Replication Report: The Effect of DACA Eligibility on Full-Time Employment Among Mexican-Born Immigrants

Replication Study 54

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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 American Community Survey (ACS) data from 2008-2016, I employ a difference-in-differences research design comparing individuals aged 26-30 at the time of DACA implementation (the treated group) with those aged 31-35 (the control group, who would have been eligible but for their age). The preferred specification yields a treatment effect of 5.07 percentage points (SE = 0.0141, 95% CI: [0.023, 0.078]), indicating that DACA eligibility significantly increased the probability of full-time employment. This effect is robust to various specifications including demographic controls, state and year fixed effects, survey weights, and alternative standard error adjustments. The findings contribute to understanding the labor market impacts of immigration policy reform.

Contents

1 Introduction

The Deferred Action for Childhood Arrivals (DACA) program, implemented on June 15, 2012, represented one of the most significant immigration policy changes in recent U.S. history. The program allowed eligible undocumented immigrants who arrived in the United States as children to apply for temporary relief from deportation and obtain work authorization. By providing legal work authorization, DACA had the potential to substantially alter the labor market opportunities of recipients, who previously faced significant barriers to formal employment.

This replication study examines the causal effect of DACA eligibility on full-time employment among ethnically Hispanic-Mexican, Mexican-born individuals residing in the United States. The research question addressed is: *What was the causal impact of eligibility for DACA on the probability that an eligible person is employed full-time (usually working 35 hours per week or more)?*

Given that DACA imposed an age restriction requiring applicants to be under 31 years old as of June 15, 2012, I exploit this discontinuity using a difference-in-differences (DID) design. The treated group consists of individuals aged 26-30 at the time the policy went into effect, while the control group comprises those aged 31-35 who would have been otherwise eligible. By comparing changes in full-time employment rates between these groups before and after DACA implementation, I estimate the causal effect of the policy.

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. The program allowed certain undocumented individuals who entered the United States as children to request deferred action from deportation and obtain employment authorization. To be eligible, applicants had to meet several criteria:

- Arrived in the U.S. before their 16th birthday
- Were under 31 years of age as of June 15, 2012
- Continuously resided in the U.S. since June 15, 2007
- Were physically present in the U.S. on June 15, 2012

- Had no lawful immigration status at the time of application

In the first four years of the program, nearly 900,000 initial applications were received, with approximately 90% approved. The program granted two-year renewable work permits and relief from deportation, with many recipients subsequently reapplying for renewal.

2.2 Theoretical Mechanisms

DACA eligibility could affect full-time employment through several channels:

1. **Work Authorization**: DACA provides legal authorization to work in the United States, enabling recipients to pursue formal employment opportunities that were previously unavailable to them.

2. **Reduced Deportation Risk**: The deferred action provision reduces the risk of deportation, which may encourage recipients to invest more in human capital and pursue more stable employment arrangements.

3. **Driver's License Access**: In many states, DACA recipients became eligible for driver's licenses, expanding their geographic mobility and access to employment opportunities.

4. **Occupational Upgrading**: With legal work status, DACA recipients may be able to transition from informal or part-time work to full-time positions with better wages and benefits.

2.3 Prior Literature

Several studies have examined the effects of DACA on various outcomes. Research has generally found positive effects on labor force participation, employment, and wages among DACA-eligible individuals. Studies have also documented improvements in mental health and educational attainment. However, the magnitude and statistical significance of these effects vary across studies and methodological approaches.

3 Data

3.1 Data Source

The analysis uses data from the American Community Survey (ACS) as provided by IPUMS USA. The ACS is a nationally representative survey conducted annually that collects demo-

graphic, social, economic, and housing information. The dataset provided for this analysis covers the years 2008-2011 (pre-DACA) and 2013-2016 (post-DACA), with 2012 excluded because the timing of DACA announcement makes it ambiguous whether observations from that year fall before or after treatment.

3.2 Sample Construction

The analytic sample was pre-constructed and includes ethnically Hispanic-Mexican, Mexican-born individuals meeting the following criteria:

- **Treated Group (ELIGIBLE = 1)**: Individuals aged 26-30 as of June 15, 2012. These individuals were young enough to be eligible for DACA based on the age requirement.
- **Control Group (ELIGIBLE = 0)**: Individuals aged 31-35 as of June 15, 2012. These individuals were too old to qualify for DACA but otherwise would have met the eligibility criteria.

The final sample contains 17,382 observations, with 11,382 in the treated group and 6,000 in the control group.

3.3 Key Variables

Outcome Variable: `FT` is a binary indicator equal to 1 if the individual usually works 35 hours or more per week, and 0 otherwise. Individuals not in the labor force are generally coded as 0.

Treatment Variables:

- `ELIGIBLE`: Binary indicator equal to 1 for individuals aged 26-30 as of June 2012 (treated group)
- `AFTER`: Binary indicator equal to 1 for years 2013-2016 (post-DACA period)

Control Variables: The dataset includes demographic characteristics (age, sex, marital status, education), household characteristics (family size, number of children), and state-level policy variables (driver's license access, in-state tuition, E-Verify requirements, and immigration enforcement policies).

Survey Weights: The variable `PERWT` provides person-level weights to account for the ACS sampling design.

3.4 Summary Statistics

Table 1 presents summary statistics for key variables by treatment group.

Table 1: Summary Statistics by Treatment Group

	Eligible (26-30) (N = 11,382)	**Control (31-35)** (N = 6,000)
Outcome Variable		
FT Employment (Before)	0.626	0.670
FT Employment (After)	0.666	0.645
Demographics		
Age in June 2012	28.11 (1.43)	32.93 (1.22)
Female	0.482	0.471
Married	0.418	0.516
Family Size	4.38	4.50
Number of Children	1.19	1.70
Education		
High School Degree	0.704	0.738
Some College	0.172	0.153
BA or higher	0.063	0.058

Notes: Standard deviations in parentheses for continuous variables. "Before" refers to 2008-2011; "After" refers to 2013-2016.

The table reveals that the treated group (DACA-eligible) has a lower pre-treatment full-time employment rate (62.6%) compared to the control group (67.0%). The eligible group is younger by construction, somewhat less likely to be married, and has fewer children on average. Educational attainment is broadly similar between groups, with high school degree being the modal education level.

4 Empirical Strategy

4.1 Difference-in-Differences Design

The primary estimation strategy employs a difference-in-differences (DID) design that compares changes in full-time employment between the treated and control groups from before to

after DACA implementation. The identifying assumption is that, in the absence of DACA, the treated group would have experienced the same trend in full-time employment as the control group (parallel trends assumption).

The basic DID model can be expressed as:

$$FT_{ist} = \alpha + \beta_1 ELIGIBLE_i + \beta_2 AFTER_t + \beta_3 (ELIGIBLE_i \times AFTER_t) + \epsilon_{ist} \quad (1)$$

where i indexes individuals, s indexes states, and t indexes time periods. The coefficient of interest is β_3, which captures the causal effect of DACA eligibility on full-time employment under the parallel trends assumption.

4.2 Extended Specifications

I estimate several specifications to assess robustness:

Model 1: Basic DID without controls (Equation 1)

Model 2: Basic DID with survey weights (WLS)

Model 3: DID with demographic controls:

$$FT_{ist} = \alpha + \beta_1 ELIGIBLE_i + \beta_2 AFTER_t + \beta_3 (ELIGIBLE_i \times AFTER_t) + X_i'\gamma + \epsilon_{ist} \quad (2)$$

where X_i includes education dummies, female indicator, married indicator, number of children, and family size.

Model 4 (Preferred): DID with demographic controls and state/year fixed effects:

$$FT_{ist} = \alpha + \beta_1 ELIGIBLE_i + \beta_3 (ELIGIBLE_i \times AFTER_t) + X_i'\gamma + \mu_s + \tau_t + \epsilon_{ist} \quad (3)$$

where μ_s and τ_t are state and year fixed effects, respectively. Note that the main effect of $AFTER_t$ is absorbed by the year fixed effects.

Model 5: Model 4 with survey weights

Model 6: Model 1 with standard errors clustered at the state level

4.3 Robustness Checks

Placebo Test: To assess the validity of the parallel trends assumption, I conduct a placebo test using only pre-treatment data (2008-2011), treating 2010-2011 as "fake post" periods.

Event Study: I estimate an event study model that allows for time-varying treatment effects relative to 2011 (the year immediately before DACA):

$$FT_{ist} = \alpha + \sum_{k \neq 2011} \beta_k (ELIGIBLE_i \times \mathbf{1}[t = k]) + \mu_s + \tau_t + \epsilon_{ist} \tag{4}$$

Alternative Estimators: I also estimate probit and logit models to check whether results are sensitive to the linear probability model assumption.

Triple Difference: I explore heterogeneity in the treatment effect by interacting the DID estimate with state-level driver's license policies.

4.4 Standard Errors

Throughout the analysis, I compute heteroskedasticity-robust standard errors (HC1). For robustness, I also report results with standard errors clustered at the state level to account for potential within-state correlation of residuals.

5 Results

5.1 Main Results

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

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

	(1) Basic DID	(2) Weighted	(3) Controls	(4) FE	(5) Weighted FE
ELIGIBLE×AFTER	0.0643***	0.0748***	0.0518***	0.0507***	0.0580***
	(0.0153)	(0.0181)	(0.0141)	(0.0141)	(0.0166)
ELIGIBLE	-0.0434***	-0.0517***	-0.0399***	-0.0413***	-0.0463***
	(0.0102)	(0.0121)	(0.0097)	(0.0097)	(0.0113)
AFTER	-0.0248**	-0.0257*	-0.0119	–	–
	(0.0123)	(0.0147)	(0.0114)		
Demographic Controls	No	No	Yes	Yes	Yes
State FE	No	No	No	Yes	Yes
Year FE	No	No	No	Yes	Yes
Survey Weights	No	Yes	No	No	Yes
R-squared	0.002	0.002	0.133	0.139	0.140
N	17,382	17,382	17,382	17,382	17,382

Notes: *** p<0.01, ** p<0.05, * p<0.1. Heteroskedasticity-robust standard errors in parentheses. Demographic controls include education dummies, female indicator, married indicator, number of children, and family size. Column (4) is the preferred specification.

The basic DID estimate in Column (1) shows that DACA eligibility increased full-time employment by 6.43 percentage points (p<0.001). This estimate is statistically significant at the 1% level. When survey weights are applied (Column 2), the estimated effect increases to 7.48 percentage points.

Adding demographic controls (Column 3) reduces the estimate somewhat to 5.18 percentage points, reflecting some compositional differences between the treated and control groups. The preferred specification (Column 4), which includes demographic controls and state/year fixed effects, yields an estimate of 5.07 percentage points (95% CI: [0.023, 0.078]). This specification controls for state-level heterogeneity and common time shocks that might otherwise confound the estimate.

The weighted version of the full model (Column 5) produces an estimate of 5.80 percentage points, broadly consistent with the unweighted results.

5.2 Preferred Estimate

Based on Model 4, the preferred estimate of the effect of DACA eligibility on full-time employment is:

Treatment Effect: 5.07 percentage points
Standard Error: 0.0141
95% Confidence Interval: [2.30%, 7.84%]
Sample Size: 17,382
p-value: 0.0003

This estimate suggests that DACA eligibility increased the probability of full-time employment by approximately 5 percentage points, representing an 8.1% increase relative to the pre-treatment mean full-time employment rate of 62.6% among the eligible group.

5.3 Clustered Standard Errors

Table 3 shows that the main result is robust to clustering standard errors at the state level.

Table 3: Basic DID with State-Clustered Standard Errors

	Robust SE	Clustered SE
ELIGIBLE×AFTER	0.0643***	0.0643***
	(0.0153)	(0.0141)
95% CI	[0.034, 0.094]	[0.037, 0.092]

Notes: *** p<0.01. Standard errors in parentheses.

The clustered standard error is actually slightly smaller than the robust standard error, and the estimate remains highly significant.

5.4 Placebo Test

To assess the parallel trends assumption, I conduct a placebo test using only pre-treatment data (2008-2011), artificially treating 2010-2011 as a "post" period.

Table 4: Placebo Test: Pre-Treatment Period Only (2008-2011)

	Placebo DID
ELIGIBLE×FAKE_AFTER	0.0157
	(0.0205)
p-value	0.444
N	9,527

Notes: FAKE_AFTER = 1 for years 2010-2011. Heteroskedasticity-robust standard errors in parentheses.

The placebo estimate is small (1.57 percentage points) and statistically insignificant (p = 0.444), providing support for the parallel trends assumption. If pre-existing differential trends were driving the main results, we would expect to see a significant effect in this placebo test.

5.5 Event Study

Table 5 presents the event study estimates, which allow the treatment effect to vary by year relative to 2011.

Table 5: Event Study Estimates (Reference Year: 2011)

Year	Coefficient	SE	95% CI	p-value
Pre-Treatment				
2008	-0.0591**	0.0289	[-0.116, -0.002]	0.041
2009	-0.0388	0.0297	[-0.097, 0.019]	0.191
2010	-0.0663**	0.0294	[-0.124, -0.009]	0.024
Post-Treatment				
2013	0.0188	0.0306	[-0.041, 0.079]	0.539
2014	-0.0088	0.0308	[-0.069, 0.052]	0.774
2015	0.0303	0.0316	[-0.032, 0.092]	0.338
2016	0.0491	0.0314	[-0.012, 0.111]	0.118

Notes: ** p<0.05. Estimates relative to 2011 (omitted year). Heteroskedasticity-robust standard errors.

The event study reveals some pre-treatment year-to-year variation, with coefficients in 2008 and 2010 being statistically significant. However, the pattern does not suggest a system-

atic differential pre-trend that would bias the DID estimate. The post-treatment coefficients show a gradual increase over time, with the largest effects in 2015 and 2016, consistent with the policy taking time to be fully implemented and utilized.

5.6 Alternative Estimators

Table 6 presents results from probit and logit models, which may be more appropriate for binary outcomes.

Table 6: Probit and Logit Models

	Probit	Logit
ELIGIBLE×AFTER (coef)	0.1737***	0.2828***
	(0.0413)	(0.0674)
Average Marginal Effect	0.0643***	0.0643***
	(0.0153)	(0.0153)
Odds Ratio (Logit)	–	1.327

Notes: *** p<0.01. Standard errors in parentheses. The average marginal effects are identical to the linear probability model estimate, confirming that results are not sensitive to functional form.

The average marginal effects from both nonlinear models (6.43 percentage points) are identical to the OLS estimate, demonstrating that the results are robust to the choice of estimator. The logit odds ratio of 1.327 indicates that DACA eligibility multiplies the odds of full-time employment by approximately 33%.

5.7 Heterogeneity Analysis

Table 7 explores heterogeneity in treatment effects by sex and education.

Table 7: Heterogeneity Analysis

	Estimate	SE	N
By Sex			
Male	0.0615***	0.0170	9,075
Female	0.0452*	0.0232	8,307
By Education			
HS or Less	0.0480***	0.0180	12,453
Some College+	0.1057***	0.0287	4,929

Notes: *** p<0.01, * p<0.1. Heteroskedasticity-robust standard errors.

The effect is statistically significant for both men (6.15 pp) and women (4.52 pp), though the effect for women is marginally significant (p = 0.051). Interestingly, the effect is substantially larger for individuals with some college or more (10.57 pp) compared to those with high school or less (4.80 pp), suggesting that more educated DACA-eligible individuals may have been better positioned to take advantage of legal work authorization.

5.8 Triple Difference with State Policies

I examined whether the treatment effect varies with state-level driver's license policies, which determine whether DACA recipients can obtain a driver's license.

Table 8: Triple Difference with Driver's License Access

	Coefficient (SE)
ELIGIBLE×AFTER	0.0879***
(Non-DL states)	(0.0207)
ELIGIBLE×AFTER×DRIVERSLICENSE	-0.0887
	(0.0577)
Total Effect in DL States	-0.0008

Notes: *** p<0.01. The triple difference interaction is not statistically significant.

Surprisingly, the results suggest that the DACA effect on full-time employment was concentrated in states where driver's licenses were *not* available to DACA recipients. The triple-difference term is negative (though not statistically significant), and the total effect in driver's

license states is essentially zero. This counterintuitive result may reflect compositional differences between states or other confounding factors and warrants further investigation.

6 Parallel Trends Analysis

The validity of the difference-in-differences design rests on the parallel trends assumption: that the treated and control groups would have followed similar trends in full-time employment in the absence of DACA. Table 9 presents the year-by-year mean full-time employment rates by treatment group.

Table 9: Full-Time Employment Rates by Year and Group

Year	Eligible	Control	Difference
Pre-Treatment			
2008	0.667	0.726	-0.060
2009	0.617	0.657	-0.039
2010	0.606	0.673	-0.067
2011	0.617	0.618	-0.001
Post-Treatment			
2013	0.642	0.624	+0.018
2014	0.640	0.649	-0.010
2015	0.680	0.650	+0.030
2016	0.708	0.660	+0.048

The pre-treatment period shows substantial year-to-year variation in the difference between groups, ranging from essentially zero in 2011 to about 6-7 percentage points in 2008 and 2010. This variation suggests some caution in interpreting the parallel trends assumption as satisfied. However, the insignificant placebo test and the clear shift in the post-treatment period (where the eligible group overtakes the control group) provide some reassurance that the main results capture a genuine treatment effect.

The post-treatment trajectory shows the eligible group's employment rate consistently rising (from 64.2% in 2013 to 70.8% in 2016) while the control group's rate remains relatively flat (around 62-66%). By 2016, the eligible group's full-time employment rate exceeds the control group's by nearly 5 percentage points, compared to roughly equal rates in 2011.

7 Discussion

7.1 Summary of Findings

This replication study finds that DACA eligibility increased full-time employment by approximately 5-6 percentage points among Mexican-born individuals who met the program's criteria. The preferred estimate of 5.07 percentage points (with state/year fixed effects and demographic controls) is highly statistically significant ($p = 0.0003$) and robust across various specifications.

The magnitude of this effect is economically meaningful. Relative to the pre-treatment full-time employment rate of 62.6% among the eligible group, the 5.07 percentage point increase represents an 8.1% relative gain. This suggests that providing legal work authorization substantially improved labor market outcomes for DACA-eligible individuals.

7.2 Interpretation

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

1. **Access to Legal Employment**: DACA recipients can legally work for any employer, expanding their job opportunities beyond the informal sector.

2. **Formalization of Existing Work**: Some DACA recipients who were previously working informally may have transitioned to formal full-time positions with their existing employers.

3. **Increased Employer Confidence**: Employers may be more willing to hire and retain workers who have documentation, potentially leading to more stable full-time employment.

4. **Human Capital Investment**: The reduced deportation risk may encourage greater investment in job-specific skills and longer-term employment relationships.

7.3 Limitations

Several limitations should be noted:

1. **Parallel Trends**: While the placebo test is reassuring, the event study reveals some pre-treatment year-to-year variation that suggests the parallel trends assumption may not hold perfectly.

2. **Age Differences**: The treated and control groups differ by approximately 5 years in age, which may introduce confounding through age-related employment patterns independent of DACA.

3. **Measurement**: The ACS does not directly identify DACA recipients. The analysis assumes that DACA eligibility translates into actual DACA receipt and labor market impacts, though not all eligible individuals applied for or received DACA.

4. **Repeated Cross-Sections**: The ACS is not panel data, so I cannot track the same individuals over time. The estimates reflect changes in group-level means that may partly reflect compositional changes.

5. **External Validity**: The results are specific to Mexican-born individuals and may not generalize to DACA-eligible individuals from other countries.

8 Conclusion

This replication study provides evidence that DACA eligibility had a positive and statistically significant effect on full-time employment among Mexican-born individuals in the United States. The preferred difference-in-differences estimate indicates that DACA increased full-time employment by 5.07 percentage points (95% CI: [2.30%, 7.84%]). This finding is robust to various specifications including the addition of demographic controls, state and year fixed effects, survey weights, and alternative standard error adjustments.

The results contribute to a growing body of evidence on the labor market effects of immigration policy reform. By providing legal work authorization, DACA appears to have facilitated greater full-time employment among eligible individuals, potentially improving their economic well-being and integration into the formal labor market.

8.1 Key Results Summary

- **Preferred Estimate**: 5.07 percentage points (SE = 0.0141)
- **95% Confidence Interval**: [2.30%, 7.84%]
- **Sample Size**: 17,382
- **Statistical Significance**: p = 0.0003

9 Appendix: Analytical Choices

9.1 Key Decisions

1. **Estimator Choice**: I primarily used OLS (linear probability model) for ease of interpretation, with robustness checks using probit and logit models.

2. **Standard Error Calculation**: Heteroskedasticity-robust (HC1) standard errors were used as the baseline, with state-clustered standard errors for robustness.

3. **Fixed Effects**: The preferred specification includes both state and year fixed effects to control for time-invariant state characteristics and common time shocks.

4. **Control Variables**: Demographic controls (education, sex, marital status, number of children, family size) were included to improve precision and account for observable differences between groups.

5. **Sample**: The full provided sample was used without additional restrictions, as specified in the instructions.

6. **Weights**: Both weighted and unweighted specifications were estimated; the preferred specification uses unweighted OLS with robust standard errors.

9.2 Variables Used

- **Outcome**: FT (full-time employment indicator)
- **Treatment**: ELIGIBLE, AFTER, ELIGIBLE×AFTER
- **Controls**: EDUC_RECODE, SEX, MARST, NCHILD, FAMSIZE
- **Fixed Effects**: STATEFIP, YEAR
- **Weights**: PERWT

10 Appendix: Complete Regression Output

10.1 Model 1: Basic DID

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                            OLS Regression Results
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Dep. Variable:	FT	R-squared:	0.002
Method:	Least Squares	Adj. R-squared:	0.001
No. Observations:	17382	F-statistic:	8.908
Covariance Type:	HC1	Prob (F-statistic):	6.79e-06

	coef	std err	z	P>|z|	[0.025	0.975]
const	0.6697	0.008	81.715	0.000	0.654	0.686
ELIGIBLE	-0.0434	0.010	-4.237	0.000	-0.063	-0.023
AFTER	-0.0248	0.012	-2.016	0.044	-0.049	-0.001
ELIGIBLE_AFTER	0.0643	0.015	4.213	0.000	0.034	0.094

10.2 Model 4: Preferred Specification (State/Year FE + Controls)

Sample Size: 17382
R-squared: 0.1385
Adj R-squared: 0.1352

Key Coefficients:
ELIGIBLE: -0.0413 (SE: 0.0097, p=0.0000)
ELIGIBLE_AFTER: 0.0507 (SE: 0.0141, p=0.0003)
EDUC_HS: 0.2276 (SE: 0.1271, p=0.0734)
EDUC_SOMECOL: 0.2694 (SE: 0.1273, p=0.0344)
EDUC_2YR: 0.2780 (SE: 0.1279, p=0.0298)
EDUC_BA: 0.3099 (SE: 0.1278, p=0.0153)
FEMALE: -0.3341 (SE: 0.0070, p=0.0000)
MARRIED: -0.0165 (SE: 0.0075, p=0.0272)
NCHILD: -0.0033 (SE: 0.0032, p=0.2942)
FAMSIZE: -0.0112 (SE: 0.0018, p=0.0000)

DID Estimate (ELIGIBLE_AFTER coefficient): 0.0507
Standard Error: 0.0141
95% CI: 0.023 to 0.0784

11 References

Note: This replication study did not consult external literature in order to maintain independence. The methodology follows standard difference-in-differences practices as described in econometrics textbooks.