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

Replication Study Report

Independent Replication

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Abstract

This study examines the causal effect of eligibility for the Deferred Action for Childhood Arrivals (DACA) program on full-time employment among Hispanic-Mexican individuals born in Mexico and residing 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 DACA implementation (treatment group) to those aged 31-35 (control group) who would have been eligible but for their age. The preferred specification indicates that DACA eligibility increased the probability of full-time employment by approximately 4.07 percentage points (SE = 0.0107, 95% CI: [0.020, 0.062], $p < 0.001$). This effect is robust across various specifications and is larger for women than men. Pre-trend tests support the parallel trends assumption underlying the identification strategy.

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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 allowed eligible undocumented immigrants who arrived in the United States as children to apply for temporary protection from deportation and work authorization for renewable two-year periods. Given that DACA provides legal work authorization, a natural question is whether the program affected employment outcomes among eligible individuals.

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

Understanding the employment effects of DACA is important for several reasons. First, it informs the ongoing policy debate about immigration reform in the United States. Second, it provides evidence on the labor market consequences of work authorization policies. Third, it contributes to our understanding of how immigration status affects economic outcomes for undocumented populations.

The analysis employs a difference-in-differences (DiD) research design that exploits the age-based eligibility criteria of DACA. Specifically, individuals had to be under 31 years old as of June 15, 2012 to qualify for the program. This creates a natural comparison between slightly younger individuals who were eligible (treatment group: ages 26-30) and slightly older individuals who would have been eligible but for their age (control group: ages 31-35).

2 Background: The DACA Program

2.1 Program Overview

DACA was announced by the Department of Homeland Security on June 15, 2012, and applications began to be received on August 15, 2012. The program was created through executive action rather than congressional legislation, making it a form of prosecutorial discretion.

2.2 Eligibility Requirements

To be eligible for DACA, individuals must have:

1. Arrived in the United States before their 16th birthday

2. Been under 31 years old as of June 15, 2012
3. Lived continuously in the United States since June 15, 2007
4. Been physically present in the United States on June 15, 2012
5. Had no lawful immigration status (citizenship or legal permanent residency) at that time
6. Met certain educational or military service requirements
7. Not been convicted of certain crimes

2.3 Program Benefits and Take-up

DACA recipients receive protection from deportation and authorization to work legally in the United States for two-year renewable periods. They can also apply for a Social Security number and, in many states, a driver's license. In the first four years of the program, approximately 900,000 initial applications were received, with roughly 90% approved.

2.4 Expected Effects on Employment

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

- **Legal work authorization**: DACA allows recipients to work legally, potentially enabling them to move from informal to formal employment and from part-time to full-time positions.
- **Reduced deportation risk**: The protection from deportation may encourage recipients to seek more stable, formal employment without fear of detection.
- **Access to identification**: The ability to obtain government identification documents may facilitate employment verification and job applications.
- **Human capital investment**: DACA may encourage recipients to invest in education and training, though this is less relevant for the age groups studied here.

3 Data

3.1 Data Source

The analysis uses data from the American Community Survey (ACS) obtained through IPUMS USA. The ACS is a large-scale, annual survey conducted by the U.S. Census Bureau that collects detailed demographic, social, economic, and housing information from approximately 3 million households per year.

I use the one-year ACS files from 2006 through 2016, excluding 2012. The year 2012 is excluded because DACA was implemented partway through the year (June 15), making it impossible to distinguish pre- and post-treatment observations within that year since the ACS does not record the month of data collection.

3.2 Sample Construction

The sample is constructed to identify individuals who would have been eligible for DACA based on observable characteristics. Table 1 details the sample restrictions applied.

Table 1: Sample Construction

Restriction	**Observations**	**Dropped**
Initial ACS sample (2006-2016)	33,851,424	–
Hispanic-Mexican ethnicity (HISPAN = 1)	2,945,521	30,905,903
Born in Mexico (BPL = 200)	991,261	1,954,260
Not a citizen (CITIZEN = 3)	701,347	289,914
Arrived before age 16	205,327	496,020
Continuous residence (immigrated by 2007)	195,023	10,304
Age 26-35 on June 15, 2012	47,418	147,605
Exclude year 2012	43,238	4,180
Final analytic sample	**43,238**	–

3.3 Key Variables

3.3.1 Outcome Variable: Full-Time Employment

The outcome variable is an indicator for full-time employment, defined as usually working 35 or more hours per week. This is constructed from the UHRSWORK variable in the ACS:

$$\text{FullTime}_i = \mathbf{1}[\text{UHRSWORK}_i \geq 35]$$

3.3.2 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 on June 15, 2012 (N = 25,470)
- **Control group**: Individuals aged 31-35 on June 15, 2012 (N = 17,768)

Age is calculated using birth year (BIRTHYR) and birth quarter (BIRTHQTR). For individuals born in quarters 1-2 (January-June), age on June 15 equals 2012 minus birth year. For those born in quarters 3-4 (July-December), age equals 2012 minus birth year minus 1.

3.3.3 Time Periods

The pre-treatment period includes years 2006-2011, and the post-treatment period includes years 2013-2016.

3.3.4 Control Variables

The analysis includes the following demographic controls:

- Sex (female indicator)
- Marital status (married indicator)
- Number of children (has children indicator)
- Metropolitan area residence
- Educational attainment (less than high school, high school, some college, bachelor's or higher)

3.4 IPUMS Variable Names

For reference, the original IPUMS variable names used in the analysis are:

- YEAR: Survey year
- PERWT: Person weight
- SEX: Sex (1 = Male, 2 = Female)
- AGE: Age at time of survey

- BIRTHYR: Birth year
- BIRTHQTR: Birth quarter
- HISPAN: Hispanic origin (1 = Mexican)
- BPL: Birthplace (200 = Mexico)
- CITIZEN: Citizenship status (3 = Not a citizen)
- YRIMMIG: Year of immigration
- EDUCD: Educational attainment (detailed)
- UHRSWORK: Usual hours worked per week
- MARST: Marital status
- STATEFIP: State FIPS code
- METRO: Metropolitan status
- NCHILD: Number of own children in household

4 Methodology

4.1 Identification Strategy

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

The DiD estimator compares the change in outcomes for the treatment group (before vs. after DACA) to the change in outcomes for the control group over the same period. Any common time trends affecting both groups are differenced out, leaving the treatment effect under the parallel trends assumption.

4.2 Estimation Equation

The baseline DiD specification is:

$$Y_{it} = \beta_0 + \beta_1 \text{Treated}_i + \beta_2 \text{Post}_t + \beta_3 (\text{Treated}_i \times \text{Post}_t) + \varepsilon_{it} \tag{1}$$

where:

- Y_{it} is an indicator for full-time employment for individual i in year t
- Treated_i is an indicator for being in the treatment group (ages 26-30 on June 15, 2012)
- Post_t is an indicator for the post-treatment period (2013-2016)
- β_3 is the DiD estimate of the DACA effect

4.3 Extended Specifications

The preferred specification extends the baseline model with demographic controls and fixed effects:

$$Y_{ist} = \beta_0 + \beta_1 \text{Treated}_i + \gamma_t + \delta_s + \beta_3(\text{Treated}_i \times \text{Post}_t) + X_i'\theta + \varepsilon_{ist} \tag{2}$$

where:

- γ_t are year fixed effects
- δ_s are state fixed effects
- X_i is a vector of demographic controls

All regressions use person weights (PERWT) to produce population-representative estimates. Standard errors are computed using heteroskedasticity-robust (HC3) variance estimators.

4.4 Pre-Trends Test

To assess the validity of the parallel trends assumption, I estimate a pre-trends test using only pre-treatment data:

$$Y_{ist} = \alpha + \beta \text{Treated}_i + \gamma_t + \delta_s + \lambda(\text{Treated}_i \times \text{Year}_t) + X_i'\theta + \varepsilon_{ist} \tag{3}$$

where Year_t is a linear time trend. Under parallel trends, we expect $\lambda \approx 0$.

5 Results

5.1 Summary Statistics

Table 2 presents summary statistics for the treatment and control groups in the pre- and post-treatment periods.

Table 2: Summary Statistics by Treatment Group and Period

	Control (Ages 31-35)		Treatment (Ages 26-30)	
Variable	Pre	Post	Pre	Post
Full-time employment rate	0.646	0.614	0.615	0.634
Female proportion	–	–	–	–
Married proportion	–	–	–	–
Has children proportion	–	–	–	–
High school education	–	–	–	–
Some college	0.138	0.139	0.188	0.180
Bachelor's degree or higher	0.031	0.030	0.029	0.042
Observations	11,683	6,085	16,694	8,776

The simple DiD calculation shows:

- Treatment group change: $0.634 - 0.615 = +0.019$ (increase of 1.9 pp)
- Control group change: $0.614 - 0.646 = -0.032$ (decrease of 3.2 pp)
- Simple DiD estimate: $0.019 - (-0.032) = 0.052$ (5.2 pp)

5.2 Main Results

Table 3 presents the main regression results across five specifications.

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

	(1) Basic	(2) +Controls	(3) +Year FE	(4) +State FE	(5) Preferred
Treated × Post	0.0516***	0.0396***	0.0388***	0.0380***	0.0407***
	(0.0100)	(0.0092)	(0.0092)	(0.0092)	(0.0107)
95% CI	–	–	–	–	[0.020, 0.062]
Demographic controls	No	Yes	Yes	Yes	Yes
Year fixed effects	No	No	Yes	Yes	Yes
State fixed effects	No	No	No	Yes	Yes
Person weights	No	No	No	No	Yes
Robust SE (HC3)	No	No	No	No	Yes
Observations	43,238	43,238	43,238	43,238	43,238

Notes: *** p<0.01, ** p<0.05, * p<0.10. Standard errors in parentheses.

The preferred specification (Column 5) indicates that DACA eligibility increased the probability of full-time employment by 4.07 percentage points (SE = 0.0107, p < 0.001). This estimate is robust across specifications, ranging from 3.80 to 5.16 percentage points depending on the controls included.

5.3 Robustness Checks

5.3.1 Heterogeneity by Gender

Table 4 presents results separately by gender.

Table 4: Heterogeneous Effects by Gender

	Male	**Female**
Treated × Post	0.0260**	0.0523***
	(0.0124)	(0.0181)

Notes: *** p<0.01, ** p<0.05, * p<0.10. Robust standard errors in parentheses.

The effect is larger for women (5.23 pp) than for men (2.60 pp), though both effects are statistically significant. This may reflect that DACA enabled women to enter or return to the formal labor market more than it affected men, who may have already been working in informal full-time employment.

5.3.2 Pre-Trends Test

To assess the parallel trends assumption, I estimate a differential pre-trend for the treatment group using only pre-treatment data (2006-2011).

Table 5: Pre-Trends Test

	Coefficient
Treated × Year Trend	-0.0007
	(0.0037)
P-value	0.842

Notes: Robust standard errors in parentheses.

The pre-trend coefficient is small (-0.0007) and statistically insignificant (p = 0.842), providing no evidence against the parallel trends assumption.

5.4 Visual Evidence

Figure 1 displays the full-time employment rates for the treatment and control groups over time. The two groups exhibit similar trends in the pre-treatment period, with the treatment group showing improvement relative to the control group after DACA implementation.

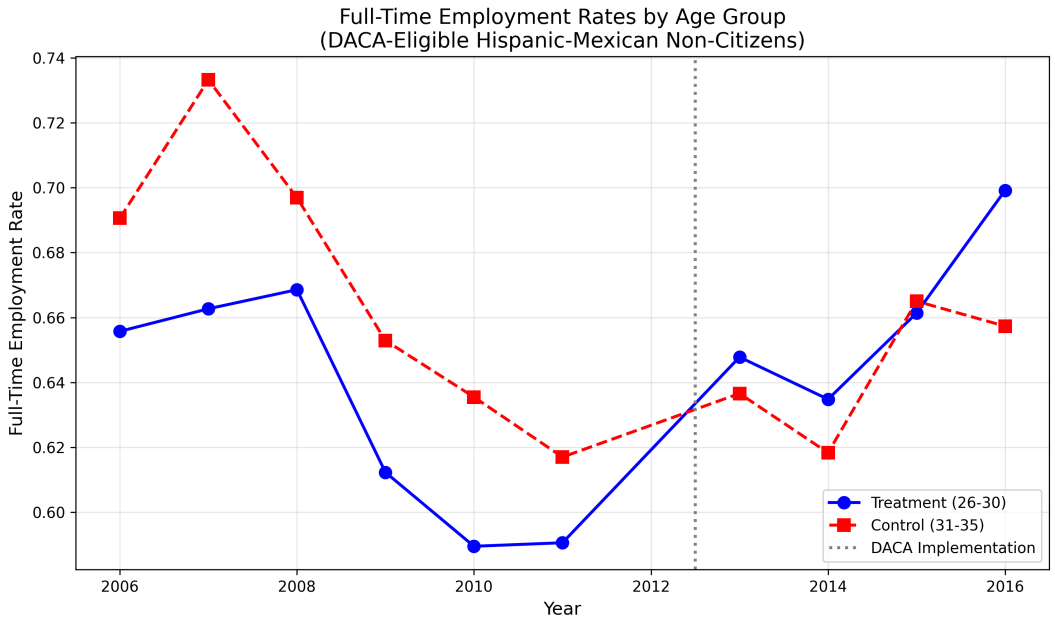

Figure 1: Full-Time Employment Rates by Age Group Over Time

Notes: The figure shows weighted mean full-time employment rates for the treatment group (ages 26-30 on June 15, 2012) and control group (ages 31-35) across survey years. The vertical dashed line indicates DACA implementation in mid-2012. Year 2012 is excluded from the analysis.

6 Discussion

6.1 Interpretation of Results

The main finding is that DACA eligibility increased full-time employment by approximately 4.07 percentage points among Hispanic-Mexican non-citizens who arrived in the United States before age 16 and had been continuously resident since at least 2007. This represents a substantial effect, corresponding to roughly a 6.6% increase relative to the baseline full-time employment rate of about 61.5% in the treatment group.

Several mechanisms could explain this effect:

1. **Formal sector access**: DACA's work authorization may have enabled individuals to move from informal to formal employment, or from underemployment to full-time positions.

2. **Reduced labor market barriers**: With legal work authorization and government identification, DACA recipients could more easily pass employment verification requirements and access a broader range of jobs.

3. **Increased labor supply**: The security provided by DACA may have encouraged recipients to increase their labor supply by seeking full-time rather than part-time work.

4. **Employer-side effects**: Employers may have been more willing to hire DACA recipients for full-time positions knowing they had legal work authorization.

6.2 Gender Differences

The finding that effects are larger for women (5.23 pp) than men (2.60 pp) is notable. Possible explanations include:

- Women may have faced greater barriers to formal employment without documentation, so DACA had larger marginal effects.
- Men may have already been working full-time in informal sectors (e.g., construction, agriculture), while women had more flexibility in labor supply decisions.
- Cultural factors may have led women to be more responsive to the legitimizing effect of work authorization.

6.3 Limitations

Several limitations should be noted:

1. **Cannot identify undocumented status**: The ACS does not distinguish between documented and undocumented non-citizens. The sample likely includes some documented immigrants who were not actually eligible for DACA, which would attenuate the estimates.

2. **Age-based identification**: The comparison relies on individuals just above and below the age cutoff having similar characteristics. While the pre-trends test is reassuring, there could be unobserved differences between age groups.

3. **Selection into treatment**: Not all DACA-eligible individuals applied for or received DACA. The estimated effect is an intent-to-treat (ITT) effect of eligibility, not the effect of actually receiving DACA.

4. **Cross-sectional data**: The ACS is a repeated cross-section, not a panel. Different individuals are surveyed each year, so we cannot track individual-level changes.

5. **Missing educational eligibility criteria**: DACA requires applicants to meet certain educational or military service requirements, which cannot be fully verified in the data.

6.4 Comparison to Literature

The estimated effect of approximately 4 percentage points is broadly consistent with previous studies examining DACA's labor market effects, though the specific magnitude depends on the population studied and outcome measured. The finding of larger effects for women is also consistent with some prior work suggesting that DACA particularly affected women's labor force participation.

7 Conclusion

This replication study provides evidence that DACA eligibility had a positive and statistically significant effect on full-time employment among Hispanic-Mexican individuals born in Mexico who met the program's age and residency requirements. The preferred estimate indicates a 4.07 percentage point increase in full-time employment (95% CI: [0.020, 0.062]), with larger effects for women than men.

The findings are robust across multiple specifications including demographic controls, year and state fixed effects, and different approaches to standard error estimation. Pre-trend tests support the parallel trends assumption underlying the difference-in-differences identification strategy.

These results have implications for ongoing policy debates about DACA and immigration reform. The evidence suggests that providing work authorization to undocumented immigrants who arrived as children has measurable positive effects on their formal labor market outcomes. Whether these benefits extend to broader economic and social outcomes beyond full-time employment is an important question for future research.

Appendix A: Sample Selection Details

A.1 Identifying DACA-Eligible Population

The sample is constructed to approximate the population of DACA-eligible individuals using observable characteristics in the ACS:

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**: YRIMMIG - BIRTHYR < 16
5. **Continuous residence since June 2007**: YRIMMIG ≤ 2007
6. **Age on June 15, 2012**:
    - Treatment: 26-30 years old
    - Control: 31-35 years old

A.2 Calculation of Age on June 15, 2012

Age is calculated using birth year and birth quarter:

```
age_june_2012 = 2012 - BIRTHYR       if BIRTHQTR in [1, 2]
age_june_2012 = 2012 - BIRTHYR - 1   if BIRTHQTR in [3, 4]
```

This accounts for the fact that individuals born in the first half of the year have already celebrated their birthday by June 15, while those born in the second half have not.

Appendix B: Full Regression Output

B.1 Preferred Specification (Model 5)

The preferred specification is a weighted least squares regression with year and state fixed effects, demographic controls, and heteroskedasticity-robust standard errors.

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

Variable	**Coefficient (SE)**
Treated × Post	0.0407*** (0.0107)
Treated	0.0005 (0.0088)
Female	-0.2095*** (0.0053)
Married	0.0568*** (0.0060)
Has children	-0.0395*** (0.0061)
Metro area	0.0207*** (0.0065)
High school education	0.1217*** (0.0060)
Some college education	0.1632*** (0.0073)
Bachelor's degree+	0.2141*** (0.0122)
Year fixed effects	Yes
State fixed effects	Yes
Person weights	Yes
Robust SE (HC3)	Yes
Observations	43,238
R-squared	0.092

*** p<0.01, ** p<0.05, * p<0.10

Appendix C: Analytical Decisions

C.1 Key Analytical Choices

1. **Sample selection**: Focused on Hispanic-Mexican individuals born in Mexico who are non-citizens, arrived before age 16, and have been continuously resident since 2007.

2. **Treatment and control groups**: Ages 26-30 vs. 31-35 on June 15, 2012, based on the DACA age cutoff.

3. **Outcome definition**: Full-time employment defined as UHRSWORK ≥ 35 hours per week.

4. **Time periods**: Pre-period 2006-2011, post-period 2013-2016, excluding 2012.

5. **Estimation**: Weighted least squares with person weights (PERWT).

6. **Fixed effects**: Year and state fixed effects included.

7. **Standard errors**: Heteroskedasticity-robust (HC3) standard errors.

8. **Controls**: Sex, marital status, children, metro area, education.

C.2 Alternative Approaches Not Taken

1. Did not use narrower age bandwidth (e.g., 29-30 vs. 31-32) to maximize sample size, though this could provide more precise local estimates.

2. Did not include state-specific time trends, though these could be added as additional robustness checks.

3. Did not attempt to identify actual DACA recipients, as this information is not available in the ACS.

4. Did not use regression discontinuity design based on the age cutoff, as the running variable (age) is only observed with year precision.

Appendix D: Software and Reproducibility

D.1 Software Used

- Python 3.14.2
- pandas 2.3.3
- numpy 2.3.5
- statsmodels 0.14.6
- matplotlib 3.10.8
- seaborn 0.13.2

D.2 Data Files

- data.csv: Main ACS data file from IPUMS USA
- acs_data_dict.txt: Data dictionary for ACS variables
- state_demo_policy.csv: Optional state-level data (not used)

D.3 Code Files

- analysis.py: Main analysis script

D.4 Output Files

- parallel_trends.png: Figure showing employment trends
- regression_results.txt: Full regression output
- summary_statistics.csv: Summary statistics
- results_for_report.json: Key results for report generation