COVID-19 Results Briefing

The African Region

July 28, 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 July 27, 2021, with data through July 26, 2021.

The Delta variant continues to fuel the third wave in the African region. While daily reported cases decreased this week to 26,100 per day on average, driven in large part by sharp decreases in South Africa, we expect transmission to continue throughout the region as 28 countries have an effective R greater than 1. Daily reported deaths increased to 720 per day; however, we estimate excess deaths to be 2.9 times larger than reported deaths. This makes COVID-19 the number 1 cause of death in the African Region this week. High mobility, limited mask usage, and inadequate and inequitable access to vaccines coupled with vaccine hesitancy pose a continued threat, particularly as health systems in most countries face high or extreme stress in the coming months. With only 38% of people expected to be immune to non-escape variants and 32% of people expected to be immune to escape variants by November 1, the potential for future surges remains. In our reference scenario, we project 159,000 cumulative reported deaths on November 1, representing 46,000 lives lost from July 26 to November 1. If universal mask usage could be achieved, 14,000 lives could be saved. When excess deaths are accounted for, we project 472,000 cumulative deaths by November 1, 146,000 additional deaths between July 26 and November 1; universal mask usage could prevent 48,000 excess deaths. Strategies to manage COVID-19 now must focus on i) increasing the supply and equitable distribution of vaccines that are effective against the prevailing Delta variant; ii) bolstering vaccine confidence; iii) mandating the use of masks and instituting social distancing measures in settings where there are rapid increases in transmission; iv) improving public adherence to social distancing measures; and v) strengthening routine collection and reporting of data on cases, hospitalizations, and deaths by age, sex, and vaccination status, which would greatly enhance the ability of each country to understand which groups among their population remain vulnerable. Additional genomic sequencing data will also be vital for tracking and identifying the spread of variants to prevent future surges.

Current situation

- Daily reported cases in the last week (through July 26) decreased to 26,100 per day on average compared to 28,200 the week before (Figure 1).

- Reported deaths due to COVID-19 in the last week increased to 720 per day on average compared to 680 the week before (Figure 2).
Excess deaths due to COVID-19 in the last week increased to 2,100 per day on average compared to 1,900 the week before (Figure 2). This makes COVID-19 the number 1 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, Namibia, South Africa, and Zimbabwe (Figure 3).

The daily rate of excess deaths due to COVID-19 is greater than 4 per million in 10 countries (Figure 3).

We estimated that 25% of people in the African Region have been infected as of July 26 (Figure 5).

Effective R, computed using cases, hospitalizations, and deaths, is greater than 1 in 28 countries (Figure 6).

The infection-detection rate in the African Region was close to 3% on July 26 (Figure 7).

Based on the GISAID and various national databases, combined with our variant spread model, we estimate the current prevalence of variants of concern (Figure 8). We estimate that B.1.351 is circulating in six countries, that B.1.617 is circulating in 36 countries, and that P.1 is circulating in no countries in the region.

Trends in drivers of transmission

Mobility last week was 9% higher than the pre-COVID-19 baseline (Figure 10). Mobility was near baseline (within 10%) in 40 countries. Mobility was lower than 30% of baseline in Seychelles and Uganda.

As of July 26, in the COVID-19 Trends and Impact Survey, 48% of people self-report that they always wore a mask when leaving their home, the same as last week (Figure 12).

There were 18 diagnostic tests per 100,000 people on July 26 (Figure 14).

In the African Region, 60.4% of people say they would accept or would probably accept a vaccine for COVID-19. This is up by 1.4 percentage points from last week. The fraction of the population who are open to receiving a COVID-19 vaccine ranges from 36% in Mali to 76% in Mauritius (Figure 18).

In our current reference scenario, we expect that 137.9 million people will be vaccinated by November 1 (Figure 19).

In our current reference scenario, we expect that by November 1, 38% of people will be immune to non-escape variants and 32% 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 159,000 cumulative reported deaths due to COVID-19 on November 1. This represents 46,000 additional deaths from July 26 to November 1. After a peak last week, daily reported deaths will decline to 330 on November 1, 2021 (Figure 21).

- Under our **reference scenario**, our model projects 472,000 cumulative excess deaths due to COVID-19 on November 1. This represents 146,000 additional deaths from July 26 to November 1. Daily excess deaths due to COVID-19 will rise to 2,100 by July 30, 2021 (Figure 21).

- If **universal mask coverage (95%)** were attained in the next week, our model projects 14,000 fewer cumulative reported deaths compared to the reference scenario on November 1.

- If **universal mask coverage (95%)** were attained in the next week, our model projects 48,000 fewer cumulative excess deaths due to COVID-19 compared to the reference scenario on November 1.

- Under our **worse scenario**, our model projects 171,000 cumulative reported deaths on November 1, an additional 12,000 deaths compared to our reference scenario. Daily reported deaths in the worse scenario will decline to 510 by September 14, 2021 and then will rise again through late October (Figure 21).

- Under our **worse scenario**, our model projects 507,000 cumulative excess deaths due to COVID-19 on November 1, an additional 35,000 deaths compared to our reference scenario. Daily excess deaths due to COVID-19 in the worse scenario will rise to 2,100 by July 30, 2021 (Figure 21).

- Daily infections in the reference scenario will rise to 1,739,610 by September 17, 2021 (Figure 22). Daily infections in the worse scenario will rise to 2,321,300 by October 1, 2021 (Figure 22).

- By November 1, we project that 19,800 lives will be saved by the projected vaccine rollout. This does not include lives saved through vaccination that has already been delivered.

- Figure 23 compares our reference scenario forecasts to other publicly archived models. Forecasts are widely divergent.

- At some point from July through November 1, 25 countries will have high or extreme stress on hospital beds (Figure 24). At some point from July through November 1, 44 countries will have high or extreme stress on intensive care unit (ICU) capacity (Figure 25).
Model updates

Our projections of SARS-CoV-2 infections and COVID-19 deaths in the worse scenario were updated to account for the possibility that population mobility may continue to increase, irrespective of vaccine coverage or infection levels. Specifically, a new mobility scenario was formulated in which all locations exhibit an 8-week linear increase in mobility to the regional maximum mobility level observed between the period 1/1/2020 and the last day of data. Furthermore, the new projections of mobility for the worse scenario assume that population mobility will remain elevated until COVID-19 mortality reaches a minimum of 15 deaths per million, at which point a location may re-impose all social distancing mandates for a period of six weeks, causing mobility to rapidly decline.
African Region  

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Figure 1. Reported daily COVID-19 cases, moving average

![Graph showing 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

<table>
<thead>
<tr>
<th>Cause name</th>
<th>Weekly deaths</th>
<th>Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>COVID-19</td>
<td>14,445</td>
<td>1</td>
</tr>
<tr>
<td>Neonatal disorders</td>
<td>14,422</td>
<td>2</td>
</tr>
<tr>
<td>Lower respiratory infections</td>
<td>12,732</td>
<td>3</td>
</tr>
<tr>
<td>HIV/AIDS</td>
<td>12,224</td>
<td>4</td>
</tr>
<tr>
<td>Malaria</td>
<td>11,351</td>
<td>5</td>
</tr>
<tr>
<td>Diarrheal diseases</td>
<td>11,088</td>
<td>6</td>
</tr>
<tr>
<td>Ischemic heart disease</td>
<td>8,306</td>
<td>7</td>
</tr>
<tr>
<td>Stroke</td>
<td>8,063</td>
<td>8</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>7,097</td>
<td>9</td>
</tr>
<tr>
<td>Congenital birth defects</td>
<td>3,721</td>
<td>10</td>
</tr>
</tbody>
</table>
Figure 2. Smoothed trend estimate of reported daily COVID-19 deaths (blue) and excess daily deaths due to COVID-19 (orange)
Figure 3. Daily COVID-19 death rate per 1 million on July 26, 2021

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

B. Daily excess COVID-19 death rate per 1 million
Figure 4. Cumulative COVID-19 deaths per 100,000 on July 26, 2021

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

B. Excess cumulative COVID-19 deaths per 100,000
**Figure 5.** Estimated percent of the population infected with COVID-19 on July 26, 2021

**Figure 6.** Mean effective R on July 15, 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 7. 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 8. Estimated percent of circulating SARS-CoV-2 for primary variant families on July 26, 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 9. Infection-fatality ratio on July 26, 2021
**Critical drivers**

**Table 2. Current mandate implementation**
**Figure 10.** Trend in mobility as measured through smartphone app use compared to January 2020 baseline

![Graph showing trend in mobility across different regions.](image)

**Figure 11.** Mobility level as measured through smartphone app use compared to January 2020 baseline (percent) on July 26, 2021

![Map of Africa showing mobility levels across different regions.](image)
**Figure 12.** Trend in the proportion of the population reporting always wearing a mask when leaving home

**Figure 13.** Proportion of the population reporting always wearing a mask when leaving home on July 26, 2021
Figure 14. Trend in COVID-19 diagnostic tests per 100,000 people

Figure 15. COVID-19 diagnostic tests per 100,000 people on July 26, 2021
Figure 16. 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.

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Efficacy at preventing disease: D614G &amp; B.1.1.7</th>
<th>Efficacy at preventing infection: D614G &amp; B.1.1.7</th>
<th>Efficacy at preventing disease: B.1.351, B.1.617, &amp; P.1</th>
<th>Efficacy at preventing infection: B.1.351, B.1.617, &amp; P.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>AstraZeneca</td>
<td>74%</td>
<td>52%</td>
<td>53%</td>
<td>47%</td>
</tr>
<tr>
<td>CoronaVac</td>
<td>50%</td>
<td>44%</td>
<td>40%</td>
<td>35%</td>
</tr>
<tr>
<td>Covaxin</td>
<td>78%</td>
<td>69%</td>
<td>62%</td>
<td>55%</td>
</tr>
<tr>
<td>Janssen</td>
<td>72%</td>
<td>72%</td>
<td>64%</td>
<td>56%</td>
</tr>
<tr>
<td>Moderna</td>
<td>94%</td>
<td>89%</td>
<td>83%</td>
<td>79%</td>
</tr>
<tr>
<td>Novavax</td>
<td>89%</td>
<td>79%</td>
<td>73%</td>
<td>64%</td>
</tr>
<tr>
<td>Pfizer/BioNTech</td>
<td>91%</td>
<td>86%</td>
<td>81%</td>
<td>77%</td>
</tr>
<tr>
<td>Sinopharm</td>
<td>73%</td>
<td>65%</td>
<td>47%</td>
<td>41%</td>
</tr>
<tr>
<td>Sputnik-V</td>
<td>92%</td>
<td>81%</td>
<td>73%</td>
<td>65%</td>
</tr>
<tr>
<td>Tianjin</td>
<td>66%</td>
<td>58%</td>
<td>53%</td>
<td>47%</td>
</tr>
<tr>
<td>CanSino</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other vaccines</td>
<td>75%</td>
<td>66%</td>
<td>60%</td>
<td>53%</td>
</tr>
<tr>
<td>Other vaccines (mRNA)</td>
<td>91%</td>
<td>86%</td>
<td>81%</td>
<td>77%</td>
</tr>
</tbody>
</table>
**Figure 17.** 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

![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](image1)

**Figure 18.** 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

![Map showing the estimated proportion of the adult (18+) population that has been vaccinated or would probably or definitely receive the COVID-19 vaccine if available](image2)
**Figure 19.** 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.

**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 November 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 November 01, 2021 for three scenarios

- **Reference scenario**
- **Universal mask use**
- **Worse**

[Graph showing daily COVID-19 infections with three scenarios: Reference scenario, Universal mask use, and Worse.]
Figure 23. 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 24. 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 25. 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.