ECONSTOR
Make Your Publications Visible.

A Service of
ZBW
Leibniz-Informationszentrum Wirtschaft
Leibniz Information Centre for Economics

Amuedo-Dorantes, Catalina; Arenas-Arroyo, Esther; Sevilla, Almudena

Working Paper

Labor Market Impacts of States Issuing of Driving Licenses to Undocumented Immigrants

IZA Discussion Papers, No. 12049

Provided in Cooperation with:
IZA – Institute of Labor Economics

Suggested Citation: Amuedo-Dorantes, Catalina; Arenas-Arroyo, Esther; Sevilla, Almudena (2018) : Labor Market Impacts of States Issuing of Driving Licenses to Undocumented Immigrants, IZA Discussion Papers, No. 12049, Institute of Labor Economics (IZA), Bonn

This Version is available at:
https://hdl.handle.net/10419/193343

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

WWW.ECONSTOR.EU

Mitglied der Leibniz-Gemeinschaft

I Z A Institute
of Labor Economics
Initiated by Deutsche Post Foundation

DISCUSSION PAPER SERIES

IZA DP No. 12049

Labor Market Impacts of States Issuing of Driving Licenses to Undocumented Immigrants

Catalina Amuedo-Dorantes
Esther Arenas-Arroyo
Almudena Sevilla

DECEMBER 2018

I Z A Institute
of Labor Economics

Initiated by Deutsche Post Foundation

DISCUSSION PAPER SERIES

IZA DP No. 12049

Labor Market Impacts of States Issuing of Driving Licenses to Undocumented Immigrants

Catalina Amuedo-Dorantes
San Diego State University and IZA

Esther Arenas-Arroyo
University of Oxford

Almudena Sevilla
University College London and IZA

DECEMBER 2018

Any opinions expressed in this paper are those of the author(s) and not those of IZA. Research published in this series may include views on policy, but IZA takes no institutional policy positions. The IZA research network is committed to the IZA Guiding Principles of Research Integrity.

The IZA Institute of Labor Economics is an independent economic research institute that conducts research in labor economics and offers evidence-based policy advice on labor market issues. Supported by the Deutsche Post Foundation, IZA runs the world's largest network of economists, whose research aims to provide answers to the global labor market challenges of our time. Our key objective is to build bridges between academic research, policymakers and society.

IZA Discussion Papers often represent preliminary work and are circulated to encourage discussion. Citation of such a paper should account for its provisional character. A revised version may be available directly from the author.

IZA – Institute of Labor Economics

Schaumburg-Lippe-Straße 5–9
53113 Bonn, Germany

Phone: +49-228-3894-0
Email: publications@iza.org

www.iza.org

ABSTRACT

Labor Market Impacts of States Issuing of Driving Licenses to Undocumented Immigrants*

Twelve U.S. states, plus the District of Columbia, have recently enacted measures granting undocumented immigrants access to driving licenses. We exploit the state and temporal variation in the issuing of state driving licenses to undocumented immigrants to estimate its impact on these population's employment outcomes. Using 2013 through 2017 data from the monthly Current Population Survey and its Outgoing Rotation Groups, we show that likely undocumented women increase their labor supply in response to the availability of driver licenses. Their work propensity rises by 4.2 percentage points, aligning it to that of their male counterparts. In addition, those at work raise their weekly hours of work by 4 percent. Overall, their real hourly wages drop by 3 percent. We find no similar impacts among likely undocumented men –a result consistent with a standard labor supply model predicting a greater response from individuals with a larger elasticity. Additionally, we find no apparent impacts on the labor supply and wages of similarly skilled Hispanic native-born women. At a time when anti-immigrant sentiments are at an all-time high, understanding how these policies impact targeted groups and similarly skilled native populations is crucial for maintaining an informed immigration policy debate.

JEL Classification: I38, J15, J22, K37

Keywords: driver licenses, undocumented immigrants, labor market impacts, United States

Corresponding author:
Catalina Amuedo-Dorantes
Department of Economics
San Diego State University
5500 Campanile Drive
San Diego, CA 92182
USA

E-mail: camuedod@mail.sdsu.edu

* The authors are grateful to Darren Lubotsky, Hans Lueders, Hani Mansour, and participants at the Workshop on Migration and the Labour Markets in Edinburgh, the 4th Workshop on the Economics of Migration at the IAB, the RWI Research Seminar, the Nuffield College Postdoc Seminar, the 2018 Society of Labor Economists conference, and the 2018 European Society of Population Economics for their comments to earlier drafts. Arenas-Arroyo gratefully acknowledges financial support from the Upjohn Institute Early Career Research Award.

"T. herself was afraid. Driving was a huge risk given that she had no license and that a misdemeanor could get her deported ('If you go out to work, you risk everything' she said)"
The New York Times Magazine, 17th December 2017.

1. Introduction

Undocumented immigrants make up 3.5 percent of the U.S. population, and 5.1 percent of its labor force (Krogstad and Passel 2015), paying close to $12 billion in state and local taxes, approximately 8 percent of all U.S. taxes. This figure almost doubles the amount paid by the top 1 percent of taxpayers, who contribute approximately 5.5 percent of all U.S. taxes (Gee *et al.* 2017). Yet, their labor supply and contributions depend, as for many in the United States, on their ability to drive. Indeed, spatially decentralized urban and suburban areas make the United States one of the top motor-vehicle dependent countries in the world.[1] In many parts of the United States, having access to a car is a requirement to be able to work, particularly for low-skilled workers living further away from high-density job areas (Raphael and Rice 2002). In this study, we look at how state level policies granting undocumented immigrants access to driving licenses affects their employment outcomes and labor incomes.

From a theoretical perspective, access to a driver's license lowers the risks associated to driving to work for undocumented immigrants, potentially raising their labor supply. After all, such access eliminates the risk of being stopped by the police without a valid authorization to drive, getting the car impounded and losing the needed means of transportation to earn a living. Technically, most traffic violations do not constitute deportable offenses. Yet, driving without a license is an offense that can lead to being charged with driving without a license, court appearances and, in some instances, to deportation.[2] In this regard, media reports have

[1] World Bank, Data Table: Motor Vehicles (Per 1,000 People), World Development Indicators (2008), available at http://data.worldbank.org/indicator/IS.VEH.NVEH.P3

[2] Before President Trump's Executive Order on immigration on January 27, 2017 most undocumented or out of status individuals arrested or jailed for minor offenses and traffic violations were spared from the widespread reach of detainers by a November 2014 memo issued by DHS Secretary Jeh Johnson and the implementation of the Priority Enforcement Program or "PEP." However, with the issuance of President Trump's Executive Order,

documented how children are left alone when their parents are taken into custody by immigration authorities after being stopped by the police and charged with driving without a license.[3] Migrants with a valid driver's license are able to provide proof of identity, proof of their eligibility to drive and, in most instances, are allowed to drive away when stopped by the police. In contrast, migrants driving without a license when stopped by the police are exposed to being fined, cited in court and, if it casts a blemish on their law-abiding character, picked up by Immigration and Customs Enforcement.

The number of states allowing unauthorized immigrants to get a driver's license under the 2005 federal REAL ID Act increased from three states in 2013 to twelve states, plus the District of Columbia, in 2016. Using 2013 through 2017 data from the monthly Current Population Survey and its Outgoing Rotation Groups, we exploit the state and temporal variation in the granting of driving licenses to undocumented immigrants to estimate its impact on this population's employment outcomes –namely, their employment likelihood, weekly hours of work and real hourly wages.

We find that likely undocumented women increase their labor supply in response to the availability of driver licenses. Their propensity to work rises by 4.2 percentage points, aligning it to that of their male counterparts. In addition, those at work raise their weekly hours of work by 4 percent. Overall, their real hourly wages drop by 3 percent. No similar impacts are found among likely undocumented men. These findings hold after taking into account the possible endogenous adoption of a state policy granting driving licenses to undocumented immigrants or the non-random residential choices made by undocumented immigrants.

The observed increases in labor supply and declines in wages of likely undocumented women can be explained using the standard labor supply framework. Decreases in the risk of

all these safeguards have rescinded and undocumented immigrants who violate traffic laws have now become priorities for apprehension and removal.

[3] See, for instance: http://abcnews.go.com/ABC_Univision/Politics/drivers-licenses-matter-undocumented-immigrants/story?id=20248587.

driving to work raise the expected returns from working. Individuals with greater labor supply elasticity exhibit a larger response to the increase in the expected return to working. Likely undocumented women, who are more likely to work part-time than men, enjoy a higher labor supply elasticity. As such, they are in a better position to respond to the policy than their male counterparts. Likewise, among likely undocumented women with children, women without the responsibility of caring for young children prove the most responsive.

Our paper contributes to a growing body of work examining the impact of a variety of recently adopted tougher interior enforcement measures on undocumented immigrants and their families (*e.g.* Bohn *et al.* 2014; Miles and Cox 2014; Amuedo-Dorantes *et al.* 2018; Kostandini *et al.* 2013; Watson 2014). To this date, analyses of undocumented immigrants' employment outcomes have been primarily focused on the impact of tougher interior immigration enforcement measures, such as employment verification mandates (*e.g.* Amuedo-Dorantes and Bansak 2012; Bohn and Lofstrom 2013; Orrenius and Zavodny 2015). Compared to previous analyses, which focused on measures challenging the assimilation of undocumented migrants, we look at a policy measure that should favor the assimilation of undocumented migrants by allowing them to drive more safely with a proper license. To our knowledge, this is the first paper examining, nationwide, how state-level regulation regarding the issuing of a driver's license to undocumented immigrants affects their labor market outcomes.

2. Institutional Background

In 2016, twelve states and the District of Columbia were issuing driving licenses to unauthorized immigrants. The 2005 federal REAL ID Act modified U.S. federal law pertaining to security, authentication, and issuance standards for state driving licenses and for identity documents. It established requirements for state driving licenses and ID cards to be accepted by the federal government for "official purposes", including boarding commercially operated

airline flights and entering federal buildings (Public Law 109-13 Title II Sec. 201 (3) *Government Printing Office*, retrieved on August 26, 2014).[4] To comply with the law, states need to collect the following documentation from applicants: a photo ID, proof of their date of birth, and their Social Security card. The law also requires that states adopt certain procedures and practices for document retention, facial image capturing, verification, security of their facilities, and fraud recognition.

One important aspect of the REAL ID Act for the purpose of this study is that it lets states decide if they want to issue driving licenses to individuals who are not legally in the United States. The requirements to get this type of "not for federal ID" license are less stringent than the requirements for other licenses that are considered valid for identification purposes. In particular, "not for federal ID" licenses have a lower application fee and do not require proof of legal residency.

Although states have control over the issuing of driving licenses and their eligibility requirements, the federal government sets the minimum standards that states need to observe for licenses to be recognized by federal agencies for official purposes under the REAL ID Act 2005. One requirement is that the license issued to undocumented immigrants needs to be distinguishable from the license issued to citizens or documented immigrants, such as legal permanent residents or certain non-immigrant visa holders. For example, licenses in California are required to have a special mark and notation on them –namely, the initials DP (Driver's Privilege), instead of DL (Driver's License). The notation specifies that the license "does not establish eligibility for employment or public benefits."

The number of states granting driving licenses to unauthorized immigrants has risen in recent years, although the trends are not monotonic. Until 2012, undocumented immigrants could only obtain a driver's license in three states (New Mexico, Utah, and Washington).

[4] Available at: https://www.gpo.gov/fdsys/pkg/PLAW-109publ13/html/PLAW-109publ13.htm

However, between 2014 and 2016, the number of U.S. states issuing driving licenses to undocumented immigrants increased to twelve plus the District of Columbia (see Table A in Appendix A). All these new regulations meant that, while only 3 percent of the estimated 11,200,000 undocumented immigrants in the United States lived in a state where they could obtain a driver's license in 2003, that share had increased to 37 percent by 2015. Around 2.5 million out of the 11.2 million undocumented immigrants in the United States reside in California where, as Figure 1 shows, the number of driving licenses applications quadrupled at the onset of the passing of the new state regulation allowing undocumented immigrants to obtain a driver's license (Passel *et al.* 2014).

This new wave of state-level regulations was a turning point in the series of restrictive immigration laws characterizing the earlier decade. Until the early 1990s, most states did not explicitly impede undocumented immigrants from getting a driver's license. California was the first state to explicitly restrict that practice in 1993, followed by Arizona in 1996.[5] In the 2000s, most states changed their laws to require that applicants prove their legal immigration status –a measure arguably adopted following the terrorist attacks of 2001.[6] Between the passage of the REAL ID Act in 2005 and the year 2010, Hawaii, Maryland, Maine, Michigan, Oregon, and Tennessee stopped granting driving privileges to unauthorized immigrants.

By the early 2010's, demographic changes in the electoral population, which now included a larger number of Hispanic voters living in mixed-status households adversely impacted by a set of expanding interior immigration enforcement measures, led several states to promote regulations aimed at facilitating the integration of undocumented immigrants.[7] The

[5] In 2003, California enacted a law allowing undocumented immigrants to obtain driver licenses. However, it was repealed in the same year (see: http://www.foxnews.com/story/2003/12/04/schwarzenegger-repeals-licenses-for-illegal-immigrants.html). Likewise, in 2001, Tennessee passed a law allowing unauthorized immigrants to obtain regular driver licenses. Nevertheless, it passed another law creating a separate "driving certificate" to distinguish those licenses from the rest that became effective in May 2004. The state stopped issuing driving certificates in February 2006, even though the law was not repealed until October 2007.

[6] See: http://w3.lexisnexis.com/practiceareas/immigration/pdfs/web785a.pdf

[7] See: http://www.latinodecisions.com/blog/2013/05/09/census-2012-vote-data-highlight-dramatic-shift-in-racial-diversity-of-american-electorate/

implementation of the Deferred Action for Childhood Arrivals (DACA) in 2012 further offered the right to apply for a driver's license to unauthorized immigrants granted temporary reprieve from deportation and work eligibility under DACA. Officials in California, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Massachusetts, Maryland, Nevada, New Mexico, Tennessee, Texas, Utah, Virginia, Washington, and Wisconsin confirmed that undocumented immigrants who qualified for DACA could also apply for a driver's license. In contrast, officials in Arizona, Arkansas, Kansas, Michigan, Mississippi, and Nebraska announced that DACA recipients did not qualify for a driver's license. One of the DACA requirements was being in school or having completed high school.[8] As we shall explain in detail in the next section, our sample does not include any DACA recipients. It is limited to likely undocumented immigrants –as captured by long-term, Hispanic, non-citizen residents with less than a high school education– able to fully participate in the labor market, as would typically be the case with working-age individuals not currently attending school.

3. Data

Our main aim is to explore the impact of laws granting undocumented migrants access to a driver's license on their employability and earnings. To that end, we combine a series of datasets spanning from 2013 through 2017. This time span provides us with a tighter time window around the adoption of most of these laws, which primarily occurred between 2013 and 2016. This is important because, while states like Washington, New Mexico and Utah enacted these laws early on in 1993, 2003 and 2005, respectively, there was a long inaction period until the rest of the states started to adopt these laws again in 2013.[9]

[8] Specifically, applicants to DACA had to be: (1) At least 15 years old when applying but under the age of 31 as of June 15, 2012; (2) Under the age 16 when entering the United States; (3) Living in the U.S. continuously since June 15, 2007; (4) Present in the U.S. on June 15, 2012, and at the time of applying; (5) In school or have graduated or completed high school, or have been honorably discharged from the military; and (6) Not convicted of a felony, a significant misdemeanor or three or more other misdemeanors. See: https://www.factcheck.org/2018/01/the-facts-on-daca/

[9] In our robustness checks, we experiment with excluding these three states from the analysis. Results prove robust to this exclusion (see Table A2 in Appendix A).

Our main data set consists of data on the annual employment information originating from the 2013 through 2017 Annual Social and Economic (ASEC) supplement to the Current Population Survey (CPS) and monthly wages and hours of work from the 2013-2017 Current Population Survey Outgoing Rotation Groups (CPS-ORG), provided by the Integrated Public Use Microdata Series (Flood *et al.* 2017). Data on the adoption year of state laws allowing undocumented immigrants to apply for a driver's license since 2013 are gathered from National Conference of State Legislatures.[10]

We also merge data on interior immigration enforcement initiatives in place during the time period under consideration from Amuedo-Dorantes and Arenas-Arroyo (2017a) and Amuedo-Dorantes, Arenas-Arroyo and Sevilla (2018). These include employment verification (E-Verify) mandates, Omnibus Immigration Laws (OIL), 287(g) agreements between Immigration Customs Enforcement (ICE) and the local or state police, and Secure Communities (SC). Because of the distinct geographic scope of the various measures, we combine them into a state-level population-weighted index that takes into account the number of months that a particular measure was in place in any given year. In that manner, we are able to better capture the intensity of interior immigration enforcement in any given state. Combining the various enforcement initiatives in place is key given that immigration enforcement is an interconnected system administered by various federal, state, and local authorities and agencies with similar missions. Furthermore, it makes the analysis of these measures somewhat more tractable, given the correlation among the various policy initiatives. Details on the data sources used, as well as on how the index is constructed, can be found in Appendix B.

Like all other official datasets representative of the United States population, the CPS

[10] For the latest data available see: http://www.ncsl.org/research/immigration/states-offering-driver-s-licenses-to-immigrants.aspx

does not contain information on migrants' legal status. We follow the literature and rely on ethnicity, citizenship and educational attainment –traits shown to be good predictors of immigrants' unauthorized status (Passel and Cohn 2009; Passel and Taylor 2010)— to proxy for the likely unauthorized status of household members (Passel and Cohn 2009, Bohn and Pugatch 2013, Pope 2016, Orrenius and Zavodny 2016).[11] In addition, since most non-immigrant visas for low-skilled workers are granted for short periods not to exceed a 5-year period including renewals, we further restrict the definition of likely unauthorized to Hispanic non-citizen household members who have, at most, a high school education and have resided in the United States in excess of 5 years. This last restriction further ensures that the low-skilled migrant is not legally in the United on a non-immigrant visa –typically granted for a much shorter duration.

Using all these traits, we obtain an estimated unauthorized immigrant population of 12,791,033 immigrants –a figure that is very close to the estimated population of 11 to 12 million undocumented immigrants in the United States using the residual method.[12] The fact that the *combination* of these descriptors does a good job when trying to proxy for the likely undocumented status of immigrants is understandable. *First*, the Census Bureau and the Department of Homeland Security estimate that nearly 40 percent of non-citizens are

[11] It is important to note that there are other methods to proxy for immigrants' unauthorized status. Perhaps the two methods used most often include: (a) residual methodologies, and (b) statistical imputation methodologies. Residual methodologies rely on the residual method initially proposed by Passel *et al.* (2014) and subsequently applied by others (*e.g.* Borjas 2017). According to that method, a person is deemed to be legally in the United States if s/he meets any of the following criteria: arrived before 1980, has U.S. citizenship, receives public benefits, works in the government sector, was born in Cuba, has an occupation that requires licensing, or has a spouse who is a legal immigrant or U.S. citizen. Everyone else is likely undocumented. Statistical imputation methods use "donor samples" containing information on immigrants' legal status, to derive out-of-sample predictions of migrants' legal status. Unfortunately, most datasets are not representative of the immigrant population. One exception is the Survey of Income and Program Participation (SIPP), which has been deemed to be representative of the immigrant population and used as a donor dataset to infer the legal status of immigrants in other datasets (*i.e.* target datasets). However, the most recent module containing information on immigrants' legal status refers to 2008 –that is, prior to the rollout of Secure Communities and tougher immigration enforcement. Furthermore, the SIPP is not valid for doing inferences of policy impacts at the state level (Van Hook *et al.* 2015), as it is the intent of the present study. Therefore, as part of our robustness checks, we experiment with using the residual method to identify the sample of likely undocumented migrants.

[12] The most comprehensive aggregate estimates are available from the Center for Migration Studies (CMS) at http://cmsny.org/researchprojects/democratizingdata/tables/.

authorized immigrants (Acosta *et al.* 2014; Baker and Rytin 2013). That is, among non-citizens we have all unauthorized immigrants, as well as many authorized immigrants. *Second*, because of geographic proximity and poor economic and social conditions at home, as well as extensive migrant networks, more than two thirds of unauthorized immigrants in the United States are Hispanics from Mexico and Central America. *Third*, as previous research has pointed out (see for example, Bohn and Lofstrom (2013) and Orrenius and Zavodny (2016)), most unauthorized immigrants have relatively little education because they are from countries with low average levels of educational attainment. About three-quarters of adult unauthorized immigrants have no more than a high school diploma (Passel and Cohn 2009).[13]

Given the demographic traits used to proxy for migrants' likely undocumented status – namely, being a low-skilled and long-term resident Hispanic non-citizen, our main sample of analysis consists of the aforementioned group of likely undocumented men and women (our *treatment* group), and their *control* counterparts. The latter include other low-skilled, long-term resident Hispanics who are also foreign-born, but who have naturalized and are clearly legal immigrants. Particularly, we use: (1) individuals aged 16 to 64, not currently at school, when modelling the likelihood of being at work, and (2) wage and salary workers between the ages of 16 and 64 when examining the impact of the state granting of driving licenses to undocumented immigrants on usual weekly hours of work and on wages. The latter are measured as: (a) the logarithm of real hourly wages for those paid by the hour, and (b) the logarithm of usual weekly labor earnings divided by usual weekly hours for salaried workers. The nominal hourly wage is converted to a real wage using the Consumer Price Index for 2011.

Table 1 presents summary statistics for our treatment and control groups by gender. The main differences between treatment and control groups stem from their age and length of

[13] At any rate, as noted earlier, we also experiment with an alternative definition of the likely undocumented sample using the residual method as part of our robustness checks. As we shall discuss, our main findings prove robust to the use of this alternative definition of the likely undocumented sample.

residency in the United States –the latter being longer for naturalized migrants. In terms of the labor market outcomes being examined, Panel A in Table 1 shows that, on average, ninety-four percent of likely undocumented men and their naturalized counterparts are employed.[14] For the most part, they work full-time for an average of 39 hours/week. Yet, likely undocumented men earn somewhat lower wages –averaging $13.5/hour, relative to the also low-skilled, long-term resident, yet naturalized, Hispanic men, who earn an average of $16/hour.

In the case of women, displayed in Panel B of Table 1, employment rates average, respectively, ninety-one percent and 92.5 percent for the likely undocumented in the treatment group and the low-skilled, long-term resident and naturalized Hispanic women in the control group. However, unlike their male counterparts, likely undocumented women's average weekly hours of work fall below the 35 hours/week benchmark for part-time work from the Bureau of Labor Statistics. Naturalized women in the control group work somewhat more, averaging 36 hours/week. Finally, real hourly wages are the lowest for likely undocumented women, hovering around $11/hour. They are somewhat higher for their naturalized counterparts, who earn an average of $12.5/hour.

4. Methodology

To learn about the impact of access to a driver's license on undocumented immigrants' employment and wages, we exploit the geographic and temporal variation in the state-level regulation of driving licenses for undocumented immigrants. Our benchmark model is given by the following equation, which is estimated using ordinary least squares (OLS):

(1) $y_{i,s,t} = \alpha + \beta_1\, DL_{s,t} + \beta_2\, LU_{i,s,t} + \beta_3\, DL_{s,t} * LU_{i,s,t} + \beta_4 EI_{s,t} + X'_{i,s,t}\, \beta_5 + \gamma_s + \theta_t + \gamma_s t + \varepsilon_{i,s,t}$

for respondent *i* living in state *s* and in year *t*. $y_{i,s,t}$ is the labor market outcome of interest, *e.g.* $y_{i,s,t}$ takes value 1 if the *i*th respondent living in state *s* in year *t* is employed, or 0 otherwise,

[14] These results are robust to authors' tabulations using the Mexican Migration Project (MMP), which also reveal that more than 90 percent of undocumented men of working age do so.

when examining the employment likelihood of likely undocumented immigrants. Alternatively, when examining hours worked or wages, the vector $y_{i,s,t}$ equals the logarithm of usual weekly hours of work and the logarithm of the real hourly wage, respectively, of wage and salary workers.

Our key regressor, $DL_{s,t}$, is a dummy variable that takes value of 1 if the migrant resides in a state *s* that issues driving licenses to undocumented immigrants in year *t*, and 0 otherwise. The vector $LU_{i,s,t}$ is a dichotomous variable that equals 1 for our treatment group –namely, likely undocumented immigrants, and 0 for our control group –that is, similarly low-skilled, long-term Hispanic residents who are, nonetheless, naturalized. We also account for other interior immigration enforcement measures potentially affecting undocumented migrants' employment and wages, as captured by the enforcement index: $EI_{s,t}$. Finally, the vector $X_{i,s,t}$ accounts for a range of individual level characteristics known to be potentially correlated with employment outcomes, such as age, marital status, number of children in the household, educational attainment, years in the United States, and whether the individual resides in a metropolitan area.

Equation (1) also includes state and year fixed-effects, as well as state-specific time trends. The state fixed-effects (γ_s) address unobserved and time-invariant state-specific characteristics potentially correlated with individual labor market outcomes, as could be the case if the individual resides in a state with a more active economy. The year fixed-effects, captured by θ_t, account for aggregate level business-cycle shocks potentially affecting labor market outcomes. Finally, we also include state-specific time trends ($\gamma_s t$) to capture a variety of unobserved time-varying state-level traits that might remain unaccounted for. Information on employment is collected annually in ASEC, whereas wages and hours of work is collected monthly in the CPS. Thus, the hours of work and wage regressions also include month fixed effects. Standard errors are clustered at the state level.

The coefficient of greater interest to us is β_3, which captures the change in employment, hours of work and wages experienced by likely undocumented immigrants –when compared to other low-skilled, long-term, Hispanic residents who have naturalized, following the adoption of regulation allowing undocumented immigrants to have apply for a driver's license. Because of the distinct labor market participation and employment patterns of men and women, we estimate equation (1) separately by gender.

5. Assessing the Labor Impacts of Driving Licenses for Undocumented Immigrants

Tables 2 and 3 display the results from estimating equation (1) for men and women, respectively. For conciseness, we focus our attention on the estimates from the most complete model specification –namely specification (3), which includes month, year and state fixed-effects, as well as state-specific time trends.

According to the estimates in Table 2, and relative to our control group of naturalized low-skilled Hispanics, likely undocumented men are approximately 1.8 percentage points less likely to be at work and, on average, earn 5.3 percent less. We also find that intensified immigration enforcement appears to boost our sample's overall work hours, once employed. However, personal characteristics are the most consistent determinants of the labor market outcomes examined. For instance, older men earn higher hourly wages than their younger counterparts do. Similarly, married men work more hours/week and earn higher hourly wages than their non-married colleagues earn. Educational attainment also matters –each additional year of schooling boosts the employment likelihood, hours worked and wages of men in our sample. Each additional child is also associated to a 2 percent higher wage. Finally, living in a metropolitan area raises the propensity to be employed, but is associated with fewer hours of work.

Table 3 repeats the same exercise for women. Likely undocumented women are 2 percentage points less likely to work than naturalized women. If employed, they work roughly

4 percent fewer hours per week and earn close to 6 percent lower real hourly wages than their naturalized counterparts. When we further compare across states and treatment vs. control groups of similarly skilled, long-term immigrant Hispanic workers, we find that employed likely undocumented women in states granting driving licenses to undocumented immigrants work about 4 percent *more* hours per week and earned approximately 3 percent *less* per hour than their counterparts in other states and control groups. There also seem to be economically important increases to employment, although this coefficient is less precisely estimated.[15] Finally, these impacts compare to the fewer hours of work and higher hourly wages of low-skill naturalized Hispanic women in states granting driving licenses to undocumented immigrants, hinting on the substitutability between the two groups.

In sum, our results seem consistent with a standard model of labor supply whereby granting undocumented immigrants the privilege of driving lowers their risk of being charged for driving without a license, along with its consequences, raising the expected return from working and, as a result, their labor supply. In the same way car ownership has been shown to have positive effects on the employment of single mothers on welfare (Baum 2009; Bansak, Mattson, and Rice 2010) and ethnic minorities (Gautier and Zenou 2010), driving licenses seem to be able to raise undocumented migrants labor supply. They achieve that goal by eliminating the possibility of being charged with driving without a license during a police stop. In equilibrium, as higher expected returns from work shift the labor supply curve rightwards, wages of likely undocumented women drop.

[15] We do observe an increase in the propensity of likely undocumented women to work outside the home, when compared to their similarly skilled naturalized Hispanic counterparts, when residing in states granting driving licenses to undocumented migrants, as shown in Appendix D. This result further supports the finding of increased labor supply among undocumented women made evident in Table 3.

6. Understanding Gender Differences and Mechanisms for the Observed Impacts

The results in Tables 2 and 3 suggest that the granting of driving licenses to undocumented immigrants has no effect on likely undocumented immigrant men. However, it appears to induce likely undocumented women to increase their labor supply, which in turn lowers their real hourly wages. In this section, we look further into the justification for the differential impact of driving licenses by gender, as well as into the mechanisms through which those effects occur.

Likely undocumented women might have a more elastic labor supply than likely undocumented men. In that regard, Borjas (2017) documents that the labor supply of undocumented men is more inelastic than that of natives or naturalized immigrants. Furthermore, the participation rate of undocumented women rests below that of their male counterparts. In our sample, the vast majority of working-age undocumented men (about 94 percent of them) work (see Table 1). This is not surprising. After all, undocumented immigrants do not have access to most safety nets. Furthermore, likely undocumented men work, on average, full-time, *i.e.* more than 38 hours/week. Hence, the availability of driving licenses is unlikely to cause significant changes to their labor supply. In contrast, likely undocumented women, although they are also at work at relatively high percentages (91 percent work), work an average of 32.9 hours/week. In other words, they work part-time. Hence, they enjoy greater labor supply elasticity and, not surprisingly, responsiveness to the policy.

Women are also more often than men the secondary household earners. Secondary household earners might endure a higher opportunity cost for working than primary household earners, who need to work to support the household. As such, women will likely be more responsive to a reduction in the opportunity cost of working than their male counterparts will. In our sample, sixty-three percent of likely undocumented immigrant men earn more than their

wives, whereas men and women in naturalized couples earn similarly. This implies that undocumented women would be more likely to increase their labor supply when the opportunity cost of driving drops.

To underscore the role of differences in labor supply elasticities in explaining the differential response of undocumented migrants to the policy by gender, we repeat the analysis looking at women with children, distinguishing according to whether women have children less or more than 5 years old. Women with young children are more likely to be constrained by time-intensive family responsibilities (including child rearing and home production), which may limit their ability to work for pay and their responsiveness to the policy. As predicted by the theory, the results in Table 4 indicate that mothers without young children are the ones responding to the policy in the manner showcased by Table 3. Relative to the control group, those mothers increase their weekly hours of work by 5 percent and experience a 3.1 percent drop in their real hourly wages when residing in states granting driving licenses to undocumented immigrants. In contrast, we do not see a similar response from their counterparts with young children. In other words, women with fewer family responsibilities seem to be the ones in a better position to respond to the policy, underscoring the likely important role of labor supply elasticity in understanding the differential responses to the policy.

While the estimates in Table 4 help us understand a potential driver for the observed gender differences in policy impacts and pinpoint the group most likely responsible for the observed policy responsiveness, we still need to understand the mechanism through which the policy impacts end up materializing. Specifically, is it the case that having access to a driver's license induces women to drive or drive more now that they risk less when doing so? For instance, are they more likely to work outside the home now than they were before? In the

latter case, have they changed either the transportation method or their commuting time in ways that could help us explain the found impacts?

To answer these questions, and given that the CPS lacks information on work commuting, we turn to the American Community Survey (ACS). The ACS contains detailed information on work commuting, as well as information on whether the person works outside the home. Of particular interest to us is the information on the choice of transportation method used to get to work and the daily on-way commute in minutes. If the person reports using a motor vehicle to get to work, the ACS further asks about the use (or lack of) of carpooling. To further substantiate the found gender differences in our results, Table 5 reports the results from assessing the impact that the state laws had on the method of transportation used, as well as on daily commuting time, of likely undocumented men and women, relative to other low-skilled and Hispanic naturalized migrants. According to the estimates in Panel A, likely undocumented men in states that granted driving licenses to undocumented migrants simply reduced their propensity to carpool by 4 percentage points, but did not alter the time commuting to work. This finding might explain why their labor supply did not significantly change. In a similar vein, likely undocumented women at work in states granting driving licenses to undocumented migrants did not significantly alter their work transportation method. Nevertheless, they seem to have increased their daily commute to work by roughly 1 minute each way or 4 percent (the average daily one-way commute is 27 minutes).

This is a modest increase in commuting time. As such, the increase in hours of work in Table 3 might stem from these women increasing the number of days per week that they work. Unfortunately, neither the CPS nor the ACS has information on the number of days worked per week, and we are not aware of any other data set available that contains this information. An alternative or parallel explanation is that likely undocumented women in states granting driving licenses to undocumented migrants increase the frequency of short

driving spells that allow them to take on more work hours in nearby locations. This working pattern is characteristic of housekeeping services, an industry in which close to 50 percent of likely undocumented women work. Perhaps, it is easy enough for these women to service one more home in the neighborhood without much more driving. In that case, we would not necessarily observe a large increase in the daily work commute, but it would increase their weekly work hours.

7. Identification Challenges

Thus far, we have shown that the granting of driving licenses to undocumented migrants raised likely undocumented women's labor supply, reduced their real hourly wages, and increased their daily commuting and propensity to work outside the home. These impacts were concentrated among women with older children and fewer family responsibilities, who are likely to enjoy greater flexibility. Our results, however, could be afflicted by the presence of differential trends in the labor supply of women in our treatment and control groups, as well as by endogeneity concerns. In what follows, we conduct a number of identification checks aimed at gauging the reliability of our findings.

7.1 Testing for Anticipation Effects

Our analysis has thus far assumed that the labor market outcomes of likely undocumented immigrants (*treated group*) and those of similarly skilled naturalized immigrants (*control group*) were not already trending differently *prior* to the states' adoption of laws granting undocumented immigrants access to driver licenses. To test this assumption, we re-estimate equation (1) including a dummy for the year prior to the adoption of the policy in question, which we interact with the dichotomous variable proxying for the individual's likely undocumented status as follows:

(2) $$y_{i,s,t} = \alpha + \sum_{k=-1}^{0} \beta_{1,k} D_{k,st} + \beta_2 LU_{i,s,t} + \sum_{k=-1}^{0} \beta_{3,k} D_{k,st} * LU_{i,s,t} + \beta_4 EI_{s,t} +$$
$$+X'_{i,s,t} \beta_5 + \gamma_s + \theta_t + \gamma_s t + \varepsilon_{i,s,t}$$

where $D_{k,st}$ is a dummy for whether the driver's license law was active in state *s* in year *t*, as well as a year prior. In the absence of any pre-existing differential impacts, the estimated coefficient on the interaction term corresponding to the year *prior* to the activation of the law should be non-statistically different from zero, whereas the estimated coefficient on the interaction term corresponding to the true policy indicator should remain statistically significant and of similar magnitude to that in Table 3.

That is precisely what we find in Panel A, Table 6. The estimated coefficient on the interaction placebo term is non-statistically different from zero, whereas the coefficient on the interaction term for the true policy period remains statistically different from zero and of similar magnitude to the estimate in Table 3. In other words, the observed policy impact among likely undocumented women does not appear to have been in place a year prior, and the policy appears to have increased likely undocumented women's weekly hours of work by 5.3 percent, and lowered their hourly wages by 4.5 percent.

Because, in order to focus the analysis on a narrower time window around the adoption of these laws by most states, our sample period starts in 2013, we can look for anticipation or pre-existing policy impacts, but not for longer pre-trends. To do so, we extract an alike sample covering the 2013 through 2017period –a period preceding the adoption of the measures of interest herein. We then create a time trend, which we interact with the likely undocumented dummy variable in order to assess if the labor market outcome in question already displayed a differential pre-trend for likely undocumented women relative to their similarly skilled naturalized Hispanic counterparts, as follows:

(3) $y_{i,s,t} = \alpha + \beta_1\, LU_{i,s,t} + \beta_2 t + \beta_3\, LU_{i,s,t} * t + \beta_4 EI_{s,t} + X'_{i,s,t}\, \beta_5 + \gamma_s + \theta_t + \gamma_s t + \varepsilon_{i,s,t}$

In the absence of pre-existing differential trends in their labor market outcomes, we would expect the coefficient on the interaction terms to be non-distinguishable from zero. The results from this exercise are shown in Panel B, Table 6. As would be expected, the coefficients on

the interaction terms –none of them significantly different from zero, point to the lack of differential labor market pre-trends for our treatment and control groups in the years preceding the adoption of the state driving policies.

7.2 Endogeneity Concerns

A second concern refers to the fact that the endogeneity stemming, primarily, from the non-random location of immigrants across states. Undocumented migrants might be sensitive to whether the state is one granting driving licenses to undocumented immigrants since access to such a document can significantly lower the opportunity cost of driving to work. Because migrants, especially undocumented ones, are a relatively mobile population, our estimates could be biased upwards if they choose to reside in states granting driving licenses that allow them to easily move around and work.

To address this concern, we instrument for the non-random residential location of undocumented immigrants in our sample using information on what their residence would have been had they chosen to reside in the same locations chosen by their countrymen *prior* to the adoption of laws granting undocumented immigrants access to driving licenses. Specifically, we look at where similar likely undocumented immigrants resided in the 1980 Census. Looking at the location of alike migrants around a decade before for most of the adopting states, allows us to address any concerns regarding the role that economic conditions not captured by the state fixed-effects or state-specific time trends could be playing in the residential choices of migrants in our sample.

Specifically, we construct a "shift-share" instrument,[16] where the *shift* is the policy itself. The *share* addresses the non-random location of undocumented immigrants using

[16] Shift-share instruments have been widely used in the economics literature in a variety of contexts (see, for example: Bartik 1991; Nakamura and Steinsson 2014; Wilson 2012; Autor, Dorn, and Hanson 2013; Kovak 2013; Nunn and Qian 2014 to name a few).

information on the residential distribution of undocumented countrymen *prior* to the adoption of the state driver policies in question as follows:

$$(4) \qquad Share\ of\ Undocumented\ Immigrant_{s,o,1980} = \frac{undocumented\ immigrants_{s,o,1980}}{undocumented\ immigrants_{o,1980}}$$

In other words, it represents the share of likely undocumented immigrants from country of origin *o* residing in state *s* in the 1980 Census computed. In the spirit of other studies in the immigration literature (*e.g.* Bartel 1989; Altonji and Card 1991; Card 2001; Cortés and Tessada 2011 among many others), we exploit the entrenched tendency of immigrants to locate in areas where they have networks of countrymen to instrument for their non-random residential choices.[17] Finally, shift and share are interacted in order to capture the likely exposure to the policy.

Table 7 displays the results from this identification test. The bottom rows in Table 7 confirm that the shift-share instrument is a good one. The F-stats from the first stage regressions are significantly different from zero and large (Sanderson and Windmeijer, 2016). Additionally, the positive and highly statistically significant IV coefficients from the first stage regressions confirm the entrenched tendency for immigrants to locate in areas with established networks of their countrymen. Finally, the estimates from the second stage regressions gauging the impact of granting driving licenses to undocumented immigrant women on their weekly hours of work and hourly wages continue to be statistically different from zero and of the same sign than those in Table 3. Specifically, the granting of driving licenses to undocumented migrants increases women's labor supply at the intensive margin by 7 percent, while it lowers their hourly wages by 3.5 percent. The results from the instrumental variable approach also uncover the fact that non-working undocumented immigrant women might be responding to

[17] It is worth noting that, despite the emergence of new immigrant locations during the 1990s, the vast majority of immigrants continued to locate in traditional states that accounted for approximately 60% of the unauthorized population: California, Texas, Florida or New York/New Jersey and Illinois (see: http://www.pewresearch.org/fact-tank/2016/09/20/5-facts-about-illegal-immigration-in-the-u-s/).

the granting of driving licenses as well. The policy raises their employment likelihood by 4.2 percentage points, thus aligning their employment propensity to that of their male counterparts. In sum, the results from Table 7 confirm that the granting of driving licenses to undocumented immigrants raises the labor supply of likely undocumented women, both at the intensive and extensive margins, lowering their real hourly wage.

8. Impact on Native Female Workers

One might reasonably be concerned about crowing-out impacts on similarly skilled Hispanic, but native, female workers or, alternatively, hopeful about emerging complementariness with high-skilled native female workers. From a theoretical perspective, the policy could reduce, raise or leave unchanged the labor supply of low- and high-skilled native women, depending on the degree to which their labor complements or substitutes the one supplied by native women (see Amuedo-Dorantes and Sevilla 2014). Hence, in Table 8, we try to answer this question by looking at how the granting of driving licenses to undocumented immigrants impacts the labor market outcomes of both, similarly low-skilled Hispanic women who are, nonetheless, U.S.-born, as well as that of high-skilled native women.

As can be seen in Panel A of Table 8, the policy does not appear to significantly alter the labor market outcomes of similarly skilled Hispanic, yet native, women, clearing up concerns of how the policy might negatively affect this group.[18] Likewise, we do not find any significant impacts of the legislation on the labor market outcomes of high-skilled native women in Panel B of Table 8. In sum, the state granting of driving licenses to undocumented immigrants does not appear to have had a significant impact on the labor market outcomes of native women, regardless of their skill level.

[18] We also perform the analysis for other subgroups, including all low-skilled native females. We also fail to find statistically significance evidence of an impact.

9. Summary and Conclusions

Twelve states in the United States and the District of Columbia have enacted measures granting undocumented immigrants access to driving licenses –most of them during the first half of the 2010s. The measures were intended to enhance security on the roads, allowing these motorists to properly register and insure. Additionally, some hoped the measures would counteract the difficulties imposed by intensified immigration enforcement on an increasingly marginalized population. In this study, we look for first-order impacts of these policies on its targeted population –namely, undocumented immigrants. Specifically, we try to assess if the adoption of these policies significantly alters the labor supply of undocumented immigrants, possibly inducing some of them to start working or, if employed, to change their work hours.

To that end, we gather data from the 2013 through 2017 ASEC annual surveys to examine changes in likely undocumented men and women's employment patterns in response to the policy, as well as CPS-ORG monthly data over the same period to gauge any responses in terms of weekly hours of work and hourly wages of those already at work. Using other low-skilled, long-term resident, foreign-born Hispanics who are, nonetheless, naturalized (thus, clearly legal) as our control group, we find that likely undocumented women respond to the availability of driving licenses for undocumented immigrants by increasing their labor supply. Specifically, after accounting for the potential endogeneity of the policy, we find that the granting of driving licenses raises undocumented women's work propensity by 4.2 percentage points –aligning it to their male counterparts' employment likelihood. In addition, those at work raise their weekly hours of work by roughly 4 percent and experience a decline in real hourly wages of approximately 3 percent. No alike responses are found among likely undocumented men –a group with a relatively inelastic labor supply given that 94 percent of them are already at work full time.

Our findings prove robust to a number of identification checks, are unique to likely undocumented women, and seem to be primarily driven by the response of women without young children –possibly with fewer family responsibilities holding them back from working longer hours. To the extent that women are more likely to be secondary household earners, they might be more likely than men to restrict their labor supply in the midst of intensified enforcement. Providing them with a valid driver's license they can present if stopped by the police can prove particularly empowering.

We also explore the mechanisms through which that increase in labor supply might be occurring. We find that the granting of driving licenses slightly raises the daily commute time of likely undocumented women, whereas undocumented men only switched their transportation method –that is, they reduce their carpooling. The latter helps explain why their labor supply for men did not significantly change, whereas that of women increased.

Overall, the findings inform about the first-order impacts of state policies granting undocumented immigrants access to driving licenses on their most basic labor market outcomes –namely, their employment likelihood, hours worked and hourly wages. While the policies seem to steer some likely undocumented immigrant women into increasing their hours of work, they do not seem to have a negative impact of the employment of other groups of low-skilled native women, palliating any concerns regarding potential negative externalities from these policies.

References

Acosta, Yesenia D., Luke J. Larse, and Elizabeth M. Grieco. 2014. "Noncitizens under Age 35: 2010-2012." *American Community Survey Briefs*.

Altonji, Joseph, and David Card. 1991. "The Effects of Immigration on the Labor Market Outcomes of Less-Skilled Natives." In *Immigration, Trade, and the Labor Market*, 201–34. National Bureau of Economic Research, Inc.

Amuedo-Dorantes, Catalina, and Esther Arenas-Arroyo. 2017. "Immigration Enforcement and Foster Care Placements." *IZA Discussion Paper* No. 10850.

Amuedo-Dorantes, Catalina, Esther Arenas-Arroyo, and Almudena Sevilla. 2018. "Immigration Enforcement and Economic Resources of Children with Likely Unauthorized Parents." *Journal of Public Economics* 158. Elsevier:63–78. https://doi.org/10.1016/j.jpubeco.2017.12.004.

Amuedo-Dorantes, Catalina, and C Bansak. 2014. "Employment Verification Mandates and the Labor Market of Likely Unauthorized and Native Workers." *Contemporary Economic Policy* 32 (3):671–80.

Amuedo-Dorantes, Catalina, and Cynthia Bansak. 2012. "The Labor Market Impact of Mandated Employment." *American Economic Review: Papers & Proceedings* 102 (3):543–48.

Amuedo-Dorantes, Catalina, and Almudena Sevilla Sanz. 2014. "Low-Skilled Immigration and Parenting Investments of College-Educated Mothers in the United States : Evidence from Time-Use Data." *Journal of Human Resources*, Forthcoming.

Autor, D.H, D. Dorn, and G.H. Hanson. 2013. "The China Syndrome: Local Labor Market Effects of Import Competition in the United States." *American Economic Review* 103 (6):2121–68.

Baker, Bryan, and Nancy Rytin. 2013. "Estimates of Unauthorized Immigrant Population Residing in the United States." *Population Estimates Office of Immigration Statistics*.

Bansak, Cynthia, Heather Mattson, and Lorien Rice. 2010. "Cars, Employment, and Single Mothers: The Effect of Welfare Asset Restrictions." *Industrial Relations: A Journal of Economy and Society* 49 (3):321–45. https://doi.org/10.1111/j.1468-232X.2010.00603.x.

Bartel, Ann P. 1989. "Where Do the New U . S . Immigrants Live ?" *Journal of Labor Economics* 7 (4):371–91. https://doi.org/10.1086/298388.

Bartik, T. J. 1991. *Who Benefits from State and Local Economic Development Policies?* Kalamazoo, MI: W.E. Upjohn Institute for Employment Research.

Baum, Charles L. 2009. "The Effects of Vehicle Ownership on Employment." *Journal of Urban Economics* 66 (3). Elsevier Inc.:151–63. https://doi.org/10.1016/j.jue.2009.06.003.

Bohn, Sarah, and Magnus Lofstrom. 2013. “Employment Effects of State Legislation against the Hiring of Unauthorized Immigrant Workers.” In *Immigration, Poverty, and Socioeconomic Inequality*, edited by David Card and Steven Raphael. Russell Sage.

Bohn, Sarah, Magnus Lofstrom, and Raphael Steven. 2014. “Did the 2007 Legal Arizona Workers Act Reduce the States Unauthorized Immigrants?” *The Review of Economics and Statistics* 96 (2):258–69.

Bohn, Sarah, and Todd Pugatch. 2013. “U.S. Border Enforcement and Mexican Immigrant Location Choice.” *Demography* 52 (5):1543–70.

Borjas, George J. 2017. “The Labor Supply of Undocumented Immigrants.” *Labour Economics* 46 (June 2016). Elsevier:1–13. https://doi.org/10.1016/j.labeco.2017.02.004.

Card, David. 2001. “Immigrant Inflows , Native Outflows , and the Local Labor Market Impacts of Higher Immigration.” *Journal of Labor Economics* 19 (1):22–64.

Cortés, Patricia, and José Tessada. 2011. “Low-Skilled Immigration and the Labor Supply of Highly Skilled Women.” *American Economic Journal: Applied Economics* 3 (3):88–123. https://doi.org/10.1257/app.3.3.88.

Flood, Sarah, Miriam King, Steven Ruggles, and J. Robert Warren. 2017. “Integrated Public Use Microdata Series, Current Population Survey: Version 5.0. [Dataset].” *Minneapolis: University of Minnesota*.

Gautier, Pieter a., and Yves Zenou. 2010. “Car Ownership and the Labor Market of Ethnic Minorities.” *Journal of Urban Economics* 67 (3). Elsevier Inc.:392–403. https://doi.org/10.1016/j.jue.2009.11.005.

Gee, Lisa Christensen, Matthew Gardner, Misha E. Hill, and Meg Wiehe. 2017. “Undocumented Immigrants’ State and Local Tax Contributions | The Institute on Taxation and Economic Policy (ITEP).” *Insitute on Taxation and Economic Policy*, no. March. http://www.itep.org/immigration/.

Hook, Jennifer Van, James D. Bachmeier, Donna L. Coffman, and Ofer Harel. 2015. “Can We Spin Straw Into Gold? An Evaluation of Immigrant Legal Status Imputation Approaches.” *Demography* 52 (1):329–54. https://doi.org/10.1007/s13524-014-0358-x.

Kostandini, G., E. Mykerezi, and C. Escalante. 2013. “The Impact of Immigration Enforcement on the U.S. Farming Sector.” *American Journal of Agricultural Economics* 96 (1):172–92. https://doi.org/10.1093/ajae/aat081.

Kovak, B.K. 2013. “Regional Effects of Trade Reform: What Is the Correct Measure of Liberalization?” *American Economic Review* 103 (5):1960–76.

Krogstad, Jens Manuel, and Jeffrey S Passel. 2015. “5 Facts about Illegal Immigration in the U.S. | Pew Research Center.” *Pew Research Center*, 1–88. http://www.pewresearch.org/fact-tank/2014/11/18/5-facts-about-illegal-immigration-in-the-u-s/.

Legislature, National Conference of State. 2017. “State Omnibus Bills and Laws.” 2017. http://www.ncsl.org/documents/statefed/omnibus_laws.pdf.

Legislatures, National Conference of State. 2017. “State E-Verify Laws.” 2017. http://www.ncsl.org/research/immigration/everify-faq.aspx#2012 State Action.

Miles, Thomas J., and Adam B. Cox. 2014. “Does Immigration Enforcement Reduce Crime? Evidence from Secure Communities.” *Journal of Law and Economics* 57 (4). https://doi.org/10.1017/CBO9781107415324.004.

Nakamura, E., and J Steinsson. 2014. “Fiscal Stimulus in a Monetary Union: Evidence from US Regions.” *American Economic Review* 104 (3):753–92.

Nunn, N, and N Qian. 2014. “US Food Aid and Civil Conflict.” *Amercian Economic Review* 106 (6).

Orrenius, Pia M, and Madeline Zavodny. 2015. “The Impact of E-Verify Mandates on Labor Market Outcomes.” *Southern Economic Journal* 81 (4):947–59. https://doi.org/10.1002/soej.12023.

———. 2016. “Do State Work Eligibility Verification Laws Reduce Unauthorized Immigration?” *IZA Journal of Migration* 5 (1). IZA Journal of Migration:5. https://doi.org/10.1186/s40176-016-0053-3.

Passel, Jeffrey S, D’Vera Cohn, and Molly Rohal. 2014. “Unauthorized Immigrant Totals Rise in 7 States, Fall in 14: Decline in Those From Mexico Fuels Most State Decreases.” *Washington, D.C. Pew Research Center’s Hispanic Trends Project, November*, Pew Research Center’s Hispanic Trends Project, November, . Washington, DC.

Passel, Jeffrey S, and D Vera Cohn. 2009. “A Portrait of Unauthorized Immigrants in the United States.” *Pew Research Center*. Washington, DC.

Passel, Jeffrey S, Mark Hugo Lopez, D’Vera Cohn, and Molly Rohal. 2014. “As Growth Stalls, Unauthorized Immigrant Population Becomes More Settled.” *Pew Rsearch Center*. Washington, DC.

Passel, Jeffrey S, and Paul Taylor. 2010. “Unauthorized Immigrants and Their U.S. Born Children.” Washington, D.C.

Pope, Nolan G. 2016. “The Effects of DACAmentation: The Impact of Deferred Action for Childhood Arrivals on Unauthorized Immigrants.” *Journal of Public Economics* 143. Elsevier B.V.:98–114. https://doi.org/10.1016/j.jpubeco.2016.08.014.

Sanderson, Eleanor, and Frank Windmeijer. 2016. “A Weak Instrument F-Test in Linear IV Models with Multiple Endogenous Variables.” *Journal of Econometrics* 190 (2). Elsevier B.V.:212–21. https://doi.org/10.1016/j.jeconom.2015.06.004.

U.S. Immigration and Customs Enforcement (ICE). 2017. “Secure Communities.” 2017. https://www.ice.gov/secure-communities#tab1.

Watson, Tara. 2014. “Inside the Refrigerator: Immigration Enforcement and Chilling Effects in Medicaid Participation.” *American Economic Journal:Economic Policy* 6 (3):313–38.

Wilson, D.J. 2012. “Fiscal Spending Jobs Multipliers: Evidence from the 2009 American Recovery and Reinvestment Act.” *American Economic Journal: Economic Policy* 4 (3):251–82.

Table 1: Descriptive Statistics

Samples	ASEC data for the Employment Outcome						CPS Outgoing Rotation Groups for Hours of Work and Wage Outcomes					
Groups	**All**		**Likely Undocumented**		**Low-Skilled, Long-Term Naturalized Hispanics**		**All**		**Likely Undocumented**		**Low-Skilled, Long-Term Naturalized Hispanics**	
Panel A: Men												
Statistic	**Mean**	**S.D.**	**Mean**	**S.D.**	**Mean**	**S.D.**	**Mean**	**S.D.**	**Mean**	**S.D.**	**Mean**	**S.D.**
In States Granting Licenses	0.270	0.444	0.253	0.435	0.323	0.468	0.319	0.466	0.302	0.459	0.376	0.484
Likely Undocumented	0.756	0.429	1.000	0.000	0.000	0.000	0.769	0.421	1.000	0.000	0.000	0.000
Enforcement Index	1.473	0.701	1.489	0.710	1.425	0.668	1.457	0.714	1.475	0.722	1.394	0.682
Age	40.841	10.501	39.210	10.097	45.895	10.113	40.416	10.721	38.814	10.209	45.765	10.660
Years in U.S.	19.785	9.513	17.832	8.520	25.836	9.877	19.313	9.399	17.461	8.413	25.495	9.866
Married	0.670	0.470	0.636	0.481	0.773	0.419	0.646	0.478	0.617	0.486	0.745	0.436
Years of Schooling	4.894	2.443	4.698	2.459	5.503	2.290	4.844	2.466	4.683	2.469	5.38	2.376
No. of Children	1.471	1.407	1.444	1.422	1.555	1.357	1.391	1.398	1.371	1.423	1.459	1.309
Metro Area	0.514	0.500	0.529	0.499	0.465	0.499	0.507	0.500	0.522	0.500	0.460	0.499
Employed	0.941	0.235	0.940	0.237	0.946	0.227	-	-	-	-	-	-
Weekly Hours of Work	-	-	-	-	-	-	39.132	6.359	39.043	6.441	39.432	6.069
Real Hourly Wage	-	-	-	-	-	-	14.018	6.062	13.503	5.719	15.739	6.812
Observations	13,613		10,173		3,440		9,510		7,331		2,179	
Panel B: Women												
Statistic	**Mean**	**S.D.**	**Mean**	**S.D.**	**Mean**	**S.D.**	**Mean**	**S.D.**	**Mean**	**S.D.**	**Mean**	**S.D.**
In States Granting Licenses	0.308	0.461	0.291	0.454	0.344	0.475	0.330	0.470	0.304	0.460	0.329	0.470
Likely Undocumented	0. 678	0.463	1.000	0.000	0.000	0.000	0.710	0.454	1.000	0.000	0.000	0.000
Enforcement Index	1.452	0.683	1.476	0.709	1.397	0.618	1.467	0.731	1.496	0.760	1.397	0.649
Age	42.168	10.447	40.332	10.002	46.236	10.265	41.876	10.497	40.266	10.067	45.812	10.492
Years in U.S.	20.456	9.679	17.896	8.234	26.127	10.218	20.007	9.431	17.693	8.146	25.664	9.956
Married	0.576	0.494	0.559	0.497	0.612	0.487	0.566	0.496	0.558	0.497	0.586	0.493
Years of Schooling	5.1453	2.377	4.8239	2.4091	5.8574	2.1392	5.1011	2.3892	4.8294	2.4133	5.7654	2.1923
No. of Children	1.614	1.293	1.679	1.321	1.469	1.216	1.591	1.275	1.635	1.303	1.484	1.197
Metro Area	0.523	0.500	0.540	0.498	0.487	0.500	0.515	0.500	0.532	0.499	0.473	0.499
Employed	0.921	0.269	0.914	0.279	0.925	0.263	-	-	-	-	-	-
Weekly Hours of Work	-	-	-	-	-	-	35.106	8.672	34.615	8.784	36.069	8.304
Real Hourly Wage	-	-	-	-	-	-	11.810	4.112	10.706	3.765	12.511	4.614
Observations	7,760		5,268		2,492		6,171		4,374		1,797	

Table 2: OLS Estimates of the Impact of Driving licenses for Undocumented Immigrants on the Labor Market Outcomes of Men

Outcome	**Employed**			**Log (Weekly Hours of Work)**			**Log (Real Hourly Wage)**		
Column	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**
Statistic	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**
Likely Undocumented (LU)	-0.014	-0.017	-0.018*	-0.004	-0.007	-0.008	-0.055***	-0.053***	-0.053***
	(0.011)	(0.010)	(0.010)	(0.008)	(0.009)	(0.009)	(0.015)	(0.016)	(0.016)
Driving licenses (DL)	0.007	0.024**	0.020	-0.008	0.005	-0.003	0.062***	0.034*	0.012
	(0.009)	(0.009)	(0.016)	(0.008)	(0.011)	(0.010)	(0.016)	(0.019)	(0.029)
LU*DL	**-0.004**	**-0.001**	**-0.001**	**0.012**	**0.013**	**0.014**	**-0.003**	**-0.012**	**-0.014**
	(0.007)	**(0.007)**	**(0.007)**	**(0.011)**	**(0.011)**	**(0.011)**	**(0.018)**	**(0.017)**	**(0.017)**
Enforcement Index (EI)	0.012**	0.019	-0.054	0.004	0.068***	0.073***	0.006	0.037	0.100
	(0.005)	(0.020)	(0.058)	(0.004)	(0.020)	(0.015)	(0.009)	(0.071)	(0.061)
Age	-0.000	0.000	0.000	0.000	0.000	0.000	0.004***	0.004***	0.004***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Years in U.S.	-0.001**	-0.001***	-0.001***	-0.000	-0.000	-0.000	0.002***	0.003***	0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Married	-0.005	-0.008	-0.007	0.012**	0.010*	0.010*	0.060***	0.061***	0.060***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Years of Schooling	0.000**	0.000***	0.000***	0.000**	0.000***	0.000***	0.003***	0.003***	0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
No. of Children	0.002	0.003	0.003	0.004	0.004	0.004	0.017***	0.018***	0.019***
	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)
Metro Area	0.008**	0.007**	0.007**	-0.014**	-0.015***	-0.015***	-0.009	-0.002	-0.002
	(0.004)	(0.003)	(0.003)	(0.006)	(0.005)	(0.005)	(0.010)	(0.010)	(0.010)
Month Fixed-Effects		n/a	n/a		Yes	Yes		Yes	Yes
State Fixed-Effects		Yes	Yes		Yes	Yes		Yes	Yes
Year Fixed-Effects		Yes	Yes		Yes	Yes		Yes	Yes
State-specific Time Trend			Yes			Yes			Yes
Observations	13,613	13,613	13,613	9,510	9,510	9,510	9,510	9,510	9,510
R-squared	0.003	0.016	0.019	0.004	0.015	0.018	0.099	0.117	0.123

Notes: All regressions include a constant term. Standard errors are clustered at the state level. * $p<0.1$; ** $p<0.05$; *** $p<0.01$.

Table 3: OLS Estimates of the Impact of Driving licenses for Undocumented Immigrants on the Labor Market Outcomes of Women

Outcome	**Employed**			**Log (Weekly Hours of Work)**			**Log (Real Hourly Wage)**		
Column	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(8)**
Statistic	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**
Likely Undocumented (LU)	-0.017***	-0.021***	-0.021***	-0.036***	-0.038***	-0.039***	-0.067***	-0.056***	-0.057***
	(0.006)	(0.007)	(0.007)	(0.011)	(0.011)	(0.012)	(0.010)	(0.013)	(0.014)
Driving licenses (DL)	0.002	-0.010	0.014	-0.028	-0.037*	-0.065***	0.086***	0.020	0.030*
	(0.012)	(0.013)	(0.012)	(0.024)	(0.021)	(0.024)	(0.019)	(0.016)	(0.016)
LU*DL	**0.012**	**0.019**	**0.018**	**0.039****	**0.040****	**0.040****	**-0.024**	**-0.035****	**-0.034****
	(0.012)	**(0.012)**	**(0.012)**	**(0.017)**	**(0.017)**	**(0.017)**	**(0.015)**	**(0.016)**	**(0.017)**
Enforcement Index (EI)	0.016**	0.059	0.038	-0.008	0.026	-0.021	-0.004	-0.014	0.018
	(0.008)	(0.045)	(0.044)	(0.009)	(0.040)	(0.052)	(0.010)	(0.069)	(0.098)
Age	0.002***	0.003***	0.002***	-0.002*	-0.001*	-0.002**	0.002***	0.002***	0.002***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
Years in U.S.	-0.001**	-0.001*	-0.001*	0.003***	0.003***	0.003***	0.003***	0.004***	0.004***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)
Married	-0.002	-0.002	-0.001	-0.017**	-0.019**	-0.019**	0.013*	0.016**	0.015**
	(0.010)	(0.009)	(0.009)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Years of Schooling	0.000	0.000	0.000	-0.000	-0.000	-0.000	0.003***	0.003***	0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
No. of Children	-0.003	-0.003	-0.003	-0.009**	-0.008**	-0.008**	0.002	0.003	0.003
	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)
Metro Area	-0.008	-0.005	-0.005	-0.008	-0.004	-0.004	-0.009	-0.004	-0.003
	(0.007)	(0.008)	(0.008)	(0.013)	(0.013)	(0.013)	(0.011)	(0.010)	(0.010)
Month Fixed-Effects		n/a	n/a		Yes	Yes		Yes	Yes
State Fixed-Effects		Yes	Yes		Yes	Yes		Yes	Yes
Year Fixed-Effects		Yes	Yes		Yes	Yes		Yes	Yes
State-specific Time Trend			Yes			Yes			Yes
Observations	7,788	7,788	7,788	6,171	6,171	6,171	6,171	6,171	6,171
R-squared	0.011	0.025	0.030	0.009	0.022	0.027	0.105	0.130	0.135

Notes: All regressions include a constant term. Standard errors are clustered at the state level. * $p<0.1$; ** $p<0.05$; *** $p<0.01$.

Table 4: Heterogeneous Effects by Family Responsibilities
OLS Estimates of the Impact of Driving licenses for Undocumented Immigrants on the Labor Market Outcomes of Women

Outcome	**Employed**			**Log (Weekly Hours of Work)**			**Log (Real Hourly Wage)**		
Column	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(8)**
Statistic	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**
Panel A: Women without Children Less than 5 Years Old									
Likely Undocumented (LU)	-0.017***	-0.021***	-0.021***	-0.039***	-0.042***	-0.043***	-0.064***	-0.053***	-0.055***
	(0.006)	(0.007)	(0.007)	(0.010)	(0.011)	(0.011)	(0.011)	(0.014)	(0.014)
Driving licenses (DL)	-0.000	-0.009	0.029	-0.028	-0.048***	-0.059**	0.093***	0.011	0.024
	(0.012)	(0.019)	(0.018)	(0.021)	(0.018)	(0.024)	(0.021)	(0.022)	(0.017)
LU*DL	**0.010**	**0.016**	**0.016**	**0.049*** **	**0.050*** **	**0.050*** **	**-0.022**	**-0.034** **	**-0.031* **
	(0.012)	**(0.012)**	**(0.012)**	**(0.013)**	**(0.013)**	**(0.014)**	**(0.014)**	**(0.015)**	**(0.016)**
Observations	6,586	6,586	6,586	5,199	5,199	5,199	5,199	5,199	5,199
R-squared	0.010	0.021	0.028	0.010	0.023	0.029	0.109	0.137	0.143
Panel B: Women with Children Less than 5 Years Old									
Likely Undocumented (LU)	-0.004	-0.003	0.003	-0.026	-0.036	-0.042	-0.101***	-0.106***	-0.103***
	(0.021)	(0.023)	(0.024)	(0.047)	(0.055)	(0.062)	(0.025)	(0.029)	(0.029)
Driving licenses (DL)	0.028	-0.017	-0.075	-0.043	0.004	-0.115	0.018	0.018	0.040
	(0.050)	(0.082)	(0.145)	(0.071)	(0.085)	(0.089)	(0.038)	(0.036)	(0.046)
LU*DL	**-0.006**	**0.018**	**0.002**	**0.008**	**0.014**	**0.019**	**0.003**	**0.014**	**0.010**
	(0.036)	**(0.042)**	**(0.045)**	**(0.070)**	**(0.076)**	**(0.084)**	**(0.042)**	**(0.047)**	**(0.049)**
Observations	1,202	1,202	1,202	972	972	972	972	972	972
R-squared	0.017	0.079	0.117	0.019	0.081	0.110	0.084	0.151	0.186
Month Fixed-Effects		n/a	n/a		Yes	Yes		Yes	Yes
State Fixed-Effects		Yes	Yes		Yes	Yes		Yes	Yes
Year Fixed-Effects		Yes	Yes		Yes	Yes		Yes	Yes
State-specific Time Trend			Yes			Yes			Yes

Notes: All regressions include a constant term and the regressors in Table 3. Standard errors are clustered at the state level. * $p<0.1$; ** $p<0.05$; *** $p<0.01$.

Table 5: OLS Estimates of the Impact of Driving licenses for Undocumented Immigrants on Car Pooling and Commute of Undocumented Men and Women

Outcome	**Use of Motor Vehicle**			**Carpools (vs. Driving Alone)**			**Daily One-Way Commute in Minutes**		
Statistic	**Coeff (S.E.)**	**Coeff (S.E.)**	**Coeff (S.E.)**	**Coeff (S.E.)**	**Coeff (S.E.)**	**Coeff (S.E.)**	**Coeff (S.E.)**	**Coeff (S.E.)**	**Coeff (S.E.)**
Panel A: Men									
Likely Undocumented (LU)	-0.042**	-0.063***	-0.063***	0.081***	0.080***	0.079***	-0.061	0.173	0.155
	(0.017)	(0.016)	(0.016)	(0.010)	(0.011)	(0.011)	(0.364)	(0.310)	(0.311)
Driving licenses (DL)	0.118*	-0.015	-0.022	-0.004	0.022**	0.045***	0.613	0.714	-0.700
	(0.060)	(0.020)	(0.015)	(0.008)	(0.010)	(0.015)	(1.205)	(0.458)	(1.006)
LU*DL	**0.017**	**0.031**	**0.031**	**-0.046*** **	**-0.041*** **	**-0.041*** **	**0.079**	**-0.176**	**-0.139**
	(0.025)	**(0.024)**	**(0.024)**	**(0.014)**	**(0.014)**	**(0.014)**	**(0.522)**	**(0.502)**	**(0.502)**
Observations	64,236	64,236	64,236	52,950	52,950	52,950	64,236	64,236	64,236
R-squared	0.118	0.218	0.219	0.040	0.055	0.056	0.009	0.027	0.029
Panel B: Women									
Likely Undocumented (LU)	-0.041*	-0.073***	-0.073***	0.081***	0.084***	0.085***	-1.279**	-0.508	-0.481
	(0.022)	(0.012)	(0.012)	(0.014)	(0.013)	(0.013)	(0.625)	(0.356)	(0.355)
Driving licenses (DL)	0.133*	0.010	0.025	-0.001	-0.008	-0.029	-0.520	-1.501**	-0.520
	(0.075)	(0.014)	(0.020)	(0.012)	(0.011)	(0.024)	(1.724)	(0.664)	(0.614)
LU*DL	**-0.025**	**-0.005**	**-0.006**	**-0.013**	**-0.015**	**-0.016**	**1.744** **	**1.109** **	**1.116** **
	(0.022)	**(0.016)**	**(0.016)**	**(0.023)**	**(0.021)**	**(0.022)**	**(0.712)**	**(0.546)**	**(0.545)**
Observations	38,255	38,255	38,255	28,384	28,384	28,384	38,255	38,255	38,255
R-squared	0.149	0.251	0.252	0.031	0.043	0.048	0.037	0.065	0.067
State Fixed-Effects		Yes	Yes		Yes	Yes		Yes	Yes
Year Fixed-Effects		Yes	Yes		Yes	Yes		Yes	Yes
State-specific Time Trend			Yes			Yes			Yes

Notes: We use 2013-2016 ACS. Our sample continues to be restricted to low-skilled, long-term Hispanic ages 16-64. All regressions include a constant term and the regressor in Table 3. Where carpool: 1 if carpool, 0 drives alone. Car: 1 car to work, 0 other (public transport). Travel time: commuting time in minutes. Standard errors are clustered at the state level. * p<0.1; ** p<0.05; *** p<0.01.

Table 6: Identification Check #1 – Assessing for Pre-Existing Differential Impacts or Anticipatory Effects

Outcome	**Employed**			**Log (Weekly Hours of Work)**			**Log (Real Hourly Wage)**		
Column	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(8)**
Statistic	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**
Panel A: Checking for Anticipatory Impacts									
Likely Undocumented (LU)	-0.010	-0.013	-0.013	-0.043***	-0.045***	-0.044***	-0.067***	-0.052**	-0.053**
	(0.011)	(0.012)	(0.012)	(0.015)	(0.015)	(0.016)	(0.017)	(0.019)	(0.020)
Driving licenses (DL)	-0.009	-0.004	-0.005	-0.048**	-0.065*	-0.092*	0.089***	-0.026	-0.038
	(0.016)	(0.018)	(0.026)	(0.018)	(0.035)	(0.053)	(0.021)	(0.024)	(0.045)
LU*DL	**0.021**	**0.027**	**0.026**	**0.051*** **	**0.054*** **	**0.053*** **	**-0.031**	**-0.047** **	**-0.045** **
	(0.020)	**(0.020)**	**(0.020)**	**(0.017)**	**(0.017)**	**(0.017)**	**(0.019)**	**(0.020)**	**(0.021)**
Placebo DL 1 Year Before	-0.025	0.013	-0.002	-0.011	-0.014	-0.037	0.009	-0.059**	-0.076**
	(0.015)	(0.020)	(0.030)	(0.013)	(0.027)	(0.036)	(0.023)	(0.028)	(0.035)
LU*Place DL 1 Year Before	**-0.018**	**-0.015**	**-0.017**	**-0.005**	**-0.006**	**-0.004**	**-0.012**	**-0.028**	**-0.027**
	(0.011)	**(0.012)**	**(0.013)**	**(0.017)**	**(0.016)**	**(0.017)**	**(0.022)**	**(0.022)**	**(0.023)**
Observations	6,059	6,059	6,059	5,000	5,000	5,000	5,000	5,000	5,000
R-squared	0.014	0.025	0.032	0.011	0.024	0.030	0.110	0.138	0.144
Panel B: Checking for Differential Pre-Trends over a Longer Time Period Preceding the Policy Implementation									
Likely Undocumented (LU)	-0.014	-0.015	-0.015	-0.077***	-0.073***	-0.075***	-0.009	-0.010	-0.010
	(0.012)	(0.011)	(0.011)	(0.016)	(0.016)	(0.016)	(0.012)	(0.012)	(0.011)
Time Trend	-0.003***	0.021	0.003	-0.002	-0.006	-0.022	-0.007***	-0.023	-0.035*
	(0.001)	(0.014)	(0.014)	(0.003)	(0.017)	(0.016)	(0.002)	(0.021)	(0.021)
LU*Time Trend	**-0.001**	**-0.001**	**-0.001**	**-0.003***	**-0.003***	**-0.003**	**-0.000**	**-0.000**	**-0.000**
	(0.001)	**(0.001)**	**(0.001)**	**(0.002)**	**(0.002)**	**(0.002)**	**(0.002)**	**(0.002)**	**(0.001)**
Observations	19,058	19,058	19,058	14,607	14,607	14,607	14,607	14,607	14,607
R-squared	0.014	0.026	0.029	0.090	0.117	0.121	0.014	0.026	0.029
Month Fixed-Effects		n/a	n/a		Yes	Yes		Yes	Yes
State Fixed-Effects		Yes	Yes		Yes	Yes		Yes	Yes
Year Fixed-Effects		Yes	Yes		Yes	Yes		Yes	Yes
State-specific Time Trend			Yes			Yes			Yes

Notes: All regressions include a constant term and the regressors in Table 3, as well as the fixed-effects and time trends noted above. Standard errors are clustered at the state level. * $p<0.1$; ** $p<0.05$; *** $p<0.01$.

Table 7: Identification Check #2 – Addressing the Non-Random Location of Likely Undocumented Immigrants
IV of the Impact of Driving licenses for Undocumented Immigrants on the Labor Market Outcomes of Women

Outcome	**Employed**			**Log (Weekly Hours of Work)**			**Log (Real Hourly Wage)**		
Column	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(8)**
Statistic	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**
Likely Undocumented (LU)	-0.019***	-0.021***	-0.022***	-0.043***	-0.044***	-0.046***	-0.069***	-0.067***	-0.059***
	(0.006)	(0.007)	(0.007)	(0.011)	(0.012)	(0.011)	(0.010)	(0.012)	(0.013)
Driving licenses (DL)	-0.015	-0.054***	0.014	-0.074***	-0.088***	-0.096***	0.093***	0.071***	0.016
	(0.014)	(0.014)	(0.017)	(0.012)	(0.017)	(0.025)	(0.019)	(0.023)	(0.018)
LU*DL	**0.018****	**0.019****	**0.022****	**0.064*****	**0.065*****	**0.067*****	**-0.021**	**-0.023**	**-0.030***
	(0.008)	**(0.009)**	**(0.009)**	**(0.010)**	**(0.011)**	**(0.011)**	**(0.013)**	**(0.014)**	**(0.016)**
Observations	7,760	7,760	7,760	6,171	6,171	6,171	6,171	6,171	6,171
R-squared	0.010	0.015	0.023	0.008	0.009	0.022	0.105	0.112	0.127
First-Stage Regression Results for DL									
IV	1.439***	1.494***	1.234***	1.366***	1.423***	1.317***	1.366***	1.423***	1.317***
	(0.074)	(0.076)	(0.183)	(0.100)	(0.078)	(0.156)	(0.100)	(0.078)	(0.156)
R-squared	0.567	0.904	0.950	0.564	0.907	0.947	0.564	0.907	0.947
Sanderson-Windmeijer Multivariate F-test	589.1	641.2	550	402.6	415.8	313.1	402.6	415.8	313.1
*First-Stage Regression Results for LU*DL*									
LU*DL	1.512***	1.497***	1.491***	1.422***	1.422***	1.422***	1.422***	1.422***	1.422***
	(0.061)	(0.059)	(0.061)	(0.079)	(0.077)	(0.077)	(0.079)	(0.077)	(0.077)
R-squared	0.598	0.810	0.833	0.604	0.827	0.852	0.604	0.827	0.852
Sanderson-Windmeijer Multivariate F-test	629.7	712.7	651.9	351.3	337.4	333.4	351.3	337.4	333.4
Month Fixed-Effects		n/a	n/a		Yes	Yes		Yes	Yes
State Fixed-Effects		Yes	Yes		Yes	Yes		Yes	Yes
Year Fixed-Effects		Yes	Yes		Yes	Yes		Yes	Yes
State-specific Time Trend			Yes			Yes			Yes

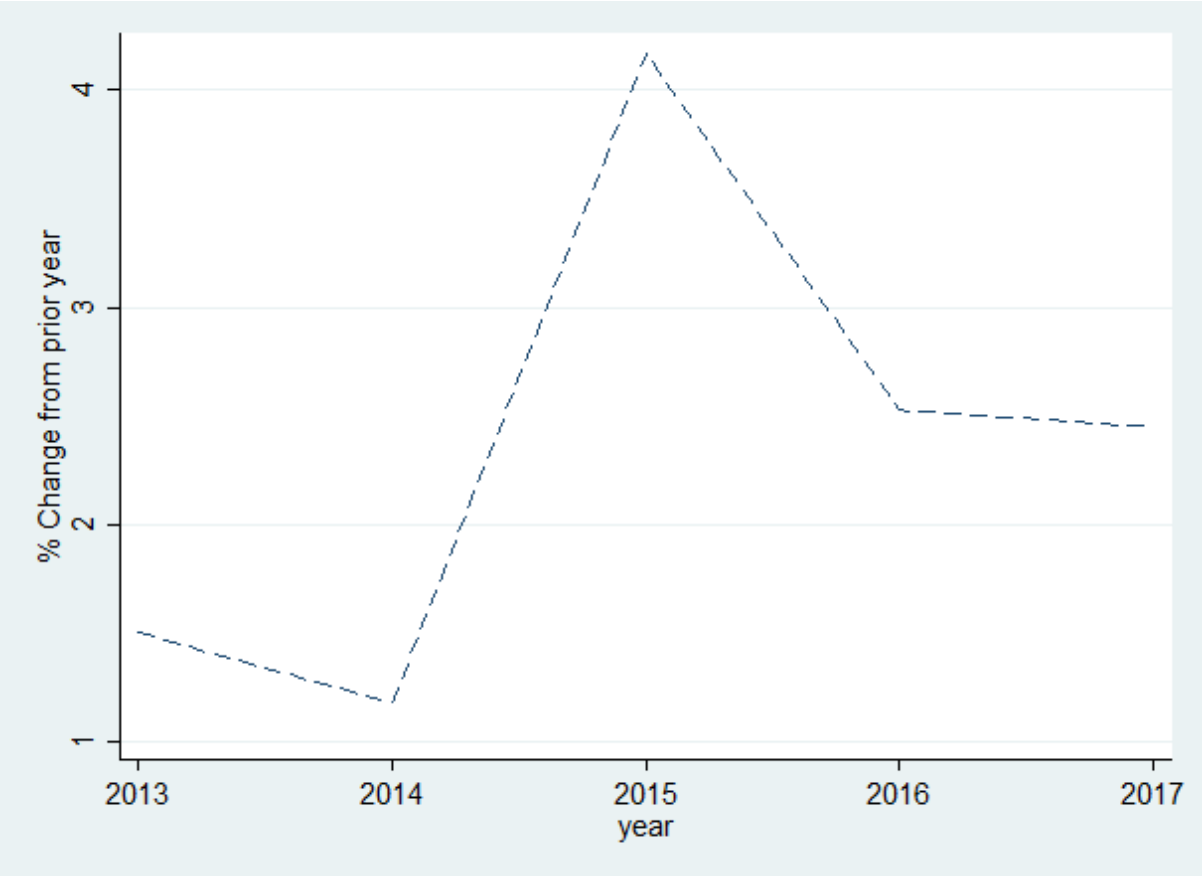
Notes: All regressions include a constant term, as well as the regressors in Table 3. Standard errors are clustered at the state level. * $p<0.1$; ** $p<0.05$; *** $p<0.01$.

Table 8
OLS Estimates of the Impact of Driving licenses for Undocumented Immigrants on Hispanic, Low-Skilled, U.S. born Women and High-Skilled, U.S. born Women

Outcome	**Employed**			**Log (Weekly Hours of Work)**			**Log (Real Hourly Wage)**		
Column	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(8)**
Statistic	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**
Panel A: Hispanic Low Skilled, U.S. Born Women									
Driving licenses (DL)	-0.010	-0.009	-0.037	0.009	-0.017	-0.043	0.100***	0.009	0.037
	(0.019)	(0.020)	(0.026)	(0.017)	(0.017)	(0.029)	(0.021)	(0.016)	(0.024)
Observations	5,364	5,364	5,364	4,363	4,363	4,363	4,363	4,363	4,363
R-squared	0.021	0.040	0.047	0.020	0.042	0.052	0.147	0.176	0.184
Panel B: High-Skilled, U.S .Born Women									
Driving licenses (DL)	0.001	0.003	-0.004	-0.029	-0.002	0.007	0.043**	0.001	-0.018
	(0.003)	(0.004)	(0.006)	(0.017)	(0.010)	(0.019)	(0.021)	(0.014)	(0.021)
Observations	54,055	54,055	54,055	29,851	29,851	29,851	29,851	29,851	29,851
R-squared	0.006	0.009	0.010	0.039	0.048	0.050	0.125	0.133	0.134
Month Fixed-Effects		n/a	n/a		Yes	Yes		Yes	Yes
State Fixed-Effects		Yes	Yes		Yes	Yes		Yes	Yes
Year Fixed-Effects		Yes	Yes		Yes	Yes		Yes	Yes
State-specific Time Trend			Yes			Yes			Yes

Notes: All regressions include a constant term, as well as the regressors in Table 3. Standard errors are clustered at the state level. * $p<0.1$; ** $p<0.05$; *** $p<0.01$.

Figure 1
Annual Changes in Outstanding Driving licenses by Year – California



Source: California's Department of Motor Vehicles. Data available at: https://www.dmv.ca.gov/portal/dmv/detail/pubs/media_center/statistics

Appendix A

Table A1
States Providing Access to Driving licenses or Cards to Likely Undocumented Immigrants

State	Bill	Effective Date
California	A 60	01/01/2015
Colorado	S 251	08/01/2014
Connecticut	H 6495	01/01/2015
Delaware	S 59	12/27/2015
Hawaii	H 1007	01/01/2016
Illinois	S 957	11/28/2013
Maryland	S 715	01/01/2014
New Mexico	H 173	01/01/2003
Nevada	S 303	01/01/2014
Utah	S 227	03/08/2005
Vermont	S 38	01/01/2014
Washington	H 1444	7/25/1993
District of Columbia	B 275	05/01/2014

Source: National Conference of States Legislation Immigration Policy Project.

Table A2: Excluding Washington, New Mexico and Utah
OLS Estimates of the Impact of Driving licenses for Undocumented Immigrants on the Labor Market Outcomes of Likely Undocumented Women

Outcome	**Employed**			**Log(Weekly Hours of Work)**			**Log(Real Hourly Wage)**		
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**
Statistic	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**	**Coefficient (S.E.)**
Likely Undocumented (LU)	-0.017**	-0.020**	-0.020**	-0.046***	-0.049***	-0.048***	-0.070***	-0.058***	-0.059***
	(0.008)	(0.009)	(0.009)	(0.012)	(0.012)	(0.012)	(0.015)	(0.017)	(0.017)
Driving licenses (DL)	-0.002	-0.010	0.000	-0.046**	-0.048**	-0.058**	0.088***	0.020	0.047**
	(0.013)	(0.015)	(0.016)	(0.019)	(0.024)	(0.026)	(0.018)	(0.018)	(0.023)
LU*DL	**0.025**	**0.031**	**0.031**	**0.047*** **	**0.051*** **	**0.050*** **	**-0.028**	**-0.042** **	**-0.041** **
	(0.019)	**(0.019)**	**(0.019)**	**(0.017)**	**(0.017)**	**(0.017)**	**(0.018)**	**(0.019)**	**(0.019)**
Observations	6,155	6,155	6,155	5,225	5,225	5,225	5,225	5,225	5,225
R-squared	0.012	0.025	0.031	0.010	0.024	0.029	0.108	0.137	0.142
Month Fixed-Effects		n/a	n/a		Yes	Yes		Yes	Yes
State Fixed-Effects		Yes	Yes		Yes	Yes		Yes	Yes
Year Fixed-Effects		Yes	Yes		Yes	Yes		Yes	Yes
State-specific Time Trend			Yes			Yes			Yes

Notes: All regressions include a constant term and the regressors in Table 3. Standard errors are clustered at the state level. * p<0.1; ** p<0.05; *** p<0.01.

Appendix B

$Total\ Enforcement_{s,t}$ captures the *intensity* of immigration enforcement to which individuals are exposed to and, using a single measure. To proxy for the enforcement intensity to which individuals living in state *s* in year *t* might be exposed to, we calculate the following population-weighted index for each enforcement initiative *k*:

(1) $$EI^{k}{}_{st} = \frac{1}{N_{2000}} \sum_{a \in s}^{S} \frac{1}{12} \sum_{t=1}^{12} \mathbf{1}\left(E_{t,a}\right) P_{a,2000}$$

where $1\left(E_{t,a}\right)$ is an indicator function that informs about the implementation of a particular policy in county *a* at time (month) *t*. Note that the above index takes into account: (1) the number of months during which a particular policy has been in place in any given year, as well as (2) the population of the counties in question. Specifically, the summation over the 12 months in the year captures the share of months during which the measure was in place in any given year. To weigh it population-wise, we use the term: $P_{a,2000}$ –namely, the population of county *a* according to the 2000 Census (prior to the rolling of any of the enforcement initiatives being considered), and *N* –the total population in state *s*.

Hence, the overall enforcement to which individuals living in state *s* and year *t* are exposed to is computed as the sum of the indices for each enforcement initiative at the (state, year) level:

(2) $$Total\ Enforcement_{s,t} = \sum_{k \in K}^{K} EI_{s,t}^{k}$$

where *k* refers to each policy, *i.e.*: 287(g) local, 287(g) state, secure communities, Omnibus immigration law and E-verify. Data on the implementation of 287(g) agreements at the state level is gathered for the 2005 through 2015 period from the ICEs 287(g) Fact Sheet website, Amuedo-Dorantes and Bansak (2014) and Kostandini *et al.* (2013). Data on the rolling of the Secure Communities (SC) program is available at the county level from 2008 to 2013 using ICE's Activated Jurisdictions document (U.S. Immigration and Customs Enforcement (ICE) 2017). Data on state level initiatives, such as omnibus immigration laws (OILs) and employment verification (E-Verify) mandates is gathered from the National Conference of State Legislature's Omnibus Laws document (Legislatures 2017) and the National Conference State's website (Legislatures 2017), respectively.[19]

[19] See Amuedo-Dorantes and Arenas-Arroyo (2017) for a further description of the index.

Appendix C

Using the Residual Method
OLS Estimates of the Impact of Driving licenses on the Labor Market Outcomes of Likely Undocumented Women

Statistic	**Employed**	**Log(Weekly Hours of Work)**	**Log(Hourly Wage)**
	Coefficient (S.E.)	**Coefficient (S.E.)**	**Coefficient (S.E.)**
Likely Undocumented (LU)	-0.013***	-0.024***	-0.074***
	(0.005)	(0.007)	(0.018)
Driving licenses (DL)	0.014	-0.005	0.032*
	(0.009)	(0.012)	(0.019)
LU*DL	**0.002**	**0.023****	**-0.032****
	(0.006)	**(0.010)**	**(0.015)**
Observations	25,349	16,708	16,708
R-squared	0.019	0.018	0.238
Month Fixed-Effects	n/a	Yes	Yes
State Fixed-Effects	Yes	Yes	Yes
Year Fixed-Effects	Yes	Yes	Yes
State-specific Time Trend	Yes	Yes	Yes

Notes: All regressions include a constant term, as well as the regressors in Table 3. Standard errors are clustered at the state level.
* $p<0.1$; ** $p<0.05$; *** $p<0.01$.

Appendix D

Women's Propensity to Work outside the Home

Outcome	**Works Outside the Home**		
Statistic	**Coeff (S.E.)**	**Coeff (S.E.)**	**Coeff (S.E.)**
Likely Undocumented (LU)	-0.006**	-0.007***	-0.007***
	(0.002)	(0.002)	(0.002)
Driving licenses (DL)	-0.004	-0.012***	-0.008
	(0.005)	(0.003)	(0.007)
LU*DL	**0.006****	**0.007*****	**0.007*****
	(0.003)	**(0.002)**	**(0.002)**
Observations	38,744	38,744	38,744
R-squared	0.003	0.007	0.009
State Fixed-Effects		Yes	Yes
Year Fixed-Effects		Yes	Yes
State-specific Time Trend			Yes

Notes: We use 2013-2016 ACS. Our sample continues to be restricted to low-skilled, long-term Hispanic ages 16-64. All regressions include a constant term and the regressor in Table 3. Standard errors are clustered at the state level. * $p<0.1$; ** $p<0.05$; *** $p<0.01$.