



European Expert Meeting

**Gender Equality, Sustainability  
& Workplace Wellbeing**

# Good practices, better workplaces

Family friendly workplaces as a  
cornerstone for an economy that cares

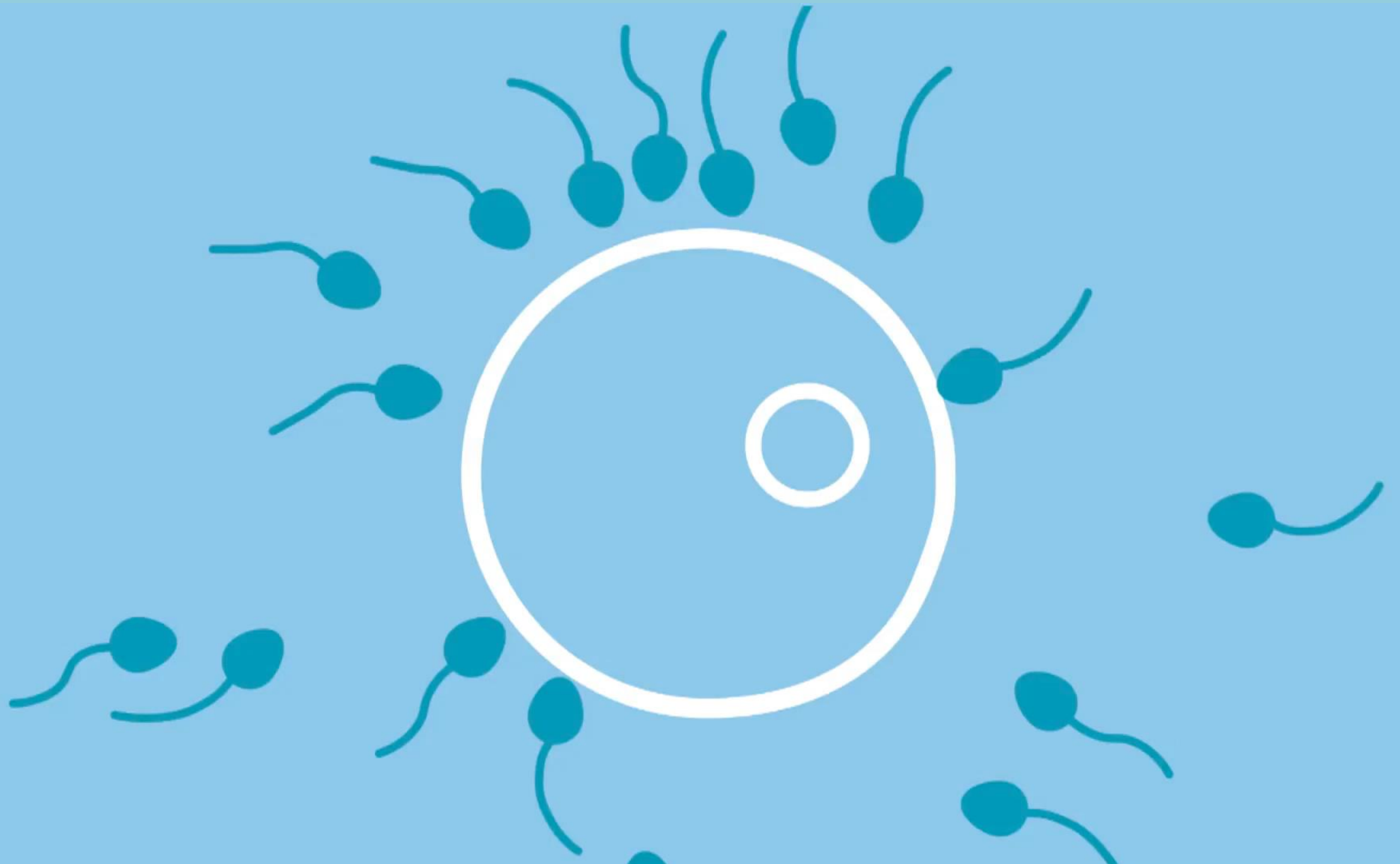




# The first 1000 days of life

Prof. dr. Tessa Roseboom





Every living creature is sensitive to environment







88 years



55 years



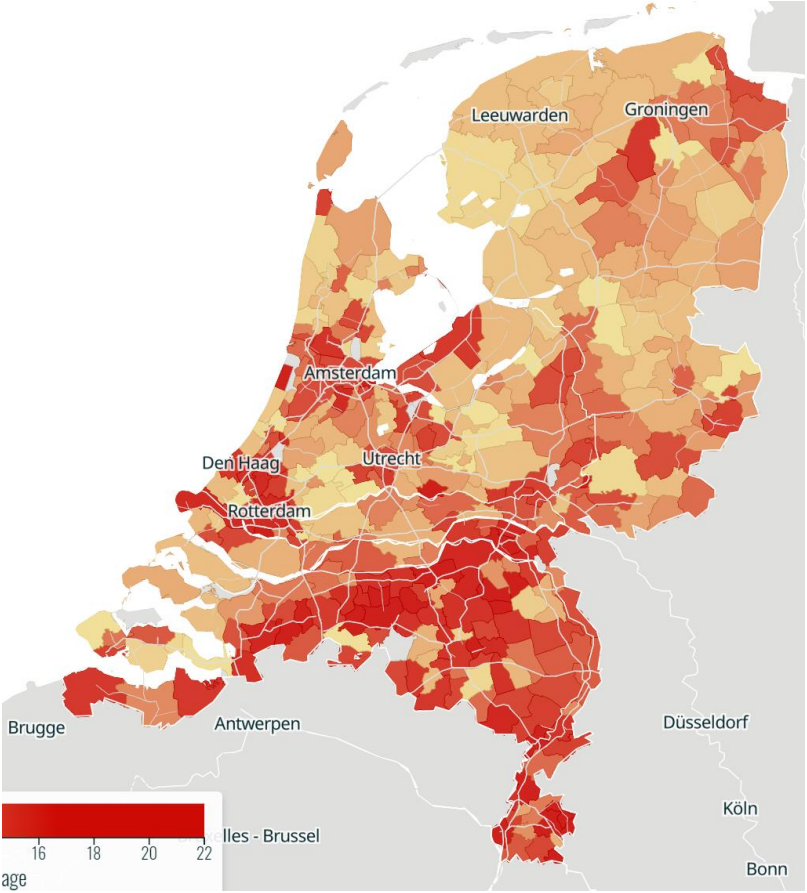
88 years



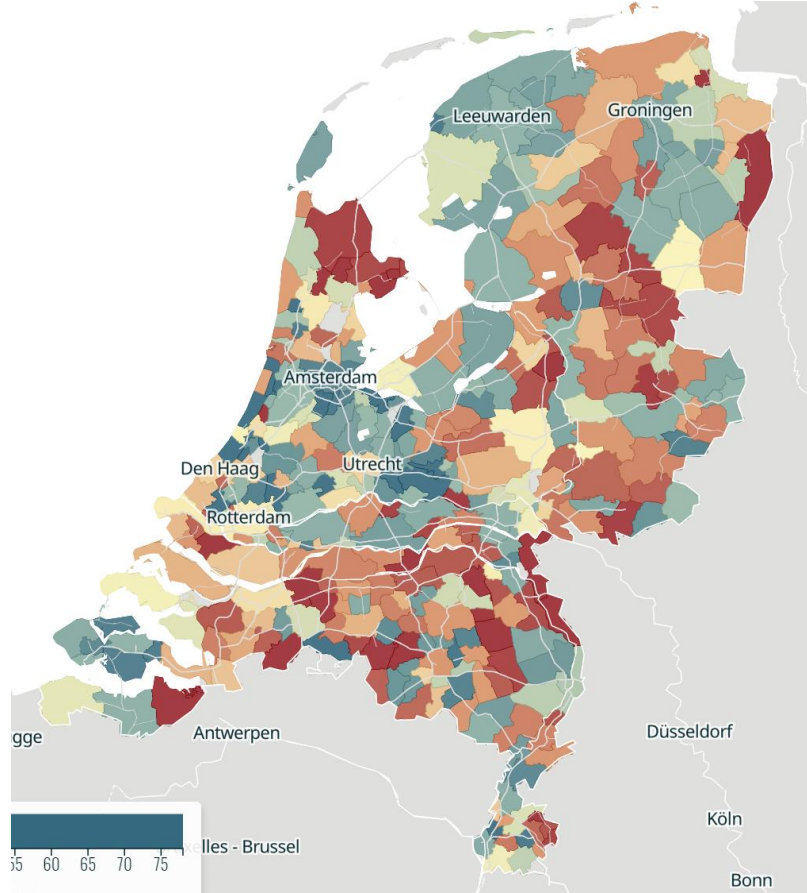


# Opportunity atlas

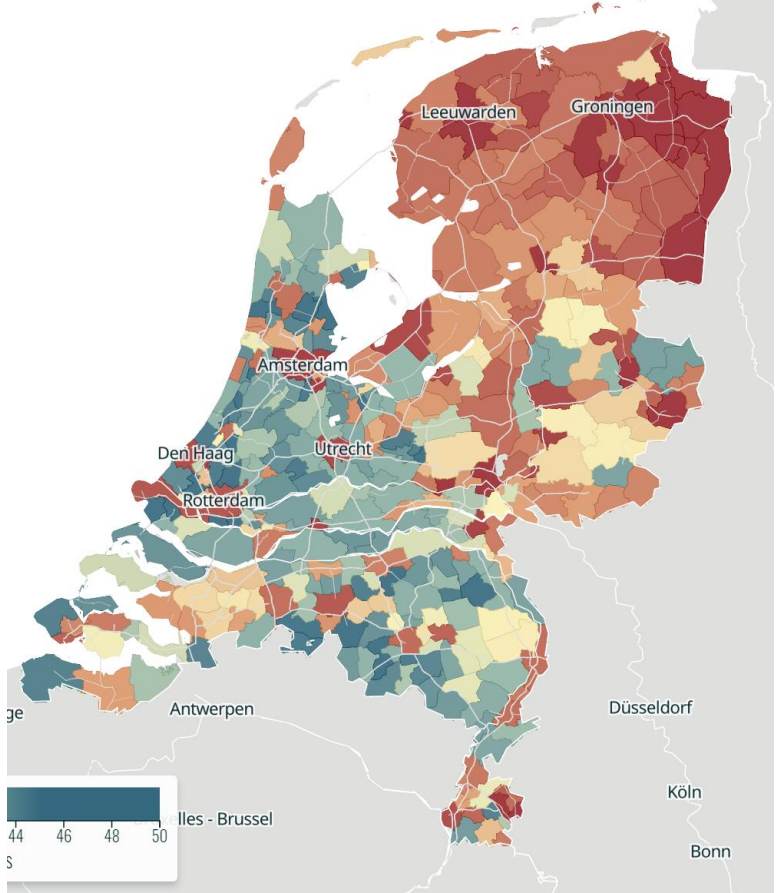
Birthweight

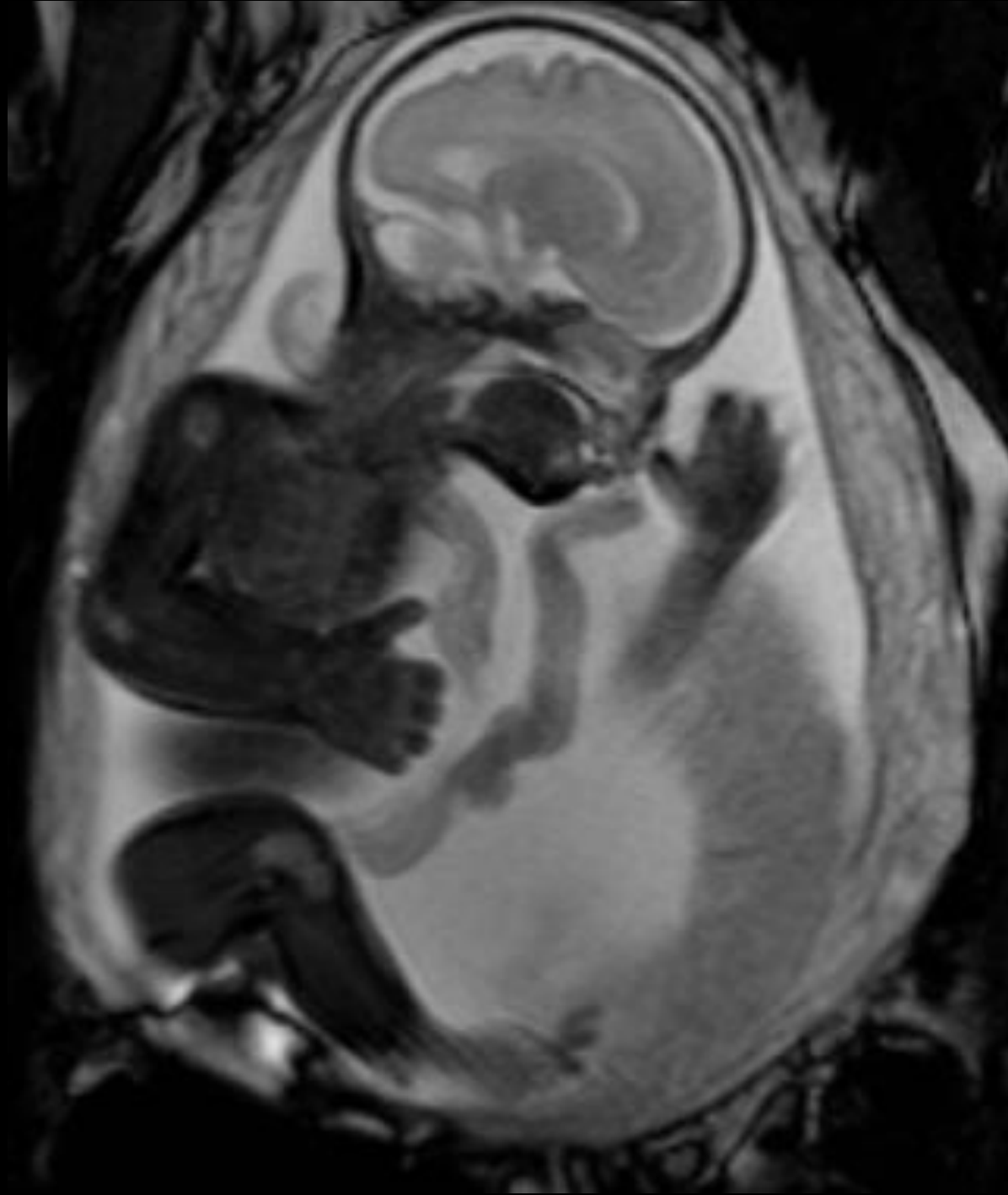


Schooladvice

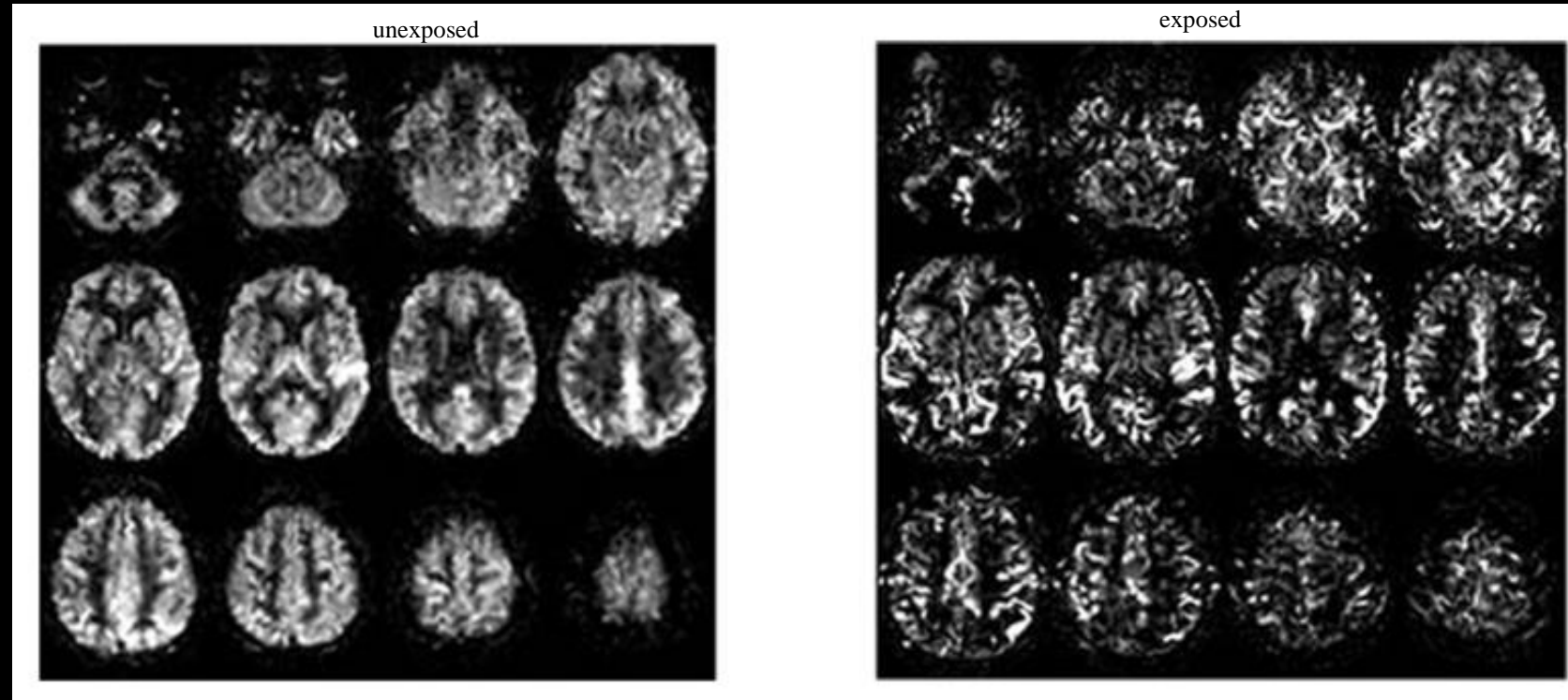


Income

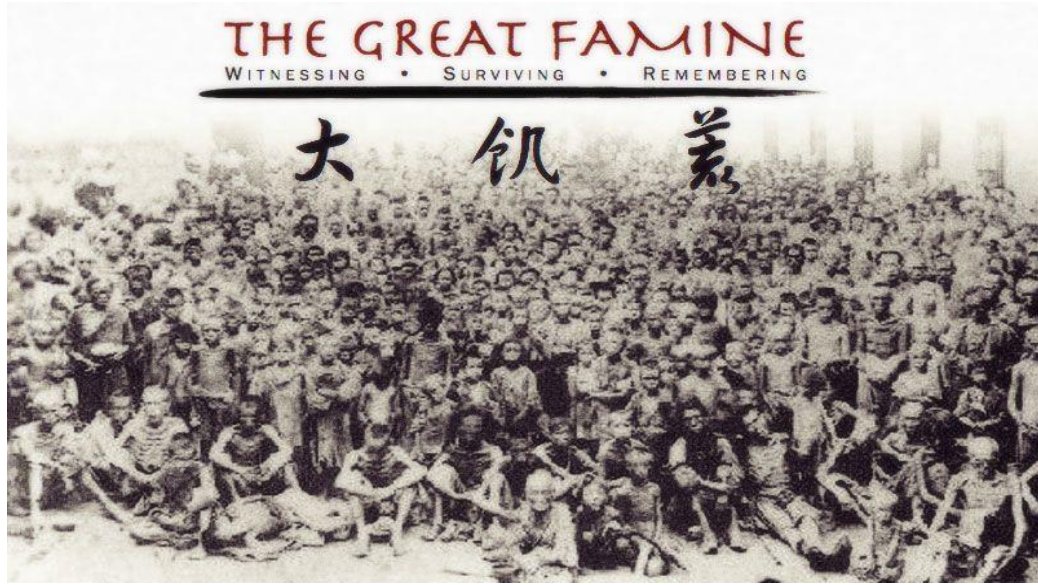








**Fig. 2.** The spatial coefficient of variation (CoV): on the left side a participant from the control group prenatally unexposed to famine with very low spatial CoV and on the right side a participant from the group exposed to famine during early gestation with very high spatial CoV. The spatial CoV provides an indication of the transit of the arterial spin labeling signal to tissue, with higher CoV values indicating transit delay.



# Ukraine war: A baby born under bombardment in Bucha

By Abdujalil Abdurasulov  
BBC News, Kyiv

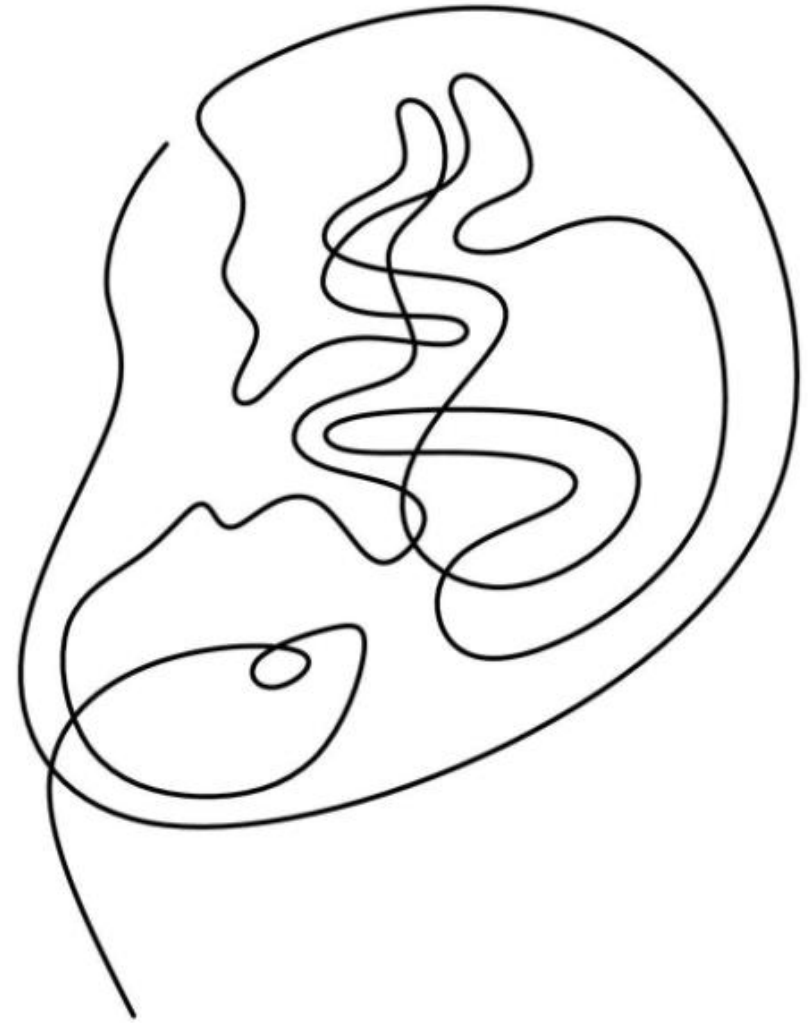
© 15 March



Russia-Ukraine war



Unborn: unseen,  
unheard,  
unprotected



# Is the 1918 Influenza Pandemic Over? Long-Term Effects of *In Utero* Influenza Exposure in the Post-1940 U.S. Population

Douglas Almond

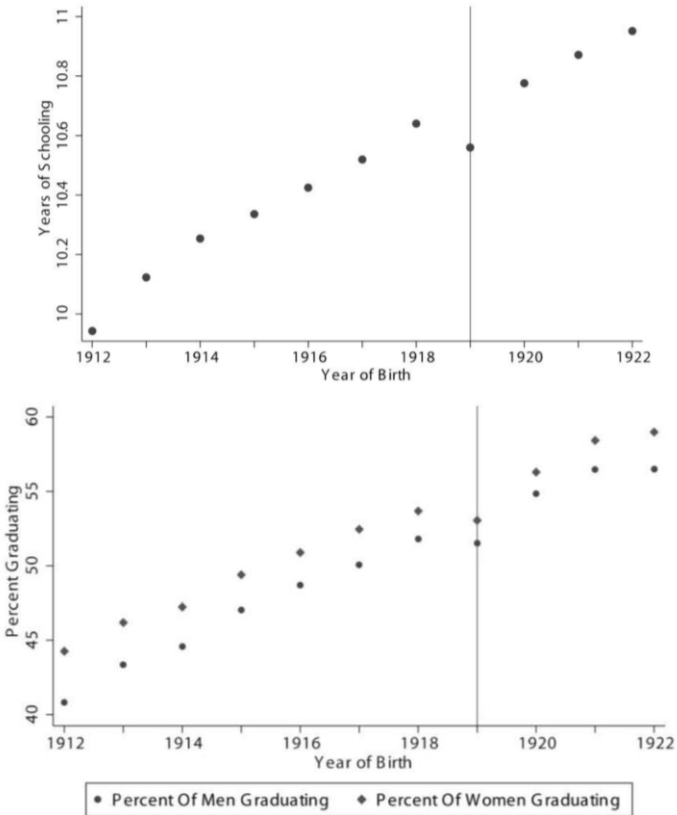


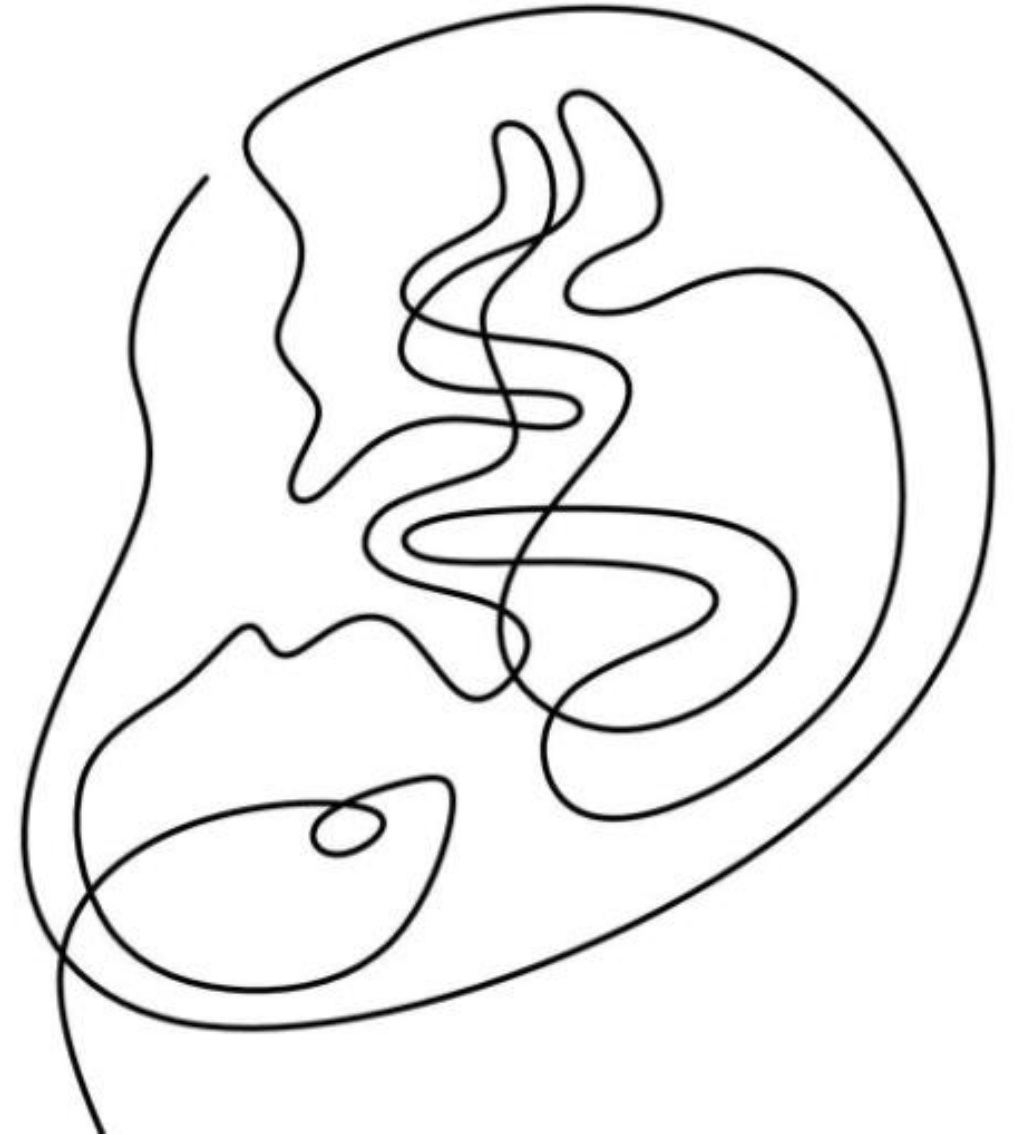
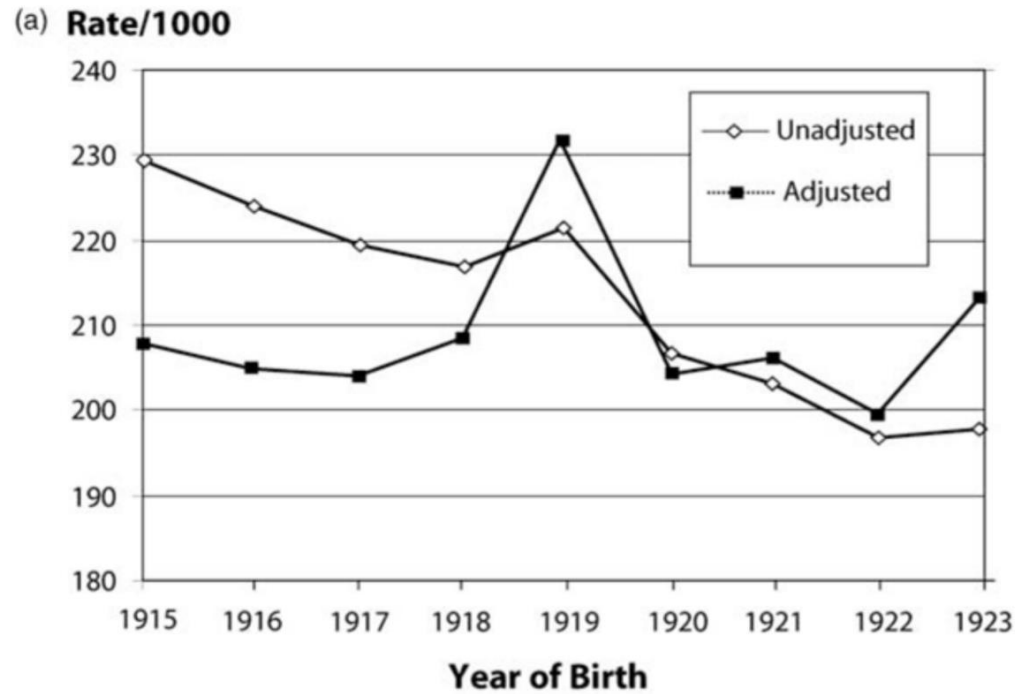
FIG. 4.—1970 high school graduation: by year of birth



# Is the 1918 Influenza Pandemic Over? Long-Term Effects of *In Utero* Influenza Exposure in the Post-1940 U.S. Population

Douglas Almond

*Columbia University and National Bureau of Economic Research*

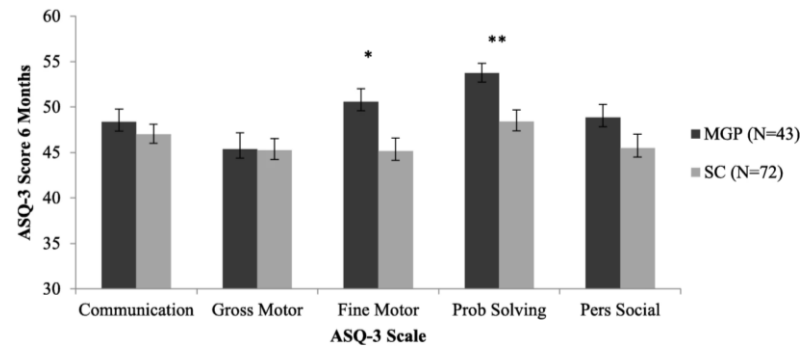




# Climate related disasters affect unborn children



Epigenetics 10.8, 749–761; August 2015; Published with license by Taylor & Francis Group, LLC



\*  $p < .05$ ; \*\*  $p < .005$

Comparison between the scores on the Ages and Stages Questionnaire (ASQ-3) scales for infants whose mothers received Midwifery Group Practice (MGP) or Standard Care (SC) in pregnancy, when controlling for the effects of flood-related objective hardship

## DNA methylation mediates the impact of exposure to prenatal maternal stress on BMI and central adiposity in children at age 13½ years: Project Ice Storm

Lei Cao-Lei<sup>1,2,1</sup>, Kelsey N Dancause<sup>3,1</sup>, Guillaume Elgbeili<sup>2</sup>, Renaud Massart<sup>4</sup>, Moshe Szyf<sup>5</sup>, Aihua Liu<sup>2</sup>, David P Laplante<sup>2</sup>, and Suzanne King<sup>1,2,4</sup>

<sup>1</sup>Department of Psychiatry, McGill University, Montreal, Quebec, Canada; <sup>2</sup>Douglas Hospital Research Center, Montreal, Quebec, Canada; <sup>3</sup>Department of Kinanthropology, University of Quebec at Montreal, Montreal, Quebec, Canada; <sup>4</sup>Department of Pharmacology and Therapeutics, McGill University, Montreal, Quebec, Canada; <sup>5</sup>Department of Pharmacology and Therapeutics and Sackler Program for Epigenetics and Developmental Psychobiology, McGill University, Montreal, Quebec, Canada

<sup>†</sup>These authors contributed equally to this work.

**Keywords:** body mass index, central adiposity, DNA methylation, Ice Storm, mediating effect, prenatal maternal stress

Prenatal maternal stress (PNMS) in animals and humans predicts obesity and metabolic dysfunction in the offspring. Epigenetic modification of gene function is considered one possible mechanism by which PNMS results in poor outcomes in offspring. Our goal was to determine the role of maternal objective exposure and subjective distress on child BMI and central adiposity at 13½ years of age, and to test the hypothesis that DNA methylation mediates the effect of PNMS on growth. Mothers were pregnant during the January 1998 Quebec ice storm. We assessed their objective exposure and subjective distress in June 1998. At age 13½, their children were weighed and measured ( $n = 66$ ); a subsample provided blood samples for epigenetic studies ( $n = 31$ ). Objective and subjective PNMS correlated with central adiposity (waist-to-height ratio); only objective PNMS predicted body mass index (BMI). Bootstrapping analyses showed that the methylation level of genes from established Type-1 and -2 diabetes mellitus pathways showed significant mediation of the effect of objective PNMS on both central adiposity and BMI. However, the negative mediating effects indicate that, although greater objective PNMS predicts greater BMI and adiposity, this effect is dampened by the effects of objective PNMS on DNA methylation, suggesting a protective role of the selected genes from Type-1 and -2 diabetes mellitus pathways. We provide data supporting that DNA methylation is a potential mechanism involved in the long-term adaptation and programming of the genome in response to early adverse environmental factors.



ARTICLE

<https://doi.org/10.1038/s41467-021-23529-7> OPEN

Check for updates

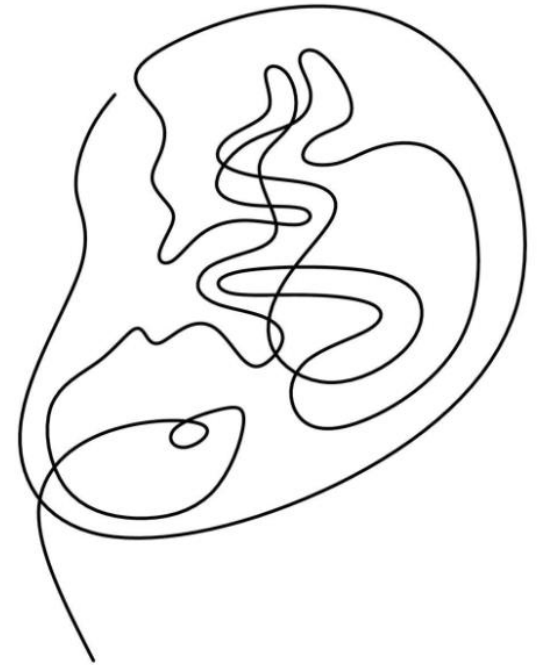
## Open fire exposure increases the risk of pregnancy loss in South Asia

Tao Xue<sup>1,5,6</sup>, Guannan Geng<sup>2,5</sup>, Yiqun Han<sup>3</sup>, Huiyu Wang<sup>1</sup>, Jiajianghui Li<sup>1</sup>, Hong-tian Li<sup>1</sup>, Yubo Zhou<sup>1</sup> & Tong Zhu<sup>4,6</sup>

Interactions between climate change and anthropogenic activities result in increasing numbers of open fires, which have been shown to harm maternal health. However, few studies have examined the association between open fire and pregnancy loss. We conduct a self-comparison case-control study including 24,876 mothers from South Asia, the region with the heaviest pregnancy-loss burden in the world. Exposure is assessed using a chemical transport model as the concentrations of fire-sourced  $PM_{2.5}$  (i.e., fire  $PM_{2.5}$ ). The adjusted odds ratio (OR) of pregnancy loss for a  $1\text{-}\mu\text{g}/\text{m}^3$  increment in averaged concentration of fire  $PM_{2.5}$  during pregnancy is estimated as 1.051 (95% confidence intervals [CI]: 1.035, 1.067). Because fire  $PM_{2.5}$  is more strongly linked with pregnancy loss than non-fire  $PM_{2.5}$  (OR: 1.014; 95% CI: 1.011, 1.016), it contributes to a non-negligible fraction (13%) of  $PM_{2.5}$ -associated pregnancy loss. Here, we show maternal health is threatened by gestational exposure to fire smoke in South Asia.

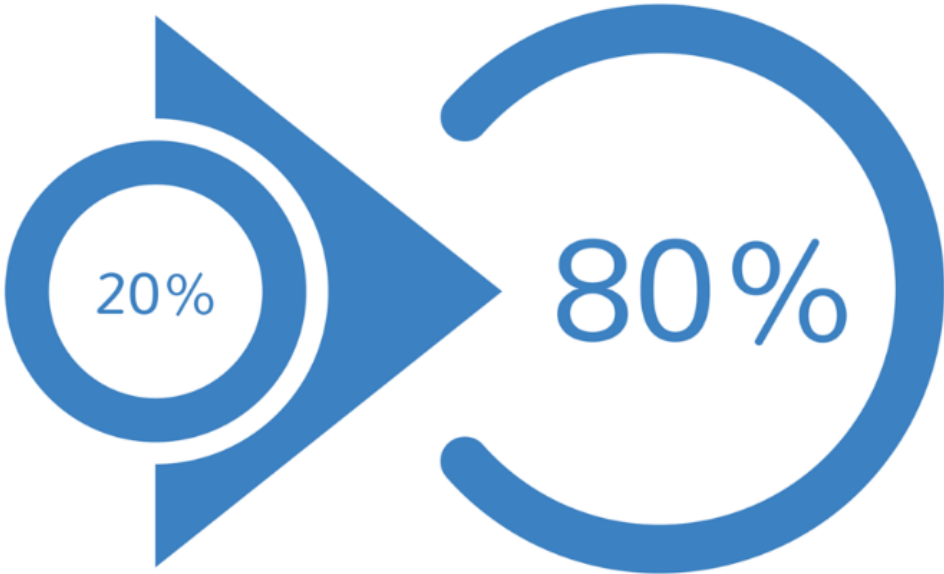
# Lessons learned from previous crises

- Unborn generations are unseen, unheard and unprotected
- While they carry the longest and largest legacy of crises



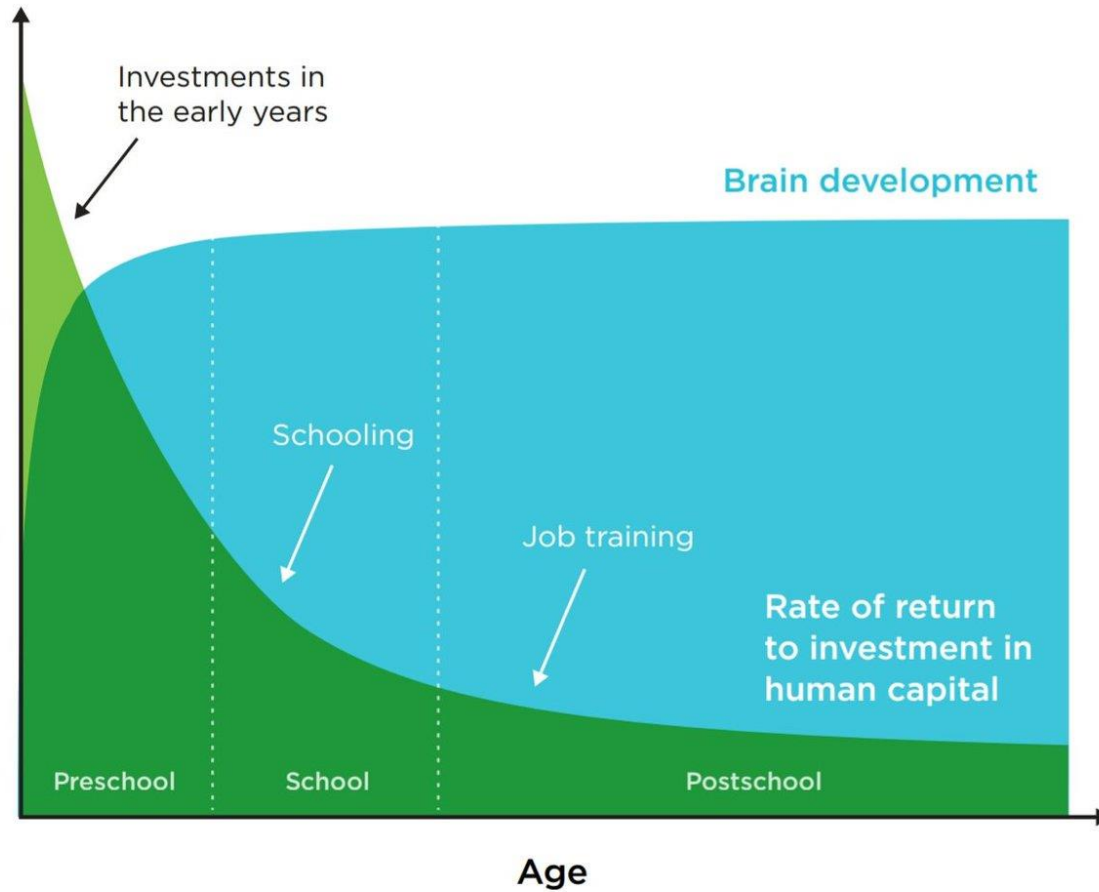
# Majority of societal costs is caused by false start in life

(Richmond-Rakerd et al Nature 2020)



**Fig. 1 | Nationwide data capture of poor health, crime and social-welfare dependency in 1.7 million New Zealanders.** We obtained information about our five sectors of interest—social-welfare benefits, public-hospital nights, prescription-drug fills, injury-insurance claims and criminal convictions—from records maintained by the New Zealand Ministry of Social Development, Ministry of Health, Pharmaceutical Management Agency, Accident Compensation Corporation and Ministry of Justice, respectively. To account for the amount of time individuals were eligible to appear in New Zealand government records, we obtained information about mortality and time overseas from records maintained by the New Zealand Department of Internal Affairs and Ministry of Business, Innovation and Employment, respectively.

**Figure 5.1** Investments in high-quality programs during children’s early years pay off



Source: WDR 2018 team, based on Carneiro, Cunha, and Heckman (2003); Martin (2012).

“SOCIETY CAN ALLOW CHILDREN TO  
**FLOURISH**  
BY GIVING THEM QUALITY  
**EARLY DEVELOPMENT.**”

**James Heckman**  
Nobel Laureate in Economics  
*At the White House Summit on Early Education*



“25 percent of all children being stunted, through no fault of their own, **having inequality and poverty baked into their brains** before the age of five, is the issue of our time.”

FIRST 1,000 DAYS LAY A LIFELONG FOUNDATION





Children under 18 have special rights as children

**ARTICLE 2**

All children have these rights, no matter who they are, where they live, what their parents do, what language they speak, what their religion is, whether they are a boy or girl, what their culture is, whether they have a disability, whether they are rich or poor. No child should be treated unfairly on any basis.



**ARTICLE 3**

All adults should do what is best for you. When adults make decisions, they should think about how their decisions will affect children.

**ARTICLE 4**

The government has a responsibility to make sure your rights are protected. They must help your family to protect your rights and create an environment where you can grow and reach your potential.



**ARTICLE 9**

You have the right to be protected from kidnapping.

**ARTICLE 12**

You have the right to give your opinion, and for adults to listen and take it seriously.

**ARTICLE 13**

You have the right to find out things and share what you think with others, by talking, drawing, writing or in any other way unless it harms or offends other people.

**ARTICLE 14**

You have the right to choose your own religion and beliefs. Your parents should help you decide what is right and wrong, and what is best for you.

**ARTICLE 15**

You have the right to choose your own friends and join or leave groups, as long as it isn't harmful to others.

**ARTICLE 16**

You have the right to privacy.

**ARTICLE 17**

You have the right to get information that is important to your wellbeing, from radio, newspapers, books, computers and other sources. Adults should make sure that the information you are getting is not harmful and that you find and understand the information you need.

**ARTICLE 18**

You have the right to be raised by your parents (if possible).

**ARTICLE 19**

You have the right to be protected from being hurt and mistreated, in body or mind.

**ARTICLE 20**

You have the right to special care and help if you cannot live with your parents.

**ARTICLE 21**

You have the right to care and protection if you are adopted or in foster care.

**ARTICLE 22**

You have the right to special protection and help if you are a refugee (if you have been forced to leave your home and live in another country), as well as all the rights in this Convention.

**ARTICLE 23**

You have the right to special education and care if you have a disability, as well as all the rights in this Convention, so that you can live a full life.

**ARTICLE 24**

You have the right to the best health care possible, safe water to drink, nutritious food, a clean and safe environment, and information to help you stay well.

**ARTICLE 25**

If you live in one of the countries...

**ARTICLE 26**

You have the right to the highest level of education you can get.

**ARTICLE 28**

Your education should help you develop your talents and abilities, and also help you learn to live peacefully, protect the environment and respect other people.

**ARTICLE 30**

You have the right to practice your own culture, language and religion - or any of those. Minority and indigenous groups need special protection of this right.

**ARTICLE 31**

You have the right to play and rest.

**ARTICLE 32**

You have the right to protection from work that harms you, and is bad for your health and education. If you work, you have the right to be safe and paid fairly.

**ARTICLE 33**

You have the right to protection from harmful drugs and from the drug trade.

**ARTICLE 34**

You have the right to be free from sexual abuse.

**ARTICLE 35**

No one is allowed to kidnap or sell you.

**ARTICLE 36**

You have the right to protection from any kind of exploitation (being taken advantage of).

**ARTICLE 37**

No one is allowed to punish you in a cruel or harmful way.

**ARTICLE 38**

You have the right to protection and freedom from war. Children under 15 cannot be forced to go into the army or take part in war.

**ARTICLE 39**

You have the right to heal if hurt, regardless of body or mind.

**ARTICLE 40**

You have the right to a fair trial and to be treated with respect by the legal system.

# UNITED NATIONS CONVENTION ON THE RIGHTS OF THE CHILD

IN CHILD-FRIENDLY LANGUAGE



**ARTICLE 5**

Your family has the responsibility to help you learn to exercise your rights, and to ensure that your rights are protected.

**ARTICLE 6**

You have the right to be alive.

**ARTICLE 7**

You have the right to a name, and this should be officially recognized by the government. You have the right to a nationality (to belong to a country).

**ARTICLE 8**

You have the right to an identity - an official record of who you are. No one should take this away from you.

**ARTICLE 9**

Children under 18 have special rights as children





**3** GOOD HEALTH AND WELL-BEING

A white icon of a heart rate monitor line with a heart at the end, set against a green background.

**1** NO POVERTY

A white icon of a family consisting of two adults and two children, set against a red background.

**4** QUALITY EDUCATION

A white icon of an open book and a pencil, set against a red background.

**16** PEACE, JUSTICE AND STRONG INSTITUTIONS

A white icon of a dove holding an olive branch and a gavel, set against a dark blue background.

**8** DECENT WORK AND ECONOMIC GROWTH

A white icon of a bar chart with an upward-pointing arrow, set against a dark red background.

**10** REDUCED INEQUALITIES

A white icon of an equals sign inside a circle, set against a pink background.



**16** PEACE, JUSTICE AND STRONG INSTITUTIONS



**3** GOOD HEALTH AND WELL-BEING



**1** NO POVERTY




**4** QUALITY EDUCATION



**16** PEACE, JUSTICE AND STRONG INSTITUTIONS



**8** DECENT WORK AND ECONOMIC GROWTH



**10** REDUCED INEQUALITIES





**3** GOOD HEALTH AND WELL-BEING

The icon for SDG 3, Good Health and Well-being, shows a white heartbeat line and a heart symbol on a green background.

**1** NO POVERTY

The icon for SDG 1, No Poverty, depicts a white silhouette of a family (two adults and two children) on a red background.

**4** QUALITY EDUCATION

The icon for SDG 4, Quality Education, features a white silhouette of an open book and a pencil on a red background.

**16** PEACE, JUSTICE AND STRONG INSTITUTIONS

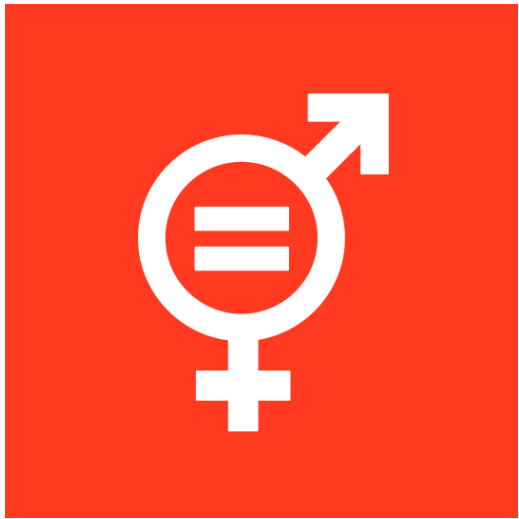
The icon for SDG 16, Peace, Justice and Strong Institutions, shows a white silhouette of a dove holding an olive branch and a gavel on a dark blue background.

**8** DECENT WORK AND ECONOMIC GROWTH

The icon for SDG 8, Decent Work and Economic Growth, displays a white silhouette of a bar chart with an upward-pointing arrow on a dark red background.

**10** REDUCED INEQUALITIES

The icon for SDG 10, Reduced Inequalities, features a white equals sign inside a circle on a magenta background.



**3** GOOD HEALTH AND WELL-BEING

An icon representing good health and well-being, featuring a white heartbeat line and a heart symbol on a green background.

**1** NO POVERTY

An icon representing no poverty, showing a white silhouette of a family (two adults and two children) on a red background.

**4** QUALITY EDUCATION

An icon representing quality education, showing a white silhouette of an open book and a pencil on a red background.

**16** PEACE, JUSTICE AND STRONG INSTITUTIONS

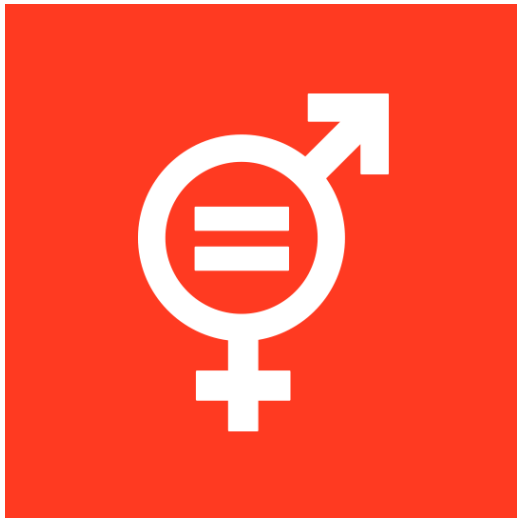
An icon representing peace, justice, and strong institutions, showing a white silhouette of a dove and a gavel on a blue background.

**8** DECENT WORK AND ECONOMIC GROWTH

An icon representing decent work and economic growth, showing a white silhouette of a bar chart with an upward-pointing arrow on a dark red background.

**10** REDUCED INEQUALITIES

An icon representing reduced inequalities, showing a white equals sign inside a circle on a pink background.



Food  
Stress  
Money  
Poverty  
Violence  
Education



**3** GOOD HEALTH AND WELL-BEING

**1** NO POVERTY

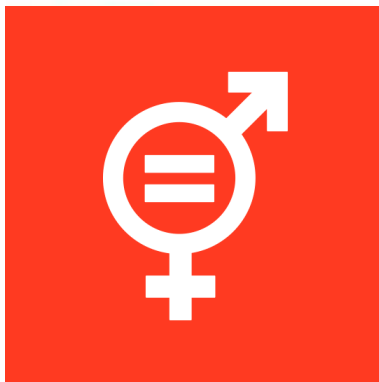
**4** QUALITY EDUCATION

**16** PEACE, JUSTICE AND STRONG INSTITUTIONS

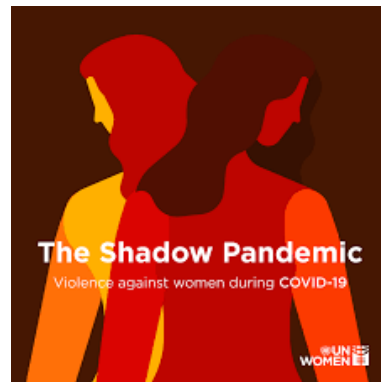
**8** DECENT WORK AND ECONOMIC GROWTH

**10** REDUCED INEQUALITIES

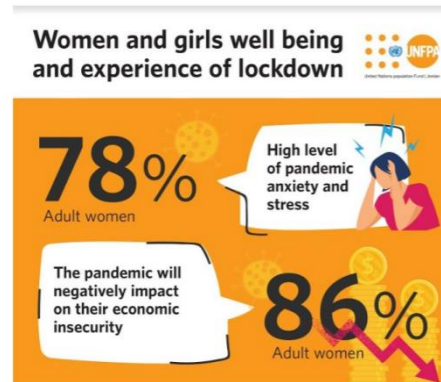
# COVID-19



Violence  
Stress  
Money  
Poverty  
Food  
Education



Up to 5 fold increase in violence against women and girls, particularly domestic violence.



**Covid-19 Could Push Half A Billion People Into Poverty**  
Additional people in poverty due to a 20% income drop caused by a Covid-19 recession\*



## Editorial

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# Unheard, unseen and unprotected: DOHaD council's call for action to protect the younger generation from the long-term effects of COVID-19

Tessa J. Roseboom<sup>1</sup> , Susan E. Ozanne<sup>2</sup>, Keith M. Godfrey<sup>3</sup>, Carmen R. Isasi<sup>4</sup>, Hiroaki Itoh<sup>5</sup>, Rebecca Simmons<sup>6</sup> , Amita Bansal<sup>6</sup>, Mary Barker<sup>3</sup>, Torsten Plosch<sup>7</sup>, Deb M. Sloboda<sup>8</sup>, Stephen G. Matthews<sup>9</sup>, Caroline H. D. Fall<sup>3</sup>, Lucilla Poston<sup>10</sup> , and Mark A. Hanson<sup>11</sup> 

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## Generation coronavirus?

The catastrophic elements that have perpetuated the COVID-19 pandemic—global interconnectedness, climate change due to human activity, vast economic inequality and deep veins of antisocialism—have resulted in more than 9 million infections and almost 500 000 deaths worldwide. Although children might be less susceptible to infection by severe acute respiratory syndrome coronavirus 2 and generally have better outcomes on their health and wellbeing, today's children are digital natives born after the turn of the 21st century, who inhabit a planet in crisis and now will inherit the unknowns of a pandemic aftermath. This rolling milieu offers a moment in which a new agenda for health could emerge with children and adolescents at the centre, defined and confined by the losses from COVID-19. With much of the world on pause, children and adolescents have been expected to move nimbly between their traditional family home and digital environments about the effects of the coronavirus pandemic on the health and wellbeing of children and adolescents. Maltreatment of children, whether physical, sexual, or emotional, increases during times of conflict. Indeed, many metrics of child maltreatment have increased, including emergency department visits for serious injury and abuse hotline calls. Other effects of physical distancing and school closures, such as deterioration of routines or restricted peer social contact, could cause new or exacerbate existing psychological disorders. Safeguarding the health and wellbeing of children and adolescents must be developmentally appropriate for specific age groups, but also for the spectrum of conditions and challenges that young people might have to cope with, including those who are medically fragile or who have special needs. Distance learning might be productive for some older children and adolescents, but certainly not all, and the digital divide created by inequities in access to technology and the internet has deepened. The response from major medical organisations about the effects of the coronavirus pandemic on the health and wellbeing of children and adolescents.

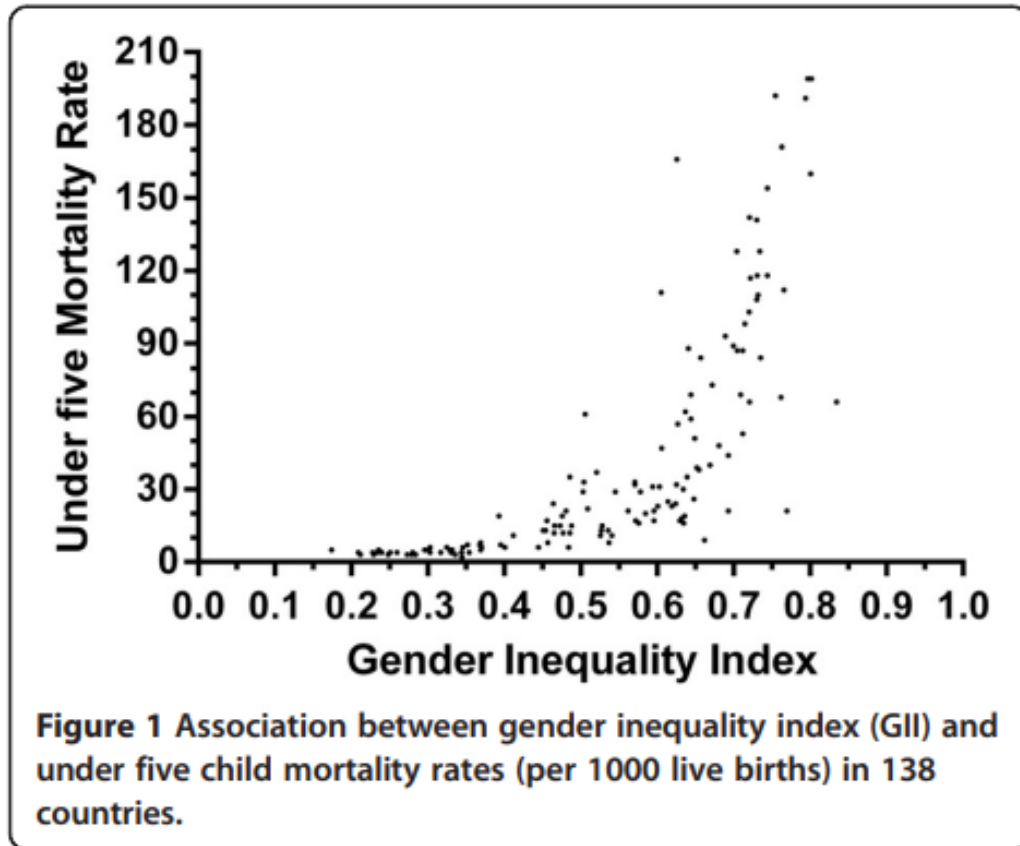
## Editorial

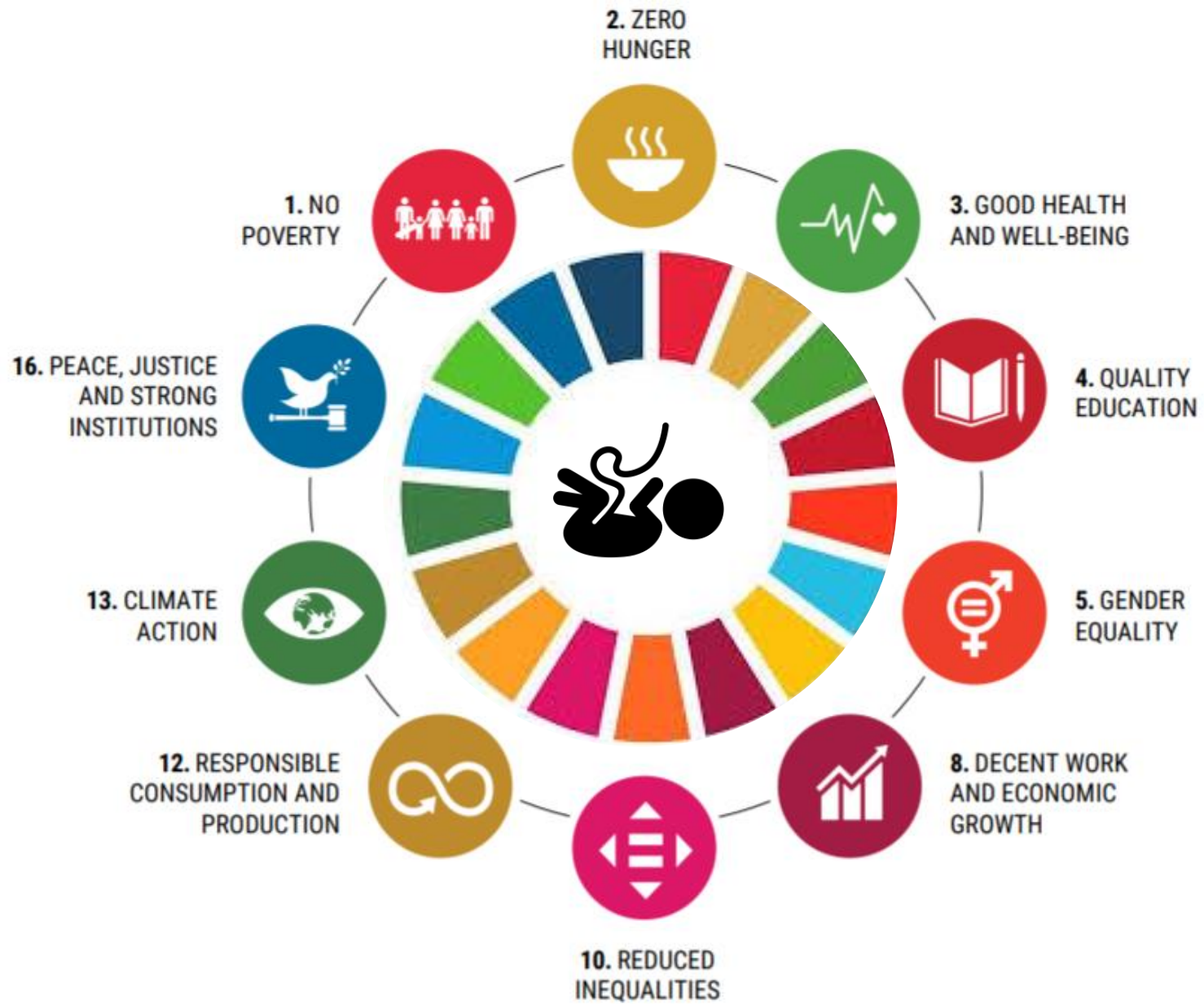


For more on school closures in South Africa and the impact on children see <https://doi.org/10.1017/S2040174420000847>. Also see <https://doi.org/10.1017/S2040174420000847>. For more on COVID-19 and children see <https://doi.org/10.1017/S2040174420000847>. For more on COVID-19 and child health see <https://doi.org/10.1017/S2040174420000847>.



More gender equality, more likely to survive to 5







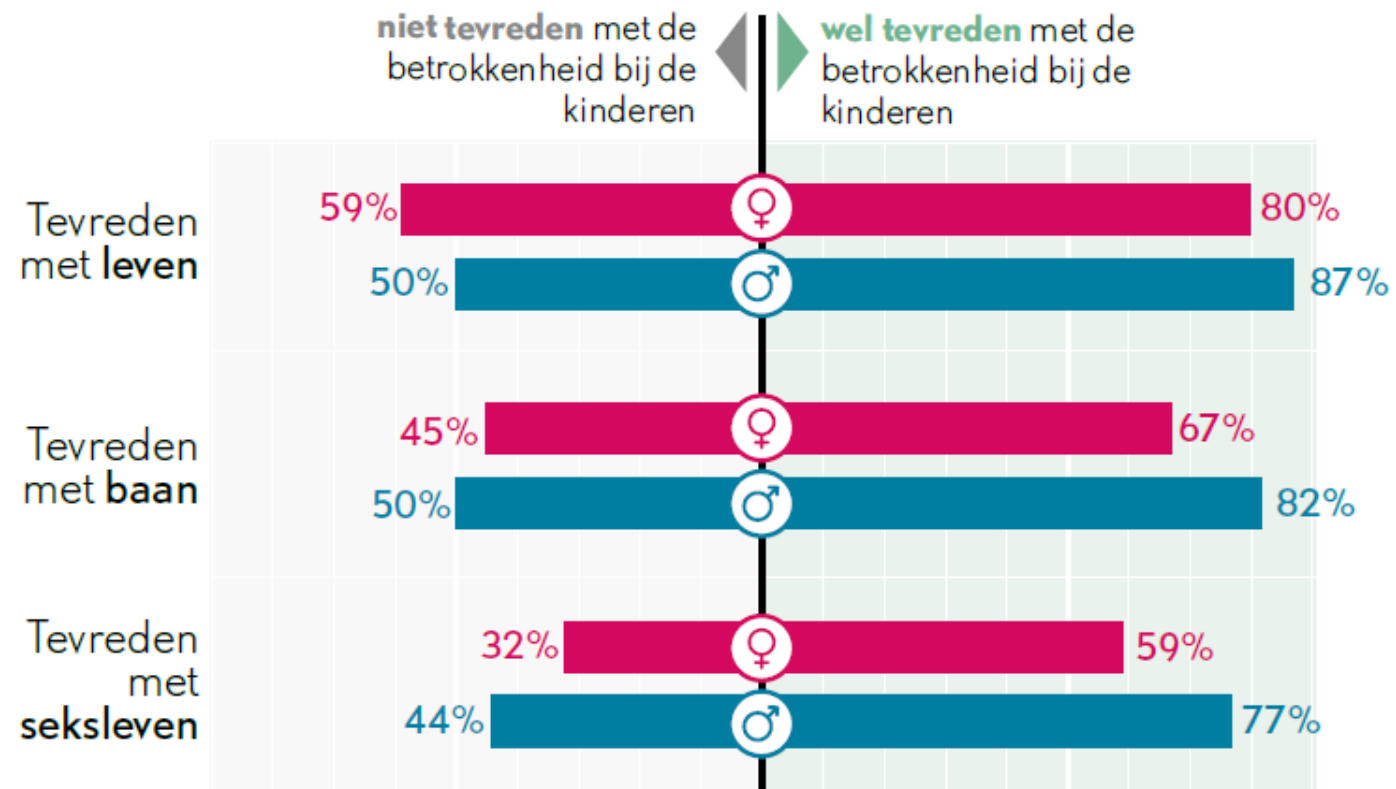



**LEGO** @LEGO\_Group · 2h  
By the end of 2022, all LEGO employees will have 26 weeks paid childcare leave for primary caregivers! ❤️ And there's more...

 POLICY 1 <b>Company-paid Health Care Coverage</b>	 POLICY 2 <b>Paid Time Off</b>	 POLICY 3 <b>Maternity Leave</b>	 POLICY 4 <b>Breastfeeding Benefits</b>	 POLICY 5 <b>"Best Place" Designation</b>
 POLICY 6 <b>Onsite Child Care</b>	 POLICY 7 <b>Child Care Assistance</b>	 POLICY 8 <b>Backup Child Care</b>	 POLICY 9 <b>Flexible Hours</b>	 POLICY 10 <b>Working Remotely</b>



Satisfaction with involvement with children is associated with satisfaction in life & work





Family friendly workplaces will help creating a climate in which future generations are able to reach their full potential and contribute to achieving a more just, healthy future for all.

It will help achieve the SDGs.



We need to invest in a climate for optimal early human development to lay the foundation for a more just and sustainable future for all

[www.tessaroseboom.com](http://www.tessaroseboom.com)  
[t.j.roseboom@amsterdamumc.nl](mailto:t.j.roseboom@amsterdamumc.nl)

