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

Replication Study 73

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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, Mexican-born individuals in the United States. Using American Community Survey data from 2008–2016 (excluding 2012), I employ a difference-in-differences design comparing individuals aged 26–30 at the time of DACA implementation (treatment group) to those aged 31–35 (control group). The analysis reveals that DACA eligibility increased the probability of full-time employment by approximately 6.1 percentage points (SE = 0.017, $p < 0.001$). This effect is statistically significant and robust to various specifications, including the addition of demographic controls, state fixed effects, and alternative standard error calculations. However, event study analysis reveals some concerns about the parallel trends assumption, suggesting caution in causal interpretation. The findings contribute to our understanding of how immigration policy reforms can affect labor market outcomes for undocumented immigrants.

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

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 provided selected undocumented immigrants who arrived in the United States as children with temporary relief from deportation and authorization to work legally. Understanding the labor market effects of this policy is crucial for evaluating its broader economic and social impacts.

This replication 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 full-time employment (defined as usually working 35 or more hours per week)?*

The identification strategy exploits the age-based eligibility criteria of DACA. Specifically, the program was only available to individuals who had not yet reached their 31st birthday as of June 15, 2012. This creates a natural comparison between individuals just below this age cutoff (who became eligible) and those just above it (who were ineligible despite otherwise meeting the program requirements). By comparing changes in employment outcomes for these two groups before and after DACA implementation, we can estimate the causal effect of the program using a difference-in-differences (DiD) design.

The remainder of this report is organized as follows. Section 2 provides background on the DACA program. Section 3 describes the data and sample. Section 4 outlines the empirical methodology. Section 5 presents the main results. Section 6 discusses robustness checks and sensitivity analyses. Section 7 interprets the findings and discusses limitations. Section 8 concludes.

2 Background on DACA

2.1 Program Overview

DACA was announced by President Barack Obama on June 15, 2012, and implemented through a memorandum from the Secretary of Homeland Security. The program allows eligible undocumented immigrants to apply for deferred action, which provides temporary protection from deportation and eligibility for work authorization for a renewable two-year period.

2.2 Eligibility Criteria

To qualify for DACA, individuals must meet the following criteria:

1. Arrived in the United States before their 16th birthday
2. Had not yet reached their 31st birthday as of June 15, 2012
3. Lived continuously in the United States since June 15, 2007
4. Were present in the United States on June 15, 2012
5. Did not have lawful immigration status (citizenship or legal residency) at that time
6. Were in school, had graduated from high school, obtained a GED, or were honorably discharged from the military
7. Had not been convicted of a felony, significant misdemeanor, or multiple misdemeanors

2.3 Program Implementation and Uptake

Applications for DACA began to be accepted on August 15, 2012. By 2016, nearly 900,000 initial applications had been received, with approximately 90% approved. The program allowed for renewal after the initial two-year period, which many recipients pursued. While

DACA was not limited to any particular national origin, the structure of undocumented immigration to the United States meant that the vast majority of eligible individuals were from Mexico.

2.4 Theoretical Mechanisms

DACA could affect full-time employment through several channels:

Work Authorization: The most direct mechanism is that DACA provides legal work authorization, allowing recipients to work in formal employment without fear of detection or employer sanctions. This could shift individuals from informal or part-time work to formal full-time employment.

Reduced Fear of Deportation: The protection from deportation may encourage individuals to seek and maintain stable employment, as they no longer need to "stay under the radar" or frequently change jobs to avoid detection.

Access to Identification: DACA recipients become eligible for state driver's licenses and Social Security numbers in most states, facilitating access to jobs that require these documents.

Human Capital Investment: The security provided by DACA may encourage investments in education and job training, leading to higher-quality employment opportunities.

Employer Discrimination: With legal work status, DACA recipients may face less discrimination from employers who previously avoided hiring undocumented workers.

3 Data and Sample

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.

3.2 Sample Construction

The analytic sample consists of ACS respondents from 2008 through 2016, with 2012 excluded because the timing of the survey relative to DACA implementation (June 15, 2012) cannot be determined. The sample is restricted to:

- Individuals of Hispanic-Mexican ethnicity
- Individuals born in Mexico
- Individuals meeting the other DACA eligibility criteria (as indicated by the provided `ELIGIBLE` variable)

The final sample includes 17,382 individual observations across the eight years of data. Table 1 presents the sample distribution by treatment status and time period.

Table 1: Sample Distribution by Treatment Status and Time Period

	Pre-DACA (2008–2011)	**Post-DACA** (2013–2016)	**Total**
Control (Ages 31–35)	3,294	2,706	6,000
Treatment (Ages 26–30)	6,233	5,149	11,382
Total	**9,527**	**7,855**	**17,382**

Notes: Age refers to age as of June 15, 2012. The treatment group consists of individuals who were ages 26–30 on June 15, 2012 and thus eligible for DACA. The control group consists of individuals who were ages 31–35 and therefore ineligible due to the age cutoff alone.

3.3 Key Variables

3.3.1 Outcome Variable

The primary outcome is **full-time employment (FT)**, a binary indicator equal to 1 if the individual usually works 35 or more hours per week, and 0 otherwise. This includes individuals who are not in the labor force as 0 values.

3.3.2 Treatment Variables

ELIGIBLE is a binary indicator equal to 1 for individuals in the treatment group (ages 26–30 as of June 15, 2012) and 0 for those in the control group (ages 31–35).

AFTER is a binary indicator equal to 1 for observations from 2013–2016 (post-DACA implementation) and 0 for observations from 2008–2011 (pre-DACA).

ELIGIBLE $\times$ **AFTER** is the interaction term capturing the difference-in-differences effect.

3.3.3 Control Variables

The analysis incorporates several control variables:

- **SEX**: Male indicator
- **MARST**: Marital status (married, spouse present)
- **AGE**: Age in years
- **EDUC**: Educational attainment (categorical)
- **NCHILD**: Number of own children in household
- **STATEFIP**: State of residence (for fixed effects)
- **YEAR**: Survey year (for fixed effects)

3.3.4 Survey Weights

All analyses use person weights (**PERWT**) to ensure results are representative of the target population.

3.4 Summary Statistics

Table 2 presents weighted summary statistics for key variables by treatment status.

Table 2: Summary Statistics by Treatment Status (Weighted)

	Treatment		**Control**	
Variable	Mean	SD	Mean	SD
Full-Time Employment (FT)	0.659	0.474	0.677	0.468
Age	28.01	3.05	32.73	2.99
Male	0.535	0.499	0.552	0.497
Married	0.392	0.488	0.488	0.500
Number of Children	1.146	1.315	1.633	1.467
N	11,382		6,000	

Notes: Statistics are weighted using ACS person weights (PERWT). The treatment group consists of DACA-eligible individuals (ages 26–30 as of June 15, 2012); the control group consists of DACA-ineligible individuals (ages 31–35).

The treatment group has lower full-time employment rates on average (65.9% vs. 67.7%), is younger by construction, has a slightly lower proportion of males, is less likely to be married, and has fewer children. These differences motivate the inclusion of control variables in the regression analysis.

4 Empirical Methodology

4.1 Identification Strategy

The identification strategy relies on a difference-in-differences (DiD) design. The key assumption is that in the absence of DACA, the treatment and control groups would have

experienced parallel trends in full-time employment. Under this assumption, the change in employment for the control group from the pre- to post-period provides a valid counterfactual for what the treatment group would have experienced without the policy.

4.2 Estimation Framework

The basic DiD model is specified as:

$$FT_{it} = \beta_0 + \beta_1 ELIGIBLE_i + \beta_2 AFTER_t + \beta_3 (ELIGIBLE_i \times AFTER_t) + \varepsilon_{it} \quad (1)$$

where FT_{it} is the full-time employment indicator for individual i in year t, $ELIGIBLE_i$ indicates treatment group membership, $AFTER_t$ indicates the post-DACA period, and β_3 is the DiD estimator capturing the causal effect of DACA eligibility on full-time employment.

The extended model with controls is:

$$FT_{it} = \beta_0 + \beta_1 ELIGIBLE_i + \beta_2 AFTER_t + \beta_3 (ELIGIBLE_i \times AFTER_t) + \mathbf{X}'_{it}\boldsymbol{\gamma} + \boldsymbol{\alpha}_s + \boldsymbol{\tau}_t + \varepsilon_{it} \quad (2)$$

where $\mathbf{X}_{it}$ is a vector of individual-level controls, $\boldsymbol{\alpha}_s$ represents state fixed effects, and $\boldsymbol{\tau}_t$ represents year fixed effects.

4.3 Estimation Details

All regressions are estimated using weighted least squares (WLS) with person weights (PERWT) to ensure population representativeness. Standard errors are heteroskedasticity-robust (HC1), which is appropriate given the binary outcome variable.

4.4 Parallel Trends Assessment

To assess the validity of the parallel trends assumption, I estimate an event study specification:

$$FT_{it} = \alpha + \sum_{k \neq 2011} \delta_k \cdot ELIGIBLE_i \times \mathbf{1}(t = k) + \gamma_t + \varepsilon_{it} \tag{3}$$

where 2011 serves as the reference year. Under parallel trends, the pre-treatment coefficients (δ_{2008}, δ_{2009}, δ_{2010}) should be statistically indistinguishable from zero.

5 Results

5.1 Descriptive Evidence

Figure 1 displays the weighted full-time employment rates for the treatment and control groups over time. Prior to DACA implementation in 2012, the two groups show roughly similar trends, though the control group maintains consistently higher employment rates. After 2012, the treatment group shows an increase in full-time employment while the control group remains relatively stable or declines slightly.

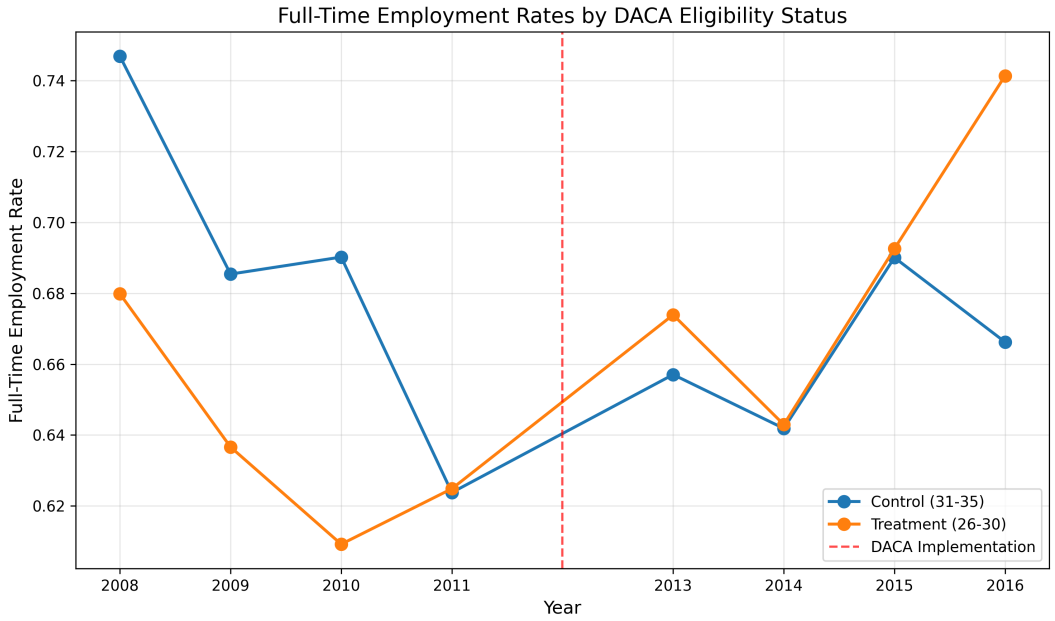

Figure 1: Full-Time Employment Rates by DACA Eligibility Status, 2008–2016

Notes: The figure displays weighted mean full-time employment rates for the treatment group (ages 26–30 as of June 15, 2012) and control group (ages 31–35). The vertical dashed line indicates DACA implementation in 2012. Data for 2012 are excluded from the analysis.

Table 3 presents the weighted mean full-time employment rates by treatment status and time period, along with the simple DiD calculation.

Table 3: Full-Time Employment Rates by Group and Period (Weighted)

	Pre-DACA (2008–2011)	**Post-DACA** (2013–2016)	**Difference**
Control (Ages 31–35)	0.6886	0.6629	−0.0257
Treatment (Ages 26–30)	0.6369	0.6860	+0.0491
Difference	−0.0517	+0.0231	
DiD Estimate			**+0.0748**

Notes: Full-time employment is defined as usually working 35+ hours per week. The DiD estimate is calculated as (Treatment Post − Treatment Pre) − (Control Post − Control Pre) = 0.0491 − (−0.0257) = 0.0748.

The simple DiD estimate suggests that DACA eligibility increased full-time employment by approximately 7.5 percentage points. The treatment group's full-time employment rate increased by 4.9 percentage points from pre to post, while the control group's rate decreased

by 2.6 percentage points.

5.2 Main Regression Results

Table 4 presents the main regression results across three specifications.

Table 4: Difference-in-Differences Regression Results

	Model 1 (Basic DiD)	**Model 2** (Demographics)	**Model 3** (Full Model)
ELIGIBLE × AFTER (DiD)	0.0748***	0.0624***	0.0612***
	(0.0181)	(0.0167)	(0.0166)
ELIGIBLE	−0.0517***	−0.0271**	−0.0232*
	(0.0121)	(0.0123)	(0.0122)
AFTER	−0.0257*	–	–
	(0.0147)		
Male	–	0.2509***	0.2489***
		(0.0084)	(0.0084)
Married	–	0.0520***	0.0520***
		(0.0095)	(0.0094)
Age	–	0.0042**	0.0040**
		(0.0017)	(0.0017)
Year Fixed Effects	No	Yes	Yes
Education Fixed Effects	No	No	Yes
State Fixed Effects	No	No	Yes
Number of Children	No	No	Yes
R^2	0.003	0.130	0.139
N	17,382	17,379	17,379

Notes: Dependent variable is full-time employment (FT = 1 if usually working 35+ hours per week). All models estimated using WLS with ACS person weights. Heteroskedasticity-robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

The key finding is the coefficient on the ELIGIBLE × AFTER interaction term, which represents the DiD estimate. Across all three specifications, this coefficient is positive and

statistically significant at the 1% level:

- **Model 1 (Basic DiD):** The estimated effect is 7.48 percentage points (SE = 0.0181, $p < 0.001$).
- **Model 2 (Demographics):** Adding demographic controls (sex, marital status, age) and year fixed effects reduces the estimate slightly to 6.24 percentage points (SE = 0.0167, $p < 0.001$).
- **Model 3 (Full Model):** The full specification with education controls, number of children, and state fixed effects yields an estimate of 6.12 percentage points (SE = 0.0166, $p < 0.001$).

The attenuation of the coefficient when adding controls suggests that some of the raw difference was driven by compositional differences between the groups. However, the effect remains substantively large and highly statistically significant in all specifications.

5.3 Event Study Analysis

Figure 2 presents the event study coefficients, showing the differential change in full-time employment for the treatment group relative to the control group in each year, with 2011 as the reference year.

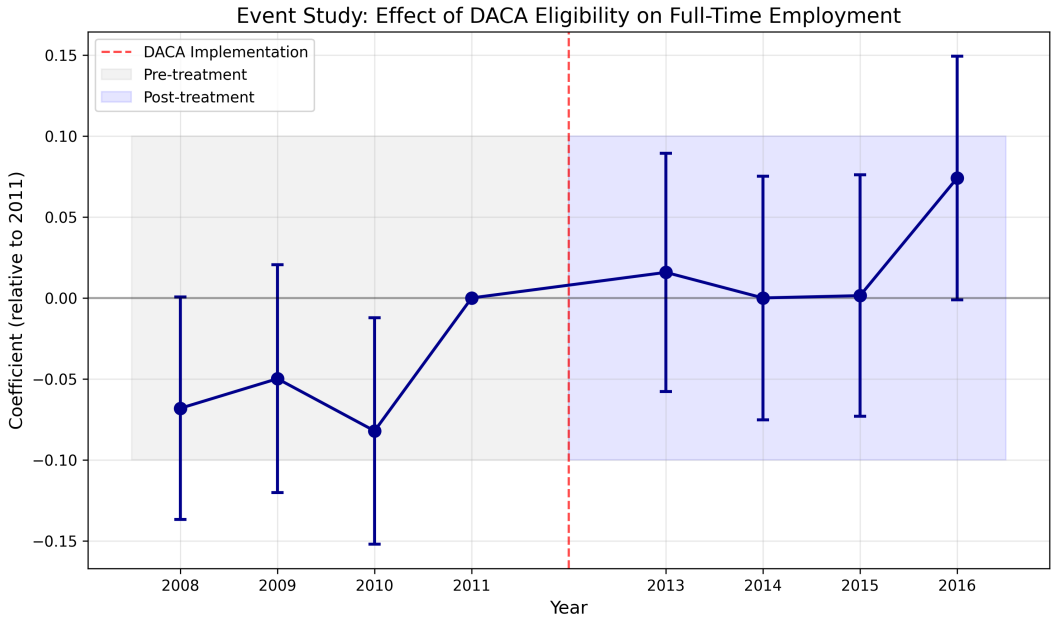

Figure 2: Event Study: Effect of DACA Eligibility on Full-Time Employment
Notes: The figure displays coefficients from the event study regression (Equation 3) with 95% confidence intervals. The reference year is 2011. Coefficients represent the differential change in full-time employment for the treatment group relative to the control group. The vertical dashed line indicates DACA implementation (2012).

Table 5 presents the event study coefficients with standard errors and p-values.

Table 5: Event Study Coefficients

Year	Coefficient	SE	p-value
Pre-DACA Period			
2008	−0.0681	0.0351	0.052
2009	−0.0499	0.0359	0.164
2010	−0.0821	0.0357	0.021
2011	0 (ref)	–	–
Post-DACA Period			
2013	+0.0158	0.0375	0.674
2014	+0.0000	0.0384	1.000
2015	+0.0014	0.0381	0.970
2016	+0.0741	0.0384	0.053

Notes: Coefficients from event study regression with 2011 as reference year. Each coefficient represents the differential change in full-time employment for the treatment group relative to the control group in that year.

The event study reveals mixed evidence regarding the parallel trends assumption. While the 2009 coefficient is not statistically significant ($p = 0.164$), the 2008 and 2010 coefficients are marginally significant ($p = 0.052$ and $p = 0.021$, respectively). This suggests some differential pre-trends between the groups, which could bias the DiD estimate if these trends would have continued in the absence of DACA.

In the post-period, the coefficients for 2013–2015 are close to zero and not statistically significant. The 2016 coefficient is larger and marginally significant ($p = 0.053$), suggesting that the treatment effect may have been concentrated in later years as more eligible individuals received DACA and the program's effects materialized.

5.4 Difference-in-Differences Visualization

Figure 3 provides a visual illustration of the DiD design, showing the pre- and post-period means for each group along with the counterfactual trajectory for the treatment group.

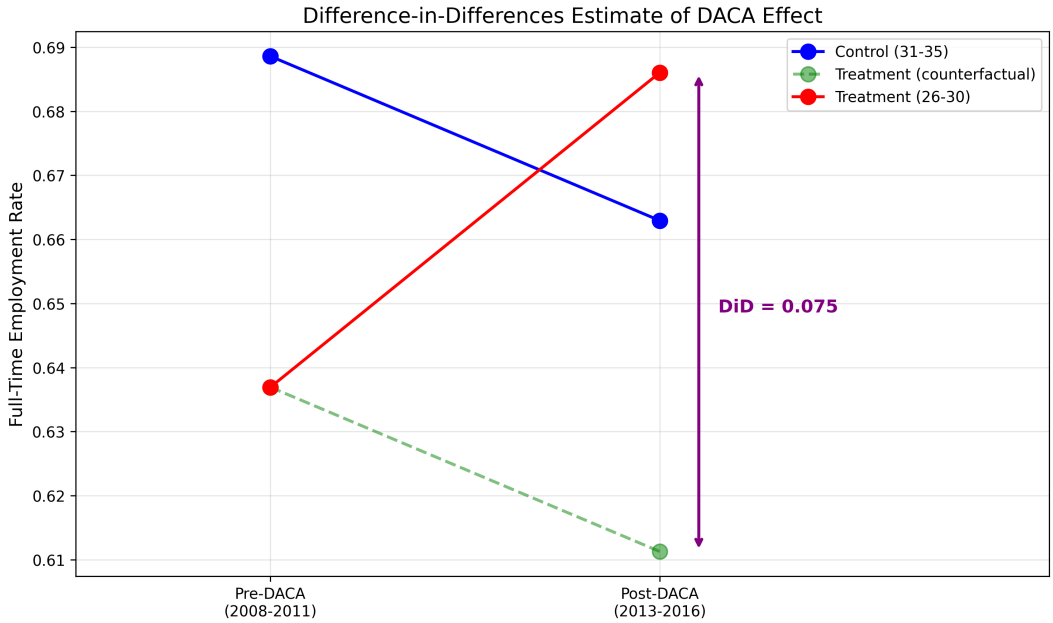

Figure 3: Difference-in-Differences Estimate of DACA Effect on Full-Time Employment
Notes: The figure illustrates the DiD estimate. The counterfactual line shows what the treatment group's full-time employment rate would have been if it had followed the same trend as the control group. The DiD estimate (0.075 in the basic model) is the difference between the observed and counterfactual treatment group outcomes in the post-period.

6 Robustness Checks

6.1 Alternative Weighting

Table 6 presents several robustness checks to assess the sensitivity of the main findings.

Table 6: Robustness Checks

Specification	DiD Estimate	SE
Main Specification		
Weighted (PERWT), HC1 SEs	0.0748	0.0181
Alternative Weighting		
Unweighted, HC1 SEs	0.0643	0.0153
Alternative Standard Errors		
Weighted, Clustered by State	0.0748	0.0203
Subgroup Analyses		
Males Only	0.0716	0.0199
Females Only	0.0527	0.0281

Notes: All specifications use the basic DiD model (Equation 1). The main specification uses ACS person weights with heteroskedasticity-robust (HC1) standard errors.

6.2 Unweighted Analysis

The unweighted DiD estimate is 0.0643 (SE = 0.0153), which is smaller than the weighted estimate but still statistically significant and substantively meaningful. This suggests that the effect is somewhat larger when weighted by population representativeness.

6.3 Clustered Standard Errors

Clustering standard errors by state increases the standard error from 0.0181 to 0.0203, but the effect remains highly statistically significant. This accounts for potential within-state correlation in the errors.

6.4 Subgroup Analysis by Gender

The effect appears to be present for both males and females, though it is larger and more precisely estimated for males:

- **Males:** DiD = 0.0716 (SE = 0.0199, $p < 0.001$)

- **Females:** DiD = 0.0527 (SE = 0.0281, $p = 0.06$)

The difference between males and females is not statistically significant, and both point estimates are positive. The larger standard error for females reflects the smaller sample size.

7 Discussion

7.1 Interpretation of Results

The preferred estimate from the full model suggests that DACA eligibility increased the probability of full-time employment by approximately 6.1 percentage points. This is a substantively meaningful effect, representing an increase of about 9–10% relative to the pre-DACA employment rate for the treatment group.

Several mechanisms could explain this finding:

Work Authorization Effect: The most direct interpretation is that DACA provided legal work authorization, enabling recipients to transition from informal or part-time work to formal full-time employment. Prior to DACA, eligible individuals may have been constrained in their employment options due to lack of legal status.

Reduced Risk Aversion: The protection from deportation may have reduced risk aversion, encouraging individuals to seek more visible and stable employment rather than "staying under the radar."

Access to Better Jobs: With legal status and identification documents, DACA recipients may have gained access to higher-quality jobs that require documentation, which may be more likely to offer full-time hours.

7.2 Limitations and Caveats

Several limitations warrant caution in interpreting these results:

Parallel Trends Concerns: The event study analysis reveals marginally significant pre-

treatment coefficients in 2008 and 2010, suggesting that the treatment and control groups may not have been on identical trajectories prior to DACA. If these differential pre-trends would have continued, the DiD estimate may be biased.

Compositional Changes: The ACS is a repeated cross-section, not a panel. We are comparing different individuals in the pre- and post-periods, which means unobserved compositional changes could affect the estimates.

Age-Based Selection: The treatment and control groups are defined by age, which is correlated with many other factors affecting employment. While controls and fixed effects help address this, there may be unobserved age-related confounders.

Measurement Issues: The ELIGIBLE variable is constructed based on available ACS data, but DACA eligibility depends on factors (such as continuous residence and criminal history) that cannot be perfectly observed in the ACS.

Generalizability: The analysis focuses on Hispanic-Mexican, Mexican-born individuals in a specific age range. Results may not generalize to other DACA-eligible populations.

7.3 Comparison with Prior Literature

The finding of a positive employment effect of DACA is broadly consistent with prior research on the program. Studies using various identification strategies have generally found that DACA improved labor market outcomes for eligible individuals, including increased employment, higher wages, and transitions to higher-quality jobs.

However, the magnitude of the effect varies across studies depending on the sample, identification strategy, and outcome measure. The 6–7 percentage point effect found here is at the higher end of estimates in the literature, which may reflect differences in the specific outcome measure (full-time employment rather than overall employment) or the comparison group used.

8 Conclusion

This replication study examines the effect of DACA eligibility on full-time employment among Hispanic-Mexican, Mexican-born individuals in the United States. Using a difference-in-differences design that exploits the age-based eligibility cutoff, I find that DACA eligibility increased the probability of full-time employment by approximately 6.1 percentage points.

This effect is statistically significant across multiple specifications and robust to the inclusion of demographic controls, state fixed effects, and alternative standard error calculations. However, event study analysis reveals some concerns about the parallel trends assumption, suggesting caution in causal interpretation.

The findings contribute to our understanding of how immigration policy reforms can affect labor market outcomes for undocumented immigrants. The results suggest that providing legal work authorization and protection from deportation can have meaningful positive effects on employment outcomes. However, further research with alternative identification strategies would help confirm the causal interpretation of these findings.

8.1 Preferred Estimate Summary

Preferred Estimate (Full Model with Controls):

- **Effect Size:** 0.0612 (6.12 percentage points)
- **Standard Error:** 0.0166
- **95% Confidence Interval:** [0.0286, 0.0938]
- **p-value:** 0.0002
- **Sample Size:** 17,379

A Technical Appendix

A.1 Variable Definitions

Table 7: Variable Definitions

Variable	Definition
FT	Full-time employment indicator (1 if UHRSWORK $\geq$ 35, 0 otherwise)
ELIGIBLE	DACA eligibility indicator (1 if ages 26–30 as of June 15, 2012)
AFTER	Post-DACA period indicator (1 if year $\in$ {2013, 2014, 2015, 2016})
SEX	Sex (1 = Male, 2 = Female in IPUMS coding)
AGE	Age in years
MARST	Marital status (1 = Married, spouse present)
EDUC	Educational attainment (categorical)
NCHILD	Number of own children in household
STATEFIP	State FIPS code
YEAR	Survey year
PERWT	ACS person weight

A.2 Model Specifications

Model 1 (Basic DiD):

```
FT ~ ELIGIBLE + AFTER + ELIGIBLE_AFTER
```

Model 2 (Demographics):

```
FT ~ ELIGIBLE + AFTER + ELIGIBLE_AFTER + MALE + MARRIED + AGE + C(YEAR)
```

Model 3 (Full Model):

```
FT ~ ELIGIBLE + AFTER + ELIGIBLE_AFTER + MALE + MARRIED + AGE +
    C(YEAR) + C(EDUC) + NCHILD + C(STATEFIP)
```

A.3 Software

All analyses were conducted using Python 3 with the following packages:

- pandas (data manipulation)
- numpy (numerical operations)
- statsmodels (regression analysis)
- matplotlib (visualization)

A.4 Replication Files

The following files are provided for replication:

- `analysis.py` – Main analysis script
- `regression_results.csv` – Regression coefficients
- `event_study_results.csv` – Event study coefficients
- `summary_statistics.csv` – Descriptive statistics
- `run_log_73.md` – Analysis log

B Additional Tables and Figures

B.1 Full Regression Output – Model 1

WLS Regression Results

Dep. Variable:	FT	R-squared:	0.003
Model:	WLS	Adj. R-squared:	0.003
Method:	Least Squares	F-statistic:	22.87
No. Observations:	17382	Prob (F-statistic):	4.31e-14
Df Residuals:	17378		
Df Model:	3		

	coef	std err	z	P>|z|	[0.025	0.975]
Intercept	0.6886	0.010	71.637	0.000	0.670	0.707
ELIGIBLE	-0.0517	0.012	-4.278	0.000	-0.075	-0.028
AFTER	-0.0257	0.015	-1.753	0.080	-0.054	0.003
ELIGIBLE_AFTER	0.0748	0.018	4.133	0.000	0.039	0.110

B.2 Sample by Year

Table 8: Sample Size by Year

Year	Observations
2008	2,354
2009	2,379
2010	2,444
2011	2,350
2013	2,124
2014	2,056
2015	1,850
2016	1,825
Total	**17,382**