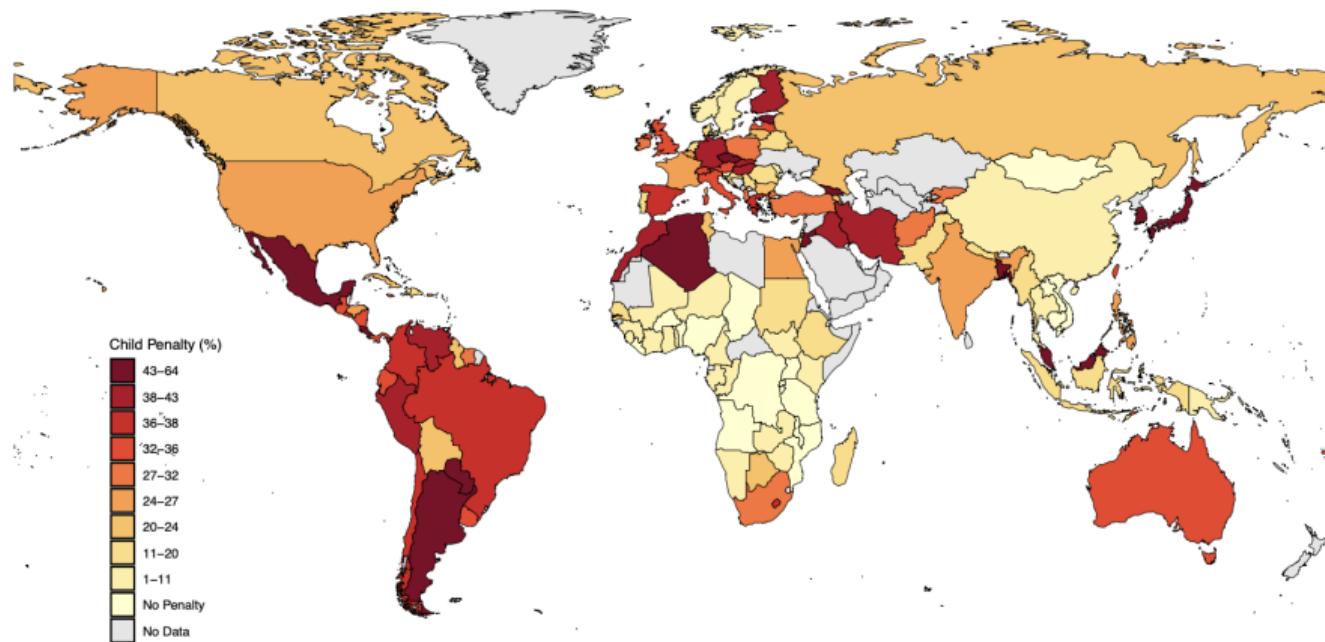


Free Childcare and the Motherhood Penalty: Evidence from São Paulo

João Garcia Rafael Latham-Proença Marcela Mello

Applied Micro Lunch



Child penalty across the world (Kleven, Landais & Leite-Mariante (2023))

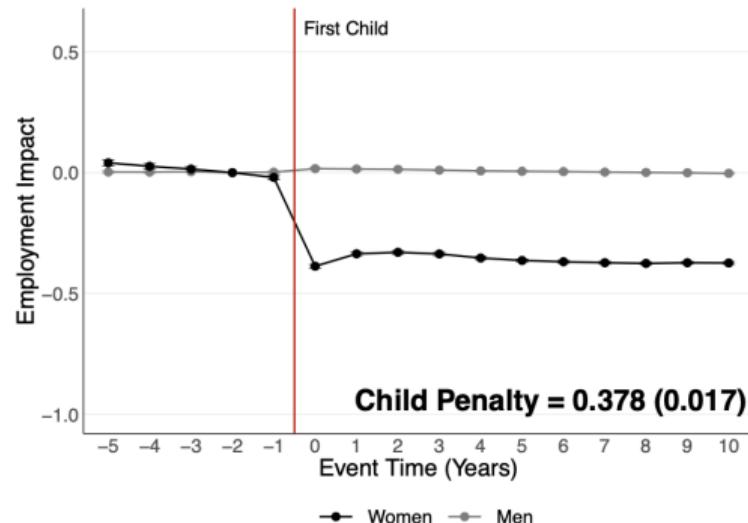
Introduction

Literature on the child penalty has focused on developed countries

Latin America has largest child penalties in the world

Still little evidence about this context

Latin America



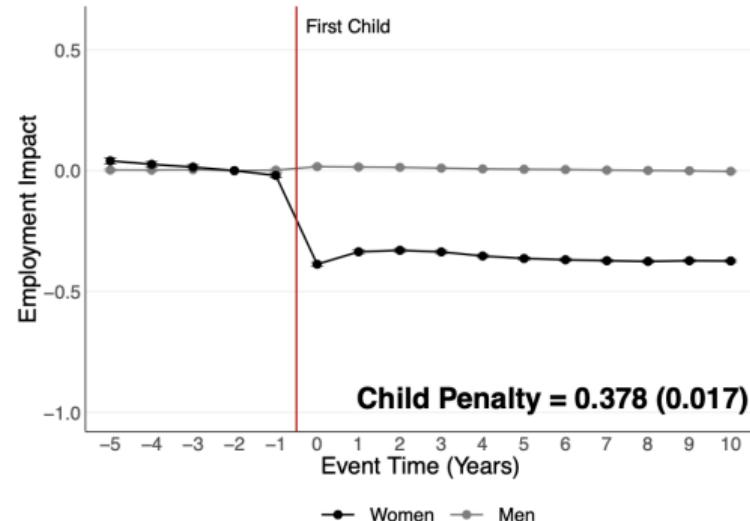
Introduction

Literature on the child penalty has focused on developed countries

Latin America has largest child penalties in the world

Still little evidence about this context

Latin America

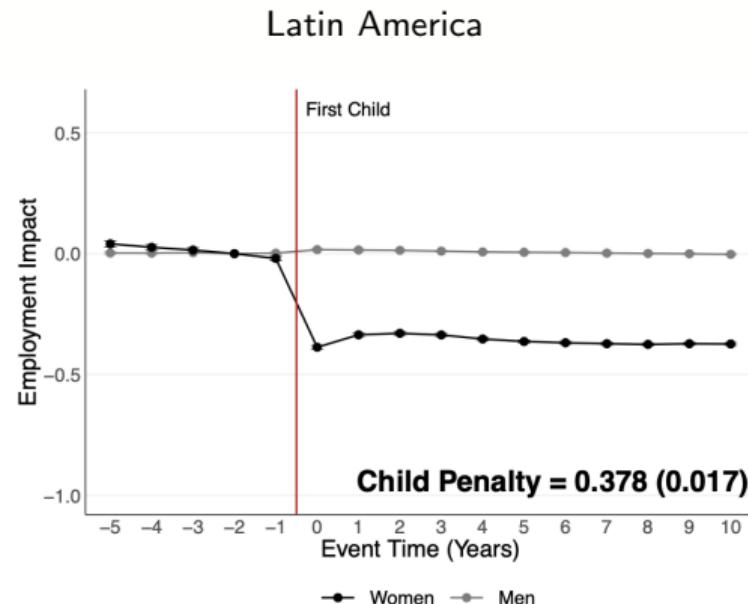


Introduction

Literature on the child penalty has focused on developed countries

Latin America has largest child penalties in the world

Still little evidence about this context



Introduction

What do we know about policies to reduce the child penalty?

Evaluations of subsidized childcare are mixed and context seems to matter

Several reasons why results from Austria may not carry over to Colombia

- Economic structure
- Labor market institutions
- Cultural norms

This paper

We study a large expansion of free childcare in the city of São Paulo.

Large scale implementation

- Added on average 30,000 new seats per year over one decade
- Coverage went from 25% to 75%

Child penalty fairly typical of LatAm

School district rules help with identification

Good data on labor and family structure

This paper

We study a large expansion of free childcare in the city of São Paulo.

Large scale implementation

- Added on average 30,000 new seats per year over one decade
- Coverage went from 25% to 75%

Child penalty fairly typical of LatAm

School district rules help with identification

Good data on labor and family structure

This paper

We study a large expansion of free childcare in the city of São Paulo.

Large scale implementation

- Added on average 30,000 new seats per year over one decade
- Coverage went from 25% to 75%

Child penalty fairly typical of LatAm

School district rules help with identification

Good data on labor and family structure

This paper

We study a large expansion of free childcare in the city of São Paulo.

Large scale implementation

- Added on average 30,000 new seats per year over one decade
- Coverage went from 25% to 75%

Child penalty fairly typical of LatAm

School district rules help with identification

Good data on labor and family structure

This paper

We study a large expansion of free childcare in the city of São Paulo.

Large scale implementation

- Added on average 30,000 new seats per year over one decade
- Coverage went from 25% to 75%

Child penalty fairly typical of LatAm

School district rules help with identification

Good data on labor and family structure

This paper

Question: How does free childcare availability affect the child penalty?

Method: We leverage the rollout of free childcare in São Paulo, into a DID framework

Results: We find an increase from 0 to 1 seat per child in a district causes an increase of 6.4 p.p. in maternal employment in that district

- Female labor and the family

Bertrand, Goldin and Katz (2010), Kleven, Goldin and Katz (2016), Landais and Sogaard (2019)

- Effects of childcare access

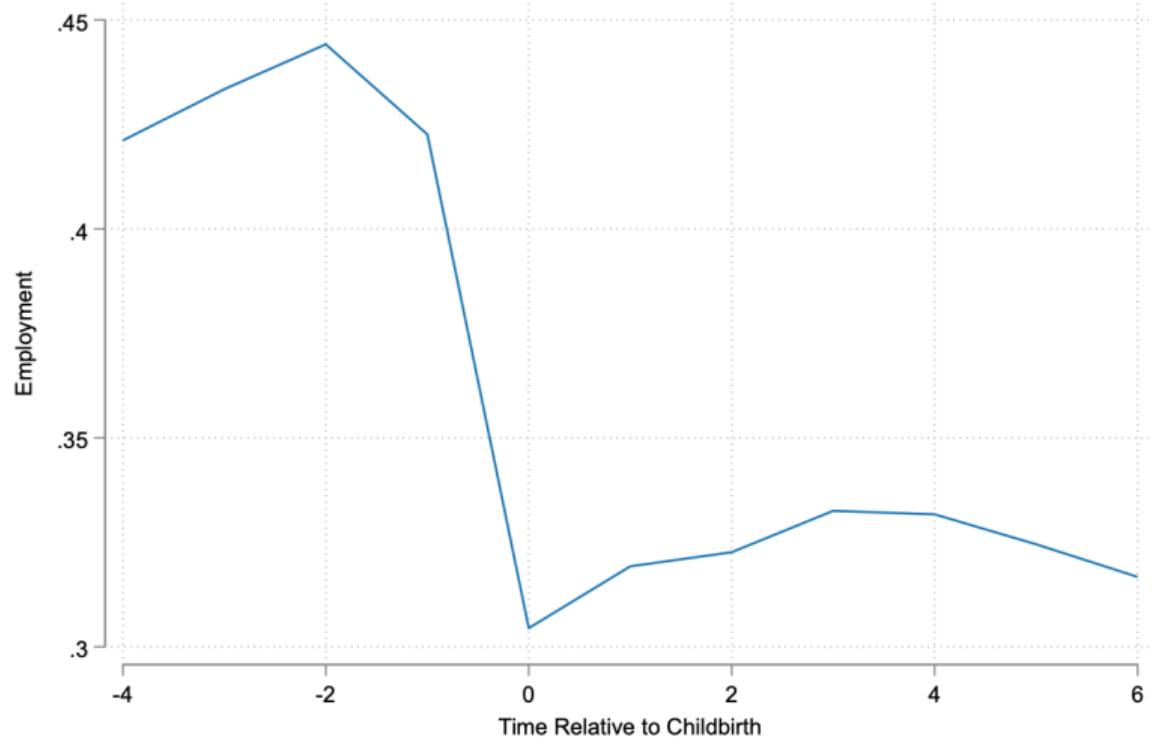
Kleven et al. (2021), Andresen and Havnes (2019), Carta and Rizzica (2018), Haeck, Lefevbre and Marrigan (2015), Havnes and Mogstad (2011), Goux and Maurin (2010), Cascio (2009), Gruber and Milligan (2008),

- Childcare in Latin America

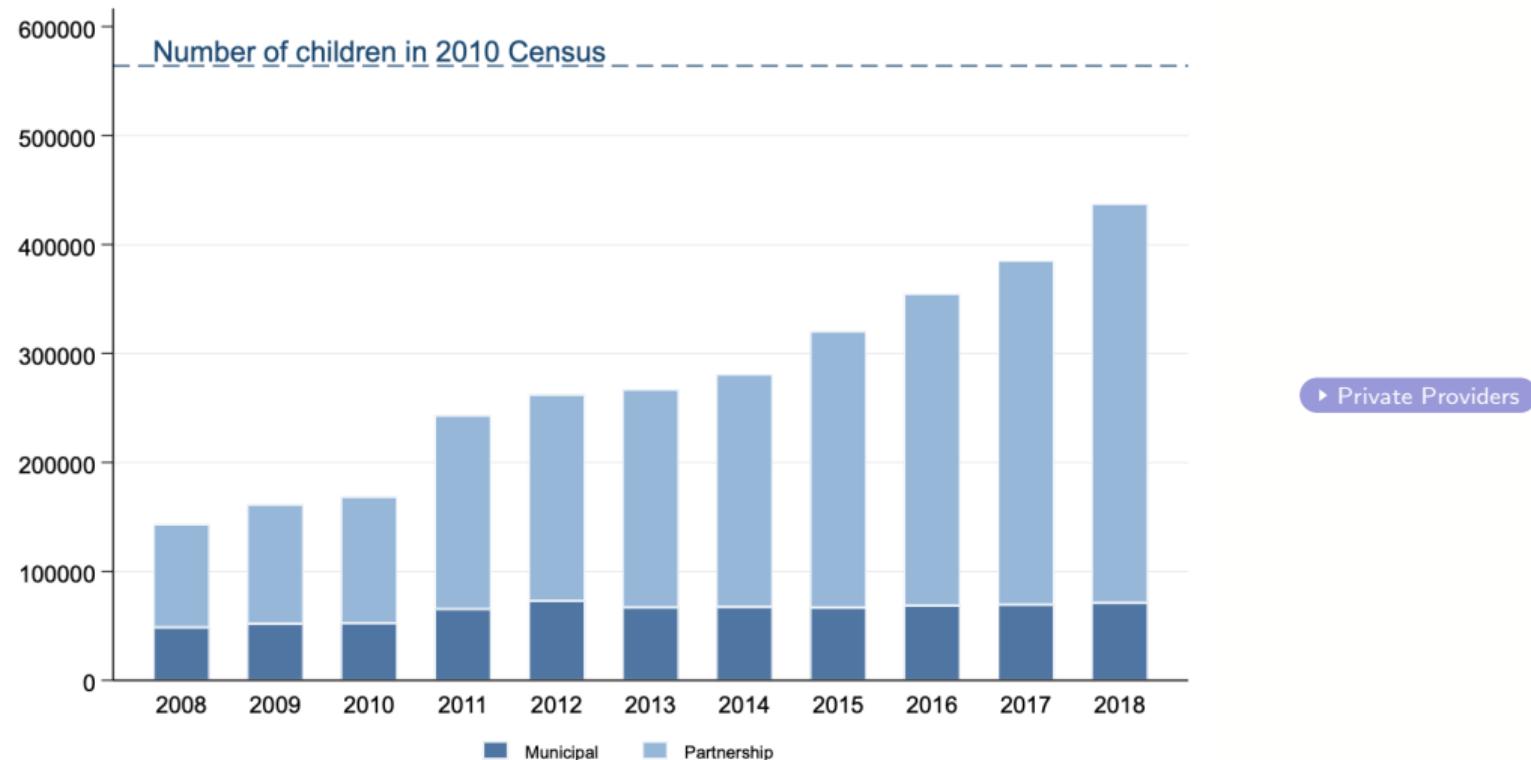
Attanasio et al. (2022), Paes de Barros (2011), Rosero and Oosterbeek (2011), Calderón (2011), Berlinski (2011)

Setting

Setting: The Child Penalty in São Paulo



Setting: Enrollment



Setting: Public-private-partnership model

City government:

- Finds and provides suitable location
- Hires childcare provider
- Pays by student

Private provider:

- Hires caretakers
- Handles day-to-day operation
- Helps find locations

High standard of quality

Flexibility allowed for fast expansion



Childcare in Itaquera, São Paulo

Allocation:

Centralized online system to match child-facility

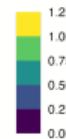
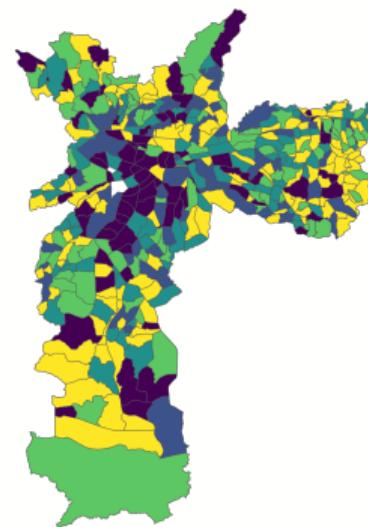
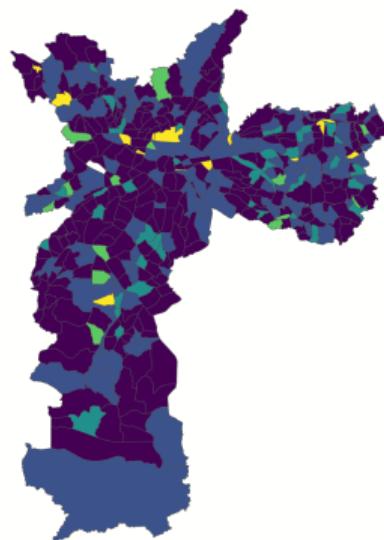
Parents request a slot in a childcare facility

Child-facility matching done in the same educational district, when available

First-come-first-served

Since 2013, priority to families living in extreme poverty

Seats per 0-3 year-old child in Census, 2008 and 2018



Data

Data Sources

Sample: Family rosters and addresses from the Single Registry - NOT representative

Outcomes: Labor data from RAIS, includes all formal employment links

Treatment: Data on childcare centers from the Municipal Government

Sample

Sample of

- Women
- Had their first child between 16 and 65 years old
- Living in the city of São Paulo
- In the Single Registry

Descriptive

Variable	Census	Single Registry
Share Compled HS	0.85	0.61
Share Born in Sao Paulo	0.66	0.53
Share White	0.62	0.40
Share Employed - Formal Sector	0.39	0.35
Share Employed - Informal Sector	0.28	?
Average Yearly Income - Formal Sector	24,878	6,326
Median Yearly Income - Formal Sector	14,400	6,169
N	88,452	45,875

	Mothers		Fathers	
	Before	After	Before	After
Share formally employed	0.44 (0.11)	0.33 (0.09)	0.57 (0.17)	0.55 (0.16)
Total earnings (Yearly)	3,465 (1,162)	2,217 (852)	6,445 (2,897)	6,449 (2,850)
Earnings if employed (Yearly)	7,749 (1,567)	6,607 (1,656)	11,314 (3,714)	11,741 (3,973)
Work hours if employed (Weekly)	29.04 (3.44)	24.36 (3.63)	33.16 (7.15)	33.23 (5.84)
Wage if employed (Hourly)	4.95 (0.78)	5.07 (1.44)	6.35 (1.70)	6.65 (2.37)
N	306,841	401,033	64,088	78,599

Empirical Strategy

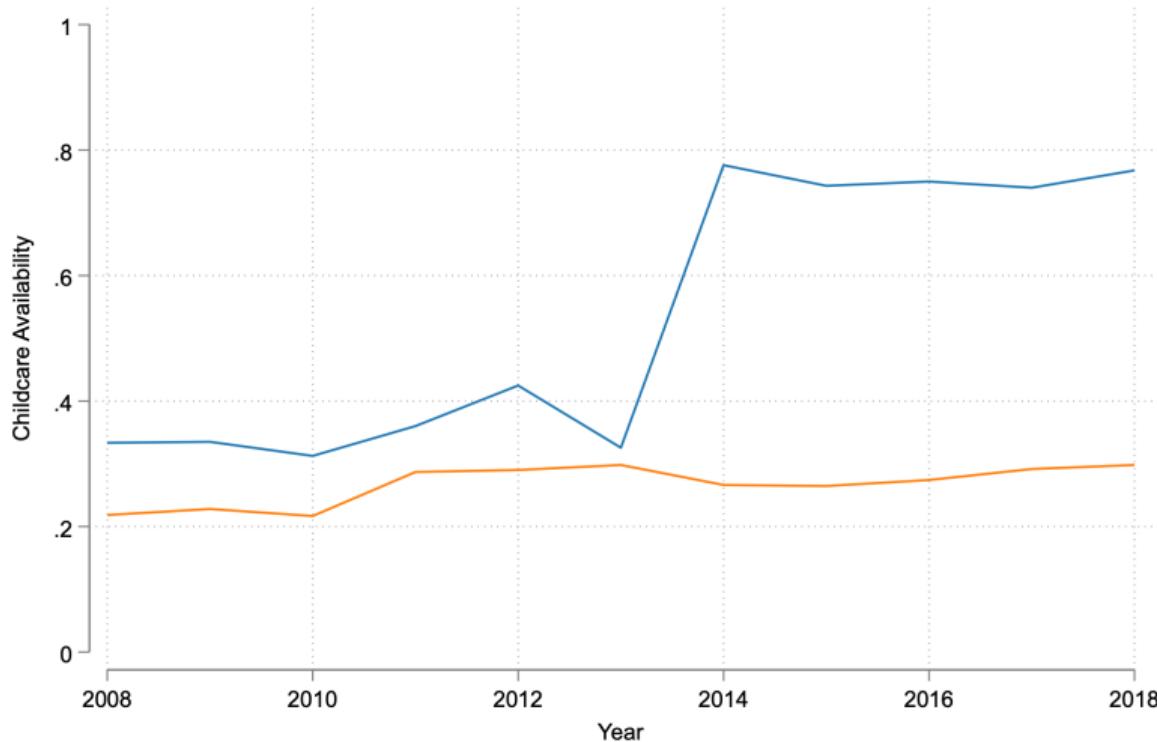
Empirical Strategy

We show two different strategies, emphasizing different comparisons

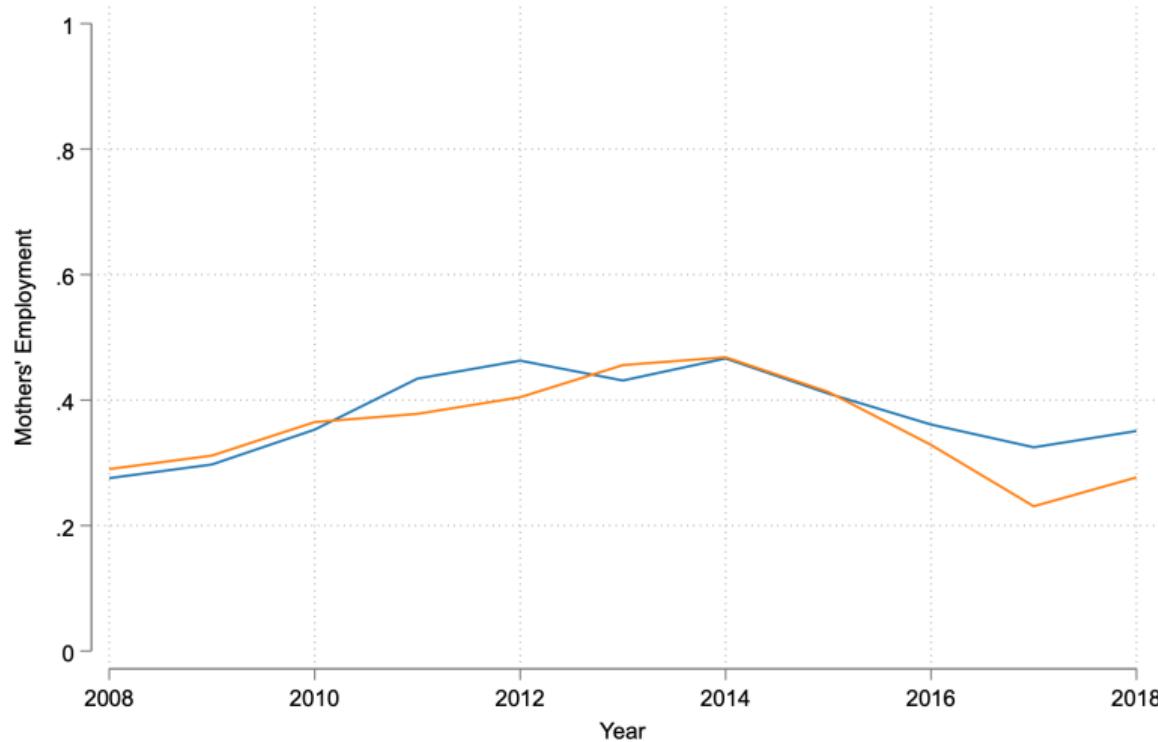
First, a comparison **between** districts with and without childcare expansion

Second, a comparison **within** districts, between mothers and mothers-to-be

Between Districts



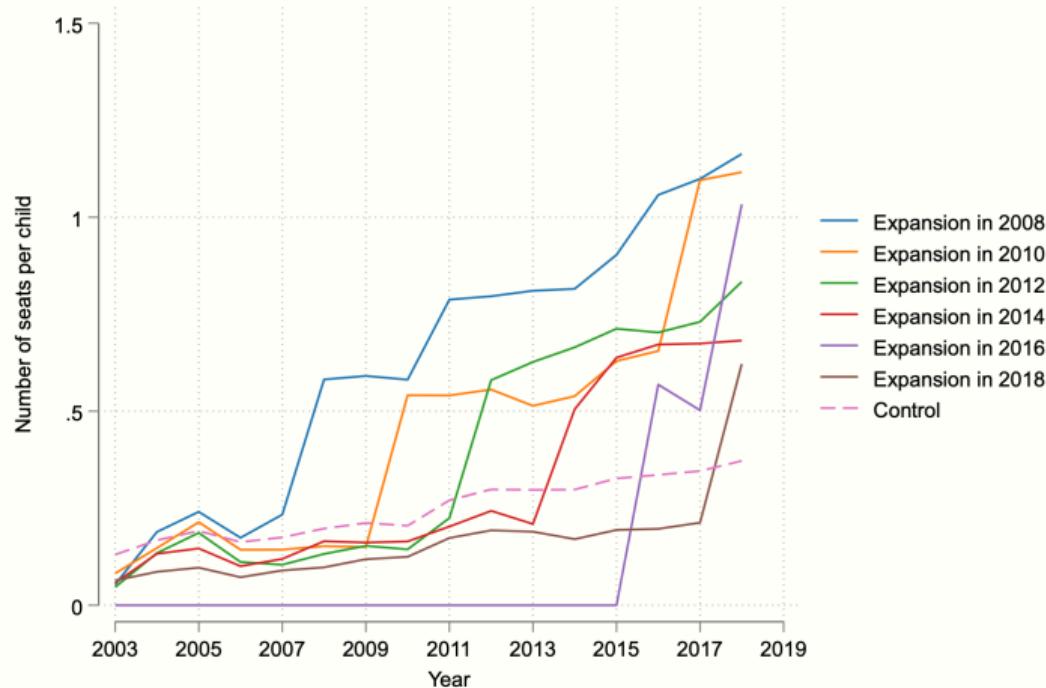
Between Districts



Empirical Strategy - Between Districts

- Expansion of childcare happened at different times in each district
- We compare places with rapid expansion to those with no significant expansion
- Calculate the largest annual increase in availability for each district over the period, $gmax_d$
- A district is considered **treated** if:
 - The first childcare facility opened during this period
 - $gmax_d$ is in the top 40% of distribution
- A district is in the **control** if $gmax_d$ is in the bottom 40%
- Districts with $gmax_d$ in the middle 20% are dropped from the comparison

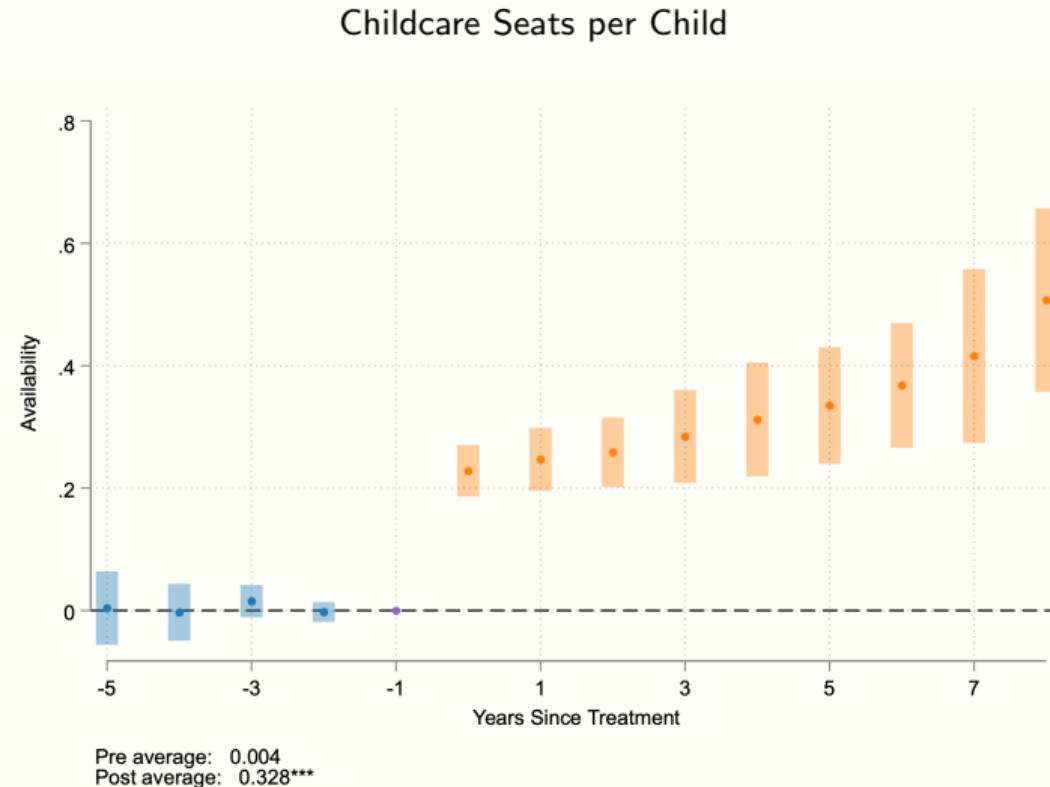
Expansion of Childcare



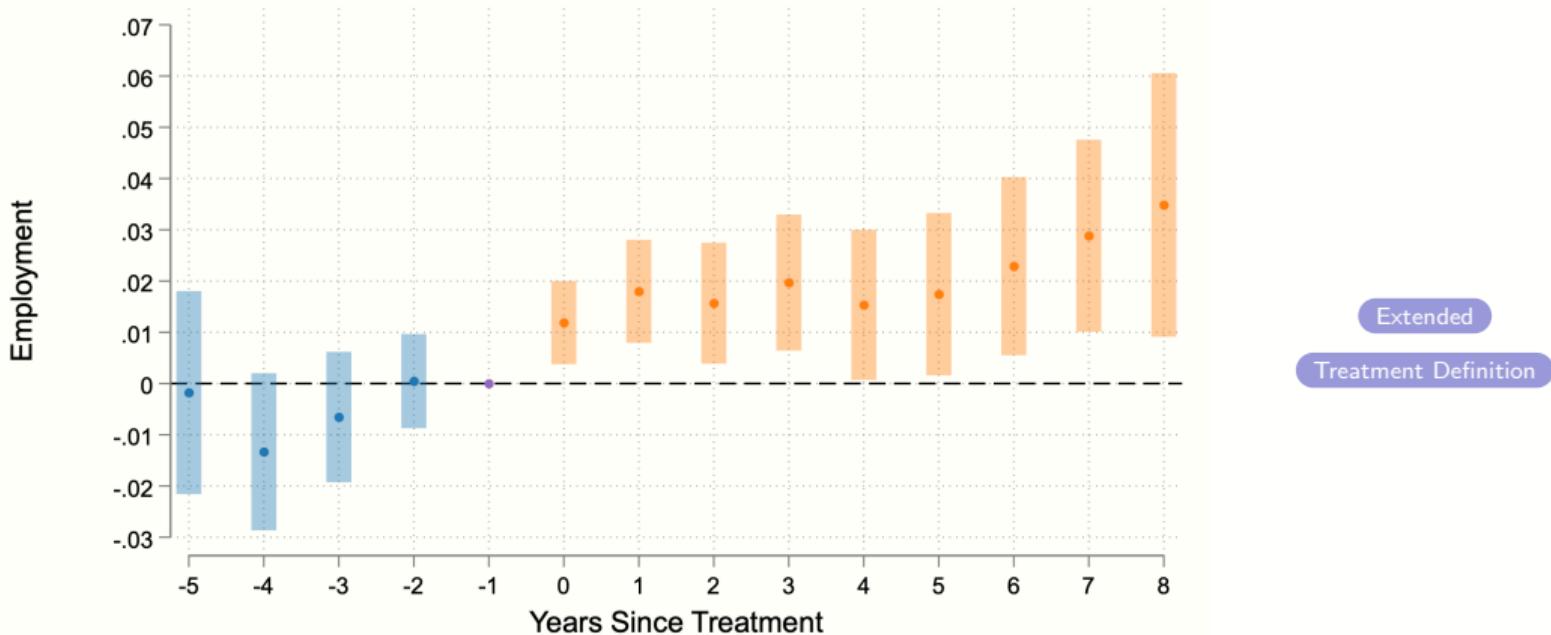
Absolute seats

- Main outcome: Employment and earnings of mothers 0 to 3 years since childbirth
- Estimation with Callaway and Sant'Anna (2021)
- First stage: effect of one expansion on availability (seats per child)
- Estimates of effect of the expansion can be rescaled to get the effect of availability

Main Results



Mothers' Employment



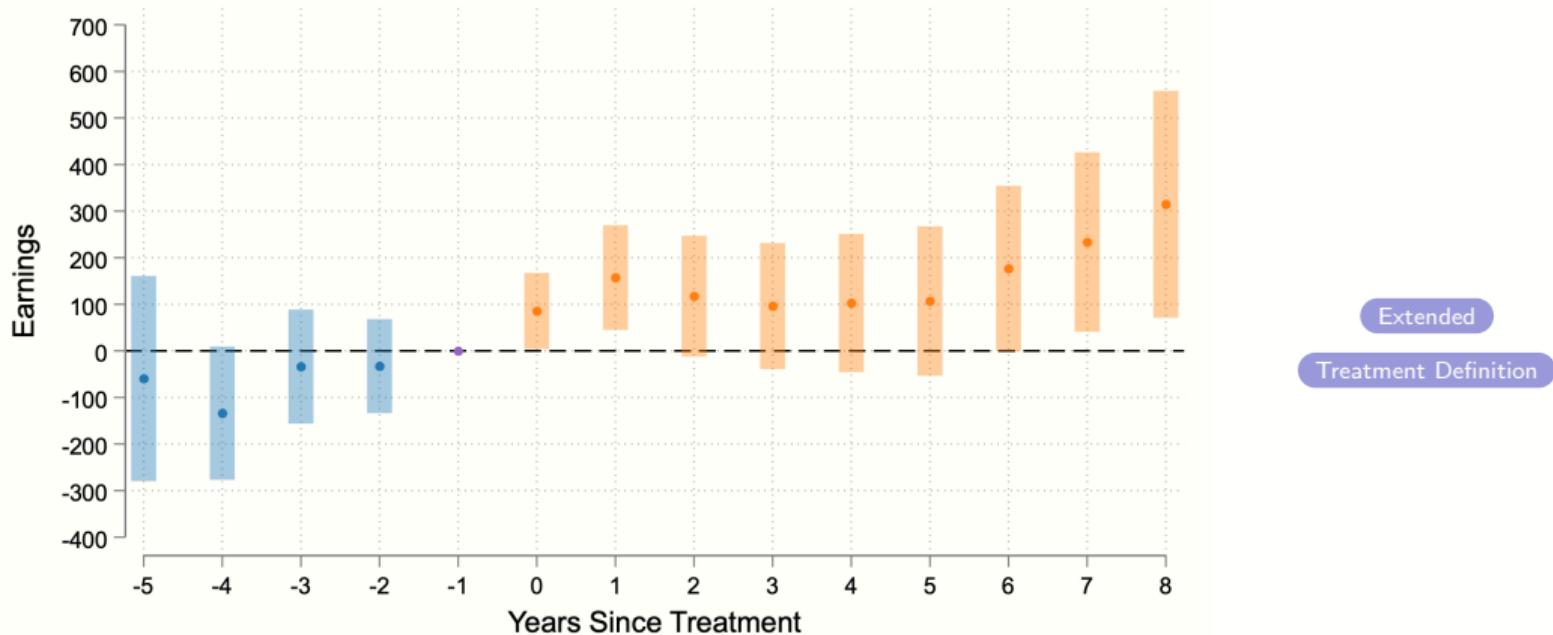
Pre average: -0.005

Post average: 0.021***

Pretrends p-value: 0.243

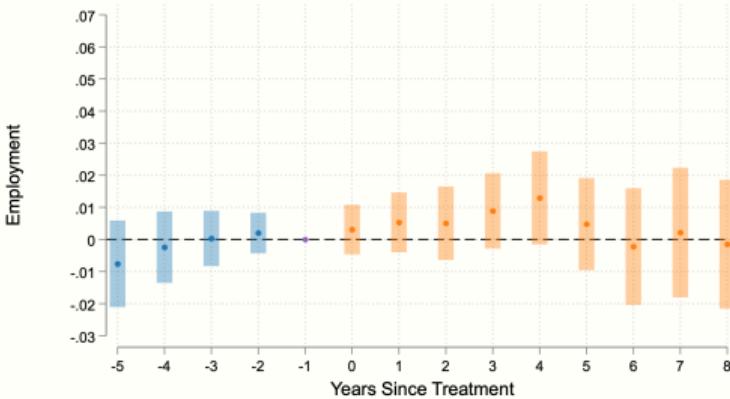
Pre = Post p-value: 0.009

Mothers' Earnings



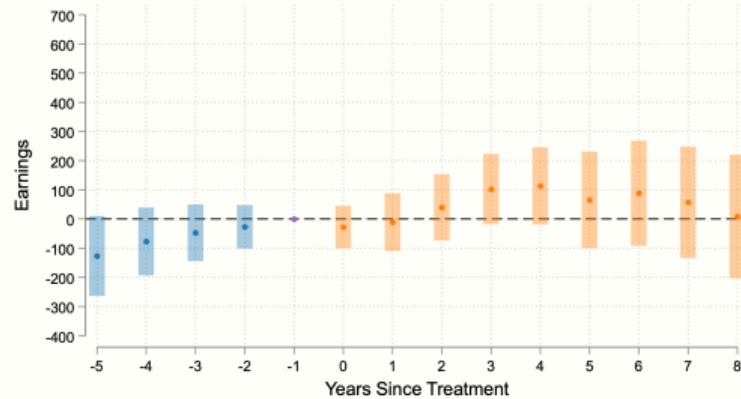
Pre average: -64.8
Post average: 154.7**
Pretrends p-value: 0.212
Pre = Post p-value: 0.031

Mothers-to-be Employment



Pre average: -0.002
Post average: 0.004
Pretrends p-value: 0.625
Pre = Post p-value: 0.441

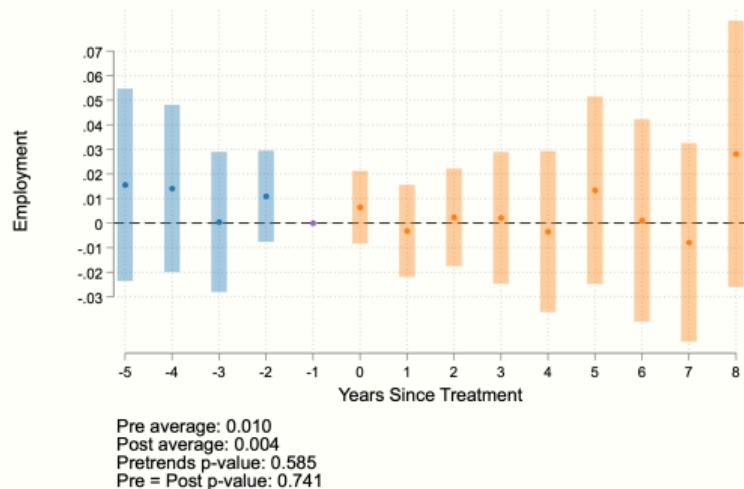
Mothers-to-be Earnings



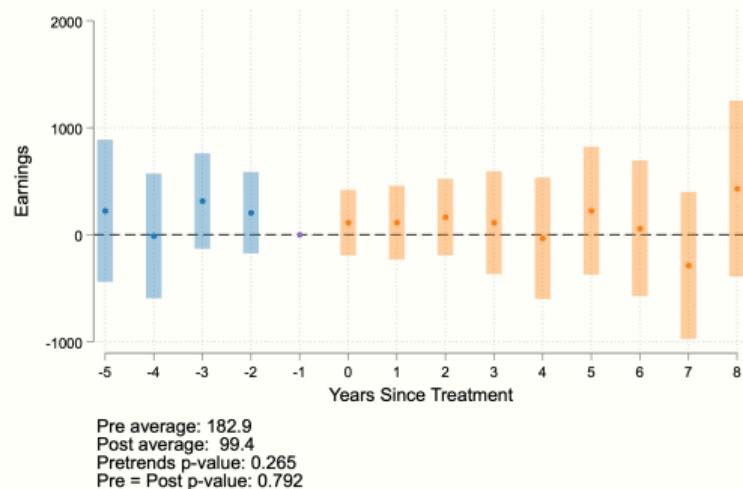
Pre average: -69.3
Post average: 48.5
Pretrends p-value: 0.478
Pre = Post p-value: 0.150

Extended

Fathers' Employment



Fathers' Earnings



Extended

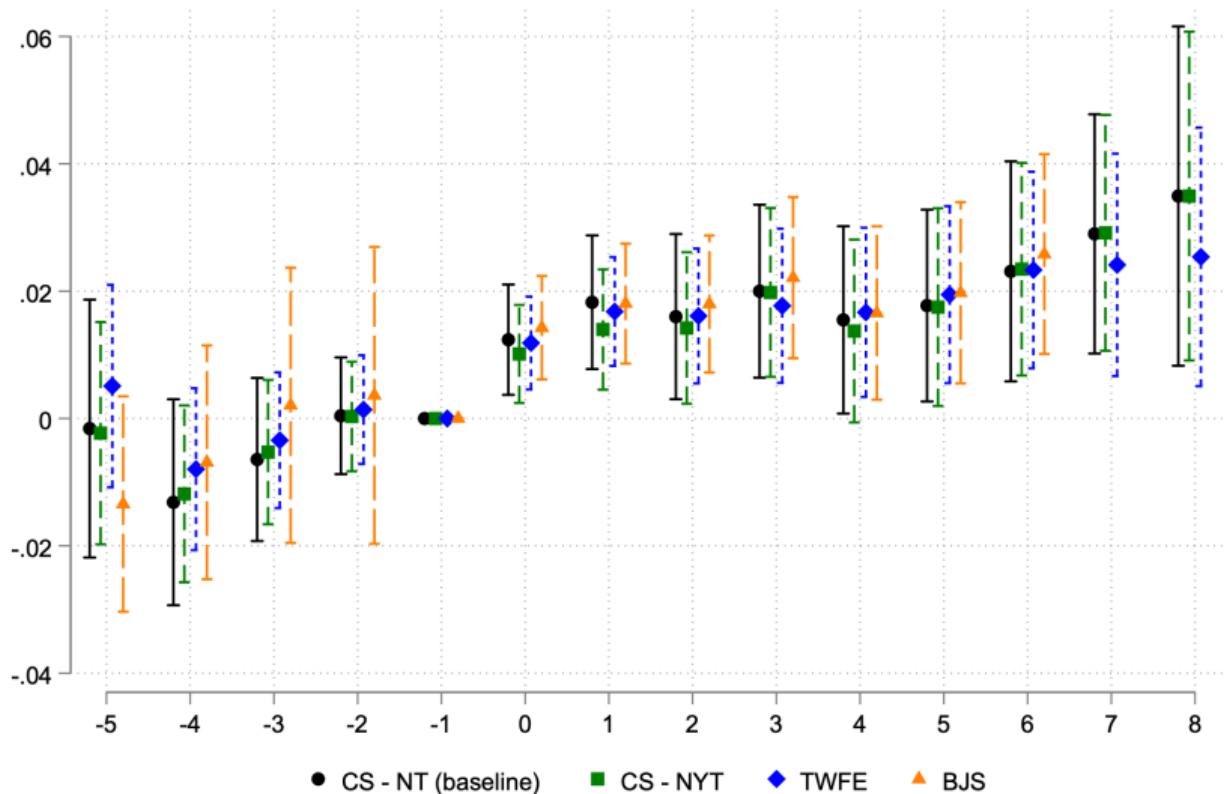
Main Results

Table: Effects of Childcare Expansion

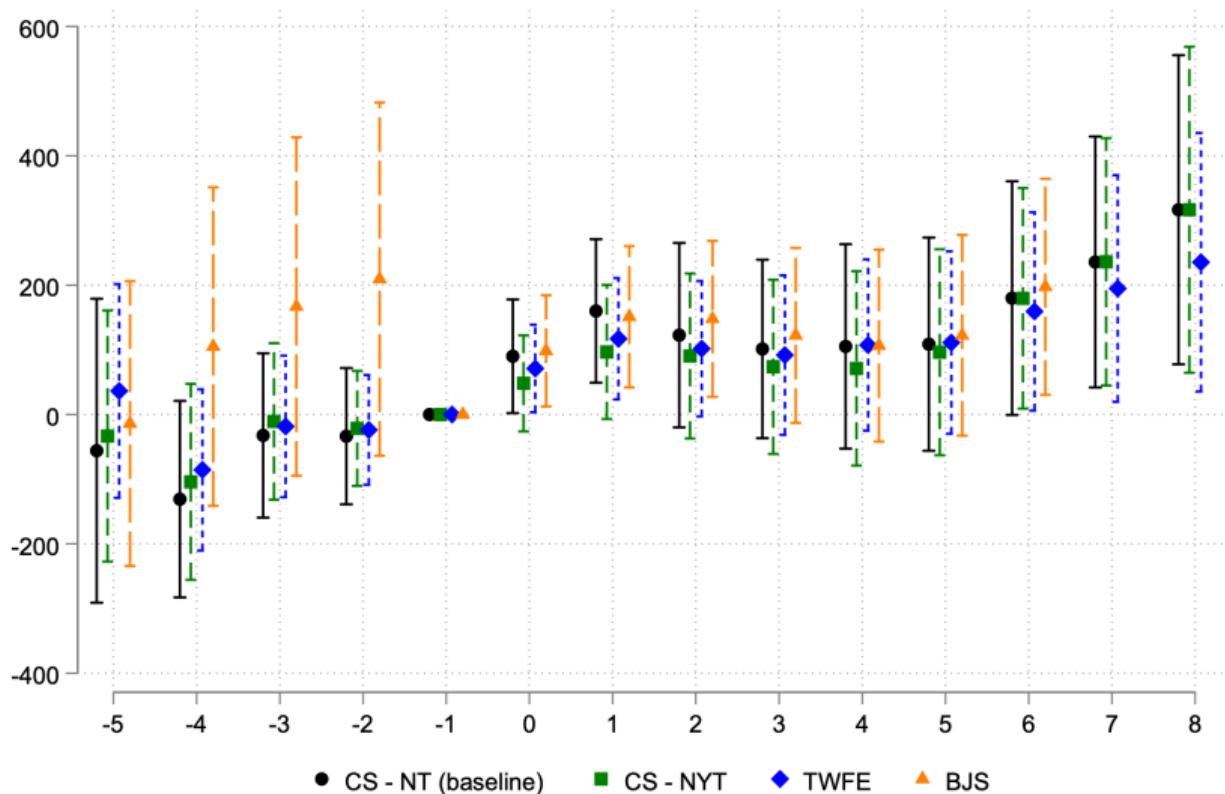
	Employment		Earnings	
	Pre	Post	Pre	Post
Mothers	−0.005 (0.006)	0.021*** (0.007)	−64.8 (63.1)	154.7** (65.9)
Mothers-to-be	−0.002 (0.004)	0.004 (0.006)	−69.3 (47.3)	48.5 (59.5)
Fathers	0.010 (0.012)	0.004 (0.014)	182.9 (219.0)	99.4 (221.5)

Notes: This table shows the average estimated effects for the Pre- and Post-expansion periods, for mothers, mothers-to-be and fathers. The mother and father samples include parents from 0 to 3 years after childbirth. The mothers-to-be sample includes 4 to 1 year before childbirth. Earnings in 2010 BRL. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Robustness: Mothers' Employment



Robustness: Mothers' Earnings



Alternative Strategy

Main potential issues with this strategy:

Targeting of expansion may be correlated with unobserved labor market trends

Falsification tests may be underpowered

We want an alternative that is robust to arbitrary trends in the local labor market

Within-District Strategy

Suppose there is only one district, where we observe mothers and mothers-to-be.

We can still use a DID design, if we assume mothers-to-be are not affected by childcare

Denote motherhood status m , time t . Suppose just 2 periods. Consider this regression:

$$Y_{m,t} = \alpha + \beta \cdot Availability_t \cdot 1\{m = 1\} + \gamma \cdot 1\{m = 1\} + \delta \cdot 1\{t = 1\} + u_{m,t}$$

Within-District Strategy

We build upon this intuition, and extend it in two ways

First, we use this strategy for all districts stacked

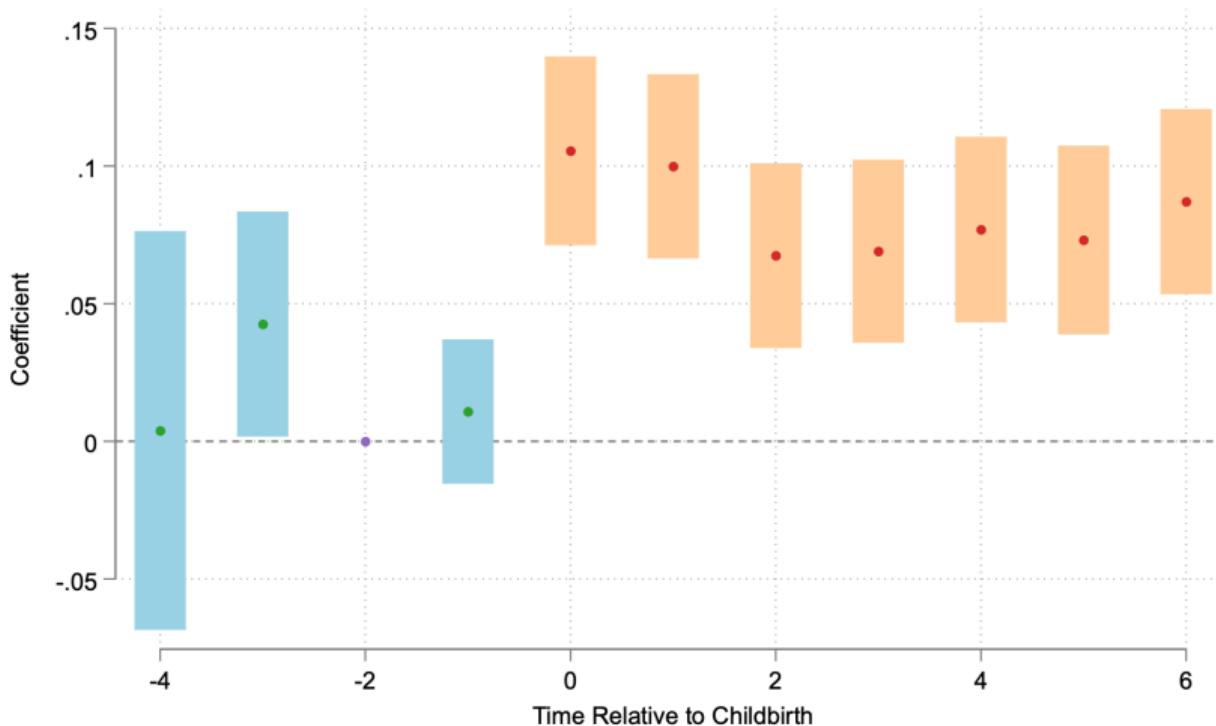
Second, we use time-from-childbirth instead of just a motherhood indicator

Within-District Strategy

Denote $Y_{d,t,\tau} = E[y_{i,t} | \text{district} = d, \text{time since childbirth} = \tau]$

$$Y_{d,t,\tau} = \alpha_{d,\tau} + \gamma_{d,t} + \sum_{k \neq -2} \beta_k \text{Availability}_{d,t} \cdot 1\{\tau = k\} + \varepsilon_{d,t,\tau}$$

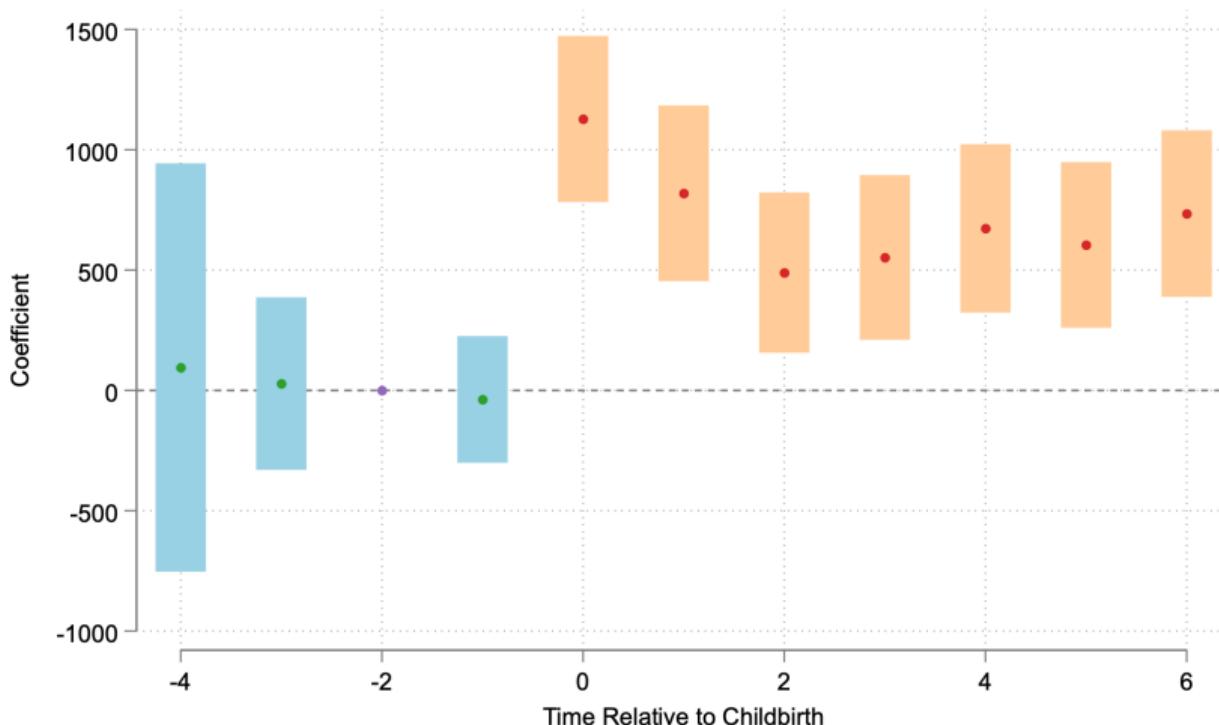
Mothers' Employment



Pre-birth p-value: 0.2552

Pre = Post p-value: 0.0002

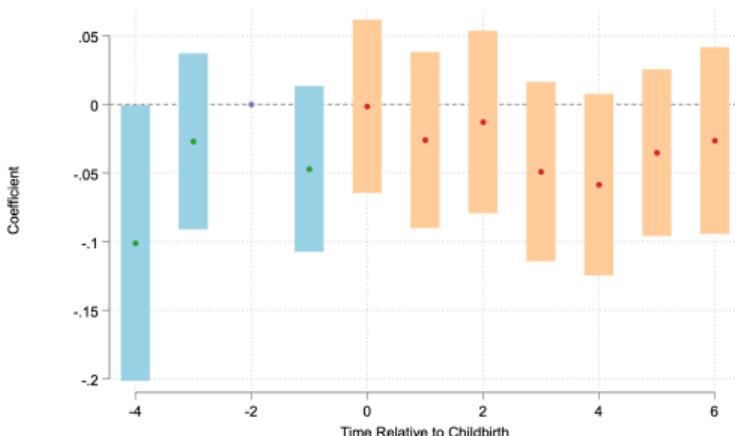
Mothers' Earnings



Pre-birth p-value: 0.8800

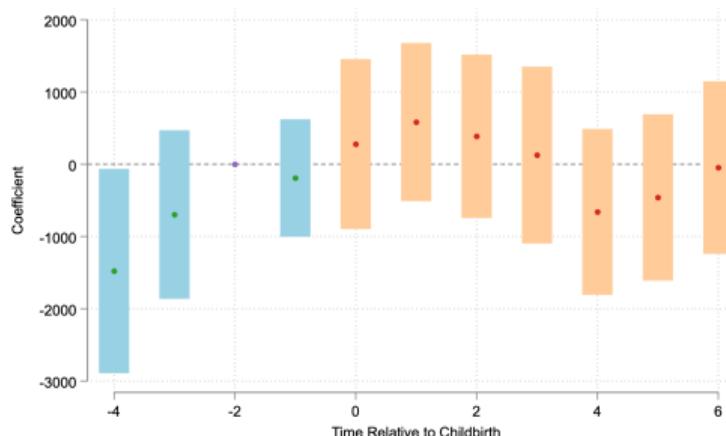
Pre = Post p-value: 0.0005

Fathers' Employment



Pre-birth p-value: 0.0532
Pre = Post p-value: 0.2059

Fathers' Earnings



Pre-birth p-value: 0.0706
Pre = Post p-value: 0.0618

Discussion

However, this is an **expensive** policy. Cost per child is close to one minimum wage

Can it be justified strictly in terms of costs compared to increased wages?

Key unknowns: (1) full persistence of effects, (2) effects on mothers out of the sample

Assuming same effects for all mothers, policy pays for itself if effects persist for **30 years**

This ignores potential benefits for the children, payments for private childcare, non-market benefits

Discussion

However, this is an **expensive** policy. Cost per child is close to one minimum wage

Can it be justified strictly in terms of costs compared to increased wages?

Key unknowns: (1) full persistence of effects, (2) effects on mothers out of the sample

Assuming same effects for all mothers, policy pays for itself if effects persist for **30 years**

This ignores potential benefits for the children, payments for private childcare, non-market benefits

Conclusion

This paper studies the effects of free childcare on the motherhood penalty

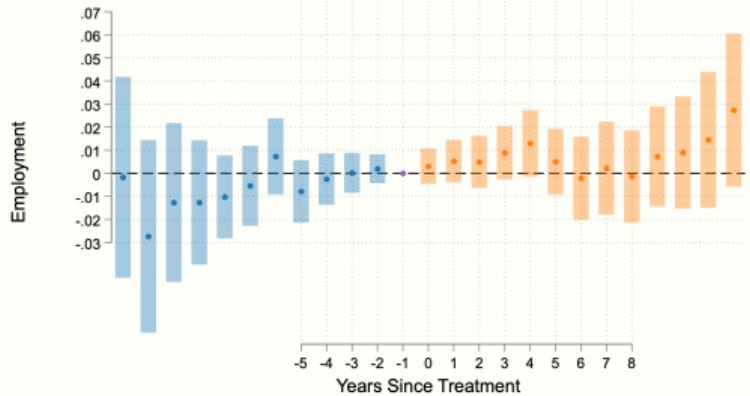
We leverage a large scale expansion in São Paulo in two complementary DID designs

We find full provision of childcare would increase mothers' employment by 6.4p.p., or roughly half the child penalty.

However, costs are high.

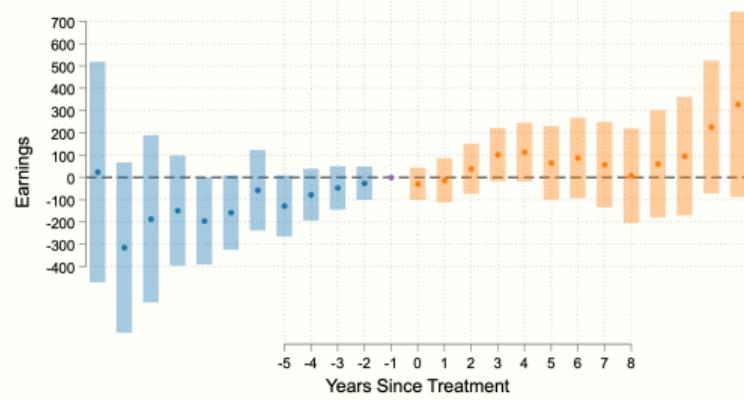
Happy Thanksgiving!

Mothers-to-be Employment



Pre average: -0.006
Post average: 0.007
Pretrends p-value: 0.263
Pre = Post p-value: 0.275

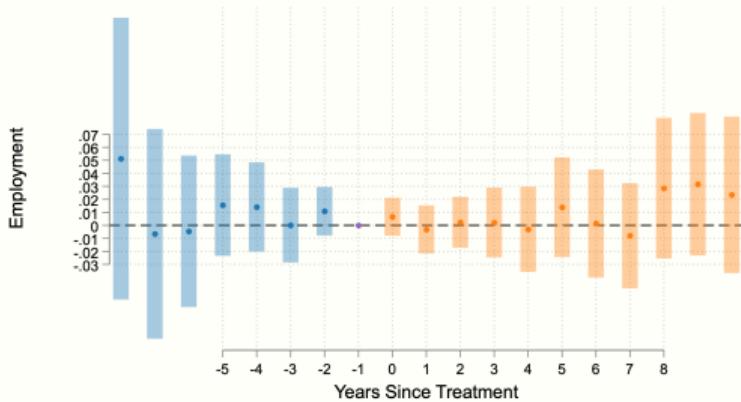
Mothers-to-be Earnings



Pre average: -119.6
Post average: 87.7
Pretrends p-value: 0.341
Pre = Post p-value: 0.132

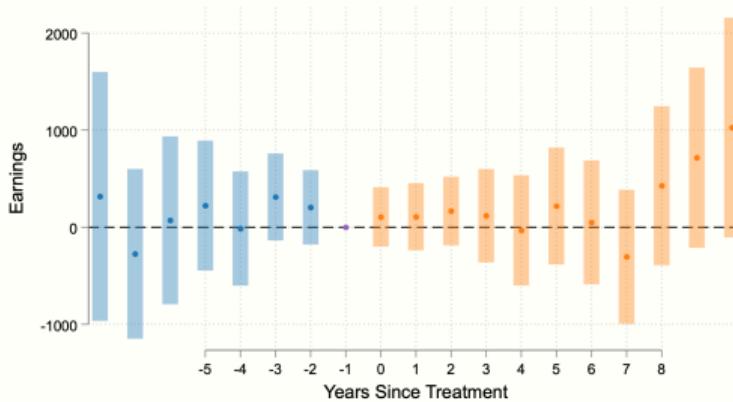
Back

Fathers' Employment



Pre average: 0.012
Post average: 0.009
Pretrends p-value: 0.513
Pre = Post p-value: 0.915

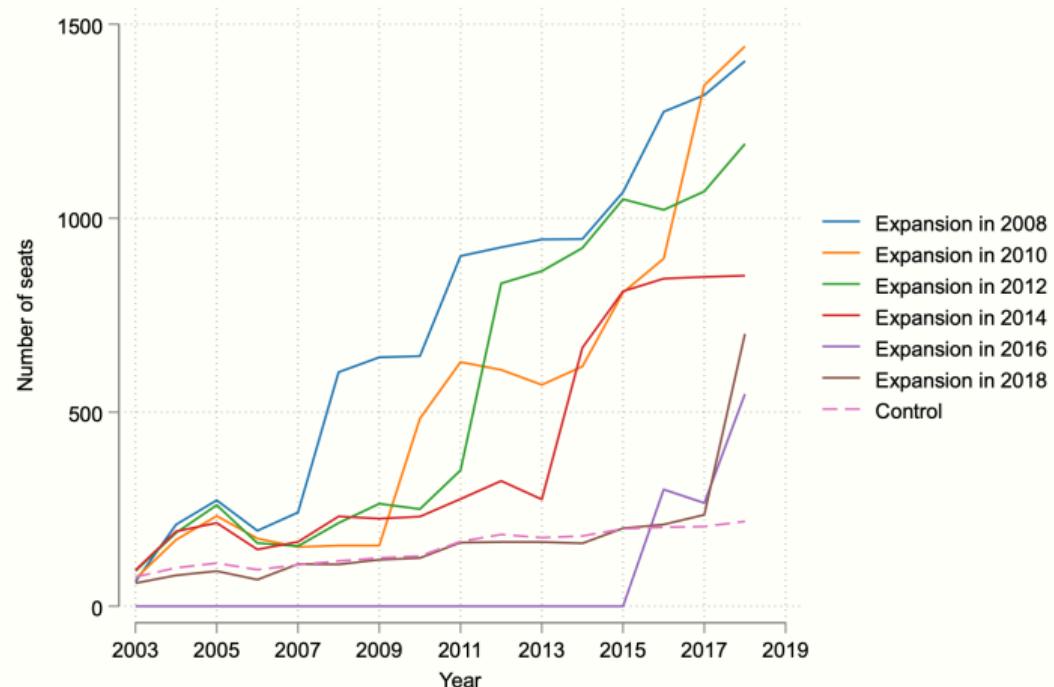
Fathers' Earnings



Pre average: 120.0
Post average: 236.2
Pretrends p-value: 0.247
Pre = Post p-value: 0.776

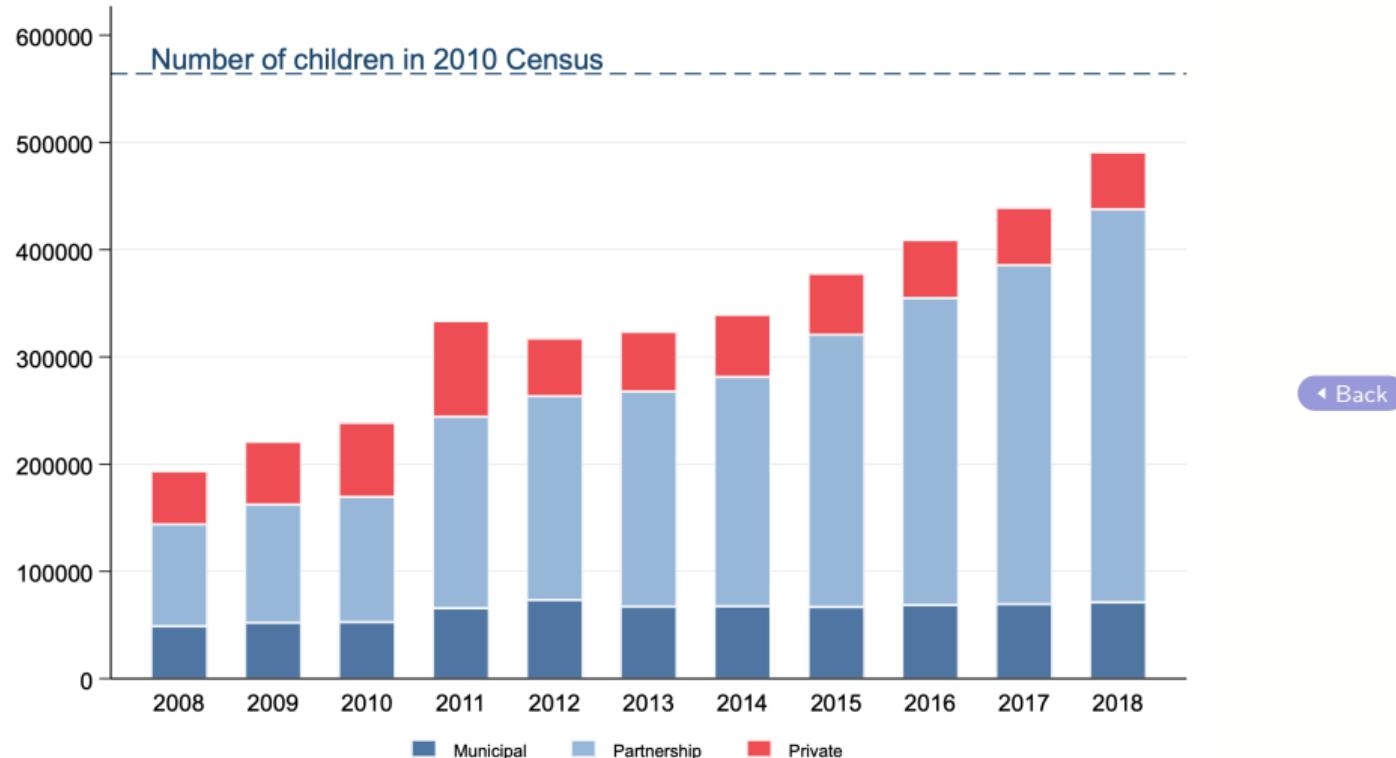
Back

Expansion of Childcare



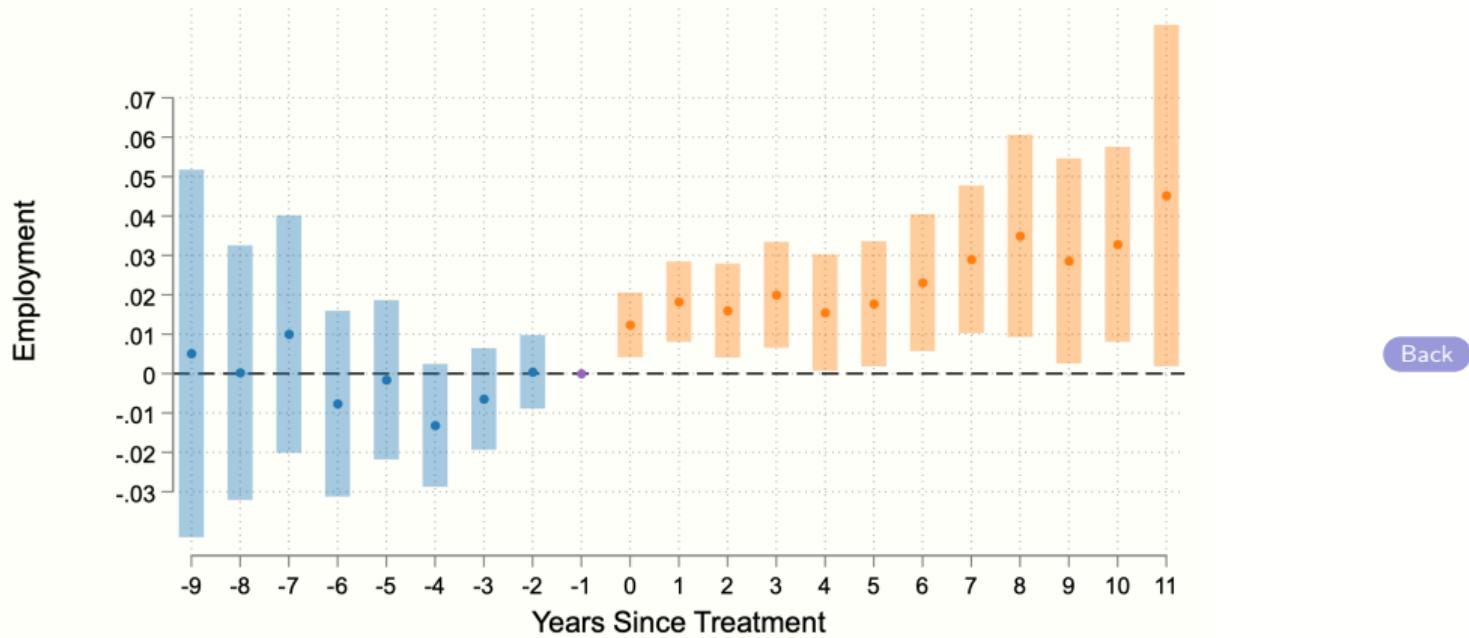
Back

Setting: Enrollment with More Data



◀ Back

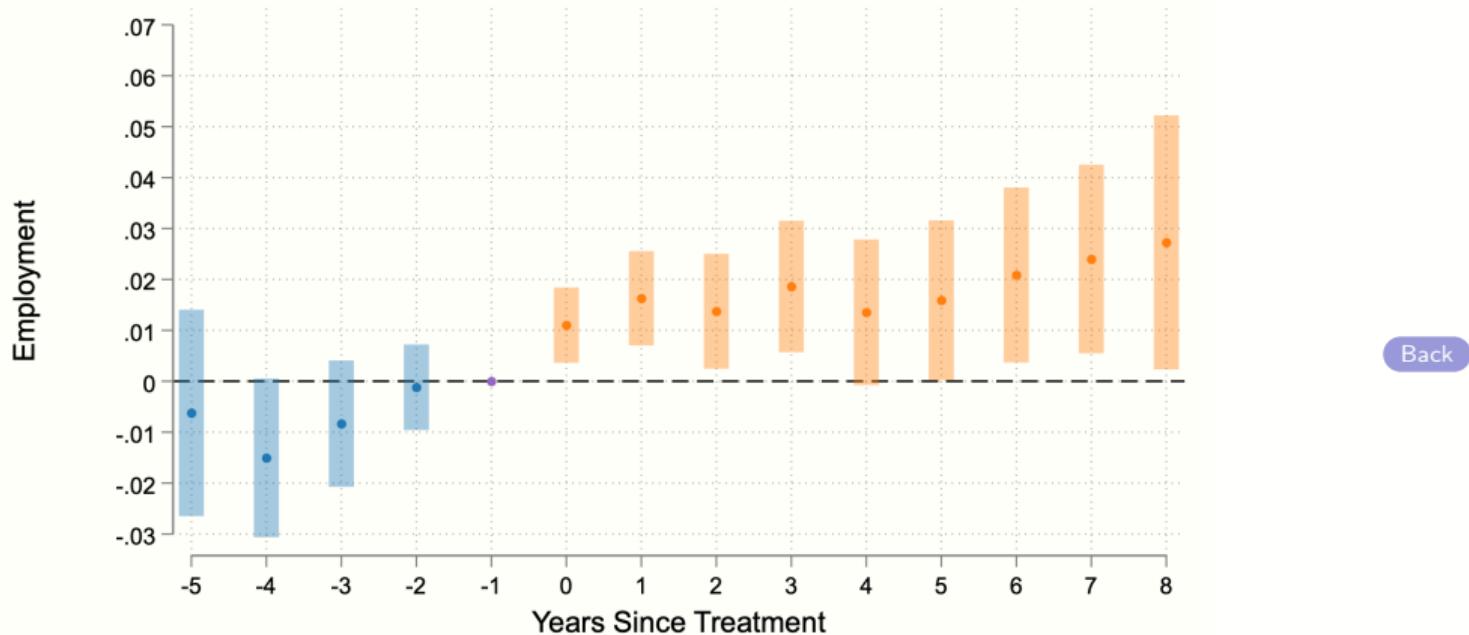
Mothers' Employment - Full Extent



Back

Pre average: -0.002
Post average: 0.024***
Pretrends p-value: 0.343
Pre = Post p-value: 0.070

Mothers' Employment - Alternative Definition (Median)



Back

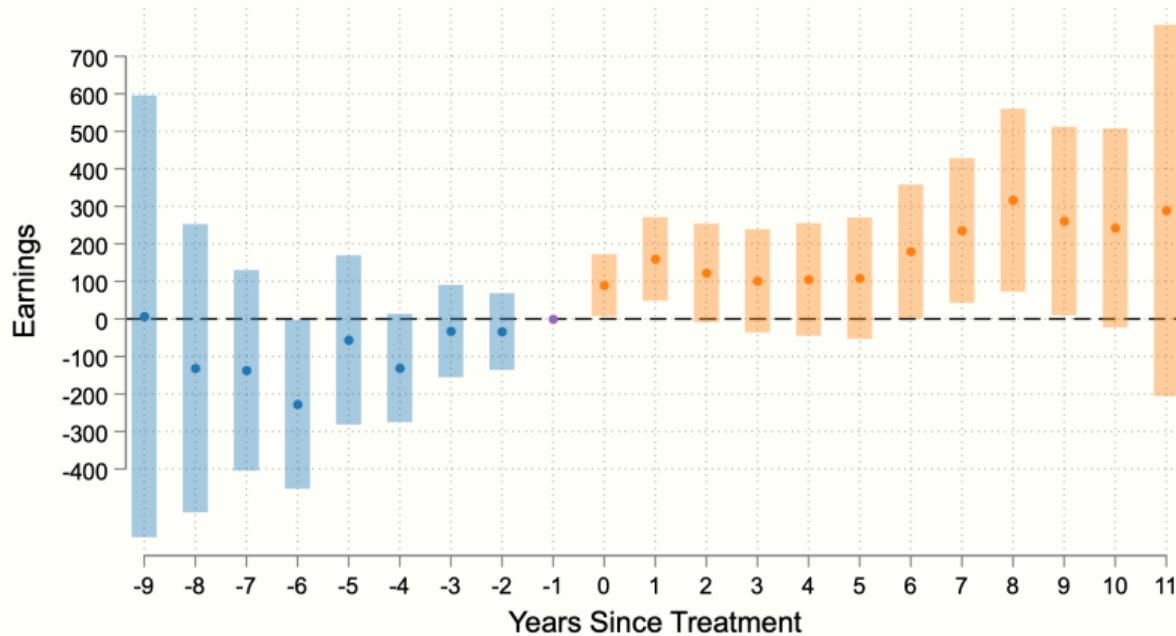
Pre average: -0.008

Post average: 0.018***

Pretrends p-value: 0.297

Pre = Post p-value: 0.011

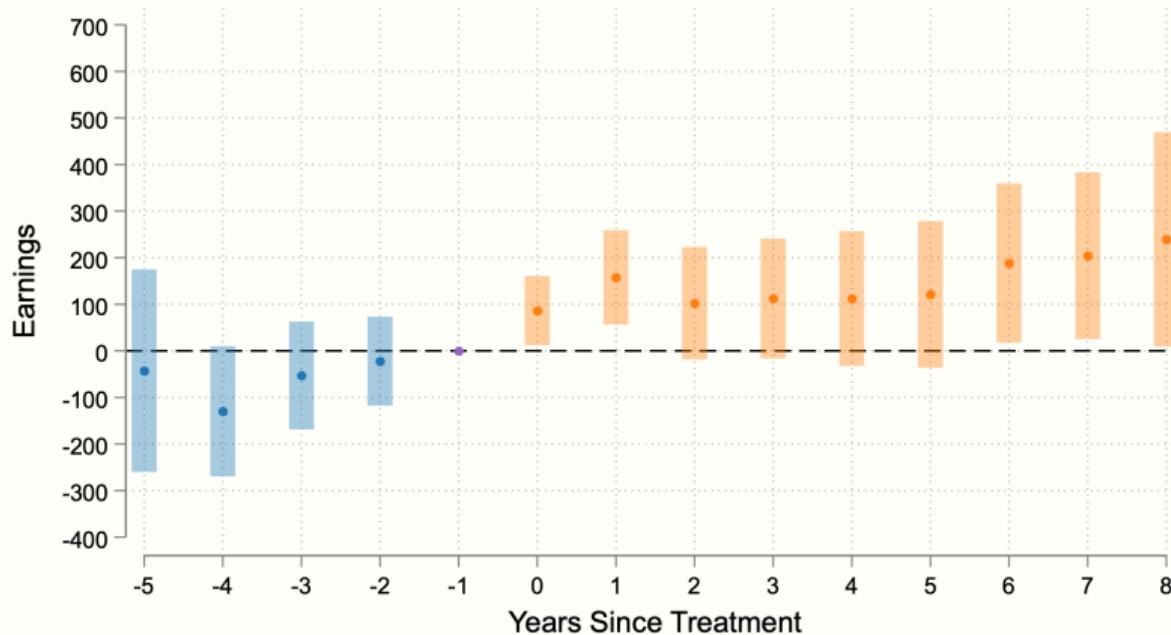
Mothers' Earnings - Full Extent



Back

Pre average: -92.7
Post average: 184.4**
Pretrends p-value: 0.282
Pre = Post p-value: 0.070

Mothers' Earnings - Alternative Definition (Median)



Back

Pre average: -61.8
Post average: 147.2**
Pretrends p-value: 0.262
Pre = Post p-value: 0.033