COVID-19 Results Briefing

Indonesia

August 5, 2021

This document contains summary information on the latest projections from the IHME model on COVID-19 in Indonesia. The model was run on August 3, 2021, with data through August 2, 2021.

Current situation

Cases, hospitalizations, and deaths started to decline in Indonesia but that decline seems to be slowing down or stalling. The situation remains fragile due to the circulation of the Delta variant and the large number of people who are susceptible to it. We estimate that about 75% of the population is susceptible which will sustain a surge unless major protective measures are taken. The main strategies to manage the epidemic in this phase include 1) community outreach and messaging to increase vaccination in local communities with high vaccine hesitancy; 2) implementation of vaccination mandates by employers and schools; 3) re-imposition of mask mandates for all in settings with rapid increases in transmission; 4) reporting of cases, hospitalizations, and deaths by vaccination status and time since vaccination to help assess vaccine effectiveness and how it changes over time; and 5) long-term planning of resources for the likely heavy demand for hospitalization due to COVID-19 and flu in the winter.

- Daily hospital census reported 137,900 admissions on August 2, 2021. Daily infections on August 2, 2021 were 782,700 (Figure 1).
- Daily reported cases in the last week (through August 2) increased to 42,700 per day on average compared to 41,700 the week before (Figure 2).
- Reported deaths due to COVID-19 in the last week increased to 1,700 per day on average compared to 1,500 the week before (Figure 3).
- Excess deaths due to COVID-19 in the last week increased to 4,600 per day on average compared to 3,900 the week before (Figure 3). This makes COVID-19 the number 1 cause of death in Indonesia this week (Table 1). Estimated excess daily deaths due to COVID-19 were 2.7 times larger than the reported number of deaths.
- The daily reported COVID-19 death rate is greater than 4 per million in Indonesia (Figure 4).
- The daily rate of excess deaths due to COVID-19 is greater than 4 per million (Figure 4).
- We estimated that 28% of people in Indonesia have been infected as of August 2 (Figure 6).
- Effective R, computed using cases, hospitalizations, and deaths, was 0.96 on July 22 (Figure 7).

- The infection-detection rate in Indonesia was close to 6% on August 2 (Figure 8).
- Based on the GISAID and various national databases, combined with our variant spread model, we estimate the current prevalence of variants of concern (Figure 9). We estimate that B.1.617.2 is circulating in the country.

Trends in drivers of transmission

- Mobility last week was 29% lower than the pre-COVID-19 baseline (Figure 11).
- As of August 2, in the COVID-19 Trends and Impact Survey, 78% of people self-report that they always wore a mask when leaving their home, about the same as last week (Figure 13).
- There were 34 diagnostic tests per 100,000 people on August 2 (Figure 15).
- In Indonesia 71.3% of people say they would accept or would probably accept a vaccine for COVID-19. This is down by 0.7 percentage points from last week. The fraction of the population who are open to receiving a COVID-19 vaccine in the region ranges from 58% in Maldives to 90% in Sri Lanka (Figure 19).
- In our current reference scenario, we expect that about 114.3 million people will be vaccinated with at least one dose by December 1.
- In our current reference scenario, we expect that by December 1, 54% of people will be immune to non-escape variants and 51% of people will be immune to escape variants (Figure 20).

Projections

- In our **reference scenario**, which represents what we think is most likely to happen, our model projects 224,000 cumulative reported deaths due to COVID-19 on December 1. This represents 127,000 additional deaths from August 2 to December 1. Daily reported deaths will rise to 1,700 by August 4, 2021 (Figure 21).
- Under our **reference scenario**, our model projects 600,000 cumulative excess deaths due to COVID-19 on December 1. This represents 340,000 additional deaths from August 2 to December 1. Daily excess deaths due to COVID-19 will rise to 4,550 by August 4, 2021 (Figure 21).
- If **universal mask coverage (95%)** were attained in the next week, our model projects 22,000 fewer cumulative reported deaths compared to the reference scenario on December 1.
- If **universal mask coverage (95%)** were attained in the next week, our model projects 58,000 fewer cumulative excess deaths due to COVID-19 compared to the reference scenario on December 1.
- Under our **worse scenario**, our model projects 310,000 cumulative reported deaths on December 1, an additional 86,000 deaths compared to our reference scenario. Daily reported deaths in the worse scenario will rise to 2,530 by October 8, 2021 (Figure 21).

- Under our **worse scenario**, our model projects 832,000 cumulative excess deaths due to COVID-19 on December 1, an additional 232,000 deaths compared to our reference scenario. Daily excess deaths due to COVID-19 in the worse scenario will rise to 6,770 by October 8, 2021 (Figure 21).
- Daily infections in the reference scenario will decline to 95,870 on December 1, 2021 (Figure 22). Daily infections in the worse scenario will rise to 1,297,830 by September 14, 2021 (Figure 22).
- Daily cases in the reference scenario will rise to 42,960 by August 7, 2021 (Figure 23). Daily cases in the worse scenario will rise to 77,030 by September 25, 2021 (Figure 23).
- Figure 24 compares our reference scenario forecasts to other publicly archived models. Forecasts are widely divergent.
- At some point from August through December 1, Indonesia will have high or extreme stress on hospital beds and intensive care unit (ICU) capacity (Figure 25 and 26).

Model updates

In this week's estimates, we have modified the effectiveness of the mRNA vaccines (Pfizer and Moderna) and AstraZeneca based on studies that show higher vaccine efficacy for preventing severe disease, hospitalization, and death, compared to all symptomatic disease. This adjustment more accurately reflects how these estimates of vaccine effectiveness are used in our model; that is, to reduce the infection-fatality rate (IFR) and the infection- hospitalization rate (IHR). We used the average ratio of vaccine effectiveness for hospitalization compared to symptomatic disease from studies in the United Kingdom and Canada (1,2,3,4) to modify the estimated effectiveness from the clinical trials for these vaccines. This was done separately for ancestral variants (based on B.1.1.7) and current variants of concern (based on B.1.617.2). The largest change, based on these data, was for the AstraZeneca vaccine, as shown in our updated vaccine effectiveness table. To be consistent with this new approach, we also used the vaccine effectiveness against severe disease for the Janssen (Johnson & Johnson) vaccine instead of the efficacy against all symptomatic disease, using results from the clinical trial (5,6,7).

1. https://khub.net/web/phe-national/public-library/-/document_library/v2WsRK3ZlEig/view/479607266
2. https://www.nejm.org/doi/full/10.1056/NEJMoa2108891
3. https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)01358-1/fulltext#supplementaryMaterial
4. https://www.medrxiv.org/content/10.1101/2021.06.28.21259420v2
5. https://www.fda.gov/media/146218/download
6. https://www.fda.gov/media/146217/download
7. https://www.fda.gov/media/146219/download

Figure 1. Daily COVID-19 hospital census and infections

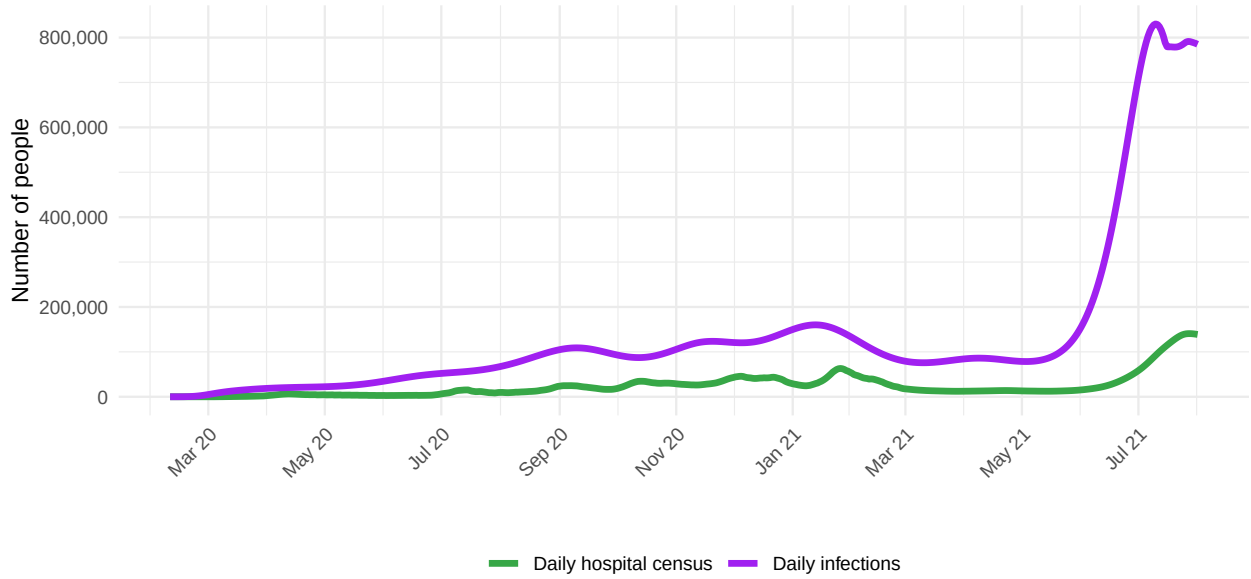


Figure 2. Reported daily COVID-19 cases, moving average

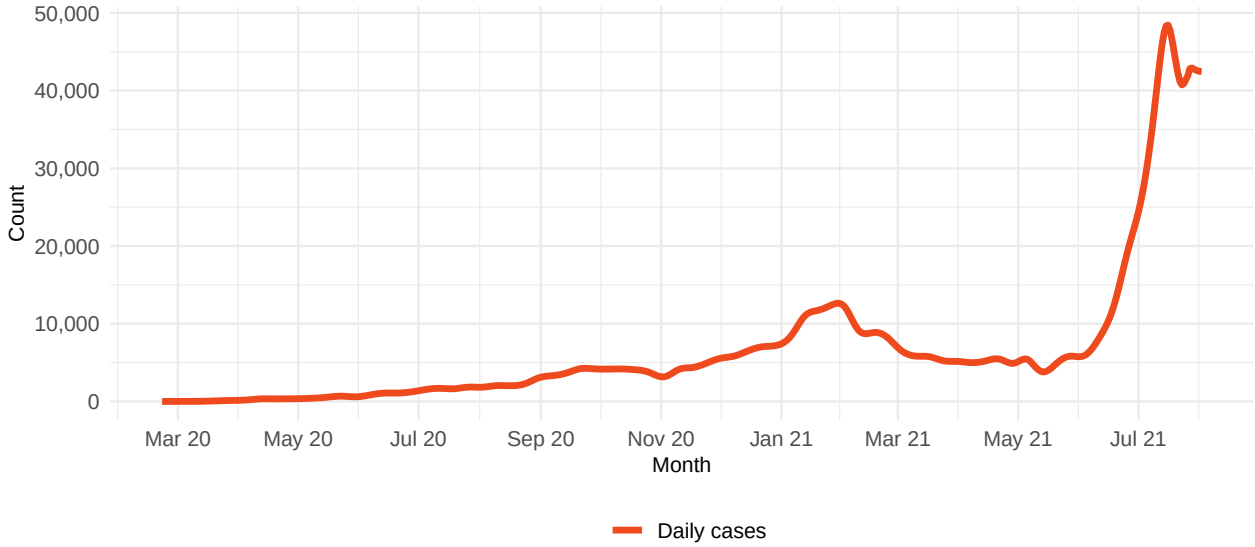


Table 1. Ranking of excess deaths due to COVID-19 among the leading causes of mortality this week, assuming uniform deaths of non-COVID causes throughout the year

Cause name	Weekly deaths	Ranking
COVID-19	32,075	1
Stroke	6,372	2
Ischemic heart disease	4,718	3
Diabetes mellitus	2,045	4
Cirrhosis and other chronic liver diseases	1,705	5
Tuberculosis	1,472	6
Chronic obstructive pulmonary disease	1,379	7
Diarrheal diseases	1,146	8
Hypertensive heart disease	973	9
Tracheal, bronchus, and lung cancer	951	10

Figure 3. Smoothed trend estimate of reported daily COVID-19 deaths (blue) and excess daily deaths due to COVID-19 (orange)

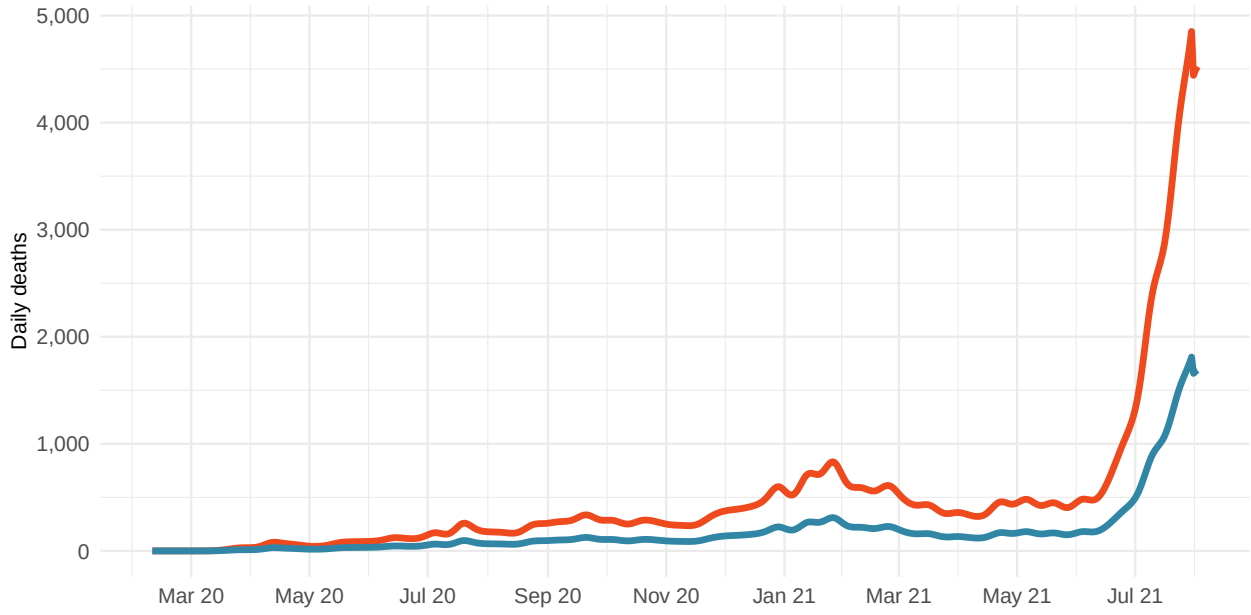
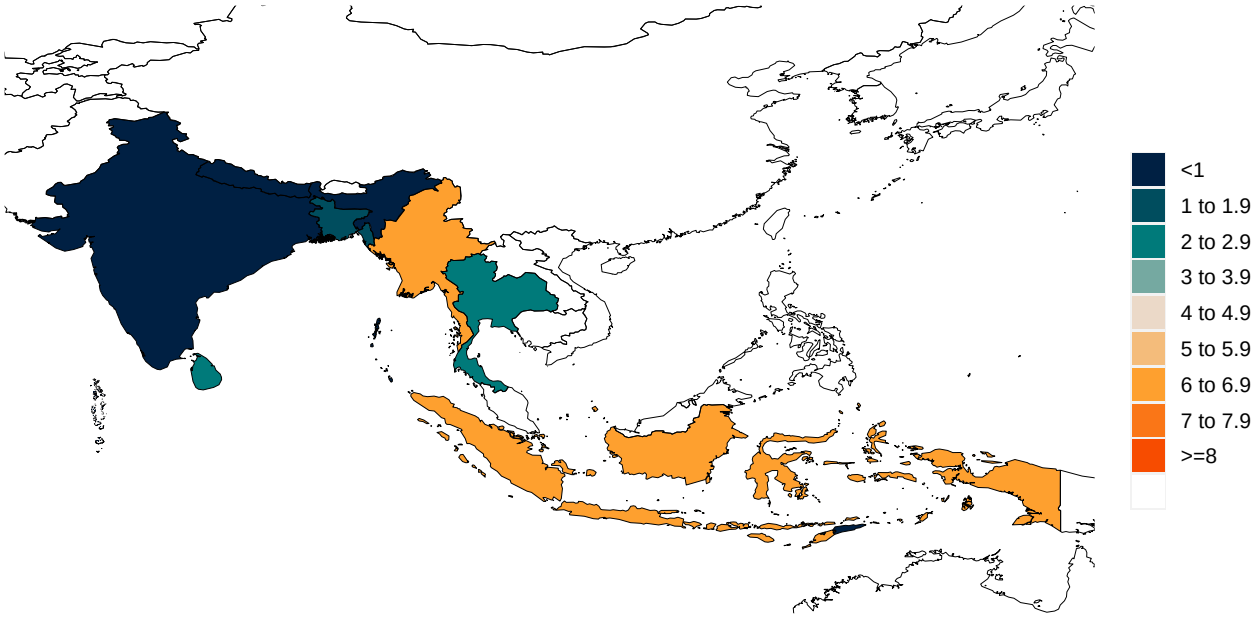


Figure 4. Daily COVID-19 death rate per 1 million on August 2, 2021

A. Daily reported COVID-19 death rate per 1 million



B. Daily excess COVID-19 death rate per 1 million

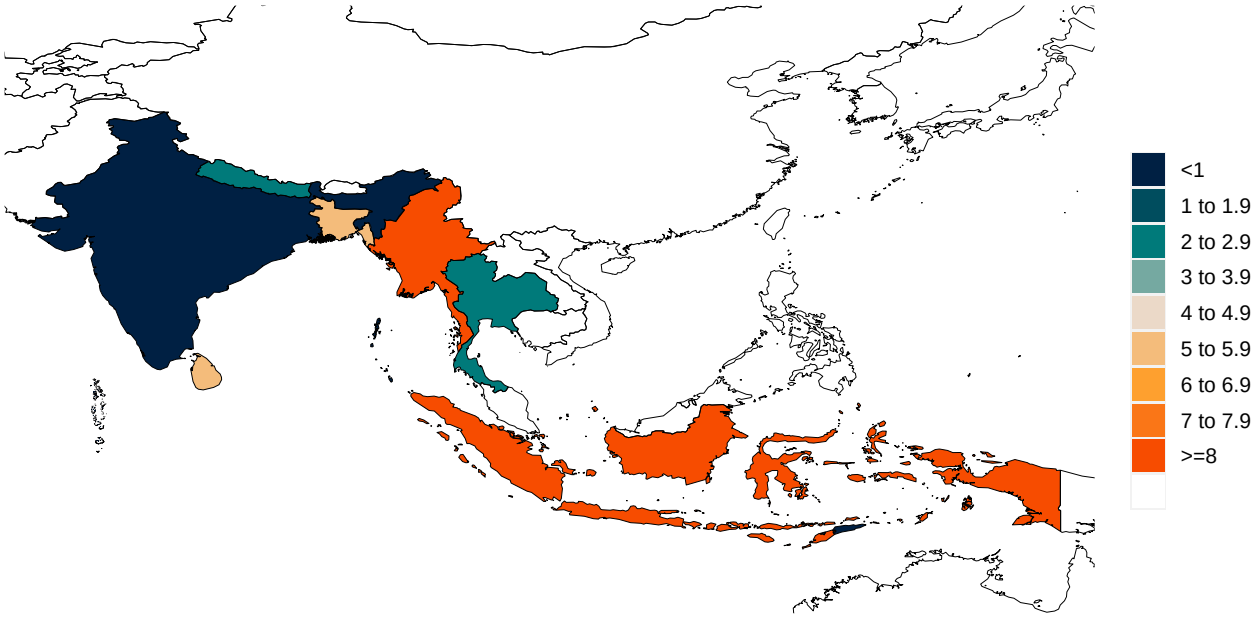


Figure 5. Cumulative COVID-19 deaths per 100,000 on August 2, 2021

A. Reported cumulative COVID-19 deaths per 100,000

B. Excess cumulative COVID-19 deaths per 100,000

Figure 6. Estimated percent of the population infected with COVID-19 on August 2, 2021

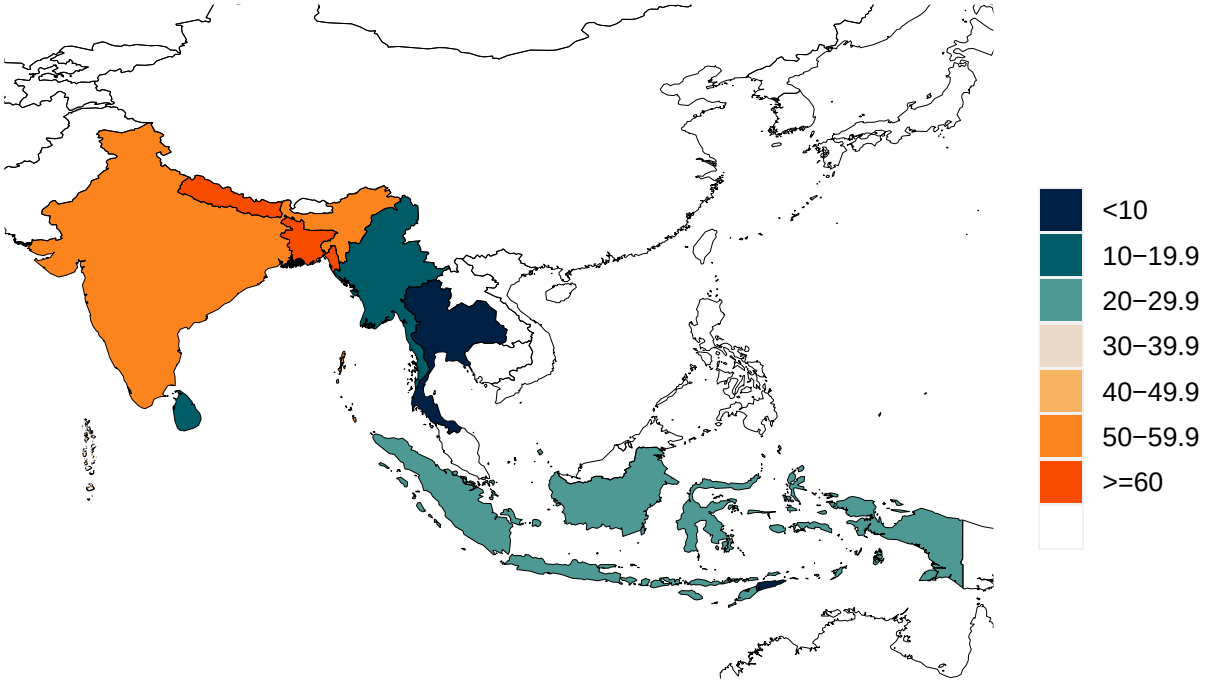


Figure 7. Mean effective R on July 22, 2021. The estimate of effective R is based on the combined analysis of deaths, case reporting, and hospitalizations where available. Current reported cases reflect infections 11-13 days prior, so estimates of effective R can only be made for the recent past. Effective R less than 1 means that transmission should decline, all other things being held the same.

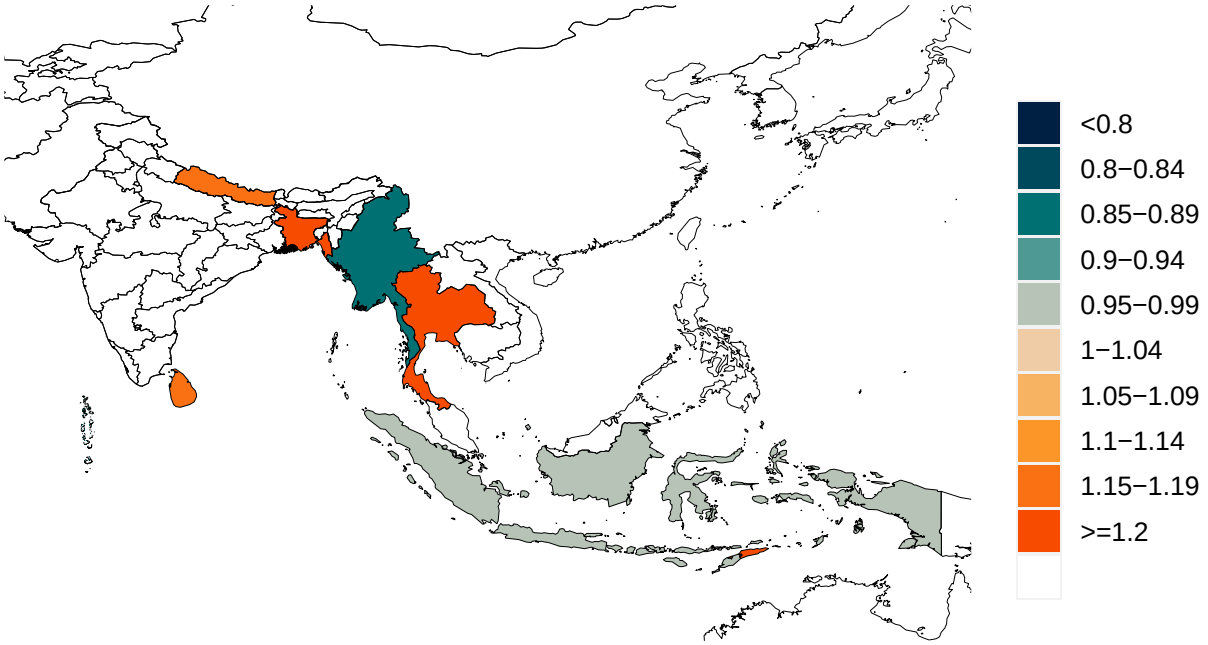


Figure 8. Percent of COVID-19 infections detected. This is estimated as the ratio of reported daily COVID-19 cases to estimated daily COVID-19 infections based on the SEIR disease transmission model. Due to measurement errors in cases and testing rates, the infection-detection rate can exceed 100% at particular points in time.

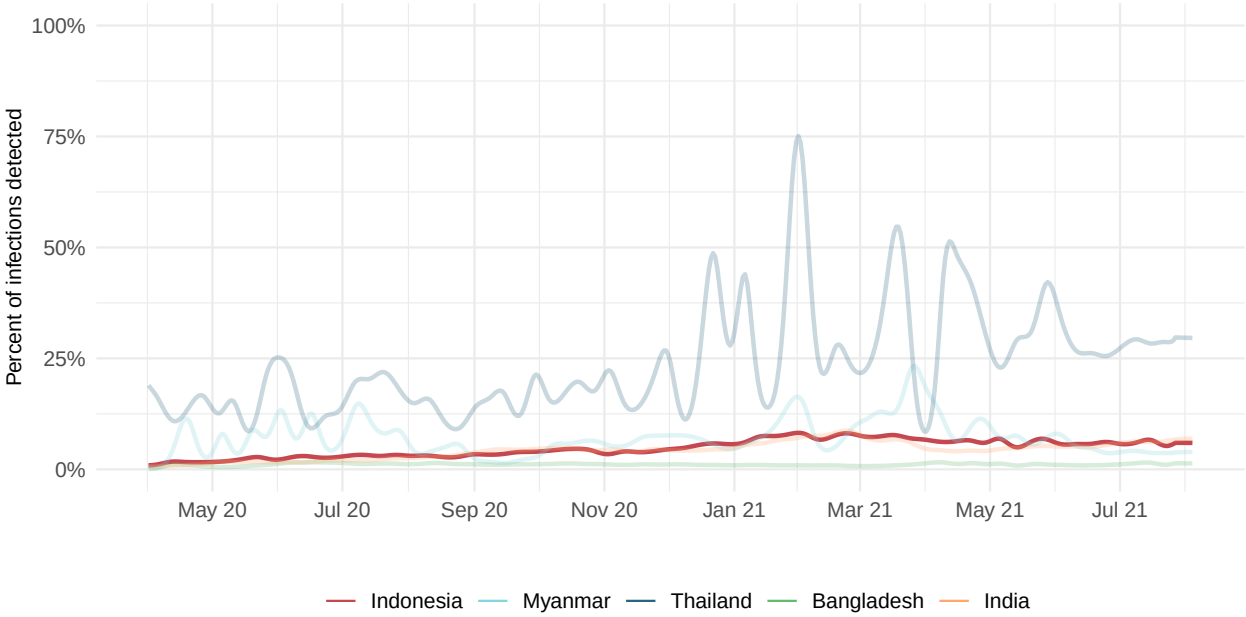
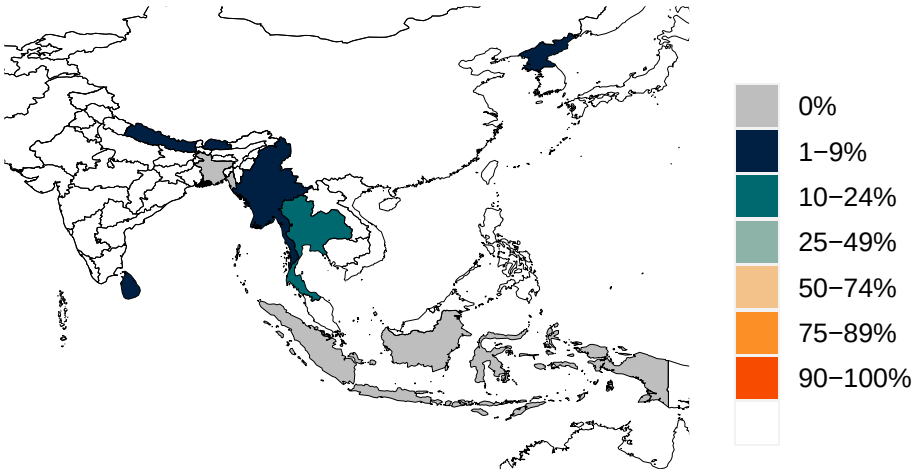
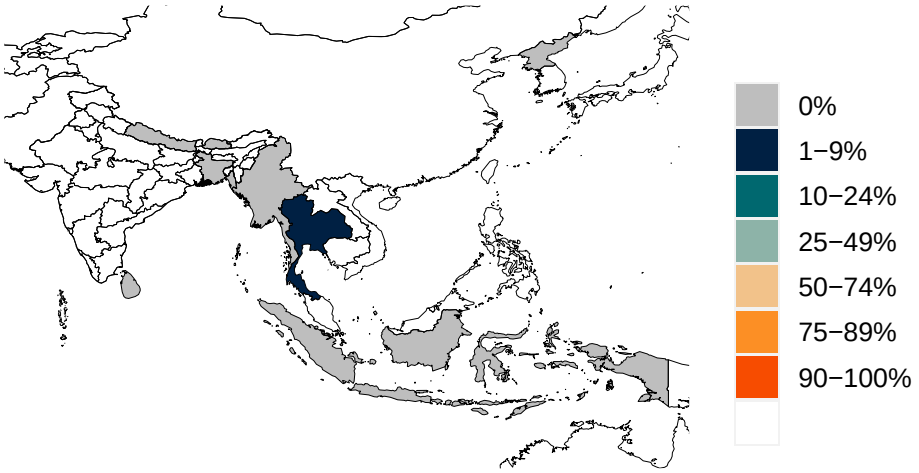


Figure 9. Estimated percent of circulating SARS-CoV-2 for primary variant families on August 2, 2021

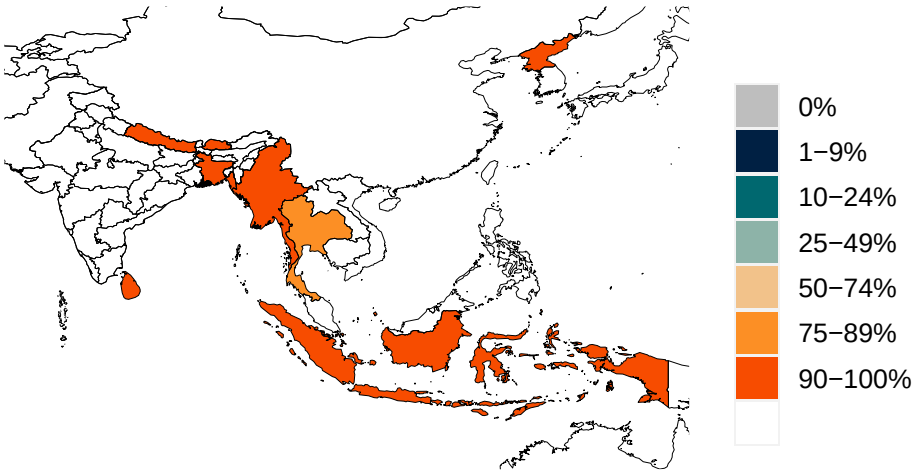
A. Estimated percent B.1.1.7 variant



B. Estimated percent B.1.351 variant

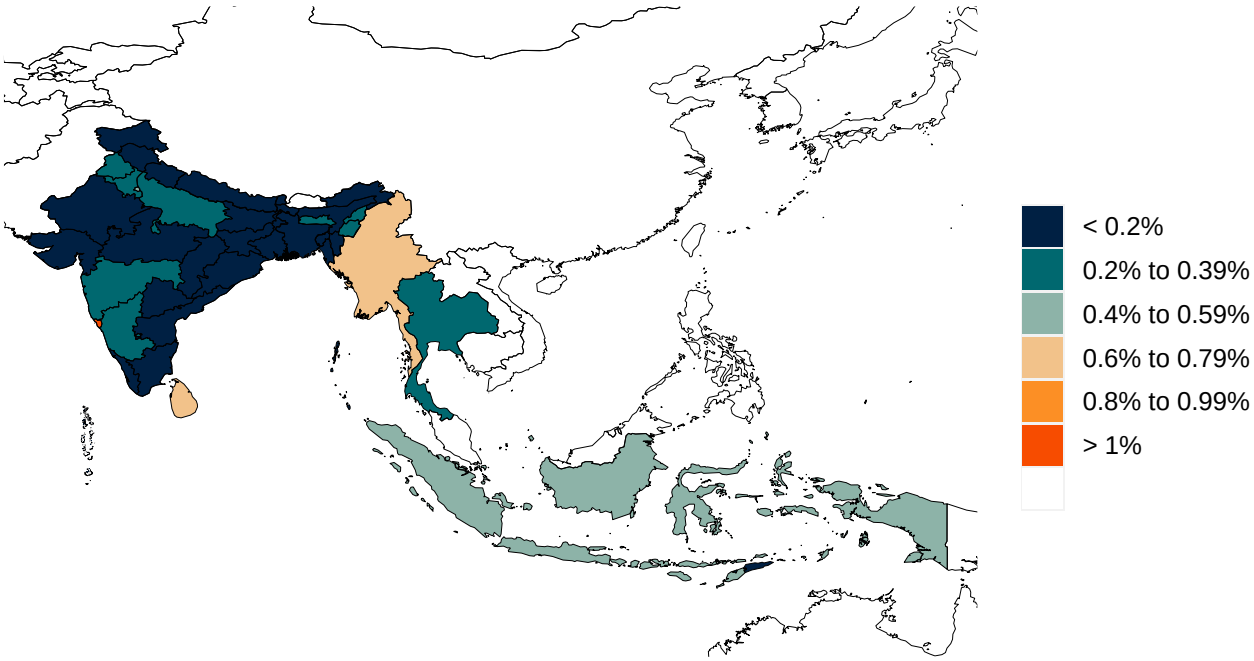


C. Estimated percent B.1.617 variant



D. Estimated percent P.1 variant

Figure 10. Infection-fatality ratio on August 2, 2021



Critical drivers

Table 2. Current mandate implementation

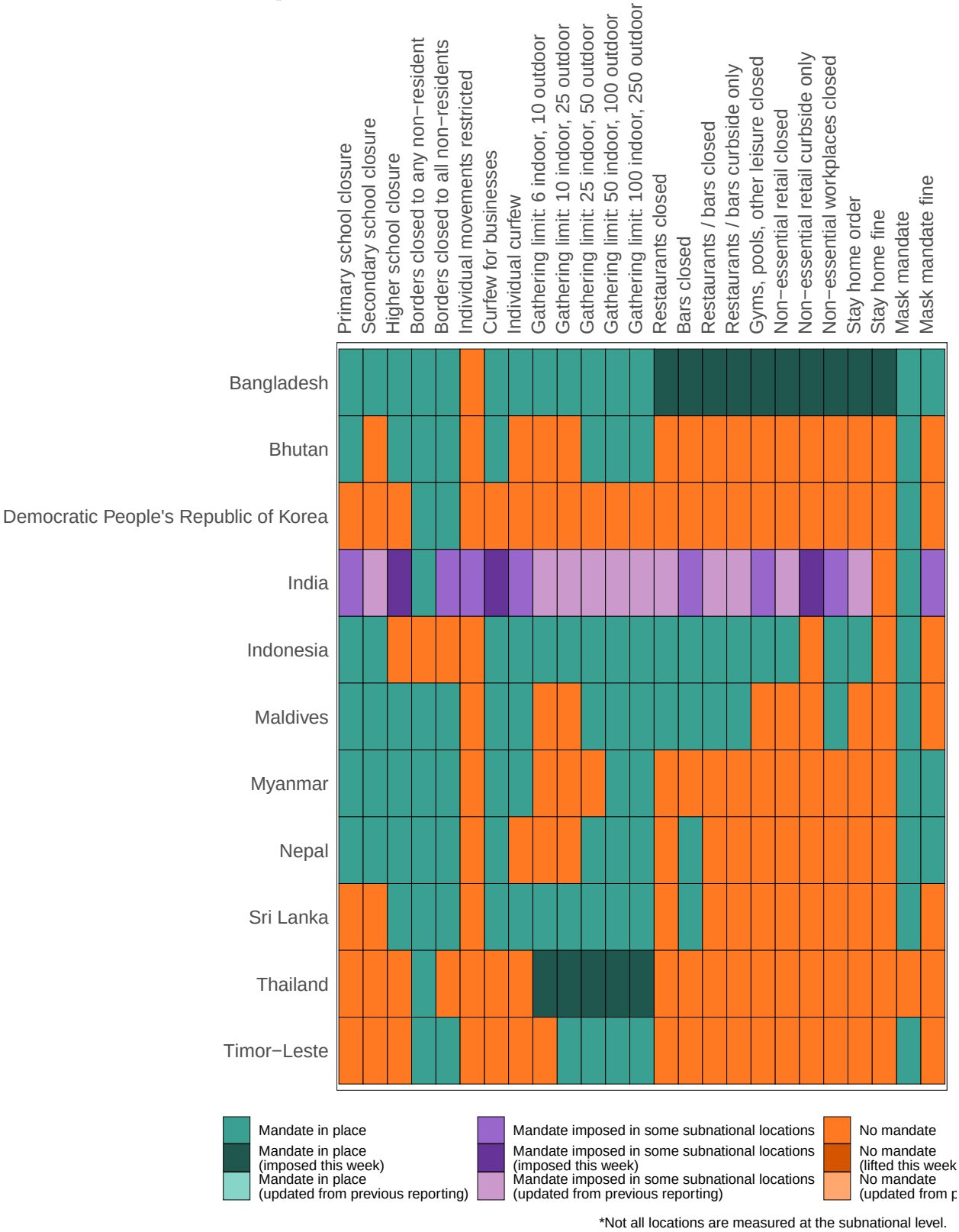


Figure 11. Trend in mobility as measured through smartphone app use compared to January 2020 baseline

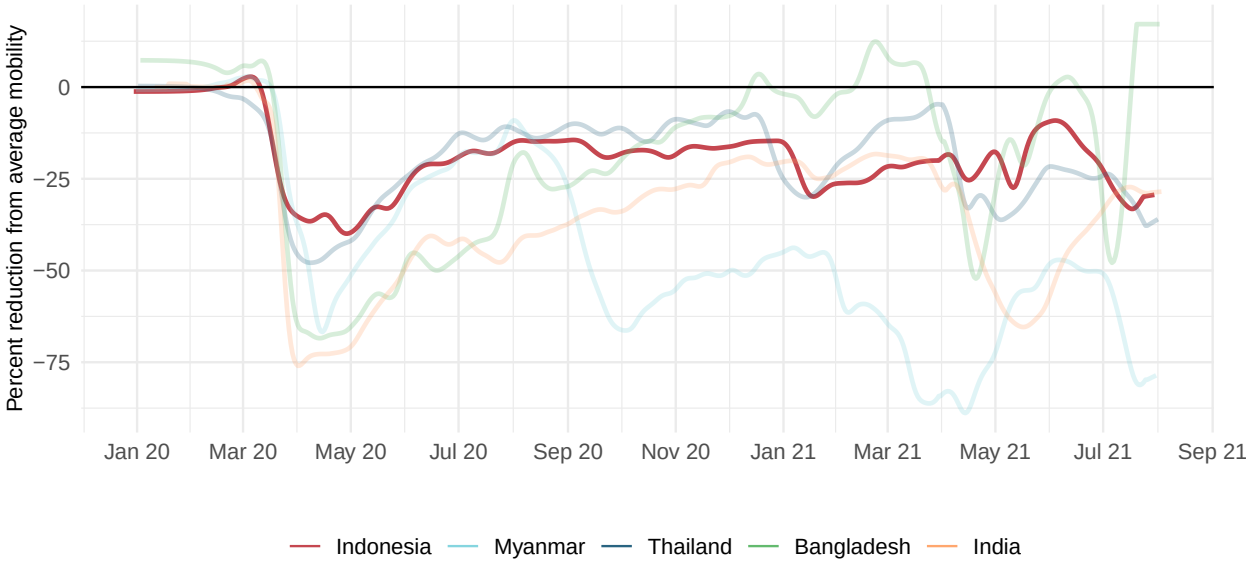


Figure 12. Mobility level as measured through smartphone app use compared to January 2020 baseline (percent) on August 2, 2021

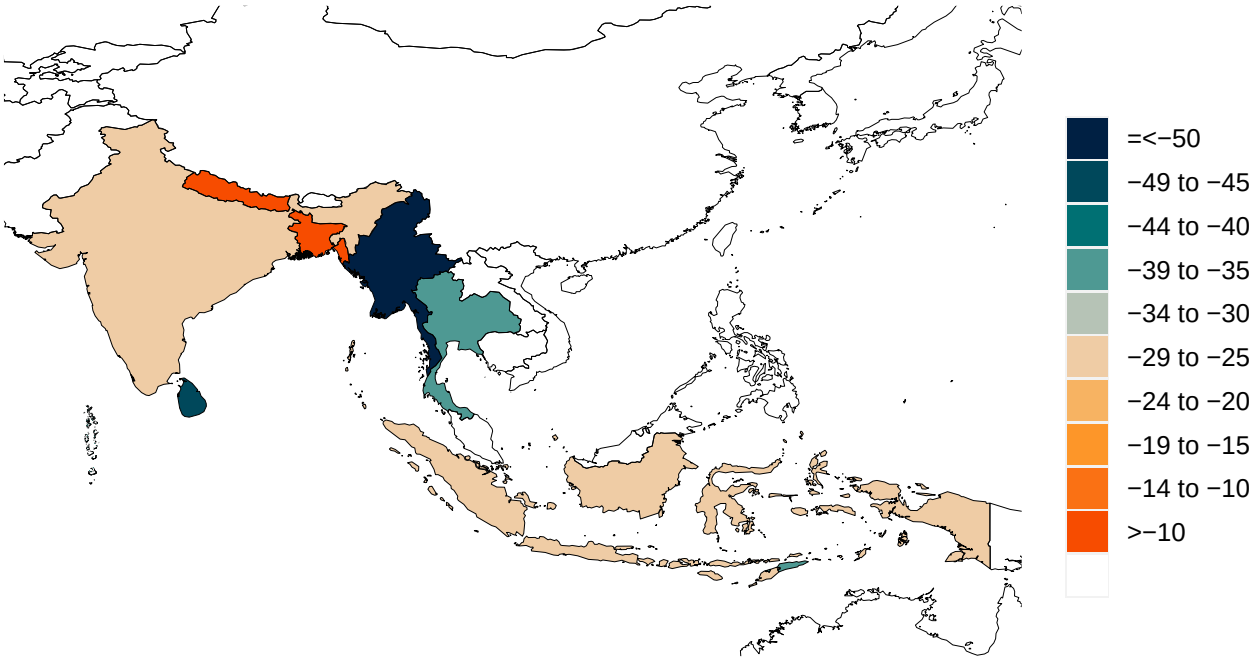


Figure 13. Trend in the proportion of the population reporting always wearing a mask when leaving home

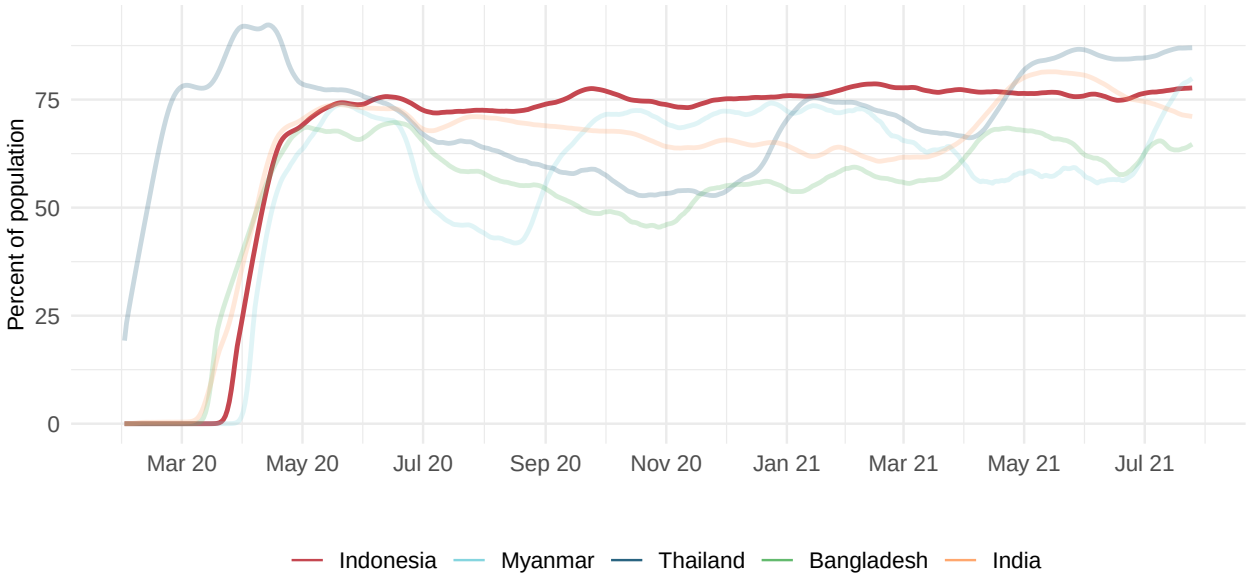


Figure 14. Proportion of the population reporting always wearing a mask when leaving home on August 2, 2021

Figure 15. Trend in COVID-19 diagnostic tests per 100,000 people

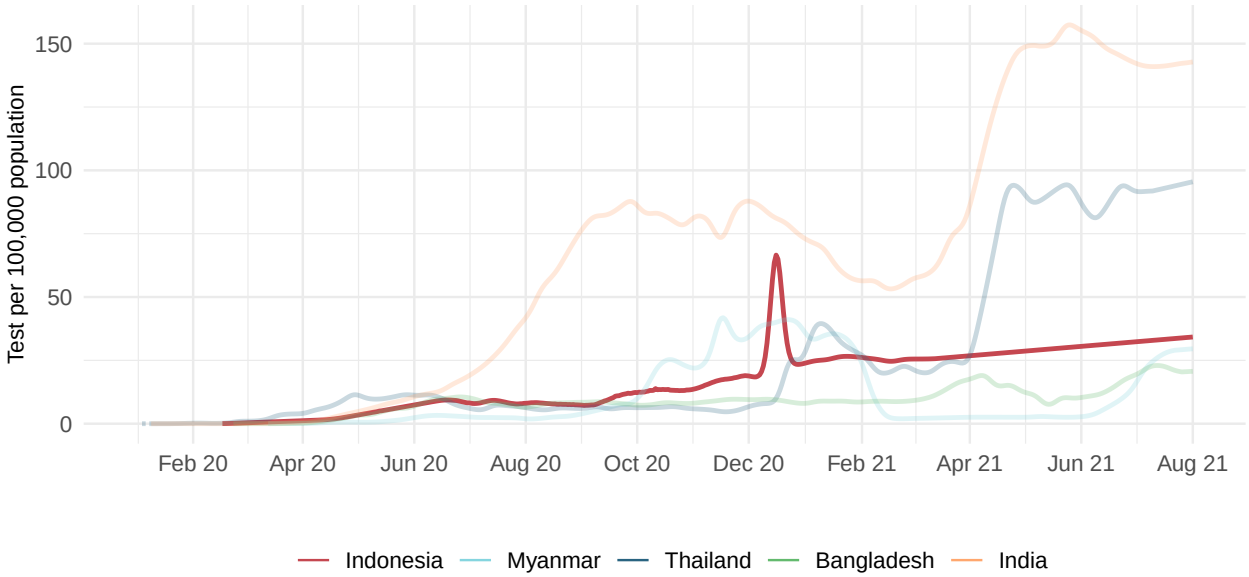


Figure 16. COVID-19 diagnostic tests per 100,000 people on August 2, 2021

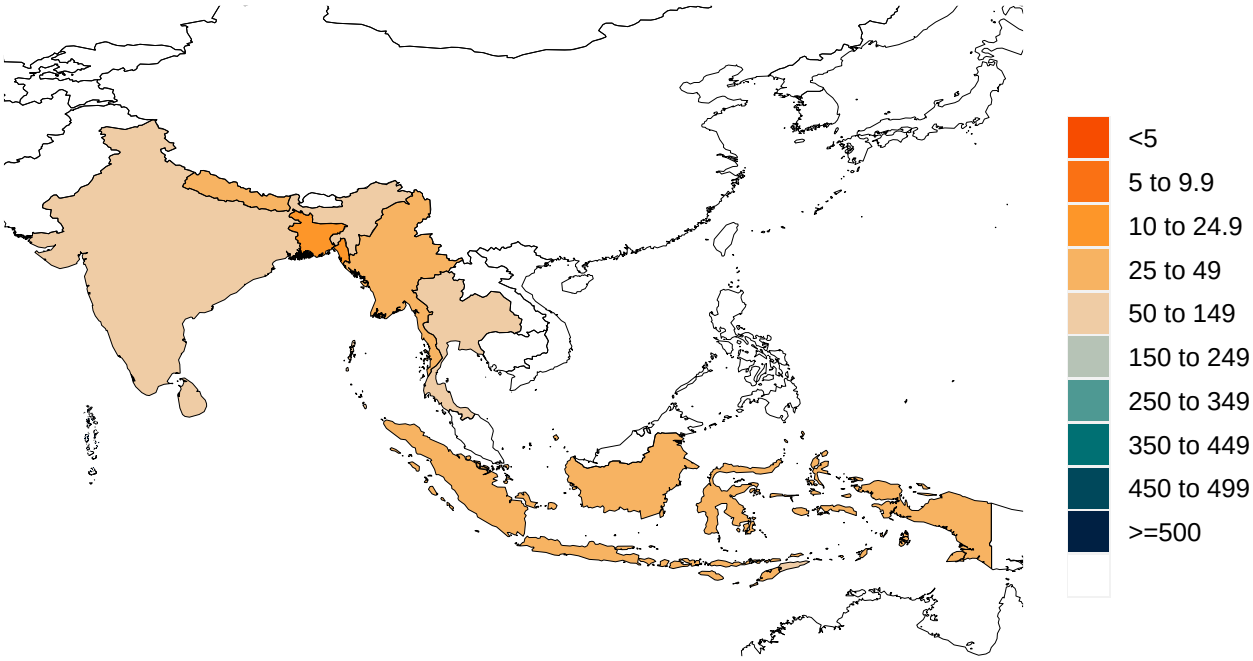


Figure 17. Increase in the risk of death due to pneumonia on February 1 compared to August 1

Table 3. Estimates of vaccine efficacy for specific vaccines used in the model at preventing disease and infection. The SEIR model uses variant-specific estimates of vaccine efficacy at preventing symptomatic disease and at preventing infection. We use data from clinical trials directly, where available, and make estimates otherwise. More information can be found on our website.

Vaccine	Efficacy at preventing disease: D614G & B.1.1.7	Efficacy at preventing infection: D614G & B.1.1.7	Efficacy at preventing disease: B.1.351, B.1.617, & P.1	Efficacy at preventing infection: B.1.351, B.1.617, & P.1
AstraZeneca	85%	52%	83%	51%
CoronaVac	50%	44%	43%	38%
Covaxin	78%	69%	68%	60%
Janssen	86%	72%	85%	56%
Moderna	94%	89%	93%	80%
Novavax	89%	79%	79%	69%
Pfizer/BioNTech	92%	86%	90%	78%
Sinopharm	73%	65%	63%	56%
Sputnik-V	92%	81%	80%	70%
Tianjin CanSino	66%	58%	57%	50%
Other vaccines	75%	66%	65%	57%
Other vaccines (mRNA)	91%	86%	89%	78%

Figure 18. Trend in the estimated proportion of the adult (18+) population that have been vaccinated or would probably or definitely receive the COVID-19 vaccine if available

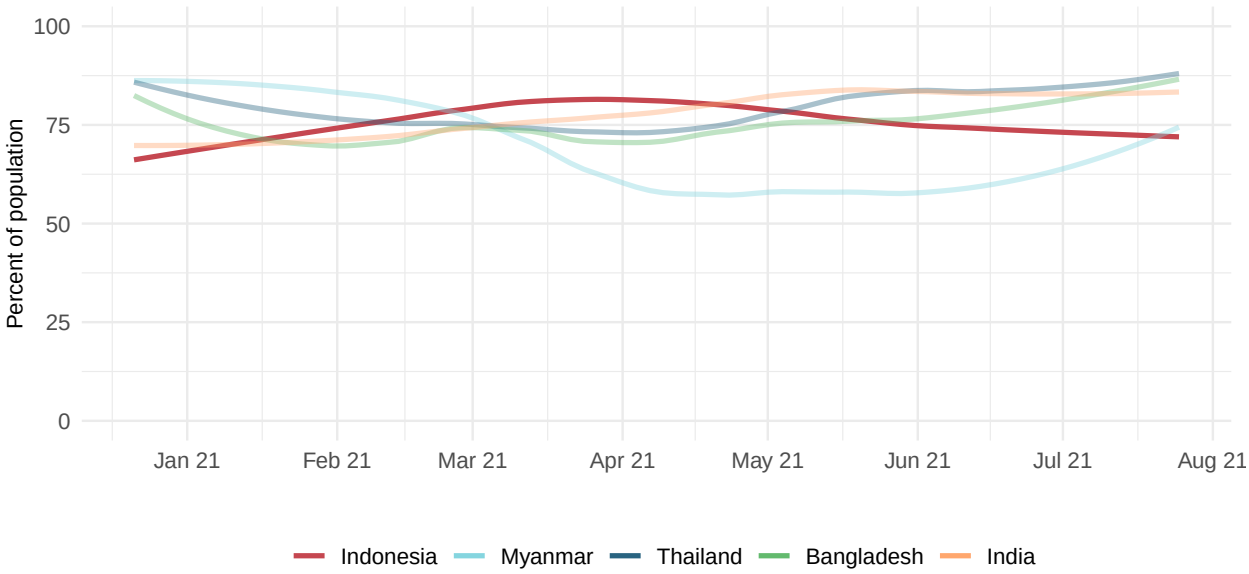


Figure 19. This figure shows the estimated proportion of the adult (18+) population that has been vaccinated or would probably or definitely receive the COVID-19 vaccine if available

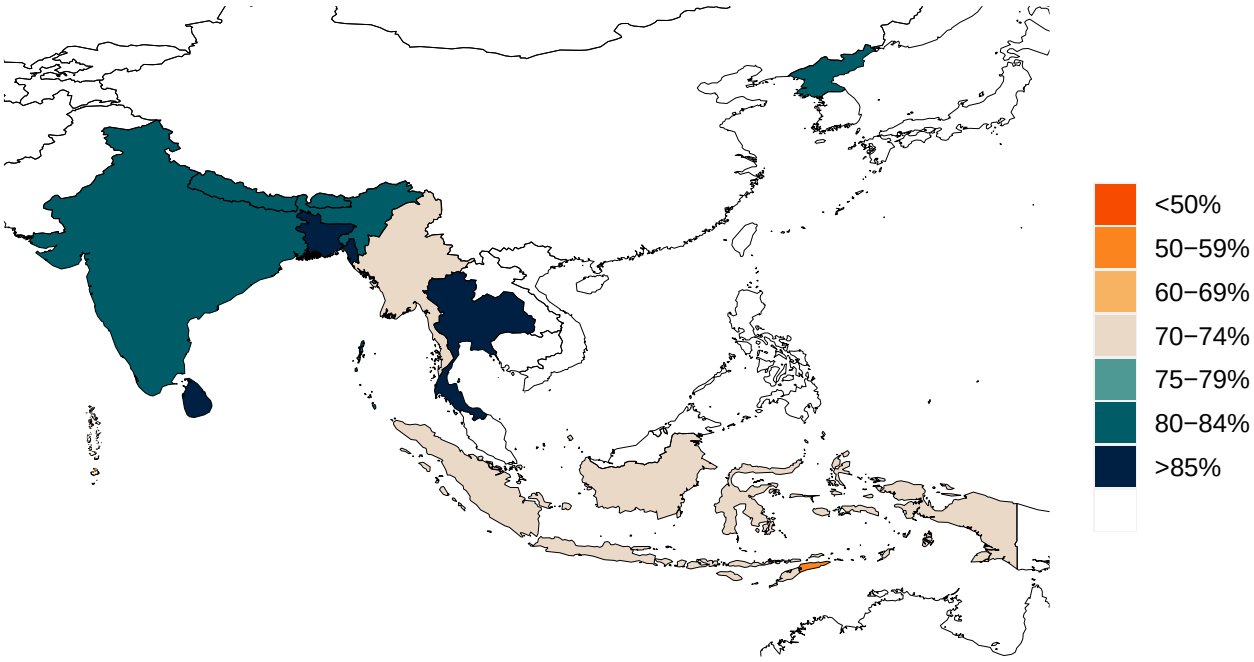
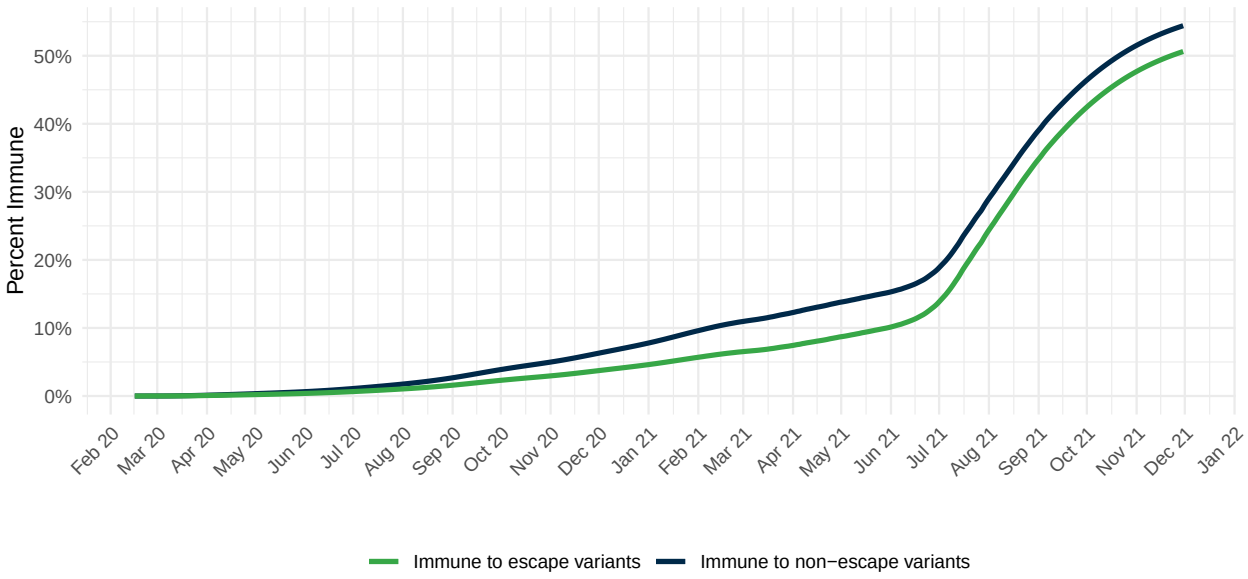


Figure 20. Percentage of people who are immune to non-escape variants and the percentage of people who are immune to escape variants



Projections and scenarios

We produce three scenarios when projecting COVID-19. The **reference scenario** is our forecast of what we think is most likely to happen:

- Vaccines are distributed at the expected pace.
- Governments adapt their response by re-imposing social distancing mandates for 6 weeks whenever daily deaths reach 8 per million, unless a location has already spent at least 7 of the last 14 days with daily deaths above this rate and not yet re-imposed social distancing mandates. In this case, the scenario assumes that mandates are re-imposed when daily deaths reach 15 per million.
- Variants B.1.1.7 (first identified in the UK), B.1.351 (first identified in South Africa), and P1 (first identified in Brazil) continue to spread from locations with (a) more than 5 sequenced variants, and (b) reports of community transmission, to adjacent locations following the speed of variant scale-up observed in the regions of the United Kingdom.

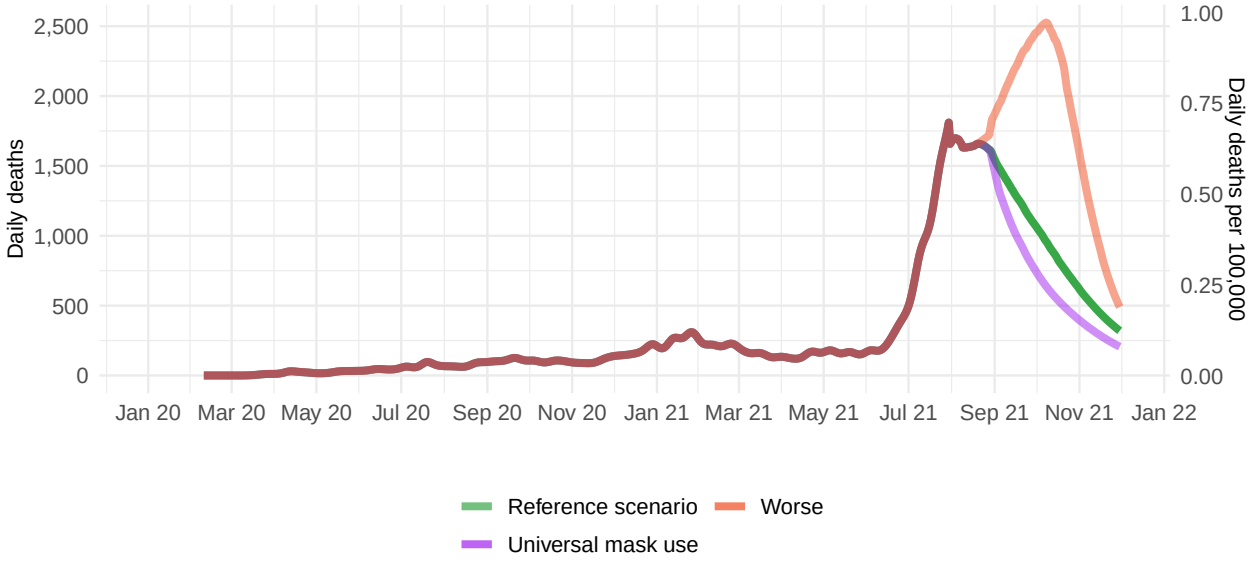
The **worse scenario** modifies the reference scenario assumptions in two ways:

- First, it assumes that variants B.1.351 or P.1 begin to spread within three weeks in adjacent locations that do not already have B.1.351 or P.1 community transmission.
- Second, it assumes that all those vaccinated increase their mobility toward pre-COVID-19 levels.

The **universal masks scenario** makes all the same assumptions as the reference scenario but also assumes 95% of the population wear masks in public in every location.

Figure 21. Daily COVID-19 deaths until December 01, 2021 for three scenarios

A. Reported daily COVID-19 death per 100,000



B. Excess daily COVID-19 deaths per 100,000

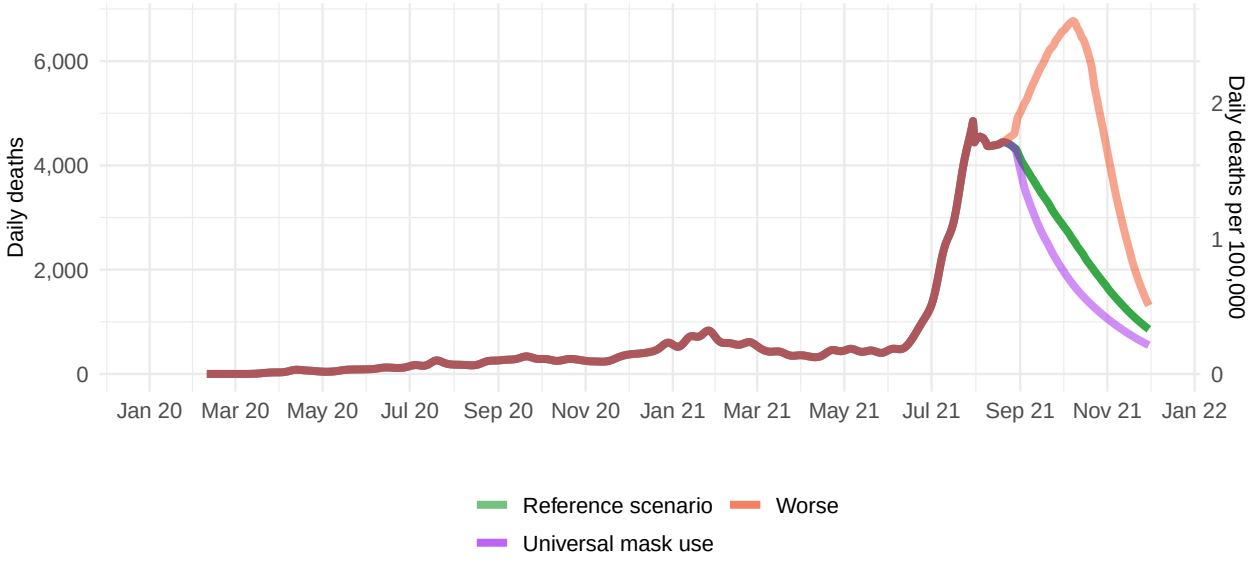


Figure 22. Daily COVID-19 infections until December 01, 2021 for three scenarios

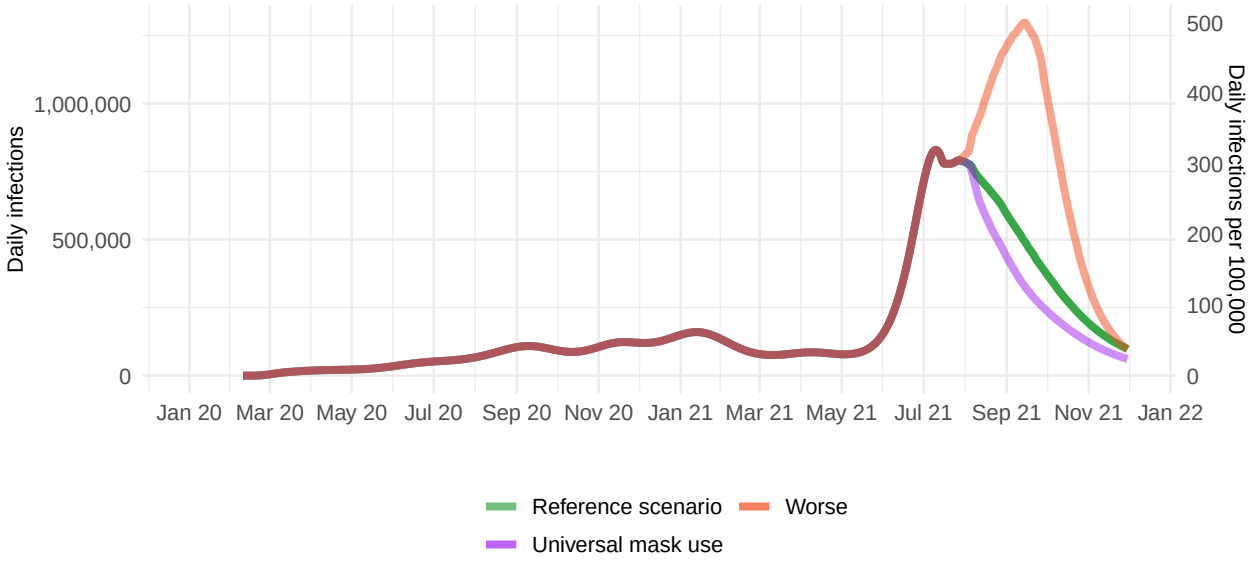


Figure 23. Daily COVID-19 reported cases until December 01, 2021 for three scenarios

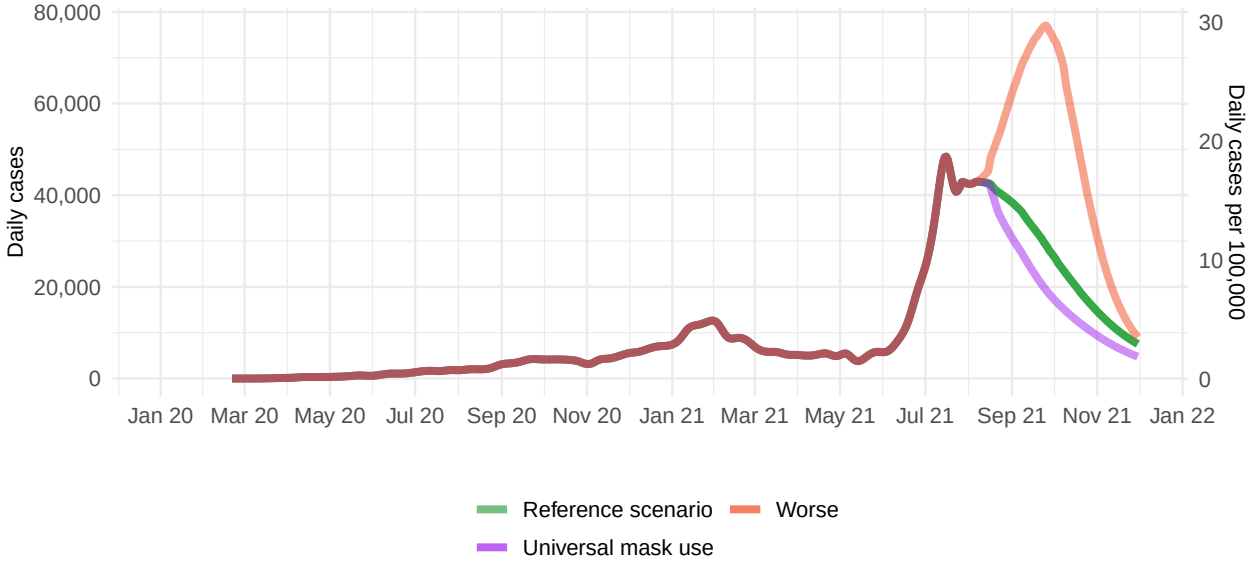


Figure 24. Comparison of reference model projections with other COVID modeling groups. For this comparison, we are including projections of daily COVID-19 deaths from other modeling groups when available: Delphi from the Massachusetts Institute of Technology (Delphi), Imperial College London (Imperial), The Los Alamos National Laboratory (LANL), and the SI-KJalpha model from the University of Southern California (SIKJalpha). Daily deaths from other modeling groups are smoothed to remove inconsistencies with rounding. Regional values are aggregates from available locations in that region.

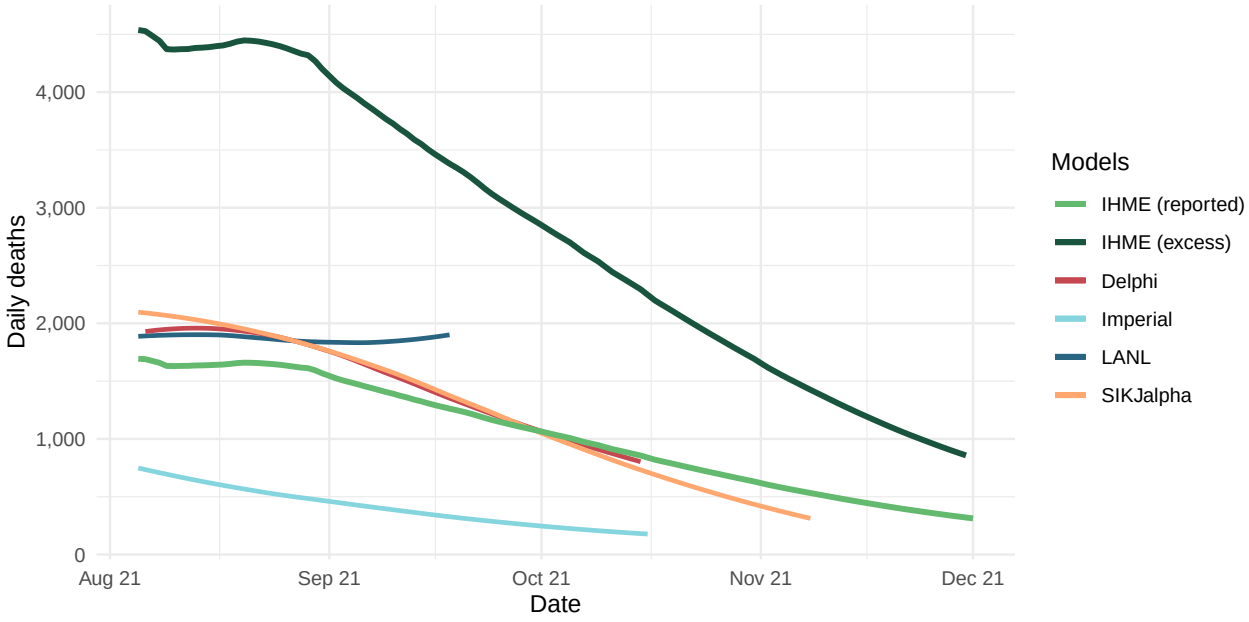


Figure 25. The estimated inpatient hospital usage is shown over time. The percent of hospital beds occupied by COVID-19 patients is color-coded based on observed quantiles of the maximum proportion of beds occupied by COVID-19 patients. Less than 5% is considered *low stress*, 5-9% is considered *moderate stress*, 10-19% is considered *high stress*, and 20% or greater is considered *extreme stress*.

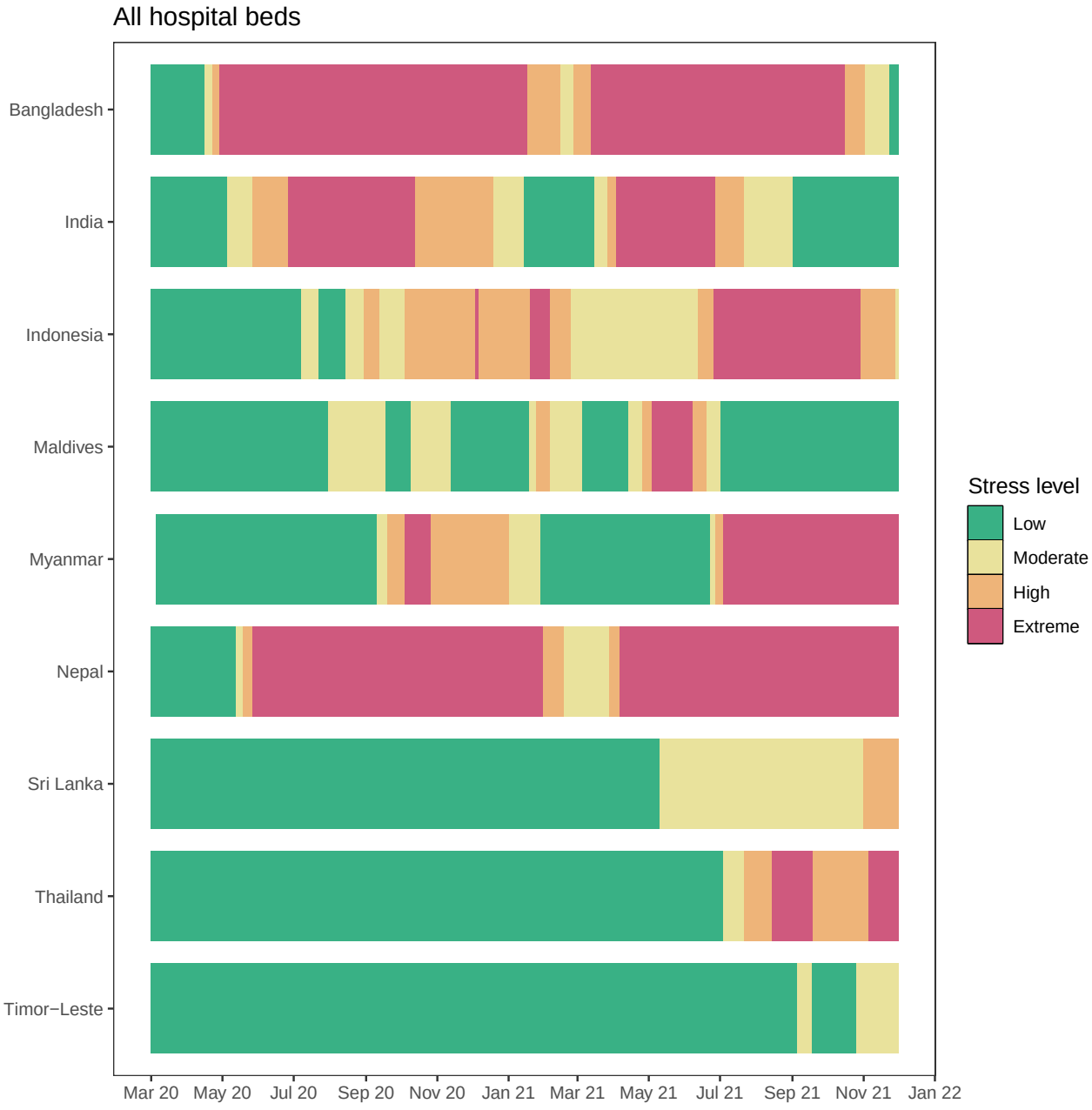


Figure 26. The estimated intensive care unit (ICU) usage is shown over time. The percent of ICU beds occupied by COVID-19 patients is color-coded based on observed quantiles of the maximum proportion of ICU beds occupied by COVID-19 patients. Less than 10% is considered *low stress*, 10-29% is considered *moderate stress*, 30-59% is considered *high stress*, and 60% or greater is considered *extreme stress*.

More information

Data sources:

Mask use and vaccine confidence data are from the The Delphi Group at Carnegie Mellon University and University of Maryland COVID-19 Trends and Impact Surveys, in partnership with Facebook. Mask use data are also from Premise, the Kaiser Family Foundation, and the YouGov COVID-19 Behaviour Tracker survey.

Genetic sequence and metadata are primarily from the GISAID Initiative. Further details available on the COVID-19 model FAQ page.

A note of thanks:

We wish to warmly acknowledge the support of these and others who have made our COVID-19 estimation efforts possible.

More information:

For all COVID-19 resources at IHME, visit http://www.healthdata.org/covid.

Questions? Requests? Feedback? Please contact us at https://www.healthdata.org/covid/contact-us.