COVID-19 Results Briefing

The South-East Asia Region

February 20, 2021

This document contains summary information on the latest projections from the IHME model on COVID-19 in the South-East Asia Region. The model was run on February 20, 2021, with data through February 16, 2021.

Daily cases continued to decline, while daily deaths increased slightly across the South-East Asia Region. There are two primary drivers for the declining trend in cases: 1) scaled-up vaccination, and, more importantly, 2) seasonality, which peaked at the end of January and is now declining. However, as transmission is declining in most locations across the region, India has localized spikes in transmission, notably in the state of Maharashtra. Two factors are contributing to local increases in transmission and could in some countries lead to larger surges: 1) the steady spread of variants B.1.1.7 and B.1.351, and 2) the public's behavioral response to the positive trends. We expect an additional 57,000 deaths within the region between now and June 1 in the reference scenario. Reductions in mask wearing and social distancing can, combined with new variant spread, lead to spring surges. Our reference scenario does not include these surges, but the way in which behavior changes after mandates are lifted and vaccines are administered will have a critical impact. Looking past June 1, reduced efficacy of vaccines against variants B.1.351 and P.1, combined with the possibility that there may not be cross-variant immunity, makes achieving herd immunity unlikely prior to next winter.

Current situation

- Daily reported cases in the last week decreased to 21,800 per day on average compared to 25,200 the week before (Figure 1).
- Daily deaths in the last week increased to 440 per day on average compared to 430 the week before (Figure 2). This makes COVID-19 the number 18 cause of death in the South-East Asia Region this week (Table 1).
- Effective R, computed using cases, hospitalizations, and deaths, is greater than 1 in three locations – the Indian states of Maharashtra, Nagaland, and Mizoram (Figure 5).
- We estimated that 9% of people in the South-East Asia Region have been infected as of February 16 (Figure 4).
- No locations in the region had daily death rates greater than 4 per million (Figure 3).

Trends in drivers of transmission

- Mobility last week was 21% lower than the pre-COVID-19 baseline (Figure 7). Mobility was near baseline (within 10%) in Bangladesh and Nepal. Mobility was lower than 30% of baseline in Myanmar and Sri Lanka.

- As of February 16, we estimated that 66% of people always wore a mask when leaving their home (Figure 9), the same as last week. Mask use was lower than 50% in Assam, India.
- There were 46 diagnostic tests per 100,000 people on February 16 (Figure 11).
- In the South-East Asia Region, 72.3% of people say they would accept or would probably accept a vaccine for COVID-19. The fraction of the population who are open to receiving a COVID-19 vaccine ranges from 67% in Bangladesh to 81% in Myanmar (Figure 14).
- In our current reference scenario, we expect that 444.55 million will be vaccinated by June 1 (Figure 15).

Projections

- In our **reference scenario**, which represents what we think is most likely to happen, our model projects 415,000 cumulative deaths on June 1, 2021. This represents 53,000 additional deaths from February 16 to June 1 (Figure 16). With mobility and variant spread increasing, a spring surge will bring daily deaths back up to 710 by June 1, 2021 (Figure 17).
- By June 1, 2021, we project that 3,700 lives will be saved by the projected vaccine rollout.
- If **universal mask coverage (95%)** were attained in the next week, our model projects 16,000 fewer cumulative deaths compared to the reference scenario on June 1, 2021 (Figure 16).
- Under our **worse scenario**, our model projects 424,000 cumulative deaths on June 1, 2021 (Figure 16).
- Figure 19 compares our reference scenario forecasts to other publicly archived models. Forecasts are widely divergent.
- At some point from February through June 1, three countries will have high or extreme stress on hospital beds (Figure 22). At some point from February through June 1, four countries will have high or extreme stress on ICU capacity (Figure 21).

Model updates

We have updated our model that predicts the spread of the new variants, which is used in the reference scenario in two ways. First, the speed of scale-up of the new variants is now based on data from more than 15 locations, whereas previously we only had data from London. Second, we now use observed data on the presence of new variants (B.1.1.7, B.1.351, or P1) in all locations with reported community transmission and more than five cases of those variants sequenced.

Figure 1. Reported daily COVID-19 cases

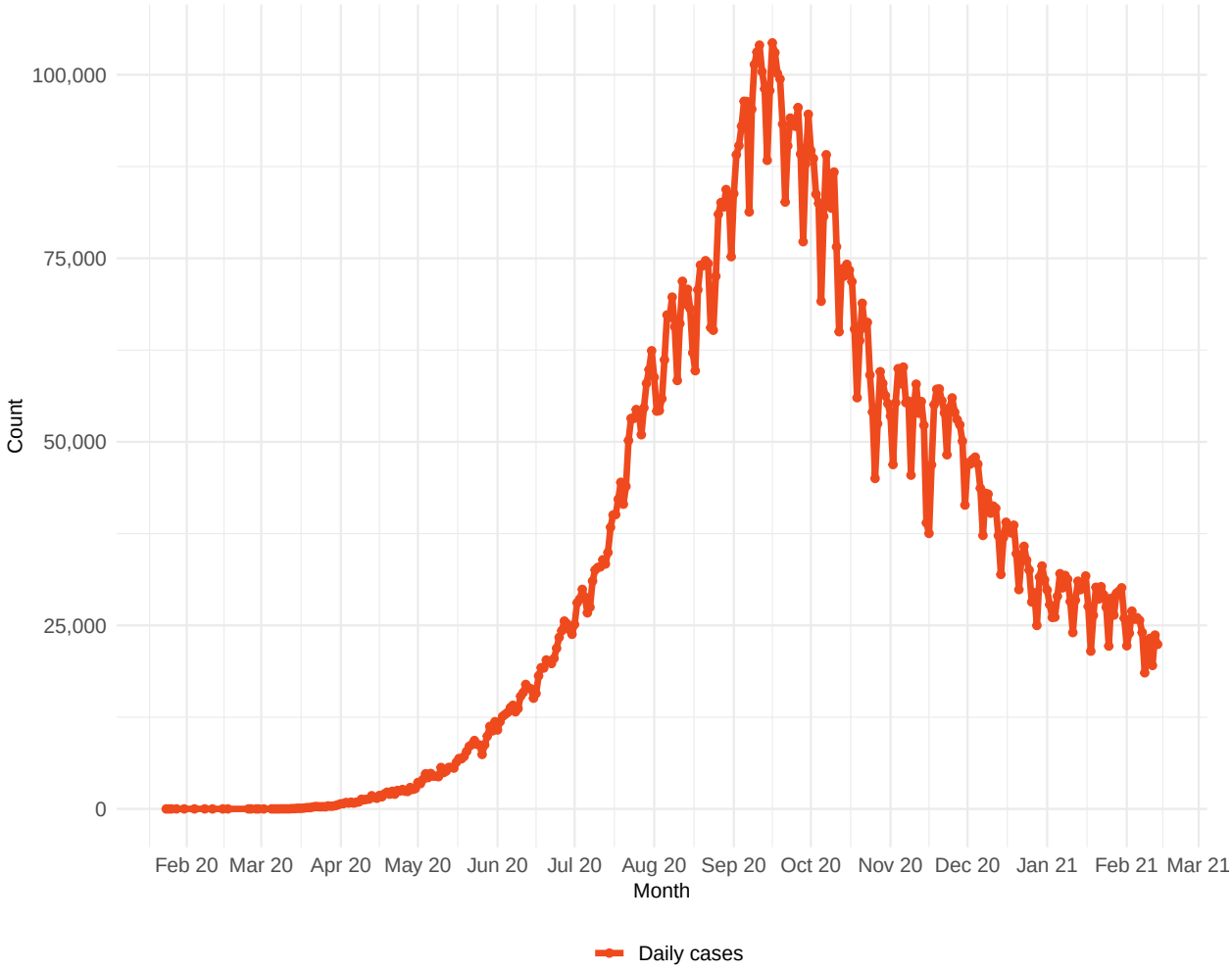


Table 1. Ranking of COVID-19 among the leading causes of mortality this week, assuming uniform deaths of non-COVID causes throughout the year

Cause name	Weekly deaths	Ranking
Ischemic heart disease	39,868	1
Stroke	27,102	2
Chronic obstructive pulmonary disease	21,984	3
Diarrheal diseases	14,328	4
Lower respiratory infections	11,327	5
Tuberculosis	10,815	6
Neonatal disorders	10,504	7
Diabetes mellitus	9,152	8
Cirrhosis and other chronic liver diseases	8,514	9
Chronic kidney disease	6,390	10
COVID-19	3,099	18

Figure 2. Reported daily COVID-19 deaths

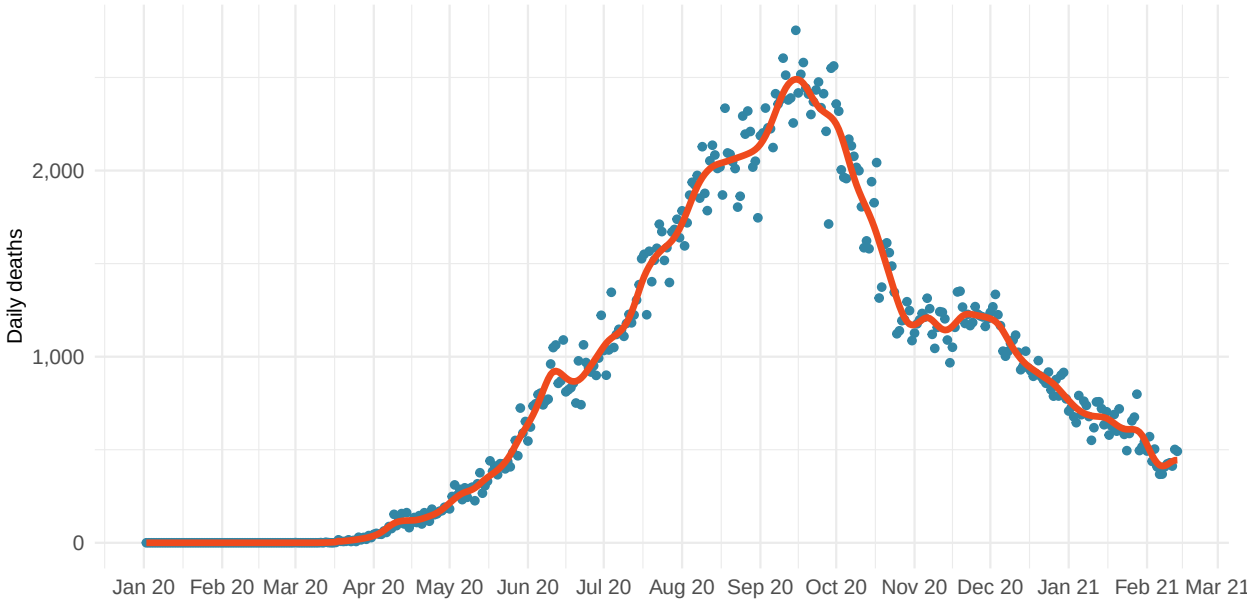
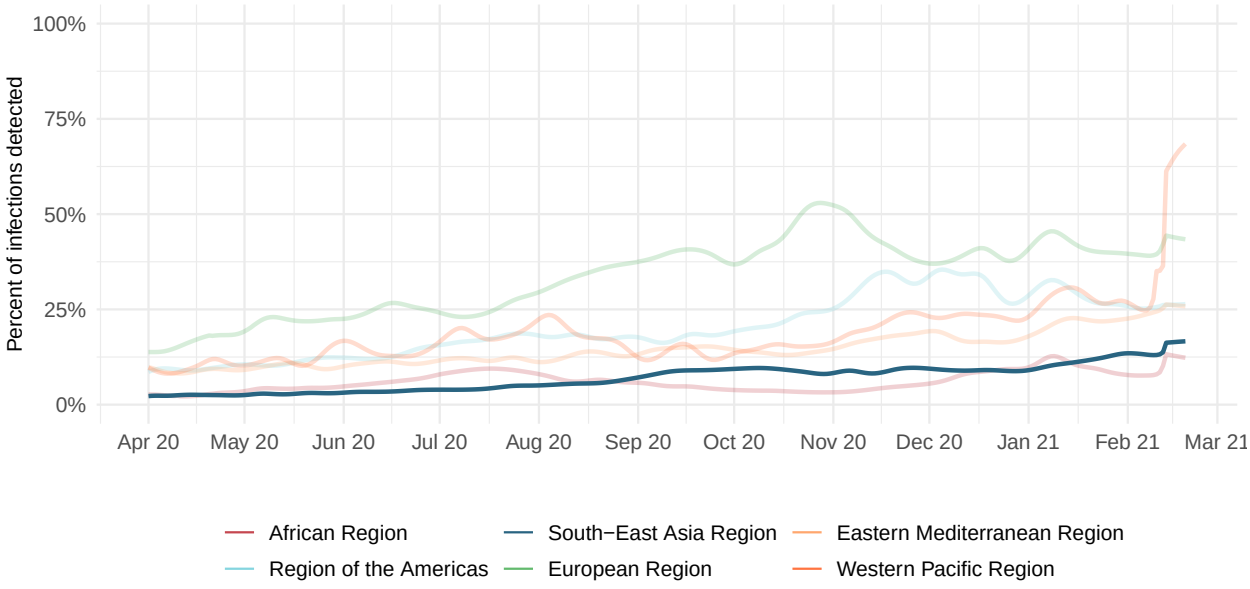


Figure 3. Daily COVID-19 death rate per 1 million on February 16, 2021

Figure 4. Estimated percent of the population infected with COVID-19 on February 16, 2021

Figure 5. Mean effective R on February 05, 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.

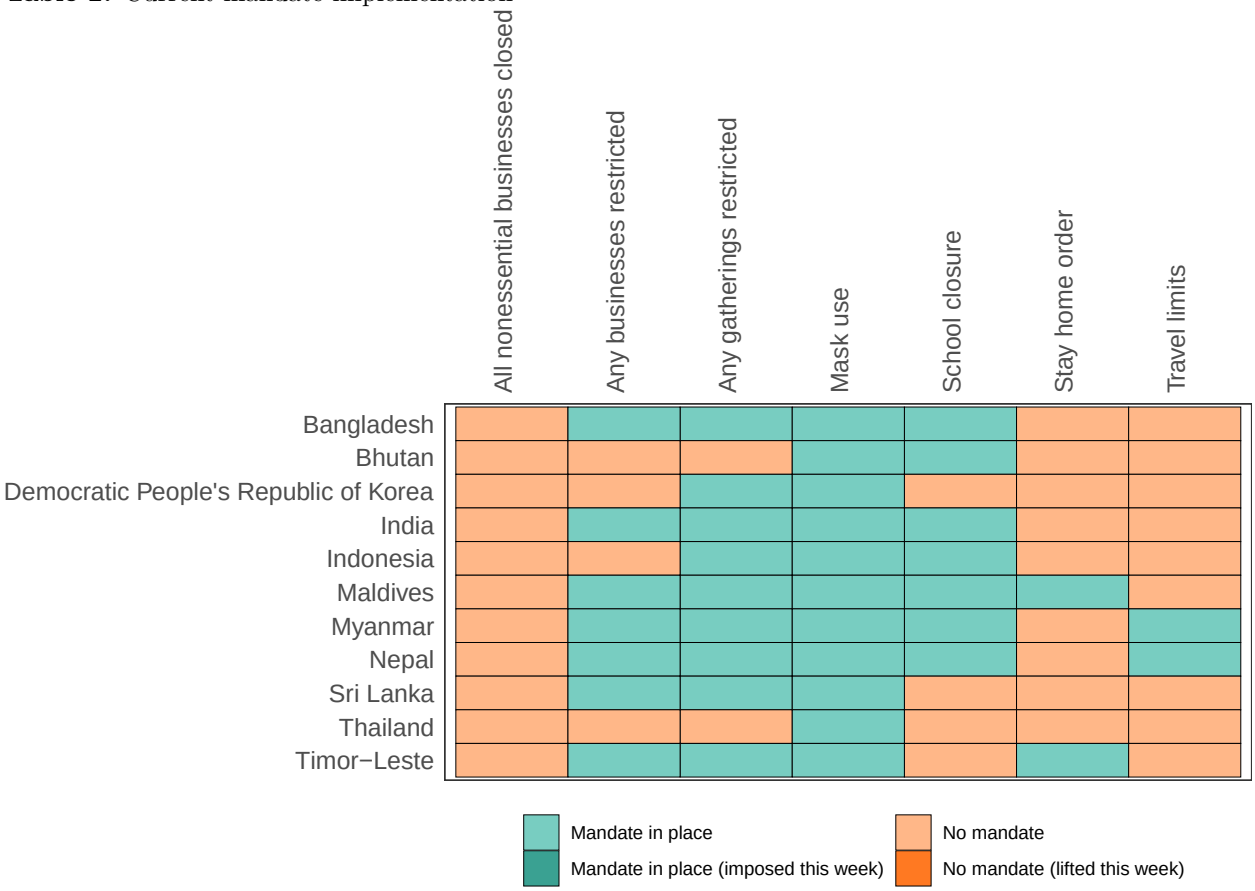
Figure 6. Percent of COVID-19 infections detected. This is estimated as the ratio of reported daily COVID-19 cases to estimated daily COVID-19 infections based on the SEIR disease transmission model.



*Due to measurement errors in cases and testing rates, the infection to detection rate (IDR) can exceed 100% at particular points in time.

Critical drivers

Table 2. Current mandate implementation



*Not all locations are measured at the subnational level.

Figure 7. Trend in mobility as measured through smartphone app use compared to January 2020 baseline

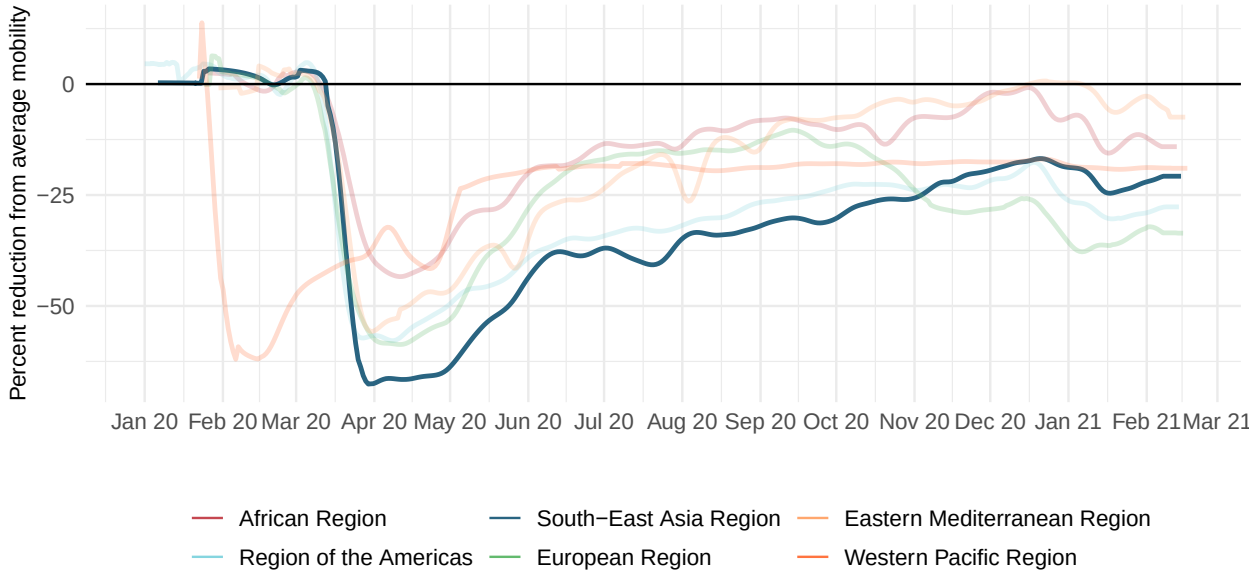


Figure 8. Mobility level as measured through smartphone app use compared to January 2020 baseline (percent) on February 16, 2021

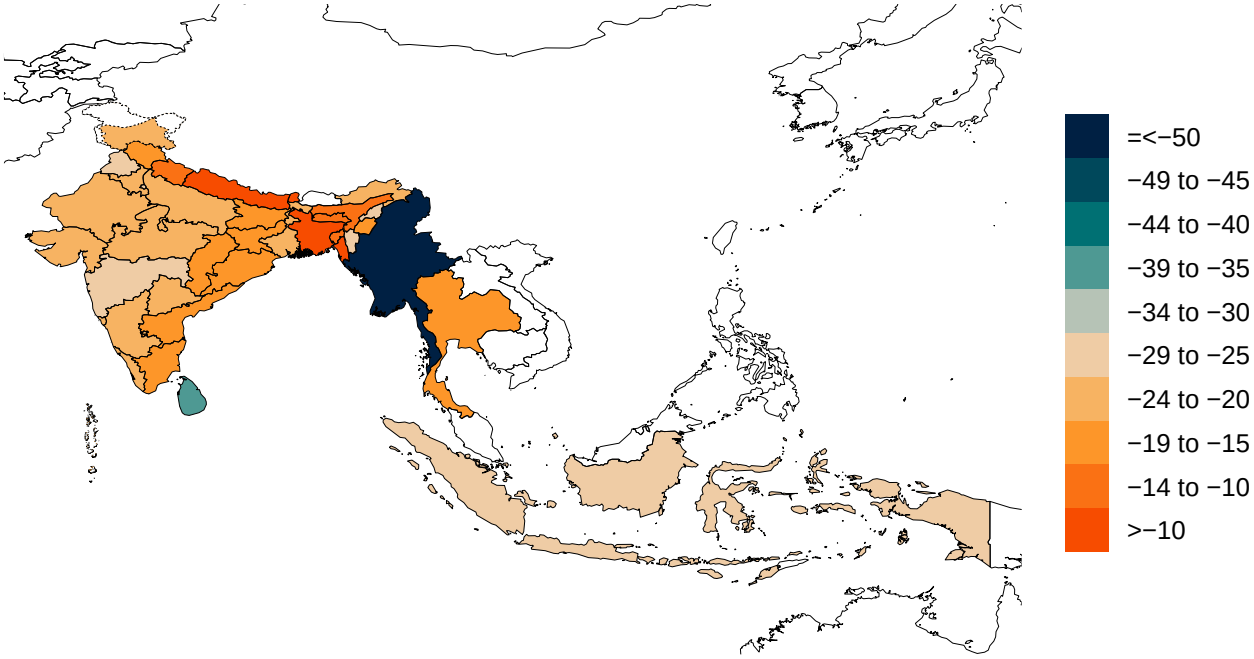


Figure 9. Trend in the proportion of the population reporting always wearing a mask when leaving home

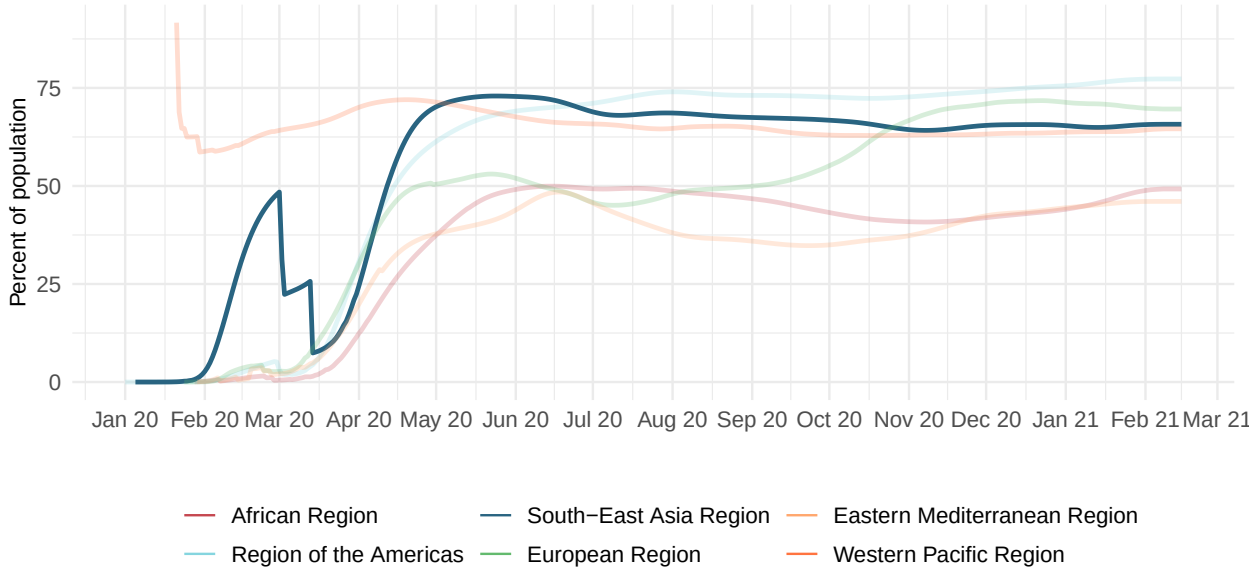


Figure 10. Proportion of the population reporting always wearing a mask when leaving home on February 16, 2021

Figure 11. Trend in COVID-19 diagnostic tests per 100,000 people

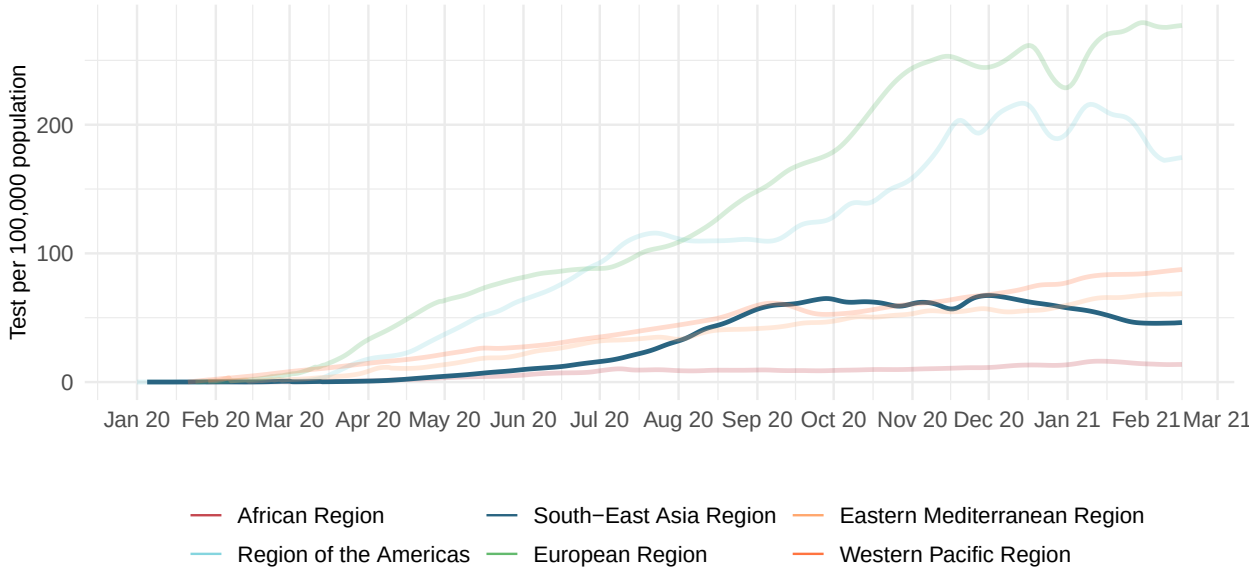


Figure 12. COVID-19 diagnostic tests per 100,000 people on February 12, 2021

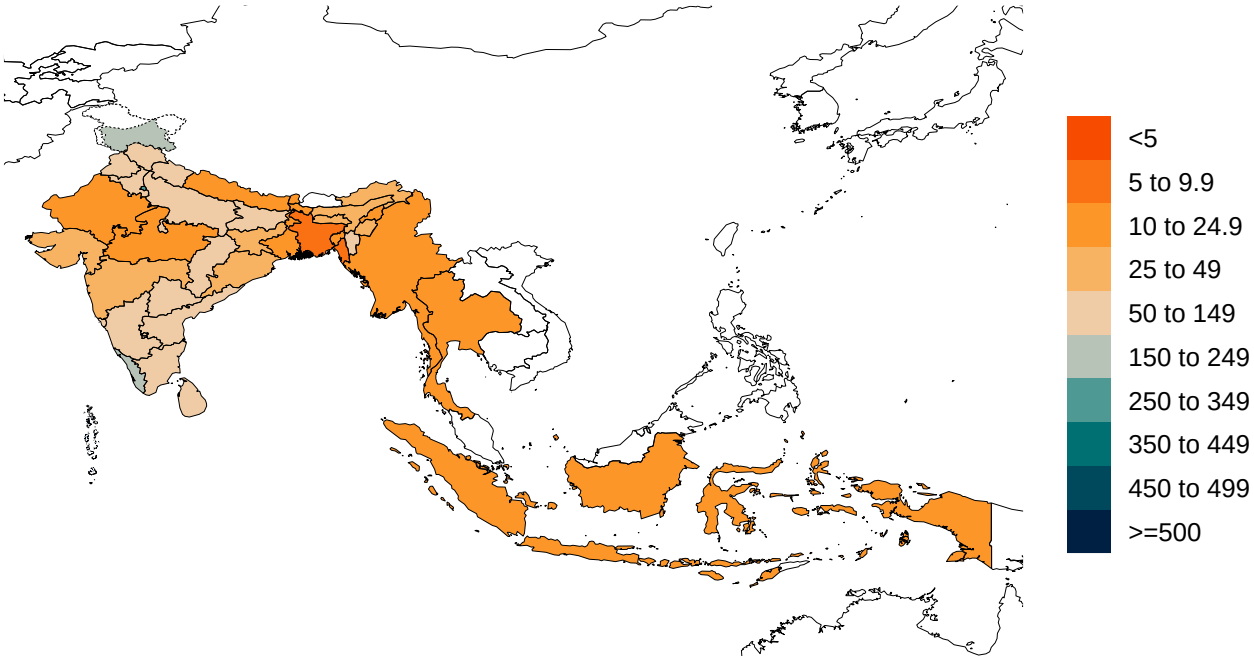


Figure 13 Increase in the risk of death due to pneumonia on February 1 2020 compared to August 1 2020

Figure 14. This figure shows the estimated proportion of the adult (18+) population that is open to receiving a COVID-19 vaccine based on Facebook survey responses (yes and yes, probably).

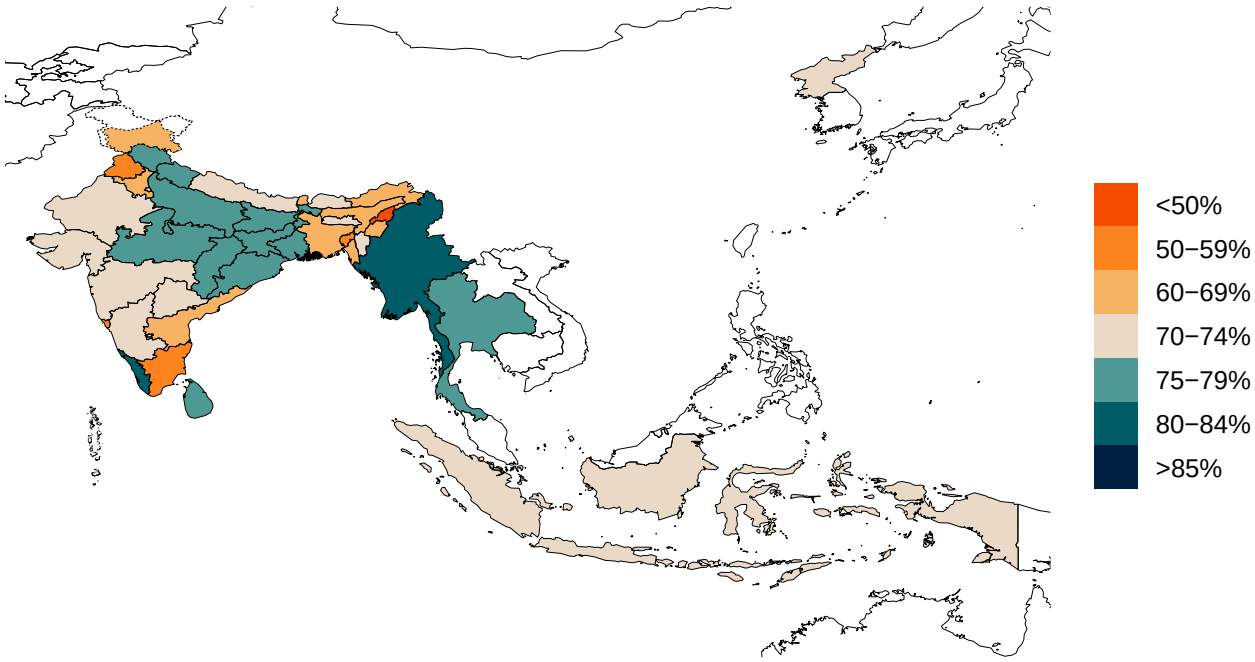
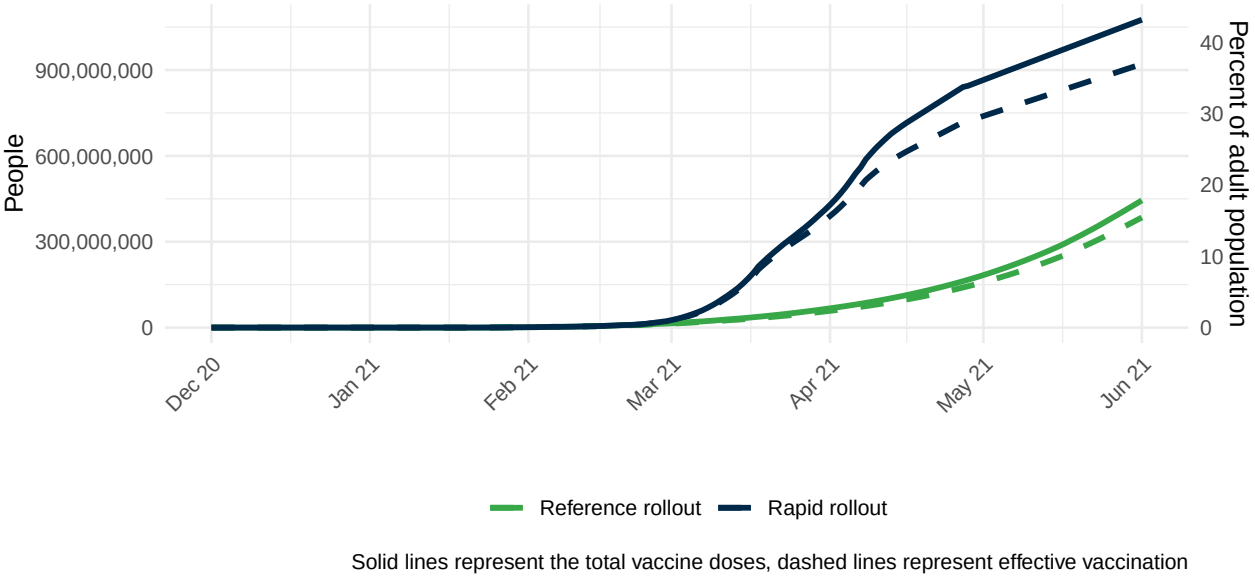


Figure 15. The number of people who receive any vaccine and those who are effectively vaccinated and protected against disease, accounting for efficacy, loss to follow up for two-dose vaccines, partial immunity after one dose, and immunity after two doses.



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 UK.
- In one-quarter of those vaccinated, mobility increases toward pre-COVID-19 levels.

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

- First, it assumes that variants B.1.351 or P1 begin to spread within 2 weeks in all locations that do not already have B.1.351 or P1 community transmission.
- Second, it also 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 16. Cumulative COVID-19 deaths until June 01, 2021 for three scenarios

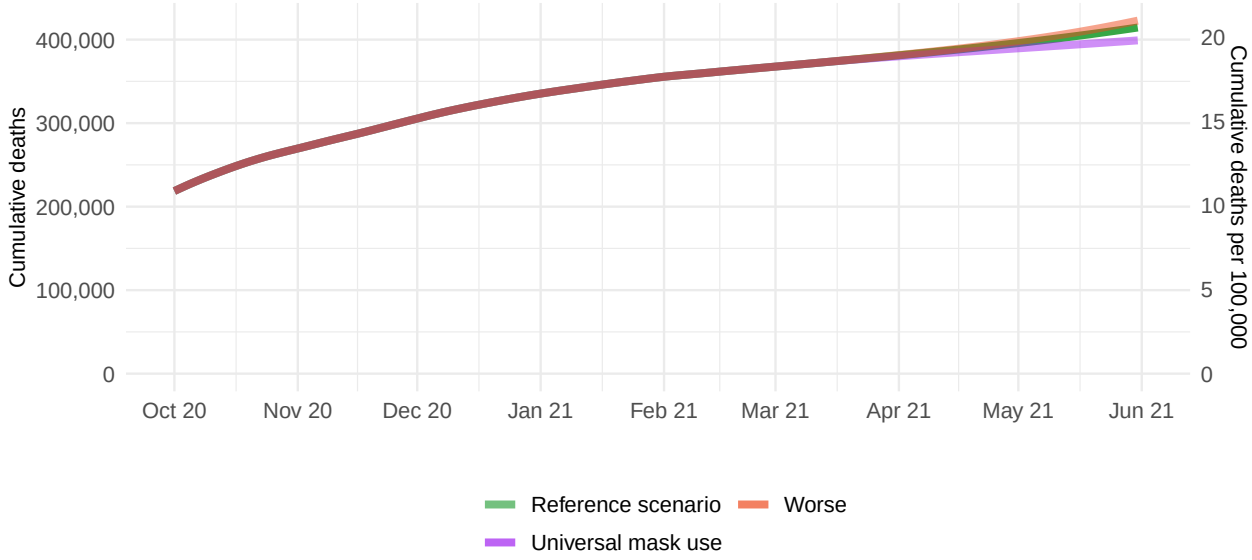


Figure 17. Daily COVID-19 deaths until June 01, 2021 for three scenarios

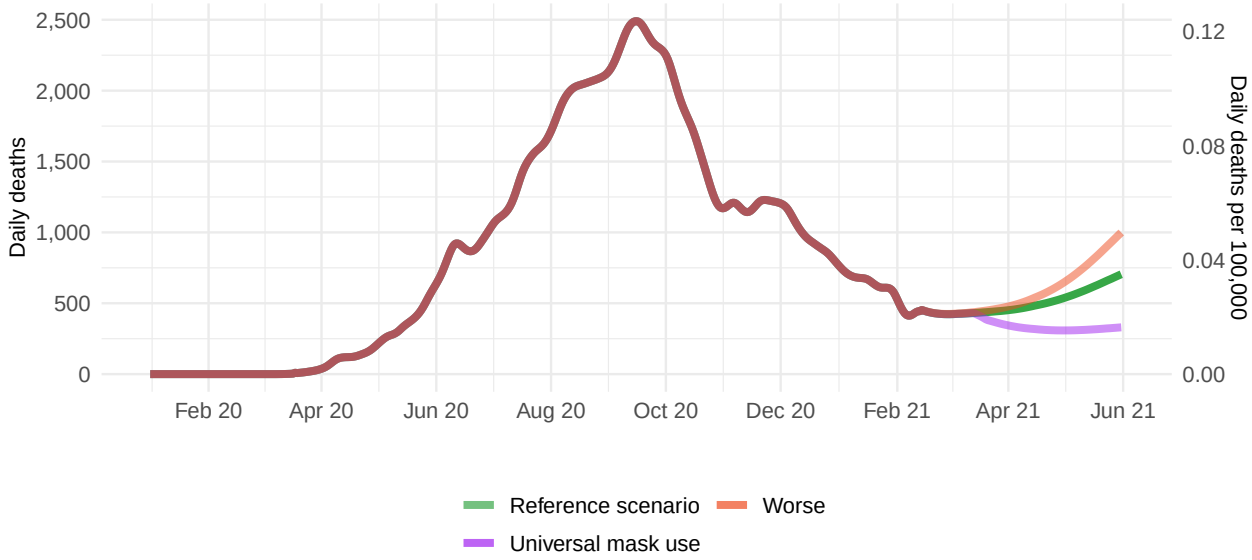


Figure 18. Daily COVID-19 infections until June 01, 2021 for three scenarios

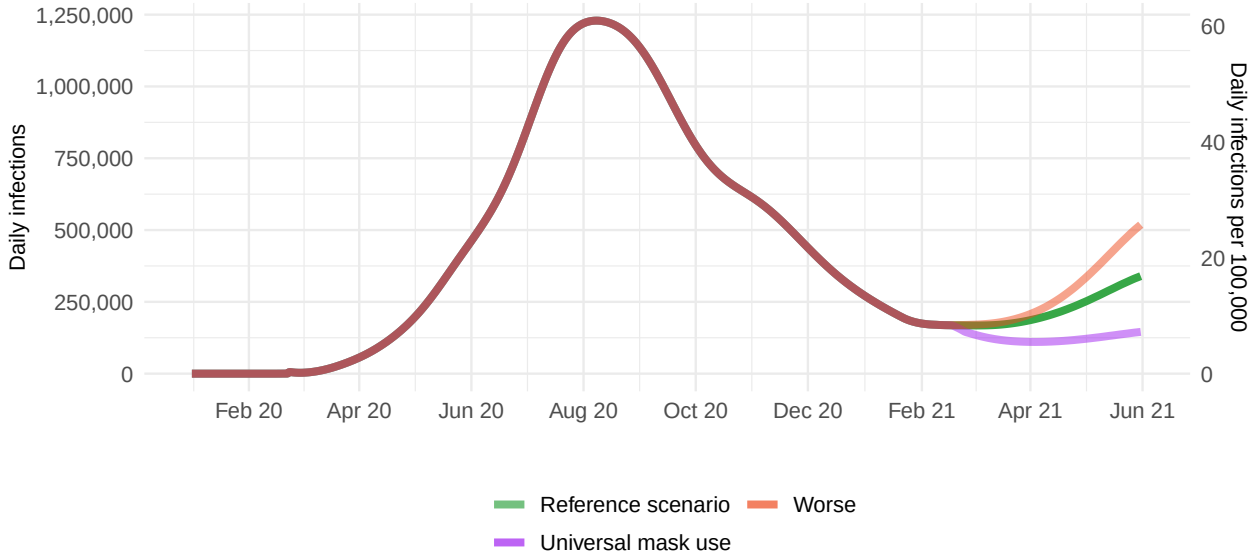


Figure 23. Forecasted percent infected with COVID-19 on June 01, 2021

Figure 19. 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 Massachussets Institute of Technology (Delphi; https://www.covidanalytics.io/home), Imperial College London (Imperial; https://www.covidsim.org), The Los Alamos National Laboratory (LANL; https://covid-19.bsvgateway.org/), and the SI-KJalpha model from the University of Southern California (SIKJalpha; https://github.com/scc-usc/ReCOVER-COVID-19). Daily deaths from other modeling groups are smoothed to remove inconsistencies with rounding. Regional values are aggregates from availble locations in that region.

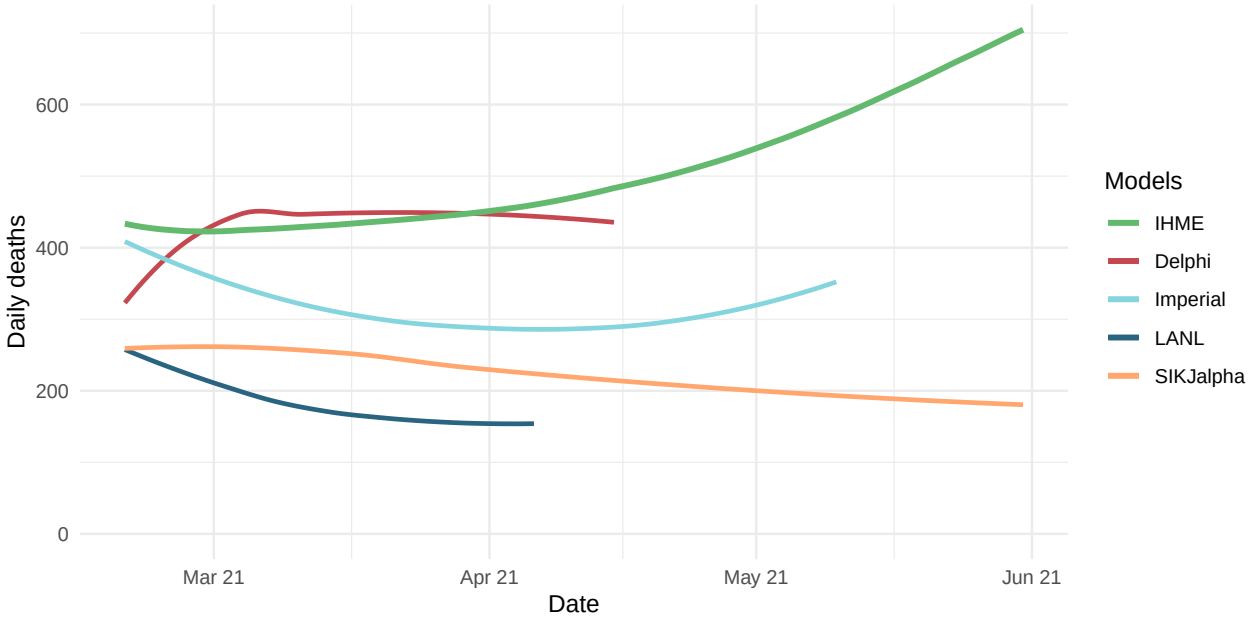


Figure 20. The estimated inpatient hospital usage is shown over time. The percent of hospital beds occupied by COVID-19 patients is color coded based on observed quantiles of the maximum proportion of beds occupied by COVID-19 patients. Less than 5% is considered *low stress*, 5-9% is considered *moderate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

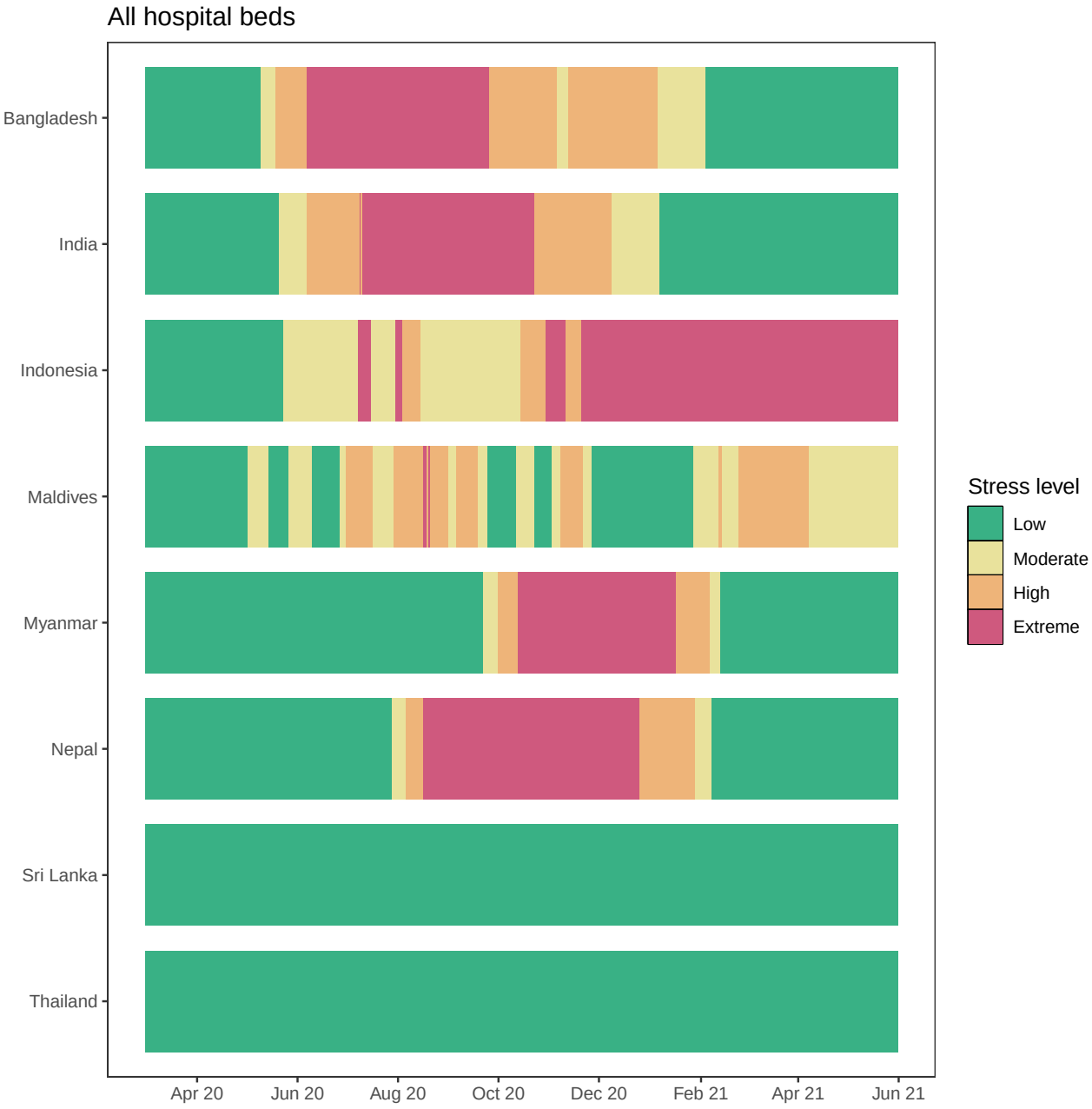
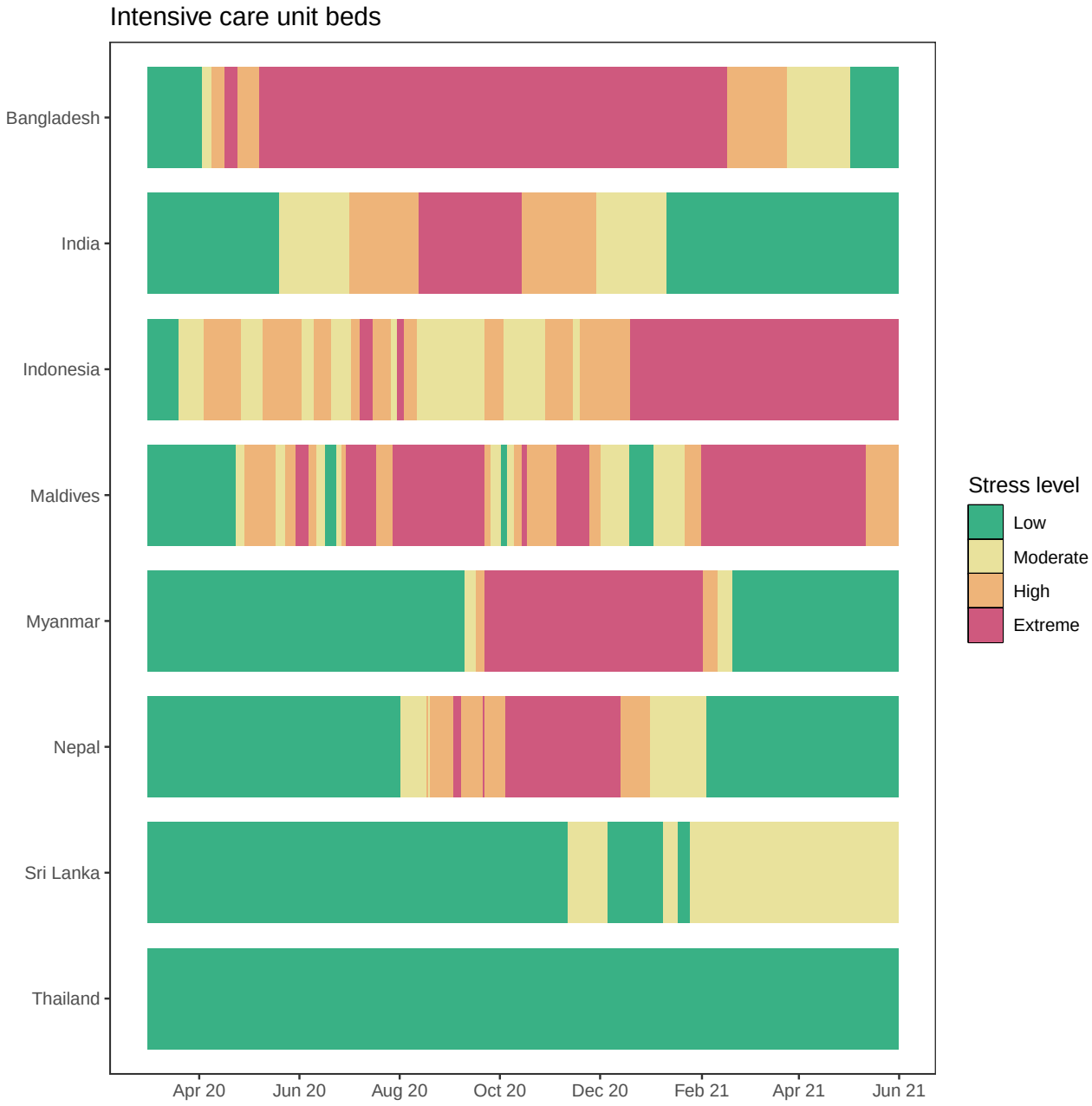


Figure 21. The estimated intensive care unit (ICU) usage is shown over time. The percent of ICU beds occupied by COVID-19 patients is color coded based on observed quantiles of the maximum proportion of ICU beds occupied by COVID-19 patients. Less than 10% is considered *low stress*, 10-29% is considered *moderate stress*, 30-59% is considered *high stress*, and greater than 60% is considered *extreme stress*.



More information

Data sources:

Mask use data sources include PREMISE; Facebook Global symptom survey (This research is based on survey results from University of Maryland Social Data Science Center) and the Facebook United States symptom survey (in collaboration with Carnegie Mellon University); Kaiser Family Foundation; YouGov COVID-19 Behaviour Tracker survey.

Vaccine hesitancy data are from the COVID-19 Beliefs, Behaviors, and Norms Study, a survey conducted on Facebook by the Massachusetts Institute of Technology (https://covidsurvey.mit.edu/).

Data on vaccine candidates, stages of development, manufacturing capacity, and pre-purchasing agreements are primarily from Linksbridge and supplemented by Duke University.

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.