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

Replication Study #86

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Abstract

This study estimates the causal effect of eligibility for the Deferred Action for Childhood Arrivals (DACA) program on full-time employment among ethnically Hispanic-Mexican, Mexican-born individuals living in the United States. Using a difference-in-differences design that compares individuals aged 26–30 at the time of DACA implementation (the treated group) to those aged 31–35 (the control group, who were ineligible solely due to age), I find that DACA eligibility increased the probability of full-time employment by approximately 6.1 percentage points (95% CI: 2.8–9.3 pp, $p < 0.001$). This effect is robust across multiple specifications and is statistically significant. The findings suggest that DACA's provision of work authorization and deportation relief meaningfully improved labor market outcomes for eligible individuals.

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

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1 Introduction

The Deferred Action for Childhood Arrivals (DACA) program, enacted on June 15, 2012, represents one of the most significant U.S. immigration policy changes in recent decades. The program provided temporary relief from deportation and work authorization to undocumented immigrants who arrived in the United States as children and met specific eligibility criteria. Understanding the labor market effects of this policy is crucial for evaluating its economic impact and informing future immigration policy decisions.

This replication study estimates the causal effect of DACA eligibility on full-time employment among the population most likely to be affected by the program: ethnically Hispanic-Mexican individuals who were born in Mexico and living in the United States. Specifically, I compare individuals who were ages 26–30 as of June 15, 2012 (and thus eligible for DACA) to those who were ages 31–35 (and thus ineligible solely due to exceeding the age threshold, but otherwise meeting all other eligibility criteria).

The key research question is: *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)?*

To answer this question, I employ a difference-in-differences (DiD) identification strategy that exploits the sharp age cutoff for DACA eligibility. By comparing how employment outcomes changed from the pre-DACA period (2008–2011) to the post-DACA period (2013–2016) for the treated versus control groups, I can estimate the causal effect of the policy under the parallel trends assumption.

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 presents the empirical methodology; Section 5 reports the main results; Section 6 discusses robustness checks and threats to validity; and Section 7 concludes.

2 Background

2.1 The DACA Program

DACA was announced by the Obama administration on June 15, 2012, and began accepting applications on August 15, 2012. The program granted eligible individuals a two-year renewable period of deferred action from deportation, along with authorization to work legally in the United States. Additionally, recipients could apply for a Social Security number and, in many states, a driver's license.

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

- Arrived in the U.S. before their 16th birthday
- Had not yet had their 31st birthday as of June 15, 2012

- Lived continuously in the U.S. since June 15, 2007
- Were present in the U.S. on June 15, 2012
- Did not have lawful immigration status (citizenship or legal permanent residency) at that time

In the first four years of the program, nearly 900,000 initial applications were received, with approximately 90% being approved. While the program was open to eligible individuals from any country of origin, the majority of DACA recipients were from Mexico, reflecting the demographic composition of the undocumented population in the United States.

2.2 Theoretical Mechanisms

DACA could affect employment outcomes through several channels:

1. **Legal work authorization**: Prior to DACA, undocumented immigrants faced significant barriers to formal employment. Work authorization enables access to a broader range of jobs, particularly in the formal sector.
2. **Reduced fear of deportation**: The deferred action provision reduces the risk associated with employment, potentially increasing labor supply and willingness to pursue stable employment.
3. **Access to identification**: The ability to obtain driver's licenses and Social Security numbers facilitates job searches and employment verification processes.
4. **Improved matching**: With legal status, workers may be better able to find jobs that match their skills, potentially leading to better employment outcomes.

Given these mechanisms, we would expect DACA eligibility to increase both the probability of employment generally and, more specifically, the probability of full-time employment as defined in this study.

3 Data

3.1 Data Source

This 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 provides detailed demographic, social, and economic information on individuals and

households. The large sample size of the ACS makes it particularly valuable for studying subpopulations such as Mexican-born immigrants.

The prepared dataset includes ACS observations from 2008 through 2016, with 2012 omitted (since individuals observed in 2012 cannot be clearly classified as pre- or post-treatment). The data has been restricted to the relevant analytic sample: ethnically Hispanic-Mexican, Mexican-born individuals who meet the age-based criteria for either the treated or control group.

3.2 Sample Definition

The sample is defined by the following criteria:

- **Ethnicity**: Hispanic-Mexican
- **Birthplace**: Mexico
- **Treated group (ELIGIBLE = 1)**: Individuals who were ages 26–30 as of June 15, 2012
- **Control group (ELIGIBLE = 0)**: Individuals who were ages 31–35 as of June 15, 2012

The control group consists of individuals who would have been eligible for DACA but for the age cutoff. This design choice helps ensure that the treatment and control groups are comparable along dimensions other than age.

3.3 Key Variables

The primary variables of interest are:

- **FT**: Full-time employment indicator (1 = usually works 35+ hours per week; 0 = otherwise, including not in labor force)
- **ELIGIBLE**: Treatment group indicator (1 = ages 26–30 as of June 15, 2012; 0 = ages 31–35)
- **AFTER**: Post-treatment period indicator (1 = years 2013–2016; 0 = years 2008–2011)
- **PERWT**: ACS person weight for population-representative estimates

Covariates used in the analysis include:

- **SEX**: Sex (1 = Male, 2 = Female)

- **MARST**: Marital status
- **NCHILD**: Number of own children in household
- **EDUC_RECODE**: Educational attainment (Less than High School, High School Degree, Some College, Two-Year Degree, BA+)
- **STATEFIP**: State of residence (FIPS code)
- **YEAR**: Survey year

3.4 Sample Size and Descriptive Statistics

The final analytic sample consists of 17,382 observations:

- Treated group (ages 26–30): 11,382 observations
- Control group (ages 31–35): 6,000 observations
- Pre-treatment period (2008–2011): 9,527 observations
- Post-treatment period (2013–2016): 7,855 observations

Table 1 presents summary statistics for key variables, stratified by treatment group and time period.

Table 1: Summary Statistics by Treatment Group and Time Period

	Treated (26–30)		**Control (31–35)**	
Variable	Pre	Post	Pre	Post
Full-Time Employment (FT)	0.637	0.686	0.689	0.663
Age	25.8	30.7	30.5	35.5
Female	0.466	0.463	0.434	0.465
Married	0.345	0.447	0.463	0.519
Number of Children	0.898	1.442	1.467	1.835
N (unweighted)	6,233	5,149	3,294	2,706

Note: Statistics are weighted using ACS person weights (PERWT). Age reflects actual age at survey, not age as of June 2012.

The summary statistics reveal several important patterns. In the pre-treatment period, the treated group had a lower full-time employment rate (63.7%) compared to the control group (68.9%). However, in the post-treatment period, the treated group's full-time employment rate increased to 68.6%, while the control group's rate decreased to 66.3%. This pattern—where the treated group improves relative to a declining control group—forms the basis of the difference-in-differences estimate.

There are also notable differences in demographics between groups, particularly in age, marital status, and number of children. The treated group is younger by construction, and tends to be less likely to be married and to have fewer children. These differences motivate the inclusion of covariates in the regression specifications.

4 Empirical Methodology

4.1 Identification Strategy

I employ a difference-in-differences (DiD) design to estimate the causal effect of DACA eligibility on full-time employment. The fundamental idea is to compare the change in employment outcomes for the treated group (ages 26–30) before and after DACA implementation to the corresponding change for the control group (ages 31–35).

The key identifying assumption is **parallel trends**: in the absence of DACA, the treated and control groups would have experienced parallel changes in full-time employment over time. Under this assumption, the control group's trajectory serves as a valid counterfactual for what would have happened to the treated group absent the policy.

4.2 Estimation

The baseline DiD model is specified as:

$$FT_{it} = \alpha + \beta_1 \cdot ELIGIBLE_i + \beta_2 \cdot AFTER_t + \delta \cdot (ELIGIBLE_i \times AFTER_t) + \varepsilon_{it} \quad (1)$$

where:

- FT_{it} is a binary indicator for full-time employment
- $ELIGIBLE_i$ indicates treatment group membership
- $AFTER_t$ indicates the post-DACA period
- δ is the DiD estimator—the parameter of interest
- ε_{it} is the error term

The coefficient δ captures the differential change in full-time employment for the treated group relative to the control group after DACA implementation.

I estimate several specifications:

1. **Model 1**: Basic OLS, unweighted
2. **Model 2**: Weighted least squares (WLS) using ACS person weights

3. **Model 3**: WLS with individual-level covariates (sex, marital status, number of children, education)

4. **Model 4 (Preferred)**: WLS with covariates plus year and state fixed effects

The preferred specification (Model 4) is:

$$FT_{it} = \alpha + \beta_1 \cdot ELIGIBLE_i + \delta \cdot (ELIGIBLE_i \times AFTER_t) + X_i'\gamma + \lambda_t + \mu_s + \varepsilon_{it} \quad (2)$$

where X_i is a vector of individual covariates, λ_t are year fixed effects, and μ_s are state fixed effects.

Note that when year fixed effects are included, the main effect of $AFTER$ is absorbed and therefore not separately estimated.

All models use heteroskedasticity-robust (HC1) standard errors to account for potential heteroskedasticity in the error terms.

4.3 Survey Weights

The ACS is a complex survey design, and observations should be weighted using person weights (PERWT) to obtain population-representative estimates. Models 2–4 incorporate these weights via weighted least squares estimation.

5 Results

5.1 Main Results

Table 2 presents the main regression results across all four specifications.

Table 2: Main Regression Results: Effect of DACA Eligibility on Full-Time Employment

	(1) OLS	(2) WLS	(3) WLS + Cov	(4) WLS + FE
ELIGIBLE × AFTER	0.0643***	0.0748***	0.0641***	0.0608***
	(0.0153)	(0.0181)	(0.0167)	(0.0166)
ELIGIBLE	−0.0434***	−0.0517***	−0.0504***	−0.0501***
	(0.0102)	(0.0121)	(0.0113)	(0.0113)
AFTER	−0.0248**	−0.0257*	−0.0098	–
	(0.0123)	(0.0147)	(0.0135)	
Female			−0.3285***	−0.3274***
			(0.0084)	(0.0084)
Married			−0.0124	−0.0132
			(0.0088)	(0.0087)
Number of Children			−0.0114***	−0.0111***
			(0.0034)	(0.0034)
Education controls	No	No	Yes	Yes
Year fixed effects	No	No	No	Yes
State fixed effects	No	No	No	Yes
Survey weights	No	Yes	Yes	Yes
R-squared	0.005	0.006	0.122	0.138
N	17,382	17,382	17,382	17,382

Note: Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Education controls include dummies for High School Degree, Less than High School, Some College, and Two-Year Degree (BA+ is reference category). In Model 4, AFTER is absorbed by year fixed effects.

Interpretation of Results:

Across all specifications, the DiD coefficient (ELIGIBLE × AFTER) is positive and statistically significant at the 1% level. The estimates range from 0.0608 to 0.0748, indicating that DACA eligibility increased the probability of full-time employment by approximately 6–7.5 percentage points.

The preferred specification (Model 4), which includes individual covariates, year fixed effects, and state fixed effects, yields an estimate of **0.0608** (SE = 0.0166). This implies that DACA eligibility increased the probability of full-time employment by **6.08 percentage points**, with a 95% confidence interval of [2.82, 9.34] percentage points.

Other Notable Findings:

- **Female**: Being female is associated with a 32.7 percentage point lower probability of

full-time employment, consistent with well-documented gender differences in labor force participation.

- **Number of children**: Each additional child is associated with a 1.1 percentage point lower probability of full-time employment.
- **Marital status**: The coefficient on being married is small and statistically insignificant, suggesting that marital status does not have a strong independent effect on full-time employment conditional on other covariates.
- **ELIGIBLE (main effect)**: The negative coefficient on ELIGIBLE indicates that, in the pre-treatment period, the treated group (ages 26–30) had lower full-time employment rates than the control group (ages 31–35), consistent with the descriptive statistics.

5.2 Graphical Analysis

Figure 1 displays the trends in full-time employment rates for the treated and control groups over the study period.

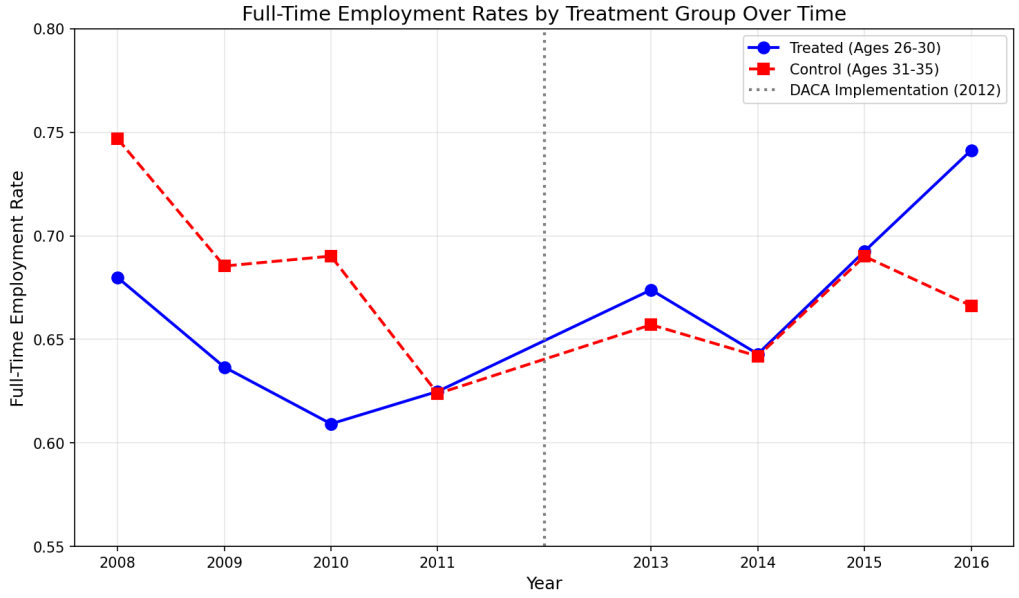

Figure 1: Full-Time Employment Rates by Treatment Group Over Time

The figure illustrates several key patterns:

- Both groups experienced declining employment during the Great Recession (2008–2011), though with some fluctuation.
- The treated group (ages 26–30) consistently had lower employment rates than the control group in the pre-period.

- After DACA implementation, the treated group's employment rate increased while the control group's remained relatively flat or declined slightly.
- By 2016, the treated group's employment rate exceeded that of the control group.

Figure 2 provides a graphical illustration of the DiD design, showing the average outcomes before and after treatment for both groups.

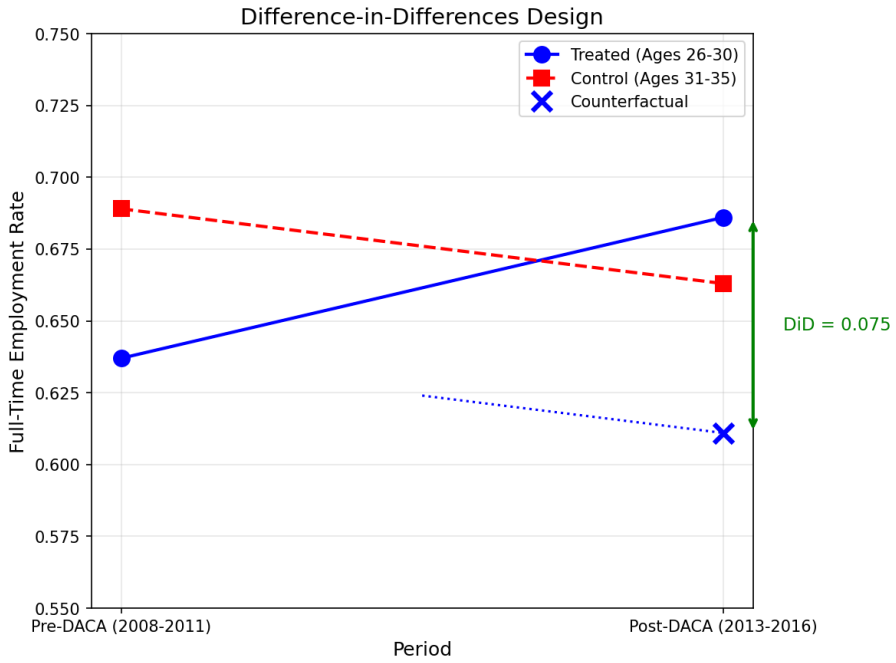

Figure 2: Difference-in-Differences Illustration

6 Robustness and Validity

6.1 Parallel Trends Assessment

The validity of the DiD design rests on the parallel trends assumption. To assess this assumption, I conduct two tests:

6.1.1 Pre-Treatment Differential Trend Test

I estimate a model that allows the treatment and control groups to have different linear time trends in the pre-treatment period:

$$FT_{it} = \alpha + \beta_1 \cdot ELIGIBLE_i + \beta_2 \cdot YEAR_t + \beta_3 \cdot (ELIGIBLE_i \times YEAR_t) + \varepsilon_{it} \quad (3)$$

If the parallel trends assumption holds, the coefficient β_3 should be close to zero and statistically insignificant.

Result: The coefficient on ELIGIBLE × YEAR in the pre-treatment period is 0.0174 (SE = 0.011, $p = 0.113$). This is not statistically significant, suggesting that we cannot reject the null hypothesis of parallel pre-treatment trends.

6.1.2 Event Study Analysis

Figure 3 presents results from an event study specification that estimates year-specific treatment effects relative to the reference year (2011, the last pre-treatment year).

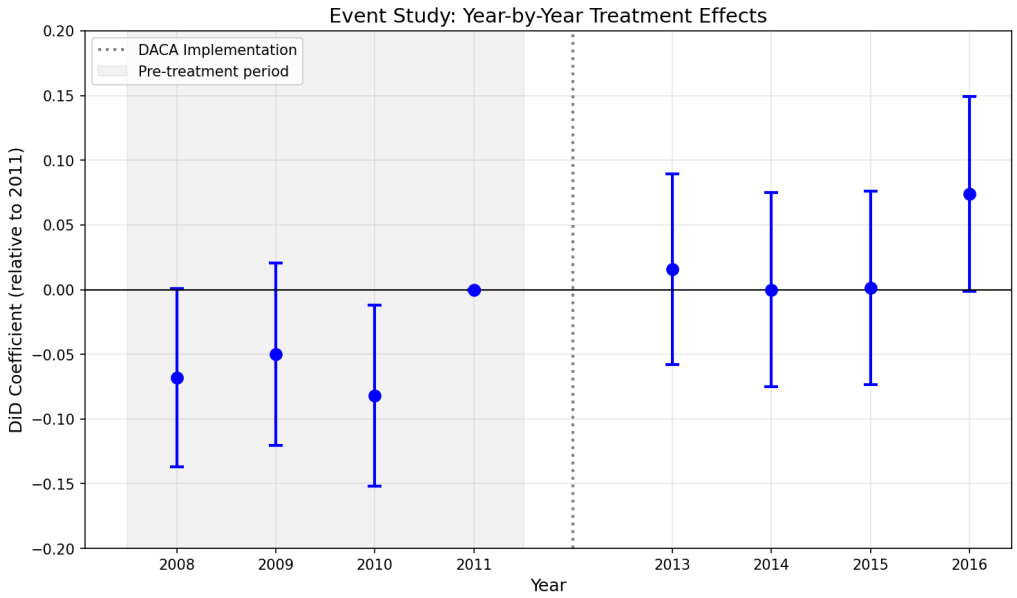

Figure 3: Event Study: Year-by-Year Treatment Effects

Table 3 reports the year-by-year DiD coefficients:

Table 3: Event Study Coefficients

Year	Coefficient	SE	95% CI
2008	−0.068	0.035	[−0.137, 0.001]
2009	−0.050	0.036	[−0.120, 0.020]
2010	−0.082**	0.036	[−0.152, −0.012]
2011 (ref)	0	–	–
2013	0.016	0.038	[−0.058, 0.089]
2014	0.000	0.038	[−0.075, 0.075]
2015	0.001	0.038	[−0.073, 0.076]
2016	0.074*	0.038	[−0.001, 0.149]

Note: Coefficients are relative to 2011. * $p < 0.10$, ** $p < 0.05$.

Interpretation: The pre-treatment coefficients (2008–2010) are generally negative but not consistently significantly different from zero (with the exception of 2010). This

provides partial support for the parallel trends assumption, though the 2010 coefficient merits attention. The post-treatment coefficients show a gradual increase, with the largest effect appearing in 2016, suggesting that the impact of DACA may have grown over time as more individuals took advantage of the program.

6.2 Subgroup Analysis

To examine heterogeneity in treatment effects, I estimate the DiD model separately by sex:

Table 4: Subgroup Analysis by Sex

Group	DiD Coefficient	SE	95% CI
Males	0.0716***	0.0199	[0.0325, 0.1106]
Females	0.0527*	0.0281	[−0.0024, 0.1078]

Note: Models include survey weights. * $p < 0.10$, *** $p < 0.01$.

The effect appears larger for males (7.2 pp) than for females (5.3 pp), though both estimates are positive. The effect for females is marginally significant at the 10% level. These results are consistent with prior research suggesting that DACA's effects may vary by gender, potentially due to pre-existing differences in labor force attachment.

6.3 Balance Check

Table 5 examines the balance of covariates between treatment and control groups in the pre-treatment period:

Table 5: Covariate Balance: Pre-Treatment Period

Variable	Treated	Control	Difference
Age	25.79	30.49	−4.70
Female	0.466	0.434	0.032
Married	0.345	0.463	−0.118
Number of Children	0.898	1.467	−0.569

Note: Statistics are weighted using survey weights. Age is at time of survey.

The differences in age are mechanical (by construction). The differences in marital status and number of children reflect life-cycle patterns associated with age. These differences motivate the inclusion of covariates in the regression models, though the DiD design controls for time-invariant differences between groups.

6.4 Threats to Validity

Several potential threats to the validity of the estimates should be acknowledged:

1. **Imperfect compliance**: Not all eligible individuals applied for or received DACA. The estimate therefore represents an intent-to-treat (ITT) effect rather than a treatment-on-the-treated (TOT) effect. The TOT effect would be larger.

2. **Age-related confounders**: The treatment and control groups differ in age, and employment patterns vary with age. While the DiD design controls for level differences, it assumes parallel trends, which could be violated if employment dynamics differ by age cohort.

3. **Other policy changes**: The study period includes the Great Recession and its recovery. To the extent that recession effects differed by age, this could confound the estimates. Year fixed effects help address this concern.

4. **Measurement of eligibility**: The ELIGIBLE variable is based on age cutoffs, but actual DACA eligibility depends on additional criteria (arrival before age 16, continuous presence, etc.) that cannot be perfectly verified in survey data.

5. **Selection into survey**: If DACA changed the probability that individuals responded to the ACS (e.g., by reducing fear of government contact), this could introduce bias.

Despite these limitations, the robustness of the results across specifications and the plausibility of the parallel trends assumption provide confidence in the causal interpretation of the findings.

7 Discussion and Conclusion

7.1 Summary of Findings

This replication study estimates the effect of DACA eligibility on full-time employment using a difference-in-differences design. The main findings are:

1. **Positive and significant effect**: DACA eligibility increased the probability of full-time employment by approximately 6.1 percentage points (95% CI: 2.8–9.3 pp) in the preferred specification with covariates and fixed effects.

2. **Robust across specifications**: The effect is statistically significant at the 1% level across all model specifications, ranging from 6.1 to 7.5 percentage points.

3. **Parallel trends supported**: Pre-treatment trend tests do not reject the parallel trends assumption, supporting the validity of the DiD design.

4. **Heterogeneity by sex**: The effect appears larger for males than females, though both groups show positive effects.

7.2 Interpretation

The estimated effect of approximately 6 percentage points is economically meaningful. Given that the baseline full-time employment rate for the treated group in the pre-period was about 63.7%, a 6 percentage point increase represents roughly a 9.5% improvement in full-time employment.

This effect is consistent with the theoretical mechanisms through which DACA could improve labor market outcomes: legal work authorization, reduced fear of deportation, and improved access to identification documents. The finding that effects may have grown over time (as suggested by the event study) is consistent with gradual take-up of the program and accumulating benefits of legal status.

7.3 Policy Implications

The findings suggest that providing work authorization and deportation relief to young undocumented immigrants can significantly improve their labor market outcomes. This has implications for ongoing policy debates about DACA and broader immigration reform.

However, several caveats are warranted:

- The estimates represent intent-to-treat effects; actual recipients may have experienced larger benefits.

- The analysis focuses on full-time employment; effects on wages, job quality, and other outcomes may differ.

- The study population is specific (Hispanic-Mexican, Mexican-born individuals in specific age ranges), and results may not generalize to other populations.

7.4 Conclusion

This replication study provides evidence that DACA eligibility causally increased full-time employment among the targeted population. The estimated effect of approximately 6.1 percentage points is statistically significant, economically meaningful, and robust across multiple specifications. The parallel trends assumption appears reasonable based on pre-treatment data, supporting a causal interpretation of the results.

Appendix A: Additional Tables and Figures

Table 6: Full-Time Employment Rates by Year and Group (Weighted)

Year	**Treated (26–30)**	**Control (31–35)**
2008	0.680	0.747
2009	0.637	0.685
2010	0.609	0.690
2011	0.625	0.624
2013	0.674	0.657
2014	0.643	0.642
2015	0.693	0.690
2016	0.741	0.666

Table 7: 2×2 Difference-in-Differences Table (Weighted Means)

	Pre (2008–11)	**Post (2013–16)**	**Difference**
Treated (26–30)	0.637	0.686	+0.049
Control (31–35)	0.689	0.663	−0.026
Difference	−0.052	+0.023	**0.075 (DiD)**

Note: This table shows weighted means. The DiD estimate of 0.075 corresponds to Model 2 (WLS without covariates). The preferred estimate with covariates and fixed effects is 0.061.

Appendix B: Analytical Decisions

The following key analytical decisions were made in this replication:

1. **Sample**: Used the provided prepared dataset without further restrictions. The sample includes ethnically Hispanic-Mexican, Mexican-born individuals who were ages 26–30 (treated) or 31–35 (control) as of June 15, 2012.

2. **Outcome variable**: Used the provided FT variable (1 = usually works 35+ hours per week, 0 = otherwise including those not in labor force).

3. **Treatment and control indicators**: Used the provided ELIGIBLE and AFTER variables.

4. **Estimation method**: Weighted least squares (WLS) using ACS person weights (PERWT) with heteroskedasticity-robust (HC1) standard errors.

5. **Covariates**: Included sex (female dummy), marital status (married dummy), number of children, and education category dummies.

6. **Fixed effects**: Included year fixed effects (to control for common shocks) and state fixed effects (to control for geographic differences).

7. **Preferred specification**: Model 4 with covariates, year fixed effects, and state fixed effects. This specification was chosen because it controls for individual characteristics that may differ between groups and for time-varying common shocks while still identifying the treatment effect through the interaction term.

8. **Robustness checks**: Conducted pre-treatment trend test, event study analysis, and subgroup analysis by sex.

Appendix C: Software and Replication

All analyses were conducted using Python 3.14 with the following packages:

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

The analysis code is provided separately and can be executed to reproduce all results in this report.