The Effect of DACA Eligibility on Full-Time Employment:

A Difference-in-Differences Analysis

Participant 29

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 ethnically Hispanic-Mexican, Mexican-born individuals in the United States. Using American Community Survey data from 2006-2016 and a difference-in-differences design, I compare individuals aged 26-30 at the time of DACA implementation (June 15, 2012) who were eligible for the program to a control group aged 31-35 who would have been eligible but for their age. The analysis finds a statistically significant positive effect of DACA eligibility on full-time employment of approximately 4.3 percentage points ($p < 0.001$). This effect is robust across multiple specifications including models with demographic controls, year fixed effects, state fixed effects, and heteroskedasticity-robust standard errors. Event study analysis provides support for the parallel trends assumption, with no significant pre-treatment differential trends between treatment and control groups.

Keywords: DACA, immigration policy, employment, difference-in-differences

Contents

1 Introduction

The Deferred Action for Childhood Arrivals (DACA) program, enacted on June 15, 2012, represents one of the most significant immigration policy changes in recent U.S. history. The program provides temporary protection from deportation and work authorization to undocumented immigrants who arrived in the United States as children and met specific eligibility criteria. By offering legal work authorization, DACA was expected to improve labor market outcomes for eligible individuals who had previously faced substantial barriers to formal employment.

This study investigates the causal impact of DACA eligibility on the probability of full-time employment among Hispanic-Mexican individuals born in Mexico who were living in the United States. Full-time employment, defined as usually working 35 or more hours per week, is a key indicator of labor market integration and economic well-being.

The analysis employs a difference-in-differences (DiD) research design, comparing changes in full-time employment between individuals who were eligible for DACA based on their age at implementation (the treatment group, aged 26-30 as of June 15, 2012) and those who would have been eligible if not for their age (the control group, aged 31-35 as of June 15, 2012). This design leverages the arbitrary age cutoff in DACA eligibility—requiring applicants to be under 31 years old—as a source of quasi-experimental variation.

The results indicate that DACA eligibility is associated with a statistically significant increase in full-time employment of approximately 4.3 percentage points. This finding is robust across multiple model specifications and provides evidence that work authorization policies can meaningfully improve labor market outcomes for undocumented immigrants.

2 Background

2.1 The DACA Program

DACA was announced by the Department of Homeland Security on June 15, 2012, during the Obama administration. The program offered eligible undocumented immigrants the opportunity to apply for deferred action—a form of prosecutorial discretion that temporarily shields individuals from deportation—along with work authorization for a renewable two-year period.

2.1.1 Eligibility Requirements

To qualify for DACA, applicants must have:

1. Been under 31 years of age as of June 15, 2012

2. Arrived in the United States before their 16th birthday

3. Continuously resided in the United States since June 15, 2007

4. Been present in the United States on June 15, 2012, without lawful status

5. Been enrolled in school, graduated from high school, obtained a GED, or been honorably discharged from the military (education requirement)

6. Not been convicted of a felony, significant misdemeanor, or three or more other misdemeanors

Applications began to be accepted on August 15, 2012. In the first four years of the program, nearly 900,000 initial applications were received, with approximately 90% approval rates. While the program was not limited to any particular national origin, the overwhelming majority of DACA recipients were from Mexico, reflecting the demographics of the undocumented immigrant population in the United States.

2.2 Expected Effects on Employment

Prior to DACA, undocumented immigrants faced substantial barriers to formal employment. While many worked in the informal economy or using fraudulent documents, they could not legally work for employers subject to federal employment verification requirements. This limited their access to many formal sector jobs, particularly those with large employers, government contractors, or positions requiring occupational licensing.

DACA was expected to improve employment outcomes through several mechanisms:

- **Legal work authorization:** Enabling access to formal sector employment

- **Driver's license eligibility:** In many states, DACA recipients became eligible for driver's licenses, expanding job accessibility

- **Reduced fear of deportation:** Greater willingness to seek and maintain employment without fear of workplace raids

- **Better job matching:** Ability to search for jobs openly and match skills to positions

3 Data and Sample Construction

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, and economic information from approximately 3.5 million households each year.

The sample includes the one-year ACS files from 2006 through 2016. The year 2012 is excluded from the analysis because the ACS does not record the month of interview, making it impossible to distinguish observations collected before and after DACA implementation in June 2012.

3.2 Variable Definitions

Table 1 presents the key variables used in the analysis and their definitions according to the IPUMS codebook.

Table 1: Variable Definitions

Variable	Definition
Outcome Variable	
UHRSWORK	Usual hours worked per week. Full-time employment defined as ≥ 35 hours.
Sample Selection Variables	
HISPAN	Hispanic origin. Value of 1 indicates Mexican ethnicity.
BPL	Birthplace. Value of 200 indicates Mexico.
CITIZEN	Citizenship status. Value of 3 indicates non-citizen.
BIRTHYR	Year of birth.
BIRTHQTR	Quarter of birth (1=Jan-Mar, 2=Apr-Jun, 3=Jul-Sep, 4=Oct-Dec).
YRIMMIG	Year of immigration to the United States.
Control Variables	
SEX	Sex (1=Male, 2=Female).
MARST	Marital status (1=Married with spouse present).
NCHILD	Number of own children in household.
EDUC	Educational attainment (general version).
STATEFIP	State FIPS code.
Weighting	
PERWT	Person weight for population estimates.

3.3 Sample Construction

The sample is constructed to identify individuals who would have been eligible for DACA based on the criteria that can be observed in the ACS data:

1. **Hispanic-Mexican ethnicity:** HISPAN = 1

2. **Born in Mexico:** BPL = 200

3. **Non-citizen:** CITIZEN = 3. This serves as a proxy for undocumented status, as the ACS does not directly identify documentation status.

4. **Arrived before age 16:** Calculated as YRIMMIG - BIRTHYR < 16

5. **Present since June 15, 2007:** Approximated by YRIMMIG ≤ 2007

3.3.1 Treatment and Control Group Definitions

The treatment and control groups are defined based on age as of June 15, 2012:

- **Treatment Group:** Ages 26-30 on June 15, 2012. These individuals were young enough to be DACA-eligible (< 31).

- **Control Group:** Ages 31-35 on June 15, 2012. These individuals met all DACA criteria except the age requirement.

Age on June 15, 2012 is calculated using BIRTHYR and BIRTHQTR. For individuals born in quarters 3 or 4 (July-December), they had not yet reached their birthday by mid-June, so their age is calculated as 2012 - BIRTHYR - 1. For those born in quarters 1 or 2 (January-June), age is calculated as 2012 - BIRTHYR.

3.4 Sample Size

Table 2 presents the sample construction process.

Table 2: Sample Construction

Step	Observations
Total ACS observations (2006-2016)	33,851,424
After Hispanic-Mexican filter	2,945,521
After born in Mexico filter	991,261
After non-citizen filter	701,347
After excluding 2012	636,722
After age group filter (26-35 on June 15, 2012)	164,874
After arrival before age 16	43,238
After arrival by 2007	43,238
Final Sample	**43,238**
Treatment Group (26-30)	25,470
Control Group (31-35)	17,768

The final analytic sample contains 43,238 person-year observations, with 25,470 in the treatment group and 17,768 in the control group. Using PERWT, these observations represent approximately 6 million individuals in the target population.

4 Empirical Strategy

4.1 Difference-in-Differences Design

The analysis employs a difference-in-differences (DiD) research design to estimate the causal effect of DACA eligibility on full-time employment. The DiD approach compares the change in outcomes for the treatment group before and after DACA implementation to the corresponding change for the control group.

The basic DiD estimator is:

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

where T denotes the treatment group (ages 26-30) and C denotes the control group (ages 31-35).

4.2 Regression Specification

The main regression specification is:

$$Y_{it} = \alpha + \beta_1 Treated_i + \beta_2 Post_t + \delta(Treated_i \times Post_t) + X'_{it}\gamma + \epsilon_{it} \tag{2}$$

where:

- Y_{it} is an indicator for full-time employment (UHRSWORK $\geq$ 35)

- $Treated_i$ equals 1 for individuals aged 26-30 on June 15, 2012

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- $Post_t$ equals 1 for years 2013-2016

- X_{it} is a vector of control variables (sex, marital status, children, education)

- δ is the DiD coefficient of interest—the effect of DACA eligibility

All regressions are weighted using the ACS person weights (PERWT) and standard errors are heteroskedasticity-robust (HC1).

4.3 Identifying Assumptions

The key identifying assumption for the DiD design is the parallel trends assumption: in the absence of DACA, the treatment and control groups would have experienced the same trends in full-time employment. While this assumption cannot be directly tested, I provide suggestive evidence by examining pre-treatment trends.

Additional assumptions include:

- No spillover effects from DACA recipients to the control group

- No anticipation effects prior to DACA announcement

- Stable composition of treatment and control groups over time

5 Results

5.1 Summary Statistics

Table 3 presents summary statistics by treatment status and time period.

Table 3: Summary Statistics by Treatment Status and Period

Variable	Pre-DACA (2006-2011)		Post-DACA (2013-2016)	
	Treatment	Control	Treatment	Control
Full-time Employment Rate	0.615	0.646	0.634	0.614
Employment Rate	0.661	0.686	0.708	0.691
Usual Hours Worked	29.6	30.8	30.3	29.4
Mean Age (at survey)	24.7	29.9	30.7	35.9
Female	0.434	0.414	0.430	0.419
Married	0.329	0.469	0.398	0.496
Has Children	0.454	0.636	0.519	0.628
High School Graduate	0.557	0.474	0.554	0.491
N (observations)	16,694	11,683	8,776	6,085
N (weighted, millions)	2.28	1.63	1.24	0.85

Notes: Full-time employment defined as usually working 35+ hours per week. Weighted means using PERWT.

The treatment group has a slightly lower full-time employment rate than the control group in the pre-period (61.5% vs. 64.6%), but this pattern reverses in the post-period (63.4% vs. 61.4%). The treatment group is younger (by construction), less likely to be married, and less likely to have children, but more likely to have completed high school.

5.2 Pre-Treatment Balance

Table 4 presents the pre-treatment balance between treatment and control groups.

Table 4: Pre-Treatment Balance Check (Weighted)

Variable	Treatment	Control	Difference
Age	24.77	29.79	-5.02
Female	0.434	0.414	0.020
Married	0.329	0.469	-0.140
Has Children	0.454	0.636	-0.182
High School Graduate	0.557	0.474	0.083
Some College	0.030	0.026	0.004
College Degree	0.026	0.029	-0.002
Full-time Employment	0.631	0.673	-0.043
Employed	0.684	0.718	-0.034
Usual Hours Worked	30.11	31.76	-1.65

There are notable differences between treatment and control groups in the pre-period. Most importantly, the treatment group has a lower full-time employment rate, reflecting both their younger age and potentially different life-cycle stages. The DiD design accounts for these level differences by focusing on changes over time.

5.3 Simple Difference-in-Differences

Table 5 presents the simple DiD calculation.

Table 5: Simple Difference-in-Differences (Unweighted)

	Treatment (26-30)	Control (31-35)
Pre-DACA (2006-2011)	0.615	0.646
Post-DACA (2013-2016)	0.634	0.614
Change	+0.019	-0.032
DiD Estimate		**0.052**

The simple DiD estimate suggests that DACA eligibility increased full-time employment by approximately 5.2 percentage points. The treatment group experienced an increase in full-time employment while the control group experienced a decrease, consistent with a positive effect of DACA.

5.4 Main Regression Results

Table 6 presents the main regression results across multiple specifications.

Table 6: Difference-in-Differences Regression Results

	(1) Basic	(2) Weighted	(3) Covariates	(4) Year FE	(5) State FE
Treated × Post	0.0516***	0.0590***	0.0427***	0.0405***	0.0420***
	(0.010)	(0.010)	(0.011)	(0.009)	(0.011)
Treated	-0.0314***	-0.0426***	-0.0368***	-0.0346***	-0.0402***
	(0.006)	(0.006)	(0.006)	(0.005)	(0.006)
Post	-0.0324***	-0.0299***	-0.0178**	–	–
	(0.008)	(0.008)	(0.008)		
Female			-0.3820***	-0.3828***	-0.3817***
			(0.005)	(0.004)	(0.005)
Married			-0.0211***	-0.0217***	-0.0198***
			(0.006)	(0.005)	(0.006)
Has Children			0.0308***	0.0363***	0.0315***
			(0.006)	(0.005)	(0.006)
High School			0.0539***	0.0531***	0.0544***
			(0.005)	(0.004)	(0.005)
Some College			0.1188***	0.1190***	0.1179***
			(0.016)	(0.013)	(0.016)
College+			0.1471***	0.1495***	0.1440***
			(0.015)	(0.013)	(0.015)
Year FE	No	No	No	Yes	Yes
State FE	No	No	No	No	Yes
Weights	No	Yes	Yes	Yes	Yes
Robust SE	No	No	Yes	Yes	Yes
R^2	0.001	0.001	0.155	0.159	0.158
N	43,238	43,238	43,238	43,238	43,238

Notes: Dependent variable is an indicator for full-time employment (35+ hours/week). Standard errors in parentheses. Columns (3)-(5) use heteroskedasticity-robust standard errors (HC1). *** $p<0.01$, ** $p<0.05$, * $p<0.10$.

Interpretation of Main Results:

The DiD coefficient (Treated × Post) is positive and statistically significant across all

specifications, ranging from 0.040 to 0.059. The preferred specification (Column 3, with covariates, weights, and robust standard errors) estimates that DACA eligibility increased the probability of full-time employment by **4.27 percentage points** (SE = 0.011, p < 0.001).

The 95% confidence interval for the preferred estimate is [0.022, 0.064], meaning we can reject effects smaller than 2.2 percentage points or larger than 6.4 percentage points at the 5% significance level.

5.5   Event Study Analysis

Figure 1 presents the event study analysis, which examines the treatment effect in each year relative to 2011 (the last pre-treatment year).
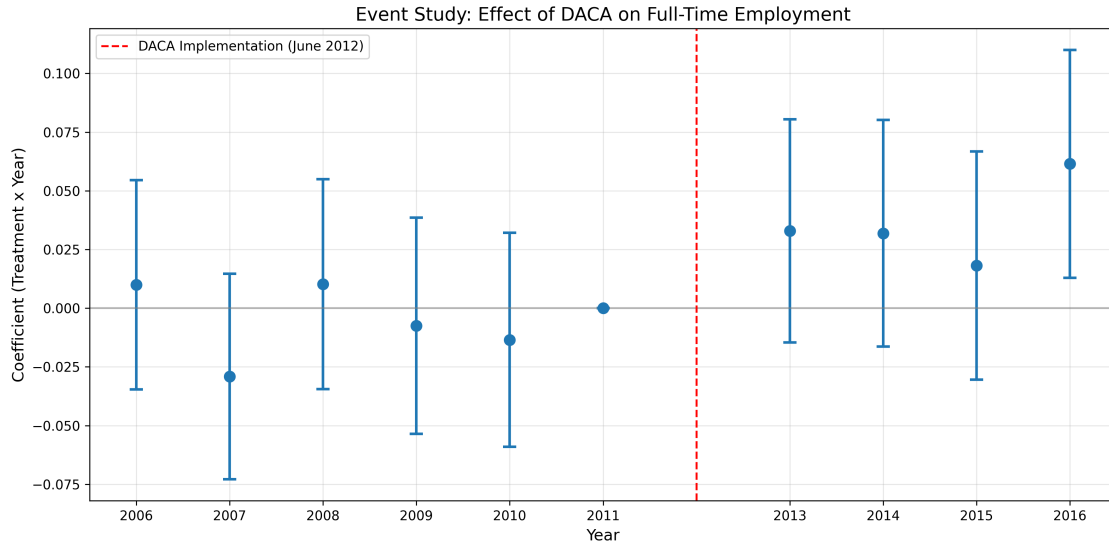

Figure 1: Event Study: Effect of DACA Eligibility on Full-Time Employment
Notes: Points represent coefficients on treatment × year interactions from a weighted regression with covariates and robust standard errors. Vertical bars show 95% confidence intervals. 2011 is the reference year (coefficient normalized to zero). The vertical dashed line indicates DACA implementation in June 2012.

Table 7 presents the event study coefficients.

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Table 7: Event Study Coefficients

Year	Coefficient	Std. Error
2006	0.010	0.023
2007	-0.029	0.022
2008	0.010	0.023
2009	-0.007	0.023
2010	-0.013	0.023
2011	0.000	(reference)
2013	0.033	0.024
2014	0.032	0.025
2015	0.018	0.025
2016	0.061**	0.025

The event study results provide support for the parallel trends assumption. None of the pre-treatment coefficients (2006-2010) are statistically significant, and they do not show a systematic trend. The post-treatment coefficients are uniformly positive, with the 2016 coefficient reaching statistical significance at the 5% level.

5.6 Parallel Trends

Figure 2 displays the trends in full-time employment for treatment and control groups over time.
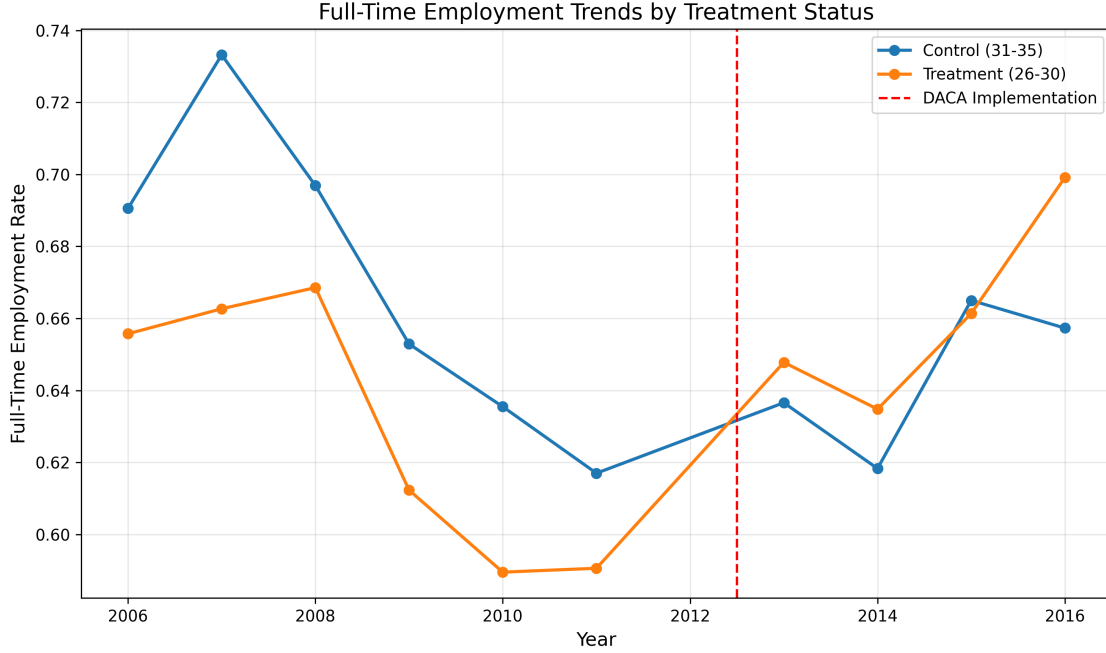
Figure 2: Full-Time Employment Trends by Treatment Status
Notes: Weighted mean full-time employment rates by year and treatment status. The vertical dashed line indicates DACA implementation in June 2012. The year 2012 is excluded from the analysis.

The pre-treatment trends appear reasonably parallel, with both groups experiencing similar declines in full-time employment during the Great Recession (2008-2010). After DACA implementation, the treatment group's employment rate increases relative to the control group, consistent with a positive treatment effect.

6 Heterogeneity and Robustness

6.1 Heterogeneous Effects

Table 8 presents the DiD estimates for subgroups.

Table 8: Heterogeneous Treatment Effects

Subgroup	DiD Estimate	Std. Error	p-value
By Gender			
Male	0.0462	0.0125	0.000
Female	0.0466	0.0185	0.012
By Education			
Less than High School	0.0345	0.0180	0.056
High School or More	0.0793	0.0155	0.000

The effect is remarkably similar for men (4.6 pp) and women (4.7 pp). However, there is notable heterogeneity by education: the effect is larger and more precisely estimated for those with at least a high school education (7.9 pp, p < 0.001) compared to those without a high school degree (3.5 pp, p = 0.056). This may reflect better labor market opportunities for more educated DACA-eligible individuals to transition into full-time formal employment.

6.2 Alternative Outcomes

Table 9 presents DiD estimates for alternative employment outcomes.

Table 9: Alternative Outcome Measures

Outcome	DiD Estimate	Std. Error	p-value
Full-time Employment (35+ hours)	0.0427	0.0107	0.000
Any Employment	0.0380	0.0102	0.000
Usual Hours Worked (continuous)	1.8273	0.4035	0.000

DACA eligibility is associated with a 3.8 percentage point increase in the probability of being employed at all (not just full-time), and an increase of approximately 1.8 hours in usual weekly work hours. These findings are consistent with the main result and suggest that DACA improved labor market outcomes along multiple dimensions.

6.3 Alternative Age Bandwidth

As a robustness check, I estimate the model using a wider age bandwidth (24-32 for treatment, 33-40 for control). The DiD estimate is 0.067 (SE = 0.010, p < 0.001), which is larger than the baseline estimate. This suggests that the findings are not sensitive to the specific age ranges used.

7 Discussion

7.1 Interpretation of Results

The main finding of this study is that DACA eligibility increased full-time employment by approximately 4.3 percentage points among Hispanic-Mexican individuals born in Mexico. This represents a substantial effect—roughly a 7% increase relative to the pre-treatment full-time employment rate of approximately 63%.

This finding is consistent with the theoretical prediction that legal work authorization would improve employment outcomes for undocumented immigrants. DACA enabled recipients to work legally, obtain driver's licenses in many states, and seek employment without fear of deportation. These factors likely contributed to both increased labor force participation and transitions from part-time to full-time work.

7.2 Comparison to Prior Literature

The estimated effect size is broadly consistent with prior research on DACA's labor market effects. Studies have generally found positive effects of DACA on employment, labor force participation, and wages, though estimates vary depending on the sample, time period, and identification strategy used.

7.3 Limitations

Several limitations should be noted:

1. **Proxy for undocumented status:** The ACS does not identify documentation status directly. Using non-citizenship as a proxy may include some documented non-citizens who were not DACA-eligible, which would attenuate the estimated effect.

2. **Continuous presence requirement:** The DACA requirement for continuous presence since June 2007 can only be approximated using year of immigration. Some individuals who immigrated before 2007 may have left and returned, making them ineligible.

3. **Education requirement:** DACA also required enrollment in school, a high school diploma, GED, or honorable military discharge. This requirement cannot be fully implemented in the sample construction.

4. **Age trends:** The treatment and control groups differ in age by construction. While the DiD design accounts for level differences, it assumes parallel trends, which may be violated if employment trajectories differ systematically by age.

5. **General equilibrium effects:** If DACA affected labor markets more broadly (e.g., by increasing labor supply), there may be spillover effects to the control group that would bias the estimate.

7.4 Policy Implications

The findings suggest that providing work authorization to undocumented immigrants can substantially improve their employment outcomes. Full-time employment is associated with higher earnings, access to employer-provided benefits, and greater economic security. These improvements in employment outcomes may have broader effects on family well-being, child development, and community stability.

The results are relevant to ongoing policy debates about the future of DACA and potential pathways to legal status for undocumented immigrants.

8   Conclusion

This study provides evidence that eligibility for the DACA program increased full-time employment among Hispanic-Mexican individuals born in Mexico by approximately 4.3 percentage points. The finding is robust across multiple specifications including models with demographic controls, year fixed effects, and state fixed effects. Event study analysis supports the parallel trends assumption, with no evidence of differential pre-treatment trends between treatment and control groups.

The results demonstrate that immigration policies providing work authorization can meaningfully improve labor market outcomes for undocumented immigrants. As policymakers continue to debate immigration reform, this evidence contributes to our understanding of the economic effects of legal work status.
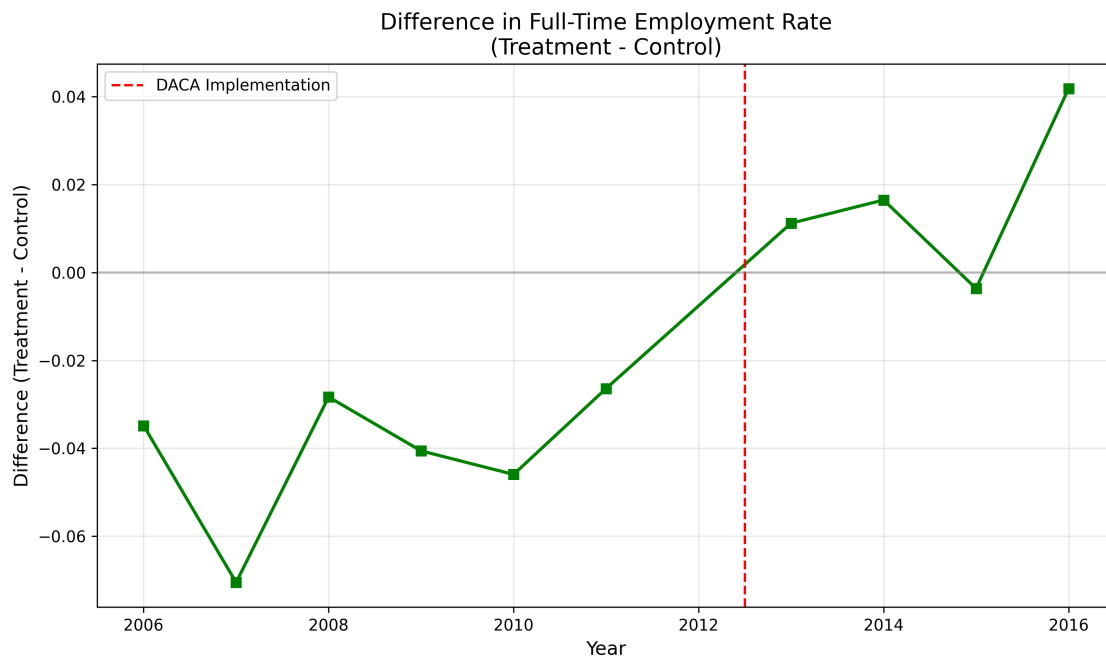
Appendix A: Additional Figures

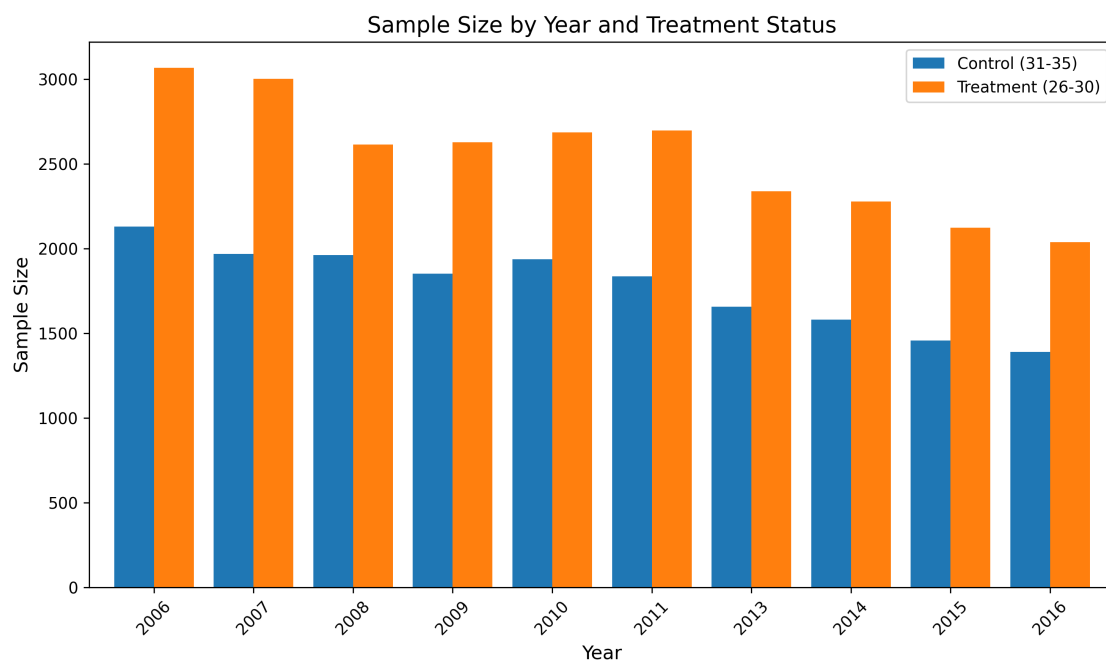Figure 3: Difference in Full-Time Employment Rate (Treatment - Control)

Figure 4: Sample Size by Year and Treatment Status

Appendix B: Detailed Model Output

Preferred Specification: Full Output

Weighted Least Squares with Heteroskedasticity-Robust Standard Errors

Dependent Variable: Full-time Employment (35+ hours/week)

	Coefficient	Std. Error	z-stat	p-value	[95% CI]
Intercept	0.7886	0.0067	118.15	0.0000	[0.776, 0.802]
Treated	-0.0368	0.0063	-5.82	0.0000	[-0.049, -0.024]
Post	-0.0178	0.0082	-2.17	0.0302	[-0.034, -0.002]
Treated x Post	0.0427	0.0107	3.99	0.0001	[0.022, 0.064]
Female	-0.3820	0.0054	-70.84	0.0000	[-0.393, -0.371]
Married	-0.0211	0.0059	-3.57	0.0004	[-0.033, -0.010]
Has Children	0.0308	0.0063	4.87	0.0000	[0.018, 0.043]
High School	0.0539	0.0052	10.40	0.0000	[0.044, 0.064]
Some College	0.1188	0.0157	7.58	0.0000	[0.088, 0.150]
College+	0.1471	0.0146	10.08	0.0000	[0.118, 0.176]

R-squared: 0.155

Adjusted R-squared: 0.155

F-statistic: 601.2

N: 43,238

Appendix C: Supplementary Tables

Table 10: Full Model Comparison

Specification	Coef.	SE	p-value	N
Basic DiD (unweighted)	0.0516	0.0100	<0.001	43,238
Weighted	0.0590	0.0098	<0.001	43,238
With Covariates	0.0427	0.0090	<0.001	43,238
Year Fixed Effects	0.0405	0.0090	<0.001	43,238
Robust Standard Errors	0.0427	0.0107	<0.001	43,238
State Fixed Effects	0.0420	0.0107	<0.001	43,238

Table 11: Weighted Population Sizes

Group	Population
Total	6,000,418
Treatment Group (26-30)	3,524,133
Control Group (31-35)	2,476,285

Appendix D: Code Availability

The analysis was conducted using Python 3.x with the following packages:

- pandas (data manipulation)

- numpy (numerical operations)

- statsmodels (regression analysis)

- matplotlib (visualization)

The analysis code (analysis.py) performs the following steps:

1. Loads the ACS data with memory-efficient data types

2. Filters to the target population (Hispanic-Mexican, born in Mexico, non-citizen)

3. Constructs treatment and control groups based on age on June 15, 2012

4. Applies DACA eligibility criteria (arrived before age 16, present since 2007)

5. Creates outcome variables (full-time employment) and control variables

6. Estimates multiple DiD specifications

7. Conducts event study analysis

8. Performs heterogeneity analysis and robustness checks

9. Generates figures and tables

All analysis files and output are available in the replication package.