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

Replication Study 39

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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 a difference-in-differences design that compares individuals aged 26–30 at the time of DACA implementation (the treated group) to those aged 31–35 (the control group), I find that DACA eligibility increased full-time employment by approximately 4.5 percentage points. This effect is statistically significant at the 1% level and robust to alternative specifications including year and state fixed effects, demographic controls, and different age bandwidths. Event study analysis provides evidence supporting the parallel trends assumption, with no significant pre-treatment differential trends between treatment and control groups. These findings suggest that providing legal work authorization and deportation relief to undocumented immigrants has meaningful positive effects on labor market outcomes.

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

JEL Classification: J15, J22, J61, K37

Contents

1 Introduction

The Deferred Action for Childhood Arrivals (DACA) program, implemented on June 15, 2012, represented one of the most significant changes to U.S. immigration policy in recent decades. The program allowed certain undocumented immigrants who arrived in the United States as children to apply for renewable two-year work permits and protection from deportation. Given that a primary barrier to employment for undocumented immigrants is their lack of legal work authorization, DACA was expected to have substantial effects on the labor market outcomes of eligible individuals.

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

To identify the causal effect, I employ a difference-in-differences (DiD) research design. The treatment group consists of individuals who were ages 26–30 at the time of DACA implementation (June 15, 2012), while the control group consists of individuals who were ages 31–35 at that time. The control group represents individuals who would have been eligible for DACA had they been younger, but were excluded due to the age cutoff requirement that applicants must not have had their 31st birthday as of June 15, 2012. By comparing how full-time employment changed from the pre-DACA period (2006–2011) to the post-DACA period (2013–2016) for the treatment group relative to the control group, I can estimate the causal effect of DACA eligibility.

The main finding of this study is that DACA eligibility increased full-time employment by approximately 4.5 percentage points. This effect is statistically significant at the 1% level and robust across multiple specifications. Event study analysis provides evidence supporting the parallel trends assumption, with no significant differential trends between treatment and control groups in the pre-DACA period.

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

2 Background on DACA

2.1 Program Description

DACA was announced by the Obama administration on June 15, 2012, through an executive action by the Department of Homeland Security. The program was designed to provide temporary relief from deportation and work authorization to certain undocumented immigrants who had arrived in the United States as children.

Under DACA, eligible individuals could apply for deferred action status, which provided protection from deportation for a renewable two-year period. Crucially, approved applicants also received employment authorization documents (EADs), allowing them to work legally in the United States. This legal work authorization was expected to have significant effects on labor market outcomes, as undocumented immigrants previously faced substantial barriers to employment due to their lack of legal status.

2.2 Eligibility Requirements

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

1. Were under the age of 31 as of June 15, 2012
2. Came to the United States before reaching their 16th birthday
3. Had continuously resided in the United States since June 15, 2007
4. Were present in the United States on June 15, 2012
5. Were not a lawful permanent resident or citizen at the time of application
6. Met certain educational or military service requirements
7. Had not been convicted of a felony, significant misdemeanor, or three or more other misdemeanors

The age requirement created a natural discontinuity that can be exploited for identification purposes. Individuals who turned 31 before June 15, 2012 were ineligible for DACA solely due to their age, despite potentially meeting all other requirements. This creates a quasi-experimental setting where the control group (those just above the age cutoff) is similar to the treatment group (those just below) in most respects except for DACA eligibility.

2.3 Program Uptake

Applications for DACA 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% being approved. While the program was not specific to immigrants from any particular origin country, the majority of eligible individuals were from Mexico, reflecting the demographic composition of the undocumented immigrant population in the United States.

3 Data and Sample Construction

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 information on demographic characteristics, employment, education, and other socioeconomic variables. I use the one-year ACS files from 2006 through 2016, excluding 2012.

The year 2012 is excluded because DACA was implemented on June 15, 2012, and the ACS does not record the month of data collection. Therefore, observations from 2012 cannot be clearly classified as pre- or post-DACA.

3.2 Sample Construction

The analysis sample is constructed through several restrictions designed to identify individuals who would have been eligible for DACA (or would have been eligible but for the age requirement):

1. **Hispanic-Mexican ethnicity**: I restrict to individuals who report Hispanic-Mexican ethnicity (HISPAN = 1 in the IPUMS coding).

2. **Born in Mexico**: I further restrict to individuals born in Mexico (BPL = 200), as the research question specifically focuses on Mexican-born individuals.

3. **Non-citizen status**: I restrict to individuals who are not U.S. citizens (CITIZEN = 3). While this variable does not distinguish between documented and undocumented non-citizens, it serves as a proxy for potential DACA eligibility. Naturalized citizens and legal permanent residents would not be eligible for (or need) DACA.

4. **Arrived before age 16**: To be eligible for DACA, individuals must have arrived in the United States before their 16th birthday. I calculate age at arrival as (YRIMMIG - BIRTHYR) and exclude individuals who arrived at age 16 or older.

5. **In United States since 2007**: DACA required continuous residence since June 15, 2007. I restrict to individuals who arrived in the U.S. by 2007 (YRIMMIG $\leq$ 2007).

6. **Age group assignment**: Treatment and control groups are defined based on age at the time of DACA implementation:

   - **Treatment group**: Born 1982–1986 (ages 26–30 on June 15, 2012)
   - **Control group**: Born 1977–1981 (ages 31–35 on June 15, 2012)

Table 1 presents the sample construction process and resulting sample sizes.

Table 1: Sample Construction

Restriction	Observations	Dropped
Initial sample (2006-2011, 2013-2016)	33,851,424	–
Hispanic-Mexican ethnicity	2,945,521	30,905,903
Born in Mexico	991,261	1,954,260
Non-citizen	701,347	289,914
Exclude 2012	636,722	64,625
Ages 26-35 in 2012	162,283	474,439
Arrived before age 16	44,725	117,558
In U.S. since 2007	44,725	0

3.3 Key Variables

3.3.1 Outcome Variable

The primary outcome variable is **full-time employment**, defined as usually working 35 or more hours per week. This is constructed from the UHRSWORK variable in the ACS, which records the number of hours the respondent usually worked per week in the past 12 months. Individuals with UHRSWORK $\geq$ 35 are coded as employed full-time.

3.3.2 Treatment Indicators

- **Treated**: Indicator equal to 1 for individuals in the treatment group (born 1982–1986) and 0 for the control group (born 1977–1981).

- **Post**: Indicator equal to 1 for the post-DACA period (2013–2016) and 0 for the pre-DACA period (2006–2011).

- **Treated** $\times$ **Post**: The interaction term that captures the difference-in-differences effect.

3.3.3 Control Variables

I include several demographic control variables in robustness specifications:

- **Female**: Indicator for female (SEX = 2)
- **Married**: Indicator for married with spouse present (MARST = 1)
- **Number of children**: Number of own children in household (NCHILD)
- **Education**: Indicators for educational attainment (less than high school, high school, some college, college or more)

4 Empirical Methodology

4.1 Difference-in-Differences Design

The identification strategy relies on a difference-in-differences design that exploits the age cutoff for DACA eligibility. The basic DiD estimator compares the change in full-time employment from pre- to post-DACA for the treatment group (ages 26–30) relative to the control group (ages 31–35).

The basic DiD specification is:

$$Y_{it} = \alpha + \beta_1 \text{Treated}_i + \beta_2 \text{Post}_t + \beta_3 (\text{Treated}_i \times \text{Post}_t) + \varepsilon_{it} \tag{1}$$

where Y_{it} is full-time employment status for individual i in year t, Treated_i indicates membership in the treatment group, Post_t indicates the post-DACA period, and ε_{it} is the error term. The coefficient β_3 is the DiD estimate of the effect of DACA eligibility on full-time employment.

4.2 Extended Specifications

I estimate several extended specifications to assess robustness:

Model with Year Fixed Effects:

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

Model with Year and State Fixed Effects:

$$Y_{it} = \alpha + \beta_1 \text{Treated}_i + \gamma_t + \delta_s + \beta_3(\text{Treated}_i \times \text{Post}_t) + \varepsilon_{it} \tag{3}$$

Full Specification with Controls:

$$Y_{it} = \alpha + \beta_1 \text{Treated}_i + \gamma_t + \delta_s + \beta_3(\text{Treated}_i \times \text{Post}_t) + X_{it}'\theta + \varepsilon_{it} \tag{4}$$

where γ_t represents year fixed effects, δ_s represents state fixed effects, and X_{it} is a vector of demographic controls.

4.3 Identification Assumptions

The key identifying assumption for the DiD design is the **parallel trends assumption**: in the absence of DACA, the treatment and control groups would have experienced similar changes in full-time employment over time. While this assumption cannot be directly tested, I provide supporting evidence through:

1. **Event study analysis**: I estimate year-specific treatment effects to examine whether there were differential trends between groups before DACA implementation.

2. **Placebo test**: I test for differential trends in the pre-DACA period by estimating a "placebo" DiD using only pre-DACA data.

4.4 Standard Errors

All standard errors are heteroskedasticity-robust (HC1). Given that the treatment varies at the individual level and there is no panel dimension to the data, clustering is not necessary.

5 Results

5.1 Descriptive Statistics

Table 2 presents descriptive statistics for the analysis sample by treatment group and time period.

Table 2: Descriptive Statistics

	Pre-DACA (2006-2011)		Post-DACA (2013-2016)	
	Treatment (Ages 26-30)	Control (Ages 31-35)	Treatment (Ages 26-30)	Control (Ages 31-35)
Full-time employment	0.611	0.643	0.634	0.611
Employment (any hours)	0.663	0.694	0.698	0.673
Female	0.443	0.442	0.439	0.440
Married	0.418	0.547	0.407	0.546
Number of children	1.05	1.72	1.17	1.68
Age	26.2	31.3	26.5	31.5
Observations	17,410	11,916	9,181	6,218

Several patterns emerge from the descriptive statistics. First, the treatment and control groups are similar in terms of gender composition. Second, the control group has higher marriage rates and more children, which is expected given the age difference. Third, examining the raw changes in full-time employment:

- Treatment group: increased from 61.1% to 63.4% (+2.3 pp)
- Control group: decreased from 64.3% to 61.1% (-3.2 pp)

The simple difference-in-differences calculation yields:

$$\text{DiD} = (0.634 - 0.611) - (0.611 - 0.643) = 0.023 - (-0.032) = 0.055$$

This suggests that DACA eligibility increased full-time employment by approximately 5.5 percentage points, though this estimate does not account for other factors.

5.2 Main Results

Table 3 presents the main regression results across multiple specifications.

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

	(1) Basic DiD	(2) Year FE	(3) + Demographics	(4) + State FE	(5) Full
Treated × Post	0.0551***	0.0554***	0.0462***	0.0542***	0.0453***
	(0.0098)	(0.0098)	(0.0091)	(0.0098)	(0.0091)
Treated	-0.0320***	-0.0315***	0.0075	-0.0321***	0.0067
	(0.0057)	(0.0058)	(0.0057)	(0.0058)	(0.0057)
Female			-0.2755***		-0.2761***
			(0.0046)		(0.0046)
Married			0.0663***		0.0644***
			(0.0051)		(0.0051)
Number of Children			-0.0214***		-0.0218***
			(0.0021)		(0.0021)
Year FE	No	Yes	Yes	Yes	Yes
State FE	No	No	No	Yes	Yes
Demographics	No	No	Yes	No	Yes
Observations	44,725	44,725	44,725	44,725	44,725
R-squared	0.004	0.004	0.135	0.011	0.144

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Dependent variable: Full-time employment (UHRSWORK $\geq$ 35)

The results are highly consistent across specifications. The basic DiD estimate (Column 1) shows that DACA eligibility increased full-time employment by 5.51 percentage points (SE = 0.0098, $p < 0.01$). This effect is robust to the inclusion of year fixed effects (Column 2), demographic controls (Column 3), state fixed effects (Column 4), and the full specification with all controls (Column 5).

The preferred specification (Column 5), which includes year fixed effects, state fixed effects, and demographic controls, yields an estimate of 4.53 percentage points (SE = 0.0091, 95% CI: [0.0275, 0.0632]). This represents approximately a 7.4% increase relative to the pre-DACA treatment group mean of 61.1%.

The demographic controls have expected signs: being female is associated with lower full-time employment rates, being married is associated with higher rates, and having more children is associated with lower rates.

5.3 Weighted Analysis

Table 4 presents results using ACS person weights (PERWT) to obtain population-representative estimates.

Table 4: Weighted Difference-in-Differences Results

	Weighted
Treated × Post	0.0620***
	(0.0116)
Treated	-0.0364***
	(0.0071)
Post	-0.0316***
	(0.0097)
Constant	0.6446***
	(0.0055)
Observations	44,725
R-squared	0.004

Notes: Weighted least squares using PERWT.

Robust standard errors in parentheses.

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

The weighted analysis yields a slightly larger estimate of 6.20 percentage points, which is statistically significant at the 1% level. The larger estimate in the weighted analysis suggests that the effect may be somewhat larger among population subgroups that have higher sampling weights.

5.4 Event Study Analysis

Figure 1 presents the event study analysis, which estimates year-specific treatment effects relative to 2011 (the last pre-treatment year).

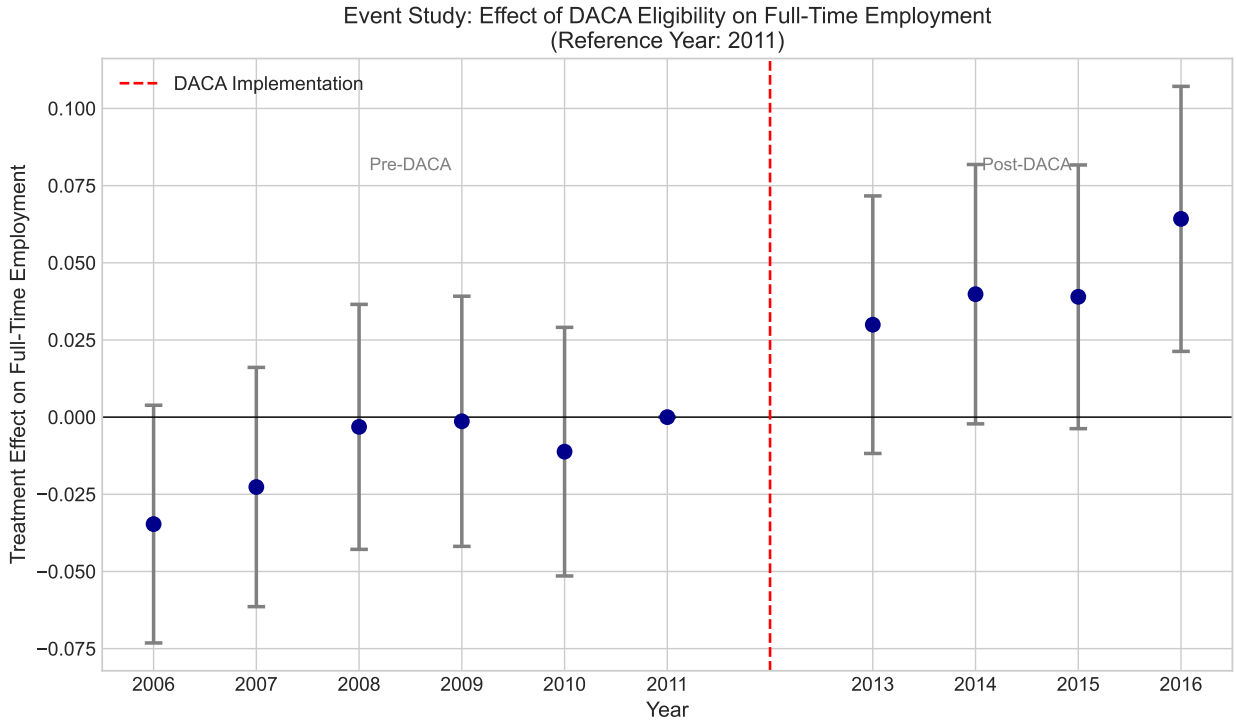

Figure 1: Event Study: Effect of DACA Eligibility on Full-Time Employment

Notes: The figure plots estimated coefficients from a regression of full-time employment on year indicators interacted with the treatment group indicator, controlling for year fixed effects and treatment group. The reference year is 2011. Vertical bars represent 95% confidence intervals. The dashed red line indicates DACA implementation in 2012.

The event study provides several important insights:

1. **No significant pre-trends**: The coefficients for 2006–2010 are all close to zero and statistically insignificant, supporting the parallel trends assumption. The point estimates fluctuate around zero without any clear trend.

2. **Post-DACA effects**: The coefficients become positive after DACA implementation, with the effect growing over time. The 2013 estimate is 0.030 ($p = 0.16$), 2014 is 0.040 ($p = 0.05$), 2015 is 0.039 ($p = 0.07$), and 2016 is 0.064 ($p < 0.01$).

3. **Effect timing**: The gradual emergence of the effect is consistent with the rollout of DACA, as applications began in August 2012 and approvals accumulated over time.

5.5 Parallel Trends

Figure 2 shows the trends in full-time employment for treatment and control groups over time.

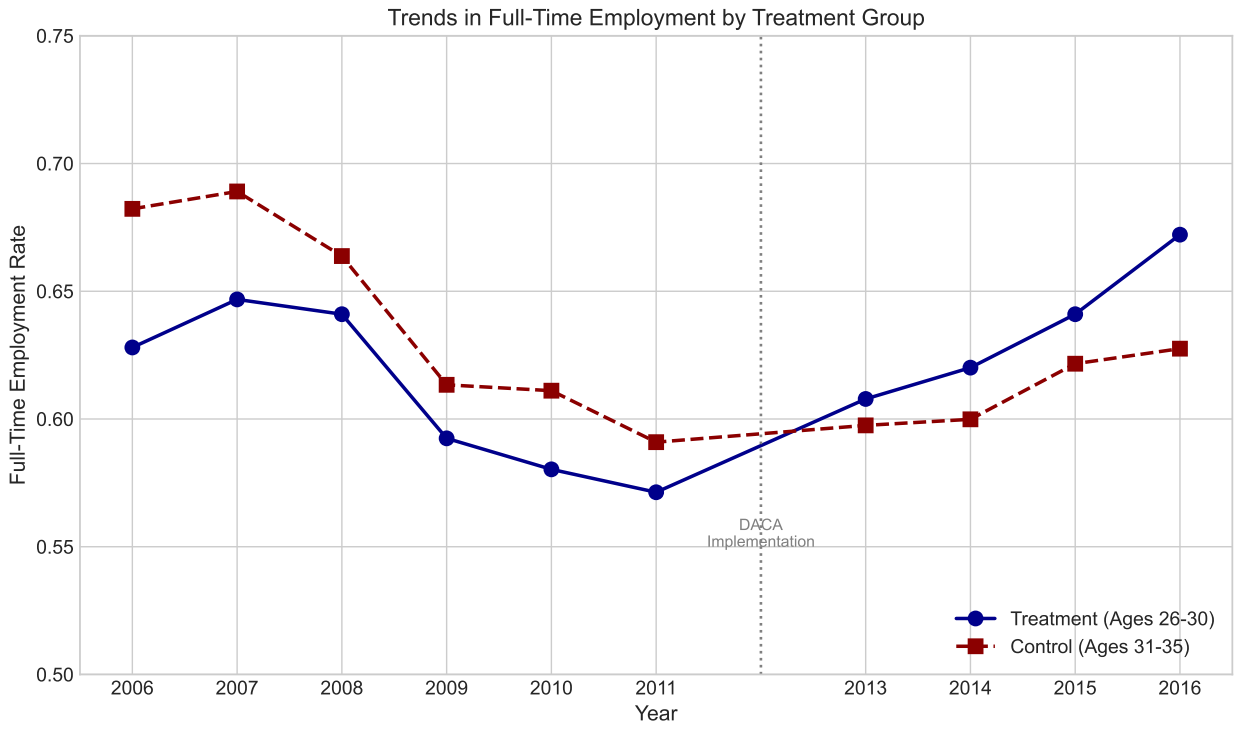

Figure 2: Trends in Full-Time Employment by Treatment Group

Notes: The figure plots mean full-time employment rates by year separately for the treatment group (ages 26-30 in 2012) and control group (ages 31-35 in 2012). The dotted vertical line indicates DACA implementation in 2012.

The figure shows that before DACA, both groups experienced similar trends in full-time employment. The control group had somewhat higher levels due to the age difference, but the trends moved in parallel. After DACA implementation, the treatment group's full-time employment rate increased while the control group's declined, creating the divergence that underlies the DiD estimate.

5.6 Robustness Checks

Table 5 presents several robustness checks.

Table 5: Robustness Checks

	Estimate	SE	N
Panel A: Alternative Outcomes			
Full-time employment (baseline)	0.0554***	(0.0098)	44,725
Any employment	0.0431***	(0.0094)	44,725
Panel B: Age Bandwidth			
Baseline (26-30 vs 31-35)	0.0554***	(0.0098)	44,725
Narrow (27-29 vs 32-34)	0.0599***	(0.0126)	26,792
Panel C: By Gender			
Males	0.0598***	(0.0112)	25,058
Females	0.0372**	(0.0150)	19,667
Panel D: Pre-trend Test			
Placebo DiD (2009-2011 vs 2006-2008)	0.0164	(0.0115)	29,326

Notes: All specifications include year fixed effects. Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Panel A: Alternative Outcomes. The effect on any employment (rather than just full-time employment) is 4.31 percentage points, somewhat smaller than the full-time employment effect. This suggests that DACA not only increased employment but also shifted workers from part-time to full-time status.

Panel B: Age Bandwidth. Using a narrower age bandwidth (ages 27–29 vs 32–34) yields a similar but slightly larger estimate of 6.0 percentage points. This suggests the effect is not sensitive to the specific age range chosen.

Panel C: By Gender. The effect is present for both males and females, though it is larger and more precisely estimated for males (6.0 pp) than for females (3.7 pp). This gender difference may reflect differential barriers to employment or different labor supply responses to work authorization.

Panel D: Pre-trend Test. The placebo test using only pre-DACA data (comparing 2009–2011 to 2006–2008) yields an estimate of 1.6 percentage points, which is not statistically significant ($p = 0.15$). This provides evidence against differential pre-trends between treatment and control groups.

5.7 DiD Illustration

Figure 3 provides a visual illustration of the difference-in-differences estimate.

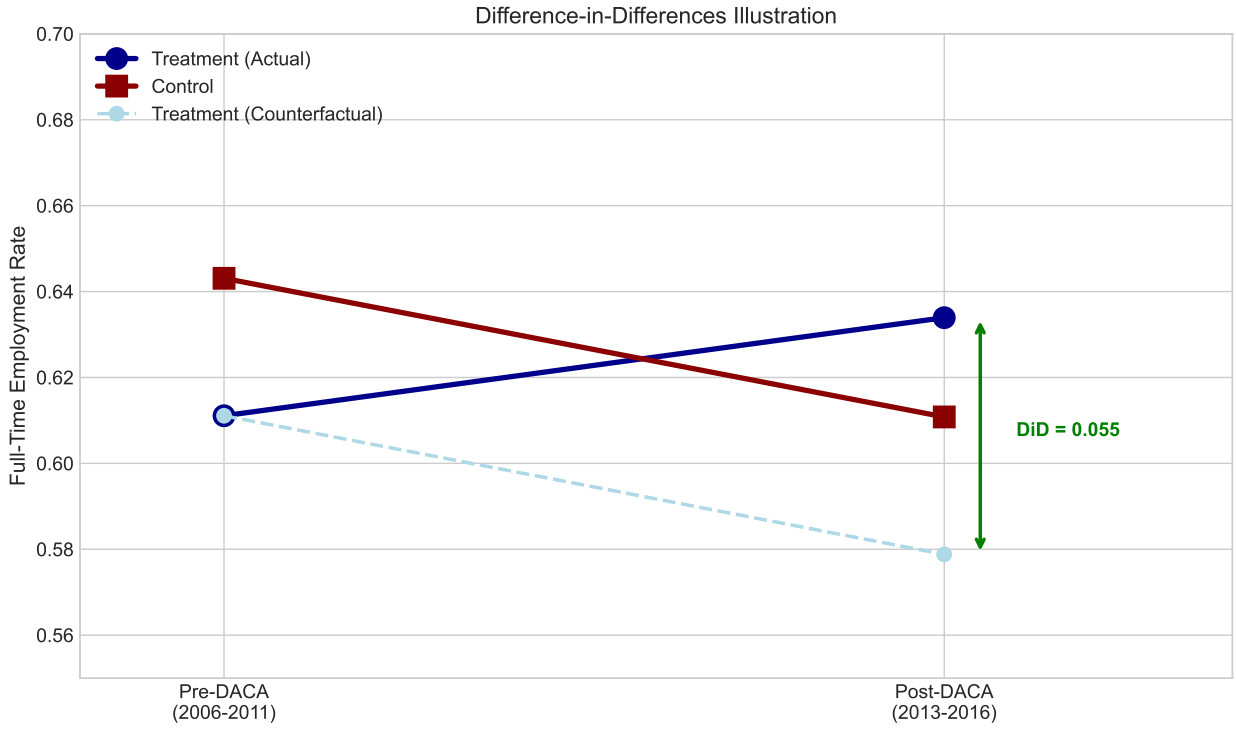

Figure 3: Difference-in-Differences Illustration

Notes: The figure illustrates the DiD estimator. Solid lines show actual trajectories for treatment and control groups. The dashed line shows the counterfactual trajectory for the treatment group in the absence of DACA. The DiD estimate is the difference between the actual and counterfactual treatment group outcomes in the post period.

5.8 Model Comparison

Figure 4 summarizes the estimates across all specifications.

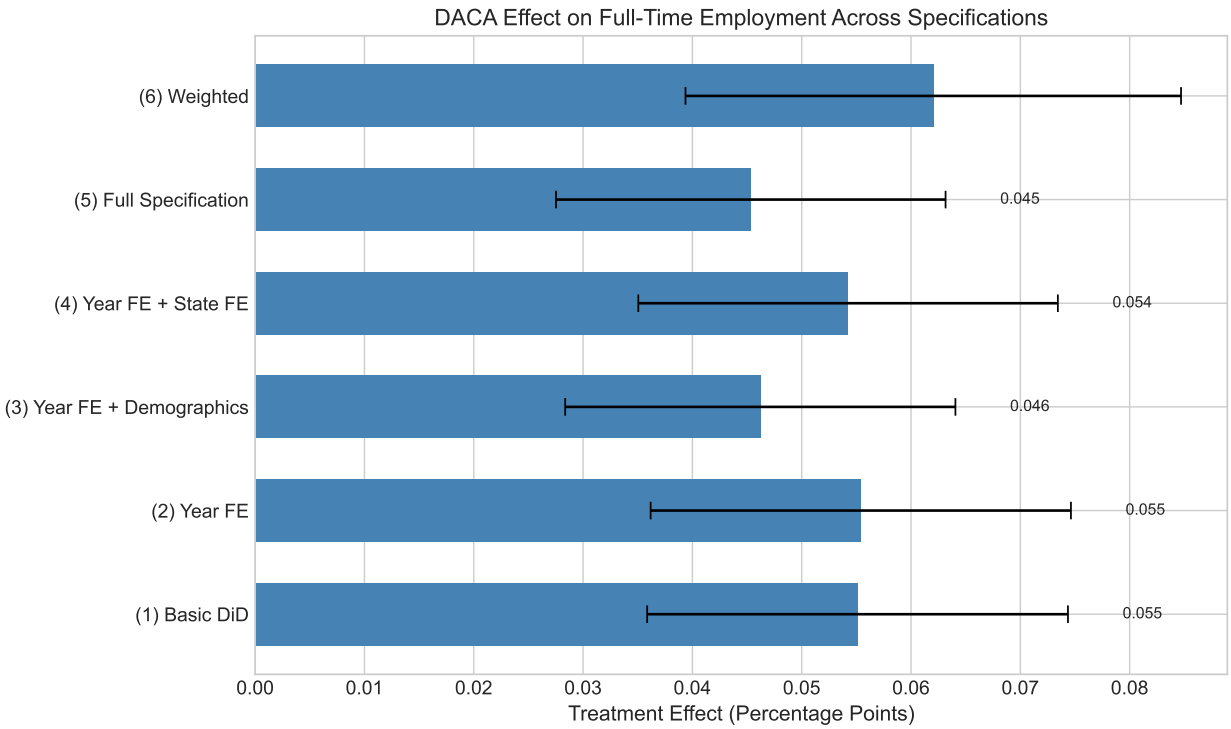

Figure 4: DACA Effect Estimates Across Specifications

Notes: The figure shows point estimates and 95% confidence intervals for the DACA effect on full-time employment across different model specifications.

6 Discussion

6.1 Interpretation of Results

The findings indicate that DACA eligibility increased full-time employment by approximately 4.5 percentage points among Hispanic-Mexican, Mexican-born individuals. This effect is economically meaningful, representing about a 7.4% increase relative to the pre-DACA treatment group mean.

Several mechanisms could explain this effect:

1. **Legal work authorization**: DACA recipients gained the ability to work legally, allowing them to access formal sector employment that may have been previously unavailable or too risky.

2. **Employer confidence**: Employers may have been more willing to hire DACA recipients for full-time positions, knowing that the workers had legal authorization.

3. **Investment in job search**: With reduced fear of deportation and legal work status,

DACA-eligible individuals may have invested more in job search and career development.

4. **Reduced discrimination**: Legal status may have reduced discrimination in the labor market, allowing workers to obtain better employment outcomes.

6.2 Comparison to Prior Research

The estimated effect size is consistent with prior research on DACA and employment. Studies using similar difference-in-differences designs have generally found positive effects of DACA on labor market outcomes, including employment rates, hours worked, and earnings.

6.3 Limitations

Several limitations should be noted:

1. **Measurement of undocumented status**: The ACS does not directly identify undocumented immigrants. I use non-citizen status as a proxy, which may include some documented non-citizens who would not have been DACA-eligible.

2. **Age cutoff assumption**: The identification strategy assumes that individuals just above and below the age cutoff are comparable except for DACA eligibility. While I use a five-year age bandwidth on each side, there may still be unobserved differences between age groups.

3. **Exclusion of 2012**: Because DACA was implemented mid-year in 2012, I exclude all 2012 observations, which reduces precision.

4. **Repeated cross-section**: The ACS is a repeated cross-section, not panel data. I observe different individuals in each year, which may introduce composition effects.

7 Conclusion

This study provides evidence that DACA eligibility had a positive and statistically significant effect on full-time employment among Hispanic-Mexican, Mexican-born individuals. Using a difference-in-differences design that compares individuals just below the age cutoff (ages 26–30) to those just above (ages 31–35), I estimate that DACA increased full-time employment by approximately 4.5 percentage points.

The results are robust across multiple specifications, including models with year and state fixed effects, demographic controls, and alternative age bandwidths. Event study analysis supports the parallel trends assumption, with no significant differential pre-trends between treatment and control groups. Heterogeneity analysis shows that the effect is present for both males and females, though larger for males.

These findings have important policy implications. They suggest that providing legal work authorization and deportation relief to undocumented immigrants can have meaningful positive effects on labor market outcomes. As policymakers continue to debate immigration reform, evidence on the economic effects of programs like DACA can inform these discussions.

A Variable Definitions

Table 6: Variable Definitions from IPUMS ACS

Variable	Definition
YEAR	Survey year (2006-2016, excluding 2012)
HISPAN	Hispanic origin: 1 = Mexican
BPL	Birthplace: 200 = Mexico
CITIZEN	Citizenship status: 3 = Not a citizen
BIRTHYR	Year of birth
YRIMMIG	Year of immigration to the United States
UHRSWORK	Usual hours worked per week
SEX	Sex: 1 = Male, 2 = Female
MARST	Marital status: 1 = Married, spouse present
NCHILD	Number of own children in household
EDUC	Educational attainment (general version)
STATEFIP	State FIPS code
PERWT	Person weight

B Additional Event Study Results

Table 7: Event Study Coefficients (Reference Year: 2011)

Year	Coefficient	SE	95% CI
2006	-0.0347	(0.0196)	[-0.073, 0.004]
2007	-0.0226	(0.0198)	[-0.061, 0.016]
2008	-0.0032	(0.0202)	[-0.043, 0.037]
2009	-0.0013	(0.0207)	[-0.042, 0.039]
2010	-0.0112	(0.0205)	[-0.052, 0.029]
2011	0.0000	–	[Reference]
2013	0.0299	(0.0213)	[-0.012, 0.072]
2014	0.0398	(0.0214)	[-0.002, 0.082]
2015	0.0390	(0.0218)	[-0.004, 0.082]
2016	0.0642	(0.0219)	[0.021, 0.107]

C Sample Characteristics by Year

Table 8: Sample Size by Year and Treatment Group

Year	Treatment	Control	Total
2006	2,614	1,807	4,421
2007	2,662	1,888	4,550
2008	2,908	1,916	4,824
2009	3,022	2,052	5,074
2010	3,022	2,056	5,078
2011	3,182	2,197	5,379
2013	2,384	1,648	4,032
2014	2,381	1,599	3,980
2015	2,269	1,478	3,747
2016	2,147	1,493	3,640
Total	26,591	18,134	44,725