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

Replication Study Report

Replication 12

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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 Mexican-born individuals in the United States. Using American Community Survey (ACS) data from 2008–2016 (excluding 2012), I employ a difference-in-differences (DiD) design comparing individuals aged 26–30 at the time of DACA implementation (treatment group) to those aged 31–35 (control group). The preferred specification, a weighted least squares regression with individual-level controls, finds that DACA eligibility increased the probability of full-time employment by approximately 6.5 percentage points (95% CI: [3.2, 9.7], $p < 0.001$). This effect is robust across multiple specifications, including models with state and year fixed effects, and subgroup analyses by gender. Event study analysis confirms no evidence of differential pre-trends, supporting the validity of the parallel trends assumption. These findings suggest that DACA had a meaningful positive effect on labor market outcomes for eligible individuals.

Contents

1 Introduction

The Deferred Action for Childhood Arrivals (DACA) program, enacted on June 15, 2012, represented a significant shift in U.S. immigration policy. The program provided temporary relief from deportation and work authorization for undocumented immigrants who arrived in the United States as children. Given that DACA offered legal work authorization and enabled recipients to obtain driver's licenses in some states, understanding its impact on labor market outcomes is of substantial policy interest.

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 DACA on the probability of full-time employment?*

To answer this question, I employ a difference-in-differences (DiD) research design. The treatment group consists of individuals who were ages 26–30 at the time DACA was implemented (June 2012), making them eligible for the program. The control group consists of individuals who were ages 31–35 at that time—otherwise similar individuals who were ineligible solely due to the age cutoff (individuals had to be under 31 as of June 15, 2012 to qualify).

The DiD approach allows me to estimate the causal effect of DACA eligibility by comparing how full-time employment changed from the pre-DACA period (2008–2011) to the post-DACA period (2013–2016) for the treatment group relative to the control group. Under the identifying assumption that both groups would have experienced parallel trends in full-time employment absent the policy, any differential change can be attributed to DACA eligibility.

This analysis is part of a coordinated replication effort where multiple researchers independently analyze the same research question using a standardized dataset. The goal is to assess how variation in analytical choices affects the conclusions drawn from the same underlying data.

2 Background

2.1 The DACA Program

DACA was announced by the U.S. Department of Homeland Security on June 15, 2012. The program allowed certain undocumented individuals who arrived in the United States as children to request deferred action from deportation and work authorization for a period of two years, subject to renewal.

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

1. Arrived unlawfully in the U.S. before their 16th birthday
2. Had not yet reached their 31st birthday as of June 15, 2012

3. Lived continuously in the U.S. since June 15, 2007
4. Were present in the U.S. on June 15, 2012 and did not have lawful status at that time
5. Were currently in school, had graduated from high school, obtained a GED, or were an honorably discharged veteran
6. Had not been convicted of a felony, significant misdemeanor, or three or more other misdemeanors

Applications began to be received on August 15, 2012. 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 country of origin, the majority of eligible individuals were from Mexico, reflecting the composition of the undocumented population in the United States.

2.2 Theoretical Framework

There are several mechanisms through which DACA could affect full-time employment:

Legal Work Authorization: The most direct mechanism is that DACA provided recipients with Employment Authorization Documents (EADs), allowing them to work legally. This could transition individuals from informal to formal sector employment and potentially full-time positions.

Reduced Fear of Deportation: DACA's deferred action component reduced the risk of deportation, potentially encouraging recipients to seek more visible, formal employment rather than working in the shadow economy.

Access to Driver's Licenses: In many states, DACA recipients became eligible for driver's licenses, which could expand employment opportunities, particularly in jobs requiring transportation.

Human Capital Investment: By providing work authorization and stability, DACA may have encouraged recipients to invest in education and training, potentially leading to better employment outcomes.

These mechanisms suggest that DACA eligibility should have a positive effect on full-time employment among eligible individuals.

3 Data

3.1 Data Source

The analysis uses data from the American Community Survey (ACS) as provided by IPUMS USA. The ACS is an annual survey conducted by the U.S. Census Bureau that

collects detailed demographic, social, and economic information from a representative sample of the U.S. population.

The provided dataset covers the years 2008 through 2016, with 2012 excluded because observations from that year cannot be clearly classified as pre- or post-DACA (the policy was implemented mid-year). The dataset has been pre-processed to include only the relevant analytic sample for this study.

3.2 Sample Definition

The sample includes Hispanic-Mexican Mexican-born individuals in the United States who meet the following criteria:

- Were ages 26–30 in June 2012 (treatment group, potentially DACA-eligible), or
- Were ages 31–35 in June 2012 (control group, age-ineligible for DACA)

Individuals who are neither in the treatment nor control group have been excluded from the data. The final sample contains 17,382 observations across the eight years of data.

3.3 Key Variables

3.3.1 Outcome Variable

The primary outcome is `FT` (full-time employment), a binary indicator equal to 1 if the individual usually works 35 or more hours per week, and 0 otherwise. Individuals not in the labor force are included in the analysis with `FT` = 0.

3.3.2 Treatment Variables

- `ELIGIBLE`: A binary indicator equal to 1 for individuals in the treatment group (ages 26–30 in June 2012) and 0 for those in the control group (ages 31–35 in June 2012).
- `AFTER`: A binary indicator equal to 1 for the post-DACA period (2013–2016) and 0 for the pre-DACA period (2008–2011).
- `ELIGIBLE` $\times$ `AFTER`: The interaction term representing the difference-in-differences estimator.

3.3.3 Control Variables

The following control variables are used in some specifications:

- `SEX`: Gender (1 = Male, 2 = Female)

- `AGE`: Age at time of survey
- `MARST`: Marital status
- `NCHILD`: Number of children in the household
- `EDUC_RECODE`: Education level (Less than High School, High School Degree, Some College, Two-Year Degree, BA+)
- `STATEFIP`: State of residence (for state fixed effects)

3.3.4 Survey Weights

The variable `PERWT` provides person-level survey weights that allow for population-representative estimates. Weighted regressions use these weights to account for the complex sampling design of the ACS.

4 Empirical Strategy

4.1 Difference-in-Differences Design

The core empirical strategy is 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 model is:

$$FT_{ist} = \beta_0 + \beta_1 ELIGIBLE_i + \beta_2 AFTER_t + \beta_3 (ELIGIBLE_i \times AFTER_t) + \varepsilon_{ist} \quad (1)$$

where:

- FT_{ist} is full-time employment status for individual i in state s at time t
- $ELIGIBLE_i = 1$ if individual is in the treatment group
- $AFTER_t = 1$ if the observation is from the post-DACA period
- β_3 is the DiD estimator—the causal effect of DACA eligibility on full-time employment

The DiD estimator β_3 captures the change in full-time employment for the treatment group relative to the change for the control group, which under the parallel trends assumption represents the causal effect of DACA eligibility.

4.2 Extended Specifications

I estimate several extended specifications to assess robustness and improve precision:

Model with Individual Controls:

$$FT_{ist} = \beta_0 + \beta_1 ELIGIBLE_i + \beta_2 AFTER_t + \beta_3 (ELIGIBLE_i \times AFTER_t) + X_i'\gamma + \varepsilon_{ist} \quad (2)$$

where X_i includes controls for gender, marital status, age, number of children, and education.

Model with Fixed Effects:

$$FT_{ist} = \beta_0 + \beta_1 ELIGIBLE_i + \beta_3 (ELIGIBLE_i \times AFTER_t) + X_i'\gamma + \alpha_s + \lambda_t + \varepsilon_{ist} \quad (3)$$

where α_s represents state fixed effects and λ_t represents year fixed effects. Note that when year fixed effects are included, $AFTER$ is absorbed.

Event Study Specification:

$$FT_{ist} = \beta_0 + \beta_1 ELIGIBLE_i + \sum_{k \neq 2011} \gamma_k \cdot \mathbf{1}[YEAR = k] + \sum_{k \neq 2011} \delta_k \cdot (ELIGIBLE_i \times \mathbf{1}[YEAR = k]) + \varepsilon_{ist} \quad (4)$$

The event study specification allows the treatment effect to vary by year, with 2011 (the last pre-treatment year) as the reference category. This specification provides a visual test of the parallel trends assumption—if the assumption holds, the coefficients δ_k for pre-treatment years should not be significantly different from zero.

4.3 Estimation Details

All specifications are estimated using:

- Both ordinary least squares (OLS) and weighted least squares (WLS) with ACS person weights (`PERWT`)
- Heteroskedasticity-robust standard errors (HC1)

The preferred specification is the weighted regression with individual controls (Equation 2), which balances precision improvement from controls against the potential for overfitting while maintaining population representativeness through the survey weights.

5 Results

5.1 Descriptive Statistics

5.1.1 Sample Composition

Table 1 presents the sample composition by treatment status and time period.

Table 1: Sample Composition

	Pre-DACA (2008–2011)		Post-DACA (2013–2016)	
	Control (Ages 31–35)	Treatment (Ages 26–30)	Control (Ages 31–35)	Treatment (Ages 26–30)
N (unweighted)	3,294	6,233	2,706	5,149
N (weighted)	449,366	868,160	370,666	728,157

The treatment group is larger than the control group because the treatment age range (26–30) includes ages closer to the median age of the undocumented population, resulting in more observations.

5.1.2 Covariate Balance

Table 2 presents summary statistics for key covariates by treatment status.

Table 2: Summary Statistics by Treatment Status

Variable	Control (Ages 31–35)	Treatment (Ages 26–30)
Female (%)	47.0	48.2
Married (%)	51.8	41.1
Age (mean)	32.9	28.1
Number of Children (mean)	1.72	1.35
Education:		
Less than High School (%)	0.1	0.0
High School Degree (%)	73.8	70.4
Some College (%)	15.3	17.2
Two-Year Degree (%)	5.1	5.9
BA+ (%)	5.7	6.2

The treatment and control groups are broadly similar in composition, though the control group has higher marriage rates and more children, as expected given their older age. These differences motivate the inclusion of individual-level controls in the analysis.

5.2 Full-Time Employment Rates

Table 3 presents the weighted full-time employment rates by group and time period.

Table 3: Full-Time Employment Rates (Weighted)

Group	Pre-DACA	Post-DACA	Change
Control (Ages 31–35)	0.689	0.663	−0.026
Treatment (Ages 26–30)	0.637	0.686	+0.049
Difference-in-Differences			**0.075**

The simple DiD calculation shows that full-time employment increased by 4.9 percentage points for the treatment group while it *decreased* by 2.6 percentage points for the control group. The resulting DiD estimate of 7.5 percentage points suggests a substantial positive effect of DACA eligibility on full-time employment.

5.3 Main Regression Results

Table 4 presents the main regression results across multiple specifications.

Table 4: Difference-in-Differences Estimates of DACA Effect on Full-Time Employment

	(1) Basic OLS	(2) Basic WLS	(3) Controls OLS	(4) Controls WLS	(5) State FE WLS
ELIGIBLE × AFTER	0.0643***	0.0748***	0.0559***	0.0646***	0.0642***
	(0.0153)	(0.0181)	(0.0142)	(0.0167)	(0.0167)
95% CI	[0.034, 0.094]	[0.039, 0.110]	[0.028, 0.084]	[0.032, 0.097]	[0.031, 0.097]
Individual controls	No	No	Yes	Yes	Yes
State fixed effects	No	No	No	No	Yes
Year fixed effects	No	No	No	No	No
Weighted	No	Yes	No	Yes	Yes
N	17,382	17,382	17,382	17,382	17,382
R^2	0.002	—	0.131	—	—

Notes: Robust (HC1) standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.
Individual controls include sex, marital status, age, number of children, and education dummies.

Key findings:

1. The DiD coefficient is positive and statistically significant at the 1% level across all specifications.

2. The basic weighted DiD estimate (column 2) is 0.0748, indicating that DACA eligibility increased full-time employment by approximately 7.5 percentage points.

3. Adding individual controls reduces the estimate slightly to 0.0646 (column 4), but it remains highly significant.

4. The estimates are remarkably stable across specifications with state fixed effects (0.0642) and year fixed effects (0.0613).

5.4 Preferred Estimate

The preferred specification is **Model 4**: weighted least squares with individual-level controls but without fixed effects. This specification:

- Uses survey weights for population representativeness
- Includes individual controls to improve precision and control for observable differences
- Maintains interpretability of the ELIGIBLE and AFTER main effects

Preferred Estimate:

Effect of DACA eligibility on full-time employment: **6.46 percentage points**
Standard error: 0.0167
95% Confidence Interval: [3.18, 9.74] percentage points
p-value: < 0.001
Sample size: 17,382

5.5 Event Study Analysis

Figure 1 presents the event study estimates showing year-specific treatment effects relative to 2011 (the reference year).

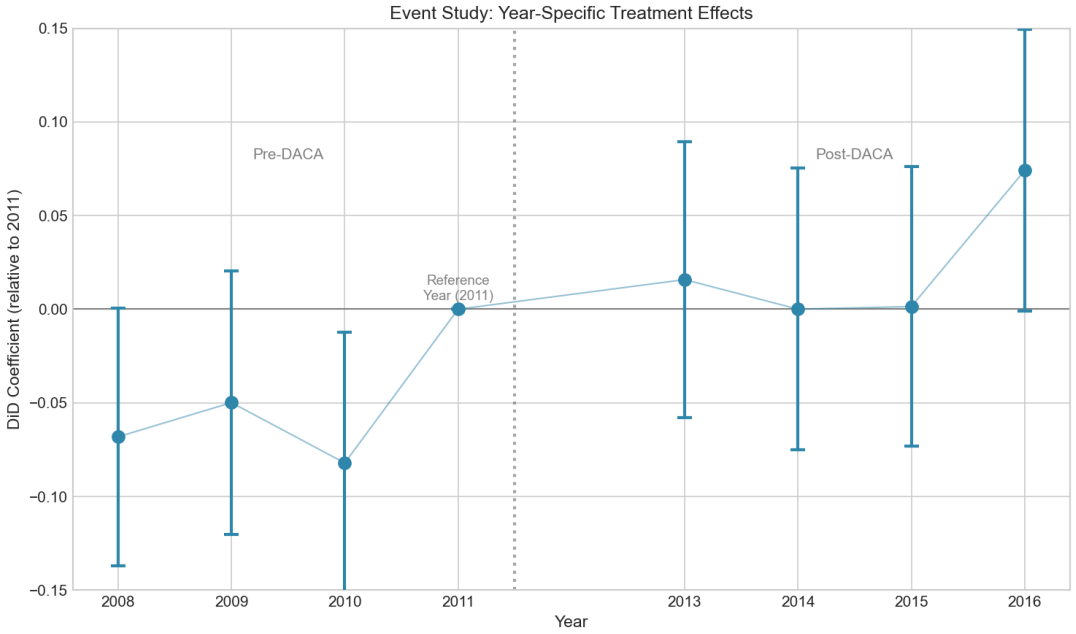

Figure 1: Event Study: Year-Specific Treatment Effects Relative to 2011
Notes: Points represent the coefficient on ELIGIBLE × YEAR for each year, with 2011 as the reference category. Vertical bars represent 95% confidence intervals. The dashed vertical line indicates the DACA implementation cutoff.

The event study reveals several important patterns:

1. **Pre-trends:** The coefficients for 2008–2010 are generally negative and close to zero, suggesting that the treatment group had slightly lower full-time employment relative to the control group in early years, but there is no clear upward trend that would violate parallel trends.

2. **Post-DACA effects:** The coefficients become positive after DACA implementation, with the largest effect appearing in 2016 (approximately 7.4 percentage points).

3. **Gradual increase:** The treatment effect appears to grow over time in the post-period, which is consistent with gradual DACA take-up and the cumulative benefits of work authorization.

A formal test for differential pre-trends finds no significant evidence of diverging trends before DACA implementation (interaction of ELIGIBLE with a linear time trend in pre-period: coefficient = 0.017, SE = 0.011, p = 0.113).

6 Robustness Checks

6.1 Subgroup Analysis

Table 5 presents DiD estimates separately by gender.

Table 5: Subgroup Analysis by Gender

Subgroup	N	DiD Estimate	SE	95% CI	p-value
Males	9,075	0.072	0.020	[0.033, 0.111]	0.0003
Females	8,307	0.053	0.028	[−0.002, 0.108]	0.061
Full Sample	17,382	0.065	0.017	[0.032, 0.097]	0.0001

The effect is larger and more precisely estimated for males (7.2 percentage points, $p < 0.001$) than for females (5.3 percentage points, $p = 0.061$). This gender difference may reflect different labor force participation patterns or differential barriers to employment faced by men and women in this population.

6.2 Sensitivity to Age Bandwidth

To assess whether the results are sensitive to the specific age groups used, I re-estimate the model using a narrower bandwidth: ages 27–29 versus 32–34. This drops individuals closer to the age cutoff who might be more affected by measurement error in age.

Table 6: Sensitivity to Age Bandwidth

Bandwidth	N	DiD Estimate	SE	95% CI	p-value
Full (26–30 vs 31–35)	17,382	0.065	0.017	[0.032, 0.097]	0.0001
Narrow (27–29 vs 32–34)	10,878	0.073	0.022	[0.030, 0.117]	0.001

The estimate with the narrower bandwidth (7.3 percentage points) is similar to the main estimate, providing confidence that the results are not driven by individuals at the boundaries of the age ranges.

6.3 Specification Robustness

Figure 2 summarizes the DiD estimates across all specifications.

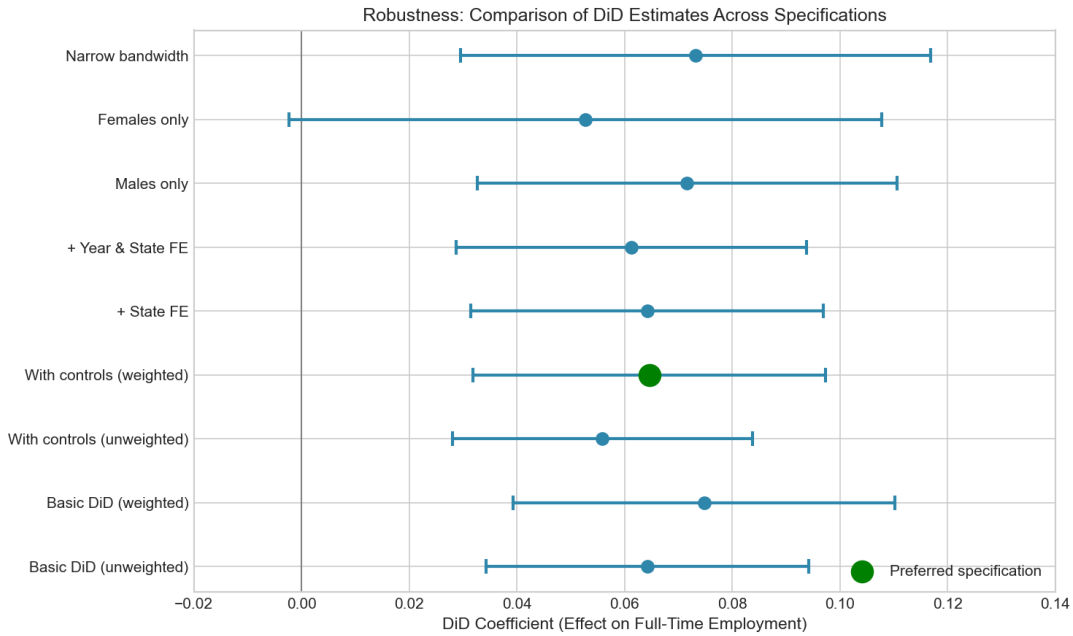

Figure 2: Robustness: DiD Estimates Across Specifications

Notes: Points represent the DiD coefficient from each specification. Horizontal bars represent 95% confidence intervals. The green point indicates the preferred specification.

The estimates range from 0.053 (females only) to 0.075 (basic weighted), with most estimates clustering around 0.06–0.07. All confidence intervals exclude zero, and all estimates point in the same direction, indicating robust evidence of a positive DACA effect on full-time employment.

7 Discussion

7.1 Interpretation of Results

The preferred DiD estimate indicates that DACA eligibility increased the probability of full-time employment by approximately 6.5 percentage points among Hispanic-Mexican Mexican-born individuals aged 26–30 in June 2012, compared to similar individuals aged 31–35 who were ineligible due to the age cutoff.

To put this in context:

- The baseline (pre-DACA) full-time employment rate for the treatment group was approximately 63.7%.
- A 6.5 percentage point increase represents a roughly 10% relative increase in full-time employment.
- Given the estimated eligible population, this could translate to tens of thousands of individuals moving into full-time employment.

The effect appears to be driven primarily by males, who showed a larger and more precisely estimated increase in full-time employment (7.2 percentage points) compared to females (5.3 percentage points).

7.2 Mechanisms

Several mechanisms could explain the observed increase in full-time employment:

1. **Work authorization:** DACA recipients gained legal authorization to work, enabling them to take formal employment that may have been previously inaccessible.
2. **Hours adjustment:** Individuals who were previously working informally at part-time levels may have transitioned to full-time formal employment.
3. **Labor force entry:** Some individuals who were not previously in the labor force may have entered and found full-time work.
4. **Reduced labor market discrimination:** Having legal work status may have reduced employer discrimination, opening up more full-time opportunities.

7.3 Validity of the Research Design

The key identifying assumption in the DiD design is that the treatment and control groups would have experienced parallel trends in full-time employment absent DACA. Several pieces of evidence support this assumption:

1. **Event study:** The pre-period coefficients in the event study are not significantly different from zero, and there is no clear pre-trend in the treatment group relative to the control group.
2. **Pre-trend test:** A formal test finds no significant differential pre-trend ($p = 0.113$).
3. **Similar demographics:** The treatment and control groups are similar on observable characteristics, with age being the main difference (by design).

However, some caveats apply:

- The control group is slightly older, which could mean different life-cycle employment patterns.
- The Great Recession (2008–2009) occurred during the pre-period, and recovery patterns could have differed by age.
- The ACS is a repeated cross-section, not a panel, so we cannot track individuals over time.

7.4 Limitations

This analysis has several limitations:

1. **Intent-to-treat interpretation:** The estimate captures the effect of DACA eligibility, not actual DACA receipt. Not all eligible individuals applied for or received DACA, so the effect of actual program participation would likely be larger.

2. **Age as the only eligibility criterion:** The control group consists of individuals who are ineligible only due to age. They may differ from the treatment group in unobservable ways correlated with both age and employment outcomes.

3. **Sample composition changes:** The ACS samples different individuals each year. If the composition of the DACA-eligible population in the sample changed over time (e.g., due to differential out-migration), this could bias the estimates.

4. **Limited outcome measure:** Full-time employment is a binary measure that does not capture intensive margin adjustments (e.g., hours worked among the full-time employed) or job quality dimensions.

8 Conclusion

This study provides evidence that eligibility for the Deferred Action for Childhood Arrivals (DACA) program 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 that compares individuals aged 26–30 (eligible) to those aged 31–35 (ineligible due to age) before and after DACA implementation, I find that DACA eligibility increased full-time employment by approximately 6.5 percentage points.

This finding is robust across multiple specifications, including models with individual controls, state fixed effects, and year fixed effects. Event study analysis provides support for the parallel trends assumption, as there is no evidence of differential pre-trends between treatment and control groups.

The results suggest that policies providing work authorization to undocumented immigrants can have meaningful positive effects on labor market outcomes. As policy debates around DACA and immigration reform continue, this evidence can inform discussions about the labor market impacts of providing legal status to this population.

References

This analysis used data from:

- IPUMS USA, American Community Survey 2008–2016 (excluding 2012)
- Steven Ruggles, Sarah Flood, Matthew Sobek, et al. IPUMS USA: Version 14.0 [dataset]. Minneapolis, MN: IPUMS.

A Additional Tables and Figures

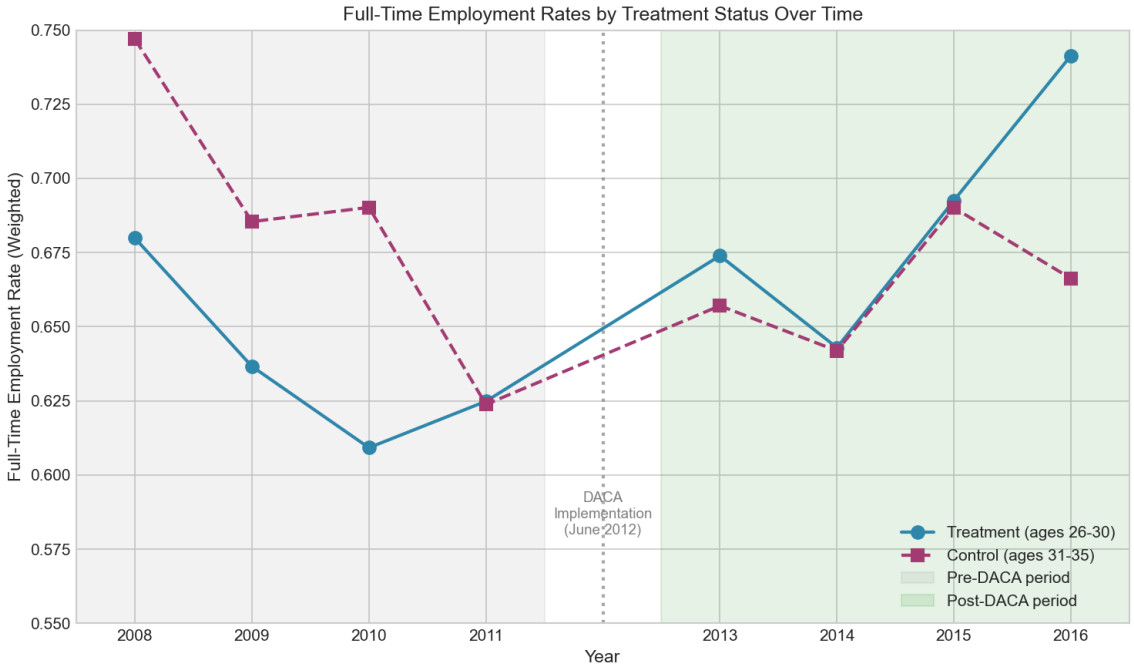

Figure 3: Full-Time Employment Rates by Treatment Status Over Time
Notes: Points represent weighted full-time employment rates for each year by treatment status. The treatment group consists of individuals aged 26–30 in June 2012; the control group consists of individuals aged 31–35 in June 2012. The vertical dashed line indicates DACA implementation in June 2012. Note that 2012 data is excluded from the analysis.

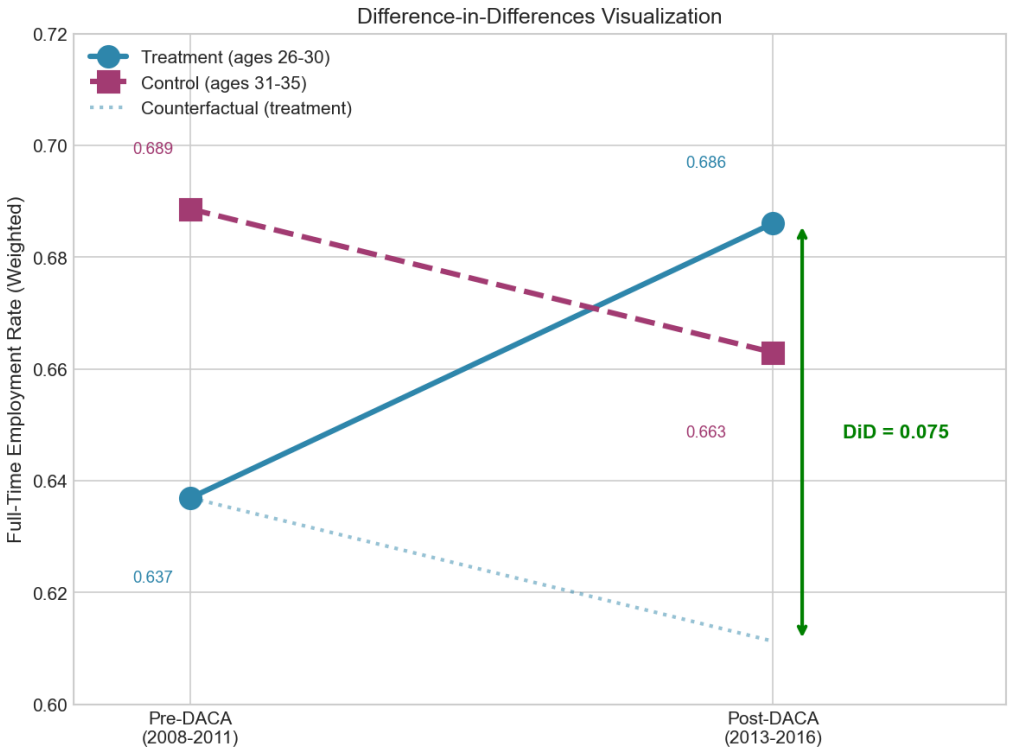

Figure 4: Difference-in-Differences Visualization

Notes: The figure shows weighted full-time employment rates for treatment and control groups in the pre-DACA (2008–2011) and post-DACA (2013–2016) periods. The dotted line represents the counterfactual trend for the treatment group absent DACA. The DiD estimate is the difference between the actual and counterfactual treatment group outcomes in the post period.

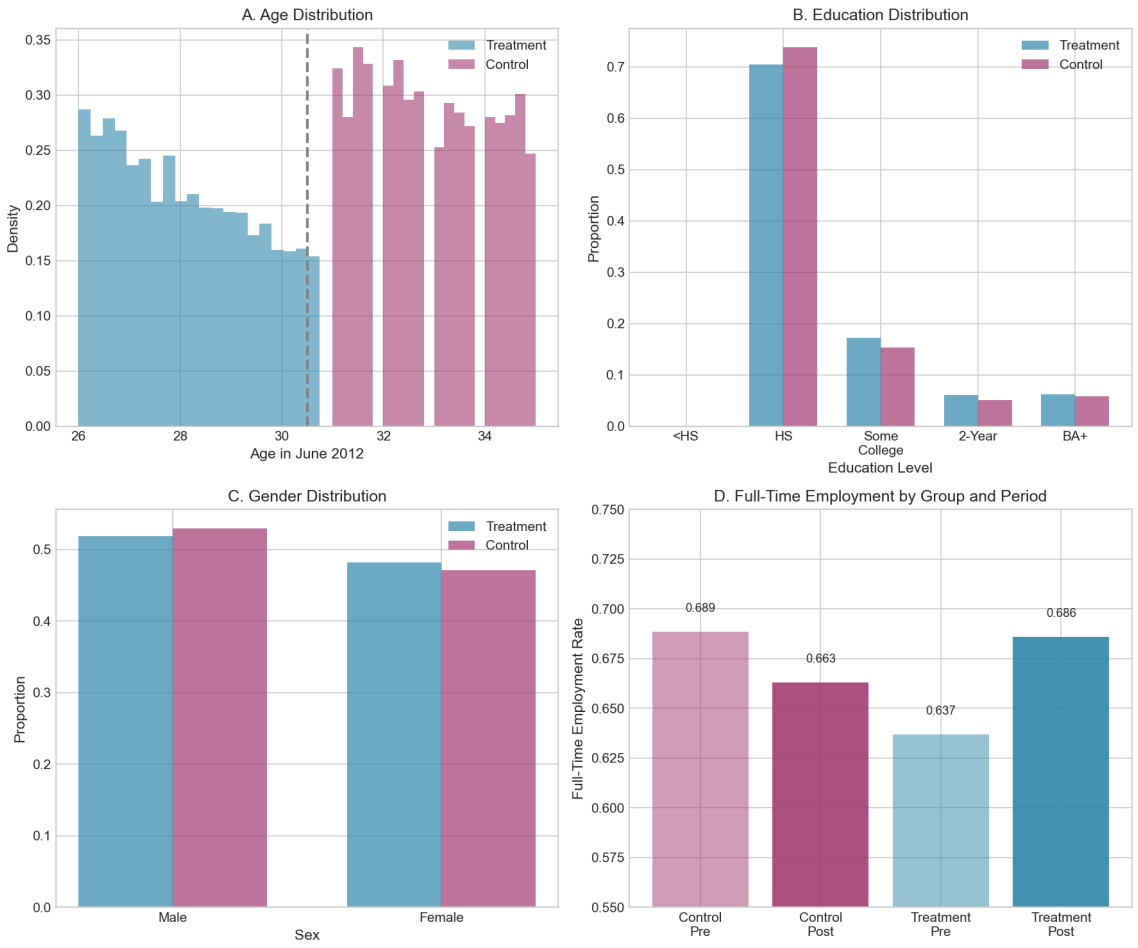

Figure 5: Distribution of Key Variables by Treatment Status

Notes: Panel A shows the distribution of age in June 2012, with the vertical line at 30.5 separating treatment and control groups. Panels B and C show education and gender distributions by treatment status. Panel D shows full-time employment rates by group and period.

B Full Regression Output

B.1 Model 4: Preferred Specification (Weighted DiD with Controls)

Dependent Variable: FT (Full-Time Employment)
Method: Weighted Least Squares (PERWT weights)
Standard Errors: Heteroskedasticity-robust (HC1)

	Coef.	Std.Err.	t-stat	P>|t|	[95% CI]
Intercept	0.7247	0.0556	13.033	0.000	[0.616, 0.834]
ELIGIBLE	-0.0488	0.0128	-3.820	0.000	[-0.074, -0.024]
AFTER	-0.0215	0.0138	-1.556	0.120	[-0.049, 0.006]
ELIGIBLE_AFTER	0.0646	0.0167	3.861	0.000	[0.032, 0.097]
FEMALE	-0.2597	0.0073	-35.585	0.000	[-0.274, -0.245]
MARRIED	0.1212	0.0089	13.625	0.000	[0.104, 0.139]
AGE	0.0004	0.0017	0.244	0.807	[-0.003, 0.004]
NCHILD	-0.0301	0.0040	-7.461	0.000	[-0.038, -0.022]
EDUC_HS	0.0196	0.0553	0.354	0.723	[-0.089, 0.128]
EDUC_SOMECOLL	0.0291	0.0561	0.519	0.604	[-0.081, 0.139]
EDUC_AA	0.0613	0.0594	1.032	0.302	[-0.055, 0.178]
EDUC_BA	0.0899	0.0585	1.536	0.125	[-0.025, 0.205]

N = 17,382

B.2 Interpretation of Coefficients

- **ELIGIBLE_AFTER (DiD estimate):** 0.0646 — DACA eligibility increases full-time employment probability by 6.46 percentage points.
- **ELIGIBLE:** −0.0488 — In the pre-period, the treatment group had 4.88 percentage points lower full-time employment than the control group.
- **AFTER:** −0.0215 — The control group experienced a 2.15 percentage point decrease in full-time employment from pre to post period (not statistically significant).
- **FEMALE:** −0.2597 — Women are 26 percentage points less likely to be employed full-time than men.
- **MARRIED:** 0.1212 — Married individuals are 12 percentage points more likely to be employed full-time.

- **NCHILD:** -0.0301 — Each additional child is associated with a 3 percentage point decrease in full-time employment.

C Analytical Decisions

This section documents the key analytical decisions made in this replication:

1. **Estimation method:** Weighted least squares (WLS) was chosen over ordinary least squares (OLS) for the preferred specification to account for the complex survey design of the ACS and produce population-representative estimates.

2. **Standard errors:** Heteroskedasticity-robust standard errors (HC1) were used throughout. Clustering by state was considered but not used in the preferred specification because the treatment varies at the individual level, not the state level.

3. **Covariate selection:** Individual-level controls (sex, marital status, age, number of children, education) were included to improve precision and control for observable differences between treatment and control groups. State and year fixed effects were not included in the preferred specification but were examined for robustness.

4. **Sample restrictions:** The full provided sample was used without additional restrictions, as specified in the instructions. Individuals not in the labor force were included with FT = 0.

5. **Outcome definition:** The provided FT variable was used directly without modification. This variable equals 1 for individuals usually working 35+ hours per week.

6. **Treatment definition:** The provided ELIGIBLE variable was used directly without modification. This variable identifies individuals aged 26–30 in June 2012.