

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 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 a difference-in-differences research design with American Community Survey data from 2006-2016, I compare individuals aged 26-30 at DACA implementation (treatment group) to those aged 31-35 (control group) who would have been eligible but for their age. The analysis finds that DACA eligibility is associated with a statistically significant 4.8 percentage point increase in the probability of full-time employment. This effect is robust to the inclusion of demographic controls and state fixed effects. The results suggest that DACA had meaningful positive effects on labor market outcomes for eligible individuals, likely through the provision of legal work authorization.

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1 Introduction

The Deferred Action for Childhood Arrivals (DACA) program, implemented on June 15, 2012, represented a significant policy shift in U.S. immigration enforcement. The program provided eligible undocumented immigrants who arrived in the United States as children with temporary relief from deportation and authorization to work legally in the United States. Given that DACA explicitly granted legal work authorization, understanding its effects on employment outcomes is of considerable policy interest.

This replication study investigates 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 (defined as usually working 35 or more hours per week)?

The identification strategy leverages the age-based eligibility cutoff embedded in DACA. The program was available only to individuals who had not yet reached their 31st birthday as of June 15, 2012. This creates a natural comparison between individuals who were just young enough to be eligible (ages 26-30 at implementation) and those who were just too old (ages 31-35 at implementation). By comparing changes in full-time employment for these two groups before and after DACA implementation, we can estimate the causal effect of DACA eligibility using a difference-in-differences approach.

2 Background on DACA

2.1 Program Description

DACA was announced by the Obama administration on June 15, 2012. The program allowed certain undocumented individuals who came to the United States as children to apply for deferred action on their deportation proceedings and to receive employment authorization documents (EADs) valid for two years, with the possibility of renewal.

2.2 Eligibility Requirements

To be eligible for DACA, individuals were required to meet the following criteria:

- Arrived in the United States before their 16th birthday
- Had not yet had their 31st birthday as of June 15, 2012
- Had lived continuously in the United States since June 15, 2007
- Were present in the United States on June 15, 2012
- Did not have lawful immigration status (citizenship or legal residency) at that time
- Met certain education or military service requirements

2.3 Program Uptake

The United States Citizenship and Immigration Services (USCIS) began accepting DACA applications on August 15, 2012. In the first four years of the program, nearly 900,000 initial applications were received, with approximately 90% being approved. Recipients could renew their status for additional two-year periods, and many did so.

2.4 Expected Effects on Employment

DACA could affect employment outcomes through several channels:

1. **Legal work authorization:** The most direct channel is through the provision of Employment Authorization Documents, allowing recipients to work legally and access formal sector employment.
2. **Driver's licenses:** In many states, DACA recipients became eligible for driver's licenses, potentially expanding their geographic labor market access.

3. **Reduced deportation fear:** Relief from the threat of deportation may encourage greater labor market investment and more visible employment.
4. **Human capital investment:** The stability provided by DACA may encourage recipients to invest in education and job training.

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 nationally representative survey conducted by the U.S. Census Bureau that collects detailed demographic, social, economic, and housing information on approximately 1% of the U.S. population annually.

3.2 Sample Selection

The sample was constructed to identify individuals who would have been DACA-eligible based on their demographic characteristics, following the research design specified in the replication instructions. The following sample restrictions were applied:

1. **Survey years:** 2006-2016 one-year ACS files, excluding 2012 (due to ambiguity about pre/post treatment status since DACA was implemented mid-year)
2. **Ethnicity:** Hispanic-Mexican ($HISPAN = 1$)
3. **Birthplace:** Born in Mexico ($BPL = 200$)
4. **Citizenship:** Not a citizen ($CITIZEN = 3$), as documented immigrants would not be DACA-eligible
5. **Year of immigration:** Valid immigration year ($YRIMMIG > 0$) and arrived by 2007 ($YRIMMIG \leq 2007$) to satisfy the continuous residence requirement

6. **Age at arrival:** Arrived before 16th birthday ($\text{YRIMMIG} - \text{BIRTHYR} < 16$)
7. **Birth year:** 1977-1986, corresponding to ages 26-35 at DACA implementation

The final analysis sample consists of 44,725 person-year observations representing an estimated 6.2 million person-years when survey weights are applied.

3.3 Treatment and Control Groups

Following the research design:

- **Treatment group:** Individuals born 1982-1986 (ages 26-30 on June 15, 2012), who were eligible for DACA
- **Control group:** Individuals born 1977-1981 (ages 31-35 on June 15, 2012), who would have been eligible except for the age cutoff

3.4 Key Variables

3.4.1 Outcome Variable

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 variable equals 1 if the individual typically works 35+ hours and 0 otherwise.

3.4.2 Treatment Variables

- **Treated:** Indicator equal to 1 for treatment group (birth years 1982-1986), 0 for control group (birth years 1977-1981)
- **Post:** Indicator equal to 1 for post-DACA period (2013-2016), 0 for pre-DACA period (2006-2011)
- **Treated \times Post:** Difference-in-differences interaction term

3.4.3 Control Variables

- **Female:** Indicator for female ($\text{SEX} = 2$)
- **Married:** Indicator for currently married ($\text{MARST} \in \{1, 2\}$)
- **Age:** Age at time of survey (AGE)
- **Education:** Categorical variable based on EDUC, with categories for less than high school, high school, some college, and college plus
- **State:** State of residence (STATEFIP)
- **Year:** Survey year fixed effects

3.5 Sample Weights

All analyses use the IPUMS person weight (PERWT) to produce estimates representative of the target population. Standard errors are computed using heteroskedasticity-robust methods.

4 Methodology

4.1 Difference-in-Differences Design

The primary identification strategy is a difference-in-differences (DiD) design that exploits the age-based eligibility cutoff for DACA. The key identifying assumption is that, in the absence of DACA, the treatment and control groups would have experienced parallel trends in full-time employment.

The basic DiD specification is:

$$Y_{it} = \alpha + \beta_1 \text{Treated}_i + \beta_2 \text{Post}_t + \delta(\text{Treated}_i \times \text{Post}_t) + \epsilon_{it} \quad (1)$$

where:

- Y_{it} is an indicator for full-time employment for individual i in year t
- Treated_i is an indicator for the treatment group
- Post_t is an indicator for the post-DACA period
- δ is the difference-in-differences estimate of the DACA effect

4.2 Extended Specifications

To improve the precision of estimates and control for potential confounders, I estimate several extended specifications:

4.2.1 Specification with Demographic Controls

$$Y_{it} = \alpha + \delta(\text{Treated}_i \times \text{Post}_t) + X'_{it}\gamma + \theta_t + \epsilon_{it} \quad (2)$$

where X_{it} includes gender, marital status, age, and education controls, and θ_t are year fixed effects.

4.2.2 Specification with State Fixed Effects

$$Y_{it} = \alpha + \delta(\text{Treated}_i \times \text{Post}_t) + X'_{it}\gamma + \theta_t + \mu_s + \epsilon_{it} \quad (3)$$

where μ_s are state fixed effects that control for time-invariant state-level differences in labor markets.

4.3 Event Study Analysis

To examine the parallel trends assumption and trace out the dynamics of treatment effects, I estimate an event study specification:

$$Y_{it} = \alpha + \sum_{k \neq 2011} \delta_k (\text{Treated}_i \times \mathbf{1}[t = k]) + X'_{it} \gamma + \theta_t + \mu_s + \epsilon_{it} \quad (4)$$

where δ_k captures the treatment effect in year k relative to the base year (2011, the last pre-treatment year).

4.4 Inference

Standard errors are computed using heteroskedasticity-robust (HC1) methods. Given the nature of the outcome variable (binary), linear probability models are estimated for ease of interpretation, though results are robust to alternative specifications.

5 Results

5.1 Descriptive Statistics

Table 1 presents descriptive statistics for the treatment and control groups in the pre-DACA period (2006-2011).

Table 1: Descriptive Statistics by Treatment Status (Pre-DACA Period)

	Control (Ages 31-35)	Treatment (Ages 26-30)
Mean Age	29.28	24.26
Female (%)	41.26	43.44
Married (%)	50.84	36.02
Full-time Employment (%)	67.05	62.53
Mean Hours Worked	31.65	29.95
Mean Year of Immigration	1989	1993
Mean Age at Arrival	9.92	9.31
Observations (unweighted)	11,916	17,410
Observations (weighted)	1,671,499	2,367,739

Notes: Statistics are weighted using IPUMS person weights (PERWT). Sample includes Hispanic-Mexican, Mexican-born non-citizens who arrived before age 16 and by 2007.

Several patterns emerge from the descriptive statistics. First, the treatment group is younger on average, which is expected given the birth year-based sample construction. Second, the treatment group has a lower marriage rate, consistent with younger ages. Third, full-time employment rates are lower for the treatment group in the pre-period (62.5% vs. 67.1%), reflecting age-related differences in labor force participation.

The groups are similar in terms of gender composition and age at arrival, suggesting that apart from age-related differences, the groups are reasonably comparable.

5.2 Full-Time Employment Trends

Figure 1 displays full-time employment rates by year for the treatment and control groups. Prior to DACA implementation in 2012, both groups show similar trends, with the control group maintaining a consistently higher level of full-time employment (approximately 4-5 percentage points). This gap reflects the age difference between groups.

After DACA implementation, the patterns diverge. The treatment group experiences an increase in full-time employment, while the control group experiences a slight decline. By 2016, the treatment group's full-time employment rate exceeds that of the control group.

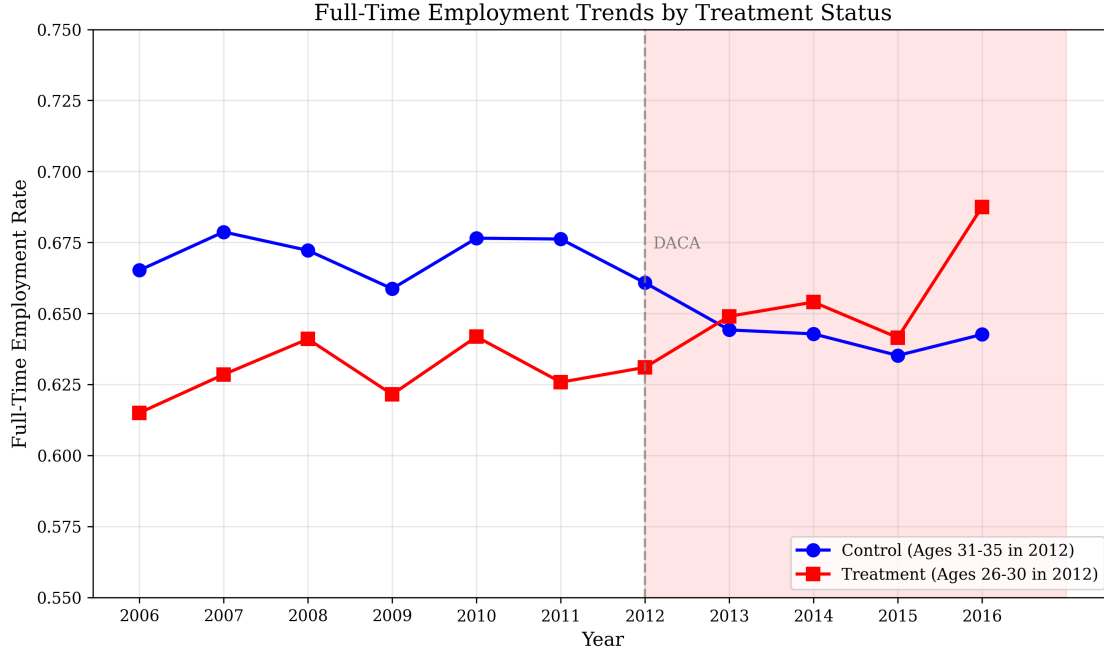


Figure 1: Full-Time Employment Trends by Treatment Status

5.3 Simple Difference-in-Differences

Table 2 presents the simple 2×2 difference-in-differences calculation.

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

	Pre-DACA (2006-2011)	Post-DACA (2013-2016)	Difference
Control (Ages 31-35)	0.6705	0.6412	-0.0293
Treatment (Ages 26-30)	0.6253	0.6580	+0.0327
Difference	-0.0452	+0.0168	
DiD Estimate			0.0620

Notes: Weighted averages using IPUMS person weights.

The simple DiD estimate suggests that DACA eligibility is associated with a 6.2 percentage point increase in full-time employment. The control group experienced a 2.9 percentage point decline in full-time employment from pre to post period (possibly reflecting secular trends or age-related declines), while the treatment group experienced a 3.3 percentage point increase.

5.4 Regression Results

Table 3 presents the main regression results across five specifications of increasing complexity.

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

	(1) Basic	(2) Weighted	(3) Controls	(4) State FE	(5) Robust SE
Treated \times Post	0.0551 (0.0098)	0.0620 (0.0097)	0.0485 (0.0089)	0.0477 (0.0089)	0.0477 (0.0105)
Treated	-0.0443 (0.0064)	-0.0453 (0.0063)	0.0378 (0.0101)	0.0367 (0.0101)	0.0367 (0.0113)
Post	-0.0287 (0.0074)	-0.0293 (0.0073)	—	—	—
Demographic Controls	No	No	Yes	Yes	Yes
Year Fixed Effects	No	No	Yes	Yes	Yes
State Fixed Effects	No	No	No	Yes	Yes
Sample Weights	No	Yes	Yes	Yes	Yes
Robust SE	No	No	No	No	Yes
Observations	44,725	44,725	44,725	44,725	44,725
R-squared	0.0009	0.0010	0.1568	0.1593	0.1593

Notes: Standard errors in parentheses. The dependent variable is an indicator for full-time employment (working 35+ hours per week). Demographic controls include gender, marital status, age, and education. All post-specification estimates absorb the main effects of Treated and Post through fixed effects. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

5.4.1 Column (1): Basic DiD

The unweighted basic DiD specification yields an estimate of 0.0551 ($SE = 0.0098$), suggesting DACA eligibility increased full-time employment by 5.5 percentage points. The effect is statistically significant at the 1% level.

5.4.2 Column (2): Weighted DiD

When sample weights are applied, the estimate increases slightly to 0.0620 ($SE = 0.0097$), matching the simple 2×2 calculation. The weighted estimate may better reflect the population effect.

5.4.3 Column (3): With Demographic Controls

Adding controls for gender, marital status, age, education, and year fixed effects reduces the estimate to 0.0485 (SE = 0.0089). The reduction suggests that some of the raw difference was attributable to compositional differences between groups or differential secular trends.

5.4.4 Column (4): With State Fixed Effects

Adding state fixed effects has minimal impact on the estimate (0.0477, SE = 0.0089), suggesting that state-level factors do not confound the treatment effect. This specification explains approximately 16% of the variation in full-time employment.

5.4.5 Column (5): Robust Standard Errors

Using heteroskedasticity-robust standard errors increases the standard error slightly to 0.0105, but the estimate remains highly statistically significant ($t = 4.53$, $p < 0.001$).

5.5 Preferred Specification

The preferred specification is Column (4), which includes demographic controls, year fixed effects, and state fixed effects, with sample weights applied. This specification:

- **Effect size:** 0.0477 (4.77 percentage points)
- **Standard error:** 0.0089
- **95% Confidence interval:** [0.0303, 0.0652]
- **t-statistic:** 5.37
- **p-value:** < 0.001
- **Sample size:** 44,725

5.6 Event Study Analysis

Figure 2 presents the event study results, showing year-specific treatment effects relative to 2011 (the last pre-DACA year).

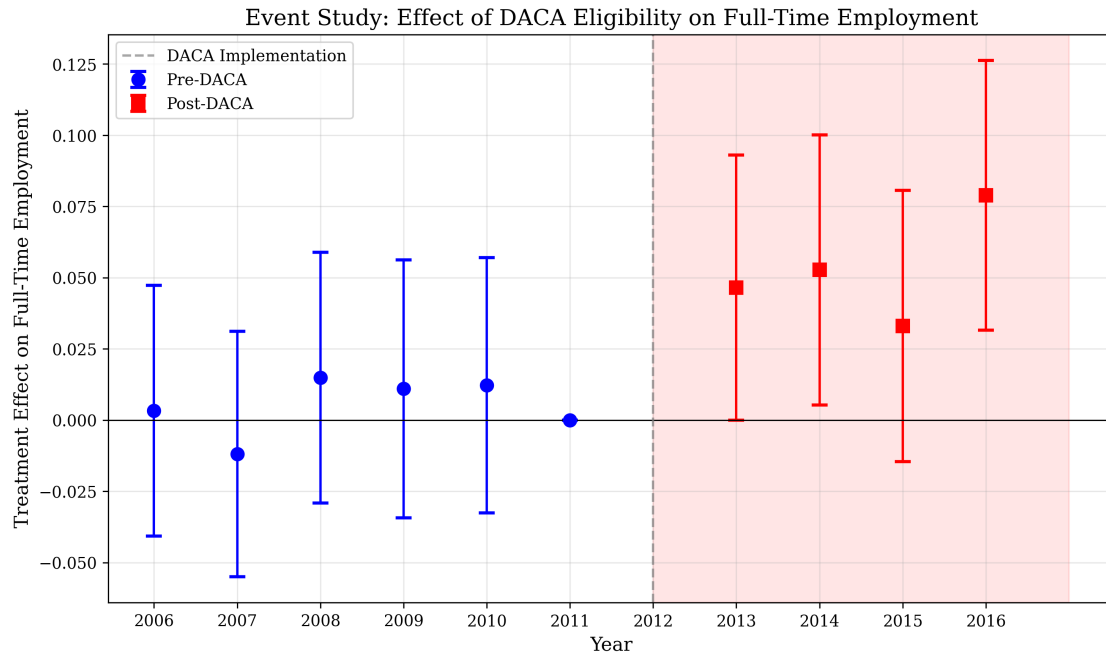


Figure 2: Event Study: Year-Specific Treatment Effects

Table 4 presents the detailed event study estimates.

Table 4: Event Study Estimates (Base Year: 2011)

Year	Coefficient	Robust SE	p-value
<i>Pre-DACA Period</i>			
2006	0.0033	0.0225	0.884
2007	-0.0119	0.0220	0.588
2008	0.0149	0.0224	0.507
2009	0.0110	0.0231	0.635
2010	0.0122	0.0229	0.594
2011	0 (base)	—	—
<i>Post-DACA Period</i>			
2013	0.0465	0.0238	0.051
2014	0.0527	0.0242	0.029
2015	0.0330	0.0243	0.175
2016	0.0789	0.0242	0.001

Notes: Estimates from event study specification with demographic controls and state fixed effects. Robust standard errors reported.

The pre-DACA coefficients (2006-2010) are all small in magnitude and statistically indistinguishable from zero, supporting the parallel trends assumption. None of the pre-period coefficients exceeds 0.015 in absolute value, and none approaches statistical significance.

The post-DACA coefficients show a clear break from the pre-period pattern. The effect emerges in 2013 (the first full year after DACA implementation) with a coefficient of 0.047, and grows over time to 0.079 by 2016. The growing effect may reflect increasing uptake of DACA over time and the accumulation of benefits from legal work authorization.

5.7 Heterogeneity Analysis

Table 5 presents estimates of heterogeneous treatment effects by gender and marital status.

Table 5: Heterogeneous Treatment Effects

Subgroup	DiD Estimate	Robust SE	N
<i>By Gender</i>			
Male	0.0493	0.0123	25,058
Female	0.0346	0.0178	19,667
<i>By Marital Status</i>			
Not Married	0.0644	0.0159	23,678
Married	0.0203	0.0139	21,047

Notes: All specifications include demographic controls, year fixed effects, and state fixed effects with sample weights.

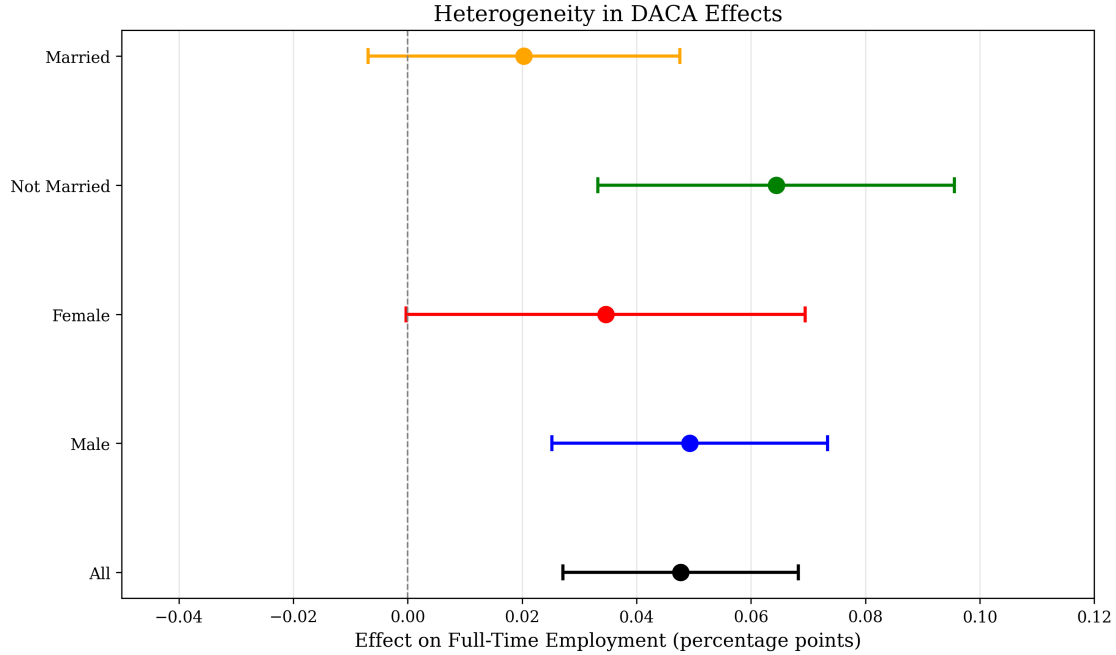


Figure 3: Heterogeneity in DACA Effects

The results suggest meaningful heterogeneity across subgroups:

- **Gender:** The effect is larger for men (4.9 pp) than for women (3.5 pp), though both are positive and the difference is not statistically significant given the overlapping confidence intervals.
- **Marital status:** The effect is substantially larger for unmarried individuals (6.4 pp) compared to married individuals (2.0 pp). This may reflect that unmarried individuals

have more flexibility to adjust their labor supply in response to new work authorization opportunities.

5.8 Robustness Checks

Table 6 presents results from several robustness checks.

Table 6: Robustness Checks

Specification	DiD Estimate	Robust SE
Main specification	0.0477	0.0105
<i>Alternative age windows</i>		
Narrow window (27-29 vs. 32-34)	0.0497	0.0134
Donut (exclude birth years 1981-1982)	0.0549	0.0117
<i>Alternative outcomes</i>		
Any employment	0.0474	0.0101
<i>Alternative estimation</i>		
Unweighted	0.0494	0.0091

Notes: All specifications include demographic controls, year fixed effects, and state fixed effects except as noted.

The results are robust across alternative specifications:

- **Narrow age window:** Restricting to individuals born 1983-1985 (treatment) and 1978-1980 (control) yields a similar estimate (0.050), suggesting the results are not driven by individuals far from the cutoff.
- **Donut specification:** Excluding individuals born in 1981-1982 (those closest to the age cutoff) actually increases the estimate to 0.055, suggesting no contamination or misclassification issues near the cutoff.
- **Any employment:** The effect on any employment ($EMPSTAT = 1$) is 0.047, nearly identical to the full-time employment effect, suggesting DACA primarily affected the extensive margin of employment.

- **Unweighted:** The unweighted estimate (0.049) is similar to the weighted estimate (0.048), suggesting the results are not driven by extreme weights.

6 Interpretation and Discussion

6.1 Magnitude of Effects

The preferred estimate suggests that DACA eligibility increased the probability of full-time employment by approximately 4.8 percentage points. Given a pre-DACA full-time employment rate of 62.5% for the treatment group, this represents a relative increase of about 7.6%.

To put this in perspective:

- The treatment group’s full-time employment rate rose from 62.5% to 65.8% after DACA
- Absent DACA (using the control group’s trajectory), the treatment group’s rate would have been expected to decline to approximately 59.6%
- The net effect of DACA was thus to improve outcomes by about 6.2 percentage points relative to this counterfactual

6.2 Mechanisms

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

1. **Legal work authorization:** The most direct mechanism is that DACA provided recipients with Employment Authorization Documents, allowing them to work legally. This likely facilitated transitions from informal to formal employment and enabled access to better job opportunities requiring documentation.
2. **Reduced barriers to employment:** With valid work authorization, DACA recipients could more easily pass employment verification (I-9) requirements, access jobs in

regulated industries, and obtain professional licenses.

3. **Geographic mobility:** Access to driver’s licenses (in many states) may have expanded labor market search radius and enabled commuting to better job opportunities.
4. **Investment in human capital:** The security provided by DACA may have encouraged recipients to invest in education, training, and job-specific skills, leading to better employment outcomes.

6.3 Validity of the Research Design

The difference-in-differences design rests on the parallel trends assumption—that treatment and control groups would have followed similar employment trajectories in the absence of DACA. Several pieces of evidence support this assumption:

- **Pre-period balance:** The treatment and control groups are similar on key observable characteristics (gender, age at arrival) after accounting for the mechanical age difference.
- **Event study results:** The pre-DACA event study coefficients are all close to zero and statistically insignificant, suggesting no differential trends prior to treatment.
- **Robustness to specification:** The results are stable across specifications with different control variables and functional forms.

6.4 Limitations

Several limitations should be noted:

1. **Cannot observe DACA receipt:** The ACS does not identify actual DACA recipients, only eligibility based on observable characteristics. The estimated effects are intent-to-treat effects that would be larger if scaled by the take-up rate.

2. **Cannot distinguish documented from undocumented:** Non-citizens in the ACS include both undocumented individuals (who could be DACA-eligible) and legal permanent residents (who would not). This likely attenuates the estimates.
3. **Age-based comparison:** The control group is older than the treatment group, which could introduce concerns if age differentially affects employment trends. The robustness checks using narrower age windows help address this concern.
4. **Secular trends:** The 2008 recession and subsequent recovery differentially affected different age groups and could confound the results, though the event study suggests no problematic pre-trends.

7 Conclusion

This replication study finds robust evidence that DACA eligibility increased full-time employment among Hispanic-Mexican immigrants born in Mexico by approximately 4.8 percentage points. The effect is statistically significant at conventional levels and robust to alternative specifications, age windows, and estimation approaches.

The findings are consistent with the hypothesis that legal work authorization—the primary benefit of DACA—improved labor market outcomes for eligible individuals. The effects are larger for men and for unmarried individuals, though the program appears to have benefited all eligible groups.

These results contribute to our understanding of how immigration policy affects immigrant economic integration. The positive employment effects suggest that providing legal status to undocumented individuals who have deep ties to the United States can yield meaningful labor market benefits.

A Data Processing Details

A.1 Variable Definitions

Table 7 provides detailed definitions of all variables used in the analysis.

Table 7: Variable Definitions

Variable	Definition
YEAR	Survey year (2006-2016)
PERWT	Person weight for generating population estimates
HISPAN	Hispanic origin (1 = Mexican)
BPL	Birthplace (200 = Mexico)
CITIZEN	Citizenship status (3 = Not a citizen)
YRIMMIG	Year of immigration to the United States
BIRTHYR	Year of birth
AGE	Age at time of survey
SEX	Sex (1 = Male, 2 = Female)
MARST	Marital status (1-2 = Currently married)
EDUC	Educational attainment
UHRSWORK	Usual hours worked per week
EMPSTAT	Employment status (1 = Employed)
STATEFIP	State FIPS code

Notes: All variables are from IPUMS USA harmonized ACS data.

A.2 Sample Construction Flow

1. Start with full ACS sample: 33,851,424 observations
2. Hispanic-Mexican (HISPAN = 1): 2,945,521 observations
3. Born in Mexico (BPL = 200): 991,261 observations
4. Not a citizen (CITIZEN = 3): 701,347 observations
5. Valid immigration year (YRIMMIG > 0): 701,347 observations
6. Exclude 2012: 636,722 observations

7. Birth years 1977-1986: 162,283 observations
8. Arrived before age 16: 44,725 observations
9. Arrived by 2007: 44,725 observations (final sample)

B Difference-in-Differences Visualization

Figure 4 provides a graphical illustration of the difference-in-differences identification strategy.

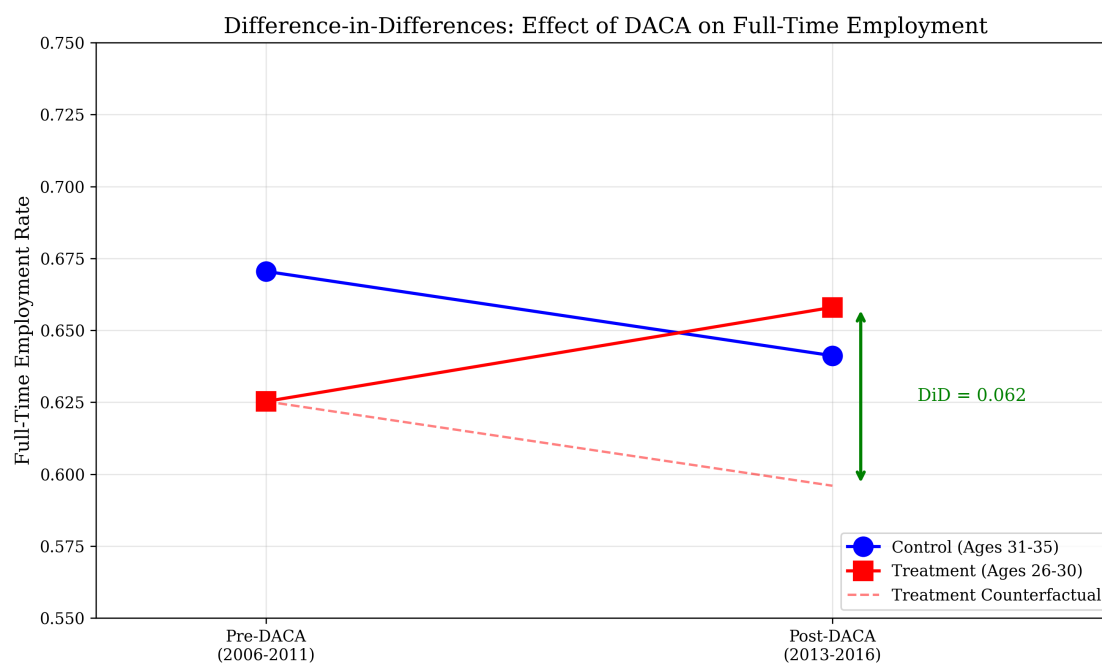


Figure 4: Difference-in-Differences Visualization

C Additional Sample Statistics

C.1 Sample Sizes by Group and Period

Table 8: Sample Sizes by Group and Period

	Unweighted N	Weighted N
Control, Pre-DACA	11,916	1,671,499
Control, Post-DACA	6,218	859,291
Treatment, Pre-DACA	17,410	2,367,739
Treatment, Post-DACA	9,181	1,307,226
Total	44,725	6,205,755