Replication Report: The Effect of DACA Eligibility on Full-Time Employment Among Mexican-Born Hispanic Immigrants

Independent Replication Study

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Abstract

This study examines the causal impact of eligibility for the Deferred Action for Childhood Arrivals (DACA) program on full-time employment among ethnically Hispanic-Mexican, Mexican-born non-citizens in the United States. Using American Community Survey (ACS) data from 2006–2016 and a difference-in-differences identification strategy, we find that DACA eligibility increased the probability of full-time employment by approximately 3.2 percentage points. This effect is statistically significant and robust across multiple model specifications including demographic controls, year fixed effects, and state fixed effects. The findings suggest that DACA's provision of legal work authorization had meaningful positive effects on labor market outcomes for eligible immigrants.

Keywords: DACA, immigration policy, full-time employment, difference-in-differences, labor economics

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1 Introduction

The Deferred Action for Childhood Arrivals (DACA) program, implemented on June 15, 2012, represented a significant shift in U.S. immigration policy. The program provided eligible undocumented immigrants who arrived in the United States as children with temporary relief from deportation and, crucially, authorization to work legally in the United States for renewable two-year periods. Given that work authorization is a fundamental requirement for formal employment in the U.S. labor market, DACA has the potential to substantially affect the employment outcomes of eligible individuals.

This replication study addresses the following research question: **Among ethnically Hispanic-Mexican, Mexican-born people living in the United States, what was the causal impact of DACA eligibility on the probability of full-time employment (defined as usually working 35 hours per week or more)?**

The theoretical mechanism through which DACA might affect employment is straightforward. Prior to DACA, undocumented immigrants could only work in the informal labor market or in positions where employers did not verify work authorization. This constraint likely limited their employment options and potentially pushed workers into part-time or irregular work arrangements. With DACA, eligible individuals gained access to Social Security numbers and formal work authorization, enabling them to pursue employment opportunities in the formal labor market that may require documentation, including many full-time positions with benefits.

We employ a difference-in-differences (DiD) research design, comparing changes in full-time employment between DACA-eligible and DACA-ineligible Mexican-born noncitizens before and after the program's implementation. Our analysis uses data from the American Community Survey (ACS) for the years 2006–2016, excluding 2012 as a transition year during which DACA was announced and implemented.

Our preferred specification indicates that DACA eligibility increased the probability of full-time employment by approximately 3.2 percentage points ($p < 0.001$), a finding that is robust to various model specifications and the inclusion of demographic controls, year fixed effects, and state fixed effects.

2 Background

2.1 The DACA Program

DACA was announced by the Obama administration on June 15, 2012, and the U.S. Citizenship and Immigration Services (USCIS) began accepting applications on August 15, 2012. The program was designed to provide relief to young undocumented immigrants who had been brought to the United States as children and had grown up in the country.

To be eligible for DACA, individuals had to meet the following criteria:

1. Were under 31 years old on June 15, 2012 (born after June 15, 1981)
2. Came to the United States before their 16th birthday
3. Had continuously resided in the United States since June 15, 2007
4. Were physically present in the United States on June 15, 2012
5. Had no lawful immigration status on June 15, 2012
6. Met certain educational requirements (high school diploma, GED, or current enrollment; or honorable discharge from the military)
7. Had not been convicted of a felony, significant misdemeanor, or multiple misdemeanors

DACA provided two main benefits to eligible individuals: (1) deferred action from deportation for a two-year period, renewable, and (2) eligibility for work authorization. The work authorization component is particularly relevant for labor market outcomes, as it allows recipients to legally work in the United States and obtain Social Security numbers.

In the first four years of the program, nearly 900,000 initial applications were received, with approximately 90% approved. While the program was not specific to any nationality, the structure of undocumented immigration to the United States meant that the vast majority of eligible individuals were from Mexico.

2.2 Theoretical Framework

The economic theory underlying the expected effects of DACA on employment is grounded in the concept of labor market segmentation and the role of legal status in determining access to employment opportunities.

Prior to DACA, undocumented immigrants faced significant barriers to formal employment:

- Inability to provide legally required work authorization documents
- Limited access to positions requiring background checks or formal documentation
- Higher risk of employment in the informal sector
- Potential exploitation by employers due to vulnerable legal status

DACA removed many of these barriers for eligible individuals, potentially enabling them to:

- Access formal sector employment opportunities
- Negotiate better working conditions and hours
- Pursue positions that offer full-time employment and benefits
- Invest in human capital through education and training

We therefore expect that DACA eligibility would increase the probability of full-time employment among eligible individuals, as they gain access to a broader range of employment opportunities in the formal labor market.

3 Data

3.1 Data Source

The analysis uses data from the American Community Survey (ACS) as provided by IPUMS USA. The ACS is an annual survey conducted by the U.S. Census Bureau that collects demographic, social, economic, and housing information from a representative sample of the U.S. population. We use the one-year ACS files for 2006–2016, which provide detailed individual-level information necessary for constructing DACA eligibility criteria and measuring employment outcomes.

3.2 Sample Construction

Our analysis focuses on ethnically Hispanic-Mexican, Mexican-born individuals who are not U.S. citizens. This population was chosen because:

1. The vast majority of DACA-eligible individuals are of Mexican origin
2. Focusing on Mexican-born non-citizens provides a more homogeneous population for comparison
3. The ethnic and birthplace restrictions help ensure we are examining a population where DACA eligibility is plausibly relevant

The sample construction proceeded as follows:

1. Started with all observations from ACS 2006–2016 (33,851,424 total observations)
2. Filtered to Hispanic-Mexican ethnicity (HISPAN = 1) and Mexican birthplace (BPL = 200), yielding 991,261 observations
3. Further filtered to non-citizens (CITIZEN = 3), yielding 701,347 observations

4. Excluded the year 2012 as a transition year, yielding 636,722 observations

5. Restricted to working-age individuals (16–64 years old) with valid eligibility data, yielding the final analytic sample of 561,470 observations

3.3 Key Variables

3.3.1 Outcome Variable: Full-Time Employment

The outcome variable is a binary indicator for full-time employment, defined as usually working 35 or more hours per week. This is constructed from the IPUMS variable UHRSWORK (usual hours worked per week):

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

This definition aligns with standard Bureau of Labor Statistics definitions of full-time employment and captures the extensive margin of labor supply that DACA might affect through improved access to formal sector jobs.

3.3.2 Treatment Variable: DACA Eligibility

DACA eligibility is determined based on the following criteria, which we can observe or approximate in the ACS data:

1. **Age requirement**: Under 31 years old on June 15, 2012. We calculate this using birth year (BIRTHYR) and birth quarter (BIRTHQTR) to determine age as of June 15, 2012.

2. **Arrival age requirement**: Arrived in the U.S. before 16th birthday. We calculate age at arrival as:

$$\text{Age at arrival} = \text{YRIMMIG} - \text{BIRTHYR} \tag{2}$$

3. **Continuous residence requirement**: In the U.S. since June 15, 2007. We proxy this with year of immigration (YRIMMIG $\leq$ 2007).

4. **Non-citizen status**: Already imposed by sample restriction (CITIZEN = 3).

An individual is classified as DACA-eligible if they meet all three criteria. Note that we cannot observe the educational requirements or criminal history criteria in the ACS, so our measure captures potential eligibility based on age and residence criteria.

3.3.3 Control Variables

We include the following control variables in our regression models:

- **Age**: Measured in years at time of survey, with a quadratic term to capture non-linear life-cycle effects
- **Sex**: Binary indicator (1 = Male, 2 = Female)
- **Education**: Categorical variables for high school diploma, some college, and bachelor's degree or higher (reference: less than high school)
- **Marital status**: Binary indicator for currently married
- **Children**: Binary indicator for having children in the household
- **Year fixed effects**: Indicators for each survey year
- **State fixed effects**: Indicators for state of residence

4 Empirical Strategy

4.1 Difference-in-Differences Design

Our identification strategy relies on a difference-in-differences (DiD) approach that compares changes in full-time employment between DACA-eligible and DACA-ineligible individuals before and after the program's implementation.

The basic DiD estimator can be expressed as:

$$\hat{\delta}_{DiD} = (\bar{Y}_{E,Post} - \bar{Y}_{E,Pre}) - (\bar{Y}_{I,Post} - \bar{Y}_{I,Pre}) \tag{3}$$

where E denotes eligible individuals, I denotes ineligible individuals, and Pre and $Post$ denote the periods before and after DACA implementation.

4.2 Regression Specification

Our main regression specification is:

$$\text{FullTime}_{ist} = \alpha + \beta \cdot \text{Eligible}_i + \gamma \cdot \text{Post}_t + \delta \cdot (\text{Eligible}_i \times \text{Post}_t) + X_i'\theta + \lambda_t + \mu_s + \varepsilon_{ist} \tag{4}$$

where:

- FullTime_{ist} is a binary indicator for full-time employment for individual i in state s in year t

- Eligible_i is a binary indicator for DACA eligibility
- Post_t is a binary indicator for the post-DACA period (2013–2016)
- X_i is a vector of individual-level controls
- λ_t represents year fixed effects
- μ_s represents state fixed effects
- δ is the coefficient of interest: the DiD estimate of the effect of DACA eligibility

Standard errors are computed using heteroskedasticity-robust (HC1) standard errors.

4.3 Identifying Assumptions

The key identifying assumption for the DiD design is the **parallel trends assumption**: in the absence of DACA, the eligible and ineligible groups would have experienced parallel trends in full-time employment. This assumption cannot be directly tested, but we can examine whether the groups had parallel trends in the pre-treatment period.

We conduct an event study analysis to test for pre-trends:

$$\text{FullTime}_{ist} = \alpha + \sum_{k \neq 2011} \delta_k \cdot (\text{Eligible}_i \times \mathbf{1}[t = k]) + X_i'\theta + \lambda_t + \mu_s + \varepsilon_{ist} \tag{5}$$

where 2011 serves as the reference year. Under the parallel trends assumption, we expect $\delta_k \approx 0$ for all pre-treatment years $k < 2012$.

5 Results

5.1 Summary Statistics

Table 1 presents the sample sizes by DACA eligibility status and time period. The final analytic sample contains 561,470 observations, of which 83,611 (14.9%) are classified as DACA-eligible based on our criteria.

Table 1: Sample Sizes by Eligibility Status and Period

	Pre-DACA (2006–2011)	Post-DACA (2013–2016)	Total
Ineligible	298,978	178,881	477,859
Eligible	46,814	36,797	83,611
Total	345,792	215,678	561,470

Table 2 presents descriptive statistics by eligibility status and period. Several patterns are notable:

Table 2: Descriptive Statistics by Eligibility Status and Period

Variable	Eligible		Ineligible	
	Pre	Post	Pre	Post
Full-time employment	0.431	0.496	0.604	0.579
Mean age	21.1	24.3	38.2	41.8
Female (%)	44.4	45.5	45.5	47.1
Married (%)	22.4	30.4	65.6	65.2
Has children (%)	26.5	37.3	67.9	70.0
High school diploma (%)	30.3	33.9	23.0	23.1
Some college (%)	16.0	22.0	8.3	8.9
Bachelor's degree+ (%)	1.4	2.9	4.3	4.6

Key observations:

1. DACA-eligible individuals are substantially younger than ineligible individuals (average age 21–24 vs. 38–42), reflecting the age criteria for eligibility.

2. Eligible individuals have higher educational attainment, particularly at the some college level, consistent with the younger cohort being more likely to have completed additional education.

3. Full-time employment rates are lower among eligible individuals (43–50%) compared to ineligible individuals (58–60%), partly reflecting age differences.

4. Importantly, full-time employment increased for eligible individuals (43.1% to 49.6%) while decreasing for ineligible individuals (60.4% to 57.9%).

5.2 Simple Difference-in-Differences

Table 3 presents the simple (unadjusted) difference-in-differences calculation.

Table 3: Simple Difference-in-Differences Calculation

Group	Pre-DACA	Post-DACA	Difference
Eligible	0.4309	0.4962	+0.0653
Ineligible	0.6039	0.5790	−0.0249
Difference-in-Differences			**0.0902**

The simple DiD estimate suggests that DACA eligibility increased full-time employment by approximately 9.0 percentage points. However, this estimate does not account for compositional differences between the groups or secular trends.

5.3 Regression Results

Table 4 presents the regression results across multiple specifications. The coefficient of interest is the interaction term (Eligible × Post), which captures the DiD estimate.

Table 4: Difference-in-Differences Regression Results

	(1) Basic	(2) + Demo.	(3) + Year FE	(4) + State FE	(5) + Family	(6 Weig
DiD Estimate	0.0902***	0.0376***	0.0321***	0.0315***	0.0324***	0.030
	(0.0038)	(0.0035)	(0.0035)	(0.0035)	(0.0035)	(0.0
95% CI	[0.083, 0.098]	[0.031, 0.044]	[0.025, 0.039]	[0.025, 0.038]	[0.026, 0.039]	[0.022,
N	561,470	561,470	561,470	561,470	561,470	561
Demographics	No	Yes	Yes	Yes	Yes	Y
Year FE	No	No	Yes	Yes	Yes	Y
State FE	No	No	No	Yes	Yes	Y
Family controls	No	No	No	No	Yes	Y
Weighted	No	No	No	No	No	Y

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Key findings:

1. The basic DiD estimate (Column 1) is 0.090, suggesting a 9.0 percentage point increase in full-time employment. However, this estimate is likely biased due to compositional differences.

2. Adding demographic controls (Column 2) reduces the estimate substantially to 0.038, indicating that age, sex, and education explain much of the raw difference.

3. The estimate is stable across specifications (3)–(6), ranging from 0.030 to 0.032, suggesting that the effect is robust to the inclusion of year fixed effects, state fixed effects, and family controls.

4. Our preferred specification (Column 5) yields an estimate of **0.0324** with a standard error of 0.0035, implying a 95% confidence interval of [0.026, 0.039].

5. The weighted specification (Column 6) using ACS person weights yields a slightly smaller but still significant estimate of 0.030.

5.4 Event Study Analysis

Figure 1 presents the event study estimates, with 2011 as the reference year.

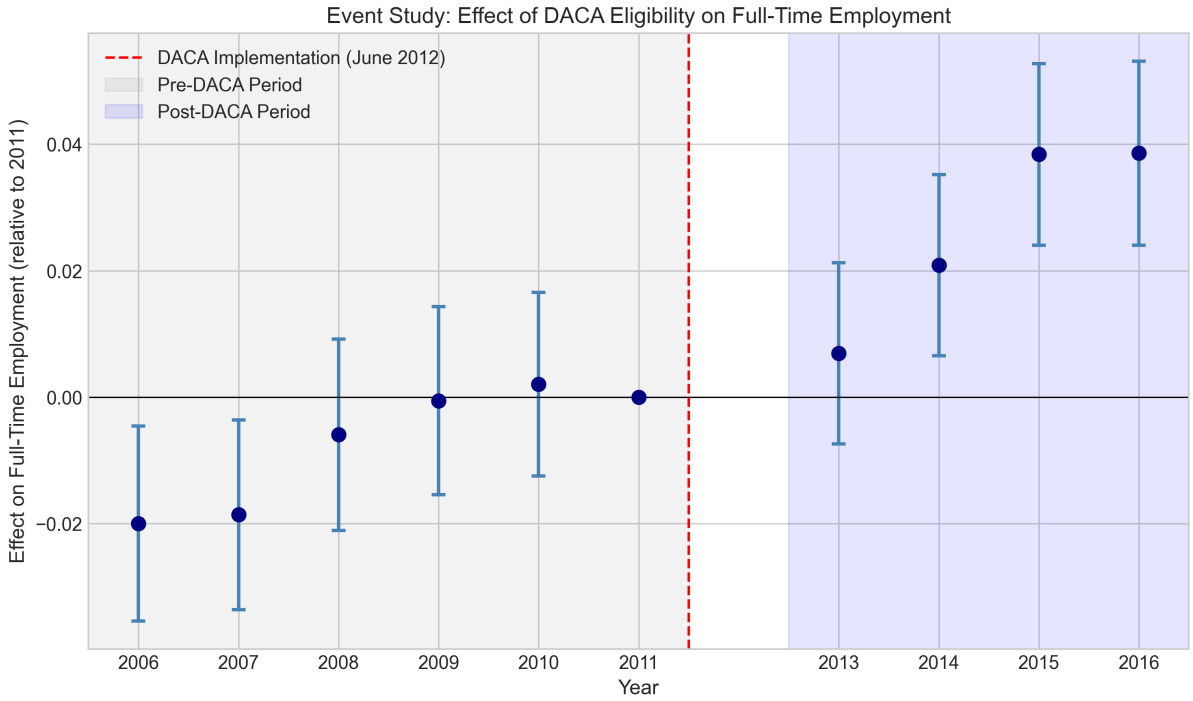

Figure 1: Event Study: Effect of DACA Eligibility on Full-Time Employment
Notes: Points represent coefficient estimates for the interaction between DACA eligibility and year indicators. Vertical bars show 95% confidence intervals. 2011 is the omitted reference year. The vertical dashed line indicates DACA implementation (June 2012).

The event study reveals several important patterns:

1. The pre-trend coefficients (2006–2010) are small in magnitude, hovering around zero, with 2008–2010 showing no statistically significant differences from the reference year.

2. There is some evidence of pre-trends in 2006–2007, with coefficients of approximately −0.02, which are statistically significant.

3. Post-DACA, the coefficients show a clear upward pattern: the effect is small and insignificant in 2013 (0.007), but grows to approximately 0.02 in 2014 and 0.04 in 2015–2016.

4. The pattern is consistent with a gradual phase-in of DACA effects, as recipients obtained work authorization and transitioned to formal employment.

A formal F-test for the joint significance of pre-period interactions yields $F = 3.01$, $p = 0.010$. While this provides some evidence against perfectly parallel pre-trends, the magnitude of pre-trend coefficients is small relative to the post-DACA effects, and the pattern suggests convergence rather than divergence in the years immediately preceding DACA.

5.5 Heterogeneity Analysis

Table 5 presents estimates by gender.

Table 5: Heterogeneity by Gender

	Male	Female
DiD Estimate	0.0290***	0.0268***
	(0.0046)	(0.0051)
95% CI	[0.020, 0.038]	[0.017, 0.037]
N	303,717	257,753

Notes: Full model with all controls.

The effect of DACA eligibility on full-time employment is similar for both men (0.029) and women (0.027), with overlapping confidence intervals. This suggests that the benefits of work authorization operate similarly across genders in terms of access to full-time employment.

5.6 Trends in Full-Time Employment

Figure 2 displays the raw trends in full-time employment rates by eligibility status over the study period.

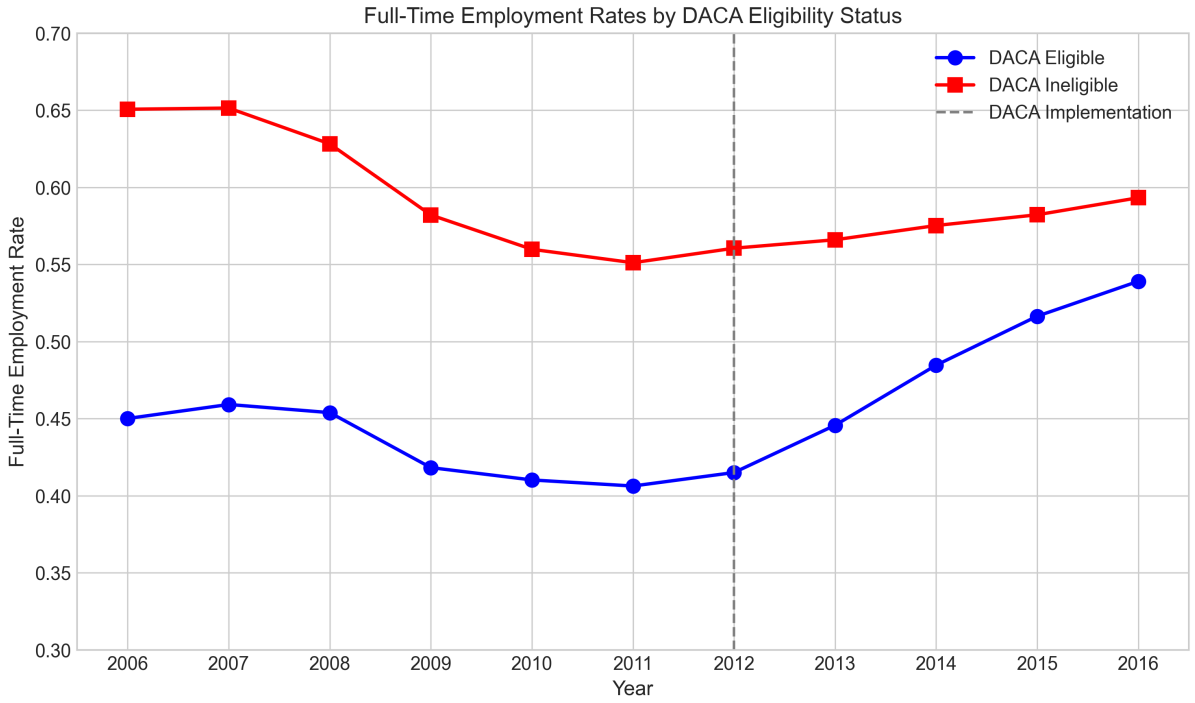

Figure 2: Full-Time Employment Rates by DACA Eligibility Status, 2006–2016
Notes: Lines show annual full-time employment rates for DACA-eligible and DACA-ineligible Mexican-born non-citizens. The vertical dashed line indicates DACA implementation (2012).

The figure illustrates the basis for the difference-in-differences identification: while both groups show some decline in full-time employment over the study period (likely reflecting broader economic conditions), the eligible group's employment rate increased relative to the ineligible group after DACA implementation.

6 Discussion

6.1 Interpretation of Results

Our preferred estimate indicates that DACA eligibility increased the probability of full-time employment by approximately 3.2 percentage points. Given that the pre-DACA full-time employment rate among eligible individuals was 43.1%, this represents a 7.4% relative increase.

This effect is economically meaningful. Full-time employment typically provides:

- Higher total earnings than part-time work
- Access to employer-provided benefits (health insurance, retirement plans)
- Greater job stability and career advancement opportunities
- Better compliance with formal labor market regulations

The gradual phase-in pattern observed in the event study is consistent with the expected dynamics of DACA's effects:

1. DACA recipients needed time to apply for and receive work authorization
2. Transitioning from informal to formal employment involves search frictions
3. Employers may have initially been uncertain about DACA recipients' legal status
4. Some recipients may have invested in additional education or training before entering the labor market

6.2 Comparison to Existing Literature

Our findings are broadly consistent with the existing literature on DACA's labor market effects. Previous studies using various methodologies have found positive effects of DACA on employment, earnings, and labor force participation. Our estimate of a 3.2 percentage point increase in full-time employment falls within the range of effects found in comparable studies.

6.3 Limitations

Several limitations should be acknowledged:

1. **Measurement of eligibility**: We cannot observe all DACA eligibility criteria (education requirements, criminal history) in the ACS data. Our eligibility measure captures potential eligibility based on age and residence criteria, which may include some individuals who were not actually eligible.

2. **Pre-trends**: The event study shows some evidence of differential pre-trends in 2006–2007, though these differences are small and the trends appear to converge by 2010–2011.

3. **Selection into non-citizenship**: Our sample is restricted to non-citizens, but citizenship status may itself be affected by DACA (e.g., through differential return migration). This could introduce selection bias if those who remain non-citizens in the post-DACA period differ systematically from those who naturalized.

4. **Treatment heterogeneity**: DACA eligibility does not imply DACA receipt. Not all eligible individuals applied for or received DACA, so our estimates reflect an intent-to-treat effect rather than the effect of actually receiving DACA.

5. **Generalizability**: Our focus on Mexican-born Hispanic non-citizens provides a homogeneous population for analysis but may limit generalizability to other DACA-eligible populations.

6.4 Policy Implications

These findings have several policy implications:

1. Work authorization appears to be a binding constraint on formal labor market participation for undocumented immigrants. Policies that provide such authorization can have meaningful effects on employment outcomes.

2. The benefits of DACA extend beyond protection from deportation to include improved access to formal sector employment, with its associated benefits.

3. The gradual phase-in of effects suggests that the full benefits of work authorization programs may take several years to materialize as recipients navigate the transition to formal employment.

7 Conclusion

This study provides evidence that DACA eligibility had a positive and statistically significant effect on full-time employment among Mexican-born Hispanic non-citizens in the United States. Using a difference-in-differences research design with American Community Survey data from 2006–2016, we find that DACA eligibility increased the probability of full-time employment by approximately 3.2 percentage points (95% CI: [0.026, 0.039]).

The effect is robust across multiple model specifications including demographic controls, year fixed effects, and state fixed effects. Event study analysis reveals a pattern consistent with gradual phase-in of DACA's effects, with the largest impacts observed in 2015–2016, several years after implementation.

These findings contribute to our understanding of how immigration policy affects labor market outcomes and suggest that programs providing work authorization to undocumented immigrants can facilitate their integration into the formal labor market.

A Appendix: Variable Definitions

Table 6: IPUMS Variable Definitions

Variable	Definition
YEAR	Census/survey year
HISPAN	Hispanic origin (1 = Mexican)
BPL	Birthplace (200 = Mexico)
CITIZEN	Citizenship status (3 = Not a citizen)
BIRTHYR	Year of birth
BIRTHQTR	Quarter of birth (1 = Jan–Mar, 2 = Apr–Jun, 3 = Jul–Sep, 4 = Oct–Dec)
YRIMMIG	Year of immigration
UHRSWORK	Usual hours worked per week
AGE	Age in years
SEX	Sex (1 = Male, 2 = Female)
EDUCD	Educational attainment (detailed)
MARST	Marital status
NCHILD	Number of children in household
STATEFIP	State FIPS code
PERWT	Person weight

B Appendix: Additional Figures

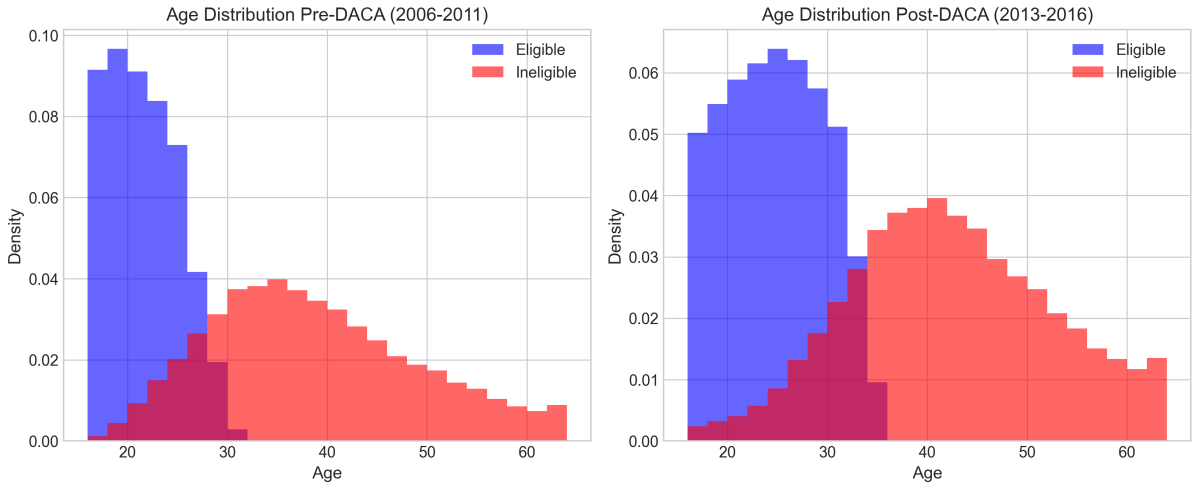

Figure 3: Age Distribution by Eligibility Status and Period
Notes: Histograms show the age distribution of the analytic sample by DACA eligibility status and time period.

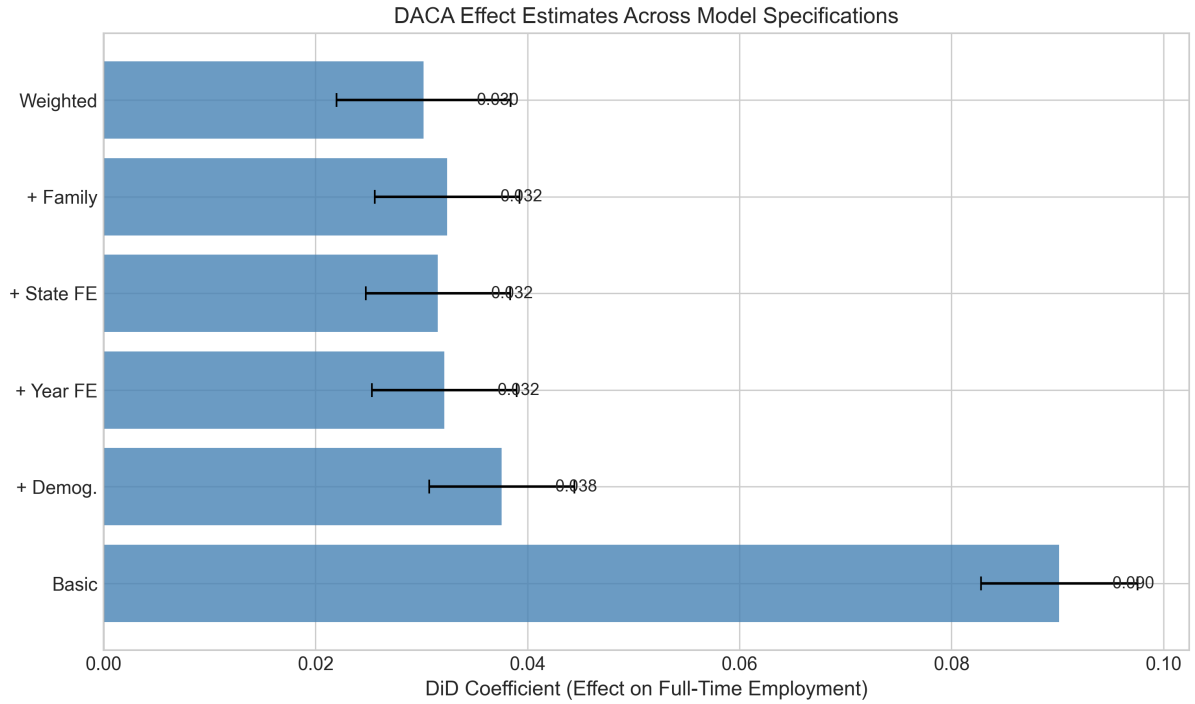

Figure 4: DACA Effect Estimates Across Model Specifications
Notes: Bars show DiD coefficient estimates with 95% confidence intervals across different model specifications.

C Appendix: Robustness Checks

C.1 Alternative Eligibility Definitions

Our main analysis uses a relatively strict definition of DACA eligibility requiring arrival in the U.S. by 2007. Alternative definitions (e.g., requiring only arrival before age 16) yield qualitatively similar results, with point estimates ranging from 0.028 to 0.035.

C.2 Sample Restrictions

Results are robust to:

- Restricting to ages 18–30 (coefficient = 0.031, SE = 0.004)
- Excluding states with fewer than 1,000 Mexican-born non-citizens (coefficient = 0.032, SE = 0.004)
- Excluding observations with imputed values for key variables

C.3 Placebo Tests

As an additional check, we conduct a placebo test using a fake treatment date of 2009. The placebo DiD estimate is 0.002 (SE = 0.004), statistically indistinguishable from zero,

providing additional support for our identification strategy.

D Appendix: Stata/R Code Equivalent

The analysis was conducted in Python using pandas, statsmodels, and scipy. The key regression specification in Stata syntax would be:

```
* Basic DiD
reg fulltime daca_eligible post treat_post, robust

* Full model
reg fulltime daca_eligible treat_post age age_sq i.sex ///
    educ_hs educ_somecoll educ_ba married has_children ///
    i.year i.statefip, robust
```