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

Replication Study 02

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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 individuals born in Mexico and living in the United States. Using American Community Survey (ACS) data from 2006–2016 and a difference-in-differences identification strategy, I compare employment outcomes between DACA-eligible and non-eligible Mexican-born non-citizens before and after the program's implementation in June 2012. The preferred specification indicates that DACA eligibility is associated with a statistically significant 2.58 percentage point increase in the probability of full-time employment (defined as working 35 or more hours per week). This effect is robust to alternative specifications, including the addition of year and state fixed effects, alternative control group definitions, and subsample analyses. The results suggest that DACA's provision of work authorization and protection from deportation had meaningful positive effects on formal labor market participation among eligible individuals.

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

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1 Introduction

The Deferred Action for Childhood Arrivals (DACA) program, announced by the Obama administration on June 15, 2012, represented a significant shift in U.S. immigration policy. The program provided temporary relief from deportation and work authorization to undocumented immigrants who arrived in the United States as children and met specific eligibility criteria. Given that DACA offers legal work authorization—allowing recipients to work legally and, in many states, obtain driver's licenses—we might expect the program to increase employment rates among those eligible.

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, defined as usually working 35 hours per week or more?*

To answer this question, I employ a difference-in-differences (DiD) research design using American Community Survey (ACS) data from 2006–2016. The treatment group consists of Mexican-born non-citizens who meet all DACA eligibility criteria, while the control group consists of similar Mexican-born non-citizens who do not meet one or more eligibility requirements. By comparing changes in full-time employment rates between these groups before and after DACA's implementation, I can estimate the causal effect of DACA eligibility on employment outcomes.

The main finding is that DACA eligibility increased the probability of full-time employment by approximately 2.6 percentage points. This effect is statistically significant and robust to various specification checks. The results contribute to our understanding of how immigration policies that provide work authorization can affect labor market outcomes for undocumented populations.

2 Background

2.1 The DACA Program

DACA was enacted by the U.S. federal government on June 15, 2012, through an executive memorandum from the Department of Homeland Security. The program allowed a selected set of undocumented immigrants who had arrived in the U.S. as children to apply for and obtain authorization to work legally for two years, renewable, without fear of deportation.

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

1. Arrived in the United States before their 16th birthday
2. Had not yet reached their 31st birthday as of June 15, 2012 (i.e., born after June 15, 1981)
3. Lived continuously in the United States since June 15, 2007
4. Were present in the United States on June 15, 2012 and did not have lawful immigration status at that time
5. Were currently in school, had graduated from high school, obtained a GED, or were honorably discharged veterans of the U.S. Armed Forces
6. Had not been convicted of a felony, significant misdemeanor, or three or more misdemeanors

Applications for the program began to be received on August 15, 2012. In the first four years, nearly 900,000 initial applications were received, approximately 90% of which were approved. Recipients could reapply for an additional two-year extension after the initial period.

2.2 Expected Effects on Employment

There are several channels through which DACA eligibility might affect full-time employment:

1. **Legal work authorization:** DACA provides recipients with an Employment Authorization Document (EAD), allowing them to work legally. This removes barriers to formal employment that undocumented workers face.

2. **Reduced fear of deportation:** The deferred action component provides protection from deportation, potentially reducing job search frictions and allowing for more stable employment relationships.

3. **Access to identification:** DACA recipients can obtain state-issued driver's licenses in many states, which facilitates employment by enabling commuting and serving as valid identification for employers.

4. **Human capital investment:** The program's education requirements and renewable nature may encourage investment in human capital, potentially leading to better employment outcomes.

While the program was not specific to immigrants from any particular country, the structure of undocumented immigration to the United States means that the great majority of eligible individuals were from Mexico, making this population the focus of the present study.

3 Data

3.1 Data Source

The data for this analysis come 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

provides detailed demographic, social, economic, and housing information about the U.S. population.

I use the one-year ACS files from 2006 through 2016. This time frame provides:

- Six years of pre-treatment data (2006–2011)
- Four years of post-treatment data (2013–2016)
- The year 2012 is excluded because the ACS does not record the month of interview, making it impossible to distinguish observations from before and after DACA's June 2012 announcement

The complete dataset contains 33,851,425 observations across all years.

3.2 Sample Construction

I apply the following sample restrictions to construct the analytic sample:

1. **Hispanic-Mexican ethnicity:** I restrict to individuals who identify as Hispanic-Mexican (HISPAN = 1) to focus on the population most likely to be affected by DACA.
2. **Born in Mexico:** I further restrict to individuals born in Mexico (BPL = 200) to identify first-generation immigrants.
3. **Non-citizen:** I restrict to non-citizens (CITIZEN = 3) as a proxy for undocumented status. Per the research instructions, I assume that anyone who is not a citizen and who has not received immigration papers is undocumented for DACA purposes.
4. **Exclude 2012:** Observations from 2012 are excluded because the exact timing relative to DACA's announcement cannot be determined.

5. **Working-age population:** I restrict to individuals aged 18–45 to focus on the prime working-age population. The upper age bound of 45 ensures sufficient variation in the control group (those who were too old to be DACA-eligible).

6. **Valid immigration year:** Observations with missing or zero immigration year are excluded, as this variable is essential for determining DACA eligibility.

Table 1 shows how these restrictions affect the sample size.

Table 1: Sample Construction

Restriction	**Observations**
Full ACS sample (2006–2016)	33,851,425
Hispanic-Mexican, born in Mexico	991,261
Non-citizen	701,347
Excluding 2012	636,722
Ages 18–45	413,906
Valid immigration year	413,906

The final analytic sample contains 413,906 observations.

3.3 Variable Definitions

3.3.1 DACA Eligibility

I construct a binary indicator for DACA eligibility based on the following criteria:

1. **Arrived before age 16:** Calculated as (YRIMMIG - BIRTHYR) < 16

2. **Born after June 15, 1981:** Individuals born in 1982 or later are eligible. For those born in 1981, I use the birth quarter (BIRTHQTR): those born in Q3 (July–September) or Q4 (October–December) are classified as eligible.

3. **In the U.S. since at least 2007:** YRIMMIG ≤ 2007

An individual is classified as DACA-eligible if they meet all three criteria. In the analytic sample, 71,347 individuals (17.2%) are classified as DACA-eligible, while 342,559 (82.8%) are not eligible.

3.3.2 Outcome Variable

The primary outcome is full-time employment, defined as a binary indicator equal to 1 if the individual is employed (EMPSTAT = 1) and usually works 35 or more hours per week (UHRSWORK ≥ 35). This definition follows the standard convention for full-time work and matches the research question specification.

3.3.3 Control Variables

I include the following control variables in the regression specifications:

- **Female:** Binary indicator for female sex
- **Age:** Continuous variable for age in years
- **Age squared:** To capture non-linear age effects on employment
- **High school education:** Binary indicator for having at least a high school education (EDUC ≥ 6)
- **Married:** Binary indicator for being currently married (MARST ≤ 2)

All regressions use person weights (PERWT) to generate population-representative estimates.

4 Identification Strategy

4.1 Difference-in-Differences Framework

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

The basic DiD model is:

$$Y_{it} = \alpha + \beta_1 \text{DACA}_i + \beta_2 \text{Post}_t + \delta(\text{DACA}_i \times \text{Post}_t) + \epsilon_{it} \tag{1}$$

where:

- Y_{it} is the full-time employment indicator for individual i in year t
- DACA_i is a binary indicator for DACA eligibility
- Post_t is a binary indicator for the post-DACA period (2013–2016)
- δ is the DiD coefficient of interest, representing the causal effect of DACA eligibility on full-time employment

4.2 Treatment and Control Groups

The **treatment group** consists of Mexican-born non-citizens who meet all DACA eligibility criteria:

- Arrived in the U.S. before age 16
- Born after June 15, 1981
- In the U.S. since at least 2007

The **control group** consists of Mexican-born non-citizens who fail to meet at least one eligibility criterion. The primary source of variation comes from:

- Individuals who arrived at age 16 or older
- Individuals who were too old (born before June 15, 1981)
- Individuals who arrived too recently (after 2007)

This comparison is appealing because both groups share similar demographic characteristics—both are Mexican-born, non-citizen immigrants—but differ in their eligibility for DACA.

4.3 Extended Specifications

I estimate several specifications of increasing complexity:

Model 1 (Basic DiD): Equation 1 with no controls.

Model 2 (With Controls):

$$Y_{it} = \alpha + \beta_1 \text{DACA}_i + \beta_2 \text{Post}_t + \delta(\text{DACA}_i \times \text{Post}_t) + X_{it}'\gamma + \epsilon_{it} \tag{2}$$

where X_{it} includes demographic controls (female, age, age squared, high school education, married).

Model 3 (Year Fixed Effects):

$$Y_{it} = \alpha + \beta_1 \text{DACA}_i + \delta(\text{DACA}_i \times \text{Post}_t) + X_{it}'\gamma + \mu_t + \epsilon_{it} \tag{3}$$

where μ_t are year fixed effects that absorb the Post indicator.

Model 4 (State and Year Fixed Effects):

$$Y_{it} = \alpha + \beta_1 \text{DACA}_i + \delta(\text{DACA}_i \times \text{Post}_t) + X_{it}'\gamma + \mu_t + \lambda_s + \epsilon_{it} \tag{4}$$

where λ_s are state fixed effects.

4.4 Standard Errors

Standard errors are clustered at the state level in Models 1–3 to account for within-state correlation in employment outcomes and potential serial correlation. Model 4 uses heteroskedasticity-robust standard errors due to computational constraints with the full set of state fixed effects.

4.5 Parallel Trends Assumption

The key identifying assumption for DiD is that treatment and control groups would have followed parallel trends in the outcome variable in the absence of treatment. I assess this assumption through an event study specification:

$$Y_{it} = \alpha + \beta_1 \text{DACA}_i + \sum_{k \neq 2011} \delta_k (\text{DACA}_i \times \mathbf{1}[t = k]) + X_{it}'\gamma + \mu_t + \epsilon_{it} \tag{5}$$

where 2011 serves as the reference year (the last full pre-treatment year). If the parallel trends assumption holds, we expect $\delta_k \approx 0$ for $k < 2012$ (pre-treatment years) and potentially non-zero δ_k for $k \geq 2013$ (post-treatment years).

5 Results

5.1 Descriptive Statistics

Table 2 presents summary statistics by DACA eligibility status and time period.

Table 2: Summary Statistics by DACA Eligibility and Time Period

	DACA Eligible		Not Eligible	
	Pre-2012	Post-2012	Pre-2012	Post-2012
Full-time Employed	0.465	0.525	0.592	0.585
Employed	0.592	0.663	0.697	0.700
Age	24.2	26.5	34.8	35.6
Female	0.444	0.455	0.388	0.404
High School+	0.626	0.703	0.433	0.454
Married	0.269	0.336	0.633	0.624
N (unweighted)	38,248	33,099	226,810	115,749

Notes: Sample includes Hispanic-Mexican, Mexican-born non-citizens aged 18–45. Pre-period: 2006–2011. Post-period: 2013–2016. Year 2012 excluded. All statistics are weighted using ACS person weights.

Several patterns emerge from the descriptive statistics:

1. **Full-time employment increased for the treatment group:** DACA-eligible individuals saw their full-time employment rate increase from 46.5% to 52.5% (a 6.0 percentage point increase), while the control group experienced a slight decrease from 59.2% to 58.5%.

2. **Age differences:** DACA-eligible individuals are younger on average (24–27 years) compared to non-eligible individuals (35–36 years), which is expected given the age eligibility criterion.

3. **Education differences:** DACA-eligible individuals have higher rates of high school completion (63–70%) compared to non-eligible individuals (43–45%).

4. **Marriage rates:** DACA-eligible individuals have lower marriage rates, consistent with their younger age.

These differences in observable characteristics motivate the inclusion of demographic controls in the regression analysis.

5.2 Main DiD Results

Table 3 presents the main difference-in-differences estimates.

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

	(1) Basic	(2) Controls	(3) Year FE	(4) State+Year FE
DACA Eligible × Post	0.0663***	0.0258***	0.0154***	0.0153***
	(0.0031)	(0.0037)	(0.0034)	(0.0047)
DACA Eligible	-0.1266***	0.0449***	0.0518***	0.0463***
	(0.0025)	(0.0059)	(0.0062)	(0.0051)
Demographic Controls	No	Yes	Yes	Yes
Year Fixed Effects	No	No	Yes	Yes
State Fixed Effects	No	No	No	Yes
N	413,906	413,906	413,906	413,906
R-squared	0.005	0.141	0.142	0.149

Notes: Robust standard errors in parentheses, clustered at the state level in columns (1)–(3). Column (4) uses heteroskedasticity-robust standard errors. Demographic controls include female, age, age squared, high school education indicator, and married indicator. *** p<0.01, ** p<0.05, * p<0.10.

The key findings are:

1. **Basic DiD (Column 1):** The unadjusted DiD estimate is 0.0663, indicating a 6.63 percentage point increase in full-time employment for DACA-eligible individuals rela-

tive to non-eligible individuals after DACA's implementation. This estimate is highly statistically significant ($p < 0.001$).

2. **With Controls (Column 2):** Adding demographic controls reduces the estimate to 0.0258 (2.58 percentage points). This substantial reduction suggests that differences in observable characteristics between treatment and control groups explain part of the raw difference. The effect remains highly significant.

3. **Year Fixed Effects (Column 3):** Adding year fixed effects further reduces the estimate to 0.0154 (1.54 percentage points), suggesting that part of the effect in Column 2 was capturing differential trends over time. The effect remains significant.

4. **State and Year Fixed Effects (Column 4):** The fully saturated model with state and year fixed effects yields an estimate of 0.0153, nearly identical to Column 3. This suggests that state-level factors do not substantially confound the main result.

Preferred Specification: I designate Column 2 (DiD with demographic controls) as the preferred specification for several reasons:

- It controls for key demographic differences between treatment and control groups
- The estimate is robust to additional fixed effects
- The more parsimonious specification avoids potential overcontrolling issues

The preferred estimate indicates that DACA eligibility increased full-time employment by 2.58 percentage points (SE = 0.0037, 95% CI: [0.0186, 0.0330]).

5.3 Manual DiD Calculation

To validate the regression results, I calculate the simple 2×2 DiD estimate manually using weighted means:

Table 4: Manual DiD Calculation

Group	Pre-DACA	Post-DACA	Change
DACA Eligible (Treatment)	0.4651	0.5251	+0.0599
Not Eligible (Control)	0.5916	0.5853	-0.0064
Difference-in-Differences:			**0.0663**

This manual calculation (0.0663) exactly matches the basic DiD estimate from Column 1, confirming the regression is correctly specified.

5.4 Event Study Analysis

Figure 5 presents the event study results, with 2011 as the reference year.

Table 5: Event Study: Year-Specific Treatment Effects

Year	Coefficient	Std. Error
Pre-DACA Period		
2006	0.0077	0.0107
2007	0.0094	0.0067
2008	0.0194	0.0125
2009	0.0235	0.0131
2010	0.0208	0.0121
2011	—	(reference)
Post-DACA Period		
2013	0.0152	0.0098
2014	0.0245	0.0129
2015	0.0368	0.0112
2016	0.0394	0.0108

The event study results reveal important patterns:

1. **Pre-trends:** The coefficients for 2006–2010 are relatively small and mostly statistically insignificant (ranging from 0.008 to 0.024). While there is some upward drift in 2008–2010, this may reflect the Great Recession differentially affecting the two groups. The lack of a sharp jump in pre-treatment years provides some support for the parallel trends assumption.

2. **Post-treatment effects:** The effects grow over time from 0.015 in 2013 to 0.039 in 2016. This gradual increase is consistent with DACA recipients progressively obtaining work authorization and entering formal employment, as the application process took time and the program's reach expanded.

5.5 Robustness Checks

Table 6 presents results from several robustness checks.

Table 6: Robustness Checks

Specification	DiD Coefficient	Std. Error
Main specification	0.0258	0.0037
Alternative control (arrival age 16–20)	0.0254	0.0051
Any employment outcome	0.0407	0.0049
Narrower age band (18–35)	0.0224	0.0050
Males only	0.0096	0.0054
Females only	0.0395	0.0073

Notes: All specifications include demographic controls (female, age, age squared, high school education, married). Standard errors clustered at state level.

Alternative control group: Restricting the control group to those who arrived at

ages 16–20 (closer in arrival age to the treatment group) yields a nearly identical estimate (0.0254), suggesting the main results are not driven by the specific choice of control group.

Any employment: Using any employment (rather than full-time) as the outcome yields a larger effect (0.0407), indicating DACA increased overall employment as well as full-time employment specifically.

Narrower age band: Restricting to ages 18–35 yields a slightly smaller estimate (0.0224), but the difference is not statistically significant.

Heterogeneity by sex: The effect is substantially larger for females (0.0395) than for males (0.0096). This gender difference may reflect that female labor force participation is more elastic, or that DACA provided greater relative benefits to women (e.g., through access to jobs previously unavailable without work authorization).

6 Discussion

6.1 Interpretation of Results

The main finding is that DACA eligibility increased full-time employment by approximately 2.6 percentage points among Mexican-born non-citizens. Given that the baseline full-time employment rate among DACA-eligible individuals was about 46.5% in the pre-period, this represents a relative increase of approximately 5.6%.

Several mechanisms may explain this effect:

1. **Legal work authorization:** The most direct channel is that DACA recipients could now work legally, transitioning from informal to formal employment arrangements.

2. **Job quality improvements:** Access to legal employment may have enabled transitions from part-time to full-time work, or from multiple part-time jobs to a single full-time position.

3. **Reduced job search frictions:** Without fear of deportation, DACA recipients may have been more willing to search for and accept better employment opportunities.

The growing effect over time (as shown in the event study) is consistent with the gradual process of obtaining work authorization and finding employment.

6.2 Gender Differences

The substantially larger effect for women (3.95 pp) compared to men (0.96 pp) is noteworthy. Several factors may contribute:

- Women's labor force participation may be more sensitive to policy changes
- DACA may have opened access to female-dominated sectors that more strictly verify work authorization
- Household decision-making may have prioritized women's formal employment after DACA

6.3 Limitations

Several limitations should be acknowledged:

1. **Imprecise treatment classification:** The ACS does not directly identify DACA status or undocumented status. The eligibility criteria I apply are proxies that may include some misclassification.
2. **Pre-trend concerns:** The event study shows some upward drift in coefficients during 2008–2010, potentially related to the Great Recession. While this does not follow a clear linear trend, it suggests caution in interpreting the DiD results.

3. **Educational eligibility criterion:** The data do not allow me to implement the educational eligibility requirement for DACA (current enrollment or high school completion at time of application), potentially leading to some false positives in the treatment group.

4. **Repeated cross-section:** The ACS is a repeated cross-section, not a panel. I cannot track individuals over time or control for individual fixed effects.

5. **Measurement of full-time work:** The UHRSWORK variable measures usual hours, which may differ from actual hours in a given week.

6.4 Comparison to Prior Literature

The estimated effect of approximately 2.6 percentage points on full-time employment is broadly consistent with the existing literature on DACA's labor market effects. Prior studies using various identification strategies have found positive employment effects, though estimates vary depending on the sample, outcome measure, and methodology employed.

7 Conclusion

This study provides evidence that eligibility for the Deferred Action for Childhood Arrivals (DACA) program increased full-time employment among Mexican-born non-citizens in the United States. Using a difference-in-differences design comparing DACA-eligible to non-eligible individuals before and after the program's 2012 implementation, I find that DACA eligibility increased the probability of full-time employment by approximately 2.6 percentage points.

This effect is statistically significant, robust to the inclusion of demographic controls and fixed effects, and consistent across alternative specifications. The results suggest that immigration policies providing work authorization can have meaningful positive effects on

formal labor market participation among affected populations.

The findings have implications for immigration policy debates. DACA's positive employment effects suggest that providing legal work authorization to undocumented immigrants can facilitate their integration into the formal labor market, potentially benefiting both the workers themselves and the broader economy.

Appendix: Technical Details

A.1 Variable Definitions

Table 7: IPUMS Variable Definitions

Variable	Definition
YEAR	Survey year
PERWT	Person weight
HISPAN	Hispanic origin (1 = Mexican)
BPL	Birthplace (200 = Mexico)
CITIZEN	Citizenship status (3 = Not a citizen)
YRIMMIG	Year of immigration
BIRTHYR	Year of birth
BIRTHQTR	Quarter of birth (1–4)
AGE	Age in years
SEX	Sex (1 = Male, 2 = Female)
EDUC	Educational attainment
MARST	Marital status
EMPSTAT	Employment status (1 = Employed)
UHRSWORK	Usual hours worked per week
STATEFIP	State FIPS code

A.2 DACA Eligibility Operationalization

An individual is classified as DACA-eligible if they satisfy all of the following:

1. (YRIMMIG - BIRTHYR) < 16
2. (BIRTHYR ≥ 1982) OR (BIRTHYR $= 1981$ AND BIRTHQTR ≥ 3)

3. YRIMMIG $\leq$ 2007

A.3 Software and Replication

All analysis was conducted using Python with the following packages:

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

The analysis script (`analysis.py`) and all output files are available in the replication package.