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On the Effectiveness of SB1070 in Arizona

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- ▶ **On the Effectiveness of SB1070 in Arizona**
- ▶ Catalina Amuedo-Dorantes and Fernando Antonio Lozano

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On the Effectiveness of SB1070 in Arizona

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Abstract: We investigate the effectiveness of Arizona's omnibus immigration law SB1070, which made it a misdemeanor crime for an alien to not carry proper documentation and asked police to determine the immigration status of any person suspected of being an illegal alien during a lawful stop. We find that SB1070's enactment coincided with the stalling to slight recovery of the share of non-citizen Hispanics in Arizona three years after the enactment of an employment verification mandate to all employers. Yet, its effectiveness in reducing the share of likely unauthorized immigrants has been minimal and questions the merit of the law.

Keywords: Undocumented, Immigration, Arizona.

JEL Codes: J61, J1.

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1. Introduction

During the past years, as the national immigration debate stalled, states started to take immigration enforcement into their own hands. Recent proposals at the state and local government level included the passage of laws where local authorities may ask a person suspected of being in the United States illegally to show proof of documented legal status in the country. Among these proposals perhaps the most controversial one has been Arizona's Senate Bill 1070 (SB1070), which was passed into law in April, 2010 and enforced in July, 2010 (later it was changed to AZ House Bill 2162). The Act forbids state and local officials from avoiding or limiting the enforcement of federal immigration laws. It also persecutes the transporting, sheltering or hiring of illegal aliens. But what has attracted the most attention in the press and political debates, especially after being recently upheld by the Supreme Court, has been the so-called "show me your papers" clause. The clause calls for police to make an effort to determine the immigration status of any person suspected of being an illegal alien during a lawful stop. Lack of proper documentation in the form of any valid federal, state or local government-issued identification by an alien is considered a misdemeanor and can carry a fine of up to \$100, court costs, and up to 20 days in jail for a first offense.¹ Although the effectiveness of this bill may be limited with its most controversial parts blocked by the Courts,² there are reasons to believe that

¹ Please refer to:

<http://www.azleg.gov/FormatDocument.asp?inDoc=/legtext/49leg/2r/bills/hb2162c.htm> for the full text of the bill.

² On July 28, 2010, one day before the law was intended to take effect, Judge Bolton (a federal district court judge) struck down its most controversial provisions. In June 2012, the Supreme Court ruled that one key provision of the law –the one requiring an officer to make a reasonable attempt to determine the immigration status of a person stopped, detained or arrested if there's reasonable suspicion that person is in the country illegally, is constitutional; thus paving the way for it to go into effect. The decision is crucial given the recent adoption by other states of alike measures (Liptak 2012).

SB1070 may have had a significant chilling effect and successfully achieved its aim of reducing the incidence of unauthorized immigration in the state.

In this paper, we examine whether that has been the case. Recent work by Lofstrom *et al.* (2013) has shown how the employment verification mandate to all employers contained in the 2007 Legal Arizona Workers Act (LAWA) – henceforth: universal E-Verify,³ reduced the shares of non-citizen Hispanics – a group more likely to encompass ‘likely unauthorized immigrants’. Hence, a priori, one might expect SB1070 to be particularly effective in further reducing the share of likely unauthorized immigrants in the state. After all, omnibus immigration laws (OILs hereafter) are significantly tougher in, at least, two regards. *First*, unlike E-Verify mandates, OILs target *all* likely unauthorized immigrants, not just those formally applying for a job. Anybody can be stopped and asked for proper documentation. *Secondly*, unlike E-Verify mandates, OILs are directly linked to police enforcement and deportation, thus imposing a much greater risk to likely unauthorized immigrants than the risk of being found ineligible for employment through an employment verification system. Nevertheless, the effectiveness of SB1070 depends, to some degree, on that of its predecessor. If LAWA was particularly effective at reducing the share of likely unauthorized immigrants in the state, it is possible that SB1070 might not have added much. Thus, our questions are the following: Has SB1070 proven effective in further reducing the share of likely unauthorized immigrants in the state? And, if so, how? Has it complemented the E-Verify mandate in LAWA by targeting

³ E-Verify is an internet-based program run by the United States government and offered freely to employers to compare the information from employees’ I-9 form to data from U.S. government records. As of June 2012, a total of nine states have enacted E-Verify mandates with a broader scope –that is, impacting *all* employers as opposed to only state agencies and/or contractors : AL (H56 in 2011), AZ (HB2779 in 2007, HB2745 in 2008), GA (HB87 in 2011), LA (Revised Statute Section 23:995 in 2011), MS (SB2988 in 2008), NC (HB36 in 2011), SC (SB20 in 2011), TN (HB1378 in 2011) and UT (HB251 in 2010, HB116 in 2011).

specific subgroups within the likely unauthorized population less impacted by its predecessor?

To answer these questions, we assess the impact of SB1070, as well as how it may have differed from that of the E-Verify mandate in LAWA. We do so by, first, estimating the joint impact of LAWA and SB1070 in deterring potentially undocumented immigrants from settling in Arizona. We then compare the estimated joint impact of LAWA and SB1070 to the effect of LAWA up until the enactment of SB1070. For the analysis, we extract monthly data from the Current Population Surveys for the period running from January 1998 through December 2013 –a period long enough to gauge the effectiveness of both LAWA and SB1070. Using those data, we implement the quasi-experimental approach proposed by Abadie *et al.* (2010) to learn about the effectiveness of SB1070 in reducing the shares of ‘likely unauthorized immigrants’ in Arizona relative to states in a synthetic control group.

We believe the analysis is of interest for various reasons. *First*, by gauging the impact of SB1070 and how it might have differed from that of the E-Verify mandate in LAWA, the study sheds some light on the long-run effectiveness of prior immigration enforcement measures. Had some of the effect of LAWA died out by the time SB1070 was enacted? That could have been the case if, over time, the likely unauthorized population responded to the E-Verify mandate by moving from the formal to the informal sector or by becoming self-employed. Alternatively, did LAWA’s impact remain intact?

Second, the analysis informs about the effectiveness of OILs, such as SB1070, in deterring unauthorized immigrants from settling in the state. Given its deleterious impact on personal freedom, the emerging accusations of racial profiling by the police and the record level of spending on interior immigration enforcement, the merit of SB1070 depends entirely on its ability to deter unauthorized immigration. Hence, determining whether the law exhibits any of

its hoped benefits, it is an important policy question in itself. Has SB1070 achieved its goal? And, if so, what can we learn about its impact dynamics and scope? Has SB1070 proven effective in reducing the shares of unauthorized immigrants less responsive to the E-Verify mandate in LAWA?

Finally, all the aforementioned questions are also of relevance in the design of future immigration policy given the numerous states following in the footsteps of Arizona as comprehensive immigration reform stalled.⁴ If comprehensive immigration reform fails, it is likely that states will continue to enact their own immigration enforcement legislation. In that case, understanding the effectiveness of these measures will become particularly important. And even if comprehensive immigration reform succeeds, there might be important lessons to be learned from state-level experiments with these tougher immigration enforcement measures before they are extended nationwide.

2. Brief Literature Review

A vast literature has explored the impact of immigration measures adopted at the *federal level* –often times following the passage of more comprehensive measures, as was the case with the 1986 Immigration Reform and Control Act (IRCA)– on the *flow of undocumented immigrants*. Most of that literature examines changes in apprehension data before and after the implementation of the aforementioned measures.⁵ Others use individual level

⁴ Specifically, five states have enacted SB1070-like bills in 2011: AL HB56 in June 2011, GA HB87 in May 2011, IN SB590 in May 2011, SC S20 in June 2011 and UT's package (H116, H466, H469 and H497) in March 2011. The trend has continued in 2012, with five additional states introducing omnibus enforcement bills: Kansas (H2576), Mississippi (H488 and S2090), Missouri (S590), Rhode Island (H7313) and West Virginia (S64). The bills in Mississippi and West Virginia have, however, failed. For more information, visit: <http://www.ncsl.org/issues-research/immig/omnibus-immigration-legislation.aspx>

⁵ Examples of these analyses are the works by Bean, Edmonston, and Passel (1990a), Bean *et al.* (1990b), Espenshade (1990), White *et al.* (1990), Singer and Massey (1988), Espenshade (1994),

data from small samples collected in specific Mexican localities at a particular point in time,⁶ or rely on individual level data collected from a large number of Mexican communities over an extended period of time.⁷ The overall consensus emanating from this literature is that enforcement policies, traditionally centered along the border, do not seem to have much of an impact on illegal immigration.

Other studies explore, instead, the *labor market implications* of more stringent immigration enforcement measures at the federal level. For instance, Bansak and Raphael (2001) explore the impact that graduated sanctions to employers knowingly hiring undocumented immigrants included in the 1986 IRCA had on the employment and earnings of Latinos. They document a decline in the earnings of Latinos after the passage of IRCA –a decline potentially due to growing discrimination against all Hispanics.

More recently, as states have started to take action on these issues within their jurisdiction, researchers have started to also look at the impact that *state-level* legislation has on the residential choices and labor market outcomes of unauthorized immigrants.⁸ For instance, Good (2012) explores the impact of

Cornelius (1998), Hanson and Spilimbergo (1999), Dávila *et al.* (2002), and Orrenius and Zavodny (2003).

⁶ See, for example, Cornelius (1989, 1990), Gonzalez and Escobar (1990), Massey *et al.* (1990), Chavez *et al.* (1990), Bustamante (1990) and Kossoudji (1992).

⁷ See, for instance, Donato *et al.* (1992), Orrenius (2001), and Angelucci (2005) for examples of studies using data from the Mexican Migration Project (MMP) to examine the impact of the 1986 Immigration Reform and Control Act (IRCA) on border crossing behavior and net illegal flows. Ritcher *et al.* (2007) use data from the *Encuesta Nacional a Hogares Rurales de Mexico* (ENHRUM) also to examine the impact of IRCA, as well as NAFTA and overall increased border enforcement on migration. Amuedo-Dorantes and Bansak (2012) use data from the *Encuesta sobre Migración en la Frontera Norte de México* (EMIF) to investigate if increased border enforcement has reduced repetitive illegal crossings.

⁸ In addition, some studies have started to look at the impact of local-level agreements between local police and immigration authorities. For instance, Parrado (2012) studies the effect of the 287(g) program on the geographic dispersion of the Mexican immigrants and finds no direct impact of the program on the number of undocumented Mexican migrants in the locality. More recently, Watson (2013) examines how 287(g) agreements might have impacted the location of

omnibus immigration laws by exploiting the geographic and time variation in the enactment of those measures countrywide. His focus is on whether immigrant outflows in states with omnibus immigration laws have been accompanied by native inflows. He finds evidence of the former, but no statistically significance evidence of the latter. While interesting, the methodology employed fails to account for pre-existing differences in immigrant outflows across the states being compared, which can invalidate the control group and, in turn, the estimated impact of the policy.

Zeroing-in on the differential impact of state-level legislation by gender, Amuedo-Dorantes and Bansak (2012) look at how employment verification (E-Verify) mandates have impacted the employment and wages of likely unauthorized men and women, also nationwide. The authors find that the mandates have significantly curtailed the employment of both groups, but had mixed effects on their wages. Specifically, likely unauthorized women experienced an increase in wages, whereas likely unauthorized men did not. The authors discuss alternative explanations for the observed gender differences, including: (a) the possibility that women, if in charge of dependent children, are more risk averse than men –fleeing to ‘non-E-Verify’ states and reducing their labor supply immediately following the enactment of these measures; and (b) the fact that likely unauthorized men and women might work in sectors impacted differently by E-Verify mandates. For instance, relative to men, likely unauthorized female workers are more often employed by private households to clean or to provide child-care services, as well as by small retail trade and food-related businesses often exempt from such regulations. In contrast, likely unauthorized male workers heavily concentrate in the construction industry.

immigrants. She finds no significant impact of these laws on the outflows of non-citizen Hispanics, except in Maricopa County.

Therefore, relative to those of female workers, their employment and wages are more likely to be shaped by significant reductions in the demand for their services by construction companies and contractors following the passage of E-Verify mandates.

Of particular interest to us is the study by Lofstrom *et al.* (2013), who also explore the impact of E-Verify mandates, but focusing on Arizona. The authors examine how the universal E-Verify mandate contained in the 2007 Legal Arizona Workers Act (LAWA) altered the internal demographic composition of the resident population of the state. They note that, despite the controversial efficacy of the employment verification mandates,⁹ the universal E-Verify mandate in LAWA reduced the share of non-citizen Hispanics residing in the state of Arizona. Like Lofstrom *et al.* (2013), we look at Arizona. However, instead of focusing on the impact of its universal E-Verify mandate, our interest lies on the more recent and significantly tougher omnibus immigration law SB1070. Specifically, we seek to better understand its effectiveness in further reducing the share of likely unauthorized immigrants.

The origins of SB1070 go back to 1996, when the legislature passed a law requiring proof of legal status in order to get a driver's license –a law proposed by Russell Pearce –director of the state Motor Vehicle Division at the time. Years later, on January 2010, Pearce introduced Senate Bill 1070. The bill passed the Senate 17-13 in February 2010. An amended version passed the House and the Senate in April 2010 and was signed into law on April 23, 2010 by Arizona's Governor Jan Brewer. Supporters of the new law sought border security, while opponents feared racial profiling. The U.S. Department of Justice filed a lawsuit,

⁹ Rosenblum (2011) discusses the strengths and weaknesses of the E-Verify system and discusses how E-Verify is highly vulnerable to identify fraud and employer noncompliance as documented by Westat Corporation (2009) and numerous audits by the Social Security Administration (SSA) Office of the Inspector General.

and the U.S. Supreme Court heard arguments to uphold or overrule an injunction on certain aspects of the law. A ruling was released June 25, 2012. The U.S. Supreme Court upheld the provision enabling the police to perform immigration status checks during a lawful stop, but stroke down three other provisions considered in violation of the federal government's primacy in immigration policy. Additionally, the Supreme Justices warned that the courts would be watching carefully the implementation of the law.

Due to its aim –namely to identify and detain unauthorized immigrants, SB1070 is expected to reduce unauthorized immigration. Unlike E-Verify, SB1070 targets all individuals, not just those seeking employment in the formal sector. Anybody can be stopped by the police and request proper identification, regardless of their labor force status. Yet, the effectiveness of SB1070 partially depends on the impact of its predecessor. If the E-Verify mandate in LAW A already significantly reduced the population of likely unauthorized immigrants in the state, SB1070 might not have done much more. In contrast, if the E-Verify mandate in LAW A primarily reached specific groups of likely unauthorized immigrants, such as men more likely to be seeking employment in the formal sector, or if its impact weakened over time as likely unauthorized workers accommodated to the policy by moving from the formal to the informal sector or by becoming self-employed, SB1070 might have had an added effect. In what follows, we examine which of these two hypothesized outcomes is supported by the data.

3. Methodology

To learn about the impact of SB1070 on the population of likely unauthorized immigrants in Arizona, one cannot simply look at changes in that population following the enactment of SB1070 owing to the confounding impact of factors like the recovery from the Great Recession, which greatly impacted

sectors employing a large share of immigrants, such as construction. Instead, we need to find a control group of states that we can use as a counterfactual to then compare changes in the population of likely unauthorized immigrants in Arizona pre-post SB1070 to changes in that same population in the control group.

There are several strategies one can follow to choose a group of control states. We follow the data-driven methodology proposed by Abadie *et al.* (2010) –henceforth: synthetic control method, which relies on finding affinities between the treatment and control units using observed characteristics. The advantages of following this methodology are twofold. *First*, we take advantage of 15 years of data to generate a convex combination of states that serves as a better comparison (or control group) to Arizona than any individual state. The weights assigned to each state in the control group reveal the contribution of each state to the counterfactual of interest. They are based on similarities between the treatment and control units in pre-intervention outcomes and other factors expected to influence the post-intervention outcomes. *Second*, we assess the statistical significance of our estimates by comparing the population estimates for Arizona to estimates for all other states in the sample derived from placebo tests, as in Abadie *et al.* (2010).

The first step in the implementation of Abadie *et al.*'s (2010) methodology is to identify the pool of states potentially used as control units –namely the ‘donor pool’. One option is to choose states that: (a) looked like Arizona in the sense that they already had a universal E-Verify mandate, but (b) had no omnibus immigration law in place. Because half of the states with universal E-Verify mandates had also enacted omnibus immigration laws, we end up with a rather small and not necessarily Arizona-like group of states.¹⁰ Thus, while this is still a

¹⁰ Along with AZ, four states with universal E-Verify mandates have adopted SB1070-like measures: AL HB56 in June 2011, GA HB87 in May 2011, SC S20 in June 2011, and UT's

strategy that we pursue later on as a robustness check, we first consider other options.

In particular, another possibility is to evaluate the joint impact of LAWA and SB1070, to then compare that impact to the impact of LAWA alone prior to SB1070. Doing so involves using LAWA and SB1070 as the treatment and constructing a synthetic control group with pre-treatment data from a pool of states with *none* of the two policies in place. We thus omit from the donor pool states that have passed a universal E-Verify mandate and/or omnibus immigration law during the period under consideration, *i.e.* Alabama, Georgia, Indiana, Kansas, Louisiana, Mississippi, Missouri, North Carolina, Rhode Island, South Carolina, Tennessee and Utah.

Subsequently, we identify a combination of states in the donor pool that mirrors Arizona in terms of the shares of likely unauthorized immigrants and their predictors *before* the passage of the two immigration measures in question. We start by collapsing the data into state-year-month cells. In that manner, we are able to compare shares of Hispanic non-citizens in Arizona and in states in the donor pool *within* each time period, thus addressing any seasonality concerns. In identifying a combination of states in the donor pool that closely resembles Arizona prior to the enactment of LAWA and SB1070, we take into consideration the share of likely unauthorized immigrants in the state (the outcome of interest) prior to the enactment of both laws, as well as the values of a range of predictors. Among the latter, we include macroeconomic, political and demographic characteristics that, if they were significantly different in Arizona, could be thought of driving our results. Of particular interest in this case given the timing of LAWA and SB1070 is the Great Recession, which severely impacted the

package (H116, H466, H469 and H497) in March 2011. As a result, only LA, MS, NC and TN had universal E-Verify mandates, but lacked omnibus immigration laws. We, nevertheless, use these states in our robustness checks to help us sort further the impact of SB1070.

construction sector in Arizona –a sector prone to hiring a large share of immigrants. To address that concern, we include among our predictors the overall employment to population ratio in each state, the share of public employees, the share of self-employed, and the states’ employment distribution across the five industries hiring most immigrants in the state of Arizona, *i.e.* agriculture, construction, administrative support, retail trade and food services.¹¹ This set of controls is intended to account for any differential employment impact that the business cycle might have had in Arizona due to the prevalence of industries like construction.¹² Additionally, we include the share voting Republican in the last federal election and per capita state spending as controls of the political environment,¹³ as well as some descriptors of the state’s population composition.¹⁴

Once we identify the combination of states in the donor pool that closely resembles Arizona prior to the enactment of the two immigration policies in terms of the share of likely unauthorized immigrants and the predictors specified above, we compute the *pre-* and *post-*intervention values of the series of likely unauthorized immigrants for that combination of states –henceforth: synthetic control group, and for Arizona. We use those values to calculate a simple difference-in-difference estimate of the joint impact that LAWA and SB1070

¹¹ These controls were created by the authors using data from the monthly Current Population Survey for the time period in question.

¹² Lofstrom *et al.* (2013) show how that, while Arizona’s labor market was seriously impacted by the recession, so were the labor markets of other states, including those of their neighbors.

¹³ These can be downloaded from: http://clerk.house.gov/member_info/electionInfo/index.aspx and from: <http://www.usgovernmentspending.com>, respectively. Because elections are every two years, we assign the results in year t to every month in year t and $t+1$. Additionally, due to the lack of election data, Washington DC is excluded from the sample.

¹⁴ These include the share of women, the share of immigrants not born in Mexico or Central America, and the average age of the population. These controls were created by the authors using data from the monthly Current Population Survey for the time period in question.

have had on the population of likely unauthorized immigrants in the state as follows:

$$\Delta_{LAWA\&SB1070} = (Y_{Post}^{AZ} - Y_{Post}^{Control}) - (Y_{Pre}^{AZ} - Y_{Pre}^{Control}) \quad (1)$$

where Y_j^i , is the outcome for group i in time period j (Pre = period before the implementation of LAWA, *i.e.* January 1998 through December 2006; $Post$ = period after the implementation of SB1070, *i.e.* August 2010 through December 2013). Since both LAWA and SB1070 are immigration enforcement measures aimed at reducing unauthorized immigration by restricting their employment opportunities and by grating the police the ability to stop anybody at any time and request proper identification, we would expect: $\Delta_{LAWA\&SB1070} < 0$.

Yet, as noted earlier, the effectiveness of SB1070 depends on the impact of its predecessor. If LAWA already significantly reduced the population of likely unauthorized immigrants in the state, SB1070 might not have been able to do much more. In contrast, if LAWA only reached specific groups of likely unauthorized immigrants, such as those seeking employment in the formal sector, or if its impact died over time, SB1070 might have proven effective. To discern between those two hypotheses, we compare $\Delta_{LAWA\&SB1070}$ and Δ_{LAWA} -the difference-in-difference estimate of the impact of LAWA prior to the enactment of SB1070. Under certain scenarios, such a comparison sheds some light on the effectiveness of SB1070. Perhaps the most informative scenario is if: $|\Delta_{LAWA\&SB1070}| < |\Delta_{LAWA}|$, in which case we can conclude that: (a) the impact of LAWA diminished over time, and (b) that the effect of SB1070 has not been large enough to counteract the loss of impact of its predecessor.

However, if, for example: $\Delta_{LAWA\&SB1070} = \Delta_{LAWA}$, as we find in the analysis that follows, it could be the case that: (a) LAWA's impact diminished over time and SB1070 made up for its weakening effectiveness, or (b) LAWA's

impact remained intact and SB1070 has been rather ineffective. Either way, it would reveal that one of the two immigration enforcement measures has proven ineffective –either in the long-run (as would be the case for LAWA) or from the very beginning (as would be the case with SB1070). To the extent that the share of likely unauthorized immigrants would not have significantly changed since the end of 2009 despite the various measures in place, that finding would underscore the need to rethink this piece-meal approach to immigration enforcement.

4. Data

The intent of SB1070 was to reduce the population of undocumented immigrants. Unfortunately, information on the legal status of immigrants is not available in most representative surveys. Nonetheless, one can look at population groups that have traits predictive of immigrants' undocumented status, such as lack of citizenship and Hispanic ethnicity (Passel and Cohn 2009a, 2009b). Therefore, as Lofstrom *et al.* (2013) and others in the literature, we rely on information on the citizenship status and ethnicity of immigrants being surveyed in the Current Population Survey (CPS) to identify a group of 'likely unauthorized immigrants', such as Hispanic non-citizens. Since Mexican origin is, yet, another predictive factor of undocumented status (Passel and Cohn 2009a, 2009b, 2011), along with not having a college degree and being younger due to the broader amnesty offered by the 1986 Immigration Reform and Control Act (IRCA), we also look at Mexican non-citizens 16 to 45 years of age who did not attend college as a robustness check.

The CPS has the advantage of offering higher frequency data needed for the analysis of the measure at hand. We use the CPS monthly surveys from January 1998 through December 2013. The pre-intervention period spans from January 1998 through December 2006. Our post-intervention period starts in

August 2010 and spans to December 2013.¹⁵ Despite being shorter in duration, we expect the post-intervention period to be sufficiently long to examine the impact of SB1070 owing to the just-in-time nature of immigration flows and the high mobility of unauthorized immigrants.¹⁶ Finally, we combine the data within each state-year-month and, to compare our outcomes to those reported for LAWA by Lofstrom *et al.* (2013), we analyze the ratio of immigrants in the population.

Our sample consists of 16-65 years old individuals in the CPS –an age range that encompasses the prime age of migration (Waldinger and Reichl 2006). As noted above, we pay close attention to two different groups of immigrants more likely representative of unauthorized immigrants: (a) a broader group comprised by non-citizen Hispanics, and (b) a narrower group composed by non-citizen Mexicans between the ages of 16-45 with no college education. Finally, given the potential distinct impact that immigration enforcement policies may have on men and women, especially E-Verify mandates owing to their different propensities to work in the uncovered informal sector, we also carry the analysis by gender.

Table 1 provides an overview of population changes in Arizona before and after the passage of the most recent immigration laws. At first sight, the populations of Hispanic non-citizens, both men and women, appear to have significantly declined from *before* to *after* the passage of LAWA (and still before the enactment of SB1070) by approximately 140,333 in the case of men and by 101,199 among women. These declines correspond to a drop of about 5 and 4

¹⁵ These data are collected each month during the week that includes the 19th day of the month. Labor market questions refer to the week that includes the 12th day of the month. Note that the bill was passed by the State House on April 13, 2010 and signed by Arizona Governor on April 23, 2010. The bill, however, did not go into effect until July 29, 2010. Hence, the bill was signed and implemented after the monthly CPS surveys corresponding to the months of April and July had been collected.

¹⁶ Notice also that this post-treatment period is as long as the one used by Lofstrom *et al* (2013).

percentage points in the share of non-citizen Hispanic men and women in the state, respectively. While the number of non-citizen Hispanic men continued to drop until after the passage of SB1070 by nearly 20,000 men, its share of the Arizona's population stabilized at about 10 percent. In the case of women, the population of Hispanic non-citizens stopped decreasing and actually recovered between the first quarter of 2010 (post-LAWA and pre-SB1070) and the first quarter of 2012 (post-SB1070). Table 1 displays similar trends taking place among Mexican non-citizens 16 to 45 years of age –possibly the most likely to be unauthorized among non-citizen Hispanics (Passel and Cohn 2009a, 2009b).

Overall, the figures in Table 1 suggest a significant impact of LAWA, but not of SB1070, on the population of non-citizen Hispanic men and women. Yet, while interesting, the population trends displayed in Table 1 cannot shed much light on the impact that Arizona's 2007 and 2010 immigration measures may have had on the demographic composition of the state. After all, they might be capturing other confounding impacts, such as the one of the Great Recession or the slow employment recovery that followed thereafter. The analysis in the next section addresses that shortcoming.

5. Findings

A) The Joint Impact of LAWA and SB1070

As discussed earlier in the methodology section, the synthetic control group is a combination of the states in the donor pool that most closely resembles Arizona in terms of the shares of non-citizen Hispanic and Mexican men and women, as well as their predictors, prior to the enactment of LAWA in 2007. Table 2 displays the weight of each state in the synthetic control group for each of the population outcomes being examined. Small gender differences aside, the weights reveal that the Hispanic non-citizen population trends observed in Arizona prior to LAWA and SB1070 are best reproduced by the following

combination of states: California (0.376), Texas (0.359), Nevada (0.088), Florida (0.059), New Mexico (0.097) and, to a much lesser extent, Kentucky (0.020). This combination changes to California (0.661), Nevada (0.191), New Mexico (0.11) and Texas (0.038) when we look at the share of Mexican non-citizens 16 to 45 years of age with no college education.

To double check whether the aforementioned combinations of states are sensible controls, Table 3 shows the average values of the population series being examined, along with those of their predictors, for Arizona, its synthetic control group and the entire donor pool *before* the enactment of LAWA and SB1070. The mean values of all the series prior to the passage of both immigration measures are rather similar in Arizona and its synthetic control group –differences are not statistically different from zero. As a result, average pre-intervention differences in the shares of Hispanic and Mexican non-citizens between Arizona and its synthetic control groups are close to zero, as shown in the first column of Table 4.

Thus, using Arizona and the synthetic control groups described in Table 2, we proceed to compute the difference-in-difference estimates for the shares of Hispanic non-citizens and Mexican non-citizens as described in equation (1). The first two columns of Table 4 show the differences in those series between Arizona and its synthetic control *before* and *after* the enactment of LAWA and SB1070, whereas the third column lists the estimated difference-in-difference estimates. To evaluate the statistical significance of our findings, the fourth column presents the ranking of Arizona’s difference-in-difference estimates in the distribution of all difference-in-difference estimates derived from running the placebo tests on states in the donor pool.¹⁷ It can be seen how the estimated joint impact of

¹⁷ As highlighted by Abadie *et al.* (2010), large sample inference is not suited to comparative case studies with aggregate data. Therefore, following both Abadie *et al.* (2010) and Lofstrom *et al.*

LAWA and SB1070 on the share of Hispanic non-citizens 16 to 65 years of age is the largest for Arizona out of the 39 states. The difference-in-difference estimate suggests a 2 percentage point decline in the proportion of Arizona residents in that category. The effect appears to be driven by an average drop in the population of likely unauthorized men (of 1.2 percentage points) and women (of 0.9 percentage points). The joint impact of LAWA and SB1070 on younger non-citizen Mexicans (a 1 percentage point reduction) is also the largest in Arizona and greater among men (0.6 percentage points) than women (0.3 percentage points).¹⁸

How do these effects compare to those of just LAWA up until the end of 2009? According to Lofstrom *et al.* (2013), LAWA lowered the share of non-citizen Hispanic men and women ages 16 to 65 residing in Arizona by approximately 2 percentage points. Hence, the estimated joint impact of LAWA and SB1070 does not appear to be different from that of LAWA alone. Similar conclusions can be reached when comparing the estimates for the other population subgroups being examined.

In sum, just as we concluded earlier, the estimated joint impact of LAWA and SB1070 does not appear to significantly differ from that of LAWA alone. This finding implies that either: (a) SB1070 has had no significant impact while LAWA's effectiveness has persisted, or (b) LAWA's effectiveness declined over

(2011), we run 38 placebo tests (one per state in the donor pool). Each time, we reproduce the impact that LAWA and SB1070 would have had in each one of the states included in the donor pool, shifting Arizona to the donor pool itself. The p-values are based on the ranking of the AZ estimates relative to the placebo estimates for the other states.

¹⁸ The estimated joint impact of LAWA and SB1070 is similar and still the largest for Arizona when we exclude bordering states to which likely unauthorized migrants might have moved to, as shown in Panel A of Table A in the appendix. This is not surprising, as the vast majority (*i.e.* 80 percent according to authors' tabulations using data from the American Community Survey) of Hispanic non-citizens leaving Arizona during the period in question did not move to other states. Rather, they were removed from the United States (2013 ICE FOIA Request #33554). Furthermore, a falsification test examining the joint impact of LAWA and SB1070 on groups not specifically targeted by the two legislative pieces reveals how the latter is close to zero and among the smallest in Arizona. In other words, the estimated impact of LAWA and SB1070 is unique to the likely unauthorized, appeasing concerns about the role of the recession in our findings.

time, but SB1070 has helped offset the diminishing impact of LAWA. In what follows, we attempt to further distinguish between these two possibilities.

B) Isolating the Impact of SB1070

In order to be able to say something more conclusive about the effectiveness of SB1070, we repeat the analysis using as a control group the states that, like Arizona, had enacted a universal employment verification mandate; however, unlike Arizona, they had no omnibus immigration law. As noted earlier, these states are: Louisiana, Mississippi, North Carolina and Tennessee. The results from such an exercise are displayed in Table 5. The first two columns of Table 5 show the differences between Arizona and its synthetic control group before and after the enactment of SB1070, whereas the third column lists the estimated difference-in-difference estimates. It is worth noting that, unlike our synthetic control group in Table 4, this one already appears ‘less alike Arizona’ prior to the enactment of SB1070, as can be seen from the first column of Table 5. The differences between Arizona and this new control group of states somewhat increase following the enactment of SB1070 and, overall, reductions in the shares of Hispanic and Mexican non-citizens end up being the largest for Arizona, as can be seen in the last column of Table 5. Nevertheless, the difference-in-difference estimates of the impact of SB1070 in the third column of Table 5 are close to zero.

In sum, the figures in Table 5 suggest that SB1070 has had a minimal to null effectiveness, explaining why the impact of LAWA did not significantly differ from the joint impact of the two policies.

C) The Underlying Impact Dynamics of LAWA and SB1070

We have thus far answered the first question we posed ourselves –namely: what has been the overall effectiveness of SB1070 in further reducing the share of likely unauthorized immigrants in Arizona? As summarized above, the impact of

SB1070 appears to have been minimal to null. Yet, by measuring the *average* impacts of the policies, the figures in Tables 4 through 5 do not shed light about the *dynamics* characterizing such impacts –namely, what the impacts were at various points in time and how they changed throughout the years being examined.

Figures 1 through 6 address that gap by displaying with a thick line the evolution of the difference in the Hispanic and Mexican non-citizen population shares between Arizona and its synthetic control group (from Tables 4 and 5) at various points in time. The gray lines represent placebo tests capturing the difference in those population shares between each state in the donor pool and its respective synthetic version. In each case, we apply the synthetic control method used to test the effect of LAW A and SB1070 in Arizona to every one of the remaining states included in the donor pool. Each time, we reproduce the impact that LAW A and SB1070 would have had in each one of the states included in the donor pool, shifting Arizona to the donor pool itself. This iterative process gives us a distribution of the estimated effects for each of the states in the donor pool where no intervention or treatment took place. The graphs also indicate with vertical lines the enactment dates of LAW A and SB1070.

A few findings are worth discussing. First, Figure 1 confirms the 2 percentage point decline in the share of Hispanic non-citizens two years after the passage of LAW A documented by Lofstrom *et al.* (2013). The graph also reveals how the share of Hispanic non-citizens seems to stall thereafter and, to some degree, slightly recover just before the enactment of SB1070 in 2010. In that regard, one might be tempted to interpret the enactment of SB1070 as an effort to further reduce the population of likely unauthorized immigrants using policies that target a population not necessarily engaged in the formal labor market. Yet, as suggested by the figures in Table 5, SB1070 does not appear to have helped much. To some extent, the share of Hispanic non-citizens slightly dropped right

after the enactment of SB1070 but, overall, hovered around the same level it had already reached in 2009. This explains why the estimated joint impact of LAWA and SB1070 is not that different from the impact of LAWA alone and supports the conclusion that SB1070 did not add much. Figure 2 displays the evolution of the difference-in-difference estimates for the share of Mexican non-citizens. There is much more noise in this graph as the sample size gets smaller. Nevertheless, it reveals how the trend exhibited in Figure 1 is largely driven by the experience of Mexican non-citizens.

Second, a closer look at the trajectory of the impacts of these policies on non-citizen Hispanic men and women may reveal some interesting gender differences in their impact dynamics. In particular, according to Figure 3, the share of Hispanic non-citizen men experienced a significant decline following the enactment of LAWA up until the time when SB1070 was enacted. However, SB1070 does not appear to have had much bite on that population. In fact, the share of Hispanic non-citizen men seems to have progressively recovered after reaching its minimum in 2009. Something similar is observed for the share of non-citizen Mexican men in Figure 4. In contrast, the shares of non-citizen Hispanic and Mexican women in Figures 5 and 6 dropped less than those of non-citizen Hispanic and Mexican men following the enactment of LAWA. However, they were slightly more responsive to SB1070 during the two years following its enactment.

As discussed by Amuedo-Dorantes and Bansak (2012), these gender differences in the impact of LAWA and SB1070 could be related to their traditional employment sectors –not all of them equally impacted by the E-Verify mandate. In particular, relative to men, likely unauthorized female workers are more often employed by private households and small retail trade and food-related businesses exempt from using E-Verify. Therefore, their employment is less likely to have been negatively impacted by the E-Verify mandate relative to

that of their male counterparts. However, women might have been more responsive to the “show me your papers” clause in SB1070 to the extent that it targets everyone in the household, regardless of their labor force status and sector of employment.

In any case, the main message from the analysis of the impact dynamics of LAWA and SB1070 is that, as shown by Figure 1, SB1070 had a limited to null effect in reducing the overall share of likely unauthorized immigrants in Arizona.

6. Summary and Conclusions

The long-overdue immigration reform at the federal level has spurred a series of legislative measures at the state level intended to curb down illegal immigration. Arizona has been one of the states in the forefront of this crusade with the passage of a universal E-Verify mandate in its 2007 LAWA and the subsequent enactment of SB1070 in April 2010. Previous analyses have found that LAWA significantly lowered the share of non-citizen Hispanics in the state. We thus ask ourselves about the effectiveness of SB1070 in further reducing the population of likely unauthorized immigrants in the state or, at the minimum, in targeting specific population groups less impacted by its predecessor.

A close examination of the dynamics of these two policies’ impacts reveals that the enactment of SB1070 in April 2010 coincided with the stalling and, sometimes slight recovery, of the shares of non-citizen Hispanics, especially women, in the state. And, although the share of Hispanic non-citizens slightly dropped right after the enactment of SB1070, it overall hovered around the same level it had already reached in 2009. As such, a comparison of the average joint impact of LAWA and SB1070 to the average impact of LAWA prior to the enactment of SB1070 on the shares of non-citizen Hispanics reveals that the two effects were similar in size. When we further explore the isolated impact of SB1070, we find that, as suggested by the impact dynamics, its impact has been

minimal to null, explaining why the impact of LAWA did not significantly differ from the joint impact of the two policies.

Before closing, it is worth noting some of the challenges faced in an analysis of this kind. Some of them refer to data constraints, as is the case with the possibility of survey non-response due to fear inspired by the law. Additionally, even though the methodology used has some important advantages –including the ability to properly weight the states in our control group according to their similarities to Arizona, we are unable to assess the statistical significance of our results using traditional large sample inference.

Despite these challenges, given its deleterious impact on personal freedom, the emerging accusations of racial profiling by the police and the record level spending on interior immigration enforcement, learning about the effectiveness of SB1070 in reducing the share of likely unauthorized immigrants is important. After all, its merit rests entirely on its ability to deter illegal immigration. The fact that SB1070 appears to have had a minimal to null impact on the share of likely unauthorized immigrants in the state questions the merit of the law and, more broadly, a piece-meal approach to immigration enforcement.

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Table 1
Summary Arizona Population Statistics Pre and Post LAWA and SB1070

Series	Male			Female		
	Hispanic Non-Citizens	Mexican Non-Citizens	Natives	Hispanic Non-Citizens	Mexican Non-Citizens	Natives
1st Quarter 2006 (Pre-LAWA)						
Total (S.D.)	572,890.14 (270.27)	262,070.92 (130.62)	1,556,586.16 (611.21)	498,098.14 (237.35)	199,014.63 (97.23)	1,584,459.55 (619.10)
Share of Population	0.15	0.07	0.40	0.13	0.05	0.41
1st Quarter 2010 (Post-LAWA and Pre-SB1070)						
Total (S.D.)	432,556.81 (197.31)	212,563.49 (100.48)	1,757,124.50 (651.96)	396,898.61 (180.29)	176,003.90 (82.21)	1,779,508.32 (658.40)
Share of Population	0.10	0.05	0.41	0.09	0.04	0.42
1st Quarter 2012 (Post-SB1070)						
Total (S.D.)	412,853.83 (192.76)	181,260.17 (83.43)	1,607,473.35 (618.40)	417,169.09 (193.77)	192,013.57 (95.50)	1,706,758.37 (644.80)
Share of Population	0.10	0.04	0.39	0.10	0.05	0.42

Note: The sample includes individuals 16-65 years of age in the respective periods. Standard deviations are shown in parentheses.

Table 2
Weights Given to States in Constructing a Synthetic Arizona

State	Weight Given for Estimates on Share of Hispanic Non-Citizens	Weight Given for Estimates on Share of Male Hispanic Non-Citizens	Weight Given for Estimates on Share of Female Hispanic Non-Citizens	Weight Given for Estimates on Share of Mexican Non-Citizens	Weight Given for Estimates on Share of Male Mexican Non-Citizens	Weight Given for Estimates on Share of Female Mexican Non-Citizens
FL	0.059	0.023	0.122	0.000	0.000	0.000
KY	0.020	0.030	0.000	0.000	0.000	0.000
TX	0.359	0.314	0.437	0.038	0.065	0.017
NM	0.097	0.105	0.086	0.11	0.112	0.109
NV	0.088	0.121	0.034	0.191	0.189	0.194
CA	0.376	0.407	0.321	0.661	0.634	0.681
N	453,800	240,586	213,214	224,644	123,879	100,765

Note: The sample includes individuals 16-65 years of age in the pooled Jan 1998-Jun 2007 and Jul 2010-Dec 2013 Monthly CPS surveys.

Table 3
Means of Hispanic and Mexican Non-citizens' Predictors

Hispanic Non-Citizens									
Controls	All			Men			Women		
	AZ	Synthetic AZ	Donor Pool	AZ	Synthetic AZ	Donor Pool	AZ	Synthetic AZ	Donor Pool
Proportion Living in the State	0.10	0.11	0.03	0.06	0.06	0.02	0.05	0.05	0.01
Proportion Working in the State	0.63	0.66	0.7	0.83	0.83	0.83	0.40	0.47	0.51
Proportion Working in Construction	0.14	0.13	0.11	0.26	0.24	0.18	0.01	0.01	0.01
Proportion Working in Retail	0.04	0.05	0.04	0.04	0.05	0.04	0.04	0.05	0.03
Proportion Working in Food Services	0.05	0.05	0.07	0.06	0.05	0.07	0.05	0.05	0.06
Proportion Working in Administrative Support	0.07	0.06	0.06	0.09	0.07	0.07	0.04	0.05	0.05
Proportion Working in Agriculture	0.05	0.05	0.06	0.08	0.07	0.1	0.01	0.02	0.02
% GOP Votes	0.56	0.50	0.49	0.56	0.50	0.48	0.56	0.50	0.49
Per Capita State and Local Expenditures	6,457.85	7,780.74	8,105.8	6,457.85	7,794.48	7,991.31	6,457.85	7,741.67	8,073.44

Mexican Non-Citizens									
Controls	All			Men			Women		
	AZ	Synthetic AZ	Donor Pool	AZ	Synthetic AZ	Donor Pool	AZ	Synthetic AZ	Donor Pool
Proportion Living in the State	0.07	0.07	0.01	0.04	0.04	0.01	0.03	0.03	0.01
Proportion Working in the State	0.63	0.67	0.66	0.86	0.85	0.8	0.36	0.44	0.4
Proportion Working in Construction	0.17	0.15	0.14	0.31	0.27	0.22	0.00	0.01	0.01
Proportion Working in Retail	0.03	0.05	0.03	0.03	0.05	0.03	0.04	0.04	0.03
Proportion Working in Food Services	0.06	0.06	0.08	0.06	0.07	0.09	0.06	0.05	0.07
Proportion Working in Administrative Support	0.07	0.07	0.06	0.10	0.09	0.07	0.04	0.05	0.04
Proportion Working in Agriculture	0.05	0.07	0.08	0.08	0.10	0.11	0.02	0.04	0.03
% GOP Votes	0.56	0.46	0.47	0.56	0.46	0.46	0.56	0.46	0.45
Per Capita State and Local Expenditures	6,457.85	8,524.2	7,689.67	6,457.85	8,531.96	7,545.98	6,457.85	8,523.66	7,448.33

Note: The proportion living in the state is measured as a share of the state's population. The proportion working in the state and in each specific industry is measured as a share of the total number of individuals in the demographic group in question in the state. The sample includes individuals 16-65 years of age in the pooled Jan 1998-Jun 2007 and Jul 2010-Dec 2013 Monthly CPS surveys.

Table 4
Joint Impact of LAW A and SB1070 on the Share of Hispanic and Mexican Non-citizens in Arizona

Series	$(Y_{Pre}^{AZ} - Y_{Pre}^{Control})$	$(Y_{Post}^{AZ} - Y_{Post}^{Control})$	$\Delta_{LAWA\&SB1070}$	Rank
Share of Hispanic Non-citizens	0.0003	-0.0210	-0.0213	1
Male	0.0001	-0.0120	-0.0121	1
Female	0.0003	-0.0090	-0.0093	1
Share of Mexican Non-citizens	0.0004	-0.0092	-0.0096	1
Male	0.0003	-0.0058	-0.0061	1
Female	0.0003	-0.0033	-0.0035	1

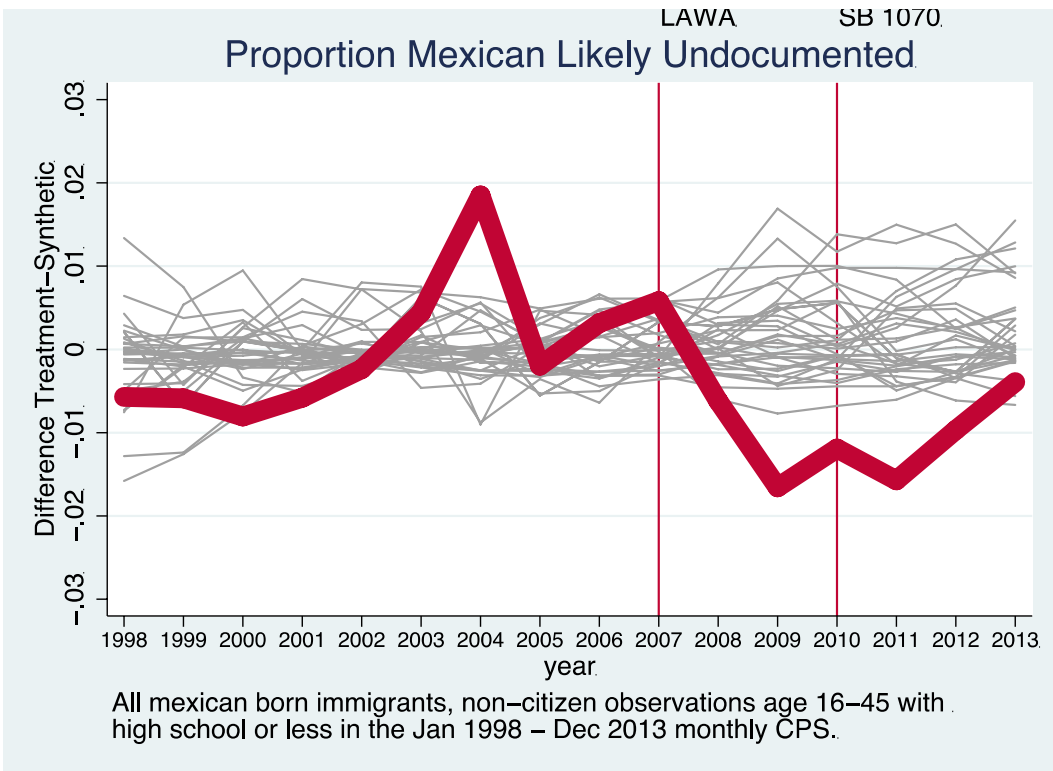
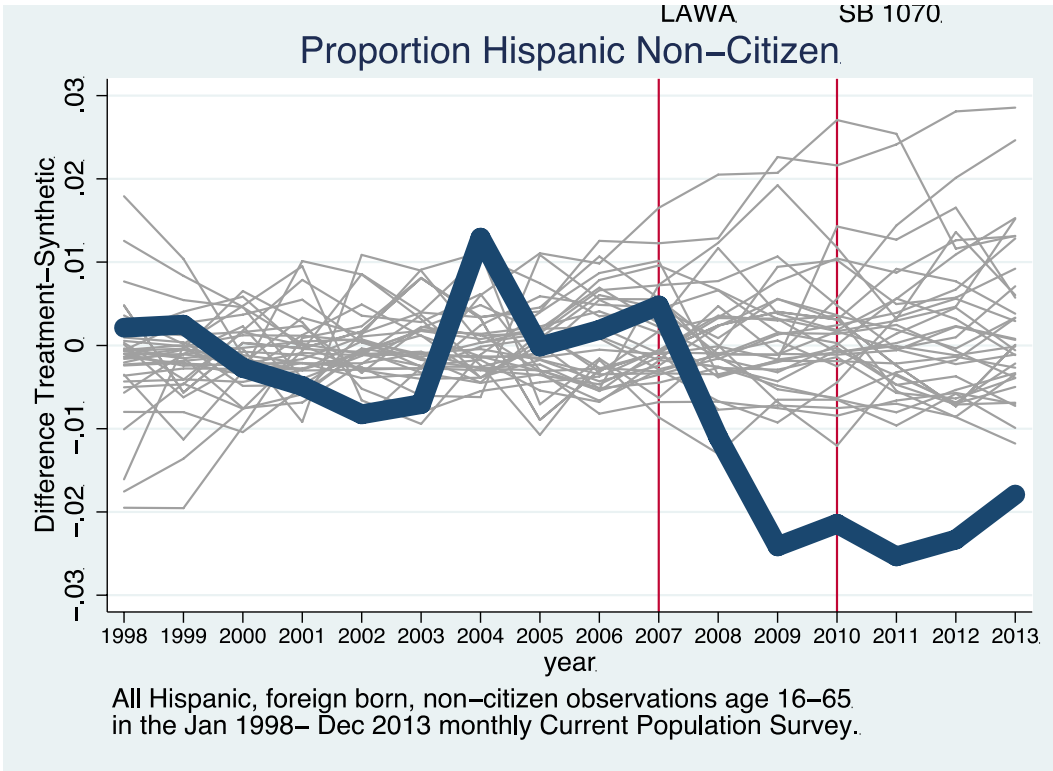
Note: The sample includes individuals 16-65 years of age in the pooled Jan 1998-Jun 2007 and Jul 2010-Dec 2013 Monthly CPS surveys.

Table 5
Impact of SB1070 on the Shares of Hispanic and Mexican Non-citizens in Arizona

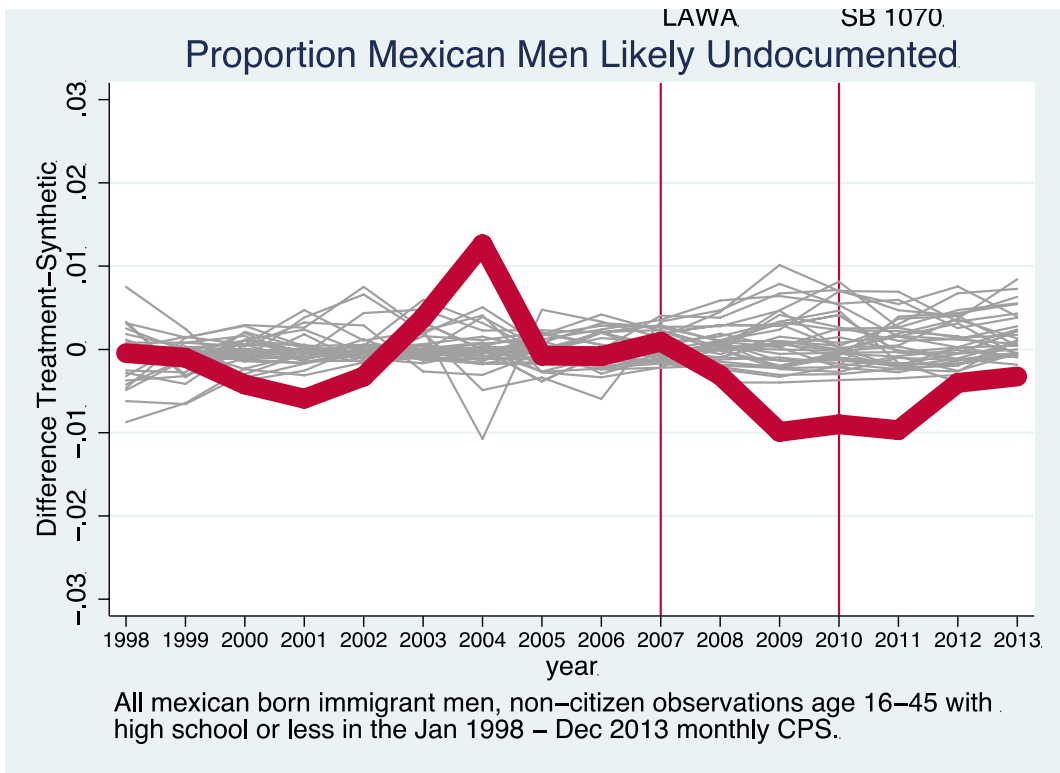
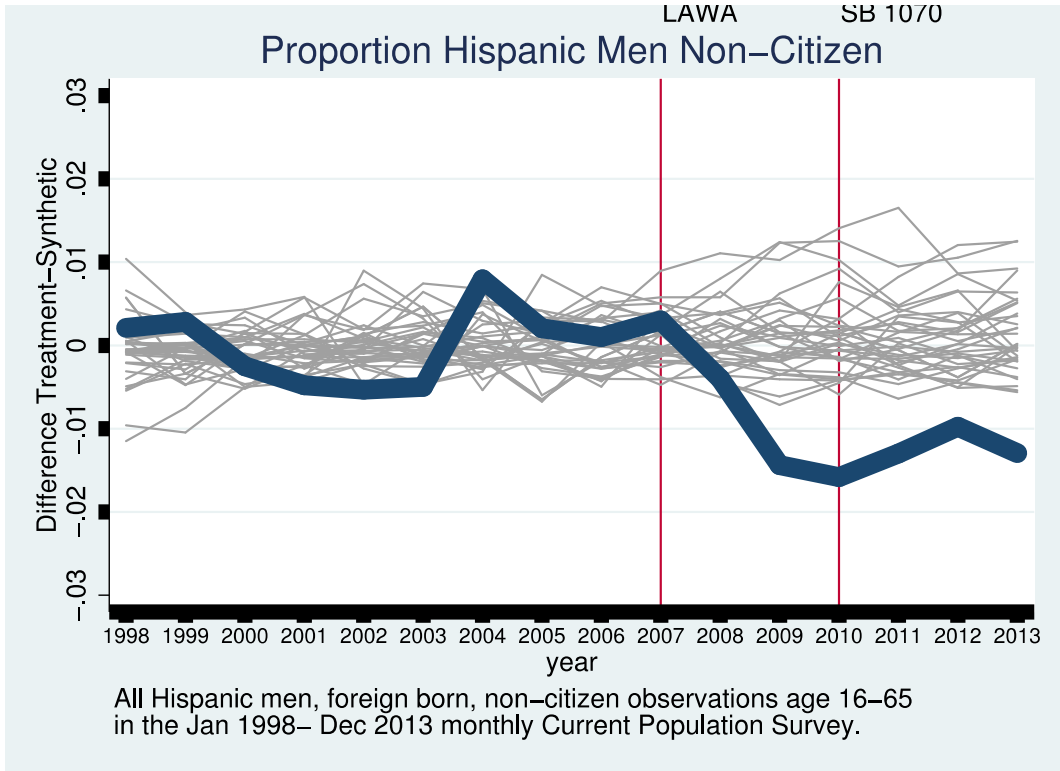
Series	$(Y_{Pre}^{AZ} - Y_{Pre}^{Control})$	$(Y_{Post}^{AZ} - Y_{Post}^{Control})$	Δ_{SB1070}	Rank
Share of Hispanic Non-citizens	-0.0318	-0.0334	-0.0016	1
Male	-0.0187	-0.0210	-0.0023	1
Female	-0.0148	-0.0155	-0.0008	1
Share of Mexican Non-citizens	-0.0266	-0.0309	-0.0043	1
Male	-0.0157	-0.0180	-0.0023	1
Female	-0.0150	-0.0173	-0.0023	1

Note: The sample includes individuals 16-65 years of age in the pooled Jan 1998-Jun 2007 and Jul 2010-Dec 2013 Monthly CPS surveys. The donor pool includes those states with universal E-Verify Mandates and no omnibus immigration law –namely Louisiana, Mississippi, North Carolina and Tennessee.

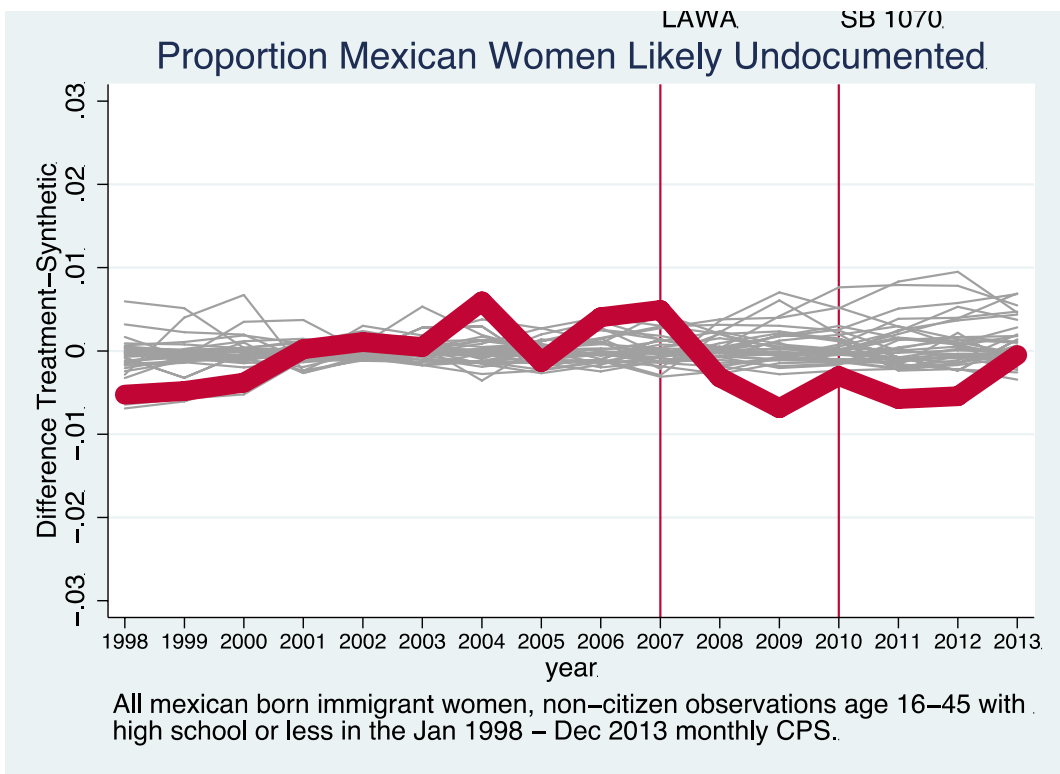
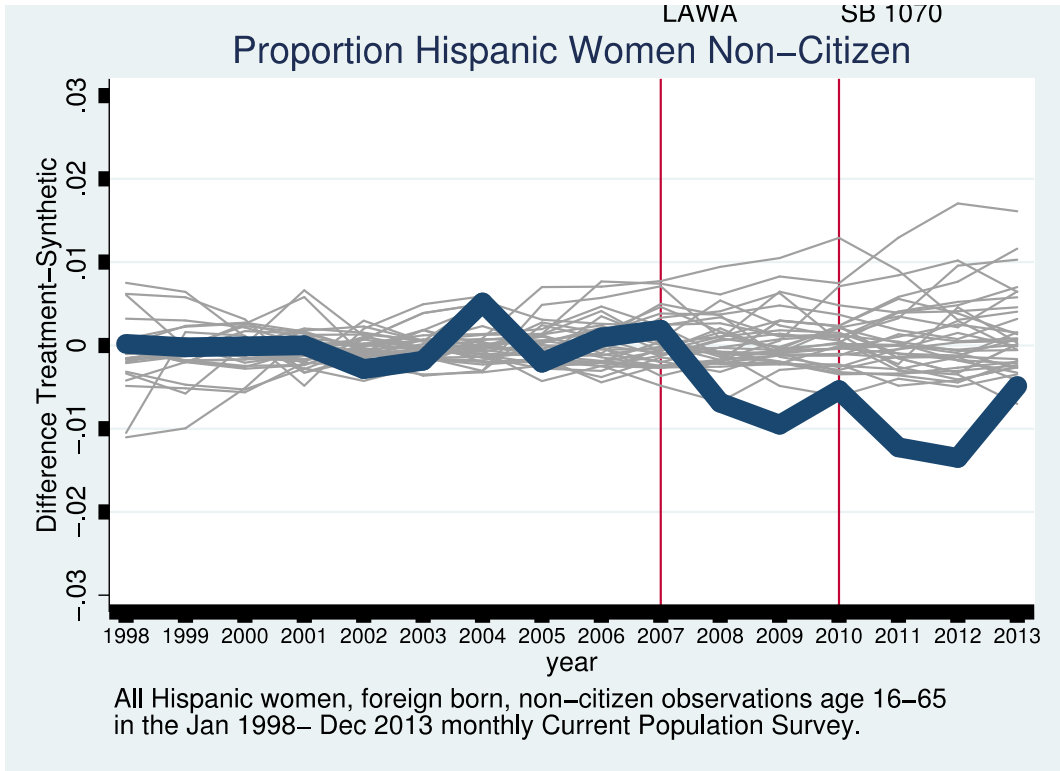
**Figures 1 and 2:
Impact on Different Samples of Likely Unauthorized Immigrants**



**Figures 3 and 4:
Impact on Different Samples of Likely Unauthorized Men**



**Figures 5 and 6:
Impact on Different Samples of Likely Unauthorized Women**



Appendix

Table A
Robustness Checks

Series	$(Y_{Pre}^{AZ} - Y_{Pre}^{Control})$	$(Y_{Post}^{AZ} - Y_{Post}^{Control})$	$\Delta_{LAWA\&SB1070}$	Rank
Panel A: Excluding Neighboring States from Control Group				
Share of Hispanics Non-citizens	0.0197	-0.0016	-0.0213	1
Male	0.0110	-0.0010	-0.0120	1
Female	0.0088	-0.0004	-0.0092	1
Panel B: Other Population Groups				
Share of Naturalized Hispanics	-0.0002	0.0038	0.0040	34
Share of U.S.-born Hispanics	0.0007	0.0013	0.0006	20
Share of non-Hispanic non-Citizens	0.0000	0.0000	0.0000	32

Note: The sample includes individuals 16-65 years of age in the pooled Jan 1998-Jun 2007 and Jul 2010-Dec 2013 Monthly CPS surveys.