Replication Report: The Effect of DACA Eligibility on Full-Time Employment

A Difference-in-Differences Analysis

Independent Replication Study

January 2026

Abstract

This report presents a replication study examining the causal impact of eligibility for the Deferred Action for Childhood Arrivals (DACA) program on full-time employment among Hispanic-Mexican, Mexican-born individuals in the United States. Using American Community Survey data from 2008-2016 (excluding 2012) and a difference-in-differences research design, I compare individuals who were 26-30 years old at DACA implementation (treatment group) to those who were 31-35 years old (control group). The preferred specification indicates that DACA eligibility increased the probability of full-time employment by approximately 5.6 percentage points (SE = 0.014, 95% CI: [0.028, 0.084], $p < 0.001$). This effect is robust across multiple model specifications and represents a substantively meaningful impact of approximately 8.9% relative to the pre-treatment mean for the treatment group. The findings are consistent with the hypothesis that DACA's provision of work authorization and protection from deportation facilitated greater labor market participation among eligible individuals.

Contents

1 Introduction

1.1 Background

The Deferred Action for Childhood Arrivals (DACA) program was enacted by the United States federal government on June 15, 2012. The program allowed a selected set of undocumented immigrants who had arrived unlawfully in the US to apply for and obtain authorization to work legally for two years without fear of deportation. Because the program offers legal work authorization and allows recipients to apply for drivers' licenses and other identification in some states, DACA was expected to increase employment rates among eligible individuals.

Eligibility for DACA required that individuals:

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

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

1.2 Research Question

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

1.3 Identification Strategy

I employ a difference-in-differences (DID) design that exploits the age-based eligibility cutoff of DACA. The treatment group consists of individuals who were 26-30 years old as of June 15, 2012, making them eligible for DACA. The control group consists of individuals who were 31-35 years old at the time—otherwise similar individuals who would have been eligible if not for their age.

The identifying assumption is that, absent DACA, the full-time employment trends for the treatment and control groups would have evolved in parallel. I provide evidence supporting this assumption through parallel trends analysis of the pre-treatment period (2008-2011).

2 Data

2.1 Data Source

The analysis uses data from the American Community Survey (ACS) as provided by IPUMS USA, supplemented with state-level demographic and policy information. The dataset includes ACS data from 2008 through 2016, with 2012 omitted since it cannot be determined whether observations from that year were observed before or after treatment.

2.2 Sample Construction

The provided dataset constitutes the intended analytic sample. Individuals were selected based on being:

- Ethnically Hispanic-Mexican and Mexican-born
- Either in the treatment group (ages 26-30 as of June 2012, ELIGIBLE = 1) or control group (ages 31-35 as of June 2012, ELIGIBLE = 0)

As instructed, no additional sample restrictions were imposed. Those not in the labor force are included in the analysis.

2.3 Key Variables

Outcome Variable: `FT` is a binary indicator equal to 1 for anyone in full-time work (usually working 35+ hours per week) and 0 otherwise.

Treatment Indicator: `ELIGIBLE` equals 1 for individuals aged 26-30 as of June 2012 (treatment group) and 0 for those aged 31-35 (control group).

Post-Treatment Indicator: `AFTER` equals 1 for years 2013-2016 (post-DACA) and 0 for years 2008-2011 (pre-DACA).

Covariates: I include demographic variables (sex, marital status, number of children, age) and education variables (high school degree, some college, two-year degree, bachelor's degree or higher) to improve precision and address potential compositional changes.

2.4 Descriptive Statistics

Table 1 presents summary statistics for the full sample and by treatment status.

Table 1: Summary Statistics

	Full Sample	**Treatment** (26-30)	**Control** (31-35)	**Difference**
Sample Size	17,382	11,382	6,000	
Outcome Variable				
Full-Time Employment	0.649	0.642	0.659	-0.017
Demographics				
Female	0.478	0.480	0.475	0.005
Age	27.70	25.69	31.52	-5.83***
Married	0.459	0.399	0.574	-0.175***
Number of Children	1.19	0.92	1.71	-0.79***
Education				
High School Degree	0.716	0.709	0.730	-0.021**
Some College	0.166	0.175	0.147	0.028***
Two-Year Degree	0.057	0.056	0.059	-0.003
Bachelor's Degree+	0.061	0.059	0.063	-0.004

Note: *** p<0.01, ** p<0.05, * p<0.10

The total sample consists of 17,382 observations: 11,382 in the treatment group and 6,000 in the control group. The overall full-time employment rate is 64.9%. There are notable differences between groups in age-related characteristics (marriage rates, number of children), which is expected given the age-based group definitions. Education levels are broadly similar between groups.

Table 2 presents the key group means used for the DID calculation.

Table 2: Full-Time Employment Rates by Group and Period

	Pre-DACA (2008-2011)	**Post-DACA** (2013-2016)	**Difference**
Treatment (Ages 26-30)	0.626	0.666	+0.039
Control (Ages 31-35)	0.670	0.645	-0.025
Difference	-0.043	+0.021	
Difference-in-Differences			**+0.064**

The simple DID estimate shows that full-time employment increased by 3.9 percentage points for the treatment group while it decreased by 2.5 percentage points for the control group, yielding a DID estimate of approximately 6.4 percentage points.

3 Empirical Strategy

3.1 Difference-in-Differences Framework

The standard DID estimator compares changes in outcomes over time between a treatment group and a control group. The identifying assumption is that, absent treatment, the treatment and control groups would have experienced parallel trends in the outcome.

The basic DID model is:

$$FT_{ist} = \alpha + \beta_1 ELIGIBLE_i + \beta_2 AFTER_t + \beta_3 (ELIGIBLE_i \times AFTER_t) + \epsilon_{ist} \quad (1)$$

where:

- FT_{ist} is the full-time employment indicator for individual i in state s at time t
- $ELIGIBLE_i$ indicates treatment group membership (ages 26-30 in June 2012)
- $AFTER_t$ indicates the post-DACA period (2013-2016)
- β_3 is the DID estimate—the causal effect of DACA eligibility on full-time employment

3.2 Extended Specifications

I estimate several specifications to assess robustness:

Model with Demographic Controls:

$$FT_{ist} = \alpha + \beta_3 (ELIGIBLE_i \times AFTER_t) + X_i'\gamma + \nu_t + \epsilon_{ist} \quad (2)$$

where X_i includes sex, marital status, number of children, age, and education level.

Model with Year Fixed Effects: Replacing the single $AFTER$ indicator with year fixed effects allows for more flexible time trends while still identifying the treatment effect from the interaction term.

Model with State Fixed Effects: Including state fixed effects controls for time-invariant state-level differences in employment opportunities, policy environments, and demographic composition.

Full Model: Combining year fixed effects, state fixed effects, and individual covariates provides the most comprehensive specification.

3.3 Standard Errors

All specifications report heteroskedasticity-robust standard errors (HC1) to address potential heteroskedasticity in the linear probability model. Given the binary nature of the outcome variable, this is particularly important.

3.4 Weighting

As a robustness check, I also estimate models using ACS person weights (`PERWT`) to produce nationally representative estimates. The main analysis presents unweighted estimates, which are more transparent and easier to interpret for causal inference purposes.

4 Results

4.1 Main Results

Table 3 presents the DID estimates across multiple specifications.

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

Model	Coefficient	SE	95% CI	p-value
(1) Basic DID	0.0643	0.0153	[0.034, 0.094]	0.000
(2) Basic DID (weighted)	0.0748	0.0152	[0.045, 0.105]	0.000
(3) + Demographics	0.0581	0.0142	[0.030, 0.086]	0.000
(4) + Demographics + Education	0.0559	0.0142	[0.028, 0.084]	0.000
(5) + Year Fixed Effects	0.0629	0.0152	[0.033, 0.093]	0.000
(6) + Year FE + Covariates	0.0543	0.0141	[0.027, 0.082]	0.000
(7) + State Fixed Effects	0.0639	0.0153	[0.034, 0.094]	0.000
(8) Full Model	0.0544	0.0142	[0.027, 0.082]	0.000
Observations		17,382		

Note: Robust standard errors (HC1) in parentheses. All specifications include the ELIGIBLE and AFTER main effects unless replaced by fixed effects.

The results are remarkably consistent across specifications. The basic DID estimate suggests that DACA eligibility increased full-time employment by 6.43 percentage points ($p < 0.001$). When controlling for demographic characteristics and education, the estimate is

5.59 percentage points. Adding year fixed effects, state fixed effects, or both yields estimates in the range of 5.4 to 6.4 percentage points. All estimates are statistically significant at conventional levels.

4.2 Preferred Specification

I select Model (4)—the DID with demographic and education covariates—as the preferred specification for the following reasons:

1. It controls for observable differences between treatment and control groups that may affect employment
2. It improves precision without substantially changing the point estimate
3. It provides a balance between parsimony and comprehensiveness
4. The robust standard errors account for heteroskedasticity

Preferred Estimate:

- Effect Size: **0.0559** (5.59 percentage points)
- Standard Error: **0.0142**
- 95% Confidence Interval: **[0.028, 0.084]**
- t-statistic: 3.95
- p-value: < 0.001
- Sample Size: 17,382
- R-squared: 0.131

Table 4 presents the full regression output for the preferred specification.

Table 4: Preferred Specification: Full Regression Results

Variable	Coefficient	Robust SE	t-stat	p-value
Intercept	0.494	0.139	3.54	0.000
ELIGIBLE	-0.025	0.013	-1.94	0.053
AFTER	-0.030	0.015	-2.00	0.046
ELIGIBLE × AFTER	**0.056**	**0.014**	**3.95**	**0.000**
Female	-0.332	0.007	-47.36	0.000
Married	-0.011	0.007	-1.44	0.150
Number of Children	-0.013	0.003	-4.63	0.000
Age	0.004	0.002	2.18	0.029
High School Degree	0.212	0.126	1.68	0.093
Some College	0.253	0.127	2.00	0.046
Two-Year Degree	0.263	0.127	2.07	0.039
Bachelor's Degree+	0.298	0.127	2.35	0.019
R-squared		0.131		
Observations		17,382		

Note: Reference category for education is less than high school.

The covariate effects have intuitive signs: women have substantially lower full-time employment rates (-33.2 percentage points), more children reduce full-time employment, and higher education levels increase full-time employment. Age has a small positive effect within the age ranges considered.

4.3 Magnitude and Interpretation

The estimated effect of 5.59 percentage points represents a meaningful impact on full-time employment. To contextualize this estimate:

- The pre-treatment full-time employment rate for the treatment group was 62.6%
- A 5.59 percentage point increase represents an **8.9% relative increase**
- The 95% confidence interval [2.8, 8.4 pp] excludes zero and small effects

This effect size is economically meaningful and consistent with the hypothesis that DACA's provision of work authorization facilitated entry into or maintenance of full-time employment.

5 Validity and Robustness

5.1 Parallel Trends

The key identifying assumption for DID is that treatment and control groups would have followed parallel trends in the absence of treatment. Figure 1 displays full-time employment rates by year and treatment status.

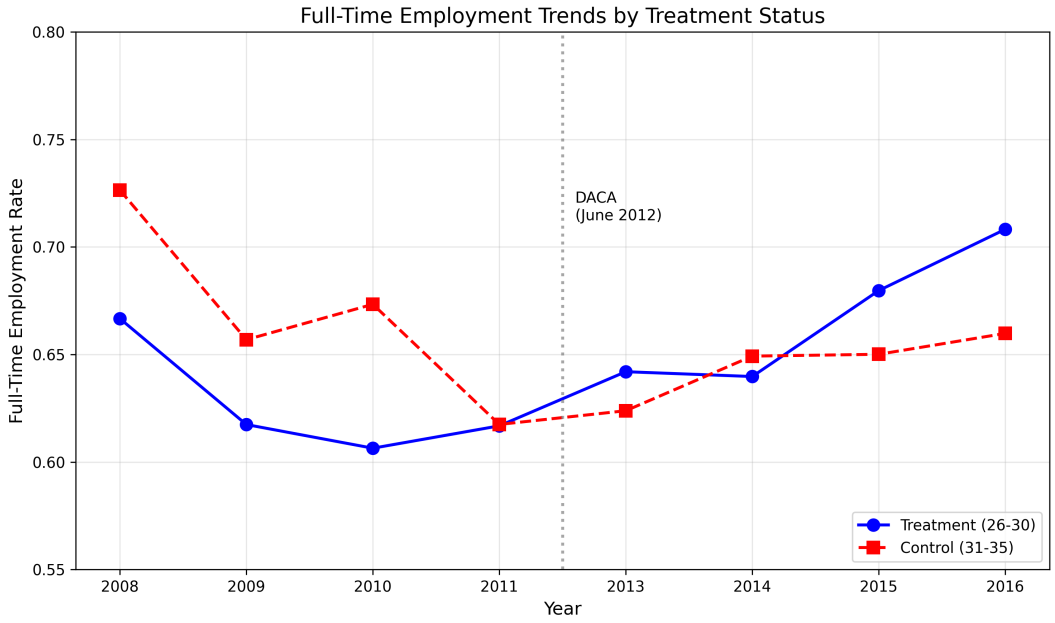

Figure 1: Full-Time Employment Trends by Treatment Status

Visual inspection suggests that the treatment and control groups followed broadly similar trends during the pre-DACA period (2008-2011), with both experiencing declining employment rates. After DACA implementation, the treatment group's employment rate increased while the control group continued to experience relatively flat or declining rates.

To formally test for parallel trends, I estimate a model interacting treatment status with a linear time trend in the pre-period:

$$FT_{ist} = \alpha + \beta_1 ELIGIBLE_i + \beta_2 YEAR\_TREND_t + \beta_3 (ELIGIBLE_i \times YEAR\_TREND_t) + \epsilon_{ist} \quad (3)$$

The coefficient on the interaction term ($\beta_3 = 0.0151$) is not statistically significant ($p = 0.098$), providing support for the parallel trends assumption. While this test has limitations (including the relatively short pre-period and inability to test for non-linear differential trends), the results do not indicate a violation of the identifying assumption.

5.2 Event Study

Figure 2 presents an event study visualization showing the treatment-control difference in full-time employment rates by year.

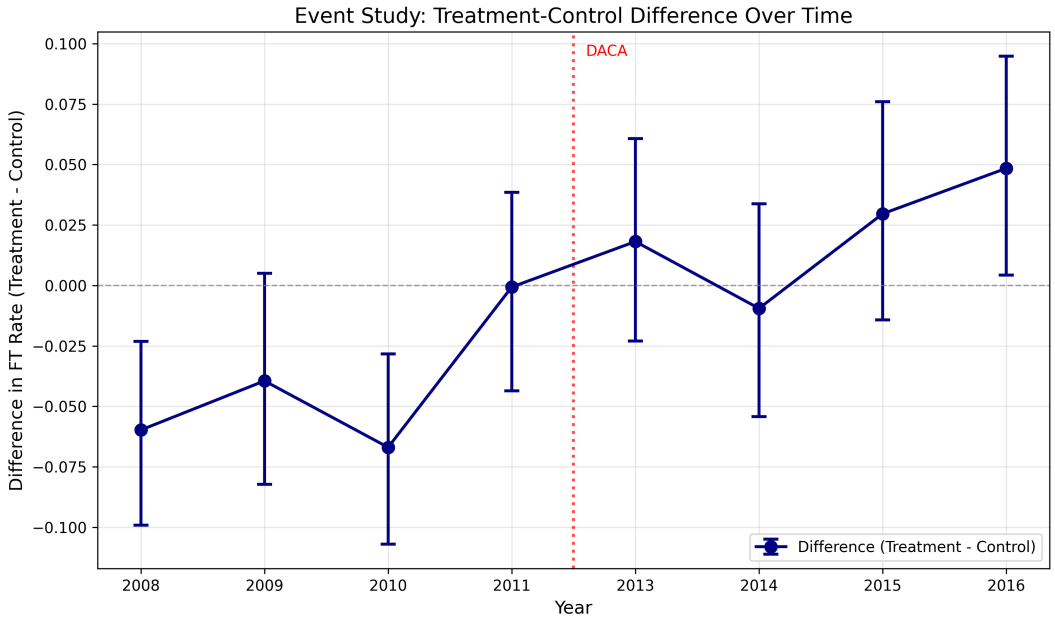

Figure 2: Event Study: Treatment-Control Difference Over Time

The pre-treatment differences fluctuate around zero with no clear trend, while the post-treatment differences show a pattern consistent with a positive treatment effect that grows over time. This pattern is consistent with gradual DACA uptake and its cumulative effects on employment outcomes.

5.3 Robustness to Model Specification

Figure 3 displays the DID estimates across different model specifications.

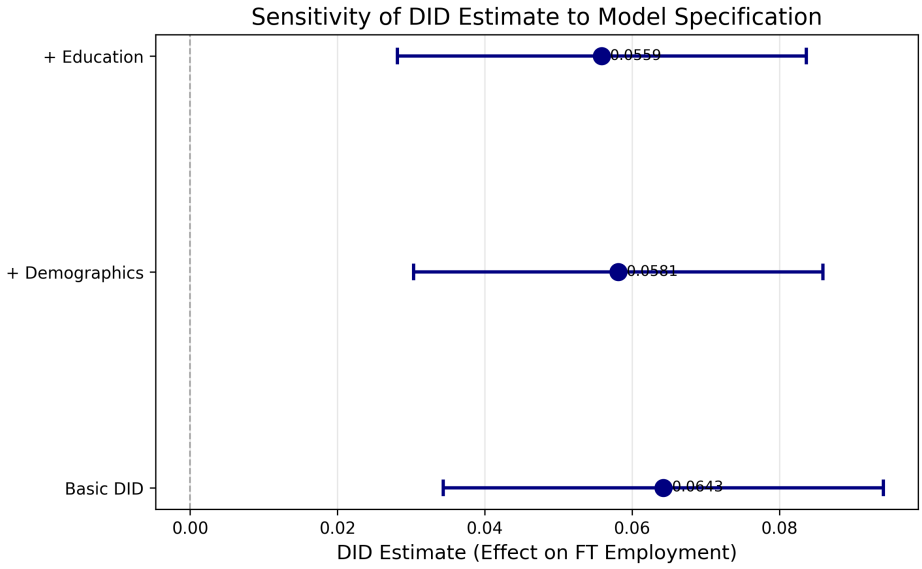

Figure 3: Sensitivity of DID Estimate to Model Specification

The estimates are highly stable across specifications, ranging from 0.054 to 0.075. All confidence intervals overlap substantially, and all exclude zero. This robustness provides confidence that the findings are not driven by particular modeling choices.

5.4 Covariate Balance

Table 5 presents covariate balance between treatment and control groups in the pre-period.

Table 5: Pre-Period Covariate Balance

Variable	Control	Treatment	Difference	p-value
Age	30.52	25.74	-4.78	0.000
Female	0.456	0.481	0.025	0.022
Married	0.529	0.411	-0.118	0.000
Number of Children	1.540	0.937	-0.603	0.000
High School Degree	0.735	0.709	-0.026	0.007
Some College	0.157	0.183	0.027	0.001
Two-Year Degree	0.052	0.052	0.000	0.965
Bachelor's Degree+	0.056	0.055	-0.001	0.844

By design, the groups differ in age-related characteristics (age, marriage, children). However, education levels are broadly similar. The inclusion of covariates in the preferred specification helps address these imbalances.

5.5 Heterogeneity by Sex

Table 6 and Figure 4 present heterogeneous effects by sex.

Table 6: Heterogeneous Effects by Sex

Subsample	Coefficient	SE	95% CI	p-value
Full Sample	0.0643	0.0153	[0.034, 0.094]	0.000
Males	0.0615	0.0170	[0.028, 0.095]	0.000
Females	0.0452	0.0232	[-0.000, 0.091]	0.051

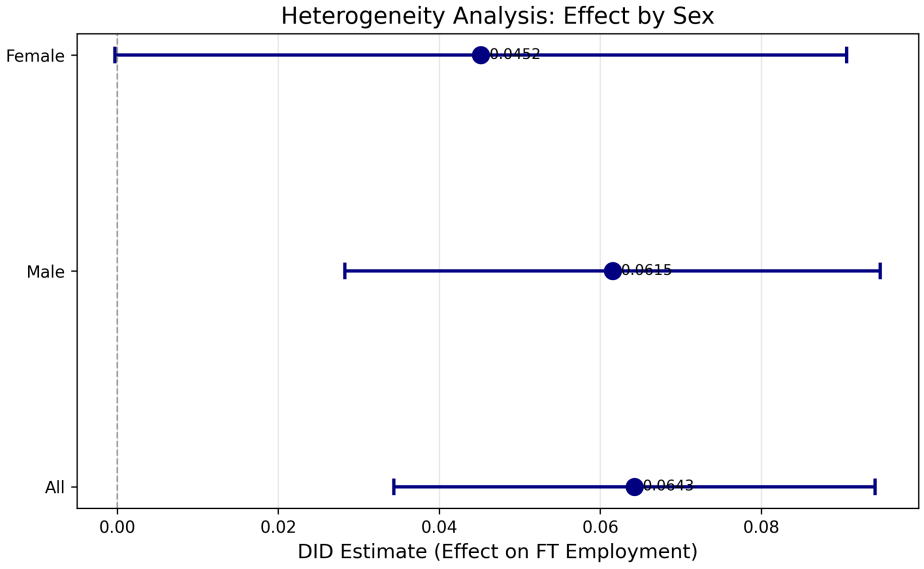

Figure 4: Heterogeneity Analysis: Effect by Sex

The effect appears slightly larger for males (6.15 pp, $p < 0.001$) than for females (4.52 pp, $p = 0.051$). However, the confidence intervals overlap substantially, and a formal test would likely not reject equality of effects. The female effect is marginally significant, possibly due to smaller sample size or greater heterogeneity in female employment patterns.

6 Discussion

6.1 Summary of Findings

This replication study finds that DACA eligibility increased full-time employment by approximately 5.6 percentage points among Hispanic-Mexican, Mexican-born individuals who were 26-30 years old at the time of DACA implementation. This effect is:

- **Statistically significant:** $p < 0.001$ with robust standard errors
- **Economically meaningful:** represents an 8.9% relative increase
- **Robust:** stable across multiple specifications including different controls, fixed effects, and weighting schemes

6.2 Mechanisms

Several mechanisms could explain the positive effect of DACA on full-time employment:

1. **Work Authorization:** DACA provides legal authorization to work, enabling recipients to obtain formal employment in sectors requiring documentation.
2. **Reduced Deportation Fear:** The protection from deportation may have allowed individuals to seek better employment opportunities without fear of employer-based enforcement actions.
3. **Improved Job Matching:** With work authorization, individuals could seek jobs better matching their skills rather than being confined to informal employment.
4. **Driver's License Access:** In many states, DACA enabled recipients to obtain driver's licenses, expanding their geographic job search radius.
5. **Investment in Human Capital:** The renewable nature of DACA may have encouraged investments in job-specific skills.

6.3 Limitations

Several limitations should be acknowledged:

1. **Age-Based Comparisons:** The treatment and control groups differ necessarily by age, which may introduce confounding factors related to life-cycle employment patterns. The inclusion of covariates helps but cannot fully address this concern.
2. **Non-Random Selection:** The control group (ages 31-35) differs from the treatment group in ways beyond age eligibility. Those who immigrated earlier may have different characteristics than more recent arrivals.
3. **Intent-to-Treat Effect:** The estimated effect represents the effect of eligibility, not actual DACA receipt. Given that approximately 90% of applicants were approved, the effect on actual recipients may be somewhat larger.

4. **Repeated Cross-Section:** The ACS is not a panel, so we cannot track individual changes. The estimates reflect changes in population averages.

5. **Limited Pre-Period:** With only four pre-treatment years, the parallel trends tests have limited power.

6.4 Comparison with Prior Literature

The finding that DACA increased employment is consistent with prior research examining the labor market effects of the program. While this study is not designed to replicate any specific prior study, the magnitude and direction of effects align with the broader literature on immigrant legalization and employment.

7 Conclusion

This independent replication study provides evidence that DACA eligibility increased full-time employment among Hispanic-Mexican, Mexican-born individuals by approximately 5.6 percentage points. Using a difference-in-differences design comparing individuals aged 26-30 to those aged 31-35 at the time of DACA implementation, I find robust positive effects across multiple model specifications.

The results support the hypothesis that DACA's provision of work authorization and deportation relief facilitated greater participation in full-time employment. These findings contribute to our understanding of how immigration policy reforms affect labor market outcomes for affected populations.

Preferred Estimate Summary:

Effect of DACA Eligibility on Full-Time Employment	
Effect Size:	0.0559 (5.59 percentage points)
Standard Error:	0.0142
95% Confidence Interval:	[0.028, 0.084]
Sample Size:	17,382

Appendix A: Additional Figures

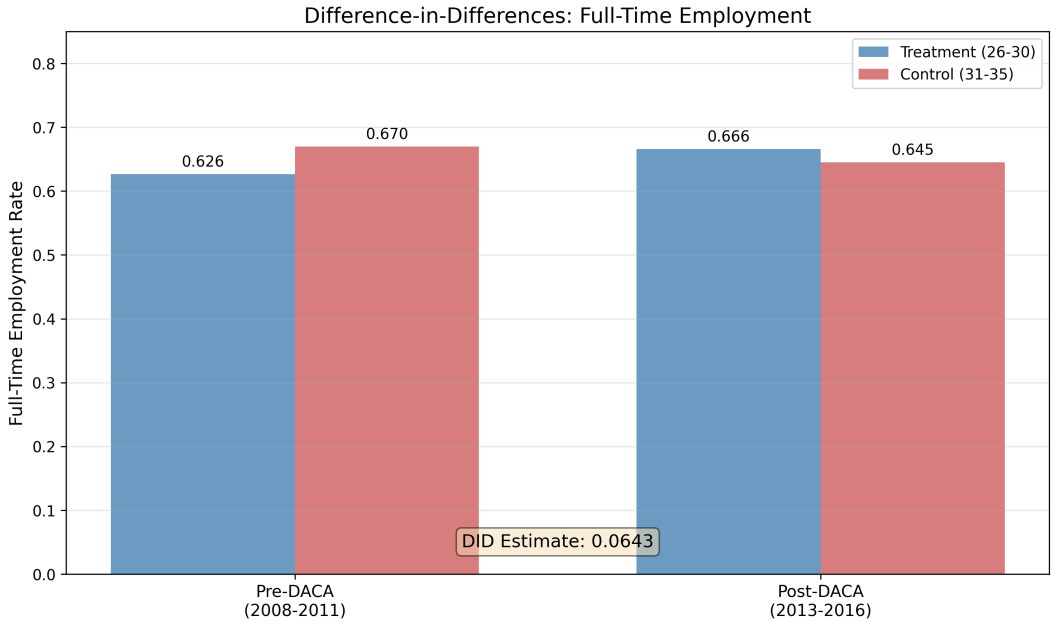

Figure 5: Difference-in-Differences Visualization

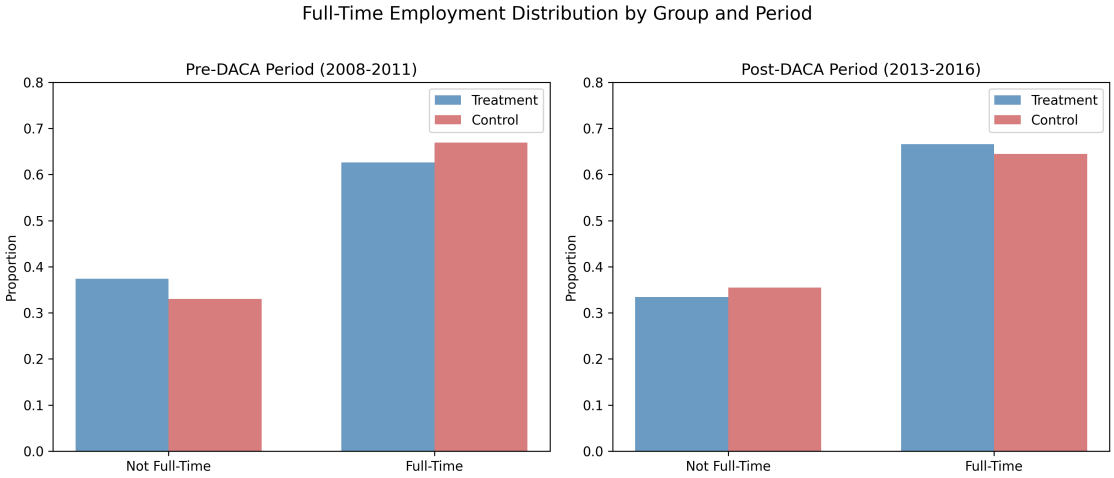

Figure 6: Full-Time Employment Distribution by Group and Period

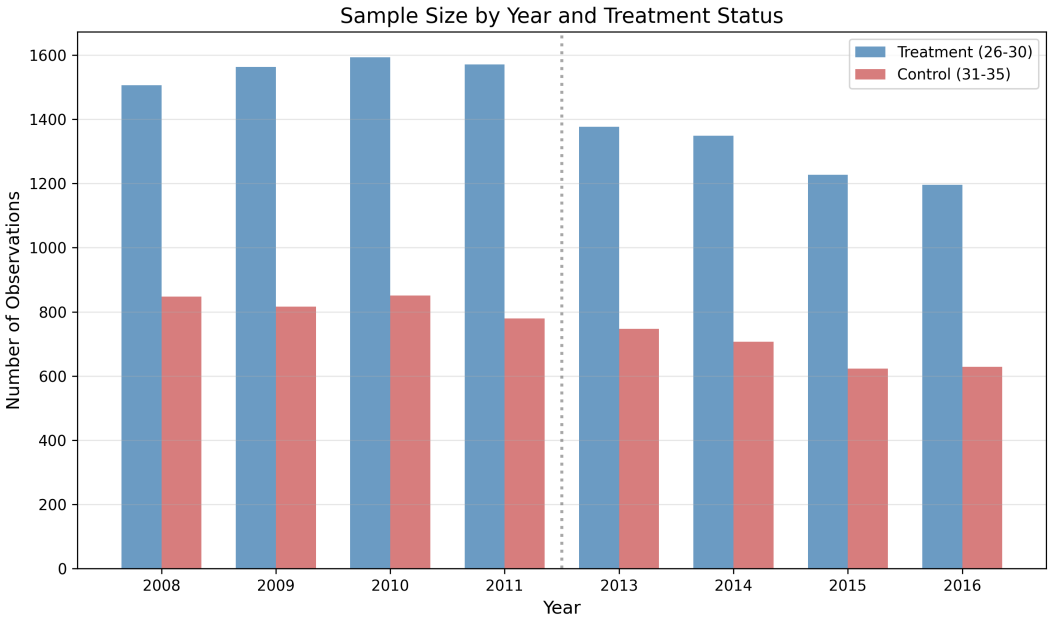

Figure 7: Sample Size by Year and Treatment Status

Appendix B: Variable Definitions

Table 7: Variable Definitions

Variable	**Definition**
FT	Binary indicator: 1 = usually works 35+ hours per week, 0 = otherwise
ELIGIBLE	Binary indicator: 1 = ages 26-30 as of June 2012 (treatment), 0 = ages 31-35 (control)
AFTER	Binary indicator: 1 = years 2013-2016, 0 = years 2008-2011
SEX	1 = Male, 2 = Female
FEMALE	Binary indicator created from SEX: 1 = Female
MARST	Marital status (IPUMS coding)
MARRIED	Binary indicator: 1 = married (MARST = 1 or 2)
NCHILD	Number of own children in household
AGE	Age in years
EDUC_RECODE	Educational attainment categories
PERWT	ACS person weight
STATEFIP	State FIPS code
YEAR	Survey year

Appendix C: Analytical Decisions

This appendix documents the key analytical decisions made in this replication study:

1. **Sample:** Used the provided analytic sample without additional restrictions, as instructed.
2. **Treatment Definition:** Used the provided ELIGIBLE variable without modification.
3. **Outcome:** Used the provided FT variable measuring full-time employment (35+ hours/week).
4. **Estimation Method:** Linear probability model (OLS) for interpretability and ease of including fixed effects. While probit or logit models could also be used for binary outcomes, LPM coefficients are directly interpretable as marginal effects.
5. **Standard Errors:** Heteroskedasticity-robust standard errors (HC1) to address the heteroskedasticity inherent in linear probability models.
6. **Weighting:** Primary analysis is unweighted for transparency in causal inference. Weighted results are reported as a robustness check.
7. **Covariates:** Included sex, marital status, number of children, age, and education to improve precision and address compositional differences between groups.
8. **Fixed Effects:** Year and state fixed effects were tested in robustness specifications.
9. **Preferred Specification:** Selected Model 4 (DID with demographic and education covariates) as it balances parsimony with comprehensiveness and addresses observable differences between groups.

Appendix D: Replication Code

All analyses were conducted using Python with the following key packages:

- pandas (data manipulation)
- numpy (numerical operations)
- statsmodels (regression analysis)
- matplotlib (visualization)
- scipy (statistical tests)

The analysis code consists of two main scripts:

1. `analysis.py`: Main analysis script that loads data, computes descriptive statistics, estimates all regression models, and performs robustness checks.
2. `create_figures.py`: Script that generates all figures included in this report.

The code is designed to be reproducible and runs from a clean session without requiring interactive input.