Replication Report: The Effect of DACA Eligibility on Full-Time Employment Among Hispanic-Mexican Immigrants

Independent Replication Study

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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, Mexico-born non-citizens in the United States. Using American Community Survey (ACS) data from 2006–2016 and a difference-in-differences research design, I compare individuals aged 26–30 at DACA's implementation (who were eligible) to those aged 31–35 (who would have been eligible but for the age cutoff). The preferred specification indicates that DACA eligibility increased the probability of full-time employment by approximately 5.9 percentage points (95% CI: [4.0, 7.8], $p < 0.001$). This effect is robust across multiple specifications including models with demographic covariates, year fixed effects, and state fixed effects. Placebo tests using pre-DACA data show no significant effect, supporting the validity of the research design. Results suggest that DACA's work authorization provisions had meaningful positive effects on labor market outcomes for eligible immigrants.

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

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1 Introduction

The Deferred Action for Childhood Arrivals (DACA) program, implemented on June 15, 2012, represents one of the most significant immigration policy changes in recent U.S. history. The program offers eligible undocumented immigrants who arrived in the United States as children a two-year reprieve from deportation and, crucially for labor market outcomes, authorization to work legally. Given that unauthorized immigrants often face substantial barriers to formal employment, the provision of legal work authorization could substantially affect their employment outcomes.

This replication study investigates the causal impact of DACA eligibility on full-time employment, defined as usually working 35 or more hours per week. The research design exploits the age-based eligibility cutoff: individuals had to be under age 31 as of June 15, 2012 to qualify for the program. By comparing individuals just below this cutoff (ages 26–30) to those just above it (ages 31–35), while applying all other eligibility criteria to both groups, we can estimate the causal effect of DACA eligibility using a difference-in-differences framework.

The policy relevance of understanding DACA's effects extends beyond academic interest. With ongoing debates about immigration reform and the program's legal status remaining contested, quantifying the economic effects of providing work authorization to undocumented immigrants provides valuable information for policymakers. If DACA increased formal employment among eligible individuals, this suggests both private benefits to recipients and potential public benefits through increased tax revenue and reduced reliance on informal labor markets.

This report proceeds as follows: Section 2 provides background on the DACA program and its eligibility requirements. Section 3 describes the data and sample construction. Section 4 outlines the empirical methodology. Section 5 presents the main results, and Section 6 discusses robustness checks. Section 7 concludes with interpretation and implications of the findings.

2 Background: The DACA Program

2.1 Program Overview

DACA was announced by the Obama administration on June 15, 2012, and began accepting applications on August 15, 2012. The program was created through executive action rather than congressional legislation, which has contributed to ongoing legal challenges regarding its status.

The core provisions of DACA include:

- A two-year deferral of deportation proceedings
- Authorization to work legally in the United States
- Eligibility to obtain a Social Security number
- Ability to apply for a driver's license in most states

Recipients could apply for renewal after the initial two-year period. In the first four years of the program, nearly 900,000 initial applications were received, with approximately 90% approval rates.

2.2 Eligibility Requirements

To qualify for DACA, applicants had to meet several criteria:

1. **Age at arrival**: Arrived in the United States before their 16th birthday
2. **Age at announcement**: Under age 31 as of June 15, 2012 (i.e., born after June 15, 1981)
3. **Continuous residence**: Lived continuously in the United States since June 15, 2007 (five years prior to the announcement)

4. **Physical presence**: Present in the United States on June 15, 2012

5. **Immigration status**: Did not have lawful status (citizenship or legal permanent residency) at the time of application

6. **Education/military**: Either in school, graduated from high school, obtained a GED, or honorably discharged from the military

7. **Criminal history**: No felony convictions, significant misdemeanors, or three or more misdemeanors

For this analysis, I focus on criteria that can be identified in the American Community Survey data: age at arrival, age at announcement, continuous residence, and immigration status. The education and criminal history requirements cannot be directly observed but affect a relatively small portion of the otherwise-eligible population.

2.3 Expected Effects on Employment

Prior to DACA, undocumented immigrants faced substantial barriers to formal employment. While many worked informally or used fraudulent documents, these arrangements typically resulted in lower wages, fewer hours, and less stable employment compared to legal workers. By providing legal work authorization, DACA could affect employment through several channels:

1. **Direct access to formal employment**: Recipients could legally accept jobs that previously required work authorization

2. **Occupational upgrading**: Legal status may enable workers to seek better-paying or full-time positions

3. **Employer willingness**: Employers may be more willing to hire workers with legal authorization

4. **Complementary benefits**: Driver's licenses and Social Security numbers facilitate employment in positions requiring transportation or formal documentation

These mechanisms suggest that DACA eligibility would increase the probability of full-time employment among eligible individuals.

3 Data and Sample Construction

3.1 Data Source

This analysis uses data from the American Community Survey (ACS), provided through IPUMS USA. The ACS is an annual survey conducted by the U.S. Census Bureau that collects detailed demographic, social, and economic information on approximately 3 million households per year. I use the one-year ACS samples from 2006 through 2016, excluding three-year and five-year pooled samples to maintain consistency in variable definitions.

The full dataset contains 33,851,424 person-year observations across the eleven survey years. The ACS provides several advantages for this analysis:

- Large sample sizes enable precise estimation even for narrowly-defined subpopulations
- Detailed information on nativity, citizenship, and year of immigration enables identification of likely DACA-eligible individuals
- The survey includes information on usual hours worked per week, allowing direct measurement of full-time employment
- Person-level weights (PERWT) enable inference to the full U.S. population

3.2 Sample Restrictions

I restrict the sample to individuals who meet the observable DACA eligibility criteria (aside from age) and who are in the relevant age range for the treatment or control group. Specif-

ically, the sample is limited to:

1. **Hispanic-Mexican ethnicity**: HISPAN = 1 (Mexican origin). The instructions specify ethnically Hispanic-Mexican individuals, and Mexican-origin individuals constitute the vast majority of DACA-eligible population.

2. **Born in Mexico**: BPL = 200 (Mexico). The instructions require Mexico-born individuals.

3. **Non-citizen**: CITIZEN = 3 (Not a citizen). Per the instructions, I assume that non-citizens who have not received immigration papers are undocumented. The ACS does not distinguish between documented and undocumented non-citizens.

4. **Arrived before age 16**: YRIMMIG $\leq$ BIRTHYR + 15. This ensures the individual arrived in the U.S. before their 16th birthday.

5. **Continuous residence since 2007**: YRIMMIG $\leq$ 2007. This ensures the individual has been in the U.S. continuously for at least five years as of DACA's implementation.

3.3 Treatment and Control Groups

Following the research design specified in the instructions, I define:

- **Treatment group**: Individuals aged 26–30 as of June 15, 2012, who meet all other eligibility criteria. These individuals were DACA-eligible.

- **Control group**: Individuals aged 31–35 as of June 15, 2012, who meet all other eligibility criteria except for the age requirement. These individuals would have been eligible for DACA but for being too old by 1–5 years.

Age as of June 15, 2012 is calculated using birth year (BIRTHYR) and birth quarter (BIRTHQTR). For individuals born in quarters 3 or 4 (July–December), I subtract one year from the simple calculation (2012 minus birth year) since they would not yet have had their birthday by mid-June.

3.4 Time Periods

The analysis period spans 2006–2016, divided as follows:

- **Pre-period**: 2006–2011 (before DACA)
- **Post-period**: 2013–2016 (after DACA)

The year 2012 is excluded because the ACS does not record the month of interview, making it impossible to distinguish observations from before versus after DACA's June 15 announcement.

3.5 Outcome Variable

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

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

where UHRSWORK is the usual number of hours worked per week. This follows the standard Bureau of Labor Statistics definition of full-time work as 35 or more hours per week.

3.6 Sample Characteristics

Table 1 presents summary statistics for the analysis sample by treatment status and time period. The final analysis sample contains 43,238 observations after excluding 2012.

Table 1: Summary Statistics by Treatment Group and Period

	Control (Ages 31–35)		**Treatment (Ages 26–30)**	
	Pre	Post	Pre	Post
Full-time Employment Rate	0.673	0.643	0.631	0.660
Employment Rate	0.711	0.683	0.658	0.690
Mean Age	29.8	33.4	24.8	29.3
Female (%)	41.4	45.2	43.4	44.1
High School+ (%)	52.9	46.5	61.3	50.6
Married (%)	46.9	42.1	32.9	38.2
Observations	11,683	6,085	16,694	8,776
Weighted N (thousands)	1,631	845	2,280	1,244

Notes: Sample restricted to Hispanic-Mexican, Mexico-born non-citizens who arrived before age 16 and have been in the U.S. continuously since 2007. Pre-period is 2006–2011; post-period is 2013–2016. Weighted statistics use PERWT survey weights.

Several patterns emerge from the summary statistics. First, the treatment group (younger individuals) has lower full-time employment rates than the control group in the pre-period (63.1% vs. 67.3%), but higher rates in the post-period (66.0% vs. 64.3%). This suggests a positive treatment effect. Second, there are notable differences between groups in marital status and education, reflecting age-related life-cycle patterns. Third, the sample sizes are substantial, with over 43,000 observations and weighted populations representing millions of individuals.

4 Empirical Methodology

4.1 Difference-in-Differences Design

The identification strategy relies on a difference-in-differences (DiD) design that compares changes in full-time employment between the treatment and control groups before and after DACA's implementation. The key identifying assumption is that, absent DACA, the treatment and control groups would have experienced parallel trends in full-time employment.

The basic DiD specification is:

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

where:

- FullTime_{it} is an indicator for individual i in year t working 35+ hours per week
- Treat_i is an indicator for being in the treatment group (ages 26–30 at DACA)
- Post_t is an indicator for post-DACA years (2013–2016)
- β_3 is the DiD estimator, capturing the causal effect of DACA eligibility

4.2 Extended Specifications

I estimate several extensions of the basic model to assess robustness:

Weighted estimation: Given that the ACS is a probability sample, I use survey weights (PERWT) in weighted least squares estimation:

$$\min_{\beta} \sum_{i} w_i \left(\text{FullTime}_i - X_i'\beta\right)^2 \tag{2}$$

where w_i is the person weight for individual i.

Covariates: I include demographic controls that may affect employment:

$$\text{FullTime}_{it} = \alpha + \beta_1 \text{Treat}_i + \beta_2 \text{Post}_t + \beta_3 (\text{Treat}_i \times \text{Post}_t) + X_{it}'\gamma + \varepsilon_{it} \tag{3}$$

where X_{it} includes indicators for female, married, high school completion or higher education, and age centered at 30.

Year fixed effects: To account for time-varying factors affecting all individuals:

$$\text{FullTime}_{it} = \alpha + \beta_1 \text{Treat}_i + \beta_3(\text{Treat}_i \times \text{Post}_t) + \sum_{t \neq 2006} \delta_t \mathbf{1}[Year = t] + \varepsilon_{it} \tag{4}$$

State fixed effects: To account for state-level differences in labor markets:

$$\text{FullTime}_{ist} = \alpha + \beta_1 \text{Treat}_i + \beta_2 \text{Post}_t + \beta_3(\text{Treat}_i \times \text{Post}_t) + \mu_s + \varepsilon_{ist} \tag{5}$$

where μ_s are state fixed effects.

4.3 Inference

Standard errors are computed using heteroskedasticity-robust (HC1) standard errors for specifications with fixed effects. For the basic specifications, conventional OLS standard errors are used given the large sample size.

5 Results

5.1 Graphical Evidence

Figure 2 presents the year-by-year weighted full-time employment rates for the treatment and control groups. Several patterns support the research design:

1. **Pre-trends**: The treatment and control groups show roughly parallel movements in employment rates from 2006–2011, with both experiencing declines during the 2008–2009 recession period.

2. **Level difference**: The control group consistently has higher employment rates in the pre-period, reflecting the age difference (older workers typically have higher employment rates).

3. **Post-DACA convergence**: After 2012, the treatment group's employment rates increase relative to the control group, narrowing and eventually reversing the gap.

Table 2: Year-by-Year Full-Time Employment Rates

Year	Control	Treatment	Difference
2006	0.691	0.656	−0.035
2007	0.733	0.663	−0.071
2008	0.697	0.669	−0.028
2009	0.653	0.612	−0.041
2010	0.636	0.590	−0.046
2011	0.617	0.591	−0.026
DACA (2012)		*excluded*	
2013	0.637	0.648	+0.011
2014	0.618	0.635	+0.017
2015	0.665	0.661	−0.004
2016	0.657	0.699	+0.042

Notes: Weighted full-time employment rates (UHRSWORK ≥ 35) using PERWT survey weights. Pre-period average difference: −0.041. Post-period average difference: +0.016.

The pre-period shows a consistent negative difference (treatment group has lower employment than control), averaging about 4.1 percentage points. In the post-period, this difference narrows substantially and becomes slightly positive on average (+1.6 percentage points). This pattern is consistent with a positive effect of DACA eligibility on full-time employment.

5.2 Main Regression Results

Table 3 presents the main regression results across six specifications of increasing complexity. The coefficient of interest is the interaction term (Treat × Post), which represents the difference-in-differences estimate.

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

	(1) OLS	(2) Weighted	(3) Covariates	(4) Year FE	(5) State FE	(6) Full
Treat × Post	0.0516***	0.0590***	0.0472***	0.0574***	0.0573***	0.0465***
	(0.0100)	(0.0098)	(0.0090)	(0.0098)	(0.0117)	(0.0107)
Treat	−0.0314***	−0.0426***	−0.0489***	−0.0413***	−0.0419***	−0.0501***
	(0.0058)	(0.0058)	(0.0073)	(0.0058)	(0.0068)	(0.0069)
Post	−0.0324***	−0.0299***	−0.0068	—	−0.0260***	—
	(0.0076)	(0.0075)	(0.0091)		(0.0077)	
Female			−0.3729***			−0.3714***
			(0.0043)			(0.0043)
Married			−0.0068			−0.0058
			(0.0043)			(0.0044)
High School+			0.0592***			0.0598***
			(0.0043)			(0.0043)
Weights	No	Yes	Yes	Yes	Yes	Yes
Year FE	No	No	No	Yes	No	Yes
State FE	No	No	No	No	Yes	No
Observations	43,238	43,238	43,238	43,238	43,238	43,238

Notes: Dependent variable is an indicator for full-time employment (usual hours ≥ 35 per week). Standard errors in parentheses. Specifications (5) and (6) use heteroskedasticity-robust standard errors. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

5.3 Interpretation of Results

The key findings are:

1. **Positive and significant effect**: Across all specifications, DACA eligibility is associated with a statistically significant increase in the probability of full-time employment. The estimates range from 4.7 to 5.9 percentage points.

2. **Preferred estimate**: The weighted specification (column 2) yields a DiD estimate of 5.9 percentage points (SE = 0.0098, 95% CI: [4.0, 7.8]). This estimate properly

accounts for the survey design through the use of person weights.

3. **Robustness**: The effect remains significant and of similar magnitude when controlling for demographic characteristics (column 3), year fixed effects (column 4), state fixed effects (column 5), and in the full specification with covariates and year fixed effects (column 6).

4. **Covariate effects**: As expected, being female is associated with substantially lower full-time employment (−37 percentage points), while having a high school education or higher is associated with higher full-time employment (+6 percentage points).

5.4 2×2 Difference-in-Differences Table

Table 4 presents the weighted mean full-time employment rates by treatment status and period, providing a transparent view of the DiD calculation.

Table 4: Weighted Mean Full-Time Employment Rates: 2×2 Table

	Pre-DACA (2006–2011)	Post-DACA (2013–2016)	Difference (Post − Pre)
Treatment (Ages 26–30)	0.631	0.660	+0.029
Control (Ages 31–35)	0.673	0.643	−0.030
Difference (Treatment − Control)	−0.042	+0.016	
DiD Estimate		**0.059**	

Notes: Weighted means using PERWT survey weights. DiD = (0.660 − 0.631) − (0.643 − 0.673) = 0.029 − (−0.030) = 0.059.

The DiD estimate can be computed manually: the treatment group's full-time employment rate increased by 2.9 percentage points (from 63.1% to 66.0%) while the control group's rate decreased by 3.0 percentage points (from 67.3% to 64.3%). The difference-in-differences is therefore 2.9 − (−3.0) = 5.9 percentage points, matching the regression estimate.

6 Robustness Checks

6.1 Placebo Test

A key assumption of the DiD design is that the treatment and control groups would have followed parallel trends absent the treatment. I test this by conducting a placebo analysis using only pre-DACA data (2006–2011) and assigning a "fake" treatment date of 2009.

If the parallel trends assumption holds, we should find no significant effect of the placebo treatment. Table 5 presents the results.

Table 5: Placebo Test: Fake Treatment in 2009

	Coefficient	p-value
Treat × Post (Placebo)	0.0058	0.610

Notes: Sample restricted to 2006–2011. Post-placebo defined as 2009–2011. Weighted estimation using PERWT.

The placebo DiD estimate is small (0.6 percentage points) and statistically insignificant ($p = 0.61$), providing no evidence of differential pre-trends. This supports the validity of the main DiD estimate.

6.2 Alternative Age Bands

The main analysis uses ages 26–30 for treatment and 31–35 for control. To assess sensitivity to this choice, I estimate the effect using alternative age bands: 24–28 for treatment and 33–37 for control.

Table 6: Alternative Age Bands: 24–28 vs. 33–37

	Coefficient	p-value
Treat × Post	0.101	< 0.001

Notes: Treatment group: ages 24–28 at DACA. Control group: ages 33–37 at DACA. Weighted estimation using PERWT.

The alternative specification yields an even larger effect (10.1 percentage points), suggesting that younger eligible individuals may have benefited more from DACA. This is consistent with the notion that younger workers have more labor market years ahead and thus more to gain from legal work authorization.

6.3 Subgroup Analysis by Gender

I examine whether the effect of DACA differs by gender, which is relevant given the large gender gap in full-time employment observed in the data.

Table 7: Subgroup Analysis by Gender

	Coefficient	SE	95% CI	p-value
Male	0.046	0.012	[0.023, 0.069]	< 0.001
Female	0.047	0.015	[0.017, 0.076]	0.002

Notes: Weighted DiD estimates separately by gender. PERWT survey weights used.

Both men and women show significant positive effects of similar magnitude (approximately 4.6–4.7 percentage points). This suggests that DACA's effect on full-time employment is not driven by a particular gender and operates broadly across the eligible population.

7 Discussion and Limitations

7.1 Interpretation

The results indicate that DACA eligibility increased the probability of full-time employment by approximately 5.9 percentage points, representing a roughly 9% increase relative to the pre-period mean of 63%. This effect is economically meaningful and statistically robust across multiple specifications.

Several mechanisms could explain this effect:

1. **Direct employment access**: DACA provides legal work authorization, allowing recipients to work in jobs that verify legal status. This could shift individuals from informal part-time work to formal full-time employment.

2. **Occupational mobility**: Legal status may enable workers to pursue better job opportunities, including positions requiring more hours or offering full-time schedules.

3. **Complementary documentation**: DACA eligibility enables recipients to obtain driver's licenses and Social Security numbers, which may be necessary for certain jobs.

4. **Reduced labor market frictions**: Legal work authorization reduces the uncertainty and transaction costs associated with hiring undocumented workers.

7.2 Limitations

Several limitations should be considered when interpreting these results:

1. **Identification of undocumented status**: The ACS does not distinguish between documented and undocumented non-citizens. I assume all non-citizens in the sample are undocumented, which may introduce measurement error. However, given the sample restrictions (Mexican-born, arrived before age 16), the majority of individuals in the sample are likely undocumented.

2. **Age-based comparison**: The treatment and control groups differ by 5 years of age, and some characteristics correlated with age (e.g., marital status, education) differ between groups. While I control for observable characteristics, unobserved differences may remain.

3. **Selection into DACA**: Not all eligible individuals applied for DACA, and application rates may have varied by characteristics that also affect employment. The estimates capture an intent-to-treat effect rather than the effect of actual DACA receipt.

4. **Spillover effects**: The control group may have been indirectly affected by DACA through changes in labor market competition, potentially biasing the estimates toward zero.

5. **Generalizability**: The sample is restricted to Hispanic-Mexican, Mexico-born individuals, who constitute the majority but not all of the DACA-eligible population.

7.3 Comparison to Prior Literature

These findings are broadly consistent with prior research on DACA's labor market effects. Studies have found positive effects on employment, earnings, and labor force participation among DACA-eligible individuals. The magnitude of the effect found here (5.9 percentage points) is within the range of estimates from previous studies, though direct comparison is complicated by differences in sample definitions, outcome measures, and research designs.

8 Conclusion

This replication study provides evidence that DACA eligibility increased full-time employment among Hispanic-Mexican, Mexico-born individuals who met the program's criteria. Using a difference-in-differences design that compares individuals just below the age-31 eligibility cutoff to those just above it, I estimate that DACA eligibility increased the probability of full-time employment by approximately 5.9 percentage points.

This effect is statistically significant, robust across multiple specifications, and supported by placebo tests showing no differential pre-trends. The effect is similar for men and women, suggesting broad-based benefits of legal work authorization.

These findings have policy implications beyond the specific context of DACA. They suggest that providing legal work authorization to undocumented immigrants can have meaningful positive effects on their labor market outcomes. Whether through DACA or other policy mechanisms, enabling formal employment appears to increase the probability that

immigrants work full-time, with potential benefits for workers, employers, and the broader economy.

8.1 Preferred Estimate Summary

For reporting purposes, the preferred estimate is:

- **Effect size**: 0.059 (5.9 percentage points increase in probability of full-time employment)
- **Standard error**: 0.0098
- **95% Confidence interval**: [0.040, 0.078]
- p**-value**: < 0.001
- **Sample size**: 43,238 observations

A Variable Definitions

Table 8: IPUMS Variable Definitions

Variable	Definition
YEAR	Survey year (2006–2016)
PERWT	Person weight for survey weighting
STATEFIP	State FIPS code
SEX	Sex (1 = Male, 2 = Female)
AGE	Age at time of survey
BIRTHYR	Year of birth
BIRTHQTR	Quarter of birth (1 = Jan–Mar, 2 = Apr–Jun, 3 = Jul–Sep, 4 = Oct–Dec)
MARST	Marital status (1 = Married, spouse present)
HISPAN	Hispanic origin (1 = Mexican)
BPL	Birthplace (200 = Mexico)
CITIZEN	Citizenship status (3 = Not a citizen)
YRIMMIG	Year of immigration to the U.S.
EDUC	Educational attainment (6+ = high school or more)
EMPSTAT	Employment status (1 = Employed)
UHRSWORK	Usual hours worked per week

B Additional Tables

Table 9: Covariate Balance: Pre-Period Weighted Means

	Treatment	Control	Difference
Age	24.8	29.8	−5.0
Female (%)	43.4	41.4	+2.0
Married (%)	32.9	46.9	−14.0
High School+ (%)	61.3	52.9	+8.4

Notes: Pre-period (2006–2011) only. Weighted means using PERWT.

C Analytical Decisions

Key decisions made in this analysis:

1. **Sample definition**: Restricted to HISPAN=1 (Mexican), BPL=200 (Mexico-born), CITIZEN=3 (non-citizen), with arrival before age 16 and continuous residence since 2007.

2. **Age calculation**: Age as of June 15, 2012 calculated from BIRTHYR and BIRTHQTR, adjusting for birth quarters after June.

3. **Treatment group**: Ages 26–30 at DACA (eligible).

4. **Control group**: Ages 31–35 at DACA (ineligible due to age only).

5. **Outcome**: Full-time employment defined as UHRSWORK ≥ 35.

6. **Time periods**: Pre = 2006–2011, Post = 2013–2016, excluding 2012.

7. **Weights**: PERWT survey weights used in preferred specification.

8. **Standard errors**: Heteroskedasticity-robust for fixed effects models.