

Illegal Immigration, State Law, and Deterrence

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Abstract

A critical immigration policy question is whether state and federal policy can deter undocumented workers from entering the U.S. We examine whether Arizona SB 1070, arguably the most restrictive and controversial state immigration law ever passed, deterred entry into Arizona. We do so by exploiting a unique data set from a survey of undocumented workers passing through Mexican border towns on their way to the U.S. Results indicate the bill's passage reduced the flow of undocumented immigrants into Arizona by 30 to 70 percent, suggesting that undocumented workers from Mexico are responsive to changes in state immigration policy. In contrast, we find no evidence that the law induced undocumented immigrants already in Arizona to return to Mexico.

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1. Introduction

Current estimates indicate there are nearly 12 million undocumented immigrants living in the U.S (Passel, Cohn and Gonzalez-Barrera, 2013). There exists considerable debate regarding how to address this issue—options range from deportation to amnesty—as well as how to reduce the flow of undocumented workers into the U.S. With respect to reducing illegal immigration, there are two general types of policies. The first is improving border security directly through the increased use of fencing, aircraft, border patrol, and other measures. The second – and less direct – policy is to lower the expected benefits from being in the U.S. illegally, thereby deterring entry. Some of these policies target labor demand by imposing penalties on employers of undocumented workers, while others target labor supply by imposing penalties on undocumented workers themselves.

While there is a large literature examining the determinants and impacts of immigrant locational choice generally (e.g., Card, 2001; Borjas, 1999 and 2006), there is less research on the impact of these state and federal policies on illegal immigration. Much of the existing research has focused on the labor market impact of policies such as the 1986 Immigration Reform and Control Act (IRCA) (Bansak and Raphael, 2001; Lowell, Teachman, and Jing, 1995), the enforcement measures put into place after 9/11 (Orreinus and Zavodny, 2009), or Immigration and Naturalization Service monitoring strategies (Davila and Pagan, 1997). In addition, among the papers that directly examine the effect of policies on illegal immigration flows, most have largely focused on the impact of either border security or demand-side penalties such as employer sanctions. For example, Hanson and Spilimbergo (1999) exploit time-series variation in border enforcement due to electoral cycles and changes in federal national defense spending to identify the impact of enforcement on border apprehensions.

Orreinus and Zavodny (2009) examine whether the amnesty aspect of IRCA affected the long-term flow of undocumented immigrants from Mexico, and find no evidence that it did. Bohn, Lofstrom, and Raphael (2014) use synthetic control methods and Census data to examine the effect of a 2007 Arizona law mandating employers use E-Verify on the presence of foreign-born Hispanics, and find that it led to the exit of Hispanics. Amuedo-Dorantes and Lozano (2015) and Sanchez (2015) use similar synthetic control methods to examine the impact of the anti-immigration law Arizona SB 1070 on the stock of non-citizen Hispanics in Arizona. Amuedo-Dorantes and Lozano (2015) find that the law had minimal effect, while Sanchez (2015) reports that the law resulted in a temporary one-year reduction of 10 to 16 percent in the proportion of noncitizen Hispanics. Finally, Watson (2013) examines how state and local enforcement of federal immigration law affects immigrants' locational decisions.

This paper complements this existing research by examining the impact of Arizona SB 1070 on the flows of illegal immigrants to and from Arizona from Mexico. We focus on Arizona SB 1070 because it is arguably the most restrictive and controversial immigration bill ever passed by a state, though the legal battles regarding its enactment have made it particularly difficult to study. The law, which was passed in April of 2010 and scheduled to take effect on July 29, targeted labor supply by making applying for or holding a job in Arizona a crime. It also required police officers to check the immigration status of anyone they believe may be in the country illegally, and allowed them to stop and arrest anyone they have reason to believe lack proper immigration papers. The law also allowed police to arrest an individual they believe to have committed a crime that would cause him or her to be deported. In short, the law substantially increased the expected costs of being an unauthorized immigrant in Arizona.

One unique feature of the law critical to its evaluation is that it never went into full effect. On July 28, one day before the law was scheduled to go into effect, a federal judge issued a temporary injunction blocking much of the law pending the outcome of a legal challenge by the federal government. Two years later, the U.S. Supreme Court struck down several components of the law. As a result, the primary way in which one can evaluate the impact of the law is to study the effect of the law's announcement from April through July. This complicates the evaluation for several reasons. The first is that because the announcement period lasts fewer than 4 months, it is difficult to estimate its impact using annual data coming from the American Community Survey (ACS) or the detailed March Supplement of the Current Population Survey (CPS). The second is that while the CPS has less detailed data available at the monthly level measuring the stock of foreign-born non-citizen Hispanics already in Arizona, one might well expect this settled population to wait for the enactment of the law before moving, rather than responding to the announcement. Finally, it may be difficult to detect a small change in the stock of Hispanics in Arizona due to a reduction in immigration into Arizona by new immigrants, who are likely more sensitive to the announcement of the new law.

We overcome these issues by exploiting a unique data set from Mexico in which undocumented workers were surveyed in Mexican border towns and Mexican airports on their way to or from the United States. These data have three major advantages. First, they are available at the monthly level, which is critical given the short time frame between passage and the temporary injunction. Second, these data focus on a population that is considerably more likely to be responsive to the announcement of a new law, since they have not yet settled into a location. Third, since the survey is given in Mexico and not in the U.S., there is much less concern about asking and having respondents honestly answer whether they have papers,

enabling us to study the precise population targeted by the legislation. In fact, more than 94 percent of those surveyed who intend to cross into the U.S. in the next 30 days report that they do not have legal permission to work in the United States. As a result, we can directly identify the population being targeted by SB 1070, which is not possible using other data sources.¹

Results indicate that the passage and announcement of the law significantly deterred undocumented immigrants from settling in Arizona. Event study and difference-in-differences estimates indicate that the law reduced illegal immigration into Arizona from Mexico by a statistically significant 30 to 70 percent. Unsurprisingly, this effect was reduced by approximately half when the judge issued the preliminary injunction blocking much of the bill, which likely reflects the reduced certainty that the law would end up going into effect.

On the other hand, we find little evidence that the passage of the law induced undocumented immigrants already residing in Arizona to return to Mexico.

Collectively, these results suggest that the locational decisions of unauthorized immigrants entering the U.S. are responsive to state legal climates, at least in the case of the restrictive and well-publicized Arizona SB 1070.

2. Background of Arizona SB 1070

In the mid to late 2000s, the Arizona border was by far the most commonly crossed border with Mexico. For example, in 2009 the U.S. Border Patrol reported that 46 percent of apprehensions made along the border with Mexico were made in Arizona. Similarly, in our data

¹ For example, Passel and Cohn (2010) estimate that of foreign-born non-citizen Hispanics residing in the U.S.—a group often studied as a proxy for unauthorized immigrants in Census data—more than half are actually authorized to be in the U.S. Similarly, our own estimates using the National Agricultural Workers Survey (NAWS) indicate that even among the population of non-citizen, foreign-born Hispanics with less than 12 years of education, fewer than 60 percent are unauthorized.

76 percent of undocumented immigrants crossing into the United States say they plan to do so in Arizona.

As a result of this traffic, Arizona has had a longer history than most states in passing legislation in an attempt to deter illegal immigration. In 1996, the legislature passed a law that required proof of legal status in order to obtain a driver's license. In 2000, voters banned bilingual education by a vote of 63 to 37, effectively requiring all courses to be taught in English. In 2004, voters passed Proposition 200, which denied public benefits to those not in the country legally. Three years later, Arizona passed the Legal Arizona Workers Act, which required the use of the E-Verify system by all Arizona employers to assess the legal eligibility of all new hires, and imposes penalties on employers who knowingly hire undocumented workers.

In 2010, Arizona passed SB 1070, which was signed by the governor on April 23, 2010, after having passed both houses in the legislature earlier that month. As passed, SB 1070 contained several different provisions. One of the provisions, referred to by critics as "show your papers," required police to check the immigration status of any individual they arrested or detained. It also allowed police to stop and arrest anyone they had reason to believe was an undocumented immigrant. Other provisions made it a crime to be in Arizona as well as to apply for or hold a job in Arizona if one did not have valid immigration papers. Finally, another provision allowed police to arrest anyone suspected of having committed a crime that would cause him to be deported.

Importantly, the passage of the law received significant media attention in both the U.S. and Mexico. For example, after the governor signed the bill, the Office of the President of Mexico issued a statement condemning the law, as did the Organization of American States, which said the law creates a basis for racial discrimination (Reséndiz, 2010; OEA Cuestiona Ley

Antiinmigrante, 2010). Marcelo Ebrard, the mayor of Mexico City, also issued a statement condemning the law, saying it violated “all conventions” on human rights, and thousands of Latinos demonstrated outside the parliament building in Phoenix (Ebrard Condena Ley Arizona, 2010). Governors and legislatures of Mexican states also denounced the law (Martínez, 2010; Sonora Protesta Contra Ley Antiinmigrante, 2010; and Ley Arizona Afectaría Michoacanos, 2010). Word of the law even made its way to Major League Baseball – protestors greeted the Arizona Diamondbacks in Chicago and Denver, and a US Senator urged players to boycott the 2011 All-Star game, which was to take place in Phoenix (McGrath, 2010; Herszenhorn, 2010). Thus, given the high profile and controversial nature of the law, we believe it is likely that those immigrating illegally to the US over this time would be aware of it.

The law was scheduled to go into effect on July 29, 2010. However, on July 28, U.S. District Judge Susan Bolton blocked much of the bill, pending the outcome of a challenge to the law filed by the federal government. On June 25, 2012 the Supreme Court struck down much of the law, upholding only a provision that allows police to check immigration status under some circumstances.

3. Data

The data used in this project come from the Survey of Migration to the Northern Border (EMIF). The EMIF is a cross-sectional survey conducted by Mexican authorities with the objective of measuring a representative sample of the migrant flow across the U.S.-Mexico border. It is conducted in 8 border cities and 5 Mexican airports, which enables it to account for approximately 94 percent of the migrant flow between Mexico and the United States (Consejo Nacional de Población, 2013). Within localities, the survey is conducted at different zones (bus

stations, train stations, international bridges, and customs inspection points) and at different points (access doors, boarding zones, gates, and baggage claim areas) that migrants must pass.

The survey consists of four separate questionnaires, each of which is targeted at a different group of immigrants. We focus on two of those questionnaires.² The first is a survey of individuals who are in Mexican border cities, but are not residents of those cities. Specifically, we focus on those born in Mexico who were at least 15 years old and who reported an intention to cross the border in the next 30 days to work in the U.S., but do not have documentation to work there legally.³ The second is conducted in border cities and Mexican airports and surveys migrants returning from the United States to Mexico. Again, we focus primarily on adults who had been working in the U.S. without legal authorization.

These data offer several advantages in evaluating the impact of SB 1070 on immigration into Arizona. A primary advantage is that the data are monthly level observations on the locational decisions of immigrants who are likely to be sensitive to the announcement of a law. This is important because while one would reasonably expect the decisions of those leaving Mexico for the U.S. to be affected by the announcement of the new law, one might also reasonably expect Hispanics already there to wait until the law went into effect before uprooting and moving elsewhere. Thus, given the complicated legal challenges that followed and the uncertainty of whether the law would ever go into effect, it is not clear when exactly one would expect current Hispanic residents to be impacted. In addition, monthly data on entry into Arizona from Mexico enable us to observe changes in flows directly, even if those monthly flows are small relative to the total stock of foreign-born non-citizen Hispanics in Arizona. This

² One unused survey is conducted among migrants apprehended by the U.S. border authorities and returned to Mexico. The other is conducted among individuals in border cities returning to different Mexican states, but who had not previously been in the U.S.

³ Of those who report they intend to cross the border to work in the U.S., 94 percent report that they do not have documentation to do so legally. In addition, 99 percent report that they intend to cross within the next 30 days.

is a critical advantage of the EMIF data compared to the Current Population Survey (CPS) and American Community Survey (ACS). Those data allow for either a monthly measure of the population stock of Hispanics in Arizona, who likely are not sensitive to the announcement of SB 1070, or an annual measure of the number of Hispanics who have immigrated from Mexico in the previous year.

A second advantage is that we observe directly whether the individuals in our data have papers to work in the United States. Importantly, not only is this question asked, but since the survey is administered in Mexico, there is likely less fear of answering these questions truthfully. This is reflected in the fact that 94 percent of the immigrants surveyed who will cross to the U.S. report that they do not have papers. In contrast, using the CPS or ACS data limits one to examining the impact on a subset of Hispanics, such as foreign-born non-citizens, that serves as a proxy for undocumented immigrants. This can be somewhat problematic; Passel and Cohn (2010) estimate that fewer than half of all foreign-born, non-citizen Hispanics residing in the U.S. are unauthorized, and our own calculations using the National Agricultural Workers Survey suggests that fewer than 60 percent of foreign-born, non-citizen Hispanics with fewer than 12 years education are unauthorized.⁴ In addition, one might worry that unauthorized immigrants may be less likely to respond to a U.S. government survey after a restrictive law such as SB 1070 is passed. One might also worry that to the extent documented and undocumented immigrants are substitutes, it may be difficult to observe a decline in undocumented immigrants using CPS or ACS data.

Finally, in contrast to data on border patrol apprehensions, these data provide a measure of flows that is independent of enforcement measures, which could change in response to a law like SB 1070. And perhaps more importantly, the EMIF data have information on the ultimate

⁴ The NAWS is the only survey of immigrants in the U.S. that records legal status.

destination of immigrants once they enter the United States, in addition to where they plan on crossing. This is a critical distinction, as our data show that while 76 percent of illegal immigrants cross the border in Arizona, the majority of them were headed to other states. Thus, while Border Patrol apprehension data are likely useful in assessing the impact of national policies (e.g., Hanson and Spilimbergo, 1999), they are of limited use in studying the impact of state policies.⁵

For the main analysis, we limit our sample to undocumented immigrants who are entering the United States, though we also examine undocumented migrants returning permanently to Mexico from the U.S. We focus on the time period from January of 2009 through December of 2010. Over this time period, we have observations on a total of 16,251 unauthorized immigrants heading to the U.S., and 4,005 immigrants returning to Mexico from the U.S.

Summary statistics are shown in Table 1. Ninety percent of those who intend to cross the border are male. Average age is 30 years old, while average years of schooling is 7.3. Nine percent of those entering the U.S. speak English, and 10 percent have previously worked in the U.S. California is the most popular destination at 26 percent, while 13 percent of immigrants report they are headed to Arizona. Twenty-nine percent report that they do not know the state of destination; consequently, we perform tests to ensure that any reduction in the likelihood of immigrating to Arizona does not merely reflect a shift into this category and find no evidence that this was the case.

Of those returning to Mexico permanently, average age and education are somewhat higher (33 years old and 8.2 years of education.) In addition, because the airport survey is larger

⁵ We also note that we were unable to acquire monthly border apprehension data by location. We were told that while these data had been available in the past, they were no longer being released due to concern that the information would be used by those illegally crossing the border.

than the land survey for return migrants, 71 percent are surveyed in an airport.⁶ Ninety percent of them worked in the U.S., and the average time spent there was 37.1 months. Twenty-three percent of returning undocumented immigrants report spending the most time in California, compared to 4 percent for Arizona.

A limitation of these data is that we know only that respondents intend to cross the border in the next 30 days and reside in a given state, not whether they ultimately do so. For example, some may not do so because they are apprehended at the border. However, using estimates on the probability of apprehension by the Border Patrol along with the probability of attempting to re-enter the U.S., we calculate a probability of successfully entering the U.S. of more than 90 percent. Still, we unfortunately have no way to verify that the immigrants surveyed do ultimately reside in the intended state.⁷ Thus, while an advantage of the EMIF data is that we know whether or not the immigrants are unauthorized and can directly detect changes in the monthly flow of immigrants into Arizona from Mexico, a disadvantage is we must rely on survey responses with respect to intended destination.

4. Methodology

To identify effects of SB 1070 on immigration flows into Arizona from Mexico, we ask whether undocumented immigrants headed for the United States were any less likely to go to Arizona once the law was passed and set to go into effect. Specifically, we ask whether

⁶ We note, however, that results for return immigrants are similar regardless of whether use both the land and airport surveys or focus only on one or the other.

⁷ Table A1 in Appendix A shows a comparison between recent immigrant location shares from the ACS and the EMIF. Across all 50 states, the correlation between the two measures is 0.78 and 0.77 for 2009 and 2010, respectively. Immigrants who intend to reside in California are more likely to appear relative to the proportion surveyed in California by the ACS, while the opposite is true for Texas. It is difficult to know the source of the discrepancies. One possibility is that one or both of the surveys are not representative as intended, while another is that the discrepancies are driven by the roughly 40 percent of the respondents in the ACS who are authorized immigrants, whereas all those we use in the EMIF data are unauthorized.

immigrants were less likely to report that their ultimate destination across the border was Arizona during the time period of April through July of 2010, when the law was passed and set to go into effect, but before the federal judge issued a temporary block of much of the law.

We do this in two ways. First, we perform an event study using individual-level data to examine whether the proportion of unauthorized immigrants destined for Arizona fell between April and July of 2009, when the law had been passed but not yet enacted or blocked.⁸

Formally, we estimate the following using ordinary least squares:

$$(1) \quad \textit{Destination_AZ}_{it} = \beta_0 + \beta_1 \textit{Post_Passage}_{it} + \beta_2 \textit{Post_Injunction}_{it} + \theta X_{it} + \varepsilon_{it}$$

where *Destination_AZ* is an indicator equal to one for individual *i* at time period *t* if the individual plans to reside in Arizona, *Post_Passage* is an indicator equal to 1 after the law was passed but before the federal injunction was issued (April through July of 2010), and *Post_Injunction* is an indicator equal to one after the federal injunction was issued. The vector *X* contains a set of time-varying controls that one might expect would affect immigration decisions, including the unemployment and per capita person income for the U.S. and the states of Arizona, California, Florida, and Texas.

The identifying assumption is that in absence of the passage of SB 1070, the rate at which entering undocumented immigrants went to Arizona would have remained the same as it was prior to the passage of the law in April of 2010. We address the validity of this assumption in

⁸ An alternative methodology would be to use a synthetic control approach as proposed by Abadie, Diamond, and Hainmueller (2010) and implemented by Bohn, Lofstrom, and Raphael (2014) in examining the impact of the Legal Arizona Workers Act passed in Arizona in 2007. We do not implement this approach because it relies heavily on using a long time-series of data before the treatment to construct a synthetic counterfactual that closely tracks the treated state. This is difficult because Arizona passed several laws prior to 2010 that would likely impact flows of undocumented workers into Arizona. For example, Bohn, Lofstrom, and Raphael (2014) document the significant impact that the Legal Arizona Workers Act of 2007 had on the presence of various subgroups of Hispanics.

several ways. First, we show that the rate at which undocumented immigrants went to Arizona was remarkably stable over the 15 months prior to the passage of the law, suggesting that time effects over this period seem relatively minor. Second, we show that the estimates are unaffected by the inclusion of controls measuring the unemployment and per capita income in Arizona and other states, which means there is little evidence that the decline in immigration to Arizona is driven by Arizona-specific time shocks. Third, we show that allowing for more general linear and quadratic time trends does not affect our estimates.

The second approach we use is a difference-in-differences research design, which requires a somewhat different assumption. Specifically, we assume that the relative change in the number of immigrants destined for Arizona would have been similar to the relative change in the number of immigrants destined for elsewhere. To implement this approach, we collapse the individual-level data into group-by-month cells, where one cell per month measures the number of immigrants destined for Arizona, and the other measures the number of immigrants destined elsewhere. Formally, we estimate the following:

$$(2) \quad \ln(\text{immigrants})_{it} = \phi_t + \theta_1 \text{Destination_AZ} + \theta_2 ((\text{Destination_AZ}) * (\text{Post_Passage}))_{it} \\ + \theta_3 ((\text{Destination_AZ}) * (\text{Post_Injunction}))_{it} + \varepsilon_{it}$$

where i denotes whether the observation measures the number of immigrants headed to Arizona, or elsewhere, and t denotes year-by-month. Destination_AZ is an indicator equal to one if the observation is for immigrants headed to Arizona, and zero otherwise, and ϕ is a set of year-by-month fixed effects. The coefficients of interest are θ_2 and θ_3 , which measure the reduction in the number of immigrants headed to Arizona after the law was passed, relative to the change in the number of immigrants headed elsewhere.

The primary drawback to this approach is to the extent that the Arizona law induced immigrants to go elsewhere in the U.S., as opposed to stay in Mexico, the difference-in-differences estimate can be overstated. To address that, we define the control group in three ways: all other immigrants, all immigrants with known destinations other than Arizona, and all immigrants destined for Texas or Florida. Thus, for this last sample, we assume that those headed to Arizona would not be displaced to either Texas or Florida, and thus changes in the number of immigrants headed to Texas or Florida provides a reasonable counterfactual for how immigration into Arizona would have changed in the absence of SB 1070.

In addition to asking whether the law impacts immigration into Arizona, we also ask whether the law affects return migration decisions. That is, we ask whether SB 1070 induced undocumented immigrants to return to Mexico from Arizona. To do so, we estimate a modified version of equation (1) in which we instead use a dependent variable equal to one if the individual returned to Mexico from Arizona.

It is important to acknowledge the limitation of the approaches outlined above. While our data and approaches are well-suited for examining whether a state law deterred undocumented immigrants from entering that state, it is much more difficult to know whether those individuals stayed in Mexico, or if they went to another state. Thus, while we can assess the deterrent effect of state policy for that state, we cannot easily answer whether that law has spillover effects on other states, or what the implication of these laws would be if passed by all states.

5. Results

We begin by examining the graphical evidence of immigrant flows into the U.S. from Mexico. Figure 1a shows the number of survey respondents immigrating to the U.S., by destination. It shows that there was a steep decline in the number of undocumented immigrants headed for Arizona beginning in April of 2010, the month the bill was passed, continuing through July of 2010, the last month before the federal injunction was issued.

Figure 1b shows the proportion of immigrants destined for Arizona, and shows that a similar pattern holds in relative terms. While the proportion of undocumented immigrants going to Arizona had previously fluctuated between 15 and 20 percent, it steadily declined from April through July of 2010, reaching a low of just below 5 percent. After the federal injunction was issued at the end of July, signaling uncertainty that many of the provisions in the law would ever go into effect, the proportion of immigrants headed to Arizona increased to around 12 percent. In short, the raw data suggest that undocumented immigrants were deterred from going to Arizona by the announcement of the law, though that effect was diminished by approximately one-half by the federal injunction blocking much of the law.

Corresponding estimates are shown in Table 2. Estimates in column 1 include no controls, while our preferred specification in column 2 includes the unemployment rate and per capita personal income for the U.S. overall as well as for Arizona, California, Florida, and Texas. Column 3 additionally tests for whether there is any evidence of a drop-off in the likelihood of going to Arizona *before* the law was passed. Column 4 includes both time-varying controls as well as a linear time trend, and column 5 includes time-varying controls and a quadratic time trend.

As shown in column 1, the unconditional estimate of the impact of the law on the likelihood of immigrating to Arizona is a reduction of 7.3 percentage points, which represents a 44 percent relative decline and is statistically significant at the 1 percent level. The estimate is remarkably stable: adding time-varying controls for economic conditions as well as general linear and quadratic time trends have only slight impacts on the estimate. Estimates in columns 2 through 5 range from 4.9 to 6.3 percentage points, and all are significant at the 1 percent level. This confirms the visual evidence in Figures 1 and 2: the announcement of SB 1070 is associated with a statistically significant and economically meaningful reduction in illegal immigration into Arizona.

Table 2 also shows estimates of the impact of the law announcement after the federal judge issued an injunction at the end of July. Consistent with Figure 1, estimates are about half the size of those of the pure announcement effect.

Importantly, there is little evidence that the significant reduction in the proportion of immigrants saying they intend to reside in Arizona is due to a shift toward not reporting where they intend to reside.⁹ In unreported results from a specification similar to column 2 of Table 2, we find that the announcement and post-injunction periods are associated with changes in the likelihood of not reporting where one intends to reside of 2.3 and -2.1 percentage points, respectively, neither of which is statistically significant.

In addition, we also examine the behavior of first-time migrants and migrants with previous migration experience separately. To the extent that SB 1070 is responsible for the reduction in overall immigration into Arizona shown in Figure 1, we would expect to see a larger reduction among new migrants who have not yet established social and work networks. Figure 2

⁹ One could be worried, for example, that immigrants no longer say they intend to reside in Arizona and instead report that they do not know, but they end up residing in Arizona anyway.

shows this is indeed the case: Figure 2a shows a large reduction in the likelihood of unauthorized new migrants going to Arizona, while Figure 2b shows little evidence that the locational decisions of experienced migrants were affected. This pattern of results also provides additional evidence that it would be difficult to detect an impact of the announcement of SB 1070 using Census data on the stock of Hispanics already in Arizona; if the locational decisions of experienced migrants are unaffected, it seems likely that the decisions of those already in Arizona would also be unaffected.¹⁰

Next, we examine the difference-in-differences estimates, which are shown in Table 3. Column 1 includes the entire sample of undocumented workers, while column 2 uses only those with known destinations, and column 3 uses only those who were destined for Arizona, Texas, or Florida. Estimates for columns 1 through 3 are -0.77, -0.74, and -0.72, all of which are statistically significant at the 1 percent level. The robustness of the estimates is striking given how significantly the identifying assumption changes across the three specifications. For example, the estimate of -0.72 in column 5 represents the causal impact of SB 1070 under the assumption that i) SB 1070 did not displace any immigrants to Texas or Florida, and ii) changes in unauthorized immigration to Texas and Florida form a proper counterfactual for what would have happened in Arizona absent the law.¹¹ Under those assumptions, estimates in column 5 indicate that the passage of SB 1070 significantly reduced illegal immigration by 72 percent, though again this deterrent effect was diminished by about half after the federal injunction was issued.

¹⁰ An open question remains whether the locational decisions of return migrants and migrants already residing in Arizona would have been affected if SB 1070 had been fully implemented.

¹¹ We expect that to the extent there was displacement, it would have been most likely to happen in California and New Mexico, which border Arizona, though we unfortunately do not have a way to test this empirically.

Given these findings, it is worth thinking about what would have to be true for some other factor to be driving the decline in immigration into Arizona from Mexico over this time period. One would have to believe that, coincidental with the passage of the law, some other factor (say, labor demand) made entry into Arizona less attractive. That factor would have to change starting in April of 2010, coincidental with the passage of SB 1070, but not in the months prior. It must also have reversed somewhat in August, coincidental with the federal judge blocking much of the law from going into effect. In addition, this factor would have to be uncorrelated with the state per capita income and unemployment rates in high-immigration states. It would also have to reduce immigration into Arizona, but not other states such as Texas, California, or Florida. And finally, this factor would have to reduce immigration by new migrants, but not by migrants with previous migration experience. We are unable to think of such a confounding variable. As a result, we feel confident that the observed decline in illegal immigration into Arizona, as shown in the figures and tables, is due to Arizona's passage of perhaps the toughest anti-immigration bill ever passed by a state, and not some other factor.

Finally, as discussed earlier, while it is difficult for us to assess whether the reduction in illegal immigration flows into Arizona represents an overall reduction in illegal immigration to the U.S. or a shifting of unauthorized immigrants to other states, we can directly examine whether the law induced undocumented workers to leave Arizona for Mexico. The number and proportion of undocumented immigrants returning permanently from Arizona to Mexico are shown in Figure 3. Based on those figures, there is little evidence to suggest that SB 1070 induced workers to leave Arizona for Mexico. This lack of evidence is also evident in the corresponding regression estimates, shown in Table 4. All estimates are small, and only 1 of 10

estimates is statistically significant at the 10 percent level. None are significant at the 5 percent level.

In summary, we find that the passage and announcement of SB 1070 significantly reduced immigration into Arizona by 30 to 70 percent. In contrast, we find no evidence that the law induced unauthorized immigrants already in Arizona to return to Mexico.

6. Conclusion

This paper examines whether the passage of Arizona SB 1070, arguably the most restrictive and controversial anti-illegal immigration legislation ever passed by a state, deterred entry of undocumented workers into Arizona. More broadly, it asks whether state policies that increase the expected costs associated with unauthorized immigration can serve as effective deterrents.

Results indicate that the passage of Arizona SB 1070 significantly reduced the flow of undocumented workers into Arizona from Mexico by 30 to 70 percent. This deterrent effect was diminished when a federal judge issued an injunction blocking much of the bill from going into effect. However, we find no evidence that the bill induced undocumented workers currently living in Arizona to return to Mexico.

Collectively, these results suggest that the decision to immigrate without authorization is sensitive to expected benefits and costs, even to the point that a law that has only been announced, but not enacted, impacts the immigration and locational decisions of new immigrants from Mexico. While this does not mean that laws like Arizona SB 1070 are socially desirable—much less constitutional—it does suggest that laws like this will continue to have appeal among states attempting to reduce the inflow of unauthorized immigrants.

References

- Abadie, Alberto, Alexis Diamond, and Jens Hainmueller. 2010). "Synthetic Control Methods for Comparative Case Studies: Estimating the Effect of California's Tobacco Control Program," *Journal of the American Statistical Association*, 105(490): 492-505.
- Amuedo-Dorantes, Catalina, and Fernando Lozano. 2015. "On the Effectiveness of SB1070 in Arizona," *Economic Inquiry*, 53(1): 335-351.
- Arizona Republic. 2013. "Timeline: SB 1070 History," last accessed on June 19, 2013 at <http://www.azcentral.com/news/politics/articles/20120422sb0170-history.html>.
- Bansak, Cynthia. 2005. "The Differential Wage Impact of the Immigration Reform and Control Act on Latino Ethnic Subgroups," *Social Science Quarterly*, 86 (1): 1279-1298.
- Bansak, Cynthia, and Steven Raphael. 2001. "Immigration Reform and the Earnings of Latino Workers: Do Employer Sanctions Cause Discrimination?" *Industrial and Labor Relations Review*, 54 (2): 275-295.
- Bohn, Sarah, Magnus Lofstrom, and Steven Raphael. 2014. "The Effects of State-Level Legislation Targeted Towards Limiting the Employment of Undocumented Immigrants on the Internal Composition of State Populations: The Case of Arizona," *Review of Economics and Statistics* 96 (2): 258-269.
- Borjas, George J. 1999. "Immigration and Welfare Magnets," *Journal of Labor Economics*, 17 (4): 607-637.
- Borjas, George J. 2006. "Native Internal Migration and the Labor Market Impact of Immigration," *Journal of Human Resources*, 41 (2): 221-258.
- Card, David. 2001. "Immigrant Inflows, Native Outflows, and the Local Labor Market Impacts of Higher Immigration," *Journal of Labor Economics*, 19 (1): 22-64.
- Consejo Nacional de Población. 2013. "Encuesta sobre Migración en la Frontera Norte de México, 2010," last accessed at http://www.conapo.gob.mx/es/CONAPO/Encuesta_sobre_Migracion_en_la_Frontera_Norte_de_Mexico_2010.
- Davila, Alberto, and Jose A. Pagan. 1997. "The Effect of Selective INS Monitoring Strategies on the Industrial Employment Choice and Earnings of Recent Migrants," *Economic Inquiry*, 35 (1): 138-150.
- Ebrard Condena Ley Arizona. 2010. "Ebrard condena en EU Ley Arizona." *El Universal*, Abril 27, 2010. Last accessed on August 12, 2014 at <http://www.eluniversal.com.mx/notas/676209.html>

- Hanson, Gordon H., and Antonio Spilimbergo. 1999. "Illegal Immigration, Border Enforcement, and Relative Wages: Evidence from Apprehensions at the U.S.-Mexico Border," *American Economic Review*, 89(5): 1337-1357.
- Herszenhorn, David M. 2010. "Menendez Urges Boycott of All-Star Game in Arizona." *The New York Times*, May 10, 2010. Last accessed on August 12, 2014 at <http://thecaucus.blogs.nytimes.com/2010/05/10/menendez-urges-boycott-of-all-star-game-in-arizona/>.
- Ley Arizona Afectaría Michoacanos. 2010. "Ley Arizona afectaría 10,000 Michoacanos: PRD." *El Universal*, Abril 27, 2010. Last accessed on August 12, 2014 at <http://www.eluniversal.com.mx/notas/675867.html>
- Lowell, B. Lindsay, Jay Teachman, and Zhongren Jing. 1995. "Unintended Consequences of Immigration Reform: Discrimination and Hispanic Employment," *Demography* 32 (4): 617-628.
- Martínez, Julieta. 2010. "BC suma fuerza contra ley Arizona." *El Universal*, Abril 27, 2010. Last accessed on August 12, 2014 at <http://www.eluniversal.com.mx/notas/676229.html>
- McGrath, Dan. 2010. "Diamondbacks Caught Up in Debate on Immigration." *The New York Times*, May 1, 2010. Last accessed on August 12, 2014 at <http://www.nytimes.com/2010/05/02/sports/baseball/02dbacks.html>
- OEA Cuestiona Ley Antiinmigrante. 2010. "OEA cuestiona ley antiinmigrante de Arizona." *El Universal*, Abril 26, 2010. Last accessed on August 12, 2014 at <http://www.eluniversal.com.mx/notas/675819.html>
- Orreinus, Pia M. and Madeline Zavodny. 2003. "Do Amnesty Programs Reduce Undocumented Immigration? Evidence from IRCA," *Demography*, 40(3): 437-450.
- Orreinus, Pia M., and Madeline Zavodny. 2009. "The Effects of Tougher Enforcement on the Job Prospects of Recent Latin American Immigrants," *Journal of Policy Analysis and Management*, 28 (2): 239-257.
- Passel, Jeffrey S., and D'Vera Cohn. 2010. "Unauthorized Immigrant Population: National and State Trends, 2010," Pew Hispanic Center of the Pew Research Center.
- Passel, Jeffrey, D'Vera Cohn, and Gonzalez-Barrera Ana. 2013. "Population Decline of Unauthorized Immigrants Stalls, May Have Reversed," Pew Research Hispanic Center. Last accessed on September 30, 2013 at <http://www.pewhispanic.org/files/2013/09/Unauthorized-Sept-2013-FINAL.pdf>.
- Reséndiz, Francisco. 2010. "Presidencia reprueba aprobación de Ley Arizona." *El Universal*, Abril 24, 2010. Last accessed on August 12, 2014 at <http://www.eluniversal.com.mx/notas/675421.html>

Sanchez, Gonzalo. 2015. "The Response of the Hispanic Noncitizen Population to Anti-Illegal Immigration Legislation: The Case of Arizona SB 1070." Working paper. Accessed at <http://econweb.tamu.edu/gsanchez/immigration>.

Sonora Protesta Contra Ley Antiinmigrante. 2010. "Sonora protesta en contra de Ley Antiinmigrante." *CNN México*, Abril 27, 2010. Last accessed on August 12, 2014 at <http://mexico.cnn.com/nacional/2010/04/27/sonora-protesta-en-contra-de-ley-antiinmigrante>.

Watson, Tara. "Enforcement and Immigrant Location Choice," NBER Working Paper 19626. Accessed at <http://www.nber.org/papers/w19626>.

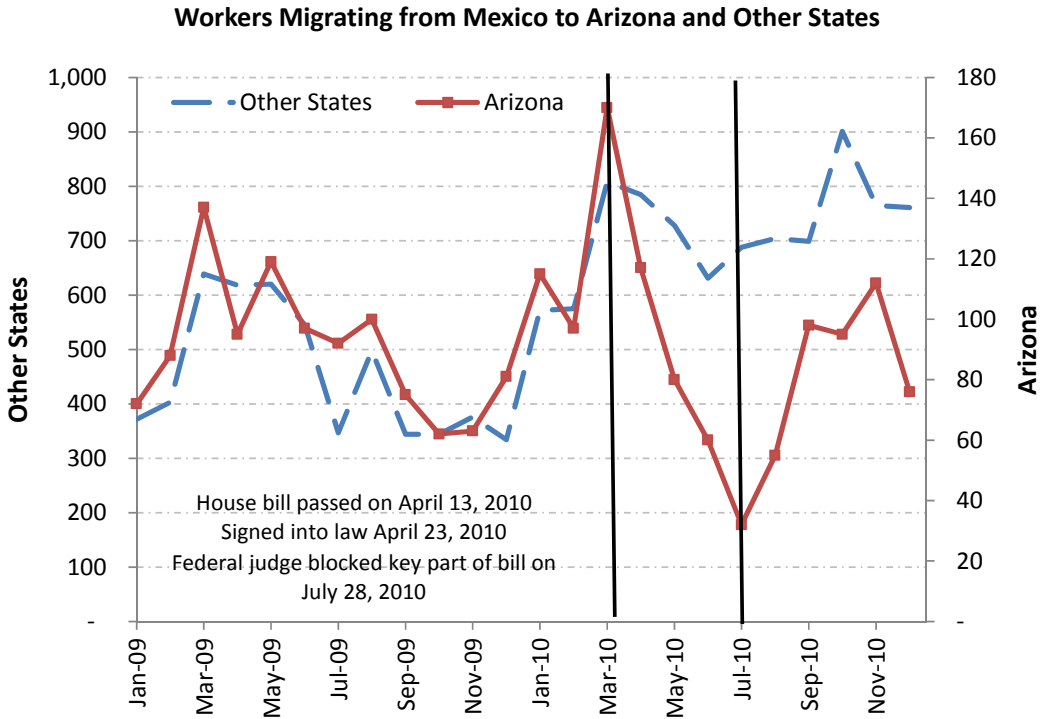


Figure 1a: Workers Migrating from Mexico to Arizona and Other States (EMIF)

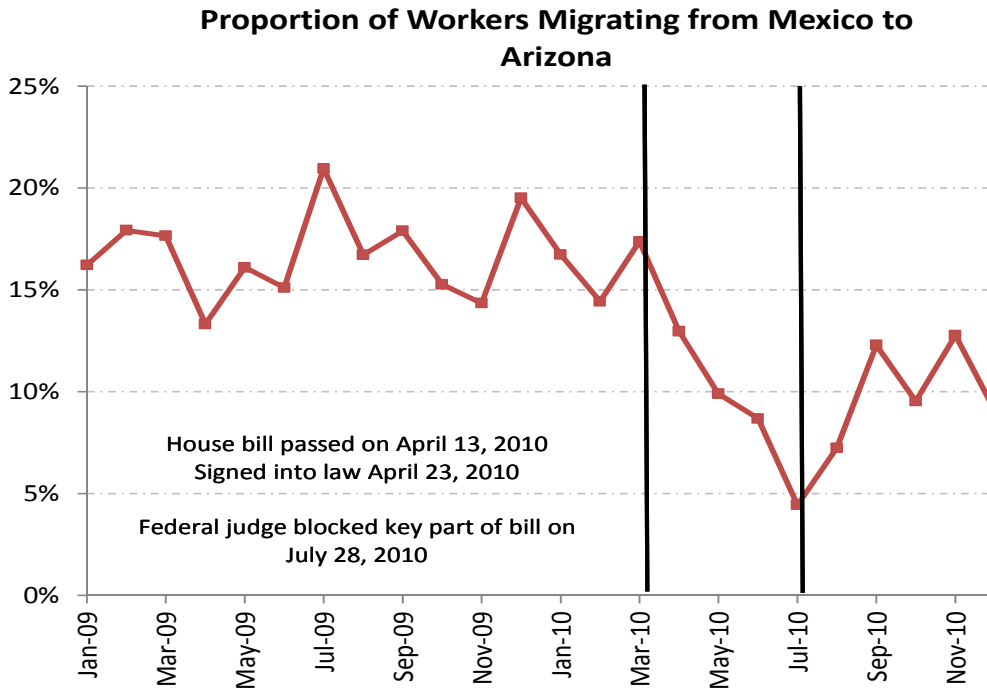


Figure 1b: Proportion of Workers Migrating from Mexico to Arizona (EMIF)

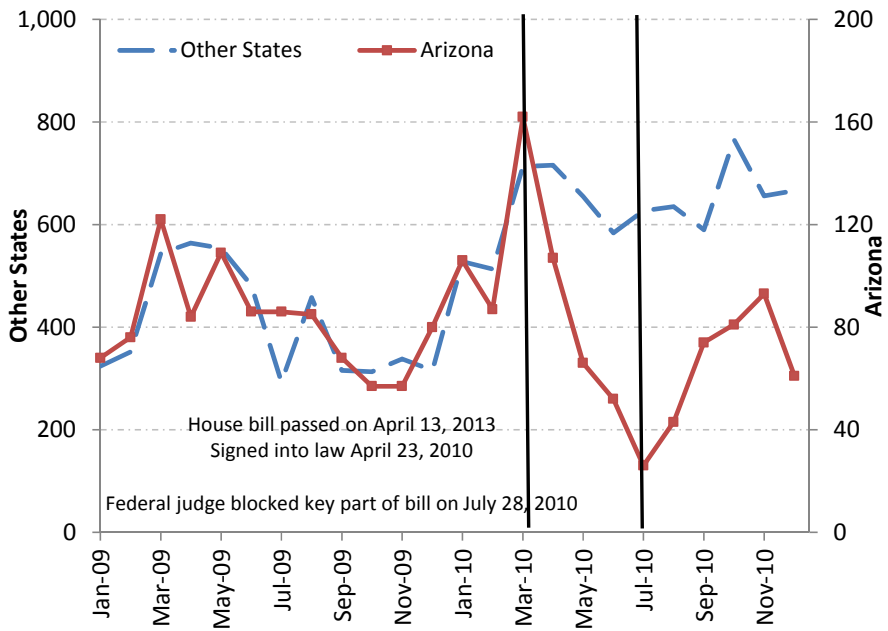


Figure 2a: First-Time Immigrants Migrating from Mexico to Arizona and Other States

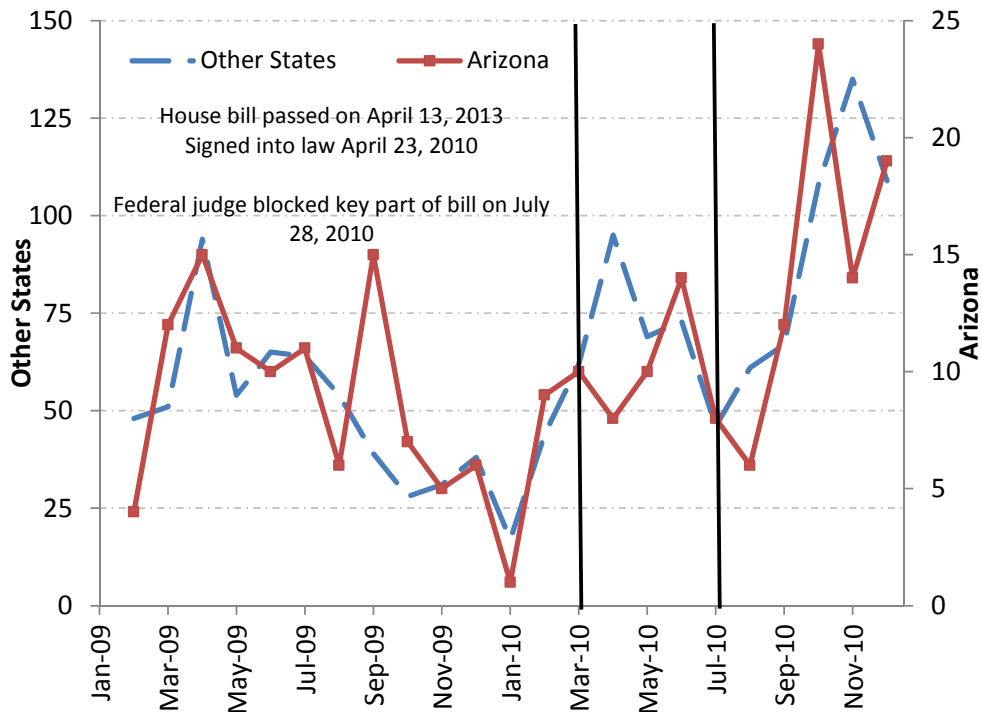


Figure 2b: Immigrants with Previous Migration Experience Migrating from Mexico To Arizona and Other States

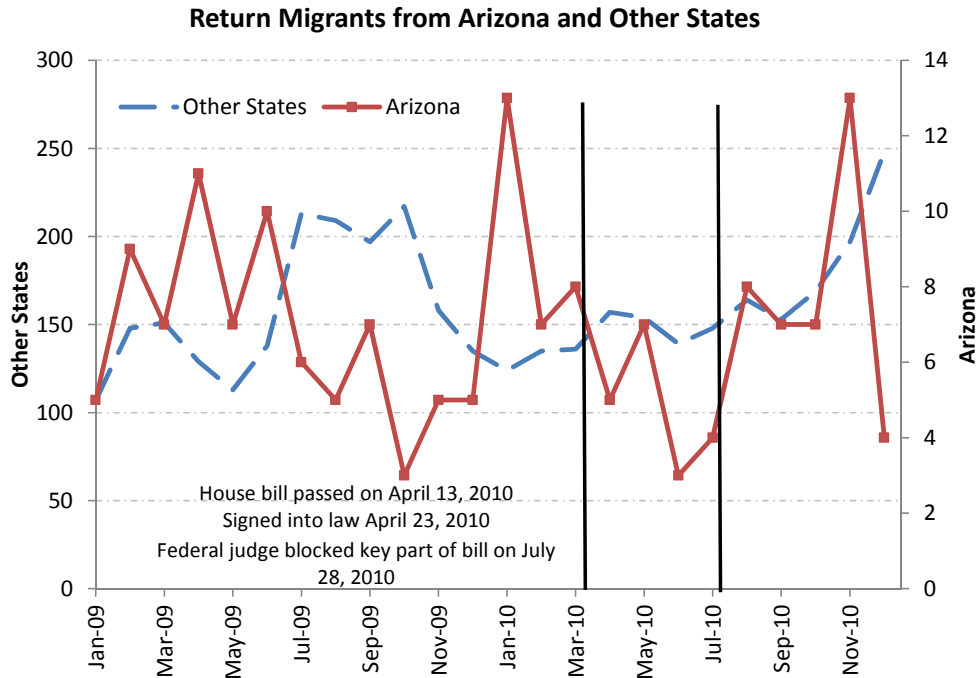


Figure 3a: Return Migrants to Mexico from Arizona and Other States

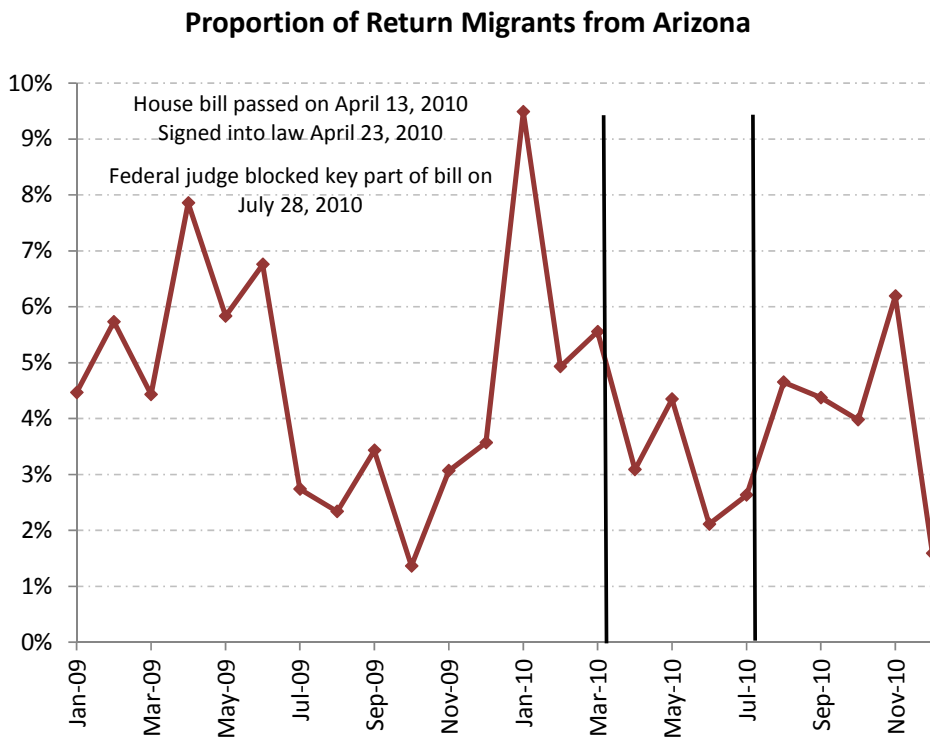


Figure 3b: Proportion of Migrants Returning to Mexico from Arizona

Table 1: Summary Statistics

Migrants to the United States		Return Migrants from the U.S.	
Variable	Mean (Std. Dev.)	Variable	Mean (Std. Dev.)
Age	29.6 (10.7)	Age	32.7 (9.4)
Years of schooling	7.3 (3.2)	Years of schooling	8.2 (3.3)
Women	0.10	Women	0.20
Married	0.58	Married	0.62
Speaks English	0.09	Speaks English ¹	0.36
Previous migratory experience in U.S.	0.11		
Worked in the U.S. previously	0.10	Worked in the U.S.	0.90
		Months in the U.S. since entering	37.1 (37.8)
		Returned by plane	0.71
State of destination in the U.S.		State in which the migrant spent most time	
California	0.26	California	0.23
Arizona	0.13	Texas	0.17
Florida	0.06	Illinois	0.07
Texas	0.05	New York	0.09
New York	0.03	Arizona	0.04
Do Not Know	0.29	Florida	0.06
Observations	16,251	Observations	4,005

¹ This variable is not available for the sample of migrants who returned by plane in 2009.

Table 2: The Effect of Arizona SB 1070 on the Likelihood of Immigrating to Arizona

Dependent Variable: Immigrating to Arizona from Mexico for Work

	1	2	3	4	5
After Arizona Law, Prior to Temporary Block by Federal Judge (April 2010 - July 2010)	-0.073*** (0.007)	-0.051*** (0.015)	-0.063*** (0.024)	-0.050*** (0.016)	-0.049*** (0.015)
After Arizona Law and After Temporary Block by Federal Judge (August 2010 - December 2010)	-0.063*** (0.006)	-0.032 (0.024)	-0.042 (0.029)	-0.030 (0.025)	-0.027 (0.025)
Six Months Prior to Passage of Arizona Law	-	-	-0.009 (0.016)	-	-
Observations	16,251	16,251	16,251	16,251	16,251
Includes time-varying controls	No	Yes	Yes	Yes	Yes
Includes linear time trend	No	No	No	Yes	No
Includes quadratic time trend	No	No	No	No	Yes

Notes: Each column represents a separate ordinary least squares regression. Sample includes all surveyed undocumented workers in Mexico planning to cross the border into the U.S. to work. Robust standard errors are in parentheses. Time-varying controls include the unemployment rate and per capita personal income for the states of Arizona, California, Florida and Texas.

Table 3: Difference-in-Differences Estimate of the Effect of SB 1070 on Immigration into Arizona

Dependent Variable: Log of number of undocumented immigrants going to the U.S., by destination (Arizona or elsewhere)						
	1	2	3	4	5	6
(After Arizona Law, Prior to Temporary Injunction) * Destined for Arizona (April 2010 - July 2010)	-0.77*** (0.23)	-0.69*** (0.24)	-0.74*** (0.23)	-0.68** (0.25)	-0.72** (0.28)	-0.63** (0.25)
(After Arizona Law and After Temporary Injunction) * Destined for Arizona (August 2010 - December 2010)	-0.58*** (0.12)	-0.52*** (0.15)	-0.67*** (0.12)	-0.60*** (0.15)	-0.35*** (0.12)	-0.33** (0.15)
Observations	48	48	48	48	48	48
Sample	All immigrants		Immigrants with known destinations		Immigrants headed to AZ, TX, or FL	
Includes time-varying controls	No	Yes	No	Yes	No	Yes

Notes: Each column in each panel represents a separate ordinary least squares regression. Each regression controls for year-by-month fixed effects and an indicator for whether the group is destined for Arizona. Time-varying controls include the unemployment rate and per capita personal income for the states of Arizona, California, Florida and Texas.

* Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4: Event Study Estimates of the Effect of SB 1070 on Permanent Return Migration to Mexico from Arizona

Dependent Variable: Permanent Return Migration to Mexico from Arizona					
	1	2	3	4	5
After Arizona Law, Prior to Temporary Injunction (April 2010 - July 2010)	-0.014*	-0.013	-0.035	-0.007	-0.008
	(0.008)	(0.019)	(0.029)	(0.020)	(0.020)
After Arizona Law and After Temporary Injunction (August 2010 - December 2010)	-0.004	-0.006	-0.026	0.005	0.005
	(0.008)	(0.034)	(0.038)	(0.034)	(0.034)
Six Months Prior to Passage of Arizona Law			-0.017		
			(0.015)		
Observations	4,005	4,005	4,005	4,005	4,005
Includes time-varying controls	No	Yes	Yes	Yes	Yes
Includes linear time trend	No	No	No	Yes	No
Includes quadratic time trend	No	No	No	No	Yes

Notes: Each column in each panel represents a separate ordinary least squares regression. Sample includes all surveyed undocumented return migrants. Robust standard errors are in parentheses. Time-varying controls include the unemployment rate and per capita personal income for the U.S. and the states of Arizona, California, Florida and Texas.

* Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Web Appendix A

Table A1: Comparison of Survey of Migration to the Northern Border (EMIF) to the American Community Survey (ACS)

	EMIF*		ACS**	
	2009	2010	2009	2010
Arizona	19%	7%	8%	5%
California	46%	58%	19%	24%
Texas	13%	14%	22%	28%
Florida	4%	3%	1%	1%
Illinois	2%	1%	3%	9%
North Carolina	2%	1%	8%	3%
Colorado	2%	2%	6%	2%
New York	1%	2%	1%	1%
Washington	1%	1%	3%	2%
Georgia	1%	2%	3%	1%
Oregon	1%	0%	2%	1%
Nevada	1%	2%	2%	1%
Other	7%	7%	23%	23%

* Non-citizens, born in Mexico who migrate in 2009 and 2010 to the U.S. Excludes respondents who do not report destination state.

** Non-citizens, born in Mexico, high school dropouts, who were living in Mexico the previous year, who migrated in 2009 and 2010.

The correlation across all 50 states is 0.78 for 2009, and 0.77 for 2010.