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

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Abstract

This study examines the causal impact of eligibility for the Deferred Action for Childhood Arrivals (DACA) program on full-time employment among Hispanic-Mexican, Mexican-born individuals in the United States. Using American Community Survey data from 2006–2016 and a difference-in-differences research design, I compare employment outcomes between individuals who were ages 26–30 at DACA implementation (treatment group) and those ages 31–35 (control group, who would have been eligible but for their age). The analysis reveals that DACA eligibility is associated with a statistically significant 4.6 percentage point increase in the probability of full-time employment (95% CI: [2.5, 6.7], $p < 0.001$). This effect is robust to alternative specifications, including controls for demographic characteristics, year and state fixed effects, and alternative age bandwidths. Placebo tests confirm the absence of differential pre-trends between treatment and control groups. These findings suggest that DACA's provision of legal work authorization had meaningful positive effects on labor market outcomes for eligible undocumented immigrants.

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1 Introduction

Immigration policy and its effects on labor market outcomes represent a significant area of economic research with important policy implications. The Deferred Action for Childhood Arrivals (DACA) program, implemented on June 15, 2012, provides a unique natural experiment to study the effects of legal work authorization on employment outcomes among undocumented immigrants.

This study addresses the following research question: *Among ethnically Hispanic-Mexican, Mexican-born people living in the United States, what was the causal impact of eligibility for DACA on the probability of full-time employment?* Full-time employment is defined as usually working 35 or more hours per week.

The identification strategy exploits the age-based eligibility cutoff for DACA. Individuals who had not yet reached their 31st birthday as of June 15, 2012, were potentially eligible for the program, while those who had already turned 31 were not eligible regardless of meeting other criteria. This creates a natural comparison group of individuals who are similar in most observable characteristics but differ in their DACA eligibility status.

Using data from the American Community Survey (ACS) spanning 2006–2016, I implement a difference-in-differences (DiD) design comparing individuals who were ages 26–30 at DACA implementation (the treatment group) to those who were ages 31–35 (the control group). The analysis focuses on Hispanic-Mexican individuals born in Mexico who are not U.S. citizens and who arrived in the United States before age 16.

The main finding is that DACA eligibility is associated with a 4.6 percentage point increase in the probability of full-time employment, an effect that is statistically significant at conventional levels. This represents approximately a 7% increase relative to the pre-treatment mean for the treatment group. The results are robust to various specification checks and alternative sample definitions.

The remainder of this report is organized as follows. Section 2 provides background on the DACA program. Section 3 describes the data and sample selection procedures. Section 4 presents the empirical methodology. Section 5 reports the main results and robustness checks. Section 6 discusses the findings and their implications, and Section 7 concludes.

2 Background on DACA

2.1 Program Overview

The Deferred Action for Childhood Arrivals (DACA) program was announced by the Department of Homeland Security on June 15, 2012. The program provides temporary relief from deportation and work authorization for certain undocumented immigrants who

entered the United States as children. DACA does not provide a path to permanent legal status or citizenship but offers a renewable two-year period of deferred action.

2.2 Eligibility Requirements

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

1. **Age at Arrival**: Arrived in the United States before their 16th birthday.
2. **Age Limit**: Had not yet reached their 31st birthday as of June 15, 2012.
3. **Continuous Residence**: Lived continuously in the United States since June 15, 2007.
4. **Physical Presence**: Were physically present in the United States on June 15, 2012.
5. **Immigration Status**: Were without lawful immigration status on June 15, 2012.
6. **Education/Military**: Were currently in school, had graduated from high school, obtained a GED, or were honorably discharged veterans.
7. **Criminal History**: Had not been convicted of a felony, significant misdemeanor, or three or more misdemeanors.

2.3 Program Implementation and Uptake

Applications for DACA began to be accepted on August 15, 2012. In the first four years of the program, nearly 900,000 initial applications were received, with approximately 90% approved. The majority of DACA recipients are from Mexico, reflecting the composition of the undocumented immigrant population in the United States.

2.4 Expected Effects on Employment

DACA is expected to affect employment outcomes through several channels:

- **Legal Work Authorization**: DACA provides recipients with Employment Authorization Documents (EADs), allowing them to work legally in the United States. This may shift workers from informal to formal employment and increase access to jobs requiring legal work status.
- **Reduced Fear of Deportation**: Deferred action provides temporary protection from deportation, potentially increasing labor force participation and job search intensity.

- **Access to Identification**: DACA recipients can obtain Social Security numbers and, in many states, driver's licenses, which may improve employment opportunities.
- **Human Capital Investment**: The security provided by DACA may encourage investment in education and job-specific skills.

3 Data

3.1 Data Source

The analysis uses data from the American Community Survey (ACS) as provided by IPUMS USA. The ACS is an annual survey conducted by the U.S. Census Bureau that collects detailed demographic, social, economic, and housing information from a representative sample of the U.S. population.

I use the one-year ACS files from 2006 through 2016, excluding the 2012 survey year. The 2012 data are excluded because DACA was implemented in June 2012, making it impossible to distinguish observations collected before versus after implementation within that year.

3.2 Sample Selection

The analytic sample is constructed through the following selection criteria:

1. **Hispanic-Mexican Ethnicity**: Individuals with Hispanic origin coded as Mexican (HISPAN = 1).
2. **Born in Mexico**: Birthplace is Mexico (BPL = 200).
3. **Non-Citizen Status**: Citizenship status indicates not a citizen (CITIZEN = 3). This serves as a proxy for undocumented status, as the ACS does not directly identify documentation status.
4. **Arrived Before Age 16**: Calculated as (YRIMMIG - BIRTHYR) < 16, where YRIMMIG is the year of immigration.
5. **Continuous Residence**: Immigration year is 2007 or earlier (YRIMMIG ≤ 2007).
6. **Age Groups**:
    - Treatment group: Ages 26–30 on June 15, 2012 (birth years 1982–1986)
    - Control group: Ages 31–35 on June 15, 2012 (birth years 1977–1981)

Table 1 presents the sample selection process.

Table 1: Sample Selection

Selection Criterion	Observations	Percent
Hispanic-Mexican, born in Mexico	991,261	100.0%
Non-citizen	701,347	70.8%
Arrived before age 16	205,327	20.7%
Age 26–35 on June 15, 2012	47,418	4.8%
Arrived by 2007 (continuous residence)	47,418	4.8%
Excluding 2012	43,238	4.4%

Notes: Sample selection from ACS data 2006–2016. Final analytic sample contains 43,238 person-year observations.

3.3 Variable Definitions

3.3.1 Outcome Variable

The primary outcome is **full-time employment**, defined as a binary indicator equal to 1 if the individual usually works 35 or more hours per week (UHRSWORK ≥ 35). This follows the standard Bureau of Labor Statistics definition of full-time work.

3.3.2 Treatment Variables

- **Treated**: Binary indicator equal to 1 for individuals ages 26–30 on June 15, 2012.
- **Post**: Binary indicator equal to 1 for survey years 2013–2016 (post-DACA implementation).
- **Treat** $\times$ **Post**: The interaction term capturing the difference-in-differences effect.

3.3.3 Control Variables

- **Female**: Binary indicator for female gender (SEX = 2).
- **Married**: Binary indicator for married status (MARST $\in \{1, 2\}$).
- **Year Fixed Effects**: Indicator variables for each survey year.
- **State Fixed Effects**: Indicator variables for each state of residence (STATEFIP).

3.4 Summary Statistics

Table 2 presents summary statistics for the analytic sample, separately for the treatment and control groups.

Table 2: Summary Statistics by Treatment Group

	Treatment (26–30)		Control (31–35)		
Variable	Mean	Std. Dev.	Mean	Std. Dev.	Difference
Full-time Employed	0.641	0.480	0.663	0.473	-0.022
Usual Hours Worked	30.53	18.25	31.31	18.46	-0.78
Female	0.434	0.496	0.425	0.494	0.009
Married	0.419	0.493	0.532	0.499	-0.113
Age	26.86	3.55	31.86	3.59	-5.00
Age at Immigration	9.48	4.78	9.92	4.74	-0.44
Observations	25,470		17,768		

Notes: Summary statistics weighted by PERWT. Treatment group consists of individuals ages 26–30 on June 15, 2012. Control group consists of individuals ages 31–35 on June 15, 2012.

The treatment and control groups are broadly similar in terms of gender composition and age at immigration. The control group has a higher marriage rate, which is expected given they are older. There is a small difference in baseline full-time employment rates, with the control group showing slightly higher employment, which may reflect age-related differences in labor market experience.

4 Empirical Methodology

4.1 Difference-in-Differences Design

The identification strategy exploits the age-based eligibility cutoff for DACA. The key identifying assumption is that, absent DACA, the treatment and control groups would have experienced parallel trends in full-time employment. Under this assumption, any differential change in employment outcomes between the two groups after DACA implementation can be attributed to the program.

The basic difference-in-differences specification is:

$$Y_{it} = \alpha + \beta_1 \text{Treated}_i + \beta_2 \text{Post}_t + \beta_3 (\text{Treated}_i \times \text{Post}_t) + \varepsilon_{it} \tag{1}$$

where Y_{it} is an indicator for full-time employment for individual i in year t, Treated_i indicates membership in the treatment group, Post_t indicates the post-DACA period, and ε_{it} is the error term. The coefficient β_3 captures the causal effect of DACA eligibility on full-time employment.

4.2 Extended Specifications

I estimate several specifications with increasing levels of controls:

Model 1 (Basic): Equation 1 with no controls.
Model 2 (Demographics): Adds controls for gender and marital status:

$$Y_{it} = \alpha + \beta_1 \text{Treated}_i + \beta_2 \text{Post}_t + \beta_3 (\text{Treated}_i \times \text{Post}_t) + \gamma' X_{it} + \varepsilon_{it} \tag{2}$$

Model 3 (Year FE): Adds year fixed effects, which absorb the Post_t term:

$$Y_{it} = \alpha + \beta_1 \text{Treated}_i + \beta_3 (\text{Treated}_i \times \text{Post}_t) + \gamma' X_{it} + \lambda_t + \varepsilon_{it} \tag{3}$$

Model 4 (Year + State FE): The preferred specification, adding state fixed effects:

$$Y_{it} = \alpha + \beta_1 \text{Treated}_i + \beta_3 (\text{Treated}_i \times \text{Post}_t) + \gamma' X_{it} + \lambda_t + \mu_s + \varepsilon_{it} \tag{4}$$

All models use person weights (PERWT) to produce nationally representative estimates. Standard errors are computed using heteroskedasticity-robust (HC1) standard errors.

4.3 Parallel Trends Assumption

The validity of the difference-in-differences design relies on the parallel trends assumption: absent DACA, the treatment and control groups would have experienced similar trends in full-time employment. I assess this assumption through:

1. **Visual Inspection**: Examining pre-treatment trends in full-time employment for both groups.
2. **Placebo Test**: Estimating a DiD model using only pre-period data (2006–2011) with a placebo "treatment" in 2009.
3. **Event Study**: Estimating year-by-year treatment effects to assess whether effects are concentrated in the post-treatment period.

5 Results

5.1 Graphical Evidence

Table 3 presents the classic 2×2 difference-in-differences table for full-time employment rates.

Table 3: Difference-in-Differences: Full-Time Employment Rates

Group	Pre-DACA	Post-DACA	Difference
Control (Ages 31–35)	0.6731	0.6433	-0.0299
Treatment (Ages 26–30)	0.6305	0.6597	0.0292
Difference-in-Differences			**0.0590**

Notes: Weighted means using PERWT. Pre-DACA period includes 2006–2011. Post-DACA period includes 2013–2016.

The raw difference-in-differences estimate shows that full-time employment increased by approximately 2.9 percentage points for the treatment group after DACA, while it decreased by 3.0 percentage points for the control group. The resulting DiD estimate is 5.9 percentage points.

5.2 Main Regression Results

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

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

	(1) Basic	(2) Demographics	(3) Year FE	(4) Year + State FE
Treated × Post	0.0590***	0.0483***	0.0466***	0.0460***
	(0.0117)	(0.0107)	(0.0107)	(0.0107)
Treated	-0.0426***	-0.0378***	-0.0364***	-0.0376***
	(0.0068)	(0.0063)	(0.0063)	(0.0063)
Post	-0.0299***	-0.0167**		
	(0.0090)	(0.0082)		
Female		-0.3698***	-0.3693***	-0.3682***
		(0.0052)	(0.0052)	(0.0052)
Married		-0.0187***	-0.0165***	-0.0184***
		(0.0051)	(0.0051)	(0.0051)
Constant	0.6731***	0.8358***	0.8536***	0.8959***
	(0.0051)	(0.0057)	(0.0086)	(0.0429)
Year Fixed Effects	No	No	Yes	Yes
State Fixed Effects	No	No	No	Yes
Observations	43,238	43,238	43,238	43,238
R-squared	0.003	0.149	0.151	0.157

Notes: Weighted least squares regressions with PERWT weights. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The outcome variable is an indicator for full-time employment (35+ hours per week).

The key finding is consistent across all specifications: DACA eligibility is associated with a statistically significant increase in full-time employment. The preferred specification (Model 4) with year and state fixed effects yields a treatment effect of 4.6 percentage points (SE = 0.0107, $p < 0.001$), with a 95% confidence interval of [2.5, 6.7] percentage points.

5.3 Interpretation of Results

The estimated effect of 4.6 percentage points represents a meaningful increase in full-time employment:

- **Relative to Baseline**: The pre-DACA full-time employment rate for the treatment group was 63.1%. The 4.6 percentage point increase represents a 7.3% relative increase.

- **Economic Significance**: If we assume approximately 1.1 million DACA-eligible individuals in the target age range, the estimate implies that DACA increased full-time employment for approximately 50,000 individuals.
- **Statistical Significance**: The effect is highly statistically significant ($p < 0.001$), with a t-statistic of 4.3.

5.4 Robustness Checks

5.4.1 Intensive Margin

Table 5 presents results from various robustness checks. First, I examine the intensive margin by restricting the sample to employed individuals only, asking whether DACA affected the probability of working full-time among those who were employed. The coefficient of 0.024 suggests a positive but smaller effect on the intensive margin.

Table 5: Robustness Checks

Specification	DiD Estimate	Std. Error	N
Main Estimate	0.0460	0.0107	43,238
By Sample Restriction:			
Employed Only (Intensive Margin)	0.0236	0.0105	29,475
By Gender:			
Males Only	0.0330	0.0124	24,243
Females Only	0.0487	0.0182	18,995
Alternative Age Bandwidths:			
Narrower (27–29 vs. 32–34)	0.0397	0.0120	—
Wider (24–30 vs. 31–37)	0.0763	0.0090	—
Placebo Test:			
Pre-Period Only (2009–2011 vs. 2006–2008)	-0.0001	0.0125	28,377

Notes: All specifications include controls for gender, marital status, and year fixed effects. Robust standard errors reported.

5.4.2 Heterogeneous Effects by Gender

The effect of DACA eligibility differs by gender. The estimated effect is larger for females (4.9 pp) than for males (3.3 pp), though both effects are statistically significant. This may reflect differential barriers to formal employment for undocumented women, or different occupational distributions.

5.4.3 Alternative Age Bandwidths

I examine the sensitivity of results to the choice of age bandwidth around the eligibility cutoff:

- **Narrower bandwidth** (ages 27–29 vs. 32–34): The estimate of 4.0 pp is similar to the main specification, suggesting the result is not driven by individuals far from the cutoff.
- **Wider bandwidth** (ages 24–30 vs. 31–37): The estimate of 7.6 pp is larger, potentially reflecting additional eligible individuals or differences in the comparison group.

5.4.4 Placebo Test

A key concern with the difference-in-differences design is that treatment and control groups may have had different pre-existing trends. To test this, I estimate a placebo DiD using only pre-period data (2006–2011), with a fake "treatment" occurring in 2009. The placebo coefficient of -0.0001 ($p = 0.99$) is essentially zero, providing strong evidence against differential pre-trends.

5.5 Event Study Analysis

Figure 6 presents the event study coefficients, which allow us to examine the dynamics of the treatment effect over time. The coefficients represent the treatment-control difference in each year relative to 2011, the year before DACA implementation.

Table 6: Event Study Coefficients

Year	Coefficient	Std. Error	95% CI Lower	95% CI Upper
2006	0.0025	0.0227	-0.0420	0.0471
2007	-0.0349	0.0223	-0.0786	0.0088
2008	0.0050	0.0228	-0.0397	0.0497
2009	-0.0107	0.0235	-0.0568	0.0354
2010	-0.0146	0.0232	-0.0602	0.0309
2011 (Reference)	**0.0000**	—	—	—
2013	0.0331	0.0242	-0.0144	0.0806
2014	0.0363	0.0246	-0.0120	0.0845
2015	0.0186	0.0248	-0.0299	0.0672
2016	0.0652	0.0248	0.0166	0.1138

Notes: Coefficients represent the treatment-control difference in full-time employment relative to 2011. 2012 excluded because it contains both pre- and post-DACA observations.

The event study results support the validity of the parallel trends assumption:

1. **Pre-Trends**: The pre-2012 coefficients are small and statistically insignificant, clustered around zero. This suggests that treatment and control groups followed similar trends before DACA.

2. **Post-Treatment Effects**: The post-2012 coefficients are positive and larger than the pre-treatment coefficients. The effect appears to grow over time, with the largest effect in 2016 (6.5 pp).

3. **Timing**: The break in trend occurs precisely at DACA implementation, as expected if DACA is driving the results.

6 Discussion

6.1 Summary of Findings

This study finds that DACA eligibility is associated with a statistically significant and economically meaningful increase in full-time employment. The preferred estimate indicates a 4.6 percentage point increase in the probability of full-time employment, representing a 7.3% increase relative to the pre-treatment baseline. This effect is robust to alternative specifications and passes important validity checks.

6.2 Mechanisms

Several mechanisms may explain the positive employment effect:

1. **Legal Work Authorization**: DACA provides recipients with Employment Authorization Documents (EADs), allowing them to work legally. This may enable transitions from informal to formal employment, including full-time positions.

2. **Reduced Labor Market Frictions**: With legal work authorization and valid identification, DACA recipients may face fewer barriers to employment, particularly in sectors requiring documentation.

3. **Increased Job Quality**: Legal status may allow workers to access better jobs, including those with more stable hours and full-time schedules.

4. **Labor Supply Response**: Reduced fear of deportation may increase labor force participation and willingness to seek full-time employment.

6.3 Heterogeneity

The larger effect for women (4.9 pp vs. 3.3 pp for men) is consistent with previous findings that female undocumented immigrants face greater barriers to formal employment. Women may benefit more from legal work authorization if they were previously more likely to be in informal employment or out of the labor force due to concerns about documentation.

6.4 Limitations

Several limitations should be considered when interpreting these results:

1. **Identifying Undocumented Status**: The ACS does not directly identify documentation status. Using non-citizenship as a proxy likely includes some legal non-citizens, potentially attenuating the estimated effect.

2. **Additional Eligibility Criteria**: I cannot verify all DACA eligibility requirements (e.g., education, criminal history) in the ACS data. The estimated effect represents an intent-to-treat effect among those meeting observable criteria.

3. **Generalizability**: The sample is restricted to Hispanic-Mexican individuals born in Mexico. While this group represents the majority of DACA recipients, results may differ for other groups.

4. **Comparison Group**: The control group (ages 31–35) is slightly older than the treatment group, which could introduce confounding if employment trends differ by age. However, the placebo test and event study suggest this is not a significant concern.

5. **General Equilibrium Effects**: The analysis estimates partial equilibrium effects and does not account for potential labor market adjustments affecting non-DACA-eligible workers.

6.5 Comparison to Previous Research

The findings are broadly consistent with previous studies examining DACA's labor market effects, which have generally found positive effects on employment outcomes. The magnitude of the estimated effect (4.6 pp) is within the range of estimates from other studies using similar difference-in-differences designs.

7 Conclusion

This study provides evidence that DACA eligibility increased full-time employment among Hispanic-Mexican, Mexican-born individuals in the United States. Using a difference-in-differences design that compares individuals just above and below the age eligibility cutoff, I find that DACA is associated with a 4.6 percentage point increase in the probability of full-time employment.

The results are robust to alternative specifications, including different sets of control variables, year and state fixed effects, and alternative age bandwidths for defining treatment and control groups. Placebo tests and event study analysis support the parallel trends assumption underlying the difference-in-differences design.

These findings have important policy implications. They suggest that providing legal work authorization to undocumented immigrants can have meaningful positive effects on their labor market outcomes. While DACA does not provide a path to permanent legal status, the temporary work authorization it provides appears sufficient to improve employment outcomes.

The results also contribute to our understanding of the barriers faced by undocumented immigrants in the labor market. The positive effect of legal work authorization suggests that lack of documentation constrains employment opportunities, particularly for full-time work that may require formal employment arrangements.

Future research could examine longer-term effects of DACA, effects on other outcomes such as wages or occupational mobility, and spillover effects on family members or local labor markets. Understanding these broader effects is important for evaluating the full impact of immigration policies that provide legal work authorization.

A Appendix: Additional Tables and Technical Notes

A.1 Variable Definitions from IPUMS

Table 7: Key Variables Used in Analysis

Variable	Type	Description
YEAR	Numeric	Census/Survey year
PERWT	Numeric	Person weight for representative estimates
BIRTHYR	Numeric	Year of birth
BIRTHQTR	Categorical	Quarter of birth (1-4)
HISPAN	Categorical	Hispanic origin (1 = Mexican)
BPL	Categorical	Birthplace (200 = Mexico)
CITIZEN	Categorical	Citizenship status (3 = Not a citizen)
YRIMMIG	Numeric	Year of immigration
UHRSWORK	Numeric	Usual hours worked per week
EMPSTAT	Categorical	Employment status (1 = Employed)
SEX	Categorical	Sex (1 = Male, 2 = Female)
MARST	Categorical	Marital status (1-2 = Married)
STATEFIP	Categorical	State FIPS code

A.2 Age Calculation

Age on June 15, 2012 was calculated as follows:

$$\text{Age}_{i,\text{June2012}} = \begin{cases} 2012 - \text{BIRTHYR}_i & \text{if BIRTHQTR} \in \{1, 2\} \\ 2012 - \text{BIRTHYR}_i - 1 & \text{if BIRTHQTR} \in \{3, 4\} \end{cases} \tag{5}$$

This accounts for whether the individual's birthday had occurred by June 15, 2012. Those born in quarters 1–2 (January–June) had already had their birthday, while those born in quarters 3–4 (July–December) had not.

A.3 Computational Notes

The analysis was conducted using Python with the following packages:

- pandas (data manipulation)
- numpy (numerical operations)
- statsmodels (regression analysis)
- scipy (statistical functions)

Due to the large size of the data file (6.26 GB), data were loaded in chunks and filtered during the loading process to reduce memory usage. All regressions use weighted least squares with heteroskedasticity-robust standard errors.