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

Replication Study

January 2026

Abstract

This study examines the causal impact of eligibility for the Deferred Action for Childhood Arrivals (DACA) program on full-time employment among Hispanic-Mexican, Mexican-born individuals in the United States. Using data from the American Community Survey (2006–2016), I employ a difference-in-differences (DiD) design comparing individuals aged 26–30 at DACA implementation (treatment group) to those aged 31–35 (control group). The simple DiD estimate suggests a 5.5 percentage point increase in full-time employment for the treatment group. However, after controlling for year and state fixed effects along with demographic characteristics, the estimate decreases to 1.4 percentage points and becomes statistically insignificant ($p = 0.21$). Pre-trends analysis shows no evidence of differential trends between groups prior to DACA. Robustness checks including gender-specific analyses and placebo tests support the validity of the research design. The findings suggest a modest but imprecisely estimated positive effect of DACA eligibility on full-time employment.

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1 Introduction

The Deferred Action for Childhood Arrivals (DACA) program, implemented on June 15, 2012, represented a significant policy intervention affecting undocumented immigrants who arrived in the United States as children. The program provided eligible individuals with temporary relief from deportation and authorization to work legally for renewable two-year periods. Given that DACA recipients could obtain legal work authorization, the program may have substantially affected their labor market outcomes, particularly employment status.

This study investigates the causal effect of DACA eligibility on full-time employment among Hispanic-Mexican, Mexican-born individuals in the United States. Full-time employment, defined as usually working 35 or more hours per week, is a key indicator of labor market integration and economic well-being. Understanding how DACA affected employment outcomes is important for evaluating the program's effectiveness and informing future immigration policy.

1.1 Background on DACA

DACA was announced by the Obama administration on June 15, 2012. The program allowed qualifying undocumented immigrants who met specific criteria to apply for deferred action status. The eligibility requirements included:

- Arrived in the United States before their 16th birthday
- Had not yet turned 31 years old as of June 15, 2012
- Lived continuously in the United States since June 15, 2007
- Were present in the United States on June 15, 2012
- Did not have lawful immigration status at the time
- Had not been convicted of a felony, significant misdemeanor, or multiple 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% being approved. While DACA was not specific to any particular country of origin, the majority of eligible individuals were from Mexico due to the structure of undocumented immigration to the United States.

1.2 Research Questions and Objectives

This study addresses the following research question: Among ethnically Hispanic-Mexican, Mexican-born individuals living in the United States, what was the causal impact of DACA eligibility on the probability of full-time employment?

The study employs a difference-in-differences research design, comparing individuals who were eligible for DACA based on the age criterion (those aged 26–30 at implementation) to similar individuals who were ineligible solely due to being too old (those aged 31–35 at implementation).

2 Data

2.1 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, economic, and housing information from approximately 3.5 million households each year.

I use the one-year ACS samples from 2006 to 2016, excluding data from 2012. The year 2012 is excluded because the ACS does not provide information about the month of data collection, making it impossible to distinguish observations collected before versus after DACA implementation on June 15, 2012.

2.2 Sample Selection

The analytic sample is constructed using the following criteria:

1. **Hispanic-Mexican ethnicity**: HISPAN = 1 (Mexican)
2. **Born in Mexico**: BPL = 200 (Mexico)
3. **Non-citizen status**: CITIZEN = 3 (Not a citizen)
4. **Arrived before age 16**: Calculated as YRIMMIG − BIRTHYR < 16
5. **Present in US since June 2007**: YRIMMIG ≤ 2007
6. **Working age**: AGE between 18 and 65 in the survey year

The non-citizen restriction is used as a proxy for undocumented status, as the ACS cannot directly identify undocumented immigrants. This is a standard approach in the literature, though it may include some legal non-citizens.

2.3 Treatment and Control Groups

The treatment and control groups are defined based on birth year, which determines age at DACA implementation:

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

The control group consists of individuals who would have been eligible for DACA based on all criteria except age. These individuals were too old to qualify (having already turned 31 by June 15, 2012) but are otherwise comparable to the treatment group.

2.4 Variables

2.4.1 Outcome Variable

The primary outcome is full-time employment, defined as a binary indicator equal to 1 if the individual usually works 35 or more hours per week (UHRSWORK ≥ 35), and 0 otherwise.

2.4.2 Key Independent Variables

- **Treatment**: Binary indicator for treatment group membership (birth year 1982–1986)
- **Post**: Binary indicator for post-DACA period (survey year 2013–2016)
- **Treatment** $\times$ **Post**: Interaction term capturing the DiD effect

2.4.3 Control Variables

- **Female**: Binary indicator for female sex
- **Married**: Binary indicator for married status (spouse present or absent)
- **Age and Age^2**: Continuous age variables to capture nonlinear age effects
- **Education**: Binary indicators for high school completion, some college, and college degree (less than high school is the reference category)

- **Year fixed effects**: Indicator variables for each survey year
- **State fixed effects**: Indicator variables for each state (STATEFIP)

2.5 Sample Description

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

Table 1: Sample Sizes by Treatment Status and Time Period

	Pre-DACA (2006–2011)	Post-DACA (2013–2016)
Control Group (ages 31–35)	11,916	6,218
Treatment Group (ages 26–30)	17,410	9,181
Total	29,326	15,399

Notes: Sample includes Hispanic-Mexican, Mexican-born, non-citizen individuals who arrived in the US before age 16 and by 2007, aged 18–65 at the time of the survey.

The final analytic sample consists of 44,725 observations: 18,134 in the control group and 26,591 in the treatment group.

3 Empirical Strategy

3.1 Difference-in-Differences Design

I employ a difference-in-differences (DiD) research design to estimate the causal effect of DACA eligibility on full-time employment. The key assumption underlying this design is that, in the absence of DACA, the treatment and control groups would have experienced parallel trends in full-time employment.

The basic DiD specification is:

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

where Y_{it} is the full-time employment indicator for individual i in year t, Treatment_i indicates treatment group membership, Post_t indicates the post-DACA period, and the coefficient β_3 on the interaction term captures the DiD estimate of the DACA effect.

3.2 Extended Specifications

I estimate several specifications with increasingly comprehensive sets of controls:

Model 1 (Basic DiD):

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

Model 2 (Demographic Controls):

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

Model 3 (Demographic + Education Controls):

$$Y_{it} = \alpha + \beta_3 (\text{Treatment}_i \times \text{Post}_t) + \mathbf{X}_{it}'\gamma + \mathbf{E}_{it}'\delta + \text{Treatment}_i + \text{Post}_t + \varepsilon_{it} \tag{4}$$

Model 4 (Year Fixed Effects):

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

Model 5 (State and Year Fixed Effects):

$$Y_{it} = \alpha + \beta_3 (\text{Treatment}_i \times \text{Post}_t) + \mathbf{X}_{it}'\gamma + \mathbf{E}_{it}'\delta + \text{Treatment}_i + \lambda_t + \mu_s + \varepsilon_{it} \tag{6}$$

where $\mathbf{X}_{it}$ includes female, married, age, and age squared; $\mathbf{E}_{it}$ includes education indicators; λ_t represents year fixed effects; and μ_s represents state fixed effects.

3.3 Inference

Standard errors are clustered at the state level to account for potential correlation in outcomes within states over time. This approach is appropriate given that DACA implementation was a federal policy with potentially heterogeneous effects across states.

3.4 Event Study Specification

To assess the validity of the parallel trends assumption, I estimate an event study specification:

$$Y_{it} = \alpha + \sum_{k \neq 2011} \theta_k (\text{Treatment}_i \times \mathbf{1}[t = k]) + \mathbf{X}_{it}'\gamma + \text{Treatment}_i + \lambda_t + \varepsilon_{it} \tag{7}$$

where θ_k captures the differential change in full-time employment for the treatment group in year k relative to 2011 (the reference year immediately before DACA). If the parallel trends assumption holds, we would expect $\theta_k \approx 0$ for all pre-DACA years (2006–2010).

4 Results

4.1 Descriptive Statistics

Table 2 presents descriptive statistics for the full sample and by treatment status.

Table 2: Descriptive Statistics

Variable	Full Sample	Control	Treatment
Full-time employment	0.624	0.632	0.619
Age	28.4	31.8	26.0
Female	0.440	0.435	0.443
Married	0.471	0.556	0.413
Less than high school	0.410	0.442	0.388
High school	0.429	0.415	0.438
Some college	0.129	0.112	0.141
College degree	0.032	0.031	0.033
Years in US	18.8	20.7	17.5
N	44,725	18,134	26,591

Notes: Statistics are unweighted sample means. Control group: ages 31–35 at DACA implementation. Treatment group: ages 26–30 at DACA implementation.

The treatment group has a slightly lower baseline full-time employment rate (61.9% vs. 63.2%), is younger on average (26 vs. 32 years), less likely to be married (41.3% vs. 55.6%), and has fewer years in the United States (17.5 vs. 20.7 years). The groups are similar in terms of gender composition and education levels.

4.2 Pre-Treatment Balance

Table 3 examines balance between the treatment and control groups in the pre-DACA period.

Table 3: Pre-Treatment Characteristics (2006–2011)

Variable	Control	Treatment
Full-time employment	0.643	0.611
Age	29.3	24.2
Female	0.432	0.439
Married	0.531	0.372
Less than high school	0.455	0.374
High school	0.409	0.449
Some college	0.105	0.149
College degree	0.031	0.028
Years in US	19.5	15.0

Notes: Sample means for the pre-DACA period (2006–2011).

As expected given the age-based group definitions, the treatment group is younger, less likely to be married, and has fewer years in the US. These differences motivate the inclusion of demographic controls in the regression analysis.

4.3 Main Results: Difference-in-Differences Estimates

Table 4 presents the main DiD regression results across all specifications.

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

	(1) Basic	(2) Demo	(3) Demo+Educ	(4) Year FE	(5) State+Year FE	(6) Weighted
Treatment × Post	0.055***	0.066***	0.066***	0.016	0.014	0.019*
	(0.006)	(0.012)	(0.012)	(0.011)	(0.011)	(0.010)
Treatment	−0.032***	−0.049***	−0.052***	–	–	–
	(0.004)	(0.007)	(0.007)			
Post	−0.032***	−0.021	−0.023	–	–	–
	(0.009)	(0.014)	(0.015)			
Female	–	−0.351***	−0.357***	−0.357***	−0.355***	−0.370**
		(0.012)	(0.013)	(0.013)	(0.013)	(0.013)
Married	–	−0.002	0.003	0.003	0.003	0.008
		(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Demographic controls	No	Yes	Yes	Yes	Yes	Yes
Education controls	No	No	Yes	Yes	Yes	Yes
Year fixed effects	No	No	No	Yes	Yes	Yes
State fixed effects	No	No	No	No	Yes	No
Weighted	No	No	No	No	No	Yes
N	44,725	44,725	44,725	44,725	44,725	44,725

Notes: Standard errors clustered at the state level in parentheses. *** p<0.01, ** p<0.05, * p<0.10. Demograph controls include female, married, age, and age squared. Education controls include high school, some college, a college degree (less than high school is reference). Model 6 uses person weights (PERWT).

4.3.1 Basic DiD Estimate

The basic DiD specification (Column 1) yields an estimated effect of 5.5 percentage points, which is statistically significant at the 1% level. This estimate represents the raw difference-in-differences without any controls.

4.3.2 Effect of Adding Controls

Adding demographic controls (Column 2) increases the estimated effect slightly to 6.6 percentage points, while adding education controls (Column 3) produces a similar estimate of 6.6 percentage points. Both remain highly statistically significant.

4.3.3 Effect of Fixed Effects

The inclusion of year fixed effects (Column 4) substantially reduces the estimated effect to 1.6 percentage points, which is no longer statistically significant at conventional levels ($p = 0.14$). Adding state fixed effects (Column 5) further reduces the estimate to 1.4 percentage points ($p = 0.21$).

4.3.4 Weighted Estimates

The weighted specification (Column 6) using person weights yields an estimate of 1.9 percentage points, which is marginally significant ($p = 0.07$).

4.3.5 Interpretation

The preferred specification (Model 5 with state and year fixed effects) suggests that DACA eligibility increased full-time employment by approximately 1.4 percentage points, though this estimate is not statistically distinguishable from zero. The 95% confidence interval ranges from -0.8 to 3.6 percentage points, indicating substantial uncertainty about the magnitude of the effect.

4.4 Simple DiD Calculation

Table 5 presents the raw mean full-time employment rates used to calculate the simple DiD estimate.

Table 5: Simple Difference-in-Differences Calculation

	Pre-DACA	Post-DACA	Change
Treatment Group	0.611	0.634	+0.023
Control Group	0.643	0.611	−0.032
Difference-in-Differences			**0.055**

Notes: Unweighted sample means. DiD = (0.634 − 0.611) − (0.611 − 0.643) = 0.055.

The treatment group experienced a 2.3 percentage point increase in full-time employment from the pre- to post-period, while the control group experienced a 3.2 percentage point decrease. The difference of these changes (5.5 percentage points) represents the basic DiD estimate.

4.5 Pre-Trends Analysis

Table 6 presents the weighted full-time employment rates by year and treatment status.

Table 6: Weighted Full-Time Employment Rates by Year

Year	Control	Treatment	Difference	Period
2006	0.693	0.638	−0.055	Pre
2007	0.723	0.660	−0.063	Pre
2008	0.692	0.660	−0.031	Pre
2009	0.645	0.612	−0.033	Pre
2010	0.630	0.599	−0.031	Pre
2011	0.630	0.580	−0.050	Pre
2013	0.632	0.642	+0.010	Post
2014	0.618	0.637	+0.020	Post
2015	0.666	0.659	−0.007	Post
2016	0.654	0.699	+0.046	Post

Notes: Weighted using person weights (PERWT). Difference = Treatment − Control.

The pre-trends analysis reveals that the treatment-control gap in full-time employment was relatively stable during the pre-DACA period (ranging from −3.1 to −6.3 percentage points), suggesting approximate parallel trends. In the post-DACA period, the gap narrowed and occasionally reversed, consistent with a positive DACA effect.

4.6 Event Study Results

Table 7 presents the event study coefficients, which capture the treatment-control difference in each year relative to 2011.

Table 7: Event Study Coefficients (Relative to 2011)

Year	Coefficient	Std. Error	p-value	Significant?
Pre-DACA Period				
2006	−0.005	0.013	0.695	No
2007	−0.004	0.014	0.761	No
2008	0.019	0.012	0.111	No
2009	0.006	0.015	0.679	No
2010	−0.003	0.012	0.808	No
Post-DACA Period				
2013	0.022	0.015	0.135	No
2014	0.014	0.015	0.362	No
2015	0.016	0.018	0.368	No
2016	0.026	0.016	0.115	No

Notes: Coefficients from event study regression with 2011 as reference year. Standard errors clustered at state level.

The event study results support the parallel trends assumption. None of the pre-DACA coefficients are statistically significant, and they are all close to zero, indicating that the treatment and control groups were on similar trajectories before DACA implementation. The post-DACA coefficients are consistently positive, ranging from 1.4 to 2.6 percentage points, though none are individually statistically significant.

5 Robustness Checks

5.1 Alternative Age Bandwidth

Table 8 presents results from alternative specifications and robustness checks.

Table 8: Robustness Checks

Specification	Coefficient	Std. Error	p-value
Main Results			
Basic DiD	0.055	0.006	<0.001
State + Year FE	0.014	0.011	0.209
Narrower Age Bandwidth			
Ages 27–30 vs. 31–34	0.064	0.012	<0.001
By Gender			
Males only	0.073	0.030	0.014
Females only	0.048	0.017	0.004
Placebo Test			
Naturalized citizens (N=27,650)	−0.016	0.014	0.261

Notes: All specifications include demographic and education controls. Standard errors clustered at state level.

5.1.1 Narrower Age Bandwidth

Using a narrower age bandwidth (ages 27–30 vs. 31–34 at DACA implementation) yields a larger and statistically significant estimate of 6.4 percentage points. This specification reduces concerns about comparing individuals of very different ages, though it also reduces sample size.

5.1.2 Gender-Specific Effects

The estimated effect is positive and statistically significant for both males (7.3 percentage points, $p = 0.014$) and females (4.8 percentage points, $p = 0.004$). The larger effect for males may reflect their higher baseline labor force participation rates and greater responsiveness to work authorization.

5.1.3 Placebo Test

As a placebo test, I apply the same DiD framework to naturalized citizens of Hispanic-Mexican origin born in Mexico. These individuals were already legally authorized to work and should not have been affected by DACA. The placebo estimate is small and statistically insignificant (−1.6 percentage points, $p = 0.26$), supporting the validity of the research design.

6 Discussion

6.1 Summary of Findings

This study examines the effect of DACA eligibility on full-time employment using a difference-in-differences design. The main findings are:

1. The simple DiD estimate suggests a 5.5 percentage point increase in full-time employment for DACA-eligible individuals.
2. After controlling for year and state fixed effects along with demographic characteristics, the estimate decreases to 1.4 percentage points and becomes statistically insignificant.
3. Pre-trends analysis supports the parallel trends assumption underlying the DiD design.
4. Robustness checks, including gender-specific analyses and a placebo test using naturalized citizens, support the validity of the research design.

6.2 Interpretation

The divergence between the basic DiD estimate and the specification with fixed effects suggests that time-varying factors common to both groups explain much of the observed change in employment patterns. The year fixed effects absorb aggregate economic trends (such as recovery from the Great Recession), while state fixed effects control for state-specific economic conditions.

The preferred estimate of 1.4 percentage points represents a modest effect—approximately a 2.2% increase relative to the pre-DACA treatment group mean of 61.1%. However, the wide confidence interval (ranging from -0.8 to 3.6 percentage points) indicates substantial uncertainty about the true magnitude.

6.3 Limitations

Several limitations should be considered when interpreting these results:

1. **Measurement of undocumented status**: The ACS does not identify undocumented immigrants. Using non-citizen status as a proxy may include some legal non-citizens who were not affected by DACA.
2. **Imperfect control group**: The control group (ages 31–35) differs from the treatment group in ways beyond just DACA eligibility, including life-cycle differences in labor market behavior.

3. **Sample selection**: The eligibility criteria based on year of immigration and age at immigration may not perfectly capture DACA eligibility.

4. **Timing imprecision**: Without knowing the exact month of ACS interviews, some observations classified as "post-DACA" may have been collected before widespread DACA enrollment.

5. **General equilibrium effects**: The estimates capture only the direct effect on eligible individuals and do not account for potential spillover effects on non-eligible workers.

6.4 Comparison to Existing Literature

The findings are broadly consistent with previous research on DACA's labor market effects. Prior studies have found positive but often modest effects on employment outcomes, with considerable heterogeneity across subgroups and specifications. The sensitivity of results to the inclusion of fixed effects highlights the importance of controlling for aggregate trends when evaluating policy effects during periods of economic change.

7 Conclusion

This study provides evidence on the effect of DACA eligibility on full-time employment among Hispanic-Mexican, Mexican-born individuals in the United States. Using a difference-in-differences design comparing individuals aged 26–30 at DACA implementation to those aged 31–35, I find a modest positive effect that is sensitive to specification choices.

The simple DiD estimate of 5.5 percentage points decreases to 1.4 percentage points and becomes statistically insignificant when year and state fixed effects are included. The pre-trends analysis supports the parallel trends assumption, and robustness checks including gender-specific analyses and a placebo test support the validity of the research design.

The results suggest that DACA may have had a positive effect on full-time employment for eligible individuals, though the effect is smaller and less precisely estimated than the simple comparison would suggest. Future research with more precise identification of undocumented status and longer post-DACA observation periods could provide additional insight into the program's labor market effects.

Appendix

A. Data and Sample Construction

Table 9: Sample Construction

Step	Observations
Initial ACS data (2006–2016, excluding 2012)	–
Hispanic-Mexican, Mexican-born, non-citizens	636,722
Born 1977–1986 (target age groups)	162,283
Arrived before age 16, by 2007	44,725
Ages 18–65 in survey year	44,725
Final analytic sample	44,725

B. Variable Definitions

Table 10: Variable Definitions from IPUMS

Variable	Definition
YEAR	Survey year
BIRTHYR	Year of birth
HISPAN	Hispanic origin (1 = Mexican)
BPL	Birthplace (200 = Mexico)
CITIZEN	Citizenship status (3 = Not a citizen)
YRIMMIG	Year of immigration
UHRSWORK	Usual hours worked per week
SEX	Sex (1 = Male, 2 = Female)
MARST	Marital status (1–2 = Married)
AGE	Age in years
EDUC	Educational attainment
STATEFIP	State FIPS code
PERWT	Person weight

C. Full Regression Output

Table 11: Full Model 5 Results (State and Year Fixed Effects)

Variable	Coefficient	Std. Error	t-stat	p-value
Treatment × Post	0.0141	0.0112	1.26	0.209
Treatment	–	–	–	–
Female	−0.355	0.013	−27.31	<0.001
Married	0.003	0.005	0.60	0.549
Age	−0.018	0.009	−2.00	0.045
Age^2	0.0003	0.0002	1.50	0.133
High School	0.057	0.006	9.50	<0.001
Some College	0.083	0.011	7.55	<0.001
College Degree	0.146	0.017	8.59	<0.001
Year FE		Yes		
State FE		Yes		
N		44,725		

References

- IPUMS USA, University of Minnesota, www.ipums.org
- U.S. Citizenship and Immigration Services, DACA program documentation
- American Community Survey, U.S. Census Bureau