COVID-19 Results Briefing
Viet Nam
February 18, 2022

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

Current situation

- Daily infections in the last week increased to 2,029,000 per day on average compared to 1,230,000 the week before (Figure 1.1). Daily hospital census in the last week (through February 14) increased to 12,000 per day on average compared to 8,000 the week before.
- Daily reported cases in the last week increased to 47,000 per day on average compared to 24,000 the week before (Figure 2.1).
- Reported deaths due to COVID-19 in the last week decreased to 120 per day on average compared to 130 the week before (Figure 3.1).
- Total deaths due to COVID-19 in the last week decreased to 280 per day on average compared to 290 the week before (Figure 3.1). This makes COVID-19 the number 2 cause of death in Viet Nam this week (Table 1). Estimated total daily deaths due to COVID-19 in the past week were 2.2 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 42% of people in Viet Nam 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. Effective R in Viet Nam was 2.1 on February 3 (Figure 7.1).
- The infection-detection rate in Viet Nam was close to 9% 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 37% lower than the pre-COVID-19 baseline (Figure 11.1). Mobility was lower than 30% of baseline in one country and 0 subnational locations in the region.
- As of February 14, in the COVID-19 Trends and Impact Survey, 66% of people self-report that they always wore a mask when leaving their home compared to 69% last week (Figure 13.1).
- There were 61 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). 81% of people in Viet Nam have received at least one vaccine dose, and 76% are fully vaccinated.
- In Viet Nam, 99.6% 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 Viet Nam (Figure 19.1).
- In our current reference scenario, we expect that 77.8 million people will be vaccinated with at least one dose by June 1 (Figure 20.1). We expect that 76% 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 2,264,150 by February 16, 2022 (Figure 22.1).
- Daily estimated infections in the 80% mask use scenario will rise to 2,086,880 by February 16, 2022 (Figure 22.1).
- Daily estimated infections in the third dose scenario will rise to 2,199,050 by February 16, 2022 (Figure 22.1).

Cases

- Daily estimated cases in the reference scenario will rise to 100,680 by February 24, 2022 (Figure 22.2).
- Daily estimated cases in the 80% mask use scenario will rise to 92,850 by February 23, 2022 (Figure 22.2).
- Daily estimated cases in the third dose scenario will rise to 96,900 by February 24, 2022 (Figure 22.2).

Hospitalizations

- Daily hospital census in the reference scenario will rise to 42,540 by March 3, 2022 (Figure 22.3).
- Daily hospital census in the 80% mask use scenario will rise to 39,310 by March 3, 2022 (Figure 22.3).
- Daily hospital census in the third dose scenario will rise to 39,110 by March 3, 2022 (Figure 22.3).

Deaths

- In our reference scenario, our model projects 51,000 cumulative reported deaths due to COVID-19 on June 1. This represents 11,000 additional deaths from February 14 to June 1. Daily reported COVID-19 deaths in the reference scenario will rise to 280 by March 13, 2022 (Figure 22.4).
- Under our reference scenario, our model projects 114,000 cumulative total deaths due to COVID-19 on June 1. This represents 24,000 additional deaths from February 14 to June 1 (Figure 25.2).
- In our 80% mask use scenario, our model projects 50,000 cumulative reported deaths due to COVID-19 on June 1. This represents 11,000 additional deaths from February 14 to June 1. Daily reported COVID-19 deaths in the 80% mask use scenario will rise to 260 by March 13, 2022 (Figure 22.4).
• In our **third dose scenario**, our model projects 49,000 cumulative reported deaths due to COVID-19 on June 1. This represents 9,300 additional deaths from February 14 to June 1. Daily reported COVID-19 deaths in the **third dose scenario** will rise to 250 by March 12, 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, 9 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>2,615</td>
<td>1</td>
</tr>
<tr>
<td>COVID-19</td>
<td>1,940</td>
<td>2</td>
</tr>
<tr>
<td>Ischemic heart disease</td>
<td>1,435</td>
<td>3</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>565</td>
<td>4</td>
</tr>
<tr>
<td>Chronic obstructive pulmonary disease</td>
<td>547</td>
<td>5</td>
</tr>
<tr>
<td>Tracheal, bronchus, and lung cancer</td>
<td>484</td>
<td>6</td>
</tr>
<tr>
<td>Road injuries</td>
<td>464</td>
<td>7</td>
</tr>
<tr>
<td>Cirrhosis and other chronic liver diseases</td>
<td>455</td>
<td>8</td>
</tr>
<tr>
<td>Chronic kidney disease</td>
<td>413</td>
<td>9</td>
</tr>
<tr>
<td>Lower respiratory infections</td>
<td>410</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>Vietnam</th>
<th>Vanuatu</th>
<th>Tuvalu</th>
<th>Tonga</th>
<th>Singapore</th>
<th>Philippines</th>
<th>Republic of Korea</th>
<th>Samoa</th>
<th>Malaysia</th>
<th>Lao People's Democratic Republic</th>
<th>Marshall Islands</th>
<th>Micronesia (Federated States of)</th>
<th>Nauru</th>
<th>New Zealand</th>
<th>Niue</th>
<th>Nauru</th>
<th>Kiribati</th>
<th>Japan</th>
<th>Fiji</th>
<th>Cook Islands</th>
<th>China</th>
<th>Cambodia</th>
<th>Brunei Darussalam</th>
<th>Australia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary school closure</td>
<td>Secondary school closure</td>
<td>Higher school closure</td>
<td>Entry restrictions for some non-residents</td>
<td>Entry restrictions for all non-residents</td>
<td>Individual movements restricted</td>
<td>Curfew for businesses</td>
<td>Individual curfew</td>
<td>Gathering limit: 6 indoor, 10 outdoor</td>
<td>Gathering limit: 10 indoor, 25 outdoor</td>
<td>Gathering limit: 25 indoor, 50 outdoor</td>
<td>Gathering limit: 50 indoor, 100 outdoor</td>
<td>Gathering limit: 100 indoor, 250 outdoor</td>
<td>Restaurants closed</td>
<td>Restaurants / bars closed</td>
<td>Restaurants / bars curbside only</td>
<td>Gyms, pools, other leisure closed</td>
<td>Non-essential retail closed</td>
<td>Non-essential workplaces closed</td>
<td>Stay home order</td>
<td>Stay home fine</td>
<td>Mask mandate</td>
<td>Mask mandate fine</td>
<td></td>
</tr>
<tr>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
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<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td></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

![Graph showing trend in COVID-19 diagnostic tests per 100,000 people from February 2020 to February 2022.]

Figure 16.1: COVID-19 diagnostic tests per 100,000 people on February 14, 2022

![Map showing COVID-19 diagnostic tests per 100,000 people on February 14, 2022 with various countries shaded in different colors indicating the number of tests per category.]

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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>63%</td>
<td>94%</td>
<td>63%</td>
<td>94%</td>
<td>69%</td>
</tr>
<tr>
<td>CanSino</td>
<td>66%</td>
<td>62%</td>
<td>66%</td>
<td>62%</td>
<td>64%</td>
<td>61%</td>
</tr>
<tr>
<td>CoronaVac</td>
<td>50%</td>
<td>47%</td>
<td>50%</td>
<td>47%</td>
<td>49%</td>
<td>46%</td>
</tr>
<tr>
<td>Covaxin</td>
<td>78%</td>
<td>73%</td>
<td>78%</td>
<td>73%</td>
<td>76%</td>
<td>72%</td>
</tr>
<tr>
<td>Johnson &amp; Johnson</td>
<td>86%</td>
<td>72%</td>
<td>86%</td>
<td>72%</td>
<td>76%</td>
<td>64%</td>
</tr>
<tr>
<td>Moderna</td>
<td>97%</td>
<td>92%</td>
<td>97%</td>
<td>92%</td>
<td>97%</td>
<td>91%</td>
</tr>
<tr>
<td>Novavax</td>
<td>89%</td>
<td>83%</td>
<td>89%</td>
<td>83%</td>
<td>86%</td>
<td>82%</td>
</tr>
<tr>
<td>Pfizer/BioNTech</td>
<td>95%</td>
<td>86%</td>
<td>95%</td>
<td>86%</td>
<td>95%</td>
<td>84%</td>
</tr>
<tr>
<td>Sinopharm</td>
<td>73%</td>
<td>68%</td>
<td>73%</td>
<td>68%</td>
<td>71%</td>
<td>67%</td>
</tr>
<tr>
<td>Sputnik-V</td>
<td>92%</td>
<td>86%</td>
<td>92%</td>
<td>86%</td>
<td>89%</td>
<td>85%</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>
</tr>
<tr>
<td>Other vaccines (mRNA)</td>
<td>91%</td>
<td>86%</td>
<td>91%</td>
<td>86%</td>
<td>88%</td>
<td>85%</td>
</tr>
</tbody>
</table>
Viet Nam

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.