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

Replication Study

January 25, 2026

Abstract

This study examines the causal effect of eligibility for the Deferred Action for Childhood Arrivals (DACA) program on full-time employment among ethnically Hispanic-Mexican, Mexican-born non-citizens in the United States. Using data from the American Community Survey (2006–2016), I employ a difference-in-differences identification strategy comparing DACA-eligible individuals to similar non-eligible non-citizens before and after the program's implementation in 2012. The preferred specification, which includes state and year fixed effects along with demographic controls, estimates that DACA eligibility increased the probability of full-time employment by approximately 3.0 percentage points (SE = 0.42, 95% CI: [2.2, 3.9]). This effect is statistically significant at conventional levels and robust to alternative specifications. Event study analysis provides evidence consistent with parallel pre-trends, strengthening the causal interpretation. The findings suggest that DACA's provision of work authorization and deportation relief had meaningful positive effects on labor market outcomes for eligible individuals.

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1 Introduction

The Deferred Action for Childhood Arrivals (DACA) program, announced on June 15, 2012, represented a significant shift in U.S. immigration policy. The program offered temporary protection from deportation and work authorization to undocumented immigrants who arrived in the United States as children. Given that DACA provides recipients with legal authorization to work, a natural question arises: did the program improve labor market outcomes for eligible individuals?

This study examines the causal effect of DACA eligibility on full-time employment—defined as usually working 35 or more hours per week—among ethnically Hispanic-Mexican individuals born in Mexico. The focus on this demographic group is motivated by the fact that the vast majority of DACA-eligible individuals are of Mexican origin, reflecting patterns of undocumented immigration to the United States.

The identification strategy employs a difference-in-differences (DiD) design, comparing changes in full-time employment rates between DACA-eligible individuals (treatment group) and similar non-eligible non-citizens (control group) before and after the program's implementation. This approach accounts for time-invariant differences between groups and common time trends affecting both groups.

The analysis uses data from the American Community Survey (ACS) for years 2006–2016, excluding 2012 as a transition year since the exact timing of survey responses relative to DACA's announcement cannot be determined. The sample is restricted to non-citizen, working-age (16–64) individuals of Mexican birth and Hispanic-Mexican ethnicity.

The preferred specification estimates that DACA eligibility increased the probability of full-time employment by approximately 3.0 percentage points, a statistically significant effect at the 1% level. This represents roughly a 6.7% increase relative to the pre-period full-time employment rate of 45.2% among DACA-eligible individuals. Robustness checks using alternative outcomes (any employment, labor force participation) and subgroup analyses by gender yield consistent findings. Event study analysis supports the parallel trends assumption, with pre-treatment coefficients that are small in magnitude and statistically insignificant.

2 Background

2.1 The DACA Program

DACA was announced by the Department of Homeland Security on June 15, 2012, with applications beginning on August 15, 2012. The program allows eligible individuals to re-

ceive a two-year, renewable period of deferred action from deportation and authorization for employment in the United States.

To be eligible for DACA, individuals must meet the following criteria:

1. Arrived in the United States before their 16th birthday
2. Had not yet reached their 31st birthday as of June 15, 2012
3. Continuously resided in the United States since June 15, 2007
4. Were physically present in the United States on June 15, 2012
5. Had no lawful immigration status on June 15, 2012
6. Were currently in school, had graduated from high school, obtained a GED, or were honorably discharged veterans
7. Had not been convicted of a felony, significant misdemeanor, or three or more misdemeanors

In the first four years of the program, nearly 900,000 initial applications were received, with approximately 90% being approved. While the program was not restricted to any particular nationality, the structure of undocumented immigration to the United States meant that the majority of eligible individuals were from Mexico.

2.2 Theoretical Mechanisms

DACA could affect employment outcomes through several channels:

Work Authorization: Most directly, DACA provides recipients with Employment Authorization Documents (EADs), allowing them to work legally. This may enable recipients to obtain formal employment that was previously inaccessible, move from part-time to full-time positions, or transition from informal to formal sector employment.

Reduced Fear of Deportation: The deferred action component reduces the risk that employment-related activities (commuting, workplace interactions) will lead to deportation. This increased security may encourage greater labor force attachment.

Access to Identification: DACA recipients can obtain Social Security numbers and, in many states, driver's licenses. These forms of identification facilitate employment and may expand job opportunities, particularly for positions requiring transportation or formal documentation.

Human Capital Investment: Knowing that they can legally work may encourage DACA recipients to invest in education and job training, potentially leading to better employment outcomes over time.

3 Data

3.1 Data Source

The analysis uses data from the American Community Survey (ACS) provided by IPUMS USA. The ACS is an annual survey conducted by the U.S. Census Bureau that collects demographic, social, economic, and housing information from approximately 3 million households annually. The survey uses a complex sampling design, and I incorporate the provided person-level weights (PERWT) in all analyses to produce nationally representative estimates.

I use the one-year ACS files for years 2006–2016, excluding three-year and five-year pooled samples. The year 2012 is excluded from the analysis because the ACS does not record the specific month of data collection, making it impossible to distinguish pre- and post-DACA observations within that year.

3.2 Sample Selection

The analysis focuses on the population most directly affected by DACA: ethnically Hispanic-Mexican individuals born in Mexico who are non-citizens. The sample restrictions are as follows:

1. **Hispanic-Mexican ethnicity:** HISPAN = 1 (Mexican)
2. **Mexican birthplace:** BPL = 200 (Mexico)
3. **Non-citizen status:** CITIZEN = 3 (Not a citizen)
4. **Working age:** AGE between 16 and 64, inclusive
5. **Exclude transition year:** YEAR $\neq$ 2012

The restriction to non-citizens is crucial for the identification strategy. Per the instructions, I assume that non-citizens who have not received immigration papers are undocumented for DACA purposes. This assumption is necessary because the ACS does not distinguish between documented and undocumented non-citizens.

These restrictions yield a final sample of 561,470 person-year observations, representing approximately 76 million person-years when weighted.

3.3 Variable Construction

3.3.1 DACA Eligibility (Treatment Variable)

I construct a binary indicator for DACA eligibility based on the criteria that can be identified in the ACS:

1. **Under 31 as of June 15, 2012:** Calculated using BIRTHYR and BIRTHQTR. Age at June 15, 2012 is computed as $2012 - \text{BIRTHYR}$, with an adjustment of -1 for individuals born in the third or fourth quarters (July–December) who would not yet have had their birthday by June 15.

2. **Arrived before age 16:** Calculated as $\text{YRIMMIG} - \text{BIRTHYR} < 16$, for observations where YRIMMIG is not missing.

3. **In the U.S. since 2007:** Defined as $\text{YRIMMIG} \leq 2007$, capturing the continuous residence requirement.

An individual is classified as DACA-eligible if all three conditions are met. Note that I cannot observe some eligibility criteria in the ACS, including educational attainment requirements and criminal history. The treatment variable should therefore be interpreted as capturing *eligibility based on observable demographic criteria*, which may include some individuals who would not qualify due to unobserved factors.

3.3.2 Outcome Variable: Full-Time Employment

The primary outcome is an indicator for full-time employment, defined as usually working 35 or more hours per week ($\text{UHRSWORK} \geq 35$). This definition follows standard conventions in labor economics and the Bureau of Labor Statistics.

3.3.3 Control Variables

The analysis includes the following control variables:

- **Age and age squared:** AGE and AGE^2 to capture nonlinear lifecycle patterns in employment
- **Female:** Indicator for $\text{SEX} = 2$
- **Married:** Indicator for $\text{MARST} \in \{1, 2\}$ (married with spouse present or absent)
- **Education:** Indicators for high school completion (EDUC 6–7) and some college or higher ($\text{EDUC} \geq 8$), with less than high school as the omitted category

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

4 Empirical Strategy

4.1 Difference-in-Differences Design

The identification strategy compares changes in full-time employment between DACA-eligible individuals (treatment group) and non-eligible non-citizens (control group) before and after the program's implementation. The basic DiD estimand is:

$$\hat{\delta}_{DiD} = (\bar{Y}_{T,post} - \bar{Y}_{T,pre}) - (\bar{Y}_{C,post} - \bar{Y}_{C,pre}) \tag{1}$$

where T denotes the treatment (DACA-eligible) group and C denotes the control group. The regression implementation takes the form:

$$Y_{ist} = \alpha + \beta \cdot \text{DACA}_i + \gamma \cdot \text{Post}_t + \delta \cdot (\text{DACA}_i \times \text{Post}_t) + X_i'\theta + \mu_s + \lambda_t + \varepsilon_{ist} \tag{2}$$

where:

- Y_{ist} is an indicator for full-time employment for individual i in state s and year t
- DACA_i is an indicator for DACA eligibility
- Post_t is an indicator for years 2013–2016
- X_i is a vector of individual-level controls
- μ_s are state fixed effects
- λ_t are year fixed effects
- δ is the coefficient of interest, representing the DiD estimate of the DACA effect

All regressions are estimated using weighted least squares with person weights (PERWT) and heteroskedasticity-robust (HC1) standard errors.

4.2 Identification Assumptions

The key identifying assumption for the DiD design is the **parallel trends assumption**: in the absence of DACA, full-time employment rates would have evolved similarly for the treatment and control groups. This assumption cannot be directly tested, but I provide evidence on its plausibility through:

1. **Event study analysis:** Estimating year-specific treatment effects to examine whether there are differential trends in the pre-period.
2. **Covariate balance:** Examining whether observable characteristics are similar between treatment and control groups, or whether any differences are stable over time.

Additionally, the DiD design assumes:

- **No anticipation:** Individuals did not change behavior before DACA's announcement in anticipation of the program.
- **No spillovers:** DACA's effects on eligible individuals do not affect outcomes for non-eligible individuals (SUTVA).
- **Stable treatment/control composition:** The criteria determining treatment status do not change over time in response to the policy.

4.3 Control Group Definition

The control group consists of non-citizen, Mexican-born individuals of Hispanic-Mexican ethnicity who do not meet the DACA eligibility criteria. These individuals fail to qualify because they:

- Were 31 or older as of June 15, 2012, and/or
- Arrived in the U.S. at age 16 or older, and/or
- Arrived in the U.S. after 2007

This control group is drawn from the same population of undocumented Mexican immigrants, which helps ensure comparability with the treatment group while providing variation in DACA eligibility.

5 Results

5.1 Descriptive Statistics

Table 1 presents summary statistics for the treatment and control groups in the pre- and post-DACA periods.

Table 1: Summary Statistics by Treatment Group and Period

	DACA Eligible		Control	
	Pre	Post	Pre	Post
Full-time Employment Rate	0.452	0.521	0.628	0.601
Employment Rate	0.534	0.637	0.684	0.685
Labor Force Participation	0.619	0.703	0.745	0.729
Mean Age	21.3	24.4	37.4	41.2
Female Share	0.444	0.451	0.428	0.461
Married Share	0.222	0.291	0.622	0.626
Less than High School	0.472	0.364	0.602	0.587
High School Graduate	0.496	0.578	0.342	0.353
Some College or Higher	0.032	0.057	0.056	0.059
Observations	46,814	36,797	298,978	178,881
Weighted N (millions)	6.16	5.22	40.48	24.43

Notes: All statistics calculated using person weights (PERWT). Pre-period includes years 2006–2011; post-period includes years 2013–2016.

Several patterns emerge from Table 1:

1. **Outcome Variables:** The DACA-eligible group shows an increase in full-time employment from 45.2% to 52.1% (6.9 percentage points), while the control group shows a slight decrease from 62.8% to 60.1% (2.6 percentage points). The simple difference-in-differences is thus approximately 9.6 percentage points.

2. **Age Differences:** The DACA-eligible group is substantially younger (mean age 21–24) compared to the control group (mean age 37–41). This reflects the age-based eligibility criteria for DACA.

3. **Education Trends:** Both groups show modest improvements in educational attainment over time, with the DACA-eligible group showing a larger increase in high school graduation rates.

4. **Marital Status:** The control group has much higher marriage rates, consistent with their older age profile.

The demographic differences between treatment and control groups underscore the importance of including appropriate controls in the regression analysis.

5.2 Main Results

Table 2 presents the main difference-in-differences estimates across specifications with progressively more controls.

Table 2: Difference-in-Differences Estimates: Effect of DACA on Full-Time Employment

	(1)	(2)	(3)	(4)	(5)
DACA × Post	0.0956***	0.0414***	0.0381***	0.0309***	0.0304***
	(0.0046)	(0.0042)	(0.0042)	(0.0042)	(0.0042)
DACA Eligible	-0.1576***	-0.0010	0.0021	0.0056	0.0056
	(0.0035)	(0.0039)	(0.0038)	(0.0039)	(0.0039)
Post	-0.0264***	-0.0335***	-0.0326***	–	–
	(0.0019)	(0.0018)	(0.0018)		
Demographics	No	Yes	Yes	Yes	Yes
Education	No	No	Yes	Yes	Yes
Year FE	No	No	No	Yes	Yes
State FE	No	No	No	No	Yes
Observations	561,470	561,470	561,470	561,470	561,470

Notes: Robust standard errors in parentheses. All regressions weighted by PERWT. Demographics include age, age squared, female indicator, and married indicator. *** p<0.01, ** p<0.05, * p<0.1.

The results in Table 2 show:

1. **Model 1 (Basic DiD):** Without any controls, the estimated effect is 9.6 percentage points. However, this estimate conflates the DACA effect with other factors that differ between treatment and control groups.

2. **Model 2 (Demographics):** Adding age, age squared, gender, and marital status reduces the coefficient to 4.1 percentage points. The large reduction indicates that age differences between groups explain much of the unadjusted difference-in-differences.

3. **Model 3 (Education):** Adding education controls has a modest additional effect, reducing the estimate to 3.8 percentage points.

4. **Model 4 (Year FE):** Replacing the post indicator with year fixed effects to allow for flexible time trends yields an estimate of 3.1 percentage points.

5. **Model 5 (State and Year FE):** The preferred specification adds state fixed effects to control for time-invariant state-level factors. The estimated effect is **3.0 percentage points** (SE = 0.0042, 95% CI: [2.2, 3.9]).

The preferred estimate of 3.0 percentage points is statistically significant at the 1% level ($p < 0.001$). In proportional terms, this represents a 6.7% increase relative to the pre-period full-time employment rate of 45.2% among DACA-eligible individuals.

5.3 Event Study Analysis

To assess the plausibility of the parallel trends assumption, I estimate an event study specification with year-specific treatment effects. Figure **??** and Table 3 present the results, using 2011 as the reference year.

Table 3: Event Study Estimates: Year-Specific Treatment Effects

Year	Coefficient	Std. Error	p-value
Pre-DACA Period			
2006	-0.0153	(0.0097)	0.114
2007	-0.0149	(0.0094)	0.110
2008	-0.0016	(0.0095)	0.863
2009	0.0054	(0.0093)	0.561
2010	0.0080	(0.0091)	0.381
2011	[Reference Year]		
Post-DACA Period			
2013	0.0125	(0.0091)	0.170
2014	0.0233**	(0.0091)	0.011
2015	0.0390***	(0.0091)	<0.001
2016	0.0406***	(0.0093)	<0.001

Notes: Coefficients represent the difference in full-time employment between DACA-eligible and control groups relative to 2011. Controls include age, age squared, female, married, education, and year fixed effects. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

The event study results provide evidence consistent with the parallel trends assumption:

1. **Pre-trends:** The coefficients for 2006–2010 are small in magnitude (ranging from -0.015 to 0.008) and none is statistically significant at conventional levels. This suggests that trends in full-time employment were similar between treatment and control groups before DACA's implementation.

2. **Post-DACA Effects:** The coefficients become larger and statistically significant starting in 2014, with the effect growing over time (1.3 percentage points in 2013, 2.3 in 2014, 3.9 in 2015, and 4.1 in 2016).

3. **Gradual Phase-In:** The pattern of increasing effects over time is consistent with gradual DACA uptake. Applications began in August 2012, and it takes time for

work authorization to translate into full-time employment. The 2013 effect may be attenuated because many recipients had only recently received their work permits.

5.4 Robustness Checks

Table 4 presents results from several robustness checks.

Table 4: Robustness Checks

Specification	Coefficient	Std. Error
A. Alternative Outcomes		
Employment (any)	0.0408***	(0.0041)
Labor Force Participation	0.0431***	(0.0039)
B. Subgroup by Gender		
Males	0.0256***	(0.0055)
Females	0.0266***	(0.0062)
C. Age Subgroups		
Young (16–30)	0.0082	(0.0055)

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

Alternative Outcomes:

- The effect on *any employment* (4.1 percentage points) is larger than the effect on full-time employment, suggesting DACA increased employment along both the extensive margin (whether employed) and the intensive margin (hours worked).
- The effect on *labor force participation* (4.3 percentage points) is similar in magnitude, indicating that DACA drew individuals into the labor force.

Gender Subgroups:

- Effects are statistically significant for both males (2.6 pp) and females (2.7 pp), with similar magnitudes.
- The slightly smaller male coefficient may reflect that men already had higher baseline employment rates, leaving less room for improvement.

Age Subgroups:

- The effect for young workers (ages 16–30) is smaller and not statistically significant (0.8 pp, SE = 0.0055). This may reflect that the youngest individuals are still in school or transitioning into the labor market, where the effects of work authorization may be less immediate.

6 Discussion

6.1 Interpretation of Results

The preferred estimate suggests that DACA eligibility increased full-time employment by approximately 3.0 percentage points among Mexican-born, Hispanic non-citizens. Several factors support a causal interpretation:

1. **Parallel Trends:** The event study analysis shows no evidence of differential pre-trends between treatment and control groups, supporting the identifying assumption.
2. **Consistent Across Specifications:** The estimate is relatively stable across specifications with different sets of controls, ranging from 3.0 to 4.1 percentage points in fully-controlled models.
3. **Plausible Mechanisms:** The provision of work authorization and reduced deportation risk provide clear channels through which DACA could increase employment.
4. **Gradual Phase-In:** The pattern of effects growing over time is consistent with the gradual rollout of DACA and the time required for work authorization to translate into employment.

6.2 Limitations

Several limitations should be noted:

1. **Measurement of Eligibility:** The ACS does not directly identify DACA eligibility or receipt. The treatment variable captures eligibility based on observable demographic criteria but may include individuals who are ineligible due to unobserved factors (education requirements, criminal history) or who chose not to apply.
2. **Documented vs. Undocumented Status:** The ACS does not distinguish between documented and undocumented non-citizens. The sample may include some legal residents who are not subject to DACA provisions.

3. **Control Group Composition:** The control group differs systematically from the treatment group in age and other characteristics. While regression controls address observable differences, unobservable differences could bias results if they evolve differently over time.

4. **General Equilibrium Effects:** If DACA affected labor market conditions more broadly (e.g., through competition effects), the control group might be affected, potentially biasing the DiD estimate toward zero.

5. **Exclusion of 2012:** Excluding the transition year prevents estimation of immediate effects and may miss important dynamics around program announcement and implementation.

6.3 Comparison to Literature

The findings are broadly consistent with prior research on DACA's labor market effects. Studies have generally found positive effects on employment outcomes, though magnitudes vary depending on methodology and sample definitions. The 3.0 percentage point effect on full-time employment found here falls within the range of estimates in the literature.

The event study pattern showing effects that grow over time is consistent with studies documenting gradual take-up of DACA and increasing effects as recipients accumulated work authorization tenure.

7 Conclusion

This study provides evidence that DACA eligibility increased full-time employment among Mexican-born non-citizens. The preferred difference-in-differences estimate of 3.0 percentage points (95% CI: [2.2, 3.9]) is robust across specifications and supported by event study analysis showing parallel pre-trends.

The findings suggest that policies providing work authorization to undocumented immigrants can meaningfully improve their labor market outcomes. The magnitude of the effect—a roughly 7% increase relative to baseline—is economically significant and implies substantial gains in earnings and economic well-being for DACA recipients.

These results contribute to ongoing policy debates about immigration reform by providing quasi-experimental evidence on the labor market effects of work authorization. While the analysis focuses specifically on full-time employment, the broader implications extend to

questions about immigrant integration, economic contributions, and the costs and benefits of various immigration policy approaches.

8 Appendix: Variable Definitions

Table 5: IPUMS Variable Definitions

Variable	Definition
YEAR	Survey year
PERWT	Person weight for sample weighting
STATEFIP	State FIPS code
AGE	Age in years
SEX	Sex (1 = Male, 2 = Female)
BIRTHYR	Year of birth
BIRTHQTR	Quarter of birth (1 = Jan–Mar, 2 = Apr–Jun, 3 = Jul–Sep, 4 = Oct–Dec)
MARST	Marital status
HISPAN	Hispanic origin (1 = Mexican)
BPL	Birthplace (200 = Mexico)
CITIZEN	Citizenship status (3 = Not a citizen)
YRIMMIG	Year of immigration
EDUC	Educational attainment
EMPSTAT	Employment status (1 = Employed)
LABFORCE	Labor force status (2 = In labor force)
UHRSWORK	Usual hours worked per week

9 Appendix: Additional Tables

Table 6: Full-Time Employment Rates by Year and Treatment Status

	DACA Eligible		Control	
Year	FT Rate	N (weighted)	FT Rate	N (weighted)
2006	0.469	849,506	0.675	6,869,737
2007	0.483	931,405	0.677	6,957,344
2008	0.478	943,534	0.657	6,774,249
2009	0.439	1,022,524	0.606	6,674,563
2010	0.429	1,181,879	0.572	6,691,454
2011	0.430	1,227,523	0.573	6,516,688
2013	0.481	1,305,991	0.593	6,236,461
2014	0.508	1,328,214	0.594	6,193,135
2015	0.539	1,284,452	0.606	6,044,640
2016	0.558	1,299,848	0.613	5,959,168

10 Appendix: Analytical Decisions

This appendix documents key analytical decisions made during the analysis:

10.1 Sample Definition

- Restricted to Hispanic-Mexican (HISPAN = 1) individuals born in Mexico (BPL = 200)
- Restricted to non-citizens (CITIZEN = 3) as proxy for undocumented status
- Working age defined as 16–64 years
- 2012 excluded as transition year

10.2 Treatment Variable Construction

- DACA eligibility based on: (1) under 31 as of June 15, 2012; (2) arrived before age 16; (3) in U.S. since 2007 or earlier
- Age at DACA calculated using BIRTHYR and BIRTHQTR for precision
- Age at arrival calculated as YRIMMIG minus BIRTHYR
- Individuals with missing YRIMMIG coded as not meeting arrival criteria

10.3 Outcome Variable

- Full-time employment defined as UHRSWORK ≥ 35
- Binary outcome suitable for linear probability model interpretation

10.4 Estimation

- Weighted least squares using person weights (PERWT)
- Heteroskedasticity-robust standard errors (HC1)
- Linear probability model for ease of interpretation

10.5 Fixed Effects

- Year fixed effects control for common time trends
- State fixed effects control for time-invariant state characteristics
- Interaction between treatment and post-period identifies the DiD effect