The Effect of DACA Eligibility on Full-Time Employment: An Independent Replication Study

Replication Task 75

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Abstract

This study replicates the estimation of the causal impact of eligibility for the Deferred Action for Childhood Arrivals (DACA) program on full-time employment among Hispanic-Mexican individuals born in Mexico. Using American Community Survey data from 2006–2016 and a difference-in-differences design, I compare individuals aged 26–30 at DACA implementation (treatment group) to those aged 31–35 (control group). The analysis finds that DACA eligibility increased the probability of full-time employment by approximately 4.35 percentage points (95% CI: 2.40–6.29 pp, $p < 0.001$). This effect is robust to the inclusion of demographic covariates and state and year fixed effects. Event study analysis shows no differential pre-trends and positive effects emerging after DACA implementation, with the largest effects in 2016 (6.5 percentage points).

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

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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 offered undocumented immigrants who arrived in the United States as children the opportunity to obtain temporary protection from deportation and legal work authorization. Given that employment is a fundamental pathway to economic integration and well-being, understanding the causal effects of DACA on labor market outcomes is of substantial policy importance.

This replication study examines a focused research question: What is the causal effect of DACA eligibility on full-time employment among Hispanic-Mexican individuals born in Mexico? Following the study design specifications, I implement a difference-in-differences (DiD) approach comparing individuals who were ages 26–30 at the time of DACA implementation (the treatment group, who were eligible) to those who were ages 31–35 (the control group, who were too old to qualify but otherwise met the eligibility criteria).

The study leverages the age-based cutoff in DACA eligibility—specifically, the requirement that applicants must not have reached their 31st birthday as of June 15, 2012—to create a quasi-experimental design. By comparing employment outcomes between these adjacent age groups before and after DACA implementation, we can estimate the causal effect of the policy under standard DiD assumptions.

2 Background

2.1 The DACA Program

DACA was announced by the Department of Homeland Security on June 15, 2012. The program allowed certain undocumented immigrants who arrived in the United States as children to request deferred action from deportation and receive work authorization. To be eligible, individuals had to meet the following criteria:

- Were under the age of 31 as of June 15, 2012
- Came to the United States before reaching their 16th birthday
- Have continuously resided in the United States since June 15, 2007
- Were physically present in the United States on June 15, 2012
- Were currently in school, graduated from high school, obtained a GED certificate, or were an honorably discharged veteran

- Had not been convicted of a felony, significant misdemeanor, or three or more other misdemeanors

Applications began being accepted on August 15, 2012. In the first four years of the program, nearly 900,000 initial applications were received, with approximately 90% approved. While the program was not specific to any national origin, the vast majority of eligible individuals were from Mexico, reflecting patterns of undocumented immigration to the United States.

2.2 Expected Effects on Employment

DACA eligibility could affect full-time employment through several channels:

1. **Legal work authorization**: DACA recipients can legally work in the United States, potentially allowing them to move from informal employment to formal sector jobs with better wages and hours.

2. **Access to driver's licenses**: Many states allow DACA recipients to obtain driver's licenses, expanding access to jobs that require driving or are in locations poorly served by public transportation.

3. **Reduced fear of deportation**: The protection from deportation may encourage recipients to seek better employment opportunities without fear of detection.

4. **Human capital investment**: The temporary protection may encourage recipients to invest in education and training, improving employment prospects.

2.3 Prior Literature

Several studies have examined the effects of DACA on labor market outcomes. Research has generally found positive effects on employment and wages among DACA-eligible populations, though estimates vary depending on the methodology and comparison group used. This replication follows a specific research design comparing age-adjacent groups to isolate the age-based eligibility effect.

3 Data

3.1 Data Source

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

collects demographic, housing, social, and economic information from approximately 3.5 million households each year.

I use the one-year ACS files from 2006–2016, excluding multi-year files. The year 2012 is excluded from the analysis because DACA was implemented mid-year (June 15, 2012), making it impossible to distinguish pre-treatment and post-treatment observations within that survey year.

3.2 Sample Selection

The analysis sample is constructed through several filtering steps:

1. **Hispanic-Mexican ethnicity**: Individuals must have HISPAN = 1 (Mexican Hispanic origin)
2. **Born in Mexico**: Individuals must have BPL = 200 (birthplace is Mexico)
3. **Non-citizen status**: Individuals must have CITIZEN = 3 (not a citizen). This serves as a proxy for undocumented status, as the ACS does not directly identify legal status.
4. **Arrived before age 16**: The age at immigration (calculated as YRIMMIG - BIRTHYR) must be less than 16
5. **Continuous residence since June 2007**: YRIMMIG must be 2007 or earlier
6. **Age at DACA implementation**: Individuals are assigned to:
    - Treatment group: Ages 26–30 on June 15, 2012
    - Control group: Ages 31–35 on June 15, 2012

Age at DACA implementation is calculated using BIRTHYR and BIRTHQTR, approximating the birth month as the midpoint of each quarter.

3.3 Variables

The key variables used in the analysis are:

- **YEAR**: Survey year (2006–2011 pre-period, 2013–2016 post-period)
- **PERWT**: Person weight for population-representative estimates
- **UHRSWORK**: Usual hours worked per week (outcome variable basis)
- **BIRTHYR, BIRTHQTR**: Birth year and quarter for age calculation

- **HISPAN, BPL, CITIZEN, YRIMMIG**: Variables for sample selection
- **SEX**: Sex (1 = male, 2 = female), used as covariate
- **MARST**: Marital status, used as covariate
- **EDUCD**: Detailed education, used to create education covariates
- **STATEFIP**: State FIPS code, used for state fixed effects

3.4 Outcome Variable

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

3.5 Sample Size

Table 1 presents the sample construction:

Table 1: Sample Construction

Filter Step	Observations
Initial ACS data (2006–2016)	33,851,424
Hispanic-Mexican, Mexico-born, non-citizen	701,347
Arrived before age 16, by 2007	195,023
Ages 26–35 at DACA implementation	47,418
Excluding 2012	43,238

The final analysis sample contains 43,238 observations: 25,470 in the treatment group (ages 26–30) and 17,768 in the control group (ages 31–35).

4 Methodology

4.1 Research Design

I employ a difference-in-differences (DiD) design that exploits the age-based eligibility cutoff of the DACA program. The treatment group consists of individuals who were ages 26–30 on June 15, 2012, making them eligible for DACA. The control group consists of individuals who were ages 31–35 on that date, making them ineligible due to exceeding the age limit, but who otherwise would have met the eligibility criteria.

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 testable during the pre-treatment period and is examined in the robustness checks.

4.2 Estimation

The basic DiD model 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 equals 1 if the individual was ages 26–30 at DACA implementation
- Post_t equals 1 for years 2013–2016
- β_3 is the DiD coefficient of interest, capturing the causal effect of DACA eligibility

The preferred specification adds covariates and fixed effects:

$$Y_{it} = \alpha + \beta_3 (\text{Treated}_i \times \text{Post}_t) + \mathbf{X}_{it}'\gamma + \theta_t + \phi_s + \varepsilon_{it} \tag{2}$$

where $\mathbf{X}_{it}$ includes individual characteristics (sex, marital status, education), θ_t represents year fixed effects, and ϕ_s represents state fixed effects. Note that with year fixed effects, Post_t is absorbed, and similarly, since treatment status is fixed within individuals, Treated_i is effectively captured by the combination of age and time effects.

Standard errors are clustered at the state level to account for within-state correlation in outcomes. All models are estimated using weighted least squares with person weights (PERWT) to produce population-representative estimates.

4.3 Event Study

To examine the dynamics of the treatment effect and test for pre-trends, I also estimate an event study specification:

$$Y_{it} = \alpha + \sum_{k \neq -1} \gamma_k (\text{Treated}_i \times \mathbf{1}[\text{Year}_t = k]) + \theta_t + \mathbf{X}_{it}'\delta + \varepsilon_{it} \tag{3}$$

where k indexes years relative to 2012 (with 2011, $k = -1$, as the reference year). The coefficients γ_k trace out the dynamic treatment effects. Under the parallel trends assumption, we expect $\gamma_k \approx 0$ for $k < 0$ (pre-treatment periods).

5 Results

5.1 Summary Statistics

Table 2 presents summary statistics for full-time employment rates by treatment status and time period.

Table 2: Full-Time Employment Rates by Group and Period (Weighted)

	Pre-DACA (2006–2011)		Post-DACA (2013–2016)	
Group	Rate	Population	Rate	Population
Treatment (26–30)	0.631	2,280,009	0.660	1,244,124
Control (31–35)	0.673	1,631,151	0.643	845,134
Difference	−0.043		0.016	

Several patterns emerge from the descriptive statistics:

1. In the pre-DACA period, the control group (ages 31–35) had higher full-time employment rates than the treatment group (ages 26–30), consistent with the typical age-earnings profile where employment rates increase with age.

2. After DACA implementation, this gap reversed: the treatment group showed higher full-time employment rates than the control group.

3. The simple difference-in-differences calculation is: $(0.660 - 0.631) - (0.643 - 0.673) = 0.029 + 0.030 = 0.059$, suggesting a positive effect of approximately 5.9 percentage points.

5.2 Main Results

Table 3 presents the difference-in-differences regression results across multiple specifications.

Table 3: Difference-in-Differences Estimates of DACA Effect on Full-Time Employment

	(1) Basic	(2) Weighted	(3) Covariates	(4) Full Model
DiD (Treated × Post)	0.052***	0.059***	0.046***	0.043***
	(0.010)	(0.010)	(0.009)	(0.010)
Treated	−0.031***	−0.043***	−0.041***	—
	(0.006)	(0.006)	(0.005)	
Post	−0.032***	−0.030***	−0.016**	—
	(0.008)	(0.008)	(0.007)	
Female			−0.374***	−0.374***
			(0.004)	(0.017)
Married			−0.007	−0.006
			(0.004)	(0.006)
High School+			0.058***	0.058***
			(0.004)	(0.006)
College+			0.080***	0.082***
			(0.012)	(0.016)
Year FE	No	No	No	Yes
State FE	No	No	No	Yes
Weighted	No	Yes	Yes	Yes
Clustered SE	No	No	No	Yes
Observations	43,238	43,238	43,238	43,238
R-squared	0.001	0.001	0.154	0.161

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

Standard errors in parentheses. Column (4) uses state-clustered SEs.

5.2.1 Model Interpretation

Column (1): Basic OLS. The unweighted DiD coefficient is 0.052 (SE = 0.010, $p < 0.001$), indicating that DACA eligibility increased the probability of full-time employment by 5.2 percentage points.

Column (2): Weighted OLS. Using person weights, the DiD coefficient increases slightly to 0.059 (SE = 0.010, $p < 0.001$), suggesting a 5.9 percentage point increase in full-time employment probability.

Column (3): With Covariates. Adding controls for sex, marital status, and education, the DiD coefficient is 0.046 (SE = 0.009, $p < 0.001$). The covariates have expected

signs: women have substantially lower full-time employment rates (37.4 percentage points lower), and education is positively associated with full-time employment.

Column (4): Full Model (Preferred). The preferred specification includes year fixed effects, state fixed effects, covariates, and state-clustered standard errors. The DiD coefficient is 0.043 (SE = 0.010, $p < 0.001$), with a 95% confidence interval of [0.024, 0.063].

5.2.2 Preferred Estimate

The preferred estimate indicates that DACA eligibility increased the probability of full-time employment by **4.35 percentage points** (95% CI: 2.40–6.29 pp). This effect is statistically significant at the 1% level and economically meaningful, representing approximately a 6.9% increase relative to the pre-DACA treatment group mean of 63.1%.

5.3 Year-by-Year Effects

Table 4 presents the difference in full-time employment rates between treatment and control groups for each year.

Table 4: Full-Time Employment Rates by Year

Year	Treatment	Control	Difference
Pre-DACA Period			
2006	0.656	0.691	−0.035
2007	0.663	0.733	−0.071
2008	0.669	0.697	−0.028
2009	0.612	0.653	−0.041
2010	0.590	0.636	−0.046
2011	0.591	0.617	−0.026
Post-DACA Period			
2013	0.648	0.637	+0.011
2014	0.635	0.618	+0.017
2015	0.661	0.665	−0.004
2016	0.699	0.657	+0.042

Key observations:

- Throughout the pre-DACA period, the treatment group consistently had lower full-time employment rates than the control group, with gaps ranging from 2.6 to 7.1 percentage points.
- The gap narrowed substantially during the 2009–2011 recession period.

- After DACA implementation, the gap reversed in most years, with the treatment group showing higher full-time employment rates.
- The treatment effect appears to grow over time, with the largest difference in 2016.

5.4 Event Study Results

Figure ?? would display the event study coefficients (presented numerically in Table 5).

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

Year	t	Coefficient	SE	Significance
2006	-6	0.009	(0.018)	
2007	-5	-0.029	(0.019)	
2008	-4	0.009	(0.019)	
2009	-3	-0.007	(0.019)	
2010	-2	-0.012	(0.019)	
2011	-1	(reference)		
2013	$+1$	0.035	(0.019)	*
2014	$+2$	0.036	(0.020)	*
2015	$+3$	0.022	(0.020)	
2016	$+4$	0.065	(0.020)	***

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

The event study results support the validity of the research design:

1. **No significant pre-trends**: None of the pre-treatment coefficients (2006–2010) are statistically significant, and they fluctuate around zero. This supports the parallel trends assumption.
2. **Positive post-treatment effects**: The coefficients become positive after DACA implementation. The effects in 2013 and 2014 are marginally significant ($p < 0.10$), and the effect in 2016 is strongly significant ($p < 0.01$).
3. **Growing effects over time**: The magnitude of the treatment effect increases over time, from 3.5 pp in 2013 to 6.5 pp in 2016. This pattern is consistent with the gradual take-up of the DACA program and the time needed for labor market adjustments.

6 Robustness Checks

6.1 Heterogeneity by Gender

Table 6 presents DiD estimates separately by gender.

Table 6: Heterogeneous Effects by Gender

	Male	Female
DiD Coefficient	0.032***	0.048***
	(0.011)	(0.015)
Observations	24,243	18,995

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

Both men and women experienced positive effects from DACA eligibility. The point estimate is larger for women (4.8 pp vs. 3.2 pp), though the difference is not statistically significant. This pattern is consistent with the hypothesis that DACA may have particularly benefited women who previously faced greater barriers to formal employment.

6.2 Placebo Test

To further test the parallel trends assumption, I conduct a placebo test using only the pre-DACA data (2006–2011) and treating 2009 as a "fake" treatment year.

Table 7: Placebo Test Results (Fake Treatment in 2009)

	Placebo DiD
Coefficient	0.006
Standard Error	(0.011)
p-value	0.610

The placebo DiD coefficient is small (0.6 percentage points) and not statistically significant (p = 0.61). This provides additional evidence that the treatment effect estimate is not driven by differential trends between the treatment and control groups in the pre-DACA period.

6.3 Model Sensitivity

The main DiD coefficient is robust across specifications:

- Basic unweighted OLS: 0.052 (SE = 0.010)
- Weighted OLS: 0.059 (SE = 0.010)
- With covariates: 0.046 (SE = 0.009)
- With year and state FE: 0.043 (SE = 0.010)

The estimates are stable across specifications, ranging from 4.3 to 5.9 percentage points. The slightly lower estimates in models with fixed effects suggest that some of the

raw DiD estimate may have been capturing state- or year-specific factors, making the preferred estimate of 4.35 pp a more conservative and reliable estimate of the true causal effect.

7 Discussion

7.1 Interpretation

The findings indicate that DACA eligibility increased full-time employment among eligible Hispanic-Mexican individuals by approximately 4.35 percentage points. This effect represents a meaningful improvement in labor market outcomes, corresponding to roughly a 7% increase relative to baseline employment rates.

Several mechanisms may explain this positive effect:

1. **Legal work authorization**: The most direct channel is that DACA provides legal work authorization, allowing recipients to work in formal sector jobs that may offer more hours and better conditions.

2. **Job upgrading**: DACA recipients may transition from informal, often part-time work to formal full-time positions that were previously inaccessible.

3. **Reduced discrimination**: With valid work authorization documents, DACA recipients may face less employment discrimination.

4. **Increased job search**: The protection from deportation may encourage more active job search and willingness to apply for visible positions.

The growing effect over time (from 3.5 pp in 2013 to 6.5 pp in 2016) is consistent with:

- Gradual take-up of the DACA program
- Time needed for job transitions and labor market adjustments
- Cumulative effects as recipients build work histories and networks

7.2 Limitations

Several limitations should be noted:

1. **Proxy for undocumented status**: The ACS does not identify legal status directly. Using non-citizen status as a proxy includes some documented non-citizens, potentially attenuating the estimated effect.

2. **Age differences**: Comparing 26–30 year-olds to 31–35 year-olds assumes similar labor market trajectories, which may not hold perfectly due to life-cycle factors.

3. **DACA take-up**: Not all eligible individuals applied for or received DACA protection. The estimates reflect the intent-to-treat effect of eligibility, not the effect of actual program participation.

4. **General equilibrium effects**: The analysis does not account for potential spillover effects on ineligible workers or labor market equilibrium adjustments.

5. **Selection concerns**: Those who remained in the ACS sample (i.e., in the U.S.) may differ systematically from those who left.

7.3 Policy Implications

These findings have important policy implications:

1. Legal work authorization appears to have substantial positive effects on employment outcomes for undocumented immigrants.

2. The growing effects over time suggest that stable, long-term policy is more beneficial than temporary or uncertain protections.

3. Immigration policy affects not only immigrants but also labor market outcomes more broadly.

8 Conclusion

This independent replication study estimates the causal effect of DACA eligibility on full-time employment among Hispanic-Mexican individuals born in Mexico. Using a difference-in-differences design comparing those aged 26–30 at DACA implementation (eligible) to those aged 31–35 (ineligible due to age), I find that DACA eligibility increased the probability of full-time employment by approximately 4.35 percentage points (95% CI: 2.40–6.29 pp).

This estimate is robust to alternative specifications, including different covariate sets and fixed effects structures. Event study analysis supports the parallel trends assumption, showing no significant differential trends before DACA and positive effects emerging after implementation. The effect grows over time, reaching 6.5 percentage points by 2016.

These findings contribute to our understanding of how immigration policy affects labor market outcomes. Legal work authorization, as provided by DACA, appears to have meaningful positive effects on employment, suggesting that policies expanding work

authorization could improve economic outcomes for undocumented immigrants and potentially benefit the broader economy.

A Appendix: Variable Definitions

Table 8: Key Variable Definitions from IPUMS ACS

Variable	Type	Definition
YEAR	Survey	Census/survey year
PERWT	Weight	Person weight for population estimates
BIRTHYR	Demographic	Year of birth
BIRTHQTR	Demographic	Quarter of birth (1=Jan-Mar, 2=Apr-Jun, 3=Jul-Sep, 4=Oct-Dec)
AGE	Demographic	Age at time of survey
SEX	Demographic	Sex (1=Male, 2=Female)
MARST	Demographic	Marital status (1=Married spouse present)
HISPAN	Ethnicity	Hispanic origin (1=Mexican)
BPL	Nativity	Birthplace (200=Mexico)
CITIZEN	Nativity	Citizenship status (3=Not a citizen)
YRIMMIG	Nativity	Year of immigration
EDUCD	Education	Educational attainment (detailed)
EMPSTAT	Employment	Employment status
UHRSWORK	Employment	Usual hours worked per week
STATEFIP	Geography	State FIPS code

B Appendix: Full Model Output

The preferred model (Model 5) includes the following components:

- **Treatment effect**: Treated × Post interaction
- **Covariates**: Female, Married, High School+, College+
- **Fixed effects**: Year fixed effects (9 years), State fixed effects (50+ states)
- **Standard errors**: Clustered at state level
- **Weights**: Person weights (PERWT)

Key statistics:

- N = 43,238
- R-squared = 0.161
- DiD coefficient = 0.0435
- Clustered SE = 0.0099
- t-statistic = 4.38

- p-value < 0.001
- 95% CI = [0.024, 0.063]

C Appendix: Sample Construction Details

DACA Eligibility Criteria Applied:

1. Hispanic-Mexican: HISPAN = 1
2. Born in Mexico: BPL = 200
3. Not a citizen: CITIZEN = 3 (proxy for undocumented)
4. Arrived before age 16: (YRIMMIG - BIRTHYR) < 16
5. Continuous residence since 2007: YRIMMIG ≤ 2007
6. Age at DACA (June 15, 2012):
    - Treatment: $26 \leq$ age ≤ 30
    - Control: $31 \leq$ age ≤ 35

Time Periods:

- Pre-period: 2006, 2007, 2008, 2009, 2010, 2011
- Post-period: 2013, 2014, 2015, 2016
- Excluded: 2012 (mid-year DACA implementation)

D Appendix: Analytical Decisions Summary

Table 9: Summary of Key Analytical Decisions

Decision	Choice	Rationale
Outcome variable	Full-time (35+ hrs/week)	Per research question specification
Treatment group	Ages 26-30 at DACA	DACA-eligible based on age
Control group	Ages 31-35 at DACA	Just over age limit, otherwise similar
Pre-period	2006-2011	Available ACS data before DACA
Post-period	2013-2016	Post-DACA, per instructions
Exclude 2012	Yes	Mid-year implementation ambiguous
Undocumented proxy	CITIZEN = 3	Best available in ACS data
Arrived before 16	Yes	DACA eligibility requirement
Arrived by 2007	Yes	Continuous residence requirement
Weights	PERWT	Population-representative estimates
Standard errors	State-clustered	Account for within-state correlation
Fixed effects	Year + State	Control for time trends and state factors
Covariates	Sex, marital, education	Standard demographic controls