

CONSEQUENCES OF THE COVID-19 PANDEMIC ON HUMAN CAPITAL DEVELOPMENT

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Background

- By 20 August 2020, there were approx. 145 thousand formally confirmed cases of COVID-19 in Indonesia and approx. 6 thousand confirmed casualties.
- The true extent of this pandemic is unclear as the number of COVID-19 tests is low; lower than other countries in the region.
- An outbreak of this size has enormous impacts; not only on the economy, but also on human capital development.
- Critical to have an accurate picture on the magnitude of the COVID-19 pandemic in Indonesia.
- And understand its impact on human capital development, particularly on health and education.

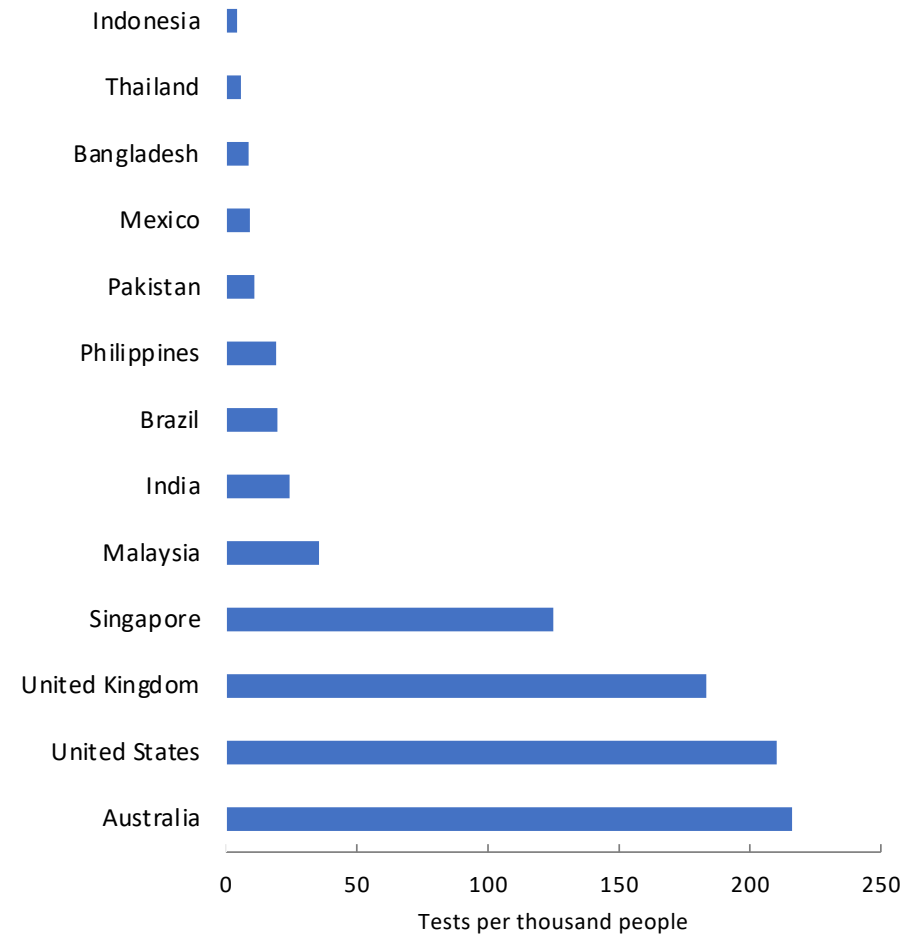


Magnitude of Covid-19



Issues with the numbers

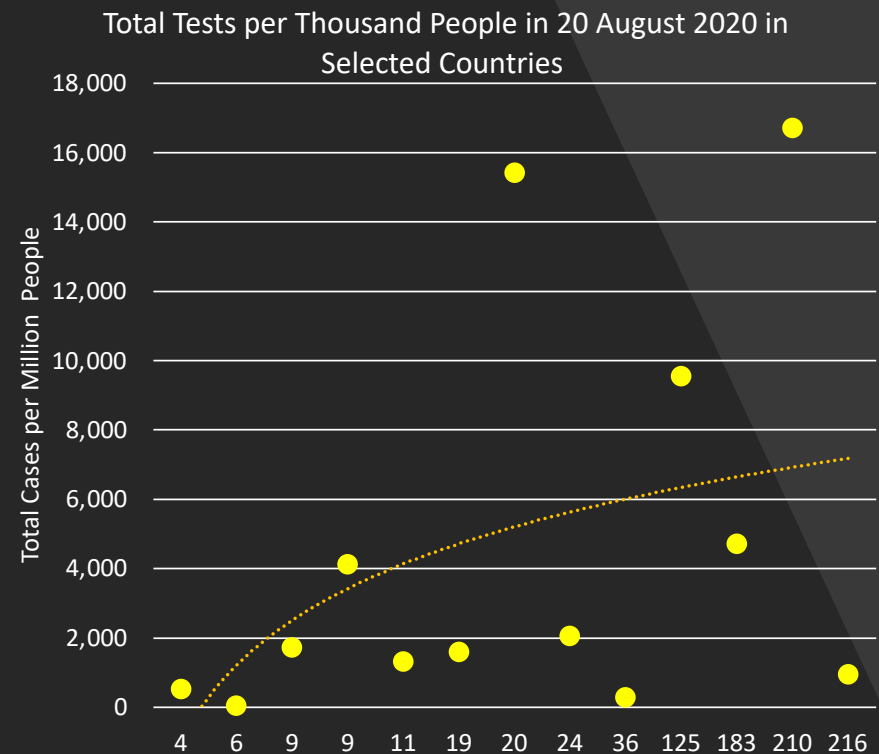
- At least up to 20 August 2020, number of COVID-19 tests per population was still very low (4 test per thousand people).
- The number of COVID-19 tests in Indonesia is lower than many other developing countries in the region; for example:
 - Thailand
 - Philippines
 - Bangladesh
- -> inability to capture the true magnitude of the pandemic in the country.
- An estimate on the true size is needed.



Source: Our World in Data-University of Oxford

Number of tests and cases detected

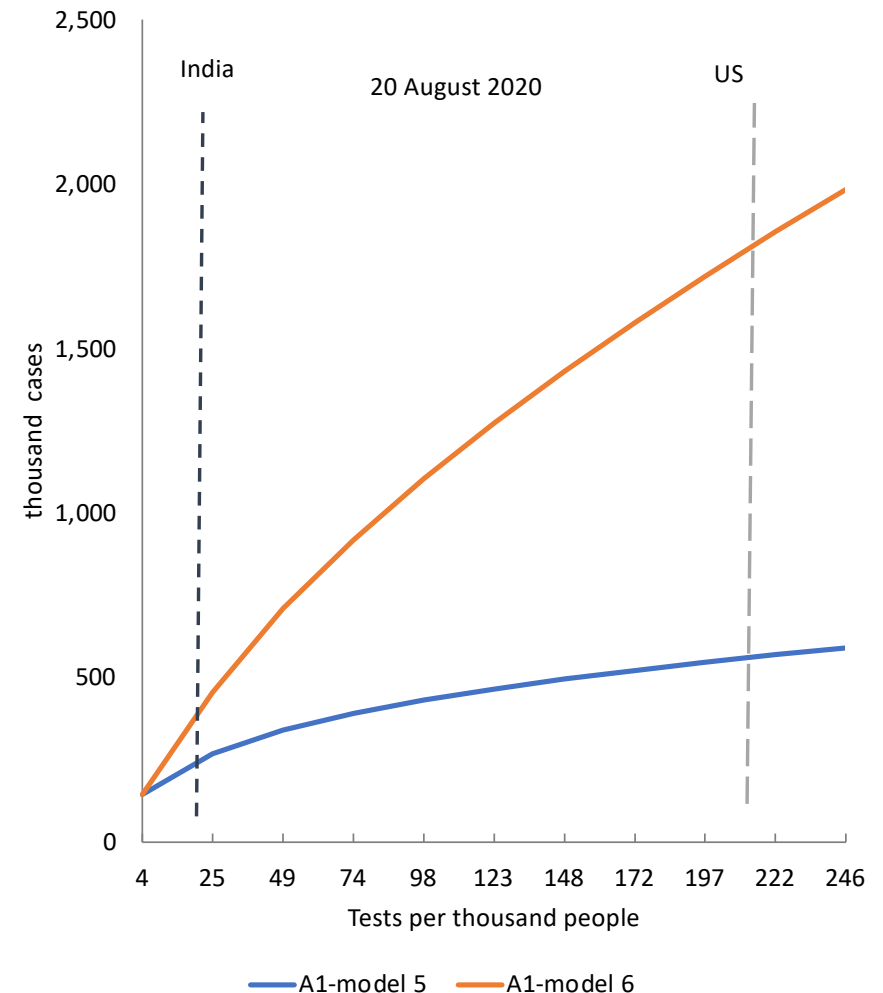
- Controlling countries' characteristics, there appears to be a strong relationship between the number of tests and the number of cases detected.
- Using a daily observation data on total cases and tests in appr. 100 countries from 1 January to 24 August 2020, the following relation is estimated to reveal the true size of the pandemic:
- Total daily cases = f(total daily test, country characteristics)
- $\ln(h_{i,t}) = d \cdot \ln(t_{i,t}) + \alpha \cdot X_i + \varepsilon_{i,t}$
 - Country characteristics are population, population density, portion of urban population, GDP per capita, diabetes prevalence, portion of smokers and physicians per thousand population
 - Source: World Development Indicator-World Bank and Our World in Data-University of Oxford.



Source: Our World in Data-University of Oxford

Estimated total COVID-19 cases

- If the number of tests per thousand people in Indonesia were 20 per thousand people by 20 August (about the levels of India, Brazil and the Philippines) -> 250 - 400 thousand cases.
 - By 20 August in India, Brazil and the Philippines, there were 280, 340 and 170 thousand cases, respectively.
- If the number of tests per thousand people in Indonesia were 210 per thousand people (about the levels in the US and UK) -> 560 thousand - 1.8 million (0.2 - 0.7% of its population); i.e. 4 - 12 times of the official/reported number).
 - By 20 August, US and UK reported 5.5 million and 320 thousand (1.7 and 0.5% of their population), respectively.
- The numbers are still growing as the spread of the pandemic continues. With the current rate, the number of cases would double every approximately 40 days.



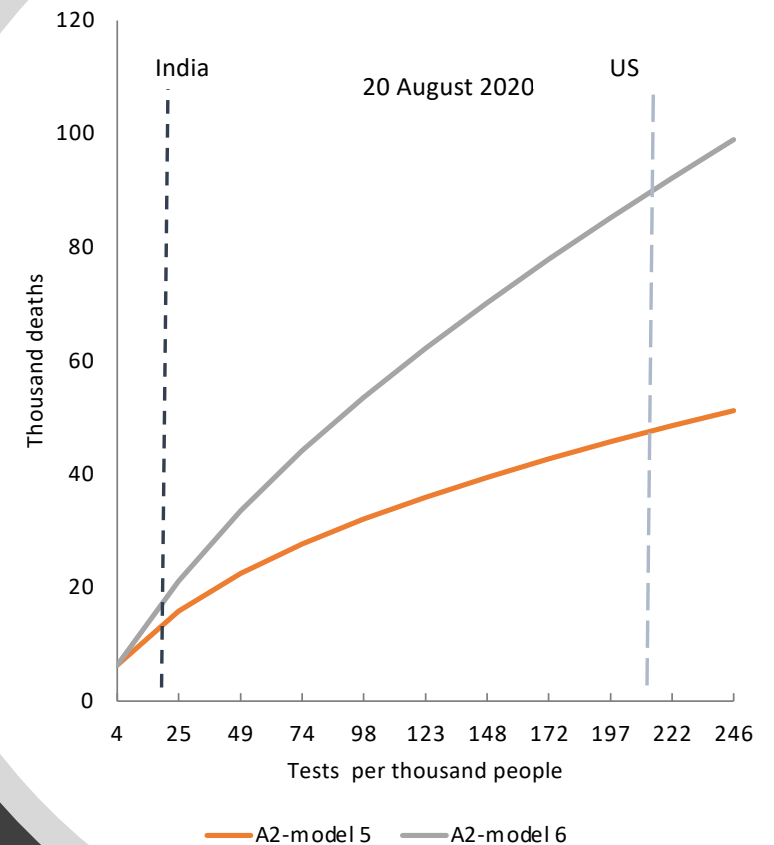
Field confirmation

- In collaboration with Rus'an Nasrudin and Pyan Amin of the University of Indonesia, a household phone survey of 342 households in Jakarta was conducted from 15 May to 20 June 2020.
- The survey reveals that the percentage of Jakarta population very possibly infected by COVID-19 was 0.3% (w/o sample weight) to 0.5% (w/ sample weight) by the end of June.
- Very possible is defined as those diagnosed as:
 - patients under surveillance (PDP) and those living with them,
 - people under surveillance (ODP) showing some symptoms or in contact with PDP, or
 - Showing some symptoms and have been in contact with PDP.
- The number for Yogyakarta was 0.6% (w/o sample weight) by end of August 2020.



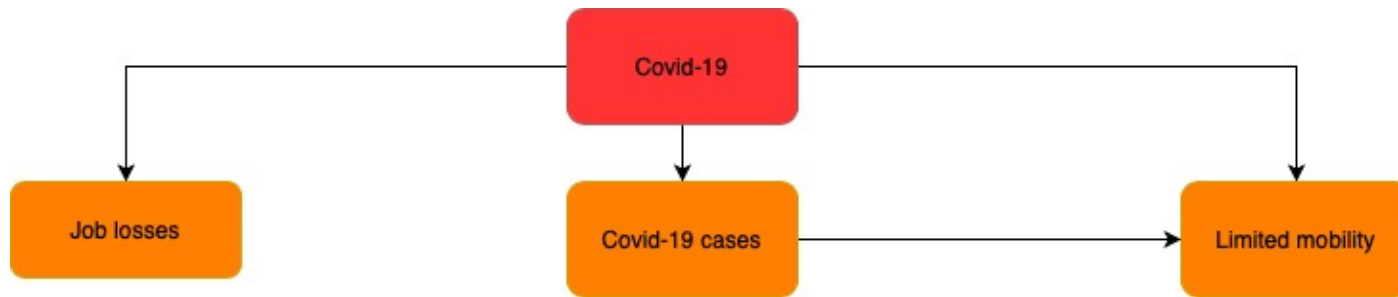
Estimated COVID-19 mortality

- If the number of COVID-19 tests in Indonesia were 210 per thousand people by 20 August (similar to the US and UK) - > 47 - 89 thousand COVID-19 deaths (0.2 - 0.3 per thousand of its population); i.e. 7 - 14 times the official/reported number.
- By 20 August 2020, total deaths due to COVID-19 in the US and UK → 173 thousand and 41 thousand (or 0.5 and 0.6 deaths per thousand people), respectively.
- The number of casualties is growing as the pandemic continues. With the current rate, it is predicted to double in every appr. 45 days.
- UN data on Indonesia's crude death rate for 2015-20: 6.4 per thousand people annually.
- Being prepared is critical.





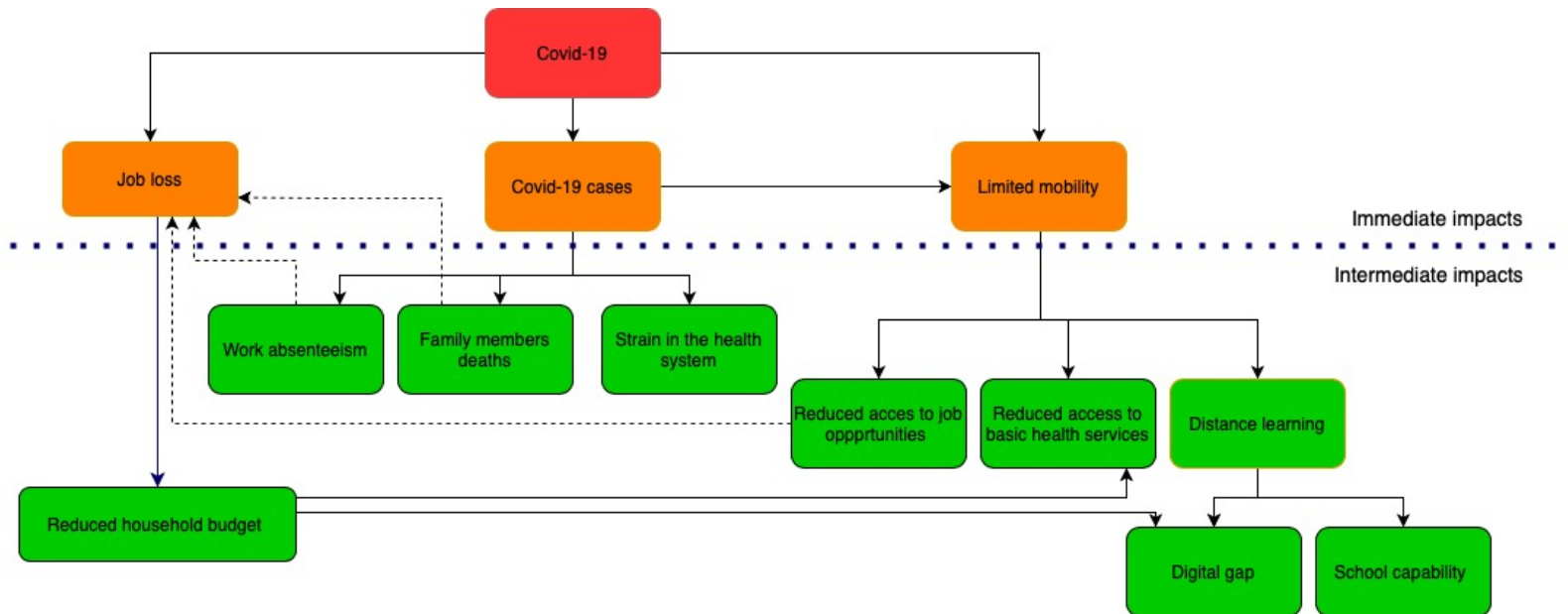
Impacts on Health & Educational Outcomes: A Conceptual Framework



Immediate impacts

Immediate/Initial Consequences

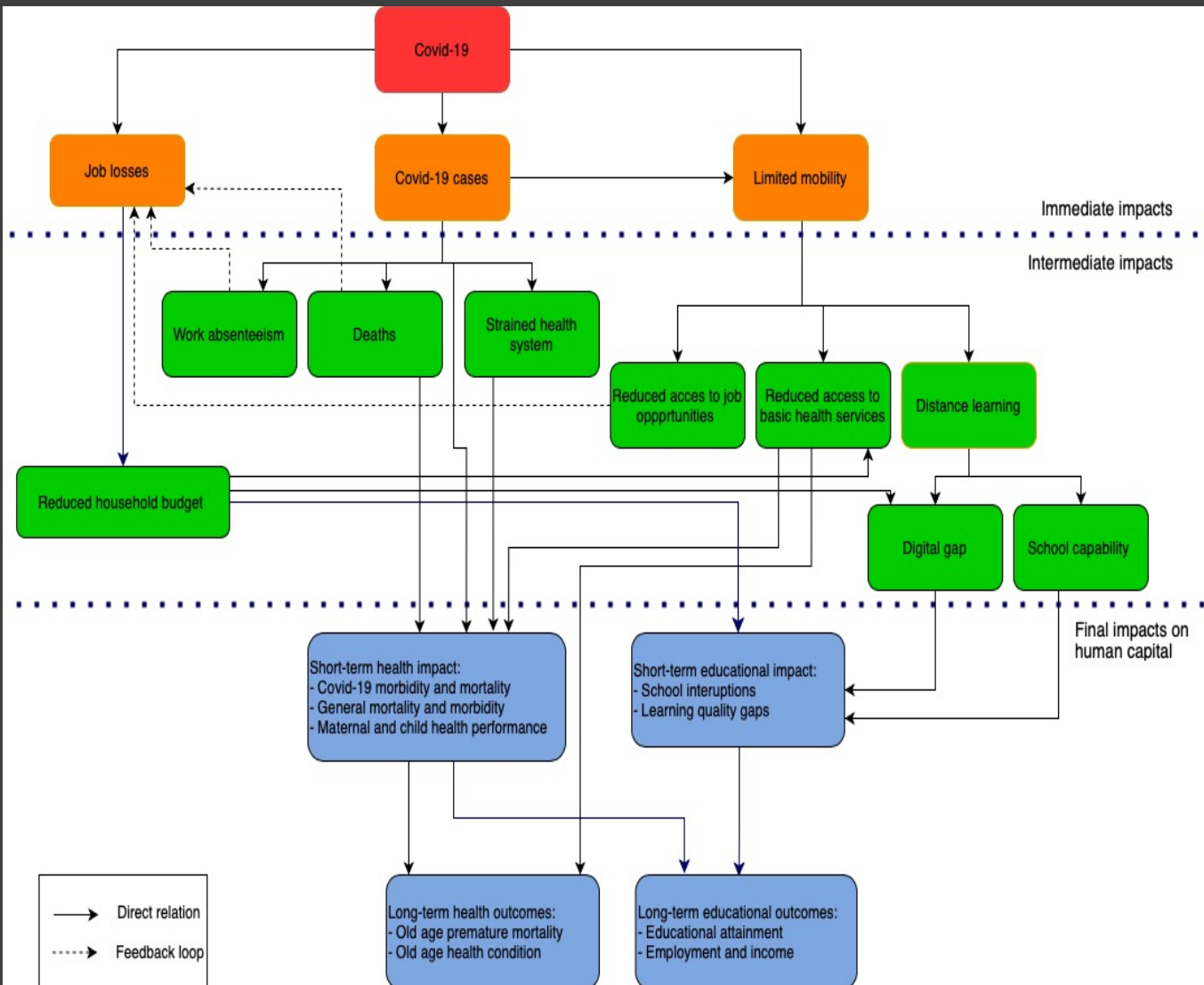
- Direct consequences of the pandemic → number of COVID-19 illnesses
- Indirect consequences of the pandemic → limited mobility and job losses



Intermediate Consequences

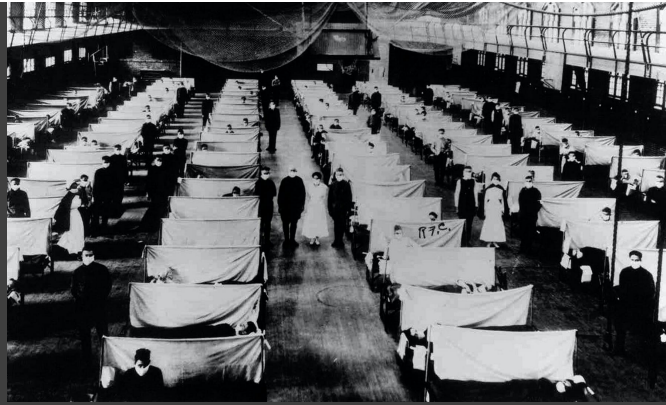
- COVID-19 cases → deaths, work absenteeism & strained health system
- Limited mobility → reduced access to job opportunities, reduced access to health services & distance learning
- Job losses → reduced household budget --> digital gap and school incapability

Health & educational consequences



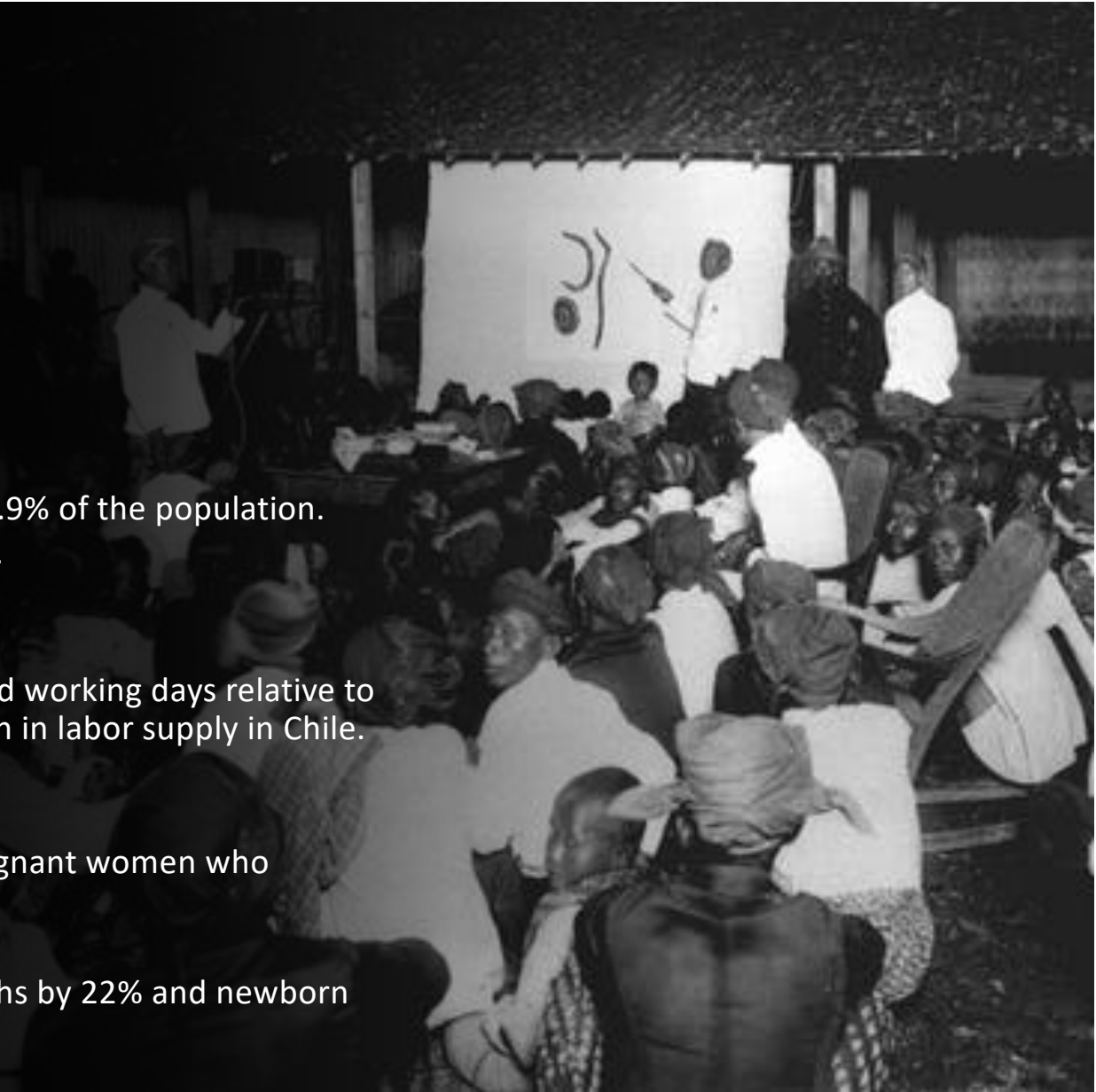
- Short-term health impact
 - COVID-19 morbidity and mortality
 - General morbidity and mortality
 - Maternal and child health performance
- Long-term health impact
 - Premature mortality
 - Old age health condition
- Short-term educational impact
 - School interruptions
 - Learning quality gaps
- Long-term educational impact
 - Educational attainment
 - Employment and income

Evidence from
Literature on
Calamities of
Disease
Outbreaks



Short-term health outcomes

- High mortality case
 - 1918 influenza pandemic:
 - Brown, 1987: 1.5 million deaths in Java or 3.9% of the population.
 - Barro et.al, 2020: Global death rate of 2.1%.
- Increased general morbidity
 - 2009 influenza pandemic
 - Duarte et al., 2017: 800% increase in missed working days relative to normal; implying a minimum 0.2% reduction in labor supply in Chile.
- Increased maternal and child health cases
 - 2009 influenza pandemic
 - Doyle, Goodin & Hamilton, 2013: 4% of pregnant women who contracted this disease died in Florida.
 - 2013-16 Ebola:
 - Elston et.al. 2017: increased maternal deaths by 22% and newborn deaths by 25% in West Africa.



Long-term health outcomes

- Old age premature mortality
 - 1766-1896 airborne infectious diseases:
 - Bengtsson & Lindström, 2002: in southern Sweden, infection during the first year of life increased old age mortality risk.
- Adulthood health outcomes
 - 1918 influenza pandemic
 - Acquah, Dahal & Sloan, 2017: In-utero exposure increased the number of hospital visits by 10% in their old age in the US.
 - Almond & Mazumder, 2005: In-utero exposure exhibited impaired adulthood health outcomes (cancer, hypertension, heart, kidney and stomach problems) relative to non-exposed cohorts in the US.



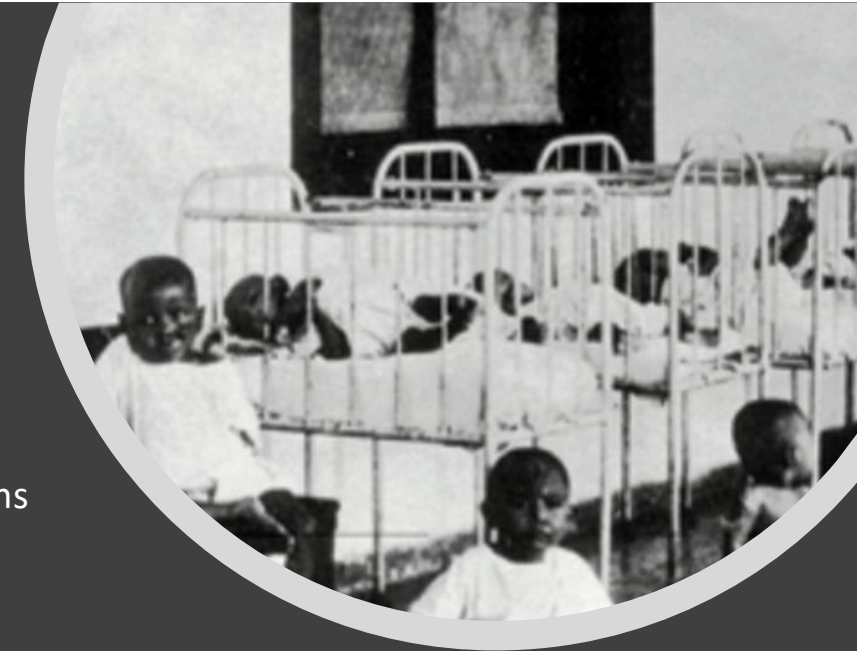
Short-term educational outcomes

- Cases of school interruptions
 - COVID-19
 - Aucejo et al., 2020: delayed graduation of 13% of students and 40% lost internship or job offer in the US.
- Learning quality gaps
 - COVID-19
 - SMERU (2020): 30% of teachers in rural area were unable to use any digital devices. Students from lower educated parents tend to use their study time playing.
 - Jaeger and Blaabaek, 2020: families with disadvantaged socio-economic condition, particularly migrants in Denmark, have less access to digital libraries.



Long-term educational outcomes

- Adult educational attainment
 - 1918 influenza pandemic
 - Almond (2006): 1919 birth cohort received one and a half months less schooling and was 4-5 percent less likely to complete high school compared to the cohort trend.
 - 1940s and 1970s malaria:
 - Lucas, 2010: eradication of malaria in Africa would later on increase the average year of schooling by 0.5 year.
- Employment and income
 - 1918 influenza pandemic
 - Nelson, 2010: Those who were in utero during the pandemic in Sao Paulo, Brazil, were less likely to be college educated, be employed, have formal employment, or more likely to receive lower wage.
 - Almond, 2006: Men born during the pandemic were 6% more likely to have a work-limiting disability and 8% more likely to have a work-preventing disability in the US.

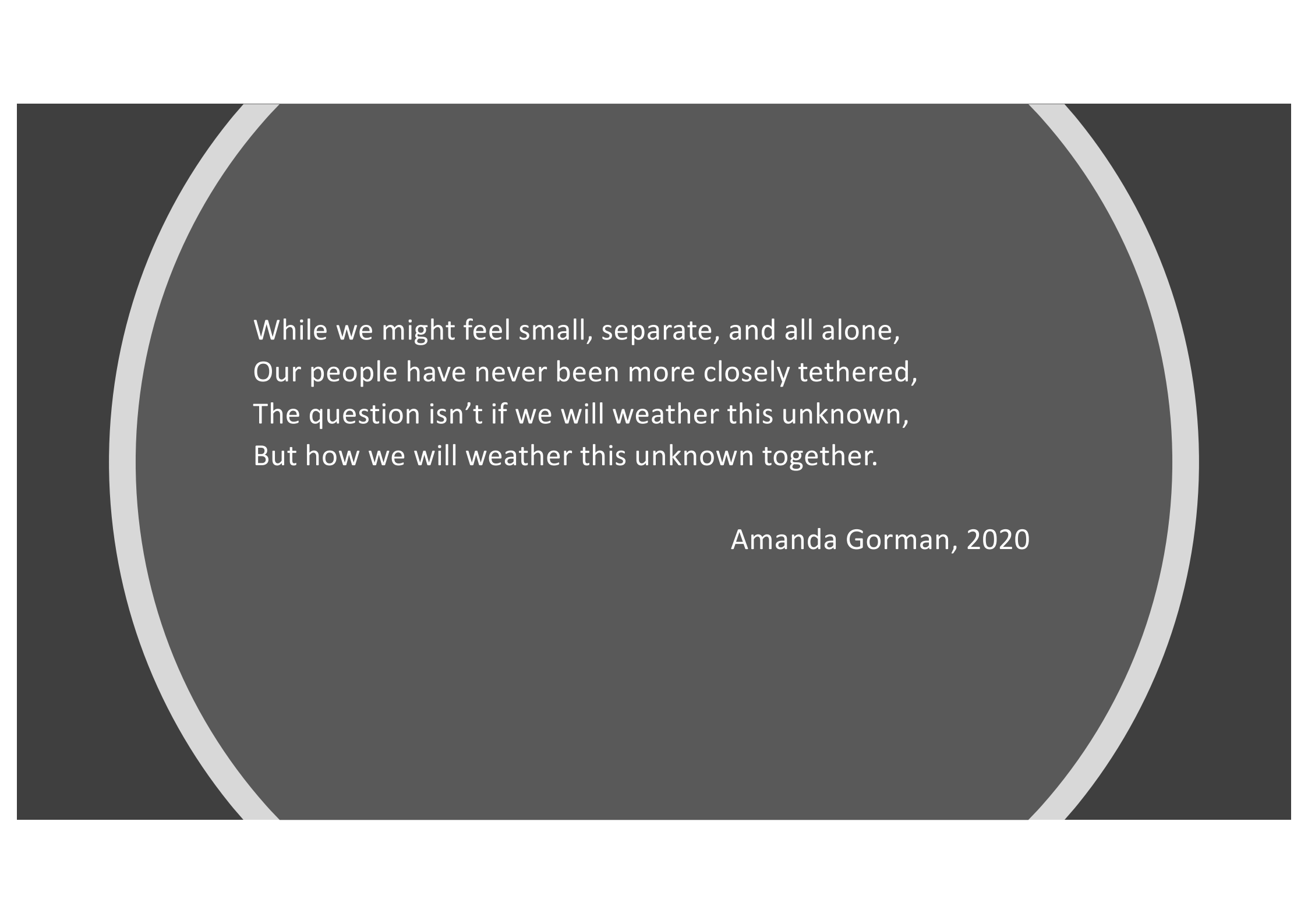


Final remarks

- Low number of COVID-19 tests most likely masks the true magnitude of the pandemic in Indonesia.
- This presentation estimates that, if by 20 August 2020 the level of tests in Indonesia were similar to those in the US & UK:
 - the expected number of COVID-19 cases by 20 August 2020 could have been between 560 thousand - 1.8 million (or 4 to 12 times the official number),
 - the expected number of COVID-19 deaths by 20 August 2020 could have been between 47 - 89 thousand COVID-19 deaths; or 7 - 14 times the official number.
 - These numbers are still growing as the spread of COVID-19 continues. With the current rate of transmission, it is expected that the numbers would double in about 40 - 45 days.
- Literature have shown that disease outbreaks would produce significant short- and long-term health and educational impacts.
- Be prepared for the worst: improving the management of the pandemic and supporting educational systems are critical.

Policy options

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- Health policies:
 - More is good: more testing, better testing, tracing, and treatment.
 - Stricter is good: firmed and enforced rules on social distancing & regional containment.
 - Health sector: faster disbursement of budget, reforms to strengthen the public health system.
 - Education policies:
 - COVID-19 stimulus must include funding to support the educational system:
 - expand scholarship programs (such as BOS and PIP), the development of digital infrastructure for education, and support for education in remote areas.
 - PKH for families with school-aged children should be increased by 25% (corresponding to those received by families with pregnant women and/or children age 0-6).



While we might feel small, separate, and all alone,
Our people have never been more closely tethered,
The question isn't if we will weather this unknown,
But how we will weather this unknown together.

Amanda Gorman, 2020