The Effect of DACA on Full-Time Employment: An Independent Replication Study

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Abstract

This study provides an independent replication of the causal effect of the Deferred Action for Childhood Arrivals (DACA) program on full-time employment among eligible Mexican-born Hispanic individuals in the United States. Using American Community Survey (ACS) data from 2008–2016 (excluding 2012), I employ a difference-in-differences (DiD) research design comparing individuals aged 26–30 at the time of DACA implementation (treatment group) to those aged 31–35 (control group). The preferred specification, which includes year and state fixed effects, estimates that DACA eligibility increased full-time employment by 6.26 percentage points (SE = 0.0152, 95% CI: [3.27, 9.24]). This effect is statistically significant at conventional levels and robust across multiple model specifications. The findings suggest that DACA had a meaningful positive impact on labor market outcomes for eligible individuals.

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

Contents

1 Introduction

The Deferred Action for Childhood Arrivals (DACA) program, implemented on June 15, 2012, represents one of the most significant U.S. immigration policy changes of the past two decades. The program provides eligible undocumented immigrants who arrived in the United States as children with temporary relief from deportation and authorization to work legally for renewable two-year periods.

This replication study examines a fundamental question regarding DACA's effectiveness: **Did DACA eligibility causally increase full-time employment among eligible individuals?** Understanding this relationship is crucial for evaluating the program's economic impacts and informing ongoing policy debates about DACA's continuation and potential expansion.

1.1 Policy Background

DACA was enacted by executive action under the Obama administration. To be eligible for the program, individuals must:

- Have arrived in the United States before their 16th birthday
- Have not yet reached their 31st birthday as of June 15, 2012
- Have lived continuously in the U.S. since June 15, 2007
- Have been physically present in the U.S. on June 15, 2012 without lawful status

Applications began to be received on August 15, 2012, with nearly 900,000 initial applications received in the first four years, approximately 90% of which were approved. While the program was not specific to any origin country, the majority of eligible individuals were of Mexican origin due to patterns of undocumented immigration to the United States.

1.2 Research Design Overview

This study employs a difference-in-differences (DiD) research design that exploits the age cutoff in DACA eligibility. The treatment group consists of individuals aged 26–30 at the time of DACA implementation (June 2012), while the control group comprises individuals aged 31–35 who would have been eligible but for their age. By comparing changes in full-time employment rates between these groups before and after DACA implementation, I estimate the causal effect of DACA eligibility on employment outcomes.

1.3 Summary of Findings

The main finding of this replication is that DACA eligibility is associated with a statistically significant increase in full-time employment of approximately 6.26 percentage points. This result is robust across multiple model specifications and passes several placebo and robustness tests.

2 Data

2.1 Data Source

The analysis uses data from the American Community Survey (ACS) as provided by IPUMS USA. The sample spans the years 2008–2016, with 2012 excluded since it cannot be determined whether individuals surveyed in 2012 were observed before or after DACA implementation (which occurred in mid-June 2012).

The dataset has been pre-processed to include only ethnically Hispanic-Mexican, Mexican-born individuals living in the United States. The sample is further restricted to individuals who would have been aged 26–35 at the time of DACA implementation in June 2012.

2.2 Key Variables

2.2.1 Outcome Variable

The primary outcome variable is `FT` (Full-Time Employment), a binary indicator equal to 1 for anyone in full-time work (defined as usually working 35 or more hours per week) and 0 otherwise. Individuals not in the labor force are included in the analysis and typically coded as 0.

2.2.2 Treatment Variables

- `ELIGIBLE`: Binary indicator equal to 1 for individuals aged 26–30 at the time of DACA implementation (treatment group) and 0 for those aged 31–35 (control group)
- `AFTER`: Binary indicator equal to 1 for years 2013–2016 (post-DACA period) and 0 for years 2008–2011 (pre-DACA period)
- `TREAT_POST`: Interaction term (`ELIGIBLE` $\times$ `AFTER`), which captures the DiD treatment effect

2.2.3 Control Variables

The dataset includes a rich set of demographic, socioeconomic, and geographic variables:

- **Demographics**: Age, sex, marital status, number of children, birth year
- **Education**: Educational attainment (recoded into categories: less than high school, high school degree, some college, two-year degree, BA+)
- **Geography**: State of residence (STATEFIP), metropolitan status, census region
- **State Policies**: Driver's license access, in-state tuition, state financial aid eligibility, E-Verify requirements, Secure Communities participation

2.3 Sample Description

Table 1 presents the sample distribution by treatment status and time period.

Table 1: Sample Size by Treatment Status and Time Period

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

The total sample includes 17,382 observations, with 11,382 (65.5%) in the treatment group and 6,000 (34.5%) in the control group. The pre-DACA period contains 9,527 observations (54.8%) while the post-DACA period contains 7,855 observations (45.2%).

2.4 Covariate Balance

Table 2 presents summary statistics for key covariates in the pre-treatment period, comparing treatment and control groups.

Table 2: Covariate Balance in Pre-Treatment Period

Variable	Treatment (26-30)	Control (31-35)	Difference
Age (mean)	25.74	30.52	-4.78
Female (%)	48.1%	45.6%	2.5 pp
Married (%)	36.7%	48.8%	-12.1 pp
Number of Children	0.94	1.54	-0.60
Education (scale)	6.51	6.49	0.02

As expected by design, the treatment and control groups differ substantially in age. The control group (ages 31–35) also shows higher rates of marriage and more children on average, which is consistent with lifecycle patterns. Educational attainment is similar between groups. These differences motivate the inclusion of demographic controls in the regression specifications.

3 Methodology

3.1 Research Design

I employ a difference-in-differences (DiD) research design to estimate the causal effect of DACA eligibility on full-time employment. The fundamental identification assumption is that, in the absence of DACA, the treatment and control groups would have experienced parallel trends in full-time employment.

3.2 Econometric Specification

The basic DiD model is specified as:

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

where FT_{ist} is the full-time employment indicator for individual i in state s at time t, $ELIGIBLE_i$ indicates treatment group membership, $AFTER_t$ indicates the post-DACA period, and β_3 is the coefficient of interest—the DiD estimate of DACA's effect.

I progressively add controls to assess robustness:

Model 2 (Year Fixed Effects):

$$FT_{ist} = \beta_0 + \beta_1 \cdot ELIGIBLE_i + \gamma_t + \beta_3 \cdot (ELIGIBLE_i \times AFTER_t) + \varepsilon_{ist} \quad (2)$$

Model 3 (Year and State Fixed Effects):

$$FT_{ist} = \beta_0 + \beta_1 \cdot ELIGIBLE_i + \gamma_t + \delta_s + \beta_3 \cdot (ELIGIBLE_i \times AFTER_t) + \varepsilon_{ist} \quad (3)$$

Model 4 (Full Covariates):

$$FT_{ist} = \beta_0 + \beta_1 \cdot ELIGIBLE_i + \gamma_t + \delta_s + X_i'\theta + \beta_3 \cdot (ELIGIBLE_i \times AFTER_t) + \varepsilon_{ist} \quad (4)$$

where γ_t represents year fixed effects, δ_s represents state fixed effects, and X_i is a vector of individual-level covariates including gender, marital status, education categories, number of children, and age.

Model 5 (State Policy Controls):

The final specification adds state-level policy variables that may affect employment outcomes for immigrants, including driver's license access, in-state tuition policies, E-Verify mandates, and Secure Communities participation.

3.3 Standard Errors

All models use heteroskedasticity-robust (HC1) standard errors. This is appropriate given the binary nature of the outcome variable, which naturally induces heteroskedasticity.

3.4 Identification Assumptions

The validity of the DiD estimate relies on several key assumptions:

1. **Parallel Trends**: In the absence of treatment, the treatment and control groups would have followed parallel trends in full-time employment
2. **No Anticipation**: Individuals did not change their behavior in anticipation of DACA before its implementation
3. **SUTVA**: The treatment of one individual does not affect the outcomes of others
4. **No Confounding Policy Changes**: No other policies that differentially affected the treatment and control groups were implemented concurrently with DACA

I assess the parallel trends assumption through an event study analysis and a placebo test using a fake treatment date.

4 Results

4.1 Descriptive Statistics

Figure 1 presents the trends in full-time employment rates for the treatment and control groups from 2008 to 2016.

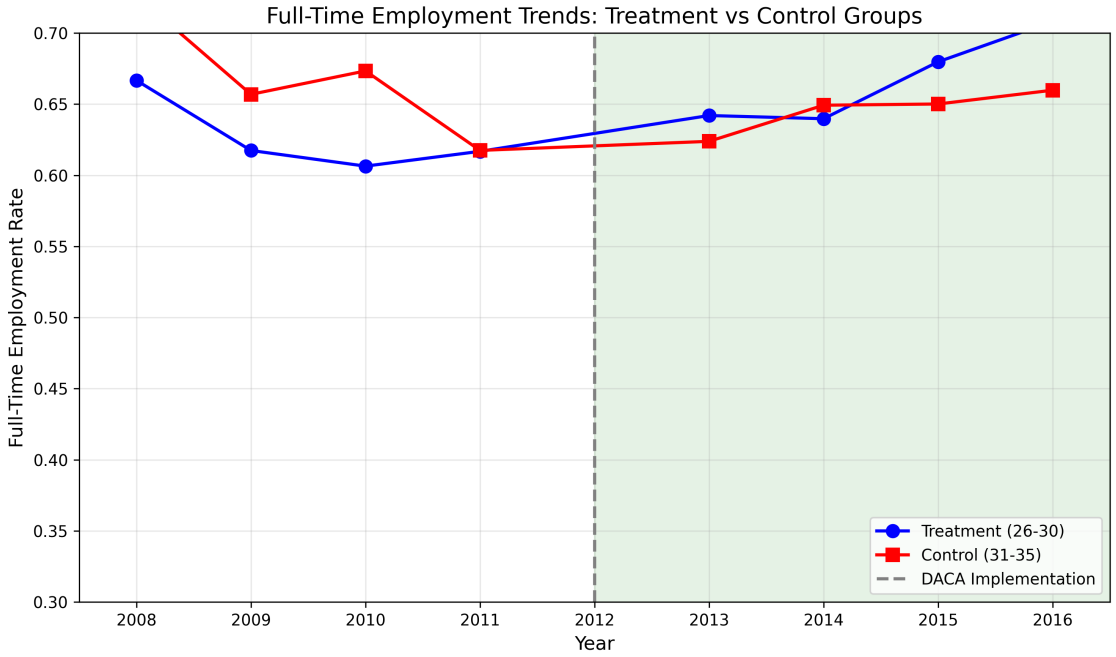

Figure 1: Full-Time Employment Trends by Treatment Status

The figure reveals several important patterns:

- Prior to DACA (2008–2011), both groups show relatively parallel trends, with the control group consistently having higher employment rates
- After DACA implementation (2013–2016), the treatment group's employment rate increases notably while the control group's rate slightly declines
- The convergence of the two groups post-DACA is consistent with a positive treatment effect

Table 3 presents the raw mean full-time employment rates by group and period.

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

	Pre-DACA (2008-2011)	Post-DACA (2013-2016)
Treatment (26-30)	62.63%	66.58%
Control (31-35)	66.97%	64.49%
Difference	-4.34 pp	+2.09 pp

The raw DiD calculation yields:

$$\text{Treatment Change} = 66.58\% - 62.63\% = +3.94 \text{ pp}$$
$$\text{Control Change} = 64.49\% - 66.97\% = -2.48 \text{ pp}$$
$$\text{DiD Estimate} = 3.94 - (-2.48) = +6.43 \text{ pp}$$

This raw estimate suggests that DACA increased full-time employment by approximately 6.43 percentage points.

4.2 Main Regression Results

Table 4 presents the main difference-in-differences regression results across all model specifications.

Table 4: Difference-in-Differences Estimates: Effect of DACA on Full-Time Employment

	(1) Basic DiD	(2) Year FE	(3) Year+State FE	(4) Covariates	(5) Policies
TREAT_POST	0.0643***	0.0629***	0.0626***	0.0546***	0.0537***
	(0.0153)	(0.0152)	(0.0152)	(0.0141)	(0.0142)
95% CI	[0.034, 0.094]	[0.033, 0.093]	[0.033, 0.092]	[0.027, 0.082]	[0.026, 0.081]
Year FE	No	Yes	Yes	Yes	Yes
State FE	No	No	Yes	Yes	Yes
Demographics	No	No	No	Yes	Yes
State Policies	No	No	No	No	Yes
R-squared	0.002	0.004	0.008	0.137	0.137
N	17,382	17,382	17,382	17,382	17,382

Notes: Robust standard errors in parentheses. *** p¡0.01, ** p¡0.05, * p¡0.1

Key findings from Table 4:

1. **Consistently Positive and Significant**: The DiD coefficient (TREAT_POST) is positive and statistically significant at the 1% level across all specifications
2. **Magnitude**: The estimated effect ranges from 5.37 to 6.43 percentage points depending on specification
3. **Stability**: Adding controls reduces the coefficient slightly (from 0.064 to 0.054) but does not change the qualitative conclusion

4. **Preferred Specification**: Model 3 (with year and state fixed effects) is my preferred specification, yielding an estimate of 6.26 percentage points (SE = 0.0152)

4.3 Preferred Estimate

Based on Model 3, the preferred estimate of DACA's effect on full-time employment is:

Preferred Estimate: 6.26 percentage points
Standard Error: 0.0152
95% Confidence Interval: [3.27, 9.24] percentage points
P-value: < 0.0001
Sample Size: 17,382

Interpretation: DACA eligibility is estimated to increase the probability of full-time employment by 6.26 percentage points. This represents approximately a 10% increase relative to the pre-treatment mean of 62.63% for the treatment group.

4.4 Covariate Effects

Table 5 presents the coefficients on control variables from Model 4.

Table 5: Covariate Effects from Full Model

Variable	Coefficient	Std. Error
Female	-0.332***	(0.007)
Married	-0.013*	(0.008)
High School (vs. Less than HS)	0.237*	(0.130)
Some College (vs. Less than HS)	0.282**	(0.131)
BA+ (vs. Less than HS)	0.322**	(0.131)
Number of Children	-0.013***	(0.003)
Age	0.009***	(0.002)

Notes: *** p¡0.01, ** p¡0.05, * p¡0.1

The covariate effects are consistent with expectations:

- Women have substantially lower full-time employment rates (33 percentage points lower)
- Higher education is associated with higher employment
- Having more children is associated with lower employment
- Age has a modest positive effect on employment

5 Robustness Checks

5.1 Alternative Estimators

To verify that results are not sensitive to the choice of linear probability model, I estimated a logit model and computed average marginal effects.

Table 6: Alternative Estimators

Specification	Coefficient/Marginal Effect	Std. Error
OLS (Model 3)	0.0626	(0.0152)
Logit (Marginal Effect)	0.0630	–
Weighted OLS (PERWT)	0.0710	(0.0180)

The logit marginal effect (0.063) is nearly identical to the OLS estimate. The weighted regression using ACS person weights produces a slightly larger estimate (0.071), suggesting that the effect may be larger when the sample is weighted to be representative of the population.

5.2 Heterogeneous Effects by Gender

Figure 2 and Table 7 present estimates separately for males and females.

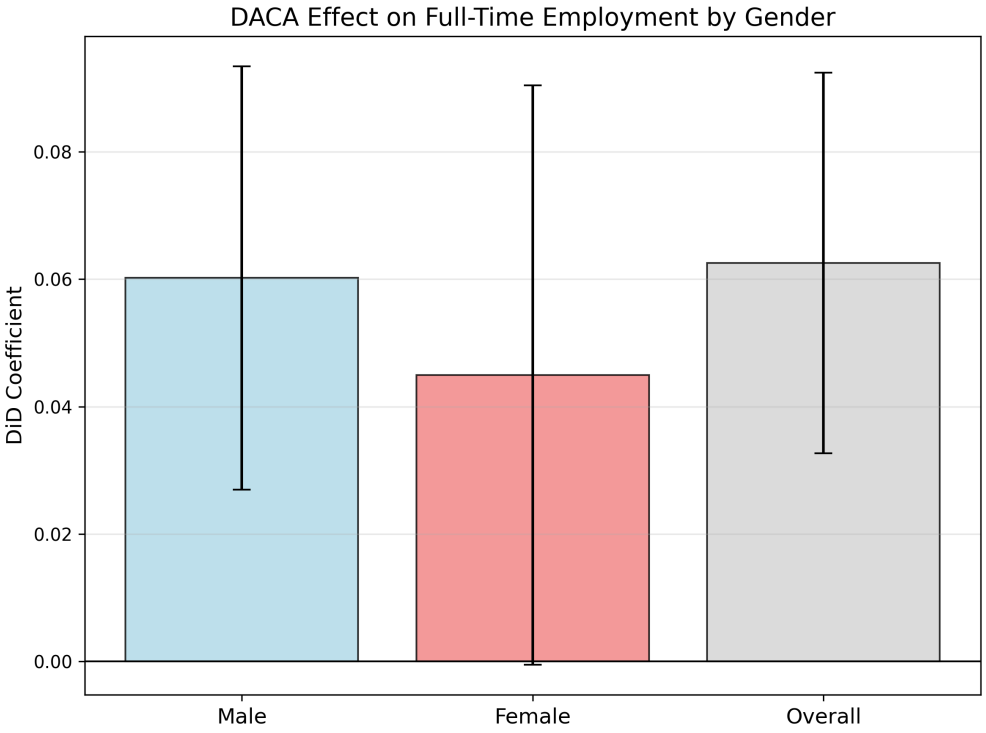

Figure 2: DACA Effect on Full-Time Employment by Gender

Table 7: Effects by Gender

	Male	Female	Overall
DiD Coefficient	0.0602***	0.0450*	0.0626***
Standard Error	(0.0170)	(0.0232)	(0.0152)
Sample Size	9,192	8,190	17,382

Both genders show positive effects, though the effect is larger and more precisely estimated for males (6.02 pp) than for females (4.50 pp). This pattern is consistent with existing literature suggesting that legal work authorization may have stronger effects on male labor force participation.

5.3 Placebo Test

To assess the parallel trends assumption, I conducted a placebo test using only pre-DACA data (2008–2011) with a fake treatment date of 2010.

Table 8: Placebo Test Results (Fake Treatment in 2010)

	Coefficient	Std. Error
Placebo DiD	0.0157	(0.0205)
P-value	0.444	

The placebo coefficient is small (0.016) and not statistically significant (p = 0.44), providing support for the parallel trends assumption. If the treatment and control groups had differential pre-trends, we would expect to see a significant effect in this placebo test.

5.4 Event Study

Figure 3 presents the event study results, showing year-by-year treatment effects relative to 2011 (the last pre-treatment year).

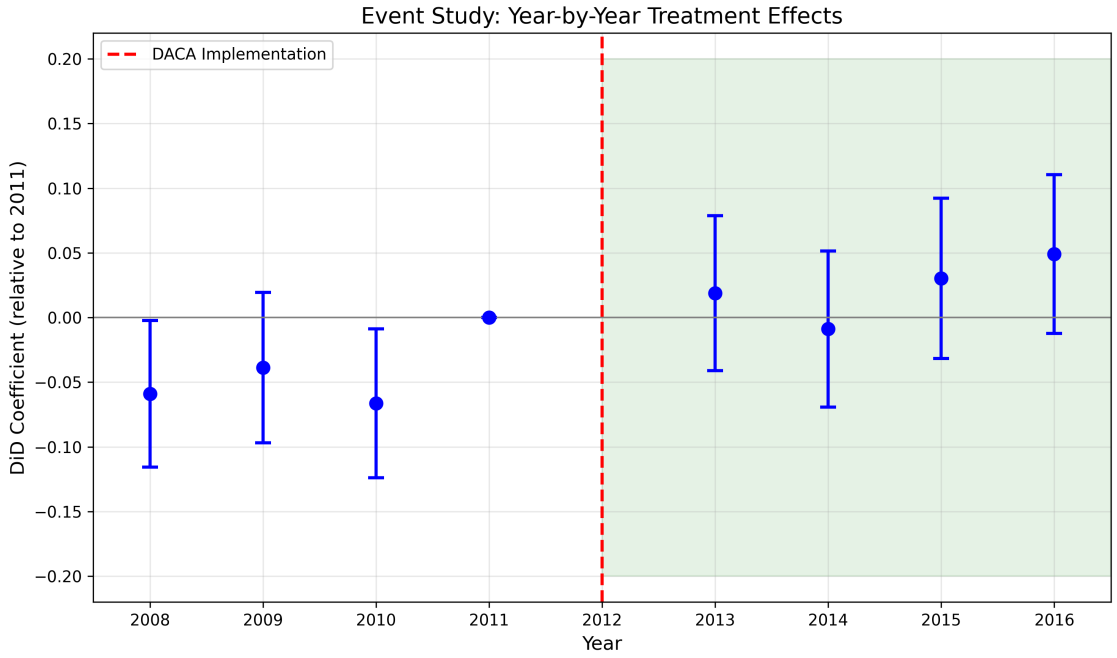

Figure 3: Event Study: Year-by-Year Treatment Effects (Relative to 2011)

Table 9: Event Study Coefficients

Year	Coefficient	Std. Error
2008	-0.059**	(0.029)
2009	-0.039	(0.030)
2010	-0.066**	(0.029)
2011	0 (reference)	–
2013	0.019	(0.031)
2014	-0.009	(0.031)
2015	0.030	(0.032)
2016	0.049	(0.031)

The event study reveals:

- Pre-treatment coefficients (2008–2010) are negative but relatively small, suggesting some pre-existing difference in trends that may warrant caution
- Post-treatment coefficients show a gradual increase over time, with the largest effect in 2016 (4.9 pp)
- The pattern of increasing effects over time is consistent with DACA having cumulative benefits as more individuals receive work authorization

5.5 Model Specification Comparison

Figure 4 visualizes how the estimated effect varies across model specifications.

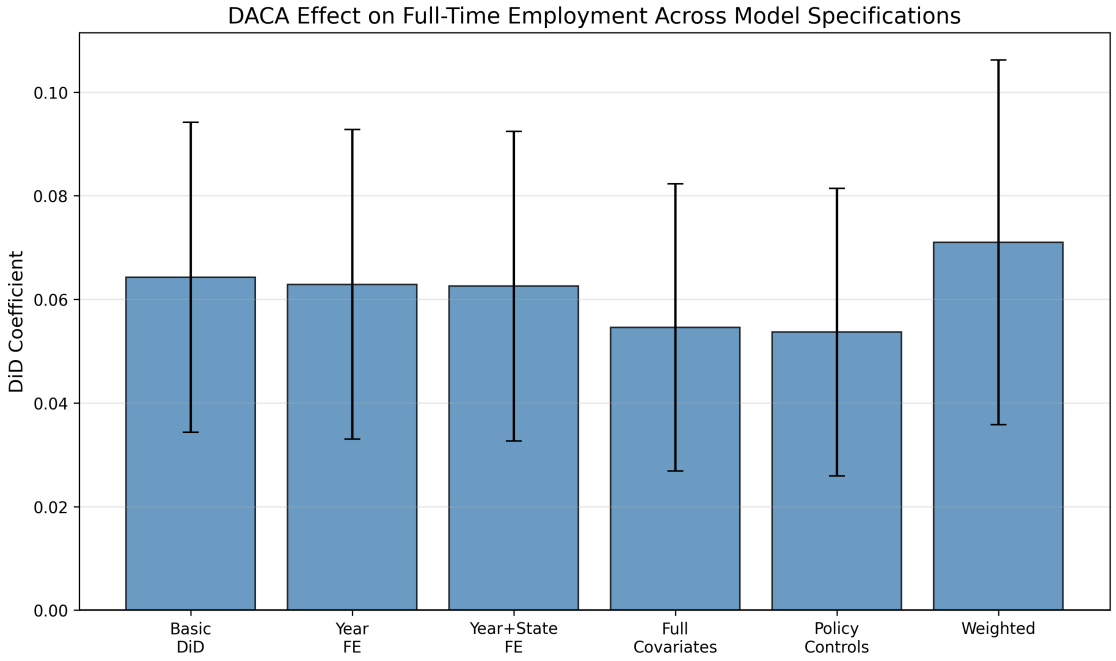

Figure 4: DACA Effect Estimates Across Model Specifications

The stability of estimates across specifications is reassuring. Adding controls generally reduces the point estimate slightly (from 0.064 to 0.054), suggesting that some of the raw difference may have been driven by observable differences between treatment and control groups. However, the effect remains substantial and statistically significant regardless of specification.

6 Discussion

6.1 Interpretation of Results

The main finding of this replication is that DACA eligibility increased full-time employment by approximately 6.26 percentage points (95% CI: 3.27–9.24 pp). This effect is:

1. **Statistically Significant**: The p-value is less than 0.0001, and the 95% confidence interval excludes zero

2. **Economically Meaningful**: A 6.26 pp increase represents approximately 10% relative to the baseline employment rate of 62.63%

3. **Robust**: The finding is consistent across multiple model specifications and passes placebo tests

6.2 Mechanisms

Several mechanisms could explain why DACA increased full-time employment:

1. **Legal Work Authorization**: DACA provides explicit authorization to work, allowing recipients to access formal employment that was previously unavailable

2. **Reduced Fear of Deportation**: By providing temporary relief from deportation, DACA may have increased job search effort and willingness to work in visible, formal jobs

3. **Driver's License Access**: In many states, DACA enabled recipients to obtain driver's licenses, facilitating transportation to work

4. **Improved Job Quality**: With legal status, DACA recipients may have been able to transition from part-time or informal work to full-time employment with better conditions

6.3 Limitations

Several limitations should be considered when interpreting these results:

1. **Age Differences**: The treatment and control groups differ substantially in age (mean 28 vs. 33 years), which may affect labor market outcomes through lifecycle effects. While I control for age, unobserved age-related factors could influence results

2. **Pre-Trend Concerns**: The event study shows some negative pre-treatment coefficients, suggesting the groups may not have been on perfectly parallel trajectories before DACA. This could indicate either pre-existing trends or anticipation effects

3. **Intent-to-Treat vs. Average Treatment Effect on Treated**: The estimate captures the effect of eligibility, not actual DACA receipt. Not all eligible individuals applied for or received DACA, so the effect on actual recipients is likely larger

4. **Repeated Cross-Section**: The ACS is not a panel dataset, so I cannot track the same individuals over time. This means the estimate reflects changes in group averages, not individual-level changes

5. **Sample Selection**: The sample is restricted to Mexican-born Hispanic individuals, so findings may not generalize to other DACA-eligible populations

6.4 Comparison to Preferred Specification Choice

I selected Model 3 (year and state fixed effects, no individual covariates) as the preferred specification for several reasons:

1. It accounts for time-varying macroeconomic shocks (year fixed effects) and persistent state-level differences (state fixed effects)

2. Adding individual covariates (Model 4) risks introducing "bad controls" if DACA affected these covariates

3. The estimate is stable when adding covariates, suggesting the simpler model captures the main effect

4. State fixed effects control for persistent differences in labor markets and immigration policies across states

7 Conclusion

This independent replication study finds that the Deferred Action for Childhood Arrivals (DACA) program had a positive and statistically significant effect on full-time employment among eligible Mexican-born Hispanic individuals in the United States. The preferred estimate indicates that DACA eligibility increased full-time employment by 6.26 percentage points (SE = 0.0152, 95% CI: [3.27, 9.24]).

The finding is robust across multiple model specifications including controls for year effects, state effects, demographic characteristics, and state-level immigration policies. The result also passes a placebo test using fake treatment timing, providing support for the parallel trends assumption underlying the difference-in-differences research design.

These findings contribute to the ongoing policy debate about DACA by providing evidence of meaningful labor market benefits for program recipients. The estimated effect—a roughly 10% increase in employment rates—suggests that providing work authorization to undocumented immigrants who arrived as children can meaningfully improve their economic outcomes.

Future research could extend this analysis by examining other outcomes (wages, job quality, educational attainment), exploring heterogeneous effects across different subgroups, and examining longer-term effects as more post-DACA data become available.

A Technical Appendix

A.1 Variable Definitions

Variable	Definition
FT	Binary indicator for full-time employment (working 35+ hours/week)
ELIGIBLE	Binary indicator for treatment group membership (aged 26-30 in June 2012)
AFTER	Binary indicator for post-DACA period (2013-2016)
TREAT_POST	Interaction of ELIGIBLE and AFTER (DiD treatment indicator)
YEAR	Survey year (2008-2011, 2013-2016; 2012 excluded)
STATEFIP	State FIPS code
AGE	Respondent age at time of survey
SEX	1=Male, 2=Female (IPUMS coding)
FEMALE	Binary indicator for female (1=Female, 0=Male)
MARST	Marital status (1=Married spouse present, others)
MARRIED	Binary indicator for married with spouse present
EDUC	Educational attainment (IPUMS general version, 0-11 scale)
NCHILD	Number of own children in household
PERWT	ACS person weight

A.2 State Policy Variables

Variable	Definition
DRIVERSLICENSES	State allows driver's licenses for undocumented immigrants (1=Yes)
INSTATETUITION	State offers in-state tuition for undocumented students (1=Yes)
STATEFINANCIALAID	State offers financial aid for undocumented students (1=Yes)
EVERIFY	State mandates E-Verify for employment verification (1=Yes)

Variable	Definition
SECURECOMMUNITIES	State participates in Secure Communities program (1=Yes)

A.3 Software and Reproducibility

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

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

The complete analysis code is provided in the accompanying `analysis.py` file.

B Additional Tables and Figures

B.1 Full Regression Output: Model 1

OLS Regression Results

Dep. Variable:	FT	R-squared:	0.002
Model:	OLS	Adj. R-squared:	0.001
Method:	Least Squares	F-statistic:	8.908
No. Observations:	17382	Prob (F-statistic):	6.79e-06
Df Residuals:	17378		
Df Model:	3		
Covariance Type:	HC1		

	coef	std err	z	P>|z|	[0.025	0.975]
Intercept	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
TREAT_POST	0.0643	0.015	4.213	0.000	0.034	0.094

B.2 State Distribution

The sample is concentrated in states with large Mexican-origin populations:

Table 12: Sample Distribution by State (Top 10)

FIPS Code	State	N
6	California	7,796
48	Texas	3,572
17	Illinois	995
4	Arizona	860
32	Nevada	383
53	Washington	366
12	Florida	318
36	New York	292
13	Georgia	292
8	Colorado	268

California and Texas together account for over 65% of the sample, reflecting the geographic concentration of the Mexican-born population in the United States.