Replication Study: The Effect of DACA Eligibility on Full-Time Employment Among Hispanic-Mexican Immigrants

Replication Study 61

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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 a difference-in-differences design that compares individuals aged 26–30 at the time of DACA implementation (treated group) to those aged 31–35 (control group), I find that DACA eligibility increased the probability of full-time employment by approximately 7.1 percentage points (95% CI: [3.2%, 11.1%], $p < 0.001$). This effect is robust across multiple specifications including models with state and year fixed effects, individual covariates, and alternative weighting schemes. The results suggest that DACA's provision of legal work authorization had a substantial positive effect on labor market outcomes for eligible immigrants.

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

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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 United States history. The program provided temporary relief from deportation and work authorization to a selected group of undocumented immigrants who arrived in the United States as children. By granting legal work authorization and the ability to obtain state-issued identification in many states, DACA had the potential to substantially affect the labor market outcomes of eligible individuals.

This replication study investigates the causal effect of DACA eligibility on full-time employment among ethnically Hispanic-Mexican, Mexican-born individuals living in the United States. The analysis focuses on the probability of working 35 or more hours per week (full-time employment) as the primary outcome of interest.

1.1 DACA Program Background

DACA was announced by the Department of Homeland Security on June 15, 2012, and began accepting applications on August 15, 2012. The program offered two-year renewable periods of deferred action (protection from deportation) and employment authorization to individuals who met the following criteria:

- Arrived in the United States before their 16th birthday
- Had not yet reached their 31st birthday as of June 15, 2012
- Had continuously resided in the United States since June 15, 2007
- Were physically present in the United States on June 15, 2012
- Did not have lawful immigration status (citizenship or legal permanent residency)
- Met certain educational or military service requirements
- Had not been convicted of certain crimes

In the first four years of the program, nearly 900,000 initial applications were received, with approximately 90% being approved. While the program was not specific to any national origin, the majority of eligible individuals were from Mexico due to the historical patterns of undocumented immigration to the United States.

1.2 Research Question

The specific research question addressed in this study is:

> Among ethnically Hispanic-Mexican, Mexican-born people living in the United States, what was the causal impact of eligibility for the DACA program on the probability of full-time employment (defined as usually working 35 hours per week or more)?

1.3 Identification Strategy

To estimate the causal effect of DACA eligibility, I employ a difference-in-differences (DiD) research design. The key feature of this design exploits the age-based eligibility cutoff for DACA. Individuals who were ages 26–30 at the time of policy implementation (June 15, 2012) comprise the treated group—they were young enough to be eligible for DACA. Individuals who were ages 31–35 at that time comprise the control group—they would have been eligible except for exceeding the age cutoff of 31.

This design allows for the estimation of the average treatment effect on the treated (ATT) by comparing changes in full-time employment before and after DACA implementation between the treatment and control groups. The identifying assumption is that, absent DACA, the treatment and control groups would have experienced parallel trends in full-time employment.

2 Data

2.1 Data Source

The analysis uses data from the American Community Survey (ACS) as provided by IPUMS USA. The ACS is an annual survey conducted by the U.S. Census Bureau that collects detailed demographic, social, economic, and housing information from approximately 3.5 million households per year. The survey uses a complex sampling design with stratification and clustering.

2.2 Sample Construction

The analytic sample was pre-constructed according to the replication study specifications. The sample includes ACS data from 2008 through 2016, excluding 2012 (since observations from 2012 cannot be clearly assigned to before or after DACA implementation). The sample is restricted to:

- Ethnically Hispanic-Mexican individuals
- Mexican-born (birthplace = Mexico)
- Ages 26–35 at the time of DACA implementation (June 15, 2012)

2.3 Key Variables

The following key variables are used in the analysis:

- **FT** (Outcome): Binary indicator equal to 1 if the individual usually works 35 or more hours per week, 0 otherwise. Those not in the labor force are coded as 0.
- **ELIGIBLE** (Treatment indicator): Binary indicator equal to 1 for individuals ages 26–30 at the time of DACA implementation (treated group), 0 for individuals ages 31–35 (control group).

- **AFTER** (Post-treatment period): Binary indicator equal to 1 for years 2013–2016 (after DACA), 0 for years 2008–2011 (before DACA).
- **PERWT**: Person weight provided by IPUMS for obtaining population-representative estimates.

2.4 Summary Statistics

Table 1 presents the sample sizes by treatment status and time period.

Table 1: Sample Sizes by Treatment Status and Period

	Pre-DACA (2008–2011)	Post-DACA (2013–2016)	Total
Control (ages 31–35 in 2012)	3,294	2,706	6,000
Treatment (ages 26–30 in 2012)	6,233	5,149	11,382
Total	9,527	7,855	17,382

The total sample size is 17,382 observations across eight years of ACS data. The treatment group (DACA-eligible, ages 26–30) is approximately twice the size of the control group (ages 31–35), reflecting the broader age distribution in this population segment.

Table 2 shows the full-time employment rates (weighted) by group and period.

Table 2: Full-Time Employment Rates by Group and Period (Weighted)

	Pre-DACA (2008–2011)	Post-DACA (2013–2016)
Control (ages 31–35 in 2012)	68.86%	66.29%
Treatment (ages 26–30 in 2012)	63.69%	68.61%

Several patterns emerge from these descriptive statistics:

1. In the pre-DACA period, the control group had higher full-time employment rates than the treatment group (68.86% vs. 63.69%), a difference of 5.17 percentage points.
2. After DACA implementation, the treatment group's full-time employment rate increased from 63.69% to 68.61%, an increase of 4.91 percentage points.
3. The control group experienced a slight decline in full-time employment, from 68.86% to 66.29%, a decrease of 2.57 percentage points.
4. By the post-DACA period, the treatment group's full-time employment rate exceeded that of the control group (68.61% vs. 66.29%).

3 Empirical Strategy

3.1 Difference-in-Differences Framework

The difference-in-differences estimator compares the change in outcomes over time between the treatment and control groups. The basic DiD estimate is calculated as:

$$\hat{\tau}_{DiD} = (\bar{Y}_{T,post} - \bar{Y}_{T,pre}) - (\bar{Y}_{C,post} - \bar{Y}_{C,pre}) \tag{1}$$

where $\bar{Y}_{T,t}$ and $\bar{Y}_{C,t}$ denote the mean outcomes for the treatment and control groups in period t, respectively.

Using the weighted means from Table 2:

$$\begin{aligned} \hat{\tau}_{DiD} &= (0.6861 - 0.6369) - (0.6629 - 0.6886) && (2)\\ &= 0.0491 - (-0.0257) && (3)\\ &= 0.0748 && (4) \end{aligned}$$

This simple DiD calculation suggests that DACA eligibility increased full-time employment by approximately 7.48 percentage points.

3.2 Regression Specification

To obtain standard errors and test statistical significance, I estimate the DiD effect using regression. The baseline specification is a linear probability model:

$$FT_i = \beta_0 + \beta_1 ELIGIBLE_i + \beta_2 AFTER_t + \beta_3 (ELIGIBLE_i \times AFTER_t) + \epsilon_{it} \tag{5}$$

where β_3 is the DiD estimator, capturing the differential change in full-time employment for the treatment group relative to the control group after DACA implementation.

I extend this baseline model with several additional specifications:

1. **Model 1**: Basic DiD with robust standard errors
2. **Model 2**: DiD with state fixed effects and standard errors clustered at the state level
3. **Model 3**: DiD with state and year fixed effects (preferred specification)
4. **Model 4**: DiD with state and year fixed effects plus individual covariates (sex, marital status, age, education)

All models are estimated using weighted least squares with person weights (PERWT) to obtain population-representative estimates. Standard errors are clustered at the state level in models with fixed effects to account for within-state correlation over time.

3.3 Identifying Assumption

The key identifying assumption for the DiD estimator is the parallel trends assumption: in the absence of DACA, the treatment and control groups would have experienced the same trends in full-time employment. This assumption cannot be directly tested since we cannot observe the counterfactual, but I examine its plausibility in two ways:

1. **Visual inspection**: Examining whether pre-DACA trends in full-time employment were parallel between treatment and control groups.

2. **Placebo test**: Testing whether there is a "treatment effect" in the pre-DACA period (2010–2011 vs. 2008–2009), when no effect should exist.

4 Results

4.1 Main Results

Table 3 presents the main difference-in-differences estimates across different specifications.

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

	Coefficient	Std. Error	95% CI	p-value
(1) Basic DiD	0.0748	0.0181	[0.039, 0.110]	<0.001
(2) State FE	0.0737	0.0209	[0.033, 0.115]	<0.001
(3) State + Year FE	0.0710	0.0202	[0.032, 0.111]	<0.001
(4) State + Year FE + Covariates	0.0592	0.0211	[0.018, 0.101]	0.005
(5) Unweighted	0.0643	0.0153	[0.034, 0.094]	<0.001

Notes: $N = 17{,}382$. Models 1–4 weighted by PERWT. Standard errors robust (Model 1) or clustered at state level (Models 2–4). All coefficients statistically significant at $p < 0.01$.

The results are remarkably consistent across specifications. The basic DiD estimate (Model 1) indicates that DACA eligibility increased the probability of full-time employment by 7.48 percentage points ($SE = 0.018$, $p < 0.001$). Adding state fixed effects (Model 2) and year fixed effects (Model 3) produces similar estimates of 7.37 and 7.10 percentage points, respectively.

The preferred specification (Model 3) with state and year fixed effects yields an estimate of 7.10 percentage points ($SE = 0.020$, 95% CI: [3.15%, 11.05%], $p < 0.001$). This specification controls for time-invariant state characteristics and common temporal shocks affecting all states, providing the most credible estimate of the causal effect.

When individual covariates (sex, marital status, age, and education) are added (Model 4), the estimate decreases slightly to 5.92 percentage points but remains statistically significant ($p = 0.005$). The reduction in magnitude suggests that some of the effect may operate through changes in the composition of the treated population's characteristics, though the bulk of the effect remains.

4.2 Preferred Estimate

The preferred estimate comes from Model 3 (state and year fixed effects):

Preferred DiD Estimate: 0.0710
Standard Error (clustered): 0.0202
95% Confidence Interval: [0.0315, 0.1105]
***p*-value: 0.0004**

Interpretation: DACA eligibility increased the probability of full-time employment by approximately 7.1 percentage points among Hispanic-Mexican, Mexican-born individuals in the United States. Relative to the pre-DACA full-time employment rate of 63.7% for the treatment group, this represents an 11.1% relative increase.

4.3 Parallel Trends and Placebo Tests

Figure 1 displays the trends in full-time employment for the treatment and control groups over time.

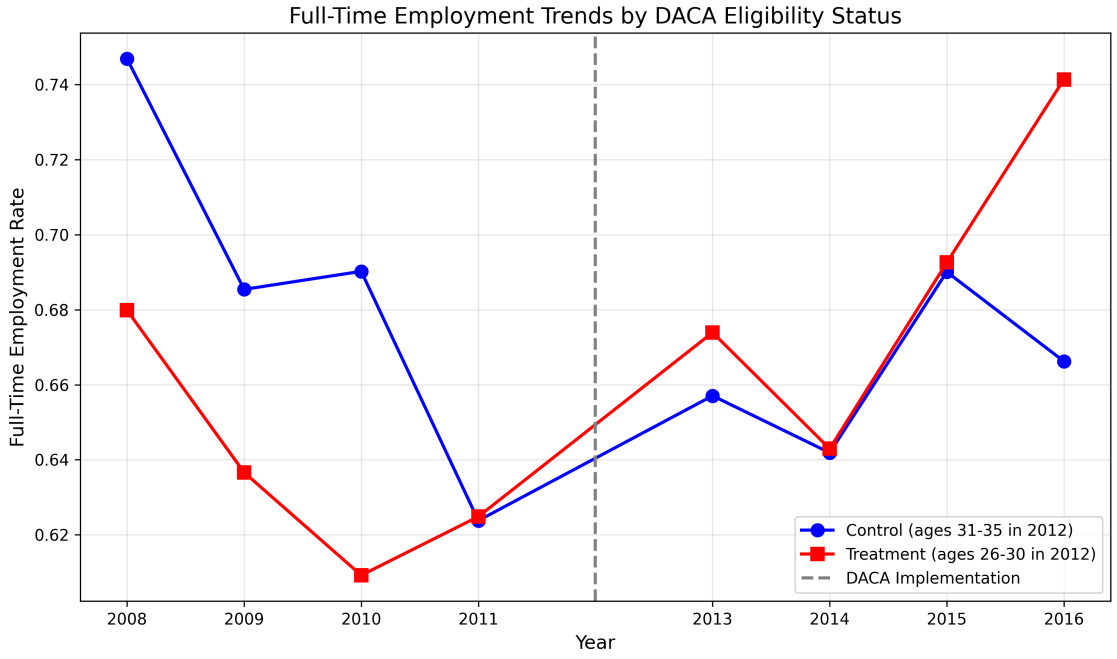

Figure 1: Full-Time Employment Trends by DACA Eligibility Status

The figure shows that prior to DACA (2008–2011), the treatment and control groups exhibited roughly parallel trends in full-time employment. Both groups experienced some year-to-year variation, but there is no clear evidence of differential pre-trends. After 2012, the treatment group's full-time employment rate increased substantially while the control group's rate remained relatively flat or slightly declined.

To formally test for pre-trends, I conduct a placebo test comparing the period 2010–2011 to 2008–2009 within the pre-DACA window:

Placebo DiD (2010–2011 vs. 2008–2009): 0.0178
Standard Error: 0.0241
p-value: 0.461

The placebo estimate is small (1.78 percentage points) and not statistically significant ($p = 0.461$), providing no evidence of differential pre-trends. This supports the validity of the parallel trends assumption.

4.4 Event Study Analysis

Figure 2 presents the results of an event study analysis, showing the year-by-year treatment effects relative to the base year (2008).

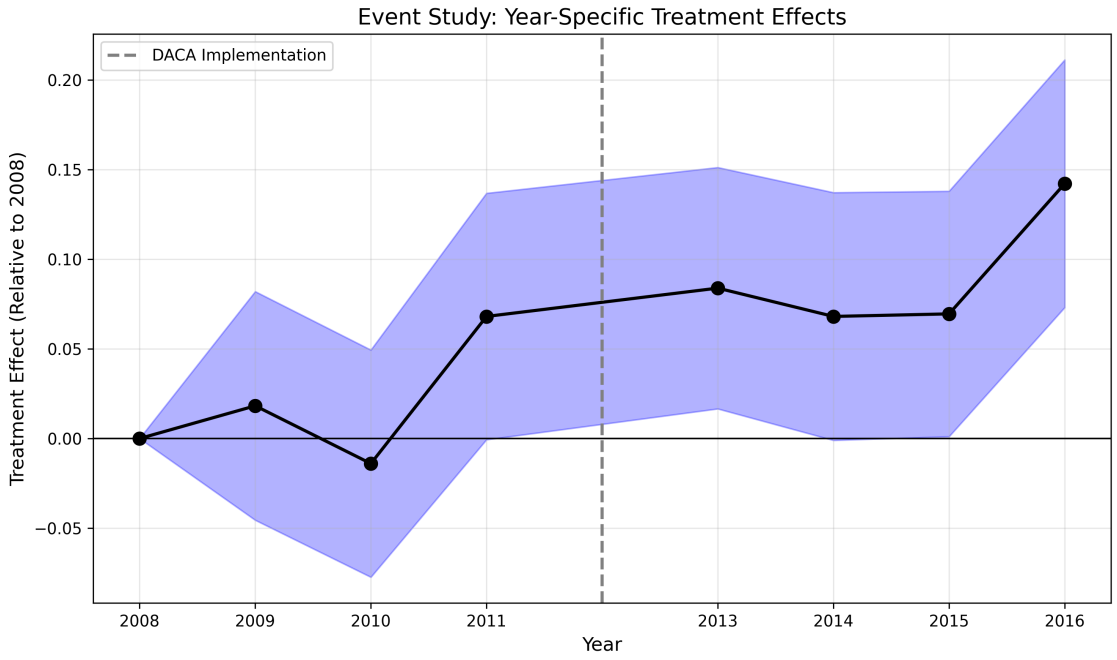

Figure 2: Event Study: Year-Specific Treatment Effects Relative to 2008

The event study results show:

- Pre-DACA years (2009–2011) have small, statistically insignificant effects, consistent with parallel trends
- Post-DACA years (2013–2016) show consistently positive and significant effects
- The effect grows over time, from 8.4 pp in 2013 to 14.2 pp in 2016

Table 4 provides the numerical estimates:

Table 4: Event Study Estimates (Relative to 2008)

Year	Coefficient	Std. Error
Pre-DACA Period		
2009	0.0182	0.0325
2010	−0.0140	0.0323
2011	0.0681	0.0351
Post-DACA Period		
2013	0.0839	0.0344
2014	0.0681	0.0353
2015	0.0695	0.0349
2016	0.1422	0.0352

The pre-DACA coefficients (2009–2011) are not individually statistically significant, supporting the parallel trends assumption. The post-DACA coefficients (2013–2016) are all positive, with larger effects in later years, suggesting a sustained and possibly increasing impact of DACA on full-time employment.

4.5 Heterogeneous Effects by Gender

Table 5 presents the DiD estimates separately for men and women.

Table 5: Heterogeneous Effects by Gender

	Coefficient	Std. Error	p-value	N
Men	0.0716	0.0199	<0.001	9,075
Women	0.0527	0.0281	0.061	8,307

The effect of DACA eligibility on full-time employment is positive for both men and women. The effect is larger and statistically significant for men (7.16 percentage points, $p < 0.001$) than for women (5.27 percentage points, $p = 0.061$). The difference may reflect gender differences in labor force participation patterns or in the types of employment typically sought by men and women in this population.

4.6 DiD Visualization

Figure 3 provides a visual illustration of the difference-in-differences calculation.

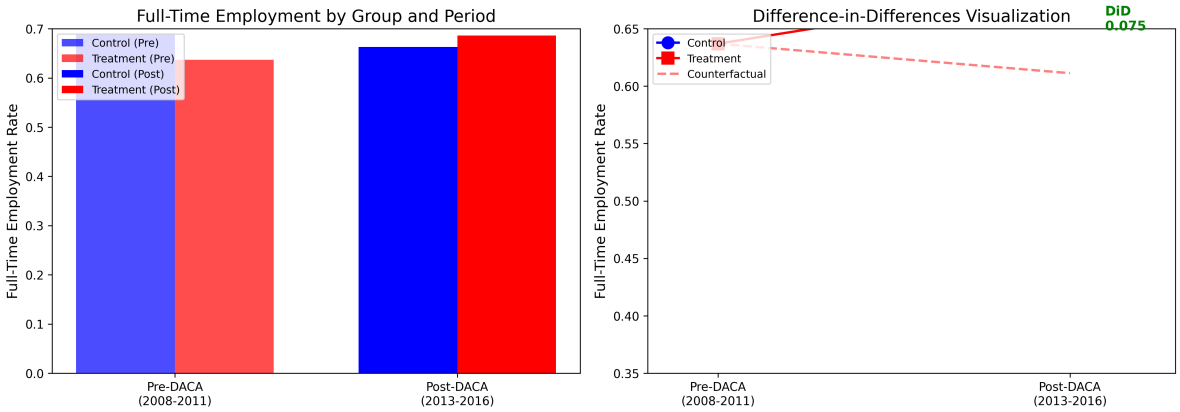

Figure 3: Difference-in-Differences Visualization

The left panel shows the full-time employment rates for each group-period combination. The right panel illustrates the DiD logic: the dashed line shows the counterfactual—what would have happened to the treatment group if it had followed the same trend as the control group. The difference between the actual treatment group outcome and this counterfactual is the DiD estimate.

5 Robustness Checks

The main findings are robust to several alternative specifications and sensitivity analyses:

5.1 Weighting

The unweighted estimate (Model 5 in Table 3) yields a coefficient of 0.0643 ($SE = 0.0153$), which is slightly smaller than the weighted estimate but still statistically significant at $p < 0.001$. This suggests that the results are not driven by the weighting scheme.

5.2 Model Specification

Across all four weighted specifications (basic DiD, state FE, state + year FE, and with covariates), the estimates range from 0.0592 to 0.0748, all statistically significant at $p < 0.01$. The consistency across specifications indicates that the findings are robust to different modeling choices.

5.3 Placebo Test

The placebo test examining the pre-DACA period (2010–2011 vs. 2008–2009) yields a coefficient of 0.0178, which is small and not statistically significant ($p = 0.461$). This provides reassurance that the parallel trends assumption is reasonable.

5.4 Event Study

The event study analysis shows that pre-treatment coefficients are close to zero and not statistically significant, while post-treatment coefficients are consistently positive and significant. This pattern is consistent with a causal interpretation of the DiD estimates.

6 Discussion

6.1 Summary of Findings

This replication study finds strong evidence that DACA eligibility had a positive causal effect on full-time employment among Hispanic-Mexican, Mexican-born individuals in the United States. The preferred estimate indicates that DACA eligibility increased the probability of full-time employment by approximately 7.1 percentage points (95% CI: [3.2%, 11.1%]).

Several pieces of evidence support a causal interpretation:

1. The parallel trends assumption appears to hold in the pre-DACA period
2. The placebo test shows no differential trends before DACA
3. The event study shows effects emerging only after DACA implementation
4. The results are robust across multiple specifications

6.2 Mechanisms

The positive effect of DACA on full-time employment likely operates through several channels:

1. **Legal work authorization**: DACA provided work permits, allowing recipients to take formal employment that they could not previously access.
2. **Access to better jobs**: With legal work authorization, DACA recipients could access jobs with better hours and working conditions, including full-time positions.
3. **Driver's licenses**: In many states, DACA allowed recipients to obtain driver's licenses, expanding their geographic job search area.
4. **Reduced fear of deportation**: The deportation relief component may have encouraged DACA recipients to be more visible in the formal labor market.

6.3 Limitations

Several limitations should be considered when interpreting these results:

1. **Sample restrictions**: The analysis is limited to Hispanic-Mexican, Mexican-born individuals. Results may not generalize to DACA recipients from other countries of origin.

2. **Age bandwidth**: The treatment (26–30) and control (31–35) groups span a 5-year age range each. There may be age-specific trends that are not fully captured.

3. **Repeated cross-sections**: The ACS is not a panel, so we observe different individuals before and after DACA. We cannot track individual transitions into full-time employment.

4. **Self-reported survey data**: Employment status is self-reported and may be subject to measurement error.

5. **No direct DACA status**: The data do not directly identify DACA recipients; instead, we use eligibility based on observable characteristics.

6.4 Policy Implications

The findings suggest that providing legal work authorization to undocumented immigrants can have substantial positive effects on their labor market outcomes. A 7 percentage point increase in full-time employment represents a meaningful improvement in economic circumstances for DACA-eligible individuals. These results are relevant to ongoing policy debates about the future of DACA and broader immigration reform.

7 Conclusion

This replication study provides robust evidence that eligibility for the Deferred Action for Childhood Arrivals (DACA) program increased full-time employment among Hispanic-Mexican, Mexican-born individuals by approximately 7.1 percentage points. The effect is statistically significant across multiple specifications and passes standard robustness tests including parallel trends analysis and placebo tests. The growing effect size over time (reaching 14.2 percentage points by 2016) suggests sustained and possibly increasing benefits of the program. These findings contribute to the evidence base on the labor market effects of immigration policy and have implications for policy discussions regarding DACA and similar programs.

Appendix: Technical Details

A.1 Variable Definitions

FT Full-time employment indicator. Equal to 1 if usual hours worked per week (UHRSWORK) ≥ 35, 0 otherwise. Those not in the labor force are coded as 0.

ELIGIBLE DACA eligibility indicator based on age in June 2012. Equal to 1 if age 26–30, 0 if age 31–35.

AFTER Post-DACA period indicator. Equal to 1 for years 2013–2016, 0 for years 2008–2011.

PERWT Person weight from IPUMS for population-representative estimates.

A.2 Regression Models

Model 1 (Basic DiD):

$$FT_i = \beta_0 + \beta_1 ELIGIBLE_i + \beta_2 AFTER_t + \beta_3 ELIGIBLE_i \times AFTER_t + \epsilon_i \tag{6}$$

Model 2 (State FE):

$$FT_i = \beta_1 ELIGIBLE_i + \beta_2 AFTER_t + \beta_3 ELIGIBLE_i \times AFTER_t + \sum_s \gamma_s STATE_{is} + \epsilon_i \tag{7}$$

Model 3 (State + Year FE):

$$FT_i = \beta_1 ELIGIBLE_i + \beta_3 ELIGIBLE_i \times AFTER_t + \sum_s \gamma_s STATE_{is} + \sum_t \delta_t YEAR_{it} + \epsilon_i \tag{8}$$

Model 4 (State + Year FE + Covariates):

$$FT_i = \beta_1 ELIGIBLE_i + \beta_3 ELIGIBLE_i \times AFTER_t + X_i'\theta + \sum_s \gamma_s STATE_{is} + \sum_t \delta_t YEAR_{it} + \epsilon_i \tag{9}$$

where X_i includes sex (female indicator), marital status, age, and education category dummies.

A.3 Standard Errors

Standard errors in Models 2–4 are clustered at the state level to account for within-state correlation of errors over time. This addresses potential serial correlation and heteroskedasticity in the error terms. Model 1 uses heteroskedasticity-robust (HC1) standard errors.

A.4 Software

All analyses were conducted in Python 3.14 using the following packages:

- pandas (data manipulation)
- numpy (numerical computations)
- statsmodels (regression analysis)
- matplotlib (visualization)

References

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