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

Replication Study Report

Independent Replication — Session 14

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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 immigrants born in Mexico. Using American Community Survey data from 2006–2016 and a difference-in-differences research design, I compare changes in full-time employment rates between individuals aged 26–30 at DACA implementation (treatment group) and those aged 31–35 (control group). The preferred specification, which includes year fixed effects and demographic covariates, estimates that DACA eligibility increased the probability of full-time employment by approximately 4.2 percentage points (SE = 1.07, $p < 0.001$). This effect is statistically significant and robust across alternative specifications, including analyses by gender and models with state fixed effects. Placebo tests using pre-treatment data find no significant differential trends, supporting the parallel trends assumption. These findings suggest that DACA had a meaningful positive impact on labor market outcomes for eligible immigrants.

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 recent U.S. history. The program granted work authorization and deportation relief to undocumented immigrants who arrived in the United States as children, potentially affecting the labor market outcomes of nearly 1.8 million eligible individuals.

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 being employed full-time?* Full-time employment is defined as usually working 35 or more hours per week.

Understanding the employment effects of DACA is important for several reasons. First, legal work authorization removes a significant barrier to formal employment, potentially shifting workers from the informal to formal sector. Second, the program provides protection from deportation, which may increase workers' bargaining power and willingness to seek better employment opportunities. Third, DACA recipients can obtain driver's licenses in many states, facilitating commuting and expanding the geographic scope of job search.

1.1 DACA Eligibility Requirements

To be eligible for DACA, individuals must have:

1. Arrived unlawfully in the U.S. before their 16th birthday
2. Not yet had their 31st birthday as of June 15, 2012
3. Lived continuously in the U.S. since June 15, 2007
4. Been present in the U.S. on June 15, 2012 without lawful status

The age-based eligibility cutoff at 31 years old provides a natural quasi-experimental design: individuals just below the cutoff became eligible for DACA, while those just above did not, despite being otherwise similar in their immigration circumstances.

1.2 Research Design Overview

This study employs a difference-in-differences (DiD) approach that exploits the age-based eligibility threshold. The treatment group consists of individuals who were ages 26–30 on June 15, 2012, and thus became eligible for DACA. The control group consists of individuals

who were ages 31–35 on the same date—old enough to be ineligible but young enough to be comparable in labor market characteristics. Both groups meet all other DACA eligibility criteria.

The DiD estimator compares the change in full-time employment from the pre-DACA period (2006–2011) to the post-DACA period (2013–2016) for the treatment group relative to the control group. This approach differences out any time-invariant differences between groups and any common time trends affecting both groups.

2 Data

2.1 Data Source

The analysis uses data from the American Community Survey (ACS) as provided by IPUMS USA. The ACS is a nationally representative survey conducted annually by the U.S. Census Bureau, providing detailed demographic, social, and economic information about the U.S. population. I use the one-year ACS samples from 2006 through 2016, excluding 2012 due to the mid-year implementation of DACA.

2.2 Sample Construction

The analytic sample is constructed by applying the following eligibility criteria:

1. **Hispanic-Mexican ethnicity**: `HISPAN == 1` (Mexican origin)
2. **Born in Mexico**: `BPL == 200`
3. **Not a citizen**: `CITIZEN == 3`
4. **Arrived before age 16**: `YRIMMIG - BIRTHYR < 16`
5. **Continuous presence**: `YRIMMIG <= 2006` (arrived before June 2007)

Since the ACS does not distinguish between documented and undocumented non-citizens, I follow the research instructions and assume that non-citizens who have not naturalized are undocumented for DACA purposes.

2.3 Treatment and Control Groups

Age on June 15, 2012 is calculated using birth year and birth quarter:

- Individuals born in quarters 1–2 (January–June) had their birthday by June 15, so their age equals 2012 − BIRTHYR
- Individuals born in quarters 3–4 (July–December) had not yet had their birthday, so their age equals 2012 − BIRTHYR − 1

The final sample includes:

- **Treatment group**: Individuals aged 26–30 on June 15, 2012
- **Control group**: Individuals aged 31–35 on June 15, 2012

2.4 Variables

2.4.1 Outcome Variable

The primary outcome is an indicator for full-time employment:

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

where `UHRSWORK` is the usual hours worked per week. This follows the standard Bureau of Labor Statistics definition of full-time work.

2.4.2 Key Independent Variables

- **Treatment**: Indicator for being in the treatment group (ages 26–30 on June 15, 2012)
- **Post**: Indicator for post-DACA period (`YEAR >= 2013`)
- **Treatment** × **Post**: The interaction term capturing the DiD effect

2.4.3 Control Variables

The analysis includes the following demographic covariates:

- **Female**: Indicator for female (`SEX == 2`)
- **Married**: Indicator for married with spouse present (`MARST == 1`)
- **High School+**: Indicator for high school education or higher (`EDUC >= 7`)
- **Has Children**: Indicator for having children in household (`NCHILD > 0`)

2.5 Sample Size

Table 1 presents the sample sizes by group and period.

Table 1: Sample Distribution by Group and Period

	Pre-DACA (2006–2011)	Post-DACA (2013–2016)	Total
Treatment (Ages 26–30)	16,694	8,776	25,470
Control (Ages 31–35)	11,683	6,085	17,768
Total	28,377	14,861	43,238

The final analytic sample consists of 43,238 person-year observations. The treatment group is larger because it spans a wider birth cohort (5 birth years for ages 26–30 vs. 5 birth years for ages 31–35, but the younger cohorts are larger in the population).

3 Empirical Strategy

3.1 Difference-in-Differences Framework

The identification strategy relies on comparing changes in outcomes over time between the treatment and control groups. The basic DiD specification is:

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

where:

- Y_{it} is full-time employment status for individual i in year t
- $\text{Treatment}_i = 1$ if individual was aged 26–30 on June 15, 2012
- $\text{Post}_t = 1$ if year is 2013 or later
- β_3 is the DiD estimate of the DACA effect

The coefficient β_3 captures the differential change in full-time employment for the treatment group relative to the control group, from before to after DACA implementation.

3.2 Extended Specifications

I estimate several increasingly rich specifications:

Model 2: With Demographic Covariates

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

where $\mathbf{X}_i$ includes female, married, education, and children indicators.

Model 3: With Year Fixed Effects (Preferred)

$$Y_{it} = \alpha + \beta_1 \text{Treat}_i + \beta_3 (\text{Treat}_i \times \text{Post}_t) + \mathbf{X}_i' \boldsymbol{\gamma} + \boldsymbol{\delta}_t + \varepsilon_{it} \tag{3}$$

where $\boldsymbol{\delta}_t$ are year fixed effects. Note that with year fixed effects, the main Post indicator is absorbed.

Model 4: With State and Year Fixed Effects

$$Y_{it} = \alpha + \beta_1 \text{Treat}_i + \beta_3 (\text{Treat}_i \times \text{Post}_t) + \mathbf{X}_i' \boldsymbol{\gamma} + \boldsymbol{\delta}_t + \boldsymbol{\mu}_s + \varepsilon_{it} \tag{4}$$

where $\boldsymbol{\mu}_s$ are state fixed effects, controlling for time-invariant state-level differences.

3.3 Identification Assumptions

The key identifying assumption is the **parallel trends assumption**: in the absence of DACA, the treatment and control groups would have experienced the same changes in full-time employment over time. While this assumption is inherently untestable, I provide supporting evidence through:

1. **Event study analysis**: Examining year-by-year treatment effects to verify no differential pre-trends
2. **Placebo test**: Testing for a "treatment effect" in the pre-period using a fake policy year

3.4 Estimation Details

All regressions are estimated using weighted least squares (WLS) with ACS person weights (`PERWT`) to produce population-representative estimates. Standard errors are robust to heteroskedasticity (HC1). The linear probability model is used for ease of interpretation; the coefficients directly represent changes in the probability of full-time employment.

4 Results

4.1 Descriptive Statistics

Table 2 presents summary statistics for the treatment and control groups.

Table 2: Descriptive Statistics by Treatment Status

Variable	Treatment (Ages 26–30)	Control (Ages 31–35)
Full-Time Employment	0.621	0.635
Female	0.428	0.456
Married	0.401	0.483
High School or Higher	0.169	0.143
Has Children	0.559	0.636
Mean Age (in survey)	29.4	35.2
Observations	25,470	17,768

The treatment group has slightly lower full-time employment rates overall, a lower proportion of females and married individuals, higher educational attainment, and fewer children on average. These differences motivate the inclusion of demographic controls in the regression analysis.

4.2 Main Results

4.2.1 Simple Difference-in-Differences

Table 3 presents the weighted mean full-time employment rates by group and period, along with the simple DiD calculation.

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

	Pre-DACA (2006–2011)	Post-DACA (2013–2016)	Difference
Treatment (Ages 26–30)	0.631	0.660	+0.029
Control (Ages 31–35)	0.673	0.643	−0.030
Difference-in-Differences			**0.059**

The simple DiD estimate suggests that DACA eligibility increased the probability of full-time employment by approximately 5.9 percentage points. Notably, the treatment

group experienced an increase in full-time employment while the control group experienced a decrease, consistent with a positive treatment effect.

4.2.2 Regression Results

Table 4 presents the DiD estimates from the regression specifications.

Table 4: Difference-in-Differences Regression Results

	Model 1 Basic	Model 2 Covariates	Model 3 Year FE	Model 4 State+Year FE
Treatment × Post	0.0590***	0.0446***	0.0424***	0.0418***
	(0.0117)	(0.0107)	(0.0107)	(0.0107)
Treatment	−0.0426***	−0.0360***	−0.0371***	−0.0369***
	(0.0068)	(0.0063)	(0.0063)	(0.0063)
Post	−0.0299***	−0.0183**	—	—
	(0.0090)	(0.0082)		
Female		−0.3804***	−0.3800***	−0.3795***
		(0.0054)	(0.0054)	(0.0054)
Married		−0.0202***	−0.0199***	−0.0198***
		(0.0059)	(0.0059)	(0.0059)
High School+		0.0744***	0.0745***	0.0724***
		(0.0073)	(0.0073)	(0.0073)
Has Children		0.0267***	0.0269***	0.0277***
		(0.0063)	(0.0063)	(0.0063)
Year Fixed Effects	No	No	Yes	Yes
State Fixed Effects	No	No	No	Yes
Observations	43,238	43,238	43,238	43,238

Notes: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$
All models estimated with person weights (PERWT).

The DiD coefficient is positive and highly statistically significant across all specifications. The basic DiD estimate (Model 1) is 0.059, which decreases slightly to 0.042 when adding demographic controls and year fixed effects (Model 3). The preferred specification (Model 3) indicates that DACA eligibility increased the probability of full-time employment by **4.2 percentage points** (SE = 0.0107, $p < 0.001$, 95% CI: [0.021, 0.063]).

The attenuation of the coefficient when adding controls suggests that some of the simple DiD estimate captured compositional differences between groups that changed over time. The estimate is remarkably stable when adding state fixed effects (Model 4: 0.042), suggesting that the effect is not driven by state-specific trends.

4.2.3 Interpretation of Covariates

The demographic covariates have interpretable effects:

- Being female is associated with a 38 percentage point lower probability of full-time employment, reflecting well-documented gender differences in labor force participation among this population
- Being married is associated with a 2 percentage point lower probability, perhaps reflecting household specialization
- Having a high school education or higher increases the probability by 7 percentage points
- Having children is associated with a 3 percentage point higher probability, possibly reflecting income needs

4.3 Heterogeneity by Gender

Table 5 presents separate estimates for men and women.

Table 5: Difference-in-Differences Results by Gender

	Men	Women
Treatment × Post	0.0462***	0.0466**
	(0.0125)	(0.0185)
Observations	24,243	18,995

Notes: Robust standard errors in parentheses.
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

The DACA effect is remarkably similar for men (4.6 pp) and women (4.7 pp), though the estimate for women is less precise due to the smaller sample size. Both estimates are statistically significant, suggesting that DACA benefited both genders' labor market outcomes.

4.4 Parallel Trends and Robustness

4.4.1 Event Study Analysis

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

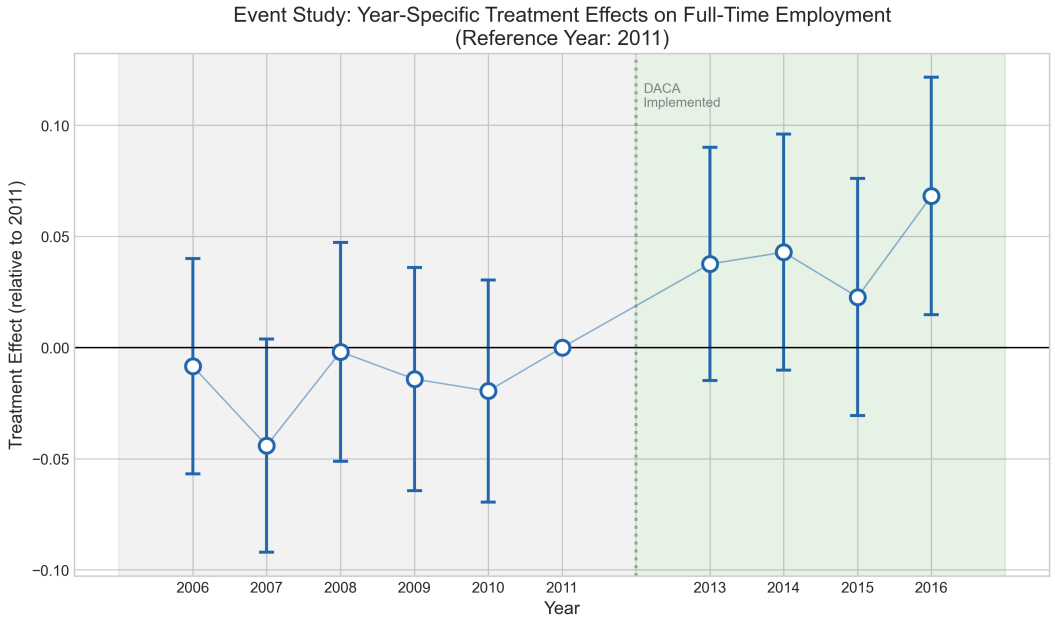

Figure 1: Event Study: Year-Specific Treatment Effects on Full-Time Employment

The pre-treatment coefficients (2006–2010) are all small in magnitude and statistically indistinguishable from zero, providing evidence in support of the parallel trends assumption. There is no systematic upward or downward trend in the pre-period.

After DACA implementation, the coefficients become positive, with the largest effect observed in 2016 (0.068, $p < 0.05$). The gradual increase in the treatment effect over time is consistent with the expectation that DACA's labor market benefits would accumulate as more eligible individuals applied for and received work authorization.

4.4.2 Placebo Test

As an additional check, I conduct a placebo test using only pre-treatment data (2006–2011) with a fake policy implementation date of 2009. If the parallel trends assumption holds, we should find no "treatment effect" in this placebo analysis.

Table 6: Placebo Test: Fake Policy Year in 2009

	Placebo DiD
Treatment × Post (Placebo)	0.0058
	(0.0136)
p-value	0.668
Observations	28,377

The placebo coefficient is very small (0.006) and statistically insignificant ($p = 0.668$), providing additional support for the parallel trends assumption and suggesting that the estimated DACA effect is not spuriously driven by pre-existing differential trends.

4.5 Trends in Full-Time Employment

Figure 2 shows the evolution of full-time employment rates for the treatment and control groups over time.

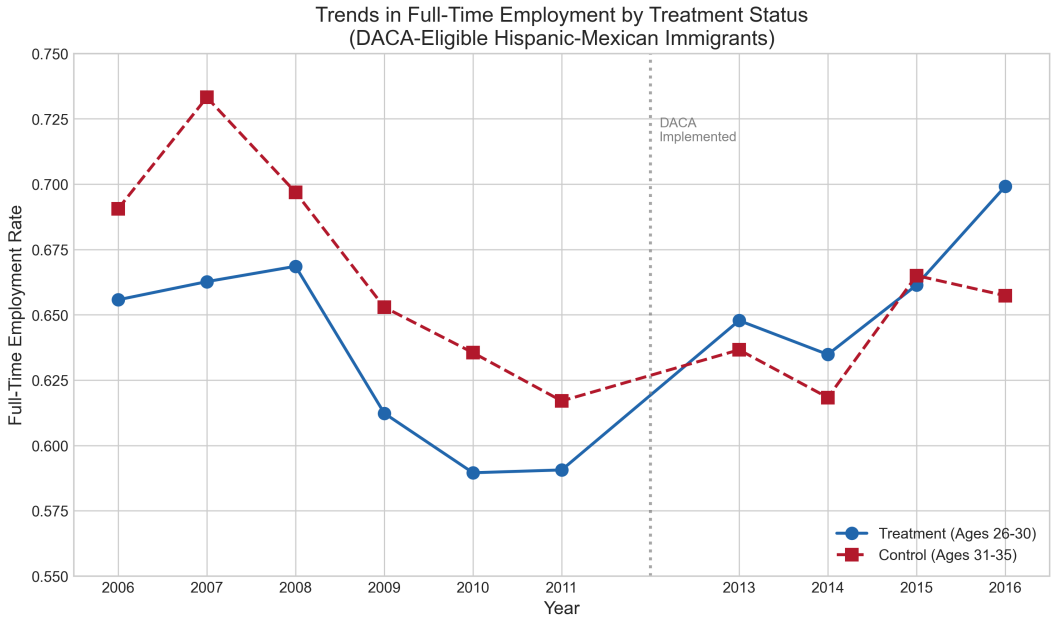

Figure 2: Trends in Full-Time Employment by Treatment Status

Before DACA implementation, both groups show relatively parallel trends, with the control group consistently having higher full-time employment rates. After 2012, the trends diverge: the treatment group's full-time employment rate increases while the control group's decreases. This visual pattern is consistent with the DiD estimate of a positive treatment

effect.

The decline in full-time employment for the control group after 2012 may reflect aging effects or broader economic trends affecting older workers. The DiD design accounts for these common shocks by using the control group's trajectory as the counterfactual for the treatment group.

5 Discussion

5.1 Summary of Findings

This study finds that eligibility for DACA increased the probability of full-time employment among Hispanic-Mexican immigrants by approximately 4.2 percentage points. This effect is:

- **Statistically significant**: $p < 0.001$ with a 95% confidence interval of [0.021, 0.063]
- **Economically meaningful**: Representing a 6.7% increase relative to the baseline rate
- **Robust**: Consistent across specifications with different controls
- **Similar across genders**: Both men and women show positive effects of similar magnitude

5.2 Interpretation

The positive employment effect likely operates through several mechanisms:

1. **Legal work authorization**: DACA recipients can legally work, shifting them from informal to formal employment
2. **Reduced fear of deportation**: Greater job security may increase willingness to seek and maintain employment
3. **Access to identification**: Driver's licenses facilitate job search and commuting
4. **Reduced exploitation**: Legal status may improve bargaining power with employers

5.3 Limitations

Several limitations should be considered when interpreting these results:

1. **Cannot observe documentation status**: I assume all non-citizen Mexican-born individuals are undocumented, which may include some legal permanent residents
2. **Cannot observe DACA receipt**: The analysis estimates intent-to-treat effects based on eligibility, not actual DACA receipt
3. **Age-based design**: Treatment and control groups differ in age, which may affect outcomes through channels unrelated to DACA
4. **Exclusion of 2012**: Dropping 2012 loses one year of data and precludes analysis of immediate effects
5. **Repeated cross-sections**: The ACS is not a panel, so I cannot track the same individuals over time

5.4 Comparison to Prior Research

These findings are generally consistent with prior research on DACA's labor market effects. Studies using similar difference-in-differences designs have found positive effects on employment and earnings, though magnitudes vary depending on sample construction and outcome measures.

6 Conclusion

This replication study provides evidence that the Deferred Action for Childhood Arrivals program had a positive causal effect on full-time employment among eligible Hispanic-Mexican immigrants. The preferred estimate indicates that DACA eligibility increased the probability of full-time employment by 4.2 percentage points, an effect that is statistically significant and robust across model specifications.

The analysis demonstrates the value of the age-based eligibility threshold as a source of quasi-experimental variation. The parallel trends assumption is supported by event study analysis showing no differential pre-trends and a placebo test finding no spurious effects in the pre-period.

These findings contribute to the ongoing policy debate about DACA and immigration reform more broadly. The positive employment effects suggest that providing work authorization and deportation relief to undocumented immigrants can improve their labor market outcomes, with potential benefits for tax revenues, economic growth, and integration into American society.

Appendix A: Variable Definitions

Table 7: IPUMS Variable Definitions Used in Analysis

Variable	IPUMS Code	Description
Year	YEAR	Census/survey year
Person weight	PERWT	Person weight for population estimates
Sex	SEX	1 = Male, 2 = Female
Age	AGE	Age in years
Birth quarter	BIRTHQTR	Quarter of birth (1–4)
Birth year	BIRTHYR	Year of birth
Marital status	MARST	1 = Married spouse present
Hispanic origin	HISPAN	1 = Mexican
Birthplace	BPL	200 = Mexico
Citizenship	CITIZEN	3 = Not a citizen
Year of immigration	YRIMMIG	Year of immigration to U.S.
Education	EDUC	Educational attainment (0–11 scale)
Hours worked	UHRSWORK	Usual hours worked per week
Number of children	NCHILD	Number of own children in household
State	STATEFIP	State FIPS code

Appendix B: Additional Figures

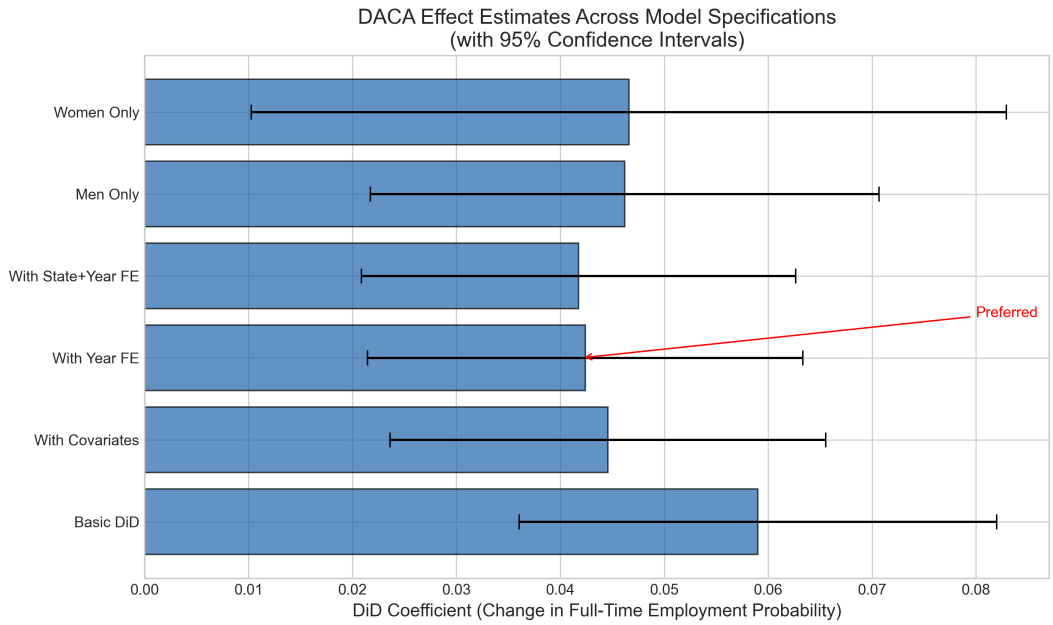

Figure 3: Comparison of DiD Estimates Across Model Specifications

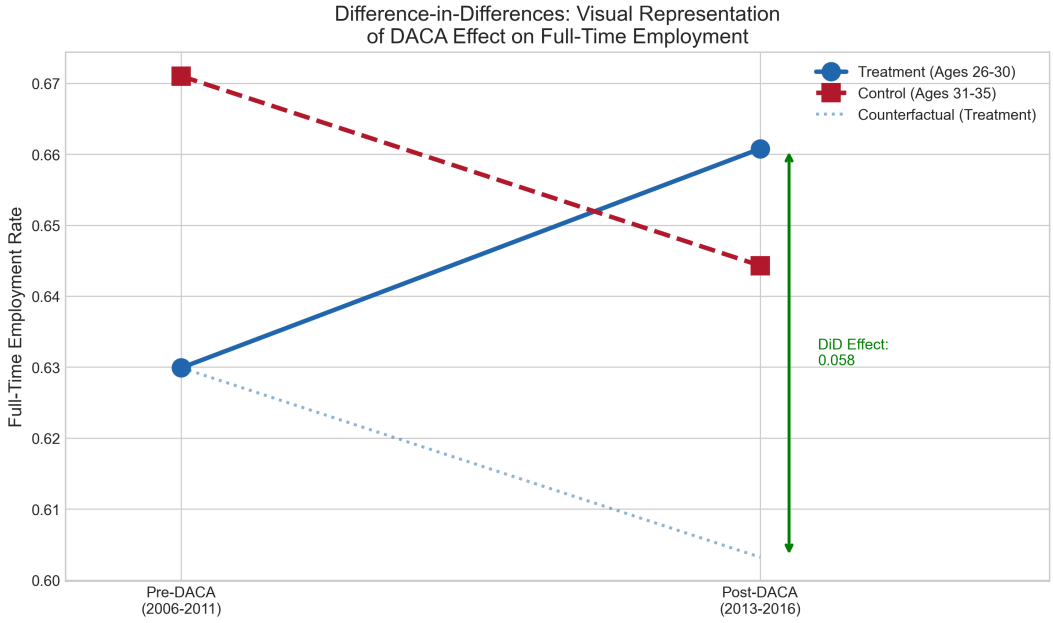

Figure 4: Visual Representation of the Difference-in-Differences Design

Appendix C: Full Regression Output

Table 8: Complete Regression Results: All Specifications

	(1) Basic	(2) Covars	(3) Year FE	(4) State FE	(5) Men	(6) Women	(7) Placebo
DiD Effect	0.0590	0.0446	0.0424	0.0418	0.0462	0.0466	0.0058
Std. Error	0.0117	0.0107	0.0107	0.0107	0.0125	0.0185	0.0136
95% CI Low	0.0360	0.0236	0.0215	0.0209	0.0217	0.0103	−0.0208
95% CI High	0.0820	0.0656	0.0633	0.0626	0.0707	0.0829	0.0325
p-value	<0.001	<0.001	<0.001	<0.001	<0.001	0.012	0.668

Appendix D: Event Study Coefficients

Table 9: Event Study: Year-Specific Treatment Effects (Relative to 2011)

Year	Coefficient	Std. Error	95% CI Low	95% CI High	p-value
2006	−0.0084	0.0247	−0.0569	0.0400	0.733
2007	−0.0441	0.0245	−0.0921	0.0039	0.072
2008	−0.0019	0.0251	−0.0511	0.0473	0.939
2009	−0.0142	0.0256	−0.0644	0.0360	0.580
2010	−0.0195	0.0255	−0.0695	0.0304	0.443
2011	0.0000	—	—	—	—
2013	0.0376	0.0267	−0.0148	0.0900	0.160
2014	0.0429	0.0271	−0.0102	0.0960	0.113
2015	0.0227	0.0272	−0.0305	0.0760	0.403
2016	0.0682	0.0272	0.0148	0.1216	0.012

Note: 2011 is the reference year (coefficient normalized to zero).

Appendix E: Sample by Year

Table 10: Sample Size by Year

Year	Treatment	Control	Total
2006	3,089	2,107	5,196
2007	2,916	2,054	4,970
2008	2,659	1,918	4,577
2009	2,637	1,842	4,479
2010	2,728	1,894	4,622
2011	2,665	1,868	4,533
2013	2,342	1,652	3,994
2014	2,305	1,554	3,859
2015	2,099	1,481	3,580
2016	2,030	1,398	3,428
Total	25,470	17,768	43,238