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INTERGENERATIONAL SPILLOVERS OF DRIVING PRIVILEGES FOR UNDOCUMENTED IMMIGRANTS: EVIDENCE FROM EARLY CHILDHOOD EDUCATION

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ABSTRACT

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Abstract

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JEL Codes: D91, H75, J15, K37, K42, R41.
Keywords: Driver's license, early childhood education, immigration, undocumented immigrants.

1. Introduction

The expansion of driving privileges to undocumented immigrants (DL laws) remains the subject of ongoing public and political debate. Opponents cite concerns about national security, identity fraud, and the perceived undermining of immigration enforcement. Proponents, in contrast, argue that such policies improve public safety by ensuring that all drivers are licensed, tested, and insured. Empirical evidence supports the latter view, showing that DL laws reduce the share of uninsured motorists among undocumented immigrants, leading to fewer hit-and-run accidents (Lueders *et al*., 2022; Amuedo-Dorantes and Dziadula, 2023), lower car insurance premiums (Cáceres and Jameson, 2015; Johnson, 2004; Odegaard, 2008), and improved immigrant mobility (Barajas *et al*., 2021). Increased driving autonomy has also been shown to raise labor supply among undocumented immigrants (Amuedo-Dorantes *et al*., 2020; Cho, 2022), even when car ownership or the number of licensed drivers does not increase (Churchill *et al*., 2021; Cho, 2022). These mobility gains are associated with broader economic and fiscal benefits, including higher state tax revenues due to more insured and documented motorists.

While the literature has largely focused on labor market and traffic safety outcomes, little is known about the downstream effects of DL laws on undocumented immigrants' children—a predominantly U.S.-born generation with long-term policy relevance. This study addresses that gap by examining whether granting driver's licenses to undocumented immigrants increases early childhood education (ECE) participation, measured by preschool attendance among children aged 3 to 6.[1]

[1] For the analysis, ECE includes pre-primary education programs such as nursery schools and kindergartens, designed for young children before they enter primary school.

ECE is an outcome of central policy concern due to its well-established long-term benefits, including improved cognitive development, educational attainment, earnings, health, and reduced involvement in the criminal justice system (Currie, 2011; Magnuson *et al*., 2006; García and Heckman, 2010). It also helps close achievement gaps between children of immigrants and those of native-born parents (Szabó-Morvai *et al*., 2023). Yet, children of undocumented immigrants—despite being overwhelmingly U.S.-born citizens (Capps, Fix, and Zong, 2016)—attend preschool at lower rates than other children. Between 2009 and 2013, only 37% of 3- and 4-year-olds with undocumented parents were enrolled in preschool, compared to 45% among all immigrant families and 48% among all U.S. children (Capps and Zong, 2016). Given the scale of this population and their limited access to early education (Karoly and Gonzalez, 2011), identifying the barriers and facilitators of ECE enrollment is critical to understanding integration dynamics and policy levers.

Access to driver's licenses may shape preschool attendance through multiple channels, including transportation, income, and parental engagement. Transportation is a well-documented barrier to ECE participation, particularly in areas with limited or unreliable public transit (Ansari *et al*., 2020). Parents are typically responsible for drop-off and pick-up (McDonald and Aalborg, 2009), but undocumented parents who drive without a license face the risk of detention or deportation. This may lead them to avoid driving altogether or rely on constrained alternatives such as carpooling or transit. Providing licenses reduces these logistical and legal barriers, lowering commuting costs and increasing transportation autonomy. Licensing may also enhance employment opportunities and household income (Blundell *et al*., 2005; Attanasio *et al*., 2012; Tommasi, 2019), easing the financial burden of ECE. Finally, it may foster greater social engagement and improve access to information about educational opportunities.

Using data from the American Community Survey (ACS) from 2005 to 2019—a period encompassing the passage of 90% of all DL laws for undocumented immigrants—we estimate the effect of these policies using a difference-in-differences framework that exploits their staggered adoption across states. We find that granting driving privileges to undocumented immigrants increases ECE attendance among Hispanic children with at least one likely undocumented parent by approximately 3 percentage points—a 6% increase over baseline enrollment. Effects are larger among children with likely undocumented mothers (4 percentage points; 7–9%) than fathers (2 percentage points; 5–6%), consistent with mothers' primary role in caregiving and school transportation. No significant effects are found among Hispanic children with likely documented parents, supporting the interpretation that results are driven by direct policy exposure. The effects persist for several years post-implementation and are robust across alternative difference-in-differences estimators and definitions of undocumented status. A triple-difference approach, comparing trends between children with and without undocumented parents within states, confirms these findings.

We explore multiple mechanisms consistent with the hypothesized pathways. Access to licenses raises car ownership, reduces reliance on carpooling, and increases solo commuting—pointing to improved transportation autonomy. We also find modest increases in parental employment and work hours, along with small wage gains for mothers, suggesting enhanced economic capacity. Self-reported English proficiency improves following policy adoption, and Google search activity related to driver's license access increases, particularly in states with large Hispanic populations—indicating heightened policy salience and potential information spillovers.

Additional checks confirm that the observed increases in preschool attendance are not driven by concurrent changes in ECE supply or quality. We find no significant effects of DL laws

on the number of childcare establishments, ECE staffing, or quality benchmarks. Nor are our findings confounded by compositional shifts or broader demographic trends. Heterogeneity analyses further reveal that policy effects are larger in less urban areas and in states with lower pre-existing ECE quality—contexts where transportation barriers and program access may be more binding.

Taken together, these results show that expanding driving privileges to undocumented immigrants improves not only adult mobility and labor market outcomes, but also yields measurable intergenerational benefits by increasing children's early educational participation.

2. Background

2.1 State Policies on Driver's Licenses for Undocumented Immigrants

In the United States, states hold the authority to issue driver's licenses. Consequently, they have the discretion to determine the qualifications for a license within their jurisdiction. The documentation required to obtain a driver's license varied across states, as some required only some form of identification and proof of residency (*e.g.* bills, rent contracts), while other states required documents that support legal presence in the United States (*e.g.* birth certificate, social security number). As a result, access to driver's licenses for undocumented immigrants has historically varied by state.

Following the terrorist attacks of 9/11, President Bush signed into law the REAL ID Act bill on May 11, 2005. The act aimed to bolster identification standards for "federal purposes," which include boarding commercial flights, renting cars, entering nuclear plants, and accessing federal facilities,[2] which also resulted in strengthening U.S. borders against the entry of

[2] https://www.naco.org/sites/default/files/documents/REAL%20ID%20Act%20of%202005.pdf

undocumented immigrants and terrorists. In response to the pressure to ensure driver's licenses met federal criteria, most states began to require a Social Security number or proof of legal status to obtain a driving permit. Some states even explicitly prohibited the issuance of driver's licenses to undocumented immigrants. While states must issue driver licenses that comply with the criteria for an ID that can be used for "federal purposes," they retain the autonomy to issue noncompliant "not for federal ID" driver licenses, which can be granted to undocumented immigrants.[3]

Around the second decade of the 21st century, these practices began to shift, coinciding with heightened interior immigration enforcement that adversely affected mixed-status households and migrant communities at large. A lack of proper documentation and insurance could lead to a criminal conviction and deportation. During this period, many states expressed growing concerns that preventing undocumented migrants from having a driver's license may pose challenges to their social and economic integration as well as their cultural assimilation (Allen and Wang, 2020), may also lead to higher insurance rates (Cáceres and Jameson, 2015) and decrease road safety (Lueders *et al*., 2022; Amuedo-Dorantes and Dziadula, 2023). As a result of these concerns, a total of 18 states had implemented some form of driving privileges for undocumented migrants by 2023 (see Appendix Table A1). During this period, some states issued only regular "for federal purposes" driving licenses, while others granted "not for federal purposes" driving privilege cards. Though distinct from regular licenses, these cards enabled undocumented migrants to legally operate vehicles.

[3] While the Real ID Act was mostly induced by the 9/11 attacks of 2001, some states began imposing Documented Presence Laws (DPL) in the 1990s, which require proof of lawful presence in the U.S. as a requirement to obtain a driver license (Amuedo-Dorantes *et al.*, 2020; Cáceres *et al.*, 2015), and resulted in effectively prohibiting undocumented immigrants from obtaining a driver license. States were allowed to issue "not for federal ID" driver's licenses as long as these are distinguishable from licenses that meet the federal identification requirements established by the 2005 REAL ID Act.

Prior studies have documented the benefits of gaining access to driver's licenses and car ownership on employment (Baum, 2009; Bansak *et al*, 2010; Gautier and Zenou, 2010). For instance, Amuedo-Dorantes *et al.* (2020) show that extending driving privileges to undocumented immigrants raises their employment opportunities and hours of work. This finding, consistent with a standard labor supply model where access to private transportation reduces commuting time and frees up time for work (Bansak *et al.,* 2010), is also confirmed by subsequent studies. For instance, Raphael *et al.* (2022) find that car ownership increases employment using an instrumental variable approach where insurance and gasoline taxes are used as instruments.

Due to spatial decentralization, cars are essential for accessing jobs, amenities, and educational facilities in the United States. Access to a motor vehicle raises mobility, autonomy, and schedule flexibility (Bania *et al.,* 1999; Holzer *et al.,* 1994). Car ownership also lowers work absenteeism and increases punctuality, particularly for workers with complicated commute patterns that are not well served by public transit (Raphael *et al*., 2022). Since absenteeism and punctuality are central in educational settings, access to a driver's license would likely enhance children's schooling performance, potentially influencing parental decisions regarding educational investments.

2.2 Barriers to Early Childhood Education Among Children of Immigrants

With the highest fertility rates in the country, Hispanic immigrants and their offspring constitute the fastest-growing population segment in the United States (Hamilton, 2021). However, children of Hispanic immigrants continue to be significantly under-enrolled in ECE programs (Ackert *et al*., 2020). In a recent study, Ansari (2017) demonstrates that ECE enrollment rates are notably lower for children of Hispanic immigrants, averaging close to 56%, compared to those of U.S.-born Hispanics (63%) or children of non-Hispanic White descent (70-72%). Remarkably,

their ECE enrollment rates are even lower than those of other immigrant-origin children (Johnson *et al*., 2017).

There is a vast literature that supports the positive effects of ECE on human capital and social outcomes, as these improve educational attainment, increase earnings, reduce welfare dependency, and reduce crime (Currie, 2011). ECE is particularly beneficial to economic actors who start with unequal endowments, as it improves skills and enhances child development, helping disadvantaged children begin schooling on equal footing with their more advantaged peers (Currie, 2011; Blau and Currie, 2004). ECE programs also have spillover effects on health, as ECE reduces the probability of health diseases, stroke, cancer, and mortality across the life cycle (Garcia and Heckman,2021). Given the well-documented positive impacts of ECE on children, including Hispanic children (Lesnick *et al.*, 2010; Holod *et al.,* 2020; Smith, 2020), it is essential to gain a deeper understanding of how policy may influence ECE enrollment among children of immigrants, who have lower ECE enrollment rates than children of natives.

Previous research has identified some of the factors responsible for the lower ECE enrollment rates of Hispanic children, including lack of familiarity with the school system by immigrant parents, limited availability of ECE in low-income Hispanic neighborhoods, and transportation difficulties in accessing the centers (*e.g.*, Ansari, 2017; Ansari *et al*., 2020; Crosnoe and Ansari, 2015). Studies have also shown that working mothers, especially those with higher earnings, are more likely to invest in high-quality early childhood education programs (*e.g.*, Waldfogel, 2002; Morrissey, 2017), suggesting both maternal employment and households' disposable income are important factors shaping children's participation in ECE programs.

Our study focuses on the effect of facilitating likely undocumented Hispanic parents' driving and transportation autonomy on their children's ECE attendance. Even though driving

without a license is not directly recognized as a deportable offense, many undocumented immigrants report fear of deportation as a driving barrier (Rabin *et al*., 2024). The extension of driving privileges to this population enhances their mobility, access to employment opportunities, and social interactions, facilitating awareness and affordability of ECE for their children.

3. Data

Our study uses the *American Community Survey* (ACS) from 2005 through 2019 (Ruggles *et al.*, 2022), which is a large nationally representative dataset surveying 1% of the U.S. population each year. The dataset is well-suited for our analysis for several reasons. First, its large sample size facilitates the analysis of questions involving minority groups, as in the case of likely undocumented immigrants. Second, the ACS provides detailed information on demographic traits necessary to identify likely undocumented migrants, including individuals' place of birth, citizenship, and ethnicity, as well as information on their year of arrival to the United States. Finally, the ACS is notable for its consistency and high-quality data over extended periods, enabling us to gauge the impact of changes in the policy environment on the labor market performance of our population of interest.

For our main analysis of children's ECE attendance,[4] we focus on Hispanic children between ages 3 to 6 with at least one likely undocumented parent. When investigating the mechanism likely at play, our sample focuses on likely undocumented adults. At this juncture, it is worth noting that, since the ACS does not collect information on the legal status of immigrants, we rely on traits highly predictive of immigrants' undocumented status to identify which parents or adults likely lack legal immigration status. Specifically, using a proxy similar to the one

[4] We measure ECE attendance using the ACS variable indicating whether a child aged 3 to 6 is enrolled in preschool. As shown in Figure A1 in the Appendix, this measure is strongly correlated with state-funded preschool enrollment data from the National Institute for Early Education Research (NIEER), supporting its validity.

proposed by Borjas (2019), parents are classified as likely undocumented if they arrived after 1980, are not citizens, lack a social security number, lack Medicaid, Medicare, or military health insurance, are not veterans, are not in the military, are not public sector employees, are not Cuban, do not have an occupation that requires licensing, and do not collect Supplemental Security Income (SSI) or alike forms of public assistance not available to unauthorized immigrants.

Table 1 presents summary statistics for Hispanic children and households with at least one likely undocumented parent, disaggregated by whether they reside in treatment (*i.e.*, DL law) or control states. Panel A focuses on the dependent variables. Preschool attendance rates among eligible Hispanic children with at least one likely undocumented parent are comparable across treatment and control states, averaging 48 percent. Car access is somewhat higher in treatment states, with slightly greater car ownership (0.95% vs. 0.91%) and a higher average number of vehicles per household (2.26 vs. 1.99). A larger share of undocumented individuals in treatment states report commuting to work alone by car (84.3% vs 83.6%) and a smaller share report carpooling (76.0% vs. 73.8%), suggesting modest gains in transportation autonomy.

Labor market outcomes for likely undocumented mothers and fathers—such as employment rates, weekly working hours, wages, and English proficiency—are similar across treatment and control states, minimizing concerns about differential selection into treatment based on baseline economic conditions. In treatment states, 61.5% of undocumented mothers and 65.4% of undocumented fathers are employed, and their average log hourly wages and working hours per week are nearly identical to their counterparts in control states. Additionally, the distribution of English proficiency is consistent across both groups.

Panel B summarizes the main covariates used in our analysis. The child-level demographic characteristics, including gender and age, are balanced across treatment and control states. Parental

education and family size also appear similar, with slight variation. For example, fathers' education averages 4.4 years in treatment states versus 4.6 in control states. The policy exposure variables reveal that treatment states have greater exposure to Secure Communities (40.6% vs. 35.5%) but are less likely to mandate kindergarten (10.6% vs 21.6%) or adopt omnibus immigration laws (3% vs 12.1%). These contextual differences are accounted for in our empirical specifications.

Overall, the descriptive statistics suggest broad comparability across groups, providing further confidence in the validity of the staggered implementation strategy and the identification of causal effects from DL law adoption.

4. Methodology

With the ultimate goal of evaluating the effect of granting driving privileges to undocumented immigrants on their offspring's access to ECE, we exploit the temporal variation in the granting of driving privileges to undocumented immigrants, comparing *changes* in ECE attendance of Hispanic 3–6-year-olds with likely undocumented parents in *treated* states following the adoption of those laws, to the changes observed in *control* states over the same period as illustrated by the following model:

(1) $$Y_{ist} = \alpha + \beta DL_{st} + X_{ist}\gamma + Z_{st}\delta + \theta_s + \theta_t + \varepsilon_{ist}$$

where the vector Y_{ist} is an indicator of whether the child *i* residing in state *s* attended ECE in year *t*. We restrict the subsample to Hispanic 3-6-year-old children with likely undocumented parents. The coefficient of interest (β) captures the effect of extending driving privileges to undocumented immigrants on ECE attendance among 3-6-year-old Hispanic children with likely undocumented parents, relative to 3-6-year-old Hispanic children with likely undocumented parents in states that did not issue driver's licenses to undocumented immigrants. The vector X_{ist} controls for a series

of individual and family traits that likely shape children's participation in ECE, such as family size, mother's and father's education, and the child's gender. The vector Z_{st} accounts for state-level mandates and other immigration policies potentially correlated to our outcome, such as mandatory kindergarten laws, E-Verify mandates, and omnibus immigration laws.

Equation (1) includes state-fixed effects to capture time-invariant differences across states affecting children's access to ECE and year-fixed effects to account for national trends in ECE affecting children in all states. Standard errors are clustered at the state level, and results are weighted using ACS individual weights. The vector ε_{ist} is the idiosyncratic error.

A priori, the impact of granting driving privileges to undocumented migrants on their children's access to ECE is ambiguous. On the one hand, having a driver's license may facilitate the child's transportation to the school, encouraging participation in ECE programs ($\beta > 0$). On the other hand, having a driver's license may encourage household task specialization, with one parent specializing in the labor market and the other one in household production, including childcare. Such a specialization could potentially reduce children's participation in ECE programs ($\beta < 0$). Finally, it is also possible that undocumented immigrants may be unaware or unable to take advantage of the driving permits, in which case their driving patterns would remain unaltered and children's attendance to ECE programs would be unaffected ($\beta = 0$).

Because parental access to a driver's license may differentially affect their offspring's access to ECE depending on which parent gains access to a driver's license, we restrict the analysis to Hispanic 3-to-6-year-old children and separately estimate the model using a subsample of children with a likely undocumented father, a subsample of children with a likely undocumented mother, and a subsample of children with two likely undocumented immigrant parents. The treatment group in each case is the subsample share residing in a state issuing driver's licenses to

undocumented immigrants, whereas the control group is composed of the remaining children in the subsample.

A limitation of the two-way fixed effects (TWFE) estimates derived from the estimation of equation (1) is that, due to the staggered enactment of laws granting driving privileges to undocumented immigrants, the estimates make both "clean" comparisons between treated and not-yet treated units, as well as "forbidden" comparisons between newly and previously treated units, leading to negative weighting problems (*e.g.,* Goodman-Bacon, 2021). Because most states have not granted driving privileges to undocumented immigrants, clean comparisons dominate in the computation of the TWFE estimates. Nevertheless, to address any concerns, we estimate equation (1) using the estimators proposed by Gardner (2022) and Borusyak *et al*. (2021) –both known to yield robust estimates in the presence of treatment-effect heterogeneity.

5. Driver's Licenses for Undocumented Migrants and Early Childhood Education

5.1 Main Findings

Our primary objective is to examine whether extending driving privileges to undocumented immigrants increases early childhood education (ECE) participation among Hispanic children aged 3 to 6 with at least one likely undocumented parent. Table 2 summarizes our main results using a difference-in-differences (DD) framework.

Panel A presents estimates for the full sample of Hispanic children with at least one likely undocumented parent. In the baseline specification (Column 1), which controls for state and year fixed effects, the enactment of a driver's license (DL) law is associated with a 3.2 percentage point increase in preschool attendance. Given a pre-policy mean of 47.9%, this translates into a 6.6% increase in ECE participation. When we add child- and household-level controls in Column 2, the

estimated effect slightly attenuates to 2.8 percentage points, or 5.8%, but remains statistically significant at the 1% level.

To address potential biases associated with staggered policy adoption, we employ two alternative estimators designed to correct for treatment effect heterogeneity and differential timing: Gardner (2022) and Borusyak *et al*. (2021). Columns 3 and 4 display estimates using these methods, showing that the magnitude and significance of the effect persist. These results provide reassurance that our findings are not driven by methodological artifacts of conventional two-way fixed effects estimation and are robust to alternative identification strategies.

In Panels B and C, we explore heterogeneity by the likely undocumented parents' gender. When the father is likely undocumented (Panel B), DL laws are associated with a 2.4 to 2.8 percentage point increase in ECE participation, representing a 4.8% to 5.9% gain over the pre-law mean of 47.2%. When the mother is undocumented (Panel C), the effects are larger, ranging from 3.6 to 4.3 percentage points (7.5% to 9%). While the differences across parent gender are not statistically significant, the consistently higher point estimates for undocumented mothers are suggestive. They align with prior evidence on mothers' disproportionate responsibility for childcare and school-related transportation, implying that easing mobility constraints on mothers may be particularly important for children's school access.

Panel D examines children with two likely undocumented parents. Here, the estimated effects range from 2.7 to 3.9 percentage points (5.7% to 8.3%), again statistically significant and broadly similar in magnitude to estimates for children with only one undocumented parent. This suggests that the presence of two undocumented caregivers does not further amplify or dampen the effect of DL laws on ECE participation, possibly because the marginal benefit of mobility access to one parent already alleviates the key constraint.

In sum, across all panels, we find consistent evidence that granting driver's licenses to undocumented immigrants leads to measurable improvements in preschool attendance among their U.S.-born children. These effects are present regardless of which parent is undocumented, but appear most pronounced when mothers are the likely license recipients. This finding reinforces the role of maternal transportation autonomy in facilitating access to early education. Moreover, the robustness of results across estimation strategies and subgroups strengthens the case that driving privileges can generate meaningful spillovers to child development and educational equity.

5.2 Placebo Checks

To assess whether the observed effects in Table 2 are driven by broader trends in preschool attendance among Hispanic children rather than by the extension of driving privileges to undocumented immigrants, we estimate a series of placebo tests. Specifically, we re-estimate equation (1) focusing on children aged 3 to 6 whose parents do not meet the criteria for likely undocumented status. If DL laws were simply capturing preexisting trends in Hispanic ECE enrollment, we would expect to see similar patterns among Hispanic children whose parents are documented.

Panel A of Table 3 shows no evidence that DL laws affected ECE attendance among Hispanic children without likely undocumented parents. While the coefficients are positive across specifications, they are small (0.8 to 1.2 percentage points), statistically insignificant, and notably lower than those found in Table 2 (which ranged from 2.8 to 3.3 percentage points). This strengthens the interpretation that the effects documented in Table 2 are indeed specific to children of undocumented immigrants, not to Hispanic children more broadly.

Given that the majority of undocumented immigrants are Hispanic,[5] it is reasonable to expect the strongest impacts among Hispanic families. However, since all undocumented immigrants—regardless of race or ethnicity—stand to benefit from access to driver's licenses, we also examine non-Hispanic children with likely undocumented parents.

Panel B presents estimates for non-Hispanic White children with at least one likely undocumented parent. The results show no consistent or significant effect on ECE attendance. Coefficients across specifications are small (ranging from −0.004 to 0.004) and statistically indistinguishable from zero.

Panel C turns to non-Hispanic Black children with likely undocumented parents. Here, we observe larger point estimates, ranging from 2.8 to 6.2 percentage points, equivalent to 5% to 11% increases over the pre-policy mean (0.564). However, these estimates are not statistically significant, likely due to limited sample size (fewer than 11,000 observations).

Panel D examines non-Hispanic Asian children with likely undocumented parents. The estimated effects are modest—between 1.6 and 2.3 percentage points, or roughly 2.7% to 3.9% relative to the pre-DL mean (0.586). Again, the results are not statistically significant, and confidence intervals are wide.

Finally, Panel E pools all non-Hispanic children with at least one likely undocumented parent. Across specifications, the estimated effect of DL laws on ECE attendance ranges from 1.5 to 2.3 percentage points, with the final specification reaching statistical significance at the 10% level. This provides some suggestive evidence that the policy may have increased ECE

[5] Approximately 67% of undocumented immigrants are from Mexico and Central America, and 6% are from South America (Migration Policy Institute, 2019)

participation among non-Hispanic children as well, though the effects are more muted and less robust than those found for Hispanic children.

In sum, the placebo analyses in Table 3 reinforce the interpretation that DL laws had a specific and meaningful impact on the children of undocumented immigrants—particularly among Hispanic families, who make up the bulk of the undocumented population. While point estimates are also positive for Black and Asian children with likely undocumented parents, the results are not statistically significant, potentially reflecting smaller subsample sizes and more heterogeneous effects. The null effects for Hispanic children with documented parents further support the causal interpretation of our main findings.

5.3 Identification Checks

A key identifying assumption of the difference-in-differences (DD) design is that, absent the implementation of DL laws, ECE attendance in states that eventually adopted such laws would have followed parallel trends to that in control states (Angrist and Pischke, 2008). Although this counterfactual cannot be tested directly, we can assess its plausibility by examining pre-policy trends in ECE attendance across treatment and control states. To do so, we estimate the following event study specification:

$$(2) \qquad Y_{ist} = \alpha + \sum_{k=-5}^{4} \beta_k \, \mathrm{I}[DL_{st}^{k} = 1] + X_{ist}\gamma + Z_{st}\delta + \theta_s + \theta_t + \varepsilon_{ist}$$

where DL_{st}^{k} equals one for each of the k periods preceding or following the year in which state s granted driving privileges to undocumented immigrants; otherwise, it equals zero. We set $\beta_{k=-1}$ to zero; therefore, all β_k coefficients should be interpreted about one year prior to the state's granting of driving licenses to undocumented immigrants.

Figure 1 displays the results from estimating equation (2) using our preferred specification from Column (4) of Table 2, separately for four subsamples: (A) Hispanic children with at least

one likely undocumented parent, (B) with a likely undocumented father, (C) with a likely undocumented mother, and (D) with two likely undocumented parents.

Across all panels, we observe no evidence of differential pre-trends between treated and control states, providing support for the parallel trends' assumption. In Panel A, the effect of the DL law emerges sharply in the year after implementation and persists for at least four years, suggesting a durable impact on ECE participation. Consistent with Table 2, the effects are more pronounced when the mother is likely undocumented (Panel C) than when the father is (Panel B), reinforcing the importance of maternal access to transportation in shaping preschool enrollment. Panel D (children with two undocumented parents) shows a similar upward shift, albeit with wider confidence intervals.

In addition to checking pre-trends, we test whether our findings might be confounded by compositional changes in the states adopting DL laws. If the demographic or educational characteristics of these states changed concurrently with the passage of DL laws, the observed increases in ECE attendance could be spuriously driven by those changes rather than the policy itself. To evaluate this, we re-estimate equation (1) using the following state-year level outcomes: (A) the share of the population that is likely undocumented, (B) the Hispanic share, (C) the share with more than a high school education, and (D) the share of the population aged 3–6.

The results, shown in Table 4, suggest that none of these compositional measures changed significantly after DL law enactment. In Panel A, the coefficient on the DL law is slightly negative and statistically indistinguishable from zero, suggesting the law did not trigger inflows of likely undocumented immigrants. Panel B finds no effect on the Hispanic population share, ruling out

shifts in Hispanic demographics as a driver of our results.[6] In Panel C, the educational composition of the population also remains unchanged, alleviating concerns that increases in parental education, an established predictor of ECE participation, are confounding the findings. Finally, Panel D shows no significant change in the share of children aged 3–6, indicating that the results are not driven by a baby boom or selective migration of young families into treated states.

In sum, the event studies and identification checks lend strong support to our identification strategy. We find no evidence of differential pre-trends, and the estimated effects of DL laws on ECE participation are unlikely to be driven by demographic or compositional shifts. These findings bolster the interpretation of our DD estimates as capturing causal effects of extending driving privileges to undocumented immigrants on early childhood education participation.

5.4. Robustness Checks and Heterogeneous Effects

5.4.1 Triple Difference Estimates

The difference-in-differences estimates presented earlier (equation 1) focus exclusively on Hispanic children ages 3–6 with at least one likely undocumented parent, comparing outcomes across treated and control states over time. This approach assumes that Hispanic children in non-DL states constitute an appropriate counterfactual for those in DL-adopting states. However, differences across states in unobserved, and time-varying factors—such as investments in early childhood education—could bias these estimates.

To address this concern, we implement a triple-differences (DDD) strategy that leverages within-state comparisons. Specifically, we compare changes in ECE attendance among Hispanic

[6] It is worth noting that, even if we had found an effect, such a mechanical increase would only be problematic if the policy raised ECE among all Hispanic children, regardless of their parent's immigration status. However, we only find evidence of an increase in ECE attendance among Hispanic children with likely undocumented parents (Table 2), and not among their counterparts with likely-documented parents (Panel A, Table 3).

children with and without likely undocumented parents, before and after the enactment of DL laws, within the same state. This approach controls for state-year shocks common to all Hispanic children (*e.g.*, changes in preschool policy or outreach), while retaining the core treatment variation. Formally, we estimate:

$$(3) \qquad Y_{ist} = \alpha + \beta_1 DL_{st} + \beta_2 LUP_{ist} + \beta_3 DL_{st} * LUP_{ist} + X_{ist}\gamma + Z_{st}\delta + \theta_s + \theta_t + \varepsilon_{ist}$$

The vector LUP_{ist} equals 1 if the child i residing in state s in year t has a likely undocumented parent; otherwise, it is zero. All other vectors are specified as in equation (1). In this manner, we can compare 3–6-year-old Hispanic children with likely undocumented parents to 3–6-year-old Hispanic children with documented parents, in control versus treated states, before and after the enactment of laws extending driving privileges to undocumented immigrants. In addition to allowing us to account for factors possibly affecting all Hispanic children in any given state, the increase in sample size enhances statistical power and results in more precisely estimated impacts than in the difference-in-differences framework.

The coefficient β_1 in equation (3) enables us to assess if ECE attendance changes after undocumented immigrants gain access to driver's licenses in any given state for all Hispanic 3–6-year-old children, irrespective of parental documented status. The coefficient β_2 gauges if ECE attendance differs among Hispanic 3–6-year-old children based on their parent's immigration status and irrespective of whether the state extended driving privileges to undocumented immigrants. The coefficient of interest is β_3, which captures the change in ECE attendance among Hispanic 3–6-year-old children with likely undocumented parents relative to their counterparts with likely documented parents, following the enactment of laws granting driving privileges to undocumented immigrants.

Table 5 presents the results. In Panel A, we find that DL laws increase ECE attendance among Hispanic children with likely undocumented parents by approximately 2.1 to 2.2 percentage points relative to Hispanic children with documented parents—a 4.4% increase over the pre-law mean (0.479)—and the estimates are statistically significant at the 5% level. Panels B through D further explore heterogeneity by parental documentation status. The effects are larger and more precisely estimated among children with likely undocumented mothers (Panel C), with impacts ranging from 2.7 to 2.9 percentage points, equivalent to a 5.6–6.1% increase in ECE participation. These estimates reinforce prior findings that maternal access to transportation is especially salient for preschool attendance, likely reflecting mothers' primary role in caregiving. For children with two undocumented parents (Panel D), we observe similarly positive effects, ranging from 2.6 to 3.9 percentage points (5.6–8.4%). In contrast, the estimates for children with only an undocumented father (Panel B) are smaller and statistically insignificant across specifications.

Together, these triple-difference estimates confirm our main findings: granting driving privileges to undocumented immigrants increases ECE participation among their children. The effects are clearest when mothers are the likely recipients of new mobility rights, underscoring the importance of maternal transportation autonomy in facilitating early educational access.

5.4.2 Alternative Definitions of Undocumented Status

A key concern when studying policies affecting undocumented immigrants is the accuracy and robustness of the proxy used to identify likely undocumented individuals. Since the American Community Survey (ACS) does not collect legal status information, researchers have employed several strategies to infer it. One common approach is the residual method, which first identifies immigrants who are likely documented and then treats the remainder as likely undocumented (*e.g.*,

Passel and Cohn, 2014). Another method uses statistical predictions based on donor datasets like the Survey of Income and Program Participation (SIPP), which includes legal status information in some waves (*e.g.*, Rendall *et al*., 2013; Van Hook *et al*., 2015). A third approach is logical imputation, which classifies individuals based on traits common among unauthorized immigrants—for example, identifying Hispanic non-citizens with low education levels, no receipt of public benefits, and employment in jobs that do not require licensure (Orrenius and Zavodny, 2016, 2017; Amuedo-Dorantes and Bansak, 2012, 2014; Amuedo-Dorantes and Lopez, 2017; Amuedo-Dorantes *et al*., 2020).

Our main analysis relies on a comprehensive definition proposed by Borjas (2017), which integrates many of these indicators. To assess robustness, we re-estimate our models using an alternative, more parsimonious proxy. Under this alternative, individuals are classified as likely undocumented if they are non-citizen, Hispanic, low-skilled (defined as having less than a high school education), and long-term residents (residing in the U.S. for at least five years—exceeding the typical duration of most non-immigrant visas).

Table 6 presents the results of this robustness check. In Panel A, we find that the implementation of DL laws increases ECE attendance among Hispanic children with at least one likely undocumented parent by 4.1 to 4.5 percentage points, relative to a pre-policy baseline of 47%—an increase of approximately 8.7% to 9.6%. These estimates are slightly larger than those obtained using the Borjas-based proxy, but remain substantively and statistically consistent.

Panels B and C explore parental gender heterogeneity. Consistent with prior findings, the effects are more pronounced among children with a likely undocumented mother (Panel C), for whom DL laws increase ECE attendance by 3.9 to 4.2 percentage points, compared to 3.2 to 3.3

percentage points among those with a likely undocumented father (Panel B). Panel D shows that effects are similar when both parents are undocumented, ranging from 3.1 to 3.2 percentage points.

In short, our main conclusions are robust to the use of an alternative and more restrictive proxy for undocumented status. Regardless of whether we use the Borjas (2017) definition or a narrower imputation based on nativity, skill level, and length of residence, we continue to find that granting driver's licenses to undocumented immigrants meaningfully increases preschool attendance among their U.S.-born children, particularly when mothers are likely to be the direct beneficiaries.

5.4.3 Assessing Policy Awareness

We also examine whether there is evidence of increased policy awareness following the implementation of laws extending driving privileges to undocumented immigrants. To that end, we leverage Google Trends data to explore changes in online search behavior related to the policy. Specifically, we test whether individuals were more likely to search for terms that indicate interest in or exposure to the policy, including "Driver+License+Immigrants" and "Requirements+Driver+License."[7]

Google provides a normalized index of search interest, which reflects the relative volume of searches for a given term within a particular state and year. The index ranges from 0 to 100 and accounts for the total search volume in that locality and period. We estimate a version of equation (1) where the outcome is the annual Google search index at the state level.[8] As shown in the first

[7] We also tested similar search terms in Spanish, but the number of observations was lower, as fewer localities reported sufficient search volume in Spanish. We did not detect statistically significant effects in those models. This may suggest that Hispanic, likely undocumented immigrants, are less likely to directly search for this type of policy information in Google. However, the observed increase in English-language searches indicates broader information dissemination and heightened awareness of DL laws, even if Hispanic, likely undocumented immigrants themselves were not the ones conducting the searches.

[8] The regressions include state and year fixed effects, as well as controls for the state-and-year-specific share of Black residents, male residents, minors (under age 18), working-age adults (ages 18–64), Hispanic residents, and the natural

three columns of Table 7, search interest in both sets of terms increases significantly following the implementation of DL laws, particularly when estimated using the OLS specification.

Panel A shows that search activity for "Driver+License+Immigrants" rises by 2.5 to 2.7 index points after the passage of a DL law, while Panel B shows a slightly stronger effect for searches related to "Requirements+Driver+License," with increases of 2.4 to 3.5 index points. These effects are statistically significant at conventional levels.

To assess whether these increases are more pronounced in states where the immigrant community is more likely to be affected, we interact the DL policy indicator with the pre-policy share of Hispanics in the state. The interaction terms are positive and significant in both panels, indicating that the rise in search activity is greater in states with a larger Hispanic population. This is consistent with the notion that members of the target population—or individuals in their social networks—were actively seeking information about policy changes that could affect their mobility or legal exposure.

Together, these results support the idea that DL law implementation generated a meaningful increase in public interest and information-seeking related to driver's license eligibility and requirements. The stronger effects in states with higher Hispanic shares further suggest that awareness was concentrated among the likely beneficiaries of the policy.

5.4.4 Impact of Driver's License Laws on Early Childhood Education Supply and Quality

While unlikely, we examine whether the passage of driver's license (DL) laws affected the quality or supply of early childhood education (ECE). To assess quality, we construct a continuous ECE quality index by averaging the number of quality benchmarks met by each state-year, based

logarithm of the total population. The model also accounts for key immigration enforcement measures, including Secure Communities, 287(g) agreements, and state-level employment verification mandates.

on data from the *National Institute for Early Education Research* (NIEER). This index ranges from 0 to 1, with higher values indicating stronger adherence to established quality standards. Column 1 of Table A2 shows no statistically significant relationship between DL laws and this index, suggesting that policy adoption did not affect the quality of ECE programs.

Second, to differentiate between the presence and absence of any ECE offering—regardless of quality—we construct a binary indicator equal to one if a state operated any ECE program in a given year, and zero otherwise. As shown in Column 2 of Table A2, DL laws had no significant effect on the likelihood that a state offered any ECE program.

Third, we evaluate potential impacts on ECE supply using two measures: the number of daycare and childcare establishments (Column 3), and the number of paid employees in these establishments (Column 4), both drawn from the *County Business Patterns* (CBP) data from 2005–2019. We aggregate counts at the state-year level for industries classified under NAICS codes 6244–62441–624410. The estimates show no statistically significant effect of DL laws on either the number of establishments or total employment, indicating no detectable supply-side response to the policy.

One remaining concern is whether increased enrollment in the absence of expanded capacity may have resulted in overcrowded classrooms or deteriorated quality. While we cannot directly observe student-to-teacher ratios, the lack of growth in total ECE employment (Column 4) suggests limited expansion of staffing. However, a key limitation is that the CBP data do not distinguish instructional staff from administrative or support personnel, making it difficult to assess changes in classroom-level staffing or instructional quality with precision.

Taken together, these findings suggest that while DL laws appear to have increased ECE participation, they did not trigger measurable changes in program quality, availability, or staffing

levels. This supports our main results by ruling out the possibility that the observed rise in attendance reflects concurrent investments in ECE infrastructure—and raises important questions about whether existing capacity was sufficient to absorb new demand without compromising the learning environment.

5.4.5 Heterogeneous Effects

The main estimates presented thus far reflect the average effect of DL laws on ECE attendance. In this subsection, we explore whether these effects are heterogeneous across relevant dimensions using our core subsample of Hispanic children with at least one likely undocumented parent.

First, we investigate whether the benefits of DL laws vary by *urbanicity*. Access to public transportation may mitigate the importance of driving in urban areas, making DL access less pivotal than in more car-dependent, non-urban areas. To assess this, we estimate a variant of equation (1) that includes an interaction between the DL law indicator and an indicator for whether the child resides in an urban area: $(\beta_{11} DL_{st} + \beta_{12} DL_{st} * Urban_{ist})$.[9] As shown in Panel A of Table A3, the main effect of DL laws is positive and significant ($\beta_{11} > 0$), but the interaction term is negative and significant ($\beta_{12} < 0$), indicating that the increase in ECE participation is smaller in urban areas. These findings are consistent with prior work (*e.g.*, Cho, 2022), which finds that access to a driver's license has more pronounced effects in places where job accessibility and daily routines are more dependent on private vehicles.

Second, we consider whether the presence of *additional adults* in the household moderates the effect of DL laws. Parents in households without other adult members may face greater

[9] The variable $Urban_{ist}$ is an indicator for whether the household i resides in a metropolitan area, and if the household is in a metropolitan area, whether the household resided within the principal city.

childcare burdens and therefore derive more benefit from ECE access. We again estimate a variant of equation (1), interacting DL laws with an indicator for the presence of at least one non-parent adult in the household: $(\beta_{11}DL_{st} + \beta_{12}DL_{st} * Adult_{ist})$. Panel B of Table A3 shows that while the main effect remains positive and significant ($\beta_{11} > 0$), the interaction term coefficient (β_{12}) is small and statistically insignificant, suggesting no meaningful heterogeneity by household composition. This result indicates that the presence of additional adults does not significantly moderate the effect of DL access on ECE enrollment among this population.

Third, we assess whether the impact of DL laws varies with the *quality of ECE programs* available in the state. While earlier results showed that DL laws do not affect the overall quality of ECE (Table A2), it remains unclear whether families respond differently to the policy depending on the quality of available programs. On one hand, high-quality ECE may be more appealing to parents, leading to larger effects. On the other hand, Hispanic children of likely undocumented immigrants may be more attracted to programs with bilingual staff or culturally relevant supports, which may not be prevalent in states with high standardized test scores. To test this, we interact the DL law indicator with the state-level ECE quality index as measured in 2002—before any DL law enactments: $(\beta_{11}DL_{st} + \beta_{12}DL_{st} * Quality_s)$. Panel C of Table A3 indicates that while the main effect of DL laws remains positive and significant, the interaction term is negative and statistically significant, suggesting that the effect of DL laws on ECE attendance is smaller in states with higher baseline ECE quality.

In sum, these heterogeneous effects suggest that DL laws are particularly effective at boosting ECE enrollment in more vehicle-dependent (non-urban) contexts and in states with lower baseline ECE quality, both settings where mobility barriers and program accessibility challenges

may be more acute. The absence of heterogeneity by household composition suggests that the policy's benefits are broadly distributed regardless of in-home support structures.

6. Mechanisms: Pathways Behind the Effects of DL Laws on ECE Enrollment

6.1 Expanded Transportation Access and Household Mobility

Our core results demonstrate that extending driving privileges to undocumented immigrants raises ECE enrollment among Hispanic children aged 3 to 6 with likely undocumented parents. One plausible mechanism is improved access to transportation. Transportation is a known structural barrier to preschool participation (Ansari *et al*., 2020), particularly for low-income and immigrant families. Legal access to driving can reduce the risks associated with unlicensed driving—including criminal charges, fines, or vehicle impoundment—and enable undocumented parents to transport their children to ECE centers (McDonald and Aalborg, 2009).

To assess whether the observed increase in ECE participation is accompanied by enhanced household mobility, we examine shifts in driving-related behaviors. Specifically, we re-estimate equation (1) on four outcomes: (i) car ownership, (ii) number of vehicles, (iii) use of a car to commute to work, and (iv) reliance on carpooling among those who commute by car. All outcomes are measured for Hispanic households with at least one likely undocumented member.

Table 8 shows that DL laws significantly increase the probability of car ownership (Panel A), though the effect is modest given already high pre-policy rates (90.4%). Specifically, we observe a 0.9 percentage point increase, equivalent to a 1% rise relative to the baseline. The number of cars owned also increases by approximately 0.07 vehicles per household (Panel B), representing a 3.6% increase from a baseline mean of 1.87 vehicles.

Beyond ownership, we find behavioral shifts in commuting. Panel C shows a 1.1 to 1.3 percentage point increase in the likelihood of commuting by car, about a 1.3% increase from a

baseline mean of 83.6%. Moreover, Panel D reveals that, conditional on commuting by car, individuals are 1.1 to 1.5 percentage points more likely to drive alone rather than carpool, suggesting a rise in transportation autonomy.

These findings imply that access to driver's licenses increases both the means and confidence to drive independently, reducing reliance on shared transportation and enabling more flexible mobility, factors that are likely to lower logistical barriers to preschool enrollment.

Figure 2 presents corresponding event study estimates, which further support the robustness of these results. We find no evidence of differential pre-trends across any of the four outcomes, strengthening the case for a causal interpretation. Post-policy increases in car ownership, the number of vehicles, and commuting by car are sustained up to five years after enactment, suggesting lasting behavioral changes rather than temporary adjustments.

6.2 Expanded Work Opportunities and Integration as Complementary Channels

Beyond easing transportation barriers, access to driver's licenses may expand employment and integration opportunities for undocumented immigrants—factors that could also facilitate early childhood education (ECE) attendance (Waldfogel, 2002; Morrissey, 2017). Table 9 explores these complementary channels, focusing on likely undocumented Hispanic parents of 3–6-year-olds.

Columns 1–3 present estimates for likely undocumented fathers, and columns 4–6 for mothers. Starting with employment (Panel A), we observe a statistically significant 1 percentage point increase for fathers from a high baseline of 90.5%. The effect for mothers, while similar in magnitude, is not statistically significant. Given the high pre-policy employment levels among men, such a small increase is unsurprising.

More pronounced are the increases along the intensive margin in Panel B. DL access raises hours worked per week by 1.1% for fathers (=0.448/39.852) and by approximately 2.6% for mothers (=0.492/18.946), with both effects statistically significant. Panel C shows modest wage gains for mothers (about 2.5%), while fathers' wages remain unchanged. This asymmetric effect may reflect differences in occupational sorting or labor market constraints, but may also increase maternal bargaining power and control over household spending, both factors known to affect child investment decisions (Verriest, 2018).

Finally, Panel D examines English fluency. Following DL enactment, the share of parents self-reporting "poor English" declines by roughly 3 to 4 percentage points for both fathers and mothers. These improvements may stem from increased exposure to native speakers, reduced fear of enforcement while traveling to language classes or work, or other integration-related behavior shifts.

Figures 3 and 4 provide corresponding event-study estimates for fathers and mothers, respectively. Across both sets of figures, we observe no evidence of differential pre-trends, strengthening the causal interpretation. For both genders, the employment, work hours, and English proficiency outcomes begin to diverge in the year of policy implementation and persist for several years post-enactment. Notably, wage effects for mothers emerge more gradually and are consistent with the lagged nature of wage adjustment.

Overall, these results support the view that DL laws not only enhanced mobility but also contributed to broader economic integration for undocumented immigrants. These gains—via increased work hours, improved wages for mothers, and stronger language skills—likely supported the increase in ECE participation through higher household resources, reduced logistical and informational barriers, and enhanced parental engagement.

7. Summary and Conclusions

This paper examines whether extending driving privileges to undocumented immigrants produces intergenerational benefits, particularly for their children's early education. Leveraging *American Community Survey* (ACS) data from 2005 to 2019 and the staggered rollout of these policies across states, we employ a quasi-experimental difference-in-differences framework to estimate the causal impact of these laws on early childhood education (ECE) attendance.

We find that granting driver's licenses to undocumented immigrants increases pre-primary enrollment by approximately 6% among Hispanic children with likely undocumented parents. The gains are especially pronounced when the mother is the likely undocumented parent—suggesting that maternal access to transportation is a critical constraint. Specifically, ECE attendance increases by roughly 4 percentage points in households with likely undocumented mothers, compared to 2 percentage points in those with likely undocumented fathers.

To bolster the credibility of these findings, we conduct a series of validation and robustness checks. First, we assess the reliability of the ECE measure in the ACS by comparing state-level ACS participation rates to administrative statistics on state-funded preschool enrollment. The two measures exhibit a strong correlation, supporting the construct validity of our main outcome. We also test whether DL laws influenced the supply or quality of ECE options, using NIEER and County Business Patterns (CBP) data. We find no evidence that the policy altered the number of ECE programs, staffing levels, or program quality—implying that observed increases in enrollment reflect greater take-up rather than changes in availability.

Next, we implement multiple econometric strategies to verify the internal validity of our results, including event study analyses, placebo tests on unaffected groups, alternative definitions of undocumented status, and triple-difference models. The findings are consistently robust across

specifications. Importantly, the estimated effects are not short-lived; they persist for several years post-policy, underscoring their durability.

We also explore plausible mechanisms. Access to driving privileges appears to increase parental mobility, vehicle ownership, and independent commuting, while reducing carpool reliance. In parallel, we observe modest increases in employment and weekly hours worked—particularly among mothers—as well as gains in mothers' hourly wages. English proficiency improves after policy adoption, likely due to increased social interaction and access to language courses, which may further aid ECE awareness and navigation.

These patterns align with existing evidence linking parental income, time constraints, and information access to children's educational participation (Waldfogel, 2002; Morrissey, 2017). The more pronounced gains for mothers also suggest a shift in intra-household bargaining dynamics that may promote investment in children's education (Verriest, 2018).

Taken together, our results provide compelling evidence that policies aimed at integrating undocumented immigrants into the formal economy can yield significant downstream benefits for the next generation. By mitigating transportation-related barriers and supporting parental economic and linguistic integration, driver's license access enhances not only adult immigrants' labor market outcomes but also their children's early educational trajectories. These findings echo broader research on the long-term returns to early educational investment (Duncan and Magnuson, 2013).

Policymakers weighing the costs and benefits of inclusive mobility or immigration policies should consider these broader ripple effects. Expanding access to driving privileges is not only a matter of safety and legal inclusion—it is also an investment in the educational and social advancement of immigrant families and their U.S.-born children.

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Table 1 – Summary Statistics: Treatment vs. Control States

Group:	Treatment states		Control states	
Statistic:	**Mean**	**SE**	**Mean**	**SE**
Panel A: Dependent variables				
Children Attend ECE[a]	0.477	0.499	0.485	0.500
Car ownership[b]	0.945	0.229	0.913	0.283
Number of cars owned[b]	2.256	1.282	1.987	1.178
Drives to work[c]	0.843	0.364	0.836	0.370
Carpools to work[d]	0.760	0.427	0.738	0.440
Maternal Outcomes:[e]				
Employed	0.615	0.487	0.618	0.486
Working hours/week	16.516	19.976	16.327	20.281
Log hourly wage	4.307	0.644	4.249	0.664
Poor English	0.357	0.479	0.359	0.480
Paternal Outcomes:[f]				
Employed	0.654	0.476	0.670	0.470
Working hours/week	17.662	20.294	18.461	20.944
Log hourly wage	4.316	0.623	4.254	0.627
Poor English	0.364	0.481	0.376	0.484
Panel B: Independent variables				
Male (%)	0.507	0.500	0.511	0.500
Age 3 (%)	0.241	0.428	0.245	0.430
Age 4 (%)	0.244	0.430	0.248	0.432
Age 5 (%)	0.253	0.435	0.254	0.435
Age 6 (%)	0.262	0.440	0.252	0.434
Father's education	4.435	2.528	4.638	2.697
Mother's education	4.748	2.548	4.917	2.662
Family size	5.179	1.648	4.952	1.470
Policy exposure:				
Counties with Secure Communities (%)	0.406	0.491	0.355	0.478
State with E-Verify Mandate (%)	0.030	0.170	0.103	0.304
State with Omnibus Immigration Laws (%)	0.030	0.170	0.121	0.326
State with Mandatory kindergarten (%)	0.106	0.308	0.216	0.411

Notes: The variables in Panel A correspond to the dependent variables. Variables in Panel B are the controls. *Education* is a categorical variable (coded as follows: 00 = N/A or no schooling; 01 = Nursery school to grade 4; 02 = Grade 5, 6, 7, or 8; 03 = Grade 9; 04 = Grade 10; 05 = Grade 11; 06 = Grade 12; 07 = 1 year of college; 08 = 2 years of college; 09 = 3 years of college; 10 = 4 years of college; 11 = 5+ years of college). (a) Universe: Hispanic children aged 3–6 with at least one likely undocumented parent (refer to Table 2 for sample size; same universe as Table 2); (b) Universe: Households with at least one likely undocumented immigrant (refer to Table 8 for sample size; same universe as Table 8); (c) Universe: Hispanic likely undocumented individuals; (d) Universe: Hispanic likely undocumented individuals who use a car to commute to work; (e)/(f) Universe: Likely undocumented mothers/fathers of Hispanic children aged 3–6.

Table 2: DL Laws and ECE Enrollment (DD Estimates)

Panel A: At least One Likely Undocumented Parent				
Driver License	0.032***	0.028***	0.028***	0.033***
	(0.009)	(0.010)	(0.010)	(0.012)
Mean Pre-DL	0.479	0.479	0.479	0.479
Observations	135783	100414	100414	100414
Panel B: Likely Undocumented Father				
Driver License	0.028**	0.024*	0.028*	0.023*
	(0.012)	(0.014)	(0.016)	(0.012)
Mean Pre-DL	0.472	0.472	0.472	0.472
Observations	82576	71230	71230	71230
Panel C: Likely Undocumented Mother				
Driver License	0.041***	0.037***	0.036***	0.043***
	(0.011)	(0.012)	(0.013)	(0.014)
Mean Pre-DL	0.476	0.476	0.476	0.476
Observations	84086	68757	68757	68757
Panel D: Both Parents are Likely Undocumented				
Driver License	0.039**	0.027*	0.035*	0.035**
	(0.018)	(0.014)	(0.019)	(0.015)
Mean Pre-DL	0.467	0.467	0.467	0.467
Observations	44295	44295	44295	44295
OLS	Y	Y	N	N
Gardner	N	N	Y	N
Borusyak	N	N	N	Y
Controls	N	Y	Y	Y
Year FE	Y	Y	Y	Y
State FE	Y	Y	Y	Y
2005-2019	Y	Y	Y	Y
Borjas def	Y	Y	Y	Y

Notes: All regressions include a constant term. Standard errors are clustered at the state level. ***Significant at the 1% level; **significant at the 5% level; *significant at the 10% level. Universe for Panel A: Hispanic children aged 3–6 with at least one likely undocumented parent. Universe for Panel B: Hispanic children aged 3–6 with a likely undocumented father. Universe for Panel C: Hispanic children aged 3–6 with a likely undocumented mother. Universe for Panel D: Hispanic children aged 3–6 with two likely undocumented parents.

Table 3 – Placebo Tests: Children Without Undocumented Parents

Panel A: Hispanic Children without any Likely Undocumented Parents			
Driver License	0.009	0.008	0.012
	(0.011)	(0.011)	(0.008)
Mean Pre-DL	0.543	0.543	0.543
Observations	218452	218452	218452
Panel B: Non-Hispanic White Children with at least One Likely Undocumented Parent			
Driver License	0.001	-0.004	0.004
	(0.012)	(0.010)	(0.011)
Mean Pre-DL	0.584	0.584	0.584
Observations	27267	24777	24777
Panel C: Non-Hispanic Black Children with at least One Likely Undocumented Parent			
Driver License	0.051	0.062	0.028
	(0.038)	(0.051)	(0.032)
Mean Pre-DL	0.564	0.564	0.564
Observations	10801	7964	9982
Panel D: Non-Hispanic Asian Children with at least One Likely Undocumented Parent			
Driver License	0.023	0.016	0.016
	(0.021)	(0.017)	(0.010)
Mean Pre-DL	0.586	0.586	0.586
Observations	31374	29168	29168
Panel E: Non-Hispanic Children with at least One Likely Undocumented Parent			
Driver License	0.023	0.015	0.015*
	(0.014)	(0.011)	(0.008)
Mean Pre-DL	0.580	0.580	0.580
Observations	75519	67201	67201
OLS	Y	N	N
Gardner	N	Y	N
Borusyak	N	N	Y
Controls	Y	Y	Y
Year FE	Y	Y	Y
State FE	Y	Y	Y
2005-2019	Y	Y	Y
Borjas def	Y	Y	Y

Notes: All regressions include a constant term. Standard errors are clustered at the state level. ***Significant at the 1% level; **significant at the 5% level; *significant at the 10% level. Universe for Panel A: Hispanic children aged 3–6 without likely undocumented parents. Universe for Panels B–E: Hispanic children aged 3–6 with at least one likely undocumented parent.

Table 4 – Identification Checks: Demographic and Policy Shifts

Panel A – Outcome: Percent Likely Undocumented			
Driver License	-0.0018	-0.0019	-0.0019
	(0.0014)	(0.0013)	(0.0012)
Mean Pre-DL	0.010	0.010	0.010
Observations	720	720	720
Panel B – Outcome: Percent Hispanic			
Driver License	0.0011	0.0011	0.0011
	(0.0017)	(0.0017)	(0.0016)
Mean Pre-DL	0.069	0.069	0.069
Observations	720	720	720
Panel C – Outcome: Percent with More than High School			
Driver License	0.0022	0.0025	0.0025
	(0.0025)	(0.0024)	(0.0021)
Mean Pre-DL	0.387	0.387	0.387
Observations	720	720	720
Panel D – Outcome: Percent Age 3-6			
Driver License	-0.0010	-0.0009	-0.0009
	(0.0011)	(0.0011)	(0.0010)
Mean Pre-DL	0.051	0.051	0.051
Observations	720	720	720
OLS	Y	N	N
Gardner	N	Y	N
Borusyak	N	N	Y
Controls	Y	Y	Y
Year FE	Y	Y	Y
State FE	Y	Y	Y
2005-2019	Y	Y	Y
Borjas def	Y	Y	Y

Notes: All regressions include a constant term. Standard errors are clustered at the state level. ***Significant at the 1% level; **significant at the 5% level; *significant at the 10% level. Each observation corresponds to a state-year. All regressions control for year and state fixed effects, as well as policy and demographic controls.

Table 5: Robustness Check #1 – DL Effects on ECE: Triple-Difference Estimates

Panel A: At Least One Likely Undocumented Parent			
Driver*Undocumented	0.021**	0.021**	0.022**
	(0.009)	(0.009)	(0.007)
Mean Pre-DL	0.479	0.479	0.479
Observations	354235	354235	354235
Panel B: Likely Undocumented Father			
Driver*Undocumented	0.009	0.008	0.01
	(0.010)	(0.011)	(0.009)
Mean Pre-DL	0.472	0.472	0.472
Observations	354235	354235	354235
Panel C: Likely Undocumented Mother			
Driver*Undocumented	0.027**	0.027**	0.029**
	(0.012)	(0.012)	(0.010)
Mean Pre-DL	0.476	0.476	0.476
Observations	354235	354235	354235
Panel D: Both Parents are Likely Undocumented			
Driver*Undocumented	0.026*	0.039**	0.028**
	(0.015)	(0.018)	(0.015)
Mean Pre-DL	0.467	0.467	0.467
Observations	262747	262747	262747
OLS	Y	N	N
Gardner	N	Y	N
Borusyak	N	N	Y
Controls	Y	Y	Y
Year FE	Y	Y	Y
State FE	Y	Y	Y
2005-2019	Y	Y	Y
Borjas def	Y	Y	Y

Notes: All regressions include a constant term. Standard errors are clustered at the state level. ***Significant at the 1% level; **significant at the 5% level; *significant at the 10% level. The universe consists of Hispanic children aged 3–6. Treated and control groups are defined as follows for each panel: *Panel A*—Treatment: children with at least one likely undocumented parent; Control: other Hispanic children aged 3–6. *Panel B*—Treatment: children with a likely undocumented father; Control: other Hispanic children aged 3–6 without a likely undocumented father (including those with and without a likely undocumented mother). *Panel C*—Treatment: children with a likely undocumented mother; Control: other Hispanic children aged 3–6 without a likely undocumented mother (including those with and without a likely undocumented father). *Panel D*—Treatment: children with both parents likely undocumented; Control: other Hispanic children aged 3–6 without both parents likely undocumented (including those with and without any likely undocumented parent).

Table 6: Robustness Check #2 – DL Effects Using Alternative Undocumented Definition

Panel A: At Least One Likely Undocumented Parent			
Driver License	0.041**	0.04***	0.045***
	(0.011)	(0.011)	(0.012)
Mean Pre-DL	0.470	0.470	0.470
Observations	70,742	70,742	70,742
Panel B: Likely Undocumented Father			
Driver License	0.033*	0.032*	0.033*
	(0.019)	(0.018)	(0.019)
Mean Pre-DL	0.463	0.463	0.463
Observations	41634	41634	41634
Panel C: Likely Undocumented Mother			
Driver License	0.039***	0.039***	0.042***
	(0.018)	(0.017)	(0.018)
Mean Pre-DL	0.463	0.463	0.463
Observations	38437	38437	38437
Panel D: Both Parents are Likely Undocumented			
Driver License	0.031*	0.032*	0.031**
	(0.018)	(0.019)	(0.018)
Mean Pre-DL	0.457	0.457	0.457
Observations	34823	34823	34823
OLS	Y	N	N
Gardner	N	Y	N
Borusyak	N	N	Y
Controls	Y	Y	Y
Year FE	Y	Y	Y
State FE	Y	Y	Y
2005-2019	Y	Y	Y
Borjas def	Y	Y	Y

Notes: All regressions include a constant term. Standard errors are clustered at the state level. ***Significant at the 1% level; **significant at the 5% level; *significant at the 10% level. The universe for each panel is defined as follows: *Panel A* – Hispanic children aged 3–6 with at least one likely undocumented parent; *Panel B* – Hispanic children aged 3–6 with a likely undocumented father; *Panel C* – Hispanic children aged 3–6 with a likely undocumented mother; *Panel D* – Hispanic children aged 3–6 with two likely undocumented parents.

Table 7: Robustness Check #3 – DL Policy Awareness: Google Search Trends

Panel A – Outcome: Google Searches of "Driver+License+Immigrants"					
Driver License	2.469**	26.486*	1.894		
	(0.996)	(15.243)	(1.405)		
Driver License*Hispanic Share				0.058	1.713**
				(0.077)	(0.848)
Mean Pre-DL	79.28	79.28	79.28	79.28	79.28
Observations	867	867	867	867	867
Panel B – Outcome: Google Searches of "Requirements+Driver+License"					
Driver License	3.513***	32.732*	2.362**		
	(1.136)	(17.043)	(1.134)		
				0.081	2.038**
				(0.066)	(0.864)
Mean Pre-DL	81.69	81.69	81.69	81.69	81.69
Observations	867	867	867	867	867
OLS	Y	N	N	Y	N
Gardner	N	Y	N	N	Y
Borusyak	N	N	Y	N	N
Controls	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y
State FE	Y	Y	Y	Y	Y
2005-2019	Y	Y	Y	Y	Y

Notes: All regressions include a constant term. Standard errors are clustered at the state level. ***Significance at the 1% level, **significance at the 5% level, and *significance at the 10% level.

Table 8: Mechanisms #1: DL Effects on Driving and Commuting Patterns

Panel A – Outcome: Car Ownership				
Driver License	0.00863*	0.00911*	0.00913*	0.0095**
	(0.0047)	(0.0048)	(0.0050)	(0.0039)
Mean Pre-DL	0.9035	0.9035	0.9035	0.9035
Observations	434,043	434,043	434,043	434,043
Panel B - Outcome: Number of Cars				
Driver License	0.0735*	0.0697*	0.0683*	0.0763**
	(0.0382)	(0.0353)	(0.0371)	(0.0347)
Mean Pre-DL	1.8663	1.8663	1.8663	1.8663
Observations	434,043	434,043	434,043	434,043
Panel C – Outcome: Use Car to Commute to Work				
Driver License	0.0111**	0.0112***	0.0119***	0.0113***
	(0.0046)	(0.0043)	(0.0045)	(0.0032)
Mean Pre-DL	0.8356	0.8356	0.8356	0.8356
Observations	754,902	754,902	754,902	754,902
Panel D – Outcome: No Carpool to Work, Conditional on Using a Car to Go to Work				
Driver License	0.0110**	0.0137***	0.0138***	0.0148***
	(0.0047)	(0.0040)	(0.0040)	(0.0048)
Mean Pre-DL	0.7392	0.7392	0.7392	0.7392
Observations	633,418	633,418	633,418	633,418
OLS	Y	Y	N	N
Gardner	N	N	Y	N
Borusyak	N	N	N	Y
Controls	N	Y	Y	Y
Year FE	Y	Y	Y	Y
State FE	Y	Y	Y	Y
2005-2019	Y	Y	Y	Y
Borjas def	Y	Y	Y	Y

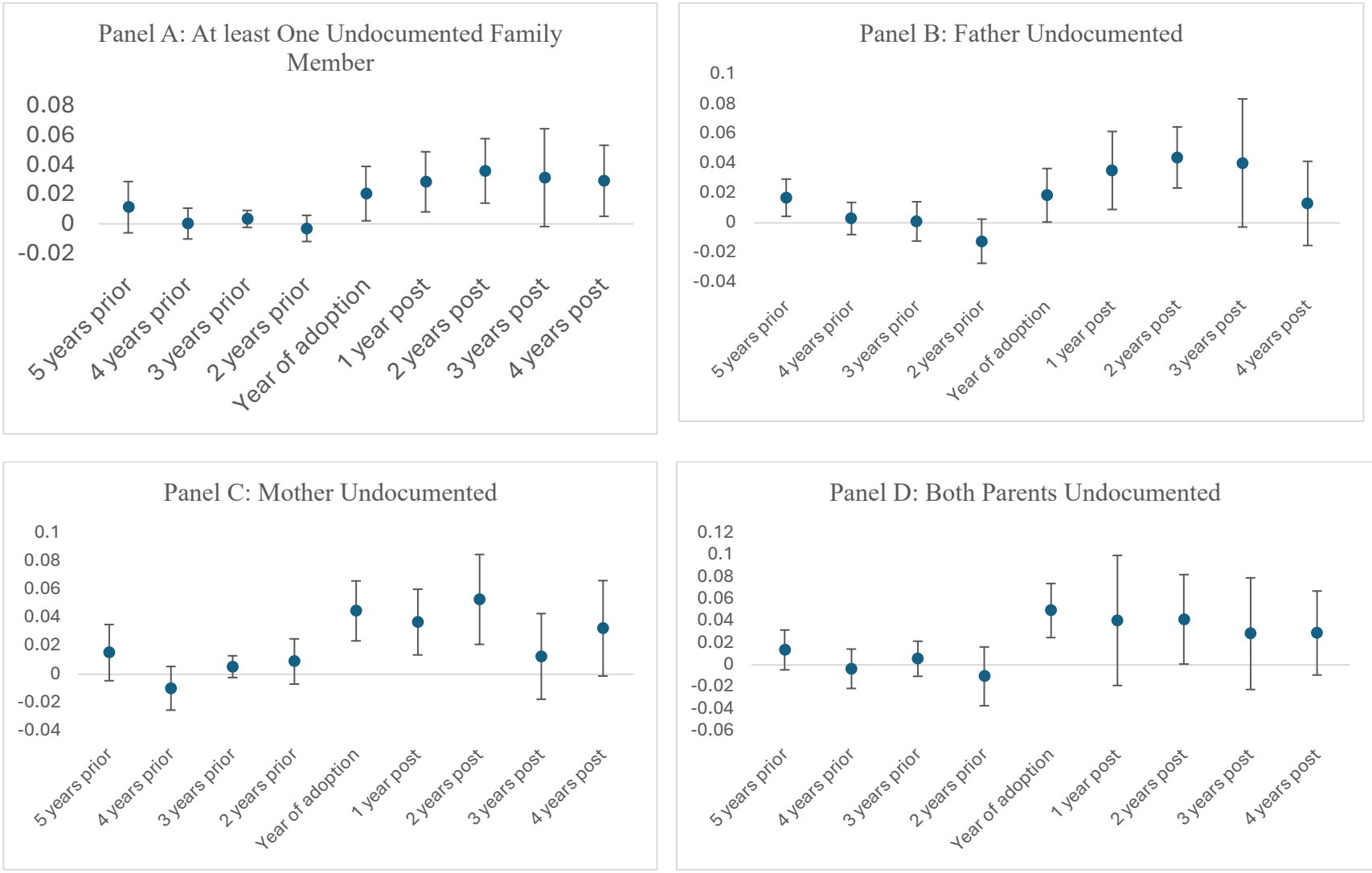
Notes: All regressions include a constant term. Standard errors are clustered at the state level. ***Significance at the 1% level, **significance at the 5% level, and *significance at the 10% level. *Panels A-B*: Households with at least one likely undocumented immigrant. *Panel C*: Likely undocumented Hispanics. *Panel D*: Likely undocumented Hispanics who use a car to commute to work.

Table 9: Mechanisms #2: DL Effects on Parental Work and English Skills

Panel A – Outcome: Employed						
Parent:		**Father**			**Mother**	
Driver License	0.011**	0.011**	0.011***	0.006	0.008	0.01
	(0.004)	(0.005)	(0.004)	(0.006)	(0.005)	(0.007)
Mean Pre-DL	0.095	0.905	0.905	0.471	0.471	0.471
Observations	253023	253023	253023	250201	250201	250201
Panel B – Outcome: Hours Worked per Week						
Parent:		**Father**			**Mother**	
Driver License	0.448*	0.459*	0.474**	0.492*	0.462*	0.558**
	(0.233)	(0.236)	(0.235)	(0.254)	(0.272)	(0.257)
Mean Pre-DL	39.852	39.852	39.852	18.946	18.946	18.946
Observations	253043	253043	253043	250214	250214	250214
Panel C – Outcome: Ln Hourly Wage						
Parent:		**Father**			**Mother**	
Driver License	-0.007	-0.008	-0.01	0.027*	0.025	0.025*
	(0.020)	(0.020)	(0.017)	(0.016)	(0.017)	(0.014)
Mean Pre-DL	4.382	4.382	4.382	4.105	4.105	4.105
Observations	221018	221018	221018	120057	120057	120056
Panel D – Outcome: Speaks Poor English						
Parent:		**Father**			**Mother**	
Driver License	-0.022***	-0.021**	-0.019**	-0.023**	-0.023**	-0.023**
	(0.008)	(0.009)	(0.008)	(0.010)	(0.011)	(0.011)
Mean Pre-DL	0.525	0.525	0.525	0.652	0.652	0.652
Observations	253043	253043	253043	250214	250214	250214
OLS	Y	N	N	Y	N	N
Gardner	N	Y	N	N	Y	N
Borusyak	N	N	Y	N	N	Y
Controls	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
State FE	Y	Y	Y	Y	Y	Y
2005-2019	Y	Y	Y	Y	Y	Y
Borjas def	Y	Y	Y	Y	Y	Y

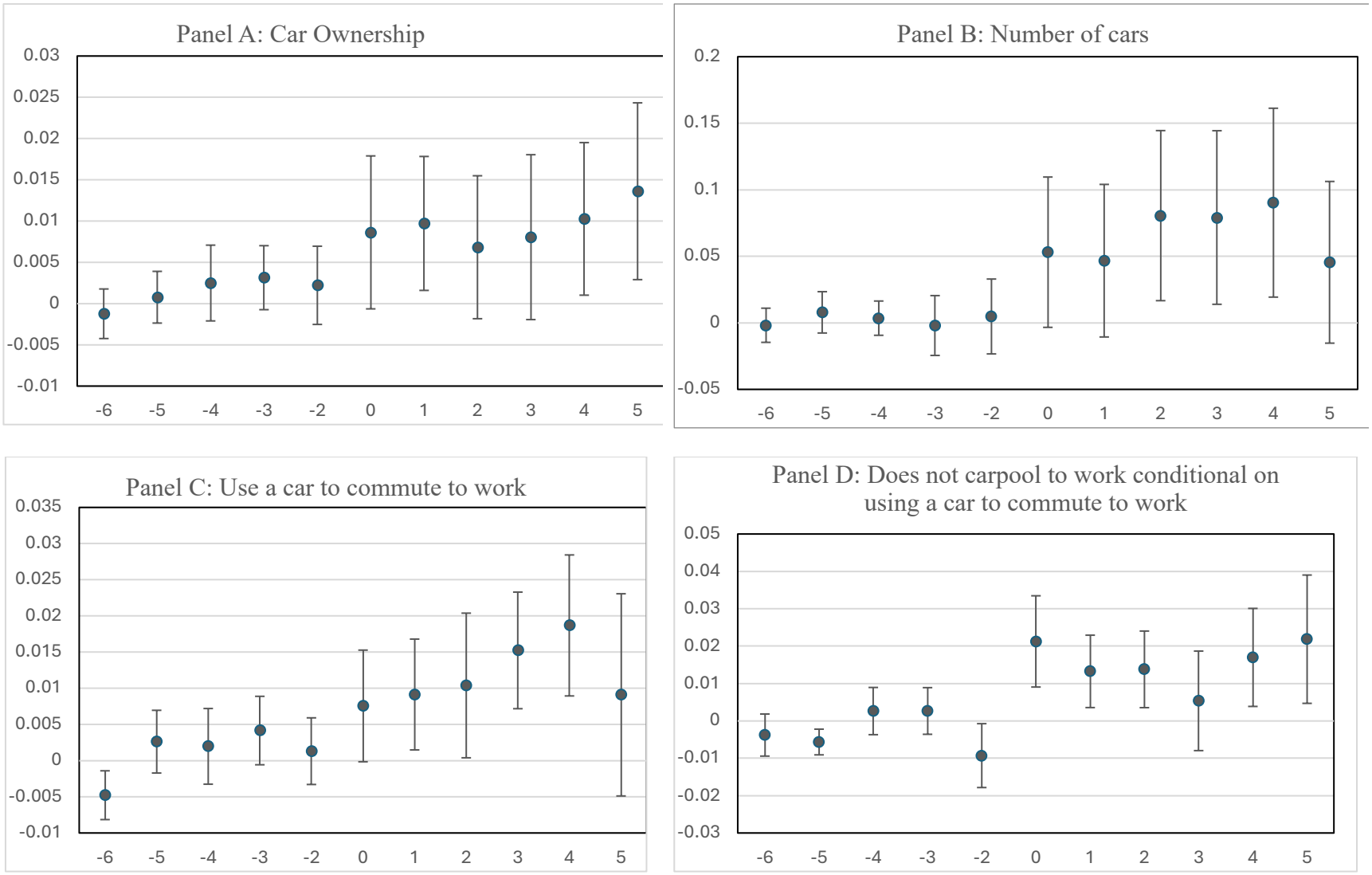
Notes: All regressions include a constant term. Standard errors are clustered at the state level. ***Significance at the 1% level, **significance at the 5% level, and *significance at the 10% level. Universe for Columns 1–3: likely undocumented fathers of Hispanic children aged 3–6. Universe for Columns 4–6: likely undocumented mothers of Hispanic children aged 3–6. *Poor English* is defined as the percentage of individuals reporting either not speaking English or speaking English "not well," based on a six-category self-assessment scale (0 = N/A or blank; 1 = Does not speak English; 2 = Yes, speaks English; 3 = Yes, speaks only English; 4 = Yes, speaks very well; 5 = Yes, speaks well; 6 = Yes, but not well).

Figure 1 – Event Study: DL Laws and ECE Enrollment



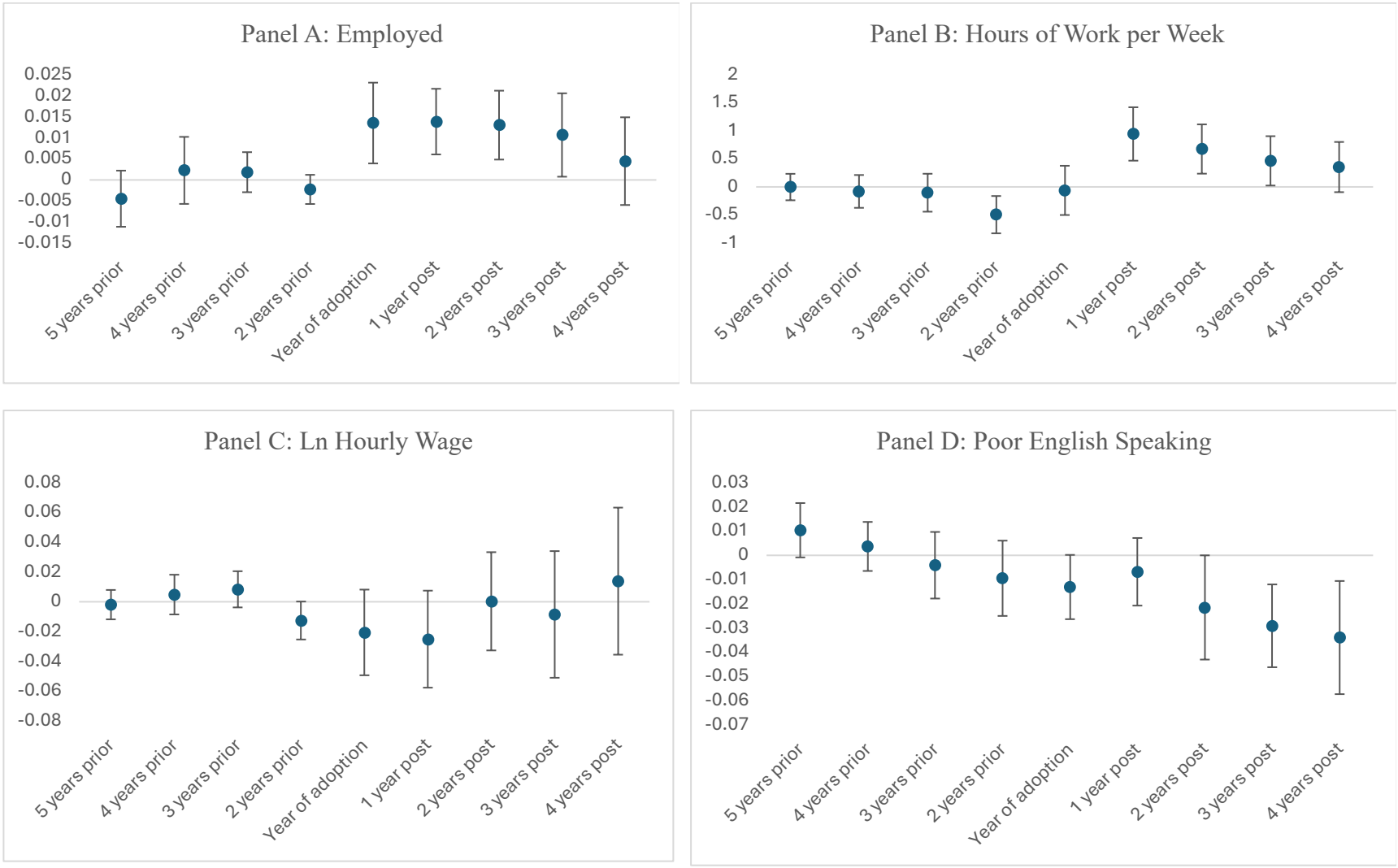
Note: Universe as in Table 2.

Figure 2 – Event Study: DL Laws and Driving Behavior



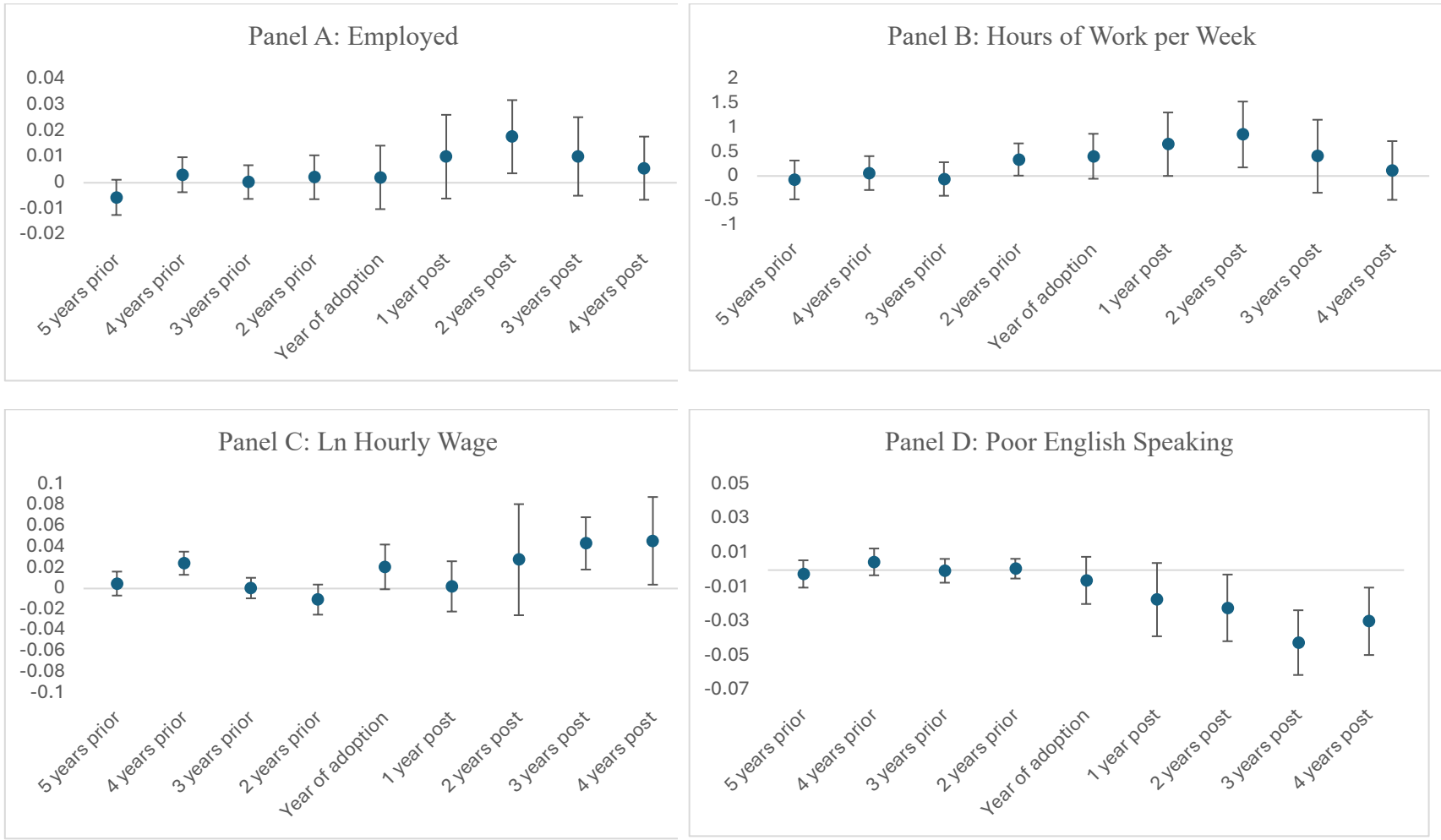
Notes: Universe as in Table 8.

Figure 3 – Event Study: Fathers' Work and English Proficiency



Notes: Universe as in Table 9.

Figure 4 – Event Study: Mothers' Work and English Proficiency



Notes: Universe as in Table 9.

APPENDIX FIGURES AND TABLES

Figure A1
ECE Enrollment (ACS) vs. State Data (NIEER)

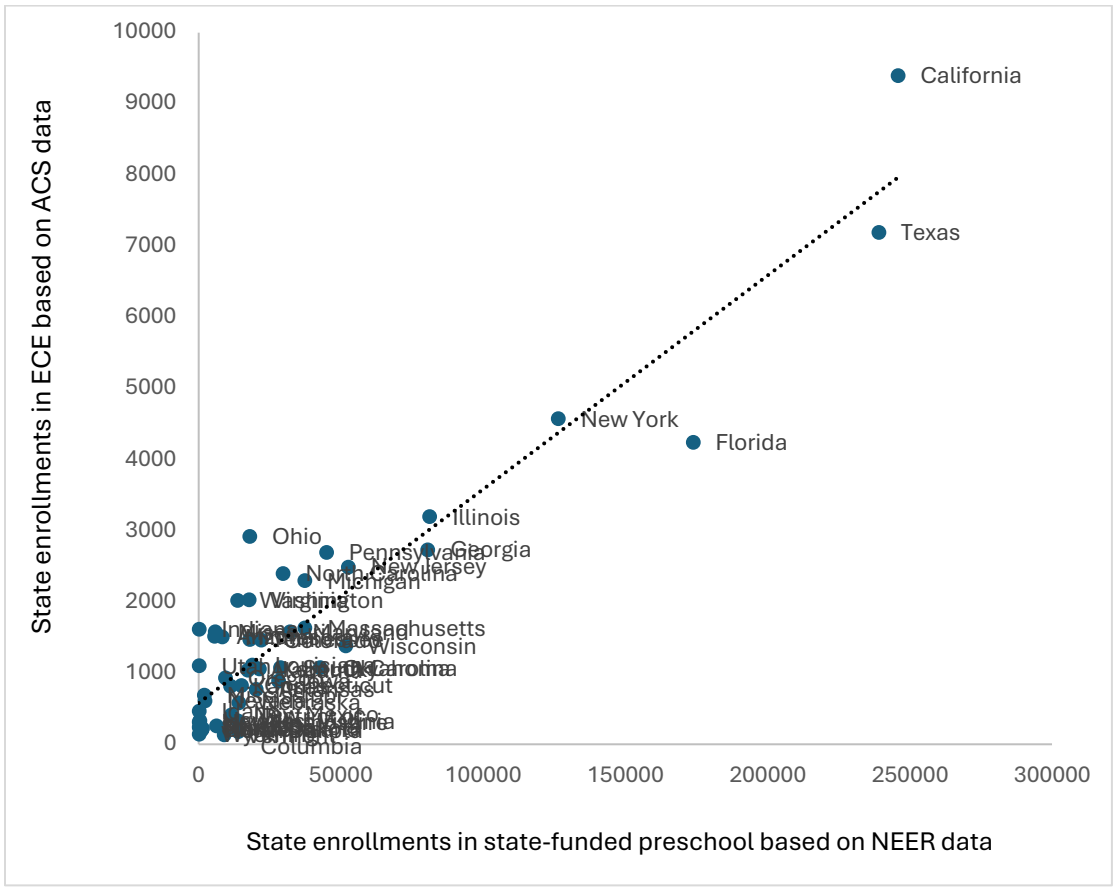


Table A1: DL Law Implementation Timeline by State

State	Bill	Year Enacted	Effective Date
California	A 60	2013	Jan. 1, 2015
Colorado	S 251	2013	Aug. 1, 2014
Connecticut	H 6495	2013	Jan. 1, 2015
Delaware	S 59	2015	Dec. 27, 2015
Hawaii	H 1007	2015	Jan. 1, 2016
Illinois	S 957	2012	Nov. 28, 2013
Maryland	S 715	2013	Jan. 1, 2014
New Jersey	A4743	2019	Jun. 1, 2000
New Mexico	H 173	2003	Jan. 1, 2003
New York	A3675	2019	Dec. 14, 2019
Nevada	S 303	2013	Jan. 1, 2014
Oregon	H2015	2019	Aug. 9, 2019
Rhode Island	S 2006/ H 7939	2022	Jul. 1, 2023
Utah	S 227	2005	Mar. 8, 2005
Vermont	S 38	2013	Jan. 1, 2014
Virginia	HB 1211/SB 34	2020	Jan. 1, 2021
District of Columbia	B275	2013	May 1, 2014
Washington	H 1444	1993	Jul. 25, 1993

Source: National Conference of State Legislatures. States Offering Driver's Licenses to Immigrants. https://www.ncsl.org/immigration/states-offering-drivers-licenses-to-immigrants.

Table A2: DL Effects on ECE Supply and Quality

Outcome:	**Quality Index**	**Has ECE Program**	**# of Daycare Establishments**	**# of Employees in Daycare/Childcare**
Driver License	-0.019	0.009	483.920	-2715.996
	(0.057)	(0.075)	(1549.178)	(16865.330)
Mean Pre DL	0.544	0.805	7359.846	88543.660
Observations	665	667	667	667
Source:	NIIER	NIEER	CBP	CBP

Notes: The table reports the effect of driver's license (DL) laws on several measures of early childhood education (ECE) quality and supply at the state-year level over 2005–2019. Column 1 uses an index constructed by averaging the number of quality benchmarks met, normalized to range from 0 to 1. Column 2 reports a binary indicator for whether a state had any ECE program each year, regardless of quality. Columns 3 and 4 use the County Business Patterns (CBP) data to measure the number of daycare/childcare establishments and employees (NAICS 6244–62441–624410), respectively. All regressions include state and year fixed effects and controls: average unemployment rate, E-Verify mandates, omnibus immigration laws, and secure communities (see Table 4). The number of observations for Column 1 is slightly smaller due to missing NIEER data for D.C. in 2005 and 2008. Robust standard errors are in parentheses.

Table A3: Heterogeneous DL Effects on ECE Attendance

Panel A: By Location in an Urban vs. Rural Area		
DL	0.067**	0.094***
	(0.029)	(0.038)
DL × Urban	-0.037	-0.062*
	(0.027)	(0.036)
Panel B: By Presence of Other Adults in the Household		
DL	0.034**	0.029**
	(0.010)	(0.011)
DL x Adult	-0.015	-0.003
	(0.013)	(0.018)
Panel C: By ECE Quality		
DL	0.061***	0.056***
	(0.012)	(0.017)
DL× (ECE Quality 2002)	-0.06***	-0.057**
	(0.015)	(0.027)
Observations	135,783	100,414
Controls	N	Y
Year FE	Y	Y
State FE	Y	Y
2005-2019	Y	Y
Borjas def	Y	Y

Notes: All regressions include a constant term. Standard errors are clustered at the state level. ***Significant at the 1% level; **significant at the 5% level; *significant at the 10% level. The universe is Hispanic children aged 3-6 with at least one likely undocumented parent. *Urban* is an indicator of whether the household resides in a metropolitan area. *Adult* is an indicator of whether there is an adult in the household other than the parents. *ECE Quality 2002* corresponds to the ECE quality index in 2002 (before the implementation of DL laws), which has a value between 0 and 1, in the state of residence.