COVID-19 Results Briefing

The African Region

August 25, 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 August 24, 2021, with data through August 23, 2021.

Daily reported cases and deaths continued to decline in the African Region this week. This trend is driven by declines in countries with early Delta surges that have peaked, while across the region, new surges are well underway in much of West Africa and Ethiopia. Patterns emerging from Scotland are concerning for countries with Delta surges in the African Region – there, cases peaked in early July and then declined but have, over the last 10 days, started increasing rapidly. This strongly suggests that with the Delta variant, changes in behavior can lead to rapid increases or decreases in settings where more than 15% to 20% of individuals are susceptible. Currently, we estimate that 20% of people in the African Region have been infected; many countries have eased Delta-related mandates in recent weeks, and inequitable vaccine distribution continues. By December 1, we expect that 43% of people will be immune to non-escape variants, and 37% of people will be immune to escape variants. Natural infection alongside the increasing, albeit slow, pace of vaccination in the region indicates we should expect to see ongoing transmission even without the emergence of a new escape variant. Waning immunity not captured in this model and/or the emergence of a new variant that can escape natural or vaccine-derived immunity would make the prospects for later this year and into 2022 worse. So far, post-vaccination studies in the US, the UK, Qatar, and Israel suggest sustained protection against severe disease and death. Eventually we should see the death toll greatly reduced at the regional level, but with only 5% of the African Region's population expected to be fully vaccinated by December 1, this prospect will be much later in 2022. In our reference scenario, we project 191,000 cumulative reported deaths and 579,000 cumulative excess deaths on December 1, representing 61,000 additional reported deaths and 203,000 additional excess deaths from August 23 to December 1. Daily reported deaths will rise to 800 per day by November 29, and we project daily excess deaths to rise to 2,840 by November 29. Universal mask use could save 27,000 lives (and up to 95,000 lives when excess deaths are considered). Over the next months the main strategies for managing the pandemic remain i) increasing the supply of vaccination through vaccine donations and increased manufacturing capacity; ii) reducing vaccine hesitancy through a variety of measures including outreach and community engagement; iii) use of masks and mask mandates wherever transmission is rapidly increasing; iv) implementation of other non-pharmaceutical interventions when hospitalizations and deaths are increasing to prevent hospital systems from becoming overwhelmed; and v) adequate testing of the vaccinated and unvaccinated to track ongoing transmission, including genetic sequencing to identify new variants as they emerge.

Current situation

- Daily infections in the last week increased to 751,700 per day on average compared to 751,600 the week before (Figure 1). Daily hospital census in the last week (through August 23) decreased to 104,800 per day on average compared to 108,200 the week before.

- Daily reported cases in the last week decreased to 22,000 per day on average compared to 22,300 the week before (Figure 2).

- Reported deaths due to COVID-19 in the last week decreased to 560 per day on average compared to 610 the week before (Figure 3).

- Excess deaths due to COVID-19 in the last week decreased to 1,600 per day on average compared to 1,800 the week before (Figure 3). This makes COVID-19 the number 5 cause of death in the African Region this week (Table 1). Estimated excess daily deaths due to COVID-19 were 2.9 times larger than the reported number of deaths.

- The daily reported COVID-19 death rate is greater than 4 per million in Botswana, Eswatini, Seychelles, and South Africa (Figure 4).

- The daily rate of excess deaths due to COVID-19 is greater than 4 per million in Botswana, Eswatini, The Gambia, Namibia, Seychelles, South Africa, and Zimbabwe (Figure 4).

- We estimate that 20% of people in the African Region have been infected as of August 23 (Figure 6).

- Effective R, computed using cases, hospitalizations, and deaths, is greater than 1 in 22 countries (Figure 7).

- The infection-detection rate in the African Region was close to 3% on August 23 (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 the Beta variant is circulating in no countries, that the Delta variant is circulating in 41 countries, and that the Gamma variant is circulating in seven countries.

Trends in drivers of transmission

- Mobility last week was 12% higher than the pre-COVID-19 baseline (Figure 11). Mobility was near baseline (within 10%) in 44 countries. Mobility was lower than 30% of baseline in Seychelles.

- As of August 23, in the COVID-19 Trends and Impact Survey, 51% of people self-report that they always wore a mask when leaving their home, the same as last week (Figure 13).

- There were 18 diagnostic tests per 100,000 people on August 23 (Figure 15).

- As of August 23, one country has reached 70% or more of the population who have received at least one vaccine dose, and no countries have reached 70% or more of the population who are fully vaccinated (Figure 17).

- In the African Region, 62.4% of people say they would accept or would probably accept a vaccine for COVID-19. This is up by 0.8 percentage points from last week. The proportion of the population who are open to receiving a COVID-19 vaccine ranges from 31% in Senegal to 74% in Kenya (Figure 19).

- In our current reference scenario, we expect that 152.6 million people will be vaccinated with at least one dose by December 1 (Figure 20).

- In our current reference scenario, we expect that by December 1, 43% of people will be immune to non-escape variants and 37% of people will be immune to escape variants (Figure 21).

Projections

- In our **reference scenario**, which represents what we think is most likely to happen, our model projects 191,000 cumulative reported deaths due to COVID-19 on December 1. This represents 61,000 additional deaths from August 23 to December 1. Daily reported deaths will rise to 800 by November 29, 2021 (Figure 22).

- Under our **reference scenario**, our model projects 579,000 cumulative excess deaths due to COVID-19 on December 1. This represents 203,000 additional deaths from August 23 to December 1. Daily excess deaths due to COVID-19 will rise to 2,840 by November 29, 2021 (Figure 22).

- If **universal mask coverage (95%)** were attained in the next week, our model projects 27,000 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 95,000 fewer cumulative excess deaths due to COVID-19 compared to the reference scenario on December 1.

- Under our **worse scenario**, our model projects 205,000 cumulative reported deaths on December 1, an additional 14,000 deaths compared to our reference scenario. Daily reported deaths in the **worse scenario** will rise to 1,130 by November 29, 2021 (Figure 22).

- Under our **worse scenario**, our model projects 626,000 cumulative excess deaths due to COVID-19 on December 1, an additional 47,000 deaths compared to our reference scenario. Daily excess deaths due to COVID-19 in the **worse scenario** will rise to 4,000 by November 29, 2021 (Figure 22).

- Daily infections in the **reference scenario** will rise to 2,722,540 by November 5, 2021 (Figure 23). Daily infections in the **worse scenario** will rise to 3,621,390 by November 2, 2021 (Figure 23).

- Daily cases in the **reference scenario** will rise to 56,910 by November 15, 2021 (Figure 24). Daily cases in the **worse scenario** will rise to 79,800 by November 12, 2021 (Figure 24).

- Daily hospital census in the **reference scenario** will rise to 279,680 by November 25, 2021 (Figure 25). Daily hospital census in the **worse scenario** will rise to 382,300 by November 23, 2021 (Figure 25).

- Figure 26 compares our reference scenario forecasts to other publicly archived models. Forecasts are widely divergent.

- At some point from August through December 1, 35 countries will have high or extreme stress on hospital beds (Figure 27). At some point from August through December 1, 46 countries will have high or extreme stress on intensive care unit (ICU) capacity (Figure 28).

Model updates

We expanded the variant spread model to include the Lambda variant of concern as well as B.1.621. We applied the same inclusion and exclusion rules for these variants as we did for others, and we applied the same spatial spread model to them as well. Based on limited evidence, our spread hierarchy remained mostly unchanged, with the Delta variant dominating in the presence of any variant competition.

Figure 1. Daily COVID-19 hospital census and infections
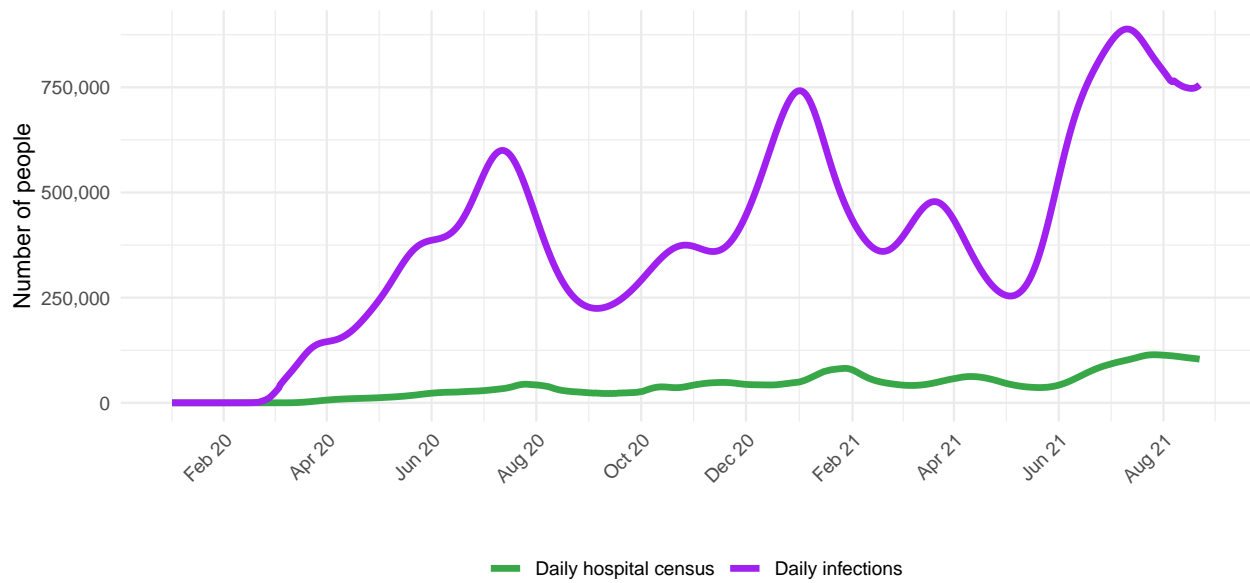
Figure 2. Reported daily COVID-19 cases, moving average
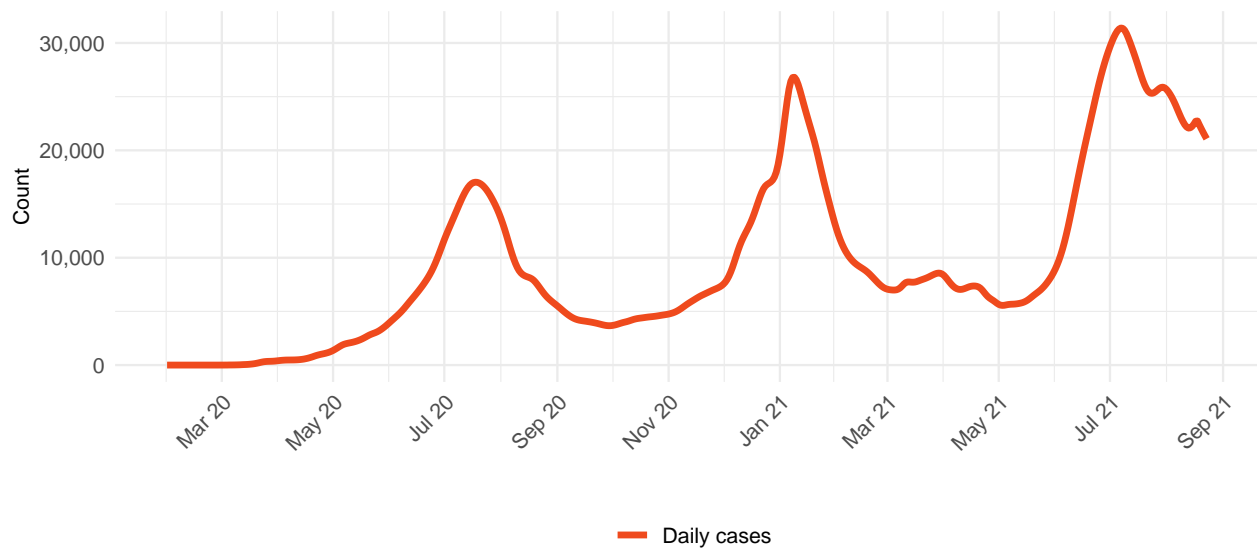
Table 1. Ranking of excess deaths due to COVID-19 among the leading causes of mortality this week, assuming uniform deaths of non-COVID causes throughout the year

Cause name	Weekly deaths	Ranking
Neonatal disorders	14,422	1
Lower respiratory infections	12,732	2
HIV/AIDS	12,224	3
Malaria	11,351	4
COVID-19	11,242	5
Diarrheal diseases	11,088	6
Ischemic heart disease	8,306	7
Stroke	8,063	8
Tuberculosis	7,097	9
Congenital birth defects	3,721	10

Figure 3. Smoothed trend estimate of reported daily COVID-19 deaths (blue) and excess daily deaths due to COVID-19 (orange)
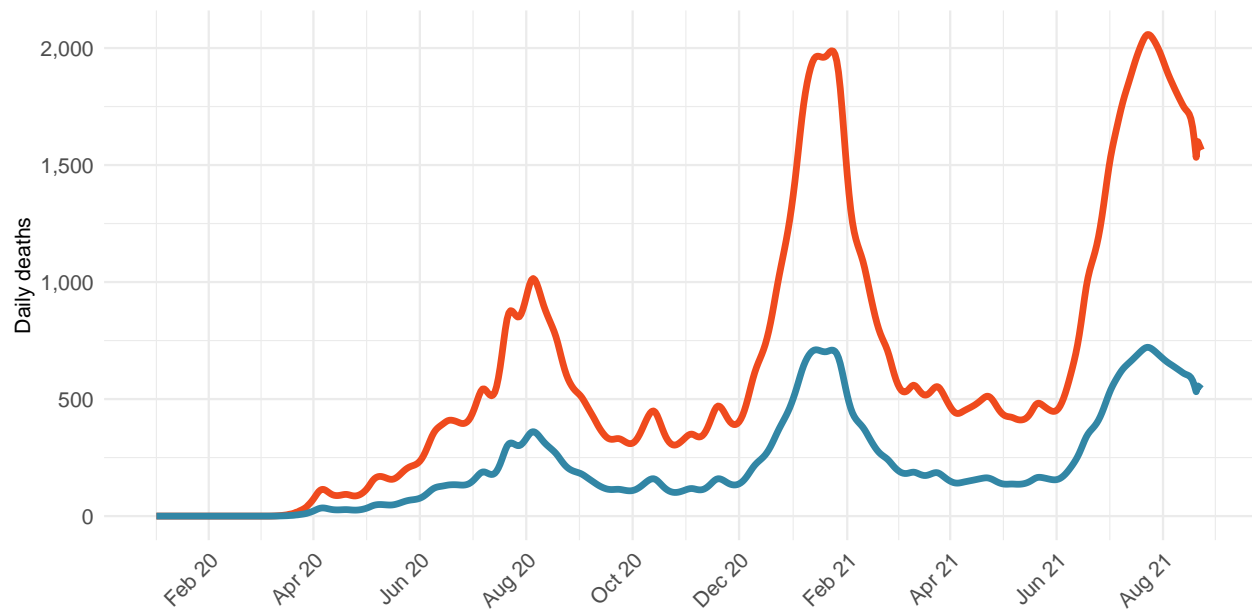
Figure 4. Daily COVID-19 death rate per 1 million on August 23, 2021

A. Daily reported COVID-19 death rate per 1 million
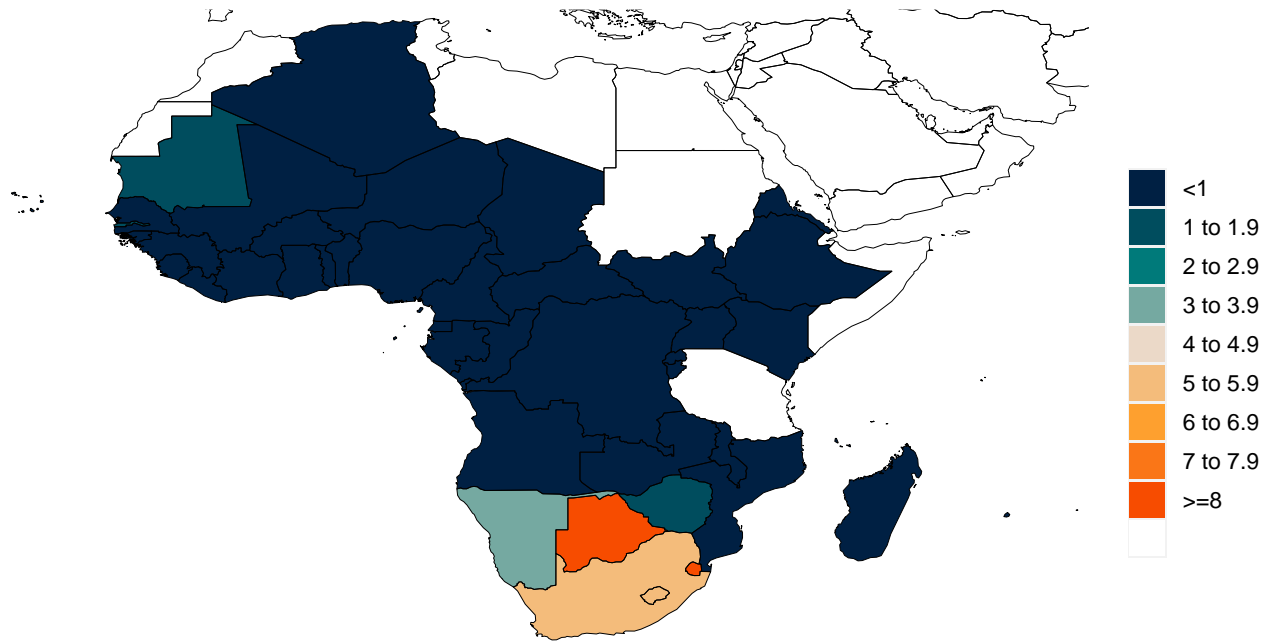
B. Daily excess COVID-19 death rate per 1 million
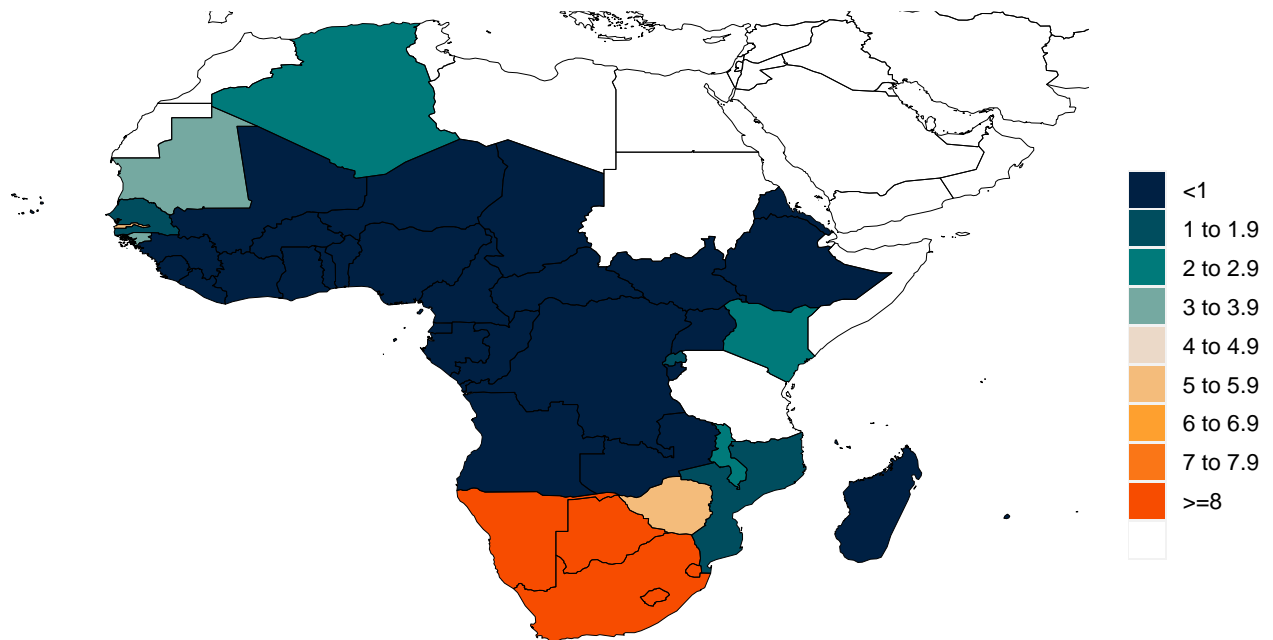
Figure 5. Cumulative COVID-19 deaths per 100,000 on August 23, 2021

A. Reported cumulative COVID-19 deaths per 100,000
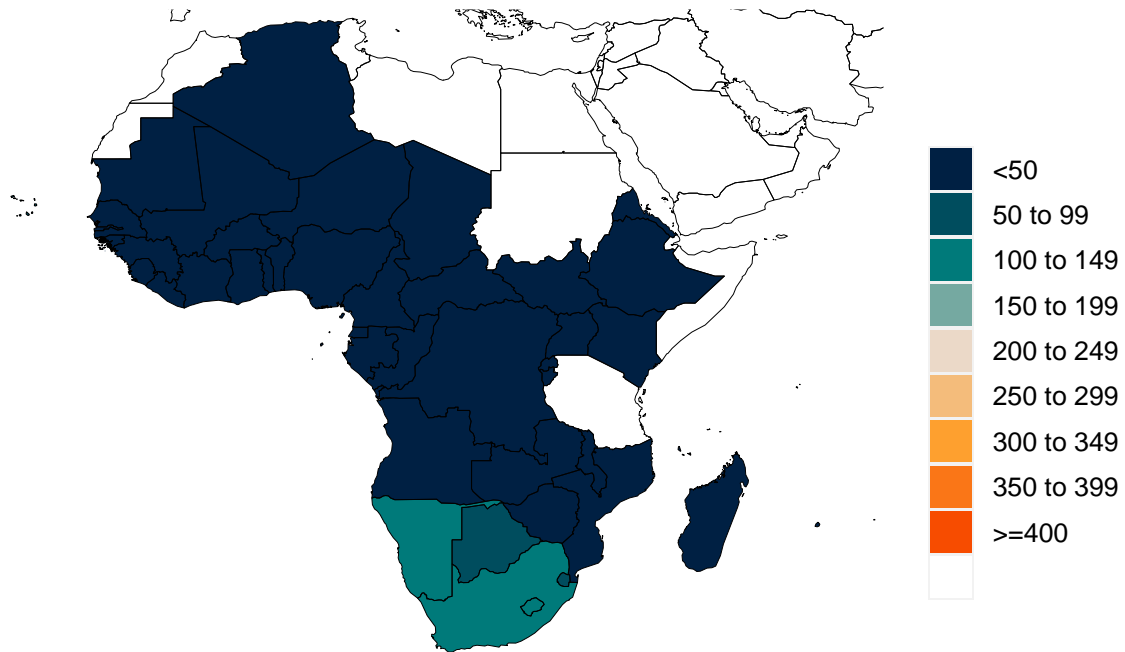
B. Excess cumulative COVID-19 deaths per 100,000
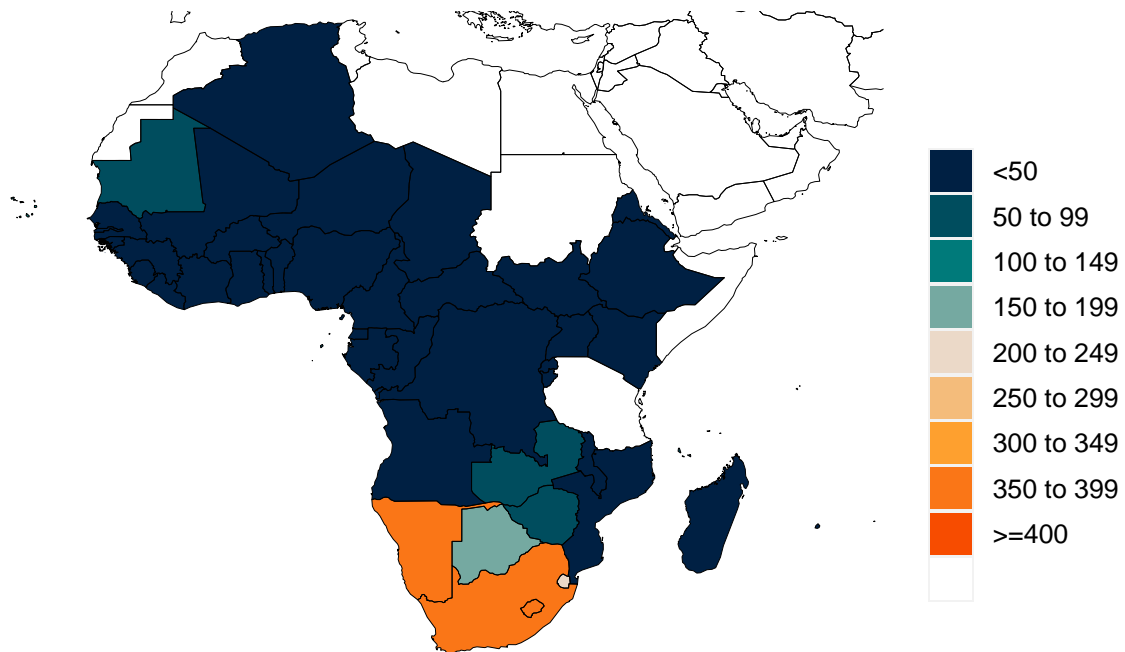
Figure 6. Estimated percent of the population infected with COVID-19 on August 23, 2021
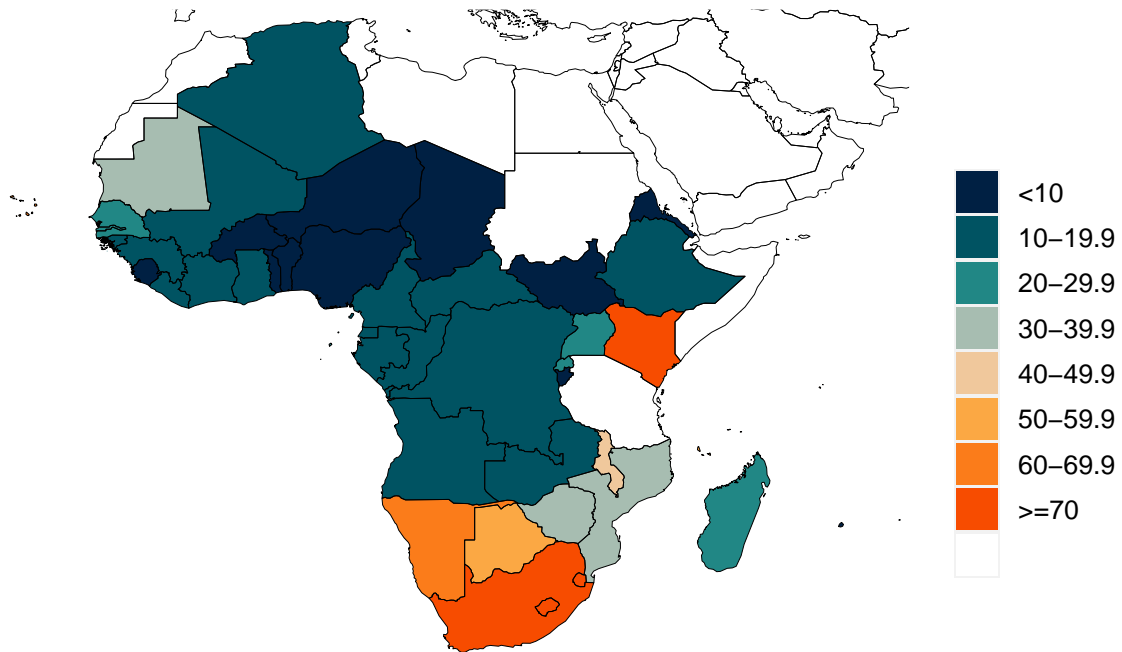
Figure 7. Mean effective R on August 12, 2021. Effective R less than 1 means that transmission should decline, all other things being held the same. The estimate of effective R is based on the combined analysis of deaths, case reporting, and hospitalizations where available. Current reported cases reflect infections 11-13 days prior, so estimates of effective R can only be made for the recent past.
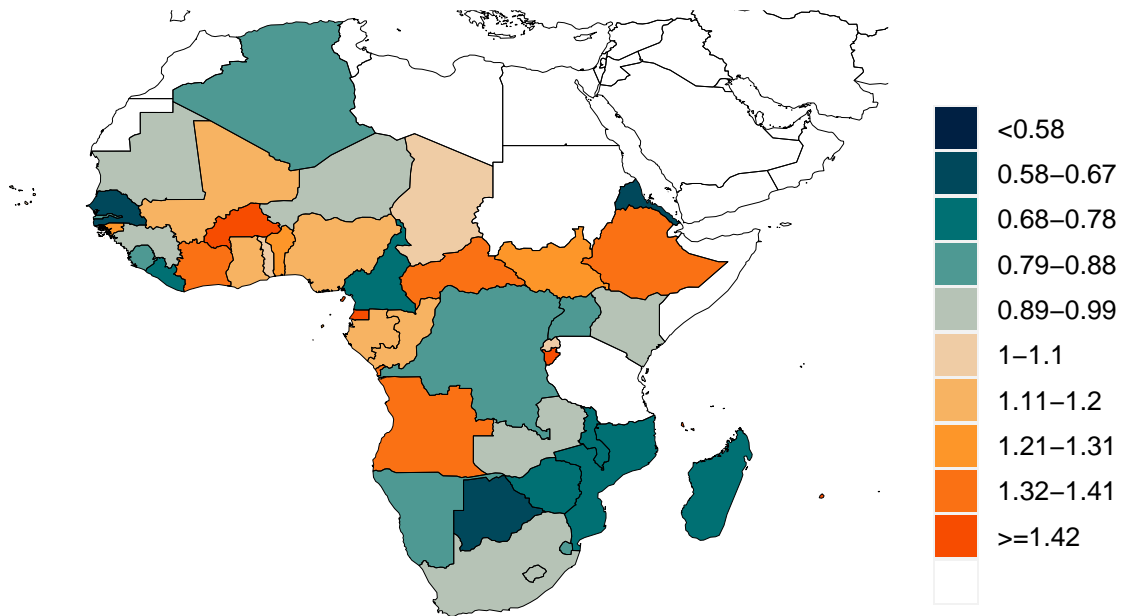
Figure 8. Percent of COVID-19 infections detected. This is estimated as the ratio of reported daily COVID-19 cases to estimated daily COVID-19 infections based on the SEIR disease transmission model. Due to measurement errors in cases and testing rates, the infection-detection rate can exceed 100% at particular points in time.
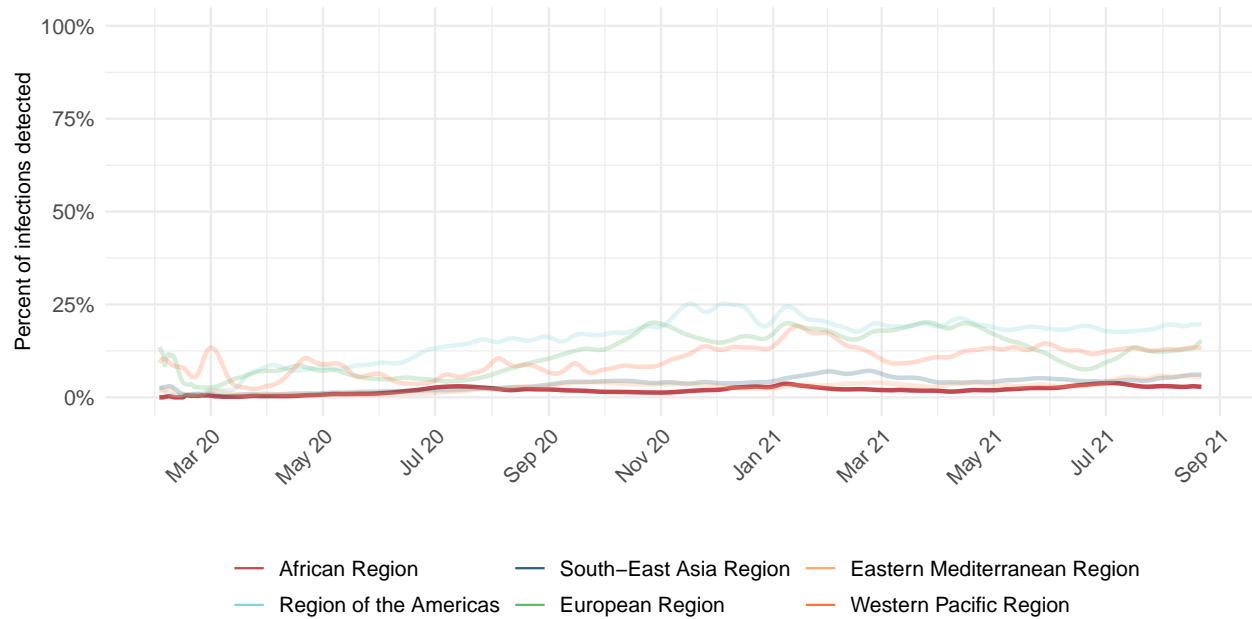
Figure 9. Estimated percent of circulating SARS-CoV-2 for primary variant families on August 23, 2021
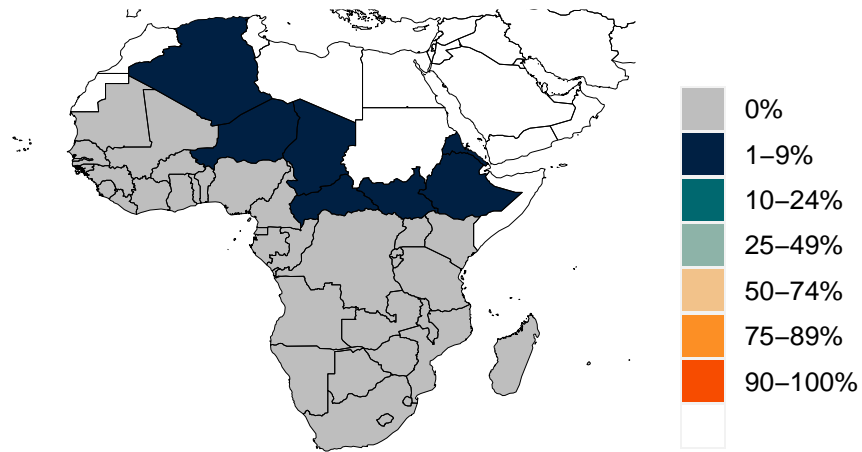
A. Estimated percent Alpha variant
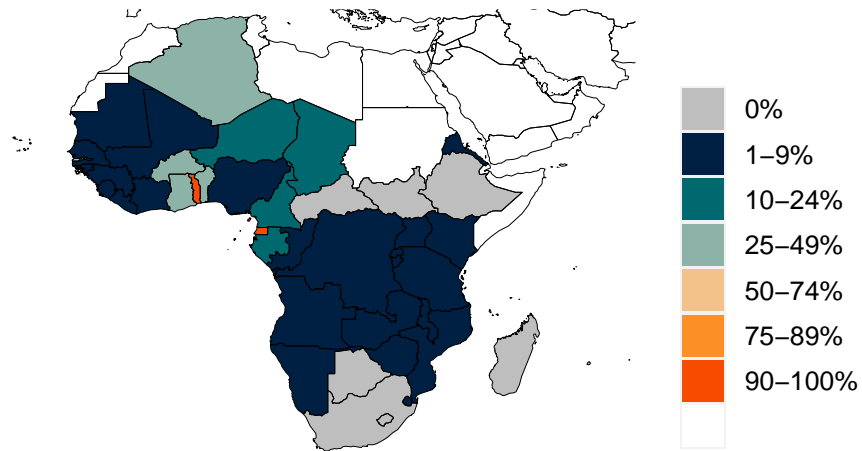
B. Estimated percent Beta variant

C. Estimated percent Delta variant
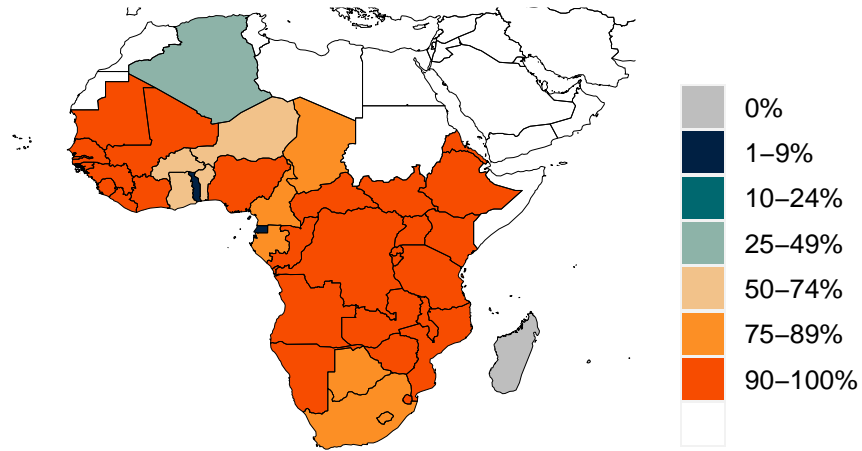
D. Estimated percent Gamma variant

Figure 10. Infection-fatality rate on August 23, 2021. This is estimated as the ratio of COVID-19 deaths to estimated daily COVID-19 infections daily COVID-19 cases based.
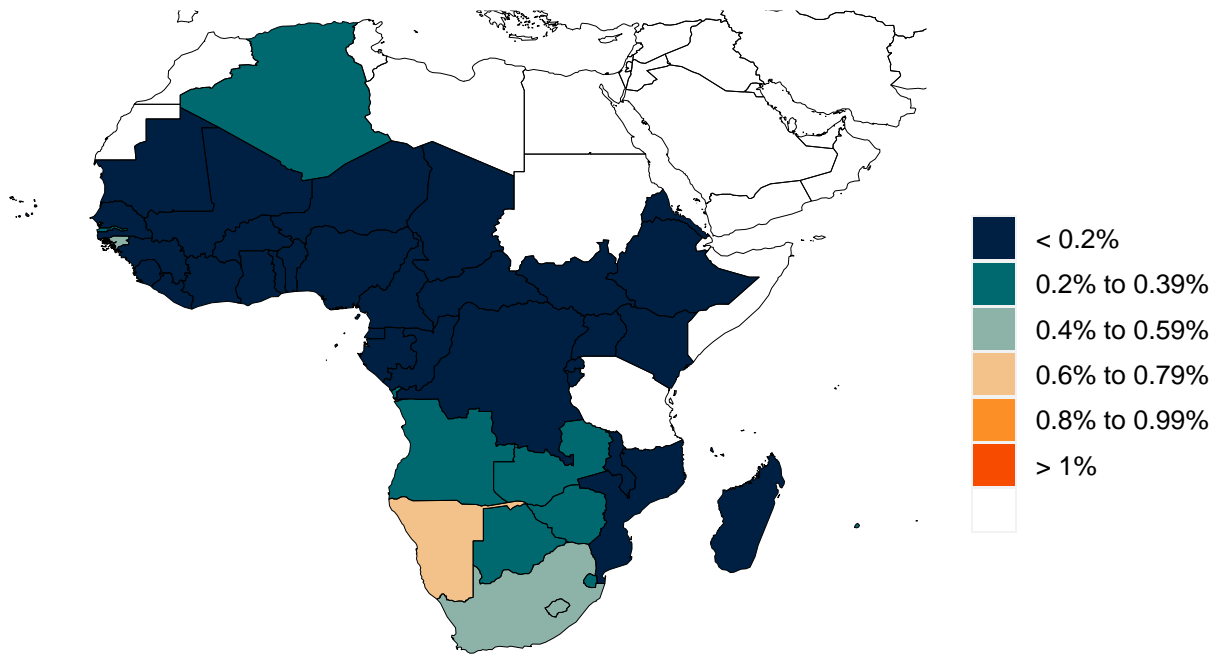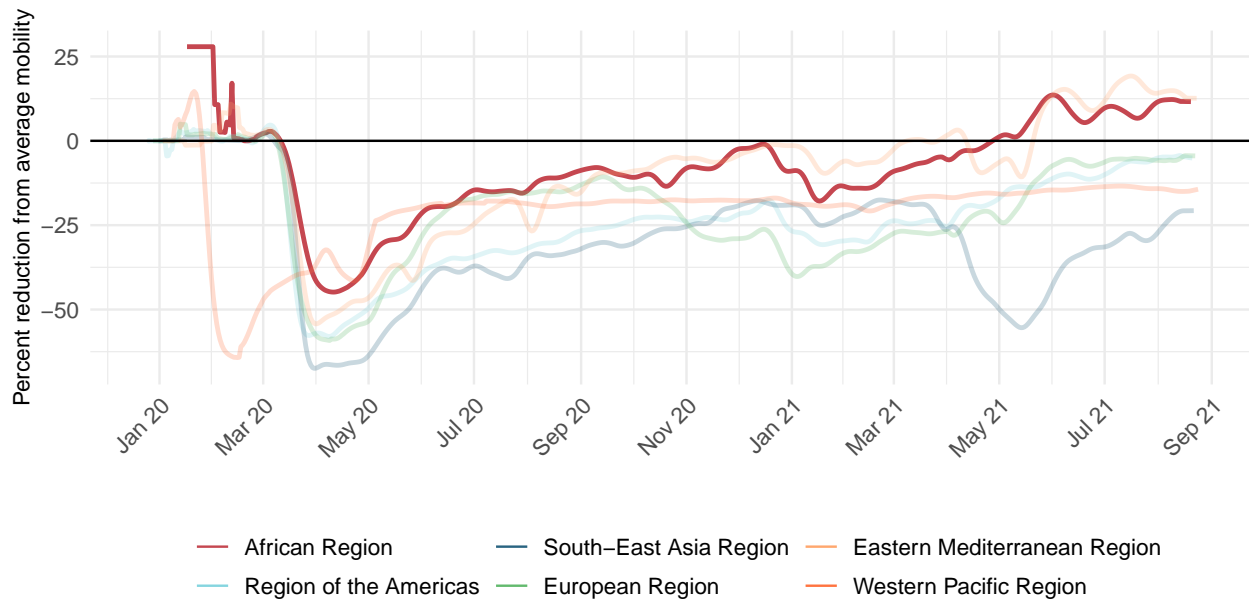
Critical drivers

Table 2. Current mandate implementation
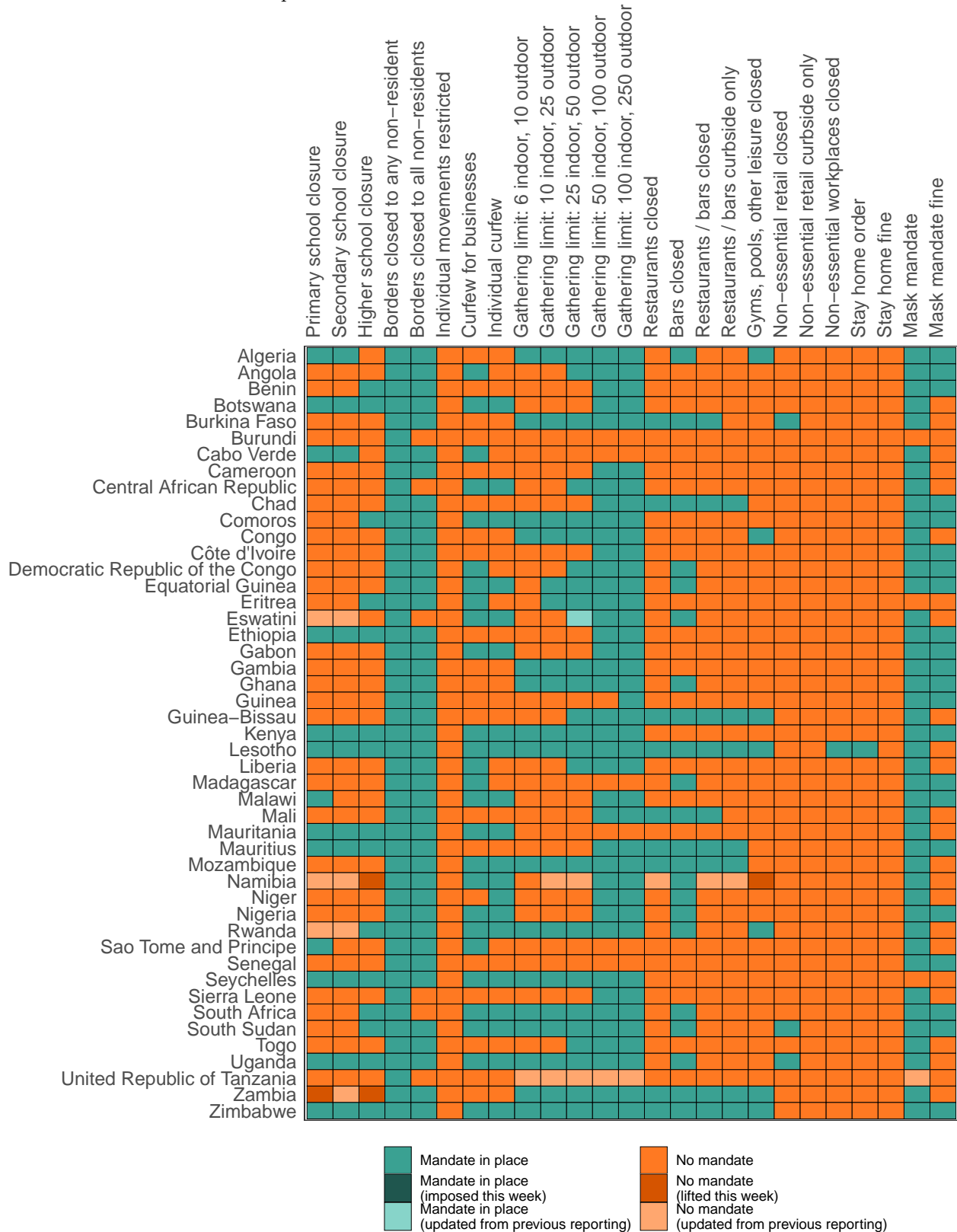
**Figure 11.** Trend in mobility as measured through smartphone app use, compared to January 2020 baseline

Legend:
- African Region
- Region of the Americas
- South–East Asia Region
- European Region
- Eastern Mediterranean Region
- Western Pacific Region

Figure 12. Mobility level as measured through smartphone app use, compared to January 2020 baseline (percent) on August 23, 2021
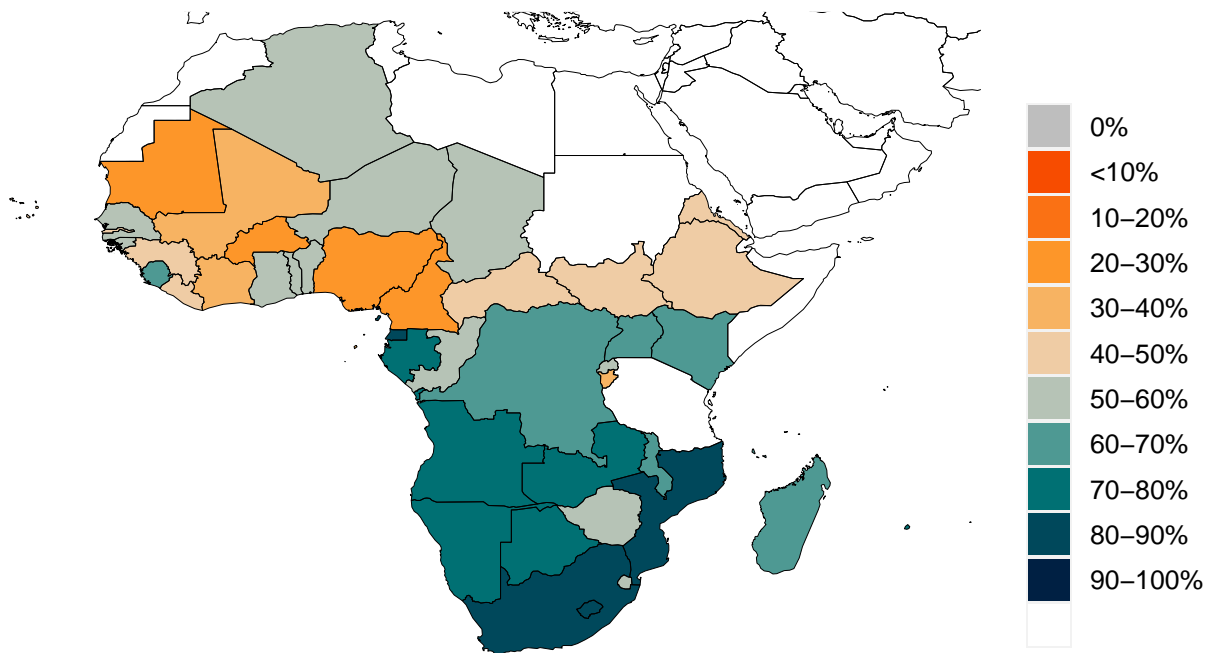

Legend:
- =<−50
- −49 to −45
- −44 to −40
- −39 to −35
- −34 to −30
- −29 to −25
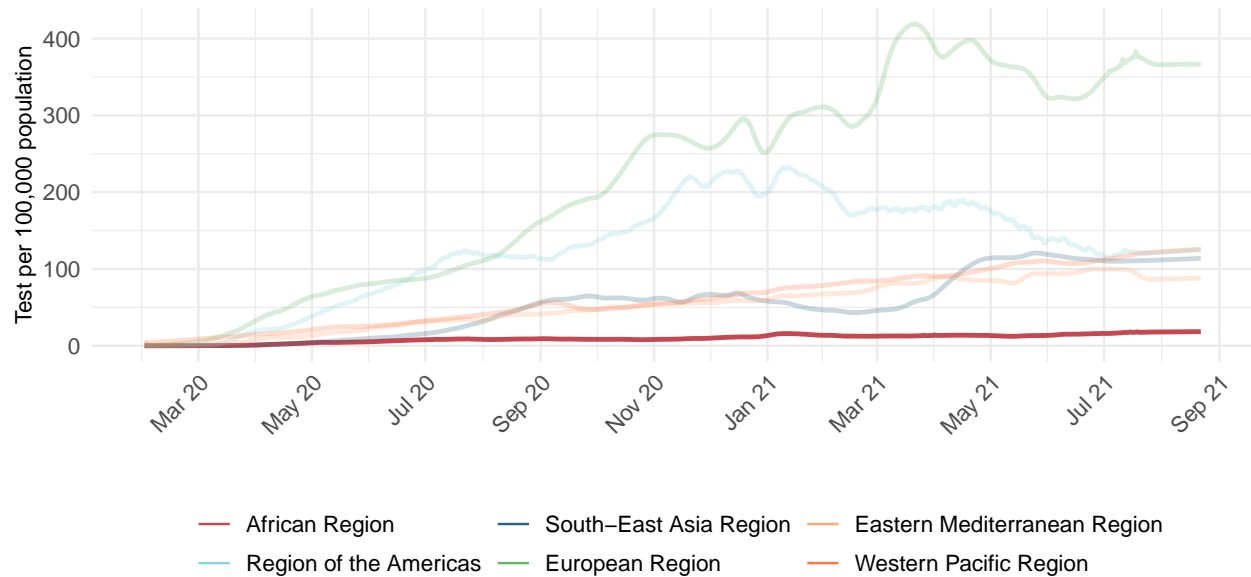- −24 to −20
- −19 to −15
- −14 to −10
- >−10

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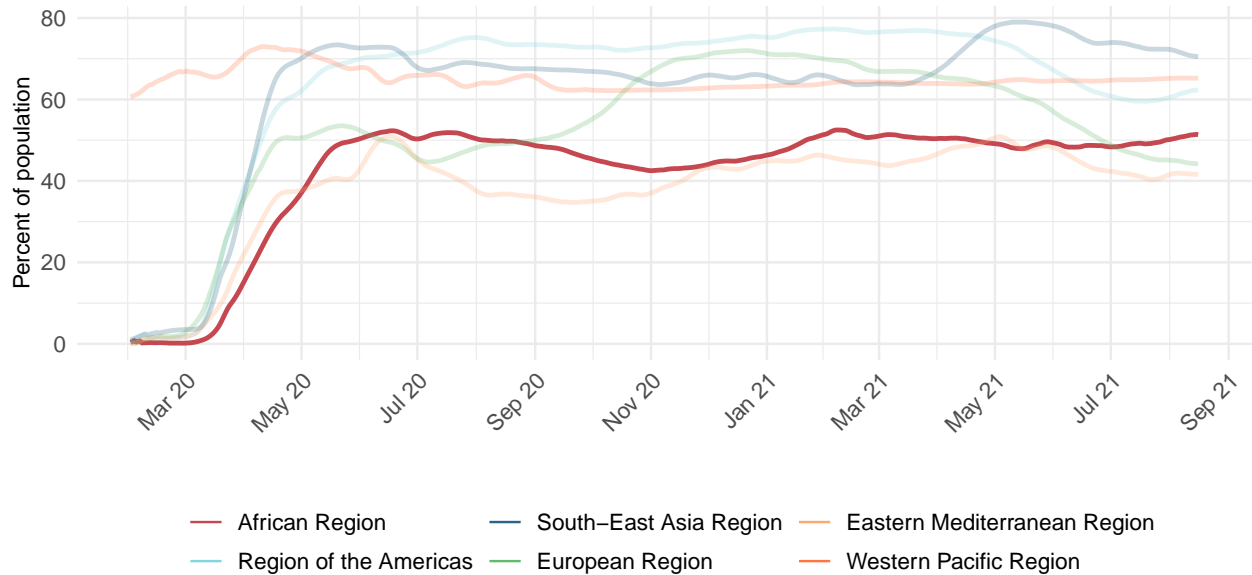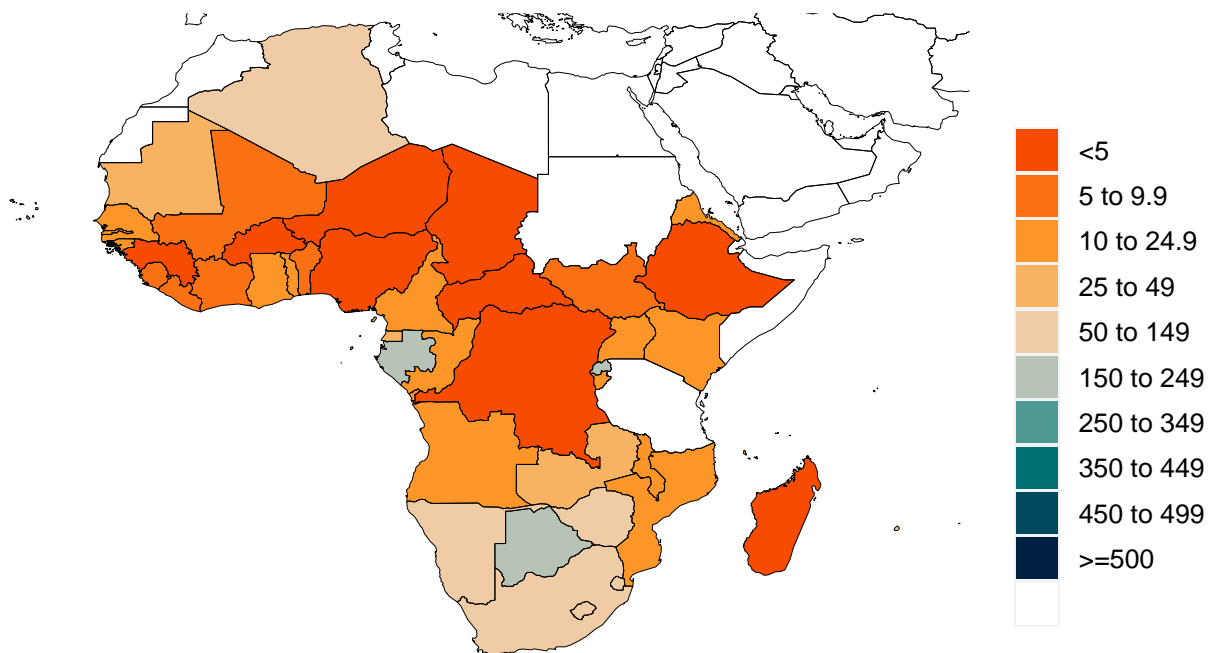

Figure 14. Proportion of the population reporting always wearing a mask when leaving home on August 23, 2021

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

**Figure 16.** COVID-19 diagnostic tests per 100,000 people on August 23, 2021

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: ancestral and Alpha	Efficacy at preventing infection: ancestral and Alpha	Efficacy at preventing disease: Beta, Delta, & Gamma	Efficacy at preventing infection: Beta, Delta, & Gamma
AstraZeneca	85%	52%	83%	57%
CoronaVac	50%	44%	43%	38%
Covaxin	78%	69%	68%	60%
Johnson & Johnson	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 17. Percent of the population (A) having received at least one dose and (B) fully vaccinated against SARS-CoV-2 by August 23, 2021
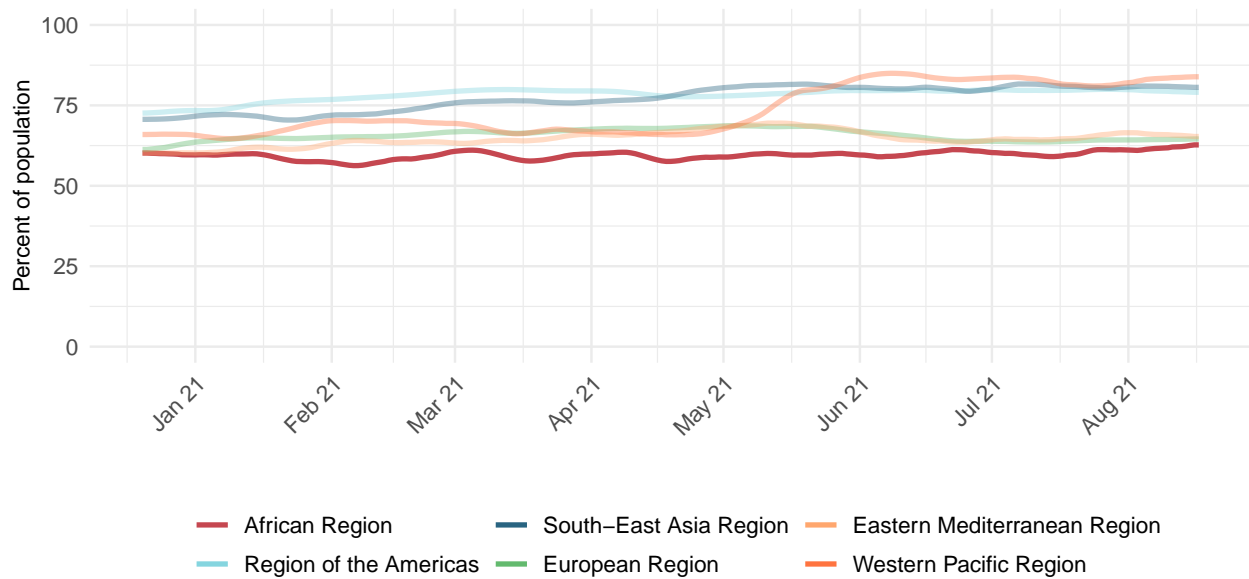
**A. Percent of the population having received one dose of a COVID-19 vaccine**
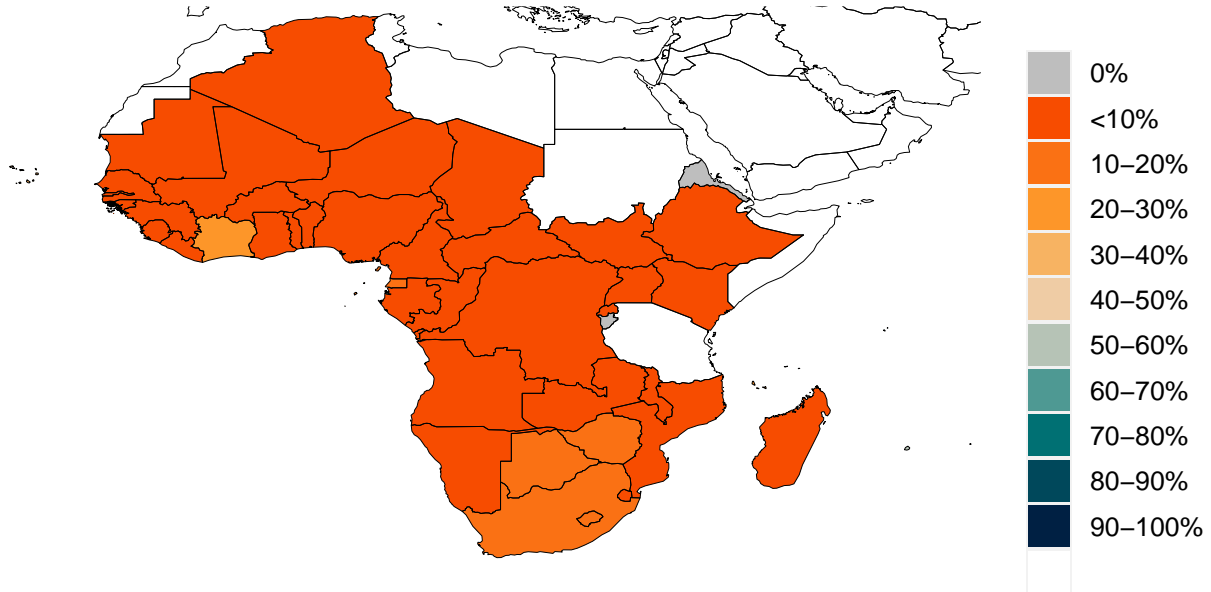
B. Percent of the population fully vaccinated against SARS-CoV-2
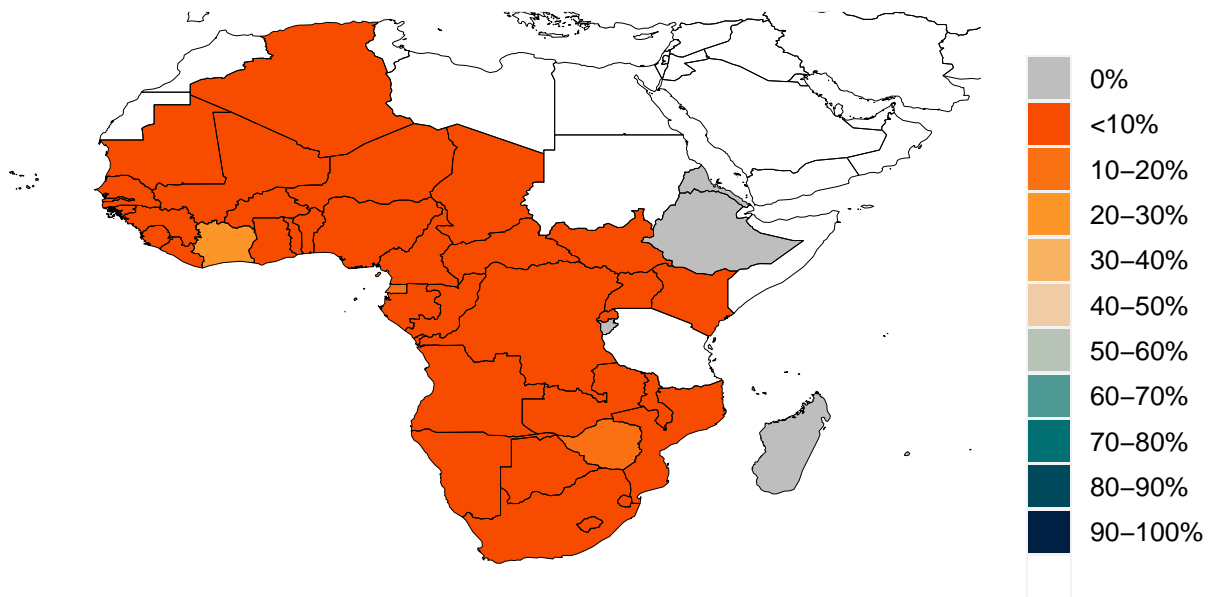
Figure 18. Trend in the estimated proportion of the adult (18+) population that have been vaccinated or would probably or definitely receive the COVID-19 vaccine if available


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
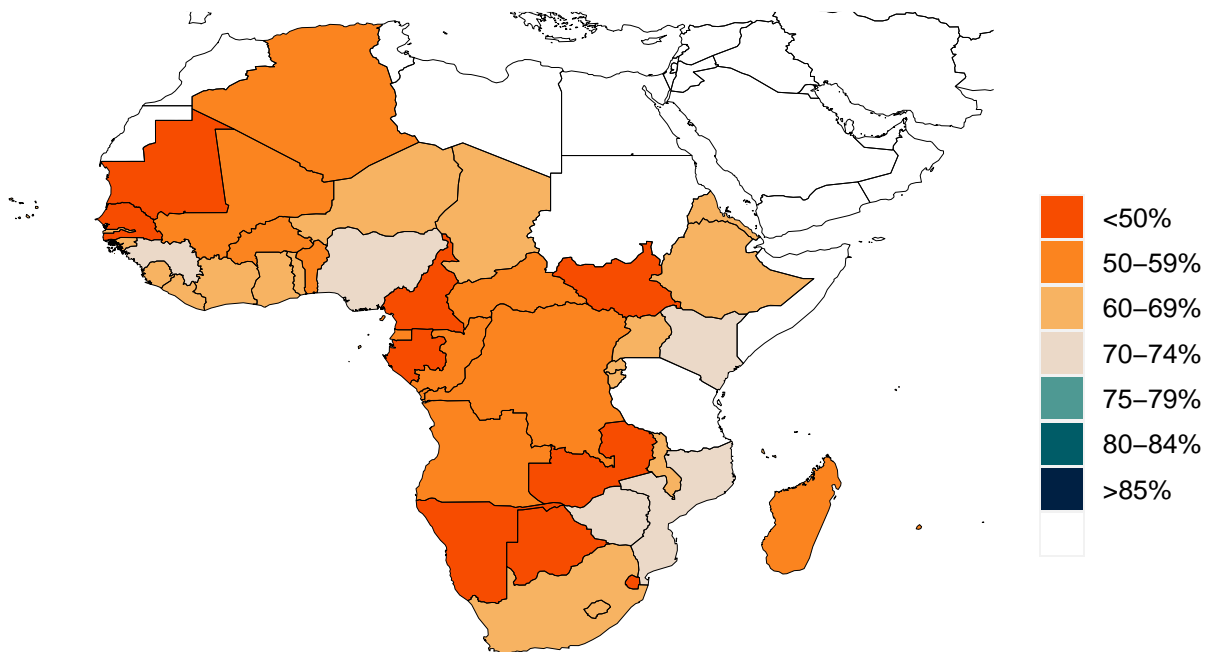
Figure 20. Percent of people who receive at least one dose of a COVID-19 vaccine and those who are fully vaccinated
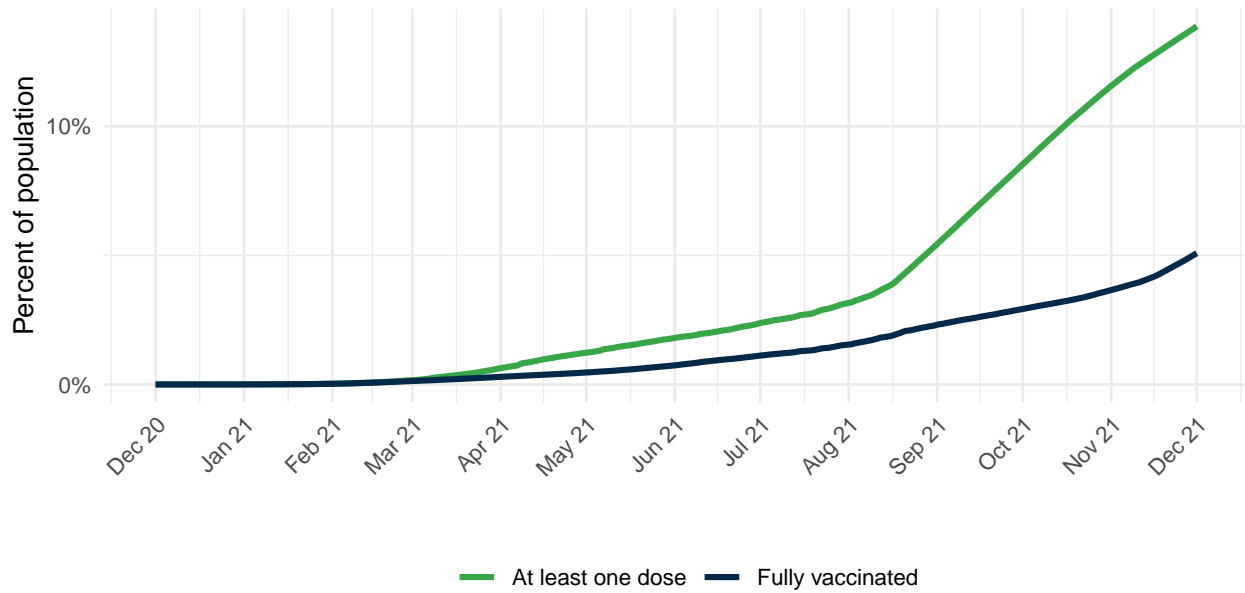
Figure 21. Percentage of people who are immune to non-escape variants and the percentage of people who are immune to escape variants
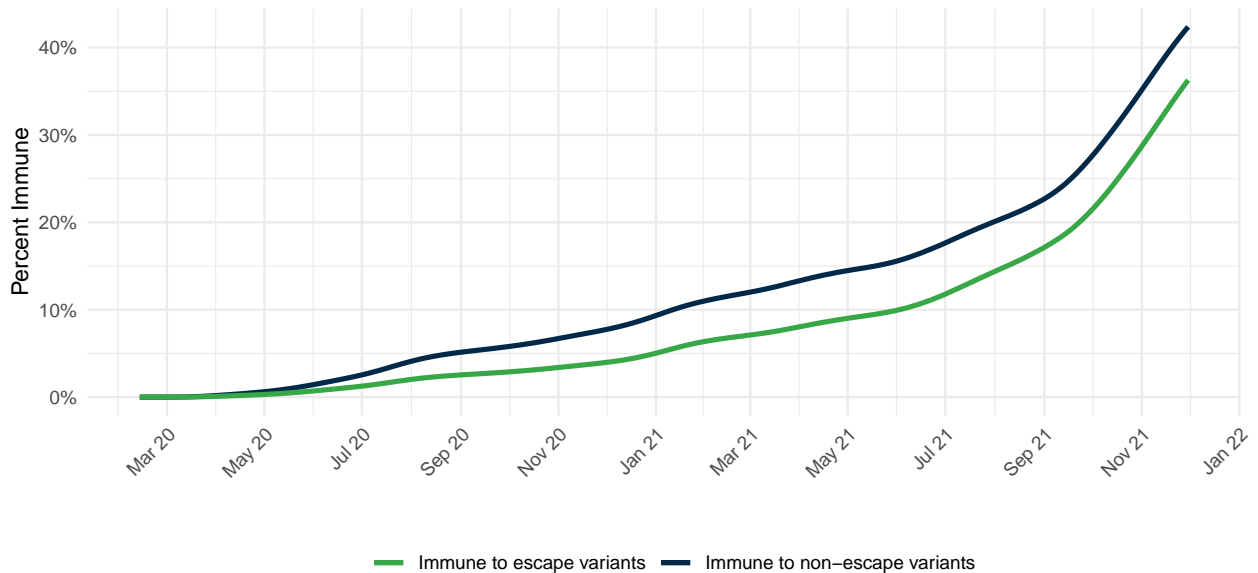
Projections and scenarios

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. Brand- and variant-specific vaccine efficacy is updated using the latest available information from peer-reviewed publications and other reports.
- Future mask use is the mean of mask use over the last 7 days.
- Mobility increases as vaccine coverage increases.
- 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 reference scenario assumes that mandates are re-imposed when daily deaths reach 15 per million.
- Variants Alpha, Beta, Gamma, and Delta continue to spread regionally and globally from locations with sufficient transmission.

The **worse scenario** modifies the reference scenario assumption in four ways:

- 100% of vaccinated individuals stop using masks.
- Mobility increases in all locations to 25% above the pre-pandemic winter baseline, irrespective of vaccine coverage.
- Governments are more reluctant to re-impose social distancing mandates, waiting until the daily death rate reaches 15 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 reference scenario assumes that mandates are re-imposed when daily deaths reach 38 per million. In either case, we assume social distancing mandates remain in effect for 6 weeks.
- Variants Alpha, Beta, Gamma, and Delta spread between locations twice as fast when compared with our reference scenario.

The **universal masks scenario** makes all the same assumptions as the reference scenario but assumes all locations reach 95% mask use within 7 days.

Figure 22. Daily COVID-19 deaths until December 01, 2021 for three scenarios
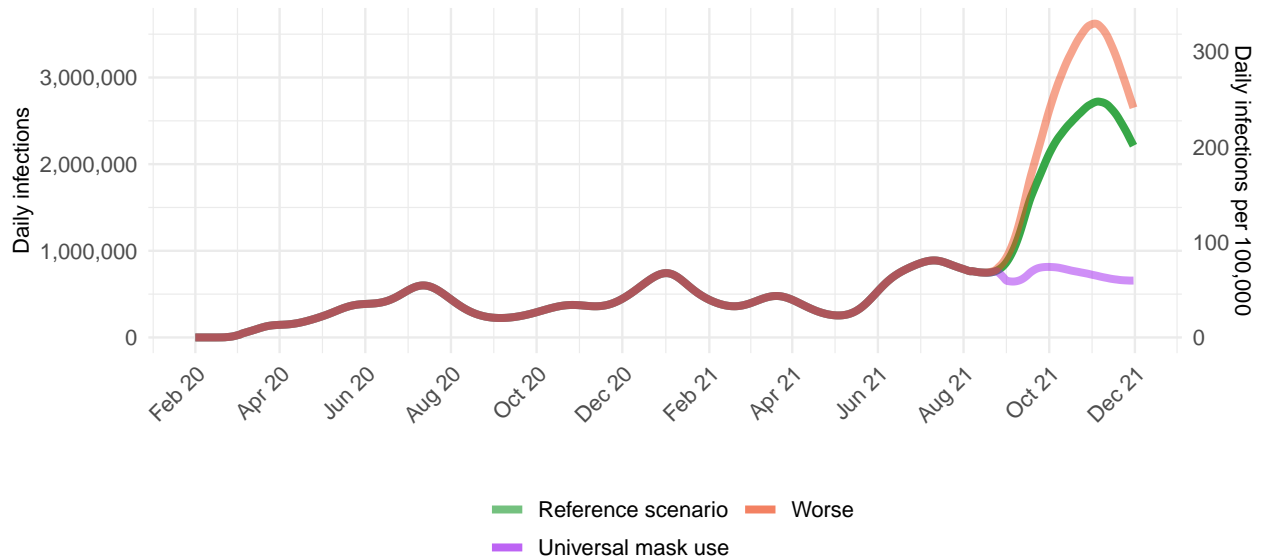
A. Reported daily COVID-19 death per 100,000

Reference scenario — Worse
Universal mask use
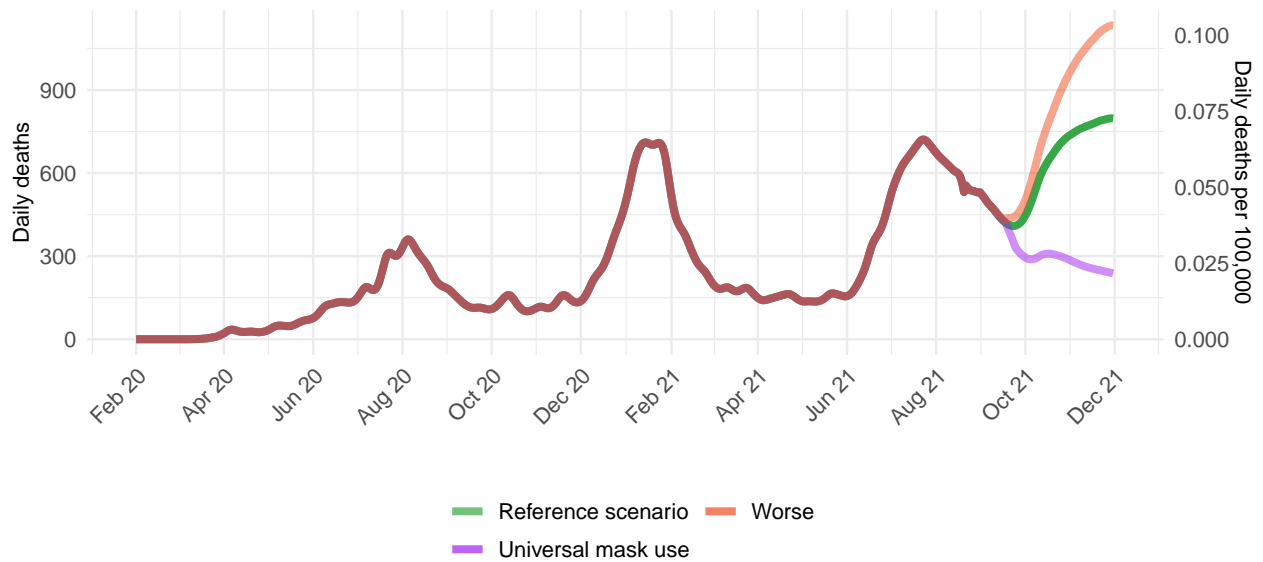
B. Excess daily COVID-19 deaths per 100,000

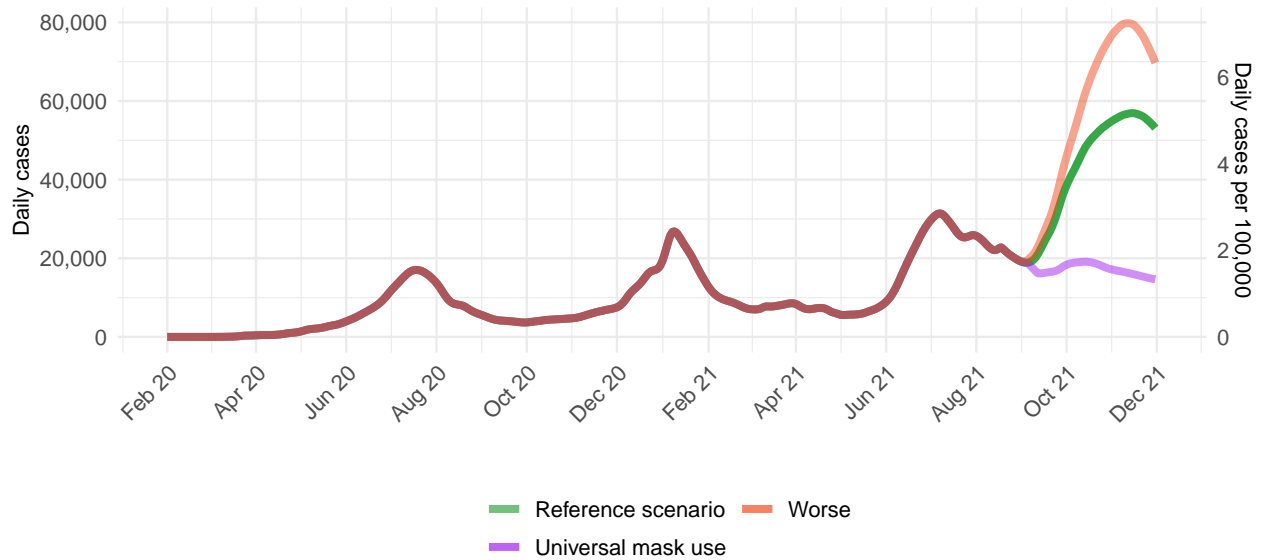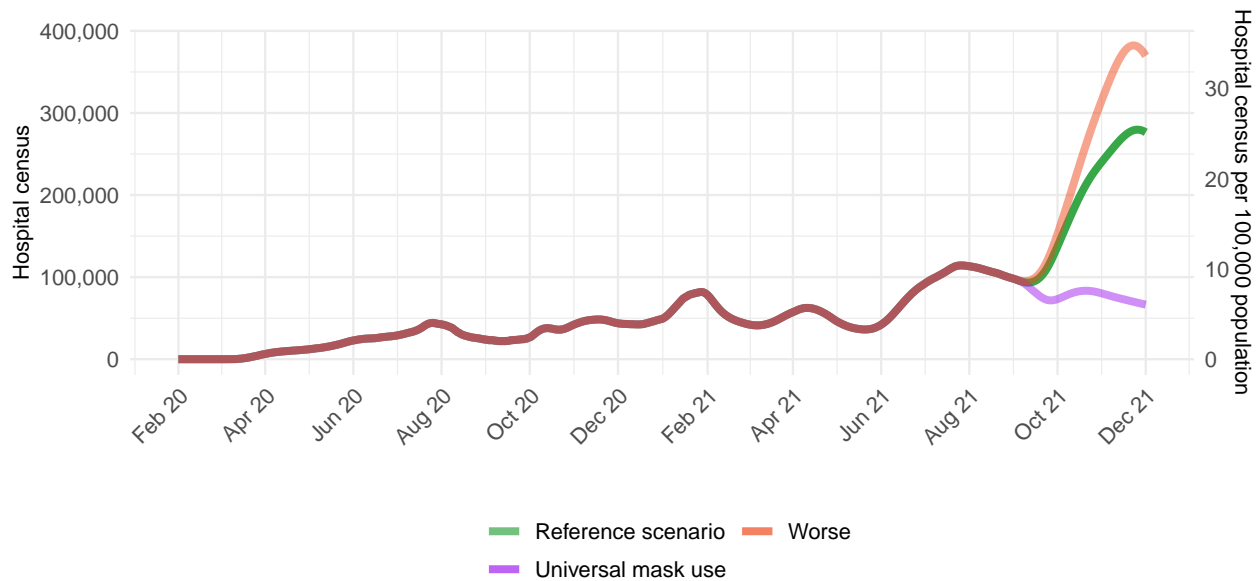
Reference scenario — Worse
Universal mask use
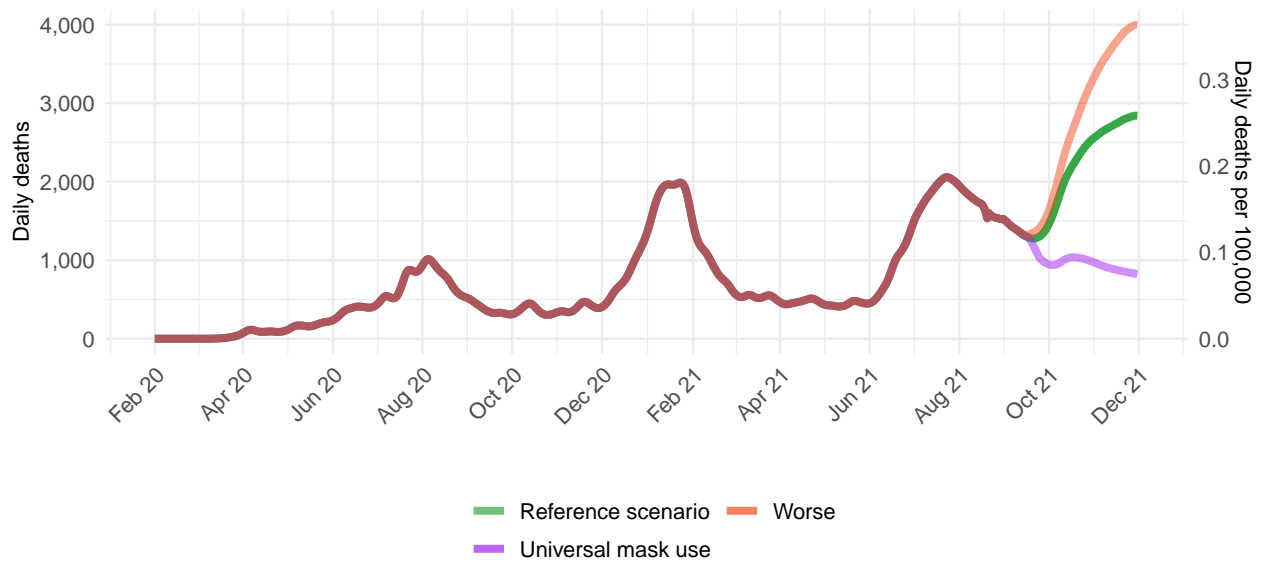
Figure 23. Daily COVID-19 infections until December 01, 2021 for three scenarios


Figure 24. Daily COVID-19 reported cases until December 01, 2021 for three scenarios

Figure 25. Daily COVID-19 hospital census until December 01, 2021 for three scenarios


Figure 26. 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.
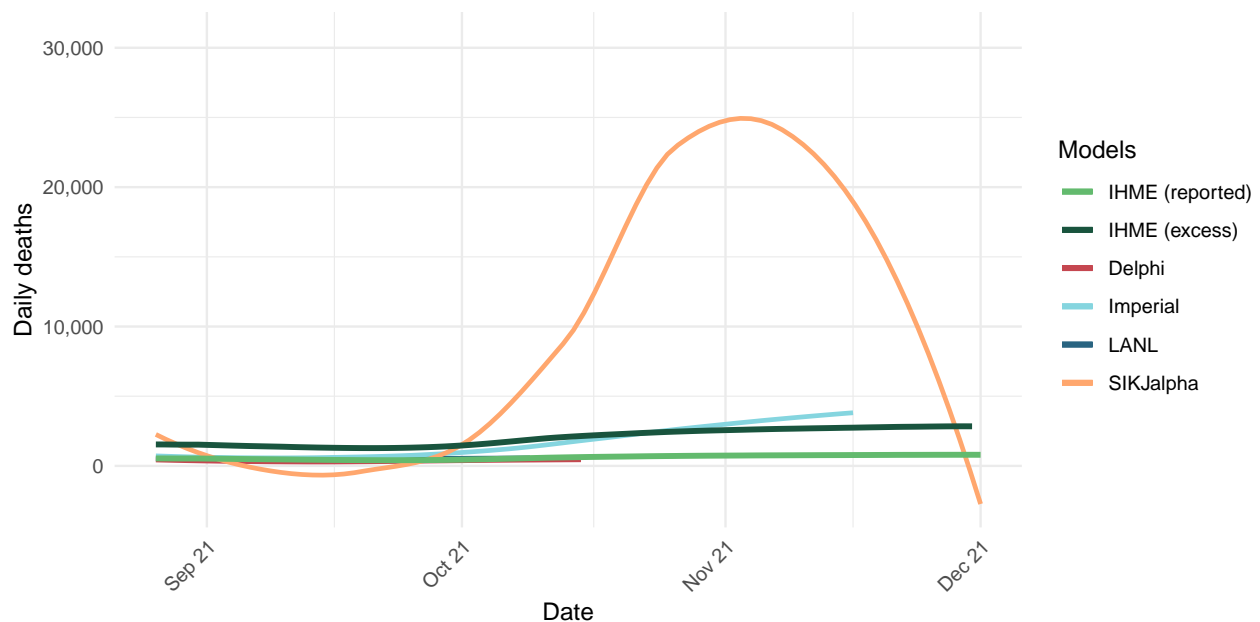
Figure 27. The estimated inpatient hospital usage is shown over time. The percent of hospital beds occupied by COVID-19 patients is color-coded based on observed quantiles of the maximum proportion of beds occupied by COVID-19 patients. Less than 5% is considered *low stress*, 5-9% is considered *moderate stress*, 10-19% is considered *high stress*, and 20% or greater is considered *extreme stress*.

All hospital beds
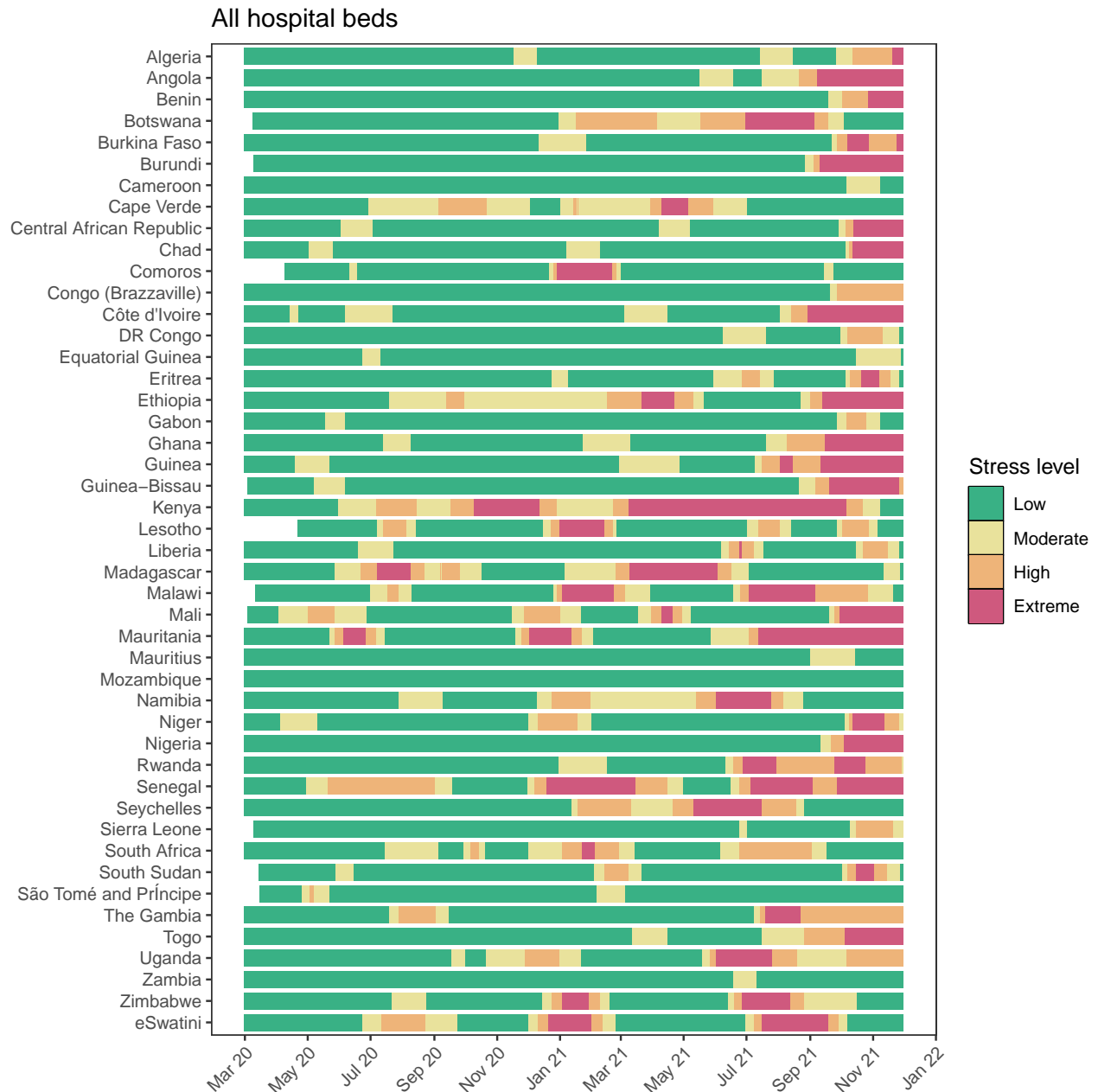
Figure 28. The estimated intensive care unit (ICU) usage is shown over time. The percent of ICU beds occupied by COVID-19 patients is color-coded based on observed quantiles of the maximum proportion of ICU beds occupied by COVID-19 patients. Less than 10% is considered *low stress*, 10-29% is considered *moderate stress*, 30-59% is considered *high stress*, and 60% or greater is considered *extreme stress*.
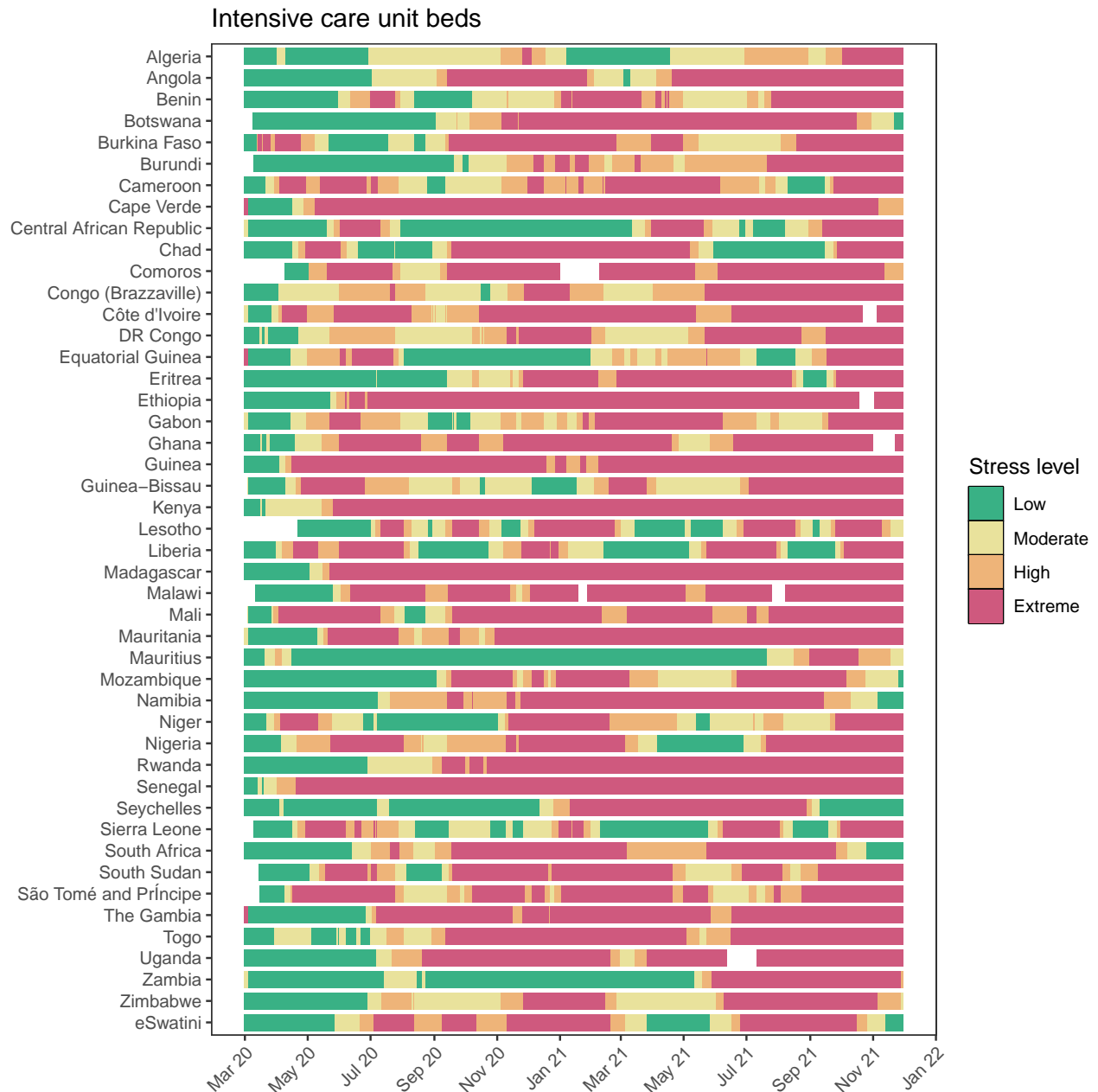
More information

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.