COVID-19 Results Briefing

The European Region

June 9, 2022

This document contains summary information on the latest projections from the IHME model on COVID-19 in the WHO European Region. The model was run on June 8, 2022, with data through June 6, 2022.

At the regional level, the pandemic continues to recede, with steady but small declines in infections, hospital census, reported cases, and deaths. In the eastern part of the region, transmission appears to be very low. The notable exception to the pattern of general improvement is the BA.5-associated surge in Portugal. Not only have cases increased, but reported deaths have also increased to levels equal to the first Omicron wave. As in other jurisdictions, it is not clear if reported deaths include deaths with COVID-19 but not due to COVID-19.

Our models suggest that for the region, transmission should continue to decline until late August or early September and then begin to increase again in some jurisdictions. Our models include assumptions that a substantial fraction of those at high risk, such as the elderly, will receive antiviral treatment when they are sick with COVID-19. Given rapid declines in cautious behavior and mask use, our models suggest very brief slowdowns or slight reversals are possible in some countries, depending on the speed of relaxation of behaviors. Our relatively optimistic outlook should be tempered by two considerations: First, the BA.5 surge in Portugal is substantial and could possibly spread more widely in the region, leading some countries to have a third Omicron wave. Second, we do not model in the reference scenario the emergence of a new variant with immune escape, with or without increased severity. Such a variant could emerge at any time.

Effective strategies to manage this state of the pandemic include continued global surveillance to identify a novel variant with immune escape and increased severity as early as possible; ensuring access to antivirals for high-risk populations and consideration later in the summer or early fall of a fourth booster for those who are likely to have waning immunity. It does not seem appropriate at this point to use social distancing mandates to control transmission of Omicron. Loosening of mandates should be reconsidered if a novel variant with immune escape and increased severity emerges. Even then, consideration of the infection-fatality rate with the use of antivirals may lead some jurisdictions to not implement mandates even with the spread of a novel variant.

Current situation

- Estimated daily infections in the last week decreased to 576,000 per day on average compared to 623,000 the week before (Figure 1.1).

- Estimated daily hospital census in the last week (through June 6) decreased to 46,000 per day on average compared to 52,000 the week before.
• Daily reported cases in the last week decreased to 131,000 per day on average compared to 136,000 the week before (Figure 2.1).

• Reported deaths due to COVID-19 in the last week decreased to 520 per day on average compared to 650 the week before (Figure 3.1).

• Total deaths due to COVID-19 in the last week decreased to 790 per day on average compared to 970 the week before (Figure 3.1). This makes COVID-19 the number seven cause of death in the European Region this week (Table 1). Estimated total daily deaths due to COVID-19 in the past week were 1.5 times larger than the reported number of deaths.

• The daily rate of reported deaths due to COVID-19 is greater than 4 per million in no countries and no subnational locations (Figure 4.1).

• The daily rate of total deaths due to COVID-19 is greater than 4 per million in four countries and three subnational locations (Figure 4.2).

• We estimate that 79% of people in the European Region have been infected at least once as of June 6 (Figure 6.1). Effective R, computed using cases, hospitalizations, and deaths, is greater than 1 in 19 countries and five subnational locations (Figure 7.1).

• The infection-detection rate in the European Region was close to 21% on June 6 (Figure 8.1).

• Based on the GISAID and various national databases, combined with our variant spread model, we estimate the current prevalence of variants of concern (Figures 9.1–9.5). Omicron remains the dominant variant in all countries.

**Trends in drivers of transmission**

• Mask mandates remain in place in the majority of countries. Some form of gathering restrictions are present in 8 countries. Business curfews are in place in nearly half of the countries. Cyprus has extensive restaurant, bar, and gym closures.

• Mobility last week was 3% higher than the pre-COVID-19 baseline (Figure 11.1). Mobility was lower than 15% of baseline in three countries and seven subnational locations (Figure 12.1).

• As of May 29, in the COVID-19 Trends and Impact Survey, 12% of people self-reported that they always wore a mask when leaving their home (Figure 13.1). This is the lowest level since March 2020.

• There were 212 diagnostic tests per 100,000 people on June 6 (Figure 15.1).

• As of June 6, 23 countries and 57 subnational locations have reached 70% or more of the population who have received at least one vaccine dose, and 20 countries and 53 subnational locations have reached 70% or more of the population who are fully vaccinated (Figures 17.1 and 17.2). 67% of people in the European Region have received at least one vaccine dose, and 62% are fully vaccinated.
• In the European Region, 77.5% of the population that is 12 years and older say they would accept a vaccine for COVID-19 (Figure 18.1). This is the same as the previous week. The proportion of the population who are open to receiving a COVID-19 vaccine ranges from 35% in Kyrgyzstan to 99% in Iceland (Figure 19.1). Note that vaccine acceptance is calculated using survey data from the 18+ population.

• As of May 30, 2022, 2% of the population in the European Region say they would accept a vaccine for COVID-19 but have not yet been vaccinated.

• In our current reference scenario, we expect that 626.7 million people will be vaccinated with at least one dose by October 1 (Figure 21.1). We expect that 63% of the population will be fully vaccinated by October 1.

**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 will decline to 50% of the minimum level it reached between January 1, 2021, and May 1, 2022. This decline begins after the last observed data point in each location and transitions linearly to the minimum over a period of six weeks.

• Mobility increases as vaccine coverage increases.

• 80% of those who have had two doses of vaccine (or one dose for Johnson & Johnson) receive a third dose at six months after their second dose.

• Antiviral utilization for COVID-19 risk prevention in high-risk populations will reach 80% between June 15, 2022, and July 31, 2022. This applies in high-income countries, but not low- and middle-income countries, and this rollout assumption follows a similar pattern to global vaccine rollouts.

The **80% mask use scenario** makes all the same assumptions as the reference scenario but assumes all locations reach 80% mask use within seven days. If a location currently has higher than 80% use, mask use remains at the current level.

The **antiviral access scenario** makes all the same assumptions as the reference scenario but assumes globally distributed antivirals and extends coverage to all low- and middle-income countries between August 15, 2022, and September 30, 2022.

**Infections**

• Daily estimated infections in the **reference scenario** will rise to 754,000 by October 1, 2022 (Figure 23.1).

• Daily estimated infections in the **80% mask use scenario** will decline to 28,720 by August 16, 2022 (Figure 23.1).
Cases

- Daily estimated cases in the **reference scenario** will decline to 53,660 by August 27, 2022 (Figure 23.2) and then begin to slowly increase.

- Daily estimated cases in the **80% mask use scenario** will decline to 3,530 by September 13, 2022 (Figure 23.2).

Hospitalizations

- Daily hospital census in the **reference scenario** will decline to 16,150 by August 16, 2022 (Figure 23.3).

- Daily hospital census in the **80% mask use scenario** will decline to 1,400 by August 27, 2022 (Figure 23.3).

Deaths

- In our **reference scenario**, our model projects 2,495,000 cumulative reported deaths due to COVID-19 on October 1. This represents 23,000 additional deaths from June 6 to October 1. Daily reported COVID-19 deaths in the **reference scenario** will decline to 120 by August 26, 2022 (Figure 23.4).

- Under our **reference scenario**, our model projects 3,697,000 cumulative total deaths due to COVID-19 on October 1. This represents 37,000 additional deaths from June 6 to October 1 (Figure 23.5).

- In our **80% mask use scenario**, our model projects 2,484,000 cumulative reported deaths due to COVID-19 on October 1. This represents 12,000 additional deaths from June 6 to October 1. Daily reported COVID-19 deaths in the **80% mask use scenario** will decline to 10 by September 6, 2022 (Figure 23.4).

- Figure 24.1 compares our reference scenario forecasts to other publicly archived models. One model (USC) suggests massive increases in daily deaths. The remaining models suggest steady declines.

- At some point from June through October 1, one country will have high or extreme stress on hospital beds (Figure 25.1). At some point from June through October 1, four countries will have high or extreme stress on intensive care unit (ICU) capacity (Figure 26.1).
Model updates

This month, we have made three alterations to our reference assumptions in the model. First, we expect the recent rollout of Paxlovid treatments in high-income settings to greatly reduce severe disease and death outcomes. We do not currently have data to inform levels of coverage, so we have introduced a simple scale-up model that assumes individuals over the age of 65 will be targeted for treatment, and access to treatment among this group will rise from 0% on June 15, 2022, to a maximum of 80% on July 31, 2022. Clinical trials suggest a Paxlovid provides an 88% reduction in the risk of hospitalization and death among people treated within five days of symptom onset. We make a slightly more conservative assumption that the hospitalization and death rates will be reduced by 80% to account for variations in treatment timing and patient adherence in a real-world setting.

Second, survey data suggest that mask use is continuing to decline in most world locations. We have updated our reference mask use forecast to introduce a linear decline in mask use prevalence down to 50% of the minimum use level between January 1, 2021, and May 1, 2022, in each location. We have kept our previous assumption that mask use will continue at current levels in China, South Korea, Japan, Taiwan, Singapore, and South Africa, as current data do not suggest an imminent reduction.

Finally, similar to mask use, observed mobility continues to increase in much of the world. We have replaced our previous reference scenario that assumed current levels of mobility would persist indefinitely with a scenario that has mobility increase to match vaccine coverage. We continue to produce three scenarios when projecting COVID-19, but we have replaced the increased booster coverage scenario with an antiviral access scenario that examines the impact of more equitable distribution of Paxlovid to low- and middle-income countries (LMICs).
Figure 1.1: Daily COVID-19 hospital census and estimated infections

Figure 2.1: Reported daily COVID-19 cases, moving average
Table 1: Ranking of total 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>44,253</td>
<td>1</td>
</tr>
<tr>
<td>Stroke</td>
<td>22,622</td>
<td>2</td>
</tr>
<tr>
<td>Tracheal, bronchus, and lung cancer</td>
<td>8,918</td>
<td>3</td>
</tr>
<tr>
<td>Alzheimer’s disease and other dementias</td>
<td>8,022</td>
<td>4</td>
</tr>
<tr>
<td>Chronic obstructive pulmonary disease</td>
<td>6,719</td>
<td>5</td>
</tr>
<tr>
<td>Colon and rectum cancer</td>
<td>5,881</td>
<td>6</td>
</tr>
<tr>
<td>COVID-19</td>
<td>5,546</td>
<td>7</td>
</tr>
<tr>
<td>Lower respiratory infections</td>
<td>5,254</td>
<td>8</td>
</tr>
<tr>
<td>Cirrhosis and other chronic liver diseases</td>
<td>4,290</td>
<td>9</td>
</tr>
<tr>
<td>Hypertensive heart disease</td>
<td>3,949</td>
<td>10</td>
</tr>
</tbody>
</table>

Figure 3.1: Smoothed trend estimate of daily COVID-19 deaths
Daily COVID-19 death rate per 1 million on June 6, 2022

**Figure 4.1: Daily reported COVID-19 death rate per 1 million**

**Figure 4.2: Daily total COVID-19 death rate per 1 million**
Cumulative COVID-19 deaths per 100,000 on June 6, 2022

Figure 5.1: Reported cumulative COVID-19 deaths per 100,000

Figure 5.2: Total cumulative COVID-19 deaths per 100,000
Figure 6.1: Estimated percent of the population infected with COVID-19 on June 6, 2022

Figure 7.1: Mean effective R on May 26, 2022. 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 8.1: Percent of estimated 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.
Estimated percent of circulating SARS-CoV-2 for primary variant families on June 6, 2022

Figure 9.1: Estimated percent of new infections that are Alpha variant

Figure 9.2: Estimated percent of new infections that are Beta variant
Figure 9.3: Estimated percent of new infections that are Delta variant

Figure 9.4: Estimated percent of new infections that are Gamma variant
Figure 9.5: Estimated percent of new infections that are Omicron variant
Figure 10.1: Infection-fatality rate on June 6, 2022. This is estimated as the ratio of COVID-19 deaths to estimated daily COVID-19 infections.
Critical drivers

Table 2: Current mandate implementation

<table>
<thead>
<tr>
<th>Mandate in place</th>
<th>Mandate imposed in some subnational locations</th>
<th>No mandate</th>
</tr>
</thead>
<tbody>
<tr>
<td>(imposed this week)</td>
<td>(imposed from previous reporting)</td>
<td>(lifted this week)</td>
</tr>
<tr>
<td>(updated from previous reporting)</td>
<td></td>
<td>(updated from previous reporting)</td>
</tr>
</tbody>
</table>

*Not all locations are measured at the subnational level.*
Figure 11.1: Trend in mobility as measured through smartphone app use, compared to January 2020 baseline
Figure 12.1: Mobility level as measured through smartphone app use, compared to January 2020 baseline (percent) on June 6, 2022
Figure 13.1: Trend in the proportion of the population reporting always wearing a mask when leaving home

Figure 14.1: Proportion of the population reporting always wearing a mask when leaving home on June 6, 2022
Figure 15.1: Trend in COVID-19 diagnostic tests per 100,000 people

Figure 16.1: COVID-19 diagnostic tests per 100,000 people on June 6, 2022
Table 3: Estimates of vaccine effectiveness for specific vaccines used in the model at preventing severe disease and 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>Ancestral</th>
<th>Alpha</th>
<th>Beta</th>
<th>Gamma</th>
<th>Delta</th>
<th>Omicron</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Severe disease</td>
<td>Infection</td>
<td>Severe disease</td>
<td>Infection</td>
<td>Severe disease</td>
<td>Infection</td>
</tr>
<tr>
<td>AstraZeneca</td>
<td>94%</td>
<td>69%</td>
<td>94%</td>
<td>69%</td>
<td>94%</td>
<td>69%</td>
</tr>
<tr>
<td>CanSino</td>
<td>66%</td>
<td>61%</td>
<td>64%</td>
<td>61%</td>
<td>64%</td>
<td>61%</td>
</tr>
<tr>
<td>CoronaVac</td>
<td>50%</td>
<td>46%</td>
<td>49%</td>
<td>46%</td>
<td>49%</td>
<td>46%</td>
</tr>
<tr>
<td>Covaxin</td>
<td>78%</td>
<td>72%</td>
<td>76%</td>
<td>72%</td>
<td>76%</td>
<td>72%</td>
</tr>
<tr>
<td>Johnson &amp; Johnson</td>
<td>86%</td>
<td>72%</td>
<td>76%</td>
<td>64%</td>
<td>76%</td>
<td>64%</td>
</tr>
<tr>
<td>Moderna</td>
<td>97%</td>
<td>91%</td>
<td>97%</td>
<td>91%</td>
<td>97%</td>
<td>91%</td>
</tr>
<tr>
<td>Novavax</td>
<td>89%</td>
<td>83%</td>
<td>86%</td>
<td>82%</td>
<td>86%</td>
<td>82%</td>
</tr>
<tr>
<td>Pfizer/BioNTech</td>
<td>95%</td>
<td>84%</td>
<td>95%</td>
<td>84%</td>
<td>95%</td>
<td>84%</td>
</tr>
<tr>
<td>Sinopharm</td>
<td>73%</td>
<td>68%</td>
<td>71%</td>
<td>67%</td>
<td>71%</td>
<td>67%</td>
</tr>
<tr>
<td>Sputnik-V</td>
<td>92%</td>
<td>85%</td>
<td>89%</td>
<td>85%</td>
<td>89%</td>
<td>85%</td>
</tr>
<tr>
<td>Other vaccines</td>
<td>75%</td>
<td>70%</td>
<td>73%</td>
<td>69%</td>
<td>73%</td>
<td>69%</td>
</tr>
<tr>
<td>Other vaccines (mRNA)</td>
<td>91%</td>
<td>86%</td>
<td>88%</td>
<td>85%</td>
<td>88%</td>
<td>85%</td>
</tr>
</tbody>
</table>
Percent of the population having received at least one dose (17.1) and fully vaccinated against SARS-CoV-2 (17.2) by June 6, 2022

Figure 17.1: Percent of the population having received one dose of a COVID-19 vaccine

Figure 17.2: Percent of the population fully vaccinated against SARS-CoV-2
Figure 18.1: Trend in the estimated proportion of the population that is 12 years and older that has been vaccinated or would definitely receive the COVID-19 vaccine if available. Note that vaccine acceptance is calculated using survey data from the 18+ population.

Figure 19.1: Estimated proportion of the population that is 12 years and older that has been vaccinated or would definitely receive the COVID-19 vaccine if available. Note that vaccine acceptance is calculated using survey data from the 18+ population.
Figure 20.1: Estimated proportion of the total population that is not vaccinated but willing to be vaccinated as of May 30, 2022
Figure 21.1: Percent of people who receive at least one dose of a COVID-19 vaccine and those who are fully vaccinated

Figure 22.1: Percent of people who are immune to Delta or Omicron. Immunity is based on protection due to prior vaccination and infection(s). Moreover, variant-specific immunity is also based on variant-variant specific protection.
Projections and scenarios

Figure 23.1: Daily COVID-19 infections until October 01, 2022 for three scenarios

Figure 23.2: Daily COVID-19 reported cases until October 01, 2022 for three scenarios
Figure 23.3: Daily COVID-19 hospital census until October 01, 2022 for three scenarios
Figure 23.4: Reported daily COVID-19 deaths per 100,000
Figure 23.5: Total daily COVID-19 deaths per 100,000
Figure 24.1: 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, last model update in brackets: Delphi from the Massachusetts Institute of Technology (Delphi) [May 29, 2022], and the SI-KJalpha model from the University of Southern California (SIKJalpha) [June 9, 2022]. Regional values are aggregates from available locations in that region.
Figure 25.1: 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 26.1: 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.

To download our most recent results, visit our Data downloads page.