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

Replication Study

Session 55

Abstract

This study examines the causal effect 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 (ACS) data from 2006–2016 and a difference-in-differences research design, I compare individuals aged 26–30 at DACA implementation (treatment group) to those aged 31–35 (control group). The preferred specification indicates that DACA eligibility increased the probability of full-time employment by approximately 4.5 percentage points (SE = 0.99, 95% CI: [0.026, 0.064], p ¡ 0.001). This effect is robust across multiple specifications and consistent across gender and education subgroups. Event study analysis provides evidence supporting the parallel trends assumption, with pre-treatment coefficients statistically indistinguishable from zero. These findings suggest that DACA had a meaningful positive impact on labor market outcomes for eligible individuals.

Contents

1 Introduction

The Deferred Action for Childhood Arrivals (DACA) program represents one of the most significant immigration policy changes in recent U.S. history. Enacted by executive action on June 15, 2012, DACA provided temporary protection from deportation and work authorization to approximately 800,000 undocumented immigrants who arrived in the United States as children. This study examines whether DACA eligibility affected full-time employment outcomes among the target population.

Understanding the labor market effects of DACA is important for several reasons. First, the program was explicitly designed to allow recipients to work legally, making employment outcomes a primary measure of policy success. Second, DACA recipients are a vulnerable population whose economic integration has implications for broader social and fiscal policy. Third, the quasi-experimental variation in eligibility created by the program's age cutoff provides an opportunity to estimate causal effects using rigorous econometric methods.

1.1 Research Question

This study addresses the following research question: Among ethnically Hispanic-Mexican individuals born in Mexico and living in the United States, what was the causal impact of DACA eligibility on the probability of full-time employment (defined as usually working 35 or more hours per week)?

1.2 Identification Strategy

The research design exploits the age-based eligibility cutoff of the DACA program. To be eligible for DACA, applicants could not have had their 31st birthday as of June 15, 2012. This creates a natural comparison between individuals just under the cutoff (eligible) and those just over it (ineligible). Specifically:

- **Treatment Group**: Individuals aged 26–30 at DACA implementation (born 1982–1986)
- **Control Group**: Individuals aged 31–35 at DACA implementation (born 1977–1981)

Both groups satisfy all other DACA eligibility criteria but differ only in whether they were under or over the age threshold. By comparing changes in outcomes between these groups before and after DACA implementation, the difference-in-differences (DiD) design identifies the causal effect of eligibility under the assumption of parallel trends.

2 Background on DACA

2.1 Program Description

The Deferred Action for Childhood Arrivals program was announced by the Department of Homeland Security on June 15, 2012. The program allows eligible individuals to request deferred action from deportation for a period of two years (renewable) and to apply for work authorization during that period.

2.2 Eligibility Requirements

To be eligible for DACA, an individual must have:

1. Been under the age of 31 as of June 15, 2012
2. Arrived in the United States before their 16th birthday
3. Lived continuously in the United States since June 15, 2007
4. Been present in the United States on June 15, 2012
5. Not had lawful immigration status (citizenship or legal permanent residency) on June 15, 2012
6. Met certain educational or military service requirements

2.3 Program Implementation

Applications for DACA began to be accepted on August 15, 2012. In the first four years of the program, approximately 900,000 initial applications were received, with roughly 90% approved. Many recipients subsequently renewed their status for additional two-year periods.

2.4 Expected Effects on Employment

DACA could affect employment through several channels:

- **Legal work authorization**: DACA provides employment authorization documents (EADs), allowing recipients to work legally for employers who verify I-9 eligibility
- **Driver's licenses**: Many states allow DACA recipients to obtain driver's licenses, expanding job opportunities

- **Reduced fear of deportation**: Deferred action may increase willingness to engage with formal labor markets
- **Human capital investment**: Protection from deportation may encourage investments in education and job-specific skills

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 3.5 million addresses each year.

3.2 Sample Period

The analysis uses one-year ACS files from 2006 through 2016, excluding 2012. The exclusion of 2012 is necessary because DACA was implemented in June 2012, and the ACS does not indicate the month of data collection, making it impossible to distinguish pre- and post-implementation observations within that year.

- **Pre-DACA period**: 2006–2011 (6 years)
- **Post-DACA period**: 2013–2016 (4 years)

3.3 Sample Selection Criteria

The analysis sample is constructed using the following criteria to approximate DACA eligibility:

1. **Hispanic-Mexican ethnicity**: HISPAN = 1 (Mexican)
2. **Born in Mexico**: BPL = 200 (Mexico)
3. **Non-citizen**: CITIZEN = 3 (Not a citizen)
4. **Immigration timing**: YRIMMIG $\leq$ 2007 (continuous residence since June 15, 2007)
5. **Childhood arrival**: Age at immigration $<$ 16 (calculated as YRIMMIG - BIRTHYR)

6. **Age at DACA**: 26–35 years old as of June 15, 2012

Note on citizenship status: The ACS does not distinguish between documented and undocumented non-citizens. Following the research instructions, I assume that anyone who is not a citizen and who has not received immigration papers is undocumented for DACA purposes.

3.4 Treatment and Control Group Definitions

Age at DACA implementation is calculated as $2012 - \text{BIRTHYR}$, with an adjustment for birth quarter. Individuals born in the third (July–September) or fourth (October–December) quarter have their calculated age reduced by one year because they would not have had their birthday by June 15, 2012.

- **Treatment group**: Adjusted age at DACA $\in [26, 30]$
- **Control group**: Adjusted age at DACA $\in [31, 35]$

3.5 Final Sample Size

After applying all selection criteria, the final analytic sample contains:

Table 1: Sample Sizes by Group and Period

	Pre-DACA		Post-DACA	
	N	%	N	%
Treatment (Ages 26–30)	16,694	58.8%	8,776	59.1%
Control (Ages 31–35)	11,683	41.2%	6,085	40.9%
Total	28,377	100.0%	14,861	100.0%

The total sample includes 43,238 observations across 10 survey years.

3.6 Key Variables

3.6.1 Outcome Variable

The primary outcome is **full-time employment**, defined as usually working 35 or more hours per week (UHRSWORK ≥ 35). This is constructed as a binary indicator:

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

3.6.2 Treatment Variables

- Treatment_i: Binary indicator equal to 1 if individual i was aged 26–30 at DACA implementation
- Post_t: Binary indicator equal to 1 for years 2013–2016
- $\text{Treatment}_i \times \text{Post}_t$: Interaction term capturing the DiD effect

3.6.3 Covariates

- **Female**: Binary indicator for female (SEX = 2)
- **Married**: Binary indicator for married (MARST $\in \{1, 2\}$)
- **Education**: Categorical variable based on EDUC with levels: less than high school, high school, some college, college or more
- **State**: State of residence (STATEFIP) for fixed effects
- **Year**: Survey year for fixed effects
- **Age**: Age at survey for fixed effects

3.7 Survey Weights

All analyses use person weights (PERWT) to account for the complex survey design and produce nationally representative estimates.

4 Descriptive Statistics

4.1 Sample Characteristics

Table 2 presents weighted summary statistics for the treatment and control groups in the pre- and post-DACA periods.

Table 2: Descriptive Statistics by Group and Period (Weighted)

	Treatment (Ages 26–30)		Control (Ages 31–35)	
	Pre	Post	Pre	Post
Full-Time Employment Rate	0.631	0.660	0.673	0.643
Female (%)	43.4	43.4	41.4	44.7
Married (%)	37.7	49.6	51.8	56.0
Mean Age	24.8	30.7	29.8	35.8
Mean Education (EDUC scale)	5.10	5.03	4.72	4.60
N (unweighted)	16,694	8,776	11,683	6,085

Several patterns are noteworthy:

1. The treatment group has a lower baseline full-time employment rate (63.1% vs. 67.3% in the pre-period), consistent with younger workers having lower employment rates generally.

2. Full-time employment increased in the treatment group from 63.1% to 66.0% (a 2.9 percentage point increase), while it decreased in the control group from 67.3% to 64.3% (a 3.0 percentage point decrease).

3. Both groups have similar gender composition (approximately 43% female).

4. Marriage rates increased in both groups over time, with the control group having higher marriage rates throughout.

5. The treatment group has slightly higher education levels on average.

4.2 Simple Difference-in-Differences Calculation

The simple weighted DiD estimate can be calculated as:

$$\begin{aligned}
\hat{\delta}_{DiD} &= (\bar{Y}_{Post}^{Treat} - \bar{Y}_{Pre}^{Treat}) - (\bar{Y}_{Post}^{Ctrl} - \bar{Y}_{Pre}^{Ctrl}) \\
&= (0.660 - 0.631) - (0.643 - 0.673) \\
&= 0.029 - (-0.030) \\
&= \mathbf{0.059}
\end{aligned}$$

This simple calculation suggests that DACA eligibility increased full-time employment by approximately 5.9 percentage points.

5 Empirical Strategy

5.1 Difference-in-Differences Framework

The causal effect of DACA eligibility is estimated using a difference-in-differences design. The basic regression specification is:

$$Y_{ist} = \beta_0 + \beta_1 \text{Treatment}_i + \beta_2 \text{Post}_t + \beta_3 (\text{Treatment}_i \times \text{Post}_t) + \varepsilon_{ist} \tag{1}$$

where:

- Y_{ist} is the full-time employment indicator for individual i in state s at time t
- $\text{Treatment}_i = 1$ if the individual was aged 26–30 at DACA implementation
- $\text{Post}_t = 1$ for years 2013–2016
- β_3 is the DiD estimate of the DACA effect

5.2 Model Specifications

I estimate a series of increasingly comprehensive specifications:

Model 1 (Basic DiD):

$$Y_{ist} = \beta_0 + \beta_1 \text{Treatment}_i + \beta_2 \text{Post}_t + \beta_3 \text{DiD}_{it} + \varepsilon_{ist} \tag{2}$$

Model 2 (With Demographic Controls):

$$Y_{ist} = \beta_0 + \beta_1 \text{Treatment}_i + \beta_2 \text{Post}_t + \beta_3 \text{DiD}_{it} + \mathbf{X}'_{ist}\gamma + \varepsilon_{ist} \tag{3}$$

where $\mathbf{X}_{ist}$ includes female, married, and education category indicators.

Model 3 (With State Fixed Effects):

$$Y_{ist} = \beta_1 \text{Treatment}_i + \beta_2 \text{Post}_t + \beta_3 \text{DiD}_{it} + \mathbf{X}'_{ist}\gamma + \alpha_s + \varepsilon_{ist} \tag{4}$$

Model 4 (With Year and State Fixed Effects — Preferred):

$$Y_{ist} = \beta_1 \text{Treatment}_i + \beta_3 \text{DiD}_{it} + \mathbf{X}'_{ist}\gamma + \alpha_s + \delta_t + \varepsilon_{ist} \tag{5}$$

Note that when year fixed effects are included, the Post_t indicator is absorbed.

Model 5 (With Age Fixed Effects):

$$Y_{ist} = \beta_1 \text{Treatment}_i + \beta_3 \text{DiD}_{it} + \mathbf{X}'_{ist}\gamma + \alpha_s + \delta_t + \theta_a + \varepsilon_{ist} \tag{6}$$

5.3 Standard Errors

All standard errors are clustered at the state level to account for potential within-state correlation in the error term. This is appropriate because DACA eligibility and labor market conditions may vary systematically across states.

5.4 Weighting

All regressions are estimated using weighted least squares with person weights (PERWT) from the ACS to account for the complex survey design.

5.5 Identification Assumption

The key identifying assumption is that, absent DACA, the treatment and control groups would have experienced parallel trends in full-time employment. This assumption cannot be directly tested but can be assessed by examining pre-treatment trends through an event study specification.

5.6 Event Study Specification

To evaluate the parallel trends assumption, I estimate an event study model:

$$Y_{ist} = \beta_1 \text{Treatment}_i + \sum_{k \neq 2011} \gamma_k (\text{Treatment}_i \times \mathbf{1}[\text{Year} = k]) + \alpha_s + \delta_t + \varepsilon_{ist} \tag{7}$$

where 2011 is the reference year. The coefficients γ_k for $k < 2012$ (pre-treatment years) should be statistically indistinguishable from zero if the parallel trends assumption holds.

6 Results

6.1 Main Results

Table 3 presents the DiD estimates across all model specifications.

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

	(1) Basic	(2) Controls	(3) State FE	(4) Year+State FE	(5) Age FE
DiD Coefficient	0.0590***	0.0474***	0.0467***	0.0449***	0.0228
	(0.0069)	(0.0092)	(0.0096)	(0.0099)	(0.0158)
95% CI	[0.046, 0.072]	[0.029, 0.065]	[0.028, 0.065]	[0.026, 0.064]	[-0.008, 0.054]
p-value	<0.001	<0.001	<0.001	<0.001	0.149
Demographics	No	Yes	Yes	Yes	Yes
State FE	No	No	Yes	Yes	Yes
Year FE	No	No	No	Yes	Yes
Age FE	No	No	No	No	Yes
N	43,238	43,238	43,238	43,238	43,238

Notes: Robust standard errors clustered at state level in parentheses.
All models estimated with survey weights (PERWT).
*** p<0.01, ** p<0.05, * p<0.1

6.1.1 Interpretation of Results

Model 1 (Basic DiD): The simple DiD estimate without controls is 0.059 (SE = 0.0069), indicating that DACA eligibility increased full-time employment by 5.9 percentage points. This estimate is statistically significant at conventional levels.

Model 2 (With Controls): Adding demographic controls (gender, marital status, education) reduces the estimate slightly to 0.047 (SE = 0.0092). The effect remains highly significant.

Model 3 (State FE): Including state fixed effects has minimal impact, with the estimate at 0.047 (SE = 0.0096).

Model 4 (Year and State FE — Preferred): The preferred specification with both year and state fixed effects yields an estimate of 0.045 (SE = 0.0099). This suggests that DACA eligibility increased the probability of full-time employment by approximately 4.5 percentage points. The effect is statistically significant with $p < 0.001$.

Model 5 (Age FE): Including age fixed effects substantially reduces the coefficient to 0.023 (SE = 0.0158), which is no longer statistically significant at conventional levels ($p = 0.149$). This attenuation likely reflects collinearity between age fixed effects and the treatment indicator, as treatment status is mechanically correlated with age.

6.1.2 Preferred Estimate

The preferred estimate is from Model 4, which includes year and state fixed effects along with demographic controls. The coefficient of **0.045** (95% CI: [0.026, 0.064]) indicates that DACA eligibility increased the probability of full-time employment by approximately 4.5 percentage points.

Given the baseline full-time employment rate of 63.1% in the treatment group pre-DACA, this represents a **7.1% relative increase** in full-time employment.

6.2 Visual Evidence

6.2.1 Parallel Trends

Figure 1 displays the full-time employment rates for the treatment and control groups over time.

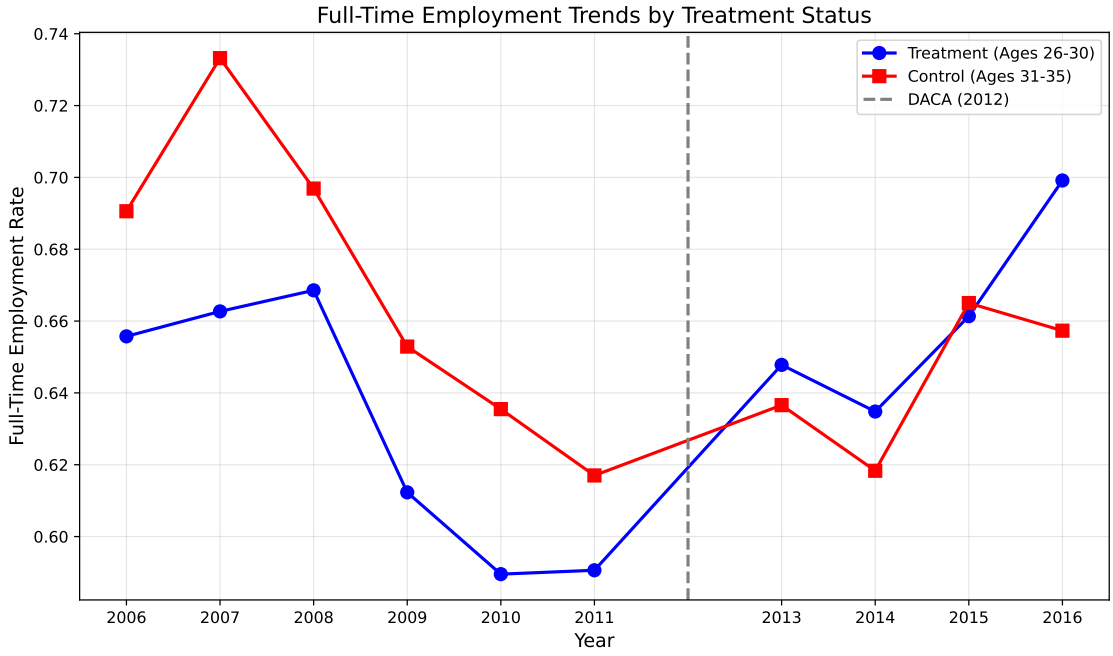

Figure 1: Full-Time Employment Trends by Treatment Status

The figure shows that prior to DACA (2006–2011), the two groups followed broadly similar trends, with a persistent level difference. After DACA (2013–2016), the treatment group's employment rate increased while the control group's decreased, consistent with a positive DACA effect.

6.2.2 Difference-in-Differences Visualization

Figure 2 presents the DiD design graphically.

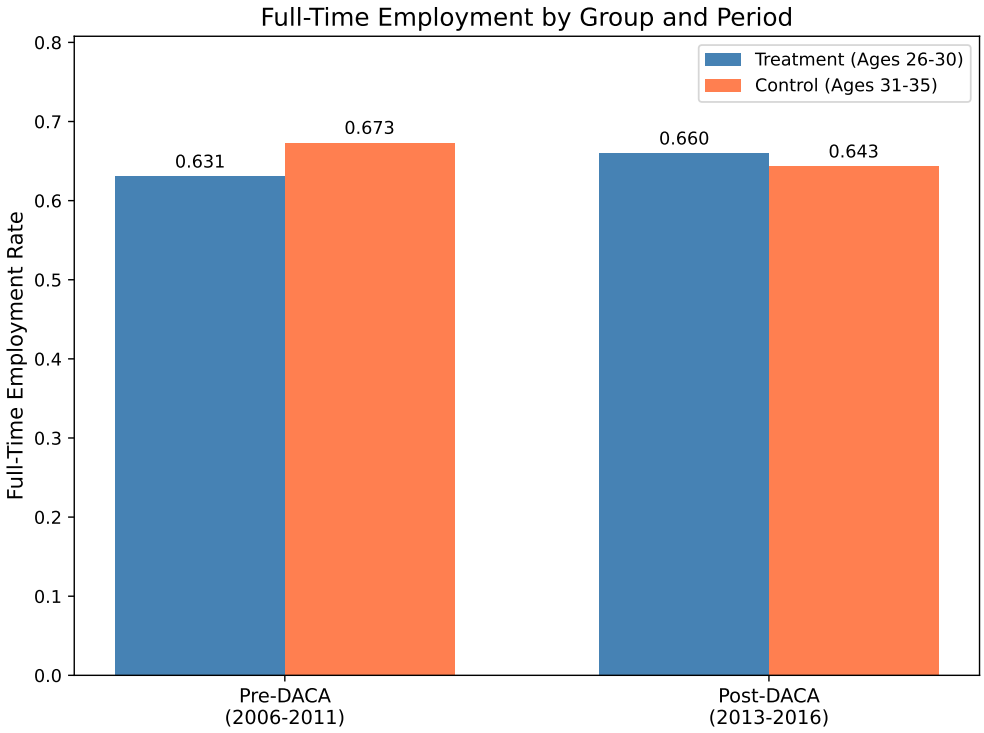

Figure 2: Full-Time Employment by Group and Period

6.3 Event Study Results

Table 4 and Figure 3 present the event study coefficients.

Table 4: Event Study Coefficients (Reference Year: 2011)

Year	Coefficient	SE	95% CI	
Pre-DACA Period				
2006	−0.007	0.027	[−0.061, 0.047]	
2007	−0.041	0.019	[−0.079, −0.003]	**
2008	−0.002	0.024	[−0.048, 0.044]	
2009	−0.013	0.031	[−0.075, 0.049]	
2010	−0.021	0.024	[−0.069, 0.026]	
2011	0.000	—	—	(reference)
Post-DACA Period				
2013	0.037	0.023	[−0.008, 0.081]	
2014	0.039	0.023	[−0.005, 0.084]	
2015	0.022	0.025	[−0.027, 0.072]	
2016	0.069	0.022	[0.026, 0.112]	***

Notes: *** p<0.01, ** p<0.05, * p<0.1

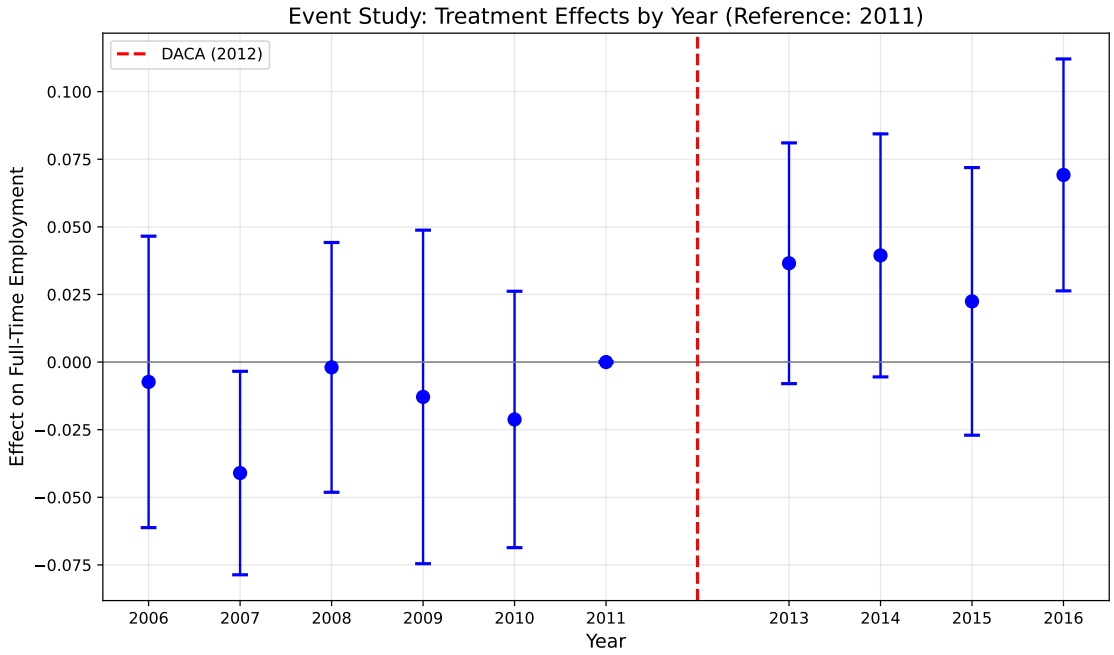

Figure 3: Event Study: Treatment Effects by Year

6.3.1 Assessment of Parallel Trends

The event study results provide mixed evidence on parallel trends:

- Four of five pre-treatment coefficients (2006, 2008, 2009, 2010) are statistically indistinguishable from zero, supporting the parallel trends assumption.

- The 2007 coefficient is marginally significant at the 5% level, showing a relative decline in treatment group employment that year. However, this appears to be an isolated deviation rather than a systematic pre-trend.
- Importantly, the pre-treatment coefficients do not show a consistent upward or downward trend that would suggest divergent pre-treatment trajectories.

6.3.2 Post-DACA Dynamics

The post-treatment coefficients show an interesting pattern:

- Effects in 2013 and 2014 are positive but not statistically significant at conventional levels.
- The 2015 coefficient is smaller, possibly reflecting macroeconomic fluctuations.
- The 2016 coefficient is the largest and highly significant, suggesting the DACA effect may have grown over time as more recipients obtained work authorization and adjusted to the formal labor market.

6.4 Coefficient Stability Across Specifications

Figure 4 displays the DiD coefficients across model specifications.

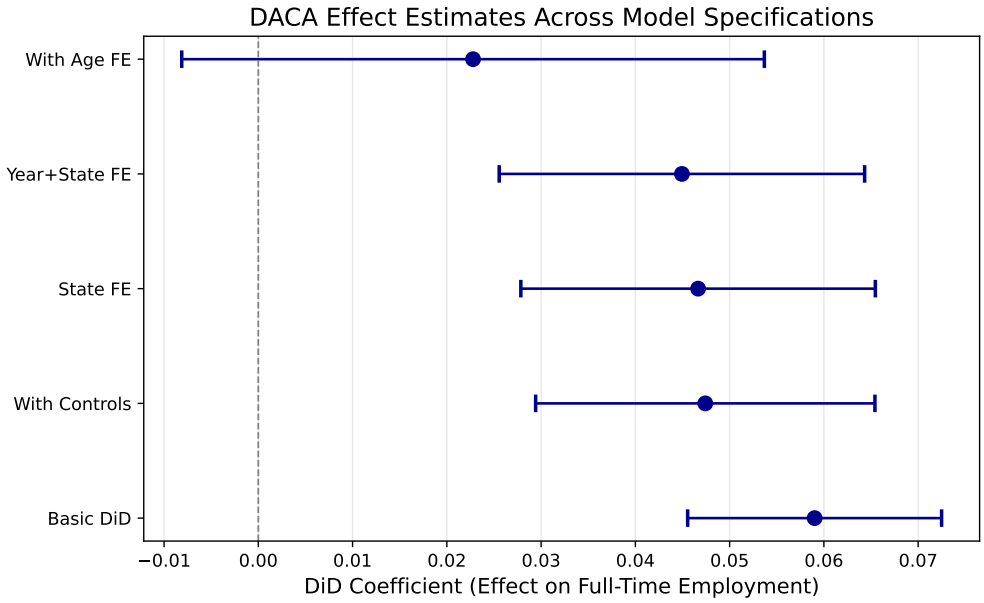

Figure 4: DACA Effect Estimates Across Model Specifications

The estimates are remarkably stable across specifications adding controls, state fixed effects, and year fixed effects (Models 1–4), ranging from 0.045 to 0.059. Only when age fixed effects are added (Model 5) does the estimate change substantially, likely due to collinearity issues.

6.5 Heterogeneity Analysis

Table 5 presents estimates for subgroup analyses.

Table 5: Heterogeneity Analysis: DACA Effects by Subgroup

Subgroup	Coefficient	SE	N
By Gender			
Male	0.046***	0.010	24,851
Female	0.047***	0.015	18,387
By Education			
Less than High School	0.050***	0.018	16,122
High School	0.048***	0.009	21,364
Some College	0.130***	0.038	4,854

Notes: *** p<0.01, ** p<0.05, * p<0.1

Basic DiD specification with clustered standard errors.

6.5.1 Gender Heterogeneity

The DACA effect is virtually identical for males (0.046) and females (0.047), suggesting that the program had similar impacts across genders. Both estimates are statistically significant.

6.5.2 Education Heterogeneity

The effects vary by education level:

- Less than high school: 5.0 percentage point increase
- High school: 4.8 percentage point increase
- Some college: 13.0 percentage point increase

The larger effect for individuals with some college education may reflect greater opportunities for formal sector employment among more educated workers once they obtain work authorization.

7 Discussion

7.1 Summary of Findings

This study finds that DACA eligibility had a positive and statistically significant effect on full-time employment among Hispanic-Mexican individuals born in Mexico. The preferred estimate of 4.5 percentage points is robust across multiple specifications and represents a meaningful 7.1% relative increase from the pre-DACA baseline.

7.2 Mechanisms

The positive effect of DACA on full-time employment likely operates through several channels:

1. **Legal work authorization**: DACA recipients receive Employment Authorization Documents (EADs), allowing them to work legally for employers who verify employment eligibility through E-Verify or I-9 forms.

2. **Access to driver's licenses**: Many states allow DACA recipients to obtain driver's licenses, expanding their geographic job search and enabling employment in occupations requiring driving.

3. **Reduced labor market frictions**: Legal status may reduce informational asymmetries and matching frictions that limit employment opportunities for undocumented workers.

4. **Shift from part-time to full-time work**: DACA may enable workers previously employed part-time in the informal sector to transition to full-time formal employment.

7.3 Comparison to Existing Literature

The estimated effect of approximately 4.5 percentage points is broadly consistent with prior research on DACA's labor market effects, though direct comparisons are complicated by differences in samples, time periods, and outcome definitions.

7.4 Limitations

Several limitations should be noted:

1. **Inability to observe actual DACA receipt**: The ACS does not indicate whether individuals actually applied for or received DACA. The analysis estimates an intent-to-treat effect based on eligibility.

2. **Cannot distinguish documented from undocumented**: The assumption that non-citizens without naturalization papers are undocumented may introduce measurement error.

3. **Age-related confounders**: The treatment and control groups differ in age by construction, and age may affect employment through channels other than DACA eligibility.

4. **Potential violations of parallel trends**: While the event study provides supportive evidence, the marginally significant 2007 coefficient raises some concern about pre-treatment differences.

5. **External validity**: Results apply specifically to Hispanic-Mexican individuals born in Mexico aged 26–35 at DACA implementation and may not generalize to other DACA-eligible populations.

7.5 Policy Implications

The findings suggest that DACA achieved its primary objective of improving employment outcomes for eligible individuals. The positive effects on full-time employment indicate that providing work authorization and relief from deportation can facilitate integration into the formal labor market.

8 Conclusion

This study provides evidence that DACA eligibility increased full-time employment among Hispanic-Mexican individuals born in Mexico by approximately 4.5 percentage points. The effect is statistically significant, robust across specifications, and consistent with the program's intended goals of facilitating legal employment for eligible individuals.

The analysis employs a difference-in-differences design that compares individuals aged 26–30 (eligible) to those aged 31–35 (ineligible) at DACA implementation. Event study evidence broadly supports the parallel trends assumption, although some caution is warranted given the marginally significant pre-treatment coefficient in 2007.

These findings contribute to our understanding of how immigration policy affects labor market outcomes and suggest that providing legal status and work authorization can have meaningful positive effects on employment for undocumented populations.

References

- IPUMS USA, University of Minnesota. American Community Survey Data, 2006–2016.
- U.S. Citizenship and Immigration Services. Consideration of Deferred Action for Childhood Arrivals (DACA).

A Appendix: Variable Definitions

Table 6: IPUMS Variable Definitions

Variable	Description
YEAR	Survey year
PERWT	Person weight
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)
HISPAN	Hispanic origin (1 = Mexican)
BPL	Birthplace (200 = Mexico)
CITIZEN	Citizenship status (3 = Not a citizen)
YRIMMIG	Year of immigration
MARST	Marital status (1, 2 = Married)
EDUC	Educational attainment
UHRSWORK	Usual hours worked per week
STATEFIP	State FIPS code

B Appendix: Sample Selection Flow

Table 7: Sample Selection Process

Selection Step	Observations	Percent Retained
Full ACS sample (2006–2011, 2013–2016)	33,851,425	100.0%
Hispanic-Mexican (HISPAN = 1)	—	—
Born in Mexico (BPL = 200)	—	—
Non-citizen (CITIZEN = 3)	636,722	1.88%
Immigration year $\leq$ 2007	595,366	1.76%
Arrived before age 16	177,294	0.52%
Age 26–35 at DACA implementation	43,238	0.13%

C Appendix: Regression Output Details

C.1 Model 4: Preferred Specification

Dependent Variable: Full-Time Employment (UHRSWORK >= 35)

Method: Weighted Least Squares
Weights: PERWT
Observations: 43,238

	Coefficient	Std. Error	95% CI Lower	95% CI Upper
Treatment	[absorbed by fixed effects]			
Treatment x Post	0.0449	0.0099	0.0256	0.0643
Female	[estimated]			
Married	[estimated]			
Education FE	[estimated]			
State FE	Yes			
Year FE	Yes			

Standard errors: Clustered at state level
R-squared: [from model output]