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), and 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 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 (2003) 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 lead 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, with somewhat differing conclusions. Amuedo-Dorrantes 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. 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 without legal authorization 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 lacks 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 announcement effect of the law 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 the law's 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 authorizing them to work in the U.S., 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

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

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[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.

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. 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) by which migrants must pass. Importantly, the National Population Council estimates that 94 percent of the total border crossings occur through locations covered by the EMIF (Consejo Nacional de Población, 2013).

The survey consists of four separate questionnaires, each of which is targeted at a different group of immigrants. We focus on two of those

questionaires.[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.[4]

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 is a critical advantage of the EMIF data compared to the Current Population Survey (CPS)

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[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.

[4] Because the immigrants we study do not have legal authorization to work in the US and because the survey excludes those who are from the city in which they are interviewed, the survey effectively excludes those who are crossing the border for daily work in the US.

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 migrated from Mexico in the previous year. With respect to the latter, the sample size is especially limiting: in the years between 2007 and 2012, the March CPS surveyed a total of only 5 low-educated, foreign-born, non-citizens living in Arizona who arrived from Mexico in the previous year. By contrast, the EMIF surveyed 5,961 undocumented migrants destined for Arizona over that same time period.

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 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 less than 12 years of education are unauthorized.[5] 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.

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

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 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.[6]

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, though we also show results that include 2011.[7] Over this time period, we have observations on a total of 16,122 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. Only 15 percent of migrants are traveling with a family member, and only 2 percent are traveling with a child. 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

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[6] 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.

[7] We focus primarily on the time period ending in December 2010 because the identifying assumptions of our event study and difference-in-differences research designs likely become more tenuous as we look at longer and longer post-injunction time horizons. However, as shown in Appendix Figure A1, results for this longer time horizon are similar to those shown in the main analysis.

immigrants report they are headed to Arizona. Twenty-nine percent report that they do not know the state of destination. We expect this is due in large part to the migration of agricultural workers who move from one farm to another following the harvest season.

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 than the land survey for return migrants, 71 percent are surveyed in an airport.[8] 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. 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.

One thing we can do is compare the respondents in the EMIF survey to those in the American Community Survey. Results are shown in Appendix Table A1, which compares the flow of migrants to the US in 2009-2010 from the EMIF

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[8] 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.

to Mexican migrants living in the US who arrived in the previous year from the ACS. Migrants in the EMIF are somewhat younger (29.5 versus 35.0), have less schooling (7.3 versus 9.3 years), are more likely to be male (90 versus 65 percent), and are less likely to speak English (9 versus 50 percent). Table A1 also 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 Arizona are more likely to appear relative to the proportion surveyed in Arizona by the ACS, while the opposite is true for Texas.

There are several potential explanations for these differences. One is that either or both of the surveys are not representative as intended. While that is certainly possible, we think that at least some differences are due to the distinction between measuring stock and flow. In particular, the EMIF was designed to measure flows, while the ACS surveys more settled immigrants. In addition, we believe that some of the differences are due to the fact that only around 60 percent of the respondents in the ACS are unauthorized immigrants, whereas all those we use in the EMIF data are unauthorized. This explanation is broadly consistent with the known differences between the two groups, as unauthorized immigrants are on average younger, less educated, and more likely to be male than authorized workers (Fry 2006; Passel and Cohn, 2009; and Passel, Cohn and Rohal, 2015).

Finally, given that SB 1070 explicitly targeted migrants who intended to work in Arizona, it is helpful to understand the labor market experiences of likely undocumented workers in the US. Table 2 shows the labor force participation, unemployment rate, health insurance coverage, hourly wage, and industry of employment for recent migrants to the US, as surveyed in the 2014 Current Population Survey. We break migrants down into four groups, each of which is sufficiently large to be illustrative: male foreign-born Hispanics, male non-citizen Mexican immigrants who arrived in the previous year, male Hispanics in Arizona,

and male foreign-born Hispanics in Arizona. Results show that migrants have labor force participation rates above 75 percent, earn an hourly wage of $15 - $17 per hour. Only around 50 percent are working in jobs eligible for health insurance. The most common industries are construction, manufacturing, and trade (wholesale and retail).

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 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 judged issued a temporary block of much of the law.

We do this using three different research designs. 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 2010, when the law had been passed but not yet enacted or blocked.[9] Formally, we estimate the following using ordinary least squares:

$$(1) \quad Destination\_AZ_{it} = \beta_0 + \beta_1 Post\_Passage_{it} + \beta_2 Post\_Injunction_{it} + \varepsilon_{it}$$

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[9] 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.

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, and *Post_Injunction* is an indicator equal to one after the federal injunction was issued. In some specifications, we also include a month fixed effect to control for seasonality.

The primary coefficient of interest is β_1, which measures the reduction in the probability of migrating Arizona after the law was passed but before it was blocked, relative to the pre-SB 1070 probability of migrating to Arizona. 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 view this assumption as reasonable given 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 seasonality effects over this period seem relatively minor.

Our second approach uses an event study with data aggregated by month and destination. As a result, we estimate the following equation:

(2) $LogArizonaMigrants_t = \beta_0 + \beta_1 Post\_Passage_t + \beta_2 Post\_Injunction_t + \varphi_t + \varepsilon_t$

where *LogArizonaMigrants$_t$* is the natural log of the number of migrants migrating to Arizona in month t. In this approach, the identifying assumption is that the log of the number of migrants destined for Arizona would have stayed at pre-SB 1070 levels absent the legislation, conditional on the month fixed effect as a control for seasonality. While this identifying assumption is stronger than that required in the approach from equation (1), the advantage of this approach is that it does not use migrant flows to other states as a counterfactual, since SB 1070

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could potentially affect migrant flows to those states due to either displacement or deterrent effects.

A threat to identification common across both of these approaches is the possibility that passage of SB 1070 coincided with other factors that would have resulted in reduced migration to Arizona. We address this issue in several ways. First, we include month fixed effects to absorb any effects of seasonality common across destinations. Second, in Appendix Figure A2 we show that the unemployment rates of Hispanics working in construction, services, and trade in Arizona were similar over this time period compared to those in California, Florida, and Texas, which together with Arizona are the four most common destination states. Similarly, we show that including these unemployment rates as controls does not affect our estimates, suggesting that our estimated effects of SB 1070 are not driven by Arizona-specific time shocks.[10] Finally, we show that allowing for linear time trends does not affect our estimates.

Our third approach uses a difference-in-differences research design, which requires a different assumption from the event studies. 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 for elsewhere. Formally, we estimate the following:

$$(3) \quad \begin{aligned} \ln(immigrants)_{it} &= \phi_t + \theta_1 Destination\_AZ + \theta_2((Destination\_AZ) \\ &\quad *(Post\_Passage))_{it} + \theta_3((Destination\_AZ)*(Post\_Injunction))_{it} + \varepsilon_{it} \end{aligned}$$

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[10] We computed these monthly employment rates using data from the Current Population Survey for Hispanics living in the four states that are the most common destination states of undocumented migrants in our sample.

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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 main coefficient of interest is θ_2, which measures 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. θ_3 measures the marginal impact of the law being blocked by the federal judge, relative to the law's impact between April and July when it was passed.

The primary drawback to this approach is to the extent 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 this issue, in one specification we explicitly adjust the data to account for the possibility that migrants otherwise headed to Arizona went to other states instead. Specifically, using the event study methodology outlined in equation (2), for each of the four months (April − July) that the law was passed, we estimate the reduction in the number of surveyed migrants destined for Arizona. We then assume that *all* of those would-be migrants to Arizona instead went to other states, and remove an identical number of surveyed migrants headed elsewhere from the data set. As a result, we estimate effects using the conservative assumption that *all* of the missing migrants to Arizona went to other states and inflated those migration numbers.

With respect to statistical inference, in addition to reporting significance based on robust standard errors, we also perform additional permutation exercises to test empirically how frequently estimates of the magnitudes we find occur by chance. Specifically, we use a data set from January 2002 to December 2013. We then choose a 24 month period, and just as for our actual data set, assume that

the first 15 months are the pre-period, followed by four months of treatment (for passage of SB 1070), and five months of a second treatment (post-injunction). In each case we assume Arizona is treated, and other states are not, so as to generate estimates how immigration flows in Arizona change due to chance. Excluding all 24-month periods in which placebo treatment overlaps with actual treatment, this gives us a total of 119 placebo estimates. We then ask how the magnitude of our actual estimate corresponds to this distribution of placebo estimates. To the extent that our estimates are more extreme than nearly all placebo estimates, it suggests that the reduction in migration to Arizona coinciding with SB 1070 was unlikely to occur due to chance.

Finally, while the main focus of our study is the deterrent effect of SB 1070 on illegal immigrant flows 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 limitations of the approaches outlined above. For example, while we can use the passage of SB 1070 to identify the short-run effect of such a law, we note that the long-run effects could be quite different. To the extent that social networks adjust to the new law more over time and prospective migrants have time to consider more alternatives, the long-run effects could be larger than the short-run effects. On the other hand, migrants may be more cautious in the short run as they seek to assess the new legal climate, in which case the long-run effects could be smaller.

In addition, we emphasize that we study the impact of this law in the context of one state that is passing it. As a result, while our data and approaches are well-suited for examining whether a state law deterred undocumented immigrants from entering that state, we are unable to determine whether those

individuals stayed in Mexico, or if they went to another state. This is largely because only around 15 percent of migrants intend to reside in Arizona, making any displacement across other states undetectable in the data. This limitation also makes it difficult for us to speak to what the impact of a similar law would be if it were passed by all states or the federal government. To the extent that Arizona SB 1070 does shift migrants to other states, a national approach might well lead to smaller deterrence effects than we observe in this context. On the other hand, we would expect a national policy to be more effective at reducing overall migration into the US than a policy like SB 1070 due to reduced displacement effects.

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.[11]

Figure 1b shows the proportion of immigrants destined for Arizona, and shows that a similar pattern holds in relative terms. While the proportion of

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[11] Figure 1a also shows that there is a significant increase in migration to Arizona in March of 2010. While one might be concerned that this increase is due to anticipation of the law being passed, we view that explanation as unlikely for two reasons. First, while we would expect an anticipation effect among those migrants traveling *through* Arizona, we would not expect it for those intending to *reside* in Arizona, since the law would apply to them no differently than if they were to arrive a month or two later. Second, we observe increased migration to other states during March of 2010, as well as increases during March across other years, both of which suggest this is a seasonality effect. For example, the overall increase in monthly migration to the US in our data from February to March was 57%, 46%, and 42% during 2009, 2010, and 2011, respectively. Similarly, more people were apprehended in March by US Border Patrol than in any other month during all but two of the 14 years between 2000 and 2013. To address the role of seasonality, as discussed in the previous section we use a combination of strategies. These include examining the rate at which migrants go to Arizona compared to elsewhere, and including month fixed effects and month-by-destination-state fixed effects.

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. We now turn to estimating these effects formally using each of our three approaches.

5.1. Event Study Estimates Using Individual-Level Data

Estimates from equation (1) are shown in Table 3. The specification in Column 1 includes no controls, while columns 2 - 7 include month fixed effects. Column 3 includes controls for the unemployment rates of Hispanics working in construction, services, and trade in Arizona, California, Florida, and Texas, which are the four most common destination states in our sample. Column 4 includes a linear time trend while column 5 includes a leading indicator variable testing for whether the migration rate changed in the six months prior to the passage of SB 1070. Column 6 includes data from 2011 in addition to 2009 and 2010. Finally, column 7 adjusts for the possibility that SB 1070 induced Arizona-bound migrants to instead migrate to other US states. Since this could potentially result in overstating deterrence effects, we use equation (2) in order to estimate the number of "missing" Arizona-bound migrants during the months of April - July. We then subtract that number of migrants from the pool of applicants destined for other states over those same four months, implicitly assuming they had gone to those other states.

As shown in column 1 of Panel A, the unconditional estimate of the impact of the law on the likelihood of immigrating to Arizona is a reduction of 7.4 percentage points, which represents a 44 percent relative decline and is statistically significant at the 1 percent level. Adding month effects in Column 2 reduces the estimate slightly to 6.7 percentage points, while adding sector-specific unemployment rates for Hispanics in Column 3 increases the estimate to 9.2 percentage points. Including a linear time trend in Column 4 results in a 5.8 percentage point decline. Estimates in Column 5 indicate that there is no evidence of a reduction in migration to Arizona before the law was passed in April of 2010. Including data from 2011 in Column 6 results in a similar estimate of 6.3 percentage points. Finally, adjusting the data for the possibility that migrants were displaced to other states in Column 7 only slightly reduces the estimate from 6.7 to 6.0 percentage points. Importantly, all seven estimates are statistically significant at the 1 percent level. Collectively, these estimates confirm the visual evidence in Figure 1: the announcement of SB 1070 is associated with a statistically significant and economically meaningful reduction in illegal immigration into Arizona.

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. The number and proportion of migrants who report unknown destination are shown in Appendix Figure A1a and A1b, which show little evidence the reduction in migration to Arizona was accompanied by a similar increase in migrants reporting unknown destinations.

The second row of Panel A of Table 3 shows estimates of the marginal impact of the law after the federal judge issued an injunction at the end of July. Estimates are close to zero, and none of the seven estimates are statistically different from zero.

In addition, we also estimate the effects of the laws in a way that more closely models the raw data shown in Figure 1. Specifically, rather than allowing for only level changes, which estimates the average impact of the law during the specified period, in Panel B of Table 3 we estimate slope effects, and then use the estimated slopes to estimate the cumulative effect of the law at a given point in time. That is, we fit lines to the underlying data between April and July, when the law was passed, and from August through December of 2010, after the federal judge issued the injunction. The reason we do so is that the underlying data shown in Figure 1 suggest that illegal immigrant flows were headed toward a new equilibrium after the passage of the law, but had not yet hit that equilibrium when the federal judge issued the injunction.

Results are shown in Panel B of Table 3. The estimates in the first row range from as small as -0.029 (Column 3) to -0.039. All but one estimate are statistically significant at the 1 percent level. These estimates indicate that for each of the roughly three months following the passage of SB 1070, immigration flows into Arizona fell by around 3 percentage points, or just less than 20 percent. The fourth row of Panel B shows estimates of the cumulative effect of the law as of July 27, 2010, the day before the federal injunction, at between 9.1 and 12.3 percentage points. These reductions represent 54 to 74 percent reductions in migrant flows to Arizona given the baseline rate of 16.7 percent.

Estimates in the second row of Panel B also suggest that migration flows into Arizona increased each month after the federal injunction, with estimates ranging from 1.4 to 2.9 percentage points per month. This suggests that while the passage of SB 1070 reduced illegal migration flows by as much as 75 percent, that effect was partly offset by the federal injunction blocking the bill from going into effect.

Permutation tests provide additional support that the observed reduction in the fraction of undocumented workers destined for Arizona was unlikely to occur

due to chance. Specifically, in Appendix Figure A3 we show that estimates in Panel A of Table 3 are more negative than the vast majority of placebo estimates derived from similar data sets from 2002 through 2013. The fraction of placebo estimates lying to the left of the actual estimates in columns 1, 2, and 4 are 0.0168, 0.0672, and 0.0840, respectively. Unsurprisingly, estimates from Panel B are even less likely to occur due to chance; only 1 of 119 estimates was more negative than -0.032 coefficient in Column 1, and no placebo estimates were more negative than the estimates of -0.039 and -0.034 in Columns 2 and 4. This indicates that Arizona did not normally experience four-month reductions in migrant rates of the magnitude observed when SB 1070 was passed.

5.2. Event Study Estimates Using Month-Level Aggregate Data

We now turn to estimating the impact of SB 1070 on migration flows to Arizona using data aggregated to the month and state-of-destination level, as in equation (2). The advantage of this approach is that because flows to other states are not used in computing the migration rate, the estimate is unaffected by the possibility that those who would have gone to Arizona instead go to another state. The disadvantage, however, is that as shown in Figure 1a, there is evidence of significant time effects at work over this period. That means controlling for those time effects is necessary, which is difficult with such a relatively short window and limited observations.

Results are shown in Table 4, which follows the format of Table 3. Estimates in Panel A range from -0.339 to -0.706, implying that migration rates to Arizona were 30 to 70 percent lower after the law was passed, compared to the 15 months prior to that. In general, however, estimates are not precisely estimated

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despite their large economic magnitudes; only two of five coefficients are statistically significant at the 5 percent level.[12]

Results for the slope specification are shown in Panel B. Resulting estimates are more precise, and suggest that for each month after the passage of the bill, migration rates to Arizona were reduced by between 17 and 25 percent. All estimates are significant at the 1 percent level. We estimate that the day before the federal injunction, the number of immigrants destined for Arizona was 50 to 75 percent lower than during the pre-SB 1070 period. In addition, this downward trajectory in migration was reduced somewhat when the federal judge issued the injunction, at which point migration rates rose by 12 to 29 percent per month.

5.3. Difference-in-Differences Estimates

Finally, we turn to the difference-in-differences estimates, which are shown in Table 5. Columns 1 – 4 include the entire sample of undocumented workers, while column 5 - 8 use only those with known destinations. For each set of results, the specification in the first column controls for only year-by-month and state-of-destination fixed effects. Columns 2 and 6 replace year-by-month fixed effects with time-varying controls for the unemployment rates of Hispanics in construction, services, and trade for Arizona, California, Florida, and Texas. Columns 3 and 7 include destination state fixed effects and year-by-month fixed effects, and add state-by-month fixed effects.

Finally, Columns 4 and 8 address a potential downside of this difference-in-differences design, which is that the control state observations are potentially contaminated to the extent that migrants switched from Arizona to, say,

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[12] Permutation tests reveal similar degrees of statistical significance. The distributions of placebo estimates are shown in Figure A4. The estimates of -0.439 and -0.706 in Columns 1 and 3 are larger than 11.76 and 3.36 percent of placebo estimates.

California. While any such bias should be relatively small due to the small fraction of migrants destined for Arizona compared to other states, it could be present. In columns 4 and 8, we explicitly adjust for this by conservatively assuming that all "missing" migrants to Arizona did in fact migrate to other states, rather than stay in Mexico. Specifically, we estimate an equation similar to equation 2 using data aggregated to the month and destination to estimate how many migrants were deterred from entering Arizona. We then subtract that number of migrants from the corresponding month from the control group, and re-estimate the effects.

Results shown in Table 5 provide further evidence that SB 1070 significantly deterred migration into Arizona. Estimates across columns 1 − 8 indicate that passing the law reduced immigration flows into Arizona by 60 to 80 percent. All estimates are statistically significant at the 10 percent level, and six of eight estimates are significant at the 1 percent level. Placebo tests also suggest that the reduction in immigrant flows to Arizona shown in Table 5 were unlikely to occur by chance. The distribution of placebo estimates shown in Figure A5, which assumes Arizona was treated in a different four-month periods before or after SB 1070, shows that the actual estimates in Table 5 are significantly more negative than those observed due to chance. Specifically, we find that the proportion of estimates more negative than actual estimates in columns 1, 3, 5, and 7 was 0.0336, 0.0420, 0.0336, and 0.0756, respectively. This provides further evidence that these declines were caused by SB 1070, and not a result of general randomness in migrant flows to Arizona.

5.4. Heterogeneous Effects of SB 1070

We now ask whether the passage of Arizona SB 1070 had differential deterrent effects on various subgroups of migrants. We begin by examining the behavior of first-time migrants compared to migrants with previous migration

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experience. 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 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.[13]

In contrast, however, we find very few differences in effects across other demographic characteristics such as age, years of schooling, gender, or marital status. This is shown in Figure 3, which shows the percent declines in these various groups from April through July of 2010, compared to the four months prior. It is also shown in Table 6, which shows that those migrating between April and July of 2010 were very similar to those migrating in the four months prior. Thus, while the deterrent effect of SB 1070 is clearly driven by first-time migrants, the passage of the law seemed to have similar effects across other demographic groups.

5.5. Estimated Effects on Return Migration to Mexico

We also test 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 4. It shows that there is little evidence to suggest that SB 1070 induced workers to leave

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[13] 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.

Arizona for Mexico. This lack of evidence is also evident in the corresponding regression estimates corresponding to equation (1), shown in Table 7. The estimates are small and negative, providing no evidence that existing undocumented workers were induced to return to Mexico as a result of SB 1070.

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 penalties 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. Unsurprisingly, this deterrent effect was diminished when a federal judge issued an injunction blocking much of the bill from going into effect.

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. This immediate response is especially striking given that most of these prospective migrants have low levels of education and do not speak English, and suggests that information on immigration laws such as SB 1070 moves quickly and accurately through informal channels. Finally, while the large deterrent effect documented here 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.

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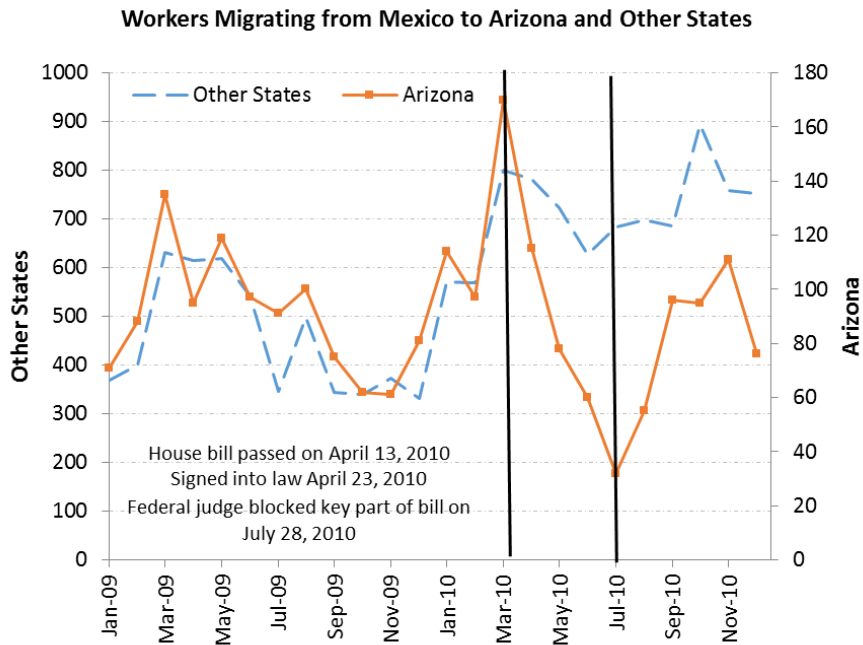
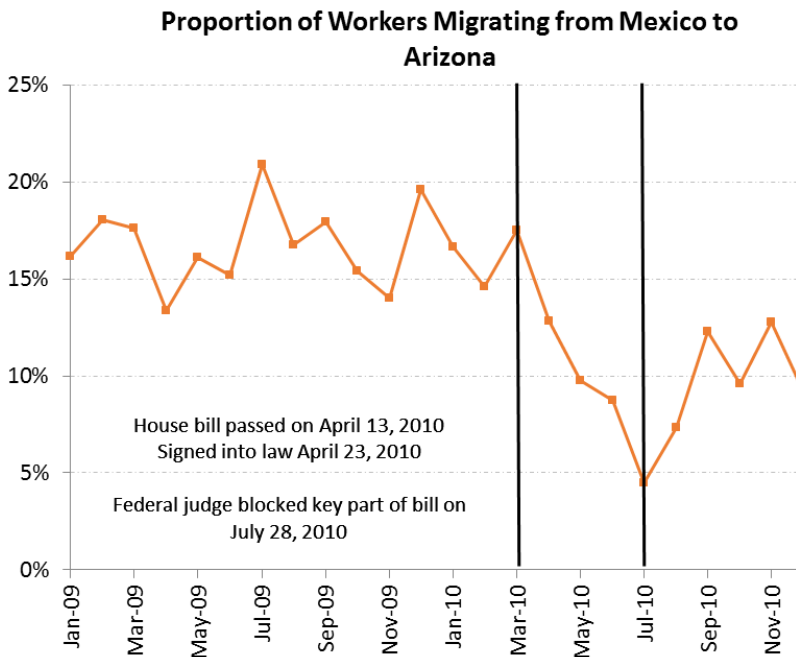Figure 1a: Workers Migrating from Mexico to Arizona and Other States (EMIF)

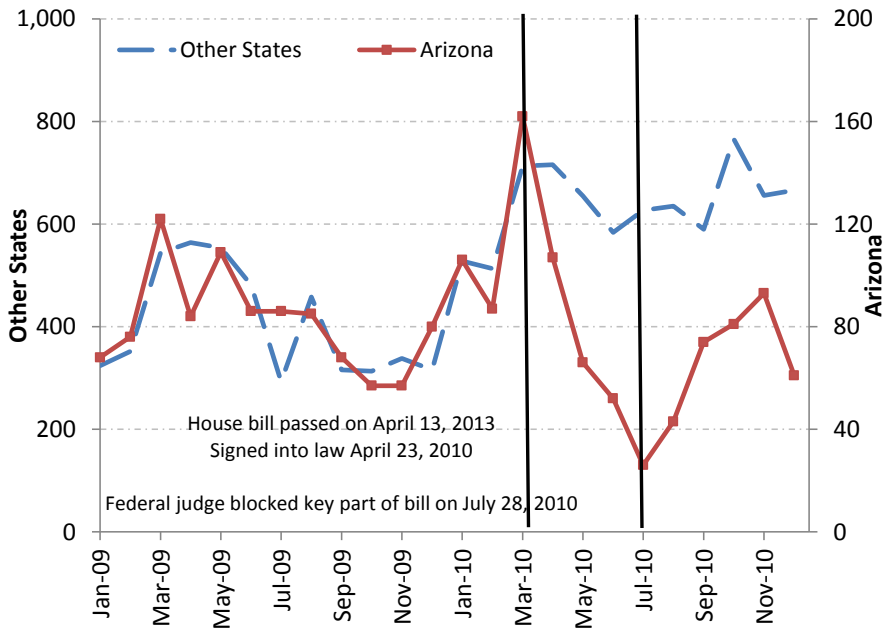Figure 1b: Proportion of Workers Migrating from Mexico to Arizona (EMIF)

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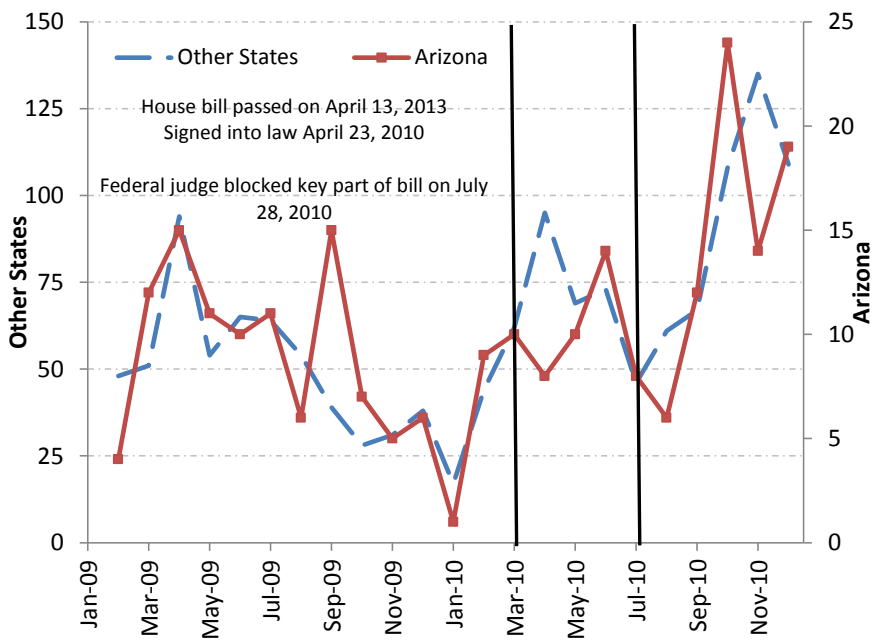

Figure 2b: Immigrants with Previous Migration Experience Migrating from Mexico To Arizona and Other States
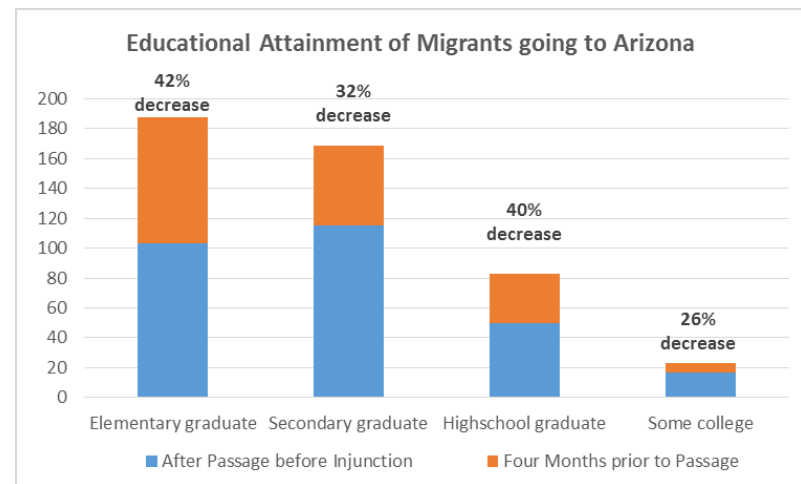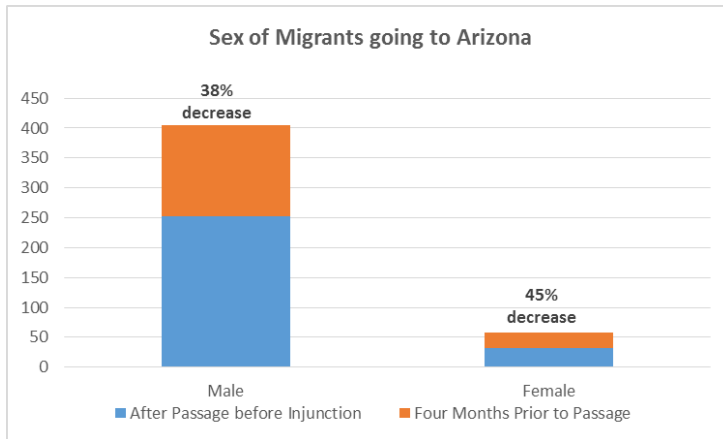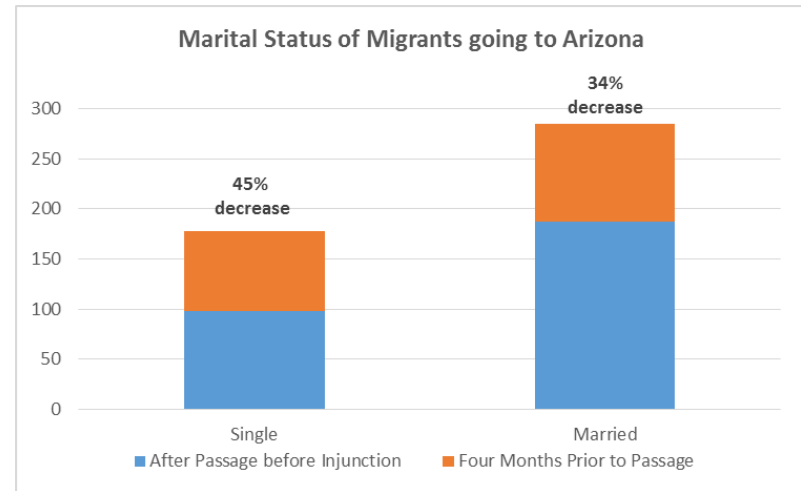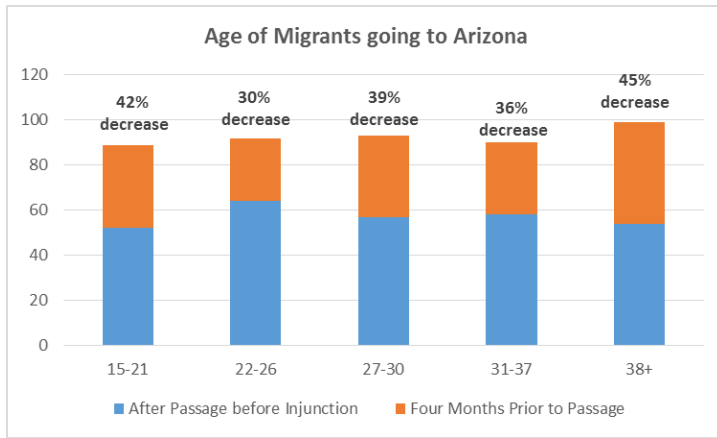
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Figure 3: Percent reductions in migrants going to Arizona between April and July of 2010, compared to four months earlier, by demographic group
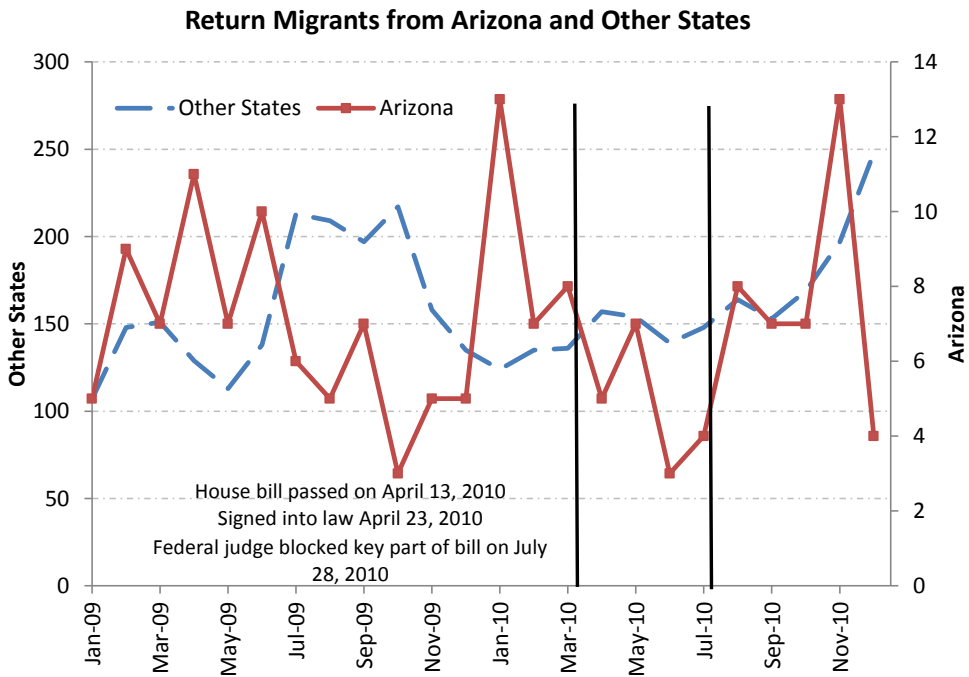
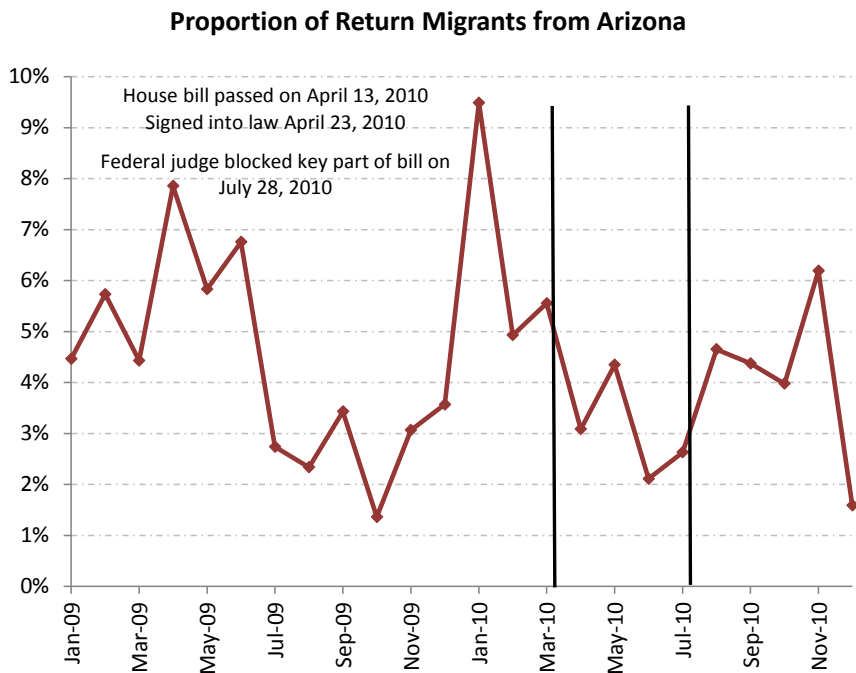Figure 4a: Return Migrants to Mexico from Arizona and Other States

Figure 4b: Proportion of Migrants Returning to Mexico from Arizona

Table 1: Summary Statistics

Migrants to the United States		**Return Migrants from the United States**	
Variable	Mean (Std. Dev.)	Variable	Mean (Std. Dev.)
Age	29.5	Age	32.7
	(10.7)		(9.4)
Years of schooling	7.3	Years of schooling	8.2
	(3.2)		(3.3)
Women	0.10	Women	0.20
Married	0.58	Married	0.62
Speaks English	0.09	Speaks English	0.36
Previous migratory experience	0.11	Previous migratory experience	1.00
Worked in the U.S.	0.10	Worked in the U.S.	0.90
Traveling alone	0.52	Months in the U.S. since entering	37.1
Migrating with family member	0.15		(37.8)
Migrating with a child	0.02	Returned by plane	0.71
State of destination in the U.S.		State of residence in the U.S.	
California	0.26	California	0.23
Arizona	0.13	Texas	0.17
Florida	0.06	New York	0.09
Texas	0.05	Illinois	0.07
New York	0.03	Florida	0.06
Illinois	0.02	New Jersey	0.04
Colorado	0.02	Arizona	0.04
Georgia	0.02	North Carolina	0.03
North Carolina	0.02	Georgia	0.03
Do Not Know	0.29	Colorado	0.02
Observations	16,122	Observations	4,005

Individuals migrating from Mexico to the US includes all undocumented migrants surveyed who are going to cross the border and enter the US within 30 days. The sample of return migrants from US includes all undocumented migrants who return to Mexico and have no intention to re-enter to the US. Respondents in 2009 were asked about migrating with children younger than 12, while respondents in 2010 were asked about children younger than 15.

Table 2: Labor Market Experiences of Recent Migrants

	Male foreign-born Hispanics	Male non-citizen Mexican immigrants recently arrived	Male Hispanics in Arizona	Male foreign-born Hispanics in Arizona
Labor Force Participation	81%	94%	72%	77%
Unemployment Rate	5.8%	6.0%	9.9%	0.7%
Insurance Coverage	58%	35%	62%	50%
Hourly Wage (in 2014 dollars)	$17.47	$15.23	$17.57	$16.13
Industry of Employment				
Construction	23%	26%	15%	25%
Manufacturing	13%	13%	14%	9%
Trade (wholesale and retail)	21%	27%	20%	15%
Agriculture, forestry and fishing	10%	15%	9%	17%
Transportation, communication and public utilities	8%	4%	11%	11%
Services (business, repair and personal services)	10%	11%	9%	9%
Professional and related services	7%	2%	10%	11%
Entertainment and recreational services	2%	0%	2%	1%
Mining	1%	0%	1%	0%
Finance, insurance and real estate	3%	1%	1%	0%
Public Administration	2%	1%	6%	3%
Other	0%	0%	2%	0%

Source: March 2014 Current Population Survey

Table 3: Event Study Estimates of 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	6	7
Panel A							
After Arizona Law	-0.074***	-0.067***	-0.092***	-0.058***	-0.067***	-0.063***	-0.060***
(April 2010 - December 2010)	(0.007)	(0.009)	(0.033)	(0.015)	(0.009)	(0.007)	(0.009)
	[0.0168]	[0.0672]		[0.0840]			
After Temporary Block by Federal Judge	0.011	0.001	0.001	0.001	-0.006	-0.004	-(0.006)
(August 2010 - December 2010)	(0.007)	(0.013)	(0.025)	(0.013)	(0.014)	(0.007)	(0.013)
Six Months Prior to Passage of Arizona Law	-	-	-	-	-0.012	-	
					(0.010)		
Panel B							
Months since Passage of Arizona Law (range = 0 to 3.17)	-0.032***	-0.039***	-0.029	-0.034***	-0.039***	-	-0.037***
	(0.002)	(0.004)	(0.020)	(0.005)	(0.004)		(0.004)
	[0.0084]	[0.0000]		[0.0000]			
Months after Temporary Block by Federal Judge (range = 0 to 5.23)	0.014***	0.018***	0.029*	0.017***	0.016***	-	0.016***
	(0.002)	(0.005)	(0.017)	(0.005)	(0.006)		(0.005)
Six Months Prior to Passage of Arizona Law	-	-	-	-	-0.008	-	
					(0.011)		
Estimated effect as of July 27, 2010	-0.103***	-0.123***	-0.091	-0.107***	-0.123***	-	-0.117***
	(0.008)	(0.013)	(0.062)	(0.017)	(0.013)		(0.013)
	[0.0084]	[0.0000]		[0.0000]			
Estimated effect as of October 27, 2010	-0.059***	-0.068***	-0.003	-0.055***	-0.074***	-	-0.067***
	(0.006)	(0.010)	(0.080)	(0.013)	(0.013)		(0.010)
Mean of dependent variable pre-treatment	0.167	0.167	0.167	0.167	0.167	0.167	
Observations	16,122	16,122	16,122	16,122	16,122	26,751	15,889
Month fixed effects	No	Yes	Yes	Yes	Yes	Yes	Yes
Includes time-varying controls	No	No	Yes	No	No	No	No
Includes linear time trend	No	No	No	Yes	No	No	No
Includes 2011 data	No	No	No	No	No	Yes	No
Adjusts for potential displacement of Arizona immigrants to other states?	No	No	No	No	No	No	Yes

Notes: Each column represents a separate ordinary least squares regression. Robust standard errors are in parentheses, while empirical p-values measuring the proportion of placebo estimates lying to the left of the estimate are shown in square brackets. The sample includes all surveyed undocumented workers in Mexico planning to cross the border into the U.S. in the next 30 days. Time-varying controls include the unemployment rates of Hispanics working in construction, services (business, repair and personal services) and trade (wholesale and retail) in 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 SB1070 on the Number of Immigrants Headed to Arizona (Aggregated Data)

Dependent Variable: Log of number of undocumented immigrants going to Arizona

	1	2	3	4	5
Panel A					
After Arizona Law	-0.439*	-0.576***	-0.706**	-0.439	-0.339
(April 2010 - July 2010)	(0.240)	(0.128)	(0.273)	(0.253)	(0.215)
	[0.1176]		[0.0336]		
(After Temporary Injunction)	0.561	0.143	0.561	0.591	0.307
(August 2010 - December 2010)	(0.316)	(0.133)	(0.334)	(0.377)	(0.217)
Six Months Prior to Passage of Arizona Law	-	-	-	0.051	-
				(0.192)	
Panel B					
Months since Passage of Arizona Law (range = 0 to 4)	-0.166***	-0.183***	-0.250***	-0.171***	-
	(0.051)	(0.023)	(0.063)	(0.052)	
Months after Temporary Block by Federal Judge (range = 0 to 5)	0.240**	0.118***	0.257**	0.293**	-
	(0.099)	(0.027)	(0.106)	(0.115)	
Six Months Prior to Passage of Arizona Law	-	-	-	0.218	-
				(0.126)	
Estimated effect as of July 27, 2010	-0.497***	-0.550***	-0.750***	-0.513***	-
	(0.152)	(0.070)	(0.190)	(0.156)	
Estimated effect as of October 27, 2010	0.223	-0.196***	0.020	0.366	-
	(0.215)	(0.034)	(0.237)	(0.258)	
Observations	24	24	24	24	36
Month fixed effects	Yes	No	Yes	Yes	Yes
Includes time-varying controls	No	Yes	No	No	No
Includes linear time trend	No	No	Yes	No	No
Includes 2011	No	No	No	No	Yes

Notes: Each column represents a separate ordinary least squares regression. Robust standard errors are in parentheses. Time-varying controls include the unemployment rates of Hispanics working in construction, services (business, repair and personal services) and trade (wholesale and retail) in the states of Arizona, California, Florida and Texas.

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

Table 5: Difference-in-Differences Estimates of the Effect of SB1070 on the Number of Undocumented Immigrants Headed to 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	7	8
(After Arizona Law) * Destined for Arizona (April 2010 - July 2010)	-0.771***	-0.648***	-0.746*	-0.681***	-0.739***	-0.638***	-0.662*	-0.586***
	(0.228)	(0.149)	(0.335)	(0.207)	(0.230)	(0.143)	(0.324)	(0.204)
	[0.0336]		[0.0420]		[0.0336]		[0.0756]	
(After Temporary Injunction) * Destined for Arizona (August 2010 - December 2010)	0.196	0.228	0.164	0.106	0.075	0.198	0.012	-0.078
	(0.249)	(0.165)	(0.367)	(0.231)	(0.249)	(0.161)	(0.353)	(0.225)
Observations	48	48	48	48	48	48	48	48
Sample			All Immigrants		Immigrants with known destinations			
Includes destination state fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Includes year-by-month fixed effects	Yes	No	Yes	Yes	Yes	No	Yes	Yes
Includes state-by-month fixed effects	No	No	Yes	No	No	No	Yes	No
Includes time-varying controls	No	Yes	No	No	No	Yes	No	No
Adjusts for potential displacement of Arizona immigrants to other states?	No	No	No	Yes	No	No	No	Yes

Notes: Each column in each panel represents a separate ordinary least squares regression. Robust standard errors are in parentheses, while empirical p-values measuring the proportion of placebo estimates lying to the left of the estimate are shown in square brackets. Time-varying controls include the unemployment rates of Hispanics working in construction, services (business, repair and personal services) and trade (wholesale and retail) in the states of Arizona, California, Florida and Texas. In Columns 5 and 10 we use estimated reductions in the number of people going to Arizona during each of the post-passage months and substract them from those going to other states.

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

Table 6: Characteristics of Undocumented Mexican Migrants Headed to Arizona before and after SB 1070

Migrants to Arizona from Mexico		
	From December of 2009 to March of 2010	From April 2010 to July 2010
Variable	Mean (Std. Dev.)	Mean (Std. Dev.)
Age	31.0	29.9
	(11.0)	(9.0)
Years of schooling	7.9	8.1
	(3.3)	(3.3)
Women	0.12	0.11
Married	0.61	0.66
Traveling along	0.46	0.46
Migrating with family member	0.11	0.12
Migrating with a child	0.03	0.02
Speaks English	0.11	0.13
Previous migratory experience	0.06	0.13
Worked in the U.S.	0.06	0.13
Already have a job secured in US	0.10	0.09
Observations	462	285

The sample includes all undocumented Mexican migrants in the survey who state they will cross the border and enter the US within 30 days and intend to reside in Arizona. Respondents in 2009 were asked about migrating with children younger than 12, while respondents in 2010 were asked about children younger than 15.

Table 7: 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	6	7
After Arizona Law, Prior to Temporary Injunction (April 2010 - July 2010)	-0.014* (0.008)	-0.026** (0.012)	-0.054 (0.0340)	-0.007 (0.0130)	-0.015* (0.0090)	-0.014* (0.0080)
After Arizona Law and After Temporary Injunction (August 2010 - December 2010)	0.009 (0.009)	0.041*** (0.014)	0.013 (0.035)	0.013 (0.011)	0.009 (0.009)	-0.009 (0.008)
Six Months Prior to Passage of Arizona Law					-0.002 (0.009)	
Observations	4,005	4,005	4,005	4,005	4,005	5,339
Month fixed effects	No	Yes	No	No	No	No
Includes time-varying controls	No	No	Yes	No	No	No
Includes linear time trend	No	No	No	Yes	No	No

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 rates of Hispanics working in construction, services (business, repair and personal services) and trade (wholesale and retail) in the states of Arizona, California, Florida and Texas.

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

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

Migrants to the United States - EMIF 2009-2010		Recently arrived non-citizen Mexican migrants - ACS 2009-2010	
Variable	Mean (Std. Dev.)	Variable	Mean (Std. Dev.)
Age	29.5	Age	35.0
	(10.7)		(15.3)
Years of schooling	7.3	Years of schooling	9.3
	(3.2)		(4.4)
Women	0.10	Women	0.35
Married	0.58	Married	0.43
Speaks English	0.09	Speaks English	0.50
State of destination in the U.S.		State of residence in the U.S.	
California	0.26	California	0.24
Arizona	0.13	Arizona	0.06
Florida	0.06	Florida	0.02
Texas	0.05	Texas	0.23
New York	0.03	New York	0.02
Illinois	0.02	Illinois	0.04
Colorado	0.02	Colorado	0.04
Georgia	0.02	Georgia	0.02
North Carolina	0.02	North Carolina	0.03
Observations	16,122	Observations	1,285

The EMIF sample includes all individuals surveyed who were migrating from Mexico to the US with the intent of crossing the border and entering the US within 30 days. The ACS sample includes surveyed individuals who migrated to the US during the year of the survey.
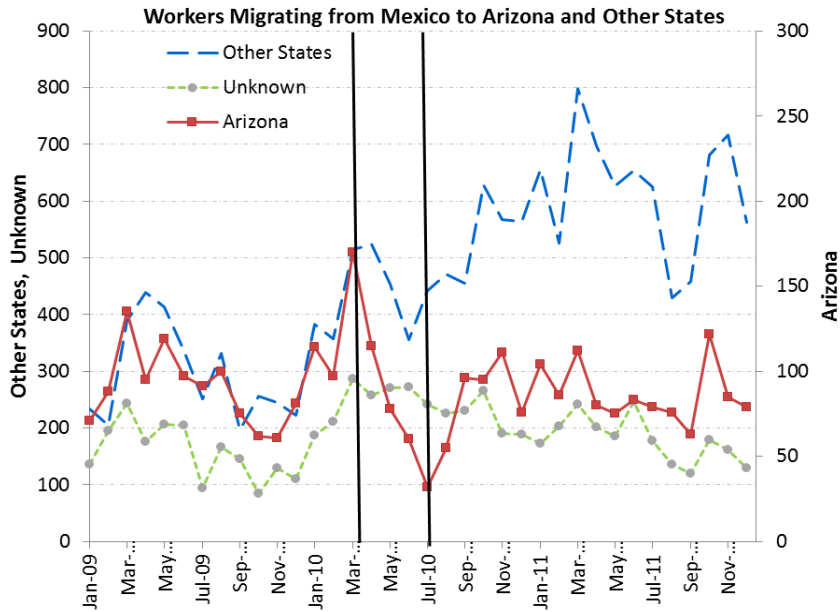
Figure A1a: Workers Migrating from Mexico to Arizona and Other States (EMIF), January 2009 – December 2011
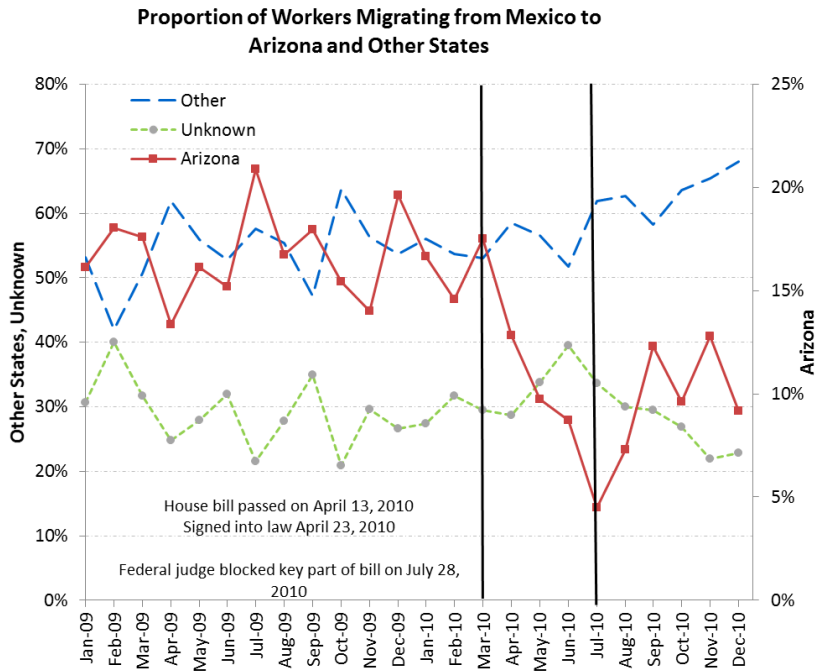
Figure A1b: Proportion of Workers Migrating from Mexico to Arizona (EMIF), January 2009 – December 2011
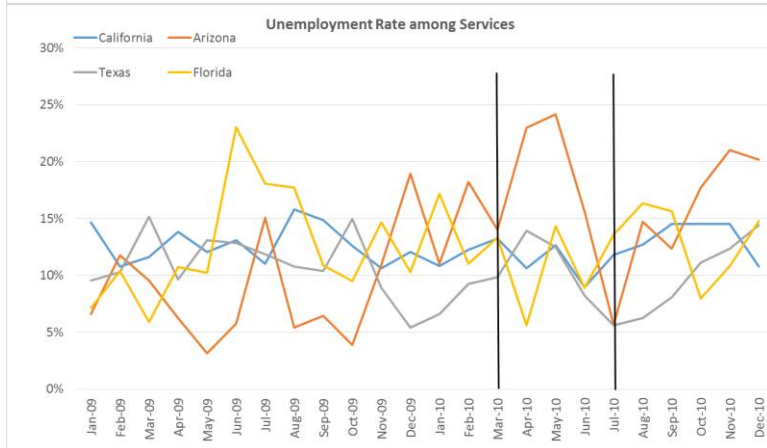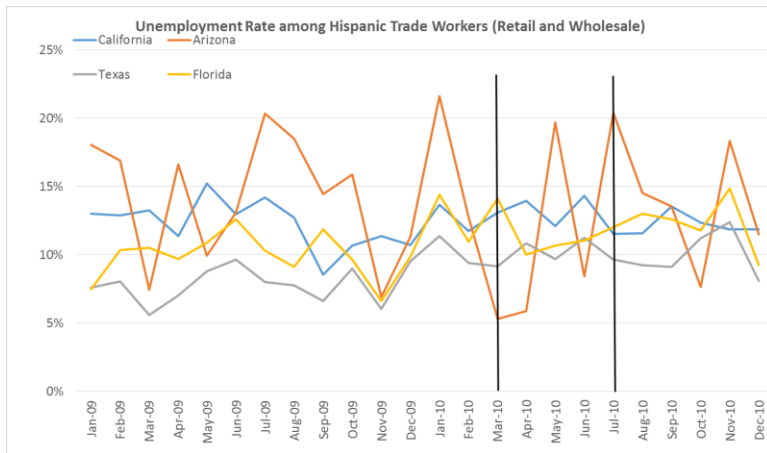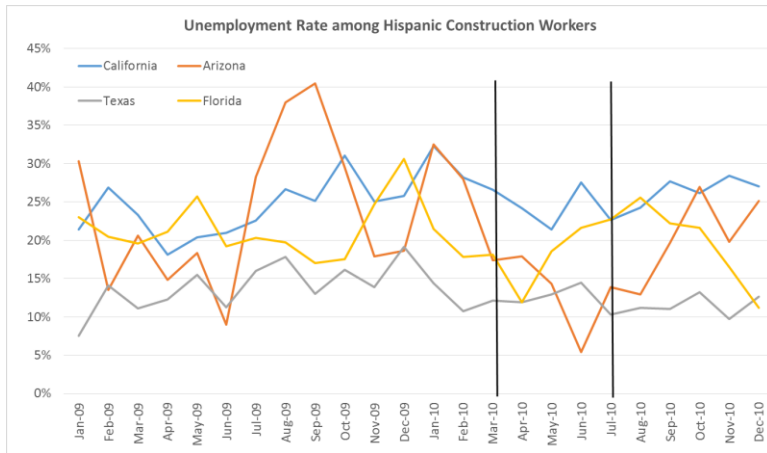
Figure A2: Unemployment rates of Hispanics working in construction, trade, and services in Arizona, California, Florida, and Texas

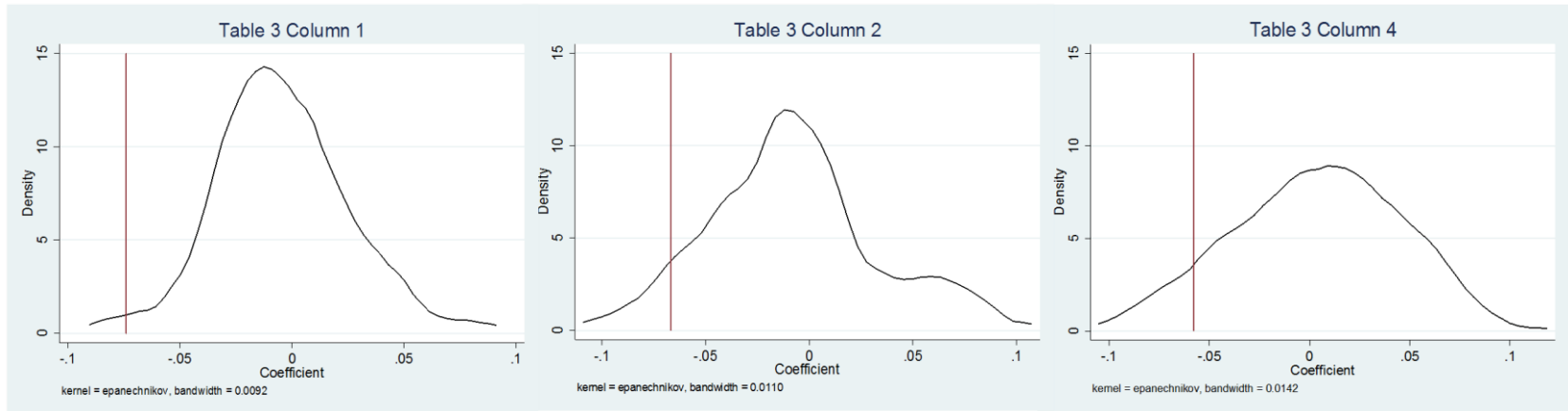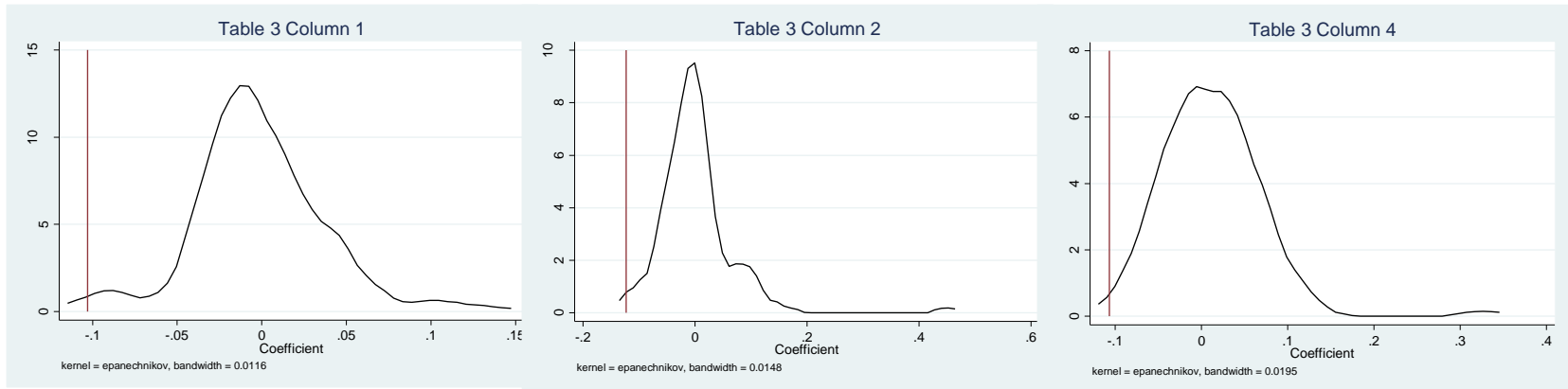Figure Figure A3a: The Distribution of Placebo Estimates of the Average Effect of SB 1070 Corresponding to Specifications from Panel A in Table 3

Notes: The fraction of placebo estimates lying to the left of the actual estimate shown in Panel A of Table 3 is 0.0168, 0.0672, and 0.0840 for columns 1, 2, and 4, respectively. The average placebo estimates are 0.0044, -0.0078, and -0.0036, respectively.

Figure Figure A3b: The Distribution of Placebo Estimates of the Effect as of July 27, 2010 Corresponding to Specifications from Panel B in Table 3

Notes: The fraction of placebo estimates lying to the left of the actual estimate shown in Panel B of Table 3 is 0.0084, 0.0000, and 0.0000 for columns 1, 2, and 4, respectively. The average placebo estimates are -0.0012, 0.0010, and 0.0112, respectively.
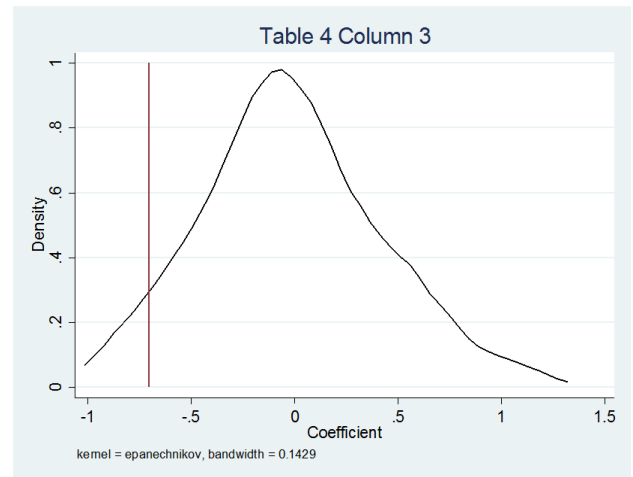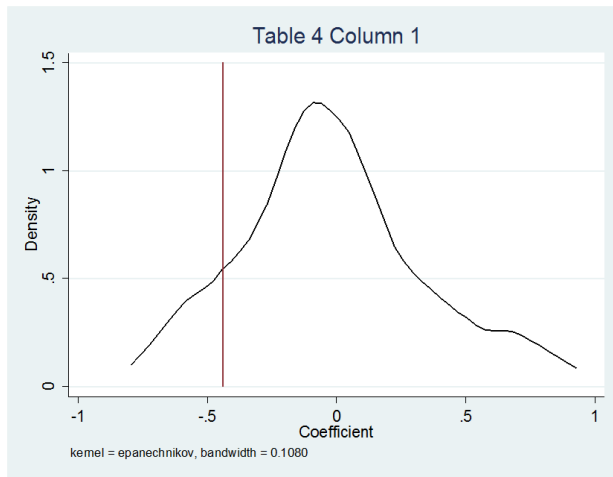
44

Figure A4: The Distribution of Placebo Estimates Corresponding to Specifications from Table 4

Notes: The fraction of placebo estimates lying to the left of the actual estimate shown in columns 1 and 3 of Table 4 is 0.1176 and 0.0336, respectively. The average placebo estimates are -0.0185 and -0.0076, respectively.
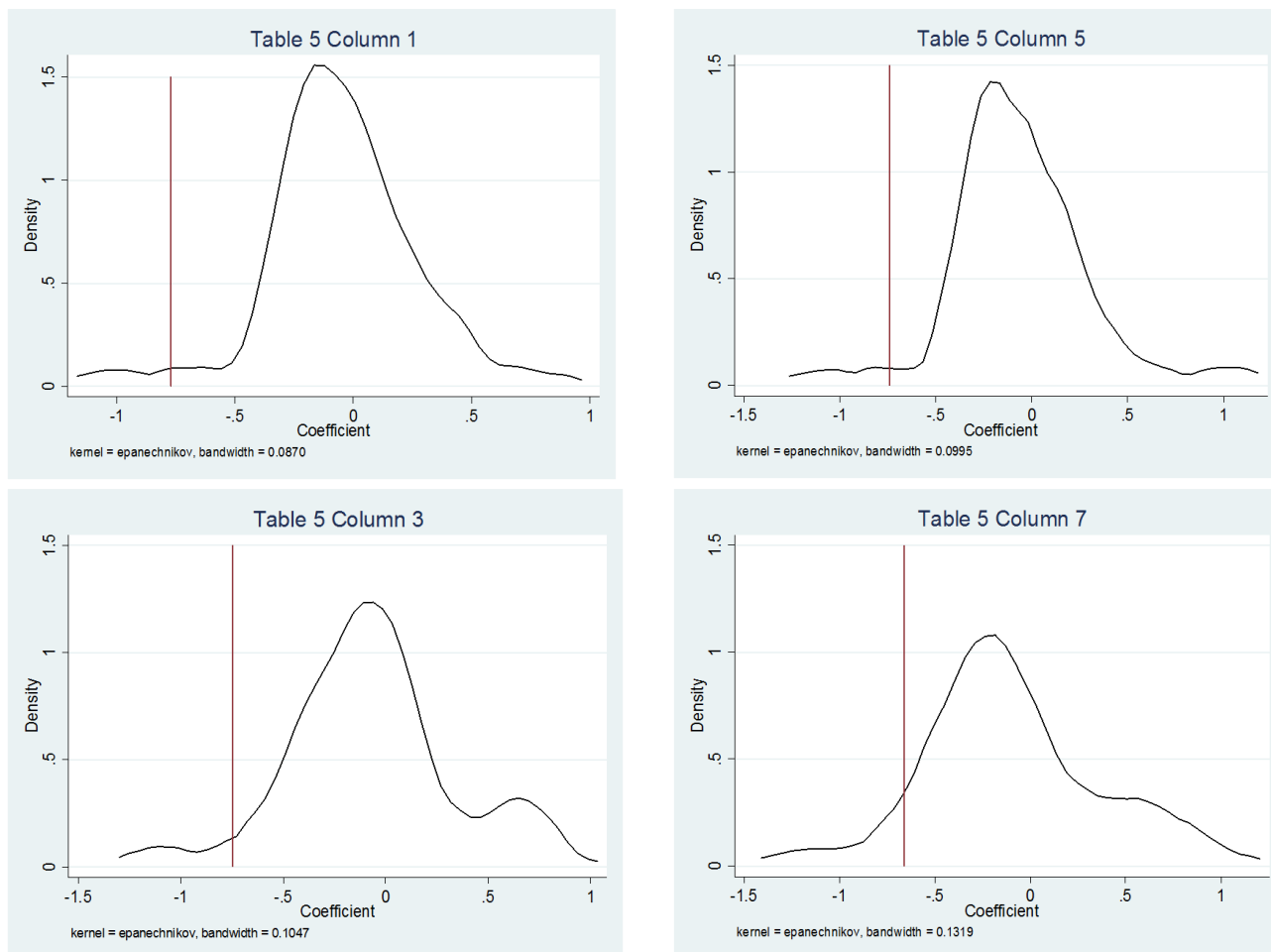
Figure A5: The Distribution of Placebo Estimates Corresponding to Specifications from Table 5

Notes: The fraction of placebo estimates lying to the left of the actual estimate shown in Table 5 is 0.0336, 0.0420, 0.0336, and 0.0756, for columns 1, 3, 5, and 7, respectively. The averages of the placebo estimates are -0.0492, -0.0732, -0.0651, and -0.0982, respectively.