COVID-19 Results Briefing

Global

February 20, 2021

This document contains summary information on the latest projections from the IHME model on COVID-19 globally. The model was run on February 20, 2021, with data through February 16, 2021.

Global daily cases are declining substantially, with a much slower decline in global daily deaths. Death rates remain high across most of the Northern Hemisphere and in major parts of Latin America. The Northern Hemisphere decline is driven by three factors: declining seasonality, increasing vaccination, and continued social distancing mandates. The spread of the B.1.1.7, B.1.351, and P1 variants in our reference scenario slows the declines in the Northern Hemisphere. As long as there is not a rapid return to pre-COVID mobility levels or major declines in mask use, we do not expect a spring surge in the Northern Hemisphere. However, even modest rebounds in mobility will lead to increases in daily infections in April and May. The spread of P1 in the Southern Hemisphere and increasing seasonality mean that in a number of countries, including many states in Brazil, we expect cases and deaths to increase to June 1. In sub-Saharan Africa in aggregate, daily cases have declined in the last week despite the spread of B.1.351. Mobility and mask use metrics do not explain this decline. In the Northern Hemisphere, managing the next phase of the epidemic should focus on scaling up vaccination, reducing vaccine hesitancy, and encouraging mask use and social distancing during the spring after formal mandates are lifted. In South America, controlling the spread of P1, coinciding with increasing seasonality, will likely require active management of transmission through social distancing mandates along with securing vaccine supplies and scaling up vaccine delivery.

Current situation

- Daily reported cases in the last week decreased to 378,600 per day on average compared to 451,700 the week before (Figure 1).
- Daily deaths in the last week decreased to 12,400 per day on average compared to 13,670 the week before (Figure 2). This makes COVID-19 the number 3 cause of death globally this week (Table 1).
- The daily death rate remains high in most of the Northern Hemisphere and in Peru, Ecuador, many states in Brazil, and South Africa (Figure 3).
- We estimated that 8% of people globally have been infected as of February 16 (Figure 4).
- Effective R, computed using cases, hospitalizations, and deaths, is greater than 1 in many disparate areas: several states in Brazil, a band of countries below the Sahel, southeastern Europe, much of the Gulf, and several countries in Southeast Asia (Figure 5).
• The global infection-detection rate is around 25% in the last month (Figure 6).

Trends in drivers of transmission

• Mobility last week was 21% lower than the pre-COVID-19 baseline (Figure 7). Mobility was near baseline (within 10%) in 43 countries. Mobility was lower than 30% of baseline in 55 countries, mostly in Europe, as well as Peru, northern Brazil, and Myanmar.

• As of February 16, we estimated that 64% of people always wore a mask when leaving their home, unchanged from last week (Figure 9). Mask use was lower than 50% in 38 countries, mostly in Africa, Northern Europe, and Australasia.

• There were 99 diagnostic tests per 100,000 people on February 16 (Figure 11).

• Globally, 69.3% 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 33% in Kazakhstan to 92% in Denmark (Figure 14).

• In our current reference scenario, we expect that 2.2 billion will be vaccinated by June 1 (Figure 15).

Projections

• In our reference scenario, which represents what we think is most likely to happen, our model projects 3,681,000 cumulative deaths on June 1, 2021. This represents 850,000 additional deaths from February 16 to June 1 (Figure 16). Daily deaths are expected to decline to June 1 (Figure 17).

• By June 1, 2021, we project that 302,100 lives will be saved by the projected vaccine rollout.

• If universal mask coverage (95%) were attained in the next week, our model projects 184,000 fewer cumulative deaths compared to the reference scenario on June 1, 2021 (Figure 16).

• Under our worse scenario, our model projects 3,817,000 cumulative deaths on June 1, 2021 (Figure 16). This represents 136,000 more deaths compared to the reference scenario.

• Daily infections in the reference scenario decline only slowly until mid-April due to the spread of new variants, with nearly 1.25 million infections per day by June 1. In the worse scenario, daily infections are expected to increase beginning in March, but scaled-up vaccination means the increase in infections does not translate into increases in deaths.
Model updates

We have updated our model that predicts the spread of the new variants, which is used in the reference scenario in two ways. First, the speed of scale-up of the new variants is now based on data from more than 15 locations, whereas previously we only had data from London. Second, we now use observed data on the presence of new variants (B.1.1.7, B.1.351, or P1) in all locations with reported community transmission and more than five cases of those variants sequenced.
Current situation

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

<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>86,834</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. Reported daily COVID-19 deaths and smoothed trend estimate.

![Graph showing daily COVID-19 deaths and smoothed trend estimate.](covid19.healthdata.org)
Figure 3. Daily COVID-19 death rate per 1 million on February 16, 2021

Figure 4. Estimated percent infected with COVID-19 on February 16, 2021
Figure 5. Mean effective R on February 05, 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.*
Critical drivers

**Figure 7.** Trend in mobility as measured through smartphone app use compared to January 2020 baseline

**Figure 8.** Mobility level as measured through smartphone app use compared to January 2020 baseline (percent)
Figure 9. Trend in the proportion of the population reporting always wearing a mask when leaving home.

Figure 10. Proportion of the population reporting always wearing a mask when leaving home on February 16, 2021.
Figure 11. Trend in COVID-19 diagnostic tests per 100,000 people

Figure 12. COVID-19 diagnostic tests per 100,000 people on February 16, 2021
Figure 13. Increase in the risk of death due to pneumonia on February 1 compared to August 1
Figure 14. This figure shows the estimated proportion of the adult (18+) population that is open to receiving a COVID-19 vaccine based on Facebook survey responses (yes and yes, probably).

Figure 15. 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 two ways:

- First, it assumes that variants B.1.351 or P1 begin to spread within 2 weeks in all locations that do not already have B.1.351 or P1 community transmission.
- Second, it also 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 16.** Cumulative COVID-19 deaths until June 01, 2021 for three scenarios.

**Figure 17.** Daily COVID-19 deaths until June 01, 2021 for three scenarios.
Figure 18. Daily COVID-19 infections until June 01, 2021 for three scenarios.
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/).

Data on vaccine candidates, stages of development, manufacturing capacity, and pre-purchasing agreements are primarily from Linksbridge and supplemented by Duke University.

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.