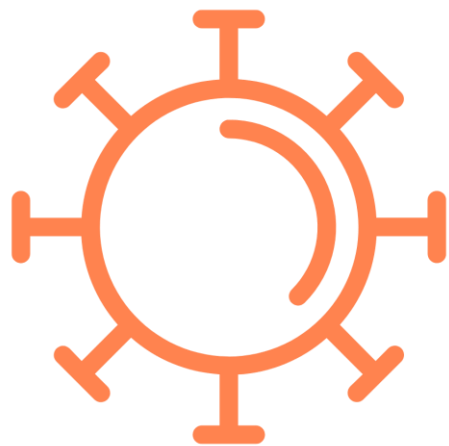


Perinatal Outcomes in the Pandemic

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COVID-19



Surveillance studies



UK Obstetric Surveillance System
CO-CIN



British Paediatric Surveillance Unit



PanCOVID

Treatment studies





Covid-19 in Pregnancy in Scotland



Population study

1st March 2020 – March 2021

All women who had a pregnancy

Data linkage: GP records <-> NHS24, COVID assessment hub, COVID test
<-> maternity records <-> hospital records <-> serology

Confirmed, probable, possible COVID-19

Miscarriage, Congenital anomaly, Stillbirth,
Preterm birth, Neonatal infection, Neonatal death

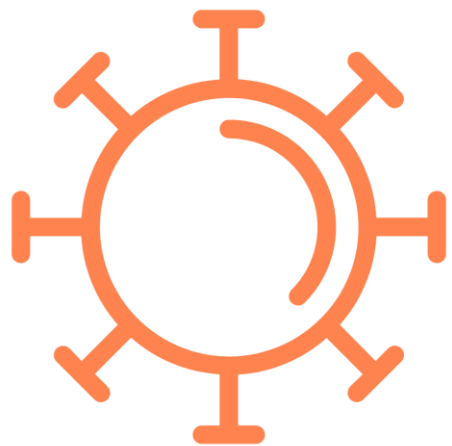


Covid-19 in Pregnancy in Scotland



Recruiting **parent members** to
be involved in all areas of the research project

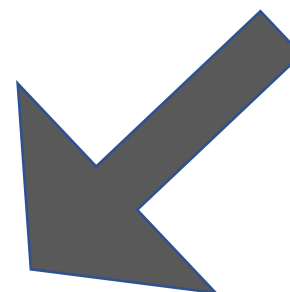
<https://www.peopleinresearch.org/opportunity/eave-ii-using-patient-data-track-progress-covid-19-happens-scotland/>



COVID-19



LOCKDOWN



Canadian hospitals saw a sudden drop in premature births during the pandemic. Now researchers are trying to find out why



Staff at the NorthernStar Mothers Milk Bank which supplies breast milk to almost three dozen Canadian hospitals work with breast milk in Calgary, Alberta, August 6, 2020.

TODD KOROL/THE GLOBE AND MAIL

The NorthernStar Mothers Milk Bank supplies breast milk to almost three dozen Canadian hospitals, making the Calgary non-profit particularly attuned to changes at the country's birthing units.

The New York Times

During Coronavirus Lockdowns, Some Doctors Wondered: Where Are the Premies?



By Elizabeth Preston

July 19, 2020



This spring, as countries around the world told people to stay home to slow the spread of the coronavirus, doctors in neonatal intensive care units were noticing something strange: Premature births were falling, in some cases drastically.

Early Data: Pandemic Perinatal Outcomes



Reduction in preterm births during the COVID-19 lockdown in Ireland: a natural experiment allowing analysis of data from the prior two decades.

 Roy K Philip,  Helen Purtill, Elizabeth Reidy,  Mandy Daly,  Mendinaro Imcha,  Deirdre McGrath,  Nuala H O'Connell,  Colum P Dunne

doi: <https://doi.org/10.1101/2020.06.03.20121442>

73% reduction in very low birthweight







Changes in premature birth rates during the Danish nationwide COVID-19 lockdown: a nationwide register-based prevalence proportion study

Gitte Hedermann, Paula L Hedley, Marie Baekvad-Hansen, Henrik Hjalgrim, Klaus Rostgaard, Porntiva Poorisrisak, Morten Breindahl, Mads Melbye, David Hougaard, Michael Christiansen, Ulrik Lausten-Thomsen

doi: <https://doi.org/10.1101/2020.05.22.20109793>

90% reduction in extremely premature

Impact of COVID-19 mitigation measures on the incidence of preterm birth: a national quasi-experimental study

 Jasper V Been,  Lizbeth Burgos Ochoa,  Loes CM Bertens,  Sam Schoenmakers,  Eric AP Steegers,  Irwin KM Reiss

doi: <https://doi.org/10.1101/2020.08.01.20160077>

15-23% reduction in preterm births

Effect of the COVID-19 pandemic response on intrapartum care, stillbirth, and neonatal mortality outcomes in Nepal: a prospective observational study

Ashish KC*, Rejina Gurung*, Mary V Kinney, Avinash K Sunny, Md Moinuddin, Omkar Basnet, Priyanka Subedi, Mahendra Prasad Shrestha, Joy E Lawn†, Mats Mälqvist†

Lancet Glob Health 2020

Published Online

August 10, 2020

**20% increase in preterm birth
57% increase in stillbirth**

Early Data: Pandemic Perinatal Outcomes



Reduction in preterm births during the COVID-19 lockdown in Ireland: a natural experiment allowing analysis of data from the prior two decades.

Roy K Philip, Helen Purtill, Elizabeth Reidy, Mairead O'Connell, Colum P Dunne
doi: <https://doi.org/10.1101/2020.06.03.20121442>

73% reduction in very low birth weight

None exploring mechanisms (very difficult with single-region studies!)

Changes in premature birth rates during the Danish nationwide COVID-19 lockdown: a nationwide register-based prevalence proportion study

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doi: <https://doi.org/10.1101/2020.08.01.20160077>

22% reduction in preterm births

Observation:

Different Story in High vs. Low-Middle Income Countries

Effect of the COVID-19 pandemic response on intrapartum care, stillbirth, and neonatal mortality outcomes in Nepal: a prospective observational study

Pratima Gurung*, Mary V Kinney, Avinash K Sunny, Md Moinuddin, Omkar Basnet, Pn Kalpana Subedi, Mahendra Prasad Shrestha, Joy E Lawn†, Mats Mölqvist†

Lancet Glob Health 2020
Published Online
August 10, 2020

20% increase in preterm birth
57% increase in stillbirth

nature¹⁰

Stillbirth rate rises dramatically during pandemic

Researchers stress need for antenatal care, as emerging data link disrupted pregnancy services to increase in stillbirths.



Researchers are concerned that high-risk pregnancies are going undetected during the pandemic. Credit: Anthony Wallace/AFP/Getty

A slew of studies from around the world has reported a disturbing trend: since the coronavirus pandemic started, there has been a significant rise in the proportion of pregnancies ending in stillbirths, in which babies die in the womb. Researchers say that in some countries, pregnant women have received less care than they need because of lockdown restrictions and disruptions to health care. As a result, complications that can lead to stillbirths were probably missed, they say.

THE TIMES

CORONAVIRUS

Coronavirus in Scotland: Expectant mothers 'should seek help if worried' as stillbirths rise



The rate of stillbirths in Scotland in July was six per 1,000 births. In July last year the figure was 3.8
ALAMY

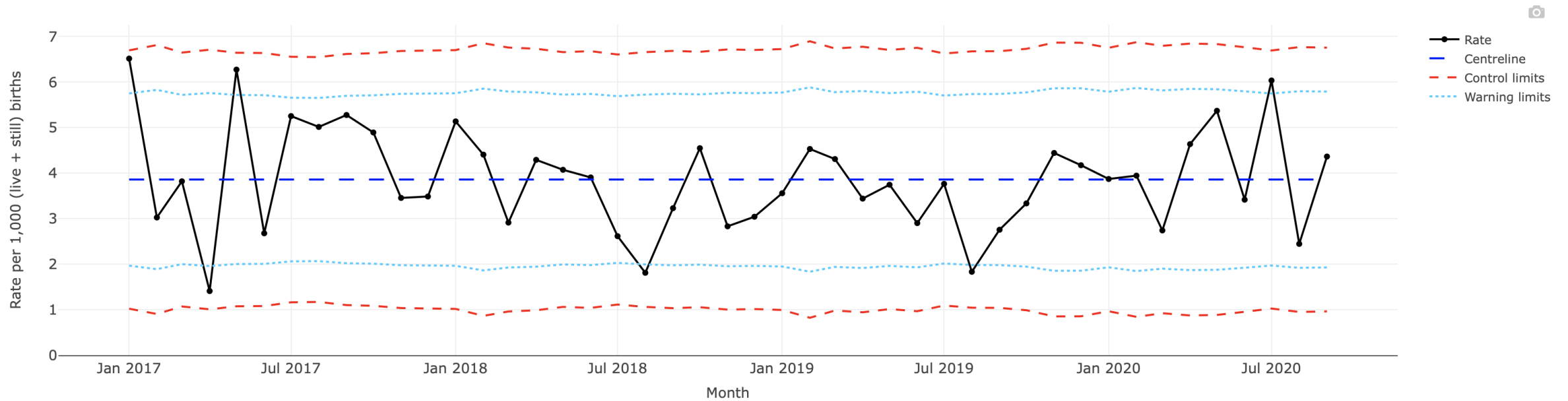
An increase in stillbirths across Scotland during the Covid-19 pandemic is being investigated by experts amid concern that some pregnant women have been afraid to seek medical help.

Stillbirths in Scotland



Monthly rate of stillbirths per 1,000 total (live + still) births in Scotland

How do we identify patterns in the data?

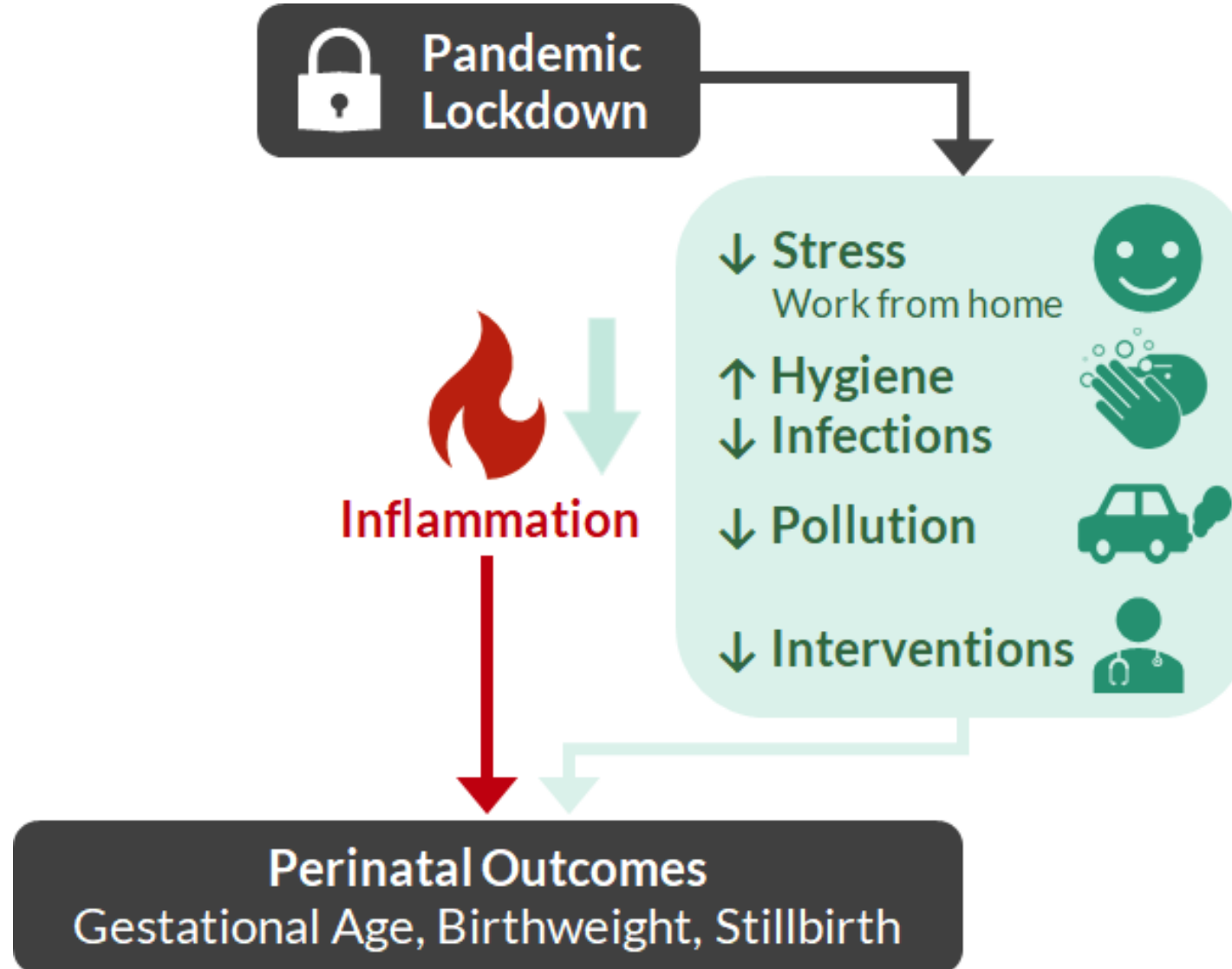


<https://scotland.shinyapps.io/phs-covid-wider-impact/>

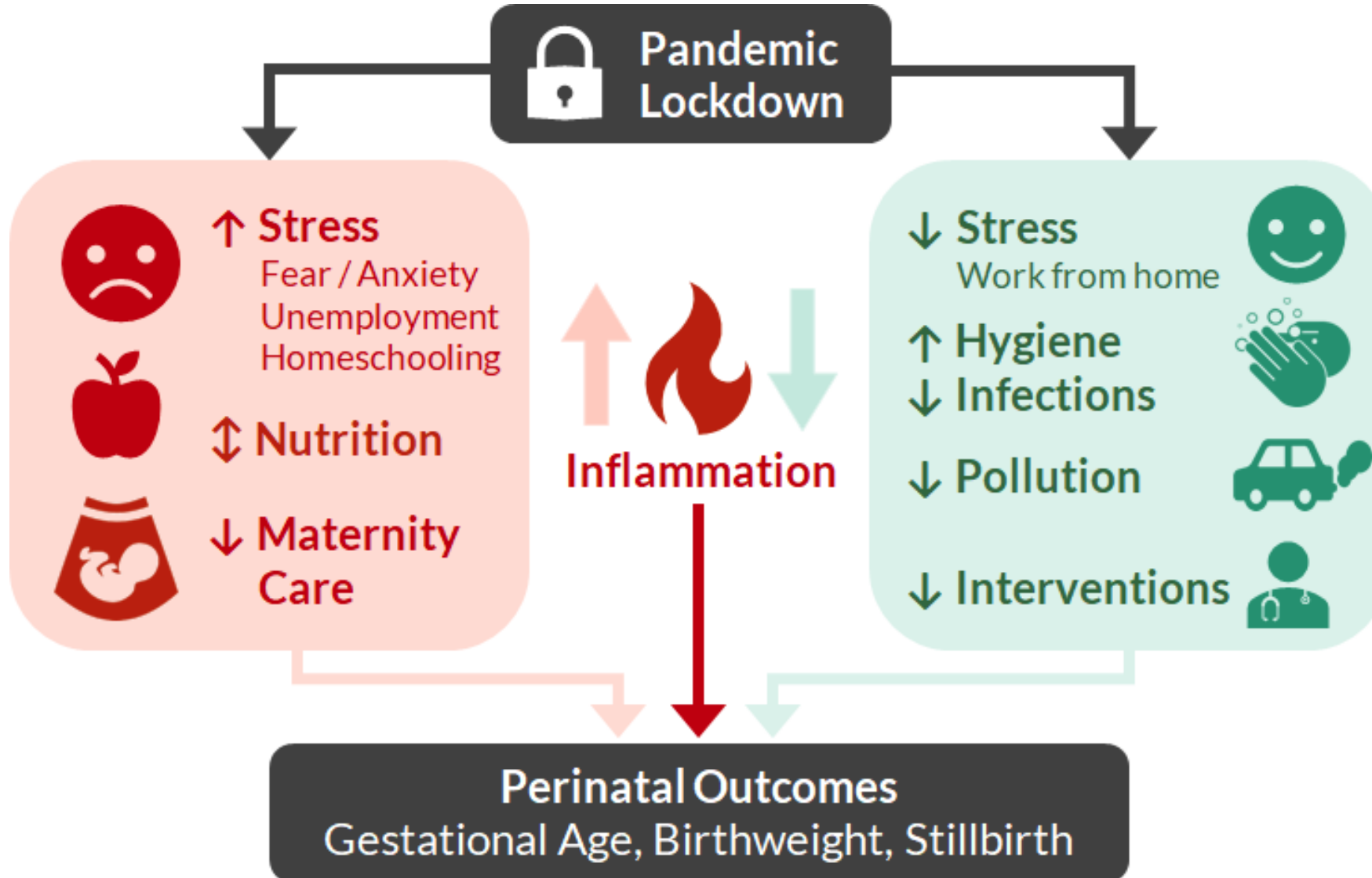
Questions

1. Is a reduction in preterm birth (really) happening everywhere?
2. What is the reason?
3. Are all pregnant women affected in the same way?

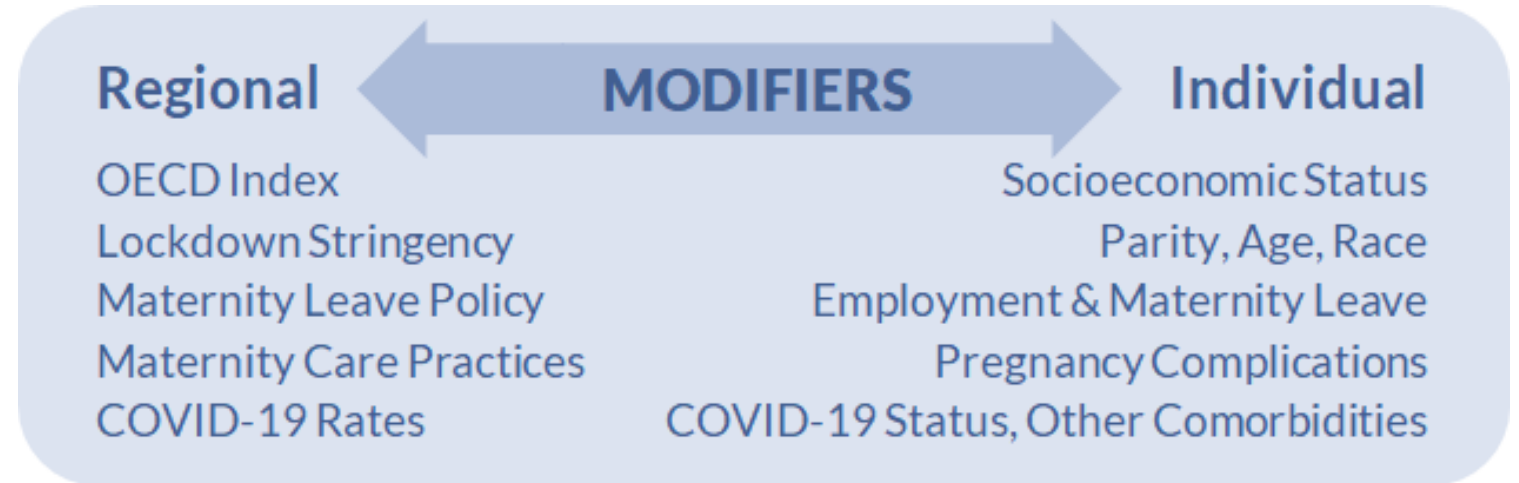
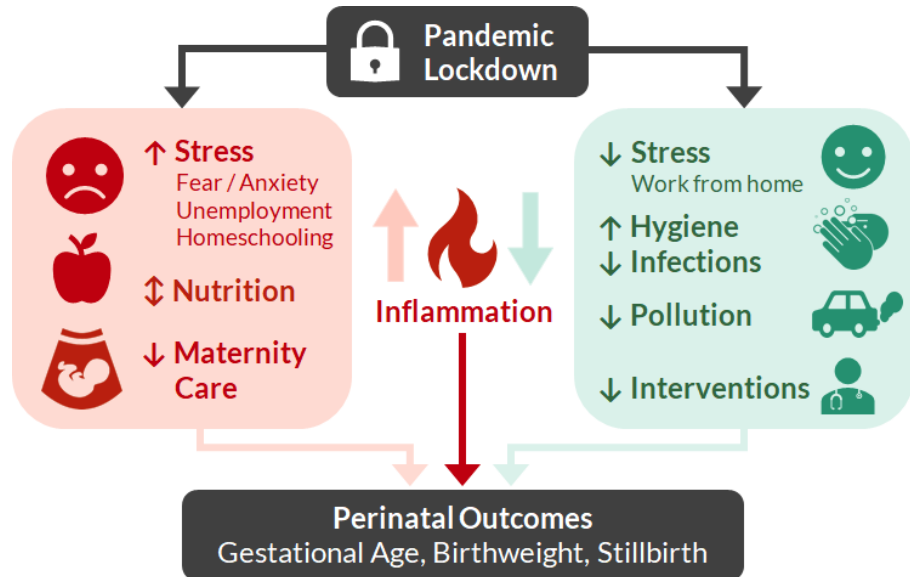
Possible Mechanisms



Possible Mechanisms



Possible Mechanisms & Modifiers



Objective

To investigate the impact of the COVID-19 **pandemic** lockdowns/restrictions on **perinatal outcomes worldwide** and identify the underlying **mechanisms**

... and efficiently translate these discoveries to practitioners and policymakers to **maximize & accelerate IMPACT.**

→ Global *collaboration to tackle meaningful questions that cannot be answered in single-region studies.*

Approaches

- **Multidisciplinary Team**

Maternal-fetal medicine, neonatology, epidemiology, statistics, intersectoral feminism, data science, artificial intelligence

- **Core Philosophies**

Equity, Open Science, Collaboration → Slack, GoogleDrive, Zoom

- **Strategic Partnerships**

Born On Time, International COVID-19 Data Alliance

- **Integrated Knowledge Translation**

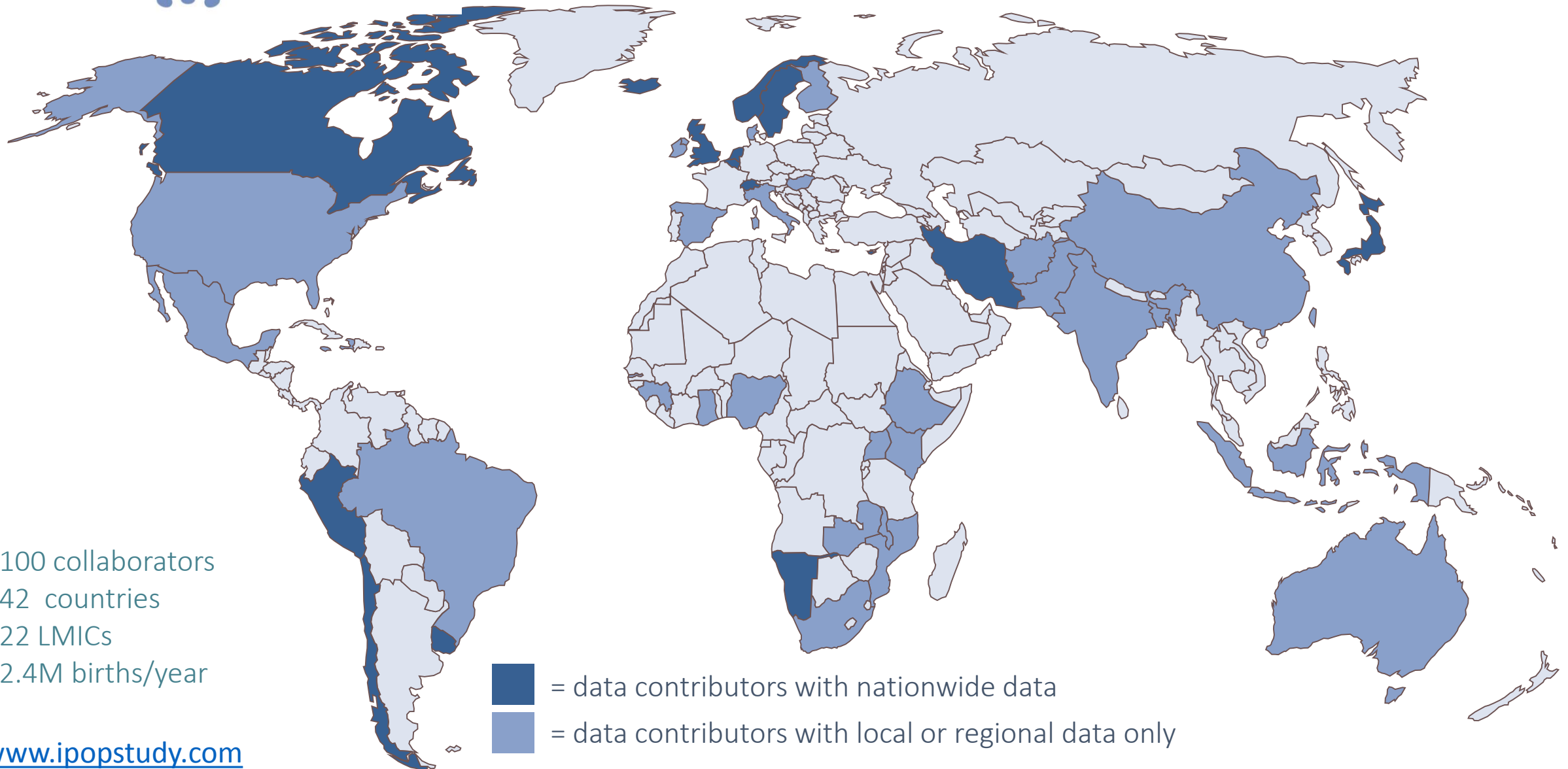
Continuous stakeholder engagement



International
Perinatal
Outcomes in the
Pandemic
Study

Participating Countries as of 11/03/2020

Join Us! www.ipopstudy.com



Aims



Aim 1: Describe Trends & Regional Differences (Aggregate Birth Data)

Describe trends in preterm birth, low birth weight and stillbirth before/during pandemic lockdown.



Aim 2: Address Context & Mechanisms (+ Public Regional Data)

Determine if these changes during lockdown are...

Correlated with changes in air quality or maternity care?

Modified by lockdown stringency, maternity leave policy, COVID-19 rates?



Aim 3: Investigate Mechanisms (+ Individual-Level Data)

Assess impact of maternal comorbidities (e.g. pregnancy complications; pre-existing chronic conditions including mental health), infections, care patterns and socio-economic factors.

Discover data	<ul style="list-style-type: none">• Search relevant data sources from around the world
Request access	<ul style="list-style-type: none">• Request data from multiple datasets through a single mechanism
Analyse data	<ul style="list-style-type: none">• The Workbench provides a secure environment for analysis with a range of tools available
Federated access	<ul style="list-style-type: none">• If data cannot leave a local setting, analysis can be sent via federated compute from the Workbench to the data
Collaborate	<ul style="list-style-type: none">• Teams of authorised researchers can work together in dedicated workspaces



The International COVID-19 Data Research Alliance and Workbench provide a co-ordinated international platform to enable researchers to access global data to derive rapid insights about COVID-19 and speed up the development of treatments.

<https://www.hdruk.ac.uk/covid-19/international-covid-19-data-alliance/>

1. Discover & understand context-specific preventable causes of adverse perinatal outcomes (preterm birth, low birthweight, stillbirth, neonatal mortality)
2. Inform further research & testable interventions for improving perinatal health - during and beyond this pandemic
3. Build research capacity (data collection & reporting) in LMICs
4. Develop robust guidelines for perinatal outcome research
5. Establish a sustainable and equitable global research platform for perinatal research that is acceptable and accessible to LMICs

iPOP Leadership Core



Meghan
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University of
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*Developmental
Origins of Chronic
Disease*



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Brockway
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University of
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*Gender Equity,
Health Systems,
Patient Engagement*



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(United Kingdom)

*Maternal Fetal
Medicine,
Clinical Trials*



Helga
Zoega
PhD

University of New
South Wales
(Australia/Iceland)

*Epidemiology,
Big Data, Electronic
Health Data Linkage*



COPS

Covid-19 in Pregnancy in Scotland



Dr Rachael Wood



Prof Aziz Sheikh, OBE



THE UNIVERSITY
of EDINBURGH

www.covidpregnancyscotland.com

Acknowledgments



Dr Rachael Wood



Prof Aziz Sheikh, OBE





Sands

Stillbirth & neonatal death charity

www.covidpregnancyscotland.com

www.ipopstudy.com