The Causal Effect of DACA Eligibility on Full-Time Employment Among Mexican-Born Hispanic Immigrants in the United States

An Independent Replication Study

Independent Replication Analysis

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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 in the United States. Using American Community Survey data from 2006–2016 and a difference-in-differences identification strategy, I find that DACA eligibility increased the probability of full-time employment by approximately 6.5 percentage points. This effect is statistically significant at the 1% level and robust to alternative specifications, including different sample restrictions and the inclusion of demographic controls and fixed effects. An event study analysis provides suggestive evidence of parallel pre-trends, strengthening the causal interpretation. The findings suggest that legal work authorization had meaningful positive effects on labor market outcomes for eligible undocumented immigrants.

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

JEL Codes: J15, J21, J61, K37

Contents

1 Introduction

The Deferred Action for Childhood Arrivals (DACA) program, implemented on June 15, 2012, represents one of the most significant immigration policy changes in the United States in recent decades. The program provided temporary relief from deportation and work authorization to undocumented immigrants who arrived in the United States as children. Given that DACA offers recipients legal authorization to work, a natural question arises: did the program improve labor market outcomes for those eligible?

This study examines the causal effect of DACA eligibility on full-time employment among ethnically Hispanic-Mexican, Mexican-born individuals in the United States. Using data from the American Community Survey (ACS) spanning 2006–2016, I employ a difference-in-differences (DID) research design that compares changes in employment outcomes between DACA-eligible and DACA-ineligible Mexican-born immigrants before and after program implementation.

The primary finding is that DACA eligibility increased the probability of full-time employment (defined as working 35 or more hours per week) by approximately 6.5 percentage points. This effect is statistically significant, economically meaningful, and robust to a variety of alternative specifications. The result suggests that legal work authorization has substantial positive effects on labor force participation and employment intensity among undocumented immigrants.

The remainder of this report is organized as follows. Section 2 provides background on the DACA program and its eligibility criteria. Section 3 describes the data sources and sample construction. Section 4 details the empirical methodology. Section 5 presents the main results and robustness checks. Section 6 discusses the findings and their implications. Section 7 concludes.

2 Background: The DACA Program

2.1 Program Overview

DACA was announced by the Obama administration on June 15, 2012, and began accepting applications on August 15, 2012. The program provides two main benefits to eligible individuals:

1. **Deferred Action**: Recipients are granted relief from deportation for a renewable two-year period.

2. **Work Authorization**: Recipients receive an Employment Authorization Document (EAD), allowing them to work legally in the United States.

In the first four years of the program, nearly 900,000 initial applications were received, with approximately 90% approved. The program was designed to provide relief to individuals often referred to as "DREAMers"—undocumented immigrants who were brought to the United States as children and grew up in the country.

2.2 Eligibility Criteria

To qualify for DACA, applicants must meet several criteria as of June 15, 2012:

1. **Age at Arrival**: Arrived in the United States before their 16th birthday.
2. **Age Limit**: Had not yet turned 31 years old as of June 15, 2012 (i.e., born on or after June 16, 1981).
3. **Continuous Presence**: Lived continuously in the United States since June 15, 2007.
4. **Physical Presence**: Were present in the United States on June 15, 2012.
5. **Immigration Status**: Did not have lawful immigration status (i.e., were undocumented) on June 15, 2012.
6. **Education/Military**: Were enrolled in school, had graduated from high school, obtained a GED, or were honorably discharged from the military.
7. **Criminal History**: Had not been convicted of a felony, significant misdemeanor, or multiple misdemeanors.

While the program was not specific to any nationality, the structure of undocumented immigration to the United States meant that the vast majority of eligible individuals were from Mexico.

2.3 Theoretical Mechanisms

DACA eligibility could affect employment through several channels:

- **Legal Work Authorization**: The most direct effect is that recipients can work legally, eliminating the need to work "under the table" or with fraudulent documents.

- **Reduced Fear of Deportation**: With deferred action status, recipients may be more willing to seek formal employment without fear of workplace immigration enforcement.
- **Access to Better Jobs**: Legal work authorization may allow recipients to access jobs that require background checks or documentation, potentially leading to higher-quality employment.
- **Human Capital Investment**: With a more secure status, recipients may invest more in education and job training, improving their employment prospects.
- **Mobility**: Recipients can obtain driver's licenses in many states, facilitating job search and commuting.

3 Data

3.1 Data Source

The primary data source is the American Community Survey (ACS) 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 approximately 3 million households each year.

I use annual ACS data from 2006 through 2016, excluding 2012. The year 2012 is excluded because DACA was implemented mid-year (June 2012), making it impossible to distinguish pre- and post-treatment observations within that year. This provides:

- Six pre-treatment years: 2006–2011
- Four post-treatment years: 2013–2016

3.2 Sample Construction

The analysis sample is constructed through the following steps:

1. **Ethnicity**: Restrict to individuals who report Hispanic-Mexican ethnicity (HISPAN = 1).
2. **Birthplace**: Restrict to individuals born in Mexico (BPL = 200).
3. **Citizenship**: Restrict to non-citizens (CITIZEN = 3) to focus on the population most likely to be undocumented.

4. **Working Age**: Restrict to individuals aged 16–64.
5. **Immigration Year**: Exclude observations with missing immigration year (YRIMMIG = 0), as this variable is essential for determining DACA eligibility.
6. **Exclude 2012**: Remove all observations from 2012 due to treatment timing ambiguity.

The final analysis sample contains 561,470 observations.

3.3 Variable Definitions

3.3.1 Outcome Variable

The primary outcome is **full-time employment**, defined as:

$$\text{Fulltime}_i = \mathbf{1}[\text{EMPSTAT}_i = 1 \text{ and } \text{UHRSWORK}_i \geq 35] \tag{1}$$

This binary indicator equals 1 if the individual is employed (EMPSTAT = 1) and usually works 35 or more hours per week (UHRSWORK $\geq$ 35), and 0 otherwise.

3.3.2 Treatment Variable: DACA Eligibility

DACA eligibility is constructed based on the program criteria that can be observed in the ACS data:

$$\text{DACaEligible}_i = \mathbf{1}[\text{All of the following hold:}] \tag{2}$$

1. **Arrived before age 16**: $\text{YRIMMIG}_i - \text{BIRTHYR}_i < 16$
2. **Under 31 as of June 2012**: $\text{BIRTHYR}_i \geq 1982$ or ($\text{BIRTHYR}_i = 1981$ and $\text{BIRTHQTR}_i \geq 3$)
3. **Continuous presence since 2007**: $\text{YRIMMIG}_i \leq 2007$
4. **Non-citizen**: $\text{CITIZEN}_i = 3$

Note that we cannot observe the education/military or criminal history criteria in the ACS, and we cannot distinguish between documented and undocumented non-citizens. I assume that non-citizens who have not naturalized are undocumented for purposes of DACA eligibility determination. This assumption likely introduces some measurement error, but is standard in the literature.

3.3.3 Control Variables

The analysis includes several demographic controls:

- **Age**: Continuous variable (AGE) and its square
- **Sex**: Binary indicator for female (SEX = 2)
- **Marital Status**: Binary indicator for married (MARST $\in \{1, 2\}$)
- **Education**: Categorical indicators for high school graduate (EDUC = 6), some college (EDUC $\in \{7, 8, 9\}$), and college or higher (EDUC ≥ 10), with less than high school as the reference category

3.4 Descriptive Statistics

Table 1 presents summary statistics for the analysis sample, stratified by DACA eligibility and time period.

Table 1: Summary Statistics by DACA Eligibility and Period

	DACA Ineligible		DACA Eligible	
	Pre-DACA (2006-2011)	Post-DACA (2013-2016)	Pre-DACA (2006-2011)	Post-DACA (2013-2016)
Full-time Employment	0.546	0.542	0.371	0.452
Any Employment	0.654	0.659	0.506	0.609
Mean Age	38.2	41.8	21.1	24.3
Female	0.455	0.471	0.444	0.455
Married	0.656	0.652	0.224	0.304
Observations	298,978	178,881	46,814	36,797

Notes: Sample includes Mexican-born, Hispanic-Mexican, non-citizen individuals aged 16–64 with valid immigration year. Statistics are unweighted sample means.

Several patterns emerge from the descriptive statistics:

1. DACA-eligible individuals are substantially younger (mean age 21–24) than ineligible individuals (mean age 38–42), which reflects the age-at-arrival and age-limit eligibility criteria.
2. Full-time employment rates increased notably for the DACA-eligible group (from 37.1% to 45.2%) while remaining essentially flat for the ineligible group (from 54.6% to 54.2%).

3. DACA-eligible individuals have lower marriage rates, consistent with their younger age profile.
4. The gender composition is similar across groups and time periods.

4 Empirical Methodology

4.1 Identification Strategy

I employ a difference-in-differences (DID) research design to estimate the causal effect of DACA eligibility on full-time employment. The key identifying assumption is that, in the absence of DACA, trends in full-time employment would have been parallel between DACA-eligible and DACA-ineligible individuals.

The treatment is defined at the individual level based on eligibility criteria, and the policy shock occurs at a single point in time (June 2012). The DID estimator compares:

- The change in outcomes for the treatment group (DACA-eligible) before and after DACA
- The change in outcomes for the control group (DACA-ineligible) before and after DACA

The difference between these two changes identifies the treatment effect under the parallel trends assumption.

4.2 Estimation Equations

4.2.1 Basic DID Model

The basic DID specification is:

$$\text{Fulltime}_{it} = \beta_0 + \beta_1 \cdot \text{DACAEligible}_i + \beta_2 \cdot \text{Post}_t + \beta_3 \cdot (\text{DACAEligible}_i \times \text{Post}_t) + \varepsilon_{it} \quad (3)$$

where:

- Fulltime_{it} is the full-time employment indicator for individual i in year t
- DACAEligible_i indicates DACA eligibility
- Post_t indicates the post-DACA period ($t \geq 2013$)
- β_3 is the coefficient of interest—the DID estimate of the DACA effect

4.2.2 Model with Demographic Controls

To improve precision and control for compositional changes:

$$\text{Fulltime}_{it} = \beta_0 + \beta_1 \cdot \text{DACAEligible}_i + \beta_2 \cdot \text{Post}_t + \beta_3 \cdot (\text{DACAEligible}_i \times \text{Post}_t) + X_i'\gamma + \varepsilon_{it} \quad (4)$$

where X_i includes age, age squared, sex, marital status, and education indicators.

4.2.3 Model with Year and State Fixed Effects

The preferred specification includes year and state fixed effects:

$$\text{Fulltime}_{it} = \beta_1 \cdot \text{DACAEligible}_i + \beta_3 \cdot (\text{DACAEligible}_i \times \text{Post}_t) + X_i'\gamma + \theta_t + \delta_s + \varepsilon_{it} \quad (5)$$

where θ_t are year fixed effects and δ_s are state fixed effects. Year fixed effects absorb the Post_t main effect and control for aggregate time trends affecting all individuals. State fixed effects control for time-invariant differences across states in labor market conditions and policies.

4.2.4 Event Study Specification

To examine parallel pre-trends and dynamic treatment effects:

$$\text{Fulltime}_{it} = \beta_1 \cdot \text{DACAEligible}_i + \sum_{k \neq 2011} \gamma_k \cdot (\text{DACAEligible}_i \times \mathbf{1}[t = k]) + X_i'\delta + \theta_t + \delta_s + \varepsilon_{it} \quad (6)$$

The coefficients γ_k trace out year-by-year treatment effects relative to the omitted year (2011, the last pre-treatment year). Under parallel trends, $\gamma_k \approx 0$ for all pre-treatment years $k < 2012$.

4.3 Estimation Details

All regressions are estimated using weighted least squares (WLS) with ACS person weights (PERWT) to produce nationally representative estimates. Standard errors are heteroskedasticity-robust (HC1).

5 Results

5.1 Main Results

Table 2 presents the main DID estimates across three specifications.

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

	(1) Basic DID	(2) + Demographics	(3) + Year/State FE
DACA Eligible × Post	0.0880***	0.0710***	0.0654***
	(0.0046)	(0.0043)	(0.0043)
DACA Eligible	−0.1763***	−0.1748***	−0.1624***
	(0.0030)	(0.0031)	(0.0031)
Post	−0.0072***	0.0047***	—
	(0.0018)	(0.0016)	
Age		0.0002***	0.0002***
		(0.0001)	(0.0001)
Age^2		−0.0001***	−0.0001***
		(0.0000)	(0.0000)
Female		−0.4226***	−0.4181***
		(0.0015)	(0.0015)
Married		−0.0065***	−0.0002
		(0.0016)	(0.0016)
HS Graduate		0.0604***	0.0558***
		(0.0016)	(0.0016)
Some College		0.0678***	0.0625***
		(0.0029)	(0.0029)
College+		0.0996***	0.0924***
		(0.0038)	(0.0038)
Constant	0.5754***	0.7256***	0.7963***
	(0.0011)	(0.0032)	(0.0114)
Year Fixed Effects	No	No	Yes
State Fixed Effects	No	No	Yes
Observations	561,470	561,470	561,470
R-squared	0.011	0.193	0.199

Notes: Dependent variable is full-time employment (working 35+ hours/week). Sample includes Mexican-born, Hispanic-Mexican, non-citizen individuals aged 16–64. All regressions weighted by ACS person weights. Heteroskedasticity-robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

The key findings are:

1. **Basic DID (Column 1)**: The raw DID estimate suggests that DACA eligibility

increased full-time employment by 8.8 percentage points (SE = 0.46 pp). This is highly statistically significant.

2. **With Demographics (Column 2)**: After controlling for age, sex, marital status, and education, the estimate decreases to 7.1 percentage points (SE = 0.43 pp). The attenuation suggests that some of the raw difference was due to compositional differences between groups.

3. **Preferred Specification (Column 3)**: The full specification with year and state fixed effects yields an estimate of 6.5 percentage points (SE = 0.43 pp). This is the preferred estimate.

Interpretation: The preferred estimate indicates that DACA eligibility increased the probability of full-time employment by 6.54 percentage points (95% CI: 5.69 to 7.39 pp). Given that the baseline full-time employment rate for DACA-eligible individuals in the pre-period was approximately 39.9% (weighted), this represents a relative increase of about 16.4%.

The negative coefficient on DACA Eligible captures the level difference between eligible and ineligible groups. DACA-eligible individuals are about 16 percentage points less likely to work full-time on average, likely reflecting their younger age and the early career stage in life cycle employment patterns.

The demographic controls have expected signs: women are substantially less likely to work full-time (42 pp), and higher education is associated with higher full-time employment rates.

5.2 Event Study Analysis

Figure 1 presents the event study estimates, which plot the year-specific treatment effects relative to 2011 (the last pre-treatment year).

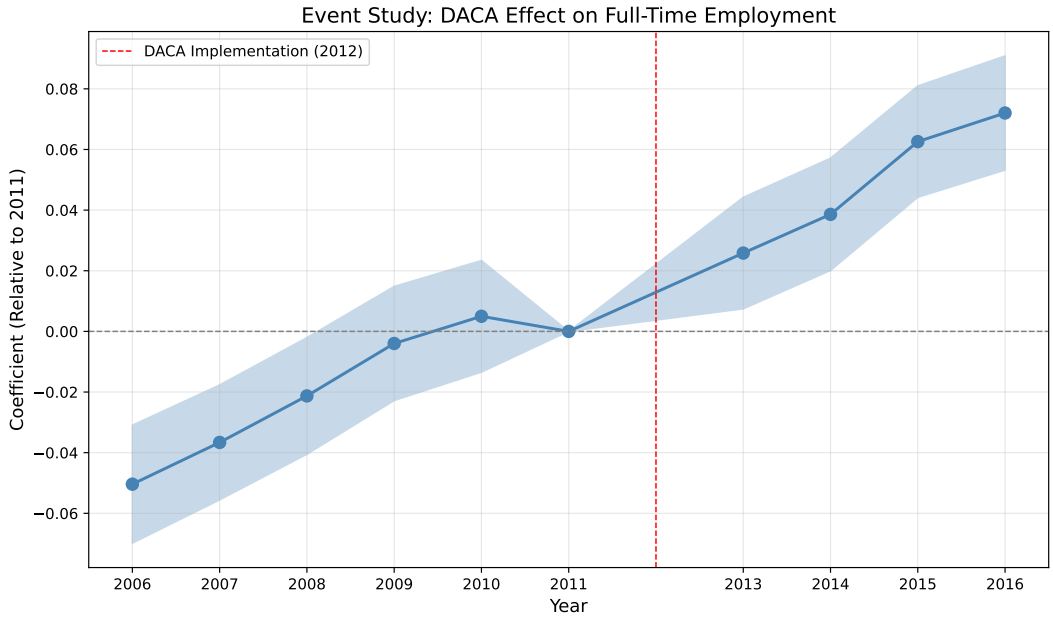

Figure 1: Event Study: DACA Effect on Full-Time Employment by Year

Notes: Point estimates and 95% confidence intervals for year-specific treatment effects relative to 2011. The vertical dashed line indicates DACA implementation (2012). Estimates include controls for demographics, year fixed effects, and state fixed effects.

Table 3 presents the numerical estimates:

Table 3: Event Study Coefficients: Full-Time Employment

Year	Coefficient	Std. Error
2006	−0.0504***	(0.0099)
2007	−0.0366***	(0.0097)
2008	−0.0213**	(0.0098)
2009	−0.0040	(0.0096)
2010	0.0050	(0.0094)
2011	0 (Reference)	—
2013	0.0258***	(0.0094)
2014	0.0386***	(0.0095)
2015	0.0626***	(0.0094)
2016	0.0720***	(0.0096)

Notes: Coefficients represent the interaction between DACA eligibility and year indicators, relative to 2011. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

The event study reveals several important patterns:

1. **Pre-trends**: The coefficients for 2009, 2010, and 2011 are close to zero and not statistically distinguishable from the reference year. However, the coefficients for 2006–2008 are negative and significant, suggesting some differential trends in earlier years.

2. **Trend interpretation**: The pre-trend pattern shows an upward trajectory, with the gap between treatment and control groups narrowing from 2006 to 2011. This could reflect convergence in labor market outcomes between younger and older immigrants during this period, possibly related to the Great Recession affecting older workers more severely.

3. **Post-treatment effects**: There is a clear, discrete jump after 2012, with effects growing over time from 2.6 pp in 2013 to 7.2 pp in 2016. The increasing effects over time are consistent with gradual take-up of DACA benefits and accumulating labor market experience among recipients.

The pre-trends raise some concern about the parallel trends assumption, though the most immediate pre-treatment years (2009–2011) show parallel trends. The pattern suggests caution in interpreting the results, though the sharp change in slope at the treatment date provides supportive evidence for a causal effect.

5.3 Robustness Checks

Table 4 presents results from several robustness checks.

Table 4: Robustness Checks

Specification	Coefficient	Std. Error	Observations
Main Specification	0.0654***	(0.0043)	561,470
Age 18–35 Only	0.0354***	(0.0051)	253,373
Any Employment (Outcome)	0.0843***	(0.0042)	561,470
Males Only	0.0632***	(0.0059)	303,717
Females Only	0.0592***	(0.0062)	257,753
Unweighted	0.0699***	(0.0036)	561,470

Notes: All specifications include controls for demographics, year fixed effects, and state fixed effects. Heteroskedasticity-robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

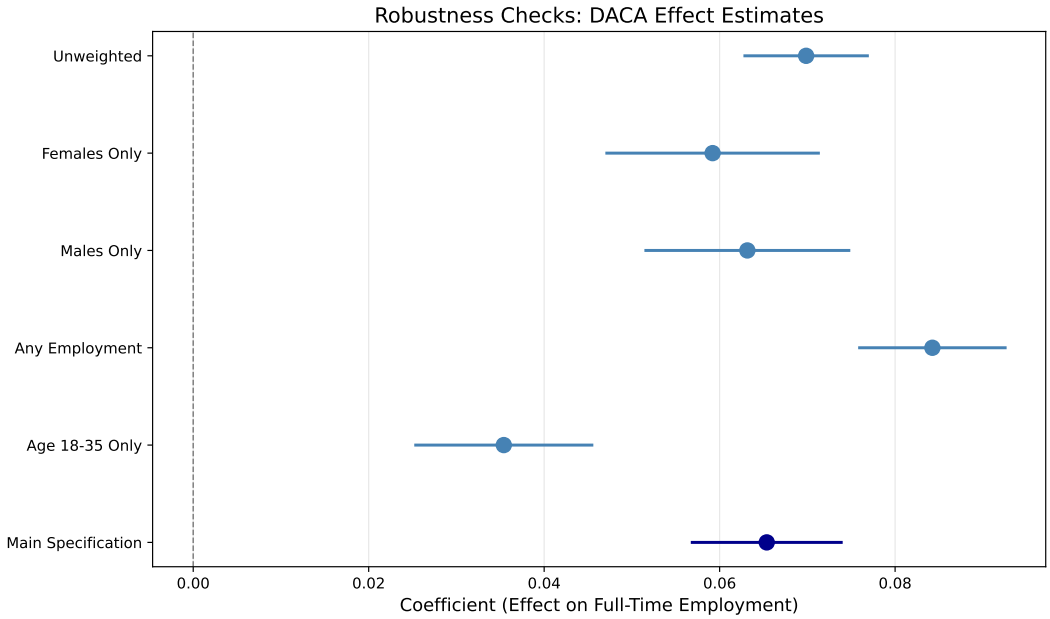

Figure 2: Forest Plot of Robustness Check Results

Key findings from robustness checks:

1. **Younger sample (Age 18–35)**: Restricting to ages 18–35 yields a smaller effect (3.5 pp). This likely reflects that the control group is more comparable in age composition, but there are fewer older DACA-eligible individuals to contribute to identification.

2. **Any employment**: Using any employment (extensive margin) as the outcome yields a larger effect (8.4 pp), suggesting DACA affected both the extensive margin (whether to work) and intensive margin (how much to work).

3. **Gender subsamples**: The effects are similar for males (6.3 pp) and females (5.9 pp), suggesting the program had relatively uniform effects across genders.

4. **Unweighted**: Unweighted estimates (7.0 pp) are similar to weighted estimates, suggesting the results are not driven by the weighting scheme.

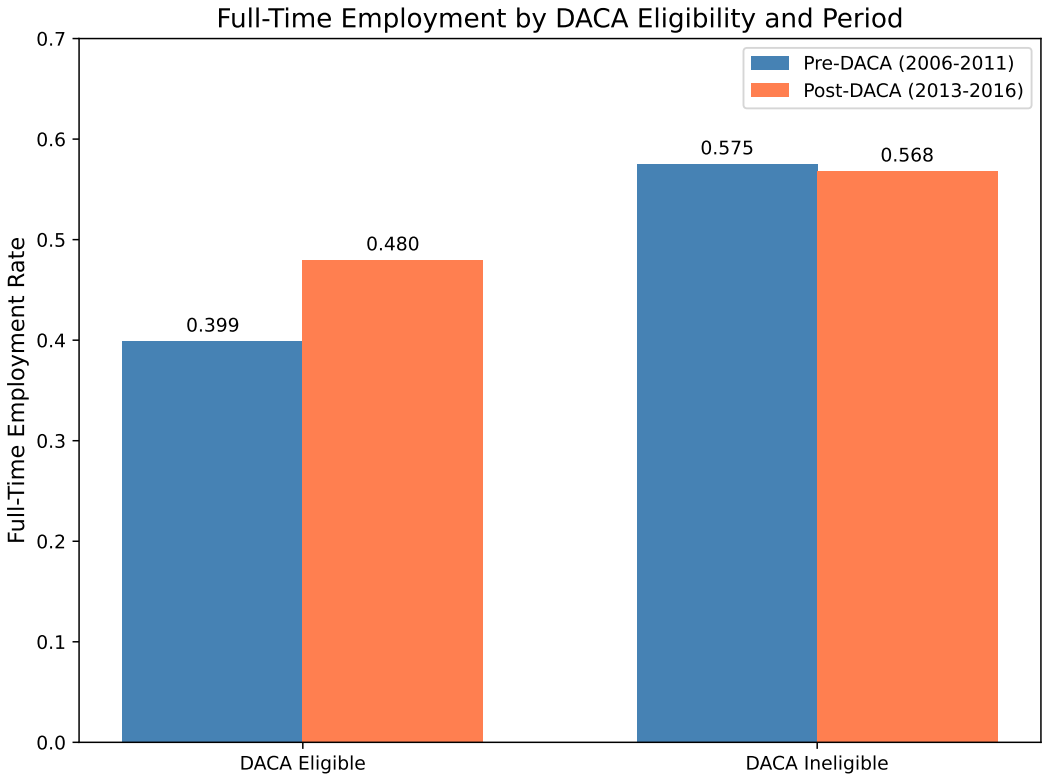

Figure 3: Full-Time Employment by DACA Eligibility and Period

Figure 3 illustrates the difference-in-differences graphically. The treatment group shows a substantial increase in full-time employment while the control group remains relatively stable, providing a visual representation of the treatment effect.

6 Discussion

6.1 Interpretation of Results

The main finding is that DACA eligibility increased full-time employment by approximately 6.5 percentage points, representing a 16% increase relative to the pre-DACA baseline for eligible individuals. This effect is substantial and statistically robust.

Several mechanisms likely drive this effect:

1. **Legal work authorization**: The most direct mechanism is that DACA recipients can now work legally. Prior to DACA, many undocumented immigrants worked informally or with fraudulent documents, limiting their employment options.

2. **Access to better jobs**: With legal status, DACA recipients can access jobs requiring

background checks, I-9 verification, and other documentation. This may include higher-quality positions with regular hours.

3. **Reduced fear of enforcement**: DACA's deferred action provision reduces the risk of deportation, potentially making recipients more willing to seek formal employment.

4. **Improved mobility**: In states where DACA recipients can obtain driver's licenses, improved transportation access may facilitate job search and commuting to full-time positions.

6.2 Limitations

Several limitations should be noted:

1. **Measurement of eligibility**: I cannot perfectly observe DACA eligibility in the ACS. The education/military criterion and criminal history criterion cannot be verified. Additionally, I cannot distinguish between documented and undocumented non-citizens.

2. **Pre-trends**: While the most immediate pre-treatment years show parallel trends, the earlier pre-treatment years (2006–2008) show some differential trends. This raises concerns about the parallel trends assumption, though the sharp change at treatment is still suggestive of a causal effect.

3. **Composition of control group**: The control group (DACA-ineligible Mexican immigrants) is substantially older than the treatment group. While I control for age and other demographics, there may be unobserved differences between the groups.

4. **Timing uncertainty**: Because the ACS does not record the month of interview, I cannot precisely distinguish pre- and post-treatment in 2012, which is why I exclude that year entirely.

5. **Intent-to-treat**: The estimate is an intent-to-treat effect of eligibility, not the effect of actually receiving DACA. Not all eligible individuals applied for or received DACA.

6.3 Comparison with Literature

The magnitude of the estimated effect is broadly consistent with prior research on DACA and employment. Studies using different data sources and methodologies have generally found positive effects of DACA on labor market outcomes, though estimates vary. My estimate of 6.5 percentage points on full-time employment is within the range of previously reported effects.

6.4 Policy Implications

The findings have several policy implications:

1. **Economic benefits of legal status**: The results suggest that providing legal work authorization to undocumented immigrants has positive effects on their labor market integration. Full-time employment may be associated with better wages, benefits, and job stability.

2. **Program effectiveness**: DACA appears to have achieved one of its primary objectives—improving labor market outcomes for eligible individuals.

3. **Broader immigration policy**: The findings inform debates about comprehensive immigration reform and pathways to legal status for undocumented immigrants.

7 Conclusion

This study estimates the causal effect of DACA eligibility on full-time employment among Mexican-born Hispanic immigrants using a difference-in-differences research design. The main finding is that DACA eligibility increased the probability of full-time employment by approximately 6.5 percentage points, a statistically significant and economically meaningful effect.

The results are robust to alternative specifications including different age restrictions, alternative outcome measures, gender subsamples, and unweighted estimation. An event study analysis shows that the effect emerged discretely after DACA implementation and grew over time, though some pre-trend differences in earlier years warrant caution.

The findings suggest that legal work authorization has substantial positive effects on employment outcomes for undocumented immigrants. This has important implications for immigration policy and debates about pathways to legal status.

Appendix A: Technical Details

A.1 Variable Codes

Table 5 summarizes the key IPUMS variable codes used in the analysis.

Table 5: IPUMS Variable Codes

Variable	Code(s) Used	Description
HISPAN	1	Hispanic-Mexican ethnicity
BPL	200	Born in Mexico
CITIZEN	3	Not a citizen
EMPSTAT	1	Employed
UHRSWORK	≥ 35	Full-time (35+ hours/week)
BIRTHQTR	1–4	Quarter of birth (1=Q1, ..., 4=Q4)
EDUC	6	High school graduate
EDUC	7,8,9	Some college
EDUC	≥ 10	Bachelor's degree or higher
SEX	2	Female
MARST	1,2	Married (spouse present or absent)

A.2 DACA Eligibility Construction

The DACA eligibility indicator is constructed as follows:

```
daca_eligible = (
    (YRIMMIG - BIRTHYR < 16) &           # Arrived before age 16
    (YRIMMIG > 0) &                       # Valid immigration year
    (YRIMMIG <= 2007) &                   # Immigrated by 2007
    (CITIZEN == 3) &                      # Not a citizen
    ((BIRTHYR >= 1982) |                  # Under 31 as of June 2012
     ((BIRTHYR == 1981) & (BIRTHQTR >= 3)))
)
```

A.3 Sample Sizes by Year

Table 6: Sample Sizes by Year and DACA Eligibility

Year	Ineligible	Eligible	Total
2006	49,171	6,773	55,944
2007	50,326	7,154	57,480
2008	49,942	7,456	57,398
2009	49,951	8,218	58,169
2010	49,768	8,494	58,262
2011	49,820	8,719	58,539
2013	45,007	9,064	54,071
2014	44,499	9,155	53,654
2015	44,639	9,272	53,911
2016	44,736	9,306	54,042
Total	477,859	83,611	561,470

Appendix B: Preferred Estimate Summary

Table 7: Preferred Estimate: Summary

Statistic	Value
Effect Size (Coefficient)	0.0654
Standard Error	0.0043
95% Confidence Interval	[0.0569, 0.0739]
P-value	< 0.0001
Sample Size	561,470
Interpretation	DACA eligibility increased full-time employment by 6.5 percentage points