A Synthetic Difference-in-Difference Analysis of Paid Family Leave in Washington State

By: Jeremy Rexus, Amneet Pawar, and Madilyn Shirley

Project Overview

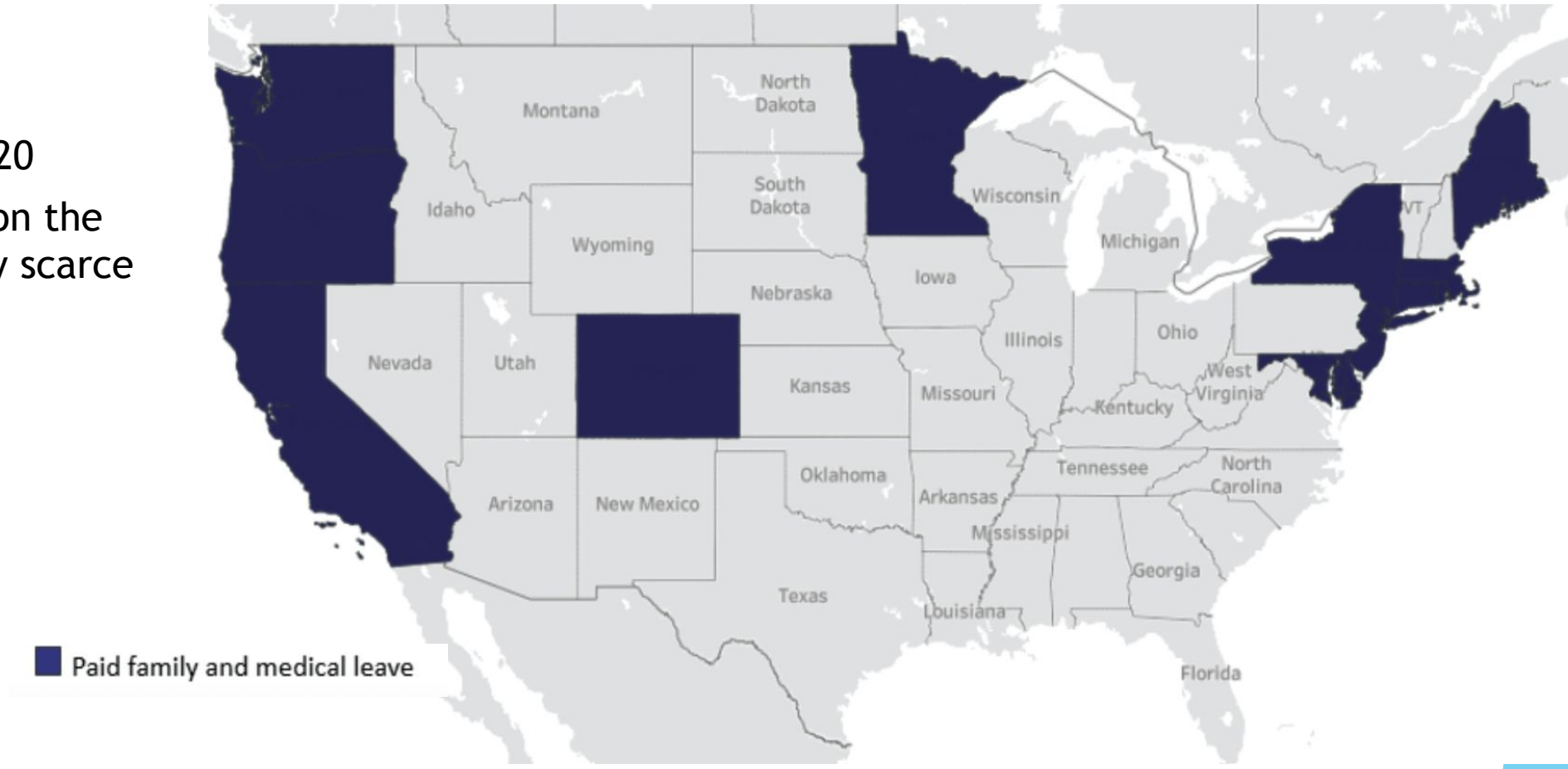
- **Central Question:**
  - How does implementing paid family leave affect birth rates in Washington state?
- **Hypothesis:**
  - Anticipated finding: A positive correlation between paid family leave implementation and birth rates.
  - Expectation: Birth rates to decline, but at a slower pace compared to no policy enactment.

Background

- Since the peak of the baby boom there has been a decline in the fertility rate
- Older populations put more strain on social programs

Background (continued)

- Some states offer Paid Leave Policies (PLP)
  - US only country without PLP
- WA PLP
  - Enacted 2017
  - Implemented 2020
- Existing literature on the subject is relatively scarce



Source: US Department of Labor

What are the differences between DID and Synthetic DID analysis?

DID focuses on estimating causal effects by comparing changes in outcomes over time between a treatment group that experiences an intervention and a control group that does not.

Synthetic DID analysis is a sophisticated extension of traditional DID methods. It Involves creating a synthetic control group that closely matches the characteristics of the treatment group before the intervention.

Data

- Crude Birth Rate & General Fertility differences
- Data Sources
  - Bureau of Labor Statistics
  - WA Dept. of Health
  - CO Center for Health & Environmental Data
  - Census Data
- We have also reached out to State Governments to gather the data necessary
- We are in the process of collecting data for more control variables such as education, income, and marital status

Project Methodology

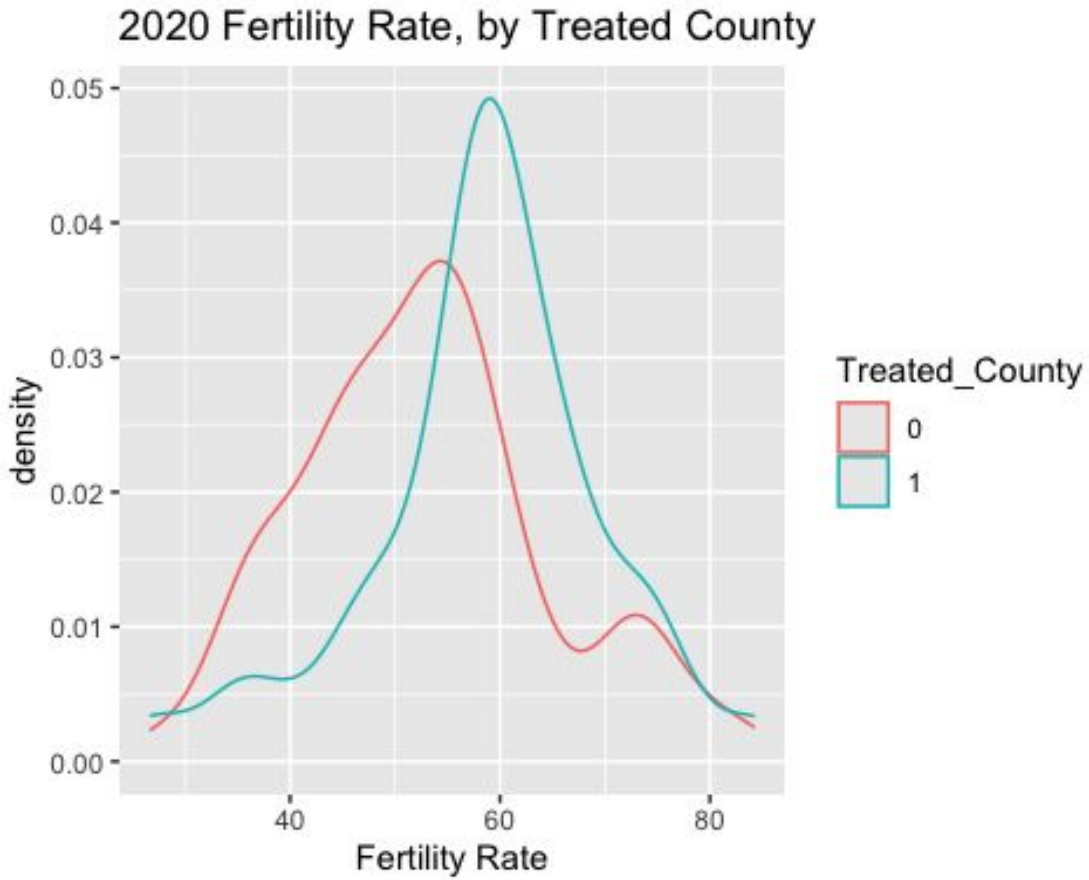
- Study period: 2011-2022
- Treatment group: Washington state
- Control group: Synthetic Washington (composed of portions of other states matched to pre-treatment characteristics of Washington). This synthetic control state is meant to mirror Washington state's characteristics.
- Control variables ensure reliability and validity of findings.
  - Age
  - Race
  - Avg. age when giving birth to 1st child
  - Marriage Status
- Fixed effects will be by year and county.

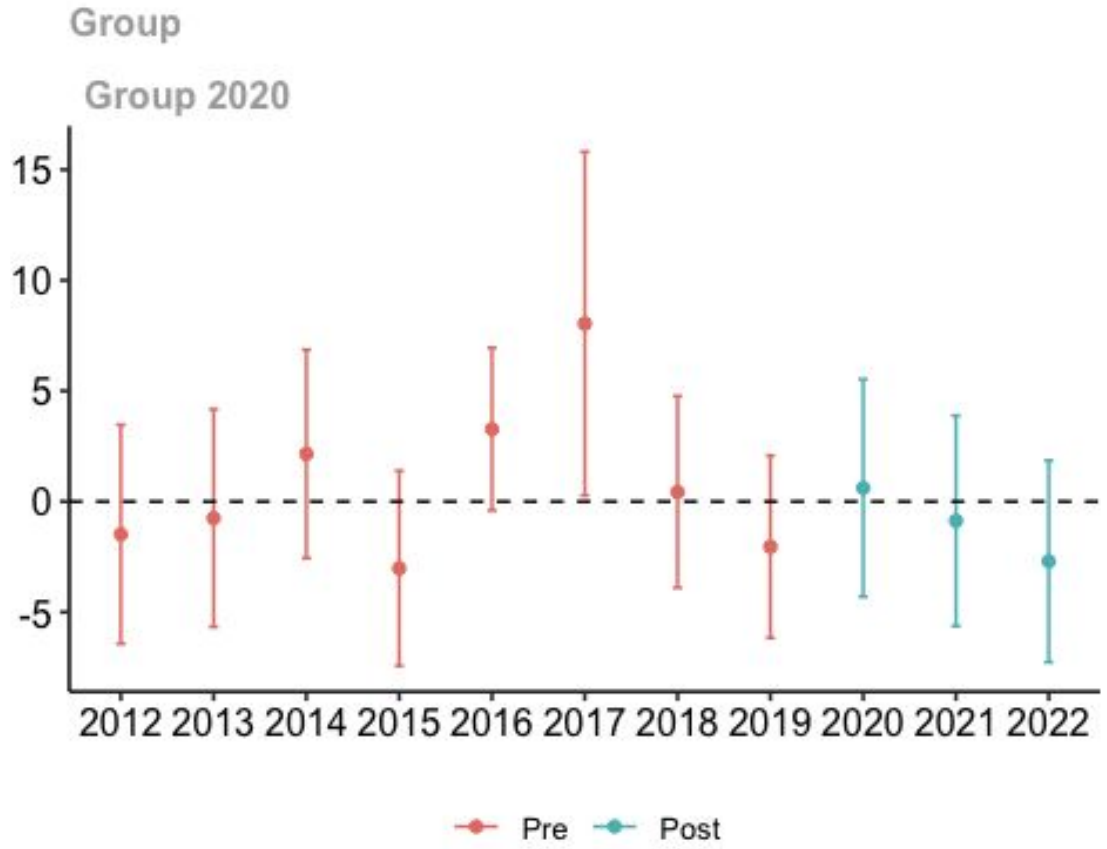
Regression Analysis

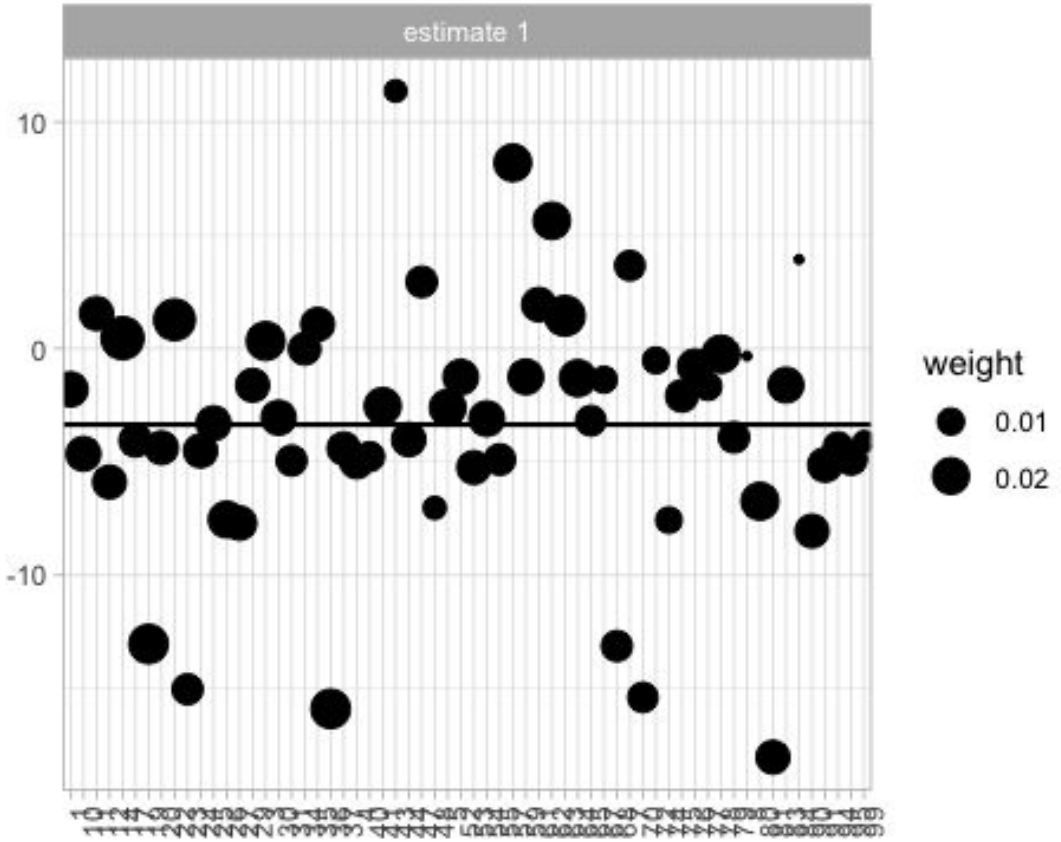
Employ regression models with county-specific and time-specific fixed effects, controlling for potential confounding factors. Estimate interaction terms between policy implementation and the post-treatment period to assess the differential effect of paid family leave policies.

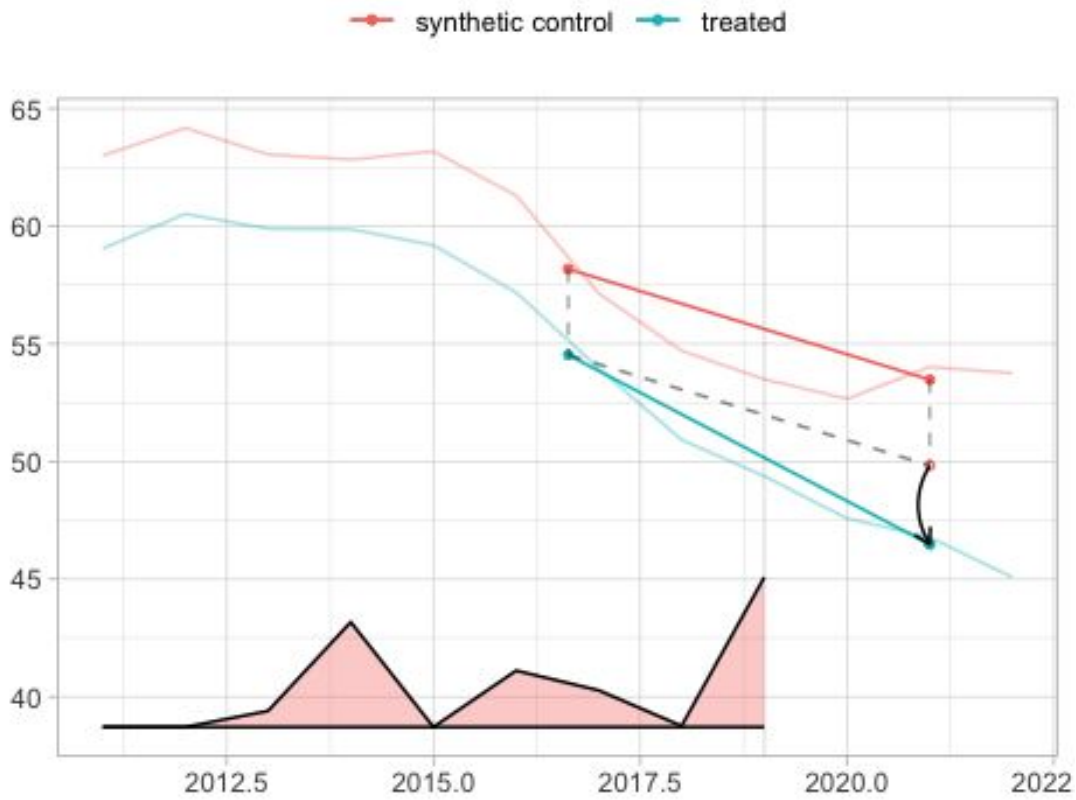
$$Y = \beta_0 + \beta_1 Post_t + \beta_2 Treatment_i + \beta_3 (Post_t \times Treatment_i) + \alpha_i + \delta_t + \epsilon_{it}$$

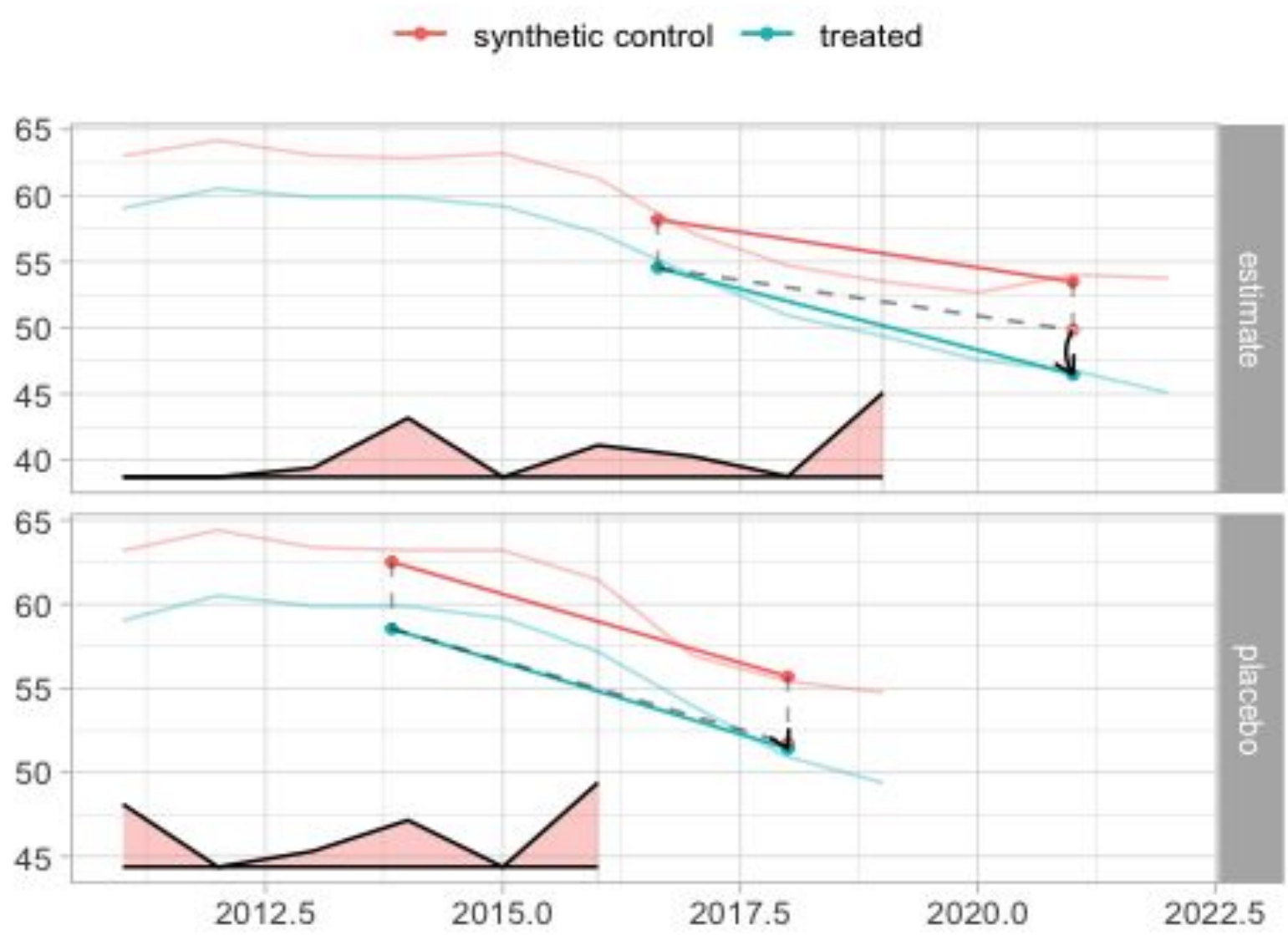
$$Y = FertilityRate$$

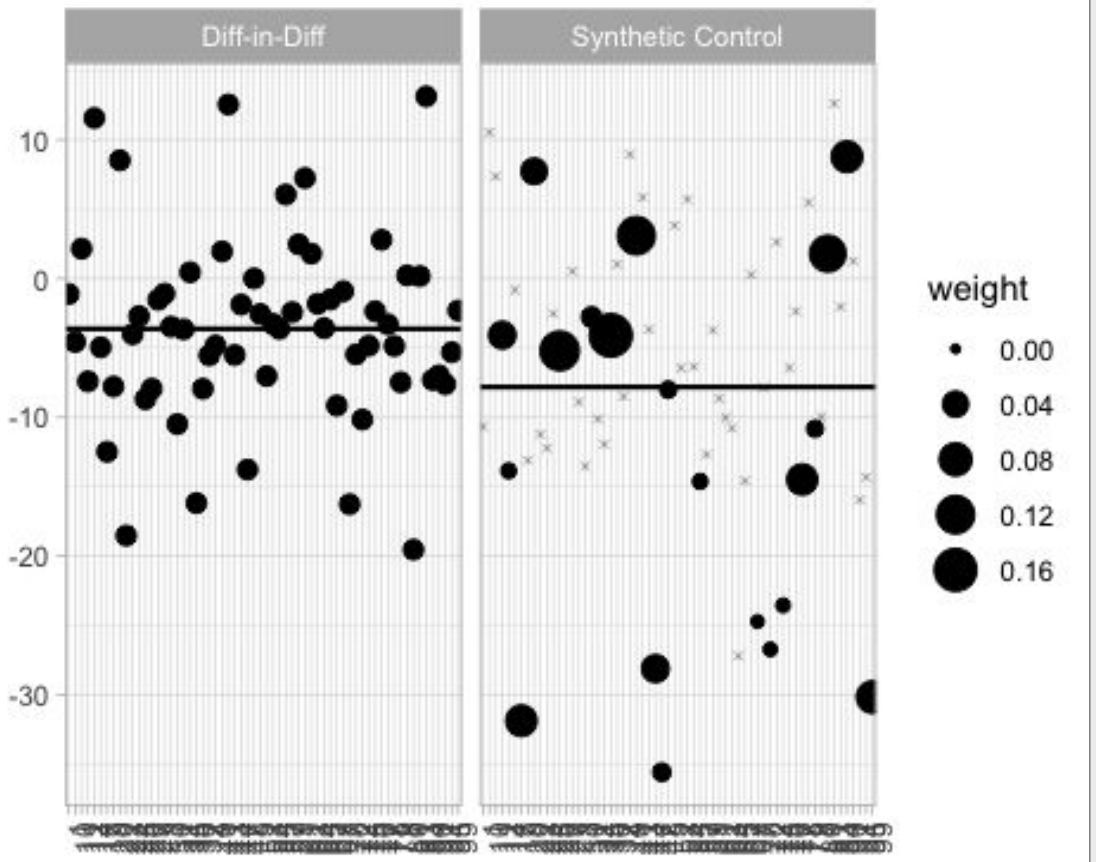

2020 Fertility Rate, by Treated County
density
0.05
0.04
0.03
0.02
0.01
0.00
40
60
80
Fertility Rate
Treated_County
0
1

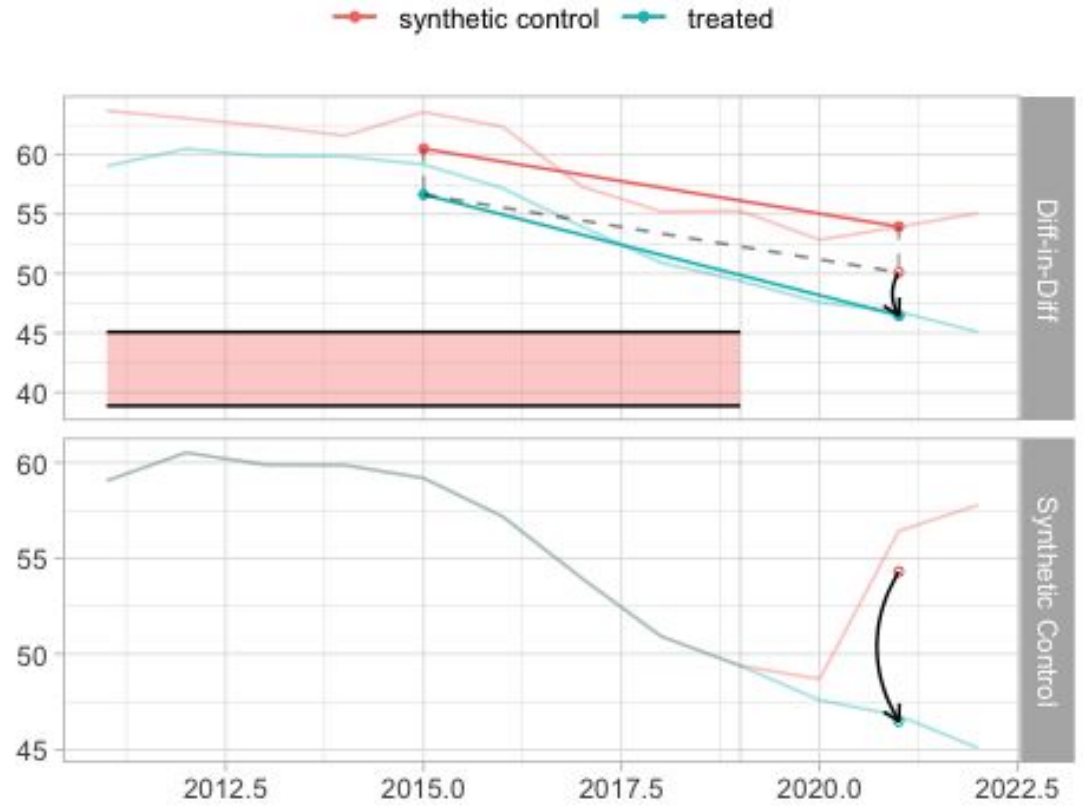

Group
Group 2020
15
10
5
0
-5
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
Pre
Post

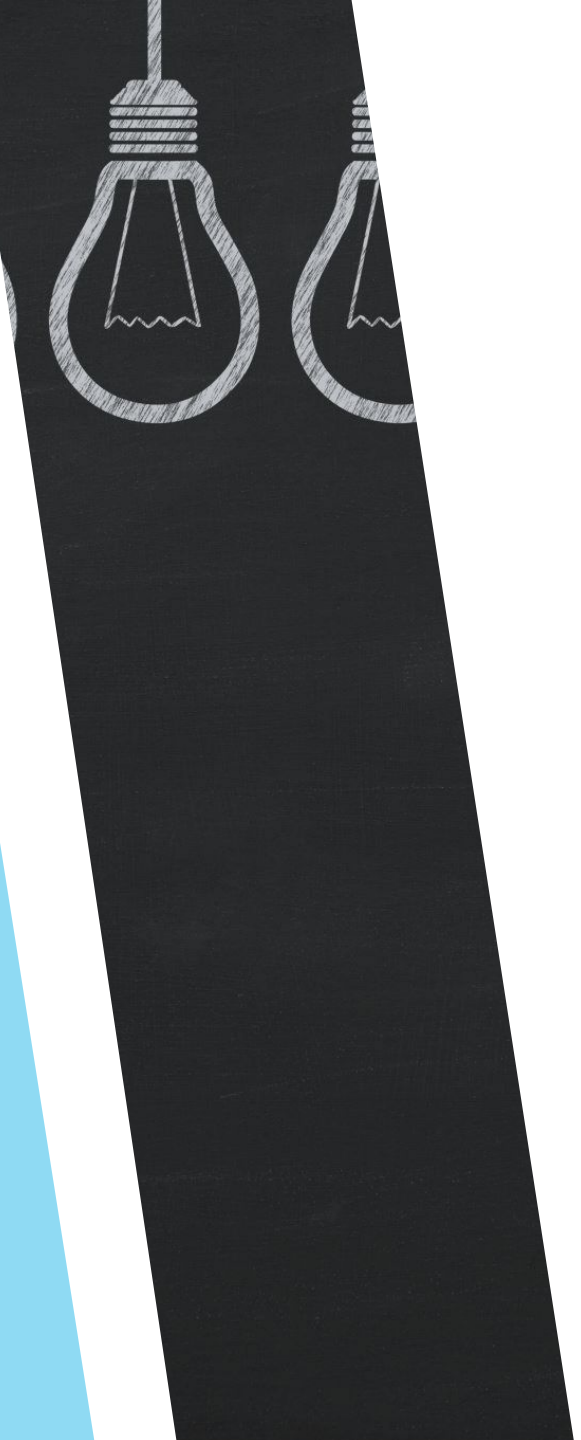

estimate 1
10
0
-10
weight
0.01
0.02


synthetic control
treated
65
60
55
50
45
40
2012.5
2015.0
2017.5
2020.0
2022


synthetic control
treated
65
60
55
50
45
40
estimate
65
60
55
50
45
placebo
2012.5
2015.0
2017.5
2020.0
2022.5


Diff-in-Diff
Synthetic Control
10
0
-10
-20
-30
weight
0.00
0.04
0.08
0.12
0.16


synthetic control
treated
60
55
50
45
40
Diff-in-Diff
60
55
50
45
Synthetic Control
2012.5
2015.0
2017.5
2020.0
2022.5



Implications of Research

- Findings will inform policymakers and stakeholders interested in family leave policies' impact on population dynamics, guiding future policy decisions.
- At least for Washington, 12 weeks of paid family leave is not enough incentive to raise the birth rate

What's After?

- **Addressing limitations:**
  - Adding more variables (education, marital status, income, etc.)
  - Collecting data from more states
  - Updating as newer data becomes available
- **Media Outreach:**
  - Local news outlets to share findings and insights from the research.
- **Massachusetts Comparison**
- **Publish Article/Journal** (IJURCA)
  - Long-run Goal

Questions?