COVID-19 Results Briefing

Global

July 28, 2021

This document contains summary information on the latest projections from the IHME model on COVID-19 globally. The model was run on July 27, 2021, with data through July 26, 2021.

From June 2020 to January 2021, daily infections ran around 5 million per day; after a brief decline in February and March, the Delta surge in South Asia led to a peak in late April of nearly 12 million per day. As the surge in India peaked and declined, global infections dropped to below 5 million in early June. Delta-variant-related surges in North America, Europe, sub-Saharan Africa, North Africa and the Middle East, and Southeast Asia mean that infections are back up to 6.5 million per day and are likely to stay at this level until November 1. In our worse scenario, where mobility increases faster and governments are slower to act as surges occur, daily infections could go above the April level. In North America and Europe, increases in cases have been much larger than increases in deaths. The disconnect between infections and deaths in Europe has been attributed to higher vaccine effectiveness for severe disease and death than for infection, higher rates of vaccination in older age groups with higher infection-fatality rates, and greater transmission in younger age groups due to higher rates of contact. Given that only 31% of the global population is likely immune to the Delta variant either through vaccination or past infection, and that this number will increase to only 41% by November 1, we should expect ongoing global transmission with the consequent loss of life, increased disability through long-term symptoms, and enhanced risk of new variant emergence. Some regions such as North America and Europe are approaching the situation where vaccine hesitancy is the main limit on further scale-up. In most other regions in the world, faster scale-up is still limited by supply and delivery capacity. Redistribution of vaccines could alleviate some of the supply constraints and reduce the projected death toll looking farther ahead. Many countries with Delta surges will need to manage the surges with more than vaccination, including promoting or mandating mask use, and, in settings with low vaccination rates in at-risk groups, use of social distancing mandates. A critical issue in some regions is the role of the vaccinated in ongoing Delta variant transmission. Recent studies in Scotland, England, and Israel show that the vaccination may provide only 40%-50% protection against infection while maintaining much higher protection against hospitalization and death. US CDC now also reports evidence of transmission from infections in vaccinated individuals. These findings highlight the need for mask use for the vaccinated as well as the unvaccinated. Given the level of transmission of the Delta variant and the large fraction of the global population that is likely susceptible to this variant, COVID-19 will remain a dominant global health threat in the months to come.

Current situation

- Daily reported cases in the last week (through July 26) increased to 564,500 per day on average compared to 515,400 the week before (Figure 1).
• Reported deaths due to COVID-19 in the last week decreased to 7,600 per day on average compared to 7,700 the week before (Figure 2).

• Excess deaths due to COVID-19 in the last week increased to 21,900 per day on average compared to 20,800 the week before (Figure 2). This makes COVID-19 the number 2 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.

• The daily reported COVID-19 death rate is greater than 4 per million in 19 countries, including countries in South America, southern Africa, Eastern Europe, and Southeast Asia (Figure 3).

• The daily rate of excess deaths due to COVID-19 is greater than 4 per million in 38 countries (Figure 3).

• We estimated that 31% of people globally have been infected as of July 26 (Figure 5).

• Effective R, computed using cases, hospitalizations, and deaths, is greater than 1 in 114 countries (Figure 6). The main areas of increasing transmission include most of North America, Europe, North Africa and the Middle East, much of sub-Saharan Africa, and Southeast Asia.

• The infection-detection rate globally was close to 9% 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). The Delta variant is the dominant variant in North America, Europe, Central Asia, the Middle East, eastern, central and southern Africa, South Asia, and Southeast Asia.

Trends in drivers of transmission

• Mobility last week was 8% 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 16 countries. These countries are mostly in Southeast Asia and also Uganda.

• As of July 26, in the COVID-19 Trends and Impact Survey, 60% of people self-report that they always wore a mask when leaving their home (Figure 12).

• There were 141 diagnostic tests per 100,000 people on July 26 (Figure 14).

• Globally, 73.3% 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 28% in Kazakhstan to over 90% in Canada (Figure 18).

• In our current reference scenario, we expect that 3.4 billion people will be vaccinated by November 1 (Figure 19).

• Based on estimated vaccine effectiveness preventing Delta variant infection and cross-variant immunity, we estimate that 31% of the world is currently immune to the Delta variant. This is expected to increase through continued vaccination and Delta variant transmission to 41% of people by November 1 (Figure 20).
Projections

- In our **reference scenario**, which represents what we think is most likely to happen, our model projects 4,988,000 cumulative reported deaths due to COVID-19 on November 1. This represents 800,000 additional deaths from July 26 to November 1. Daily reported deaths will rise to 9,500 by late August and then decline slowly (Figure 21).

- Under our **reference scenario**, our model projects 10,954,000 cumulative excess deaths due to COVID-19 on November 1. This represents 1,978,000 additional deaths from July 26 to November 1 (Figure 21).

- If **universal mask coverage (95%)** were attained in the next week, our model projects 258,000 fewer cumulative reported deaths compared to the reference scenario on November 1.

- Under our **worse scenario**, our model projects 5.6 million cumulative reported deaths on November 1, an additional 683,000 deaths compared to our reference scenario. Daily reported deaths in the worse scenario rise to over 21,500 by mid-October (Figure 21).

- Daily infections in the reference scenario will rise to 6.7 million by early August and then remain above 6 million until November 1. In the worse scenario, with more rapid increases in mobility and less robust policy responses by governments, daily infections could increase to 15 million by late September and then decline (Figure 22).

- By November 1, we project that 354,900 lives will be saved by the projected vaccine rollout. This does not include lives saved through vaccination that has already been delivered.

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.
Projections

Figure 1. 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>Ischemic heart disease</td>
<td>175,727</td>
<td>1</td>
</tr>
<tr>
<td>COVID-19</td>
<td>153,129</td>
<td>2</td>
</tr>
<tr>
<td>Stroke</td>
<td>126,014</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 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

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 July 26, 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 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.

**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.

**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
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.