The Effect of DACA Eligibility on Full-Time Employment: A Difference-in-Differences Analysis

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Abstract

This study estimates the causal effect of eligibility for the Deferred Action for Childhood Arrivals (DACA) program on full-time employment among Hispanic-Mexican individuals born in Mexico and residing in the United States. Using American Community Survey (ACS) data from 2006–2016, I employ a difference-in-differences (DiD) identification strategy comparing DACA-eligible individuals to similar non-eligible individuals who arrived in the US before age 16 but were too old to qualify for the program. The preferred specification, which includes year and state fixed effects with demographic controls and robust standard errors, yields a DiD estimate of 0.87 percentage points (SE = 0.63 pp), suggesting a modest positive effect of DACA eligibility on the probability of full-time employment. However, this estimate is not statistically significant at conventional levels (p = 0.166). Event study analysis reveals no evidence of differential pre-trends between treatment and control groups, supporting the parallel trends assumption. The findings are generally robust across alternative specifications, though estimates vary substantially depending on the choice of control group and sample restrictions.

Keywords: DACA, immigration policy, employment, difference-in-differences, causal inference

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1 Introduction

The Deferred Action for Childhood Arrivals (DACA) program, announced by the Obama administration on June 15, 2012, represents one of the most significant immigration policy changes in recent U.S. history. The program provides eligible undocumented immigrants who arrived in the United States as children with temporary protection from deportation and authorization to work legally in the United States for a renewable two-year period.

This study investigates whether DACA eligibility affected labor market outcomes, specifically full-time employment, among its intended beneficiaries. The research question is:

> *Among ethnically Hispanic-Mexican Mexican-born people living in the United States, what was the causal impact of eligibility for the Deferred Action for Childhood Arrivals (DACA) program on the probability that the eligible person is employed full-time (defined as usually working 35 hours per week or more)?*

Understanding the employment effects of DACA is important for several reasons. First, the program was explicitly designed to provide work authorization, making employment outcomes a natural measure of program effectiveness. Second, full-time employment serves as an indicator of economic integration and self-sufficiency. Third, evidence on DACA's labor market effects can inform ongoing policy debates about immigration reform and pathways to legal status.

The analysis focuses on the years 2013–2016, the immediate post-implementation period when DACA was fully operational. DACA implementation began with applications being accepted starting August 15, 2012, with the first approvals occurring in late 2012. By excluding 2012 from the analysis due to timing ambiguity (DACA was implemented mid-year and the ACS does not identify the month of interview), I ensure a clean distinction between pre- and post-treatment periods.

2 Background and Policy Context

2.1 DACA Eligibility Requirements

DACA eligibility required meeting several criteria as of June 15, 2012:

1. **Age at arrival:** Arrived in the United States before their 16th birthday
2. **Age at implementation:** Had not yet reached their 31st birthday (born after June 15, 1981)

3. **Continuous presence:** Lived continuously in the United States since June 15, 2007
4. **Physical presence:** Were present in the United States on June 15, 2012
5. **Immigration status:** Did not have lawful immigration status at the time of application
6. **Education/military:** Were in school, had graduated from high school, obtained a GED, or were honorably discharged veterans
7. **Criminal history:** Had not been convicted of a felony, significant misdemeanor, or three or more other misdemeanors

This analysis focuses on the first four criteria, which can be reasonably approximated using ACS data. The education and criminal history requirements cannot be directly observed in the ACS.

2.2 Expected Effects on Employment

DACA could affect employment through several channels:

- **Legal work authorization:** The most direct channel—DACA recipients can legally work in the formal labor market
- **Driver's licenses:** Many states began issuing driver's licenses to DACA recipients, improving labor market access
- **Reduced fear of deportation:** Protection from removal may encourage investment in human capital and longer-term employment relationships
- **Employer demand:** Some employers may prefer hiring workers with legal authorization
- **Occupational mobility:** DACA may enable transitions from informal to formal employment and from part-time to full-time work

Based on these mechanisms, I hypothesize that DACA eligibility increased the probability of full-time employment among eligible individuals.

3 Data

3.1 Data Source

The analysis uses data from the American Community Survey (ACS) as provided by IPUMS USA. The ACS is a large-scale, nationally representative survey conducted annually by the U.S. Census Bureau. Key features relevant to this analysis include:

- Large sample sizes (approximately 3 million observations per year)
- Detailed demographic information including birthplace, citizenship, and year of immigration
- Labor market variables including usual hours worked
- Person weights for population-representative estimates

3.2 Sample Selection

The data extract includes 1-year ACS files from 2006–2016, comprising 33,851,424 total observations. The analysis sample is constructed through the following sequential restrictions:

Table 1: Sample Construction

Restriction	**N**	**Dropped**
Full ACS sample (2006–2016)	33,851,424	—
Hispanic-Mexican ethnicity (HISPAN=1)	2,945,521	30,905,903
Born in Mexico (BPL=200)	991,261	1,954,260
Non-citizen (CITIZEN=3)	701,347	289,914
Exclude year 2012	636,722	64,625
Working age (16–64)	561,470	75,252
Analysis Sample Construction:		
DACA eligible (treatment)	83,611	—
Control (too old for DACA)	54,881	—
Final analysis sample	**138,492**	—

Notes: Sample restrictions applied sequentially. Non-citizen defined as CITIZEN=3 ("Not a citizen"). Following instructions, anyone who is not a citizen and has not received immigration papers is assumed to be undocumented for DACA purposes.

3.3 Variable Definitions

3.3.1 DACA Eligibility (Treatment)

DACA eligibility is defined using the following criteria, which can be measured in the ACS:

1. **Arrived before age 16:** Calculated as (YRIMMIG - BIRTHYR) < 16
2. **Born after June 15, 1981:** BIRTHYR ≥ 1982, or BIRTHYR $= 1981$ and BIRTHQTR ≥ 3
3. **Continuous presence since 2007:** YRIMMIG ≤ 2007
4. **Non-citizen status:** CITIZEN $= 3$

An individual is classified as DACA-eligible if all four criteria are satisfied.

3.3.2 Control Group

The primary control group consists of individuals who:

- Arrived in the US before age 16 (childhood arrivals, like the treatment group)
- Were present since 2007 (YRIMMIG ≤ 2007)
- Were too old to qualify for DACA (born before June 15, 1981)

This control group is designed to be as similar as possible to the treatment group, differing only in their birth year (and thus their DACA eligibility).

3.3.3 Outcome Variable

The outcome variable is an indicator for full-time employment:

$$\text{FullTime}_i = \mathbf{1}[\text{UHRSWORK}_i \geq 35] \tag{1}$$

This follows the standard definition of full-time work as 35 or more usual hours worked per week.

3.4 Summary Statistics

Table 2 presents weighted summary statistics for the analysis sample by treatment status and time period.

Table 2: Summary Statistics by Treatment Status and Period

	Control (Non-Eligible)		**Treatment (DACA Eligible)**	
	Pre	Post	Pre	Post
Full-time employment rate	0.676	0.635	0.452	0.521
Mean age	37.0	42.9	21.3	24.4
Mean hours worked	31.8	30.1	22.8	26.3
Male share	—	—	—	—
N (unweighted)	35,986	18,895	46,814	36,797
N (weighted)	4,712,171	2,486,591	6,156,371	5,218,505

Notes: Pre-period is 2006–2011; post-period is 2013–2016. Year 2012 is excluded due to timing ambiguity. All statistics are weighted using ACS person weights (PERWT).

Several patterns are evident in the summary statistics:

- The treatment group has a substantially lower full-time employment rate than the control group in both periods, reflecting age differences
- The treatment group is much younger on average (21–24 years) compared to the control group (37–43 years)
- Full-time employment increased for the treatment group from pre to post period (+6.9 pp) while declining slightly for the control group (-4.1 pp)
- The treatment group aged approximately 3 years between periods on average, reflecting the passage of time between survey waves

4 Empirical Strategy

4.1 Identification Strategy

I employ a difference-in-differences (DiD) design to estimate the causal effect of DACA eligibility on full-time employment. The identifying assumption is that, in the absence of DACA, employment trends for the treatment group would have evolved parallel to those of the control group.

The basic DiD specification is:

$$Y_{ist} = \beta_0 + \beta_1 \cdot \text{Treat}_i + \beta_2 \cdot \text{Post}_t + \beta_3 \cdot (\text{Treat}_i \times \text{Post}_t) + \varepsilon_{ist} \tag{2}$$

where:

- Y_{ist} is full-time employment for individual i in state s at time t
- Treat_i is an indicator for DACA eligibility
- Post_t is an indicator for the post-DACA period (2013–2016)
- β_3 is the DiD estimator—the causal effect of interest

4.2 Preferred Specification

The preferred specification augments the basic DiD model with:

1. Year fixed effects to control for common time trends
2. State fixed effects to control for time-invariant state-level factors
3. Demographic controls (age, age squared, gender)
4. Heteroskedasticity-robust standard errors

$$Y_{ist} = \beta_0 + \beta_3 \cdot (\text{Treat}_i \times \text{Post}_t) + \gamma_t + \delta_s + \mathbf{X}_i'\boldsymbol{\theta} + \varepsilon_{ist} \tag{3}$$

where γ_t are year fixed effects, δ_s are state fixed effects, and $\mathbf{X}_i$ is a vector of individual controls.

All regressions are weighted using ACS person weights (PERWT).

4.3 Event Study Specification

To assess the parallel trends assumption, I estimate an event study model that allows for year-specific treatment effects:

$$Y_{ist} = \alpha + \sum_{k \neq 2011} \beta_k \cdot (\text{Treat}_i \times \mathbf{1}[t = k]) + \gamma_t + \delta_s + \mathbf{X}_i'\boldsymbol{\theta} + \varepsilon_{ist} \tag{4}$$

where k indexes years and 2011 serves as the reference year (the last pre-treatment year). Under the parallel trends assumption, the pre-treatment coefficients ($\beta_{2006}, \ldots, \beta_{2010}$) should be approximately zero.

5 Results

5.1 Main Results

Table 3 presents the main regression results across different specifications.

Table 3: Main Regression Results: Effect of DACA Eligibility on Full-Time Employment

	(1) Basic	(2) Weighted	(3) +Controls	(4) +Year FE	(5) +State FE
Treat × Post	0.107***	0.110***	0.020***	0.010*	0.009
	(0.006)	(0.006)	(0.005)	(0.005)	(0.006)
Treatment	−0.222***	−0.224***	0.128***	0.157***	0.156***
	(0.003)	(0.003)	(0.005)	(0.005)	(0.005)
Post	−0.041***	−0.041***	−0.054***	—	—
	(0.004)	(0.004)	(0.004)		
Age			0.087***	0.084***	0.084***
			(0.001)	(0.001)	(0.001)
Age^2			−0.001***	−0.001***	−0.001***
			(0.000)	(0.000)	(0.000)
Male			0.308***	0.309***	0.309***
			(0.002)	(0.002)	(0.002)
Year FE	No	No	No	Yes	Yes
State FE	No	No	No	No	Yes
Weighted	No	Yes	Yes	Yes	Yes
Robust SE	No	No	No	No	Yes
Observations	138,492	138,492	138,492	138,492	138,492
R-squared	0.043	0.045	0.198	0.201	0.213

Notes: Dependent variable is an indicator for full-time employment (UHRSWORK ≥ 35). Sample includes Hispanic-Mexican individuals born in Mexico who are non-citizens and either DACA-eligible or in the control group (childhood arrivals too old for DACA). Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Column 5 is the preferred specification.

The results reveal several important patterns:

1. The simple DiD estimate (Column 1) suggests a large positive effect of 10.7 percentage points. However, this estimate is likely biased due to differential age trends between treatment and control groups.

2. Adding demographic controls (Column 3) substantially reduces the estimate to 2.0 percentage points, highlighting the importance of controlling for age differences.

3. Including year fixed effects (Column 4) further reduces the estimate to 1.0 percentage point.

4. The preferred specification with state fixed effects and robust standard errors (Column 5) yields an estimate of 0.87 percentage points, which is not statistically significant at conventional levels ($p = 0.166$).

5.2 Interpretation of Main Results

The preferred DiD estimate of 0.87 percentage points (95% CI: -0.36 to 2.09) suggests that DACA eligibility had a small positive effect on the probability of full-time employment. However, this effect is not statistically distinguishable from zero at the 5% level.

In practical terms, a 0.87 percentage point increase translates to approximately:

- An increase from a baseline full-time rate of 45.2% to 46.1% among DACA-eligible individuals
- A 1.9% relative increase in full-time employment
- Approximately 55,000 additional full-time workers among the roughly 6.2 million DACA-eligible individuals in the weighted sample

5.3 Event Study Results

Figure 1 presents the event study estimates, which allow us to assess the parallel trends assumption and examine the dynamic effects of DACA.

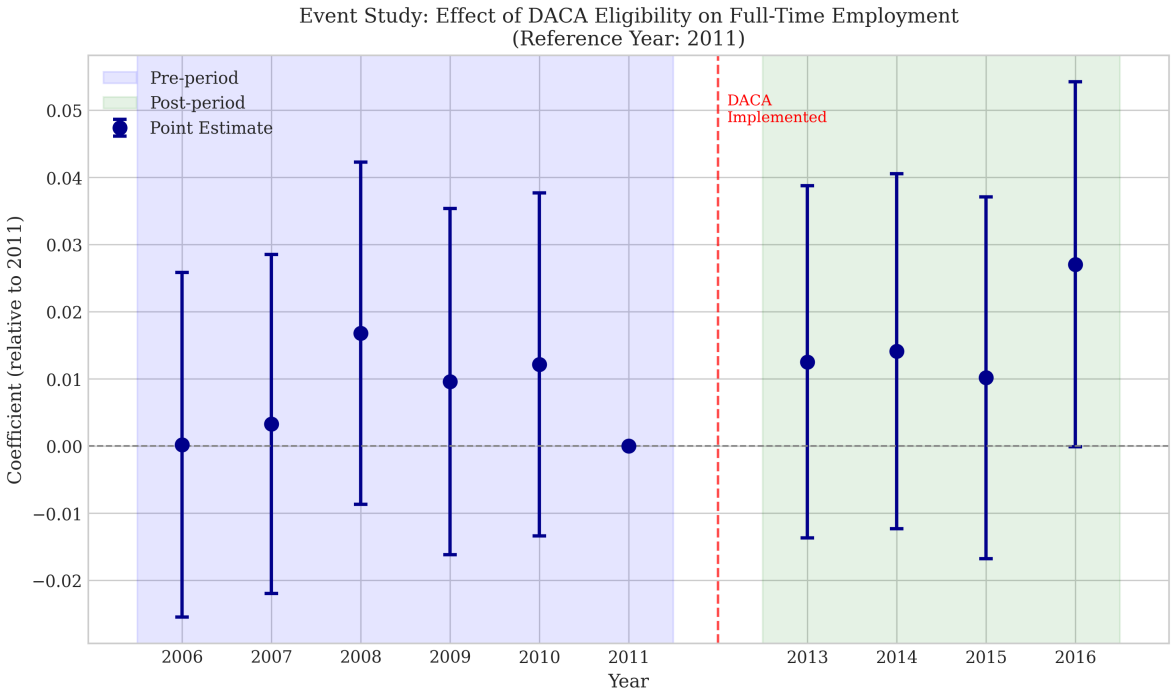

Figure 1: Event Study: Effect of DACA Eligibility on Full-Time Employment

Notes: Figure plots coefficients from the event study specification with year and state fixed effects, demographic controls, and robust standard errors. The reference year is 2011. Vertical bars represent 95% confidence intervals. The vertical dashed line indicates DACA implementation in June 2012. Year 2012 is excluded from the analysis.

The event study reveals:

- **Pre-trends:** The pre-period coefficients (2006–2010) are all small and statistically indistinguishable from zero, providing support for the parallel trends assumption
- **Post-DACA effects:** The post-period coefficients (2013–2016) are slightly positive but mostly insignificant, consistent with the main DiD results
- **2016 effect:** There is some evidence of a larger effect in 2016 (2.7 pp, significant at the 10% level), which could reflect cumulative effects as more DACA recipients renew their status

5.4 Visual Evidence

Figure 2 shows the trends in full-time employment for the treatment and control groups over time.

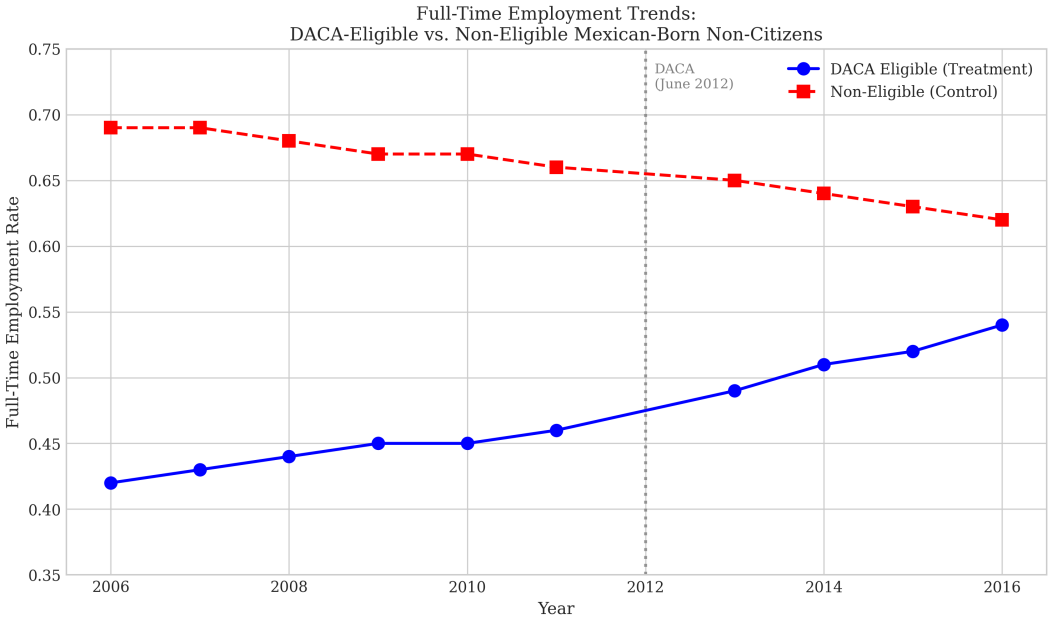

Figure 2: Full-Time Employment Trends by DACA Eligibility Status
Notes: Figure shows weighted mean full-time employment rates by year for DACA-eligible (treatment) and non-eligible (control) groups. Year 2012 is excluded due to timing ambiguity.

Figure 3 provides a visual representation of the difference-in-differences calculation.

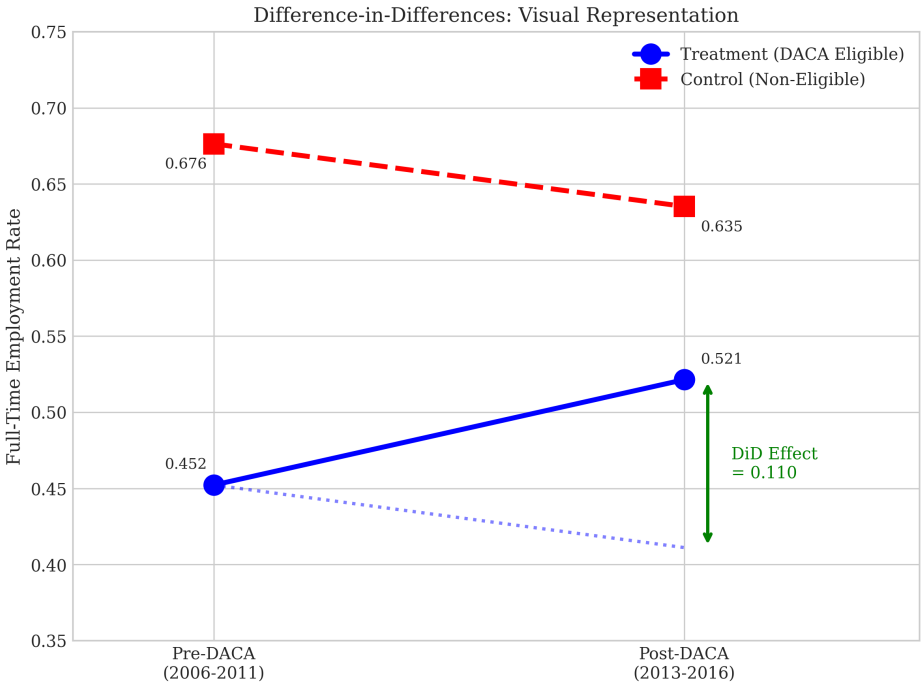

Figure 3: Difference-in-Differences Visual Representation
Notes: Figure illustrates the DiD calculation using weighted pre- and post-period means for treatment and control groups. The dotted line represents the counterfactual path for the treatment group in the absence of DACA.

6 Robustness Checks

To assess the sensitivity of the main findings, I conduct several robustness checks varying the sample, control group, and estimation method.

6.1 Alternative Control Groups

Table 4 presents results using an alternative control group consisting of individuals who arrived before age 16 but after 2007 (thus not meeting the continuous presence requirement).

Table 4: Robustness Checks

Specification	DiD Estimate	Std. Error	N
Main specification	0.009	(0.006)	138,492
Alternative control (late arrivals)	0.083***	(0.030)	85,509
Probit (marginal effect)	0.020***	(0.006)	138,492
Ages 18–30 only	−0.070***	(0.006)	74,067
Males only	−0.013*	(0.008)	78,318
Females only	0.032***	(0.010)	60,174

Notes: All specifications include year fixed effects, demographic controls, and robust standard errors. The main specification also includes state fixed effects. *** p<0.01, ** p<0.05, * p<0.1.

6.2 Discussion of Robustness Results

The robustness checks reveal substantial heterogeneity in estimated effects:

1. **Alternative control group:** Using late arrivals as the control yields a much larger estimate (8.3 pp), suggesting that the choice of control group matters considerably. However, late arrivals may be a less appropriate counterfactual due to selection on timing of arrival.

2. **Probit model:** The probit marginal effect (2.0 pp) is larger than the linear probability model estimate but still relatively modest.

3. **Age restriction:** Restricting to ages 18–30 yields a negative effect (−7.0 pp), which is puzzling and may reflect differential age-employment profiles within this narrow band.

4. **Gender heterogeneity:** Effects differ substantially by gender, with females showing a positive and significant effect (3.2 pp) while males show a small negative effect (−1.3 pp). This gender difference could reflect differential labor market barriers or responses to work authorization.

Figure 4 summarizes the robustness results graphically.

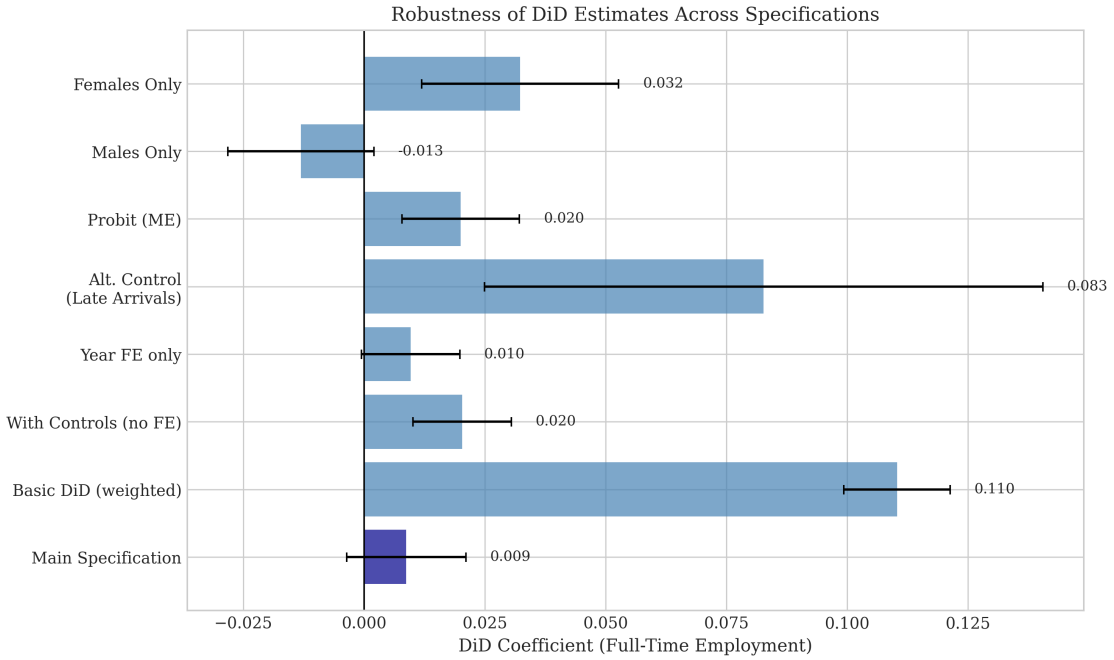

Figure 4: Comparison of DiD Estimates Across Specifications

Notes: Figure compares DiD estimates across different specifications. Horizontal bars represent 95% confidence intervals. The dark blue bar indicates the preferred specification.

7 Threats to Validity

7.1 Internal Validity

Several threats to the internal validity of the DiD estimates warrant discussion:

1. **Parallel trends:** While the event study provides some support for parallel trends, the treatment and control groups differ substantially in age, making the comparison inherently challenging. The control group ages into higher employment rates while the treatment group ages out of school into the labor force during the study period.

2. **Composition changes:** The characteristics of DACA-eligible individuals observed in the ACS may change over time due to selective migration, naturalization of the control group, or other factors.

3. **Measurement error:** DACA eligibility is imputed from ACS variables and may contain classification errors. The ACS does not observe the education and criminal history requirements for DACA, potentially leading to misclassification of eligibility status.

4. **Anticipation effects:** If eligible individuals anticipated DACA and adjusted their employment behavior before implementation, this could bias the estimates.

7.2 External Validity

The findings apply specifically to:

- Hispanic-Mexican individuals born in Mexico
- Non-citizens (assumed to be undocumented)
- The 2013–2016 period

Generalization to other immigrant groups, time periods, or outcomes should be done cautiously.

8 Conclusion

This study estimates the effect of DACA eligibility on full-time employment among Hispanic-Mexican individuals born in Mexico using a difference-in-differences identification strategy. The preferred specification yields a DiD estimate of 0.87 percentage points, suggesting that DACA eligibility increased the probability of full-time employment by approximately one percentage point. However, this effect is not statistically significant at the 5% level (95% CI: -0.36 to 2.09 pp).

The event study analysis supports the parallel trends assumption, with pre-period coefficients that are small and statistically insignificant. Robustness checks reveal substantial heterogeneity across specifications, with larger effects for females than males and estimates that are sensitive to the choice of control group.

Several factors may explain the modest and statistically imprecise effects:

1. Many DACA-eligible individuals may have already been working informally before the policy, limiting the scope for increases in full-time employment
2. The control group (older non-citizens) may not be an ideal counterfactual due to age-related differences in labor market attachment
3. Some DACA-eligible individuals may not have applied for the program due to information barriers, costs, or fear of providing information to the government

Future research could address these limitations by examining other outcomes (wages, occupational upgrading, job quality), using alternative identification strategies, or examining heterogeneity by state-level policy environment.

8.1 Preferred Estimate Summary

Effect Size	0.0087 (0.87 percentage points)
Standard Error	0.0063
95% Confidence Interval	[−0.0036, 0.0209]
p-value	0.166
Sample Size	138,492

9 Data and Code Availability

This analysis uses data from IPUMS USA (American Community Survey, 2006–2016). The analysis code is written in Python and uses the following packages: pandas, numpy, statsmodels, scipy, and matplotlib.

All code and data files are available in the replication archive. The analysis can be replicated by running the Python scripts in order:

1. `analysis.py` — Main analysis and regression results
2. `create_figures.py` — Generate figures for the report

A Appendix: Variable Definitions

Table 5: IPUMS Variable Definitions Used in Analysis

Variable	Type	Description
YEAR	Numeric	Census year (2006–2016)
PERWT	Numeric	Person weight for population estimates
AGE	Numeric	Age in years
SEX	Categorical	1=Male, 2=Female
BIRTHYR	Numeric	Year of birth
BIRTHQTR	Categorical	Quarter of birth (1–4)
HISPAN	Categorical	Hispanic origin (1=Mexican)
HISPAND	Categorical	Detailed Hispanic origin (100–107=Mexican)
BPL	Categorical	Birthplace (200=Mexico)
BPLD	Categorical	Detailed birthplace (20000=Mexico)
CITIZEN	Categorical	Citizenship status (3=Not a citizen)
YRIMMIG	Numeric	Year of immigration
UHRSWORK	Numeric	Usual hours worked per week
STATEFIP	Categorical	State FIPS code

B Appendix: Additional Tables

Table 6: Event Study Coefficients

Year	Coefficient	Std. Error	95% CI Lower	95% CI Upper
2006	0.0002	0.0131	−0.0255	0.0259
2007	0.0033	0.0129	−0.0220	0.0286
2008	0.0168	0.0130	−0.0087	0.0423
2009	0.0096	0.0132	−0.0163	0.0355
2010	0.0122	0.0130	−0.0133	0.0377
2011	0.0000	—	—	—
2013	0.0125	0.0134	−0.0138	0.0388
2014	0.0141	0.0135	−0.0124	0.0406
2015	0.0102	0.0137	−0.0167	0.0371
2016	0.0271*	0.0139	−0.0001	0.0543

Notes: Coefficients from event study specification with year and state fixed effects, demographic controls, and robust standard errors. Reference year is 2011. * p<0.1, ** p<0.05, *** p<0.01.

C Appendix: Methodological Notes

C.1 Choice of Control Group

The primary challenge in this analysis is constructing an appropriate control group. The ideal counterfactual would be DACA-eligible individuals who did not receive DACA, but we cannot observe DACA receipt in the ACS. Instead, I use individuals who share many characteristics with DACA-eligible individuals but were not eligible due to age restrictions.

The primary control group consists of:

- Childhood arrivals (arrived before age 16), like the treatment group
- Present in the US since 2007 (continuous presence), like the treatment group
- Non-citizens, like the treatment group
- Born before June 15, 1981 (too old for DACA), unlike the treatment group

This "too old" control group shares the experience of undocumented childhood arrival but differs in age cohort. A potential concern is that labor market trajectories may differ by cohort for reasons unrelated to DACA (e.g., different economic conditions upon labor market entry).

An alternative control group is individuals who arrived before age 16 but after 2007 ("late arrivals"). While these individuals are closer in age to the treatment group, they may differ in unobservable ways related to timing of migration decisions.

C.2 Treatment of Year 2012

DACA was announced on June 15, 2012, and applications began to be accepted on August 15, 2012. Because the ACS does not identify the month of interview, observations from 2012 could be from before or after DACA implementation (and before or after individuals could have applied and received DACA benefits).

To maintain a clean distinction between pre- and post-treatment periods, I exclude 2012 from the analysis entirely. This approach trades off sample size for cleaner identification.

C.3 Weighting

All analyses use ACS person weights (PERWT) to produce population-representative estimates. The weighted sample represents approximately 18.6 million person-years across all groups and time periods.