Pandemic Babies: The Effects of Medical Procedure Delays on Infant and Maternal Health

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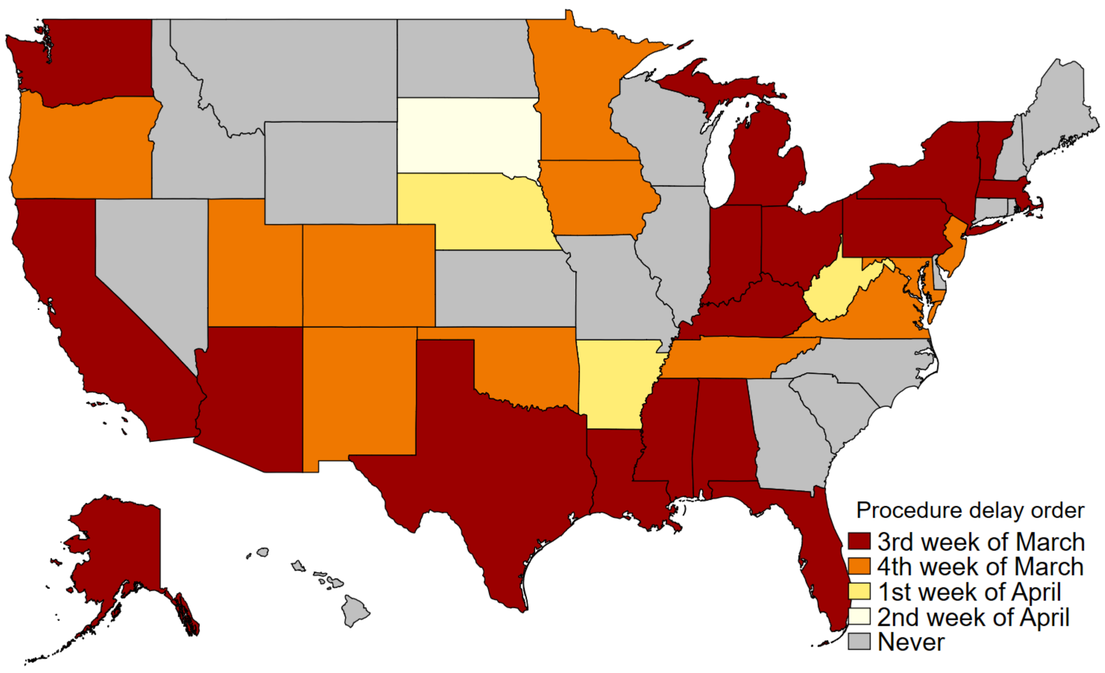
Introduction

- **Infant health** is critical to both short- and long-term outcomes and is closely related to **maternal health**.
- **Delaying or skipping medical care** is now a global public health issue.
  - ➢ Exogeneous policy shock: State level **medical procedure delay orders** (MPDOs)
- Investigated the impacts of **delaying or skipping medical care** on **infants and pregnant women** through:
  - ➢ Infant care
  - ➢ Prenatal care
- **Key findings:**
  - ➢ Infants born after MPDOs: **miss important care** and **adverse health outcomes**
  - ➢ Infants with fetal exposure to MPDOs: **low birth weight**
  - ➢ Pregnant women after MPDOs: **higher chances of pregnancy-related health issues**
  - ➢ **Minority** and **low-income** communities disproportionately affected

Institutional Background

- **Non-essential/Non-urgent/Elective** medical procedure delay executive orders
  - ➢ Postpone procedures if not "emergent or urgent attention to save a life, manage severe disease, or avoid further harms from an underlying condition"
  - ➢ Effective or partially effective for months since March/April 2020

Fig 1: Time & Geo variations in issuing medical procedure delay executive orders



Data

- De-identified nationwide medical claims records (from the COVID-19 Research Database)
- Supplemental data
  - ➢ 3-digit ZIP code level characteristics
  - ➢ state-month level COVID-19 prevalence data

Effects of Delaying Infant Care on Post-birth Outcomes

- **Fuzzy RD: born shortly before *VS* shortly after MPDOs**

Tab 1 : Effects of MPDOs on infant post-birth outcomes by age

	(1) ER/UC	(2) Exam	(3) Vaccination	(4) Perinatal	(5) Physiological
			2 weeks		
Procedure delay order	-0.016***	-0.004	-0.009**	0.023***	-0.000
	(0.006)	(0.007)	(0.004)	(0.007)	(0.001)
Observations	96,500	96,500	96,500	96,500	96,500
			3-16 weeks		
Procedure delay order	0.016***	-0.008	-0.013**	0.006*	0.003*
	(0.006)	(0.007)	(0.006)	(0.004)	(0.001)
Observations	96,500	96,500	96,500	96,500	96,500

- Born after MPDOs:
  - ➢ experience delayed ER/UC visits ↑
  - ➢ miss vaccinations ↑
  - ➢ develop problems originating in the perinatal period ↑
  - ➢ lack expected normal physiological development ↑

Effects of Delaying Prenatal Care on Birth Weight

- **DID: born in 2019 *VS* 2020; states with *VS* without MPDOs**

Tab 2 : Effects of MPDOs on infant birth weight

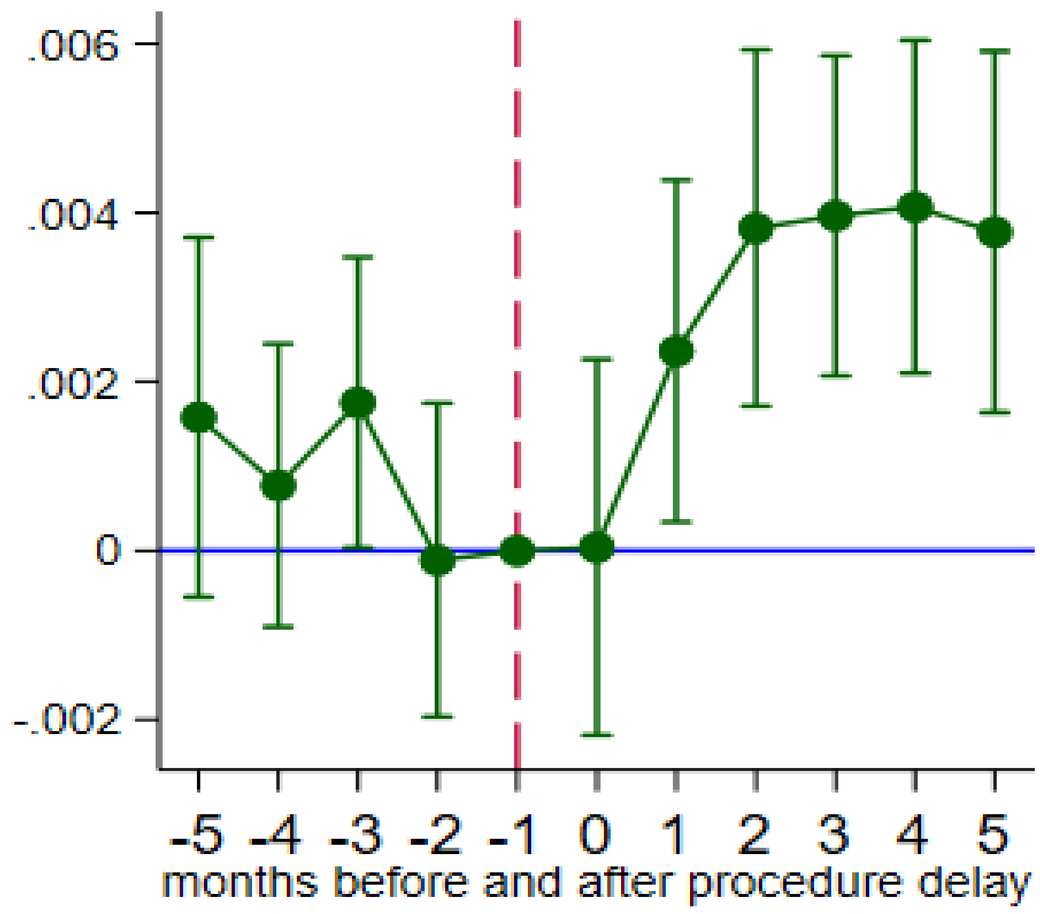
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Pr(Low birth weight)						
	July	August	September	October	November	December	July-Dec
	Specification 1: Indicator of treated states controlled						
Procedure delay order	-0.003	0.011***	0.000	0.008**	-0.006	0.007*	0.003*
	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.002)
Observations	87,908	85,949	84,495	89,177	77,886	93,327	518,742
R-squared	0.001	0.002	0.001	0.001	0.001	0.001	0.001

- Exposure to MPDOs during pregnancy: low birth weight ↑

Effects of Delaying Prenatal Care on Maternal Outcomes

- **Event Study: before *VS* after MPDOs; states with *VS* without MPDOs**

Fig 2 : Effects of MPDOs on maternal outcomes (**e.g. pregnancy-related physiological issues**)



- After MPDOs, probabilities of:
  - ➢ pregnancy-related physiological issues ↑
  - ➢ pregnancy-related psychological issues ↑
  - ➢ labor and delivery risks ↑