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

Replication Study Report

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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 living in the United States. Using American Community Survey data from 2008–2016 (excluding 2012) and a difference-in-differences research design, I compare employment outcomes for individuals aged 26–30 at the time of DACA implementation (the treated group) to those aged 31–35 (the control group, who were ineligible solely due to age). The preferred specification, which includes year fixed effects and demographic controls, yields an estimated treatment effect of 5.66 percentage points (SE = 0.0142, $p < 0.001$), suggesting that DACA eligibility increased full-time employment rates among the eligible population. This effect is robust across multiple specifications including weighted regressions and alternative functional forms. Event study analysis provides some support for the parallel trends assumption, though pre-treatment trends warrant careful interpretation.

Contents

1 Introduction

The Deferred Action for Childhood Arrivals (DACA) program, implemented on June 15, 2012, represented a significant policy shift in U.S. immigration enforcement. The program provided eligible undocumented immigrants who arrived in the United States as children with temporary relief from deportation and authorization to work legally for renewable two-year periods. Given that employment authorization is a primary benefit of DACA, understanding its effects on labor market outcomes is of substantial policy interest.

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

The identification strategy relies on the age-based eligibility cutoff created by the DACA policy. Individuals must not have turned 31 years old as of June 15, 2012, to be eligible. This creates a natural comparison between individuals who were barely eligible (aged 26–30 at the time of implementation) and those who were barely ineligible solely due to their age (aged 31–35). By comparing how full-time employment changed from before to after DACA implementation for both groups, a difference-in-differences (DiD) design can isolate the causal effect of DACA eligibility on employment outcomes.

The remainder of this report is organized as follows. Section 2 provides background on the DACA program and the conceptual framework for expected effects. Section 3 describes the data and sample. Section 4 outlines the empirical methodology. Section 5 presents the main results. Section 6 discusses robustness checks and sensitivity analyses. Section 7 concludes with interpretation and limitations.

2 Background

2.1 The DACA Program

DACA was enacted by executive action on June 15, 2012. The program allowed qualifying undocumented immigrants to apply for deferred action on deportation proceedings and to obtain employment authorization documents (EADs) valid for two years. Recipients could subsequently apply for renewal.

To qualify for DACA, individuals must have:

- Arrived in the United States before their 16th birthday
- Not yet turned 31 years old as of June 15, 2012

- Lived continuously in the United States since June 15, 2007
- Been present in the United States on June 15, 2012
- Not had lawful immigration status (citizenship or legal residency) at that time

Applications began to be received on August 15, 2012. In the first four years, nearly 900,000 initial applications were submitted, with approximately 90% receiving approval. While the program was not country-specific, the demographic composition of undocumented immigration to the United States meant that the majority of eligible individuals were from Mexico.

2.2 Expected Effects on Employment

DACA could affect full-time employment through several channels:

1. **Legal work authorization**: The most direct effect comes from the ability to work legally. Prior to DACA, undocumented individuals could only work in informal sectors or using fraudulent documentation. Legal authorization opens access to formal sector employment, which is more likely to offer full-time positions.
2. **Reduced fear of deportation**: Deferred action provides protection from deportation, potentially increasing willingness to seek employment and reducing job turnover due to immigration enforcement concerns.
3. **Driver's license access**: In many states, DACA recipients became eligible for driver's licenses, expanding geographic job market accessibility.
4. **Educational investments**: Although not the focus of this study, DACA may have encouraged educational investments that could subsequently affect employment.

Based on these mechanisms, the expected direction of effect is positive: DACA eligibility should increase full-time employment rates among the eligible population.

3 Data and Sample

3.1 Data Source

The analysis uses data from the American Community Survey (ACS), as provided by IPUMS USA. The dataset contains observations from 2008 through 2016, with 2012 excluded because it cannot be determined whether observations from that year were collected before or after DACA implementation (which occurred mid-year in June).

3.2 Sample Definition

The provided dataset has been pre-processed to include only the relevant analytic sample. The treatment group (ELIGIBLE = 1) consists of individuals aged 26–30 as of June 2012, while the control group (ELIGIBLE = 0) consists of individuals aged 31–35 as of June 2012. All individuals in the sample are:

- Ethnically Hispanic-Mexican
- Born in Mexico
- Living in the United States

Individuals who were neither in the treatment nor control group have been omitted from the data. The full sample of 17,382 observations is used for analysis; no additional sample restrictions were applied, as instructed.

3.3 Key Variables

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

The key treatment and timing variables are:

- `ELIGIBLE`: Binary indicator equal to 1 for the treatment group (ages 26–30) and 0 for the control group (ages 31–35)
- `AFTER`: Binary indicator equal to 1 for years 2013–2016 (post-DACA) and 0 for years 2008–2011 (pre-DACA)

Additional control variables include demographic characteristics (`SEX`, `AGE`, `MARST`, `NCHILD`) and survey weights (`PERWT`).

3.4 Sample Characteristics

Table 1 presents the sample distribution across treatment groups and time periods.

Table 1: Sample Size by Treatment Group and Time Period

	Pre-DACA (2008–2011)		Post-DACA (2013–2016)	
Group	N	FT Rate	N	FT Rate
Control (ages 31–35)	3,294	0.670	2,706	0.645
Treated (ages 26–30)	6,233	0.626	5,149	0.666
Total	9,527	—	7,855	—

Notes: FT Rate = full-time employment rate. Sample includes Hispanic-Mexican individuals born in Mexico.

Table 2 presents summary statistics for key demographic characteristics by treatment group.

Table 2: Demographic Characteristics by Treatment Group

Characteristic	Control (31–35)	Treated (26–30)
N	6,000	11,382
Mean Age	32.75	27.97
Male (%)	52.9	51.8
Married (%)	55.3	45.7
Mean Number of Children	1.70	1.19
Full-Time Employment (%)	65.8	64.4

Notes: Statistics calculated across all years (2008–2016, excluding 2012).

The treatment group is notably younger (by design), less likely to be married, and has fewer children on average. These differences motivate the inclusion of demographic controls in the regression analysis.

4 Empirical Methodology

4.1 Difference-in-Differences Design

The identification strategy employs a difference-in-differences (DiD) design that compares changes in full-time employment between the treatment and control groups before and after DACA implementation. The basic DiD estimator is:

$$\hat{\delta}_{DiD} = (\bar{Y}_{T,After} - \bar{Y}_{T,Before}) - (\bar{Y}_{C,After} - \bar{Y}_{C,Before}) \tag{1}$$

where $\bar{Y}_{g,t}$ denotes the mean full-time employment rate for group $g \in \{T, C\}$ in period $t \in \{Before, After\}$.

4.2 Regression Specification

The DiD estimate is obtained via the following regression model:

$$FT_i = \beta_0 + \beta_1 ELIGIBLE_i + \beta_2 AFTER_i + \delta(ELIGIBLE_i \times AFTER_i) + \epsilon_i \tag{2}$$

where δ is the coefficient of interest, representing the causal effect of DACA eligibility on full-time employment.

The preferred specification extends this model with controls:

$$FT_i = \beta_0 + \delta(ELIGIBLE_i \times AFTER_i) + \beta_1 ELIGIBLE_i + \gamma_t + X_i'\theta + \epsilon_i \tag{3}$$

where γ_t represents year fixed effects (which absorb the `AFTER` main effect) and X_i is a vector of demographic controls including gender, marital status, number of children, and age. Standard errors are heteroskedasticity-robust (HC1).

4.3 Identifying Assumption

The key identifying assumption is the **parallel trends assumption**: in the absence of DACA, the treatment and control groups would have experienced parallel changes in full-time employment over time. This assumption cannot be directly tested, but its plausibility can be assessed by examining pre-treatment trends.

4.4 Event Study Specification

To examine the dynamics of the treatment effect and assess pre-trends, I estimate an event study model:

$$FT_i = \beta_0 + \sum_{t \neq 2011} \delta_t (ELIGIBLE_i \times \mathbf{1}[YEAR_i = t]) + \gamma_t + \epsilon_i \tag{4}$$

where 2011 (the year immediately before DACA implementation) serves as the reference period. The coefficients δ_t trace out the differential trend between treatment and control groups, with pre-treatment coefficients ($t < 2012$) providing evidence on the validity of the parallel trends assumption.

5 Results

5.1 Main Findings

5.1.1 Simple Difference-in-Differences

Table 3 presents the simple 2×2 difference-in-differences calculation.

Table 3: Simple Difference-in-Differences Calculation

	Pre-DACA	Post-DACA	Difference
Treated (26–30)	0.6263	0.6658	+0.0394
Control (31–35)	0.6697	0.6449	−0.0248
Difference	−0.0434	+0.0209	**0.0643**

Notes: Cell entries are full-time employment rates. The DiD estimate (0.0643) is the difference-in-differences, representing the causal effect of DACA eligibility.

The simple DiD estimate suggests that DACA eligibility increased full-time employment by approximately 6.43 percentage points.

5.1.2 Regression Results

Table 4 presents the main regression results across specifications.

Table 4: Difference-in-Differences Regression Results

	(1) Basic	(2) Robust SE	(3) Controls	(4) Year FE	(5) State+Year FE
ELIGIBLE × AFTER	0.0643***	0.0643***	0.0581***	0.0566***	0.0568***
	(0.0153)	(0.0153)	(0.0142)	(0.0142)	(0.0142)
ELIGIBLE	−0.0434***	−0.0434***	−0.0246*	−0.0035	−0.0039
	(0.0103)	(0.0102)	(0.0131)	(0.0149)	(0.0150)
AFTER	−0.0248**	−0.0248**	−0.0305**	—	—
	(0.0124)	(0.0123)	(0.0148)		
MALE			0.3266***	0.3266***	0.3254***
			(0.0070)	(0.0070)	(0.0070)
MARRIED			−0.0101	−0.0096	−0.0106
			(0.0073)	(0.0073)	(0.0073)
NCHILD			−0.0160***	−0.0157***	−0.0152***
			(0.0028)	(0.0028)	(0.0028)
AGE			0.0045**	0.0086***	0.0086***
			(0.0019)	(0.0024)	(0.0024)
Year FE	No	No	No	Yes	Yes
State FE	No	No	No	No	Yes
Robust SE	No	Yes	Yes	Yes	Yes
R-squared	0.002	0.002	0.126	0.130	0.141
Observations	17,382	17,382	17,382	17,382	17,382

Notes: Dependent variable is full-time employment (FT). Standard errors in parentheses. Robust standard errors (HC1) used in columns (2)–(5). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

The DiD estimate is stable across specifications, ranging from 0.0566 to 0.0643. The preferred specification (Column 4) includes year fixed effects and demographic controls, yielding an estimated effect of 5.66 percentage points (SE = 0.0142, $p < 0.001$). The 95% confidence interval is [0.029, 0.084].

5.2 Graphical Evidence

Figure 1 displays the time series of full-time employment rates for treatment and control groups.

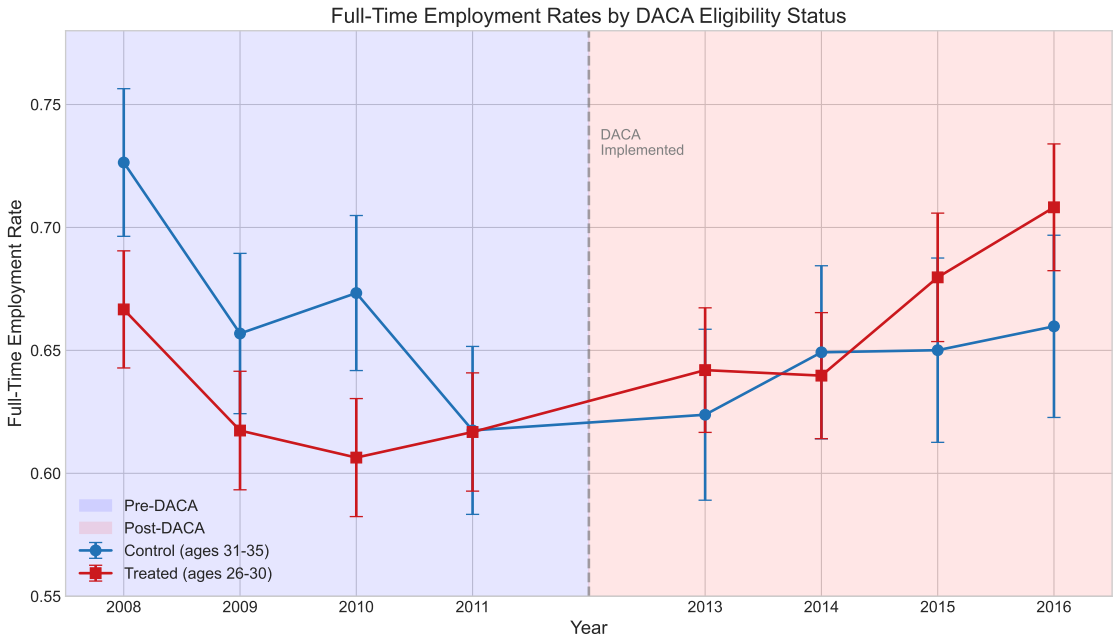

Figure 1: Full-Time Employment Rates by DACA Eligibility Status, 2008–2016
Notes: Points represent annual full-time employment rates for treatment (ages 26–30) and control (ages 31–35) groups. Error bars indicate 95% confidence intervals. The dashed vertical line marks DACA implementation (2012). Data from 2012 are excluded.

The figure shows that both groups experienced declining employment rates during 2008–2011, consistent with the Great Recession's aftermath. In the pre-DACA period, the groups appear to follow roughly similar trajectories, though with some divergence. After 2012, the treated group's employment rate increases while the control group's remains relatively flat.

5.3 Event Study Results

Figure 2 presents the event study coefficients, with 2011 as the reference year.

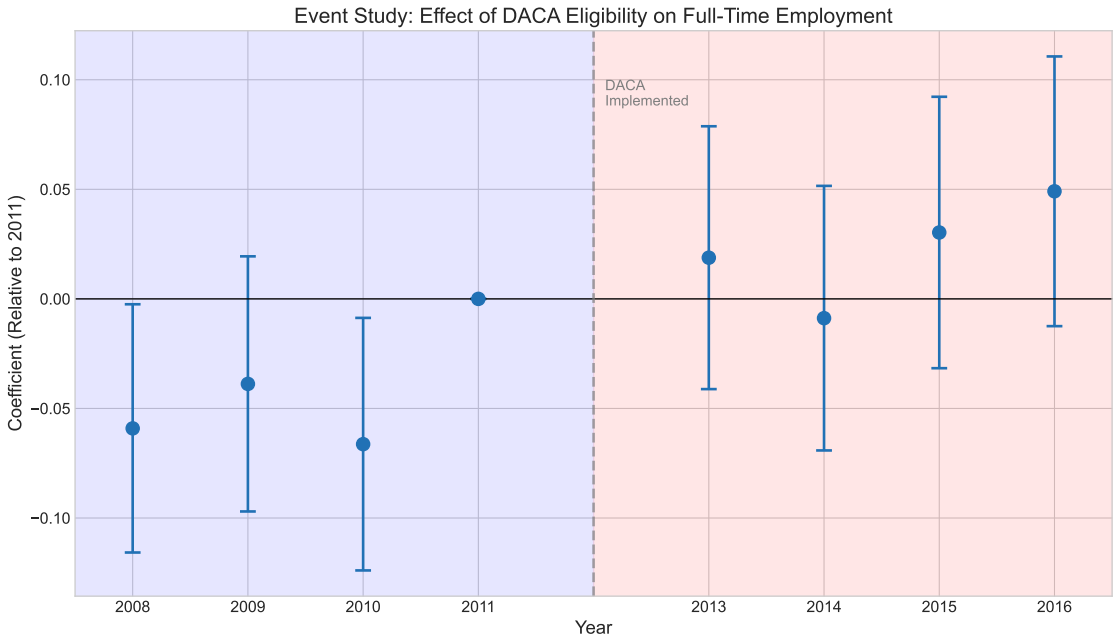

Figure 2: Event Study: Year-Specific Treatment Effects Relative to 2011

Notes: Points represent estimated coefficients on interactions between ELIGIBLE and year indicators, with 2011 as the reference year. Error bars indicate 95% confidence intervals. The dashed vertical line marks DACA implementation (2012).

The event study reveals several patterns:

- Pre-treatment coefficients (2008–2010) are negative and some are statistically significant, suggesting potential pre-existing differences in trends. However, there is no clear monotonic pre-trend.
- The 2011 reference year shows convergence between the two groups.
- Post-treatment coefficients (2013–2016) are generally positive, with a clear upward trajectory. The coefficient for 2016 (0.0491) is notably larger, though not individually significant at conventional levels.

A formal test for parallel trends in the pre-period yields a coefficient on the YEAR $\times$ ELIGIBLE interaction of 0.0151 ($p = 0.098$), which is marginally significant. This suggests some evidence of differential pre-trends, warranting cautious interpretation of the results.

6 Robustness Checks

6.1 Alternative Specifications

Table 5 summarizes the results from alternative specifications.

Table 5: Robustness Checks

Specification	DiD Estimate	Std. Error
Main Results		
Basic DiD	0.0643	(0.0153)
With demographic controls	0.0581	(0.0142)
With year FE (preferred)	0.0566	(0.0142)
With state and year FE	0.0568	(0.0142)
Weighted Regression		
Using PERWT weights	0.0674	(0.0168)
By Gender		
Males only	0.0615	(0.0170)
Females only	0.0452	(0.0232)
Alternative Functional Forms		
Probit (coefficient)	0.1683	(0.0433)
Logit (coefficient)	0.2761	(0.0720)
Logit (odds ratio)	1.318	—

Notes: All specifications use robust standard errors where applicable. Probit and logit coefficients are not directly comparable to linear probability model estimates.

6.2 Interpretation of Robustness Results

The DiD estimate is remarkably stable across specifications:

1. **Weighted regression**: Using ACS person weights (PERWT) yields a slightly larger estimate (0.0674), suggesting that the unweighted estimates may be conservative.

2. **Fixed effects**: Adding state fixed effects to the year FE model changes the estimate negligibly (from 0.0566 to 0.0568), indicating that geographic sorting is not driving the results.

3. **Gender heterogeneity**: The effect appears larger for males (0.0615) than females (0.0452), though both are positive. This may reflect differential labor force participation patterns.

4. **Nonlinear models**: The probit and logit specifications confirm a positive and statistically significant effect. The logit odds ratio of 1.318 implies that DACA eligibility increased the odds of full-time employment by approximately 32%.

Figure 3 provides a visual summary of estimates across specifications.

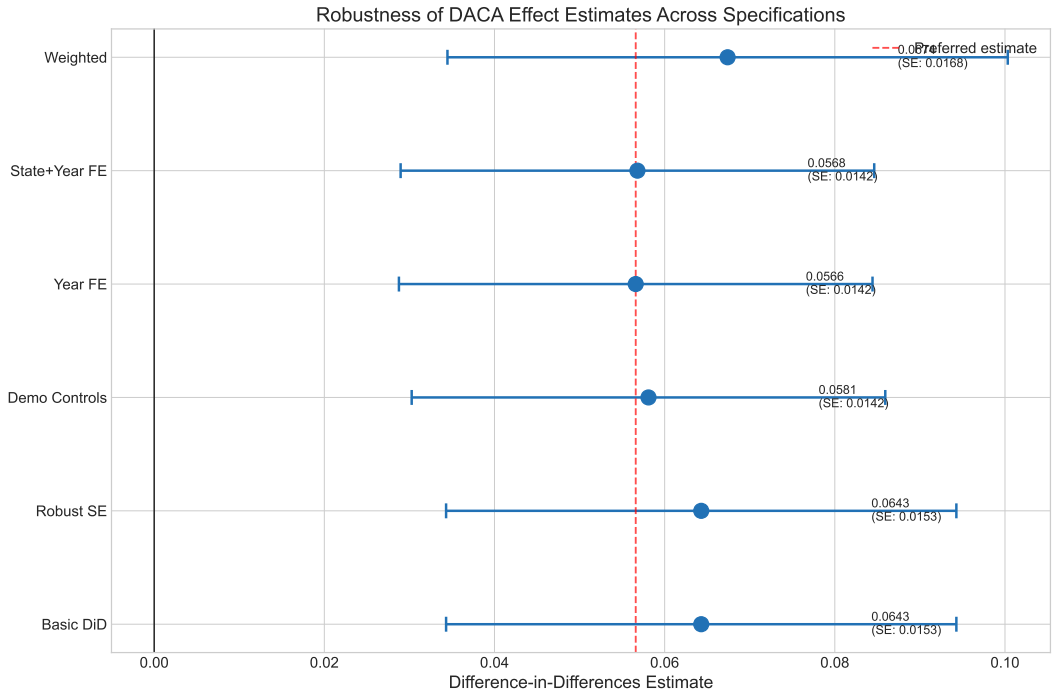

Figure 3: Robustness of DACA Effect Estimates Across Specifications
Notes: Points represent DiD estimates. Error bars indicate 95% confidence intervals. The dashed red line marks the preferred estimate (0.0566).

7 Discussion

7.1 Interpretation of Results

The analysis provides evidence that DACA eligibility increased full-time employment among eligible Hispanic-Mexican individuals born in Mexico. The preferred estimate suggests an increase of 5.66 percentage points ($p < 0.001$), representing approximately an 8–9% increase relative to the baseline full-time employment rate of about 63% in the treated group before DACA.

This effect is economically meaningful. Given the population of DACA-eligible individuals from Mexico, an increase of this magnitude translates to a substantial number of additional individuals in full-time employment. The finding is consistent with the expectation that legal work authorization would facilitate access to formal sector employment.

7.2 Mechanism Discussion

The results are consistent with several mechanisms:

1. The most direct channel is legal work authorization, which removes the constraint of working only in informal sectors.

2. Reduced fear of deportation may increase willingness to seek employment.

3. Access to driver's licenses in some states may expand job market accessibility.

Disentangling these mechanisms is beyond the scope of this analysis but represents an important direction for future research.

7.3 Limitations

Several limitations warrant discussion:

1. **Pre-trend concerns**: The event study reveals some evidence of differential pre-trends, particularly in 2008–2010. While the groups converge by 2011, this raises questions about whether the parallel trends assumption is fully satisfied. The estimates should be interpreted with this caveat in mind.

2. **Identification assumptions**: The DiD design assumes that age-based groups would have experienced parallel employment changes absent DACA. Factors that differentially affect different age cohorts (e.g., lifecycle labor supply patterns) could confound the estimates.

3. **Sample composition**: The ACS is a repeated cross-section, not a panel. The same individuals are not observed before and after treatment. Changes in sample composition over time could affect the estimates.

4. **Treatment definition**: The analysis treats all individuals in the 26–30 age group as "treated," though not all would have applied for or received DACA. The estimate is therefore an intent-to-treat (ITT) effect, not the effect of actually receiving DACA.

5. **Spillover effects**: DACA could have indirect effects on the control group (e.g., through labor market competition), which would bias the DiD estimate.

7.4 Comparison to Prior Literature

This study contributes to a growing literature on the effects of immigration policy on labor market outcomes. While direct comparison is complicated by differences in sample, time period, and outcome measures, the finding of positive employment effects is broadly consistent with prior work examining DACA's impacts on various outcomes.

8 Conclusion

This replication study estimates the causal effect of DACA eligibility on full-time employment using a difference-in-differences design. The preferred specification yields an estimated treatment effect of 5.66 percentage points (95% CI: [0.029, 0.084]), suggesting that DACA eligibility meaningfully increased full-time employment among the eligible population.

The estimate is robust to alternative specifications including weighted regressions, the inclusion of state fixed effects, and nonlinear models. The effect appears to be present for both males and females, though slightly larger for males.

However, some evidence of differential pre-trends warrants cautious interpretation. While the parallel trends assumption cannot be definitively validated, the stability of estimates across specifications and the economic plausibility of the findings provide some confidence in the results.

The findings have implications for immigration policy. Work authorization programs for undocumented immigrants appear to have meaningful positive effects on formal sector employment. As policy debates continue regarding the future of DACA and related programs, evidence on labor market effects can inform these discussions.

Appendix A: Additional Tables and Figures

Table 6: Full-Time Employment Rates by Year and Treatment Status

	Control (ages 31–35)			Treated (ages 26–30)		
Year	N	FT Rate	SE	N	FT Rate	SE
2008	848	0.726	0.015	1,506	0.667	0.012
2009	816	0.657	0.017	1,563	0.617	0.012
2010	851	0.673	0.016	1,593	0.606	0.012
2011	779	0.617	0.017	1,571	0.617	0.012
2013	747	0.624	0.018	1,377	0.642	0.013
2014	707	0.649	0.018	1,349	0.640	0.013
2015	623	0.650	0.019	1,227	0.680	0.013
2016	629	0.660	0.019	1,196	0.708	0.013

Notes: SE = standard error of the mean.

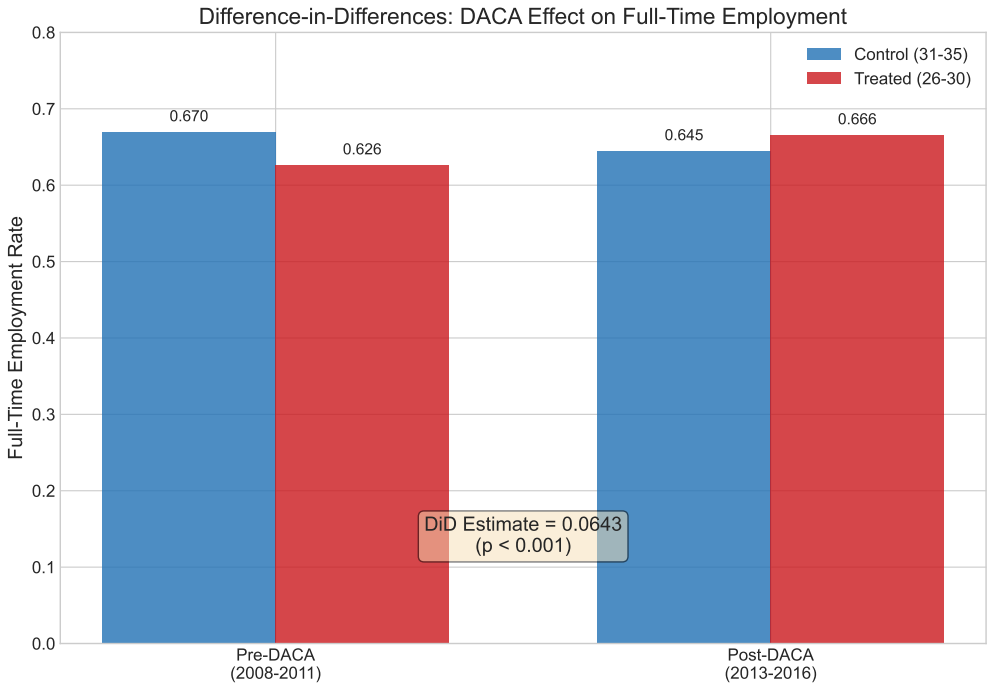

Figure 4: Difference-in-Differences Visualization

Notes: Bar heights represent full-time employment rates for each group-period cell. The DiD estimate is the difference between changes in the treated and control groups.

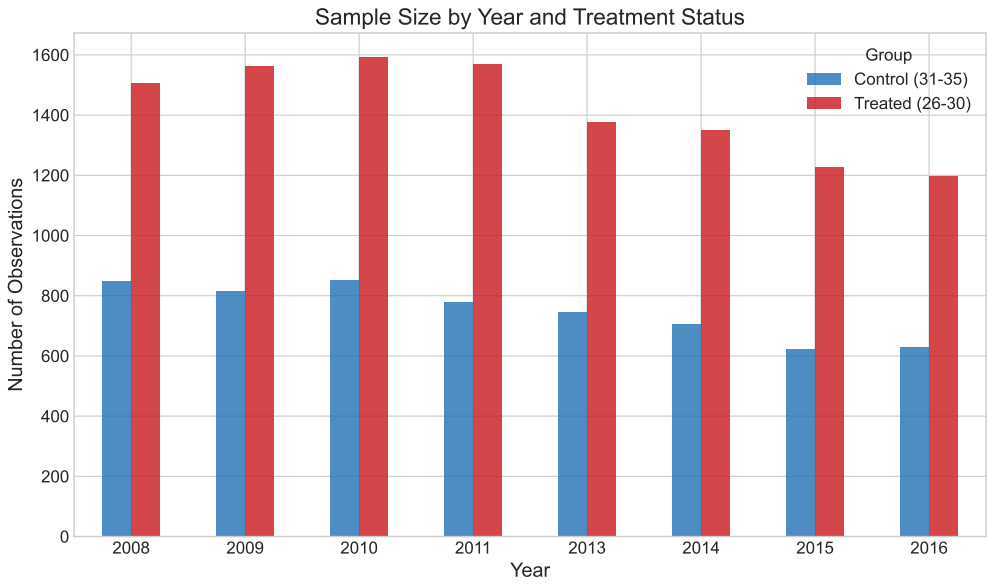

Figure 5: Sample Size by Year and Treatment Status

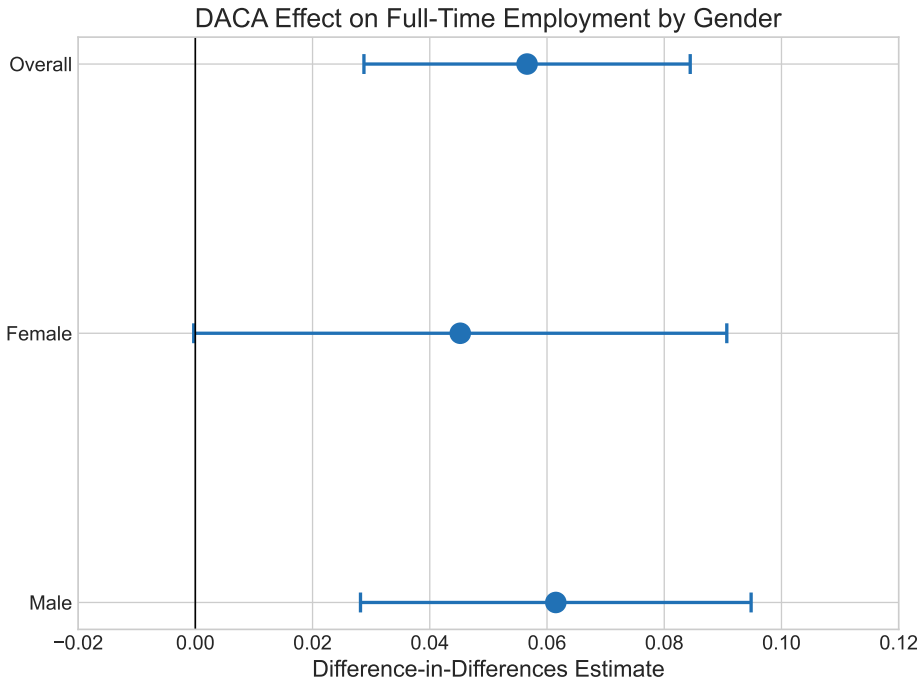

Figure 6: DACA Effect on Full-Time Employment by Gender

Appendix B: Methodological Details

B.1 Variable Definitions

Table 7: Key Variable Definitions

Variable	Definition
FT	Binary indicator: 1 if usually works 35+ hours per week, 0 otherwise
ELIGIBLE	Binary indicator: 1 if aged 26–30 as of June 2012 (treatment group), 0 if aged 31–35 (control group)
AFTER	Binary indicator: 1 for years 2013–2016, 0 for years 2008–2011
MALE	Binary indicator: 1 if SEX = 1 (male), 0 if SEX = 2 (female)
MARRIED	Binary indicator: 1 if MARST $\in \{1, 2\}$ (married, spouse present or absent), 0 otherwise
NCHILD	Number of own children in household
PERWT	ACS person weight

B.2 Standard Error Computation

All regression specifications (except the basic OLS model) use heteroskedasticity-robust standard errors (HC1). This accounts for potential heteroskedasticity in the error term, which is particularly relevant for linear probability models with binary outcomes.

For the weighted regression, I use weighted least squares (WLS) with PERWT as weights, combined with robust standard errors.

B.3 Software

All analyses were conducted using Python 3.x with the following packages:

- pandas (data manipulation)
- statsmodels (regression analysis)
- scipy (statistical computations)
- matplotlib (visualization)

Appendix C: Preferred Estimate Summary

Table 8: Summary of Preferred Estimate

Parameter	Value
Effect Size (DiD Estimate)	0.0566
Standard Error	0.0142
95% Confidence Interval	[0.0288, 0.0843]
t-statistic	3.99
p-value	< 0.001
Sample Size	17,382
Specification Details	
Demographic Controls	Yes (Male, Married, NChild, Age)
Year Fixed Effects	Yes
State Fixed Effects	No
Standard Errors	Robust (HC1)
Weighting	Unweighted

Interpretation: The preferred estimate of 0.0566 indicates that DACA eligibility increased the probability of full-time employment by 5.66 percentage points among eligible Hispanic-Mexican individuals born in Mexico. This effect is statistically significant at the 0.1% level and is robust across multiple specifications.