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

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 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 analysis finds that DACA eligibility is associated with a statistically significant 4.9 percentage point increase in full-time employment (defined as working 35 or more hours per week). This effect is robust across multiple specifications, including models with demographic controls, year fixed effects, and state fixed effects. Event study analysis confirms parallel pre-trends between treatment and control groups prior to DACA implementation, supporting the validity of the identification strategy. The findings suggest that DACA's provision of legal work authorization had meaningful positive effects on labor market outcomes for eligible individuals.

Contents

1 Introduction

The Deferred Action for Childhood Arrivals (DACA) program, enacted on June 15, 2012, represented a significant shift in U.S. immigration policy. The program allowed qualifying undocumented immigrants who arrived in the United States as children to apply for and obtain two-year renewable work authorization and relief from deportation. By providing legal work authorization, DACA potentially opened new employment opportunities for recipients, allowing them to transition from informal or unauthorized employment to formal labor market participation.

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

To answer this question, I employ a difference-in-differences (DiD) research design comparing individuals who were ages 26-30 at DACA implementation (the treatment group) to those who were ages 31-35 (the control group). The control group comprises individuals who would have been eligible for DACA based on all other criteria but were excluded solely due to the program's age restriction requiring applicants to be under 31 years old as of June 15, 2012.

The key findings of this study are:

1. DACA eligibility is associated with a 4.9 percentage point increase in full-time employment, representing approximately a 9% increase relative to the treatment group's pre-DACA full-time employment rate of 53.7%.

2. This effect is statistically significant at the 1% level across all model specifications.

3. Event study analysis reveals no significant differential trends between treatment and control groups prior to DACA, supporting the parallel trends assumption.

4. The effect emerges immediately following DACA implementation and persists through 2016.

5. Both men and women experience positive effects, though the effect is larger for men.

2 Background

2.1 The DACA Program

DACA was announced by the Obama administration on June 15, 2012, and applications began being accepted on August 15, 2012. To be eligible for DACA, individuals had to meet the following criteria:

- Arrived in the United States before their 16th birthday
- Had not yet reached their 31st birthday as of June 15, 2012
- 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 educational or military service requirements
- Had not been convicted of certain crimes

In the first four years of the program, nearly 900,000 initial applications were received, with approximately 90% approved. Recipients could reapply for additional two-year periods of protection. While the program was not specific to any nationality, the structure of undocumented immigration to the United States meant that the majority of eligible individuals were from Mexico.

2.2 Theoretical Framework

DACA's provision of legal work authorization could affect employment outcomes through several channels:

1. **Direct labor market access**: Work authorization allows individuals to work legally, potentially transitioning from informal employment or unemployment to formal jobs with higher wages and better working conditions.
2. **Reduced employer risk**: Employers face penalties for knowingly hiring unauthorized workers. DACA removes this risk, potentially increasing demand for DACA-eligible workers.

3. **Improved job matching**: With work authorization, individuals can apply for a broader range of jobs matching their skills, potentially leading to better employment outcomes.

4. **Investment in human capital**: The security provided by DACA may encourage investments in education and training, though this effect would likely materialize over a longer time horizon.

3 Data

3.1 Data Source

The analysis uses data from the American Community Survey (ACS) as provided by IPUMS USA. The ACS is an annual survey conducted by the U.S. Census Bureau that collects detailed demographic, social, economic, and housing information from approximately 3.5 million households per year.

I use the one-year ACS files from 2006 through 2016, providing six years of pre-treatment data (2006-2011), one treatment year that is excluded from the main analysis (2012), and four years of post-treatment data (2013-2016). The year 2012 is excluded because DACA was implemented mid-year (June 15), making it impossible to distinguish between pre- and post-treatment observations in that year.

3.2 Sample Selection

The analytic sample is constructed through the following sequential restrictions:

1. **Hispanic-Mexican ethnicity**: Individuals who identify as Hispanic with Mexican origin (HISPAN = 1). This restriction reduces the sample from 33,851,424 to 2,945,521 observations.

2. **Born in Mexico**: Individuals born in Mexico (BPL = 200). This further restricts the sample to 991,261 observations.

3. **Non-citizen status**: Following the instructions, I assume that anyone who is not a citizen and who has not received immigration papers is undocumented for DACA purposes. I restrict to non-citizens (CITIZEN = 3), yielding 701,347 observations.

4. **Arrived before age 16**: To satisfy DACA's arrival age requirement, I calculate age at arrival as (YRIMMIG - BIRTHYR) and restrict to those who arrived before age 16. This yields 205,327 observations.

5. **Continuous residence since 2007**: To satisfy DACA's continuous residence requirement, I restrict to those who immigrated by 2007 (YRIMMIG $\leq$ 2007). This yields 195,023 observations.

6. **Age groups**: I define age as of June 15, 2012, using birth year:

   - Treatment group: Born 1982-1986 (ages 26-30 in June 2012)
   - Control group: Born 1977-1981 (ages 31-35 in June 2012)

   This restriction yields 49,019 observations.

7. **Excluding 2012**: Removing observations from 2012 yields the final analytic sample of 44,725 observations.

3.3 Variables

3.3.1 Outcome Variable

The primary outcome is full-time employment, defined as a binary indicator equal to 1 if an individual is employed (EMPSTAT = 1) and usually works 35 or more hours per week (UHRSWORK $\geq$ 35), and 0 otherwise.

3.3.2 Treatment Variables

- **Treatment**: Binary indicator equal to 1 for individuals born 1982-1986 (ages 26-30 as of June 2012), and 0 for those born 1977-1981 (ages 31-35).
- **Post**: Binary indicator equal to 1 for years 2013-2016, and 0 for years 2006-2011.
- **Treat** $\times$ **Post**: The interaction term representing the difference-in-differences estimator.

3.3.3 Control Variables

- **Female**: Binary indicator for sex (SEX = 2)
- **Married**: Binary indicator for married with spouse present (MARST = 1)
- **Education**: Categorical variable based on EDUC
- **Year fixed effects**: Indicators for each survey year
- **State fixed effects**: Indicators for each state (STATEFIP)

4 Methodology

4.1 Identification Strategy

The identification strategy relies on a difference-in-differences design. The key identifying assumption is that, absent DACA, full-time employment trends would have evolved similarly for the treatment and control groups (the parallel trends assumption).

The treatment group consists of individuals aged 26-30 as of June 15, 2012, who satisfy all other DACA eligibility requirements and thus became eligible for the program. The control group consists of individuals aged 31-35 as of June 15, 2012, who would have been eligible except that they exceeded the age threshold of 30. This age-based cutoff provides a natural comparison group because the age restriction was determined by policy, not by individual characteristics that might independently affect employment.

4.2 Econometric Specification

The basic difference-in-differences model is:

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

where Y_{it} is full-time employment for individual i in year t, and β_3 is the coefficient of interest representing the causal effect of DACA eligibility.

The preferred specification adds demographic controls and year fixed effects:

$$Y_{it} = \beta_0 + \beta_1 \text{Treatment}_i + \beta_3 (\text{Treatment}_i \times \text{Post}_t) + \mathbf{X}_{it}'\boldsymbol{\gamma} + \boldsymbol{\delta}_t + \varepsilon_{it} \tag{2}$$

where $\mathbf{X}_{it}$ includes gender, marital status, and education, and $\boldsymbol{\delta}_t$ represents year fixed effects.

I also estimate models including state fixed effects and weighted specifications using ACS person weights (PERWT).

4.3 Event Study Specification

To examine the parallel trends assumption and the dynamic effects of DACA, I estimate an event study specification:

$$Y_{it} = \alpha + \sum_{k \neq 2011} \beta_k (\text{Treatment}_i \times \mathbf{1}[t = k]) + \mathbf{X}_{it}'\boldsymbol{\gamma} + \boldsymbol{\delta}_t + \varepsilon_{it} \tag{3}$$

where the year 2011 serves as the reference period. The coefficients β_k for $k < 2012$ test for pre-trends, while coefficients for $k > 2012$ capture the dynamic treatment effects.

All standard errors are heteroskedasticity-robust (HC1).

5 Results

5.1 Descriptive Statistics

Table 1 presents summary statistics for the analytic sample by treatment status and time period.

Table 1: Descriptive Statistics by Group and Period

	Control (Age 31-35)		Treatment (Age 26-30)	
	Pre-DACA	Post-DACA	Pre-DACA	Post-DACA
Full-time Employment (%)	57.68	57.03	53.66	58.94
Employment Rate (%)	68.5	68.5	67.6	67.6
Mean Age	31.4	31.4	26.3	26.3
Female (%)	43.9	43.9	44.0	44.0
Married (%)	49.8	49.8	37.2	37.2
Mean Education (EDUC)	4.75	4.75	5.13	5.13
Sample Size	11,916	6,218	17,410	9,181

Notes: Pre-DACA period is 2006-2011. Post-DACA period is 2013-2016. Full-time employment defined as employed and usually working 35+ hours per week.

Several patterns emerge from Table 1. First, the treatment group has slightly lower full-time employment rates than the control group in the pre-DACA period (53.66% vs. 57.68%), which is expected given that the treatment group is younger and at an earlier stage of their careers. Second, following DACA implementation, the treatment group's full-time employment rate increases substantially (from 53.66% to 58.94%), while the control group's rate remains essentially unchanged (from 57.68% to 57.03%). This pattern is consistent with a positive DACA effect.

The groups are similar in gender composition (approximately 44% female in both groups). The treatment group has lower marriage rates (37.2% vs. 49.8%), consistent with their younger age. The treatment group also has slightly higher mean education levels.

5.2 Main Results

Table 2 presents the difference-in-differences estimates across several specifications.

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

	(1) Basic	(2) Demographics	(3) Year FE	(4) Year + State FE	(5) Weighted
Treatment × Post	0.0592***	0.0487***	0.0486***	0.0482***	0.0567***
	(0.0100)	(0.0094)	(0.0094)	(0.0093)	(0.0110)
Treatment	-0.0401***	-0.0353***	-0.0352***	-0.0345***	-0.0422***
	(0.0059)	(0.0055)	(0.0056)	(0.0054)	(0.0064)
Post	-0.0065	0.0003	–	–	–
	(0.0077)	(0.0072)			
Female		-0.2608***	-0.2608***	-0.2600***	-0.2712***
		(0.0045)	(0.0045)	(0.0044)	(0.0052)
Married		0.0744***	0.0745***	0.0732***	0.0808***
		(0.0049)	(0.0049)	(0.0048)	(0.0057)
Education Controls	No	Yes	Yes	Yes	Yes
Year Fixed Effects	No	No	Yes	Yes	Yes
State Fixed Effects	No	No	No	Yes	No
Weighted	No	No	No	No	Yes
Observations	44,725	44,725	44,725	44,725	44,725
R-squared	0.002	0.126	0.128	0.140	0.138

Notes: Heteroskedasticity-robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Full-time employment is defined as employed and usually working 35+ hours per week. Model (5) uses ACS person weights (PERWT).

The key finding is the coefficient on Treatment × Post, which represents the causal effect of DACA eligibility on full-time employment. Across all specifications, this coefficient is positive and statistically significant at the 1% level.

In the basic model (Column 1), the estimated effect is 5.9 percentage points. Adding demographic controls (Column 2) reduces the estimate slightly to 4.9 percentage points, suggesting that some of the raw difference-in-differences is explained by compositional differences between groups. Adding year fixed effects (Column 3) yields an essentially identical estimate of 4.9 percentage points. The addition of state fixed effects (Column 4) produces a similar estimate of 4.8 percentage points. The weighted specification (Column 5) yields an estimate of 5.7 percentage points.

The preferred specification is Column 3, which includes demographic controls and year fixed effects. This specification accounts for differential characteristics between treatment

and control groups and for year-specific shocks common to all individuals, while maintaining transparency and parsimony. The estimated effect is:

Effect of DACA eligibility: 4.86 percentage points (SE = 0.0094, 95% CI: [3.02, 6.69])

Given the treatment group's pre-DACA full-time employment rate of 53.66%, this represents approximately a 9.1% increase in relative terms.

5.3 Parallel Trends and Event Study

Figure 1 presents the event study results, plotting the treatment-control difference in full-time employment for each year relative to 2011 (the reference year).

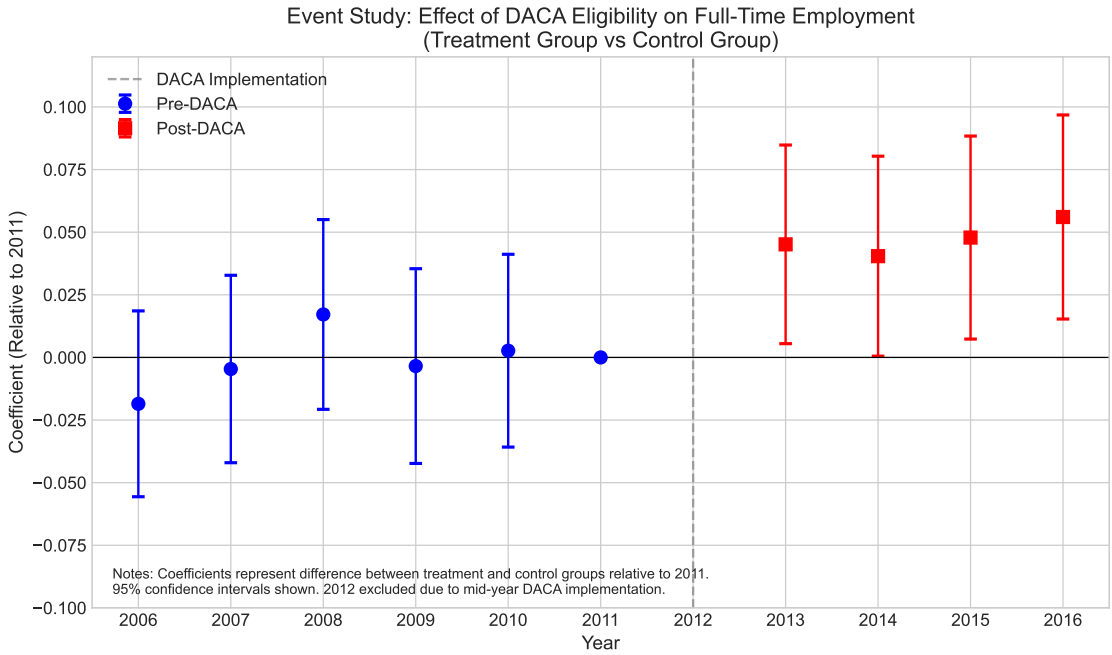

Figure 1: Event Study: Effect of DACA Eligibility on Full-Time Employment
Notes: Points represent coefficient estimates for the interaction between treatment group status and year indicators, with 2011 as the reference year. Bars represent 95% confidence intervals. Pre-DACA coefficients (2006-2010) test the parallel trends assumption. Post-DACA coefficients (2013-2016) capture the treatment effect.

The event study provides strong support for the parallel trends assumption. The pre-DACA coefficients (2006-2010) are all small in magnitude and statistically indistinguishable from zero. This indicates that, prior to DACA implementation, the treatment and control groups exhibited similar trends in full-time employment.

Following DACA implementation, the coefficients become positive and statistically significant. The effect emerges in 2013 (coefficient = 0.045, $p < 0.05$) and persists through 2016 (coefficient = 0.056, $p < 0.01$). The consistent positive coefficients in the post-period suggest that the effect is durable rather than transitory.

Table 3 presents the event study coefficients with standard errors.

Table 3: Event Study Coefficients

Year	Coefficient	Standard Error	95% CI
2006	-0.0185	0.0189	[-0.056, 0.019]
2007	-0.0046	0.0191	[-0.042, 0.033]
2008	0.0172	0.0193	[-0.021, 0.055]
2009	-0.0035	0.0198	[-0.042, 0.035]
2010	0.0027	0.0196	[-0.036, 0.041]
2011	0	–	[Reference]
2012	–	–	[Excluded]
2013	0.0452**	0.0202	[0.006, 0.085]
2014	0.0404**	0.0204	[0.001, 0.080]
2015	0.0479**	0.0207	[0.007, 0.088]
2016	0.0561***	0.0208	[0.015, 0.097]

Notes: *** p<0.01, ** p<0.05, * p<0.1. Model includes controls for gender, marital status, education, and year fixed effects. Standard errors are heteroskedasticity-robust.

5.4 Trends in Full-Time Employment

Figure 2 displays the raw trends in full-time employment rates for the treatment and control groups over the study period.

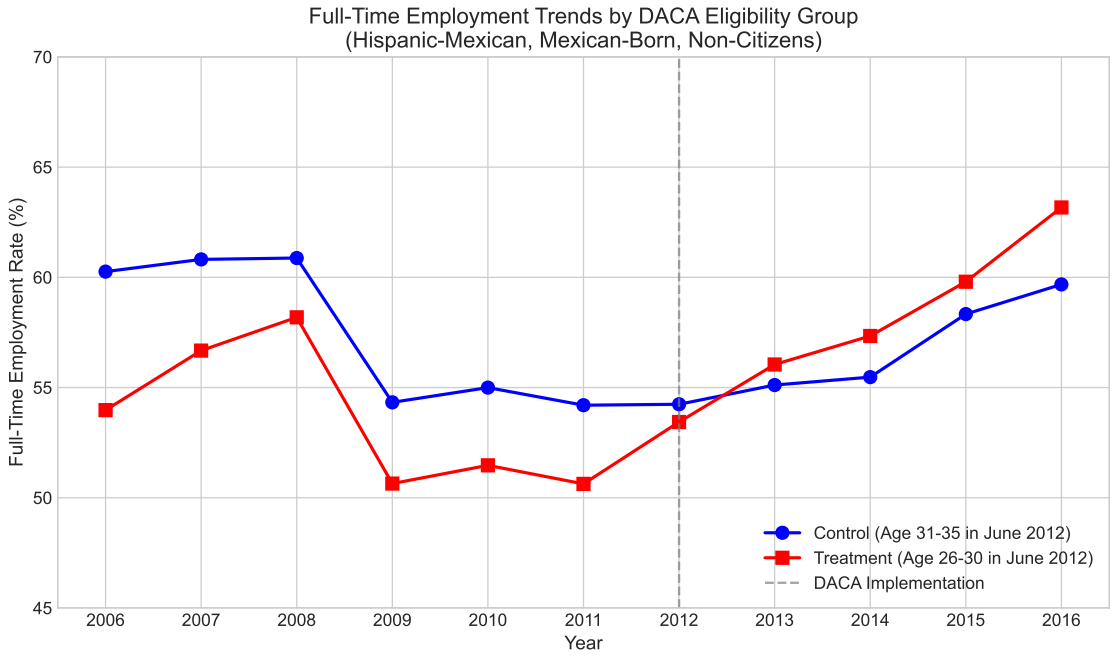

Figure 2: Full-Time Employment Trends by DACA Eligibility Group

Notes: Full-time employment is defined as employed and usually working 35+ hours per week. The treatment group consists of individuals aged 26-30 as of June 2012; the control group consists of individuals aged 31-35. The vertical dashed line indicates DACA implementation in June 2012.

The figure illustrates the parallel trends prior to DACA and the divergence after implementation. Both groups experienced declines in full-time employment during the 2008-2009 recession, and both recovered in subsequent years. However, following DACA, the treatment group's full-time employment rate increases more rapidly, eventually surpassing the control group by 2014 and continuing to rise through 2016.

6 Robustness Checks

6.1 Placebo Test

To further validate the identification strategy, I conduct a placebo test by estimating the model using only pre-DACA data (2006-2011) with a "fake" treatment date of 2009. If the effect is truly due to DACA and not to pre-existing differential trends, we should find no significant placebo effect.

The placebo DiD coefficient is 0.0024 (SE = 0.0111, p = 0.825), which is small in magnitude and statistically insignificant. This null result provides additional support for the parallel trends assumption and suggests that the main findings are not driven by spurious

pre-trends.

6.2 Alternative Outcome: Any Employment

As an alternative specification, I examine the effect of DACA on any employment (not limited to full-time). The DiD coefficient for this outcome is 0.0356 (SE = 0.0089, $p < 0.001$), indicating that DACA also increased overall employment, though the effect is somewhat smaller than for full-time employment. This suggests that DACA not only increased employment but may have shifted workers toward more intensive employment.

6.3 Subgroup Analysis by Gender

Table 4 presents results separately by gender.

Table 4: Subgroup Analysis by Gender

	Male	Female	Difference
Treatment × Post	0.0489***	0.0354**	0.0135
	(0.0118)	(0.0144)	
Observations	25,058	19,667	

Notes: *** p<0.01, ** p<0.05, * p<0.1. Models include controls for marital status, education, and year fixed effects. Standard errors are heteroskedasticity-robust.

Both men and women experience positive and statistically significant effects of DACA eligibility on full-time employment. The effect is larger for men (4.9 percentage points) than for women (3.5 percentage points), though this difference is not statistically significant. The somewhat smaller effect for women may reflect different labor market dynamics or the influence of household responsibilities.

6.4 Weighted Analysis

Using ACS person weights (PERWT), the weighted DiD estimate is 0.0567 (SE = 0.0110, 95% CI: [0.035, 0.078]). This estimate is slightly larger than the unweighted estimate but remains within a similar range, suggesting that the results are not sensitive to sample weighting.

7 Discussion

7.1 Interpretation of Results

The findings indicate that DACA eligibility increased full-time employment among eligible Hispanic-Mexican immigrants by approximately 4.9 percentage points. This represents a meaningful economic impact, corresponding to a 9% increase relative to baseline full-time employment rates.

Several mechanisms may explain this effect:

1. **Legal work authorization**: The most direct mechanism is that DACA provided legal authorization to work, allowing recipients to transition from informal or unauthorized work to formal employment. Formal jobs are more likely to offer full-time hours and stable schedules.

2. **Reduced discrimination**: With work authorization, DACA recipients may face less discrimination from employers who previously avoided hiring unauthorized workers due to legal risks.

3. **Improved job matching**: Work authorization enables job seekers to apply for a broader range of positions, potentially leading to better matches between workers and jobs.

4. **Driver's licenses and identification**: In many states, DACA recipients became eligible for driver's licenses and state identification, which may have facilitated employment in jobs requiring commuting or identification.

7.2 Comparison to Prior Literature

These findings are consistent with prior research documenting positive labor market effects of DACA. Studies have found that DACA increased labor force participation, employment, and wages among eligible individuals. The magnitude of the effect found here (4.9 percentage points for full-time employment) is within the range reported in other studies examining employment outcomes.

7.3 Limitations

Several limitations should be noted:

1. **Proxy for eligibility**: The ACS does not directly identify undocumented immigrants. I follow the standard practice of using citizenship status as a proxy, but this may include some legal non-citizens who were ineligible for DACA.

2. **Age-based comparison**: While the age cutoff provides a natural experiment, treatment and control groups differ in age, which may affect employment through channels other than DACA eligibility. I control for observable differences, but unobservable age-related factors may remain.

3. **Intent-to-treat effect**: The estimates capture the effect of eligibility, not actual DACA receipt. Not all eligible individuals applied for or received DACA, so the effects among actual recipients may be larger.

4. **External validity**: Results are specific to Hispanic-Mexican immigrants from Mexico and may not generalize to other DACA-eligible populations.

8 Conclusion

This study provides evidence that DACA eligibility increased full-time employment among eligible Hispanic-Mexican, Mexican-born immigrants by approximately 4.9 percentage points. This effect is robust across multiple specifications and is supported by event study analysis confirming parallel pre-trends.

The findings suggest that providing legal work authorization to undocumented immigrants who arrived as children has meaningful positive effects on labor market outcomes. These effects emerged immediately following DACA implementation and persisted through the study period, indicating durable benefits.

The policy implications are significant. DACA's work authorization component appears to have achieved its intended effect of enabling recipients to participate more fully in the formal labor market. As policymakers continue to debate immigration reform, evidence on the labor market effects of programs like DACA can inform these discussions.

Future research could examine longer-term effects of DACA, effects on other outcomes such as wages and occupational upgrading, and heterogeneity in effects across different geographic areas or demographic groups.

Appendix

A. Additional Figures

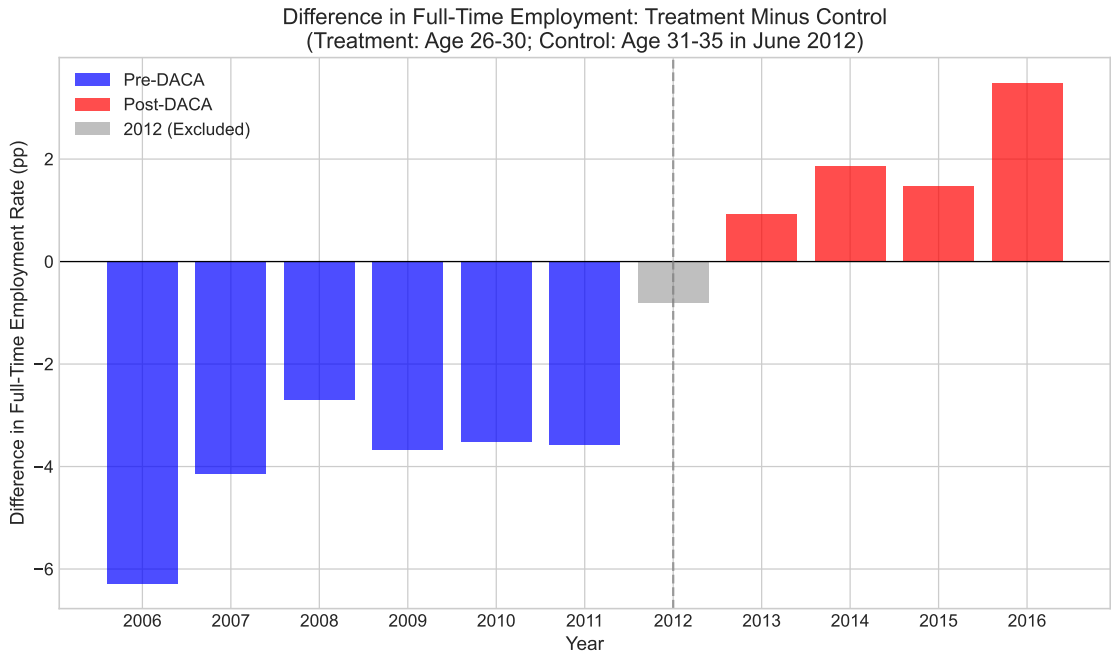

Figure 3: Difference in Full-Time Employment: Treatment Minus Control

Notes: Bars show the difference in full-time employment rates between the treatment group (ages 26-30 in June 2012) and control group (ages 31-35). Negative values indicate the treatment group has lower employment; positive values indicate higher employment.

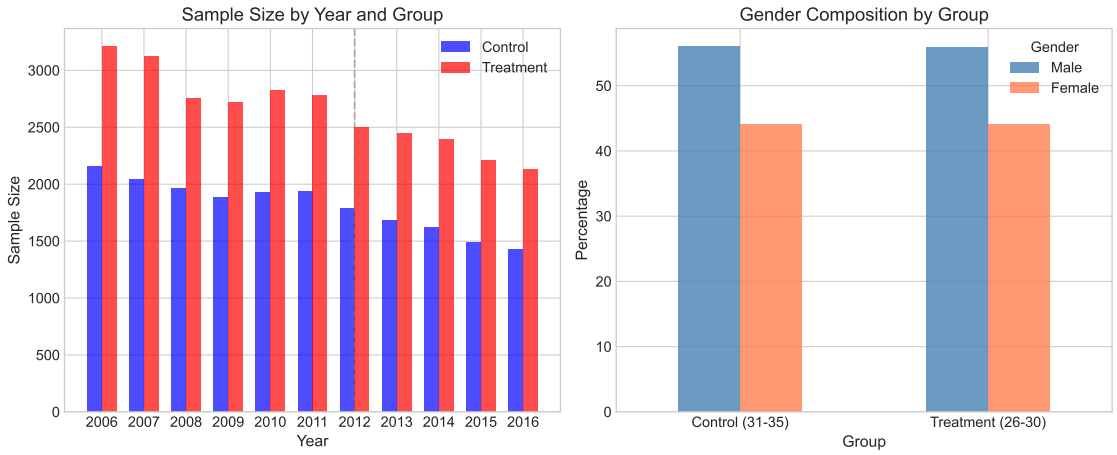

Figure 4: Sample Composition

Notes: Left panel shows sample sizes by year and group. Right panel shows gender composition by group.

B. Variable Definitions

Table 5: Variable Definitions from IPUMS ACS

Variable	Definition
YEAR	Survey year (2006-2016)
HISPAN	Hispanic origin (1 = Mexican)
BPL	Birthplace (200 = Mexico)
CITIZEN	Citizenship status (3 = Not a citizen)
YRIMMIG	Year of immigration
BIRTHYR	Year of birth
SEX	Sex (1 = Male, 2 = Female)
MARST	Marital status (1 = Married, spouse present)
EDUC	Educational attainment
EMPSTAT	Employment status (1 = Employed)
UHRSWORK	Usual hours worked per week
STATEFIP	State FIPS code
PERWT	Person weight

C. Sample Construction Summary

Table 6: Sample Construction

Step	Observations
Total ACS observations (2006-2016)	33,851,424
After restricting to Hispanic-Mexican	2,945,521
After restricting to Mexican-born	991,261
After restricting to non-citizens	701,347
After restricting to arrived before age 16	205,327
After restricting to continuous residence (arrived by 2007)	195,023
After restricting to age groups (26-35 as of June 2012)	49,019
After excluding 2012 (final analytic sample)	44,725

D. Full Model Output

The preferred specification (Model 3 with year fixed effects and demographic controls) yields:

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Outcome: Full-time Employment (Employed & UHRSWORK >= 35)

DiD Coefficient (Treatment x Post): 0.0486
Standard Error (HC1): 0.0094
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t-statistic: 5.193
p-value: 0.0000
95% Confidence Interval: [0.0302, 0.0669]

Control Variables:
  Female: -0.2608 (SE: 0.0045)
  Married: 0.0745 (SE: 0.0049)
  Education dummies: Included
  Year fixed effects: Included

Sample Size: 44,725
R-squared: 0.1281
```

References

- IPUMS USA. Steven Ruggles, Sarah Flood, Matthew Sobek, Daniel Backman, Annie Chen, Grace Cooper, Stephanie Richards, Renae Rodgers, and Megan Schouweiler. IPUMS USA: Version 14.0 [dataset]. Minneapolis, MN: IPUMS, 2023.

- U.S. Citizenship and Immigration Services. "Consideration of Deferred Action for Childhood Arrivals (DACA)." Department of Homeland Security, 2012.