Eros vs. Thanatos: How Will COVID-19 Impact Fertility in 2020 and 2021?

LYMAN STONE
MCGILL UNIVERSITY
The Myth:

Of ‘Covidivorces’ and ‘Coronababies’: Life During a Lockdown

Across the world, the pandemic is radically altering approaches to love, dating, sex and family relations.
The Reality:

* Ladurie (1969) maybe first clear demonstration that births fall 9 months after high-mortality events

* Lee (1981) classic demonstration in 300 years of English data

* Hertelius et al (2018) most recent demonstration in wide range of cases, from urban fires to epidemics to earthquakes
Question 1:
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Is the decline in births after high-mortality events *really* all that general?
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Is the decline in births after high-mortality events really all that general?

Even after COVID?
Question 2:
Question 2:

WHY do births generally fall nine months after high-mortality events?
Proposed Answers:

* “Direct” or “Biological” effects?
  ◦ Caloric shortfalls lead to amenorrhea?
  ◦ Fetal loss/miscarriage?
  ◦ Death of reproductive-age women?
Proposed Answers:

* “Direct” or “Biological” effects?
  ◦ Caloric shortfalls lead to amenorrhea?
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* “Indirect” or “Social” Effects?
  ◦ Reduced sexual activity
  ◦ Death of partners
  ◦ More termination of pregnancy
Proposed Answers:

* “Direct” or “Biological” effects?
  ◦ Caloric shortfalls lead to amenorrhea?
  ◦ Fetal loss/miscarriage?
  ◦ Death of reproductive-age women?

* “Indirect” or “Social” Effects?
  ◦ Reduced sexual activity
  ◦ Death of partners
  ◦ More termination of pregnancy
  ◦ Deliberate delay???
Proposed Answers: Deliberate Delay

* Lee (1981) suggested that the *timing and shape* of fertility responses to high mortality events (sharp fall 7-10 months later, then a large rebound at 12-18 months) suggested *deliberate postponement*

* Dyson (1991) argued the same about fertility after South Asian food crises

* Bengtsson and Dribe (2006) and Dribe and Scalone (2010) find the same in pre-transitional Swedish and German cases
Proposed Answers: Deliberate Delay

* The Problem:

These studies couldn’t directly observe fertility preferences.
Method
Confirming Generality

* New sample of pre-identified high-mortality events matched to subsequent fertility data

* Identification:
  ◦ archival records of high-mortality events,
  ◦ lists of disasters and epidemics,
  ◦ search of large vital statistics databases
More Deaths, Fewer Births: In 182 Historic Events

![Graph showing the relationship between increase in deaths during an event and change in births 9 months later. The graph includes categories for Epidemic Disease and Disaster and War.](image-url)
More Deaths, Fewer Births: In 142 Historic Epidemic Events

-70% -60% -50% -40% -30% -20% -10% 0% 10% 20%

Change in Births 9 Months Later

1% 10% 100% 1000%

Increase in Deaths During Event

-70% -60% -50% -40% -30% -20% -10% 0% 10% 20%

Identifiable coronaviruses

Yellow Fever

Chikunguya and Dengue

Cholera

Ebola

Other flu or unidentified winter respiratory diseases

1918 Influenza Pandemic

-40% -30%
Confirming Generality

* Entire UN database of monthly vital events in a Country-Month panel model
More Deaths, Fewer Births: In 22,000 Country-Month Cases
Confirming Generality

More Deaths = Fewer Births
Confirming Generality

More Deaths = Fewer Births

So did COVID increase deaths?
Peak 2020 Monthly YoY Increase in Deaths

U.S. States
- New York
- Connecticut
- Michigan
- Louisiana
- Maryland
- Mississippi
- Florida
- Pennsylvania
- Arkansas
- Utah
- Tennessee
- Wisconsin
- Alabama
- California
- Missouri
- Virginia
- Oklahoma
- South Dakota
- Minnesota
- Kentucky
- Oregon
- Ohio
- West Virginia
- Rhode Island
- Maryland
- Mississippi
- Florida
- Pennsylvania
- Arkansas
- Utah
- Tennessee
- Wisconsin
- Alabama
- California
- Missouri
- Virginia
- Oklahoma
- South Dakota
- Minnesota
- Kentucky
- Oregon
- Ohio
- West Virginia

Canadian Provinces
- Quebec
- Ontario
- Alberta
- Saskatchewan
- Nova Scotia

EuroStat Reporting Countries
- United Kingdom
- Belgium
- Liechtenstein
- Netherlands
- Malta
- Iceland
- Luxembourg
- Bulgaria
- Lithuania
- Estonia
- Finland
- Croatia
- Germany
- Austria
- Greece
- Peru
- Chile
- South Korea
- Australia
- Japan

Latin America
- Peru
- Chile

Asia
- Japan
COVID is a major high-mortality event!
COVID is a major high-mortality event!
But will births decline?
Measuring Fertility Preferences

* U.S. states have been hit by COVID...
  ◦ at different times,
  ◦ with different spikes in mortality,
  ◦ and some have been hit multiple times

* Lots of variation to use in a model!
Measuring Fertility Preferences

* Ran a survey of fertility preferences:
  ◦ Two waves (Late April and late September)
  ◦ Representative sample of women ages 18-44
  ◦ Sample recruited online by Qualtrics
  ◦ Strict respondent quality rules
  ◦ ~1,300 valid respondents in each wave (including ~100 recontacted in both samples)
  ◦ Future waves planned in January and May 2021
Measuring Fertility Preferences

* Two approaches: Individual and State
  ◦ Key independent variable: state level excess mortality before/between waves

* Individual level (OLS or Logit depending on dependent variable)
  ◦ Controls for race, income, relationship status;
  ◦ Robustness tests for attitudes toward COVID, recent economic experience, state Trump vote, battery of other social values

* State (Panel with fixed effects)
  ◦ Same robustness tests
# Measuring Fertility Preferences

**Individual Model: Effect of Deaths Rising 20%**

<table>
<thead>
<tr>
<th>Preferences</th>
<th>Odds of Worried About the Economy</th>
<th>Odds of Worried About COVID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected Months Until Next Childbirth</td>
<td>Odds of Decreased Desired Parity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Odds of Increased Desired Parity</td>
<td></td>
</tr>
<tr>
<td>General Fertility Ideals</td>
<td>Odds of Increase in Eagerness to Have Children</td>
<td></td>
</tr>
<tr>
<td>Personal Fertility Ideals</td>
<td>Odds of Delay</td>
<td></td>
</tr>
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**Self-Assessed COVID Impact**

- Odds of Worried About the Economy
- Odds of Worried About COVID
- Odds of Decreased Desired Parity
- Odds of Increased Desired Parity
- Odds of Increase in Eagerness to Have Children
- Odds of Delay

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**Effect of Deaths Rising 20%, as a % of Variable Mean**

-80%  -30%  20%
Measuring Fertility Preferences

State Panel Model: Effect of Deaths Rising 20%

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<td>Worried About the Economy</td>
<td>Worried About COVID</td>
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</tr>
<tr>
<td>Decreased Desired Parity</td>
<td>Increased Desired Parity</td>
<td>Increased Desired Parity</td>
<td>Increased Desired Parity</td>
</tr>
<tr>
<td>Increase in Eagerness to Have Children</td>
<td>Delay</td>
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<td>Expected Months Until Next Childbirth</td>
<td>Share Intending to Have Another Child</td>
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-100% -80% -60% -40% -20% 0% 20% 40%
Measuring Fertility Preferences

* When state-level deaths rise sharply
  ◦ Long-run desired parity *tends to rise*, consistent with “mortality replacement”
  ◦ *BUT*, more people also report delays, and the timeline for intended births shifts outward

* This is exactly what we would expect based on the wider literature!
Question 2:

**WHY** do births generally fall nine months after high-mortality events?
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**WHY** do births generally fall nine months after high-mortality events?

People choose to delay!
Robustness

* No prior studies of short-run preferences
* Prior long-run studies: more deaths $\rightarrow$ higher preferences
  ◦ Confirmation!
* Continuous DHS programs in Senegal and Peru
  ◦ No documented high-mortality events in Senegal
  ◦ August 15, 2007 Ica Earthquake in Peru (400 dead in one district)
Robustness: Ica Earthquake

Women in Ica Expected More Delayed Fertility

<table>
<thead>
<tr>
<th>Expected years until next birth</th>
<th>Immediately Pre-Quake</th>
<th>Immediately Post-Quake</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ica</td>
<td>3,2</td>
<td>3,8</td>
</tr>
<tr>
<td>Rest of Peru</td>
<td>3,0</td>
<td>3,6</td>
</tr>
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Robustness: 2004 Tsunami

Tsunami-Hit Regions Had More Positive Long-term Change in Fertility Ideals

- Tamil Nadu, India
- Rest of India
- Aceh, Indonesia
- Rest of Indonesia

Last pre-Tsunami DHS Round
First post-Tsunami DHS Round
Robustness: 2010 Haiti Earthquake

Average Change in Regional Mean Ideal
2006 DHS to 2012 DHS

Hardest Hit Regions

Other Regions
Robustness: 2003 Heatwave in France

Change in Mean Personal Fertility Ideal
2001 Eurobarometer to 2006 Eurobarometer

- Increase in August Deaths for Region Group
- Change in Mean Personal Fertility Ideal
  - Hardest-Hit Third of Regions
  - Least-Hit Third of Regions