COVID-19 Results Briefing

Global

July 1, 2021

This document contains summary information on the latest projections from the IHME model on COVID-19 globally. The model was run on July 1, 2021, with data through June 29, 2021.

Global daily cases and deaths continue to decline. Transmission, however, is increasing in a large number of locations, driven in many cases by spread of the Delta variant. In Southeast Asia, there have been notable increases in Myanmar, Indonesia, Thailand, and Cambodia. In South Asia, after controlling the first Delta variant surge in April and May, relaxation of social distancing measures has led to a second surge and has required reimposition of stay-at-home orders. While most states in India continue to have declining cases and deaths, mobility has surged, raising the risk that what is happening in Bangladesh may happen in India in the next weeks. In sub-Saharan Africa, surges continue in multiple countries in central, east, and southern Africa. Of note, social distancing measures have allowed cases to peak in Uganda, holding out hope that these measures can control Delta variant surges in other countries in sub-Saharan Africa. In Latin America, the most notable increases are in multiple states in Mexico—sequencing data are very sparse in these settings, so it is hard to be sure what is driving these surges. In Europe, the three largest surges are in the United Kingdom, the Russian Federation, and Cyprus. The UK surge, particularly in Scotland in a moderately vaccinated population, highlights both the transmissibility of the Delta variant and escape from vaccine-derived immunity. The surge in Russia in a population with nearly 80% previously infected points to considerable escape for the Delta variant from immunity derived from past infection. Other locations with considerable Delta variant, such as select states in the west of the US, have small increases in cases so far but not major surges. Overall, the prospect for the next two months is highly uncertain. Continued spread of the Delta variant could see UK-like surges in many locations, or these surges may be delayed to later in the fall in the Northern Hemisphere as seasonality increases. For locations such as Mexico with low vaccination and high infection-fatality rates, the threat of the Delta variant when it begins to spread will be very great. The main strategies to manage the Delta variant surges include: a) every effort to maximize vaccination rates, including addressing supply inequalities and vaccine hesitancy; b) in settings where there are surges, implement mask mandates including for the vaccinated and, where appropriate, other social distancing measures; c) in places that have used vaccines that are less effective against the Delta variant, consideration should be given to a supplemental dose of mRNA vaccine if available; and d) enhanced surveillance is needed to track the spread of Delta variant outbreaks, especially as the infection-detection rate appears to have been dropping in many locations.

Current situation

- Daily reported cases in the last week (through June 25) decreased to 351,200 per day on average compared to 362,500 the week before (Figure 1).
Reported deaths due to COVID-19 in the last week decreased to 7,100 per day on average compared to 7,800 the week before (Figure 2).

Excess deaths due to COVID-19 in the last week decreased slightly to 17,100 per day on average compared to 17,700 the week before (Figure 2). This makes COVID-19 the number 3 cause of death globally this week (Table 1). Estimated excess daily deaths due to COVID-19 were 2.1 times larger than the reported number of deaths.

Reported deaths were above 4 per million in multiple locations in South America, Yukon, Baja California Sur, Tunisia, Oman, Namibia, Zambia, and the Russian Federation (Figure 3A).

Excess deaths related to COVID-19 were above 4 per million in nearly all locations in South America, parts of Central America, multiple states in Mexico, most of southern Africa, Eastern Europe, Central Asia, and Indonesia (Figure 3B).

We estimated that 31% of people globally have been infected as of June 29 (Figure 5).

Effective R, computed using cases, hospitalizations, and deaths, is greater than 1 in some locations in every region. Notable increases in transmission are seen in some US states, more than half of Mexican states, multiple but not all countries in sub-Saharan Africa, Eastern Europe and Central Asia, Southeast Asia, the United Kingdom, Portugal, and Cyprus (Figure 6).

The infection-detection rate globally was close to 7% on June 29 (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 57 countries, that B.1.617 is circulating in 85 countries, and that P.1 is circulating in 20 countries.

**Trends in drivers of transmission**

Mobility last week was 17% lower than the pre-COVID-19 baseline (Figure 10). Mobility was near baseline (within 10%) in 115 countries. Mobility was lower than 30% of baseline in 18 countries.

As of June 29, in the Global COVID-19 Symptom Surveys and the US COVID-19 Symptom Surveys, 61% of people self-report that they always wore a mask when leaving their home (Figure 12). Mask use was lower than 50% in 81 countries.

There were 131 diagnostic tests per 100,000 people on June 29 (Figure 14).

Globally, 75% 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 29% in Kazakhstan to over 95% in Meghalaya (Figure 18).

In our current reference scenario, we expect that 2.9 billion people will be vaccinated with one dose by October 1 (Figure 19).
Projections

- In our **reference scenario**, which represents what we think is most likely to happen, our model projects 4,549,000 cumulative reported deaths due to COVID-19 on October 1. This represents 589,000 additional deaths from June 29 to October 1. Daily reported deaths are expected to increase until August 1 and then decline until October 1, 2021 (Figure 20).

- Under our **reference scenario**, our model projects 9,932,000 cumulative excess deaths due to COVID-19 on October 1. This represents 1,545,000 additional deaths from June 29 to October 1 (Figure 20).

- If **universal mask coverage (95%)** were attained in the next week, our model projects 148,000 fewer cumulative reported deaths compared to the reference scenario on October 1.

- Under our **worse scenario**, our model projects 4,774,000 cumulative reported deaths on October 1, an additional 225,000 deaths compared to our reference scenario. Daily reported deaths in the worse scenario increase until late August and then decline slowly until October 1, 2021 (Figure 20).

- By October 1, we project that 252,400 lives will be saved by the projected vaccine rollout. This does not include lives saved through vaccination that has already been delivered.

- Daily infections in the reference scenario are expected to increase until mid-July and then slowly decline until October 1, 2021. Under the worse scenario, daily infections are expected to increase until early August and then decline slowly until October 1, 2021 (Figure 21).
Model updates

Our modeling inclusion criteria for current local transmission of a variant were updated to account for locations with relatively few sequences, but for which all sequences were collected in the last few weeks. Specifically, we consider local transmission to have potentially occurred if a location has identified more than 50 sequences of a new variant in the previous six weeks. This rule essentially only applies to P.1 and B.1.617.2.
Projections

Figure 1. Reported daily COVID-19 cases

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>Ischemic heart disease</td>
<td>175,727</td>
<td>1</td>
</tr>
<tr>
<td>Stroke</td>
<td>126,014</td>
<td>2</td>
</tr>
<tr>
<td>COVID-19</td>
<td>119,388</td>
<td>3</td>
</tr>
<tr>
<td>Chronic obstructive pulmonary disease</td>
<td>63,089</td>
<td>4</td>
</tr>
<tr>
<td>Lower respiratory infections</td>
<td>47,946</td>
<td>5</td>
</tr>
<tr>
<td>Tracheal, bronchus, and lung cancer</td>
<td>39,282</td>
<td>6</td>
</tr>
<tr>
<td>Neonatal disorders</td>
<td>36,201</td>
<td>7</td>
</tr>
<tr>
<td>Alzheimer’s disease and other dementias</td>
<td>31,217</td>
<td>8</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>29,830</td>
<td>9</td>
</tr>
<tr>
<td>Diarrheal diseases</td>
<td>29,509</td>
<td>10</td>
</tr>
</tbody>
</table>
Figure 2. Smoothed trend estimate of reported daily COVID-19 deaths (blue) and total daily COVID-19 deaths (orange).
Figure 3. Daily COVID-19 death rate per 1 million on June 29, 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 June 29, 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 June 29, 2021

Figure 6. Mean effective R on June 18, 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 June 29, 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 June 29, 2021
Critical drivers
Figure 10. Trend in mobility as measured through smartphone app use compared to January 2020 baseline

Figure 11. Mobility level as measured through smartphone app use compared to January 2020 baseline (percent) on June 29, 2021
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 June 29, 2021
Figure 14. Trend in COVID-19 diagnostic tests per 100,000 people

Figure 15. COVID-19 diagnostic tests per 100,000 people on June 29, 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</td>
<td>91%</td>
<td>86%</td>
<td>81%</td>
<td>77%</td>
</tr>
<tr>
<td>(mRNA)</td>
<td></td>
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</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.

**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.
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.
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.
- 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 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.
- 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 20.** Daily COVID-19 deaths until October 01, 2021 for three scenarios

A. Reported daily COVID-19 death per 100,000

B. Excess daily COVID-19 deaths per 100,000
Figure 21. Daily COVID-19 infections until October 01, 2021 for three scenarios

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

Data sources:

Mask use and vaccine confidence data are from the Global COVID-19 Symptom Survey (this research is based on survey results from University of Maryland Social Data Science Center with Facebook’s support) and the US COVID-19 Symptom Survey (this research is based on survey results from Carnegie Mellon University’s Delphi Research Group with Facebook’s support). 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.