COVID-19 Results Briefing

The African Region

April 08, 2021

This document contains summary information on the latest projections from the IHME model on COVID-19 in the African Region. The model was run on April 6, 2021 with data through April 5, 2021.

Daily cases continue to increase in the region, while daily deaths declined this week. Mobility remains very high, and mask use is only 50% on average. This – coupled with the circulation of the B.1.351 and B.1.117 variants – contributes to rising cases. An effective R greater than 1 in 20 countries suggests transmission will continue to increase throughout the continent. With an infection detection rate of only close to 2%, vigilant mask usage and concerted efforts to reduce mobility are important to mitigate the spread. This week's projections include an extension to August 1, by which time our reference scenario estimates 129,000 cumulative deaths. This represents an additional 51,000 deaths between April 5 and August 1. Daily deaths will peak at 490 on July 5. If mask use could be increased to 95%, 22,000 lives could be saved. Strategies to tackle this phase of the pandemic over the next few months remain expanding vaccination wherever possible and bolstering vaccine confidence, expanding mask use, and maintaining or re-imposing appropriate social distancing mandates as needed when transmission intensifies.

Current situation

- Daily reported cases in the last week increased to 8,600 per day on average compared to 7,900 the week before (Figure 1).
- Daily deaths in the last week decreased to 170 per day on average compared to 180 the week before (Figure 2). This makes COVID-19 the number 24 cause of death in the African Region this week (Table 1).
- The daily death rate is greater than 4 per million in Botswana and Seychelles (Figure 3).
- We estimated that 11% of people in the African Region have been infected as of April 5 (Figure 4).
- Effective R, computed using cases, hospitalizations, and deaths, is greater than 1 in 20 countries (Figure 5).
- The infection detection rate in the African Region was close to 2% on April 5 (Figure 6).

Trends in drivers of transmission

- Mobility last week was 8% lower than the pre-COVID-19 baseline (Figure 9). Mobility was near baseline (within 10%) in 27 countries. Mobility was lower than 30% of baseline in Cabo Verde, Mauritius, and Seychelles.

- As of April 5, we estimated that 50% of people always wore a mask when leaving their home, the same as last week (Figure 11). Mask use was lower than 50% in Algeria, Burkina Faso, Burundi, Cameroon, Central African Republic, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Gambia, Mauritania, Nigeria, São Tomé and Príncipe, South Sudan, United Republic of Tanzania, and Zambia.
- There were 14 diagnostic tests per 100,000 people on April 5 (Figure 13).
- In the African Region 58.4% of people say they would accept or would probably accept a vaccine for COVID-19. This is up by 0.7 percentage points from last week. The fraction of the population who are open to receiving a COVID-19 vaccine ranges from 25% in Congo to 80% in Guinea (Figure 17).
- In our current reference scenario, we expect that 244.80 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 129,000 cumulative deaths on August 1. This represents 51,000 additional deaths from April 5 to August 1 (Figure 19). Daily deaths will peak at 490 on July 5 (Figure 20).
- If **universal mask coverage (95%)** were attained in the next week, our model projects 22,000 fewer cumulative deaths compared to the reference scenario on August 1 (Figure 19).
- Under our **worse scenario**, our model projects 135,000 cumulative deaths on August 1, an additional 5,600 deaths compared to our reference scenario (Figure 19).
- By August 1, we project that 4,900 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, 29 countries will have high or extreme stress on hospital beds (Figure 23). At some point from April through August 1, 37 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

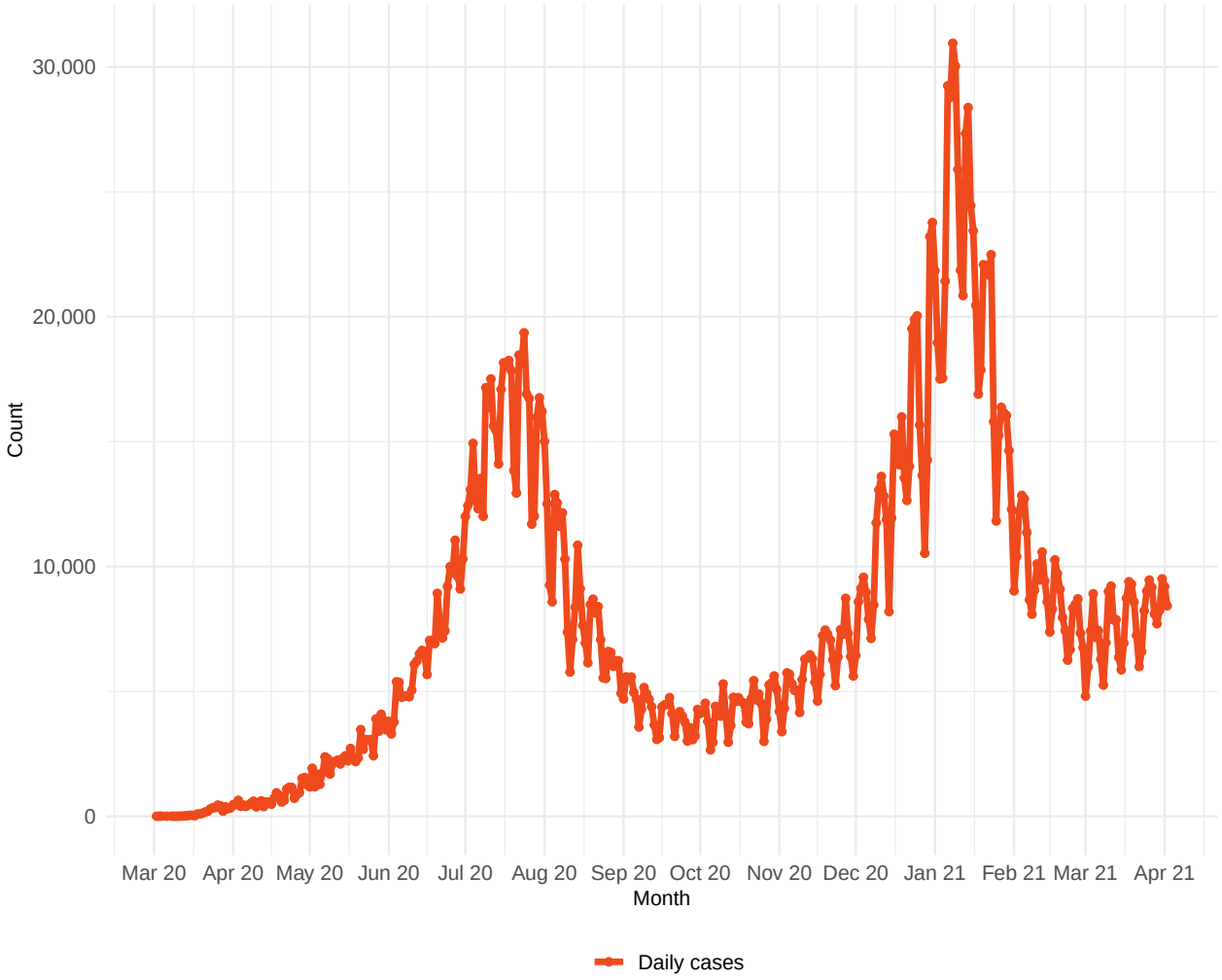


Table 1. Ranking of COVID-19 among the leading causes of mortality this week, assuming uniform deaths of non-COVID causes throughout the year

Cause name	Weekly deaths	Ranking
Neonatal disorders	14,422	1
Lower respiratory infections	12,732	2
HIV/AIDS	12,224	3
Malaria	11,351	4
Diarrheal diseases	11,088	5
Ischemic heart disease	8,306	6
Stroke	8,063	7
Tuberculosis	7,097	8
Congenital birth defects	3,721	9
Cirrhosis and other chronic liver diseases	3,615	10
COVID-19	1,223	24

Figure 2. Reported daily COVID-19 deaths

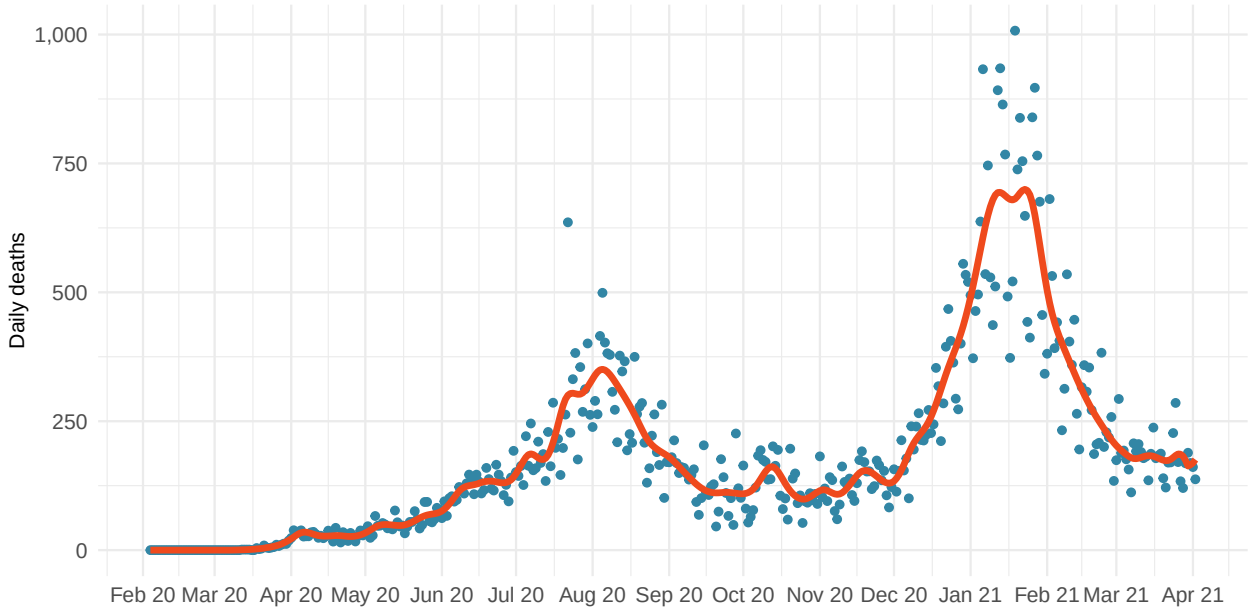


Figure 3. Daily COVID-19 death rate per 1 million on April 05, 2021

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

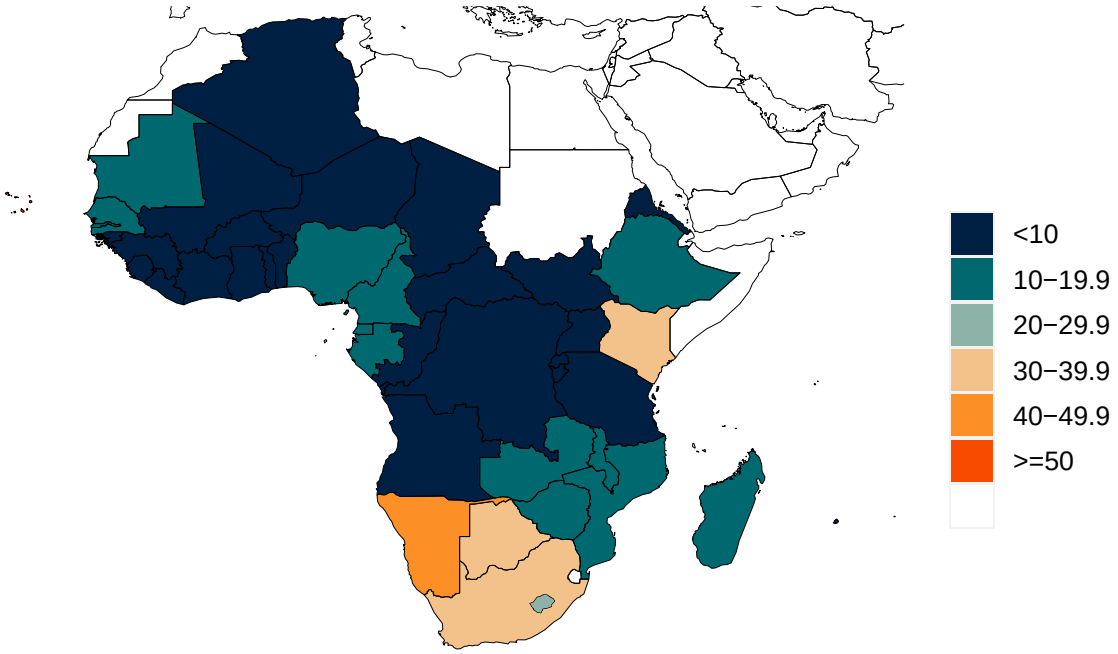


Figure 5. Mean effective R on March 25, 2021. The estimate of effective R is based on the combined analysis of deaths, case reporting, and hospitalizations where available. Current reported cases reflect infections 11-13 days prior, so estimates of effective R can only be made for the recent past. Effective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

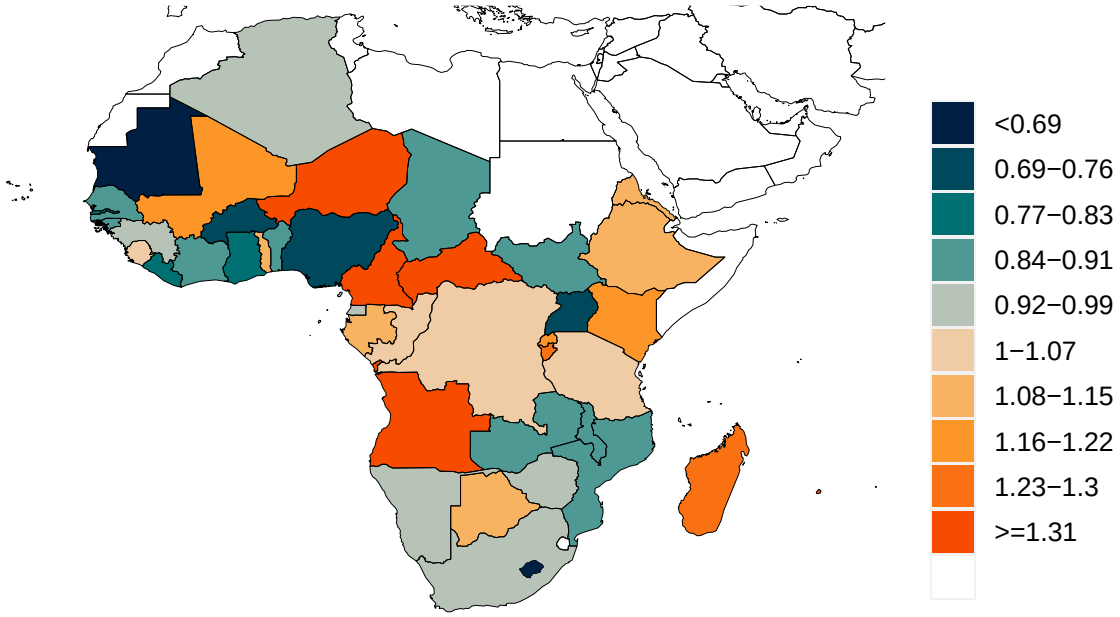
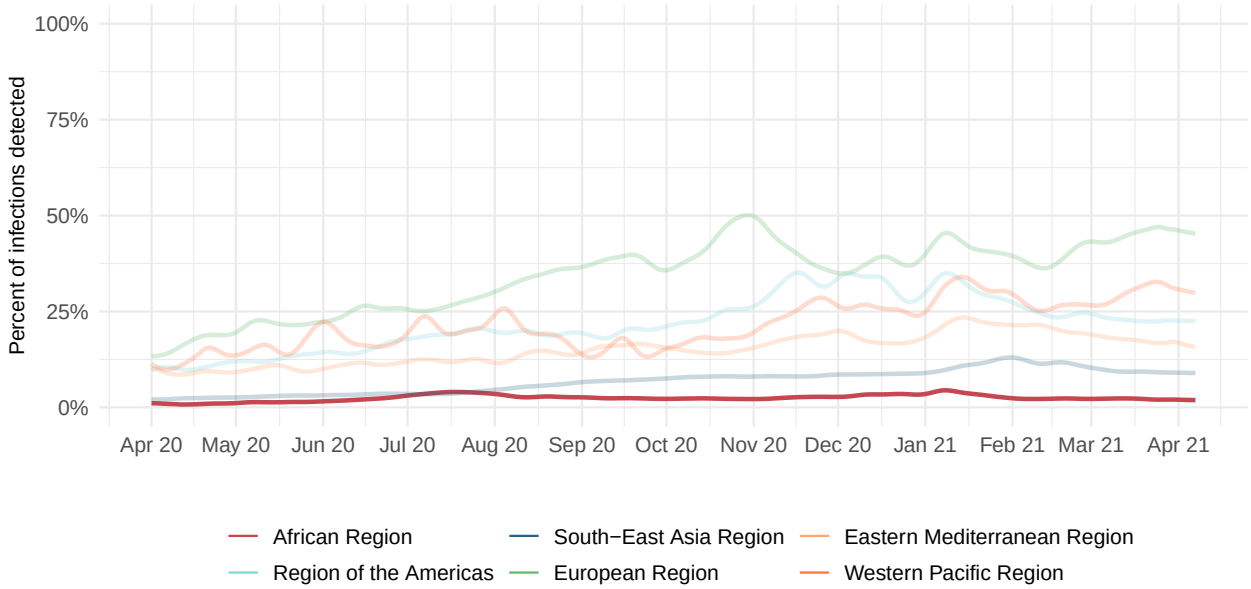


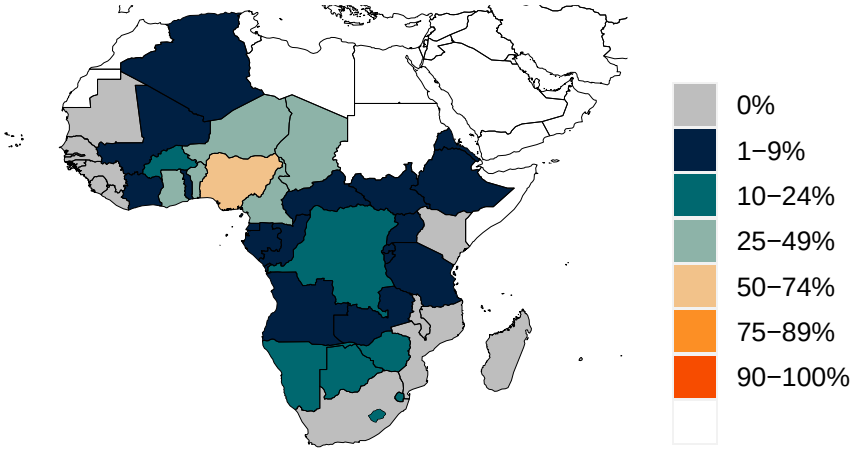
Figure 6. Percent of COVID-19 infections detected. This is estimated as the ratio of reported daily COVID-19 cases to estimated daily COVID-19 infections based on the SEIR disease transmission model.



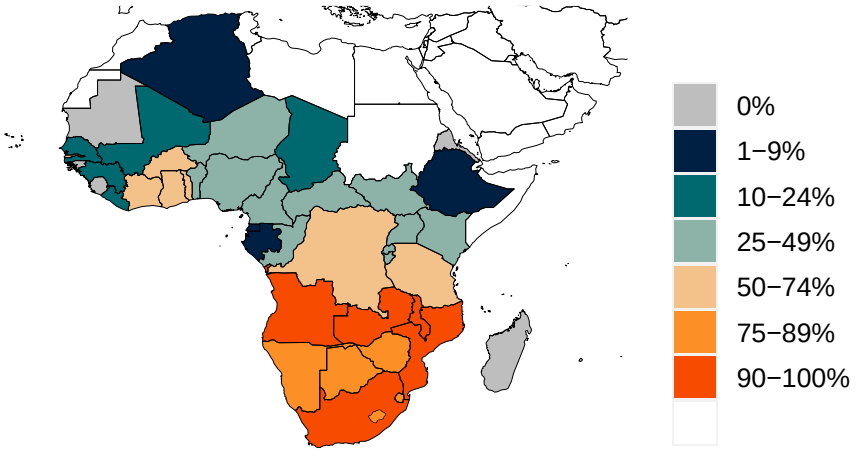
*Due to measurement errors in cases and testing rates, the infection to detection rate (IDR) can exceed 100% at particular points in time.

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

A. Percent B.1.1.7 variant

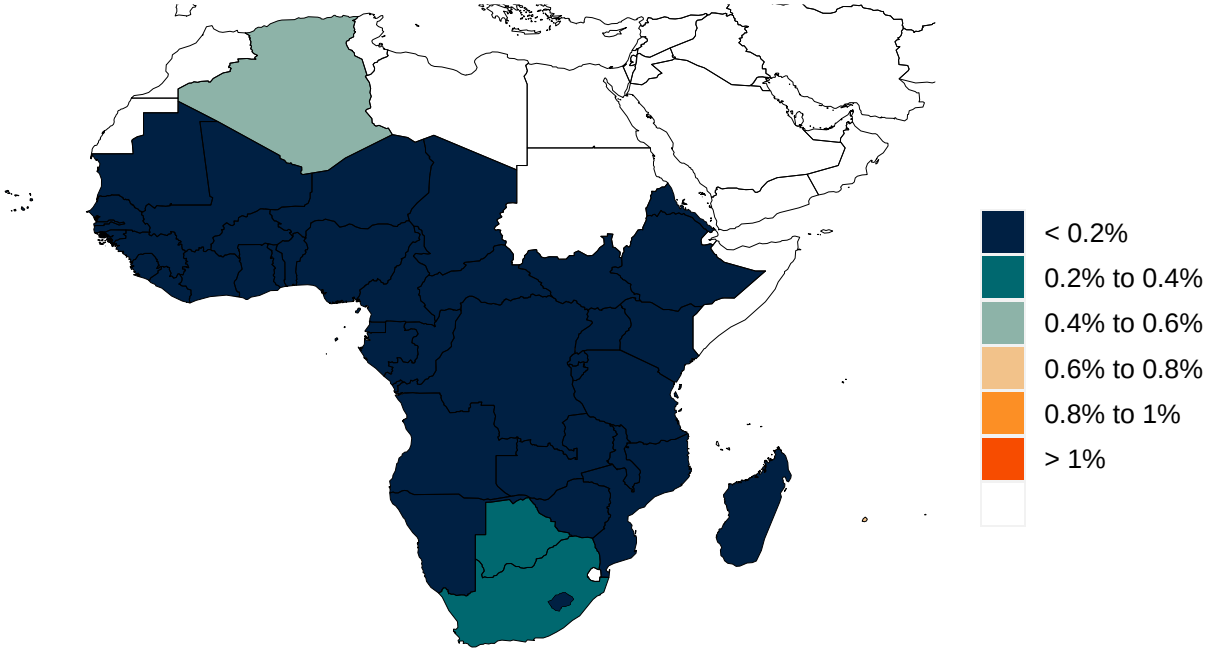


B. Percent B.1.351 variant



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

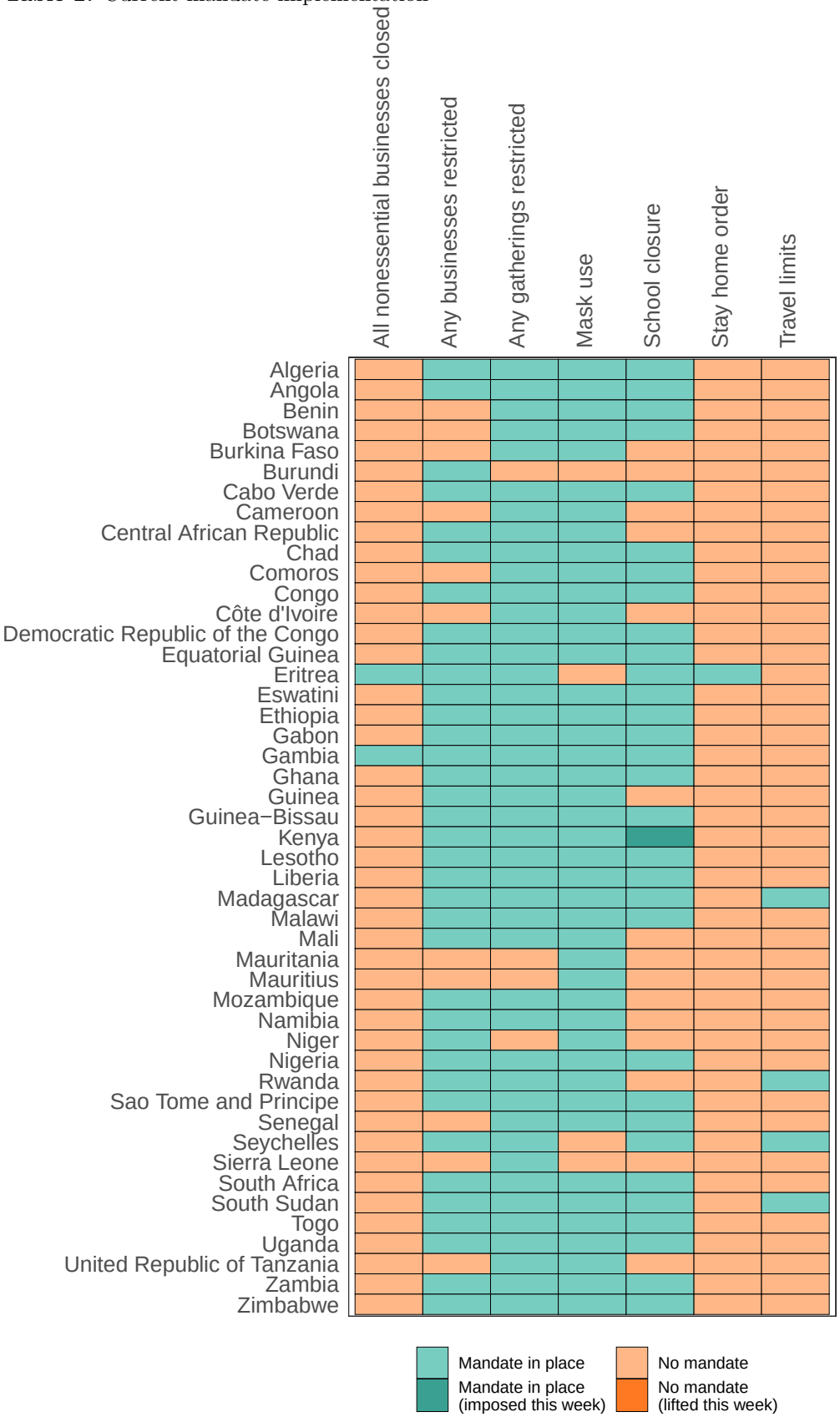


Figure 9. Trend in mobility as measured through smartphone app use compared to January 2020 baseline

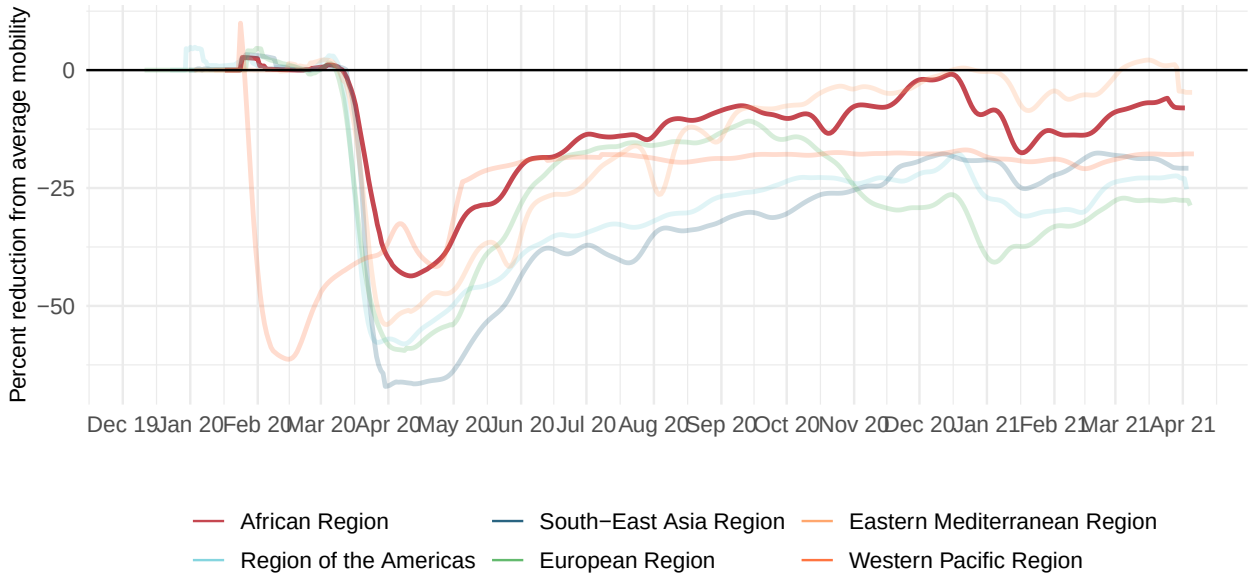


Figure 10. Mobility level as measured through smartphone app use compared to January 2020 baseline (percent) on April 05, 2021

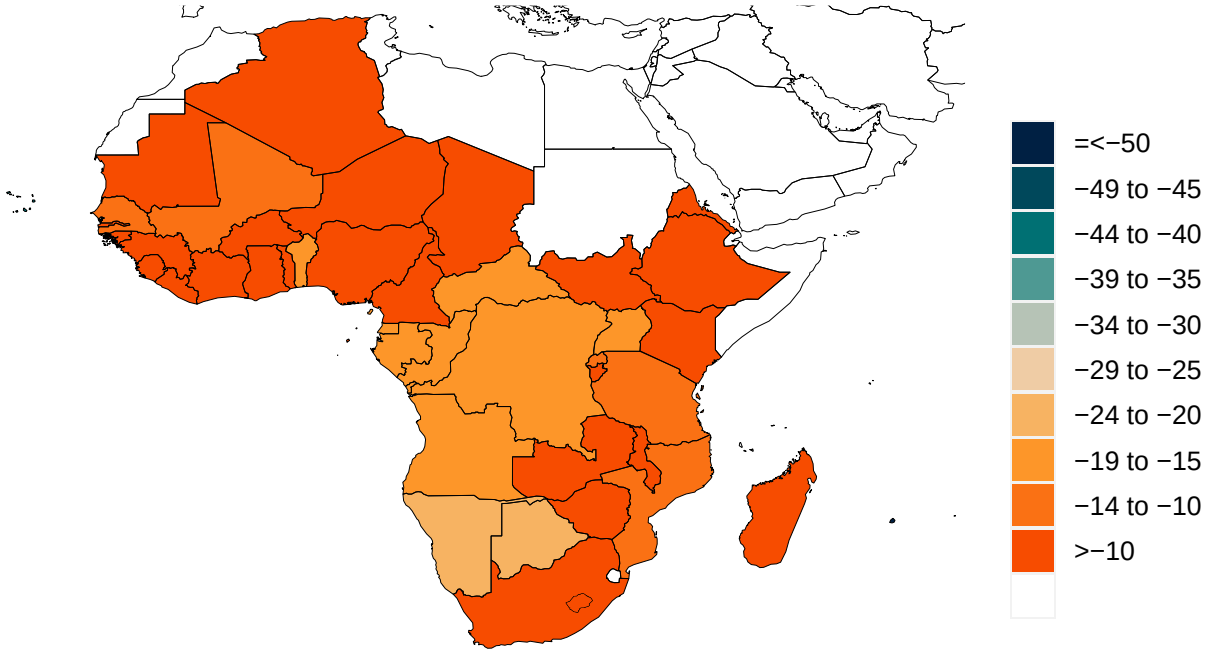


Figure 11. Trend in the proportion of the population reporting always wearing a mask when leaving home

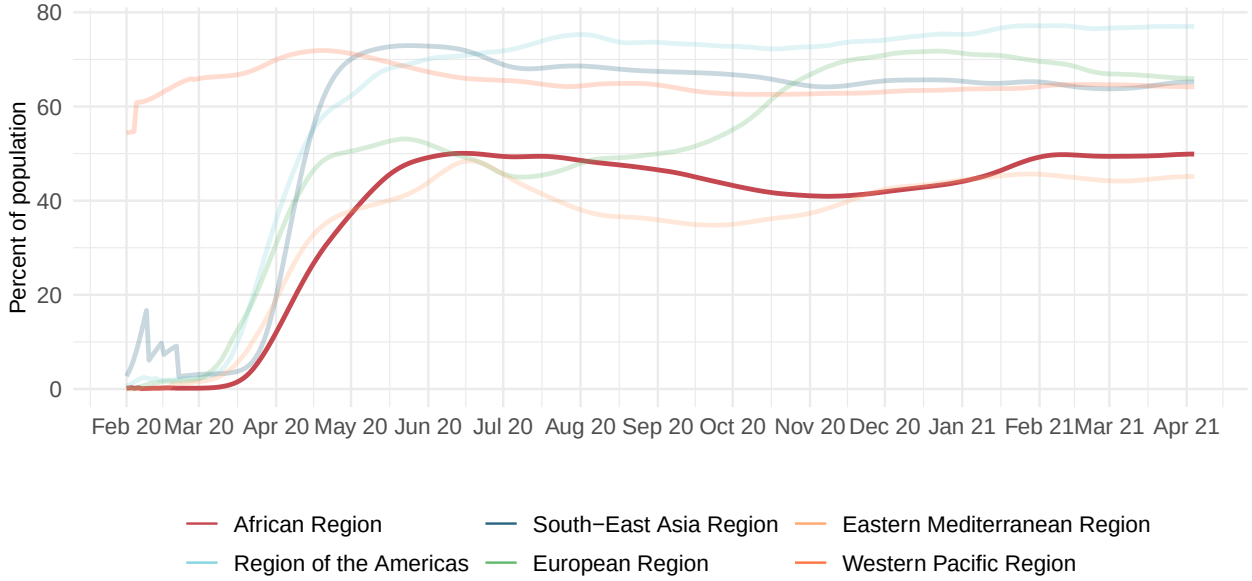


Figure 12. Proportion of the population reporting always wearing a mask when leaving home on April 05, 2021

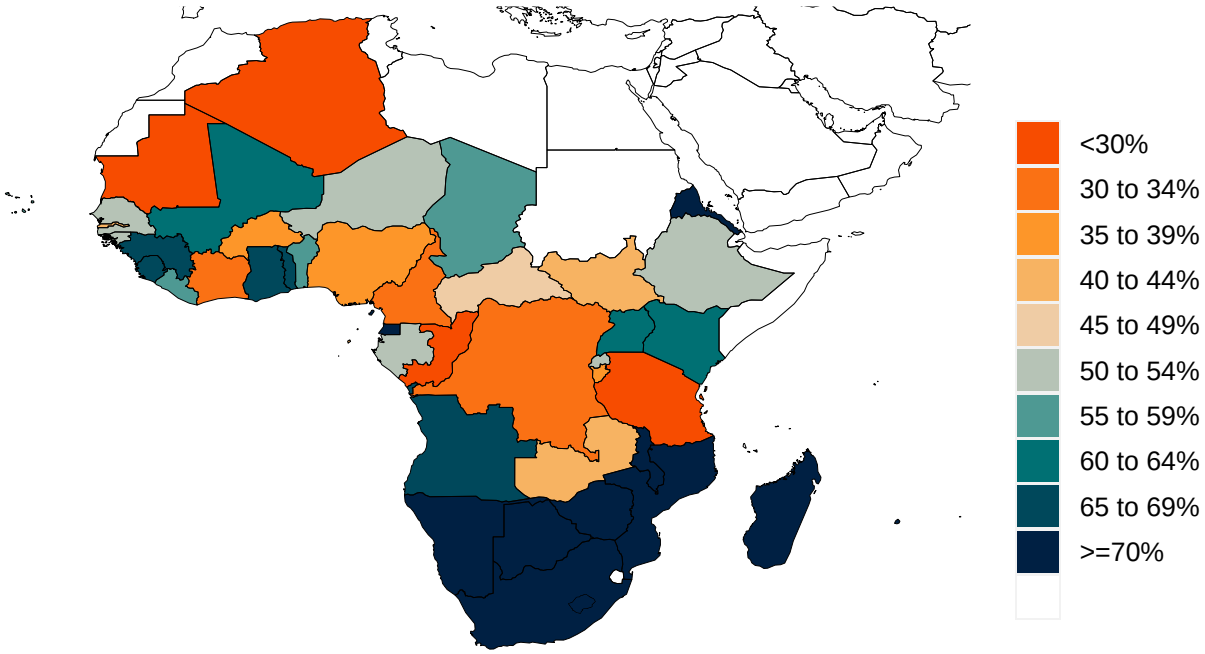


Figure 13. Trend in COVID-19 diagnostic tests per 100,000 people

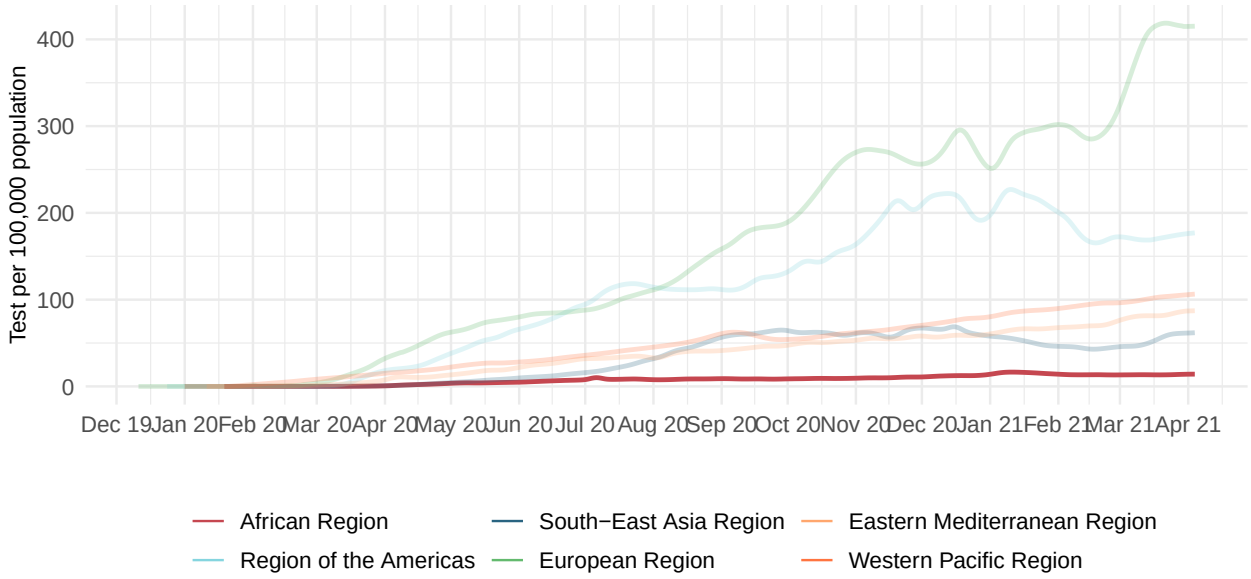


Figure 14. COVID-19 diagnostic tests per 100,000 people on April 01, 2021

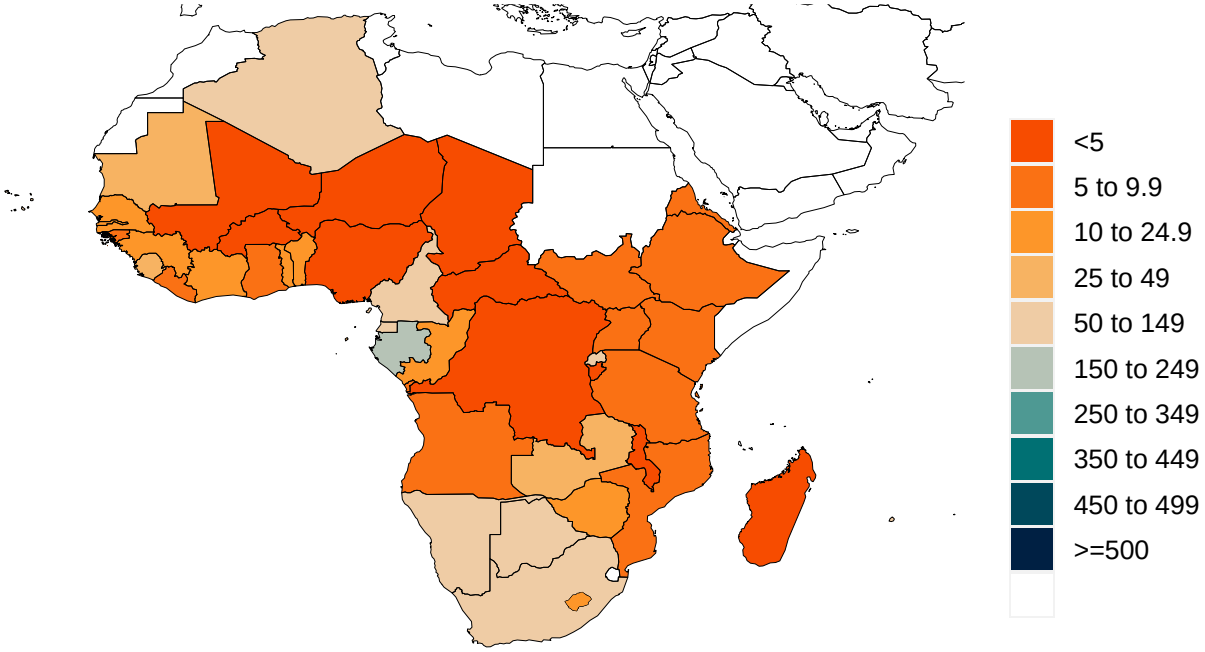


Figure 15. Increase in the risk of death due to pneumonia on February 1 2020 compared to August 1 2020

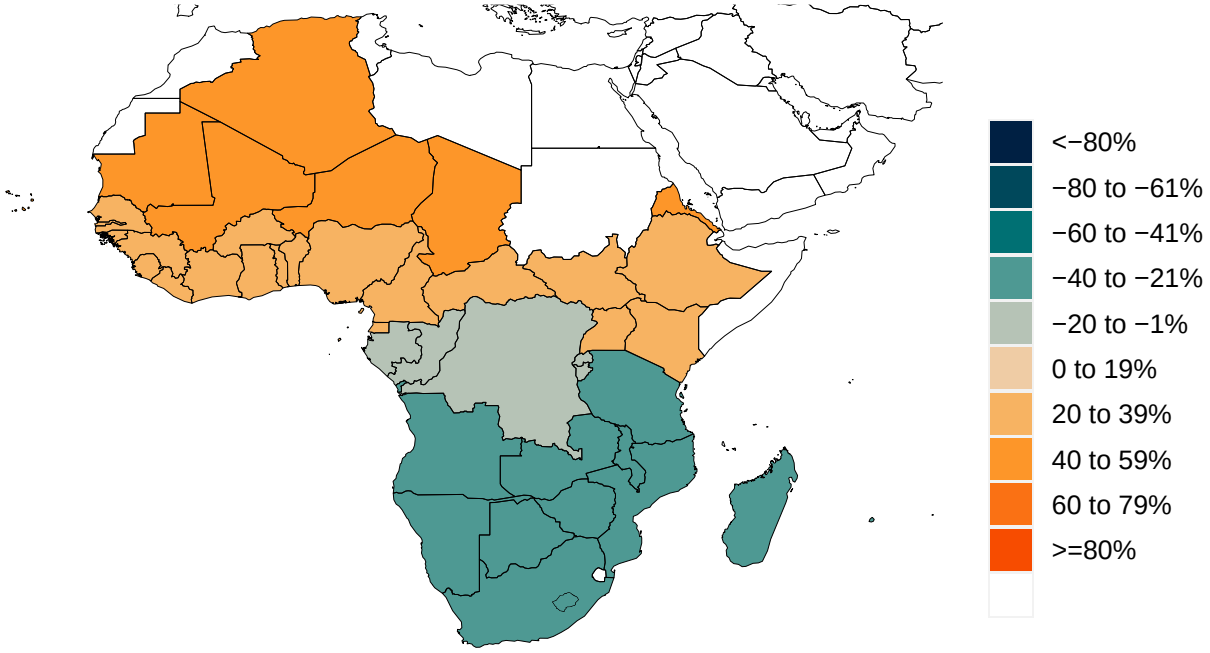


Table 3. The SEIR model uses variant-specific estimates of vaccine efficacy at preventing symptomatic disease and at preventing infection. We use data from clinical trials directly, where available, and make estimates otherwise. More information can be found on our website (http://www.healthdata.org/node/8584).

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).

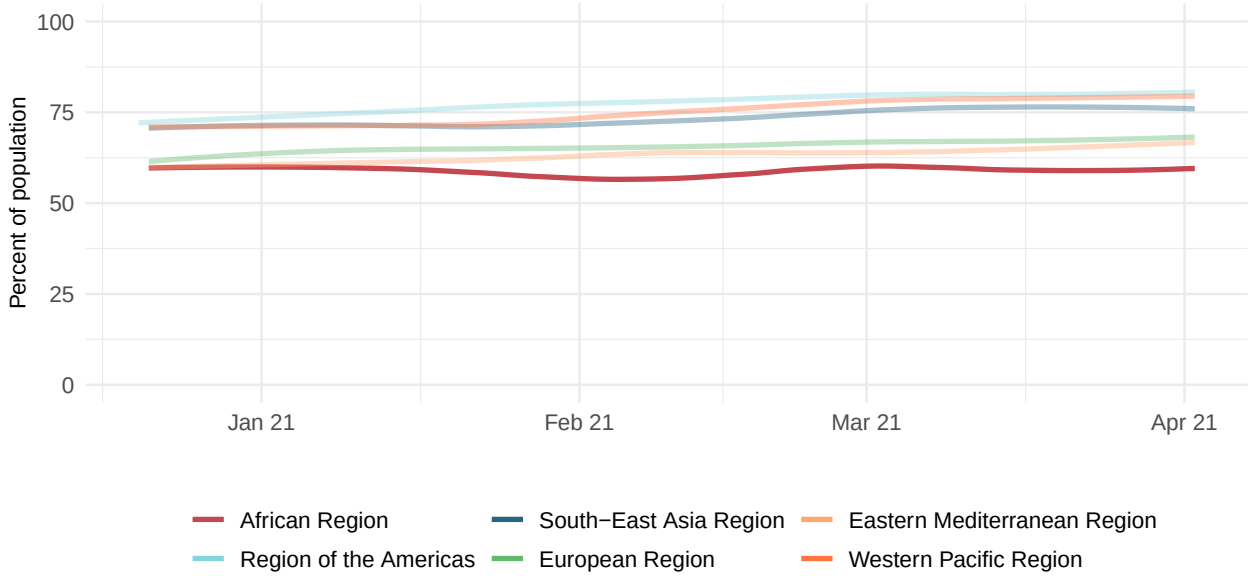


Figure 17. This figure shows the estimated proportion of the adult (18+) population that has been vaccinated or is open to receiving a COVID-19 vaccine based on Facebook survey responses (yes and yes, probably).

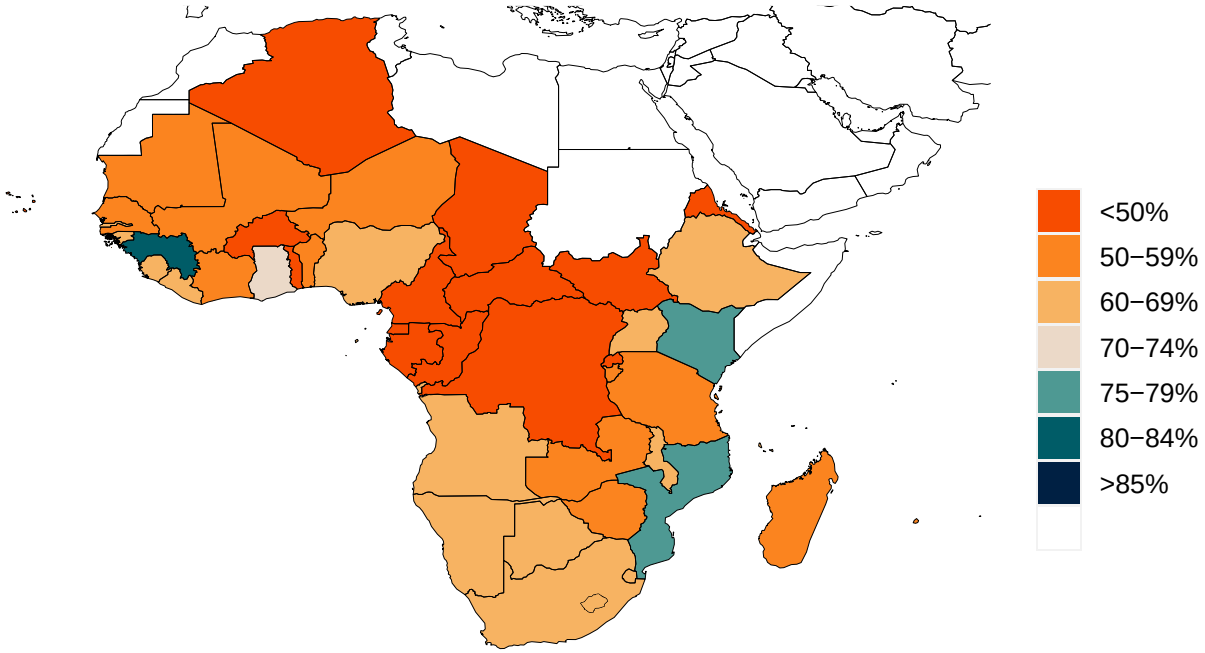
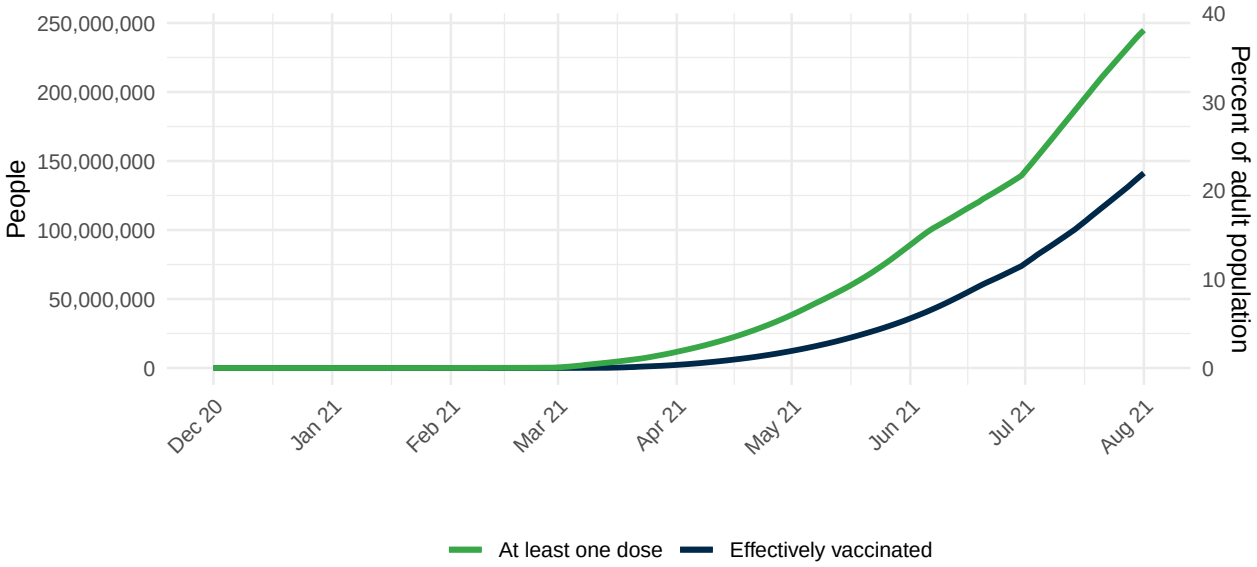


Figure 18. The number of people who receive any vaccine and those who are effectively vaccinated and protected against disease, accounting for efficacy, loss to follow up for two-dose vaccines, partial immunity after one dose, and immunity after two doses.



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

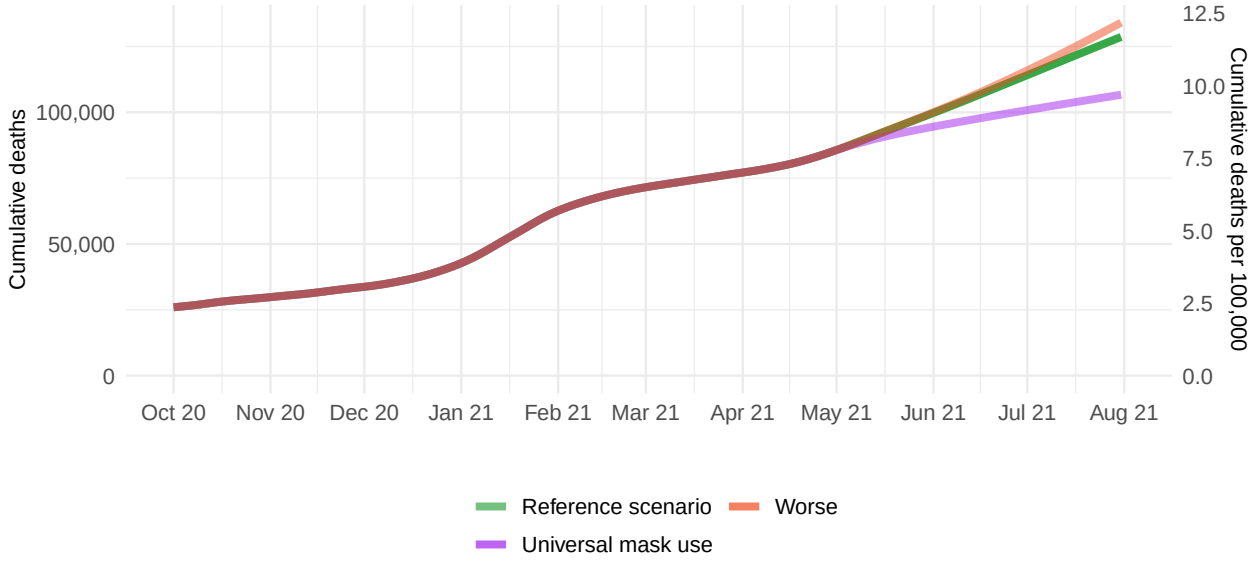


Figure 20. Daily COVID-19 deaths until August 01, 2021 for three scenarios,

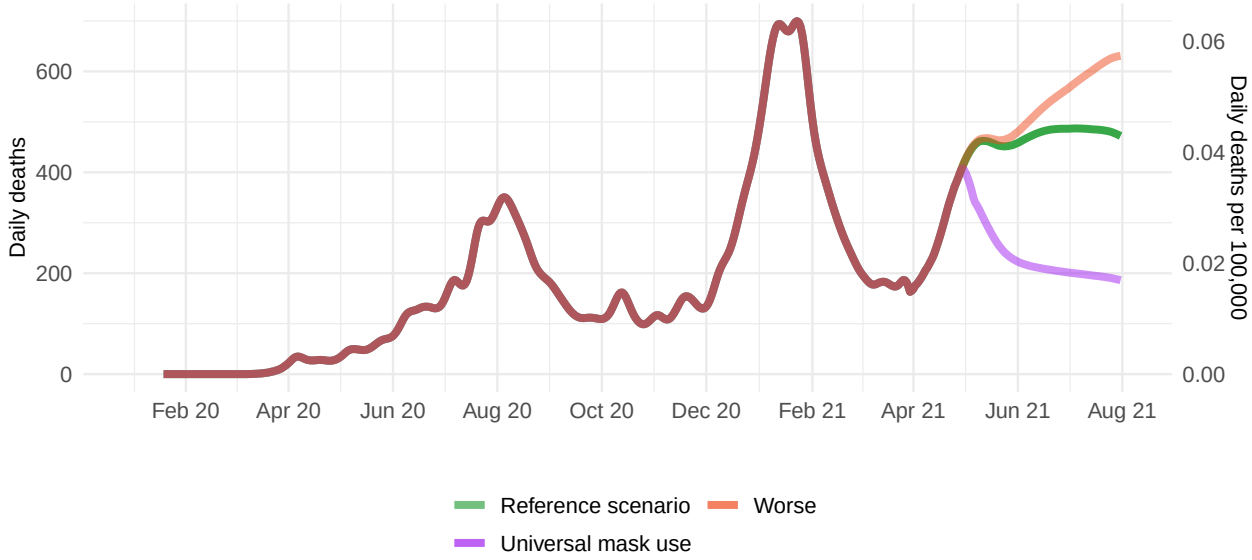


Figure 21. Daily COVID-19 infections until August 01, 2021 for three scenarios.

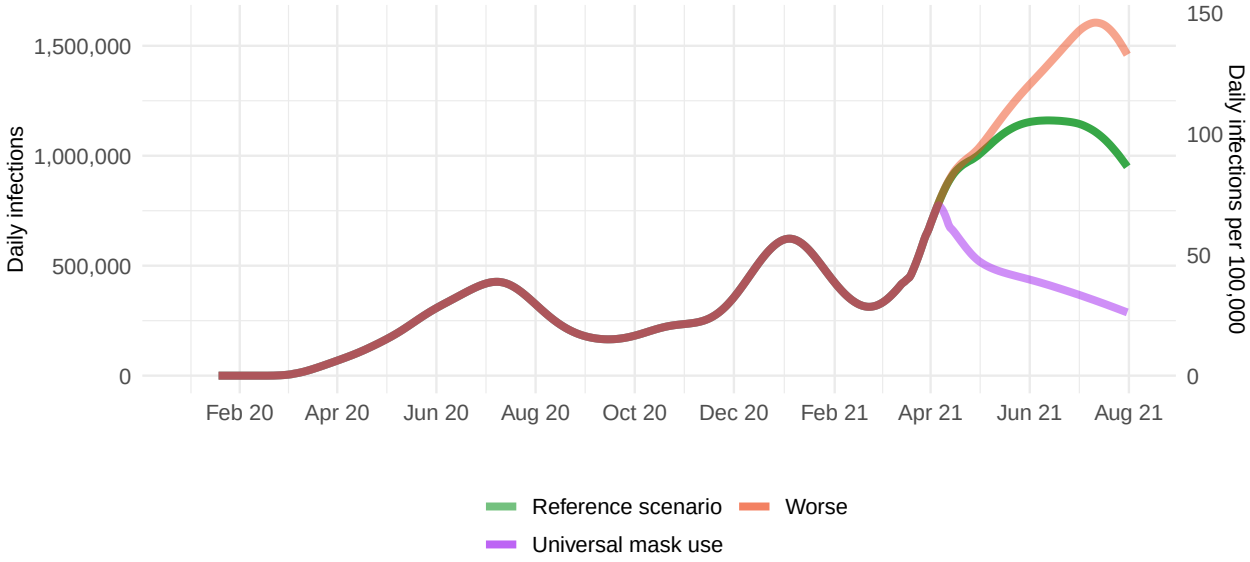


Figure 22. Comparison of reference model projections with other COVID modeling groups. For this comparison, we are including projections of daily COVID-19 deaths from other modeling groups when available: Delphi from the Massachussets Institute of Technology (Delphi; https://www.covidanalytics.io/home),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

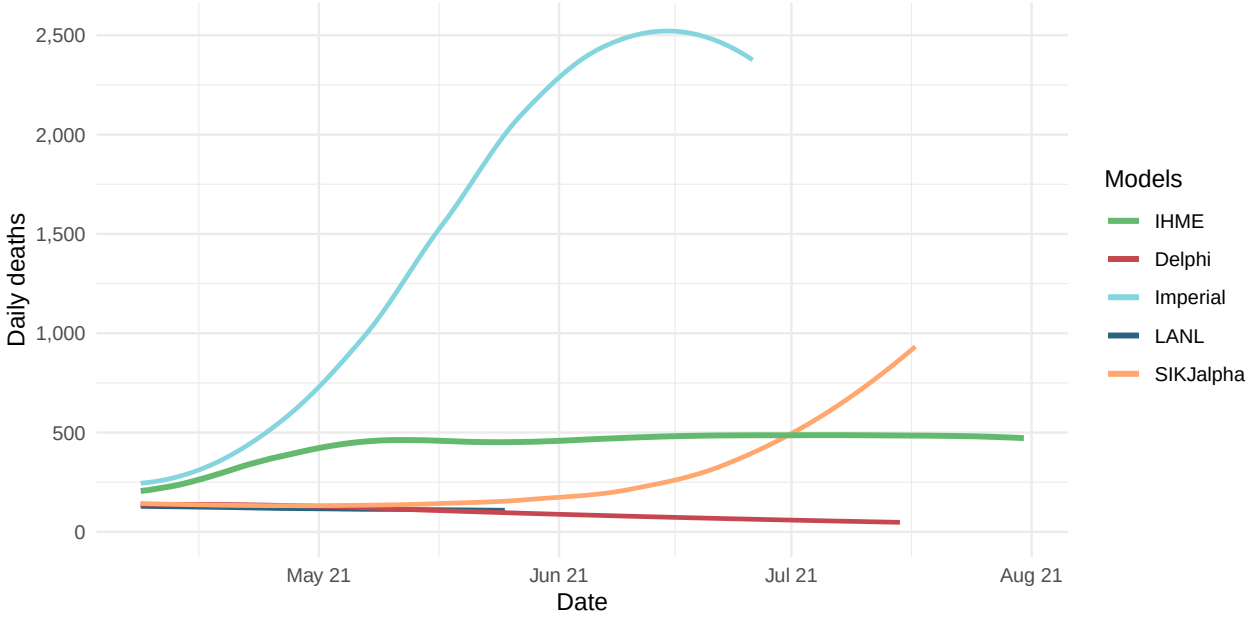


Figure 23. The estimated inpatient hospital usage is shown over time. The percent of hospital beds occupied by COVID-19 patients is color coded based on observed quantiles of the maximum proportion of beds occupied by COVID-19 patients. Less than 5% is considered *low stress*, 5-9% is considered *moderate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