over how Secure Communities would change marriage outcomes, we estimate the relationship empirically using data on foreign born women from

²Depending on the length of time of unauthorized status in the US, to gain legal status through marriage, immigrants would need to return to their country of origin. However, they would then be barred from returning for 3 to 10 years making gaining a green card from marrying a US citizen impractical and undesirable as an immediate response to deportation risk

³This shift towards more homophily could result in more endogamous marriages either due to a preference for a co-ethnic partner or due to increased exposure to potential endogamous versus exogamous partners.

the American Community Survey (ACS). We link this to individual level data on deportations under Secure Communities, which includes information on the country of origin and location in the U.S. of the person who was apprehended and removed. Our measure of immigration enforcement thus is quite specific, and one key benefit of this is that we capture actual immigration enforcement at the local level as opposed to a measure of intent to enforce using either the roll-out of Secure Communities or a comprehensive set of county, state, and federal level agreements, programs and legislation (Amuedo-Dorantes et al. 2020). These measures – actual immigration enforcement and the intent to enforce – may differ if local police are not willing or able to detain individuals for immigration violations or report them to ICE for possible removal (Cox and Miles 2013, Pedroza 2019).

Another key benefit of using individual level deportation data is that we can model marriage markets at the MSA and country of origin level. We argue this approach is justified given the dominance of co-ethnic marriages and the large variation in deportation rates by country of origin, even within the same MSA. For example, as shown in Table 3, in Los Angeles alone the removal rates for Mexican and Central American born individuals is one to five times that of other countries, some of which have sizeable populations.⁴ Thus while Secure Communities (and other immigration policies) may have been introduced at the MSA-level, the deportation data reveal large disparities in the level of immigration enforcement by country of origin. Taken together, both the ACS statistics and Secure Communities enforcement data clearly show that marriage markets are concentrated among co-ethnics and the shocks to these markets as measured by deportations vary by country of origin group and not necessarily by MSA.

A final benefit of our data is that they allow us to estimate 10 year changes in marriage patterns as a function of the accumulated deportations under Secure Communities. We argue this is preferable to analyzing short term responses as it likely takes time for individuals

⁴Mexican nationals make up over 75% of all deportations while nationals from Guatemala, Honduras and El Salvador make up another 18% (see Table 2). These values are two to three times larger than each group as a percentage of the total immigrant population, and yield average removal *rates* that are dramatically higher than for any other immigrant group.

to learn about an increase in deportations and subsequently change their behavior. By estimating the 10 year response to all deportations under Secure Communities over the 2008 to 2017 period, we do not risk underestimating the size of the shock to marriage markets or the response.⁵

In our empirical analysis we find that higher Secure Communities removals are associated with a significant *increase* in the incidence of marriage among foreign born women in the U.S. Thus, the demand for marriage by foreign women and/or increased supply into the marriage market of foreign men clearly offset the negative supply shocks caused by deportations of men.⁶ We also find significant shifts in partner type, with an *increase* in endogamous marriage, a *decrease* in exogamous marriage to immigrants from other countries, and indeterminate changes in exogamous marriage to natives. We find these results are not a result of differential mobility of immigrant women in response to Secure Communities (selection), the choice of time period or MSAs for the analysis, or a mechanical result due to the deportation of men and an analysis of the women left behind. Overall our findings are notable as the *overall* incidence of endogamous marriages moderately falls while incidence of exogamous marriage to natives rises during our sample period (See Figure 1 and Amuedo-Dorantes et al. 2020)⁷. This means the aggregate trends hide significant variation across country of origin and MSA groups with respect to heightened immigration enforcement.

As for possible channels, we test to see if policy-induced flight to marriage as a safety measure is the dominant response or if the increased importance of networks in the face of fear of deportations results in more partnerships for women to men from the same country

⁵We have not found a specific time period that other studies have consistently used to assess changes in marriage markets due to exogenous events. Some look at responses to one-time shocks such as Das and Dasgupta (2020) who use a 5-year window. Others look at long-run effects on fertility and on marriage rates of the next generation (Corno, Hildebrandt, and Voena, 2019). We are looking at cumulative deportations over 10 years and thus look for 10 year effects.

⁶There could also be negative supply shifts of native-born men if they found marrying a foreign-born woman undesirable in this time of increased deportations. However, given that very few women were deported, we do not find this to be a large driver of shifts in marriage market behavior.

⁷Average marriage rates fall from 63.3% in the 2005 to 2007 period to 61% in the 2015 to 2017 period. Rates of endogamous marriage fall from 69% to 67%, while the rate of exogamous marriage to a native rise from 20.8 to 21.6%.

of origin. First, we do not find evidence of a switch toward marriage of naturalized citizens by foreign born women suggesting that the increase in marriages is not coming from a desire to marry a US citizen and to acquire legal status. However, we do find evidence that unmarried women are also more likely to be cohabitating with a partner from the same country of origin and conclude that these results support the homophily explanation. We argue this suggests networks are the dominant channel through which marriage patterns change, as fear generated by the policy may have led individuals to concentrate their social networks among co-ethnics. While our data do not allow us to explore networks in detail, recent work by Barsbai et al. (2020) shows that immigrant networks significantly change in response to a reduction in uncertainty about the destination.

From a policy perspective, the finding that Secure Communities led to changes in marriage patterns is important because these shifts could have long-run implications on family formation, household investments, and labor market outcomes. Several papers find that divorce rates are lower among immigrants in endogamous marriages than exogamous ones (Chiswick and Houseworth 2020, Kalmijn et al. 2005). This may be because endogamous marriage yields higher consumption and investment value, if co-ethnic partners have more similar preferences about household public goods (Lam 1988, Foad 2018). It also may be due to the importance of co-ethnic social networks, either in enforcing origin country norms or providing a safety net. For example, Furtado, Marcen and Sevilla (2013) find that the importance of origin country divorce rates in determining the divorce rates of immigrants who arrive in the U.S. as children is more pronounced for those who live in areas with more co-ethnics.

While endogamous marriages may be less likely to end in divorce, there is evidence that parents also invest more in their children and housing, but are less tied to the labor market. Furtado (2009) finds that after one controls for selection into marriage, children of endogamous marriages are less likely to drop out of school than children in exogamous marriages. Wong (2016) finds endogamous marriages in the early 20th century lead to higher investment in children and home ownership, but lower labor force participation of

married women. McManus and Apgar (2019) find that second generation immigrant women in endogamous marriages are less likely to be in the labor force, even after controlling for the culture of parent’s origin countries. Papers that study exogamy directly find that those in inter-ethnic marriages are more likely to be employed and to have higher wages (Meng and Gregory 2005, Furtado and Theodoropoulos 2009 and 2010, Chi 2015). Overall, this suggests immigration policies, such as Secure Communities, may have unintended consequences that change immigrant marriage patterns which then have long run effects on future generations.

2 Data

2.1 Immigration Enforcement

To capture immigration enforcement we use data on Immigration and Customs Enforcement (ICE) removals under the Secure Communities program, which was launched in late 2008 and became operational in all U.S. jurisdictions by 2013 ([ICE webpage](#)). The goal of the program was to increase coordination between ICE, the Department of Homeland Security (DHS) and local law enforcement on deportation of non-citizens accused of crimes. Under the program, participating law enforcement agencies run the fingerprints of arrested individuals through the federal FBI immigration database and these are checked with DHS records on noncitizens by ICE. If there is a match, ICE can issue a detainer to the local jail, asking officials to retain the individual so that ICE can take them into custody and begin deportation proceedings.

While removals under Secure Communities represent less than one third of all deportations, they are a preferable measure of immigration enforcement because the origination of proceedings with local police means that each record is linked to the state and county where the fingerprint record was submitted. The records therefore have the location where a non-citizen was apprehended, instead of where they were deported from, and are more likely to capture where an individual person resides in the U.S.

A further advantage of the Secure Communities program is that, during the time frame

we consider, the program focused on deporting individuals with a criminal record as opposed to families who were undocumented. Under the framework of “prosecutorial discretion” few individuals with children in the U.S. were deported⁸. For example, in President Obama’s well-known speech on immigration policy in 2014, he states: “And that’s why we’re going to keep focusing enforcement resources on actual threats to our security. Felons, not families. Criminals, not children. Gang members, not a mom who’s working hard to provide for her kids. We’ll prioritize, just like law enforcement does every day.” ([Link to Full Speech](#)). Thus married individuals living with their spouses, particularly those with children, represent a small percentage of removals under Secure Communities. As a result, any changes in marriage patterns among women who live with their spouses should not be driven by removals of the women themselves.

The data on removals under Secure Communities comes from Transactional Records Access Clearinghouse, Syracuse University ([TRAC](#)), which obtained individual records from ICE through Freedom of Information Act requests. We use data from the beginning of Secure Communities in November 2008 to right after the program restarted in July 2017. Our time frame covers the period from 2014 to 2017 when Secure Communities was suspended and replaced with a program called the Priority Enforcement Program (PEP). We chose to include the PEP period because the change may have been unknown to many immigrant communities, particularly since deportations continued at a high level under PEP (see Figure 2). Thus many immigrants likely continued to view the 2014-2017 period as one of heightened immigration enforcement, despite the replacement of SC during these years.⁹

Over the 2008 to 2017 time frame there were 552,751 removals under SC.¹⁰ Of these

⁸[Article from NOLO](#)

⁹The TRAC organization validates this approach by explaining that the “identical fingerprint matching procedures continued unchanged under both programs” ([Link](#)). We run robustness checks using the 2008-2014 deportation rate and find similar results. See Appendix Table A2 as a reference.

¹⁰The number of removals under Secure Communities in CBSAs falls to 534,068, or 96.7% of the total. TRAC includes information on the most serious criminal conviction; traffic offences, drunk driving, and immigration violations make up 38.6% of all removals. Meanwhile domestic violence makes up only 1.27% of all removals; if these deportations originated by foreign born women reporting domestic violence from their foreign born spouses, this may have a reverse causality impact. In this case, marriage could affect removal rates in their MSA. The very low value of deportees being cited for domestic abuse related charges limits

95.8% were men and approximately 81.6% were between the ages of 18 and 40. To match the arrest data to the outcomes of immigrant women residing in the U.S., we use metropolitan statistical areas, as measured by Core Based Statistical Areas (CBSAs).¹¹ To calculate MSA removal rates we total all removals from November 2008 to July 2017 by country of origin and metropolitan area and divide by the largest recorded country of origin population across the 2005 to 2007 ACS samples.¹²

In Table 2 we provide summary statistics on total removals and removal rates in metropolitan areas for the top 10 countries. The reason for stopping at 10 is clear, as Mexico makes up almost 77% of all removals, while the Central American countries of Guatemala, Honduras and El Salvador make up 17%. Combined the top 10 countries make up 96.5% of all removals under the Secure Communities program. As shown in the next two columns, these numbers do not reflect the composition of migrants in the U.S. According to the 2007 multi-year ACS, Mexican migrants made up close to 30% of all migrants and 50% of migrants with less than a high school degree (LHS) (the closest measure of the unauthorized population), while those from Guatemala, Honduras and El Salvador make up 4.5%, 2.9% and 1.6% respectively. Their composition of removals are two to five times these values.

To further show the disparity in enforcement across immigrant groups we add to the table information on China, India and Korea: three countries with large populations in the U.S. but low numbers of Secure Communities removals. For example, while immigrants from China make up 3.6% of all immigrants and 3.0% of those with less than a high school education, they account for only 0.04% of removals under Secure Communities.

Before specifying our empirical strategy, it is useful to think about how the intensity of

concerns about this channel.

¹¹This is preferable to using counties, as the source of our outcome data (the ACS) covers only approximately 25% of counties in the U.S., which means we cannot tell a meaningful story of impacts at the county level. Meanwhile, the ACS covers the vast majority – approximately 75% – of CBSAs. CBSAs also are preferable to PUMAs, because they cover multiple states. This is useful, as marriage markets likely comprise a broad area, particularly for immigrant groups with small numbers. For example, for someone living in the Washington D.C. area, the marriage market may include parts of Northern Virginia and Southern Maryland.

¹²Total arrests by CBSA are the sum of arrests from 2008 to 2017 in all counties listed under a given CBSA. We take the maximum population across several years given that some immigrant groups are small and might not be equally represented in all ACS samples.

Secure Communities enforcement can vary across groups. Intensity depends on two main factors. The first is how long Secure Communities was operational in an MSA.¹³ We control for this using MSA fixed effects. The second is the probability an arrested immigrant lacks documentation and is a candidate for deportation. This depends on the proportion of an immigrant group’s population that is undocumented, which we do not know. Instead we proxy for this using the portion of the country of origin-MSA group with less than a high school education. This is an important control, as education is positively correlated with marriage (Lundberg et al. 2016) and with the propensity to enter co or inter-ethnic marriages (Furtado 2012).

2.2 Marriage, Incidence and Patterns

The data on marriage incidence and marriage patterns comes from the American Community Survey, as accessed through IPUMS (Ruggles et al. 2020). We compare two periods: the pre-period before the implementation of Secure Communities (the years 2005, 2006 and 2007) and the post period after the program and its successor had been in effect for close to a decade (the years 2015, 2016 and 2017). Technically ”post” refers to the period seven to nine years after the implementation of Secure Communities. It does not refer to the period after Secure Communities officially ended in 2014, because deportations remained at a high level under the replacement program (PEP) and immigrants may not have noticed the change in policy names (see Figure 2). Our aim is to capture the term response to a program in place for a close to a decade.

To calculate marriage rates and patterns we limit the sample to foreign born women between ages 18 to 54 who reside in CBSAs.¹⁴ Given the small sizes of some of these groups, multi-year ACS estimates are preferable to single year ones. Ideally we would use 3 year, multi-year samples, but the ACS changed its multi-year range from 3 years to 5 years in 2014,

¹³For example, Cox and Miles (2013) show that counties that adopted Secure Communities earlier rather than later were more likely to have larger Hispanic populations.

¹⁴We exclude individuals born abroad to American parents as immigrants and code spouses who were born abroad to American parents as natives.

before our post period in 2015. This means we must construct our own 3 year estimates for the post period and we follow the recommended approach by the Census (Ramsey 2013).¹⁵¹⁶

For marriage incidence we consider the percentage of foreign born women who are married, with or without a spouse present. For marriage patterns we examine the country of origin of spouses who live with foreign born women.¹⁷ We code three types of status: (a) married to an immigrant from the same country; (b) married to an immigrant from another country; (c) married a native. We define the first type of marriage— one between immigrants from the same country— as ethnically endogamous. Both other types of marriage are considered as exogamous.

Summary statistics on marriage rates and patterns for the period prior to the commencement of Secure Communities are shown in Table 1. The averages for all immigrant groups, shown in the bottom row, reveal a high degree of ethnically endogamous marriage, as 67.5% of married immigrant women are married to someone from the same country of origin. Only 10.8% are married to an immigrant from another country and 21.8% are married to a native. These averages, however, mask a high degree of variation across countries of origin. For example, 82.9% of Mexican born women with a spouse present are married to another Mexican born individual— a value that is more than fifteen percentage points higher than the average. Meanwhile only 3.4% are married to an immigrant from another country and 13.6% are married to a native. These values do not reflect those for all Latin American migrants. For example, among El Salvadoran born women 64.8% are married to another migrant from

¹⁵To do this we concatenate three individual year samples and divide the weights by 3. We choose the three year range as a five year one is too broad and not feasible as the ACS only began providing CBSA information in 2005. To maintain consistency we similarly construct 3 year estimates for the pre period. In Appendix A we compare our pre-period constructed estimates to those from the 2007 multi-year ACS, showing there are negligible differences between the two. We also show our results are robust to using the 3 year multi-year sample for the pre-period.

¹⁶There are 290 CBSAs in our sample and 167 countries of origin, generating 28,203 country of origin-MSA cells. However, only 9,495 cells have at least one woman in both periods and only 4,249 have at least five women. Finally, only 3,670 cells have more than five women and no missing marriage values. In terms of the number of countries of origin represented in MSAs, the average number is 74.7. The smallest number of 16 is Hammond, Louisiana. The largest one of 147 countries of origin is held by Washington D.C. and Los Angeles. New York has 146, while Miami (145), Boston (144) and Philadelphia (144) are not far behind.

¹⁷For this measure we are limited to married women with a spouse present, as the ACS only has information on spouses who also appear in the survey.

El Salvador, while 23.5% are married to an immigrant from another country, while among Colombian born women these values are 52.5% and 20.0%, respectively. The averages also mask variation across MSAs by the same country of origin. For example, as shown in Panel C of Figure 1, the rates of endogamy for Mexican and Central American born women vary significantly, ranging from over 80% in Denver to approximately 60% in El Paso.

3 Empirical Model

To estimate medium term changes in marriage outcomes as a function of Secure Communities we calculate the 10-year deportation rate (total deportations over 2008-2017) and the change in average outcome variables for country of origin-MSA cells from the pre Secure Communities period (2005 to 2007) to the post period (2015 to 2017). Our outcomes, therefore, are the 10 year change in the marriage rate at the country of origin-MSA level. For example, we compute the change in average marriage rates for Mexican born women in Los Angeles or Albanian born women in New York City between the three years 2005 to 2007 (pre period) and the three years 2015 to 2017 (post period). As this example highlights, the size of the country of origin-MSA cells varies considerably. This makes a model with individual outcomes and clustered standard errors problematic, because the size of the clusters varies greatly (MacKinnon and Webb 2016, Monras 2020). Similar to Monras (2020), by first differencing the outcomes, we can avoid the problem of different cluster sizes.¹⁸

Specifically, we estimate the *change* in the average marriage rates and patterns of women from country j , living in CBSA s from 2005-2007 (pre Secure Communities) to 2015-2017 (post Secure Communities) as a function of the Secure Communities removal rate over the 2008 to 2017 period, MSA and country of origin fixed effects and several country of origin-

¹⁸The cell and cluster size problem comes from focusing on country of origin groups. Papers that use broader groups, such as all immigrant women, or regions rather than countries, do not face this problem.

MSA controls (detailed below).

$$\Delta Outcome_{js} = \beta_0 + \beta_1 RemovalRate_{js} + \delta_j + \delta_s + \gamma * X_{js} + \epsilon_{js} \quad (1)$$

The inclusion of MSA fixed effects allows us to control for factors that vary across MSAs, such as differences in Secure Communities enforcement for *all* immigrant groups due to the timing of roll out or compliance of local police. Meanwhile the inclusion of country of origin fixed effects allows us to control for factors that vary by country of origin, such as the rate of undocumented immigration or propensities to enter endogamous marriages. The relevant variation used to identify changes in marriage outcomes, therefore, is at the country of origin-MSA level. Even with the first differenced dependent variable, we still have remaining MSA-country of origin interaction effects because we use the 10 year deportation rate instead of the change from pre to the post period (since deportations were zero in the pre period this difference would entail using the total from 2015-2017). Our model therefore does not first difference the right hand side variables. We argue this is preferable to estimating a first difference model and a response to shorter term deportation rates, as it likely takes time for individuals to learn about an increase in deportations and subsequently change their behavior. By estimating the 10-year response to all deportations under Secure Communities, we do not risk underestimating the size of the shock to marriage markets or the response.¹⁹

The threat to identification comes from factors at the country of origin-MSA level that are correlated with removal rates and marriage patterns. We consider four key factors: the size of the male population (immigrant population effect); the size of an immigrant population relative to the total for an MSA (enclave effect); the composition of the immigrant population in terms of education (unauthorized effect); and the sex ratio (more men effect). Below we discuss each in turn.

The first effect, the immigrant population effect, is captured by the size of the male population in an MSA from a country of origin. The opportunity for women to enter

¹⁹For robustness we do estimate such a first difference model in section 2 and find similar results.

endogamous marriages increases as the number of men from the same country of origin increases. However, deportations might increase in male population size, making these groups easier for local law enforcement to target. We therefore include a control for the size of the pre Secure Communities population of men by country of origin and MSA.

The second effect, the enclave effect is measured by the percentage of an MSA’s total population a country of origin group makes up pre-Secure Communities. Considering the concentration of an immigrant population within a city is important, as the opportunity for endogamous marriage may be larger among groups that comprise a larger percentage of an MSA’s population, but these groups also may be easier to target for immigration violations. We account for this using the percentage of an MSA’s total population a country of origin group makes up pre-Secure Communities.

The third effect is the unauthorized effect. Undocumented immigrants are more likely to be removed, but also may be more likely to locate in specific MSAs. They also may have different marriage patterns.²⁰ To control for this we use the percentage of a country of origin-MSA group that has less than a high school education in the pre-period.

Finally, what may matter is not just the total number of men, but the number of men relative to women. The intuition is that a higher ratio of men will increase the opportunity for women to marry endogamously, but also may increase immigration enforcement if officials target men over women. In some specifications we use the ratio of men to women from a country of origin in an MSA in the pre period.

An additional concern is that the deportation rates have a mechanical relationship with our outcome variables because deportations affect the post-Secure Communities population or because the pre-Secure Communities population appears in both our dependent variable (change in marriage rates) and our control variable (removal rates). However, we believe that we do not suffer from either of these concerns. First, as noted in section 2, close to

²⁰One channel may be education, as undocumented immigrants have lower education levels than documented ones and immigrants with less education are more likely to enter endogamous marriages (Furtado and Theodopolous 2011, Furtado 2012)

96% of removals under Secure Communities are men, which means that deportations under the program do little to directly change the number of foreign born women. This means outcomes for foreign born women are less likely to suffer from selection bias due to who is being deported. Second, it still is possible that immigrant women leave the sample due to deportations if they separate from a deported spouse or leave the country with them. However, as shown in section (5), we find no evidence of this. The incidence of married immigrant women divorced from or living without a spouse does not significantly increase as a result of Secure Communities. Furthermore, if deportations lead to exit from the married with spouse present sample, this will occur for women married to other immigrants, but not for women married to natives. Any such compositional effects would bias us towards finding an increase in exogamous marriages to natives and a decrease in endogamous marriages. Third, the denominator for removal rates includes both men and women (or the total country of origin-MSA population), and thus the same variable does not show up on both sides of the equation. Furthermore, the denominator represents the population of immigrants in an MSA *before* SC was introduced so the denominator does not suffer from selection due to deportations.

Finally, we note that we weight all observations by the size of the country of origin population in an MSA in the pre-period. We do this since the large variation in the size of country-MSA cells leads to concerns about heteroskedasticity. For example, the Mexican born population in Los Angeles is orders of magnitude larger than, say, the Albanian population in any MSA. Without some type of weighting these cells are treated equally, which leads to heteroskedasticity as the sampling variance is not equal across all cells.²¹

²¹We get similar results from unweighted regressions. These are available upon request.

4 Results

4.1 Main Results

Table 4 shows the estimated coefficients from different versions of the model, which vary based on the country of origin-MSA controls (all versions contain country of origin and MSA fixed effects). Panel A has results from the model that includes no country-MSA controls. Panel B contains results from the model that contains the log of the average number men from a country of origin from 2005-2007, the percentage of the country of origin-MSA population with less than a high school degree, and the percentage of the *total* MSA population comprised of that country of origin group. Panel C has results from the model that includes the log of the average country of origin-MSA population with less than a high school degree from 2005-2007 and the sex ratio in the pre period.

Starting with marriage incidence, we find that higher Secure Communities deportation rates are associated with significant *increases* in the incidence of marriage among immigrant women. According to the coefficient in column one of Panel B (our preferred specification), a one standard deviation increase in the deportation rate under Secure Communities (0.03%) is associated with a one percentage point increase in the incidence of marriage. Since the mean marriage rate in the pre-period is 63.7%, this constitutes a change of 1.64% of the mean. This is notable as studies that just look at negative supply shocks as a result of other factors like incarceration (Charles and Luoh 2010) or international migration (Angrist 2002, Raphael 2013) find reductions in marriage.²² Our result therefore suggests that the negative supply shock caused by deportations was more than offset by increases in demand by women and/or increases in supply by remaining men.

We also find evidence that demand for endogamous partners increased rather than decreased, as higher Secure Communities deportation rates are associated with an *increase* in endogamous marriage. According to the coefficients in Panel B, one standard deviation

²²For example, Charles and Luoh (2010) find that a one percentage point increase in incarceration rates for men reduces marriage among women by 1.1%. A one standard deviation increase reduces marriage rates by 3%, a decline of 5% from the mean.

increase in Secure Communities deportation rates are associated with a one percentage point increase in a woman having a spouse from the same country of origin. This constitutes 1.4% of the pre period mean. Thus, while the effect may not appear large, it is significant and can have implications for other markets (e.g. labor and housing markets), human capital investment and the marriage patterns of second generation immigrants. Meanwhile, we find a significant decrease in the incidence of exogamous marriage to immigrants from other countries and an insignificant decrease in exogamous marriage to natives. A one standard deviation increase in the deportation rate leads to a 0.95 percentage point decrease in having a spouse from another country and a 0.04 percentage point decrease in having a native spouse. These constitute 9.1 and 0.2% of the mean values of marriage types in the pre-period, respectively.

We again emphasize that these results are striking because, if anything, Secure Communities reduced the supply of same ethnicity partners in marriage markets. Thus it does not appear that women responded to these negative shocks by shifting towards native or foreign born partners from other countries. Instead, they shifted towards same country partners. These responses could have been generated by a perception that married individuals were less likely to be deported, by a change in the structure and importance of networks or a combination of the two. In section 6 we investigate these channels in more detail.

We also conduct robustness checks to ensure our results are not driven by the use of concatenated data, the time frame of our sample or from border MSAs. The results are shown in Table A2 and discussed in more detail in Section 2. In all cases the conclusions hold, showing our results do not stem from the method of constructing average outcomes, the choice of time periods for the outcomes and deportations, or specific MSAs.

4.2 Heterogeneity

We examine heterogeneity across demographic groups, as there might be differences by citizenship, educational attainment, age and nationality. We start by splitting the sample

by naturalized citizen status, as some papers find that marriage to natives decline when immigrant groups gain legal access to labor markets (Adda et al., 2019)²³. As shown in Panels A and B of Table 5 while both citizen and non-citizen women exhibit an increase in marriage and endogamy and a decrease in exogamous marriage to natives, the size of the coefficients on the first two is larger and significant for non-citizens. The decline in marriage to immigrants in other countries also is only exhibited by non-citizens. While it appears that the largest effects were experienced by non-citizens, the heightened deportations under SC may also have affected the marriage patterns of naturalized citizens, despite the fact that their spouses were less likely to be deported. We think this speaks to the importance of co-ethnic networks, which may have become more concentrated under SC, thereby affecting the marriage outcomes of naturalized citizens.

We continue by considering those with college and those with less than a college education, given that several papers find endogamous marriage depends on one’s education level and one’s education compared to the average education level of individuals from the same country (Furtado and Theodoropoulos 2011, Furtado 2012). The results in Panels C and D of Table 5 confirms that the link between Secure Communities deportations, increases in endogamy and decreases in exogamy is driven by less than college educated women. This is line with papers that generally find that endogamy decreases in education. Indeed, we find that among college educated women higher deportation rates lead to insignificant decline in endogamous marriage and an increase in exogamous marriage to natives. Nevertheless, we do find marriage incidence increases significantly for college educated women in response to Secure Communities, showing this group is not immune to the impacts of the policy.

To address potential concerns about the large age range of our sample, we split women into two age groups: women age 18 to 35 (Panel E) and women age 36 to 54 (Panel F). By dividing the sample we lose precision, but find similar results across the two age groups

²³Adda et al. (2019) study the case of Italy and find that marriage to natives declines for immigrant groups that gain legal access to labor markets through EU expansions. Some non-citizens may have legal work status, through permanent residency or work visas, but we do not know this information.

(except for exogamous marriage to natives). This suggests are results are not being driven by younger women, who are more likely to be in a first marriage, or older women, some of whom might be in second marriages and have children of their own.

Finally we estimate the model separately for Mexican born women (Panel G) and women from all other countries (Panel F). This is to address concerns that Mexican born individuals drive our results, as Mexico has one of the highest rates of endogamous marriages and deportations under Secure Communities. We find, however, this is not the case, as the increase in endogamous marriage and decrease in exogamous marriage is exhibited strongly in the sample that excludes Mexican born women (Panel G). For Mexican born women only we actually find opposite results, with increased deportations associated with a decrease in endogamous marriage and an increase in exogamous marriage to natives. These are similar to the results found by Amuedo-Dorantes et al (2020), who find the increase in marriage to U.S. citizens following greater immigration enforcement is driven by Mexican nationals. However, we take our results with a bit of caution, as these regressions do not include MSA fixed effects, which we find to be important in other regressions (see Appendix Section 2).

In sum, the results presented in this section validate, for the most part, the theoretical predictions discussed above. Where they do not, such as the case for more educated immigrants, they provide fertile areas for future research.

5 Selection

5.1 Evidence and Checks

Before investigating the mechanisms that might explain an increase in endogamous marriage, we address the concern that our results simply capture differential selection across MSAs based on deportation rates. The potential sources of selection depend on whether the outcome is marriage incidence or marriage patterns. For marriage incidence the value is the change in the portion of all female immigrants from a country of origin in an MSA who are married, and thus depends on the relative movement of married and unmarried individuals.

These movements could differ if married individuals move to MSAs with higher removal rates (say family reunification reason for initial migration), or if unmarried individuals move to MSAs with lower removal rates.

The story is different for marriage *patterns*, as this sample is limited to married individuals who live with their spouse. The only type of selection that would affect marriage type is the differential movement of couples in endogamous marriages to MSAs with higher deportation rates or of couples in exogamous marriages to MSAs with lower deportation rates. For example, many of the cities with the highest removal rates historically have been gateway cities for migrants. Fears of deportation may have reduced the mobility of couples in endogamous marriages relative to those in exogamous ones and thus reduced movement from gateway cities to other locations in the U.S..

To gauge the extent to which selection may explain our results we examine the correlations between removal rates and location patterns. We estimate changes in the locations of new arrivals, defined as individuals who moved into an MSA in the past year.²⁴ We then calculate the percent of immigrant women, married immigrant women, and immigrant women in endogamous and exogamous marriages who arrived in the past year. If there is selection in line with our results, the change in the percentage of recent arrivals among married women or women in endogamous marriages would be positively associated with the removal rate, while the change in percentage of unmarried women or women in exogamous marriages would be negatively associated with the removal rate.

The results of the estimation of these correlations are shown in Table 6. We find that for women who are recent arrivals to areas with high removal rates, they are more likely to be married, in endogamous marriages, in exogamous marriage to immigrants from other countries and in exogamous marriages to natives. Findings in the same direction of our main

²⁴This is the closest we can come to measuring recent migration, as the ACS only includes, on a consistent basis, information on where someone lived one year ago. Options include living in the same state, another state, or another country. To allow for the possibility that individuals move to other areas within the same CBSA (which can span state lines) we classify new migrants as those who lived in a different CBSA one year ago. In addition, while the ACS does allow us to distinguish between arrivals from another MSA or abroad, given the small sample size for some cells, we focus on any type of migration.

results, which are three of the four results, suggest that mobility could be part of what we are finding in our main results rather than a behavioral response. However, none of the results are significant, likely due to the small sample sizes for many groups. We therefore take these results as providing mixed evidence of the type of selection patterns that would explain our results.

Given this mixed evidence of selection we re-estimate our results on two sub-samples of individuals who are less likely to have moved in response to Secure Communities deportation rates. The first is migrants who arrived to the U.S. before age 18, since these individuals could not have arrived as part of a married couple.²⁵ The second excludes immigrant women who arrived in their current MSA in the past year. The results are shown in Table 7. For the arrived young sub-sample (Panel A) the sign for most of the coefficients is similar to our main results, although we lose precision as the sample size becomes smaller. For the sub-sample of no new arrivals (Panel B), the sign, size and significance of the coefficients look very similar to the main ones (4). Thus while new arrivals do not capture all individuals who may have re-located in response to Secure Communities, the similarity of the results with and without them provides evidence that our findings are not fully explained by selective migration.

We next estimate other outcomes to see if there is a change in family structure as a result of SC. These results are shown in Table 8. We find that higher deportations are associated with a significant increase in the percentage of women who live with their spouse and a much smaller decrease, although insignificant, in the percentage whose spouse is not present. We also find a much smaller and insignificant increase in the percentage of women who are divorced or separated. Combined, these findings do not provide strong evidence that married women no longer live with their spouses because they were removed. Instead they show an *increase* in spousal co-residence, which further suggests our results capture changes in marriage markets rather than changes to the stock of married individuals living in particular MSAs. We also find that having a child present in the household – a possible

²⁵Approximately 34% of immigrant women in the ACS arrived before the age of 18.

protection from deportation – increased insignificantly in MSAs with higher removal rates.

Finally, we look at outcomes that capture potential changes in spousal matching. In terms of matching, if more foreign born men entered the marriage market, foreign women could possibly enter into more desirable matches. If these matches were those to men with more education, more experience, and higher wages, we would expect to see a bigger age gap – which we do – and a higher education gap, which we do not. Thus the results regarding matching and shifts in the supply curve are inconclusive.

5.2 Flows Into Marriage

To further check if selection explains our results, we examine the partner choices of women who enter marriage in the past 12 months. Because these individuals are less likely to have moved as part of a married couple, changes in their behavior should reflect changes in marriage patterns rather than selection into different locations. We caution, however, that while these individuals did not likely come to the US married, it is not clear, *a priori*, which deportation rates to use when modeling these flows. Given likely delays in individuals’ ability to learn about a change in deportations and change their behavior, we argue a longer-run analysis is necessary to observe true changes in marriage behavior. Nonetheless, we present our short-run flows specification, but suspect that quick marriage decisions are not necessarily feasible or desirable for a population at risk of being deported.

To examine flows into marriage we use outcomes at the individual level, as opposed to at the country of origin-MSA cell level. We do this as the ACS only began asking whether or not a person married in the past year in 2008, the same year when Secure Communities starts, and we cannot construct similar 3-year cells from 2005-2007 or control for pre-Secure Communities patterns. Summary statistics on the annual incidence of each partnership type are presented in Panel C of Figure 1. They show that endogamous marriage is the dominant form of partnership, as approximately 52% of recently married immigrant women marry someone from the same country of origin, while 33% marry a native and 15% marry

someone from another country. Thus while the rates of endogamous marriage are lower and the rates of exogamous marriage are higher among the newly married than the general immigrant population, endogamous marriage remains the dominant form of partnership. This means the marriage patterns we see partially reflect current partner preferences, and not just those from an earlier time period.

We estimate the partnership type of woman i from country of origin j in MSA s and year t who married in the past year as a function of the Secure Communities deportation rate in the past one or two years, country of origin, MSA and year fixed effects and country of origin-MSA controls. Standard errors are clustered at the country of origin-MSA level. To be clear, we map women who say they married over the past year to the deportation rate in the previous year. For example, women in the 2017 ACS who say they married in the past 12 months are linked to deportation rates in 2016 (one year), or in 2015 and 2016 (2 years). This is more appropriate than using the 2017 rate, as many of these women likely married before these deportations rates would have affected their decisions.²⁶ As we discussed in section 3, this model with individual level outcomes and shorter response times to deportation rates is not our preferred model. However, we adopt this model as a robustness check (rather than our main specification) due to the absence of a pre-period for flows into marriage and the much smaller sample of women who marry in any given year making it difficult to compute country-of-origin MSA cells.

$$Outcome_{ijst} = \beta_0 + \beta_1 RemovalRate_{jst-1} + \delta_j + \delta_s + \delta_t + \gamma * X_{sj} + \epsilon_{ijst} \quad (2)$$

The estimation results are shown in Table 9. While none of the coefficients are significant, the signs for the previous one and two year deportation rates are similar to those for our main results. Higher SC deportation rates are associated with an *increase* in marriage to someone from the same country of origin and a *decrease* in marriage to a someone from another country or a native. These changes relative to the mean are small, likely reflecting

²⁶We extend the time frame to the 2018 ACS, as this is linked to the 2017 deportation data.

moderate changes in marriage patterns over our sample period (see Figure 1). Furthermore, we did not expect marriages to change quickly as women who were afraid of deportation may have delayed the marriage process or waited to hear if it was really protected under prosecutorial discretion. In other words, 'coming out of the shadows' to change one's marital status may not have been quick and easy.

6 Channels

The increase in endogamous marriages as a result of SC could have been generated from a pro-marriage response to the policy *or* to the increased importance of networks or both. In this section, we look for suggestive evidence of the likelihood of these explanations.

6.1 Citizenship

We first look at the citizenship status of partners to see if a policy induced incentive to marry is the dominant channel. As was mentioned earlier, law enforcement was given prosecutorial discretion to deport unauthorized immigrants and were also directed by then President Obama to focus on 'felons, and not families'. What we further argue is that if marriage is protection, marriage to a citizen is the safest. However, we have already found that exogamous marriage to natives, if anything, declines or is unresponsive (see Table 4). This finding may not be due to a change in demand from immigrant women, but a change in supply from native born men. It is possible that SC changed preferences for foreign born spouses among *natives* and reduced their supply to avoid the increased prospects of deportation (Amuedo-Dorantes et al. 2020).

We therefore focus on marriage to foreign born men, who may not have exhibited the same shifts in preferences. Examining the citizenship status of foreign born spouses may provide a clearer picture of the extent to which demand for a spouse with citizenship might have changed. To conduct this analysis, we define two types of foreign born spouses (Spouse Same Country and Spouse Different Country) and then look at the change in marriage rates

to those who are naturalized citizens and those who are not citizens. The results are shown in Table 10, and reveal no significant increase the incidence of marriage to foreign born partners who are citizens. Indeed, for spouses from a different country we find a significant decrease in marriage rates to those with citizenship. In tandem with the results on exogamous marriages to natives which also saw declines or no change this provides further evidence that marrying a citizen was not a primary concern for immigrant women seeking spouses in areas with higher levels of removal rates from SC. This points towards a relative importance of networks and family formation over legal status as a driver of marriage. In the next section, we further investigate if co-ethnic marriage is driven by the importance of co-ethnic ties reflected by an increased importance of networks for those in areas with higher deportation rates.

6.2 Networks

Secure Communities could have led to increases in marriage because of a perception that married couples were less likely to be deported or because fear generated by the policy led individuals to concentrate their social networks among co-ethnics. To disentangle these two effects we look at cohabitation patterns for non-married partners. Since cohabitation carries limited legal benefits, changes in partner type for cohabiters will not reflect policy induced incentives to marry. Instead this behavioral change should only reflect the change in the value of networks.

The estimated coefficients from a model that looks at changes in partner type of cohabitating foreign born women are presented in Table 11. We note that the sample size declines significantly, as there are fewer individuals in cohabitating partnerships. While we lose precision, the signs of the coefficients are similar to those from the main results. In response to higher SC deportations, the incidence of endogamous cohabitating partnerships *increases*, while the incidence of exogamous partnerships *decreases*. These are the same patterns we see with marriage, and yet cannot reflect any perceived protective effects of legal partnership. As such, we argue they more strongly reflect the importance of co-ethnic networks, and take

this as evidence this channel is dominant.

7 Conclusion

In this project, we believe we are the first to document the impact of the implementation of immigration enforcement on the extent of endogamous marriage among immigrant women in the US. One contribution is the use of detailed data on deportations under the Secure Communities program at the country of origin and MSA level. This is important given the dominance of co-ethnic marriages and large variation in deportation rates by country of origin, even within the same MSA. We examine the impact of removals over a 10-year period (2005 to 2017) and find that increased interior enforcement through the Secure Communities resulted in higher marriage rates and increased endogamous partnerships for immigrant women. We do not find that immigrant women shifted to native-born US spouses or naturalized partners from their country or another country of origin. These findings suggest immigration policies, such as Secure Communities, may have unintended consequences in the form of changing immigrant marriage patterns.

We discuss and explore why marriage rates could increase with increased deportations and why individuals may have increased preferences for co-ethnic partners. Using information on young arrivals, new arrivals and flows into marriage we do not find that selective relocation across MSAs explains our results. Higher deportations also did not reduce family formation, as women were not more likely to live without their spouse or to divorce. We, however, do find suggestive evidence these changes are due to the increased importance of country of origin networks and the safety that could possibly result from such a union. With this finding our paper contributes to the literature which shows the importance of networks for immigrant communities and, in particular, how networks change in response to information (Barsbai et al. 2020). We argue there could be interesting explorations of how the structure of these networks can change in response to heightened fear and uncertainty, and how these changes, in turn, can alter various outcomes for immigrants.

References

- Adda, Jérôme, Paoli Pinotti, and Guilia Tura**, “There’s More to Marriage than Love: The Effect of Legal Status and Cultural Distance on Intermarriages and Separations,” *Working Paper*, 2019.
- Alsan, Marcella and Crystal S. Yang**, “Fear and the Safety Net: Evidence from Secure Communities,” *NBER Working Paper*, 2018, 24731.
- American, Immigration Council**, “The Three and Ten Year Bars: How New Rules Expand Eligibility for Waivers,” <https://www.americanimmigrationcouncil.org/research/three-and-ten-year-bars>, 2016.
- Amuedo-Dorantes, Catalina and Esther Arenas-Arroyo**, “Immigration Enforcement and Children’s Living Arrangements,” *Journal of Policy Analysis and Management*, 2019, 38.
- , – , and **Chunbei Wang**, “Is Immigration Enforcement Shaping Immigrant Marriage Patterns?,” *Journal of Public Economics*, 2020, 190.
- Angrist, Josh**, “How do Sex Ratios Affect Marriage and Labor Markets? Evidence from America’s Second Generation,” *Quarterly Journal of Economics*, 2002, 117 (3), 997–1038.
- Barsbai, Toman, Victoria Licuanan, Andreas Steinmayr, Erwin Tiongson, and Dean B. Yang**, “Information and the Acquisition of Social Network Connections,” *NBER Working Paper*, 2020, 27346.
- Charles, Kerwin Kofi and Ming Ching Luoh**, “Male Incarceration, the Marriage Market, and Female Outcomes,” *The Review of Economics and Statistics*, 2010, 92 (3), 614–627.
- Chi, Miao**, “Does intermarriage promote economic assimilation among immigrants in the United States?,” *International Journal of Manpower*, 2015, 36, 1034–1057.
- Chiswick, Barry R. and Christina A. Houseworth**, “Ethnic intermarriage among immigrants: human capital and assortative mating.,” *IZA Discussion Papers*, 2008, 3740.
- Choi, Kate H. and Marta Tienda**, “Marriage-Market Constraints and Mate-Selection Behavior: Racial, Ethnic, and Gender Differences in Intermarriage,” *Journal of Marriage and Family*, 2017, 79, 301–317.
- Corno, Lucia Lucia, Nicole Hildebrandt, and Alessandra Voena**, “Age of Marriage, Weather Shocks, and the Direction of Marriage Payments,” *Becker Friedman Institute Working Paper*, 2019, 2019-123.
- Cox, Adam B. and Thomas J. Miles**, “Policing Immigration,” *University of Chicago Law Review*, 2013, 80, 87–136.
- Das, Shreyasee and Shatanjaya Dasgupta**, “Marriage Market Responses in the Wake of a Natural Disaster in India,” *Working Paper*, 2020.
- Foad, Hisham**, “Intermarriage between Immigrants and Natives in the United States,” *Working paper*, 2018.
- Furtado, Delia**, “Cross-Nativity Marriages and Human Capital Levels of Children,” *Research in Labor Economics*, 2009, 29, 273–296.
- , “Human Capital and Interethnic Marriage Decisions,” *Economic Inquiry*, 2012, 50, 82–93.
- and **Nikolaos Theodoropoulos**, “Why Does Intermarriage Increase Immigrant Employment? The Role of Networks,” *B E Journal of Economic Analysis and Policy*,

- 2010, 10.
- **and** –, “Interethnic marriage: a choice between ethnic and educational similarities,” *Journal of Population Economics*, 2011, 24, 1257–1279.
 - , **Miriam Marcén, and Almudena Sevilla**, “Does Culture Affect Divorce? Evidence From European Immigrants in the United States,” *Demography*, 2013, 50, 1013–1038.
 - Houseworth, Christina A. and Barry R. Chiswick**, “Divorce among European and Mexican Immigrants in the U.S,” *Review Of Economics Of The Household*, 2020, 18, 1–25.
 - Kalmijn, Matthijs**, “Intermarriage and Homogamy: Causes, Patterns, Trends,” *Annual Review of Sociology*, 1998, 24, 395–421.
 - **and Frank Van Tubergen**, “A Comparative Perspective on Intermarriage: Explaining Differences Among National-Origin Groups in the United States,” *Demography*, 2010, 71, 459–479.
 - Kets, Willemien and Sandroni Alvaro**, “A belief-based theory of homophily,” *Games and Economic Behavior*, 2019, 115, 410–435.
 - Kovářík, Jaromír and Marco J. van der Leij**, “Risk aversion and social networks,” *Review of Network Economics*, 2014, 13, 121–155.
 - Lam, David**, “Marriage Markets and Assortative Mating with Household Public Goods: Theoretical Results and Empirical Implications,” *Journal of Human Resources*, 1988, 23, 462–487.
 - Lundberg, Shelly, Robert A. Pollak, and Jenna Sterns**, “Family Inequality: Diverging Patterns in Marriage, Cohabitation, and Childbearing,” *Journal of Economic Perspectives*, 2016, 30, 70–102.
 - MacKinnon, James A. and Matthew D. Webb**, “Wild Bootstrap Inference for Wildly Different Cluster Sizes,” *Journal of Applied Econometrics*, 2016, 32, 233–254.
 - McManus, Patricia A. and Lauren Apgar**, “Parental Origins, Mixed Unions, and the Labor Supply of Second-Generation Women in the United States,” *Demography*, 2019, 56, 49–73.
 - Meng, Xin and Robret G. Gregory**, “Intermarriage and the economic assimilation of immigrants,” *Journal of Labor Economics*, 2005, 23, 135–175.
 - Monras, Joan**, “Immigration and Wage Dynamics: Evidence from the Mexican Peso Crisis,” *Journal of Political Economy*, 2020, 128.
 - Pedroza, Juan Manuel**, “Deportation Discretion: Tiered Influence, Minority Threat, and Secure Communities Deportations,” *Policy Studies Journal*, 2019, 47, 624–646.
 - Ramsey, Nathan**, “Creating Multi-Year ACS PUMS Estimates Using Single-Year Files,” *U.S. Census Bureau Working Paper*, 2013.
 - Raphael, Steven**, “International Migration, Sex Ratios, and the Socioeconomic Outcomes of Nonmigrant Mexican Women,” *Demography*, 2013, 50, 971–991.
 - Ruggles, Steven, Sarah Flood, Ronald Ronald Goeken, Josiah Grover, Erin Meyer, Jose Pacas, and Matthew. Sobek**, “IPUMS USA: Version 10.0 [dataset].,” Technical Report, Minneapolis, MN: IPUMS, 2020. 2020.
 - Wang, Chunbei and Le Wang**, “The effects of 9/11 on intermarriage between natives and immigrants to the U.S.,” *Review of Economics of the Household*, 2012, 10, 171–192.
 - Wong, Ho-Po Crystal**, “Ethnic Assortative Matching in Marriage and Family Outcomes: Evidence from the Mass Migration to the U.S. During 1900-1930,” *Journal of Population Economics*, 2016, 29, 817–848.

Tables

Table 1: Immigrant Women's Marriage Patterns, Pre Secure Communities

Country of Origin	Married (%)	Of Married, Spouse Present		
		Immigrant Same Country (%)	Immigrant Other Country (%)	Native (%)
Mexico	64.42	82.93	3.42	13.65
El Salvador	55.49	64.82	23.54	11.64
Guatemala	54.44	65.96	22.00	12.04
Dom. Republic	42.13	65.12	14.27	20.61
Jamaica	41.71	64.09	12.09	23.82
Colombia	60.35	52.51	20.01	27.49
Ecuador	60.55	65.52	14.27	20.21
China	75.09	78.53	11.08	10.39
Korea	66.25	69.80	4.68	25.52
India	83.74	91.12	4.04	4.84
All	64.31	67.46	10.76	21.78

Source: Foreign born women (not from American parents abroad) age 18-54 residing in MSAs in the American Community Survey, Years 2005-2007. Statistics are from the 3 year concatenated sample and represent average values across the three year time frame.

Table 2: Removals in MSAs Under Secure Communities

Country of Origin	Total Removals Secure Com.	Percent Total Removals	Percent Immigrant Population	Percent LHS Imm. Pop	Per Removals To Percent Imm Pop	Average Removal Rate
Mexico	348,471	76.70	29.61	49.94	2.59	5.67
El Salvador	22,715	5.00	2.92	4.49	1.71	7.73
Guatemala	27,131	5.97	1.84	2.94	3.25	19.08
Honduras	28,111	6.19	1.10	1.63	5.62	14.82
Dom. Republic	2,893	0.64	2.12	2.52	0.30	2.52
Jamaica	2,092	0.46	1.70	1.11	0.27	2.46
Colombia	1,799	0.40	1.63	1.04	0.24	2.52
Nicaragua	2,004	0.44	0.65	0.55	0.68	3.24
Brazil	1,586	0.35	0.96	0.65	0.36	3.90
Ecuador	1,472	0.32	1.07	1.04	0.30	2.36
China	594	0.13	3.61	3.01	0.04	0.31
Korea	574	0.13	2.76	1.31	0.05	0.16
India	571	0.13	4.06	1.57	0.03	0.32

Source: TRAC Syracuse and the ACS. Over the 11/2008 to 7/2017 period there were 454,345 removals in MSAs under Secure Communities. Percent Immigrant Population is the how much each country of origin comprises of the total immigrant population over 2005 to 2007, while Percent LHS Imm. Pop. is how much each country of origin comprises of the total immigrant population with less than a high school degree. Per. removals to percent imm pop is the percent removals over the percent of the total immigrant population. Finally, removal rates are calculated as total removals in a CBSA over the average population from 2005-2007 in the ACS.

Table 3: Removals in MSAs Under Secure Communities, Only Los Angeles

Country of Origin	Total Removals Secure Com.	Percent Total Removals	Percent Immigrant Population	Percent LHS Imm. Pop	Per Removals To Percent Imm Pop	Average Removal Rate
Mexico	42,412	76.47	14.68	63.92	5.21	2.23
El Salvador	4,077	7.35	2.16	8.18	3.40	1.34
Guatemala	4,140	7.46	1.42	5.78	5.25	2.06
Honduras	1,816	3.27	0.26	1.04	12.65	5.27
Dom. Republic	18	0.03	0.02	0.01	2.03	0.54
Colombia	122	0.22	0.17	0.26	1.33	0.51
China	124	0.22	1.09	2.03	0.21	0.08
Korea	197	0.36	1.65	1.77	0.22	0.09
India	33	0.06	0.52	0.52	0.11	0.05

Source: TRAC Syracuse and the ACS. Percent Immigrant Population is the how much each country of origin comprises of the total immigrant population over 2005 to 2007, while Percent LHS Imm. Pop. is how much each country of origin comprises of the total immigrant population with less than a high school degree. Per. removals to percent imm pop is the percent removals over the percent of the total immigrant population. Finally, removal rates are calculated as total removals in a CBSA over the average population from 2005-2007 in the ACS.

Table 4: Women's Marriage Patterns

	Of Married, Spouse Present			
	(1)	(2)	(3)	(4)
	Married	Immigrant Same Country	Immigrant Other Country	Native
PANEL A: No Controls				
SC Deportation Rate	0.353** (0.143)	0.342* (0.178)	-0.347** (0.174)	0.005 (0.154)
Observations	3,634	3,624	3,624	3,624
PANEL B: Control Set 1				
	(1)	(2)	(3)	(4)
SC Deportation Rate	0.351** (0.145)	0.330* (0.179)	-0.318* (0.178)	-0.012 (0.153)
Observations	3,626	3,616	3,616	3,616
PANEL C: Control Set 2				
	(1)	(2)	(3)	(4)
SC Deportation Rate	0.453*** (0.156)	0.422** (0.177)	-0.385** (0.171)	-0.037 (0.155)
Observations	3,535	3,525	3,525	3,525

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses.

Note: The sample is limited to immigrant groups with more than 5 women in an MSA in both periods and all observations are weighted by the cell size in the pre period. All regressions contain MSA and country of origin fixed effects. Panel A contains no country of origin-MSA controls. Panel B contains the log of total men from the country of origin in the MSA in the pre-period, the percentage of an MSA's total population made up by all individuals from a country of origin in the pre-period, and the percentage of the country of origin population in an MSA with less than a high school education. Panel C contains the log of the total number of immigrants from a country of origin in an MSA with less than a high school degree in the pre-period, the percentage of an MSA's total population made up by all individuals from a country of origin in the pre-period, and the country of origin sex ratio in an MSA in the pre-period.

Source: The ACS, as accessed through IPUMS, and TRAC Syracuse.

Table 5: Women's Marriage Patterns, By Demographic Groups

	Of Married, Spouse			
	(1)	(2)	(3)	(4)
	Married	Immigrant Same Country	Immigrant Other Country	Native
PANEL A: Naturalized Citizens				
SC Deportation Rate	0.063 (0.285)	0.206 (0.270)	0.075 (0.383)	-0.281 (0.387)
PANEL B: Non Citizens				
SC Deportation Rate	0.452** (0.188)	0.576** (0.238)	-0.467** (0.189)	-0.108 (0.185)
PANEL C: College				
SC Deportation Rate	0.806** (0.361)	-0.347 (0.409)	-0.312 (0.334)	0.659 (0.471)
PANEL D: Less than College				
SC Deportation Rate	0.312* (0.186)	0.450** (0.224)	-0.357* (0.203)	-0.093 (0.189)
PANEL E: Ages 18-35				
SC Deportation Rate	0.321 (0.263)	0.103 (0.297)	-0.137 (0.258)	0.034 (0.329)
PANEL F: Ages 36-54				
SC Deportation Rate	0.329 (0.211)	0.526** (0.215)	-0.186 (0.229)	-0.340 (0.248)
PANEL G: Mexican Born Only				
SC Deportation Rate	0.182 (0.186)	-0.437* (0.259)	0.003 (0.080)	0.434* (0.222)
PANEL H: Excluding Mexican Born				
SC Deportation Rate	0.228 (0.155)	0.363* (0.213)	-0.294 (0.255)	-0.069 (0.172)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses.

Note: All regressions contain the log of total men from the country of origin in the MSA in the pre-period, and the percentage of an MSA's total population made up by all individuals from a country of origin in the pre-period. The regressions in Panel E-H also include the percentage of the country of origin population in an MSA with less than a high school education. All regressions except those with only Mexican born contain country of origin and MSA fixed effects.

Table 6: Selection: Percent Recent Migrants

			Of Married, Spouse Present		
	(1)	(2)	(3)	(4)	(5)
	All	Married	Immigrant Same Country	Immigrant Other Country	Native
SC Deportation Rate	-0.093 (0.149)	0.020 (0.149)	0.105 (0.145)	0.003 (0.018)	-0.130 (0.089)
Observations	3,634	3,627	3,624	3,624	3,624

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses.

Table 7: Women's Marriage Patterns, Selection

		Of Married, Spouse Present		
	(1)	(2)	(3)	(4)
	Married	Immigrant Same Country	Immigrant Other Country	Native
PANEL A: Arrived Young				
SC Deportation Rate	0.052 (0.288)	0.107 (0.486)	-0.200 (0.410)	0.093 (0.412)
Observations	3,267 (1)	2,522 (2)	2,522 (3)	2,522 (4)
PANEL B: No New Arrivals				
SC Deportation Rate	0.308* (0.163)	0.309* (0.185)	-0.384** (0.185)	0.074 (0.160)
Observations	3,624	3,610	3,610	3,610

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses.

Note: The sample is limited to immigrant groups with more than 5 women in an MSA in both periods and all observations are weighted by the cell size in the pre period. All regressions include MSA and country of origin fixed effects, and MSA-country of origin controls. Panel A includes women who arrived in the U.S. prior to age 18. Panel B includes women who did not arrive in the past year (no new arrivals)

Source: The ACS, as accessed through IPUMS, and TRAC Syracuse.

Table 8: Other Outcomes

	Married, Spouse		Divorced/Separated	Child	Age	Education Gap	
	(1)	(2)				(6)	(7)
	Present	Not Present	(3)	(4) Present	(5) Gap	Equal or More	Less
SC Deportation Rate	0.365** (0.148)	-0.013 (0.064)	0.046 (0.096)	0.215 (0.140)	3.383 (2.253)	-0.088 (0.191)	0.088 (0.191)
Observations	3,626	3,626	3,626	3,626	3,616	3,616	3,616

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses.

Note: The sample is limited to immigrant groups with more than 5 women in an MSA in both periods and results are weighted by the cell size in the pre period. All regressions contain MSA and country of origin fixed effects, the log of total men from the country of origin in the MSA in the pre-period, the percentage of an MSA's total population made up by all individuals from a country of origin in the pre-period, and the percentage of the country of origin population in an MSA with less than a high school education.

Source: The ACS, as accessed through IPUMS, and TRAC Syracuse.

Table 9: Women's Marriage Patterns, Married Last Year

	Married, Spouse Present		
	(1) Immigrant Same Country	(2) Immigrant Other Country	(3) Native
SC Deportation Rate, Previous Year	0.662	-0.127	-0.535
	(1.663)	(0.659)	(1.859)
Observations	22,712	22,712	22,712
PANEL B: Previous Two Years			
	(1)	(2)	(3)
SC Deportation Rate, Previous 2 Years	0.310	-0.116	-0.194
	(0.841)	(0.363)	(0.955)
Observations	22,712	22,712	22,712

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses.

Note: The sample is limited to immigrant groups with more than 5 women in an MSA in 2008 through 2010. Population weights are used and standard errors are clustered at the country of origin-MSA level. All regressions include year, MSA and country of origin fixed effects, the log of total men from the country of origin in the MSA in the pre-period, the percentage of an MSA's total population made up by all individuals from a country of origin in the pre-period, and the percentage of the country of origin population in an MSA with less than a high school education.

Source: Annual ACS surveys from 2008 to 2018, as accessed through IPUMS, and TRAC Syracuse.

Table 10: Women's Marriage Patterns, By Spouse's Citizenship

	Spouse Citizen	Spouse Same Country		Spouse Different Country	
	(1)	(2)	(3)	(4)	(5)
		Spouse Citizen	Spouse Not Citizen	Spouse Citizen	Spouse Not Citizen
SC Deportation Rate	-0.239 (0.191)	0.067 (0.149)	0.263 (0.200)	-0.293*** (0.113)	-0.027 (0.123)
Observations	3,616	3,616	3,616	3,616	3,616

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses.

Note: The sample is limited to immigrant groups with more than 5 women in an MSA in both periods and all observations are weighted by the cell size in the pre period. All regressions contain MSA and country of origin fixed effects, the log of total men from the country of origin in the MSA in the pre-period, the percentage of an MSA's total population made up by all individuals from a country of origin in the pre-period, and the percentage of the country of origin population in an MSA with less than a high school education.

Source: The ACS, as accessed through IPUMS, and TRAC Syracuse.

Table 11: Women's Partnership Patterns, Unmarried

	Of Unmarried, Partner Present		
	(1)	(2)	(3)
	Immigrant Same Country	Immigrant Other Country	Native
SC Deportation Rate	0.367 (0.883)	-0.344 (0.633)	-0.023 (0.856)
Observations	1,292	1,292	1,292

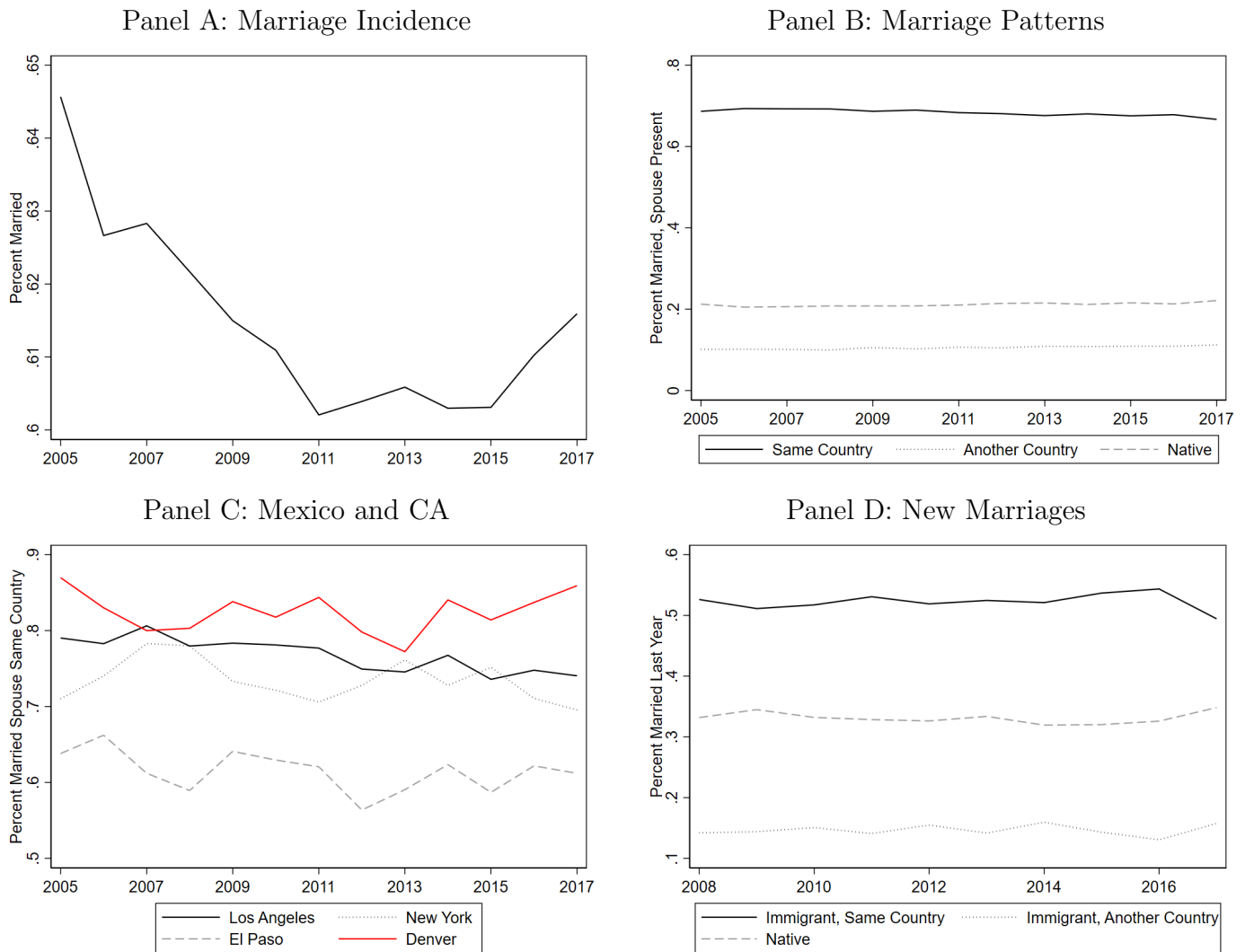
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses.

Note: The sample is limited to immigrant groups with more than 5 women in an MSA in both periods and all observations are weighted by the cell size in the pre period. All regressions contain MSA and country of origin fixed effects, the log of total men from the country of origin in the MSA in the pre-period and the percentage of an MSA's total population made up by all individuals from a country of origin.

Source: The ACS, as accessed through IPUMS, and TRAC Syracuse.

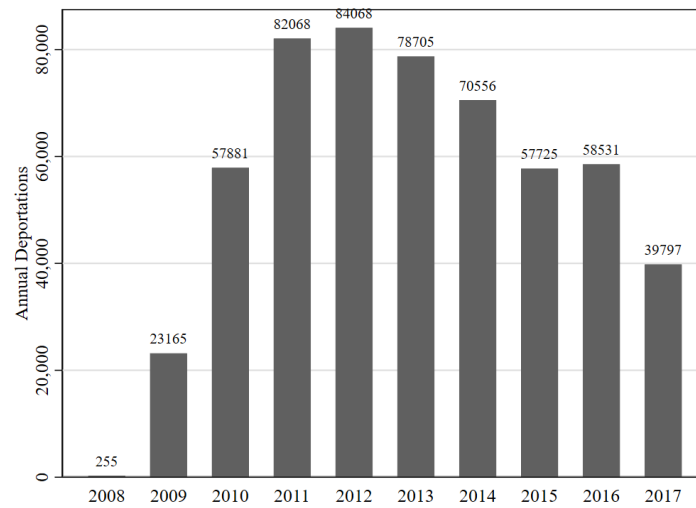
Figures

Figure 1: Trends in Marriage Incidence and Patterns



Source: ACS 2005-2018. Sample limited to foreign born women (not to American citizens) ages 18-54.

Figure 2: Deportations Under Secure Communities, 2008-2017



Source: TRAC Syracuse. The graph presents data on all removals, not just those within MSAs.

Appendix

1 The Small Cell Problem

One challenge posed by the ACS data is that many country of origin-MSA groups are small and likely are under-sampled in the annual surveys. The multi-year ACS therefore is ideal, as it groups together several years and adjusts the weights to reflect averages over a multi-year period. The problem, however, is that the ACS changed its multi-year range from 3 years to 5 years in 2014, during the period we are interested in. In order to use comparable, 3 year averages in the pre and post period we have two options. The first is to use the 2007 ACS 3 year sample for the pre-period and construct our own 3 year sample for the post period, by concatenating the 2015, 2016, and 2017 individual year samples and dividing the person weights by 3. The second is to create 3 year concatenated samples for both periods (Ramsey 2013). The second option is our preferred one as the pre and post estimates are constructed in the same way. However, to justify this we compare the estimates to those generated by the multi-year ACS samples.

We present total population estimates for all immigrants and those from specific countries in Table A1. We include countries with the largest deportation rates (Mexico, Guatemala, Honduras, El Salvador), one with a large immigrant population but low deportation rates (China), and a couple with small immigrant populations, as small groups are more likely to be under-sampled in the yearly data. The results show small differences between the multi-year 3 year ACS estimates (column 1) and the concatenated 3 year estimates (column 2). For example, for Mexico the average estimated MSA population is 39,784 in the multi-year 3 year ACS and 39,812 in the 3 year concatenated sample— a gap of 0.07%. The differences also are small for New Zealand, which has a small sample size. Meanwhile, the difference between the multi-year and yearly average estimates (column 3), are noticeably larger, particularly for smaller groups. For example, the difference in the estimates for New Zealand jumps from 2 people (1%) to 43 people (22%). This suggests yearly averages pose an inferior estimation strategy.

2 Robustness Checks

2.1 General Checks

In this section we conduct robustness checks to ensure our results are not driven by the use of concatenated data, limitations on cell size, the time frame of our sample, the time

Table A1: Comparison of Population Estimates, 2005-2007

Country of Origin	3 year ACS (1)	Concatenated ACS (2)	3 year average (3)	No. of MSAs (4)
All	1843	1839	1901	265
<i>Country</i>				
Mexico	39,784	39,812	39,828	262
Guatemala	2878	2874	2943	225
Honduras	1950	1938	2008	199
El Salvador	5031	5004	5057	203
China	5046	5036	5073	252
Uruguay	594	591	672	93
St. Vincent	413	416	500	48
New Zealand	194	192	237	57

The data set is at the country of origin-MSA level and contains 19,807 observations. Each cell reports the average, estimated population size for each country of origin-MSA cell. Column 1 contains estimates from the 2007 3 year, multi-year sample, with weights that are adjusted to be representative of a 3 year time frame. Column 2 contains estimates from our concatenated sample (We add the individual year 2005, 2006 and 2007 sample, divide the sample weights by 3, and construct estimates.) Column 3 contains the average of one year totals for 2005, 2006 and 2007, with no adjustment in the weights for a multi-year time horizon.

frame of deportations or border MSAs. We start with concerns over the concatenated data, re-estimating the model using the 2007 3 year multi-year ACS for the pre period (as opposed to concatenated estimates). We use the multi-year data for the marriage outcomes and for the denominator in the deportation rates. The results are shown in Panel A of Table A2, and are similar to those from the main model. This is unsurprising given the proximity of the population estimates in the multi-year and concatenated data.

We continue by addressing concerns that our results are driven by limiting the sample size to country-of-origin-MSA groups with more than five observations in the pre and post period. In Panel B we show estimates with no limits on sample size, and get similar results.

In Panel C we present results which use 2014 to 2016 as the "post" period. This allows us to check if the first year of the Trump administration (which began in 2017 and increased immigration enforcement) drives our results. We find it does not, as the conclusions remain the same.

In Panel D we use our original post period (2015-2017) but deportations from 2008 to when Secure Communities was suspended in 2014. This compares to our original rate, which includes deportations through 2017 under Secure Communities successor program, Priority Enforcement Program. We also consider this deportation rate and the earlier "post" period, from 2014 to 2016 (Panel E). In both cases we lose precision in the estimates of marriage

type, but the conclusions remain.

In Panel F we estimate something closer to a first differences model, using our original post period (2015-2017) and the deportation rates in the last three years of the SC program (2012-2014). We do this as opposed to using the 2015-2017 deportation rate as this covers the period after SC was suspended and replaced with PEP. While the deportations did not end, their level declined from those seen at the end of the SC program, when it was fully operational in all MSAs. We note that the deportation rates are smaller than in the other estimates, because they only capture three years as opposed to ten. For this reason the coefficient estimates are larger. However, the general conclusions hold.

Finally, in Panel F we exclude seven border MSAs to ensure our results are not driven by these areas.²⁷ In all cases the sign and significance of the coefficients remains, showing our results are not driven by the choice of multi-year estimation, the time frame of our "post" period, the the time frame of the deportation data, or border cities.

2.2 MSA and Region Deportation Rates

In order to compare our results to those from other papers we also estimate the change in marriage rates and patterns as a function of regional and MSA level deportation rates as opposed to those by country of origin. As we state in the introduction, one key difference between our paper and others that investigate the impact of Secure Communities is that we focus on variation by country of origin as opposed to variation over time in the roll out of the program. We argue our approach of modeling MSA-country-specific shocks is justified given the dominance of co-ethnic marriages and the large variation in deportation rates by country of origin within the same MSA (see Table 3). Meanwhile using deportation rates at the MSA level masks a high level of variation, leading to over and under estimates of how Secure Communities impacted different immigrant communities. To assess the extent of these differences we analyze changes in marriage patterns as a function of MSA deportation rates. One problem with using MSA level rates, however, is that we cannot include MSA fixed effects, and for this reason we also consider deportation rates by region of origin. We group countries into the following seven regions: Mexico and Central America, the Caribbean, South America, Europe, Asia, Africa, and all Other.

The results are shown in Table A3, with regional rates in Panel A and MSA level rates in Panel B. While we find similar signs on the coefficients for regional rates, we find opposite signs for MSA rates, with the incidence of endogamous marriage *declining* and the incidence of exogamous marriage, particularly to natives, *rising*. We note that we get a similar

²⁷The 7 cities we exclude are: El Paso Texas, McAllen Texas, Laredo Texas, El Centro California, Brownsville Texas, Las Cruces New Mexico, and Yuma Arizona.

change in the sign of the coefficients when we omit MSA fixed effects from the regressions that use regional deportation rates. One potential explanation for these differences is the size of the immigrant population. In MSAs with large immigrant populations endogamy might be higher and exogamy lower, but the overall deportation *rates* might be lower. For example, large cities like Los Angeles, Houston and New York have low deportation rates for immigrants overall, and rank well below many smaller cities. However, they still have higher deportation rates for specific country of origin groups. Thus for endogamy, leaving out the MSA fixed effects would generate a negative bias, and an underestimation of the impact of deportations on co-ethnic marriage. Meanwhile for exogamy, the bias would be positive, leading to an overestimate. For these reasons we argue that using MSA-country of origin deportation rates in the context of marriage markets is more appropriate.

2.3 Heterogeneity

In this section, we also consider other possible heterogeneities that address concerns with our sample selection. In the following three appendix tables, we look at marriage patterns by children present, by time in the US, by region of origin, and for foreign born men. These results support our main findings and shed additional light on the possible mechanisms through which increased endogamy is the preferred marital outcome for those facing increased deportation rates.

In Table A4, we split the sample by those with a child present and those without and then by time in the US. In the first two panels, we see that our main results are most similar for women with a child in the household. Foreign born women with children present are significantly more likely to be in an endogamous marriage and less likely to be in exogamous marriages as a result of higher deportation rates. This pattern does not hold for those without children and supports the idea that family formation (being married with children) may be a significant driver to protecting one from deportation. As for time in the US, we find a significant decline in the likelihood of marrying a native for someone who has been in the US less than five years. This suggests that newer arrivals are less likely to be married to a native born man and more likely to be married to someone from their country of origin or another country of origin.

We present a regional analysis in Table A5, showing marriage patterns by six different groupings of countries. It should be noted that deportation rates and their standard deviations vary significantly across these regions, as shown in the last two rows of the table, making it difficult to compare the size of the coefficients. The sample sizes also drop considerably as some of these regions have small shares of immigrants and are concentrated in a few

counties in the US. That said, we see significant increases in marriage rates to those of the same country of origin (Panel B) for those from Mexico and Central American (Column 1) and those from South America (Column 3). Those from the Caribbean are more likely to marry a foreign-born man from another country which may be due to the large number of islands in the Caribbean with similar languages, religions, and other networks. All three regional groupings in columns 1, 2, and 3 are less likely to marry a native-born man although the results are not statistically significant. Immigrant women from the other three regions, Europe, Asia, and Africa, do not appear to have changed their propensity to marry (Panel A) and European women are less likely to marry men from other countries of origin when deportation rates rise (Panel C).

In Table A6, we present results when we limit the sample to foreign-born men. As we are concerned with severe selection issues for this group (men in exogamous marriage to natives are less likely to be deported), we do not present these results in the main body of our paper. It is possible that non-deported men in this sample could be quite different from those who were deported and we cannot control for this selection. One may expect that this group is more likely to be married to native-born women. Nonetheless, we do observe similar patterns for men to those of women where there is increased marriage, increased endogamy and decreased exogamy. We find these results reassuring in that they are symmetric and show us the other side of the marriage market that we are presenting from the perspective of foreign-born women. Taken together, we find both men and women show increased marriage as a result of higher deportation rates and an increased likelihood to be married to someone of their same country of origin.

Table A2: Robustness Checks

	Of Married, Spouse Present			
	(1) Married	(2) Immigrant Same Country	(3) Immigrant Other Country	(4) Native
PANEL A: MultiYear ACS Pre-Period				
SC Deportation Rate	0.276** (0.119)	0.304** (0.145)	-0.199 (0.151)	-0.105 (0.130)
PANEL B: No Cell Size Limit				
SC Deportation Rate	0.242* (0.138)	0.321 (0.210)	-0.112 (0.212)	-0.209* (0.126)
Observations	8,398	7,296	7,296	7,296
PANEL C: 2014-2016 Post Period				
2008-2017 SC Deportation Rate	0.417*** (0.135)	0.312* (0.169)	-0.398** (0.157)	0.087 (0.145)
PANEL D: 2008-2014 Deportation Rate				
2008-2014 SC Deportation Rate	0.522** (0.232)	0.408 (0.298)	-0.440 (0.271)	0.032 (0.242)
PANEL E: Alt. Post and Rate				
2008-2014 SC Deportation Rate	0.456** (0.215)	0.276 (0.287)	-0.456* (0.236)	0.180 (0.232)
PANEL F: 2012-2014 Deportation Rate				
2012-2014 SC Deportation Rate	0.641 (0.392)	1.044* (0.572)	-0.346 (0.572)	-0.698* (0.388)
PANEL G: Without Border MSAs				
SC Deportation Rate	0.310* (0.163)	0.254 (0.203)	-0.251 (0.195)	-0.003 (0.167)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses.

Note: All regressions are weighted by the pre-Secure Communities country of origin-MSA population, and have MSA and country of origin fixed effects, the log of total men from the country of origin in the MSA in the pre-period, the percentage of an MSA's total population made up by all individuals from a country of origin in the pre-period, and the percentage of the country of origin population in an MSA with less than a high school education.

Table A3: Deportation Rates by Region and MSA

		Of Married, Spouse Present		
	(1)	(2)	(3)	(4)
	Married	Immigrant Same Country	Immigrant Other Country	Native
PANEL A: Regional Rate				
SC Deportation Rate, Region	0.474**	0.022	-0.115	0.093
	(0.233)	(0.268)	(0.196)	(0.240)
Observations	3626	3616	3616	3616
PANEL B: MSA Rate				
SC Deportation Rate, MSA	0.105	-0.576**	0.117	0.459**
	(0.189)	(0.241)	(0.107)	(0.212)
Observations	3660	3650	3650	3650

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses.

Note: The sample is limited to immigrant groups with more than 5 women in an MSA in both periods and all observations are weighted by the cell size in the pre period. All regressions contain country of origin fixed effects, the log of total men from the country of origin in the MSA in the pre-period and the percentage of an MSA's total population made up by all individuals from a country of origin. The regressions in Panel A also include MSA fixed effects.

Source: The ACS, as accessed through IPUMS, and TRAC Syracuse.

Table A4: Women's Marriage Patterns, More Heterogeneity

		Of Married, Spouse		
	(1)	(2)	(3)	(4)
	Married	Immigrant Same Country	Immigrant Other Country	Native
PANEL A: Children Present				
SC Deportation Rate	0.076	0.577***	-0.312*	-0.265
	(0.167)	(0.195)	(0.183)	(0.166)
Observations	3,608	3,557	3,557	3,557
PANEL B: No Children Present				
SC Deportation Rate	0.562**	-0.480	-0.490	0.970***
	(0.281)	(0.404)	(0.365)	(0.349)
Observations	3,523	2,840	2,840	2,840
PANEL C: In U.S.<=5years				
SC Deportation Rate	0.689	0.640	0.367	-1.007**
	(0.426)	(0.559)	(0.438)	(0.441)
Observations	2,945	2,458	2,458	2,458
PANEL D: In U.S.>5years				
SC Deportation Rate	0.213	0.330	-0.455**	0.125
	(0.163)	(0.203)	(0.197)	(0.178)
Observations	3,621	3,582	3,582	3,582

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses.

Note: The sample is limited to immigrant groups with more than 5 women in an MSA in both periods and all observations are weighted by the cell size in the pre period. All regressions contain MSA and country of origin fixed effects, the log of total men from the country of origin in the MSA in the pre-period and the percentage of an MSA's total population made up by all individuals from a country of origin. The regressions in Panel A also include MSA fixed effects.

Source: The ACS, as accessed through IPUMS, and TRAC Syracuse.

Table A5: Women's Marriage Patterns, By Region

	Region					
	(1)	(2)	(3)	(4)	(5)	(6)
	Mexico Cen.America	Caribbean	South America	Europe	Asia	Africa
PANEL A: Marriage						
SC Deportation Rate	0.064 (0.170)	2.364 (1.920)	1.759 (1.779)	-5.911 (6.354)	-10.514 (6.926)	9.239 (6.785)
PANEL B: Same Country						
SC Deportation Rate	0.572** (0.266)	-2.111 (2.040)	4.383*** (1.362)	1.573 (8.171)	4.538 (6.819)	-10.045 (9.568)
PANEL C: Different						
SC Deportation Rate	-0.547* (0.287)	3.957** (1.853)	-1.552 (1.581)	-13.685* (7.230)	0.928 (6.038)	5.755 (7.449)
PANEL D: Native						
SC Deportation Rate	-0.025 (0.186)	-1.846 (2.532)	-2.831 (1.860)	12.113 (7.548)	-5.466 (6.915)	4.289 (7.048)
Observations	368	207	336	811	1,246	307
Avg. Removal Rate	0.035	0.003	0.003	0.001	0.000	0.001
St.Dev. Removal Rate	0.088	0.010	0.017	0.003	0.002	0.007

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses.

Note: The sample is limited to immigrant groups with more than 5 women in an MSA in both periods and all observations are weighted by the cell size in the pre period. All regressions contain MSA and country of origin fixed effects, the log of total men from the country of origin in the MSA in the pre-period and the percentage of an MSA's total population made up by all individuals from a country of origin.

Source: The ACS, as accessed through IPUMS, and TRAC Syracuse.

Table A6: Men's Marriage Patterns

	Of Married, Spouse Present			
	(1) Married	(2) Immigrant Same Country	(3) Immigrant Other Country	(4) Native
PANEL A: All				
SC Deportation Rate	0.322* (0.174)	0.409** (0.195)	-0.273 (0.195)	-0.136 (0.177)
Observations	3,650	3,548	3,548	3,548
PANEL B: Citizens				
SC Deportation Rate	0.411 (0.280)	0.183 (0.407)	-0.638** (0.322)	0.454 (0.471)
Observations	3,373	3,101	3,101	3,101
PANEL C: Non Citizens				
SC Deportation Rate	0.137 (0.207)	0.376 (0.246)	-0.204 (0.226)	-0.173 (0.205)
Observations	3,385	3,026	3,026	3,026

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses.

Note: The sample is limited to immigrant groups with more than 5 women in an MSA in both periods and all observations are weighted by the cell size in the pre period. All regressions contain MSA and country of origin fixed effects, the log of total men from the country of origin in the MSA in the pre-period and the percentage of an MSA's total population made up by all individuals from a country of origin. The regressions in Panel A also include MSA fixed effects.

Source: The ACS, as accessed through IPUMS, and TRAC Syracuse.

Table A7: Main Results, Expanded Table

	Of Married, Spouse Present			
	(1)	(2)	(3)	(4)
	Married	Immigrant Same Country	Immigrant Other Country	Native
PANEL A: Control Set 1				
SC Deportation Rate	0.351** (0.145)	0.330* (0.179)	-0.318* (0.178)	-0.012 (0.153)
% Less than High School	0.012 (0.033)	0.060 (0.038)	-0.076*** (0.029)	0.016 (0.035)
% MSA Pop.	-0.126 (0.092)	0.004 (0.105)	-0.061 (0.084)	0.056 (0.099)
Log Men	-0.002 (0.003)	-0.008** (0.003)	0.006** (0.003)	0.003 (0.003)
Observations	3,626	3,616	3,616	3,616
PANEL B: Controls Set 2				
	(1)	(2)	(3)	(4)
SC Deportation Rate	0.453*** (0.156)	0.422** (0.177)	-0.385** (0.171)	-0.037 (0.155)
Log Pop. Less than High School	-0.000 (0.002)	-0.002 (0.003)	-0.001 (0.002)	0.003 (0.003)
% MSA Pop.	-0.313*** (0.092)	-0.180* (0.108)	0.071 (0.084)	0.109 (0.105)
Sex Ratio	-0.049*** (0.008)	-0.032*** (0.010)	0.015* (0.008)	0.016** (0.008)
Observations	3,535	3,525	3,525	3,525

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses.

Note: The sample is limited to immigrant groups with more than 5 women in an MSA in both periods and all observations are weighted by the cell size in the pre period. All regressions have MSA and country of origin fixed effects.

Source: The ACS, as accessed through IPUMS, and TRAC Syracuse.