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Parents' legal status and children's health insurance: Evidence from DACA

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Abstract

Fear of immigration enforcement may deter undocumented parents from seeking government benefits for their US citizen children. This paper examines the effect of providing legal status to parents through the Deferred Action for Childhood Arrivals (DACA) program on health insurance coverage among US-born children. Using a regression discontinuity design, I find that DACA eligibility among likely undocumented mothers increases Medicaid enrollment among their US-born children by 4 to 5 percentage points. I do not find evidence to support a similar effect among US-born children with likely undocumented fathers.

Keywords: DACA; undocumented immigrants; US-born children; health insurance; regression discontinuity design.

Classification codes: I13; I18; J18.

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1 Introduction

There were approximately 5 million US-born children (hereafter referred to as children) under the age of 18 living with at least one undocumented parent in 2016.¹ Despite their parents' legal status, they generally have access to public assistance programs, e.g.: the Supplemental Nutrition Assistance Program (SNAP), Medicaid, or the Children's Health Insurance Program (CHIP). However, fear of exposure to authorities may hinder parents' willingness to enroll their children in those programs. Specifically, children born to undocumented parents are three times more likely to be uninsured compared to children born to documented parents, despite being eligible for Medicaid or CHIP.² However, this gap may instead simply reflect that undocumented and documented immigrants are different. To assess whether immigration policy is creating costs for US citizen children, we need to assess the extent to which this relationship is causal.

Health insurance among children is associated with a decline in child mortality, a reduction in disparities in the number of healthcare visits, and a narrowing of racial differences in mortality rates (Currie and Gruber, 1996). Public health insurance programs for children increase high school and college completion (Cohodes et al., 2016). It also has effects on mortality, disability reduction, and long-run effects on employment (Goodman-Bacon, 2018, 2021). Despite those benefits, it can be challenging to expand health coverage to children living with undocumented parents. Having a deeper understanding of how parents' legal status impacts children's health coverage is crucial for government agencies to develop more effective immigration policies for undocumented parents. Unfortunately, research on this specific topic remains largely unexplored.

In this paper, I attempt to disentangle correlation from causation in the relationship between parents' legal status and children's health insurance by studying the effects of the Deferred Action for Childhood Arrivals (DACA) program. The DACA program, initiated by the Obama administration in 2012, granted temporary legal status to undocumented immigrants who were brought into the US as minors. The DACA program allows me to have quasi-experimental variation in legal status, which then enables me to assess whether the correlation that I observed earlier has

¹<https://www.pewresearch.org/short-reads/2018/11/01/the-number-of-u-s-born-babies-with-unauthorized-immigrant-parents-has-fallen-since-2007/>

²Gusmano, Garrison, NY: The Hastings Center, 2012

any causal component.

I measure the intention-to-treat effects of DACA eligibility using a parametric regression discontinuity (RDD) framework. I use micro-data from the American Community Survey spanning from 2013 to 2019. Due to the unavailability of data on DACA recipients, it is not feasible to directly measure the treatment effects of DACA status among undocumented parents on their children’s health insurance coverage. I instead focus on a sample of children with non-citizen parents. Specifically, my main analysis measures the effects of DACA eligibility among non-citizen parents on their children’s health insurance. These parents are just under or over 31 years old in 2012 and meet all other observable DACA requirements. From now on, I would refer to this sample as children with likely undocumented parents, though non-citizen parents are not necessarily all undocumented because they may have legal status through non-immigrant visas or with permanent residency. These individuals are not eligible for DACA regardless of their DACA eligibility. It is estimated around 60% of non-citizens under 35 years old in 2013 are undocumented (Acosta et al., 2014; Baker, 2021). Considering a conservative estimate of 60% of DACA-eligible individuals applying for DACA,³ there could be up to 36% changes in DACA uptake between those just below and just above the eligibility threshold. So, the treatment effects may be 1 divided by 0.36 equals 2.7 times higher than my intention-to-treat effects. In Section 6, I will discuss in detail a variety of methods to address this potential bias caused by the imputation of legal status.

I have four main findings. First, children with DACA-eligible mothers are 4 to 5 percentage points (ppts) more likely to enroll in Medicaid insurance compared to children with DACA-ineligible mothers. The statistical significance of these estimates depends on the choice of functional forms, bandwidths, and the imputation method of legal status. Second, there is suggestive evidence indicating that mothers may opt to move their children from private insurance to Medicaid. Third, there is no appreciable effect among children with likely undocumented fathers who are DACA-eligible. Using my preferred specification for the sample on fathers, the confidence interval (CI) permits potential effects on children’s Medicaid enrollment of up to 4 ppts. Lastly, my results suggest that only a small percentage of the overall increase in children’s health coverage can be attributed to a corresponding increase in parental health insurance.

³The high-end estimate for DACA-eligible population is 1.3 million, while the number of DACA holders is 800,000 according to Chishti and Gelatt (2022).

This paper is closely related to two lines of research. The first line of research studies the effects of DACA on a variety of outcomes among likely undocumented immigrants, including labor market outcomes (Amuedo-Dorantes and Antman, 2017; Pope, 2016), educational outcomes (Amuedo-Dorantes and Antman, 2017; Kuka et al., 2020), health outcomes (Giuntella and Lonsky, 2020; Giuntella et al., 2021), and health insurance (Bae, 2020; Garcia-Perez, 2019; Giuntella and Lonsky, 2020). In particular, Bae (2020) and Giuntella and Lonsky (2020) find that DACA increases the health insurance rate among likely undocumented immigrants by 3% to 5%. The second line of literature is about immigration policies and children’s health. This literature shows that uncertain immigration policies may worsen children’s health outcomes (Patler et al., 2019; Vargas and Ybarra, 2017); heighten immigration enforcement may decrease children’s insurance due to the chilling effect (Watson, 2014); or DACA is associated with improvement in birth outcomes among Mexican immigrant mothers (Hamilton et al., 2021). For instance, Patler et al. (2019) find that children’s health had improved during the early years of DACA but worsened after 2015 due to the political climate of the 2016 presidential election.

This paper offers the first evidence of the effects of parents’ legal status on children’s health insurance, an area that has received limited attention in previous studies.

This paper proceeds as follows. Section 2 describes the DACA program and health insurance among children. Section 3 discusses data and summary statistics. Section 4 details the econometric strategy. Section 5 reports and discuss the results. Section 6 presents several robustness checks. Section 7 concludes.

2 Deferred Action for Childhood Arrivals and health insurance

2.1 Deferred Action for Childhood Arrivals

In 2012, the Deferred Action for Childhood Arrivals program, also known as DACA was implemented through an Executive Order by President Obama. DACA program offers work permits and removes the constant danger from deportation to undocumented immigrants, who had been brought to the US as minors. To be eligible for DACA status, an immigrant: a) must be undocumented as of June 15, 2012; b)

entered the US before their 16th birthday; c) must be under 31 as of June 15, 2012; d) must have constantly resided in the US since June 15, 2007; e) must be either enrolled in school, must have obtained a high school diploma, general education development, or be an honorably discharged veteran of the Coast Guard or Armed Forces of the United States; f) must have no record of either a felony or significant misdemeanors.

Although there is no precise number of DACA-eligible individuals, it is estimated that there were around 1.3 million DACA-eligible individuals in the US.⁴ Nonetheless, this estimate is likely a higher end because there are unobserved DACA requirements such as if an individual commits any felony or significant misdemeanor. DACA has provided temporary legal status to over 800,000 undocumented immigrants since 2012.⁵ They are residing all over the US, however, nearly half of them are living in California and Texas. Many DACA recipients have built lives in the US, have gotten married, and had US citizen children. More than 250,000 children who were born in the US are living with at least one DACA recipient parent, and about 1.5 million people share a home with a DACA recipient. DACA recipients and their households pay annually approximately 9 billion US dollars in federal, state, and local taxes; pay about 3 billion dollars in annual rental and mortgage payments.⁶ Despite the significant contributions that DACA recipients have made to the economy, the program has faced multiple legal challenges, which have resulted in uncertain circumstances for the lives of DACA recipients. As a result, the number of initial DACA applications has significantly dropped over time due to the suspension during the Trump administration. As of 2023, DACA renewals are still open while initial DACA applications stay in limbo and will not be processed.

2.2 Health insurance among children

The uninsured rate among children is influenced by various social and economic factors tied to their parents. Additionally, the immigration and citizenship status of parents play a significant role, with children in immigrant families being more prone

⁴https://www.migrationpolicy.org/sites/default/files/datahub/State%20Estimates%20of%20DACA-Eligible%20Population_Dec%202020.xlsx

⁵Chishti and Gelatt (2022). At Its 10th Anniversary, DACA Faces a Tenuous Future Despite Societal Benefits, *Migration Policy*

⁶<https://www.federalregister.gov/documents/2022/08/30/2022-18401/deferred-action-for-childhood-arrivals>

to lacking health insurance coverage compared to children whose parents were born in the United States (Brown et al., 1999; Nguyen et al., 2022).

Although many children are covered by private insurance through their parents' plans, a considerable portion of them rely on public health insurance programs such as Medicaid or CHIP. These public health insurance programs play a vital role in ensuring access to healthcare for children from low-income families, as well as those with disabilities and complex health needs. CHIP provides health coverage to eligible children based on income, encompassing both citizen children and qualified immigrant children. It serves as a safety net for families whose income is too high to qualify for Medicaid but still insufficient to afford private insurance. In general, these programs target children in low-income households.

To be eligible for Medicaid or CHIP, children typically need to meet certain criteria: 1) be under 19 years of age (for CHIP); 2) be uninsured; 3) either be citizens or meet immigration requirements; 4) be residents of the state; 5) fall within the state's income range determined by family income and other state-specific rules.

It is estimated that more than 44 million children had ever enrolled in either Medicaid or CHIP as of 2020.⁷

3 Data and summary statistics

3.1 Data

I use data from the American Community Survey (ACS). ACS is a nationally representative survey that is conducted on a continuous basis. ACS data is released yearly that provides vital information about demographics, economic status, and housing characteristics. There are a couple of concerns regarding the presence of undocumented immigrants in ACS data and their willingness to respond. However, existing literature suggests that these concerns are unlikely to pose significant issues. (Pope, 2016; Tran, 2023)

My main analysis in this paper utilizes ACS data from 2013 to 2019. The data starts from 2013 because the majority of DACA application was accepted from late 2012.

For my analysis, I match children who were born in the US and are 0 to less than

⁷Medicaid.gov: 2020 Statistical Enrollment Report

18 years old with their parents' characteristics. Then, based on parents' characteristics, I identify individuals who are likely to have DACA-eligible parents.

In ACS, data on legal status is not available, so I focus on a group of children with non-citizen parents. In my robustness checks, I also use Mexicans and follow a method proposed by Borjas (2017) to impute the legal status of non-citizen parents. Moreover, one of the key variables in my analysis is the age in 2012. However, ACS is surveyed year-round, which makes it difficult to know exactly individuals' age in 2012. For example, a person who was 30 in 2012 and was born in Quarter 1, was recorded as being born in 1982. In fact, this individual may be born in either 1981 Quarter 1 or 1982 Quarter 1. To deal with that, I rely on age and quarter of birth to construct my sample and drop observations where the classification is ambiguous.

I examine three relevant outcome variables for children, which are if they are covered by any kind of insurance, if they are covered by private insurance, or if they are covered by Medicaid insurance.

3.2 Summary statistics

Table 1 reports the descriptive statistics of children living with at least likely undocumented parent. Children with parents under 31 years old in 2012 were generally younger (5.8 versus 10.4 years old), more likely to be of Mexican origin (62% versus 52%), and more likely to enroll in Medicaid insurance (65% versus 46%) than children with parents over 31 years old in 2012.

Table 1: Summary statistics

Variables	Parents over 31 in 2012			Parents under 31 in 2012		
	N	Mean	SD	N	Mean	SD
Age	35857	10.44	4.98	38287	5.84	4.36
Male	35857	0.51	0.50	38287	0.51	0.50
Mexican	35857	0.52	0.50	38287	0.62	0.49
Years of education	35857	5.01	4.07	38287	1.71	2.75
Any insurance	35857	0.92	0.28	38287	0.93	0.25
Private insurance	35857	0.49	0.50	38287	0.31	0.46
Medicaid insurance	35857	0.46	0.50	38287	0.65	0.48

Notes. Panel A includes all children aged 0 to 18. Those children have either non-citizen mothers or non-citizen fathers who have entered the US before their 16th birthday, have obtained high-school diploma and have continuously lived in the US since 2007. Treatment group (Control group) includes children who have either parents under (over) 31 as of June 15, 2012.

4 Econometric strategies

To examine the impact of parents' legal status on children's health coverage, I employ the eligibility criteria of the DACA program for non-citizen parents. The DACA program has six eligibility requirements. First, the individual must be undocumented. Second, they should be under 31 years of age as of June 15, 2012. Third, they must have entered the United States before their 16th birthday. Fourth, they should earn a high school diploma or be currently enrolled in school. Fifth, they must have resided continuously in the U.S. since June 15, 2007. Lastly, they should have no record of a felony or significant misdemeanor. However, the legal status of immigrant parents is unobserved, so I instead examine the effects of those eligibilities on children with non-citizen parents. This may introduce potential bias in my findings, as the impact on documented non-citizens, regardless of their DACA eligibility, would be null. Nonetheless, I also do various ways to impute legal status as my robustness checks. Additionally, since I lack information on whether an immigrant has a record of felony or significant misdemeanor, I do not incorporate this condition into my analysis.

Specifically, I restrict the sample to all children with non-citizen parents. Those non-citizen parents must meet all observed DACA criteria: they must have entered the US before turning 16, obtained a high school diploma, and entered the US before

2007. To establish my RDD identification of the effects of DACA eligibility on health coverage outcomes, I use parent’s age in 2012 as a running variable to define the treatment status. Specifically, an individual is considered treated if their parents were under 31 years old in 2012 (i.e.: DACA-eligible), and untreated otherwise (i.e.: DACA-ineligible). This econometric strategy offers two key advantages. First, this strategy focuses on an older group of DACA-eligible individuals who are more likely to have children than a younger group. Second, it generates comparable treatment and control groups, with the only difference being the age of individuals in 2012. This paper does not consider age at arrival as a running variable because there are a considerable number of studies showing that age at arrival is correlated with human capital (Bleakley and Chin, 2004, 2010; Gonzalez, 2003).

This paper employs a parametric discontinuity design, which relies mostly on the functional form (Lee and Card, 2008). I consider three functional forms in this study, which are linear, quadratic, and cubic. However, there is an additional concern that estimates from cubic functional form usually yield different estimates from linear and quadratic functions. Gelman and Imbens (2019) argue that higher order of polynomials can cause several major problems, which make results with higher-order polynomials less reliable than linear or quadratic functional forms. In this paper, my preferred functional form is linear.

In the scope of this study, I consider the following main specification:

$$Y_{ist} = \alpha + \beta * D_{ist} + \sum_1^n \gamma_n * R_{ist}^n + \sum_1^n \delta_n * R_{ist}^n * D_{ist} + X_{ist} + \sigma_t + \omega_s + \epsilon_{ist} \quad (1)$$

in which: Y_{ist} refers to the outcome variables of children of parent i living in state s at time t ; X_{ist} is the vector of control variables, which includes age, sex, parental education, and race;⁸ σ_t is year fixed effect and ω_s is state fixed effect.⁹ In this model, n indicates the order of the polynomial function, where $n = 1, 2, 3$ are linear, quadratic and cubic functions respectively. I normalize $R_{ist} = \text{non-citizen parent's age in 2012}$

- 31 and $D_{ist} = \begin{cases} 0 & \text{if } R_{ist} \geq 0 \\ 1 & \text{if } R_{ist} < 0 \end{cases}$ is defined as a binary treatment variable.

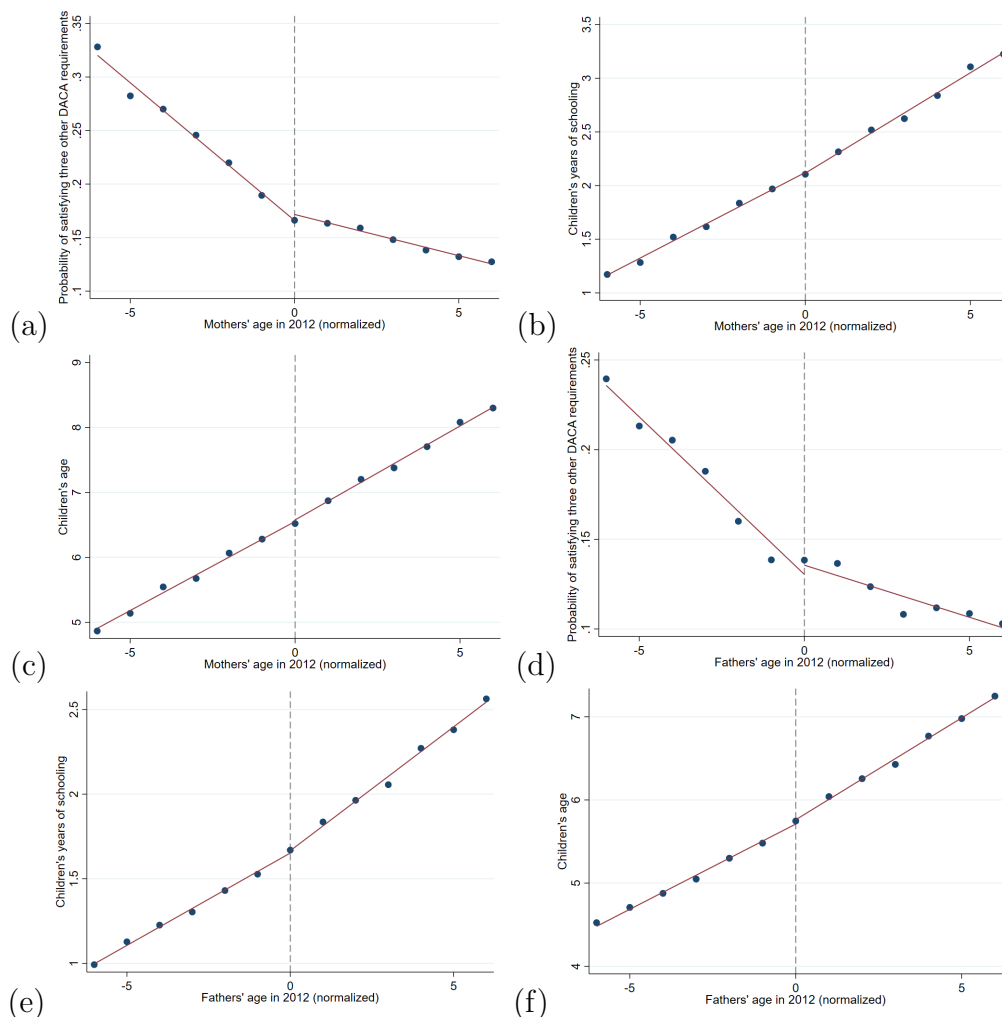
Specifically, children are treated if either their mother or their father is DACA-eligible.

⁸The results remain consistent even after adding more control variables, such as ethnicity, number of years in the US for parents, English proficiency, etc.

⁹Adding state and year fixed effects may result in a small number of observations in one bin. So, I also run the model without state and year fixed effects and the results do not significantly change

The RDD method relies on a key assumption that observations around the threshold are comparable, and there is no manipulation to sort them into the desired group. To examine this assumption, I construct a sample of all children with likely undocumented parents and plot the means of three observable variables separately for mothers and fathers. The first observable is the probability of parents who satisfy the other three criteria (i.e.: under 16 years old when immigrating to the US, have entered the US since 2007, and have obtained a high-school diploma). The second observable is the number of years of schooling for children, while the third variable is the age of children. Those variables are depicted in Figure 1. They exhibit smooth patterns across the threshold. This finding supports the fundamental assumption of the RDD method, indicating that observations on either side of the threshold are comparable and not subject to manipulation for group assignment.

Figure 1: Balance check of covariates

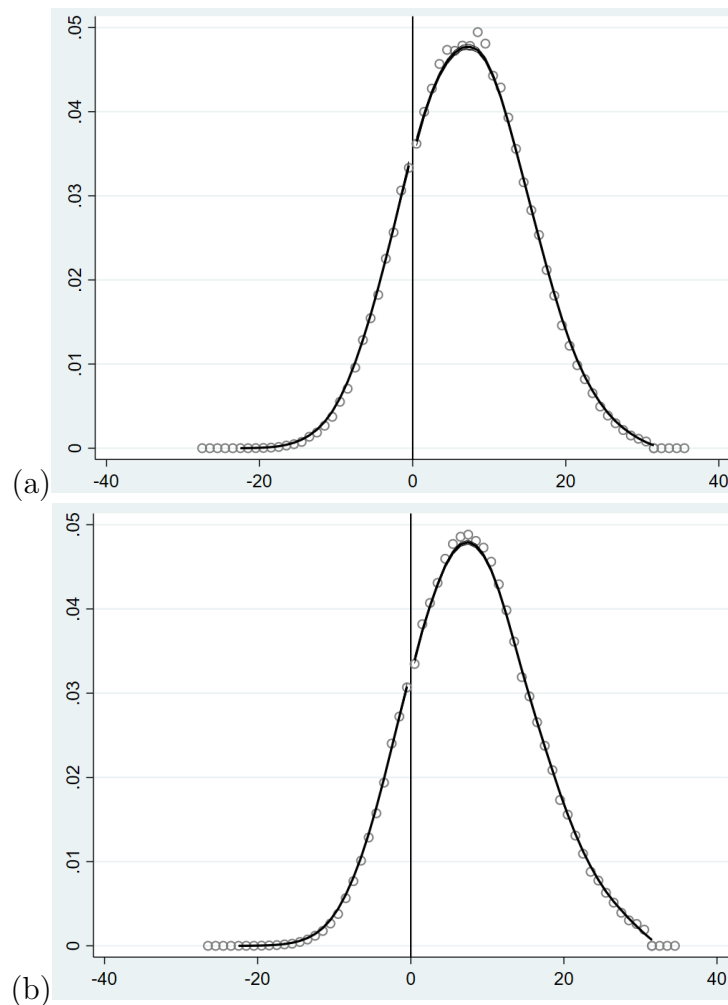


Notes: This figure illustrates the means of three observable variables along with linear lines of fit for children with likely undocumented mothers (Figure 1a, 1b, and 1c) and likely undocumented fathers (Figure 1d, 1e, and 1f).

Additionally, I perform a formal manipulation test based on a methodology proposed by McCrary (2008). Figure 2 illustrates the results of the McCrary test for two groups: children with likely undocumented mothers (Figure 2a) and children with likely undocumented fathers (Figure 2b). The statistics are -0.019 (with a standard error of 0.013) and -0.013 (with a standard error of 0.011) respectively. These test results indicate that we do not have sufficient evidence to reject the null hypothesis of continuity in the density of the covariates. In other words, there is no significant

abnormal trend observed around the threshold, suggesting that manipulation is not detected within the sample data. This supports the validity of the assumption that observations near the threshold are comparable and free from manipulation.

Figure 2: McCrary (2008) test



Notes: Figure 2a illustrates the McCrary test for children with likely undocumented mothers while Figure 2b illustrates the McCrary test for children with likely undocumented fathers. The samples in this figure are non-citizen mothers or non-citizen fathers. The statistics fail to reject the null hypothesis of continuity in both cases.

5 Results and discussions

5.1 Results

I present the findings for children aged 0 to 18 years old with DACA-eligible mothers or fathers. I consider three relevant outcome variables for these children: 1) whether they are covered by any form of insurance, 2) whether they are covered by private insurance, and 3) whether they are covered by Medicaid or any type of government assistance plans.

To analyze those outcomes using a parametric RDD, it is essential to determine functional forms and bandwidth selection. In my main analysis, I use a linear functional form with a bandwidth of 6. However, I use different functional forms and bandwidths to ensure the robustness and present the results in Section 6.2.

Table 2 presents the results for children with potential DACA-eligible mothers and potential DACA-eligible fathers.¹⁰ In the second column, the likelihood of being covered by any insurance among children with DACA-eligible mothers increases by 1 to 2 percentage points, though these changes are not statistically significant. While the probability of being covered by private insurance decreases by almost 3 percentage points, it remains statistically insignificant. Notably, the effect on Medicaid insurance shows an increase of approximately 4 percentage points and is statistically significant at only a 10% significance level. To provide a comprehensive evaluation of the magnitude of these effects, Figures 3a, 3b, and 3c present the means of the three outcome variables along with linear lines of fit. Figure 3b exhibits a clear discontinuity around the threshold. Moreover, the linear lines of fit also seem to fit my data better than the quadratic lines of fit.¹¹ In summary, DACA eligibility among likely undocumented mothers suggests an increase in Medicaid enrollment for their children by approximately 4 ppts.

In the third column, the results indicate that there is no comparable effect observed among potential DACA-eligible fathers. To further support this conclusion, Figures 3d, 3e, and 3f visually depict the outcome variables with linear lines of fit. The plot confirms the absence of any discernible discontinuities around the threshold

¹⁰I also narrow my samples to only places CA, NY, MA, MN, and DC, where DACA-eligible parents get access to public health insurance. The magnitudes of my coefficients are almost unchanged. However, most of them are underpowered and statistically insignificant due to the small sample size.

¹¹I also plot quadratic lines of fit in Appendix A

for likely undocumented fathers.¹² In summary, these point estimates suggest that DACA eligibility among likely undocumented fathers does not lead to a significant impact on the health insurance coverage of their children. I will explain in detail the difference between the effects of mothers and fathers in the following section.

Table 2: The effects of parents' DACA eligibility on children's health insurance

	Non-citizen mothers	Non-citizen fathers
Any insurance	0.017 (0.010)	0.01 (0.015)
Private insurance	-0.027 (0.023)	0.023 (0.026)
Medicaid insurance	0.041* (0.024)	-0.008 (0.024)
State & Year FEs	Yes	Yes
Functional form	Linear	Linear
Bandwidth	6	6
Observations	19890	15019

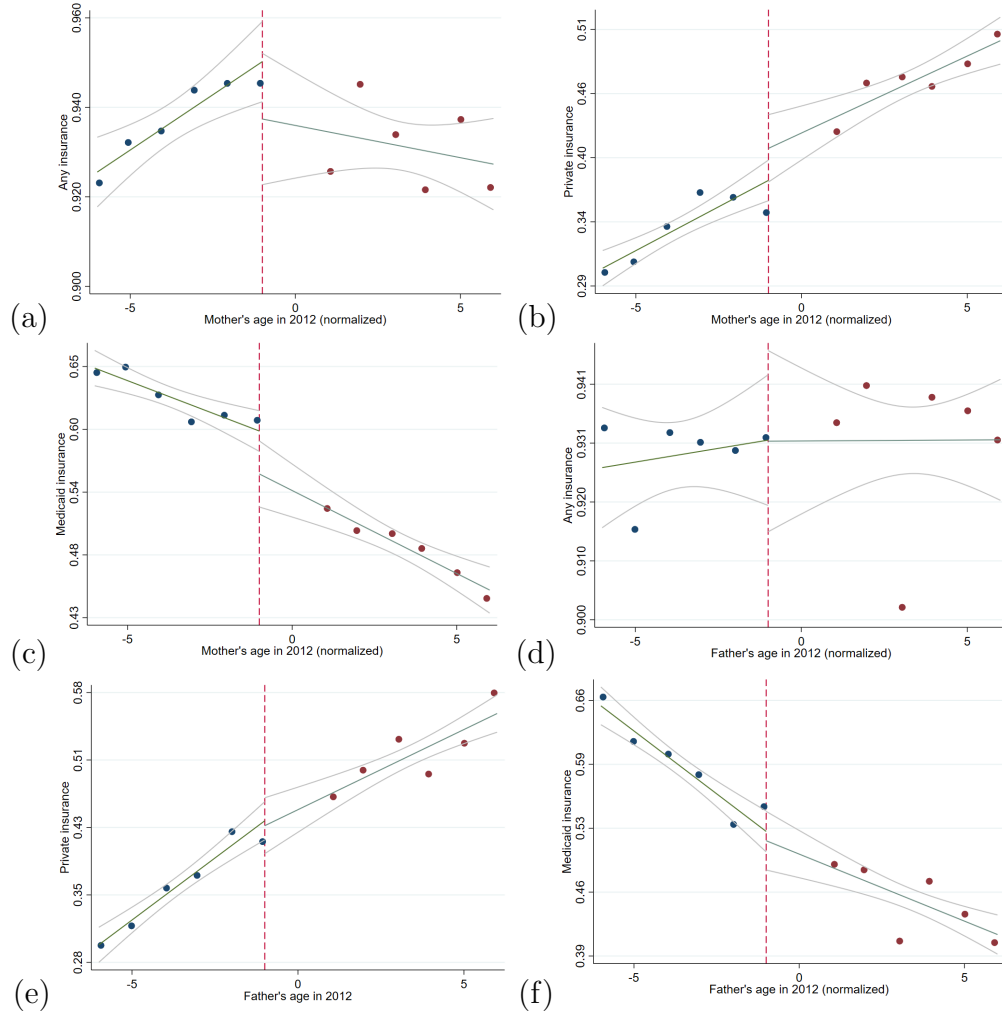
Standard errors are clustered at state level.

Notes. This table shows the effects of DACA on health insurance coverage among children with DACA-eligible mothers or DACA-eligible fathers. Sample includes US-born children aged 0 to 18 to non-citizen mothers/fathers who have obtained high-school diploma, entered the US before their 16th birthday, and immigrated to the US before 2007

* $p < .10$, ** $p < .05$, *** $p < .01$

¹²I also plot quadratic lines of fit in Appendix A

Figure 3: Health insurance coverage among children with DACA-eligible parents



Notes: This figure illustrates the means of outcome variables along with linear lines of fit and 95% confidence intervals for children with likely undocumented mothers (Figure 3a, 3b, and 3c) and children with likely undocumented fathers (Figure 3d, 3e, and 3f). I drop all observations at 0 due to potential non-compliers.

5.2 Discussions

Differential effects of parents’ legal status on children’s Medicaid insurance My results suggest that providing legal status to undocumented mothers increases Medicaid coverage among children. However, it is puzzling that there are differential effects between mothers and fathers. Even though I cannot definitively explain this difference, I offer two possible explanations. First, one possibility is that

there is an effect on Medicaid insurance among children with DACA-eligible fathers, which is masked due to sampling error. In fact, the CI for the father’s sample allows for a maximum effect of 4 ppts on their children’s Medicaid insurance, which partly overlaps the CI for the mother’s sample. Second, mothers spend more time with their children than fathers generally according to Craig (2006), Li and Guo (2023) and the Bureau of Labor Statistics.¹³ Therefore, it leads to asymmetric effects that mothers are more important than fathers in decisions related to children’s health (Case and Paxson, 2001; Nyqvist and Jayachandran, 2017).

Income effect of DACA eligibility on Medicaid enrollment There is a possibility that an increase in Medicaid among children could be due to a negative income effect of DACA. This means that DACA eligibility could make people worse off in terms of income, leading to their children being more likely to be eligible for Medicaid and CHIP. However, this explanation is unlikely because the literature shows that DACA has no appreciable effect on income (Pope, 2016; Amuedo-Dorantes and Antman, 2017). I also separately test the effect of DACA on wage income among likely undocumented immigrants and find no effect.¹⁴

Effects of DACA eligibility on likely undocumented parents Most children are covered through their parent’s health insurance. So, there is a possibility that any changes in health insurance among DACA-eligible parents can explain an increase in Medicaid enrollment among children. I empirically test this hypothesis by examining the effects of DACA eligibility on health insurance among likely undocumented parents. I restrict my sample to non-citizen parents who meet all observed DACA criteria, i.e.: they must have entered the US before turning 16, obtained a high school diploma, and entered the US before 2007. Individuals are treated if they are under 31 years old in 2012 and are untreated otherwise.

I examined three relevant outcome variables. The first variable is if they have any form of insurance. The second variable is if they have Medicaid insurance, while the third variable is if they have employment-based insurance.

Table A1 in Appendix B presents the results for DACA-eligible parents. Panel A reports the results for all states. Panel B reports the results for California, New York, Massachusetts, Minnesota, and the District of Columbia, where they allow DACA recipients to purchase public health insurance. In Panel A, results are close to zero and are statistically insignificant. In Panel B, the results are almost consistent with

¹³<https://www.bls.gov/opub/ted/2022/how-parents-used-their-time-in-2021.htm>

¹⁴Results are available upon request

the results in Panel A except for the Medicaid insurance with a quadratic functional form. However, if I plot the means of those variables, there are no clear discontinuities around the threshold.

One important aspect of these results is that I cannot definitively rule out positive effects on DACA-eligible parents. To evaluate the highest intention-to-treat effects on DACA-eligible parents, I use my point estimates and standard errors from Panel A in Table A1 to evaluate the upper end of my CIs. In Table A2 in Appendix B, I present the point estimates with CIs and compare them with results from Giuntella and Lonsky (2020) and Bae (2020). While my sample is not entirely comparable to the sample from Giuntella and Lonsky (2020), as I measure non-citizen parents around 31 years old in 2012, my estimates on Medicaid and employment-based insurance are consistent with theirs. However, my estimate on any insurance diverges from the existing literature and is close to zero. However, its CI partly overlaps with CIs from (Bae, 2020; Giuntella and Lonsky, 2020). My CIs suggest that DACA eligibility may increase health insurance enrollment among eligible parents by at most 2 ppts. This finding is consistent with the fact that most states do not allow DACA holders to enroll in Medicaid insurance.

If DACA eligibility only slightly increases insurance enrollment among likely undocumented parents, the increases in children's health insurance can only be partly attributed to the DACA eligibility effects on parents' health insurance. Another possibility that may explain the difference between the effects of DACA eligibility on parents and their children is that even though DACA status does not generally allow DACA recipients to enroll in Medicaid, it eliminates the fear of interacting with authorities. Thereby, it encourages parents to enroll their children in Medicaid. Unfortunately, it is not possible to test this hypothesis empirically.

In short, the differential effects between mothers and fathers are likely due to sampling errors. The CI allows a modest effect on Medicaid enrollment among children with DACA-eligible fathers. Furthermore, the existing literature supports that mothers may be more likely to be responsible for children's health, which may also partly explain those differences. Second, it is unlikely that the income effect of DACA eligibility makes children more likely to be eligible for Medicaid. Lastly, it is not possible to directly empirically test the effects of parents' health insurance on children's health insurance, so I cannot draw a definitive conclusion. However, based on empirical evidence regarding the effects of DACA eligibility on likely undocumented parents, only a part of increases in children's Medicaid enrollment can

be explained by increases in parents' health insurance.

6 Robustness checks

In this section, I perform a battery of robustness checks to ensure that my main analysis remains valid. First, I narrow the focus to non-citizen Mexicans, specifically targeting a subgroup with a higher likelihood of being undocumented. Second, I present the RDD estimates derived from various specification choices, using specification curves.. Third, I perform a placebo test utilizing a sample of naturalized citizens.

6.1 Mexican

In my main analysis, my sample focuses on non-citizen parents. This approach may introduce a potential bias toward 0 because documented non-citizens are not qualified for DACA regardless of their eligibility. To address this concern, I run my robustness check by focusing on children of non-citizen Mexican parents. There are two primary reasons for this choice. First, approximately one in every two Mexicans residing in the United States is undocumented, according to the Pew Research Center in 2019. This method focuses on a group of the population with a higher likelihood of being undocumented than the general non-citizens. Second, undocumented Mexican immigrants constitute almost 80% of DACA status holders. By narrowing my analysis to a group that is more likely to be directly impacted by DACA, I expect the effects will be more pronounced.

I present the results for children with non-citizen Mexican mothers and non-citizen Mexican fathers, who meet all other DACA requirements and are just under or over 31 years old in 2012. The sole difference here is I use non-citizen Mexican parents instead of considering all non-citizen parents.

In Table 3, I present the effects of DACA eligibility among non-citizen Mexican mothers and non-citizen Mexican fathers on children. The results are mostly consistent with my main analysis. Notably, DACA eligibility among non-citizen Mexican mothers leads to a 5-percentage-point increase in Medicaid insurance coverage for their children and is statistically significant at a 5% significance level. This finding is reasonable given the focus on a subgroup of non-citizens that is more likely to be undocumented.

In short, using Mexicans as a proxy for being undocumented, my findings are relatively consistent with my main results.

Table 3: The effects of parents' DACA eligibility on children's health insurance

	Mexican mothers	Mexican fathers
Any insurance	0.018 (0.016)	0.006 (0.019)
Private insurance	-0.024 (0.030)	0.027 (0.040)
Medicaid insurance	0.054** (0.026)	-0.021 (0.037)
State & Year FEs	Yes	Yes
Functional form	Linear	Linear
Bandwidth	6	6
Observations	12231	9317

Standard errors are clustered at state level.

Notes. This table shows the effects of DACA on health insurance coverage among children with DACA-eligible Mexican mothers or DACA-eligible Mexican fathers. Sample includes US-born children aged 0 to 18 to non-citizen Mexican mothers/Mexican fathers who have obtained high-school diploma, entered the US before their 16th birthday, and immigrated to the US before 2007

* $p < .10$, ** $p < .05$, *** $p < .01$

6.2 Specification curves

In Figures 4 and 5 below, I present the effects of parents' legal status on health insurance among children using different functional forms, bandwidths, methods to impute legal status, and econometric models in the form of specification curves, following Simonsohn et al. (2020).

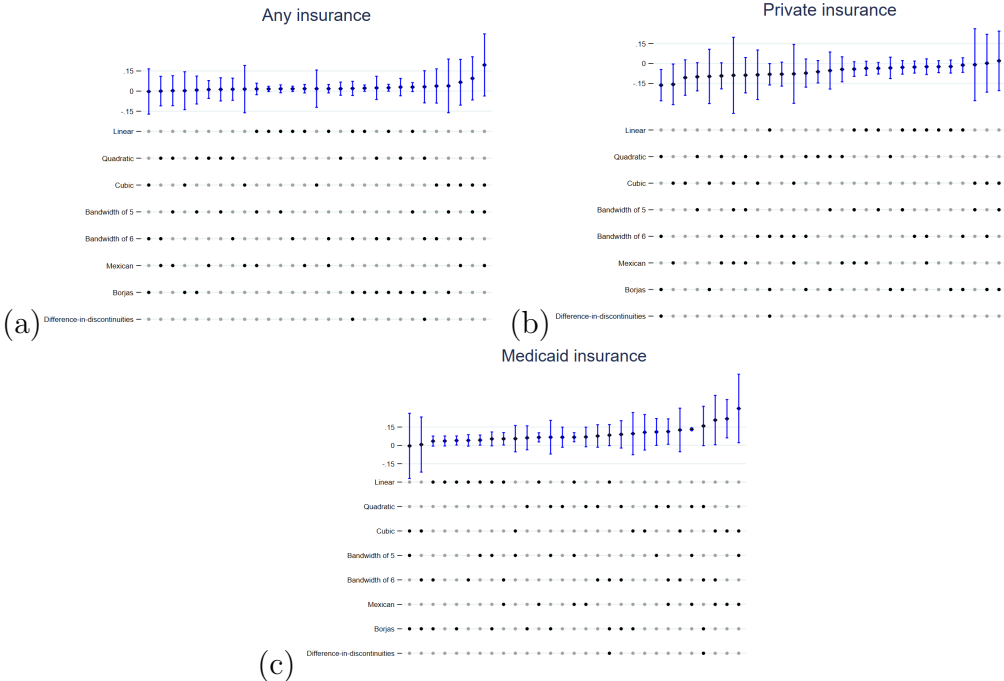
- **Functional forms:** The main analysis uses the linear functional form, while in the specification curves, I use three different functional forms, which are linear, quadratic, and cubic.
- **Bandwidths:** In my primary analysis, I employ a bandwidth of 6. For the specification curves, I also use different bandwidths, specifically 5, 6, and 7.

- **Methods to impute legal status:** In my primary analysis, my focus is on non-citizen individuals. However, in these specification curves, I specifically examine non-citizen Mexicans and utilize a sample likely to consist of undocumented immigrants proposed by Borjas (2017).¹⁵
- **Econometric models:** In addition to my regression discontinuity design, I follow Bae (2020) and run a regression-in-discontinuities design.

Figure 4 shows the effects of mothers' legal status on children's health insurance. A few key observations stand out from this figure. First, there is no clear increase in overall health insurance coverage among children with likely DACA mothers. Second, a discernible trend emerges, indicating that DACA eligibility among likely undocumented mothers leads them to opt out of private insurance. However, it is important to note that most of these coefficients are not statistically significant. Third, the coefficients on Medicaid enrollment are largely positive, with many are statistically significant. Fourth, when employing the cubic functional form, the coefficients exhibit extreme values and wide confidence intervals. This reaffirms that higher-order functional forms did not perform well in the regression discontinuity design Gelman and Imbens (2019)

¹⁵Refer to Appendix C for details on how to construct the sample using Borjas (2017)

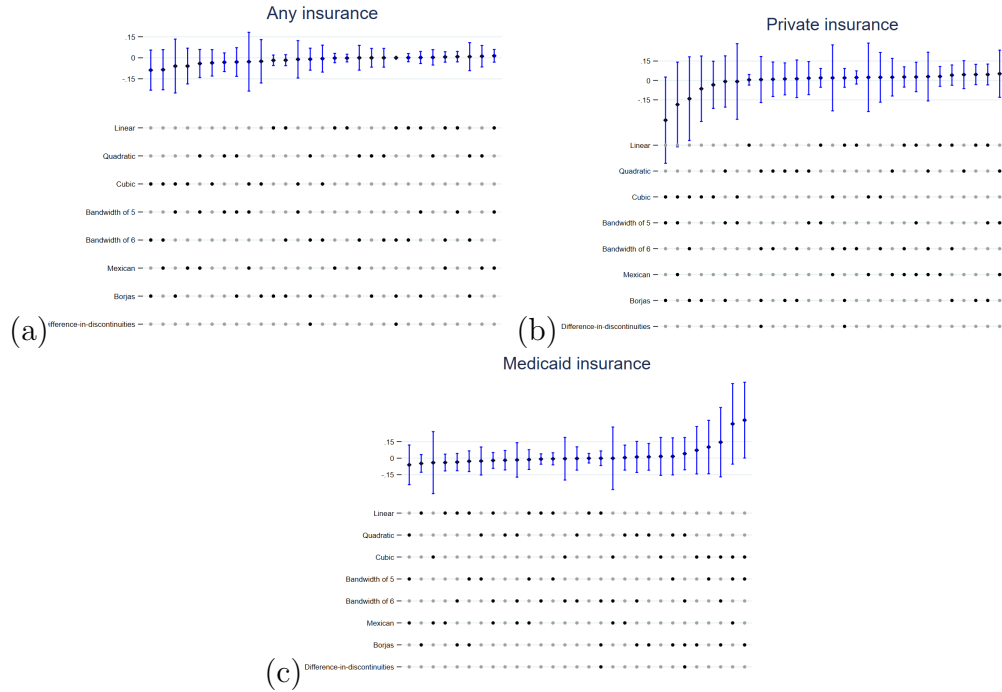
Figure 4: The effects of mothers' legal status on children's health insurance



Notes: This figure illustrates effects of mothers' legal status on children's health insurance. The top half shows the coefficients of interest and 95% confidence intervals. The bottom panels show the choices in each specifications.

Figure 5 depicts the impact of fathers' legal status on children's health insurance. Contrary to the findings in Figure 4, the evidence for health insurance is not as large across different specifications. Most coefficients are close to zero and lack statistical significance. Furthermore, the coefficients derived from the cubic functional form display extreme values, as previously explained.

Figure 5: The effects of fathers' legal status on children's health insurance



Notes: This figure illustrates effects of fathers' legal status on children's health insurance. The top half shows the coefficients of interest and 95% confidence intervals. The bottom panels show the choices in each specifications.

6.3 Naturalized citizens

In this section, I restrict the sample to children of naturalized citizens. These naturalized citizen parents are not justified under the DACA program. Consequently, I do not anticipate observing any positive effects on health insurance coverage for this group. I construct a sample that includes children born to naturalized citizens who meet all observed DACA requirements. I also restricted my sample to children whose parents were naturalized before 2012 to not contaminate my sample with individuals who had been DACA recipients and were naturalized later on. By focusing exclusively on this sample, I aim to examine the absence of any causal effects related to DACA eligibility within this specific subgroup.

Table 5 presents the results for children with naturalized citizen mothers and naturalized citizen fathers. All coefficients indicate that the effects of DACA eligibility among naturalized citizen mothers on their children's health insurance coverage are

close to zero. Furthermore, these coefficients are statistically insignificant, indicating the absence of a causal effect. Likewise, the results confirm no statistically significant effects of DACA eligibility among naturalized citizen fathers on their children’s health insurance coverage. These coefficients are close to zero, reinforcing the conclusion that there is no causal relationship between DACA eligibility among naturalized citizen fathers and their children’s health insurance outcomes.¹⁶

Table 5: Naturalized parents’ DACA eligibility and children’s health insurance

	Naturalized mothers	Naturalized fathers
Any insurance	-0.003 (0.006)	0.014* (0.007)
Private insurance	-0.011 (0.016)	0.006 (0.013)
Medicaid insurance	0.009 (0.015)	0.007 (0.014)
State & Year FEs	Yes	Yes
Functional form	Linear	Linear
Bandwidth	6	6
Observations	49355	31724

Standard errors are clustered at state level.

Notes. This table shows the effects of DACA on health insurance coverage among children with naturalized mothers or naturalized fathers. Sample includes children aged 0 to 18 to non-citizen mothers/ fathers who have obtained high-school diploma, entered the US before their 16th birthday, immigrated to the US before 2007 and became naturalized citizens before 2012.

* $p < .10$, ** $p < .05$, *** $p < .01$

7 Conclusion

This paper investigates the effects of parents’ legal status on children’s health insurance. Using the DACA program, I find that DACA eligibility among likely undocumented mothers increases Medicaid enrollment for children by 4 to 5 ppts. There is suggestive evidence indicating that DACA eligibility among likely undocu-

¹⁶I run this sample across different functional forms and bandwidths and the results are all close to zero and statistically insignificant.

mented mothers may prompt them to opt for un-enrolling their children from private insurance. Consequently, the overall insurance rate remains unchanged. So, the overall insurance rate do not change. My point estimate suggests a null effect on Medicaid insurance among children with DACA-eligible fathers, which could be due to sampling error. The CI indicates that the maximum effect on children's Medicaid enrollment with DACA-eligible fathers could be up to 4 ppts. This paper does not find strong evidence to support that DACA eligibility increases insurance enrollment among DACA-eligible parents. Thus, it indirectly suggests that increases in children's health insurance are partly attributed to increases in parents' health insurance.

This paper contributes to a broader literature on parents' legal status and children's human capital (Hainmueller et al., 2017). The findings in this paper are relevant and are of interest to a variety of audiences. First, parents and families of children want to ensure that their children have access to affordable and comprehensive healthcare services, including preventive care, regular check-ups, vaccinations, and treatment for illnesses or injuries. Second, government agencies develop policies, administer programs such as Medicaid and CHIP, and work towards expanding coverage and improving healthcare access for children. Third, numerous advocacy organizations, both at the national and community levels, focus on children's health and advocate for improved access to health insurance as well as advocacy for DACA recipients. Fourth, educational institutions are concerned about children's health insurance because it directly impacts students' well-being and ability to participate in educational activities. Lastly, it may be an interest to society as a whole because healthy children will grow up to become healthy adults.

This paper is the first paper to examine the effects of parents' legal status on children's health insurance. However, it is essential to acknowledge several limitations and thereby identify areas for future research. First, due to data constraints, this paper can only estimate the effect of DACA eligibility, not the treatment effects of DACA. Second, while this paper offers two possible explanations for differential effects between mothers and fathers, it cannot exhaustively address this concern. Lastly, this paper does not directly assess whether eliminating the fear of interacting with authorities among undocumented parents plays a central role in driving the observed increase in children's Medicaid enrollment.

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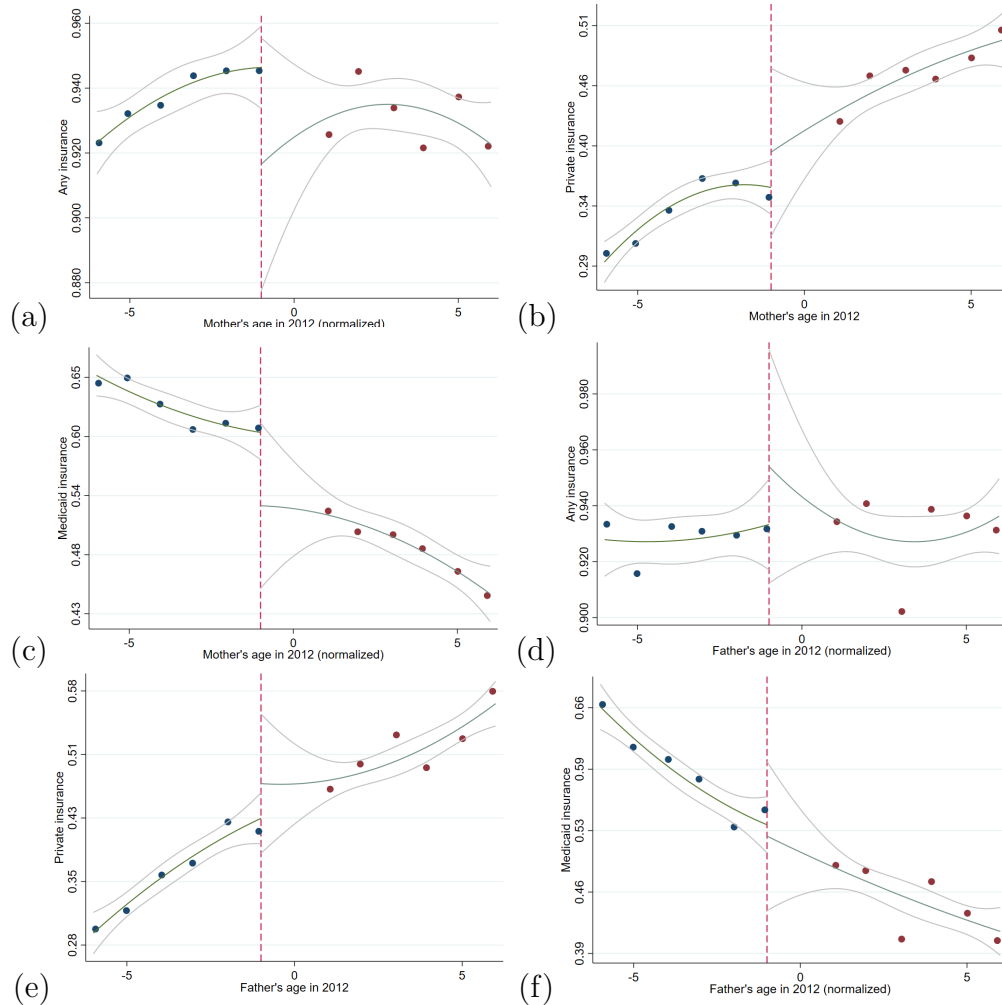
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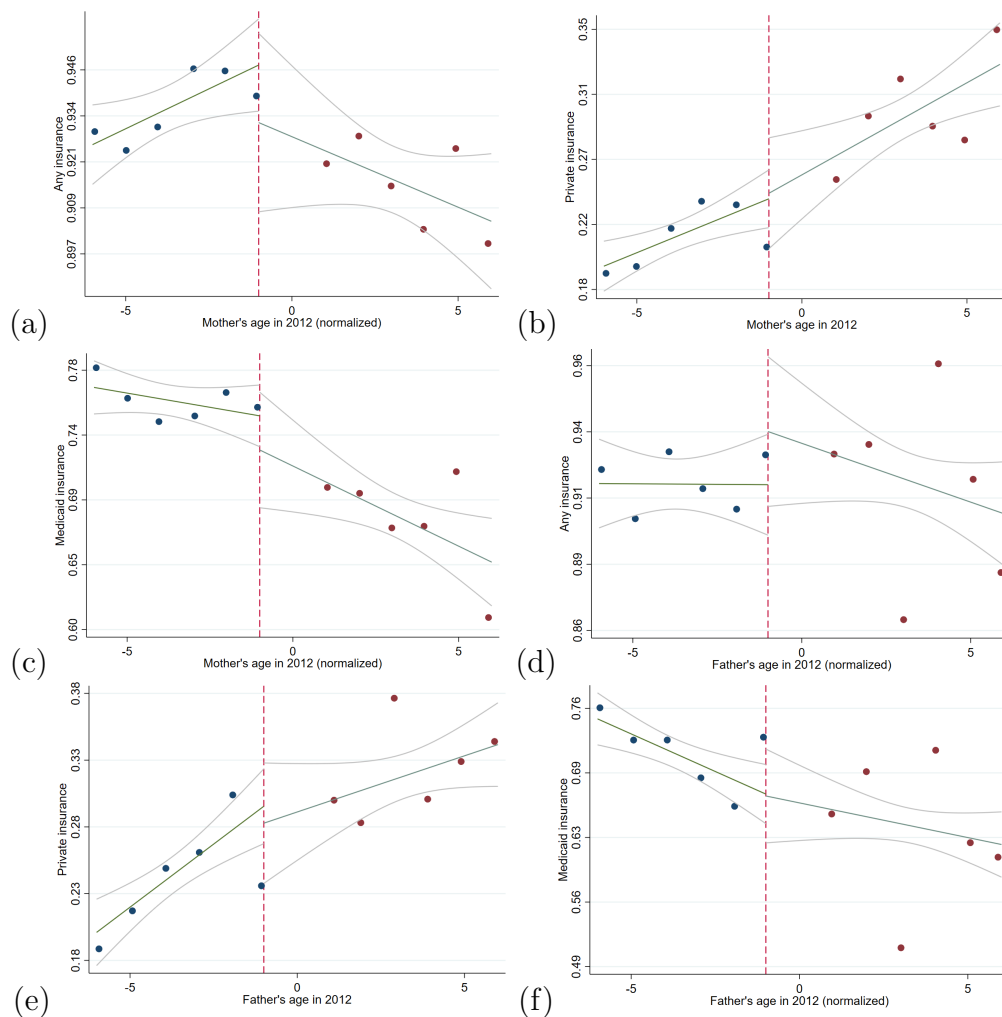
Appendix A

Figure 6: Health insurance coverage among children by parents' age in 2012



Notes: This figure illustrates the means of outcome variables along with quadratic lines of fit and 95% confidence interval for children with likely undocumented mothers (Figure 4a and 4b) or children with likely undocumented fathers (Figure 4c and 4d).

Figure 7: Health insurance coverage among children by parents' age in 2012



Notes: This figure illustrates the means of outcome variables along with quadratic lines of fit and 95% confidence interval for children with likely undocumented mothers (Figure 5a and 5b) or children with likely undocumented fathers (Figure 5c and 5d). However, it does not necessarily change the results with linear lines of fit. In this figure, legal status is imputed by using a method proposed by Borjas (2017).

Appendix B

Table A1: Effects of DACA eligibility on health insurance among likely undocumented parents

<i>Panel A: All states</i>									
	Linear			Quadratic			Cubic		
Bandwidth	5	6	7	5	6	7	5	6	7
Any insurance	-0.000 (0.015)	-0.007 (0.015)	-0.015 (0.014)	-0.024 (0.028)	-0.001 (0.026)	0.005 (0.022)	-0.142* (0.079)	-0.097* (0.056)	-0.050 (0.039)
Medicaid insurance	0.000 (0.010)	-0.005 (0.013)	-0.002 (0.015)	0.008 (0.017)	0.012 (0.011)	-0.003 (0.010)	-0.040 (0.047)	-0.013 (0.033)	0.021 (0.024)
Employment-based insurance	-0.012 (0.015)	-0.007 (0.014)	-0.019 (0.016)	-0.017 (0.035)	-0.016 (0.034)	0.004 (0.024)	-0.174** (0.077)	-0.084 (0.059)	-0.064 (0.056)
Year & State FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	13485	16277	19070	13485	16277	19070	13485	16277	19070

<i>Panel B: CA, NY, MA, MN, DC</i>									
	Linear			Quadratic			Cubic		
Bandwidth	5	6	7	5	6	7	5	6	7
Any insurance	-0.001 (0.025)	-0.012 (0.019)	-0.014 (0.016)	-0.020 (0.018)	0.009 (0.031)	0.003 (0.031)	-0.024 (0.034)	-0.052 (0.029)	-0.009 (0.018)
Medicaid insurance	-0.002 (0.015)	-0.006 (0.028)	-0.005 (0.032)	0.036** (0.011)	0.023** (0.007)	0.009** (0.003)	0.032** (0.011)	0.051** (0.018)	0.059*** (0.011)
Employment-based insurance	-0.007 (0.023)	-0.018 (0.013)	-0.022 (0.019)	-0.002 (0.012)	0.019 (0.044)	0.010 (0.042)	-0.019 (0.054)	-0.035 (0.042)	0.003 (0.019)
Year & State FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5559	6716	7859	5559	6716	7859	5559	6716	7859

Standard errors are clustered at state level.

Notes. Panel A shows the effects of DACA on health insurance coverage among non-citizen parents who have obtained high-school diploma, have entered the US before their 16th birthday and have immigrated to the US before 2007. Panel B restricts to only non-citizen parents who reside in California, New York, Massachusetts, Minnesota and Washington D.C.

* $p < .10$, ** $p < .05$, *** $p < .01$

Table A2: Estimates on health insurance among DACA-eligible individuals across different studies

	Giuntella & Lonsky (2020)			Bae (2020)			This paper				
Non-citizens from 18-35 with high-school degree	Point estimates	95% conf. interval		Non-citizen Mexicans with high-school degree	Point estimates	95% conf. interval		Non-citizens with high-school degree enter the US before 16 and before 2007	Point estimates	95% conf. interval	
Any coverage	0.022	0.007	0.038	Any coverage	0.043	0.011	0.021	Any insurance	-0.007	-0.036	0.022
Medicaid	0.008	-0.005	0.022					Medicaid	-0.005	-0.030	0.020
Employment-based insurance	0.006	-0.006	0.018					Employment-based insurance	-0.007	-0.034	0.020

Notes. This table compares the intention-to-treat effects of DACA on health insurance among likely DACA-eligible individuals between this paper and two other papers: Giuntella & Lonsky (2020) and Bae (2017).

Appendix C

I employ a method proposed by Borjas (2017) to impute the legal status of non-citizen parents. In this method, a foreign-born individual is classified as a documented immigrant if any of following conditions are met:

- that person arrived before 1980;
- that person is a citizen;

- that person receives welfare benefits such as Social Security, SSI, Medicaid, Medicare, or military insurance;
- that person is a veteran or is currently in the Armed Forces;
- that person works in the government sector;
- that person resides in public housing or receive rental subsidies, or that person is a spouse of someone who resides in public housing or receive rental subsidies;¹⁷
- that person was born in Cuba;
- that person's occupation requires some form of licensing;
- that person's spouse is a legal immigrant or citizen.

I make some adjustments to this method to avoid potentially dropping DACA recipients. First, I do not include the welfare benefit because it is directly related to my outcome variables, which can bias my results. Second, DACA recipients can also work in local and state government positions, so I classify only those individuals who work in federal government positions as legal immigrants. Third, certain states implemented laws granting professional licenses to DACA recipients (Liang, 2021). So, I classify individuals working in occupations requiring professional licenses as documented immigrants only if those individuals had worked in those states before those laws came into effect. I assume undocumented immigrants are those who are not classified as documented immigrants. Then, I construct the sample, assign treatment status as discussed in my main analysis, and re-run the econometric model.

¹⁷There is no information on public housing in ACS data, so I did not consider this condition in my analysis.