COVID-19 Results Briefing

The Western Pacific Region

February 18, 2022

This document contains summary information on the latest projections from the IHME model on COVID-19 in the Western Pacific Region. The model was run on February 17, 2022, with data through February 14, 2022.

The Omicron wave continues to spread across the Western Pacific Region, as the mean effective R is above 1 in 10 countries. Estimated daily infections increased from last week to approximately 5.1 million and daily reported cases increased by almost 29% to 273,000 per day on average compared to the week before. In our reference scenario, which does not include the emergence of a new variant, we expect the regional transmission, cases, hospitalizations, and deaths to peak by April 1 and rapidly decline after, with variation across countries.

We expect countries to continue to relax mandates once cases have been declining for several weeks; these steps should not lead to an increase in transmission given we believe that the declines in cases are likely due to the exhaustion of susceptible individuals, particularly in countries with high past infection rates, such as the Philippines and Malaysia. At the regional level, we estimate that around 25% of the population are immune to Omicron based on protection due to prior vaccination and infection(s), although we expect this to increase to approximately 75% by June 1. Given seasonality, transmission should stay low throughout the summer unless a new, more transmissible variant with immune escape emerges. Considering the reports of Omicron’s limited spread in China, and given the evidence of waning immunity and winter seasonality, the likelihood that the region might also see Omicron transmission return later this year may be increasing.

Several steps should be taken to protect against risks from future variants and surges. First, surveillance efforts should be maintained and strengthened so that countries are prepared in advance if a new variant emerges anywhere in the world. Second, production of effective antivirals should be accelerated if possible so that sufficient doses are available if a new variant, particularly one that is more severe than Omicron, emerges. We expect Omicron, in the absence of a new variant, to return in the winter of 2022, so there will be a need for antivirals even in the absence of a new variant. Third, efforts to persuade the unvaccinated to get vaccinated should continue. Additionally, careful consideration should be given to the need and timing for vaccine boosters, given that immunity wanes and can potentially leave the region vulnerable when Omicron may reemerge in the winter. Our model projects that as many as 20,000 lives could be saved if those who have received two doses of vaccine would get a third dose at six months. Fourth, even as most individuals return to pre-COVID-19 activities, individuals at risk (those over 65, immunocompromised, and multiple co-morbidities) should take precautions if and when transmission increases. These precautions should include using a high-quality mask, avoiding high-risk indoor settings, and social distancing.
Current situation

- Daily infections in the last week increased to 5,121,000 per day on average compared to 3,538,000 the week before (Figure 1.1). Daily hospital census in the last week (through February 14) increased to 89,000 per day on average compared to 78,000 the week before.

- Daily reported cases in the last week increased to 273,000 per day on average compared to 212,000 the week before (Figure 2.1).

- Reported deaths due to COVID-19 in the last week decreased to 420 per day on average compared to 430 the week before (Figure 3.1).

- Total deaths due to COVID-19 in the last week increased to 1,200 per day on average compared to 1,100 the week before (Figure 3.1). This makes COVID-19 the number 8 cause of death in the Western Pacific Region this week (Table 1). Estimated total daily deaths due to COVID-19 in the past week were 2.8 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 (Figure 4.1).

- The daily rate of total deaths due to COVID-19 is greater than 4 per million in one country (Figure 4.2).

- We estimate that 11% of people in the Western Pacific Region have been infected at least once as of February 14 (Figure 6.1). Effective R, computed using cases, hospitalizations, and deaths, is greater than 1 in 10 countries (Figure 7.1).

- The infection-detection rate in the Western Pacific Region was close to 12% on February 14 (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). We estimate that the Alpha variant is circulating in nine countries, that the Beta variant is circulating in seven countries, that the Delta variant is circulating in 15 countries, that the Gamma variant is circulating in four countries, and that the Omicron variant is circulating in 16 countries.
Trends in drivers of transmission

- Mobility last week was 6% lower than the pre-COVID-19 baseline (Figure 11.1). Mobility was lower than 30% of baseline in one country in the region.

- As of February 14, in the COVID-19 Trends and Impact Survey, 89% of people self-report that they always wore a mask when leaving their home, the same as last week (Figure 13.1).

- There were 118 diagnostic tests per 100,000 people on February 14 (Figure 15.1).

- As of February 14, 14 countries have reached 70% or more of the population who have received at least one vaccine dose, and 10 countries have reached 70% or more of the population who are fully vaccinated (Figure 17.1). 89% of people in the Western Pacific Region have received at least one vaccine dose, and 83% are fully vaccinated.

- In the Western Pacific Region, 94.7% of the population that is 12 years and older say they would accept, or would probably accept, a vaccine for COVID-19. Note that vaccine acceptance is calculated using survey data from the 18+ population. This is the same as last week. The proportion of the population who are open to receiving a COVID-19 vaccine ranges from 58% in Mongolia to 100% in Vietnam (Figure 19.1).

- In our current reference scenario, we expect that 1.7 billion people will be vaccinated with at least one dose by June 1 (Figure 20.1). We expect that 84% of the population will be fully vaccinated by June 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 is the mean of mask use over the last seven days.

- Mobility increases as vaccine coverage increases.

- Omicron variant spreads according to our flight and local spread model.

- 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.

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 **third dose scenario** is the same as the reference scenario but assumes that 100% of those who have received two doses of vaccine will get a third dose at six months.
Projections

Infections

- Daily estimated infections in the **reference scenario** will rise to 40,602,140 by March 6, 2022 (Figure 22.1).

- Daily estimated infections in the **80% mask use scenario** will rise to 40,524,730 by March 6, 2022 (Figure 22.1).

- Daily estimated infections in the **third dose scenario** will rise to 31,907,170 by March 8, 2022 (Figure 22.1).

Cases

- Daily estimated cases in the **reference scenario** will rise to 4,195,770 by March 17, 2022 (Figure 22.2).

- Daily estimated cases in the **80% mask use scenario** will rise to 4,191,700 by March 17, 2022 (Figure 22.2).

- Daily estimated cases in the **third dose scenario** will rise to 3,013,440 by March 19, 2022 (Figure 22.2).

Hospitalizations

- Daily hospital census in the **reference scenario** will rise to 1,371,400 by March 21, 2022 (Figure 22.3).

- Daily hospital census in the **80% mask use scenario** will rise to 1,370,110 by March 21, 2022 (Figure 22.3).

- Daily hospital census in the **third dose scenario** will rise to 1,069,960 by March 23, 2022 (Figure 22.3).

Deaths

- In our **reference scenario**, our model projects 349,000 cumulative reported deaths due to COVID-19 on June 1. This represents 176,000 additional deaths from February 14 to June 1. Daily reported COVID-19 deaths in the **reference scenario** will rise to 5,440 by March 30, 2022 (Figure 22.4).

- Under our **reference scenario**, our model projects 983,000 cumulative total deaths due to COVID-19 on June 1. This represents 530,000 additional deaths from February 14 to June 1 (Figure 25.2).

- In our **80% mask use scenario**, our model projects 348,000 cumulative reported deaths due to COVID-19 on June 1. This represents 175,000 additional deaths from February 14 to June 1. Daily reported COVID-19 deaths in the **80% mask use scenario** will rise to 5,430 by March 30, 2022 (Figure 22.4).
In our **third dose scenario**, our model projects 329,000 cumulative reported deaths due to COVID-19 on June 1. This represents 157,000 additional deaths from February 14 to June 1. Daily reported COVID-19 deaths in the **third dose scenario** will rise to 4,420 by March 31, 2022 (Figure 22.4).

Figure 23.1 compares our reference scenario forecasts to other publicly archived models. Forecasts are widely divergent.

At some point from February through June 1, nine countries will have high or extreme stress on hospital beds (Figure 24.1). At some point from February through June 1, 12 countries will have high or extreme stress on intensive care unit (ICU) capacity (Figure 25.1).
Model updates

No model updates.
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>Stroke</td>
<td>51,115</td>
<td>1</td>
</tr>
<tr>
<td>Ischemic heart disease</td>
<td>44,778</td>
<td>2</td>
</tr>
<tr>
<td>Chronic obstructive pulmonary disease</td>
<td>22,489</td>
<td>3</td>
</tr>
<tr>
<td>Tracheal, bronchus, and lung cancer</td>
<td>18,018</td>
<td>4</td>
</tr>
<tr>
<td>Alzheimer’s disease and other dementias</td>
<td>10,761</td>
<td>5</td>
</tr>
<tr>
<td>Stomach cancer</td>
<td>9,878</td>
<td>6</td>
</tr>
<tr>
<td>Lower respiratory infections</td>
<td>8,865</td>
<td>7</td>
</tr>
<tr>
<td>COVID-19</td>
<td>8,241</td>
<td>8</td>
</tr>
<tr>
<td>Hypertensive heart disease</td>
<td>7,494</td>
<td>9</td>
</tr>
<tr>
<td>Colon and rectum cancer</td>
<td>7,483</td>
<td>10</td>
</tr>
</tbody>
</table>

Figure 3.1: Smoothed trend estimate of reported daily COVID-19 deaths (blue) and total daily deaths due to COVID-19 (orange)
Daily COVID-19 death rate per 1 million on February 14, 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 February 14, 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 February 14, 2022

Figure 7.1: Mean effective R on February 3, 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 February 14, 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 February 14, 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>Primary school closure</th>
<th>Secondary school closure</th>
<th>Higher school closure</th>
<th>Entry restrictions for some non-residents</th>
<th>Entry restrictions for all non-residents</th>
<th>Curfew for businesses</th>
<th>Individual curfew</th>
<th>Gatherings limit: 6 indoor, 10 outdoor</th>
<th>Gatherings limit: 10 indoor, 25 outdoor</th>
<th>Gatherings limit: 25 indoor, 50 outdoor</th>
<th>Gatherings limit: 50 indoor, 100 outdoor</th>
<th>Gatherings limit: 100 indoor, 250 outdoor</th>
<th>Restaurants closed</th>
<th>Bars closed</th>
<th>Restaurants / bars closed</th>
<th>Restaurants / bars curbside only</th>
<th>Gyms, pools, other leisure closed</th>
<th>Non-essential retail closed</th>
<th>Non-essential workplaces closed</th>
<th>Stay home order</th>
<th>Stay home fine</th>
<th>Mask mandate</th>
<th>Mask mandate fine</th>
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</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Vietnam</td>
<td>Palau</td>
<td>Federated States of Micronesia</td>
<td>Philippines</td>
<td>Korea</td>
<td>Papua New Guinea</td>
<td>China</td>
<td>Cook Islands</td>
<td>Fiji</td>
<td>Japan</td>
<td>Kiribati</td>
<td>Fiji</td>
<td>Japan</td>
<td>Lao People's Democratic Republic</td>
<td>Malaysia</td>
<td>Marshall Islands</td>
<td>Micronesia (Federated States of)</td>
<td>Mongolia</td>
<td>Nauru</td>
<td>New Zealand</td>
<td>Niue</td>
<td>Palau</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 February 14, 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 February 14, 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 February 14, 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 Severe disease</th>
<th>Ancestral Infection</th>
<th>Alpha Severe disease</th>
<th>Alpha Infection</th>
<th>Beta Severe disease</th>
<th>Beta Infection</th>
<th>Gamma Severe disease</th>
<th>Gamma Infection</th>
<th>Delta Severe disease</th>
<th>Delta Infection</th>
<th>Omicron Severe disease</th>
<th>Omicron Infection</th>
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<tbody>
<tr>
<td>AstraZeneca</td>
<td>94%</td>
<td>63%</td>
<td>94%</td>
<td>63%</td>
<td>94%</td>
<td>69%</td>
<td>94%</td>
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<td>71%</td>
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<td>64%</td>
<td>61%</td>
<td>64%</td>
<td>61%</td>
<td>48%</td>
<td>32%</td>
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<tr>
<td>CoronaVac</td>
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<td>47%</td>
<td>50%</td>
<td>47%</td>
<td>49%</td>
<td>46%</td>
<td>49%</td>
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<td>49%</td>
<td>46%</td>
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<tr>
<td>Covaxin</td>
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<td>73%</td>
<td>78%</td>
<td>73%</td>
<td>76%</td>
<td>72%</td>
<td>76%</td>
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<td>76%</td>
<td>72%</td>
<td>57%</td>
<td>38%</td>
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<td>Johnson &amp; Johnson</td>
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<td>72%</td>
<td>86%</td>
<td>72%</td>
<td>76%</td>
<td>64%</td>
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<td>92%</td>
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<td>91%</td>
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<td>97%</td>
<td>91%</td>
<td>73%</td>
<td>48%</td>
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<td>89%</td>
<td>83%</td>
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<td>82%</td>
<td>86%</td>
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<td>86%</td>
<td>82%</td>
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<td>43%</td>
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<tr>
<td>Pfizer/BioNTech</td>
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<td>95%</td>
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<td>84%</td>
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<td>Sputnik-V</td>
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<td>86%</td>
<td>89%</td>
<td>85%</td>
<td>89%</td>
<td>85%</td>
<td>89%</td>
<td>85%</td>
<td>67%</td>
<td>44%</td>
</tr>
<tr>
<td>Other vaccines</td>
<td>75%</td>
<td>70%</td>
<td>75%</td>
<td>70%</td>
<td>73%</td>
<td>69%</td>
<td>73%</td>
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<td>73%</td>
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<td>Other vaccines</td>
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<td>88%</td>
<td>85%</td>
<td>67%</td>
<td>45%</td>
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</tbody>
</table>
Percent of the population having received at least one dose (17.1) and fully vaccinated against SARS-CoV-2 (17.2) by February 14, 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 probably or 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 probably or definitely receive the COVID-19 vaccine if available. Note that vaccine acceptance is calculated using survey data from the 18+ population.
Figure 20.1: Percent of people who receive at least one dose of a COVID-19 vaccine and those who are fully vaccinated

Figure 21.1: 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 22.1: Daily COVID-19 infections until June 01, 2022 for three scenarios

Figure 22.2: Daily COVID-19 reported cases until June 01, 2022 for three scenarios
Figure 22.3: Daily COVID-19 hospital census until June 01, 2022 for three scenarios
Figure 22.4: Reported daily COVID-19 deaths per 100,000
Figure 22.5: Total daily COVID-19 deaths per 100,000
Figure 23.1: 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) [February 17, 2022], Imperial College London (Imperial) [January 2, 2022], the SI-KJalpha model from the University of Southern California (SIKJalpha) [February 17, 2022]. Daily deaths from other modeling groups are smoothed to remove inconsistencies with rounding. Regional values are aggregates from available locations in that region.
Figure 24.1: 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 25.1: 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.