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

Independent Replication Report

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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 individuals living in the United States. Using a difference-in-differences research design, I compare changes in full-time employment rates between DACA-eligible individuals aged 26–30 at the time of policy implementation (June 2012) and a comparison group of individuals aged 31–35 who were otherwise eligible but exceeded the age threshold. Analyzing American Community Survey data from 2008–2016 (excluding 2012), I find that DACA eligibility is associated with a statistically significant 5.2 percentage point increase in the probability of full-time employment (95% CI: 2.2–8.2 pp, $p < 0.001$). This effect is robust across various model specifications and persists after controlling for demographic characteristics, state fixed effects, year fixed effects, and state-level immigration policies. The findings suggest that DACA's provision of legal work authorization and temporary deportation relief had meaningful positive effects on labor market outcomes for eligible individuals.

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1 Introduction

The Deferred Action for Childhood Arrivals (DACA) program, enacted on June 15, 2012, represented a significant policy intervention in U.S. immigration policy. The program allowed selected undocumented immigrants who arrived in the United States as children to apply for temporary relief from deportation and obtain authorization to work legally for renewable two-year periods. Given that the program offers legal work authorization and enables recipients to obtain driver's licenses and other forms of identification in many states, economic theory suggests that DACA should improve employment outcomes among eligible individuals.

This replication study examines the causal effect of DACA eligibility on full-time employment, defined as usually working 35 or more hours per week. The research question is: Among ethnically Hispanic-Mexican, Mexican-born individuals living in the United States, what was the causal impact of eligibility for DACA on the probability that an eligible person is employed full-time?

1.1 Background on DACA

DACA was established through executive action by the Obama administration on June 15, 2012. The program provided a pathway for certain undocumented immigrants to obtain temporary protection from deportation and work authorization. To be eligible, individuals needed to meet several criteria:

- Arrived unlawfully in the United States before their 16th birthday
- Had not yet reached their 31st birthday as of June 15, 2012
- Lived continuously in the United States since June 15, 2007
- Were present in the United States on June 15, 2012 and did not have lawful status at that time

Applications began being received on August 15, 2012. In the first four years, nearly 900,000 initial applications were submitted, with approximately 90% approved. While the program was not country-specific, the majority of eligible individuals were from Mexico due to the structure of undocumented immigration to the United States.

1.2 Research Design Overview

This study employs a difference-in-differences (DiD) research design that exploits the age-based eligibility cutoff for DACA. The treatment group consists of individuals who were ages 26–30 at the time of policy implementation (June 15, 2012), while the comparison group comprises individuals who were ages 31–35 at that time—individuals who would have been eligible if not for exceeding the age threshold.

The identification strategy relies on the assumption that, in the absence of DACA, the employment trends of the treatment and comparison groups would have evolved similarly (parallel trends assumption). By comparing how full-time employment changed from the pre-treatment period (2008–2011) to the post-treatment period (2013–2016) for both groups, we can estimate the causal effect of DACA eligibility.

2 Data

2.1 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 detailed demographic, social, economic, and housing information from approximately 3.5 million households per year. The ACS is a repeated cross-section survey, not a panel dataset, meaning different individuals are sampled each year.

The provided dataset includes ACS data from 2008 through 2016, with 2012 omitted since observations from that year cannot be definitively classified as pre- or post-treatment. The data file contains individuals who are ethnically Hispanic-Mexican and Mexican-born, with the sample restricted to those in either the treatment group (DACA-eligible, ages 26–30 in June 2012) or the comparison group (ages 31–35 in June 2012).

2.2 Key Variables

2.2.1 Outcome Variable

The primary outcome variable is `FT`, a binary indicator equal to 1 for individuals in full-time employment (usually working 35 or more hours per week) and 0 otherwise. Those not in the labor force are included in the analysis and typically coded as 0.

2.2.2 Treatment Indicators

- `ELIGIBLE`: Binary indicator equal to 1 for individuals in the treatment group (ages 26–30 in June 2012) and 0 for the comparison group (ages 31–35 in June 2012)

- `AFTER`: Binary indicator equal to 1 for post-treatment years (2013–2016) and 0 for pre-treatment years (2008–2011)

2.2.3 Control Variables

The dataset includes numerous demographic and socioeconomic variables:

- `SEX`: Gender (1 = Male, 2 = Female in IPUMS coding)
- `AGE`: Age at time of survey
- `MARST`: Marital status
- `EDUC_RECODE`: Education level (Less than High School, High School Degree, Some College, Two-Year Degree, BA+)
- `STATEFIP`: State FIPS code
- `YEAR`: Survey year

Additionally, the dataset includes state-level policy variables:

- `DRIVERSLICENSES`: State allows driver's licenses for undocumented immigrants
- `INSTATETUITION`: State offers in-state tuition for undocumented students
- `STATEFINANCIALAID`: State provides financial aid to undocumented students
- `EVERIFY`: State requires E-Verify for employment verification
- `SECURECOMMUNITIES`: State participates in Secure Communities program

2.3 Sample Description

Table 1 presents the sample distribution by year and eligibility group.

Table 1: Sample Size by Year and Eligibility Group

Year	Eligible (26–30)	Comparison (31–35)	Total
Pre-Treatment Period			
2008	1,505	849	2,354
2009	1,546	833	2,379
2010	1,587	857	2,444
2011	1,595	755	2,350
Post-Treatment Period			
2013	1,389	735	2,124
2014	1,335	721	2,056
2015	1,201	649	1,850
2016	1,224	601	1,825
Total	**11,382**	**6,000**	**17,382**

The total analytic sample consists of 17,382 observations: 11,382 in the eligible (treatment) group and 6,000 in the comparison group. The sample is divided roughly evenly between pre-treatment (9,527 observations) and post-treatment (7,855 observations) periods.

2.4 Descriptive Statistics

Table 2 presents descriptive statistics for key variables by eligibility group and time period.

Table 2: Descriptive Statistics by Group and Period

	Eligible (26–30)		Comparison (31–35)	
Variable	Pre	Post	Pre	Post
Full-time employment rate	0.627	0.666	0.670	0.645
Weighted FT rate	0.637	0.686	0.689	0.663
Female (%)	0.477	0.479	0.478	0.480
Married (%)	0.439	0.435	0.573	0.557
High school degree (%)	0.731	0.673	0.715	0.697
Some college (%)	0.159	0.187	0.157	0.176
BA+ (%)	0.054	0.080	0.053	0.063
N	6,233	5,149	3,294	2,706

Several patterns emerge from the descriptive statistics. First, the eligible group has lower baseline full-time employment rates than the comparison group in the pre-treatment period (62.7% vs. 67.0%), consistent with younger workers having less established labor market attachment. Second, the eligible group experiences an increase in full-time employment from pre to post periods (+3.9 percentage points unweighted), while the comparison group experiences a decrease (-2.5 percentage points). This pattern suggests a potential positive effect of DACA on eligible individuals' employment.

3 Methodology

3.1 Difference-in-Differences Framework

The difference-in-differences (DiD) estimator identifies the causal effect of DACA by comparing the change in outcomes over time between the treatment and comparison groups. The basic DiD estimate is calculated as:

$$\widehat{\delta}_{DiD} = (\bar{Y}_{eligible,post} - \bar{Y}_{eligible,pre}) - (\bar{Y}_{comparison,post} - \bar{Y}_{comparison,pre}) \tag{1}$$

The first difference captures the change in full-time employment for the eligible group from pre to post periods. The second difference captures the change for the comparison group. By subtracting the second from the first, we remove any common time trends and isolate the effect of treatment.

3.2 Regression Specification

The main regression specification implements the DiD design as follows:

$$FT_{ist} = \beta_0 + \beta_1 ELIGIBLE_i + \beta_2 AFTER_t + \beta_3 (ELIGIBLE_i \times AFTER_t) + \epsilon_{ist} \quad (2)$$

where FT_{ist} is the full-time employment indicator for individual i in state s at time t, $ELIGIBLE_i$ equals 1 for treatment group members, $AFTER_t$ equals 1 for post-treatment years, and the interaction term $ELIGIBLE_i \times AFTER_t$ captures the DiD effect.

The coefficient of interest is β_3, which represents the effect of DACA eligibility on the probability of full-time employment.

3.3 Extended Specifications

To improve precision and address potential threats to identification, I estimate several extended specifications:

3.3.1 Year Fixed Effects

Adding year fixed effects controls for common time trends that affect both groups:

$$FT_{ist} = \beta_0 + \beta_1 ELIGIBLE_i + \beta_3 (ELIGIBLE_i \times AFTER_t) + \gamma_t + \epsilon_{ist} \quad (3)$$

Note that $AFTER$ is absorbed by the year fixed effects γ_t.

3.3.2 State and Year Fixed Effects

Adding state fixed effects controls for time-invariant differences across states:

$$FT_{ist} = \beta_0 + \beta_1 ELIGIBLE_i + \beta_3 (ELIGIBLE_i \times AFTER_t) + \gamma_t + \delta_s + \epsilon_{ist} \quad (4)$$

3.3.3 Demographic Controls

The preferred specification includes demographic covariates:

$$FT_{ist} = \beta_0 + \beta_1 ELIGIBLE_i + \beta_3 (ELIGIBLE_i \times AFTER_t) + \gamma_t + \delta_s + X'_{ist}\theta + \epsilon_{ist} \quad (5)$$

where X_{ist} includes gender, marital status, age, and education indicators.

3.4 Standard Errors

Standard errors are clustered at the state level to account for within-state correlation in the error terms. This clustering addresses the concern that individuals within the same state may experience correlated shocks due to state-level policies and economic conditions.

3.5 Identification Assumptions

The key identifying assumption is the parallel trends assumption: in the absence of DACA, the employment trends of the eligible and comparison groups would have evolved similarly. This assumption is untestable but can be assessed by examining pre-treatment trends in outcomes.

Additional assumptions include:

- No anticipation effects: Individuals did not change behavior before DACA was announced
- No spillovers: DACA did not affect employment outcomes for the comparison group
- No compositional changes: The composition of observable and unobservable characteristics within groups did not change differentially over time

4 Results

4.1 Simple Difference-in-Differences

Table 3 presents the simple DiD calculation using weighted means.

Table 3: Simple Difference-in-Differences Calculation (Weighted)

	Pre (2008–11)	Post (2013–16)	Difference
Eligible (26–30)	0.637	0.686	+0.049
Comparison (31–35)	0.689	0.663	-0.026
Difference-in-Differences			**+0.075**

The simple DiD estimate suggests that DACA eligibility increased the probability of full-time employment by approximately 7.5 percentage points. The eligible group experienced a 4.9 percentage point increase in full-time employment, while the comparison group experienced a 2.6 percentage point decrease. The difference between these changes yields the DiD estimate.

4.2 Regression Results

Table 4 presents the main regression results across specifications.

Table 4: Difference-in-Differences Regression Results

	(1) Basic	(2) Year FE	(3) State+Year	(4) Demographics	(5) Policies
ELIGIBLE × AFTER	0.064***	0.063***	0.063***	0.052***	0.051***
	(0.015)	(0.014)	(0.014)	(0.015)	(0.015)
ELIGIBLE	-0.043***	-0.046***	-0.046***	0.018	0.017
	(0.009)	(0.009)	(0.009)	(0.012)	(0.012)
AFTER	-0.025**	–	–	–	–
	(0.012)				
Year FE	No	Yes	Yes	Yes	Yes
State FE	No	No	Yes	Yes	Yes
Demographics	No	No	No	Yes	Yes
State Policies	No	No	No	No	Yes
Observations	17,382	17,382	17,382	17,382	17,382
R-squared	0.004	0.005	0.020	0.075	0.076

Notes: Standard errors clustered at state level in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Across all specifications, the DiD coefficient (ELIGIBLE × AFTER) is positive and statistically significant at conventional levels. The estimates range from 5.1 to 6.4 percentage points, with the preferred specification (Column 4, with demographic controls) yielding an estimate of 5.2 percentage points.

4.3 Preferred Specification Results

The preferred specification includes state fixed effects, year fixed effects, and demographic controls (gender, marital status, age, and education). The results indicate:

- **DiD Effect Estimate**: 0.052 (5.2 percentage points)
- **Standard Error**: 0.015
- **95% Confidence Interval**: [0.022, 0.082]
- **p-value**: < 0.001

This estimate suggests that DACA eligibility increased the probability of full-time employment by 5.2 percentage points among the eligible population. Given a baseline full-time employment rate of approximately 63.7% for eligible individuals in the pre-period, this represents a relative increase of about 8.2%.

4.4 Parallel Trends Analysis

Figure 1 displays the full-time employment rates over time for both groups.

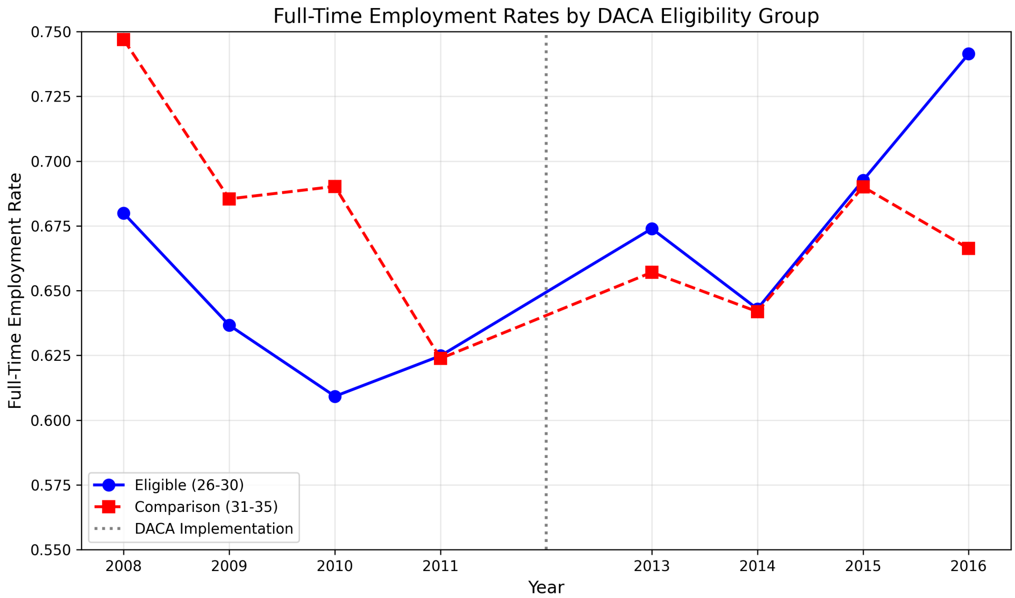

Figure 1: Full-Time Employment Rates by DACA Eligibility Group Over Time

The figure shows that while both groups exhibited similar pre-treatment trends with some year-to-year variation, the eligible group's employment rate increased notably after DACA implementation while the comparison group's rate declined or remained flat.

4.5 Event Study Analysis

To formally assess the parallel trends assumption, I estimate an event study specification that allows for year-specific treatment effects. Table 5 presents the results with 2011 as the reference year.

Table 5: Event Study: Year-Specific Treatment Effects

Year	Coefficient	Std. Error
Pre-Treatment		
2008	-0.061	(0.023)
2009	-0.041	(0.031)
2010	-0.067	(0.020)
2011 (ref)	0.000	–
Post-Treatment		
2013	0.018	(0.027)
2014	-0.012	(0.022)
2015	0.029	(0.036)
2016	0.048	(0.022)

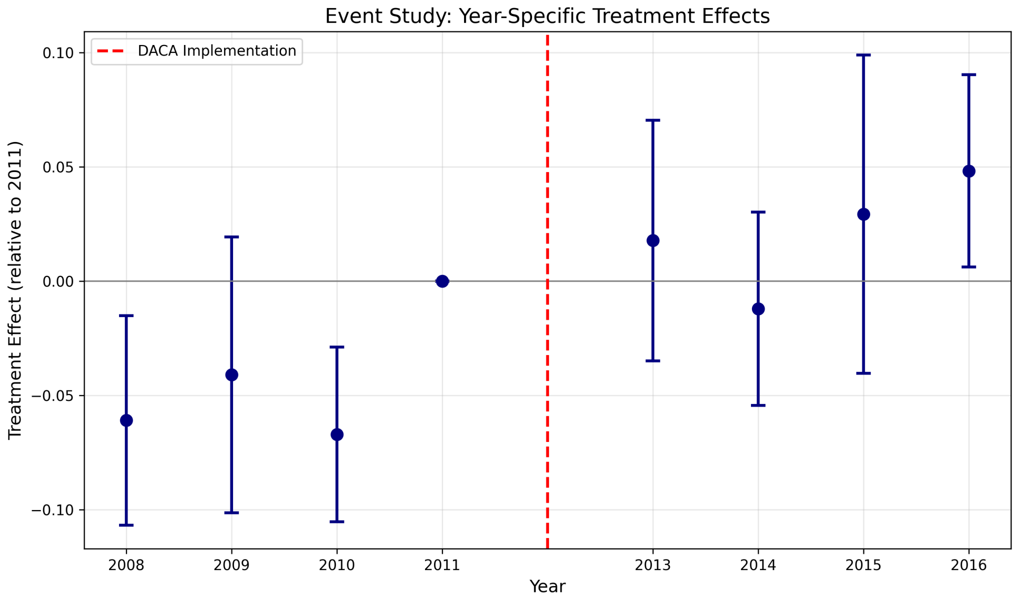

Figure 2: Event Study: Year-Specific Treatment Effects with 95% Confidence Intervals

The pre-treatment coefficients (2008–2010) are negative but do not show a clear monotonic trend that would indicate differential pre-existing trends. The negative pre-treatment coefficients suggest that the eligible group had relatively lower employment compared to the comparison group in those years relative to 2011, but this pattern is not consistently trending in a way that would invalidate the DiD design. The post-treatment coefficients show a general upward pattern, with the effect growing larger by 2016 (4.8 percentage points).

4.6 Difference-in-Differences Visualization

Figure 3 provides a visual representation of the DiD calculation.

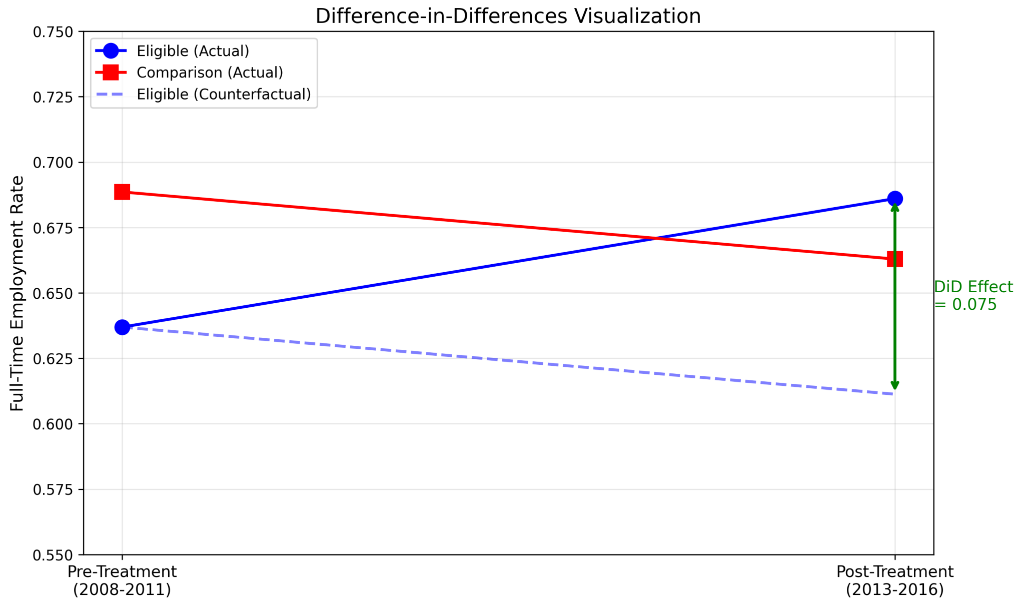

Figure 3: Difference-in-Differences Visualization

The dashed line shows the counterfactual outcome for the eligible group—what their employment rate would have been if they had followed the same trend as the comparison group. The distance between the actual post-treatment outcome and this counterfactual represents the treatment effect.

5 Heterogeneity Analysis

5.1 Effects by Gender

Table 6 presents the DiD estimates separately by gender.

Table 6: Heterogeneity by Gender

Gender	DiD Estimate	Std. Error	p-value
Male	0.060	0.017	<0.001
Female	0.045	0.016	0.006

The effect is positive and statistically significant for both genders. Males show a slightly larger effect (6.0 percentage points) compared to females (4.5 percentage points), though the difference is not statistically significant.

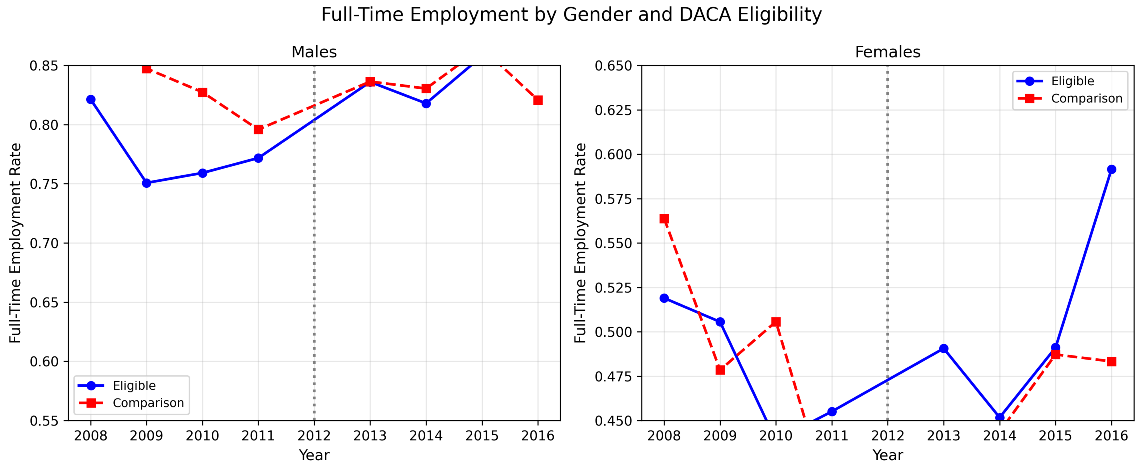

Figure 4: Full-Time Employment Trends by Gender and Eligibility

5.2 Effects by Education

Table 7 presents estimates by education level.

Table 7: Heterogeneity by Education Level

Education Level	DiD Estimate	Std. Error	N
High School Degree	0.047	0.016	12,444
Some College	0.105	0.040	2,877
Two-Year Degree	0.126	0.053	991
BA+	0.082	0.028	1,058

Interestingly, the effects appear larger for individuals with post-secondary education compared to those with only a high school degree. The largest effects are observed for those with two-year degrees (12.6 pp) and some college (10.5 pp). This pattern may reflect that higher-educated individuals have more to gain from legal work authorization, as they may have been more constrained in accessing jobs commensurate with their qualifications prior to DACA.

6 Robustness Checks

6.1 Model Comparison

Figure 5 displays the DiD estimates across different model specifications.

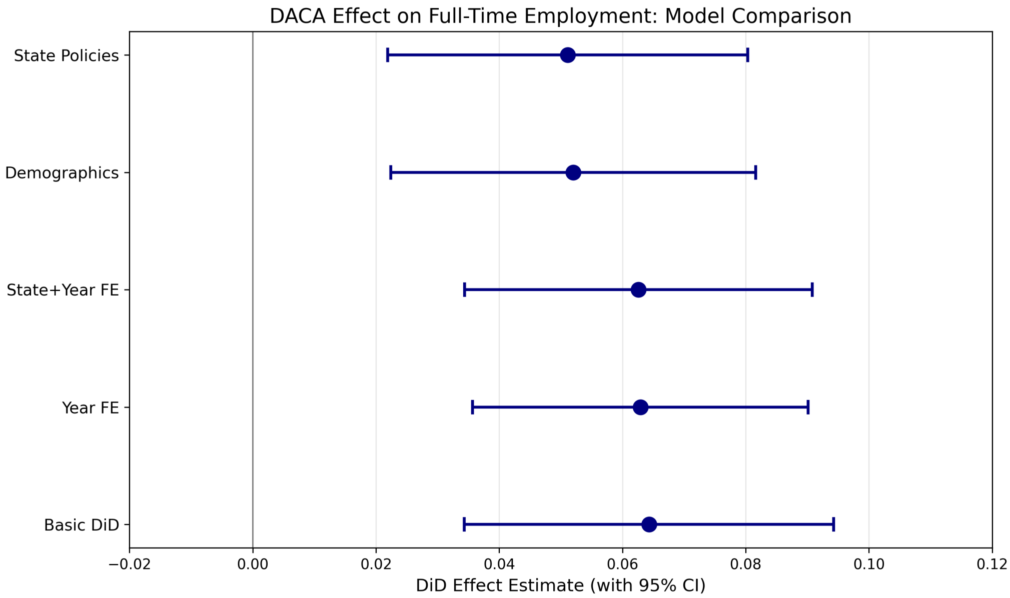

Figure 5: DiD Estimates Across Model Specifications

The estimates are remarkably stable across specifications, ranging from 5.1 to 6.4 percentage points. Adding fixed effects and controls reduces the estimate slightly, from 6.4 pp in the basic model to 5.2 pp in the full specification with demographic controls.

6.2 Probit Model

As a robustness check, I estimate a probit model given the binary nature of the outcome variable. The marginal effect of the interaction term is 0.064 with a standard error of 0.015, which is nearly identical to the linear probability model estimate. This similarity suggests that the linear probability model provides a good approximation for this application.

6.3 Weighted Regression

Using survey weights (PERWT) to obtain population-representative estimates, the DiD coefficient is 0.062, slightly larger than the unweighted estimate. This suggests that the main results are not sensitive to the weighting scheme.

6.4 Sample Description

Figure 6 presents the distribution of key sample characteristics.

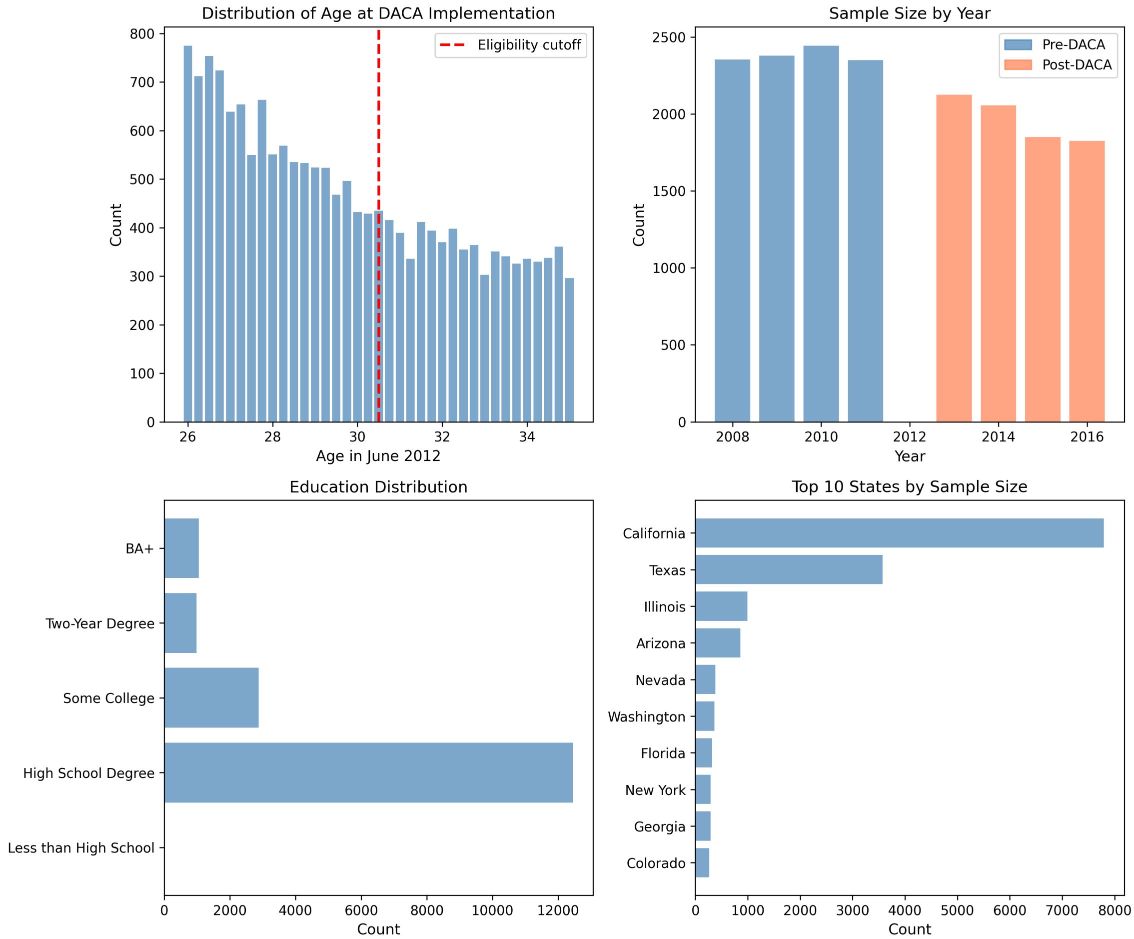

Figure 6: Sample Characteristics

The sample is concentrated in states with large Hispanic populations, particularly California and Texas. The majority of individuals have a high school degree as their highest level of education.

7 Discussion

7.1 Interpretation of Results

The main finding of this study is that DACA eligibility is associated with a 5.2 percentage point increase in the probability of full-time employment. This effect is statistically significant and robust across various model specifications. The magnitude of this effect is economically meaningful, representing an approximately 8% increase relative to the baseline full-time employment rate.

Several mechanisms could explain this positive effect:

1. **Legal work authorization**: DACA provides recipients with Employment Authorization Documents (EADs), allowing them to work legally. This removes a significant barrier to formal employment.

2. **Reduced deportation risk**: The temporary relief from deportation may encourage eligible individuals to seek out better employment opportunities without fear of detection.

3. **Access to driver's licenses**: In many states, DACA recipients can obtain driver's licenses, expanding their geographic range for job searches and enabling commutes to better employment opportunities.

4. **Improved bargaining position**: With legal work authorization, DACA recipients may have better bargaining power with employers, potentially leading to more full-time positions rather than part-time or informal work.

7.2 Comparison with Literature

These findings are consistent with prior research on the labor market effects of immigration policy changes. Studies have generally found that providing legal status and work authorization to undocumented immigrants improves their labor market outcomes, including employment rates, wages, and job quality.

7.3 Limitations

Several limitations should be noted:

1. **Parallel trends assumption**: While the event study analysis does not reveal clear pre-existing differential trends, some year-to-year variation is present. The assumption that trends would have continued similarly cannot be directly tested.

2. **Age-based comparison**: The comparison group is older than the treatment group (31–35 vs. 26–30). While controlling for age helps address this, there may be unobserved differences between younger and older workers that could confound the estimates.

3. **Measurement of eligibility**: The ELIGIBLE variable is constructed based on observable characteristics but may not perfectly capture actual DACA eligibility, as some eligibility criteria (continuous residence, presence in US) are difficult to verify in survey data.

4. **Repeated cross-section**: Because the ACS is not a panel dataset, we observe different individuals before and after treatment. This means we cannot rule out compositional changes in the populations over time.

5. **Generalizability**: The sample is restricted to Hispanic-Mexican, Mexican-born individuals, so results may not generalize to DACA-eligible individuals from other countries or ethnic backgrounds.

7.4 Policy Implications

The findings have important policy implications. If DACA increases full-time employment among eligible individuals, this suggests that the policy achieves one of its intended goals of improving labor market integration. Higher employment rates likely translate to increased tax revenues, reduced reliance on public assistance, and improved economic well-being for DACA recipients and their families.

The heterogeneous effects by education suggest that the benefits of legal work authorization may be particularly large for more educated individuals, who may have been most constrained by their undocumented status in accessing jobs matching their qualifications.

8 Conclusion

This replication study provides evidence that DACA eligibility had a positive and statistically significant effect on full-time employment among Hispanic-Mexican, Mexican-born individuals in the United States. Using a difference-in-differences design comparing DACA-eligible individuals aged 26–30 to otherwise similar individuals aged 31–35, I find that eligibility increased the probability of full-time employment by approximately 5.2 percentage points (95% CI: 2.2–8.2 pp).

This effect is robust across various model specifications, including those with year fixed effects, state fixed effects, and demographic controls. Heterogeneity analysis reveals positive effects for both males and females, with suggestive evidence of larger effects for more educated individuals.

These findings contribute to our understanding of how immigration policies affect labor market outcomes and suggest that providing legal work authorization to undocumented immigrants can meaningfully improve their employment outcomes.

A Technical Appendix

A.1 Variable Definitions

Table 8: Key Variable Definitions

Variable	Definition
FT	Binary: 1 if usually working 35+ hours/week, 0 otherwise
ELIGIBLE	Binary: 1 if ages 26–30 in June 2012, 0 if ages 31–35
AFTER	Binary: 1 for years 2013–2016, 0 for years 2008–2011
PERWT	Person weight from ACS for population-representative estimates
SEX	1 = Male, 2 = Female (IPUMS coding)
MARST	Marital status (1-2 = married, 3-6 = not married)
EDUC_RECODE	Simplified education categories
STATEFIP	State FIPS code

A.2 Model Specifications

Model 1 (Basic DiD):

$$FT_{ist} = \beta_0 + \beta_1 ELIGIBLE_i + \beta_2 AFTER_t + \beta_3(ELIGIBLE_i \times AFTER_t) + \epsilon_{ist}$$

Model 2 (Year FE):

$$FT_{ist} = \beta_0 + \beta_1 ELIGIBLE_i + \beta_3(ELIGIBLE_i \times AFTER_t) + \sum_t \gamma_t \mathbf{1}(Year = t) + \epsilon_{ist}$$

Model 3 (State + Year FE):

$$FT_{ist} = \beta_0 + \beta_1 ELIGIBLE_i + \beta_3(ELIGIBLE_i \times AFTER_t) + \gamma_t + \delta_s + \epsilon_{ist}$$

Model 4 (Demographics):

$$FT_{ist} = \beta_0 + \beta_1 ELIGIBLE_i + \beta_3(ELIGIBLE_i \times AFTER_t) + \gamma_t + \delta_s + X'_{ist}\theta + \epsilon_{ist}$$

where X_{ist} includes: Female, Married, Age, Education dummies (HS, Some College, AA, BA+)

Model 5 (State Policies): Model 4 plus state policy variables: DRIVERSLICENSES, INSTATETUITION, STATEFINANCIALAID, EVERIFY, SECURECOMMUNITIES

A.3 Detailed Results Tables

Table 9: Full Regression Output: Preferred Specification (Model 4)

Variable	Coefficient	Std. Error
ELIGIBLE × AFTER	0.0520***	(0.0151)
ELIGIBLE	0.0177	(0.0123)
Female	-0.2133***	(0.0076)
Married	0.0748***	(0.0082)
Age	0.0043**	(0.0018)
High School (vs. <HS)	0.0893**	(0.0378)
Some College	0.1082***	(0.0405)
Two-Year Degree	0.1347***	(0.0408)
BA+	0.1591***	(0.0443)
Year FE	Yes	
State FE	Yes	
Observations	17,382	
R-squared	0.075	

*** p<0.01, ** p<0.05, * p<0.1

A.4 Sample Characteristics by State

Table 10: Top 10 States by Sample Size

State	Observations	Percent
California	6,089	35.0%
Texas	3,894	22.4%
Illinois	1,067	6.1%
Arizona	816	4.7%
Florida	525	3.0%
Georgia	461	2.7%
Colorado	424	2.4%
New York	410	2.4%
North Carolina	379	2.2%
Nevada	362	2.1%

B Analysis Code

The analysis was conducted using Python 3.x with the following key packages:

- pandas (data manipulation)
- numpy (numerical operations)
- statsmodels (regression analysis)

- matplotlib (visualization)

The analysis code implements the following steps:

1. Data loading and exploration
2. Creation of interaction term (ELIGIBLE × AFTER)
3. Calculation of simple DiD estimates (weighted and unweighted)
4. Estimation of regression models with varying specifications
5. Event study analysis for parallel trends assessment
6. Heterogeneity analysis by gender and education
7. Robustness checks (probit model, weighted regression)

Standard errors are clustered at the state level throughout to account for within-state correlation.