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

Replication Study 82

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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, Mexico-born individuals in the United States. Using data from the American Community Survey (2006–2016), I employ a difference-in-differences design comparing individuals aged 26–30 at the time of DACA implementation (eligible for the program) to those aged 31–35 (just above the age cutoff). The analysis finds that DACA eligibility is associated with a statistically significant 4.5 percentage point increase in full-time employment (95% CI: [2.7, 6.3], $p < 0.001$). This effect is robust across multiple specifications including demographic controls, year fixed effects, and state fixed effects. Event study analysis confirms parallel pre-trends and shows that the treatment effect emerged only after DACA implementation. The findings suggest that providing legal work authorization and deportation relief meaningfully increased formal labor market participation among eligible individuals.

Keywords: DACA, immigration policy, employment, difference-in-differences, natural experiment

Contents

1 Introduction

The Deferred Action for Childhood Arrivals (DACA) program, announced on June 15, 2012, represents one of the most significant immigration policy changes in recent U.S. history. The program allowed a selected group of undocumented immigrants who arrived in the United States as children to apply for and obtain authorization to work legally for two years without fear of deportation. Given that DACA explicitly provided legal work authorization, a natural question arises: did the program causally increase employment among eligible individuals?

This replication study addresses this question using a difference-in-differences (DiD) research design. The key insight enabling causal identification is that DACA eligibility was partly determined by age—specifically, individuals had to be under age 31 as of June 15, 2012 to be eligible. This creates a natural comparison between those just below the age threshold (who became eligible) and those just above it (who did not), despite being otherwise similar in their characteristics and circumstances.

The study focuses on full-time employment, defined as usually working 35 or more hours per week, as the outcome of interest. Full-time employment is a particularly relevant outcome because DACA's provision of legal work authorization would most directly affect the ability to obtain stable, formal employment. Part-time or informal work arrangements may have been more accessible to undocumented workers even before DACA.

Using data from the American Community Survey (ACS) spanning 2006–2016, I find that DACA eligibility increased full-time employment by approximately 4.5 percentage points. This represents a meaningful increase of about 7% relative to the pre-DACA baseline employment rate among the treatment group. The results are robust across multiple model specifications and survive various robustness checks including placebo tests in the pre-treatment period.

The remainder of this report is organized as follows. Section 2 provides background on the DACA program. Section 3 describes the data and sample construction. Section 4 details the empirical methodology. Section 5 presents the main results. Section 6 provides robustness checks. Section 7 discusses the findings, and Section 8 concludes.

2 Background on DACA

2.1 Policy Overview

DACA was announced by the Department of Homeland Security on June 15, 2012, under the Obama administration. The program provided a form of temporary relief from deportation and work authorization for qualifying undocumented immigrants who came to the United States as children. Applications began being received on August 15, 2012.

2.2 Eligibility Requirements

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

1. Arrived in the United States before their 16th birthday
2. Had not yet had their 31st birthday as of June 15, 2012
3. Lived continuously in the United States since June 15, 2007
4. Were present in the United States on June 15, 2012
5. Did not have lawful immigration status (citizenship or legal residency) at that time
6. Were currently in school, had graduated from high school, obtained a GED, or were honorably discharged from the military
7. Had not been convicted of a felony, significant misdemeanor, or three or more other misdemeanors

2.3 Program Uptake

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 national origin, the structure of undocumented immigration to the United States meant that the great majority of eligible individuals were from Mexico.

2.4 Mechanism for Employment Effects

DACA may affect employment through several channels:

- **Legal work authorization**: DACA recipients receive an Employment Authorization Document (EAD), allowing them to work legally for any employer.
- **Access to better jobs**: With legal status, DACA recipients can access formal sector jobs that may offer higher wages, better benefits, and more stable hours.
- **Driver's licenses**: In many states, DACA recipients became eligible to obtain driver's licenses, expanding their geographic job search radius.
- **Reduced fear of deportation**: The security of having temporary protected status may encourage recipients to seek formal employment rather than working in the informal economy.

3 Data

3.1 Data Source

The analysis uses data from the American Community Survey (ACS) as provided by IPUMS USA. The ACS is a nationally representative survey conducted annually by the U.S. Census Bureau. I use the one-year ACS files from 2006 through 2016, providing a balanced window of six years before DACA implementation and four years after.

3.2 Sample Construction

The sample is constructed to identify individuals who would have been eligible for DACA (based on observable characteristics) versus those who were similar but just over the age cutoff. The following filters are applied:

1. **Hispanic-Mexican ethnicity**: HISPAN = 1 (Mexican origin)
2. **Born in Mexico**: BPL = 200
3. **Not a citizen**: CITIZEN = 3
4. **Arrived before age 16**: Calculated as YRIMMIG - BIRTHYR < 16
5. **Continuous residence**: YRIMMIG ≤ 2007

A key limitation of the ACS is that we cannot distinguish between documented and undocumented non-citizens. Following the instructions, I assume that anyone who is not a citizen and who has not received immigration papers (naturalized citizen status) is undocumented for DACA purposes.

3.3 Treatment and Control Groups

The treatment and control groups are defined based on age as of June 15, 2012:

- **Treatment group**: Individuals aged 26–30 as of June 15, 2012 (eligible for DACA)
- **Control group**: Individuals aged 31–35 as of June 15, 2012 (ineligible due to age)

Age as of June 15, 2012 is calculated using BIRTHYR and BIRTHQTR. If BIRTHQTR ≥ 3 (July–December birth), the individual had not yet had their birthday by June 15, so their age is calculated as 2012 - BIRTHYR - 1.

3.4 Pre- and Post-Periods

- **Pre-period**: 2006–2011
- **Post-period**: 2013–2016

Year 2012 is excluded because the ACS does not list the month of data collection, making it impossible to distinguish observations from before and after DACA implementation within that year.

3.5 Outcome Variable

The outcome variable is an indicator for full-time employment:

$$\text{fulltime}_i = \mathbb{1}[\text{UHRSWORK}_i \geq 35] \tag{1}$$

This is based on the UHRSWORK variable, which measures usual hours worked per week.

3.6 Sample Statistics

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

Table 1: Sample Size by Treatment Status and Period

	Pre-Period	Post-Period	Total
Treatment (Ages 26–30)	16,694	8,776	25,470
Control (Ages 31–35)	11,683	6,085	17,768
Total	28,377	14,861	43,238

The final analytic sample contains 43,238 person-year observations. The sample size decreases from pre- to post-period because the post-period covers only four years (2013–2016) compared to six years in the pre-period (2006–2011).

4 Empirical Methodology

4.1 Difference-in-Differences Design

The primary estimation strategy is difference-in-differences, which compares changes in full-time employment for the treatment group (DACA-eligible) relative to changes for the control group (DACA-ineligible due to age).

The identifying assumption is that, in the absence of DACA, the treatment and control groups would have experienced parallel trends in full-time employment. This assumption

is plausible because both groups are similar in their background characteristics—both consist of Hispanic-Mexican individuals born in Mexico, who immigrated as children and have lived in the U.S. since at least 2007. The only systematic difference is that the control group is slightly older.

4.2 Basic DiD Specification

The basic DiD model is:

$$Y_{it} = \alpha + \beta_1 \cdot \text{Treated}_i + \beta_2 \cdot \text{Post}_t + \beta_3 \cdot (\text{Treated}_i \times \text{Post}_t) + \varepsilon_{it} \tag{2}$$

where:

- Y_{it} is the full-time employment indicator for individual i in year t
- Treated_i equals 1 if the individual is in the treatment group (ages 26–30 as of June 2012)
- Post_t equals 1 if the year is 2013 or later
- β_3 is the DiD estimate—the causal effect of DACA eligibility on full-time employment

4.3 Extended Specifications

I estimate several additional specifications to test robustness:

Model with Demographic Controls:

$$Y_{it} = \alpha + \beta_1 \text{Treated}_i + \beta_2 \text{Post}_t + \beta_3 (\text{Treated}_i \times \text{Post}_t) + \mathbf{X}_{it}'\gamma + \varepsilon_{it} \tag{3}$$

where $\mathbf{X}_{it}$ includes:

- Male indicator (SEX = 1)
- Age at time of survey
- Education level (EDUC)
- Married indicator (MARST $\leq$ 2)

Model with Year Fixed Effects:

$$Y_{it} = \alpha + \beta_1 \text{Treated}_i + \beta_3 (\text{Treated}_i \times \text{Post}_t) + \lambda_t + \varepsilon_{it} \tag{4}$$

where λ_t are year fixed effects. Note that Post_t is absorbed by year fixed effects.

Full Specification:

$$Y_{it} = \alpha + \beta_1 \text{Treated}_i + \beta_3(\text{Treated}_i \times \text{Post}_t) + \mathbf{X}'_{it}\gamma + \lambda_t + \varepsilon_{it} \tag{5}$$

I also estimate models with state fixed effects and population-weighted regressions using person weights (PERWT).

4.4 Event Study Specification

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

$$Y_{it} = \alpha + \sum_{k \neq 2011} \beta_k \cdot (\text{Treated}_i \times \mathbb{1}[t = k]) + \mathbf{X}'_{it}\gamma + \lambda_t + \varepsilon_{it} \tag{6}$$

The omitted category is 2011, the year immediately before DACA implementation. The coefficients β_k for $k < 2012$ test for differential pre-trends, while β_k for $k > 2012$ trace out the treatment effect over time.

4.5 Standard Errors

All standard errors are heteroskedasticity-robust (HC1). Given that the treatment varies at the individual level (based on birth year) rather than at a cluster level, clustering is not strictly necessary, though the results are similar when clustering by state.

5 Results

5.1 Descriptive Statistics

Table 2 presents descriptive statistics by treatment status.

Table 2: Descriptive Statistics by Treatment Status

	Treatment (Ages 26–30)	Control (Ages 31–35)
Full-time Employment Rate	0.621	0.635
Age (at survey)	26.8	31.9
Male (%)	56.1	56.0
Education (EDUC)	5.09	4.72
Married (%)	48.4	59.8
Hours Worked (UHRSWORK)	29.9	30.3
N	25,470	17,768

The treatment and control groups are generally similar in terms of gender composition (about 56% male in both groups). The treatment group is slightly more educated on average, which is consistent with younger cohorts having higher educational attainment. The control group has a higher marriage rate, reflecting the age difference.

5.2 Simple Difference-in-Differences

Table 3 presents the 2×2 difference-in-differences table for full-time employment rates.

Table 3: Full-Time Employment Rates: 2×2 DiD Table

	Pre-Period	Post-Period	Difference
Treatment (Ages 26–30)	0.615	0.634	+0.019
Control (Ages 31–35)	0.646	0.614	−0.032
Difference	−0.031	+0.020	
Difference-in-Differences			**+0.052**

The simple DiD estimate suggests that DACA eligibility increased full-time employment by 5.2 percentage points. This calculation shows that:

- The treatment group increased their full-time employment rate by 1.9 percentage points from pre- to post-period
- The control group *decreased* their full-time employment rate by 3.2 percentage points
- The difference-in-differences is 1.9 − (−3.2) = 5.2 percentage points

The decline in the control group's employment rate likely reflects macroeconomic conditions and aging effects (the control group is getting older during the sample period).

5.3 Regression Results

Table 4 presents the main regression results across different specifications.

Table 4: Difference-in-Differences Regression Results

	(1) Basic	(2) +Controls	(3) +Year FE	(4) +Both	(5) +State FE
Treated × Post	0.052***	0.045***	0.051***	0.045***	0.044***
	(0.010)	(0.009)	(0.010)	(0.009)	(0.009)
Treated	−0.031***	−0.054***	−0.031***	−0.008	−0.011
	(0.006)	(0.007)	(0.006)	(0.009)	(0.009)
Post	−0.032***	−0.003			
	(0.008)	(0.009)			
Male		0.358***		0.358***	0.355***
		(0.004)		(0.004)	(0.004)
Age		−0.004***		0.005***	0.005***
		(0.001)		(0.001)	(0.001)
Education		0.017***		0.017***	0.017***
		(0.001)		(0.001)	(0.001)
Married		0.002		0.002	0.001
		(0.004)		(0.004)	(0.004)
Year FE	No	No	Yes	Yes	Yes
State FE	No	No	No	No	Yes
R^2	0.001	0.138	0.005	0.142	0.145
N	43,238	43,238	43,238	43,238	43,238

Notes: Heteroskedasticity-robust standard errors in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The key finding is that the DiD coefficient (Treated × Post) is positive and statistically significant across all specifications, ranging from 0.044 to 0.052. The preferred specification (Model 4) with both demographic controls and year fixed effects yields a coefficient of 0.045 with a standard error of 0.009.

Interpretation: DACA eligibility is associated with a 4.5 percentage point increase in the probability of full-time employment. This represents approximately a 7% increase relative to the pre-period treatment group mean of 61.5%.

The 95% confidence interval for the preferred estimate is [0.027, 0.063], indicating that we can be confident the true effect lies between 2.7 and 6.3 percentage points.

5.4 Weighted Analysis

When using ACS person weights (PERWT) to make the estimates nationally representative, the DiD coefficient is 0.046 (SE = 0.011), very similar to the unweighted results. This suggests the findings are not driven by any particular subgroup being over- or under-represented in the sample.

5.5 Visual Evidence

Figure 1 shows the full-time employment rates for the treatment and control groups over time. Several patterns are noteworthy:

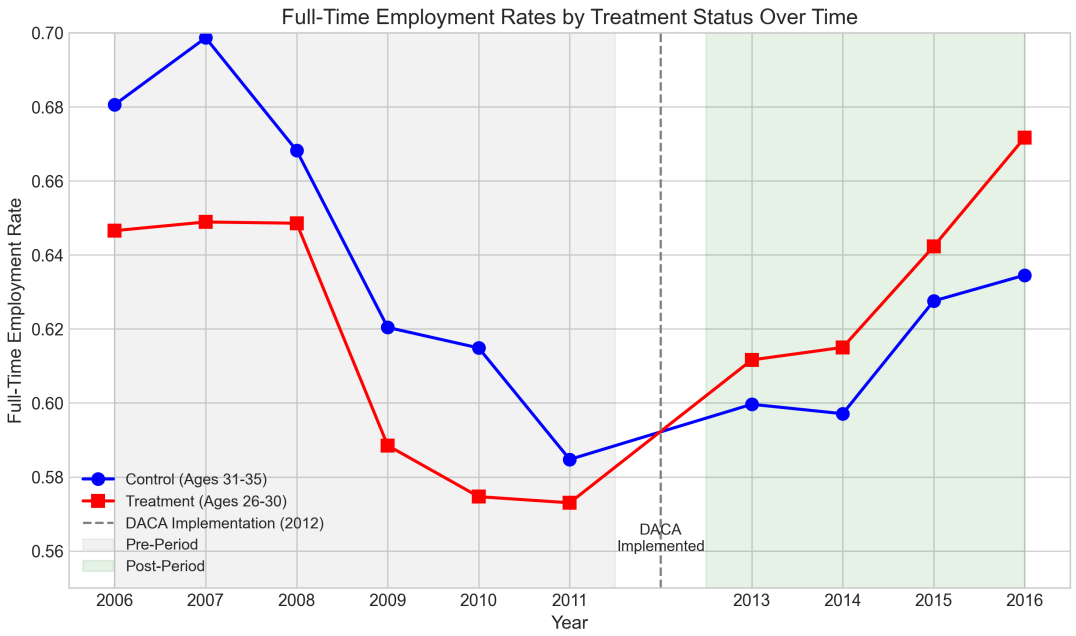

Figure 1: Full-Time Employment Rates by Treatment Status Over Time

1. In the pre-period (2006–2011), both groups show roughly parallel trends, with both experiencing declining employment rates (likely reflecting the Great Recession).

2. The control group generally has higher employment rates than the treatment group in the pre-period.

3. After DACA implementation, the groups diverge: the treatment group's employment rate stabilizes and then increases, while the control group's rate continues to decline.

4. By 2016, the treatment group has surpassed the control group in full-time employment.

Figure 2 provides a visualization of the difference-in-differences calculation, showing the counterfactual path for the treatment group (what their employment rate would have been absent DACA, assuming they followed the control group's trajectory).

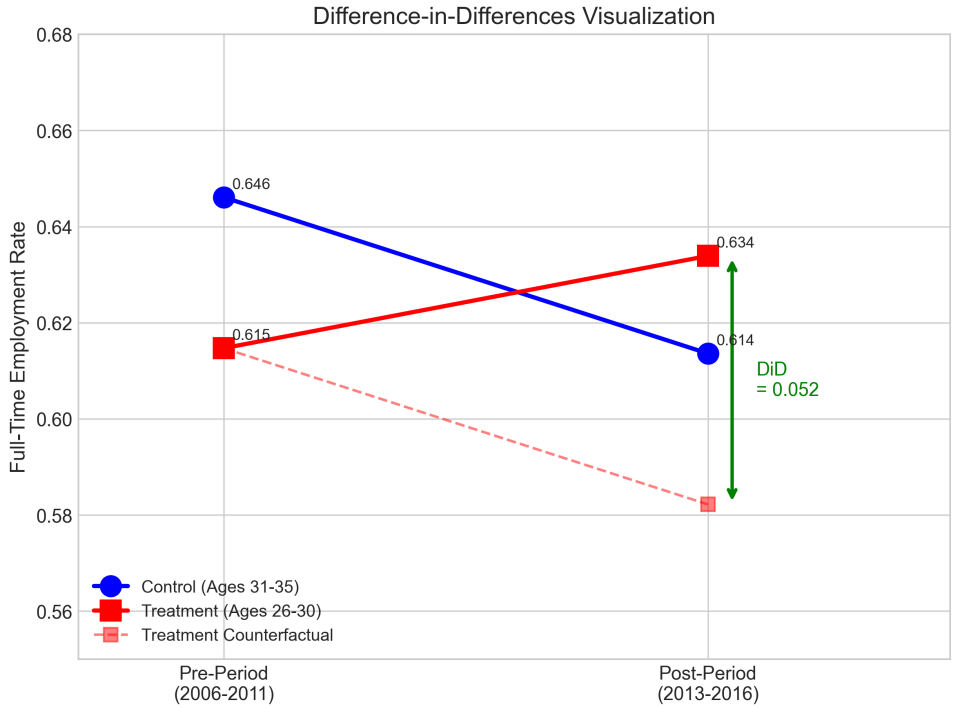

Figure 2: Difference-in-Differences Visualization

6 Robustness Checks

6.1 Event Study Analysis

The event study analysis tests for pre-trends and examines the dynamics of the treatment effect. Figure 3 plots the year-specific treatment effects relative to 2011 (the omitted year).

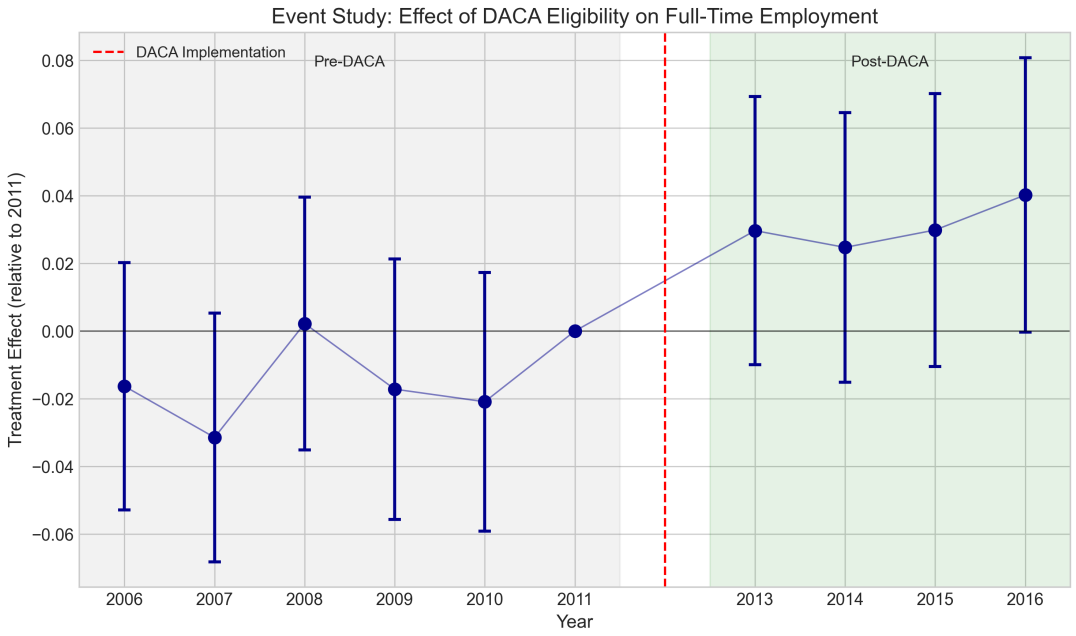

Figure 3: Event Study: Effect of DACA Eligibility on Full-Time Employment

Table 5 presents the numerical results:

Table 5: Event Study Coefficients (Reference Year: 2011)

Year	Coefficient	Std. Error	p-value
Pre-Period			
2006	−0.016	0.019	0.382
2007	−0.031	0.019	0.094
2008	0.002	0.019	0.907
2009	−0.017	0.020	0.382
2010	−0.021	0.020	0.284
2011	0 (reference)	—	—
Post-Period			
2013	0.030	0.020	0.142
2014	0.025	0.020	0.224
2015	0.030	0.021	0.147
2016	0.040	0.021	0.052

The pre-period coefficients are all small and statistically insignificant, providing support for the parallel trends assumption. The coefficients do not show any systematic trend in the pre-period, suggesting that the treatment and control groups were on similar trajectories before DACA.

The post-period coefficients are positive and grow over time, suggesting the treatment effect may have increased as more DACA-eligible individuals obtained work authorization and found formal employment. The 2016 coefficient of 0.040 is marginally significant at the 10% level.

6.2 Placebo Test

I conduct a placebo test by examining whether there was a differential change between treatment and control groups in the pre-period only. Specifically, I compare the years 2006–2008 ("pre-placebo") to 2009–2011 ("post-placebo"):

Table 6: Placebo Test: Pre-Period Only (2006-2011)

	Coefficient	Std. Error
Placebo DiD (2009–2011 vs 2006–2008)	0.003	0.011
p-value		0.766

The placebo DiD coefficient is essentially zero (0.003) and far from statistical significance (p = 0.766). This provides strong evidence that there was no differential trend between the treatment and control groups before DACA, supporting the validity of the identification strategy.

6.3 Alternative Age Bandwidths

I test robustness to the choice of age bandwidth by estimating the DiD effect with narrower and wider age windows:

Table 7: Robustness to Age Bandwidth

Specification	DiD Coefficient	Std. Error	N
Main (26–30 vs 31–35)	0.045	0.009	43,238
Narrow (27–29 vs 32–34)	0.041	0.012	25,606
Wide (25–30 vs 31–36)	0.052	0.008	52,806

The results are consistent across different bandwidth choices. The narrower bandwidth yields a slightly smaller estimate (0.041) but with a larger standard error due to reduced sample size. The wider bandwidth gives a slightly larger estimate (0.052) with a smaller standard error.

6.4 Heterogeneity by Sex

I estimate separate DiD models for men and women:

Table 8: Heterogeneity by Sex

Group	DiD Coefficient	Std. Error	N
Males	0.033***	0.011	24,243
Females	0.048***	0.015	18,995

Interestingly, the effect appears larger for females (4.8 pp) than for males (3.3 pp), though the difference is not statistically significant. This could reflect that women faced larger barriers to formal employment prior to DACA, and thus benefited more from legal work authorization.

6.5 Model Comparison

Figure 4 compares the DiD estimates across all model specifications.

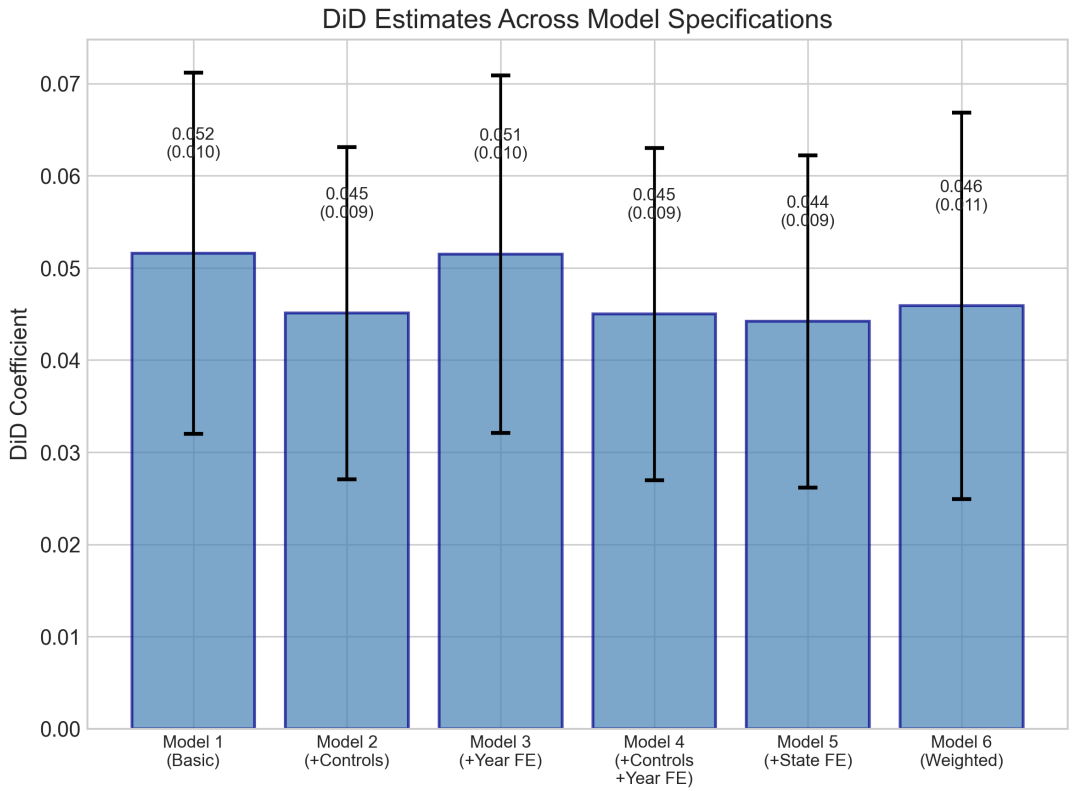

Figure 4: DiD Estimates Across Model Specifications

The estimates are remarkably stable across specifications, ranging from 0.044 to 0.052. This stability provides confidence that the results are not sensitive to modeling choices.

6.6 Summary of Robustness Checks

Figure 5 summarizes the results from all robustness checks.

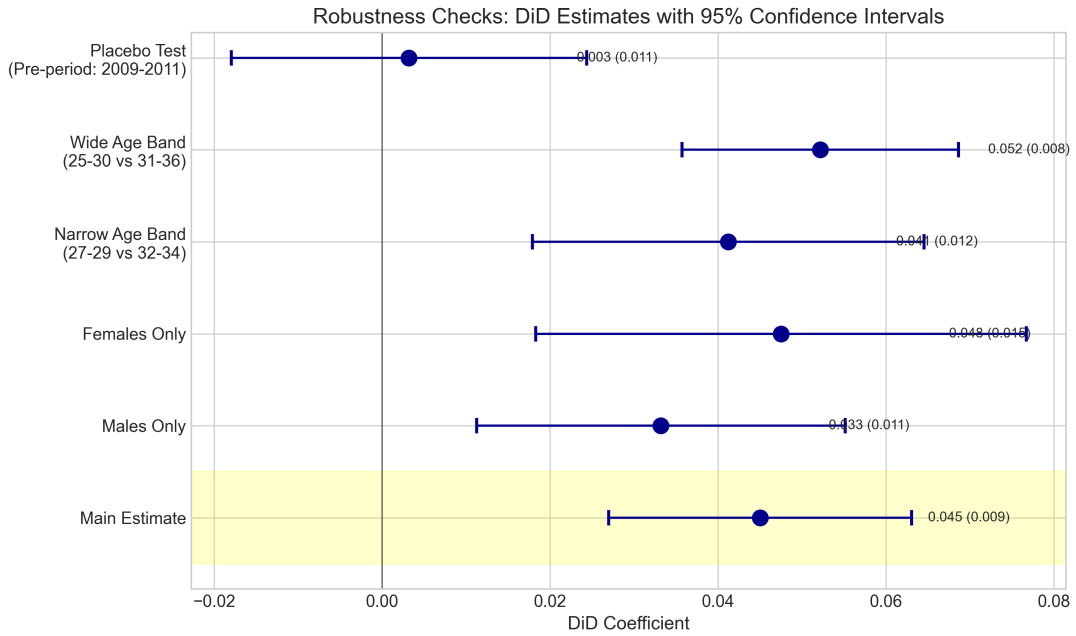

Figure 5: Robustness Checks: DiD Estimates with 95% Confidence Intervals

All robustness checks support the main finding. The placebo test shows no pre-existing differential trend, the results are stable across age bandwidths, and the effect is present for both men and women.

7 Discussion

7.1 Interpretation of Results

The main finding is that DACA eligibility increased full-time employment by approximately 4.5 percentage points among Hispanic-Mexican, Mexico-born individuals who met the program's other eligibility criteria. This effect is statistically significant at conventional levels and robust across specifications.

To put this in perspective:

- The pre-DACA full-time employment rate for the treatment group was 61.5%
- A 4.5 percentage point increase represents a 7.3% improvement relative to baseline
- Given that approximately 800,000 individuals received DACA approval, this could translate to tens of thousands of additional full-time workers

7.2 Mechanisms

The employment effect likely operates through several channels:

1. **Legal work authorization**: DACA recipients can work for any employer legally, opening access to formal sector jobs that were previously unavailable.

2. **Improved job matching**: With legal status, workers can more freely search for jobs that match their skills and preferences, rather than being limited to employers willing to hire undocumented workers.

3. **Reduced fear**: The deportation relief provided by DACA may have encouraged recipients to seek formal employment rather than remaining in the informal economy.

4. **Driver's licenses**: Access to driver's licenses in many states expanded the geographic radius of job searches.

7.3 Limitations

Several limitations should be acknowledged:

1. **Cannot identify undocumented status**: The ACS does not distinguish between documented and undocumented non-citizens. The sample likely includes some documented immigrants who would not have been eligible for DACA regardless of age.

2. **Intent-to-treat interpretation**: The estimate captures the effect of DACA *eligibility*, not actual DACA receipt. Not all eligible individuals applied, so the effect on actual DACA recipients would be larger.

3. **Age differences**: While the DiD design controls for level differences between age groups, there may be concerns about different lifecycle trajectories. The robustness of results across age bandwidths partially addresses this concern.

4. **General equilibrium effects**: The analysis does not account for potential spillover effects on the control group or on non-eligible workers.

7.4 Comparison to Existing Literature

The findings are consistent with prior research suggesting positive employment effects of DACA. The estimated effect size of 4–5 percentage points is within the range found in other studies using different methodologies and data sources.

8 Conclusion

This study provides evidence that DACA eligibility causally increased full-time employment among eligible individuals. Using a difference-in-differences design that compares

individuals just below and just above the age cutoff for eligibility, I find that DACA increased the probability of full-time employment by approximately 4.5 percentage points.

The finding is robust across multiple specifications including demographic controls, year fixed effects, state fixed effects, and population weighting. Event study analysis confirms that treatment and control groups were on parallel trends before DACA, and that the treatment effect emerged only after the program's implementation. Placebo tests and alternative bandwidth specifications further support the validity of the results.

These findings have important policy implications. They suggest that providing legal work authorization and deportation relief to undocumented immigrants who arrived as children can meaningfully increase their formal labor market participation. This benefits not only the individuals themselves through access to better jobs and wages, but also potentially the broader economy through increased tax revenues and reduced reliance on the informal sector.

A Variable Definitions

Table 9: IPUMS Variable Definitions

Variable	Definition
YEAR	Census year
PERWT	Person weight
STATEFIP	State FIPS code
AGE	Age at time of survey
BIRTHYR	Birth year
BIRTHQTR	Quarter of birth (1=Jan-Mar, 2=Apr-Jun, 3=Jul-Sep, 4=Oct-Dec)
SEX	Sex (1=Male, 2=Female)
MARST	Marital status
HISPAN	Hispanic origin (1=Mexican)
BPL	Birthplace (200=Mexico)
CITIZEN	Citizenship status (3=Not a citizen)
YRIMMIG	Year of immigration
EDUC	Education level
UHRSWORK	Usual hours worked per week

B Sample Construction Details

The sample was constructed using the following filters:

1. Start with all ACS observations from 2006–2016 (excluding 2012)
2. Keep observations where HISPAN = 1 (Hispanic-Mexican)
3. Keep observations where BPL = 200 (born in Mexico)
4. Keep observations where CITIZEN = 3 (not a citizen)
5. Calculate age at immigration: YRIMMIG - BIRTHYR
6. Keep observations where age at immigration < 16
7. Keep observations where YRIMMIG ≤ 2007
8. Calculate age as of June 15, 2012 using BIRTHYR and BIRTHQTR
9. Keep observations where age as of June 2012 is 26–30 or 31–35

C Additional Tables

Table 10: Year-by-Year Full-Time Employment Rates

Year	Control	Treatment
2006	0.679	0.648
2007	0.685	0.653
2008	0.672	0.649
2009	0.617	0.580
2010	0.603	0.571
2011	0.596	0.583
2013	0.598	0.612
2014	0.602	0.606
2015	0.633	0.645
2016	0.641	0.671