

# Parental Labor Market Penalties During Two Years of COVID-19

**Maria De Paola**

INPS and Calabria University

**Salvatore Lattanzio**

Bank of Italy and Dondena

EEA-ESEM 2023

August 30, 2023

# Motivation

- COVID-19 had **unprecedented** effects on labor market

# Motivation

- COVID-19 had **unprecedented** effects on labor market
- **Heterogeneous effects** on worker subgroups, especially by **gender**

# Motivation

- COVID-19 had **unprecedented** effects on labor market
- **Heterogeneous effects** on worker subgroups, especially by **gender**
  - Government policies **to fight the pandemic**
    - **Shutdown** of non-essential sectors
    - **School closures**

# Motivation

- COVID-19 had **unprecedented** effects on labor market
- **Heterogeneous effects** on worker subgroups, especially by **gender**
  - Government policies **to fight the pandemic**
    - **Shutdown** of non-essential sectors
    - **School closures**
  - Governments policies for a more equal division of **childcare**
    - Expansion of **parental leaves**

# Motivation

- COVID-19 had **unprecedented** effects on labor market
- **Heterogeneous effects** on worker subgroups, especially by **gender**
  - Government policies **to fight the pandemic**
    - **Shutdown** of non-essential sectors
    - **School closures**
  - Governments policies for a more equal division of **childcare**
    - Expansion of **parental leaves**
- Potential **heterogeneous** paths during **recovery**

# This paper

- We investigate
  - the **consequences** of the pandemic for mothers and fathers
    - we focus on labor earnings and their determinants

# This paper

- We investigate
  - the **consequences** of the pandemic for mothers and fathers
    - we focus on labor earnings and their determinants
  - both during the **recession in 2020** and the **recovery in 2021**
    - we explore **heterogeneity** by sector, children's age, within-household GWG



# This paper

- We investigate
  - the **consequences** of the pandemic for mothers and fathers
    - we focus on labor earnings and their determinants
  - both during the **recession in 2020** and the **recovery in 2021**
    - we explore **heterogeneity** by sector, children's age, within-household GWG
- We contribute to an expanding literature
  - on how pandemic recession is **different** from the past [Alon et al., 2020]
  - on its **gendered** impacts [Adams-Prassl et al., 2020; Del Boca et al., 2020]

# Data

- **Monthly** administrative data on **universe** of private-sector workers in **Italy 2020-21** (INPS)
  - Information on **labor contracts**
    - earnings, days worked, open-ended/temporary, full/part-time, STW, quits
  - Information on **workers** (gender, age, place of birth)
  - Information on **firms** (sector, size)
- Merge w/ data on **childbirth** episodes, from parental leave applications
- Merge w/ information on take-up of **parental leave**

# Labor market penalties

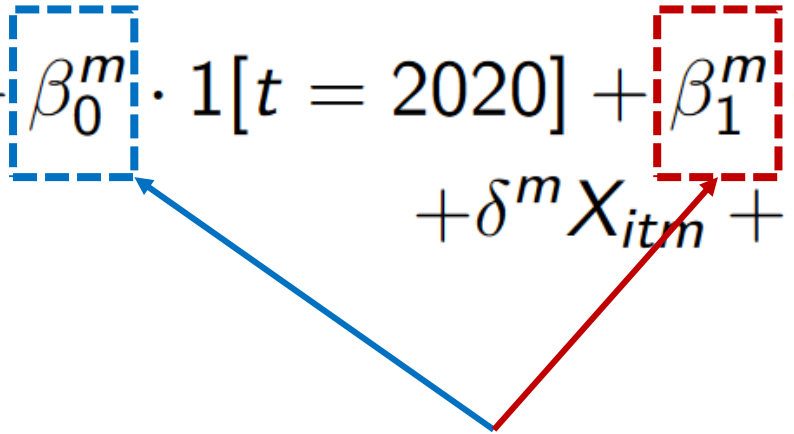
## Empirical strategy

Compare monthly outcomes in 2020-21 w.r.t. 2019 for M & F

$$y_{itm} = \alpha^m + \beta_0^m \cdot 1[t = 2020] + \beta_1^m \cdot 1[t = 2021] \\ + \delta^m X_{itm} + \eta_{J(i,t)}^m + \epsilon_{itm}$$

# Labor market penalties

## Empirical strategy

$$y_{itm} = \alpha^m + \beta_0^m \cdot 1[t = 2020] + \beta_1^m \cdot 1[t = 2021] + \delta^m X_{itn} + \eta_{J(i,t)}^m + \epsilon_{itm}$$


Monthly change in **outcome y**  
between **2020** or **2021** and  
2019

# Labor market penalties

## Empirical strategy

$$y_{itm} = \alpha^m + \beta_0^m \cdot 1[t = 2020] + \beta_1^m \cdot 1[t = 2021] + \delta^m X_{itm} + \eta_{J(i,t)}^m + \epsilon_{itm}$$



### Outcomes

log monthly earnings  
log days worked  
quit probability  
STW probability  
parental leave take-up

# Labor market penalties

## Empirical strategy

$$y_{itm} = \alpha^m + \beta_0^m \cdot 1[t = 2020] + \beta_1^m \cdot 1[t = 2021] + \delta^m X_{itm} + \eta_{J(i,t)}^m + \epsilon_{itm}$$

### Outcomes

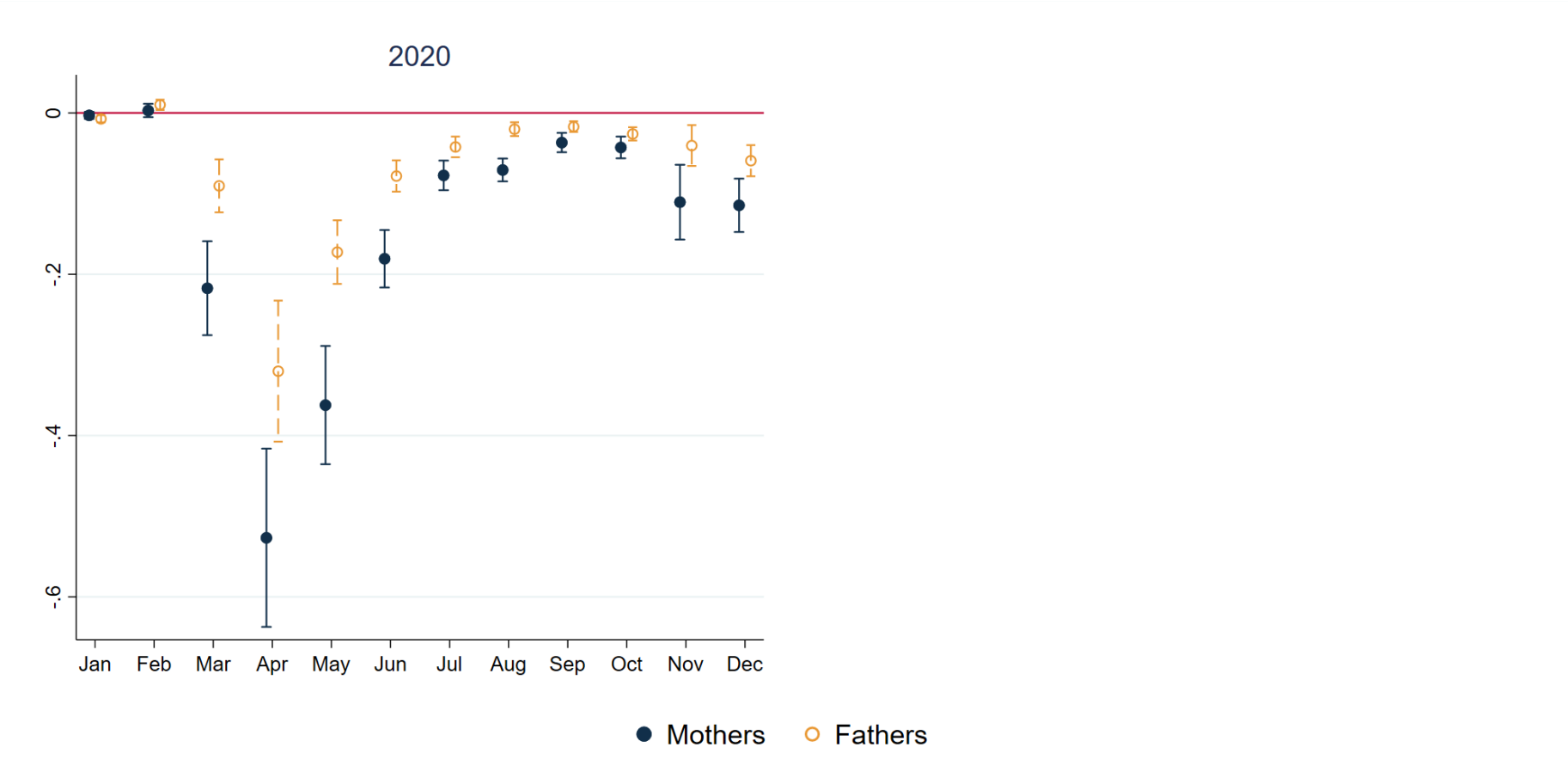
log monthly earnings  
log days worked  
quit probability  
STW probability  
parental leave take-up

### Controls

experience & age  
white-collar  
# children  
(parental leave)  
(STW)  
region & sector dummies

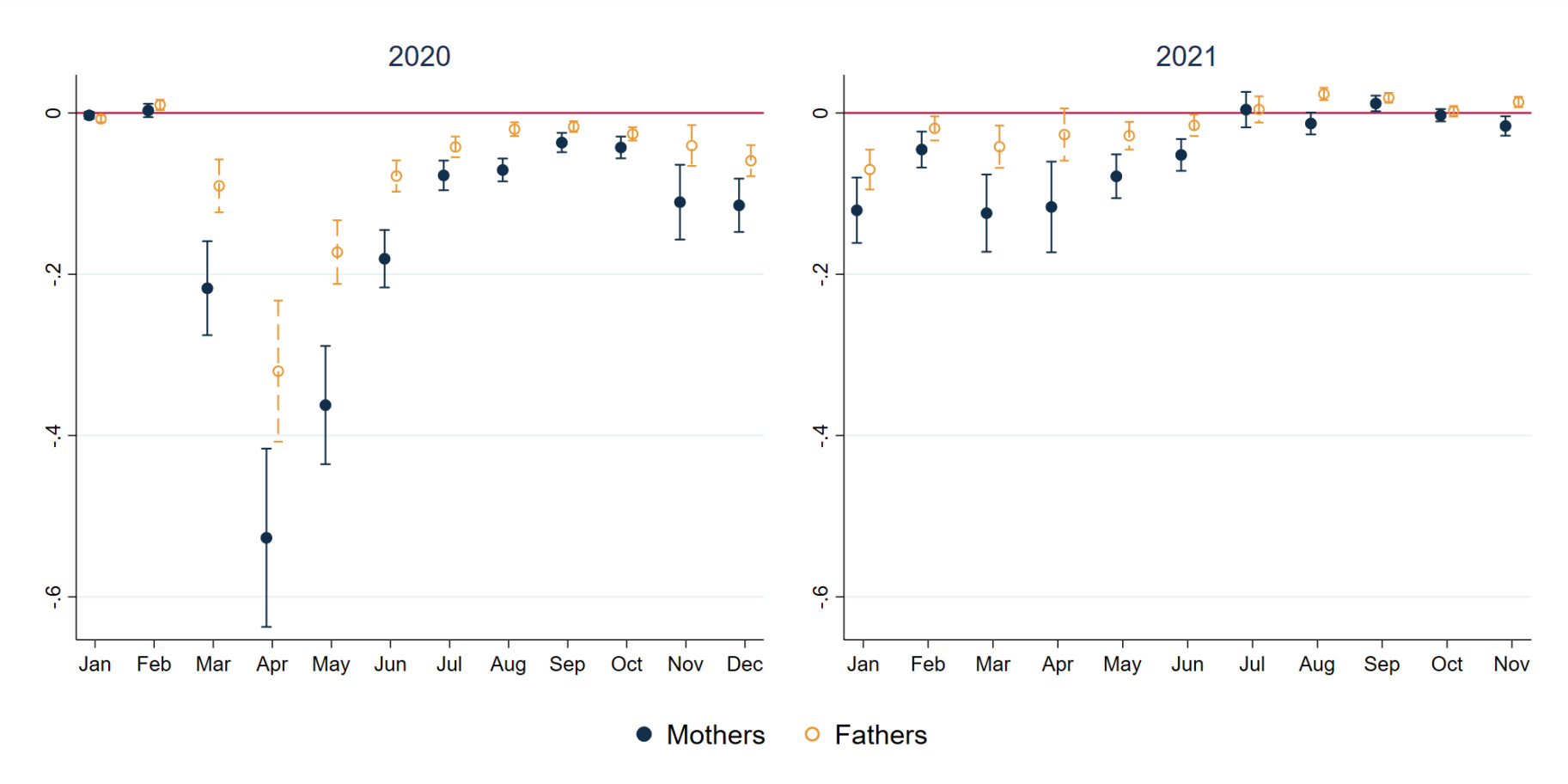
**The labor market  
consequences of COVID-19  
for mothers and fathers**

# Mothers experience larger earnings drop

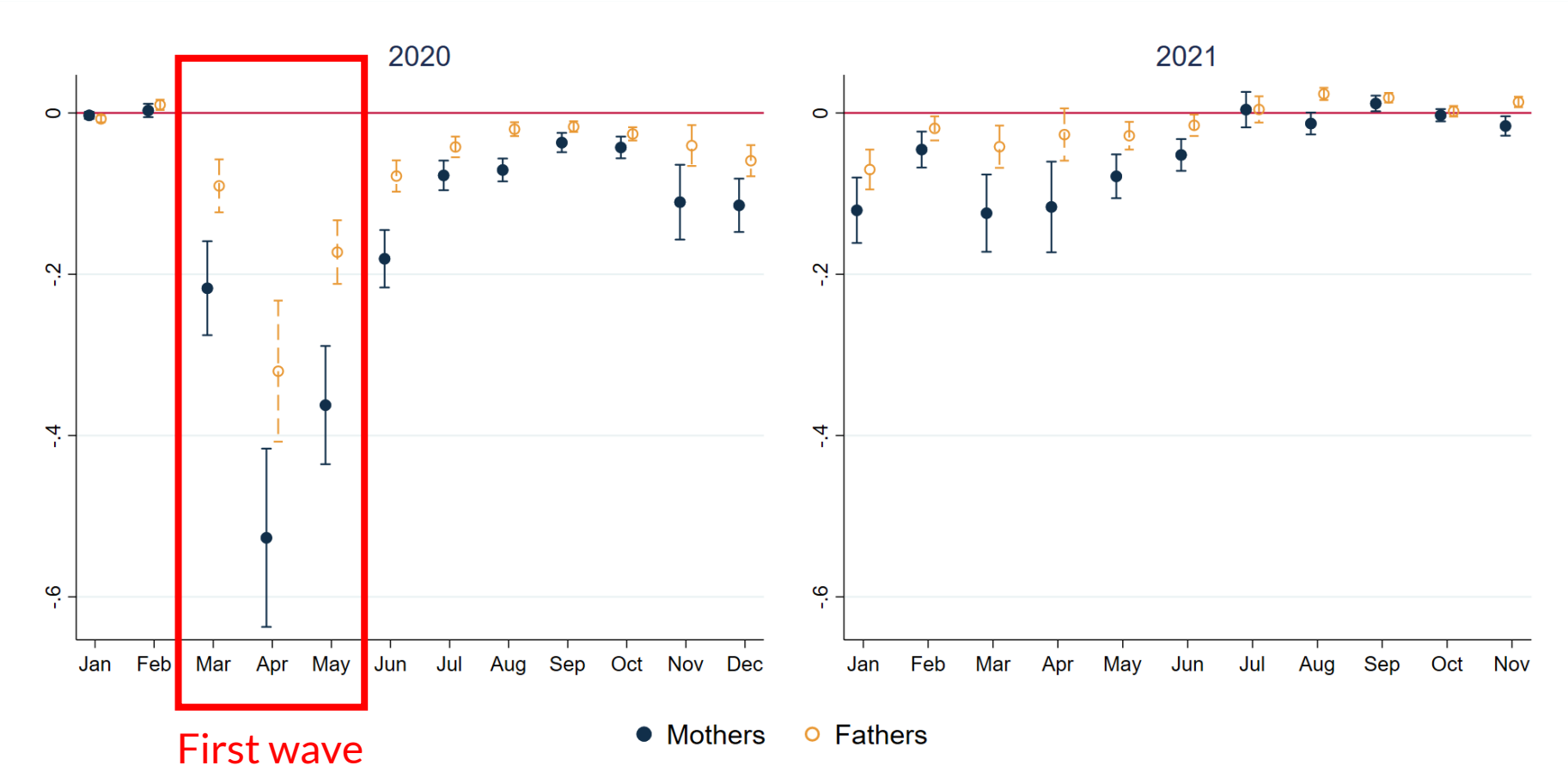




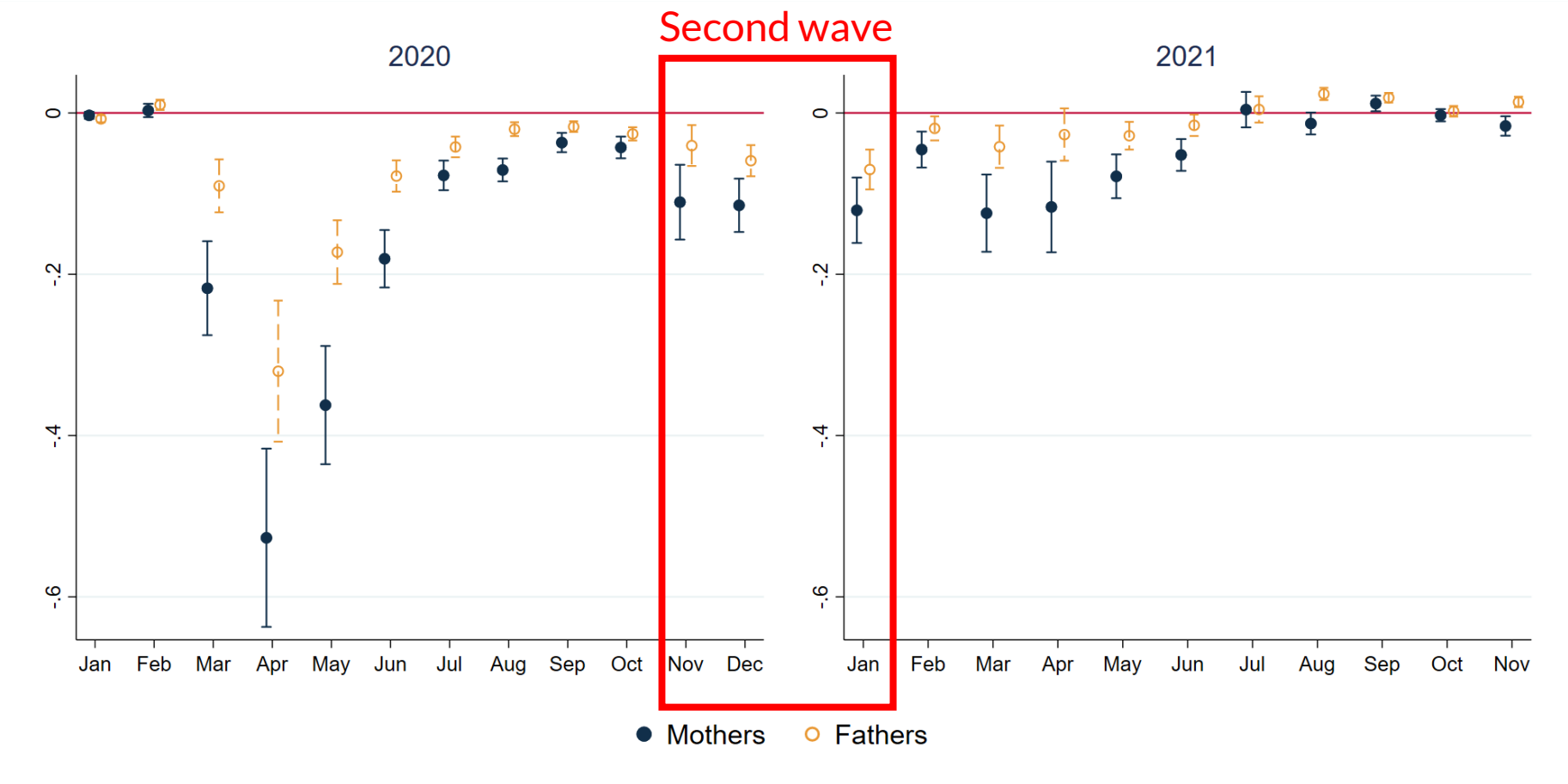
# Mothers experience larger earnings drop



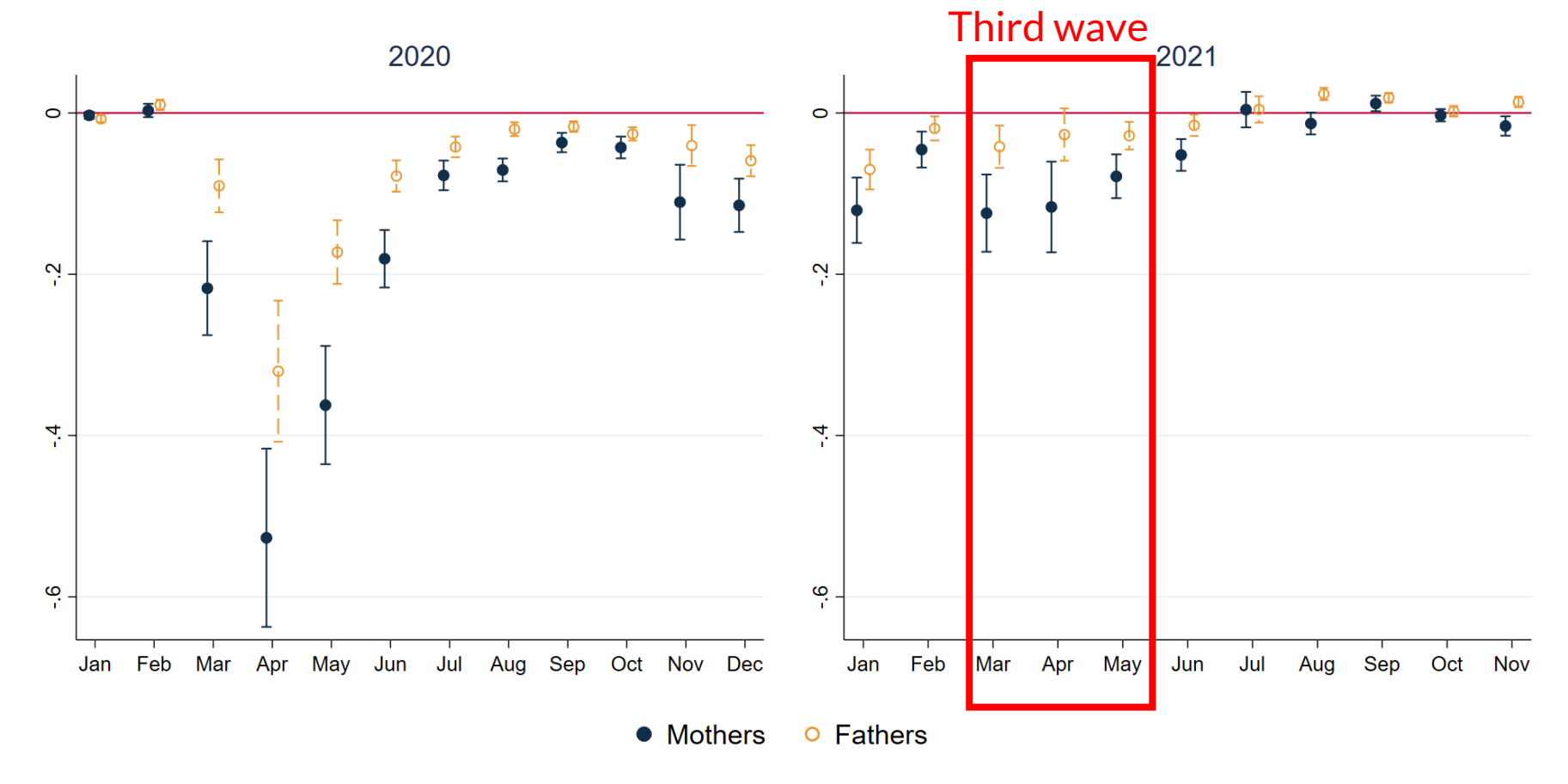
# Mothers experience larger earnings drop



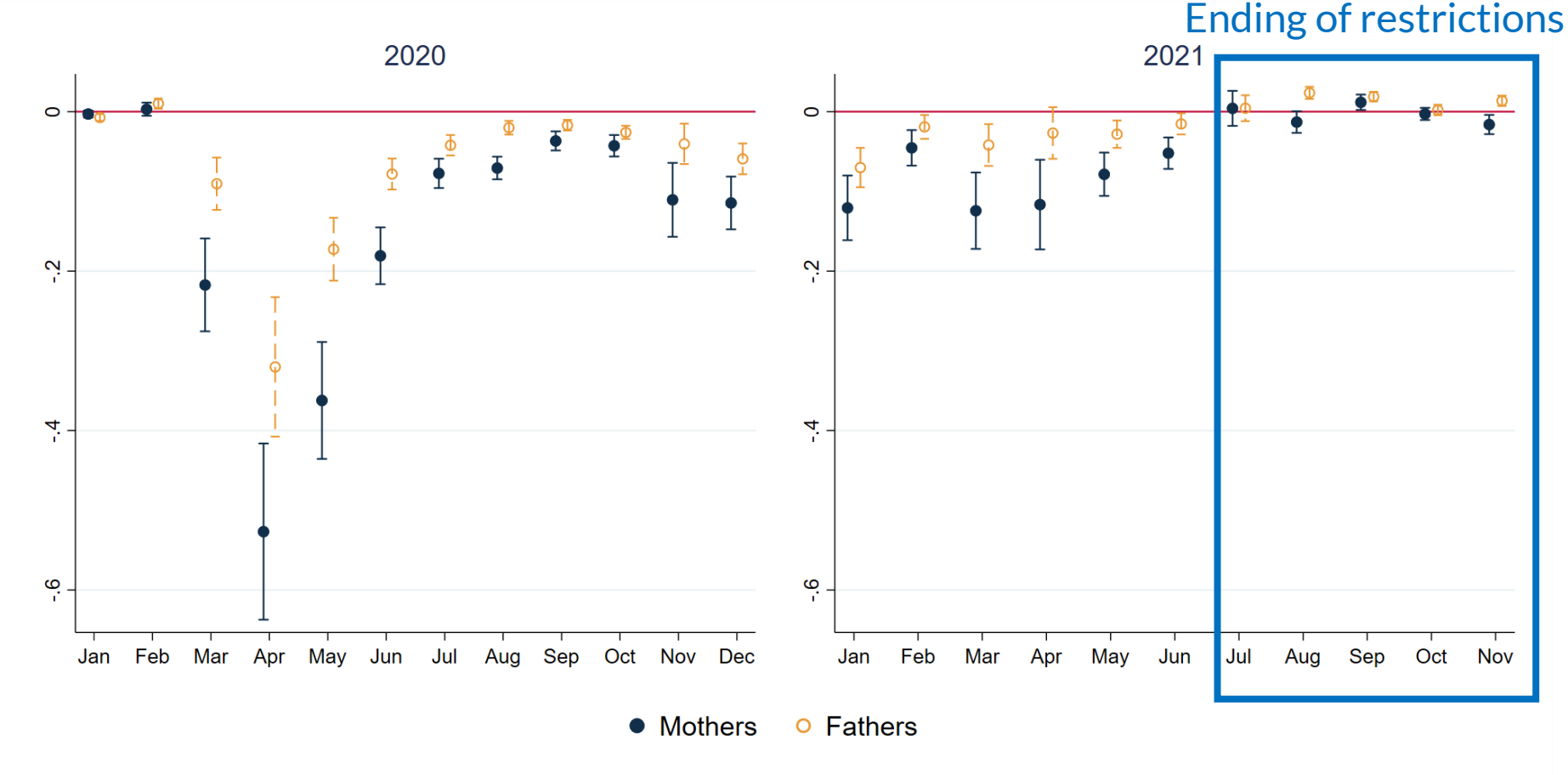
# Mothers experience larger earnings drop



# Mothers experience larger earnings drop

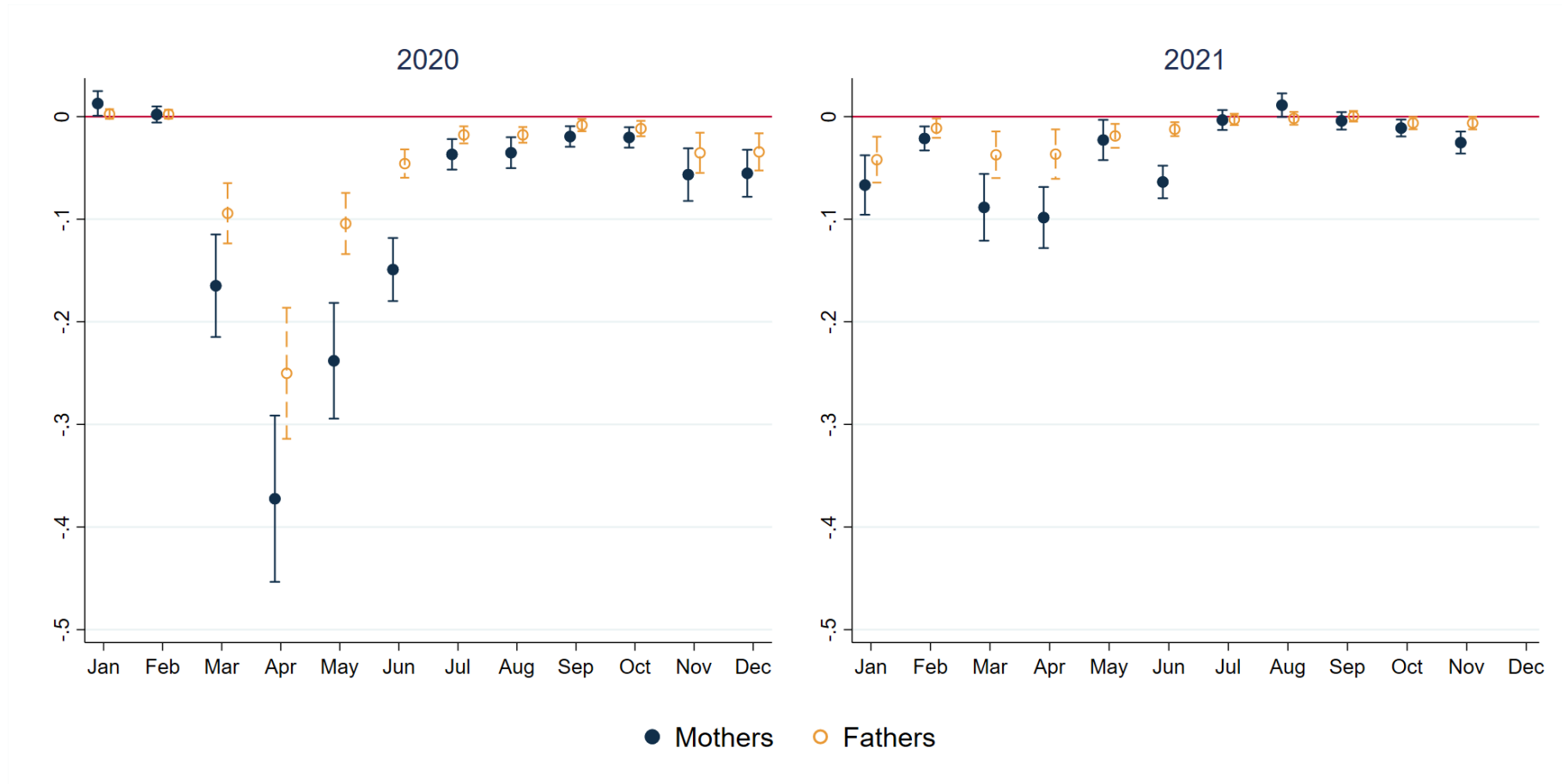


# Mothers experience larger earnings drop



# What determines the earnings penalty?

Larger drop in **days worked** for mothers



**Why did days worked drop more for mothers than for fathers?**

# Why did days worked drop more for mothers than for fathers?

- Differences in **parental leave** use



# Why did days worked drop more for mothers than for fathers?

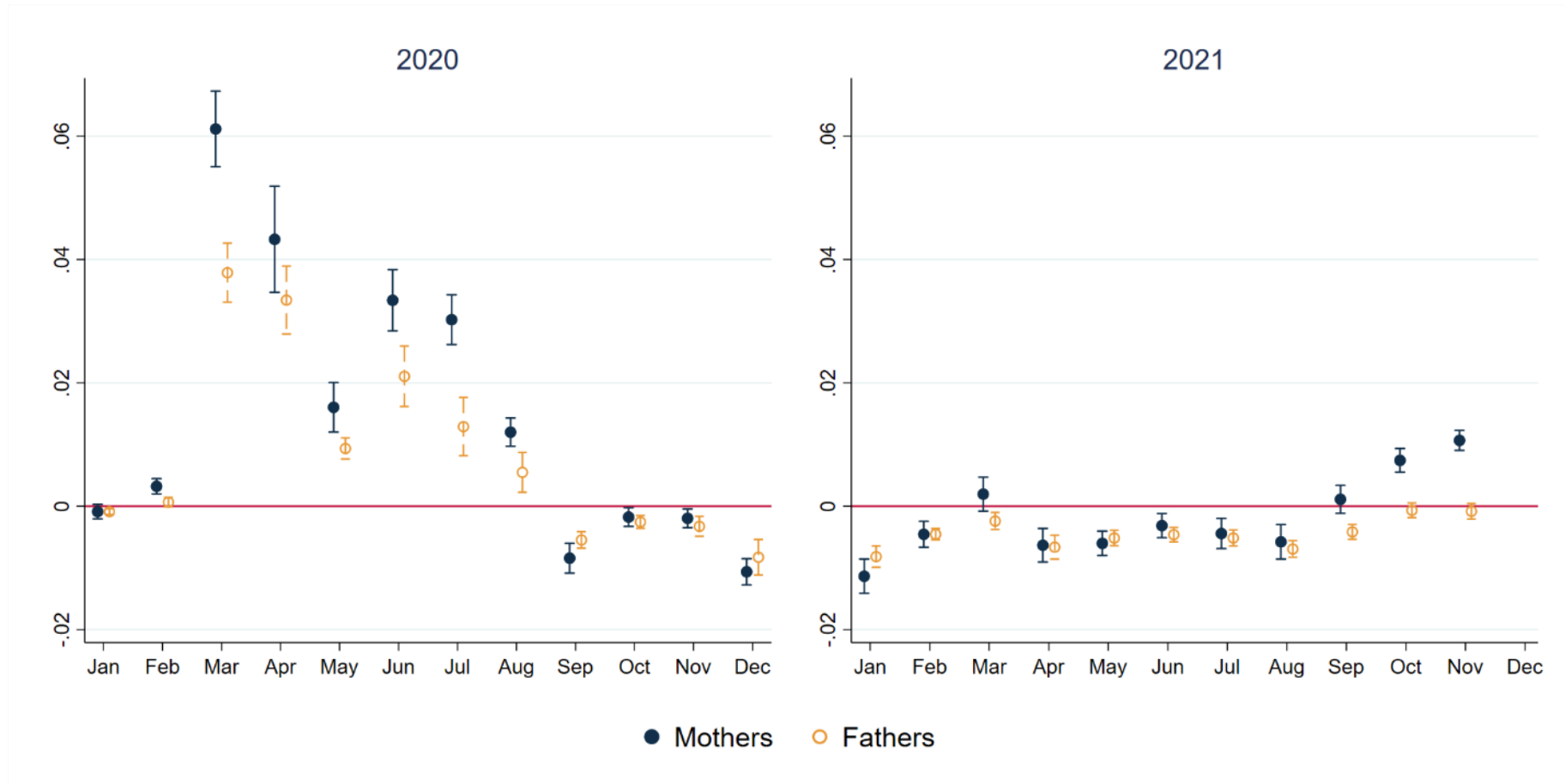
- Differences in **parental leave** use
- Differences in **short-time work** use

# Why did days worked drop more for mothers than for fathers?

- Differences in **parental leave** use
- Differences in **short-time work** use
- Differences in **separations**

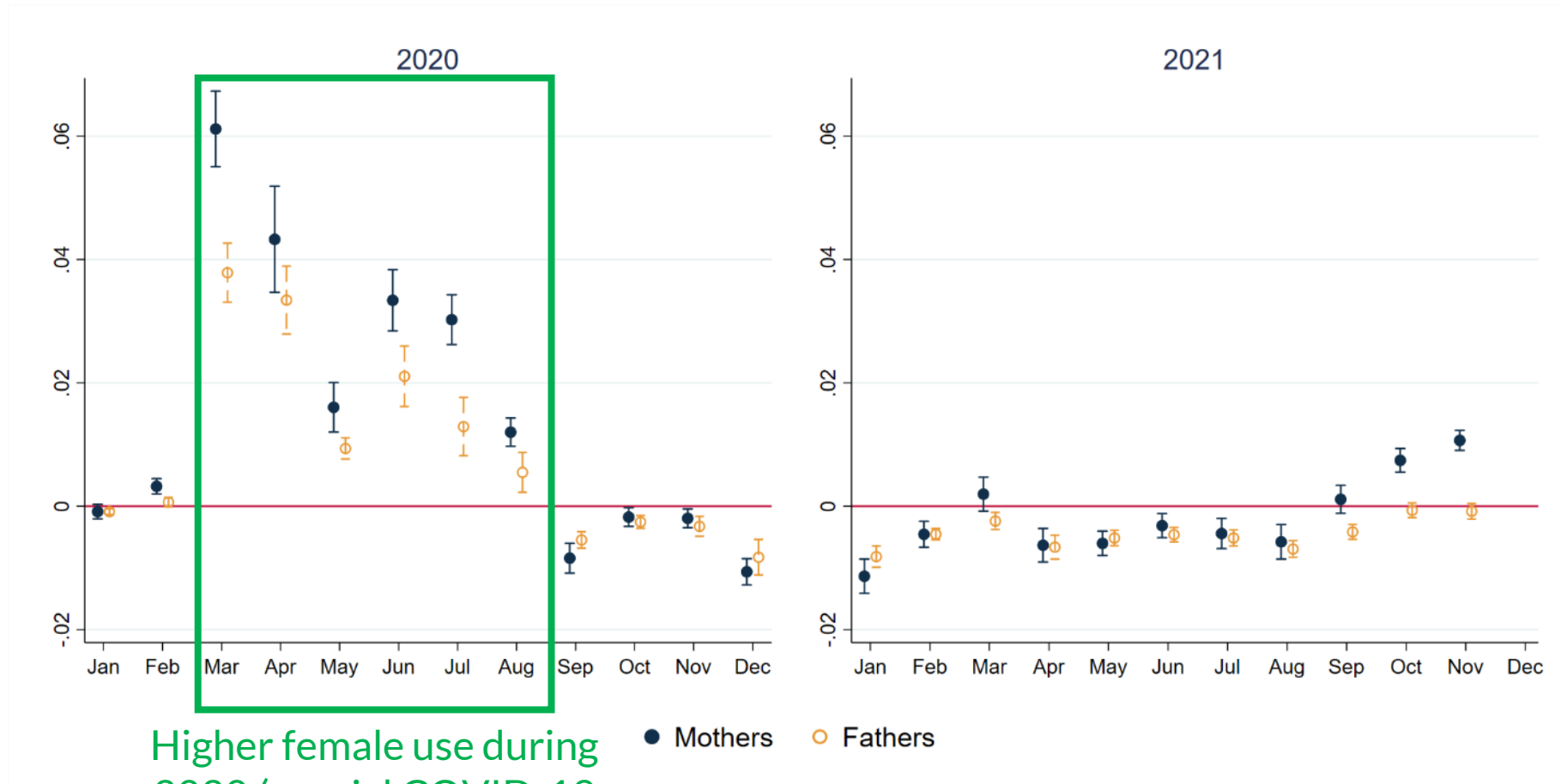
# What determines the penalty?

## Higher **parental leave** take-up



# What determines the penalty?

## Higher **parental leave** take-up

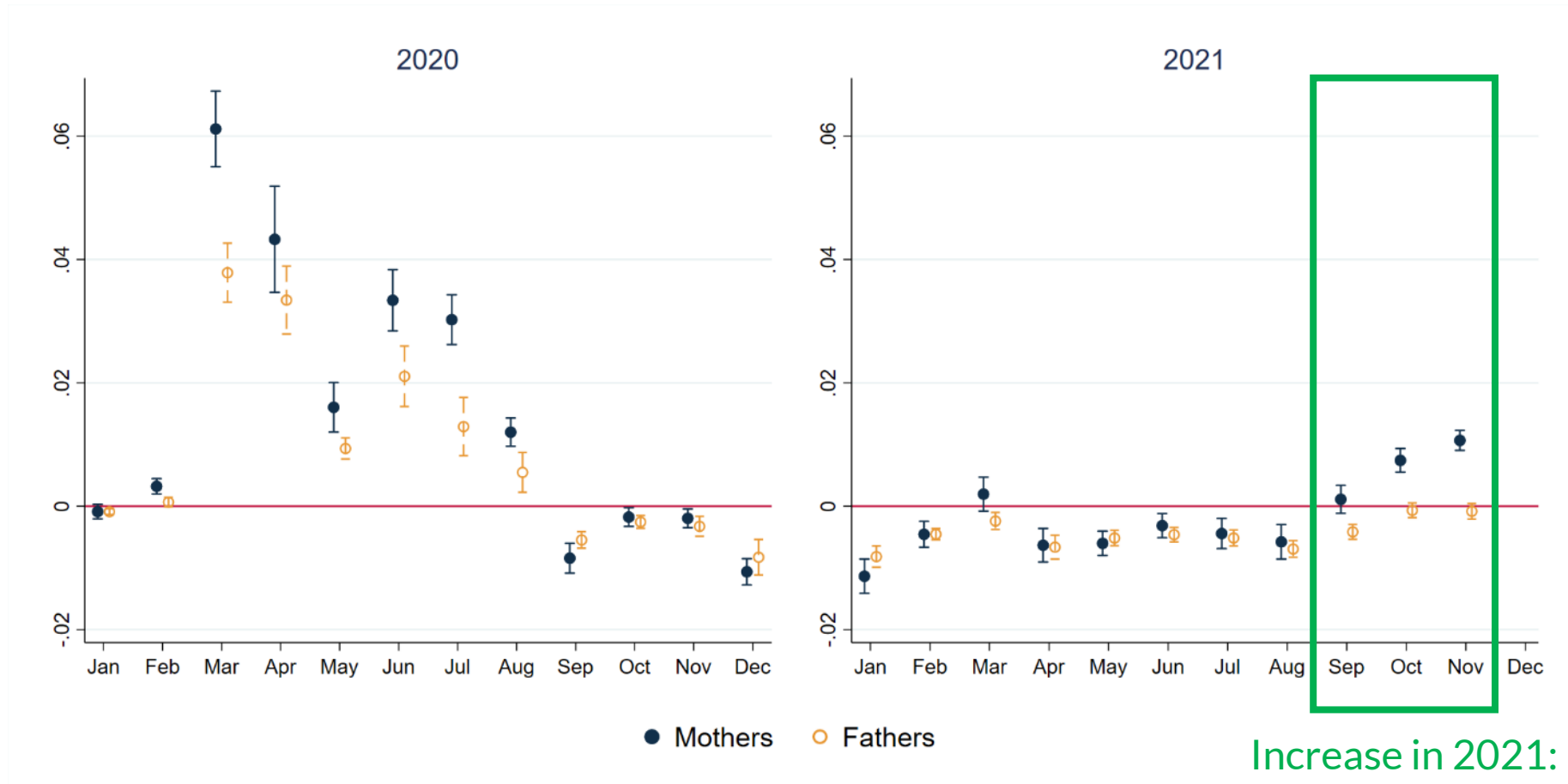


Higher female use during 2020 (special COVID-19 leave was introduced)

● Mothers ○ Fathers

# What determines the penalty?

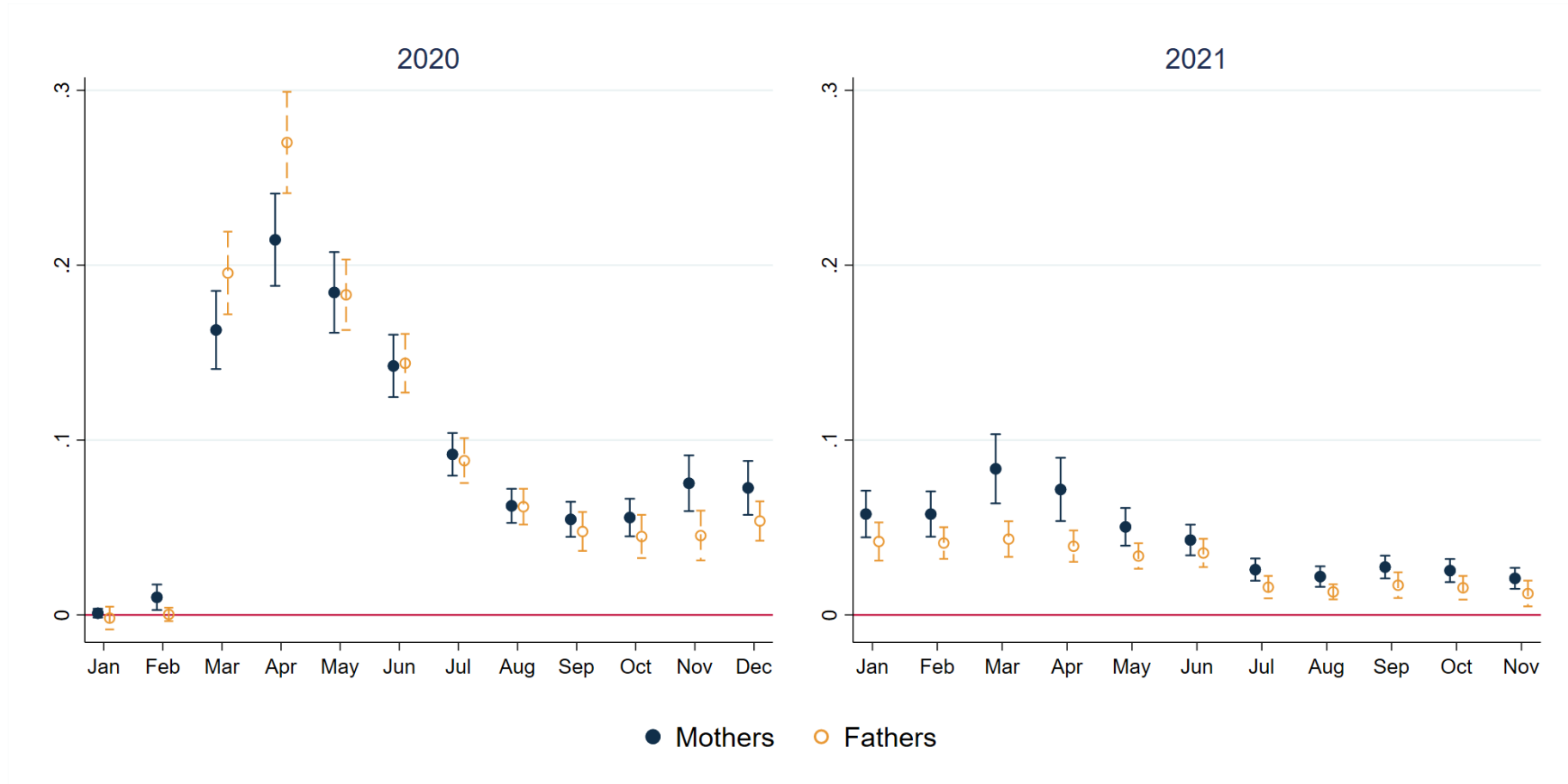
## Higher **parental leave** take-up



Increase in 2021:  
employers reducing  
WFH?

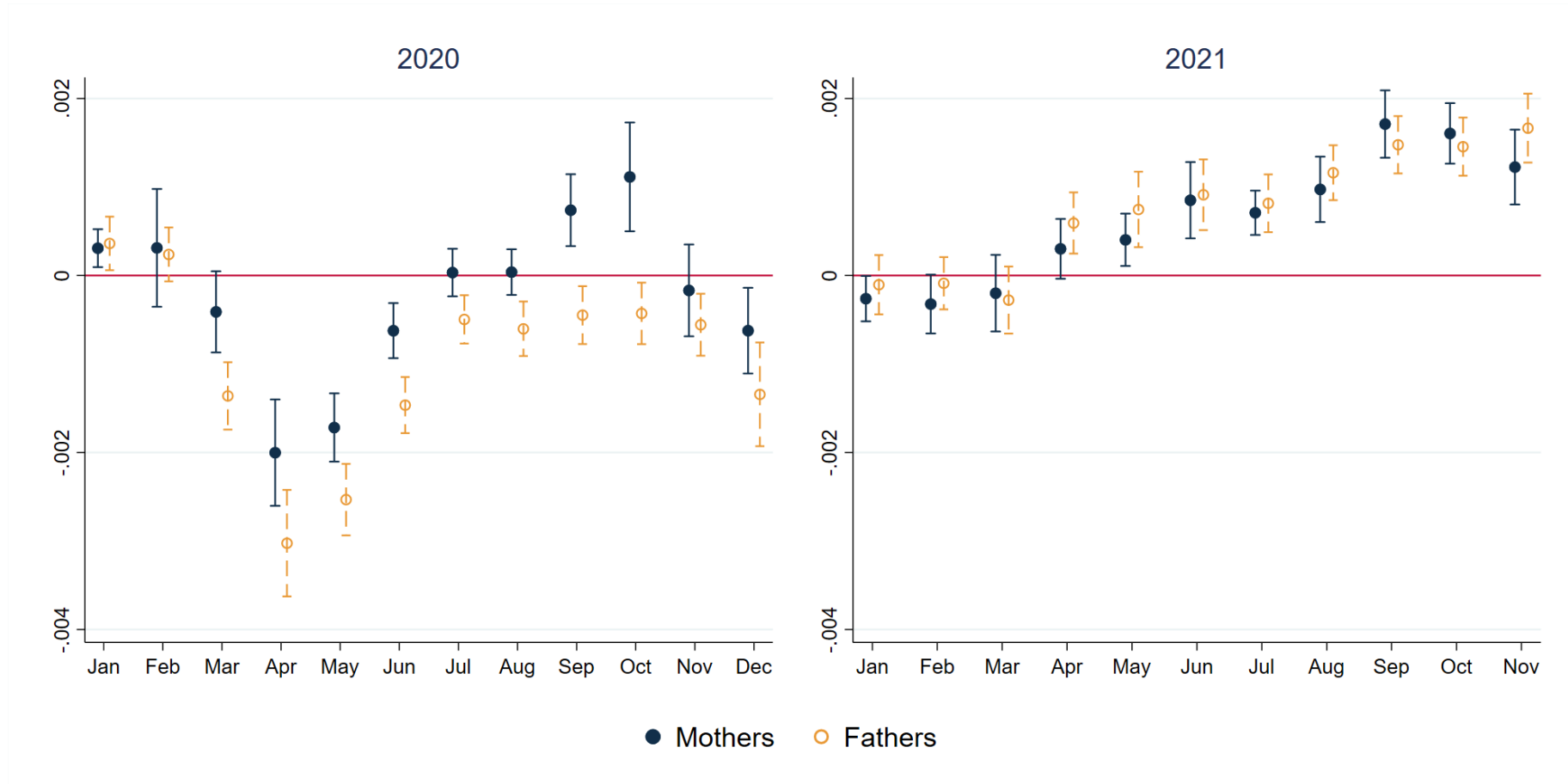
# What determines the penalty?

**STW** use: heterogeneity across time



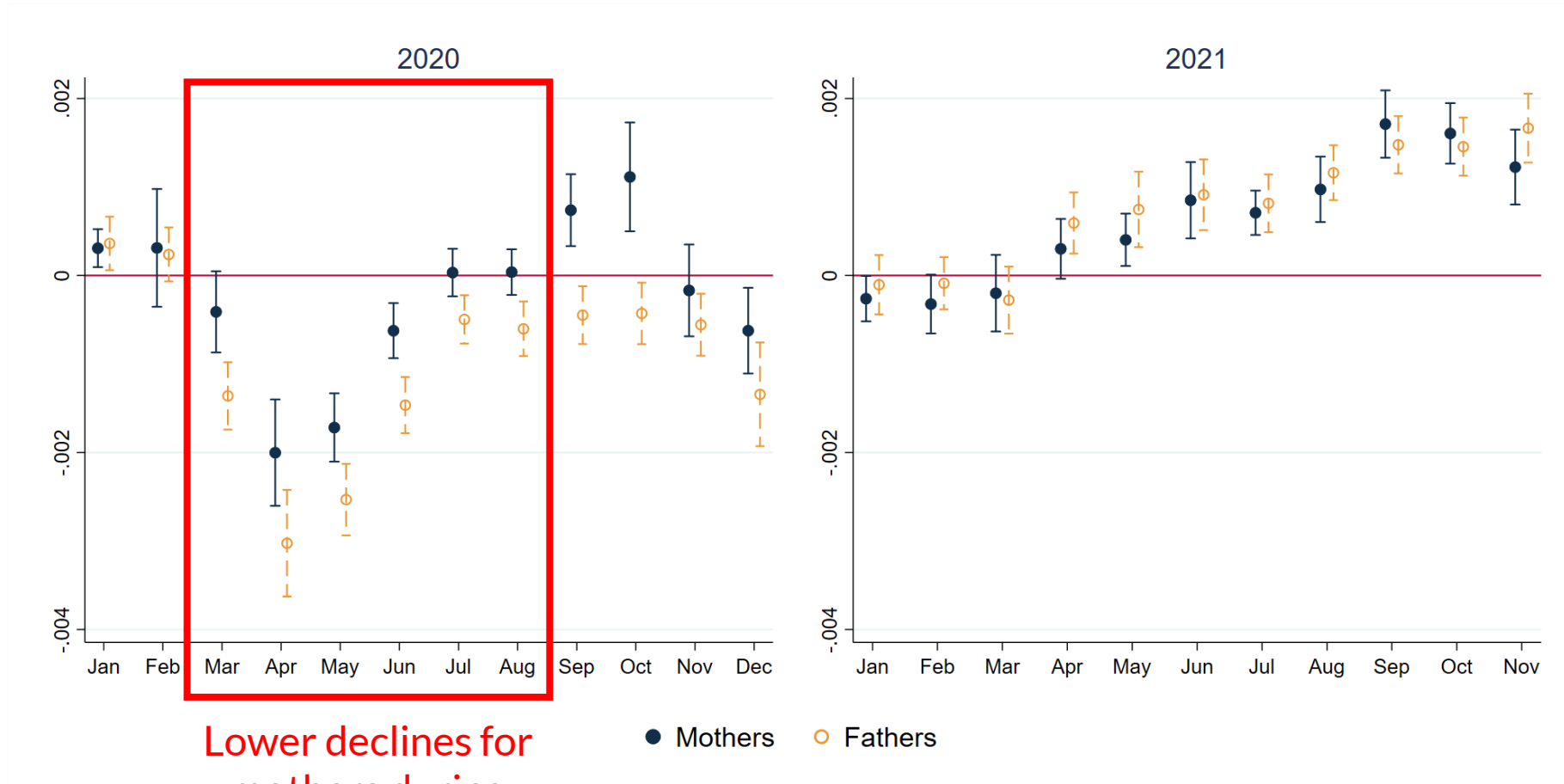
# What determines the penalty?

## Gender differences in quit probability



# What determines the penalty?

## Gender differences in quit probability



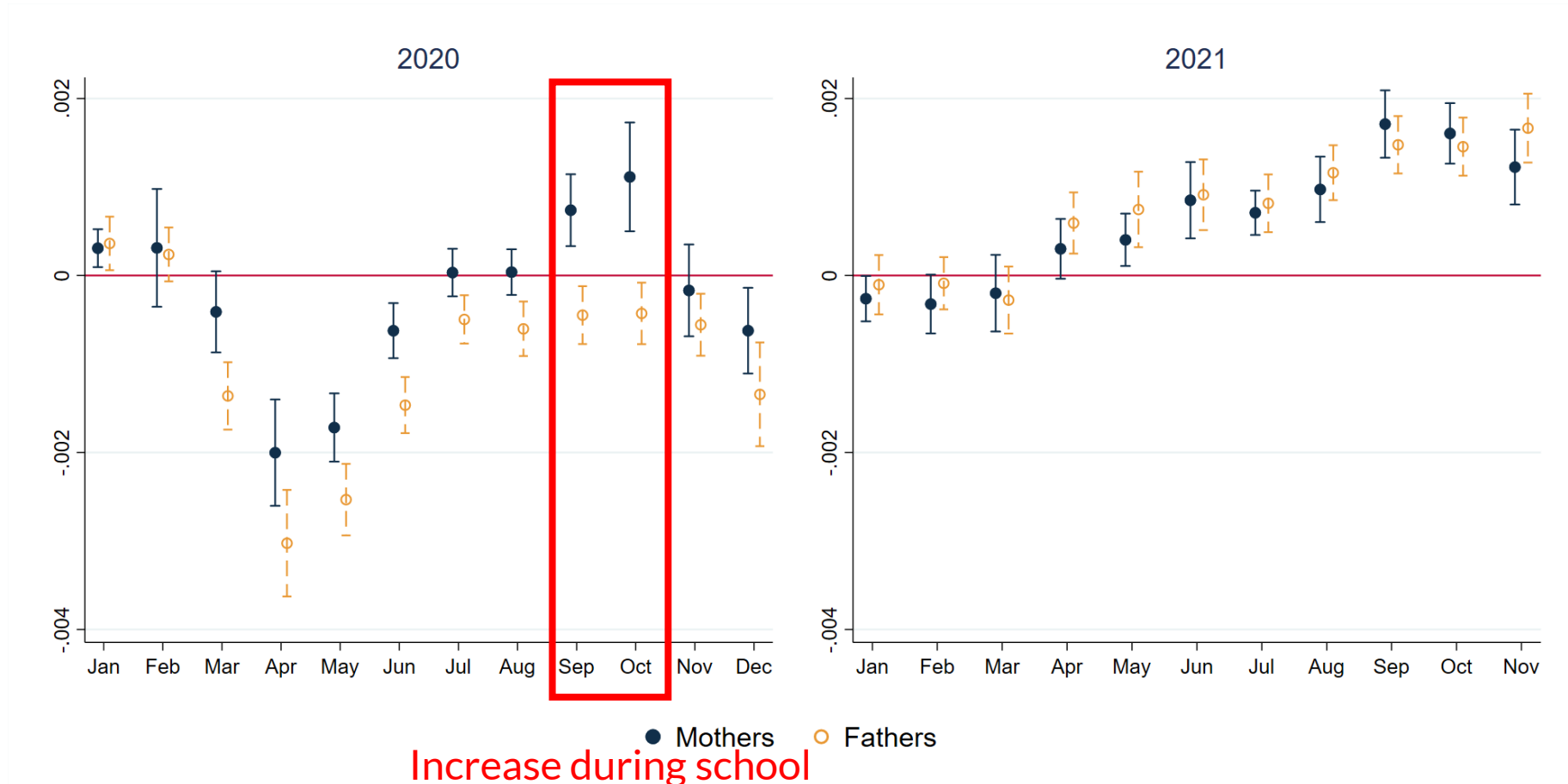
Lower declines for mothers during recession

● Mothers ○ Fathers



# What determines the penalty?

## Gender differences in quit probability

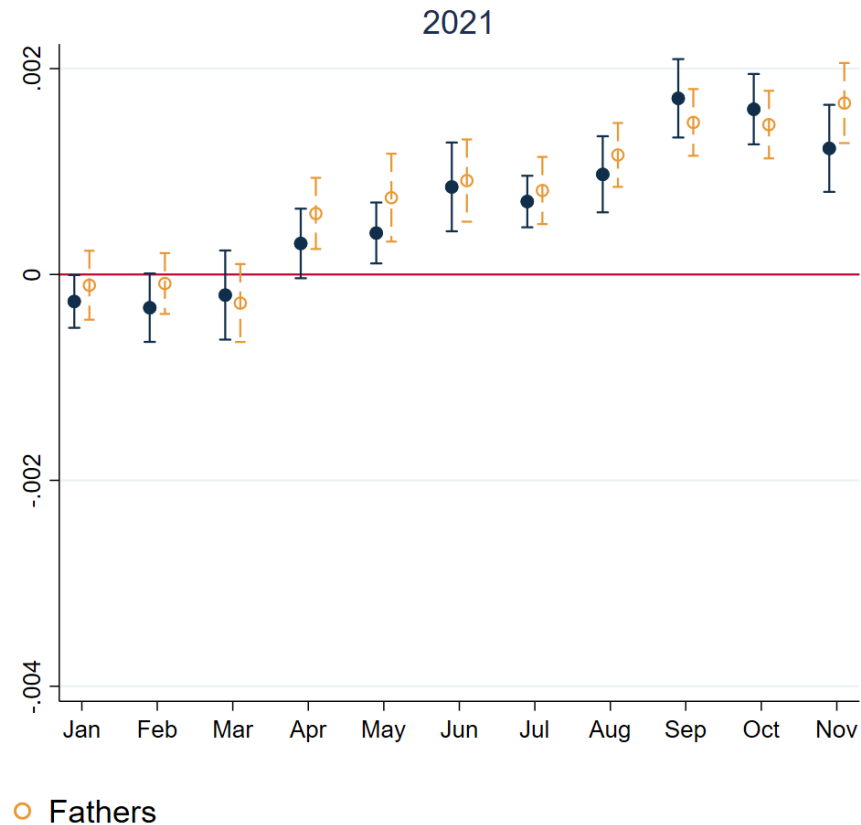


● Mothers ○ Fathers  
Increase during school re-openings after summer break

# What determines the penalty?

## Gender differences in **quit probability**

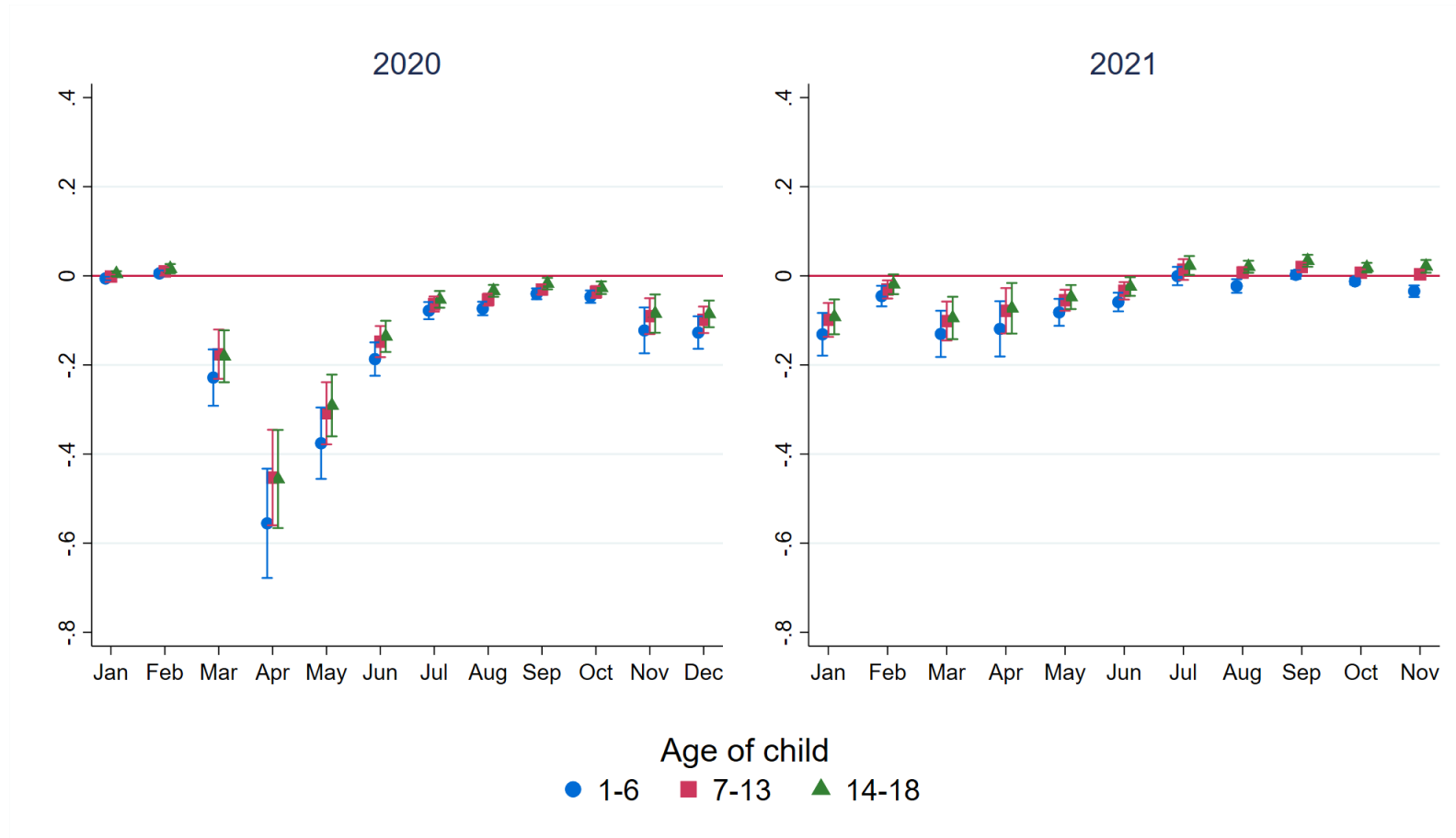
No statistically significant differences during the «Great Resignation»



# Heterogeneity in the effects of the pandemic

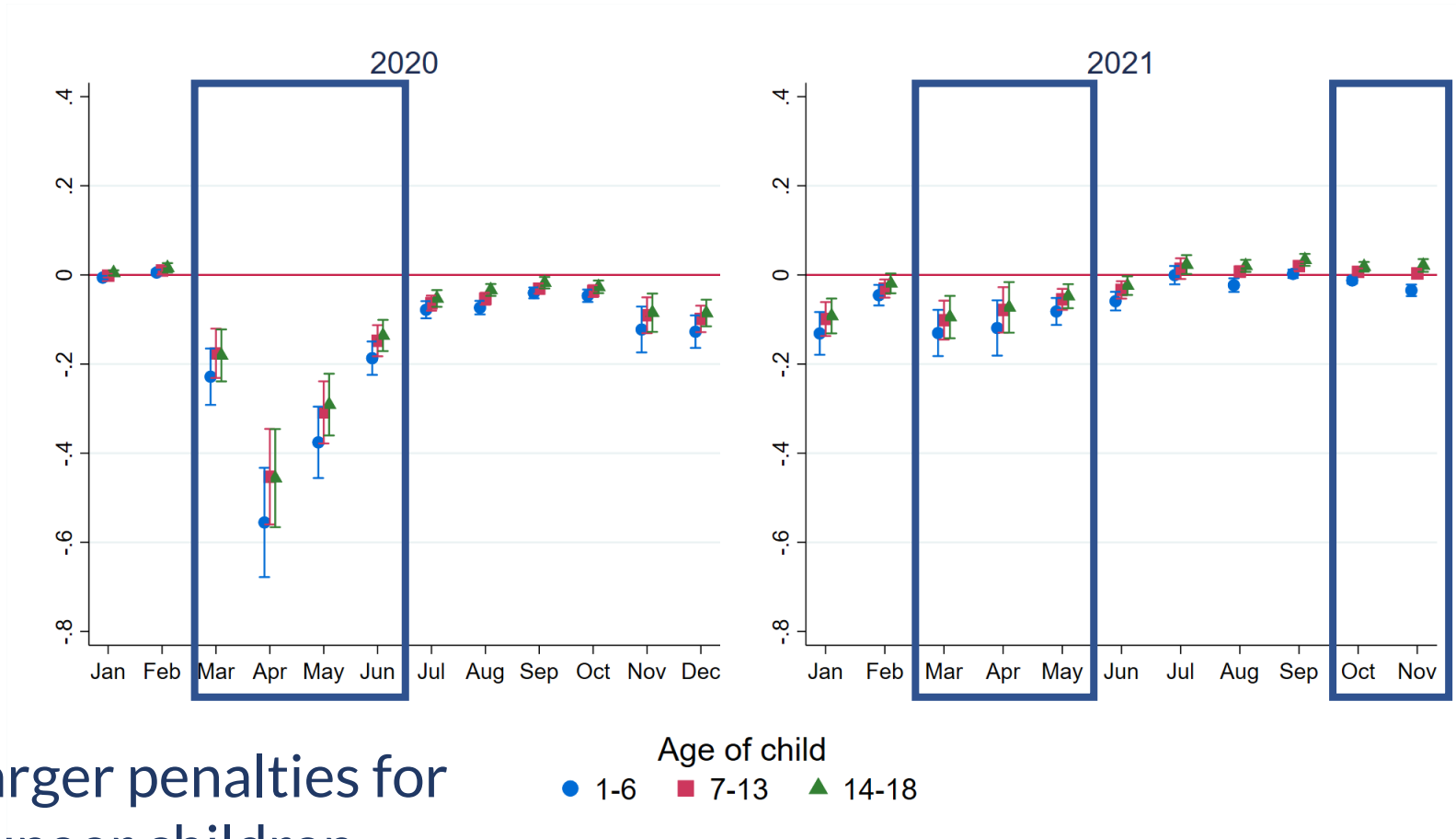
# Children's age

## Weak correlation w/ penalty for mothers



# Children's age

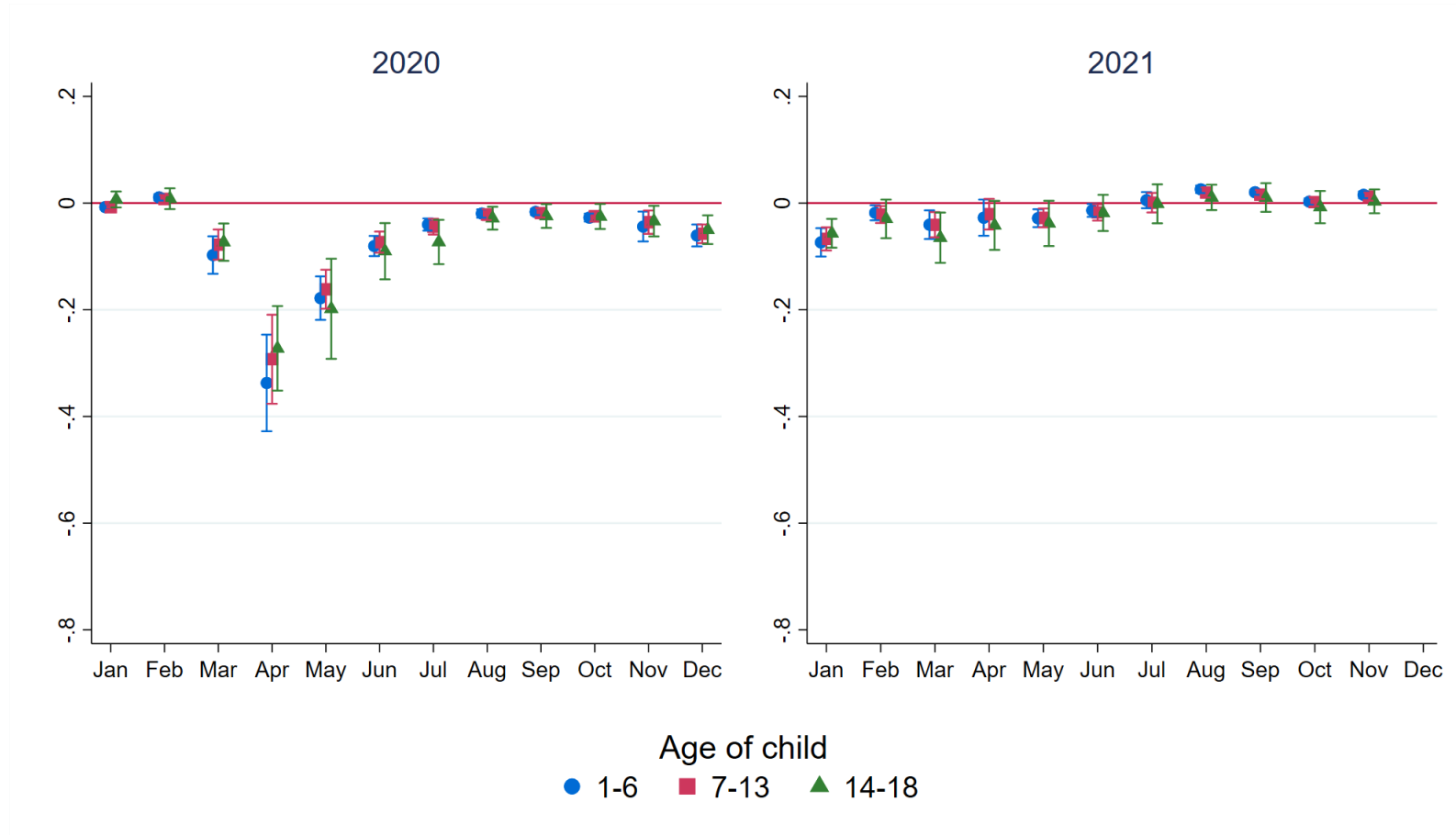
Weak correlation w/ penalty for mothers



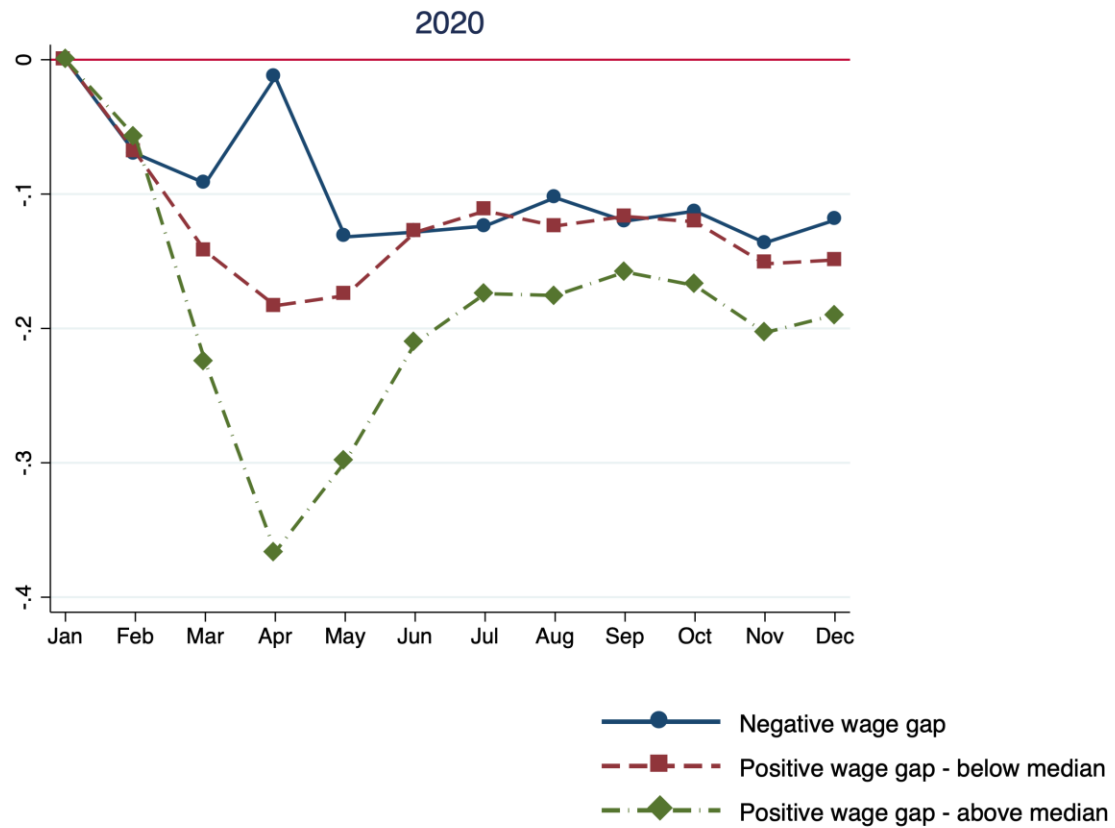
Only slightly larger penalties for mothers of younger children – those more likely to need childcare

# Children's age

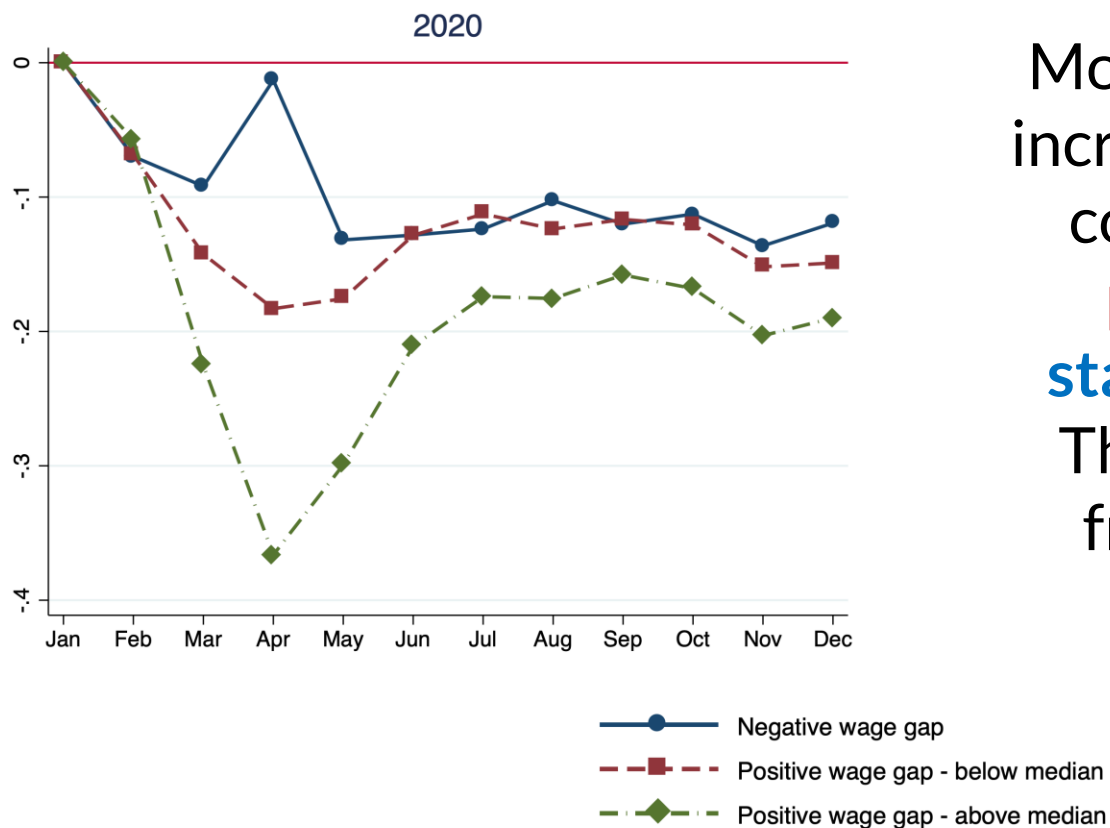
## No correlation w/ penalty for fathers



# Within household gender pay gap



# Within household gender pay gap



Mother-father gap **in 2020** increases especially in those couples that, **before the pandemic**, had **larger starting gender pay gaps**. The penalty partly stems from within-household bargaining



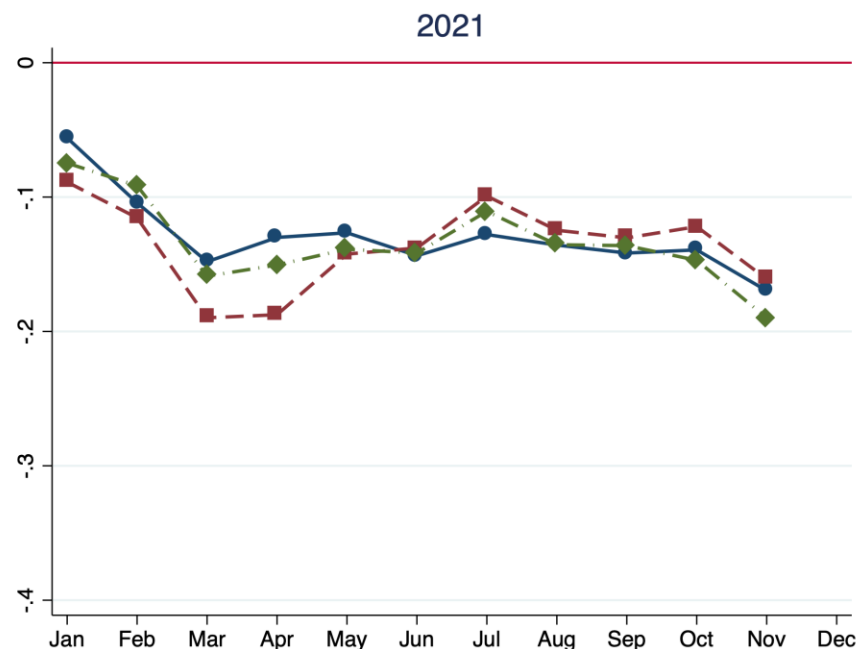
# Within household gender pay gap



# Within household gender pay gap

No such heterogeneity exists **in 2021**

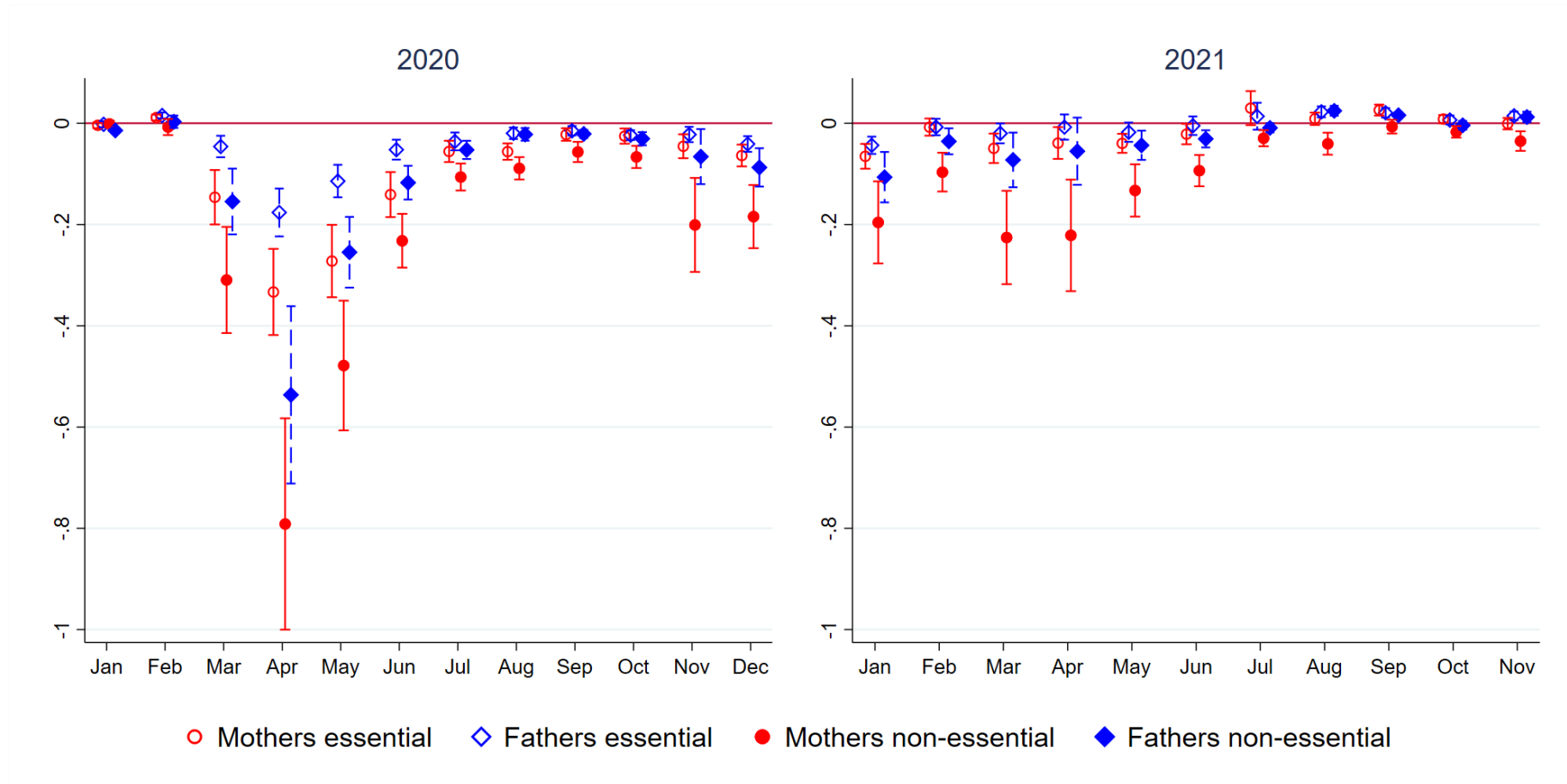
[Note: coefficients normalized w.r.t. to January 2020]



- Negative wage gap
- -■ - Positive wage gap - below median
- · -◆ - Positive wage gap - above median

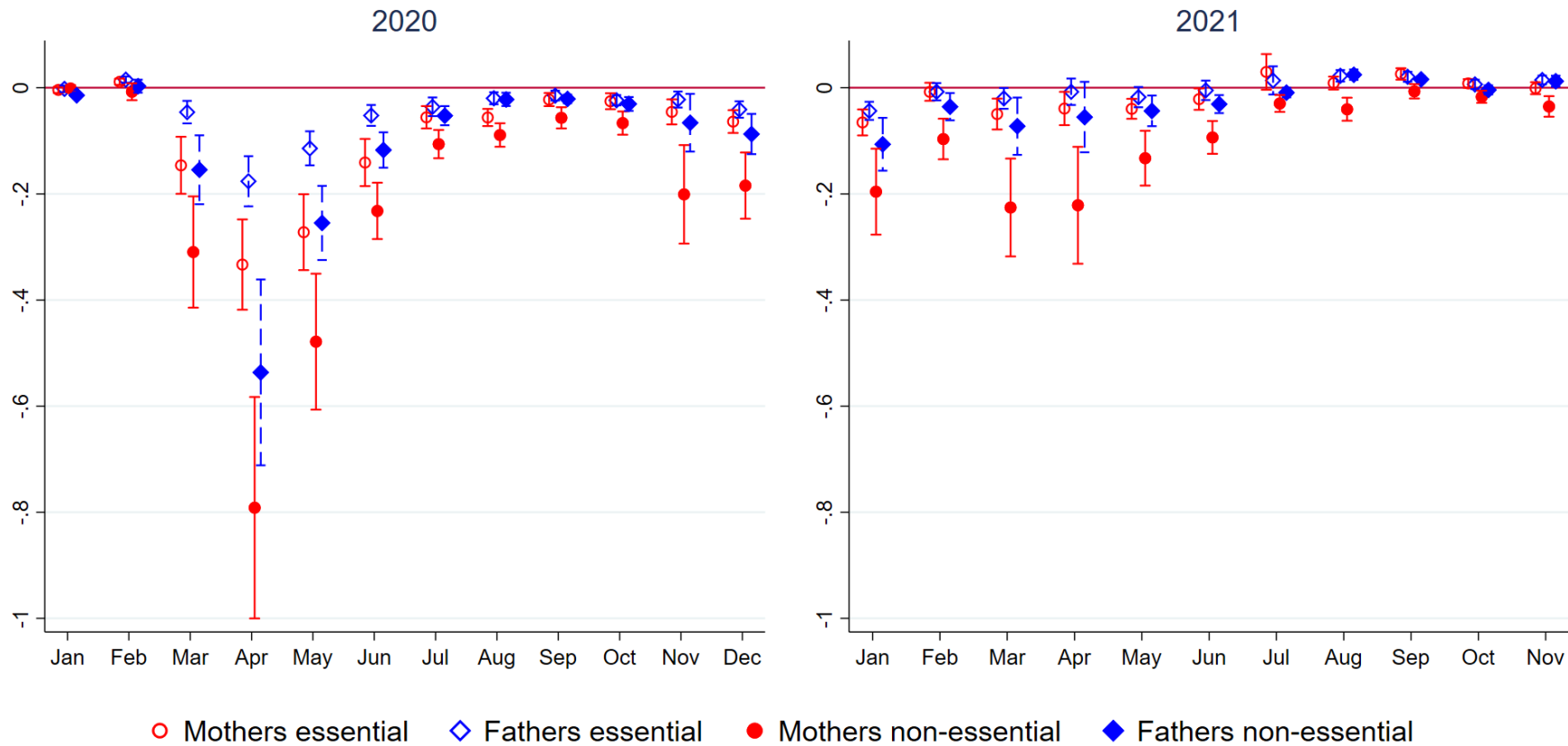
# Essential vs. non-essential sectors

# Essential vs. non-essential sectors

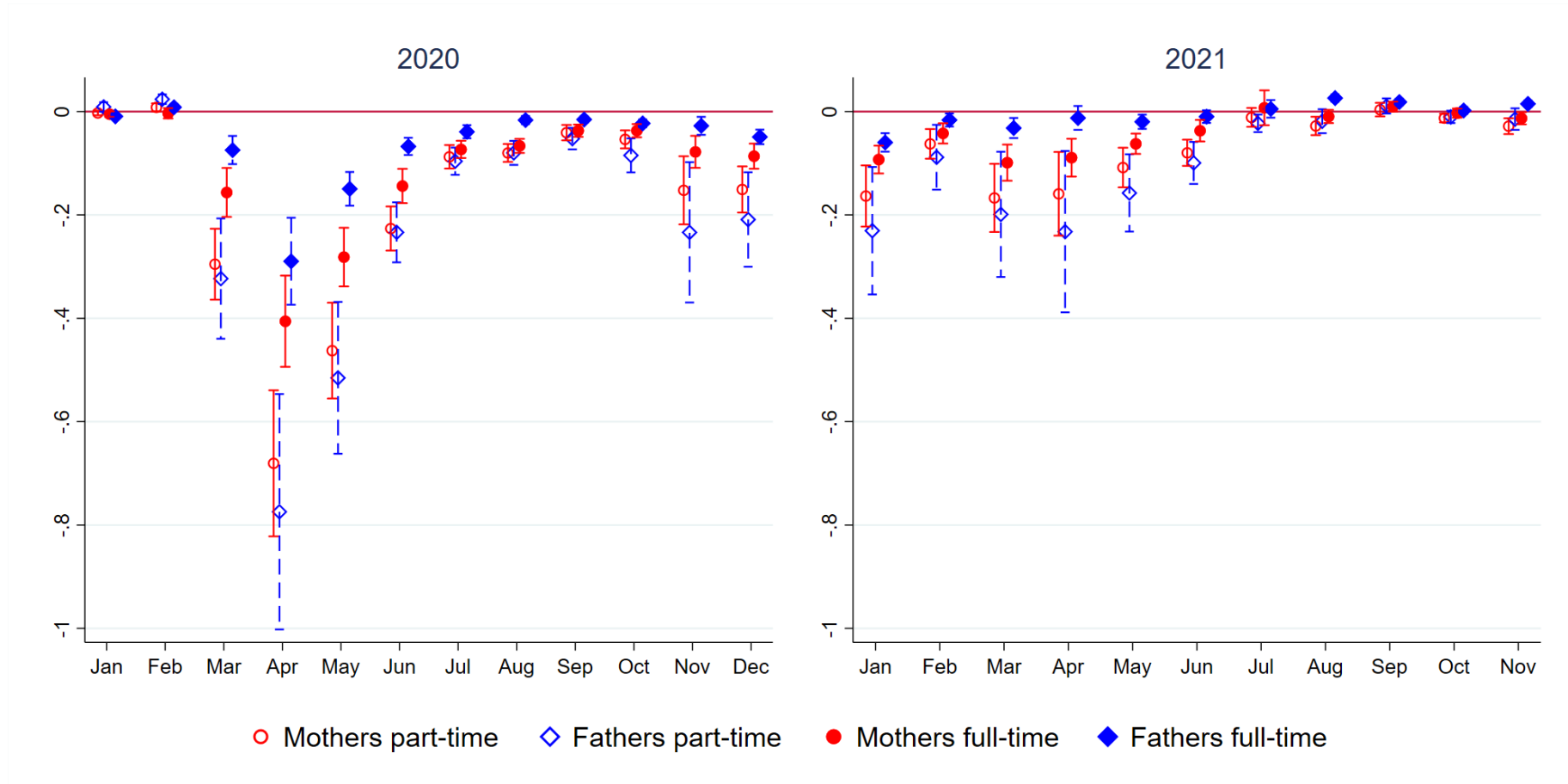


# Essential vs. non-essential sectors

Women experience **larger** penalties in **both** groups



# Part-time workers pay larger penalty



# Part-time workers pay larger penalty

The **over-representation** of women among part-time contracts **can explain aggregate larger negative effects**

# Part-time workers pay larger penalty

The **over-representation** of women among part-time contracts **can explain aggregate larger negative effects**

No differences for open-ended vs fixed-term

[Figure]



# Conclusions

- **Large earnings penalty** for working parents during the pandemic
  - in particular for mothers
- The penalty stems from **strong reductions in days worked**
  - in turn determined by: parental leave, STW, quits
- The size of the penalty
  - is only **weakly correlated with children's age**
  - is **larger** in **non-essential sectors** and for **part-time** workers
    - over-representation of women in both

---

**Thank you**

---

# Descriptive statistics 2019

	<u>Mothers</u>		<u>Fathers</u>	
	<u>Mean</u>	SD	<u>Mean</u>	SD
<b>2019</b>				
<u>Monthly earnings</u>	1902.42	1737.60	3031.73	3896.29
Days worked	16.19	9.01	23.78	5.79
<u>Quit rate</u>	0.005	0.07	0.005	0.07
Short-time work	0.01	0.11	0.02	0.14
<u>Experience (months)</u>	240.67	78.70	260.20	83.59
Age	41.65	5.79	42.60	6.09
<u>White-collar</u>	0.63	0.48	0.36	0.48
<u>Number children</u>	1.32	0.51	1.23	0.45
<u>Ordinary parental leave</u>	0.05	0.22	0.03	0.17
<u>Observations</u>	11,468,752		6,789,257	

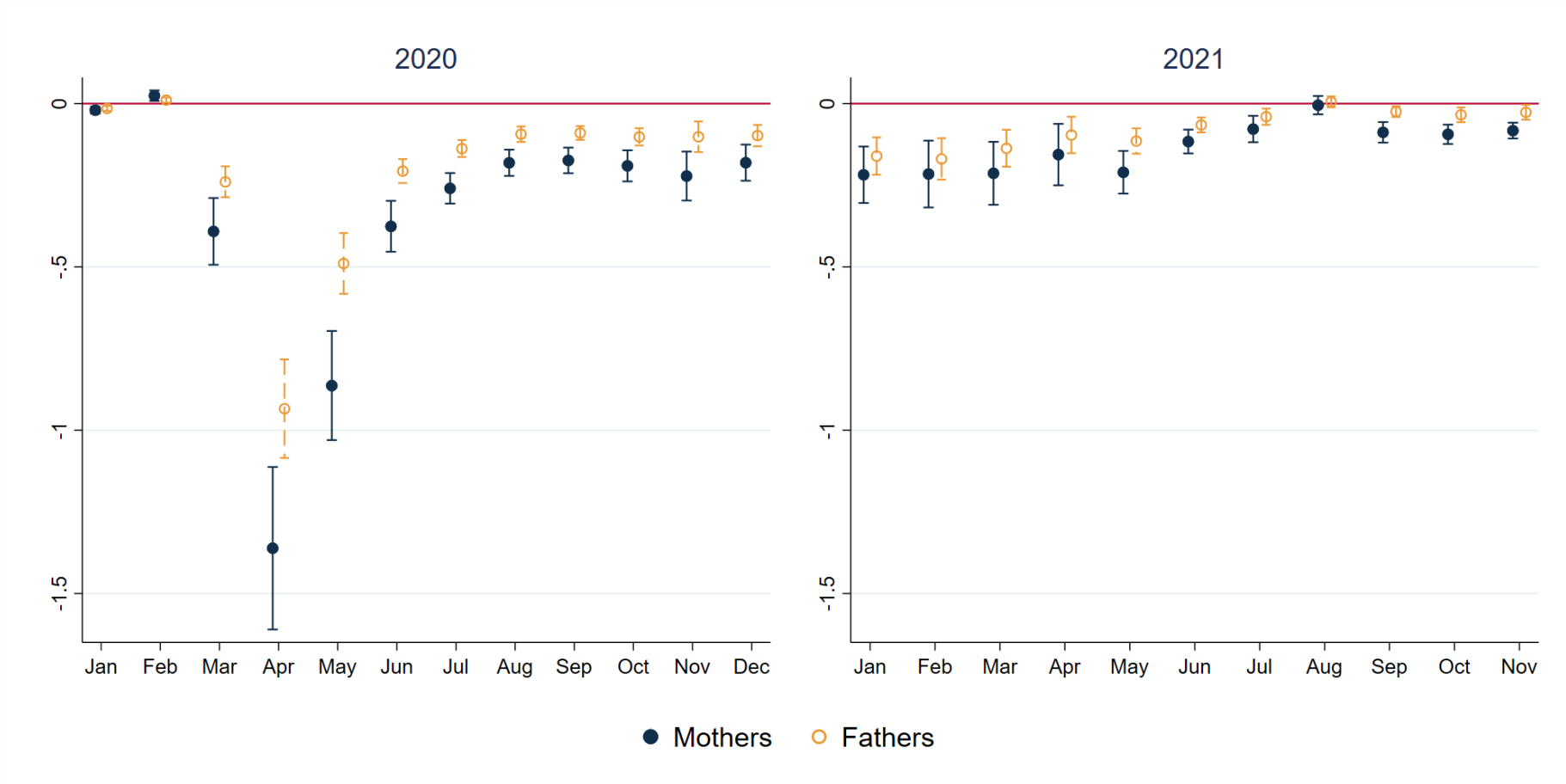
# Descriptive statistics 2020

	<u>Mothers</u>		<u>Fathers</u>	
	<u>Mean</u>	SD	<u>Mean</u>	SD
<b>2020</b>				
<u>Monthly earnings</u>	1750.92	1872.50	2877.89	4317.72
<u>Days worked</u>	14.60	9.58	22.29	7.36
<u>Quit rate</u>	0.004	0.07	0.004	0.07
Short-time work	0.11	0.31	0.11	0.31
<u>Experience (months)</u>	243.97	80.12	265.399	84.57
Age	41.93	5.97	43.02	6.22
<u>White-collar</u>	0.63	0.48	0.37	0.48
<u>Number children</u>	1.34	0.52	1.23	0.5
<u>Ordinary parental leave</u>	0.03	0.17	0.02	0.13
<u>Covid-19 parental leave</u>	0.02	0.16	0.01	0.12
<u>Observations</u>	12,585,427		7,669,857	

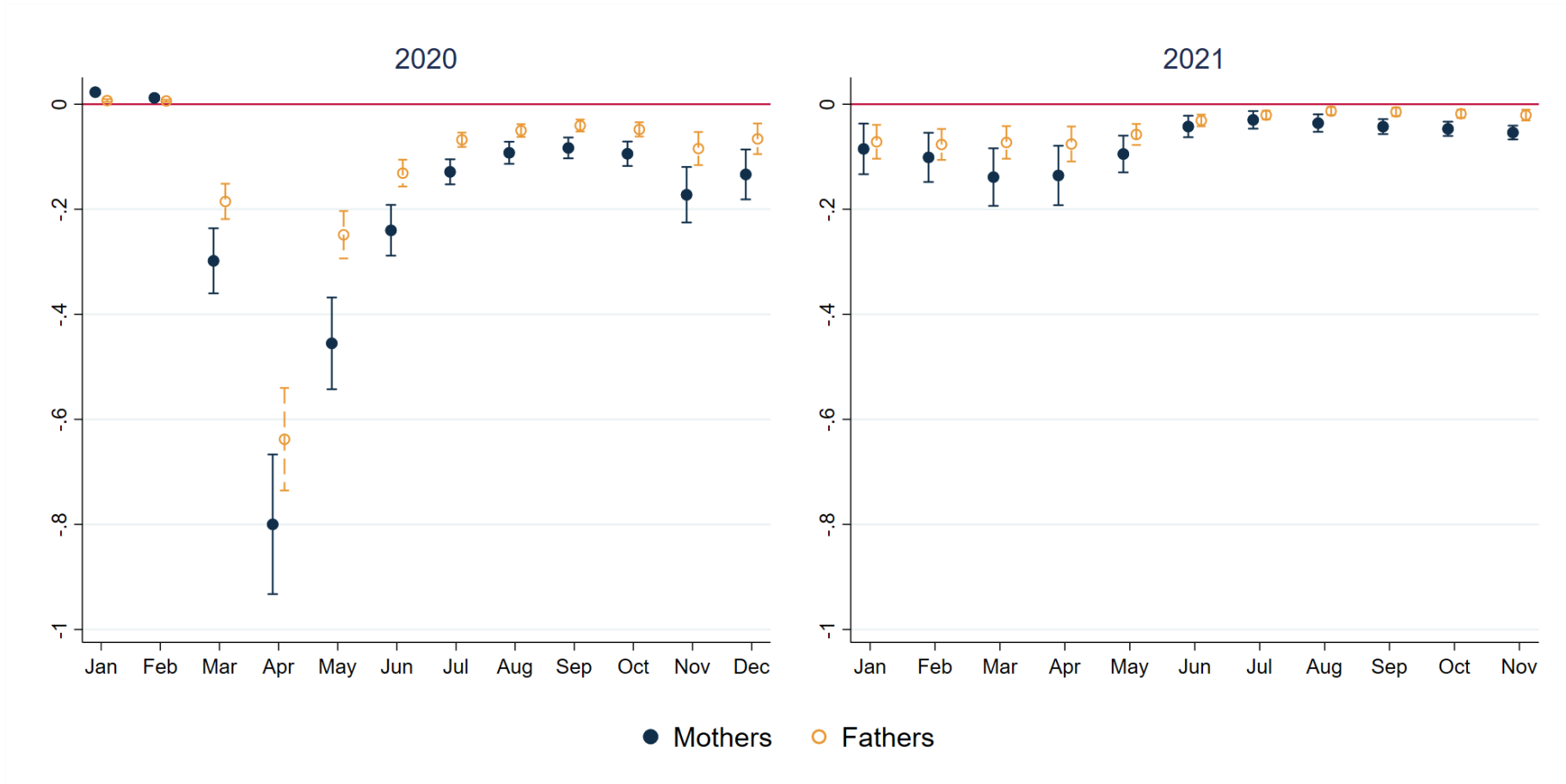
# Descriptive statistics 2021

	<u>Mothers</u>		<u>Fathers</u>	
	<u>Mean</u>	SD	<u>Mean</u>	SD
<b><u>2021 January-November</u></b>				
<u>Monthly earnings</u>	1776.717	1809.90	2888.05	4467.15
<u>Days worked</u>	15.60	9.43	23.66	5.71
<u>Quit rate</u>	0.005	0.07	0.006	0.08
Short-time work	0.06	0.23	0.05	0.21
<u>Experience (months)</u>	246.71	81.57	270.16	85.59
Age	42.01	6.22	43.44	6.34
<u>White-collar</u>	0.64	0.48	0.36	0.48
<u>Number children</u>	1.35	0.52	1.23	0.45
<u>Ordinary parental leave</u>	0.04	0.21	0.02	0.14
<u>Observations</u>	12,420,031		7,769,414	

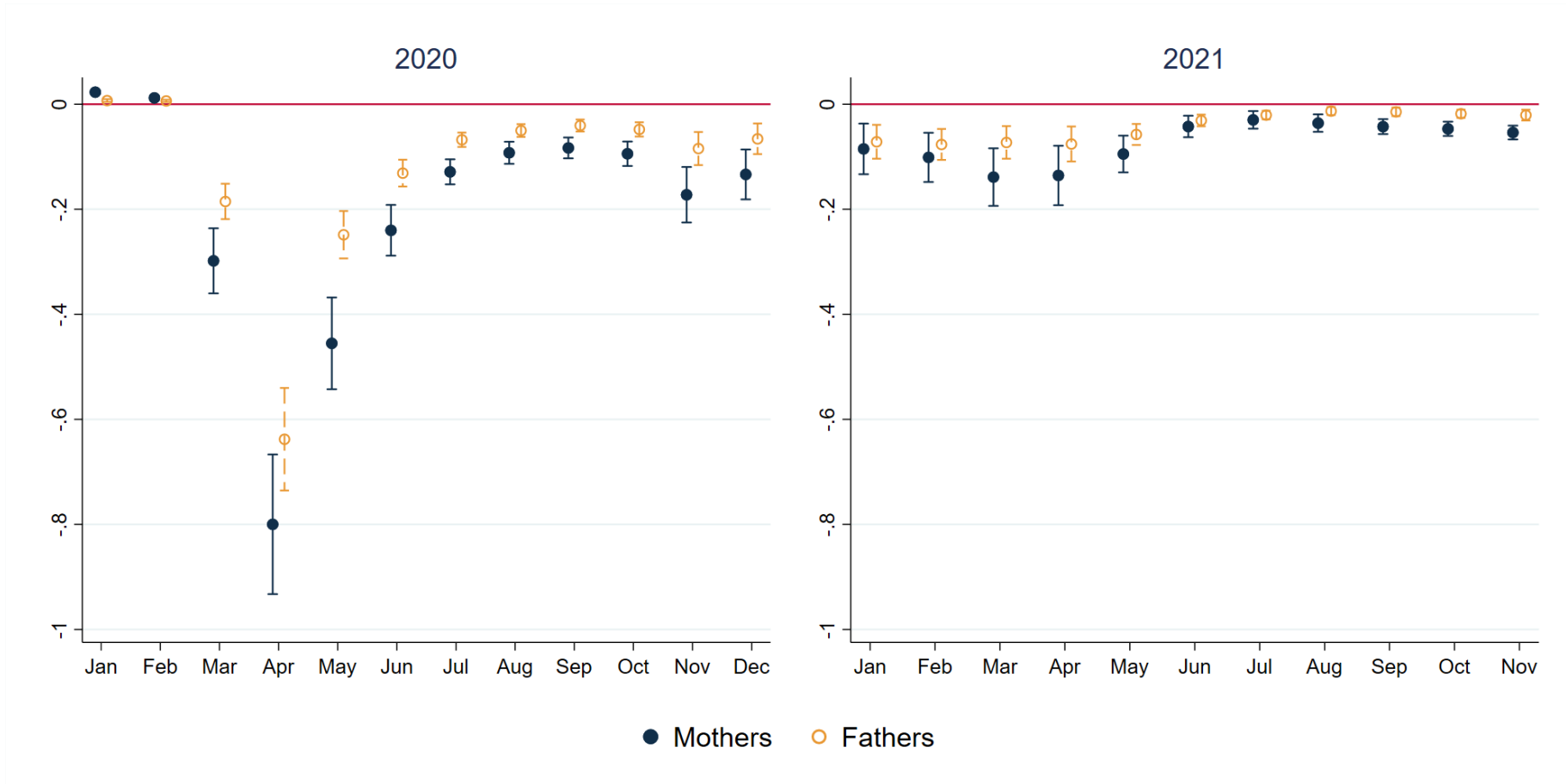
# Log [1 + earnings]



# Log [1 + days]



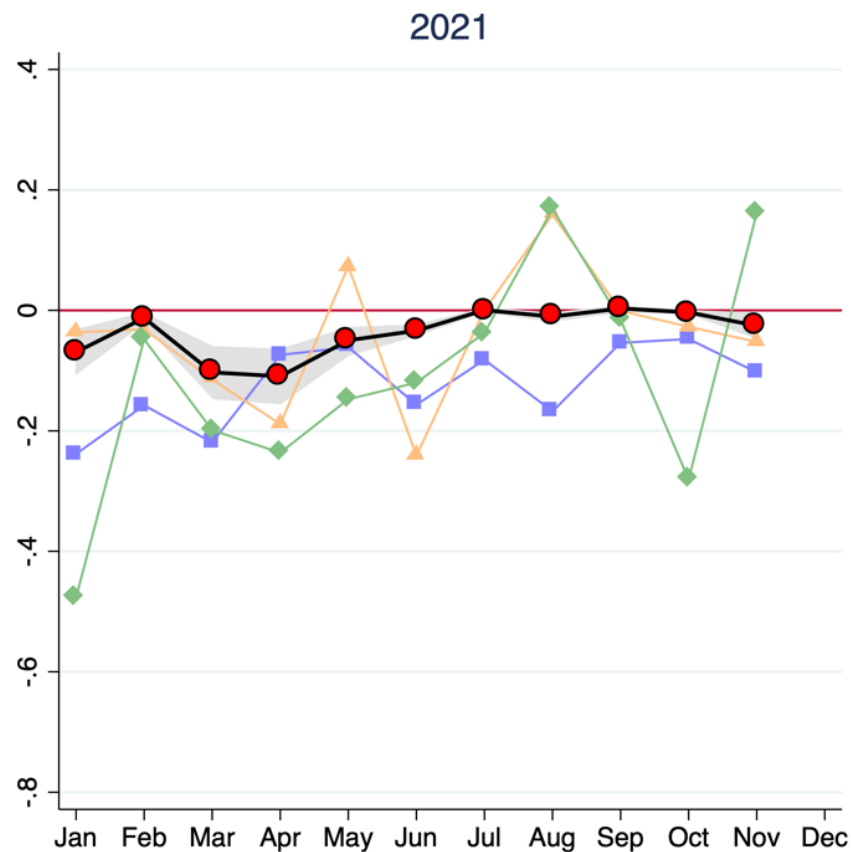
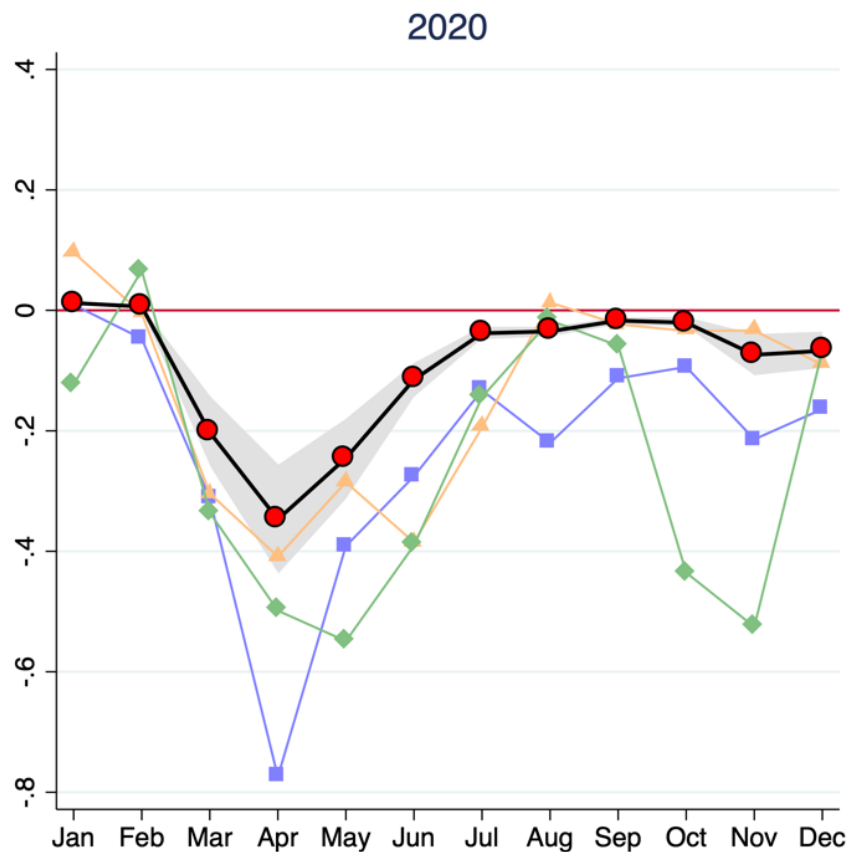
# Log [1 + days]





# Days - decomposition

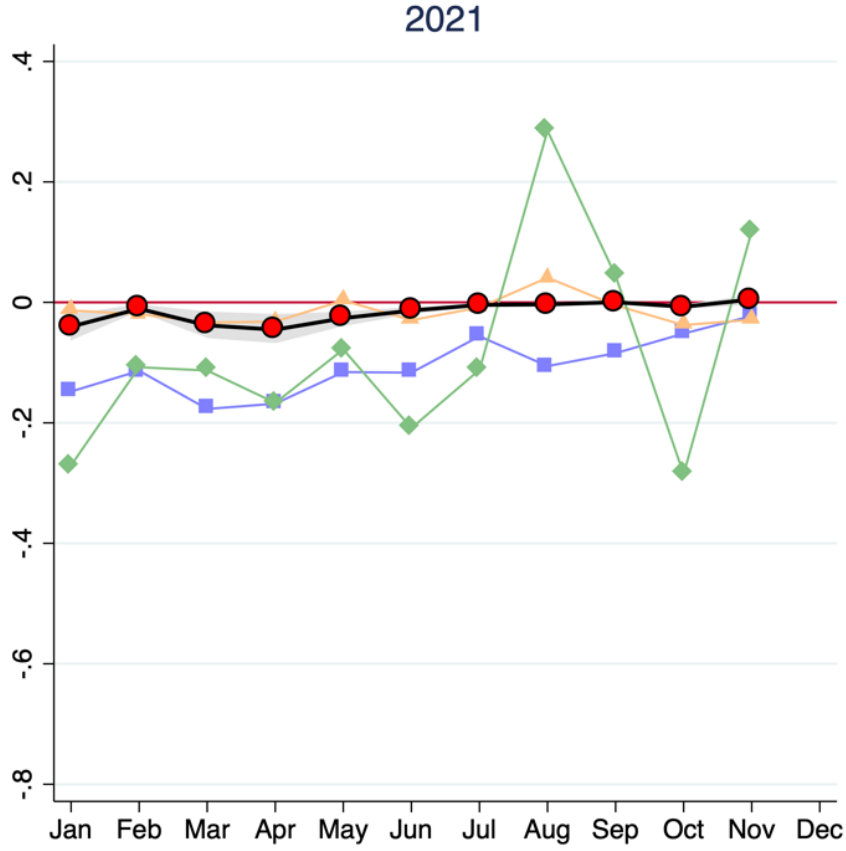
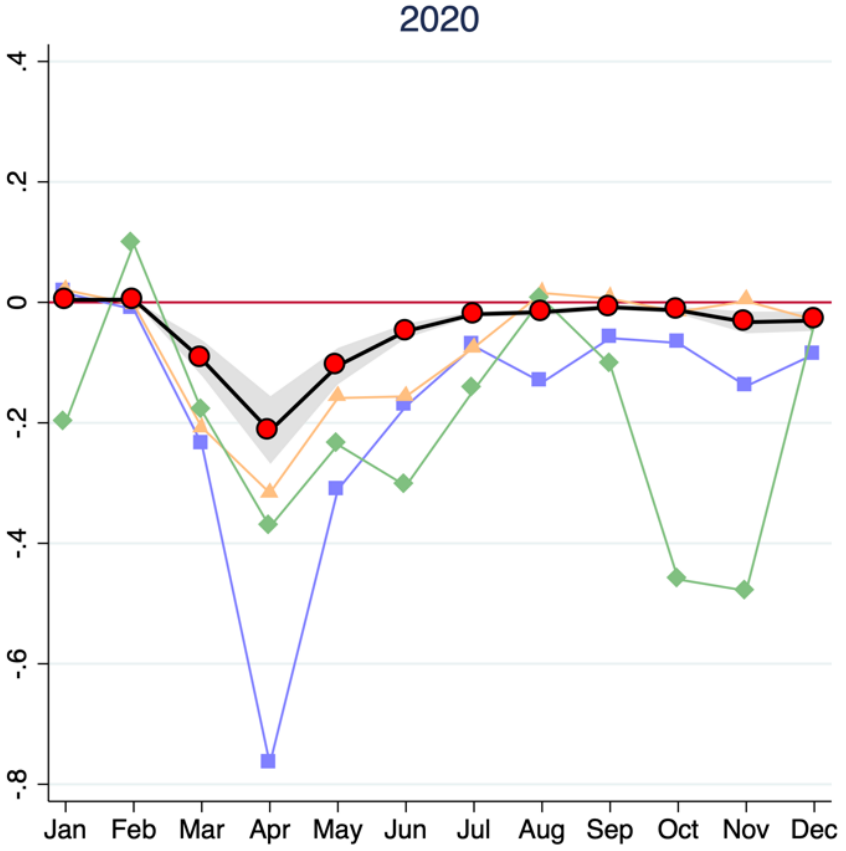
## Mothers



—●— Baseline
—■— Short time work
—▲— Parental leave
—◆— E-NE

# Days - decomposition

## Fathers



● Baseline    ■ Short time work    ▲ Parental leave    ◆ E-NE

# Similar penalties for temporary & open-ended

