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

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Abstract

This study examines the causal impact of eligibility for the Deferred Action for Childhood Arrivals (DACA) program on full-time employment among Hispanic-Mexican 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 reveals that DACA eligibility increased full-time employment by approximately 5.6 percentage points (95% CI: 3.3 to 7.9 pp, $p < 0.001$). This effect is robust to alternative specifications, covariates, and bandwidth choices. Event study analysis suggests parallel pre-trends between treatment and control groups, supporting the validity of the difference-in-differences design.

Keywords: DACA, immigration policy, employment, difference-in-differences, quasi-experimental methods

Contents

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 provides temporary relief from deportation and work authorization to undocumented immigrants who arrived in the United States as children. Given that work authorization is a key component of the program, understanding DACA's impact on employment outcomes is crucial for evaluating its economic effects.

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

Full-time employment is defined as usually working 35 hours or more per week. The analysis employs a difference-in-differences (DiD) design that exploits the age-based eligibility cutoff of the DACA program. Specifically, I compare individuals who were ages 26–30 on June 15, 2012 (the treatment group, who were DACA-eligible) to those who were ages 31–35 (the control group, who were just over the age threshold and thus ineligible solely due to their age).

The key identifying assumption is that, absent DACA, the employment trends of the treatment and control groups would have evolved in parallel. This assumption is supported by the event study analysis, which shows no systematic pre-treatment differences in employment trends between the groups.

2 Background

2.1 The DACA Program

DACA was announced by the Obama administration on June 15, 2012, and applications began to be received on August 15, 2012. The program offers qualifying individuals:

- Deferred action status (temporary protection from deportation)
- Work authorization for an initial period of two years

- Eligibility for Social Security numbers
- Ability to obtain driver's licenses in most states

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

1. Arrived in the U.S. before their 16th birthday
2. Were under age 31 as of June 15, 2012
3. Lived continuously in the U.S. since June 15, 2007
4. Were present in the U.S. on June 15, 2012
5. Did not have lawful immigration status
6. Were enrolled in school, had graduated high school, obtained a GED, or were honorably discharged from the military
7. Had not been convicted of a felony, significant misdemeanor, or multiple misdemeanors

In the first four years of the program, nearly 900,000 initial applications were received, with approximately 90% approved. While DACA was not restricted to any particular nationality, the vast majority of recipients were from Mexico due to the composition of the undocumented immigrant population in the United States.

2.2 Theoretical Motivation

DACA may affect employment through several channels:

Legal Work Authorization: Prior to DACA, undocumented immigrants faced significant barriers to formal employment due to lack of work authorization. DACA provides legal work permits, enabling recipients to pursue employment in the formal labor market.

Reduced Fear of Deportation: The deferred action status reduces the risk of deportation, potentially increasing labor supply by reducing the fear associated with working and interacting with employers.

Access to Better Jobs: With legal work authorization and identification documents, DACA recipients may have access to jobs with better wages, hours, and working conditions, including full-time positions.

Human Capital Investment: The security provided by DACA may encourage investments in education and training, leading to improved employment outcomes.

3 Data

3.1 Data Source

The analysis uses data from the American Community Survey (ACS) as provided by IPUMS USA. The ACS is a large-scale, nationally representative survey conducted annually by the U.S. Census Bureau. I use the one-year ACS files from 2006 through 2016, excluding 2012 due to the mid-year implementation of DACA that makes pre/post classification ambiguous for that year.

3.2 Sample Selection

The analytic sample is constructed by applying the following selection criteria:

1. **Hispanic-Mexican Ethnicity:** Individuals identified as Hispanic-Mexican using the HISPAN variable (= 1) or HISPAND variable (codes 100–107, representing various Mexican ethnic categories).
2. **Born in Mexico:** Individuals with BPL = 200 or BPLD = 20000, indicating Mexican birthplace.
3. **Not a Citizen:** Individuals with CITIZEN = 3 (not a citizen). This serves as a proxy for undocumented status, as the ACS does not directly identify documentation status.
4. **Arrived Before Age 16:** Individuals whose age at immigration (YRIMMIG – BIRTHYR) was less than 16 and non-negative.
5. **In U.S. Since 2007:** Individuals with YRIMMIG $\leq$ 2007, indicating continuous presence since June 15, 2007.

6. **Age Groups:**

   - Treatment group: Age 26–30 as of June 15, 2012
   - Control group: Age 31–35 as of June 15, 2012

Age as of June 15, 2012 is calculated using birth year (BIRTHYR) and birth quarter (BIRTHQTR). For individuals born in quarters 1–2 (January–June), age is computed as 2012 – BIRTHYR. For those born in quarters 3–4 (July–December), age is 2012 – BIRTHYR – 1, as they would not have reached their birthday by June 15.

3.3 Variables

Outcome Variable: Full-time employment, defined as a binary indicator equal to 1 if UHRSWORK ≥ 35 (usual hours worked per week is 35 or more), and 0 otherwise.

Treatment Indicator: Binary variable equal to 1 for individuals in the treatment age group (26–30 as of June 15, 2012) and 0 for the control group (31–35).

Post-Treatment Indicator: Binary variable equal to 1 for survey years 2013–2016 (post-DACA) and 0 for 2006–2011 (pre-DACA).

Covariates:

- Female: Binary indicator for female sex (SEX = 2)
- Married: Binary indicator for married status (MARST = 1 or 2)
- High school education: Binary indicator for high school completion or higher (EDUC ≥ 6)

Survey Weights: PERWT (person weight) is used in weighted analyses to produce population-representative estimates.

3.4 Sample Characteristics

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

Table 1: Sample Sizes by Group and Period

	Pre-DACA (2006–2011)		Post-DACA (2013–2016)	
Group	N	%	N	%
Control (Ages 31–35)	11,530	41.1%	5,985	40.8%
Treatment (Ages 26–30)	16,500	58.9%	8,674	59.2%
Total	28,030	100%	14,659	100%

The total analytic sample consists of 42,689 person-year observations, with 25,174 in the treatment group and 17,515 in the control group.

4 Methodology

4.1 Difference-in-Differences Design

The analysis employs a difference-in-differences (DiD) design that compares changes in full-time employment between the treatment and control groups before and after DACA implementation. The key equation is:

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

where:

- Y_{it} is full-time employment status for individual i in year t
- Treat_i is an indicator for the treatment group (ages 26–30)
- Post_t is an indicator for the post-DACA period (2013–2016)
- β_3 is the DiD estimator, representing the causal effect of DACA eligibility

4.2 Preferred Specification

The preferred specification adds year fixed effects to control for time-varying factors affecting all individuals:

$$Y_{it} = \alpha + \beta_1 \text{Treat}_i + \beta_3 (\text{Treat}_i \times \text{Post}_t) + \sum_{t=2007}^{2016} \gamma_t \text{Year}_t + \epsilon_{it} \tag{2}$$

This specification is estimated using weighted least squares (WLS) with person weights (PERWT) and heteroskedasticity-robust standard errors (HC1).

4.3 Event Study Specification

To examine pre-trends and the dynamics of treatment effects, I estimate an event study model:

$$Y_{it} = \alpha + \beta_1 \text{Treat}_i + \sum_{t \neq 2011} \delta_t (\text{Treat}_i \times \text{Year}_t) + \sum_{t=2007}^{2016} \gamma_t \text{Year}_t + \epsilon_{it} \tag{3}$$

where 2011 is the omitted reference year (the last full pre-treatment year). The coefficients δ_t for $t < 2012$ test for differential pre-trends, while δ_t for $t > 2012$ trace out the dynamic treatment effects.

4.4 Identifying Assumptions

The validity of the DiD design rests on the parallel trends assumption: in the absence of DACA, the treatment and control groups would have experienced the same changes in full-time employment over time. This assumption is not directly testable but can be assessed by examining pre-treatment trends.

Additional assumptions include:

- No anticipation effects prior to DACA implementation

- No spillover effects from the treatment to control group
- The composition of the treatment and control groups remains stable over time (no differential selection into or out of the sample)

5 Results

5.1 Descriptive Statistics

Table 2 presents weighted means of key variables by treatment status and time period.

Table 2: Weighted Means by Group and Period

	Control (31–35)		Treatment (26–30)	
Variable	Pre	Post	Pre	Post
Full-time employed	0.672	0.643	0.631	0.660
Employed (any)	0.718	0.722	0.684	0.740
Female	0.414	0.447	0.434	0.433
Married	0.519	0.562	0.377	0.497
High school+	0.527	0.512	0.611	0.594
N (observations)	11,530	5,985	16,500	8,674

Several patterns emerge from the descriptive statistics:

1. The treatment group (younger cohort) had lower baseline full-time employment rates in the pre-period (63.1% vs. 67.2%).
2. The control group experienced a *decline* in full-time employment from pre to post (-2.9 pp), while the treatment group experienced an *increase* (+2.9 pp).
3. The treatment group has higher educational attainment (61.1% vs. 52.7% with high school or more) and lower marriage rates (37.7% vs. 51.9% pre-period), consistent with their younger age.

5.2 Simple Difference-in-Differences

The simple 2×2 DiD calculation using weighted means yields:

$$\begin{aligned}
\text{DiD} &= (Y_{Treat,Post} - Y_{Treat,Pre}) - (Y_{Control,Post} - Y_{Control,Pre}) \\
&= (0.660 - 0.631) - (0.643 - 0.672) \\
&= 0.029 - (-0.029) \\
&= \mathbf{0.058}
\end{aligned}$$

This suggests DACA eligibility increased full-time employment by approximately 5.8 percentage points.

5.3 Main Regression Results

Table 3 presents the DiD estimates from various regression specifications.

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

	(1) Basic Unweighted	(2) Basic Weighted	(3) Year FE Weighted	(4) Year FE + Cov. Weighted
DiD (Treat × Post)	0.0502***	0.0577***	0.0561***	0.0451***
	(0.0100)	(0.0118)	(0.0118)	(0.0108)
95% CI	[0.031, 0.070]	[0.035, 0.081]	[0.033, 0.079]	[0.024, 0.066]
Treatment Group	-0.0396***	-0.0398***	-0.0398***	-0.0394***
	(0.0068)	(0.0068)	(0.0068)	(0.0063)
Female				-0.3736***
				(0.0052)
Married				-0.0129**
				(0.0051)
High School+				0.0578***
				(0.0051)
Year Fixed Effects	No	No	Yes	Yes
Weights	No	Yes	Yes	Yes
N	42,689	42,689	42,689	42,689

Notes: Heteroskedasticity-robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

The main findings are:

1. **Preferred estimate (Column 3):** DACA eligibility increased full-time employment by 5.61 percentage points (SE = 0.0118, 95% CI: 3.30 to 7.92 pp), statistically significant at the 1% level.

2. The estimate is robust across specifications, ranging from 4.5 to 5.8 percentage points.

3. The treatment group has a baseline disadvantage in full-time employment (-4.0 pp relative to control), consistent with their younger age.

4. Female sex is strongly negatively associated with full-time employment (-37.4 pp), while high school education is positively associated (+5.8 pp).

5.4 Event Study Analysis

Figure ?? presents the event study coefficients with 2011 as the reference year.

Table 4: Event Study Coefficients (Relative to 2011)

Year	Coefficient	Std. Error	95% CI
Pre-treatment period:			
2006	-0.0054	0.0248	[-0.054, 0.043]
2007	-0.0416	0.0246	[-0.090, 0.007]
2008	0.0027	0.0252	[-0.047, 0.052]
2009	-0.0064	0.0258	[-0.057, 0.044]
2010	-0.0119	0.0256	[-0.062, 0.038]
2011	0	—	[reference]
Post-treatment period:			
2013	0.0438	0.0269	[-0.009, 0.097]
2014	0.0433	0.0273	[-0.010, 0.097]
2015	0.0238	0.0273	[-0.030, 0.077]
2016	0.0719**	0.0274	[0.018, 0.126]

** p<0.05

The event study results support the parallel trends assumption:

1. **Pre-trends:** All pre-treatment coefficients (2006–2010) are statistically insignificant and small in magnitude, fluctuating around zero. The largest pre-treatment coefficient is -0.042 in 2007, which is marginally significant at the 10% level but not at conventional levels.

2. **Post-treatment effects:** The coefficients turn positive after DACA implementation. The effect appears to grow over time, with the 2016 coefficient (0.072) being statistically significant and larger than earlier post-treatment years.

3. **No anticipation:** There is no evidence of anticipation effects in 2010 or 2011.

5.5 Robustness Checks

Table 5 presents results from various robustness checks.

Table 5: Robustness Checks

Specification	Coefficient	Std. Error	95% CI	N
Main estimate:				
Year FE, Weighted	0.0561***	0.0118	[0.033, 0.079]	42,689
Alternative outcomes:				
Any employment	0.0513***	0.0110	[0.030, 0.073]	42,689
Alternative bandwidth:				
Ages 28–30 vs. 31–33	0.0514***	0.0155	[0.021, 0.082]	24,264
By sex:				
Males only	0.0431***	0.0126	[0.018, 0.068]	23,936
Females only	0.0445**	0.0186	[0.008, 0.081]	18,753
Additional controls:				
With state fixed effects	0.0544***	0.0117	[0.031, 0.077]	42,689
Placebo test:				
Pre-DACA only (2009–2011 vs. 2006–2008)	0.0086	0.0137	[-0.018, 0.036]	28,030

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

Key findings from robustness checks:

1. **Alternative outcome:** The effect on any employment (0.051) is similar to the effect on full-time employment (0.056), suggesting DACA primarily moved people into employment rather than shifting part-time workers to full-time.

2. **Narrower bandwidth:** Restricting to ages closer to the cutoff (28–30 vs. 31–33) yields a nearly identical estimate (0.051), supporting the validity of the age-based identification.

3. **By sex:** The effect is positive and significant for both males (0.043) and females (0.045), with similar magnitudes.

4. **State fixed effects:** Adding state fixed effects barely changes the estimate (0.054 vs. 0.056), suggesting state-level factors do not confound the results.

5. **Placebo test:** The placebo test using only pre-DACA years yields a small, statistically insignificant coefficient (0.009), confirming no spurious effects in the pre-treatment period.

6 Discussion

6.1 Interpretation of Results

The main finding of this study is that DACA eligibility increased full-time employment by approximately 5.6 percentage points among eligible Hispanic-Mexican Mexican-born individuals. This effect is statistically significant at conventional levels and robust to various specification choices.

To put this effect in context:

- The baseline full-time employment rate for the treatment group in the pre-period was 63.1%.
- A 5.6 percentage point increase represents an approximately 8.9% relative increase in full-time employment.
- Given an estimated eligible population in this age range of several hundred thousand individuals, this translates to tens of thousands of people gaining full-time employment.

The event study analysis reveals that the effect appeared immediately after DACA implementation and grew over time, with the largest effect observed in 2016 (7.2 percentage points). This pattern is consistent with gradual take-up of the program and the time required to transition into formal full-time employment.

6.2 Mechanisms

Several mechanisms may explain the positive effect of DACA on full-time employment:

1. **Legal work authorization:** DACA provides formal work permits, allowing recipients to seek employment in the formal labor market where full-time positions are more common.
2. **Access to better jobs:** With legal documentation, DACA recipients can apply for positions that require background checks, tax documentation, or occupational licenses.

3. **Reduced fear:** The protection from deportation may encourage recipients to work more hours or seek visible employment without fear of detection.

4. **Geographic mobility:** Driver's licenses and state IDs (available to DACA recipients in many states) enable commuting to better-paying full-time jobs.

6.3 Limitations

Several limitations should be noted:

1. **Proxy for undocumented status:** The ACS does not directly identify undocumented immigrants. Using non-citizenship as a proxy includes some legal non-citizens and excludes undocumented individuals who misreport their status.

2. **Intent-to-treat interpretation:** The estimates capture the effect of DACA eligibility, not actual DACA receipt. Some eligible individuals did not apply, so the effect on actual recipients is likely larger.

3. **Repeated cross-sections:** The ACS is not a panel, so we cannot track the same individuals over time. Differential selection into or out of the sample could bias estimates.

4. **Age as a proxy for eligibility:** The control group (ages 31–35) differs from the treatment group in age-related characteristics that may affect employment trends independently of DACA.

5. **Generalizability:** Results focus on Hispanic-Mexican Mexican-born individuals and may not generalize to DACA-eligible individuals from other countries.

6.4 Comparison to Existing Literature

The estimated effect size of approximately 5–6 percentage points is broadly consistent with the existing literature on DACA and employment, though direct comparisons are complicated by differences in sample definitions, time periods, and outcome measures.

7 Conclusion

This replication study provides evidence that DACA eligibility had a positive causal effect on full-time employment among Hispanic-Mexican Mexican-born individuals. The preferred estimate indicates that DACA eligibility increased full-time employment by 5.61 percentage points (95% CI: 3.30 to 7.92 pp). This effect is statistically significant and robust to alternative specifications, including different bandwidths, covariates, and fixed effects.

The event study analysis supports the validity of the difference-in-differences design, showing parallel pre-trends between treatment and control groups. The placebo test using only pre-DACA years yields a null result, further supporting the causal interpretation.

These findings suggest that providing legal work authorization to undocumented immigrants who arrived as children can substantially improve their labor market outcomes. The policy implications extend beyond DACA to broader debates about immigration reform and pathways to legal status for undocumented immigrants.

Appendix A: Variable Definitions

Table 6: IPUMS Variable Definitions

Variable	Definition
YEAR	Survey year (2006–2016)
PERWT	Person weight for population estimates
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)
SEX	Sex (1=Male, 2=Female)
HISPAN	Hispanic origin (1=Mexican)
HISPAND	Detailed Hispanic origin (100–107 = Mexican variants)
BPL	Birthplace (200=Mexico)
BPLD	Detailed birthplace (20000=Mexico)
CITIZEN	Citizenship status (3=Not a citizen)
YRIMMIG	Year of immigration to U.S.
MARST	Marital status (1,2=Married)
EDUC	Educational attainment (6+=High school or more)
EMPSTAT	Employment status (1=Employed)
UHRSWORK	Usual hours worked per week
STATEFIP	State FIPS code

Appendix B: Full Regression Output

Preferred Model: DiD with Year Fixed Effects (Weighted)

WLS Regression Results

Dep. Variable:	fulltime	R-squared:	0.005
Model:	WLS	Adj. R-squared:	0.005
No. Observations:	42689		
Covariance Type:	HC1		

	coef	std err	z	P>|z|	[0.025	0.975]
Intercept	0.6934	0.009	79.854	0.000	0.676	0.710
C(YEAR)[T.2007]	0.0211	0.011	1.944	0.052	-0.000	0.042
C(YEAR)[T.2008]	0.0098	0.011	0.881	0.379	-0.012	0.032
C(YEAR)[T.2009]	-0.0416	0.011	-3.628	0.000	-0.064	-0.019
C(YEAR)[T.2010]	-0.0620	0.011	-5.437	0.000	-0.084	-0.040
C(YEAR)[T.2011]	-0.0679	0.012	-5.557	0.000	-0.092	-0.044
C(YEAR)[T.2013]	-0.0583	0.014	-4.198	0.000	-0.086	-0.031
C(YEAR)[T.2014]	-0.0767	0.014	-5.461	0.000	-0.104	-0.049
C(YEAR)[T.2015]	-0.0391	0.014	-2.782	0.005	-0.067	-0.012
C(YEAR)[T.2016]	-0.0214	0.014	-1.514	0.130	-0.049	0.006
treat	-0.0398	0.007	-5.838	0.000	-0.053	-0.026
treat_post	0.0561	0.012	4.758	0.000	0.033	0.079

Model with Covariates

WLS Regression Results

Dep. Variable:	fulltime	R-squared:	0.158
Model:	WLS	Adj. R-squared:	0.157
No. Observations:	42689		

Covariance Type: HC1

	coef	std err	z	P>|z|	[0.025	0.975]
Intercept	0.8212	0.009	90.334	0.000	0.803	0.839
C(YEAR)[T.2007]	0.0192	0.010	1.908	0.056	-0.001	0.039
C(YEAR)[T.2008]	0.0096	0.010	0.928	0.354	-0.011	0.030
C(YEAR)[T.2009]	-0.0343	0.011	-3.207	0.001	-0.055	-0.013
C(YEAR)[T.2010]	-0.0560	0.011	-5.316	0.000	-0.077	-0.035
C(YEAR)[T.2011]	-0.0583	0.011	-5.174	0.000	-0.080	-0.036
C(YEAR)[T.2013]	-0.0444	0.013	-3.483	0.000	-0.069	-0.019
C(YEAR)[T.2014]	-0.0588	0.013	-4.558	0.000	-0.084	-0.034
C(YEAR)[T.2015]	-0.0201	0.013	-1.547	0.122	-0.045	0.005
C(YEAR)[T.2016]	-0.0054	0.013	-0.413	0.679	-0.031	0.020
treat	-0.0394	0.006	-6.242	0.000	-0.052	-0.027
treat_post	0.0451	0.011	4.196	0.000	0.024	0.066
female	-0.3736	0.005	-71.215	0.000	-0.384	-0.363
married	-0.0129	0.005	-2.538	0.011	-0.023	-0.003
educ_hs	0.0578	0.005	11.388	0.000	0.048	0.068

Appendix C: Sample Selection Flow

Table 7: Sample Selection Steps

Selection Criterion	Remaining Observations
Total ACS observations (2006–2016)	33,851,424
Hispanic-Mexican ethnicity	–
Born in Mexico	–
Not a citizen	–
Arrived before age 16	–
In U.S. since 2007	–
Age 26–35 as of June 15, 2012	–
Excluding 2012	**42,689**

Notes on Sample Construction:

1. The ACS provides a repeated cross-section of the U.S. population. Each year represents an independent sample.

2. Year 2012 is excluded because DACA was implemented mid-year (June 15), making it impossible to determine whether observations are pre- or post-treatment.

3. The non-citizen criterion (CITIZEN = 3) serves as a proxy for undocumented status. Some individuals in this category may be legal non-citizens (e.g., green card holders who have not naturalized), while some undocumented individuals may misreport as citizens.

4. The age groups are constructed to compare individuals just below the DACA age cutoff (26–30) to those just above (31–35), minimizing age-related confounding while maintaining adequate sample size.