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

Replication Report

Independent Replication Study

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Abstract

This report presents an independent replication analysis examining 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 2006–2016 and a difference-in-differences research design, I compare individuals aged 26–30 (treatment group) to those aged 31–35 (control group) as of June 15, 2012. The preferred specification estimates that DACA eligibility increased the probability of full-time employment by 4.56 percentage points (robust SE = 0.0107, 95% CI: [0.025, 0.067], $p < 0.001$). This represents a 7.4% increase relative to the treatment group's pre-period mean. Event study analysis provides evidence supporting the parallel trends assumption, with pre-treatment coefficients statistically indistinguishable from zero. The effect is positive for both men (3.30 pp) and women (4.73 pp), with the estimate for women slightly larger but less precisely estimated.

Contents

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 provided temporary relief from deportation and work authorization to undocumented immigrants who arrived in the United States as children. Understanding the labor market effects of this program is important for evaluating immigration policy and understanding how legal status affects economic outcomes.

This report presents an independent replication analysis examining the effect of DACA eligibility on full-time employment among Mexican-born Hispanic individuals in the United States. The analysis uses a difference-in-differences (DiD) research design that compares individuals who were age-eligible for DACA (ages 26–30 as of June 15, 2012) to those who were slightly too old (ages 31–35), before and after the program's implementation.

The research question addressed is: *Among ethnically Hispanic-Mexican Mexican-born people living in the United States, what was the causal impact of eligibility for the Deferred Action for Childhood Arrivals (DACA) program on the probability that the eligible person is employed full-time?*

Full-time employment is defined as usually working 35 hours per week or more, following standard definitions in labor economics.

2 Background

2.1 The DACA Program

DACA was announced by the Obama administration on June 15, 2012, and applications began to be accepted on August 15, 2012. The program allowed eligible undocumented immigrants to apply for a two-year renewable period of deferred action from deportation and work authorization.

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

- Arrived in the United States before their 16th birthday

- Had not yet had 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 status (citizenship or legal residency) at that time
- Met education and background requirements

In the first four years, nearly 900,000 initial applications were received, with approximately 90% approved. While the program was not specific to any origin country, the structure of undocumented immigration to the United States meant that the great majority of eligible individuals were from Mexico.

2.2 Expected Effects on Employment

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

1. **Legal work authorization**: DACA recipients can work legally, allowing them to seek formal sector employment rather than informal or under-the-table work.
2. **Driver's licenses**: In many states, DACA recipients became eligible to obtain driver's licenses, improving access to employment opportunities.
3. **Reduced fear of deportation**: The security provided by deferred action may encourage recipients to seek better employment opportunities without fear of exposure.
4. **Human capital investment**: Work authorization may encourage investment in education and job-specific training.

2.3 Research Design Rationale

The age eligibility cutoff at 31 years old (as of June 15, 2012) provides a natural comparison group. Individuals who were 31–35 years old meet all other DACA eligibility criteria but are excluded solely due to their age. Comparing those just below the age cutoff (26–30) to

those just above (31–35) allows us to estimate the causal effect of DACA eligibility while controlling for other factors that affect employment.

The five-year bandwidth on each side of the cutoff (ages 26–30 vs. 31–35) balances the tradeoff between similarity of the groups and statistical power. A narrower bandwidth would increase comparability but reduce sample size; a wider bandwidth would increase power but potentially include less comparable individuals.

3 Data

3.1 Data Source

The analysis uses data from the American Community Survey (ACS) as provided by IPUMS USA. The ACS is a nationally representative household survey conducted by the U.S. Census Bureau, collecting detailed demographic, social, economic, and housing information.

I use the one-year ACS files from 2006 through 2016, excluding 2012. The exclusion of 2012 is necessary because the ACS does not record the month of interview, making it impossible to distinguish pre-DACA and post-DACA observations within that year.

3.2 Sample Construction

The analytic sample is constructed through the following steps:

1. **Ethnicity restriction**: Hispanic-Mexican ethnicity (HISPAN = 1)
2. **Birthplace restriction**: Born in Mexico (BPL = 200)
3. **Citizenship restriction**: Not a U.S. citizen (CITIZEN = 3). This serves as a proxy for undocumented status, as we cannot distinguish documented from undocumented non-citizens in the data.
4. **DACA eligibility criteria**:
    - Arrived in the U.S. before age 16 (calculated as YRIMMIG − BIRTHYR < 16)

- Arrived by 2007 (YRIMMIG $\leq$ 2007), as a proxy for continuous residence since June 15, 2007

5. **Age restriction**: Ages 26–35 as of June 15, 2012 (the treatment and control groups)

Age as of June 15, 2012 is calculated using birth year (BIRTHYR) and birth quarter (BIRTHQTR). For individuals born in quarters 3 (July–September) or 4 (October–December), I subtract one year from the simple calculation (2012 − BIRTHYR) because they would not yet have had their birthday by June 15.

3.3 Variables

3.3.1 Outcome Variable

The outcome variable is an indicator for full-time employment, defined as:

$$\text{fulltime}_i = \mathbf{1}[\text{UHRSWORK}_i \geq 35]$$

where UHRSWORK is the usual hours worked per week.

3.3.2 Treatment and Time Variables

- **Treated**: Indicator equal to 1 if the individual was ages 26–30 as of June 15, 2012
- **Post**: Indicator equal to 1 for years 2013–2016 (post-DACA period)
- **Treated** $\times$ **Post**: The interaction term capturing the DiD effect

3.3.3 Control Variables

The following demographic controls are included in the preferred specification:

- **Male**: Indicator for male sex (SEX = 1)
- **Married**: Indicator for married status (MARST $\leq$ 2, including spouse present or absent)

- **High school education**: Indicator for high school completion or higher (EDUCD $\geq$ 62)

3.3.4 Fixed Effects

The preferred specification includes:

- Year fixed effects (dummies for each survey year)
- State fixed effects (dummies for each state of residence, using STATEFIP)

3.4 Sample Characteristics

Table 1 shows the sample construction process.

Table 1: Sample Construction

Restriction	**Observations**
Full ACS data (2006–2016)	33,851,424
Hispanic-Mexican ethnicity (HISPAN = 1)	2,945,521
Born in Mexico (BPL = 200)	991,261
Non-citizen (CITIZEN = 3)	701,347
Excluding 2012	636,722
Arrived before age 16	186,357
Arrived by 2007 (continuous residence)	177,294
Ages 26–35 as of June 2012 (final sample)	**43,238**

The final analytic sample contains 43,238 observations, with 25,470 in the treatment group (ages 26–30) and 17,768 in the control group (ages 31–35).

4 Methodology

4.1 Difference-in-Differences Design

The analysis employs a difference-in-differences research design. The identifying assumption is that, in the absence of DACA, the full-time employment rate of the treatment group (ages 26–30) would have followed the same trend as the control group (ages 31–35).

The basic DiD estimator is:

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

where T denotes the treatment group, C denotes the control group, and $\bar{Y}$ represents the mean of the outcome variable.

4.2 Regression Specification

The preferred specification is:

$$\text{fulltime}_{ist} = \alpha + \beta_1 \text{Treated}_i + \gamma_t + \mu_s + \delta(\text{Treated}_i \times \text{Post}_t) + X_i'\theta + \varepsilon_{ist} \tag{1}$$

where:

- fulltime_{ist} is the full-time employment indicator for individual i in state s in year t
- Treated_i is an indicator for treatment group membership
- γ_t represents year fixed effects
- μ_s represents state fixed effects
- X_i is a vector of demographic controls (male, married, high school education)
- δ is the coefficient of interest—the DiD estimate of DACA's effect

The regression is estimated using weighted least squares (WLS) with person weights (PERWT) to account for the complex survey design. Robust (heteroskedasticity-consistent) standard errors are used in the preferred specification.

4.3 Event Study Specification

To assess the parallel trends assumption, I estimate an event study model:

$$\text{fulltime}_{ist} = \alpha + \beta \text{Treated}_i + \gamma_t + \mu_s + \sum_{k \neq 2011} \delta_k (\text{Treated}_i \times \mathbf{1}[t = k]) + X_i' \theta + \varepsilon_{ist} \qquad (2)$$

where the coefficients δ_k capture the difference between treatment and control groups in each year, relative to the reference year (2011, the last pre-treatment year). Under the parallel trends assumption, the pre-treatment coefficients $(\delta_{2006}, \ldots, \delta_{2010})$ should be close to zero.

5 Results

5.1 Descriptive Statistics

Table 2 presents descriptive statistics by treatment status and time period.

Table 2: Descriptive Statistics by Group and Period

	Treatment (26–30)		**Control (31–35)**	
	Pre	Post	Pre	Post
Full-time employment rate	0.615	0.634	0.646	0.614
Mean usual hours worked	29.6	30.3	30.8	29.4
Mean age	24.7	30.7	29.9	35.9
Proportion male	0.562	0.559	0.567	0.548
Observations	16,694	8,776	11,683	6,085

The raw means show an interesting pattern. The treatment group's full-time employment rate increased from 61.5% to 63.4% (a 1.9 percentage point increase), while the control group's rate *decreased* from 64.6% to 61.4% (a 3.2 percentage point decrease). This divergence is consistent with a positive effect of DACA on the treatment group.

The raw difference-in-differences estimate is:

$$\widehat{\delta}_{raw} = (0.634 - 0.615) - (0.614 - 0.646) = 0.019 - (-0.032) = 0.052$$

5.2 Main Regression Results

Table 3 presents the main regression results across multiple specifications.

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

	(1)	(2)	(3)	(4)	(5)
Treated × Post	0.0516***	0.0590***	0.0480***	0.0463***	**0.0456*** **
	(0.0100)	(0.0098)	(0.0090)	(0.0090)	**(0.0107)**
Treated	−0.0314***	−0.0426***	−0.0425***	—	—
	(0.0058)	(0.0058)	(0.0054)		
Post	−0.0324***	−0.0299***	−0.0155**	—	—
	(0.0076)	(0.0075)	(0.0069)		
Male			0.3734***	0.3735***	0.3735***
			(0.0043)	(0.0043)	(0.0051)
Married			−0.0153***	−0.0168***	−0.0168***
			(0.0043)	(0.0043)	(0.0049)
High school+			0.0622***	0.0603***	0.0603***
			(0.0043)	(0.0043)	(0.0046)
Weights	No	Yes	Yes	Yes	Yes
Year FE	No	No	No	Yes	Yes
State FE	No	No	No	No	Yes
Robust SE	No	No	No	No	Yes
95% CI	[0.032, 0.071]	[0.040, 0.078]	[0.030, 0.066]	[0.029, 0.064]	**[0.025, 0.067]**
N	43,238	43,238	43,238	43,238	43,238

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Column (5) is the preferred specification.

The coefficient on Treated × Post is the DiD estimate of DACA's effect on full-time employment. Across all specifications, the estimate is positive and statistically significant at the 1% level.

Preferred estimate (Column 5): The preferred specification, which includes survey weights, year fixed effects, state fixed effects, demographic controls, and robust standard errors, yields an estimate of **0.0456** (robust SE = 0.0107). This means DACA eligibil-

ity increased the probability of full-time employment by approximately **4.56 percentage points**.

The 95% confidence interval is [0.025, 0.067], indicating that the effect is statistically significantly different from zero. The t-statistic is 4.28 and the p-value is less than 0.001.

In relative terms, this represents a $\frac{0.0456}{0.615} \times 100 = 7.4\%$ increase relative to the treatment group's pre-period mean full-time employment rate.

5.3 Robustness of Results

The results are robust across specifications:

- Adding survey weights increases the estimate slightly (from 0.052 to 0.059)
- Adding demographic controls reduces the estimate modestly (to 0.048)
- Adding year and state fixed effects has minimal additional effect
- Using robust standard errors increases standard errors from 0.009 to 0.011, but the coefficient remains highly statistically significant

5.4 Event Study Results

Table 4 and Figure 1 present the event study results.

Table 4: Event Study Estimates (Reference Year: 2011)

Year Interaction	**Coefficient**	**Robust SE**	**P-value**
Pre-treatment period			
Treated × 2006	0.0068	0.0227	0.764
Treated × 2007	−0.0288	0.0223	0.195
Treated × 2008	0.0085	0.0228	0.710
Treated × 2009	−0.0067	0.0235	0.774
Treated × 2010	−0.0135	0.0232	0.562
Post-treatment period			
Treated × 2013	0.0356	0.0242	0.141
Treated × 2014	0.0364	0.0246	0.139
Treated × 2015	0.0225	0.0248	0.365
Treated × 2016	0.0679***	0.0246	0.006

*** p<0.01. Reference year is 2011.

The event study results provide important evidence regarding the parallel trends assumption:

1. **Pre-treatment coefficients**: All five pre-treatment coefficients (2006–2010) are statistically indistinguishable from zero at conventional significance levels. The point estimates range from −0.029 to 0.009, with no systematic trend. This supports the parallel trends assumption.

2. **Post-treatment coefficients**: The post-treatment coefficients are consistently positive, ranging from 0.023 to 0.068. The coefficient for 2016 (0.068) is statistically significant at the 1% level, while the others are positive but not individually significant. The pattern suggests the effect may have strengthened over time as more individuals obtained DACA status and its benefits accumulated.

3. **Pattern**: There is no evidence of pre-existing differential trends. The post-treatment coefficients are uniformly higher than the pre-treatment coefficients, consistent with a treatment effect emerging after DACA implementation.

Event Study Coefficients

2006	•	0.007
2007	•	−0.029
2008	•	0.008
2009	•	−0.007
2010	•	−0.013
2011	○	0.000 (Reference)
2013	•	0.036
2014	•	0.036
2015	•	0.022
2016	•**	0.068

Figure 1: Event Study Coefficients (Treatment × Year interactions relative to 2011)

5.5 Heterogeneity Analysis

Table 5 presents results by gender.

Table 5: Heterogeneity by Gender

Subgroup	Coefficient	Robust SE	N
Full sample	0.0456	0.0107	43,238
Males only	0.0330***	0.0124	24,243
Females only	0.0473***	0.0181	18,995

*** p<0.01

Both men and women show positive effects of DACA eligibility on full-time employment. The point estimate for women (4.73 pp) is larger than for men (3.30 pp), though the difference is not statistically significant and the estimate for women is less precisely estimated due to smaller sample size. This pattern could reflect several factors:

- Women may have faced greater barriers to formal employment before DACA
- The baseline full-time employment rate is lower for women, so there is more room for improvement
- Work authorization may have particularly enabled women's labor force participation

6 Discussion

6.1 Interpretation of Results

The preferred estimate suggests that DACA eligibility increased full-time employment by approximately 4.56 percentage points among Mexican-born Hispanic non-citizens who met the program's other eligibility criteria. This is a substantively meaningful effect, representing a 7.4% increase relative to baseline.

Several mechanisms could explain this effect:

1. **Legal work authorization**: DACA recipients obtained Employment Authorization Documents (EADs), allowing them to work legally in the formal sector.
2. **Improved job quality**: With legal work authorization, individuals may have transitioned from part-time or informal work to full-time formal employment.
3. **Driver's licenses**: Many states allowed DACA recipients to obtain driver's licenses, expanding job opportunities and commuting options.
4. **Reduced employment discrimination**: Legal status documentation may have reduced employer reluctance to hire undocumented workers.

6.2 Validity of the Research Design

The difference-in-differences design relies on the parallel trends assumption. Several pieces of evidence support this assumption:

1. **Event study analysis**: Pre-treatment coefficients are statistically indistinguishable from zero, with no systematic trend.
2. **Similar groups**: The treatment and control groups are similar on observable characteristics. Both groups are Mexican-born, non-citizen, arrived as children, and differ only in their exact birth year.
3. **Robustness**: Results are stable across specifications, including those with different fixed effects and control variables.

6.3 Limitations

Several limitations should be noted:

1. **Proxy for undocumented status**: The ACS does not identify undocumented status directly. Using non-citizenship as a proxy includes some documented non-citizens (visa holders, green card applicants).

2. **Intent-to-treat**: The analysis estimates the effect of DACA *eligibility*, not actual DACA receipt. Not all eligible individuals applied for or received DACA.

3. **Continuous residence**: I use year of immigration ≤ 2007 as a proxy for continuous residence since June 15, 2007, which is imprecise.

4. **Age calculation**: Age as of June 15, 2012 is estimated using birth year and quarter, not exact birth date.

5. **Spillover effects**: The control group (ages 31–35) may have been indirectly affected by DACA through labor market competition or household dynamics.

6.4 Comparison with Prior Literature

The finding of a positive effect on employment is consistent with prior research on DACA and labor market outcomes. Several studies have found that DACA increased labor force participation, employment, and earnings among eligible individuals. The magnitude of my estimate (4.56 pp) falls within the range of estimates in the literature, which typically find effects on the order of 3–8 percentage points for various employment measures.

7 Conclusion

This independent replication analysis finds that DACA eligibility had a positive and statistically significant effect on full-time employment among Mexican-born Hispanic individuals in the United States. The preferred estimate indicates that DACA eligibility increased the probability of full-time employment by 4.56 percentage points (SE = 0.011, $p < 0.001$).

The analysis supports the validity of the difference-in-differences design through event study evidence showing no pre-existing differential trends. The effect is present for both men and women, with a somewhat larger point estimate for women.

These findings contribute to our understanding of how immigration policy affects labor market outcomes. Legal work authorization through programs like DACA appears to meaningfully increase formal labor force attachment among previously undocumented immigrants.

8 Summary of Key Results

Table 6: Summary of Preferred Estimate

Statistic	**Value**
Preferred estimate (Treated × Post)	0.0456
Robust standard error	0.0107
95% Confidence interval	[0.0247, 0.0665]
T-statistic	4.28
P-value	< 0.001
Total sample size	43,238
Treatment group (ages 26–30)	25,470
Control group (ages 31–35)	17,768
Pre-period observations (2006–2011)	28,377
Post-period observations (2013–2016)	14,861
Treatment group pre-period mean	0.615
Treatment group post-period mean	0.634
Control group pre-period mean	0.646
Control group post-period mean	0.614
Raw difference-in-differences	0.052

A Appendix: Data Dictionary

Table 7: Key IPUMS Variables Used

Variable	Description
YEAR	Census year
HISPAN	Hispanic origin (1 = Mexican)
BPL	Birthplace (200 = Mexico)
CITIZEN	Citizenship status (3 = Not a citizen)
YRIMMIG	Year of immigration
BIRTHYR	Birth year
BIRTHQTR	Quarter of birth (1 = Jan–Mar, 2 = Apr–Jun, 3 = Jul–Sep, 4 = Oct–Dec)
AGE	Age at survey
SEX	Sex (1 = Male, 2 = Female)
MARST	Marital status (1–2 = Married)
EDUCD	Educational attainment, detailed ($\geq$ 62 = High school or more)
UHRSWORK	Usual hours worked per week ($\geq$ 35 = Full-time)
PERWT	Person weight
STATEFIP	State FIPS code

B Appendix: Sample Selection Decisions

Key analytic decisions made in this replication:

1. **Age calculation**: Age as of June 15, 2012 is calculated as 2012 − BIRTHYR, with an adjustment of −1 for those born in quarters 3–4 (July–December) who would not have had their birthday yet.
2. **Arrival age**: Calculated as YRIMMIG − BIRTHYR. Required to be < 16.
3. **Continuous residence**: Proxied by YRIMMIG $\leq$ 2007.
4. **Full-time definition**: UHRSWORK $\geq$ 35 hours per week.
5. **Age bandwidth**: 5 years on each side of the 31-year cutoff (ages 26–30 vs. 31–35).
6. **Pre-period**: 2006–2011 (2012 excluded due to ambiguity).

7. **Post-period**: 2013–2016.
8. **Standard errors**: Robust (heteroskedasticity-consistent) standard errors.
9. **Weights**: Person weights (PERWT) used in all preferred specifications.

C Appendix: Regression Output Details

C.1 Model Specifications

1. **Model 1**: Basic OLS without weights

$$\text{fulltime}_i = \alpha + \beta_1 \text{Treated}_i + \beta_2 \text{Post}_i + \delta(\text{Treated}_i \times \text{Post}_i) + \varepsilon_i$$

2. **Model 2**: WLS with person weights
3. **Model 3**: WLS with demographics (male, married, high school education)
4. **Model 4**: WLS with demographics and year fixed effects
5. **Model 5**: WLS with demographics, year FE, and state FE
6. **Model 6 (Preferred)**: Same as Model 5 with robust standard errors

C.2 Control Variable Coefficients (Preferred Specification)

- Male: 0.374 (SE = 0.005, $p < 0.001$) – Men are 37.4 pp more likely to work full-time
- Married: -0.017 (SE = 0.005, $p < 0.001$) – Married individuals are 1.7 pp less likely to work full-time
- High school+: 0.060 (SE = 0.005, $p < 0.001$) – Those with high school education are 6.0 pp more likely to work full-time

D Appendix: Additional Methodological Considerations

D.1 Survey Weights

The ACS provides person weights (PERWT) to make the sample representative of the U.S. population. Using these weights is important for obtaining population-representative estimates rather than sample-specific estimates. The weights account for:

- Probability of selection into the sample
- Nonresponse adjustments
- Post-stratification to known population totals

In the preferred specification, weighted least squares (WLS) is used with PERWT as the weight variable. This approach produces estimates that are representative of the population of Mexican-born Hispanic non-citizens meeting the DACA eligibility criteria.

D.2 Standard Error Estimation

The preferred specification uses heteroskedasticity-robust standard errors (HC1). This is appropriate because:

1. The outcome variable is binary (full-time employment), which inherently produces heteroskedastic errors in a linear probability model
2. The treatment and control groups may have different error variances
3. Robust standard errors provide valid inference without requiring the homoskedasticity assumption

An alternative approach would be to cluster standard errors at a higher level (e.g., state or birth cohort). In robustness checks (not shown), clustering by state produces similar standard errors to the HC1 approach used here.

D.3 Linear Probability Model vs. Nonlinear Models

This analysis uses a linear probability model (LPM) rather than logit or probit specifications. The advantages of the LPM include:

- Direct interpretability of coefficients as marginal effects
- Straightforward inclusion of fixed effects
- Robustness to distributional misspecification
- Ease of computing difference-in-differences estimates

The main limitation of the LPM is that predicted probabilities can fall outside [0,1]. However, for the sample used here, predicted probabilities are generally well-behaved, and the marginal effect interpretation is most relevant for policy purposes.

D.4 Alternative Outcome Definitions

The primary outcome (full-time employment, UHRSWORK $\geq$ 35) follows standard labor economics conventions. Alternative outcomes that could be considered include:

- Any employment (EMPSTAT = 1)
- Hours worked (continuous)
- Labor force participation (LABFORCE = 2)
- Wage income (INCWAGE)

These alternatives would capture different aspects of labor market attachment but were not the focus of the research question.

E Appendix: Potential Threats to Validity

E.1 Selection into the Control Group

One potential concern is that individuals in the control group (ages 31–35) may differ systematically from those in the treatment group beyond just age. Several factors could drive such differences:

1. **Cohort effects**: Different birth cohorts may have experienced different economic conditions in Mexico or during immigration.
2. **Assimilation**: Older immigrants have lived in the U.S. longer, potentially affecting their labor market integration.
3. **Family formation**: Older individuals are more likely to have children and established households, affecting labor supply decisions.

The identifying assumption is that these cohort differences affect both groups' employment trends similarly over time. The event study analysis supports this assumption by showing no differential pre-trends.

E.2 Attrition and Sample Composition

The ACS is a repeated cross-section, not a panel, so we cannot track the same individuals over time. Changes in sample composition could bias estimates if:

- Return migration to Mexico differs by age group
- Mortality rates differ by age group
- Survey response rates change differentially by age

These concerns are mitigated by the relatively narrow age range (26–35) and short time span (10 years) of the analysis.

E.3 Spillover Effects

If DACA affected the control group through spillover effects, the difference-in-differences estimate would be biased. Potential spillovers include:

- **Labor market competition**: If DACA increased labor supply by the treatment group, this could affect wages or employment opportunities for the control group.
- **Household effects**: DACA recipients may support family members, including those in the control group, potentially affecting their labor supply.
- **Anticipation effects**: If individuals expected a future extension of DACA eligibility, this could affect behavior even among ineligible individuals.

If these spillovers reduced employment in the control group, the DiD estimate would overstate the true effect of DACA. If spillovers increased employment in the control group (e.g., through improved household income), the estimate would understate the true effect.

E.4 External Validity

The estimated effect applies specifically to:

- Mexican-born Hispanic non-citizens
- Who arrived in the U.S. as children (before age 16)
- Who had been in the U.S. since at least 2007
- Who were ages 26–35 in June 2012

Extrapolating to other immigrant populations or to younger DACA-eligible individuals requires caution, as effects may differ by national origin, education level, or local labor market conditions.

F Appendix: Software and Replication Information

F.1 Software Used

The analysis was conducted using:

- Python 3.x
- pandas (data manipulation)
- numpy (numerical operations)
- statsmodels (regression analysis)

F.2 Replication Files

The following files are included for replication:

1. `analysis_script.py` – Main analysis script
2. `data/data.csv` – ACS data extract
3. `data/acs_data_dict.txt` – Variable documentation
4. `regression_results.csv` – Saved regression coefficients
5. `event_study_results.csv` – Event study estimates
6. `summary_statistics.csv` – Descriptive statistics
7. `key_results.csv` – Key results for reporting

F.3 Computational Notes

- The full ACS extract contains approximately 33.8 million observations
- Memory-efficient loading was implemented using chunked CSV reading
- Total runtime for the analysis script is approximately 5–10 minutes depending on system resources