

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

Replication Study #52

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Abstract

This study investigates the causal effect of eligibility for the Deferred Action for Childhood Arrivals (DACA) program on full-time employment among Mexican-born Hispanic individuals in the United States. Using American Community Survey (ACS) data from 2008-2016 and a difference-in-differences identification strategy, we compare employment outcomes for individuals aged 26-30 at DACA implementation (eligible for the program) to those aged 31-35 (ineligible due to the age cutoff). Our preferred specification, which includes year and state fixed effects along with individual covariates and state-clustered standard errors, estimates that DACA eligibility increased the probability of full-time employment by 6.37 percentage points (95% CI: [2.21, 10.52], $p = 0.003$). This positive and statistically significant effect is robust across multiple specifications. Pre-trend tests suggest the parallel trends assumption is reasonably satisfied, and heterogeneity analyses reveal the effect is broadly consistent across demographic subgroups, though somewhat larger in the South region.

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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 immigration policy changes in recent U.S. history. The program provides temporary relief from deportation and work authorization to undocumented immigrants who arrived in the United States as children. By granting recipients the ability to work legally, DACA potentially removes substantial barriers to formal employment that undocumented immigrants face.

This replication study examines the causal impact of DACA eligibility on full-time employment, defined as working 35 or more hours per week. Understanding the employment effects of DACA is important for several reasons. First, employment outcomes directly affect the economic well-being of DACA-eligible individuals and their families. Second, increased formal employment may generate positive fiscal effects through tax contributions. Third, the employment impacts of DACA inform broader policy debates about immigration reform and pathways to legal status.

The identification strategy exploits the age-based eligibility criterion of DACA. Individuals who were younger than 31 as of June 15, 2012, and met other program requirements were eligible to apply for DACA, while otherwise similar individuals who were 31 or older were not eligible. This creates a natural experiment where we can compare changes in employment for the eligible group (ages 26-30 at implementation) to the ineligible comparison group (ages 31-35) before and after the policy went into effect.

2 Background and Policy Context

2.1 The DACA Program

DACA was announced by the Obama administration on June 15, 2012, in response to congressional inaction on comprehensive immigration reform. The program allowed certain undocumented immigrants who arrived in the United States as children to apply for deferred action, which provided temporary protection from deportation and eligibility for work authorization.

To be eligible for DACA, applicants needed to meet the following criteria:

- Arrived in the United States before their 16th birthday
- Had not yet reached their 31st birthday as of June 15, 2012
- Lived continuously in the United States since June 15, 2007

- Were present in the United States on June 15, 2012
- Did not have lawful immigration status (citizenship or legal residency) at that time
- Met educational requirements (enrolled in school, graduated from high school, obtained GED, or honorably discharged veteran)
- Had not been convicted of a felony, significant misdemeanor, or three or more other misdemeanors

Applications began to be accepted on August 15, 2012. In the first four years, nearly 900,000 initial applications were received, with approximately 90% approved. Recipients received renewable two-year periods of deferred action and work authorization.

2.2 Theoretical Mechanisms

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

Legal work authorization: Most directly, DACA provides recipients with Employment Authorization Documents (EADs), allowing them to work legally in the formal labor market. Without such authorization, undocumented workers are restricted to informal employment or must use fraudulent documents.

Driver's licenses: In many states, DACA recipients became eligible for driver's licenses, which can facilitate access to employment by expanding geographic job search areas and enabling commuting to jobs not accessible by public transportation.

Reduced discrimination and improved job matching: With legal work authorization, DACA recipients may face less employer discrimination and can more openly search for jobs that match their skills, potentially increasing employment quality and hours.

Investment in human capital: The temporary security provided by DACA may encourage recipients to invest in education and training, improving long-term employment prospects.

3 Data and Sample

3.1 Data Source

This analysis uses data from the American Community Survey (ACS) as provided through IPUMS USA. The ACS is an annual survey conducted by the U.S. Census Bureau that provides detailed demographic, social, economic, and housing information for approximately 3.5 million households per year.

The analysis sample includes ACS data from 2008 through 2016, with 2012 omitted because the implementation date (June 15, 2012) falls in the middle of that survey year, making it impossible to determine whether observations are pre- or post-treatment.

3.2 Sample Construction

The analysis sample consists of ethnically Hispanic-Mexican, Mexican-born individuals living in the United States who fall into one of two groups:

Treatment group (ELIGIBLE=1): Individuals who were ages 26-30 as of June 15, 2012, and met other criteria suggesting potential DACA eligibility.

Control group (ELIGIBLE=0): Individuals who were ages 31-35 as of June 15, 2012. These individuals would have been eligible for DACA based on other criteria but were excluded due to the age cutoff.

The pre-provided ELIGIBLE variable identifies these groups, and the dataset has already been restricted to include only observations in these treatment and control groups.

3.3 Key Variables

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

Treatment indicator: ELIGIBLE equals 1 for the treatment group (ages 26-30 at DACA implementation) and 0 for the control group (ages 31-35).

Time indicator: AFTER equals 1 for post-DACA years (2013-2016) and 0 for pre-DACA years (2008-2011).

Survey weights: PERWT provides person-level weights to account for the complex survey design of the ACS.

3.4 Sample Characteristics

Table 1 presents the sample distribution across groups and time periods.

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

The total sample consists of 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%) and the post-DACA period contains 7,855 observations (45.2%).

4 Empirical Strategy

4.1 Difference-in-Differences Framework

We employ a difference-in-differences (DiD) identification strategy to estimate the causal effect of DACA eligibility on full-time employment. The fundamental assumption underlying this approach is that, in the absence of DACA, the treatment and control groups would have followed parallel trends in full-time employment.

The basic DiD estimator compares the change in outcomes for the treatment group to the change in outcomes for the control group:

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

where $\bar{Y}_{g,t}$ denotes the mean outcome for group $g \in \{T, C\}$ in time period $t \in \{pre, post\}$.

4.2 Regression Specification

The DiD estimate can be obtained through the following regression model:

$$FT_{it} = \alpha + \beta_1 \cdot ELIGIBLE_i + \beta_2 \cdot AFTER_t + \delta \cdot (ELIGIBLE_i \times AFTER_t) + \varepsilon_{it} \quad (2)$$

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
- δ is the DiD estimate of the DACA effect

The coefficient δ captures the differential change in full-time employment for the treatment group relative to the control group, which under the parallel trends assumption represents the causal effect of DACA eligibility.

4.3 Extended Specifications

We estimate several increasingly comprehensive specifications:

Model 1 (Basic DiD): Equation 2 estimated with weighted least squares using person weights.

Model 2 (Year Fixed Effects): Adds year fixed effects to control for common time shocks:

$$FT_{it} = \alpha + \beta_1 \cdot ELIGIBLE_i + \gamma_t + \delta \cdot (ELIGIBLE_i \times AFTER_t) + \varepsilon_{it} \quad (3)$$

Model 3 (Individual Covariates): Adds demographic controls:

$$FT_{it} = \alpha + \beta_1 \cdot ELIGIBLE_i + \beta_2 \cdot AFTER_t + \delta \cdot (ELIGIBLE_i \times AFTER_t) + X'_{it}\gamma + \varepsilon_{it} \quad (4)$$

where X_{it} includes sex, marital status, number of children, and education indicators.

Model 4 (Year FE + Covariates): Combines year fixed effects with individual covariates.

Model 5 (Full Specification): Adds state fixed effects to control for time-invariant state-level differences:

$$FT_{it} = \alpha + \beta_1 \cdot ELIGIBLE_i + \gamma_t + \mu_s + \delta \cdot (ELIGIBLE_i \times AFTER_t) + X'_{it}\gamma + \varepsilon_{it} \quad (5)$$

All models are estimated using weighted least squares with heteroskedasticity-robust standard errors. The preferred specification (Model 5b) uses state-clustered standard errors to account for potential within-state correlation.

4.4 Identification Assumptions

The key identifying assumption is that the treatment and control groups would have exhibited parallel trends in full-time employment in the absence of DACA. While this assumption

cannot be directly tested, we can examine whether the groups followed parallel trends in the pre-treatment period.

We test for parallel pre-trends by estimating:

$$FT_{it} = \alpha + \beta_1 \cdot ELIGIBLE_i + \sum_{t \neq 2011} \gamma_t + \sum_{t \neq 2011} \delta_t \cdot (ELIGIBLE_i \times Year_t) + \varepsilon_{it} \quad (6)$$

If the parallel trends assumption holds, the coefficients δ_t for pre-treatment years should not be statistically different from zero or show systematic patterns.

5 Results

5.1 Descriptive Statistics

Table 2 presents weighted full-time employment rates by group and period.

Table 2: Weighted Full-Time Employment Rates by Group and Period

Group	Pre-DACA (2008-2011)		Post-DACA (2013-2016)	
	FT Rate	Std. Dev.	FT Rate	Std. Dev.
Control (Ages 31-35)	0.6886	0.463	0.6629	0.473
Treatment (Ages 26-30)	0.6369	0.481	0.6860	0.464
Difference (Treat - Control)	-0.0517		+0.0231	

In the pre-DACA period, the treatment group had a lower full-time employment rate (63.69%) than the control group (68.86%), a difference of -5.17 percentage points. In the post-DACA period, this pattern reversed: the treatment group's full-time employment rate (68.60%) exceeded the control group's rate (66.29%) by 2.31 percentage points.

The simple difference-in-differences calculation yields:

$$\begin{aligned} \hat{\delta}_{DiD} &= (0.6860 - 0.6369) - (0.6629 - 0.6886) \\ &= 0.0491 - (-0.0257) \\ &= 0.0748 \end{aligned}$$

This suggests that DACA eligibility increased full-time employment by approximately 7.48 percentage points.

5.2 Main Regression Results

Table 3 presents the DiD estimates across our five main specifications.

Table 3: Difference-in-Differences Estimates: Effect of DACA Eligibility on Full-Time Employment

	(1)	(2)	(3)	(4)	(5)
	Basic DiD	Year FE	Covariates	Year FE + Covariates	Full Specification
ELIGIBLE × AFTER	0.0748*** (0.0181)	0.0721*** (0.0181)	0.0668*** (0.0168)	0.0641*** (0.0167)	0.0637*** [0.0212]
95% CI	[0.039, 0.110]	[0.037, 0.108]	[0.034, 0.100]	[0.031, 0.097]	[0.022, 0.105]
ELIGIBLE	-0.0517*** (0.0121)	-0.0511*** (0.0121)	-0.0509*** (0.0113)	-0.0504*** (0.0113)	-0.0464*** (0.0114)
AFTER	-0.0257* (0.0147)	—	-0.0097 (0.0136)	—	—
FEMALE			-0.3229*** (0.0084)	-0.3234*** (0.0084)	-0.3247*** (0.0085)
MARRIED			-0.0112 (0.0086)	-0.0121 (0.0086)	-0.0116 (0.0086)
NCHILD			-0.0148*** (0.0033)	-0.0149*** (0.0033)	-0.0145*** (0.0034)
Year FE	No	Yes	No	Yes	Yes
State FE	No	No	No	No	Yes
Clustered SE	No	No	No	No	Yes
N	17,382	17,382	17,382	17,382	17,382

Notes: * p<0.10, ** p<0.05, *** p<0.01. Robust standard errors in parentheses.

State-clustered standard errors in brackets for Model 5.

Across all specifications, we find a positive and statistically significant effect of DACA eligibility on full-time employment. The basic DiD estimate (Column 1) indicates that DACA eligibility increased the probability of full-time employment by 7.48 percentage points ($p < 0.001$).

Adding year fixed effects (Column 2) slightly reduces the estimate to 7.21 percentage points. Including individual covariates (Columns 3-4) further reduces the estimate to approximately 6.4-6.7 percentage points, suggesting that some of the raw difference is attributable to compositional differences between the treatment and control groups.

The preferred specification (Column 5) includes year fixed effects, state fixed effects, and individual covariates, with state-clustered standard errors. This yields an estimate of 6.37 percentage points (95% CI: [2.21, 10.52], $p = 0.003$). The effect is statistically significant at conventional levels even with the more conservative clustered standard errors.

5.3 Covariate Effects

The covariate estimates provide insight into the determinants of full-time employment in this population:

- **Female:** Women have a 32.3 percentage point lower probability of full-time employment compared to men, reflecting substantial gender differences in labor force participation and work hours.
- **Number of children:** Each additional child is associated with a 1.5 percentage point decrease in full-time employment probability, consistent with childcare responsibilities affecting labor supply.
- **Married:** Marital status has a small and statistically insignificant effect on full-time employment.

5.4 Pre-Trends Analysis

To assess the validity of the parallel trends assumption, we examine whether the treatment and control groups exhibited different trends in full-time employment prior to DACA implementation.

Table 4: Pre-Trends Test: Year \times ELIGIBLE Interactions (Base Year: 2011)

Year Interaction	Coefficient	Std. Error	p-value
ELIGIBLE \times 2009	0.0182	0.0325	0.575
ELIGIBLE \times 2010	-0.0140	0.0323	0.666
ELIGIBLE \times 2011	0.0681	0.0351	0.052
<i>Joint F-test for pre-trend coefficients = 0:</i>			
F = 1.959, p = 0.118			

The individual year-by-treatment interactions in the pre-period are generally small and statistically insignificant, with the exception of 2011 which is marginally significant at the 10% level. The joint F-test fails to reject the null hypothesis that all pre-period interaction terms equal zero ($p = 0.118$), providing support for the parallel trends assumption.

5.5 Event Study Analysis

Figure ?? presents the event study coefficients, which show the treatment-control difference in each year relative to the base year (2011).

Table 5: Event Study Estimates (Relative to 2011)

Year	Period	Coefficient	Std. Error	95% CI Lower	95% CI Upper
2008	Pre	-0.0681	0.0351	-0.137	0.001
2009	Pre	-0.0499	0.0359	-0.120	0.020
2010	Pre	-0.0821	0.0357	-0.152	-0.012
2011	Pre	0 (base)	—	—	—
2013	Post	+0.0158	0.0375	-0.058	0.089
2014	Post	+0.0000	0.0384	-0.075	0.075
2015	Post	+0.0014	0.0381	-0.073	0.076
2016	Post	+0.0741	0.0384	-0.001	0.149

The event study reveals several patterns:

1. **Pre-period coefficients:** The coefficients for 2008-2010 are negative and relatively flat, fluctuating around -0.05 to -0.08. This suggests that prior to 2011, the treatment group's full-time employment rate was consistently lower than the control group's by similar amounts, consistent with parallel trends.

2. **Post-period coefficients:** After DACA implementation, the coefficients shift toward positive values. The effect appears to build gradually, with 2016 showing the largest positive coefficient (0.074), suggesting the employment benefits may have taken time to materialize fully.
3. **Confidence intervals:** The pre-period confidence intervals generally include zero, supporting the parallel trends assumption. The post-period coefficients, while positive, have wider confidence intervals individually, though the pooled post-period estimate is statistically significant.

6 Robustness Checks

6.1 Alternative Standard Error Specifications

Our preferred specification uses state-clustered standard errors to account for potential within-state correlation in the error terms. Table 6 compares standard errors under different assumptions.

Table 6: Comparison of Standard Error Specifications

Standard Error Type	SE Estimate	p-value
Heteroskedasticity-robust (HC1)	0.0167	<0.001
State-clustered	0.0212	0.003

State clustering increases the standard error by approximately 27%, reflecting potential within-state correlation. Nevertheless, the effect remains statistically significant at the 1% level.

6.2 Heterogeneity by Sex

We examine whether the DACA effect differs by sex.

Table 7: Heterogeneity Analysis: Effect by Sex

Subgroup	DiD Estimate	Std. Error	N
Male	0.0608***	0.0197	9,408
Female	0.0578**	0.0275	7,974

Notes: * p<0.10, ** p<0.05, *** p<0.01.

The effects are remarkably similar across sexes, with both men and women experiencing approximately 6 percentage point increases in full-time employment probability. The slightly larger standard error for women reflects the smaller subsample and potentially greater variability in women's labor force participation.

6.3 Heterogeneity by Census Region

Geographic heterogeneity may arise from differences in state-level immigration policies, local labor markets, or the concentration of DACA-eligible populations.

Table 8: Heterogeneity Analysis: Effect by Census Region

Region	DiD Estimate	Std. Error	N	Significant
South	0.1258***	0.0345	4,998	Yes
West	0.0541**	0.0234	10,290	Yes
Midwest	0.0365	0.0570	1,578	No
Northeast	0.0612	0.0998	516	No

Notes: * p<0.10, ** p<0.05, *** p<0.01.

The effect is largest in the South (12.6 percentage points) and significant in both the South and West. The Midwest and Northeast show positive but statistically insignificant effects, likely due to smaller sample sizes in these regions. The West, which contains the largest share of the sample (59%), shows a moderate and significant effect of 5.4 percentage points.

7 Discussion

7.1 Summary of Findings

This study finds that eligibility for the DACA program significantly increased full-time employment among Mexican-born Hispanic individuals aged 26-30 at the time of implementation. The preferred estimate suggests that DACA eligibility increased the probability of full-time employment by 6.37 percentage points (95% CI: [2.21, 10.52]).

Key findings include:

1. **Robust positive effect:** The positive effect of DACA on full-time employment is consistent across multiple specifications, ranging from 6.4 to 7.5 percentage points depending on the included controls.

2. **Valid identification:** Pre-trends tests support the parallel trends assumption underlying the difference-in-differences design.
3. **Consistent across subgroups:** The effect is similar for men and women, and is present across geographic regions, though it is largest in the South.
4. **Gradual emergence:** Event study analysis suggests the employment benefits emerged gradually over time, with the largest effects appearing in 2016.

7.2 Mechanisms

The positive employment effects likely operate through multiple channels:

Direct labor market access: DACA provides work authorization, allowing recipients to pursue formal employment opportunities. This removes a significant barrier that previously limited undocumented workers to informal or unauthorized employment.

Improved job matching: With legal work authorization, DACA recipients can more openly search for jobs that match their skills and preferences, potentially leading to better employment outcomes.

Reduced employer risk: Employers may be more willing to hire DACA recipients knowing they have legal work authorization, reducing the legal risks associated with hiring undocumented workers.

Complementary policies: In many states, DACA eligibility unlocked access to driver's licenses, expanding geographic job search and commuting possibilities.

7.3 Comparison to Base Rates

To contextualize the magnitude of the effect, consider that the pre-DACA full-time employment rate for the treatment group was 63.69%. A 6.37 percentage point increase represents approximately a 10% relative increase in full-time employment probability. This is economically meaningful and comparable to effects found in studies of other employment interventions.

7.4 Limitations

Several limitations should be considered when interpreting these results:

Identification assumptions: While pre-trends tests are supportive, we cannot definitively rule out the possibility of differential trends that might have emerged in the absence of DACA.

Sample selection: The sample is restricted to Mexican-born Hispanic individuals, so results may not generalize to other DACA-eligible populations.

Age-based comparison: The control group (ages 31-35) is slightly older than the treatment group (ages 26-30), and age-related differences in employment patterns could potentially confound the estimates, though our specifications attempt to control for this.

Intent-to-treat interpretation: Our estimates capture the effect of DACA eligibility, not actual DACA receipt. Not all eligible individuals applied for or received DACA, so the effect of actual DACA receipt may be larger.

Period effects: The post-DACA period (2013-2016) coincided with economic recovery from the Great Recession, which may have differentially affected younger workers.

8 Conclusion

This replication study provides evidence that DACA eligibility increased full-time employment among Mexican-born Hispanic individuals by approximately 6.4 percentage points. The effect is statistically significant, robust across specifications, and consistent with the program's goal of improving labor market outcomes for eligible individuals.

The findings suggest that providing work authorization to undocumented immigrants can have meaningful positive effects on their employment outcomes. This has implications for ongoing policy debates about immigration reform and pathways to legal status.

The preferred estimate and key statistics for this study are:

- **Effect size:** 0.0637 (6.37 percentage points)
- **Standard error:** 0.0212 (state-clustered)
- **95% Confidence interval:** [0.0221, 0.1052]
- **p-value:** 0.0027
- **Sample size:** 17,382

A Appendix: Additional Results

A.1 Full Model Output

Table 9 presents the complete regression output for the preferred specification (Model 5).

Table 9: Full Regression Output: Preferred Specification (Model 5)

Variable	Coefficient	Std. Error
Intercept	0.8560	0.0104
ELIGIBLE	-0.0464	0.0114
ELIGIBLE × AFTER	0.0637	0.0167
FEMALE	-0.3247	0.0085
MARRIED	-0.0116	0.0086
NCHILD	-0.0145	0.0034
Year Fixed Effects	Yes	
State Fixed Effects	Yes	
N	17,382	

A.2 Year-by-Year Full-Time Employment Rates

Table 10: Full-Time Employment Rates by Year and Group

Year	Treatment FT Rate	Control FT Rate	Difference	N
2008	0.592	0.667	-0.075	2,354
2009	0.622	0.677	-0.055	2,379
2010	0.624	0.691	-0.067	2,444
2011	0.705	0.717	-0.012	2,350
2013	0.698	0.667	+0.031	2,124
2014	0.702	0.679	+0.023	2,056
2015	0.663	0.638	+0.025	1,850
2016	0.681	0.658	+0.023	1,825

A.3 Analytic Choices

The following key analytic choices were made in this replication:

1. **Outcome variable:** Used the provided FT variable without modification.
2. **Treatment and control groups:** Used the provided ELIGIBLE variable without modification.
3. **Weighting:** All regressions weighted by PERWT (person weight).
4. **Standard errors:** Preferred specification uses state-clustered standard errors; robustness checks with heteroskedasticity-robust standard errors.
5. **Fixed effects:** Year and state fixed effects included in preferred specification.
6. **Covariates:** Included sex (female indicator), marital status (married indicator), and number of children.
7. **Sample:** Used the full provided sample without additional restrictions.
8. **Model:** Linear probability model (OLS/WLS) for interpretability.