COVID-19 Results Briefing

the Western Pacific Region

April 08, 2021

This document contains summary information on the latest projections from the IHME model on COVID-19 in the Western Pacific Region. The model was run on April 06, 2021 with data through April 05, 2021.

Current situation

- Daily reported cases in the last week increased to 14,500 per day on average compared to 11,800 the week before (Figure 1).
- Daily deaths in the last week increased to 74 per day on average compared to 72 the week before (Figure 2). This makes COVID-19 the number 54 cause of death in the Western Pacific Region this week (Table 1).
- No locations had daily death rates greater than 4 per million (Figure 3).
- We estimated that 1% of people in the Western Pacific Region have been infected as of April 5 (Figure 4).
- Effective R, computed using cases, hospitalizations, and deaths, is greater than 1 in 16 countries (Figure 5).
- The infection detection rate in the Western Pacific Region is close to 30% on April 5 (Figure 6).

Trends in drivers of transmission

- Mobility last week was 18% lower than the pre-COVID-19 baseline (Figure 9). Mobility was near baseline (within 10%) in Malaysia, Mongolia, New Zealand, Papua New Guinea, and Viet Nam. Mobility was lower than 30% of baseline in Cambodia, and Philippines.
- As of April 5 we estimated that 64% of people always wore a mask when leaving their home compared to 64% last week (Figure 11). Mask use was lower than 50% in Australia, and New Zealand.
- There were 107 diagnostic tests per 100,000 people on April 5 (Figure 13).
- In the Western Pacific Region 66.9% of people say they would accept or would probably accept a vaccine for COVID-19. This is up by 0.5 percentage points from last week. The fraction of the population who are open to receiving a COVID-19 vaccine ranges from 27% in Mongolia to 92% in Fiji (Figure 17).
- In our current reference scenario, we expect that 875.47 million will be vaccinated by August 1 (Figure 18.

Projections

- In our **reference scenario**, which represents what we think is most likely to happen, our model projects 73,000 cumulative deaths on August 1, 2021. This represents 41,000 additional deaths from April 5 to August 1 (Figure 19). Daily deaths will peak at 460 on July 6, 2021 (Figure 20).
- If **universal mask coverage (95%)** were attained in the next week, our model projects 8,700 fewer cumulative deaths compared to the reference scenario on August 1, 2021 (Figure 19).
- Under our **worse scenario**, our model projects 81,000 cumulative deaths on August 1, 2021, an additional 8,000 deaths compared to our reference scenario (Figure 19).
- By August 1, we project that 4,600 lives will be saved by the projected vaccine rollout.
- Figure 22 compares our reference scenario forecasts to other publicly archived models. Forecasts are widely divergent.
- At some point from April through August 1, 5 countries will have high or extreme stress on hospital beds (Figure 23). At some point from April through August 1, 4 countries will have high or extreme stress on ICU capacity (Figure 24).

Model updates

There are no major updates in the model this week.

Figure 1. Reported daily COVID-19 cases

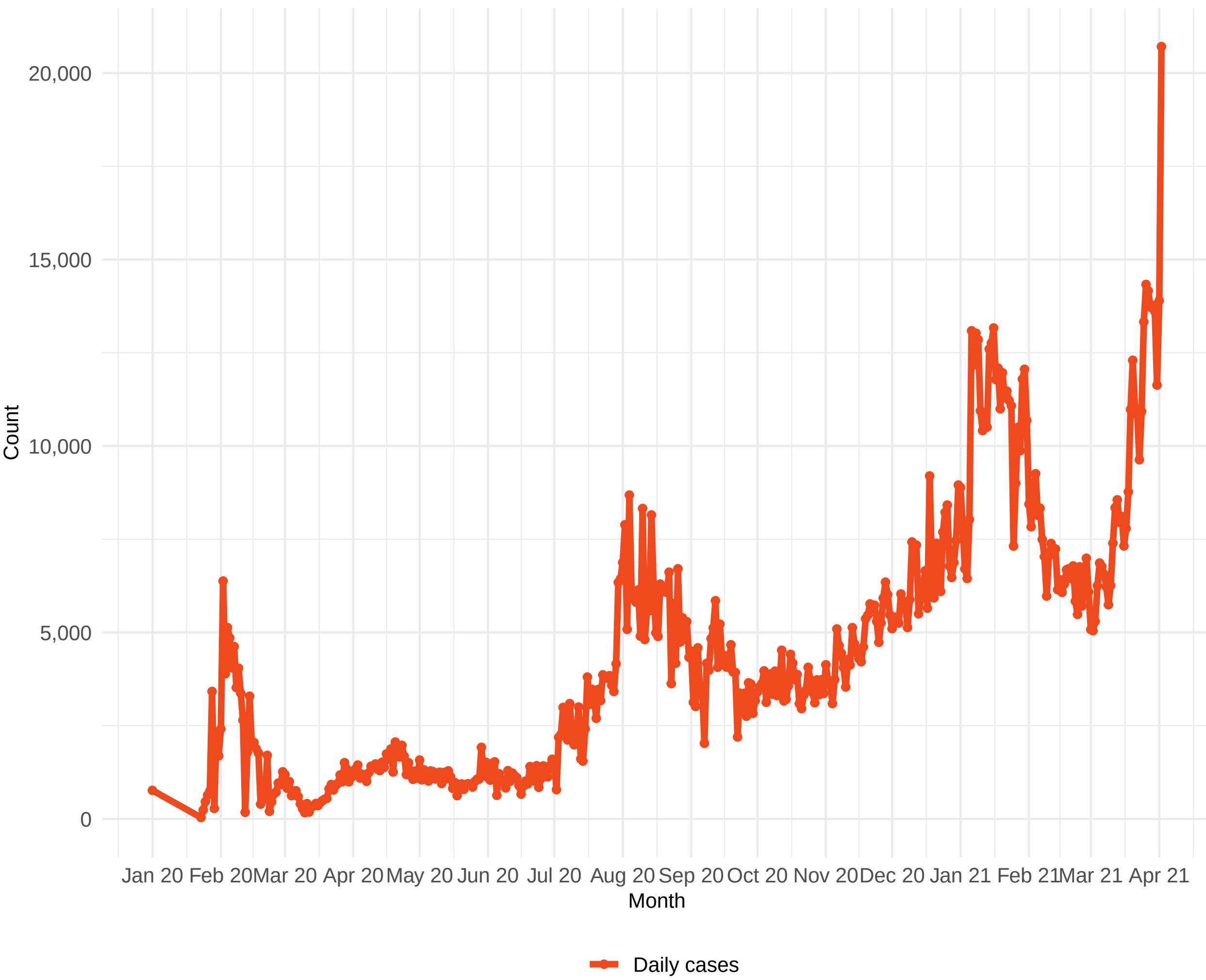


Table 1. Ranking of COVID-19 among the leading causes of mortality this week, assuming uniform deaths of non-COVID causes throughout the year

Cause name	Weekly deaths	Ranking
Stroke	51,115	1
Ischemic heart disease	44,778	2
Chronic obstructive pulmonary disease	22,489	3
Tracheal, bronchus, and lung cancer	18,018	4
Alzheimer's disease and other dementias	10,761	5
Stomach cancer	9,878	6
Lower respiratory infections	8,865	7
Hypertensive heart disease	7,494	8
Colon and rectum cancer	7,483	9
Chronic kidney disease	6,343	10
COVID-19	520	54

Figure 2. Reported daily COVID-19 deaths

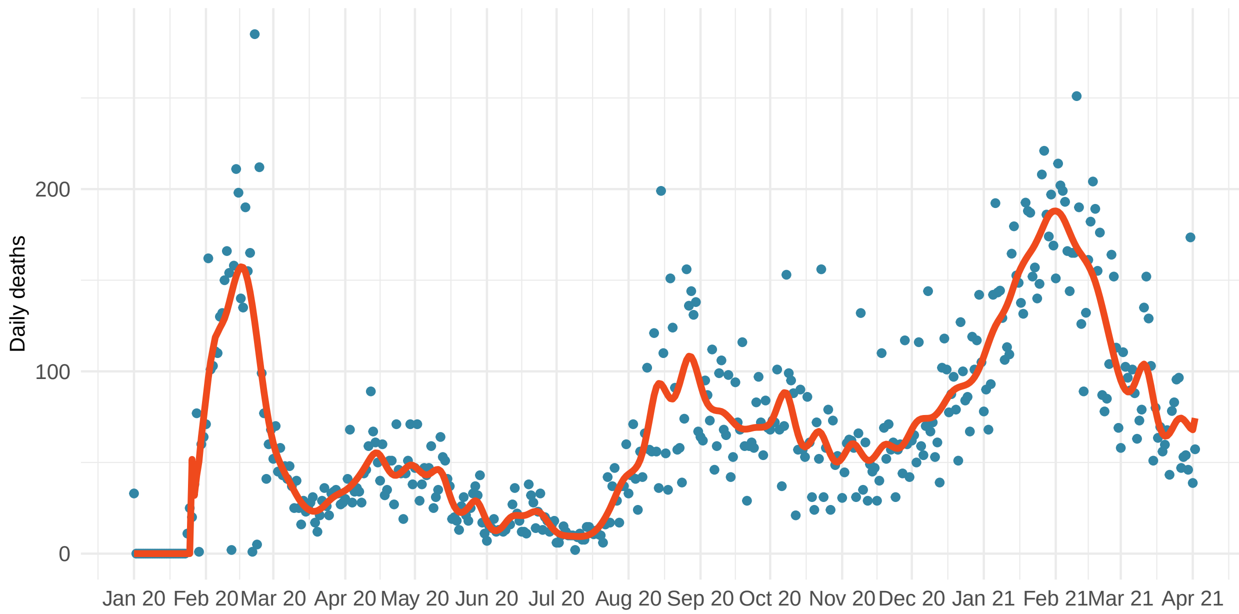


Figure 3. Daily COVID-19 death rate per 1 million on April 05, 2021

Figure 4. Estimated percent of the population infected with COVID-19 on April 05, 2021

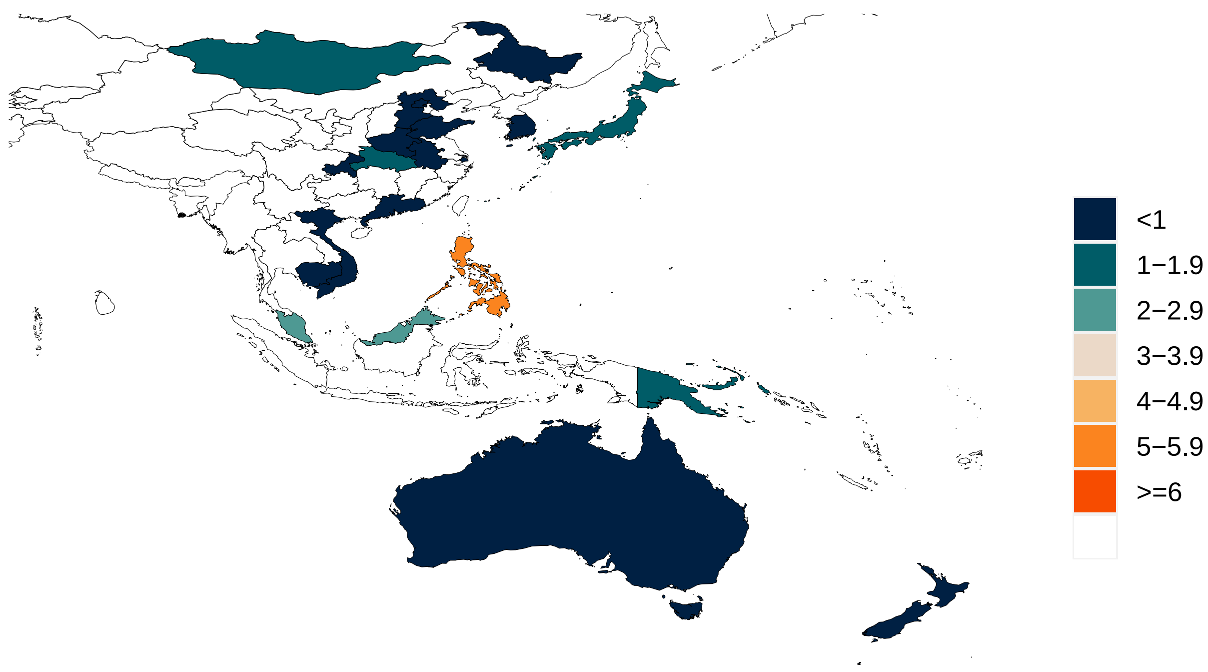


Figure 5. Mean effective R on March 25, 2021. The estimate of effective R is based on the combined analysis of deaths, case reporting, and hospitalizations where available. Current reported cases reflect infections 11-13 days prior, so estimates of effective R can only be made for the recent past. Effective R less than 1 means that transmission should decline, all other things being held the same.

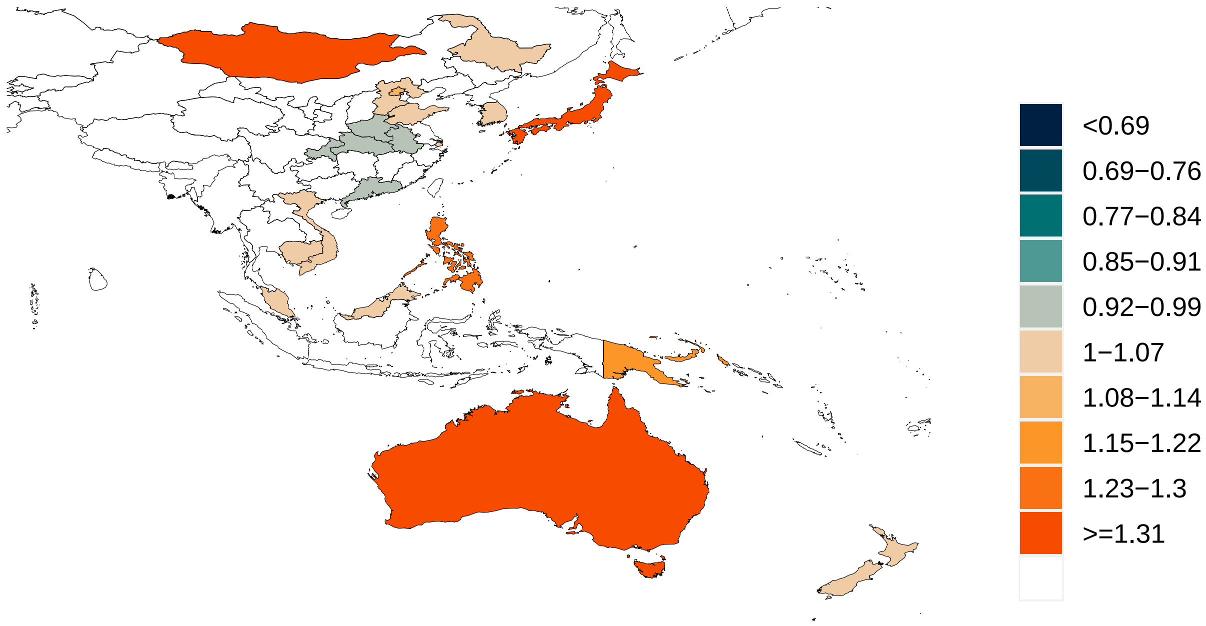


Figure 6. Percent of COVID-19 infections detected. This is estimated as the ratio of reported daily COVID-19 cases to estimated daily COVID-19 infections based on the SEIR disease transmission model.

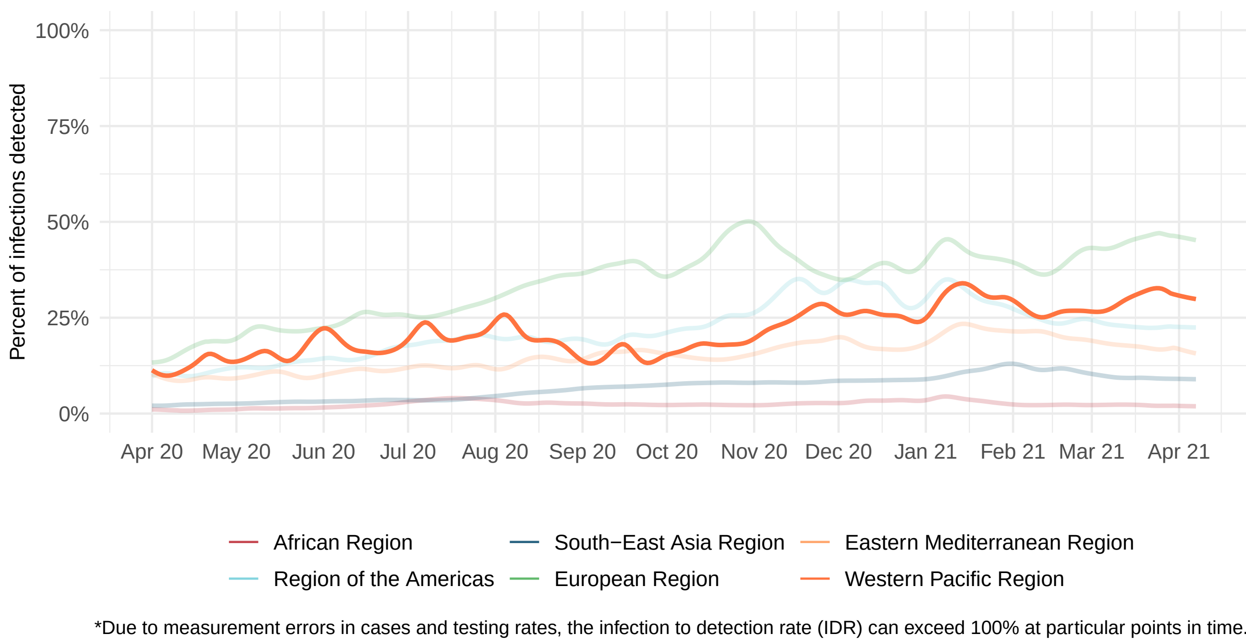
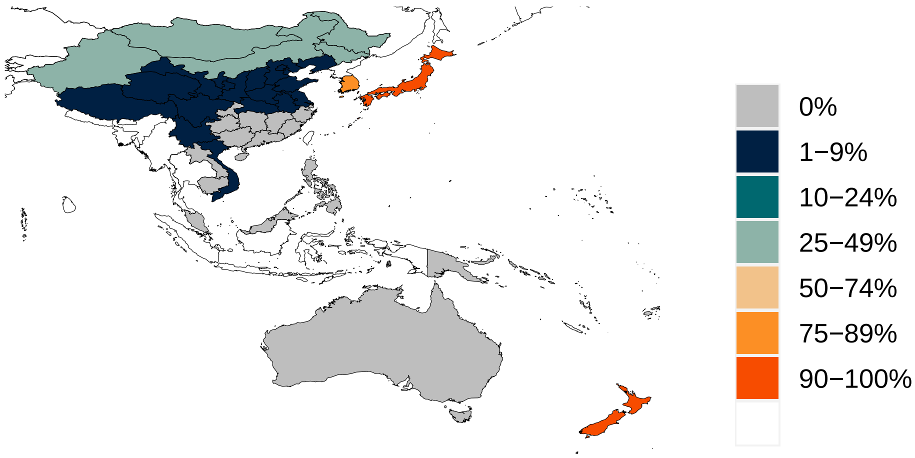
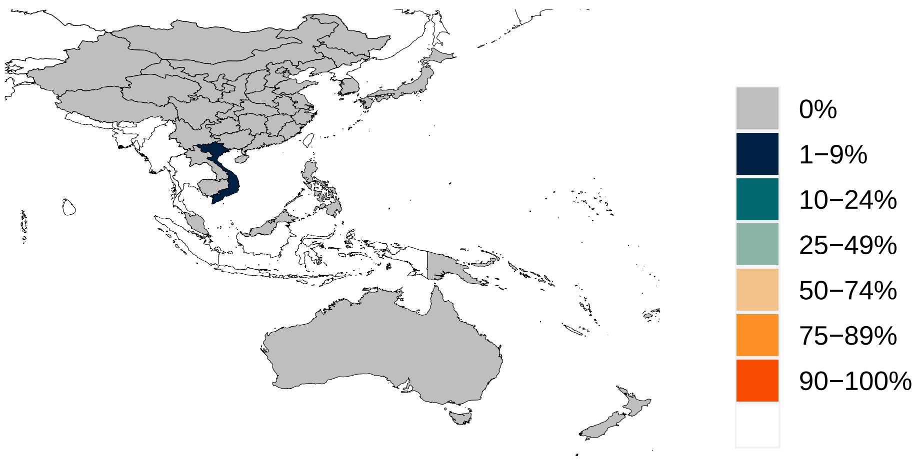


Figure 7. Percent of circulating SARS-CoV-2 for 3 primary variants on April 5, 2021.

A. Percent B.1.1.7 variant



B. Percent B.1.351 variant



C. Percent P1 variant

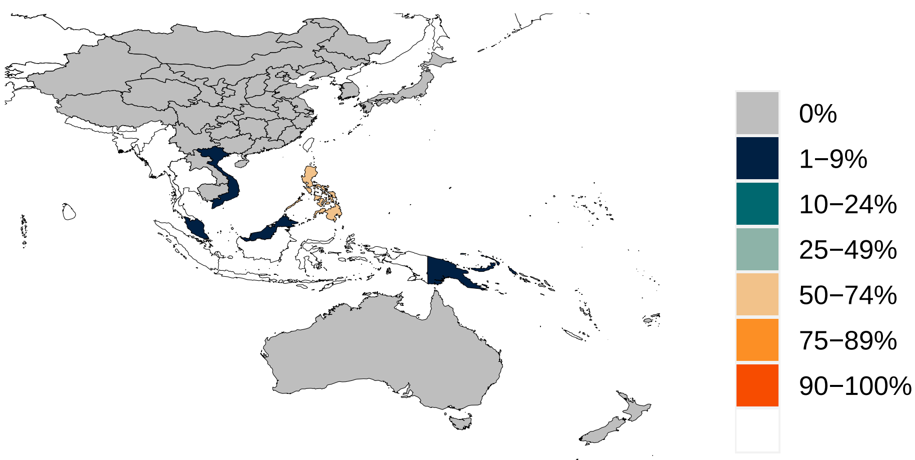
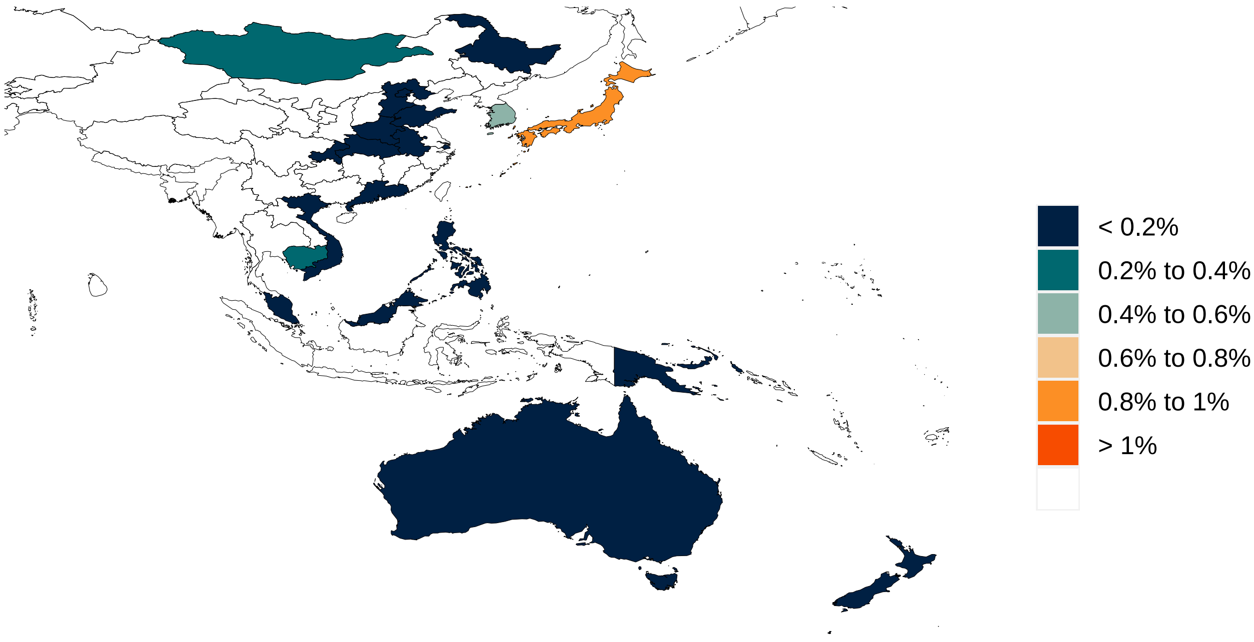


Figure 8. Infection fatality ratio on April 05, 2021. This is estimated as the ratio of COVID-19 deaths to infections based on the SEIR disease transmission model.



Critical drivers

Table 2. Current mandate implementation

	All nonessential businesses closed	Any businesses restricted	Any gatherings restricted	Mask use	School closure	Stay home order	Travel limits
Australia	No mandate	Mandate in place	No mandate	No mandate	No mandate	No mandate	No mandate
Brunei Darussalam	No mandate	No mandate	Mandate in place	Mandate in place	No mandate	No mandate	No mandate
Cambodia	No mandate	Mandate in place	Mandate in place	No mandate	Mandate in place	No mandate	No mandate
China	No mandate	No mandate	No mandate	No mandate	No mandate	No mandate	No mandate
Cook Islands	No mandate	No mandate	No mandate	No mandate	No mandate	No mandate	No mandate
Fiji	No mandate	Mandate in place	Mandate in place	No mandate	No mandate	No mandate	No mandate
Japan	No mandate	No mandate	No mandate	No mandate	No mandate	No mandate	No mandate
Kiribati	No mandate	No mandate	No mandate	No mandate	No mandate	No mandate	No mandate
Lao People's Democratic Republic	No mandate	Mandate in place	Mandate in place	No mandate	No mandate	No mandate	No mandate
Malaysia	No mandate	Mandate in place	Mandate in place	No mandate	Mandate in place	No mandate	No mandate
Marshall Islands	No mandate	No mandate	No mandate	No mandate	No mandate	No mandate	No mandate
Micronesia (Federated States of)	No mandate	No mandate	No mandate	No mandate	Mandate in place	No mandate	No mandate
Mongolia	No mandate	Mandate in place	Mandate in place	Mandate in place	Mandate in place	No mandate	No mandate
Nauru	No mandate	No mandate	No mandate	No mandate	No mandate	No mandate	No mandate
New Zealand	No mandate	No mandate	Mandate in place	No mandate	No mandate	No mandate	No mandate
Niue	No mandate	No mandate	No mandate	No mandate	No mandate	No mandate	No mandate
Palau	No mandate	No mandate	No mandate	No mandate	No mandate	No mandate	No mandate
Papua New Guinea	No mandate	Mandate in place	Mandate in place	Mandate in place	No mandate	No mandate	No mandate
Philippines	No mandate	No mandate	No mandate	Mandate in place	Mandate in place	No mandate	No mandate
Republic of Korea	No mandate	Mandate in place	No mandate	Mandate in place	No mandate	No mandate	No mandate
Samoa	No mandate	Mandate in place	Mandate in place	No mandate	No mandate	No mandate	No mandate
Singapore	No mandate	Mandate in place	Mandate in place	Mandate in place	No mandate	No mandate	No mandate
Solomon Islands	No mandate	No mandate	No mandate	No mandate	No mandate	No mandate	No mandate
Tonga	No mandate	No mandate	Mandate in place	No mandate	No mandate	No mandate	No mandate
Tuvalu	No mandate	No mandate	Mandate in place	No mandate	Mandate in place	No mandate	No mandate
Vanuatu	No mandate	No mandate	Mandate in place	No mandate	No mandate	No mandate	No mandate
Viet Nam	No mandate	Mandate in place	Mandate in place	Mandate in place	No mandate	No mandate	No mandate

Mandate in place
Mandate in place (imposed this week)
No mandate
No mandate (lifted this week)

*Not all locations are measured at the subnational level.

Figure 9. Trend in mobility as measured through smartphone app use compared to January 2020 baseline

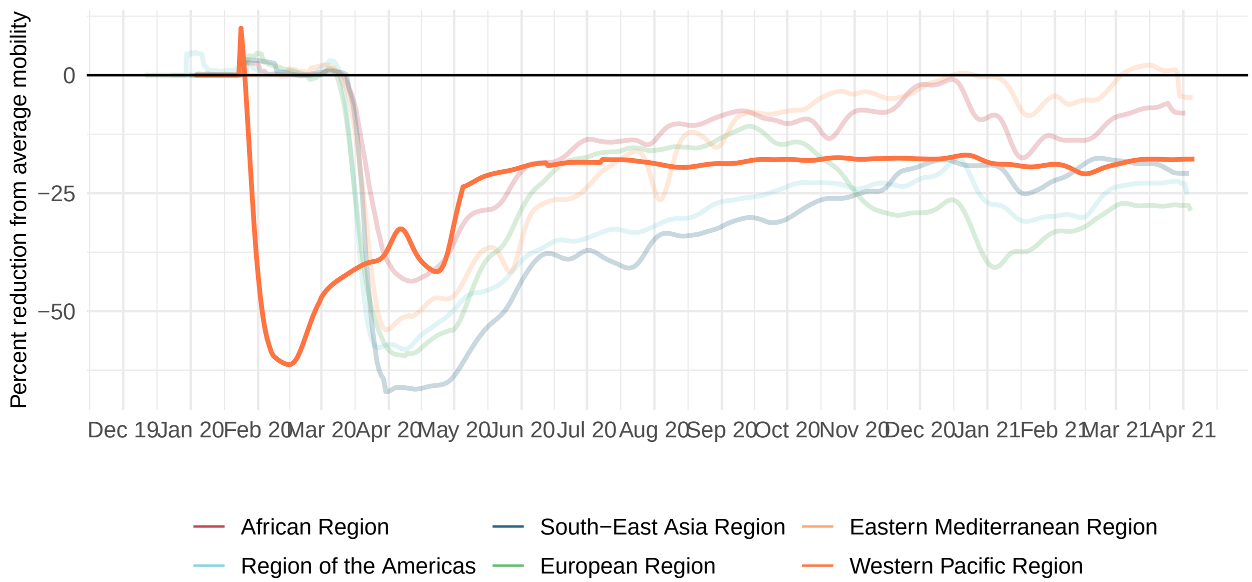


Figure 10. Mobility level as measured through smartphone app use compared to January 2020 baseline (percent) on April 05, 2021

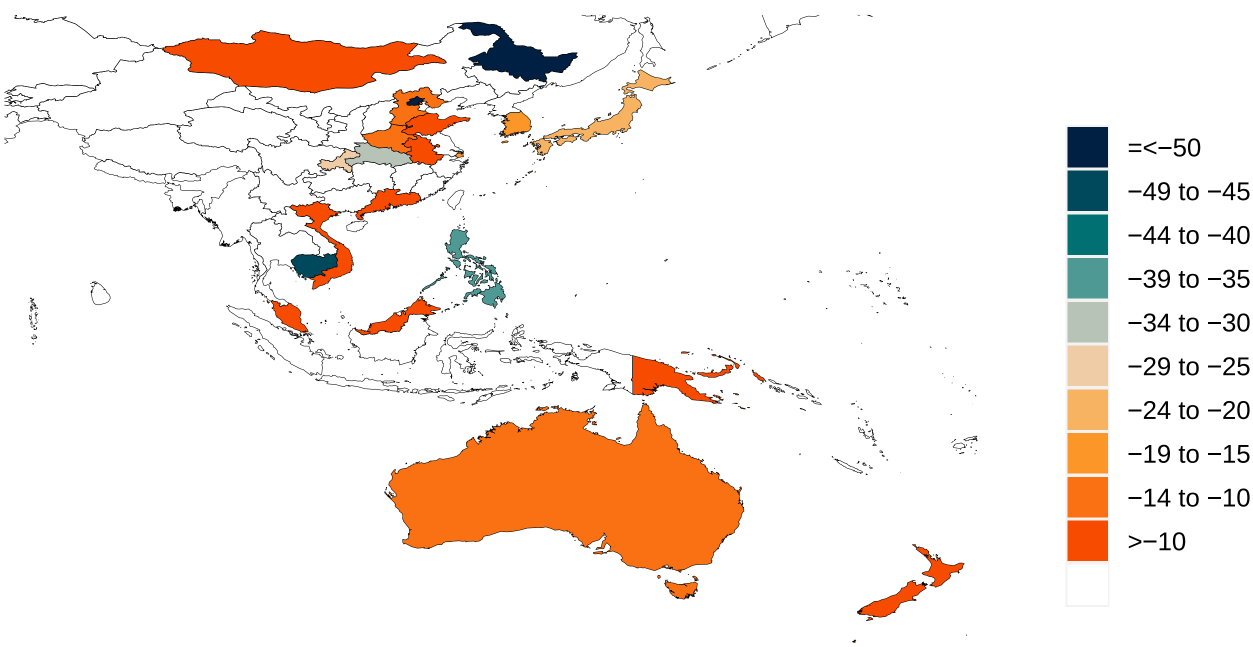


Figure 11. Trend in the proportion of the population reporting always wearing a mask when leaving home

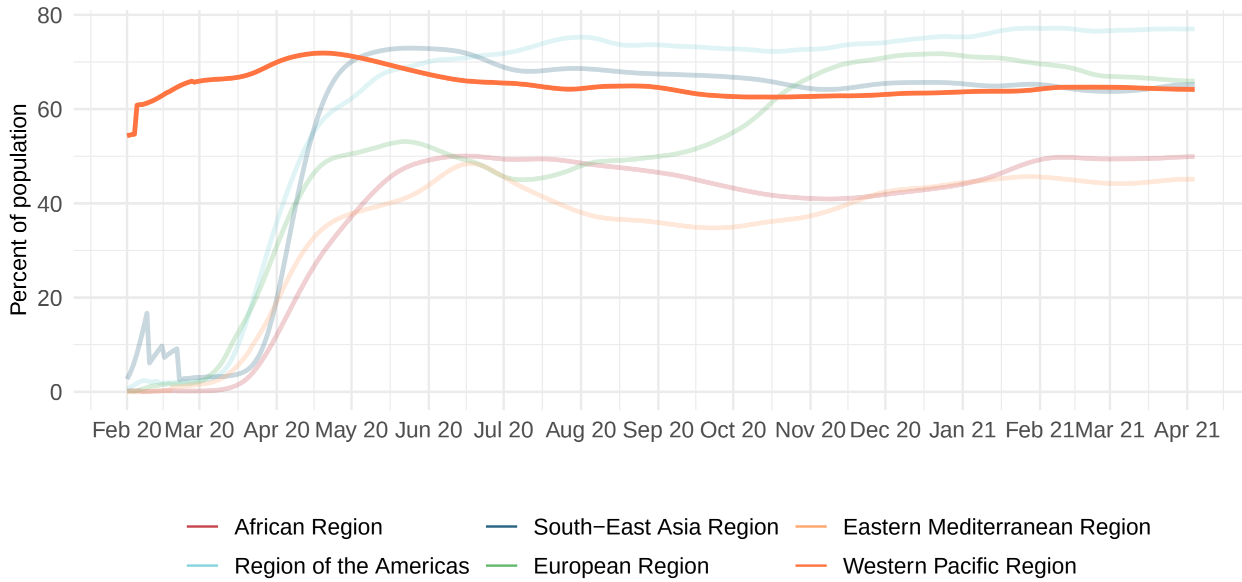


Figure 12. Proportion of the population reporting always wearing a mask when leaving home on April 05, 2021

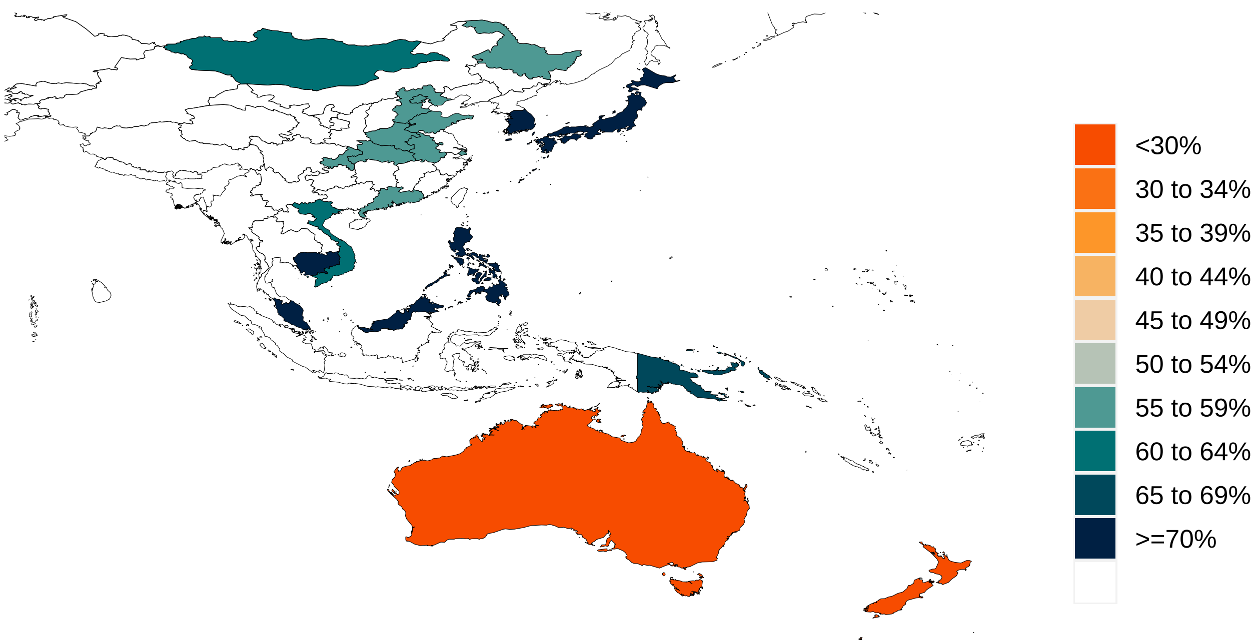


Figure 13. Trend in COVID-19 diagnostic tests per 100,000 people

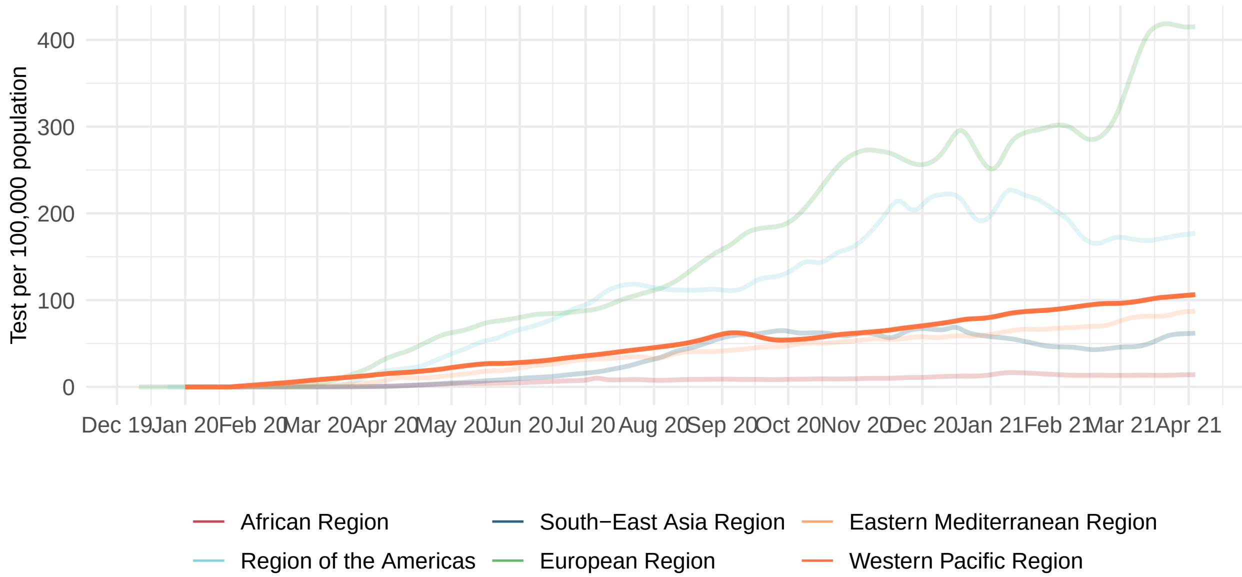


Figure 14. COVID-19 diagnostic tests per 100,000 people on April 01, 2021

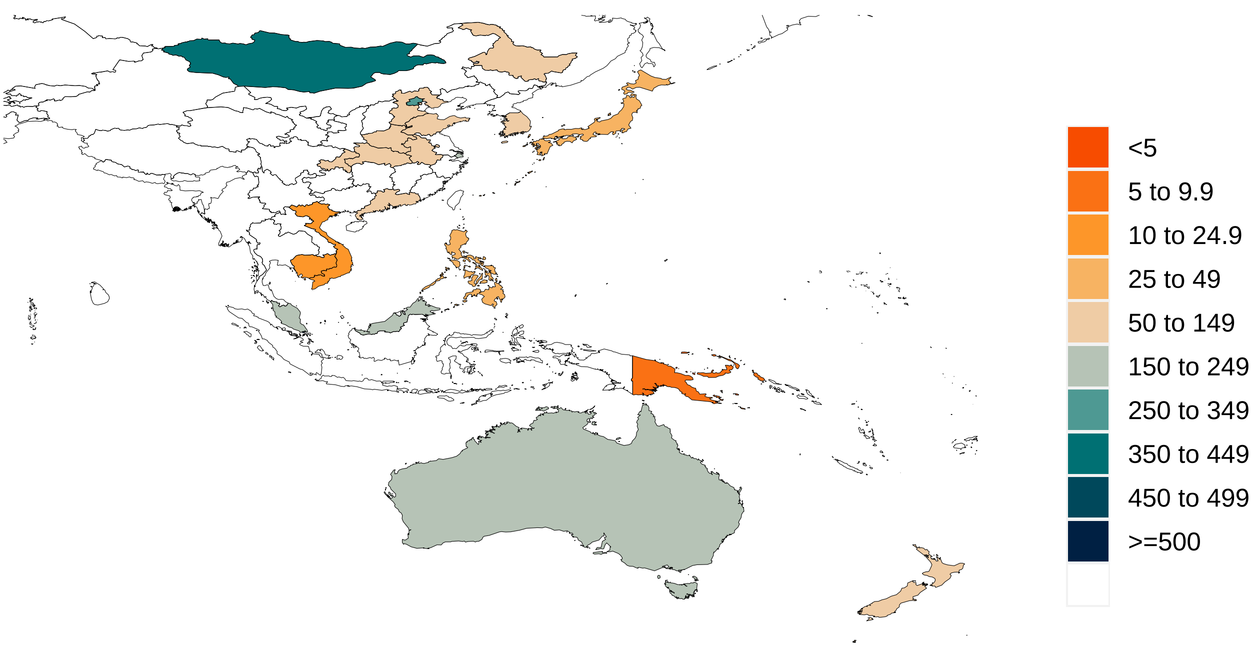


Figure 15. Increase in the risk of death due to pneumonia on February 1 2020 compared to August 1 2020

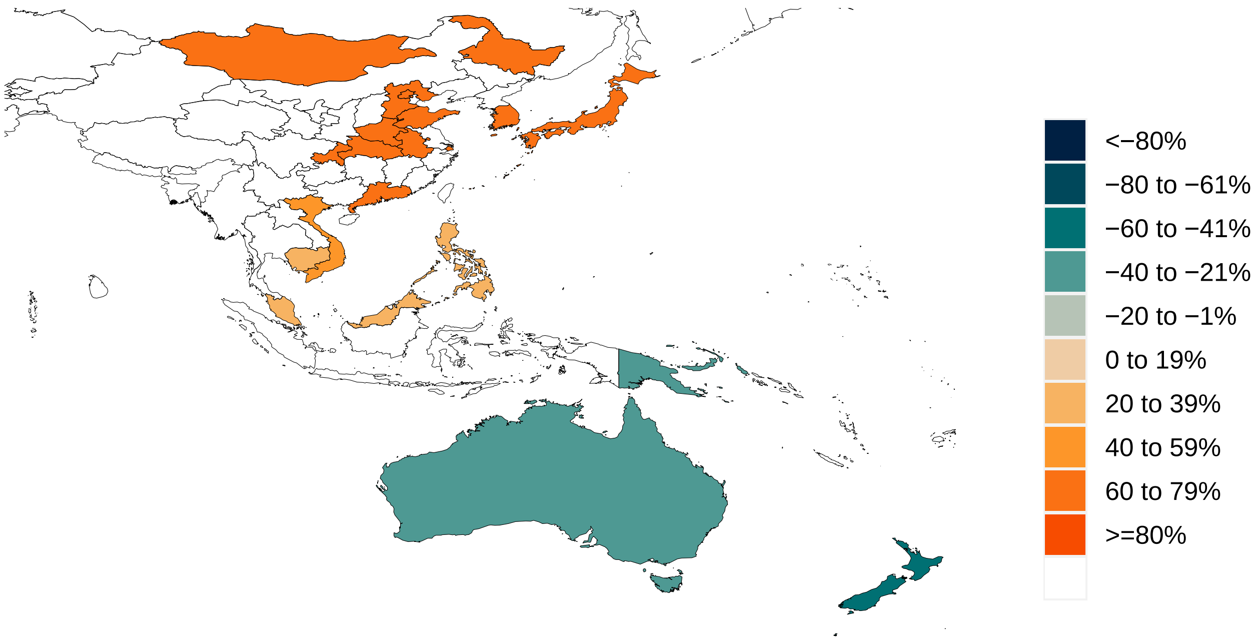


Table 3. The SEIR model uses variant-specific estimates of vaccine efficacy at preventing symptomatic disease and at preventing infection. We use data from clinical trials directly, where available, and make estimates otherwise. More information can be found on our website (http://www.healthdata.org/node/8584).

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 & P.1	Efficacy at preventing infection: B.1.351 & P.1
AstraZeneca	75%	52%	10%	7%
CanSinoBio	66%	57%	50%	44%
CoronaVac	50%	43%	38%	33%
Johnson & Johnson	72%	72%	64%	56%
Moderna	94%	85%	72%	62%
Novavax	89%	77%	49%	43%
Pfizer/BioNTech	91%	86%	69%	61%
Sinopharm	73%	63%	56%	48%
Sputnik V	92%	80%	70%	61%
Other mRNA vaccines	95%	83%	72%	63%
All other vaccines	75%	65%	57%	50%

Figure 16. Trend in the estimated proportion of the adult (18+) population that have been vaccinated or is open to receiving a COVID-19 vaccine based on Facebook survey responses (yes and yes, probably).

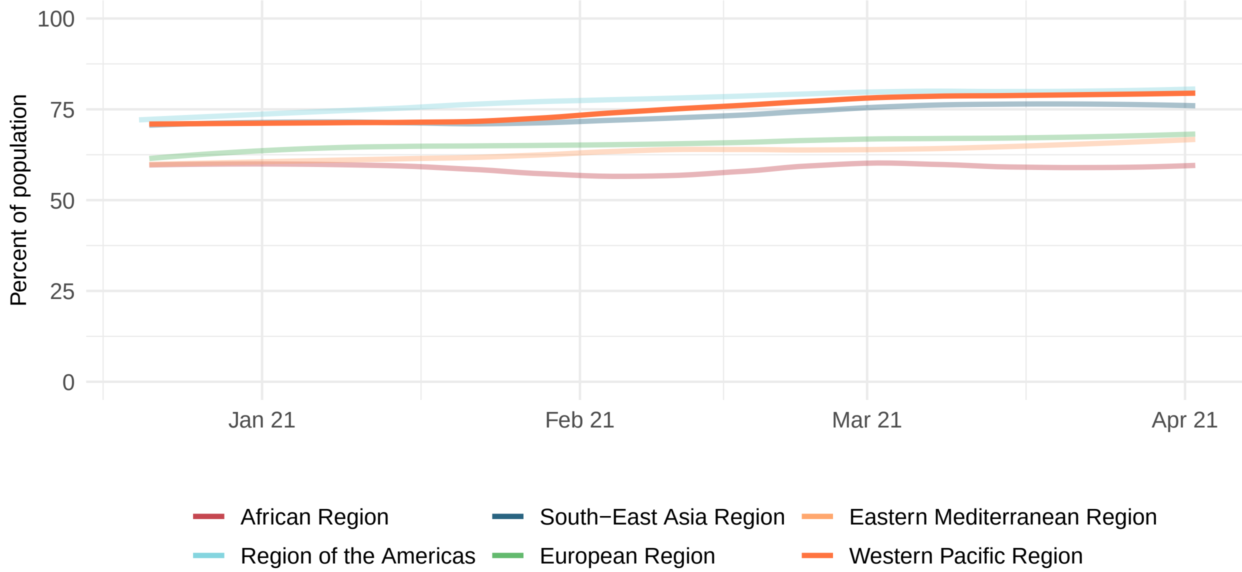


Figure 17. This figure shows the estimated proportion of the adult (18+) population that has been vaccinated or is open to receiving a COVID-19 vaccine based on Facebook survey responses (yes and yes, probably).

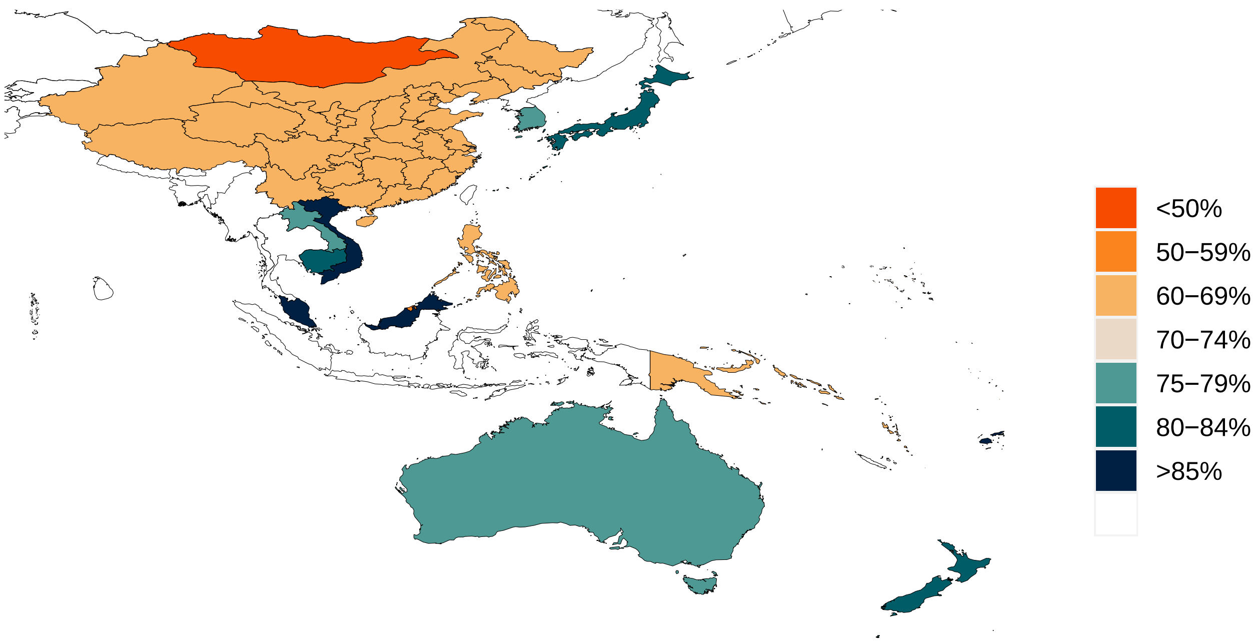
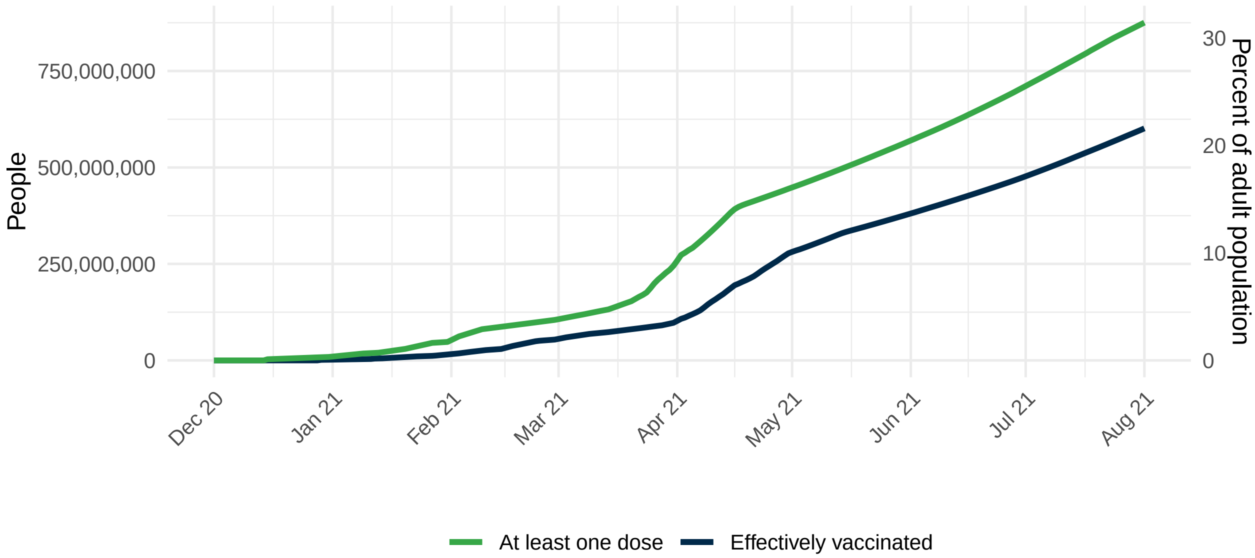


Figure 18. The number of people who receive any vaccine and those who are effectively vaccinated and protected against disease, accounting for efficacy, loss to follow up for two-dose vaccines, partial immunity after one dose, and immunity after two doses.



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 three ways:

- First, it assumes that variants B.1.351 or P1 begin to spread within 3 weeks in adjacent locations that do not already have B.1.351 or P1 community transmission.
- Second, it assumes that all those vaccinated increase their mobility toward pre-COVID-19 levels.
- Third, it assumes that among those vaccinated, mask use starts to decline exponentially one month after completed vaccination.

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 19. Cumulative COVID-19 deaths until August 01, 2021 for three scenarios

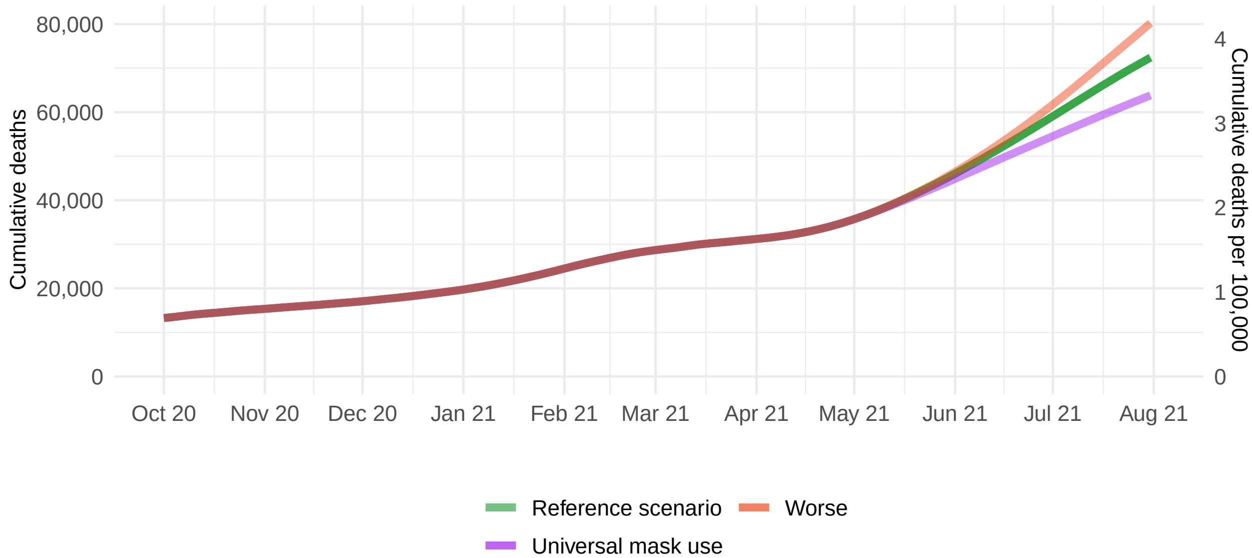


Figure 20. Daily COVID-19 deaths until August 01, 2021 for three scenarios,

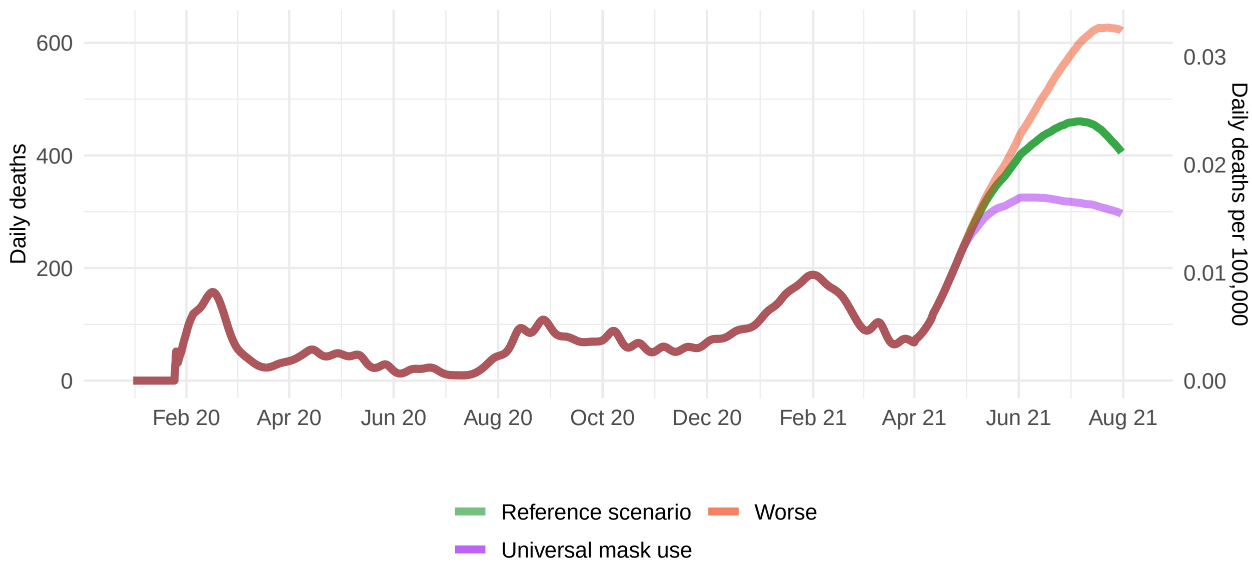


Figure 21. Daily COVID-19 infections until August 01, 2021 for three scenarios.

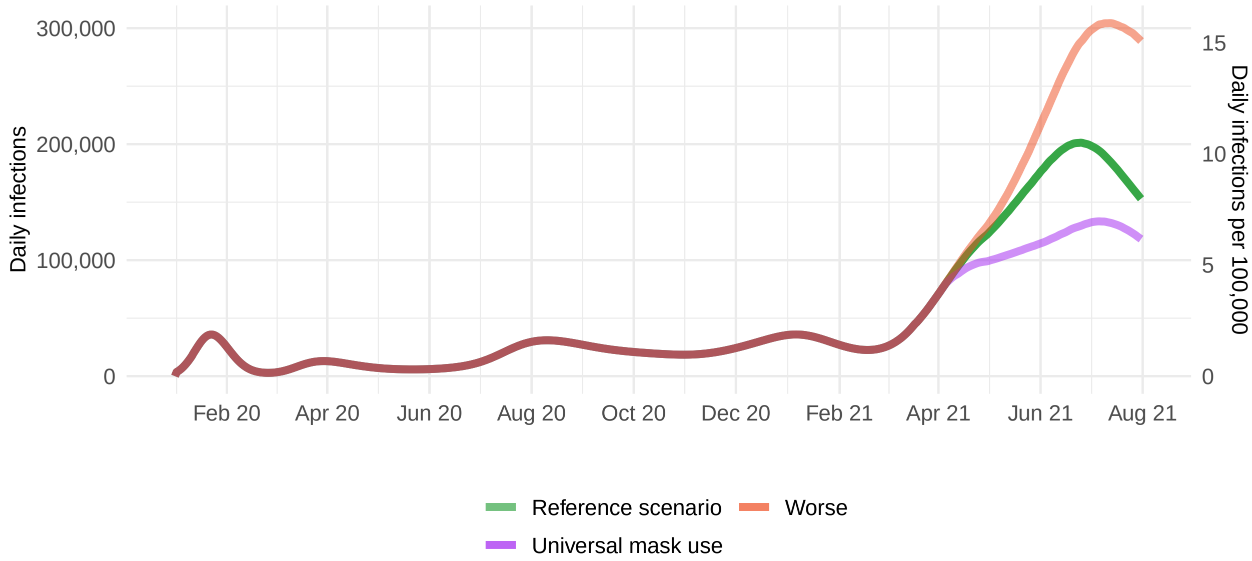


Figure 22. Comparison of reference model projections with other COVID modeling groups. For this comparison, we are including projections of daily COVID-19 deaths from other modeling groups when available: Delphi from the Massachussets Institute of Technology (Delphi; https://www.covidanalytics.io/home), 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.

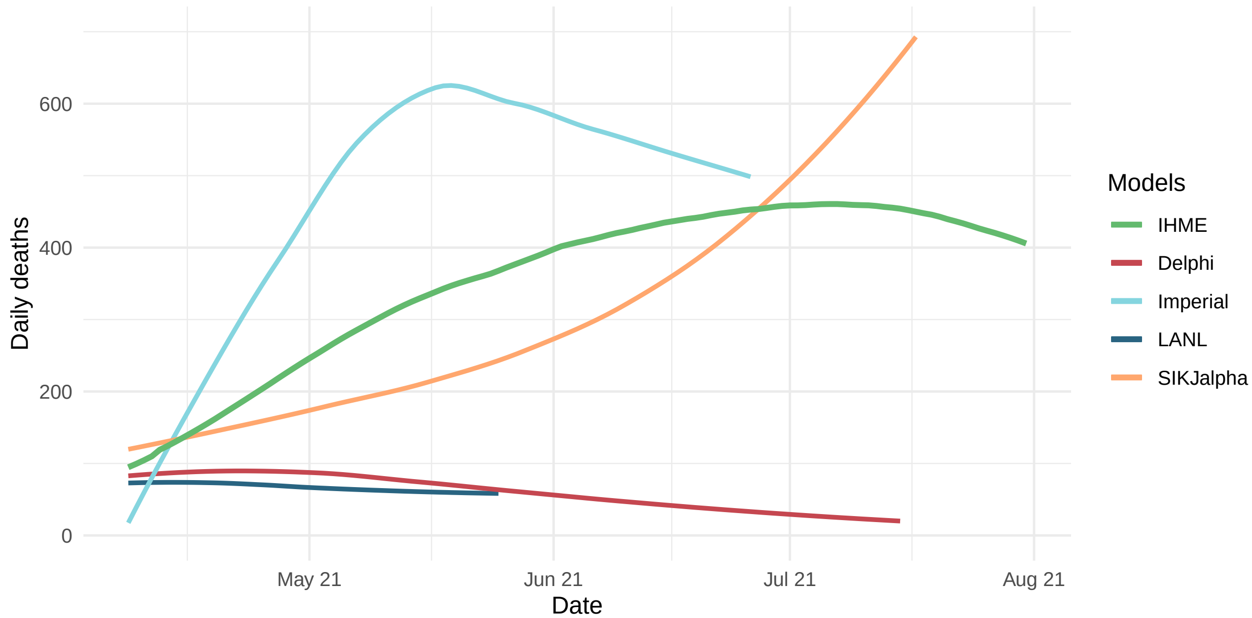


Figure 23. The estimated inpatient hospital usage is shown over time. The percent of hospital beds occupied by COVID-19 patients is color coded based on observed quantiles of the maximum proportion of beds occupied by COVID-19 patients. Less than 5% is considered *low stress*, 5-9% is considered *moderate stress*, 10-19% is considered *high stress*, and greater than 20% is considered *extreme stress*.

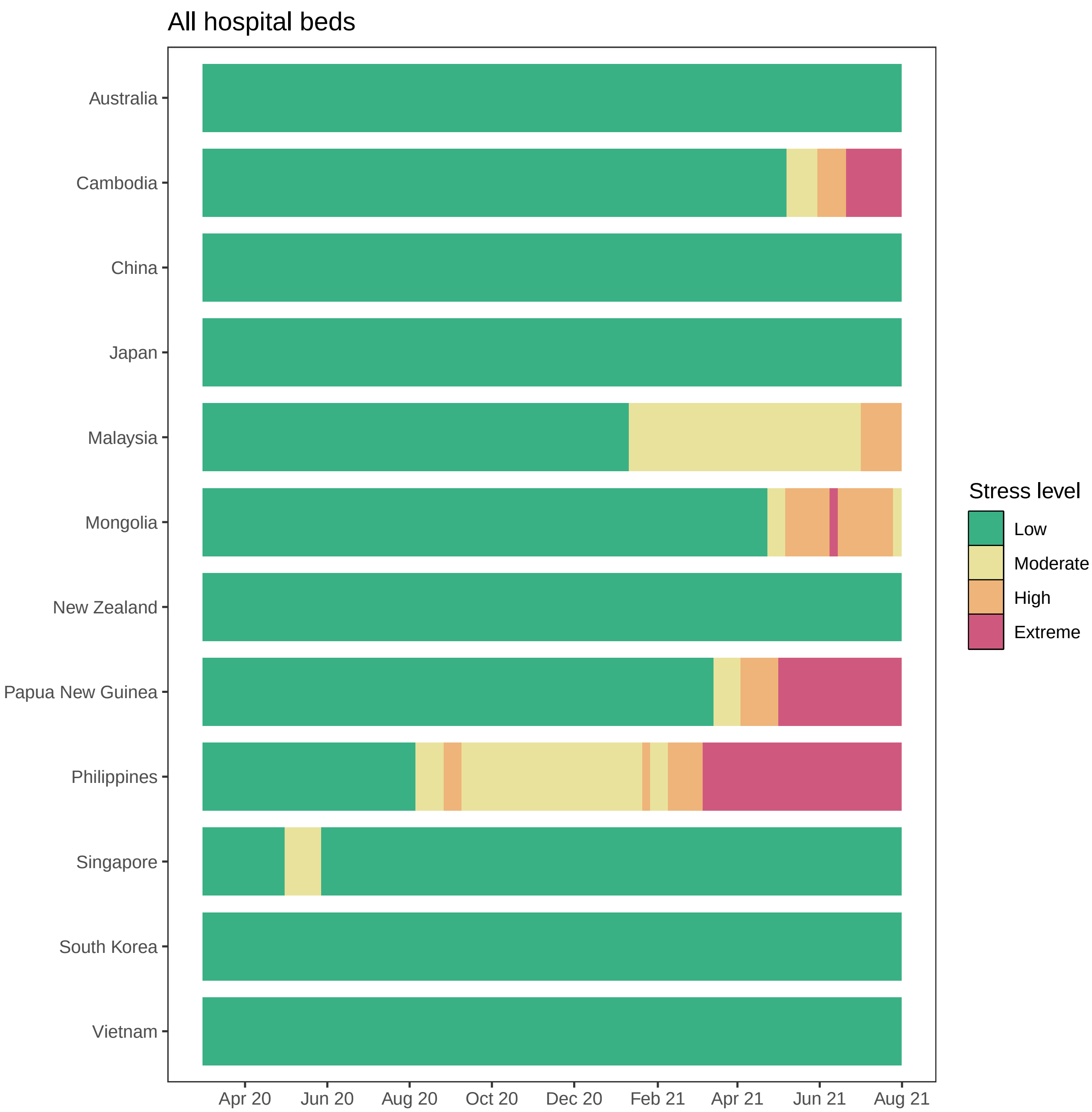
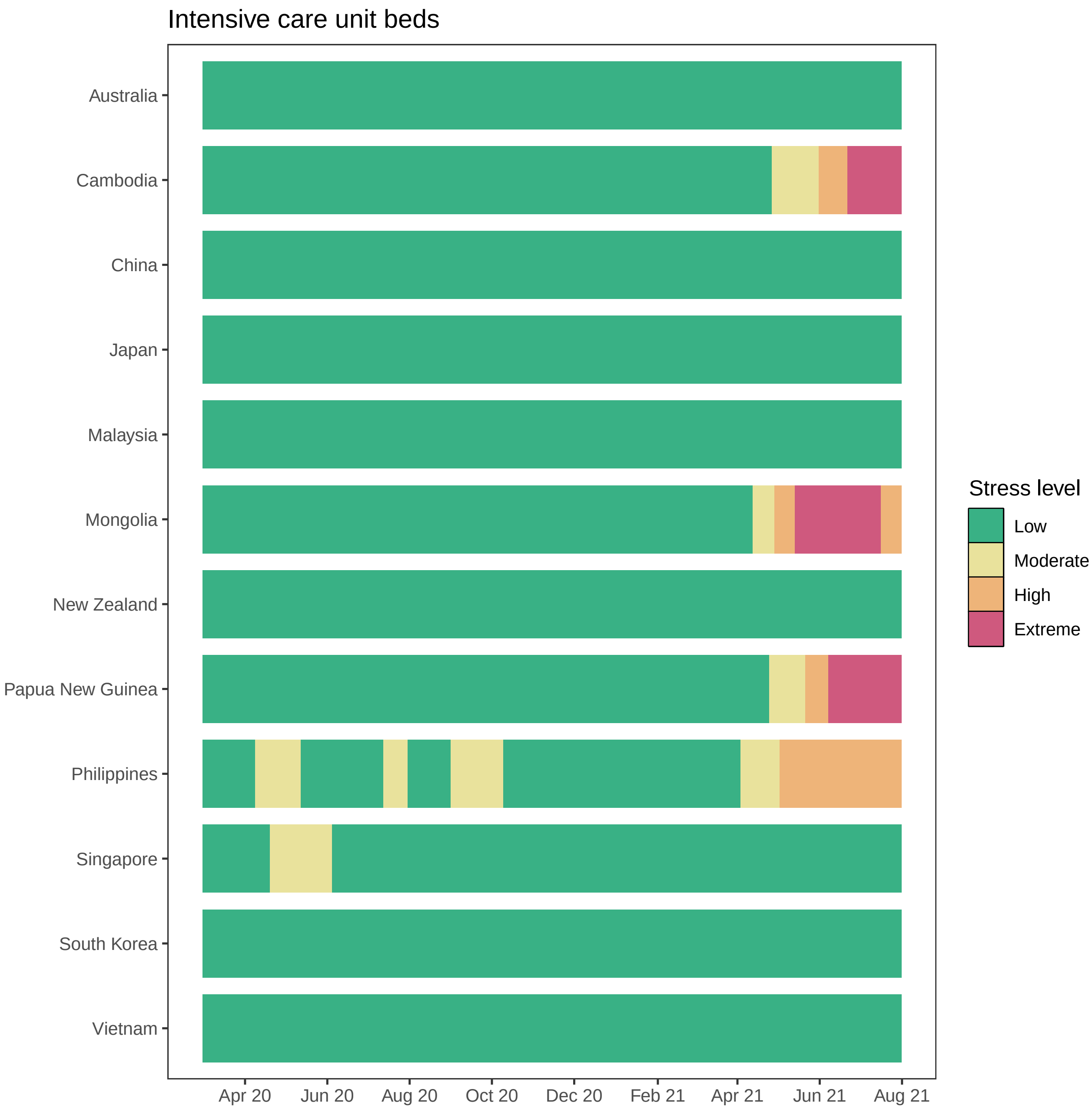


Figure 24. The estimated intensive care unit (ICU) usage is shown over time. The percent of ICU beds occupied by COVID-19 patients is color coded based on observed quantiles of the maximum proportion of ICU beds occupied by COVID-19 patients. Less than 10% is considered *low stress*, 10-29% is considered *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/).

Vaccine hesitancy data are from the Facebook Global Symptom Survey (This research is based on survey results from University of Maryland Social Data Science Center), the Facebook United States Symptom Survey (in collaboration with Carnegie Mellon University), and from the Facebook COVID-19 Beliefs, Behaviors, and Norms Study conducted by the Massachusetts Institute of Technology.

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.