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The Fertility Effect of Laws Granting Undocumented Migrants Access to Driving Licenses in the United States

Christian Gunadi*

May, 2022

Abstract

As of 2021, 16 U.S. States and the District of Columbia have implemented laws allowing undocumented migrants to acquire a driver's license. In this paper, I hypothesize that lower barriers to work caused by the ability to obtain driving licenses can affect undocumented migrants' fertility decisions. Using a difference-in-differences strategy based on temporal and geographical variation in the implementation of laws granting undocumented migrants access to driving licenses across U.S. states, I find that these laws were associated with about 9% decline in childbirth among likely undocumented married women. Exploring the mechanism, the results of the analysis indicate that granting undocumented migrants access to driving licenses increased the propensity to work along the intensive margin. Among those at work, their usual weekly hours rose by approximately 1.5%.

JEL Classification: J13, I38, J15, K37

Keywords: driving licenses, undocumented immigrants, fertility, labor market impacts

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Declarations of interest: none.

1 Introduction

Many countries are facing the challenge of aging population. In the United States, the population size of older adults ages 65 and over is expected to surpass children under age 18 by 2034 (Vespa, 2018). The declining fertility among migrants in the U.S. is a contributing factor. Between 2000 and 2017, the fertility rate of immigrant women fell from 90.7 to 77.4 births per 1,000 women, compared to a decrease from 65.8 to 60.2 birth per 1,000 among U.S-born women (Livingston, 2019). Considering the implications of aging population on economic growth as well as costs of health and retirement programs for elderly (Dobriansky et al., 2007; Maestas et al., 2016; Lee and Mason, 2017; Sheiner, 2021), it is important to understand the reasons behind the decline in fertility among immigrant women.

In this paper, I examine the role of laws allowing undocumented migrants to obtain a driver's license in shaping undocumented women's fertility decisions. I hypothesize that these laws can affect undocumented women fertility by lowering barriers to work. Indeed, previous studies have demonstrated that access to a car in the United States provides advantages in locating and maintaining employment due to spatially decentralized urban and suburban areas (e.g., Ong, 1996; Stoll et al., 2000; Raphael and Rice, 2002). Gaining the ability to drive would allow undocumented migrants to access distant job centers, expanding their labor market opportunities. While undocumented migrants might drive without licenses, being stopped by the police for traffic violations can lead to criminal charges and possible deportation. Consequently, driving without a license constitutes a risk that barred many undocumented migrants from fully participating in the labor market (Amuedo-Dorantes et al., 2020). Laws

that grant undocumented migrants access to a driver's license can thus increase the opportunity costs of childbearing and lower fertility among undocumented women.

At the same time, the rise in work propensity among undocumented migrants due to the ability to drive may increase household income, relaxing resource constraints of having a child and increasing fertility. The effect of laws allowing undocumented migrants to obtain a driving license on undocumented women fertility is, therefore, as a priori, indeterminate.

Utilizing American Community Survey data from 2005 to 2019, I employ a difference-in-differences strategy exploiting temporal and geographical variation in the implementation of laws granting undocumented migrants access to driving licenses to estimate the impact of these laws on undocumented women fertility. The results of the analysis indicate that laws allowing undocumented migrants to obtain driving licenses were associated with about 9% decline in childbirth among likely undocumented married women. Further analysis shows that this finding is robust to a battery of robustness checks. First, to ensure that the estimated effect is not driven by a specific treatment state, I conduct a leave-one-out analysis, dropping one treatment state at a time and re-running the analysis. The results of this exercise show that the estimated effect is not being driven by a specific treatment state.

Second, while I use non-citizen indicator as a proxy for undocumented status in the main analysis, the results qualitatively hold when an alternative way based on the residual method proposed by Borjas (2017b,a) is used to impute undocumented status. Third, recent work by Goodman-Bacon (2021) shows that estimates of policy impact obtained using difference-in-differences research design exploiting treatment timing variation are biased in the presence of dynamic treatment effects. This bias is mainly

due to the estimates partly identified through 'bad' comparison, using early treated groups as control for later treated groups. Conducting Goodman-Bacon decomposition analysis, the results show that the estimated impact of laws authorizing driver's licenses issuance to undocumented migrants is mainly driven by using never-treated group as control for treated groups, alleviating the concern noted in Goodman-Bacon (2021). Fourth, the difference-in-differences research design mainly relies on parallel trends assumption. While inherently untestable, the event study results show that fertility of likely undocumented married women was not differentially trending across U.S. states prior to the implementation of the laws, providing support that the parallel trend assumption is likely to hold. Fifth, recent work by Sun and Abraham (2021) shows that results of event study analysis exploiting variation in treatment timing can break down in the presence of heterogeneous treatment effect. Estimating the event study model using Callaway and Sant'Anna (2021) estimator that is robust to heterogeneous treatment effects, the main finding qualitatively holds. Finally, there is no evidence that the estimated effects are driven by the in-migration flows in response to the implementation of the laws.

After showing the robustness of the main finding, I explore the mechanisms through which laws granting undocumented migrants access to driving licenses may affect fertility. I find that the increase in work propensity along the intensive margin is an important mechanism explaining the relationship. Among those at work, allowing driver's license issuance to undocumented migrants increased likely undocumented married women usual weekly hours by about 1.5%. I also find that their household income increased by approximately 4.8%. Since the net effect of the policy on fertility is negative, these results indicate that the effect coming from the increase in opportu-

nity costs of childbearing dominates the income effect. I did not find evidence of an effect along the extensive margins of work. Laws granting undocumented migrants access to driving licenses were not associated with changes in labor force participation and the employment rate of likely undocumented married women.

The result above is consistent with the finding by Amuedo-Dorantes et al. (2020), who found that granting undocumented migrants access to driving licenses increased likely undocumented women weekly hours of work by 4%. My analysis differs from Amuedo-Dorantes et al. (2020) in three main ways. First, since my objective is to examine the effect of the laws on undocumented migrant fertility, I focus my analysis on likely undocumented married women ages 25-45 years old, the group whose fertility decision is most likely to be affected by changes in labor market opportunities. Second, while Amuedo-Dorantes et al. (2020) focused on 2013-2017 period, I analyze 2005-2019 period, exploiting more policy variation across U.S. states. Finally, I check the robustness of the findings using Callaway and Sant'Anna (2021) estimator that is robust to heterogeneous treatment effects.

This paper contributes to relatively scarce research on the impact of immigration policy on immigrant fertility. These studies include the work by Amuedo-Dorantes et al. (2016), which found that welfare reform legislation in 1996 that denied the use of most means-tested assistance to non-citizens lowered the fertility of non-citizen women and increased their labor force participation, likely to obtain employer-sponsored benefits. Another study by Kuka et al. (2019) found that Deferred Action for Childhood Arrivals (DACA), which grants temporary legal status to eligible undocumented migrants, decreased undocumented youth teenage births. The authors argued that DACA incentivized undocumented youth to not drop out of school earlier, allowing

more opportunities to learn about contraception and safer sex practices. Amuedo-Dorantes and Arenas-Arroyo (2021) documented evidence that tougher interior immigration enforcement policies, such as E-Verify and Secure Communities, reduced childbearing among likely undocumented women mainly by increasing uncertainty about the future of the family unit and its resources. My paper adds to these previous studies by documenting evidence that an immigration policy that authorizes driving license issuance to undocumented migrants can also alter undocumented women's fertility decisions through its impact on labor market opportunities.

This paper is also broadly related to the literature examining the policy determinants of fertility. Some recent research includes the work by Milligan (2005), who documented a strong positive fertility effect of pro-natalist cash transfer policy in the Canadian province of Quebec. More recently, Lalive and Zweimüller (2009) found that the expansion of parental leave program duration in Austria increased fertility. Exploiting the roll-out of federally-funded family planning programs across U.S. counties from 1964 to 1973, Bailey (2012) found that these programs were linked to significant and persistent reductions in fertility. My paper adds to this literature by documenting evidence that granting undocumented migrants access to driving licenses, which is a policy that lowers barriers to work, can alter fertility decisions among undocumented women.

The rest of the paper is constructed as follows. The next section describes the background of laws authorizing driving license issuance to undocumented migrants. Sections 3 and 4 describe the data and empirical strategy used in the analysis. Section 5 documents the findings. Section 6 concludes.

2 Background

Currently, most U.S. states require proof of legal presence for acquiring driver's licenses, preventing undocumented migrants from obtaining one. However, there are widespread debates on whether to allow undocumented migrants to obtain driving licenses. Proponents argue that the policy would improve public safety, increase their contribution to the local economy, and improve road safety by requiring these migrants to complete driving tests (Guelespe and Gomberg-Munoz, 2012; Hendricks, 2014). At the same time, opponents argue that the policy would undermine the rule of law and facilitate identity fraud (Styma, 2020). They also contend that allowing undocumented migrants to obtain a driver's license would not improve traffic safety since the ability to pass a driving test does not necessarily translate into safe driving (Styma, 2020).

Notwithstanding the controversy, 16 U.S. states and the District of Columbia have authorized the issuance of a driver's license or driving privilege card to undocumented migrants as of 2021 (Figure 1 and Table 1) (NCSL, 2021). It is worth noting that under the 2005 REAL ID Act, which establishes the requirements for state driver's licenses and ID cards to be accepted by the federal government for "official purposes" such as boarding commercial airline flights and entering federal buildings, the driver's licenses issued to undocumented migrants need to be distinguishable from the licenses issued to legal residents. For example, driver's licenses issued to undocumented migrants in California have a special feature "Federal Limits Apply" in the top right hand corner and a statement "not acceptable for official federal purposes" at the back of the card. Due to these differences, undocumented migrants may

put themselves at risk if they show their driving licenses to law enforcement in another state, contingent on the laws and policies in that state (ACLU, 2015). They also should not use their driver's licenses to verify their identity to federal law enforcement officers, such as Immigration and Customs Enforcement (ICE) and Customs and Border Patrol (CBP) (ACLU, 2015).

Recent evidence shows that the number of undocumented migrants with driver's licenses increased sizably when a state allows them to obtain driving licenses. In California, where 2.2 out of 10.7 million undocumented migrants reside in the U.S. (Pew Research Center, 2019), more than one million driver's licenses have been issued to undocumented residents of the state after the passage of AB 60, representing about four percent of all driver's license held in the state (Potter et al., 2018). In Utah, after the state began issuing Driving Privilege Cards in 2005, about 42,000 out of 50,000 undocumented immigrant motorists in the state have Driving Privilege Cards (Vasan, 2015). Lastly, a recent study by Churchill et al. (2022) found that laws authorizing driver's license issuance to undocumented migrants increased the number of licensed drivers in the state by 1.3%.

3 Data and Methodology

To examine the impact of laws granting undocumented migrants access to driving licenses on fertility, I utilize the American Community Survey (ACS) data. Conducted annually, ACS is a nationwide survey that collects and produces information on social, economic, housing, and demographic characteristics of U.S. population (U.S. Census Bureau, 2017). Over 3.5 million households across the U.S. are contacted to participate in the ACS each year (U.S. Census Bureau, 2017). My analysis focus on 2005-2019

period. I start with 2005 since it is the first year of full implementation of ACS. I end with 2019 to avoid potential bias arising from the Covid-19 pandemic which began in early 2020.[1] An important limitation of ACS is that it does not have information on the legal status of foreign-born individuals. Following previous study (Pope, 2016), I use non-citizen indicator as a proxy for legal status. As detailed in the sensitivity check later, however, the result is robust to the residual method based on Borjas (2017a,b) to impute undocumented status.

For the analysis, I focus on the sample of likely undocumented (i.e., non-citizen) married women ages 25-45, the group whose fertility decision is likely to be affected by increased labor market opportunities due to laws authorizing driver's license issuance to undocumented migrants. 25 is chosen as the lower threshold to focus on individuals who are likely to have completed schooling and in prime working age. 45 is chosen as the higher threshold to focus on women who are of reproductive age. ACS asks women of reproductive age whether they had given birth to any children in the past 12 months. Using this information, I construct the share of likely undocumented married women with childbirth in the past 12 months, which is the main outcome of interest, for each state-year cell. ACS also has information on labor force participation, employment, usual weekly work hours, and household income that I utilize to explore the mechanisms through which laws granting undocumented migrants access to a driver's license may affect fertility.

To examine the impact of laws authorizing driver's license issuance to undocumented migrants, I use a difference-in-differences strategy, exploiting the temporal

[1]For example, the estimated effect would be biased if states hit the hardest by labor shortage due to the pandemic are more likely to allow undocumented migrants to obtain a driver's license in order to address the shortage. There is also a concern that data collection disruptions due to the pandemic affect the quality of the data (U.S. Census Bureau, 2021).

and geographical variation in the implementation of the laws across the U.S. states. Specifically, I estimate the following model:

$$\ln(y_{st}) = \delta_s + \delta_t + \gamma DrivingLicenses_{st} + X'_{st}\alpha + \varepsilon_{st} \quad (1)$$

where y_{st} is the outcome at state s in year t.[2] δ_s and δ_t are state and year fixed effects, respectively. X is a vector of state-level controls, including unemployment rate, income per capita, share of non-whites in the population, share of youth (<18) in the population, share of less-educated individuals without high school diploma, and interior immigration enforcement policies (i.e., E-Verify, the fraction of counties in the state with Secure Communities activated). The main variable of interest is $DrivingLicenses_{st}$, which takes the value of one if laws granting undocumented migrants access to a driving license present at state s in year t and zero otherwise. The regressions are weighted by state population averaged over the analysis period (2005-2019), and the standard errors are clustered at the state level.

I exclude New Mexico, Utah, and Washington that implemented the laws in or before 2005 because the inclusion of always treated states in the sample as a comparison group would bias the estimates in the presence of dynamic treatment effects (Goodman-Bacon, 2021). The summary statistics are reported in Table 2. Except for a few characteristics, the states implementing laws granting undocumented migrants access to driving licenses appear to be largely similar in observed states' characteristics compared to the non-granting states.

[2]To avoid dropping observations with zero values, I added a small constant (0.001) to the share of likely undocumented married women with childbirth in the past 12 months before it is log-transformed. The results qualitatively hold when a small constant was not added.

4 Results

4.1 Main Results

The main findings are reported in Table 3. Column 1 reports the results without any control. Column 2 reports the results when interior immigration enforcement policies, including E-Verify and Secure Communities, are added to the model. The last column reports the results when states' demographics and economic conditions were included in the model.

The results of the analysis indicate that laws granting undocumented migrants access to driving licenses led to a decrease in fertility among likely undocumented married women. In the baseline without any control, these laws were associated with a 9.2% decline in the share of likely undocumented women with childbirth in the past 12 months. Including controls for interior immigration enforcement policies slightly increase the magnitude of the effect to 10.1%, while adding further states' demographics and economic conditions controls do not lead to a sizable change in the estimated effect.

Overall, the evidence shows that laws granting undocumented migrants access to driving licenses were linked to a decline in fertility among likely undocumented married women. In the following analysis, I examine the robustness and the potential mechanisms for this finding.

4.2 Robustness Checks

4.2.1 Alternative Undocumented Status Imputation Method

In the main analysis, following Pope (2016), I use non-citizen indicator as a proxy to impute undocumented status. However, this is not the only way to assign legal status. An alternative way to impute undocumented status is by using the residual method proposed by Borjas (2017a,b). Based on this method, a foreign-born is classified as a legal immigrant if any of the following conditions hold:

a. the person arrived in the U.S. before 1980;
b. the person is a U.S. citizen;
c. the person receives welfare benefits;
d. the person is a veteran or is currently in the Armed Forces;
e. the person works in the government sector;
f. the person resides in public housing or receives rental subsidies, or that person is a spouse of someone who resides in public housing or receives rental subsidies;[3]
g. the person was born in Cuba;
h. the person's occupation requires some form of licensing;
i. the person's spouse is a legal immigrant or U.S. citizen.

Other foreign-born individuals who are not classified as legal immigrants are assumed to be undocumented.

The results of this exercise are reported in Table 4. Overall, the results qualitatively hold. If any, the magnitude of the estimated effects is larger compared to the main estimates.

[3]Because ACS does not have information on whether someone resides in public housing or receives rental subsidies, I did not apply this condition to impute undocumented status, similar to Borjas (2017a).

4.2.2 Leave-one-out Analysis

A concern is that the main finding might be driven by a specific treated state. To see if this is the case, I conduct a leave-one-out analysis, excluding a treated state at a time and re-estimating the model. The results of this check are reported in Figure 2. There is no evidence that a specific treated state was driving the results. The estimated effect is similar in magnitude regardless of which treated state was excluded from the sample.

4.2.3 Goodman-Bacon Decomposition

Recent work by Goodman-Bacon (2021) shows that the estimated effect obtained from the two-way fixed effects difference-in-differences model exploiting variation in treatment timing is a weighted average of all possible two-group and two-period DD estimators. As an implication, the difference-in-differences estimates based on treatment timing variation would be biased in the presence of dynamic treatment effects, mainly because the estimated effects are partly identified by using early treated groups, which are still affected by the treatment, as control for later treated groups. Since my difference-in-differences strategy relies on treatment timing variation, it is also subject to the concern outlined in Goodman-Bacon (2021).

To address this concern, I conduct Goodman-Bacon (2021) decomposition analysis. There are two main takeaways from this analysis (Figure 3 and Table 5). First, the difference-in-differences estimates reported in Table 3 are mostly driven by the non-problematic comparison between treated and never-treated groups. Almost all the weight, close to 90%, is assigned to this comparison. Second, focusing on the non-problematic comparison, the estimated effect (-9.2%) is quite similar to the main

estimates in Table 3. Altogether, the results of decomposition analysis alleviate the concern outlined in Goodman-Bacon (2021).

4.2.4 Event Study

The main identification assumption of difference-in-differences strategy described above is that there were no unobserved time-varying state-specific factors that were correlated with the timing of implementation of laws granting undocumented migrants access to driving licenses, usually known as the parallel trends assumption. To give support that this assumption holds, I estimate an event study model. Specifically:

$$\ln(y_{st}) = \delta_s + \delta_t + \sum_{\tau=2}^{5} \beta_{-\tau} DrivingLicenses_{s,t-\tau} + \sum_{\tau=0}^{3} \beta_{+\tau} DrivingLicenses_{s,t+\tau} + \varepsilon_{st} \tag{2}$$

where the variables are defined in the same way as before. $DrivingLicenses_{s,t-1}$ is excluded from the model, so the estimated effects (β) should be interpreted as relative to the year prior to implementation of the law. It should be noted that for $DrivingLicenses_{s,t-5}$, the variable is equal to one for $t-5$ and each year prior to $t-5$. Similarly, $DrivingLicenses_{s,t+3}$ is equal to one for $t+3$ and each year after $t+3$. For the validity of difference-in-differences research design, there should be no discernible difference in the trends prior to the implementation of the law.

The result of the event study model is reported in Figure 4. The red dots and caps represent the point estimates and their 95% confidence intervals. There is no evidence that differences in pre-law trends are driving the main findings. Fertility declined in the year of law adoption and kept decreasing until at least two years after the implementation.

A concern with the event study result above is that the finding can break down in the presence of heterogeneous treatment effect due to contamination of leads/lags with the effects from other periods (Sun and Abraham, 2021). To address this concern, I estimate the event study model using Callaway and Sant'Anna (2021) estimator that is robust to heterogeneous treatment effects. The blue diamond hollow and caps in Figure 1 represent the point estimates based on Callaway and Sant'Anna (2021) estimator and its 95% confidence intervals. In general, the results are qualitatively similar, alleviating the concern noted in Sun and Abraham (2021).

4.2.5 In-Migration Flows

Another concern is that authorizing driving license issuance to undocumented migrants may lead to in-migration to states that implemented the policy. If undocumented women moved into these states to take advantage of lower barriers to work induced by the laws, the estimated effects on fertility would be biased downward. To alleviate this concern, I examine the effect of the laws on in-migration flows of likely undocumented married women ages 25-45, which is the group of interest in this paper.[4]

The results of this analysis are reported in Figure 5 and Table 6. There is no evidence that authorizing driver's license issuance to undocumented migrants led to an inflow of likely undocumented married women ages 25-45. If any, the estimated effects are negative, indicating that these laws lower the inflow. However, these estimates are not statistically significantly different from zero.

[4]To avoid dropping observations with zero values, I added one to the in-migration flow of likely undocumented married women ages 25-45 before it is log-transformed. The results are qualitatively similar when a small constant was not added.

4.3 Potential Mechanism

The results of the main analysis indicate that laws granting undocumented migrants access to driving licenses were linked to lower fertility among likely undocumented married women. In this subsection, I examine the channel through which allowing undocumented migrants to obtain a driver's license might affect fertility. Specifically, I hypothesize that these laws lower barriers to work among undocumented women of reproductive age, increasing the opportunity costs of having a child and lowering fertility. Table 7 reports the results of this analysis.

There is no evidence that granting undocumented migrants access to a driver's license affects labor force participation or the employment rate of likely undocumented married women (Panels A and B). While the baseline estimates without any control are positive and significant, they become smaller in magnitude and no longer statistically significantly different from zero when immigration enforcement policies and states' demographics and economic conditions were added as controls. However, there is strong evidence that granting undocumented migrants access to a driver's license increased work propensity of likely undocumented married women along the intensive margin (Panel C). The usual weekly hours among those who are employed increased by about 1.5% after the law was implemented. Evaluated at the mean in the baseline period (Table 2), this result represents roughly half an hour increase in usual weekly hours. This rise in usual weekly hours worked consequently raised household income (Panel D), which had the opposing effect to lowering fertility by relaxing household resource constraints. However, the net negative impact on fertility implies that this income effect was dominated by the substitution effect (i.e., the effect coming from the rise in opportunity costs of having a child).

The results of the event study model reported in Figure 6 support the validity of the estimates in Table 7. There is no evidence that labor force participation or employment rate of likely undocumented married women was affected by laws allowing undocumented migrants to obtain a driver's license. However, usual weekly hours and household income among those who are employed rose after the law was implemented. There is no evidence that the differential in pre-trends explained the positive effect of laws granting undocumented migrants access to driving licenses on usual weekly hours and household income among those who are employed.

5 Conclusion

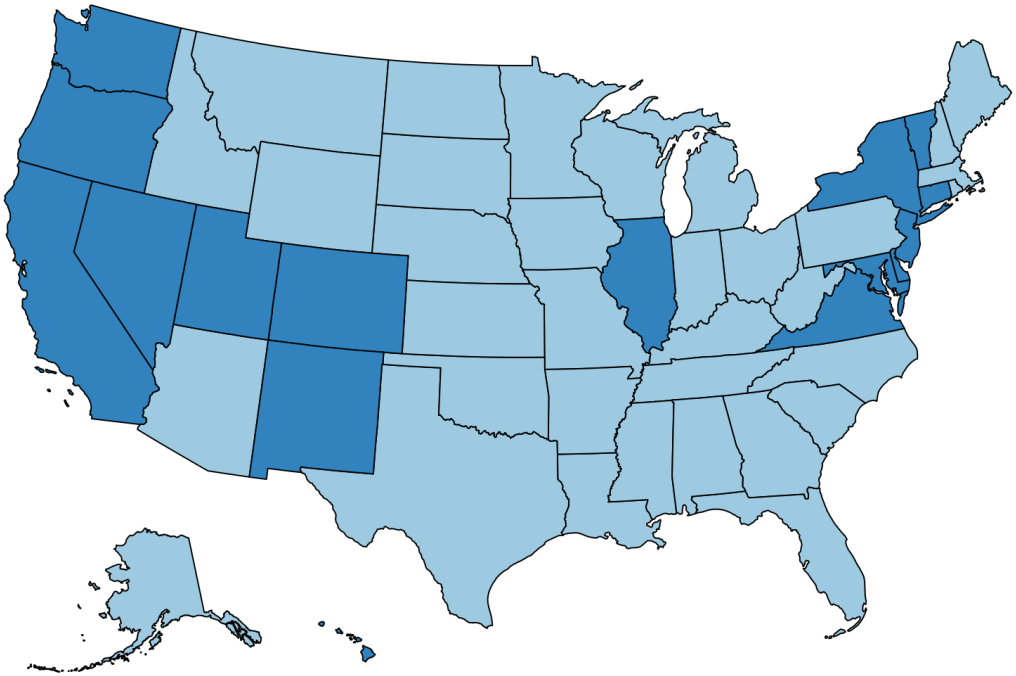
The fertility rate of immigrant women in the U.S. has been declining faster than their native-born counterparts (Livingston, 2019), contributing to the aging population challenge in the United States. Given the implications of aging population on U.S. economic growth and the solvency of the social security system, it is important to understand the reasons behind this declining fertility.

This paper examines the role of an immigration policy, authorizing driver's license issuance to undocumented migrants, in affecting the fertility decisions of undocumented women. I hypothesize that granting undocumented migrants access to driving licenses lowers barriers to work, increasing the opportunity costs of having a child and lowering fertility. Using difference-in-differences strategy exploiting the temporal and geographical variation in the implementation of these laws, I find that laws allowing undocumented migrants to obtain a driving license were associated with about 9% decline in the share of likely undocumented married women with childbirth in the past 12 months. Further analysis indicates that the increase in work

propensity along the intensive margin is an important mechanism. Granting undocumented migrants access to a driver's license increased the usual weekly hours of likely undocumented married women who are employed by approximately 1.5%.

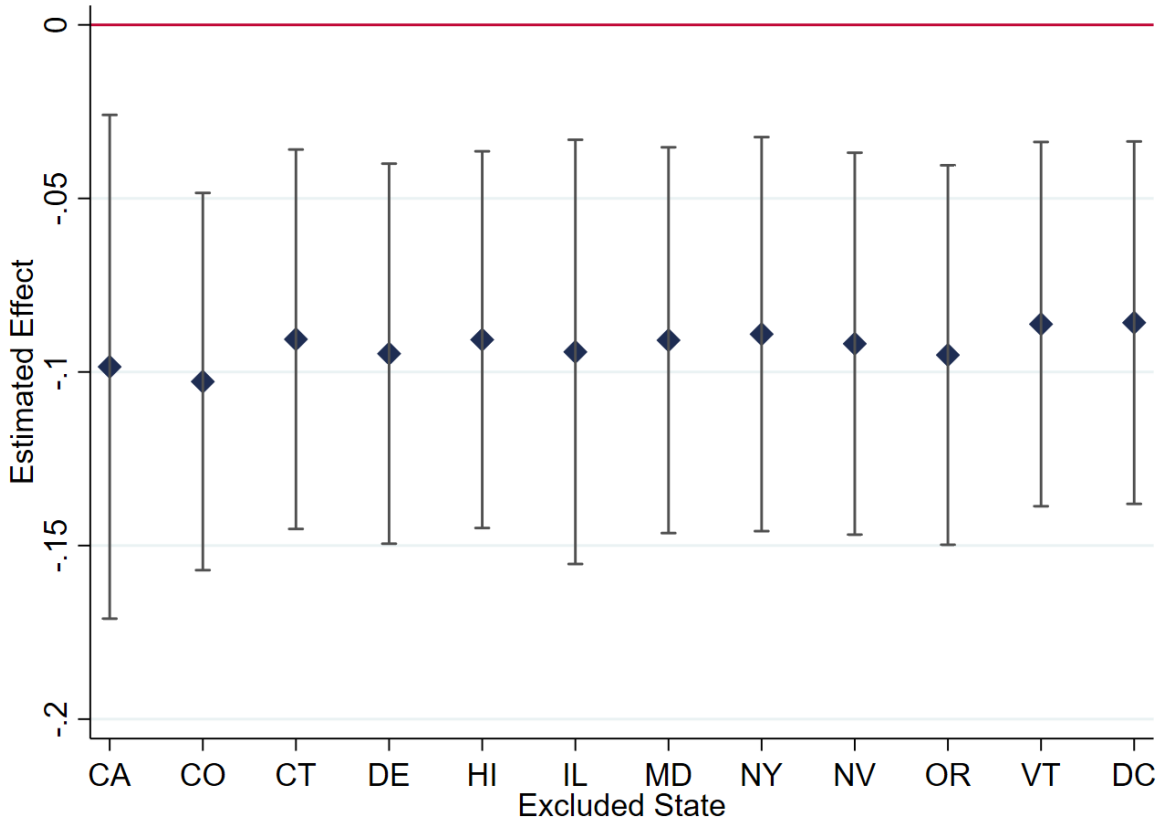
6 Figures and Tables

Figure 1: States with Law Granting Undocumented Migrants Access to Driving License as of 2021



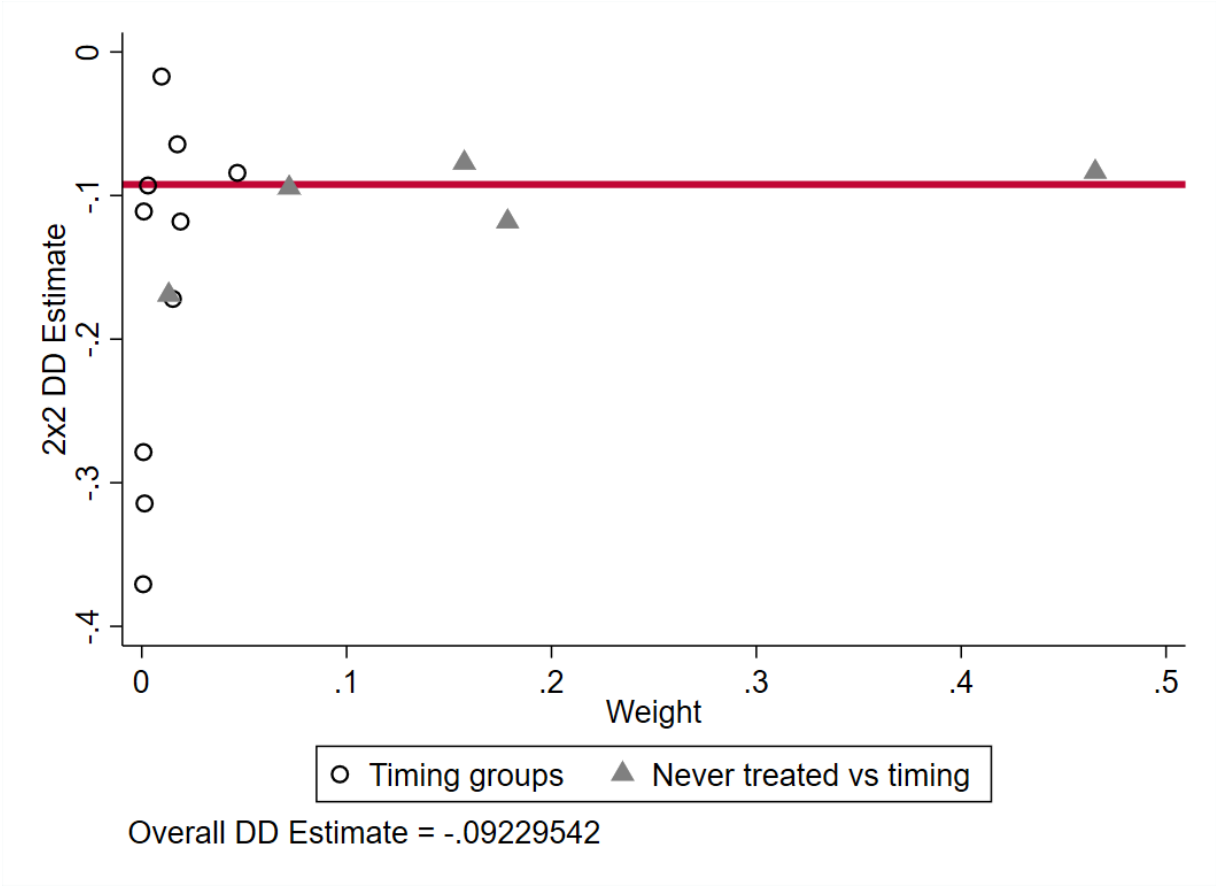
Source: National Conference of States Legislatures Immigrant Policy Project (NCSL, 2021). Darker blue indicates states with law authorizing driver's license issuance to undocumented migrants as of 2021.

Figure 2: Leave-one-out Analysis



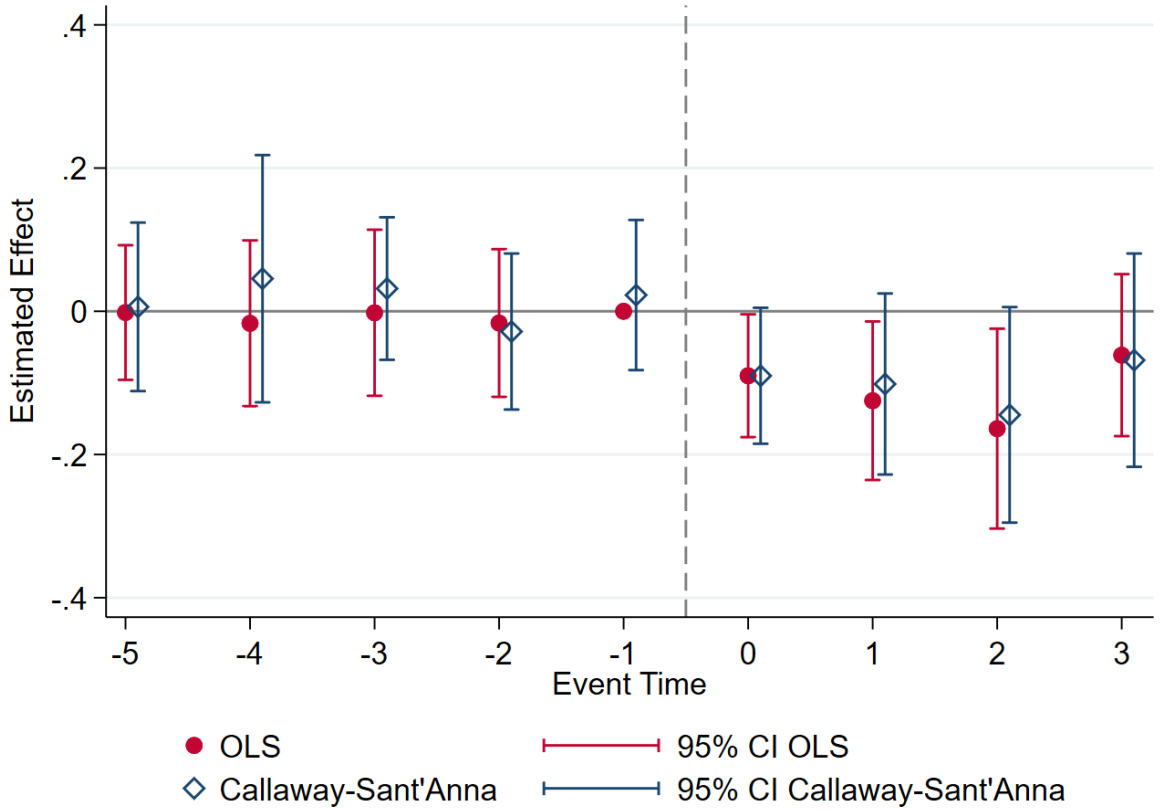
Notes: The figure show the estimate of the effect when the treated state in the corresponding x-axis is excluded from the regression. 95% confidence intervals constructed based on standard errors clustered at the state level are reported in the figure. All regressions are weighted by state population averaged over the analysis period (2005-2019) and include controls for state and year fixed effects.

Figure 3: Goodman-Bacon Decomposition



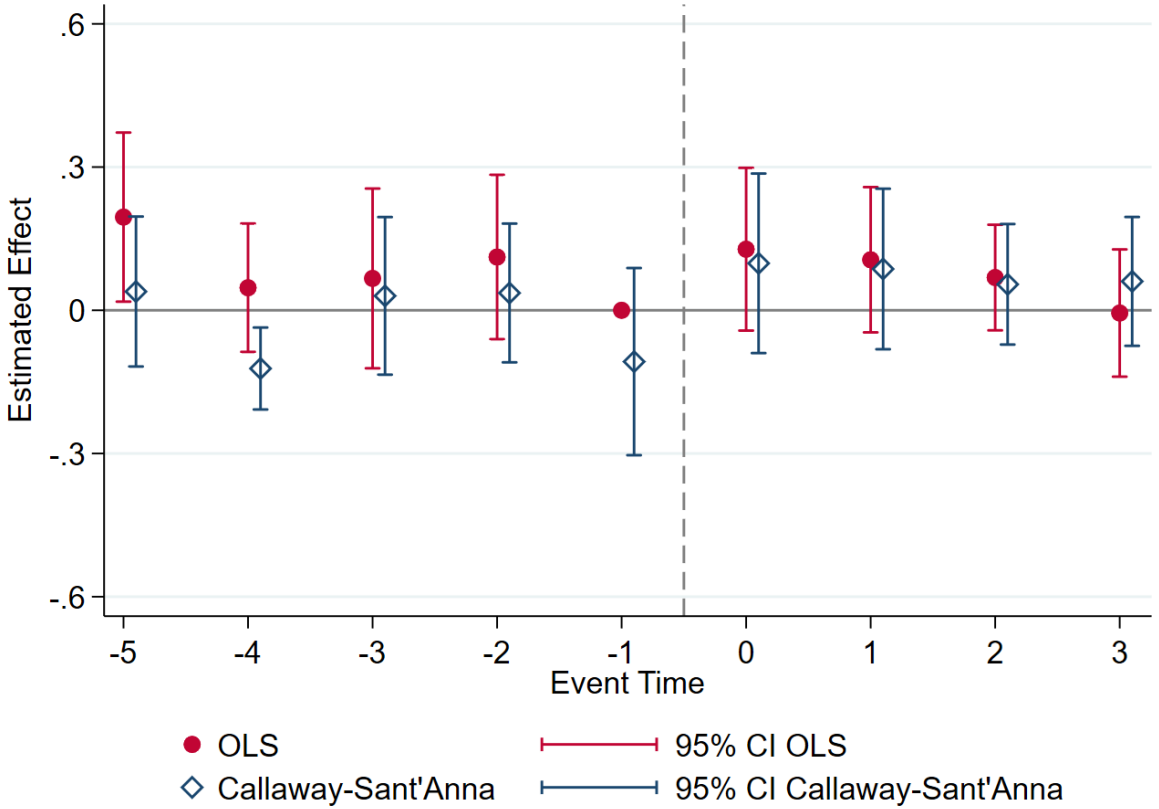
Notes: The y-axis reports the two-way fixed-effect estimate for one of the groups based on treatment timing. The x-axis reports the weight in the overall difference-in-differences estimate based on treatment timing.

Figure 4: The Effect of Laws Granting Undocumented Migrants Access to Driving License on Fertility



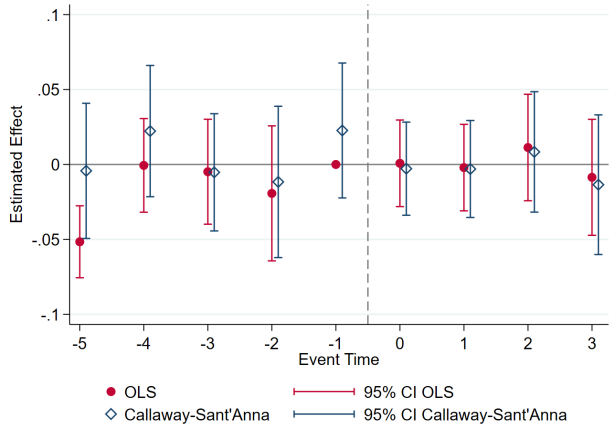
Notes: Data are from American Community Survey 2005-2019. The model include state and year fixed effects. The red dot shows the point estimates using OLS. Each dot displays the estimated effect of laws granting undocumented migrants access to driving license relative to the year prior to the implementation (the omitted year). The blue diamond hollow shows the point estimates using Callaway and Sant'Anna estimator. 95% confidence intervals constructed with standard errors clustered at the state level are provided in the figure. The results are weighted using state population averaged over the study period (2005-2019).

Figure 5: The Effect of Laws Granting Undocumented Migrants Access to Driving License on In-Migration Flows

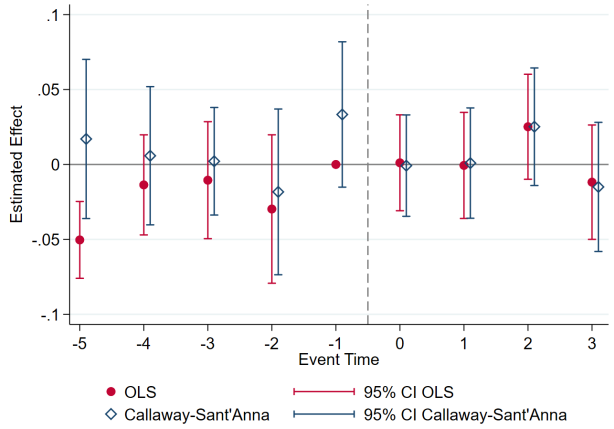


Notes: Data are from American Community Survey 2005-2019. The model include state and year fixed effects. The red dot shows the point estimates using OLS. Each dot displays the estimated effect of laws granting undocumented migrant access to driving license relative to the year prior to the implementation (the omitted year). The blue diamond hollow shows the point estimates using Callaway and Sant'Anna estimator. 95% confidence intervals constructed with standard errors clustered at the state level are provided in the figure. The results are weighted using state population averaged over the study period (2005-2019).

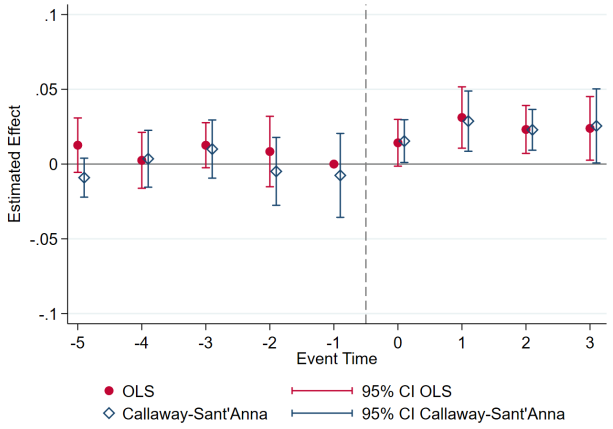
Figure 6: The Effect of Laws Granting Undocumented Migrants Access to Driving License on Labor Market Outcomes



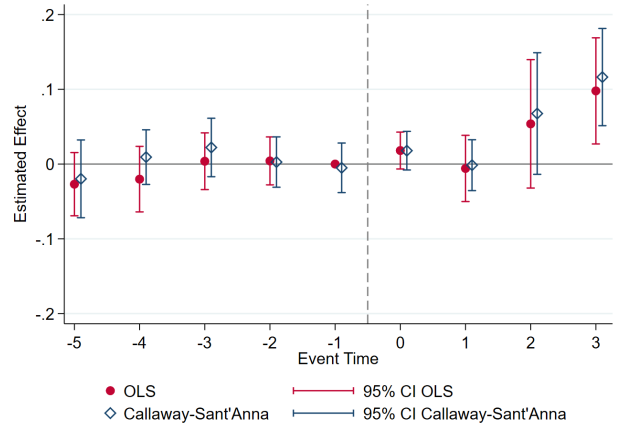
(a) ln (Labor Force Participation Rate)



(b) ln (Employment Rate)



(c) ln (Usual Weekly Hours)



(d) ln (Household Income)

Notes: Data are from American Community Survey 2005-2019. The model include state and year fixed effects. The red dot shows the point estimates using OLS. Each dot displays the estimated effect of laws granting undocumented migrant access to driving license relative to the year prior to the implementation (the omitted year). The blue diamond hollow shows the point estimates using Callaway and Sant'Anna estimator. 95% confidence intervals constructed with standard errors clustered at the state level are provided in the figure. The results are weighted using state population averaged over the study period (2005-2019).

Table 1: States Authorizing Driver's Licenses/Cards Issuance to Undocumented Immigrants As of 2021

State	Bill	Effective Date
California	A 60	1/1/2015
Colorado	S 251	8/1/2014
Connecticut	H 6495	1/1/2015
Delaware	S59	12/27/2015
Hawaii	H 1007	1/1/2016
Illinois	S 957	11/28/2013
Maryland	S 715	1/1/2014
New Jersey	A 4743	6/1/2020
New Mexico	H 173	2003
New York	S 1747, A 3675	06/17/2019, 12/14/2019
Nevada	S 303	1/1/2014
Oregon	H 2015	8/9/2019
Utah	S 227	3/8/2005
Vermont	S 38	1/1/2014
Virginia	HB 1211/SB 34	1/1/2021
Washington	H 1444	7/25/1993
District of Columbia	B 275	5/1/2014

Source: National Conference of States Legislatures Immigrant Policy Project NCSL (2021).

Table 2: States' Summary Statistics in the Baseline Period (2005-2012)

	All States	States Granting Undocumented Migrants Access to Driving License	Non-Granting States	Differences (Granting vs Non-Granting)
Likely Undocumented Married Women in Prime Working Age (25-45):				
Childbirth in the past 12 months	0.114	0.117	0.113	0.005
Labor Force Participation Rate	0.572	0.584	0.569	0.015
Employment Rate	0.516	0.529	0.512	0.017
Usual Weekly Work Hours Among Employed	36.940	36.602	37.053	-0.451
Household Income Among Employed	59912.462	66534.306	57705.180	8829.126**
Migration Inflow	4662.807	7265.094	3795.378	3469.715
Unemployment Rate	0.065	0.068	0.063	0.005
Income per Capita	20529.981	23400.050	19573.291	3826.759***
Share of Non-Whites in the Population	0.225	0.322	0.193	0.129**
Share of Youth (<18) in the Population	0.237	0.231	0.239	-0.008
Share of Less-Skilled Without High School Diploma in the Population	0.341	0.331	0.344	-0.012

Notes: Data are from American Community Survey 2005-2012. 2005-2012 is the baseline period because the first state to adopt law authorizing driver's license issuance to undocumented migrants in the study period (Illinois implemented the law in 2013). * $p < .1$, ** $p < .05$, *** $p < .01$

Table 3: Effect of States Granting Undocumented Migrants Access to Driving License on Fertility

	ln (Share of Women with Childbirth in the Past 12 Months)		
	(1)	(2)	(3)
Granting Undocumented Migrants Access to Driving License	-0.092***	-0.101***	-0.099**
	(0.028)	(0.036)	(0.040)
Controls:			
Interior Immigration Enforcement Policies	No	Yes	Yes
States' Demographics and Economic Condition	No	No	Yes
Observations	720	720	720

Notes: Data are from American Community Survey 2005-2019. The model include state and year fixed effects. The estimates show the effects of laws granting undocumented migrants access to driving license on fertility of likely undocumented married women ages 25-45. Controls for interior immigration enforcement policies include E-Verify and share of counties in the state with activated Secure Communities. Controls for states' demographics and economic condition include unemployment rate, income per capita, share of non-Whites in the population, share of youth (<18) in the population, and share of less-skilled individuals without a high school diploma in the population. The regressions are weighted by state population averaged over the study period (2005-2019). Heteroskedastic- and clustered-robust standard errors at the state level in parentheses. * $p < .1$, ** $p < .05$, *** $p < .01$

Table 4: Effect of States Granting Undocumented Migrants Access to Driving License on Fertility (Robustness - Residual Method to Assign Undocumented Status)

	ln (Share of Women with Childbirth in the Past 12 Months)		
	(1)	(2)	(3)
Granting Undocumented Migrants Access to Driving License	-0.127***	-0.145***	-0.218***
	(0.045)	(0.047)	(0.072)
Controls:			
Interior Immigration Enforcement Policies	No	Yes	Yes
States' Demographics and Economic Condition	No	No	Yes
Observations	720	720	720

Notes: Data are from American Community Survey 2005-2019. The model include state and year fixed effects. The estimates show the effects of laws granting undocumented migrants access to driving license on fertility of likely undocumented married women ages 25-45. Controls for interior immigration enforcement policies include E-Verify and share of counties in the state with activated Secure Communities. Controls for states' demographics and economic condition include unemployment rate, income per capita, share of non-Whites in the population, share of youth (<18) in the population, and share of less-skilled individuals without a high school diploma in the population. The regressions are weighted by state population averaged over the study period (2005-2019). Heteroskedastic- and clustered-robust standard errors at the state level in parentheses. * $p < .1$, ** $p < .05$, *** $p < .01$

Table 5: Goodman-Bacon Decomposition

	Weight	**Beta**
Timing Groups	0.113	-0.098
Never vs Timing	0.887	-0.092

Notes: The table reports Goodman-Bacon Decomposition analysis. Weight column reports the weight in the overall difference-in-differences estimate based on treatment timing. Beta columns report the two-way fixed-effect estimate for one of the groups based on treatment timing.

Table 6: Effect of States Granting Undocumented Migrants Access to Driving License on In-Migration Flow

	ln (In-Migration)		
	(1)	(2)	(3)
Granting Undocumented Migrants Access to Driving License	-0.061	-0.064	-0.083
	(0.041)	(0.049)	(0.055)
Controls:			
Interior Immigration Enforcement Policies	No	Yes	Yes
States' Demographics and Economic Condition	No	No	Yes
Observations	720	720	720

Notes: Data are from American Community Survey 2005-2019. The model include state and year fixed effects. The estimates show the effects of laws granting undocumented migrants access to driving license on in-migration flows of likely undocumented married women ages 25-45. Controls for interior immigration enforcement policies include E-Verify and share of counties in the state with activated Secure Communities. Controls for states' demographics and economic condition include unemployment rate, income per capita, share of non-Whites in the population, share of youth (<18) in the population, and share of less-skilled individuals without a high school diploma in the population. The regressions are weighted by state population averaged over the study period (2005-2019). Heteroskedastic- and clustered-robust standard errors at the state level in parentheses. * $p < .1$, ** $p < .05$, *** $p < .01$

Table 7: Effect of States Granting Undocumented Migrants Access to Driving License on Labor Market Outcomes

	(1)	(2)	(3)
Panel A: ln (Labor Force Participation Rate)			
Granting Undocumented Migrants Access to Driving License	0.027**	0.019	0.010
	(0.012)	(0.013)	(0.016)
Panel B: ln (Employment Rate)			
Granting Undocumented Migrants Access to Driving License	0.031**	0.023	0.015
	(0.014)	(0.015)	(0.016)
Panel C: ln (Usual Weekly Hours Among Employed)			
Granting Undocumented Migrants Access to Driving License	0.013***	0.014***	0.015***
	(0.005)	(0.005)	(0.005)
Panel D: ln (Household Income Among Employed)			
Granting Undocumented Migrants Access to Driving License	0.065**	0.067**	0.048**
	(0.032)	(0.030)	(0.020)
Controls:			
Interior Immigration Enforcement Policies	No	Yes	Yes
States' Demographics and Economic Condition	No	No	Yes
Observations	720	720	720

Notes: Data are from American Community Survey 2005-2019. The model include state and year fixed effects. The estimates show the effects of laws granting undocumented migrants access to driving license on labor market outcomes of likely undocumented women ages 25-45. Controls for interior immigration enforcement policies include E-Verify and share of counties in the state with activated Secure Communities. Controls for states' demographics and economic condition include unemployment rate, income per capita, share of non-Whites in the population, share of youth (<18) in the population, and share of less-skilled individuals without a high school diploma in the population. The regressions are weighted by state population averaged over the study period (2005-2019). Heteroskedastic- and clustered-robust standard errors at the state level in parentheses. * $p < .1$, ** $p < .05$, *** $p < .01$

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