COVID-19 Results Briefing

Thailand

April 8, 2022

This document contains summary information on the latest projections from the IHME model on COVID-19 in Thailand. The model was run on April 7, 2022, with data through April 4, 2022.

Current situation

- Daily infections in the last week decreased to 352,000 per day on average compared to 389,000 the week before (Figure 1.1). Daily hospital census in the last week (through April 4) increased to 10,000 per day on average compared to 9,500 the week before.
- Daily reported cases in the last week increased to 26,000 per day on average compared to 22,000 the week before (Figure 2.1).
- Reported deaths due to COVID-19 in the last week increased to 87 per day on average compared to 74 the week before (Figure 3.1).
- Total deaths due to COVID-19 in the last week increased to 120 per day on average compared to 100 the week before (Figure 3.1). This makes COVID-19 the number three cause of death in Thailand this week (Table 1). Estimated total daily deaths due to COVID-19 in the past week were 1.4 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 54% of people in Thailand have been infected at least once as of April 4 (Figure 6.1). Effective R, computed using cases, hospitalizations, and deaths, is greater than 1 in five countries and 11 subnational locations. Effective R in Thailand was 1.0 on March 24 (Figure 7.1).
- The infection-detection rate in Thailand was close to 7% on April 4 (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 eight countries and 25 subnational locations, that the Beta variant is circulating in three countries and seven subnational locations, that the Delta variant is circulating in 11 countries and 34 subnational locations, that the Gamma variant is circulating in four countries and five subnational locations, and that the Omicron variant is circulating in 11 countries and 34 subnational locations.

Trends in drivers of transmission

- Mobility last week was 10% lower than the pre-COVID-19 baseline (Figure 11.1). Mobility was lower than 15% of baseline in two countries.
- As of April 4, in the COVID-19 Trends and Impact Survey, 79% of people self-report that they always wore a mask when leaving their home compared to 78% last week (Figure 13.1).
- There were 96 diagnostic tests per 100,000 people on April 4 (Figure 15.1).
- As of April 4, nine countries and 16 subnational locations have reached 70% or more of the population who have received at least one vaccine dose, and six countries and nine subnational locations have reached 70% or more of the population who are fully vaccinated (Figure 17.1). 80% of people in Thailand have received at least one vaccine dose, and 72% are fully vaccinated.
- In Thailand, 90.3% of the population that is 12 years and older say they would accept a vaccine for COVID-19. Note that vaccine acceptance is calculated using survey data from the 18+ population. This is up by 1.0 percentage points from last week. The proportion of the population who are open to receiving a COVID-19 vaccine ranges from 47% in Timor-Leste to 99% in Bangladesh (Figure 19.1).
• In our current reference scenario, we expect that 60.5 million people will be vaccinated with at least one dose by August 1 (Figure 20.1). We expect that 81% of the population will be fully vaccinated by August 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 decline to 1,320 by August 1, 2022 (Figure 22.1).
- Daily estimated infections in the 80% mask use scenario will decline to 1,260 by August 1, 2022 (Figure 22.1).
- Daily estimated infections in the third dose scenario will decline to 1,080 by August 1, 2022 (Figure 22.1).

Cases
- Daily estimated cases in the reference scenario will decline to 110 by August 1, 2022 (Figure 22.2).
- Daily estimated cases in the 80% mask use scenario will decline to 100 by August 1, 2022 (Figure 22.2).
- Daily estimated cases in the third dose scenario will decline to 90 by August 1, 2022 (Figure 22.2).

Hospitalizations
- Daily hospital census in the reference scenario will rise to 10,750 by April 7, 2022 (Figure 22.3).
- Daily hospital census in the 80% mask use scenario will rise to 10,750 by April 7, 2022 (Figure 22.3).
- Daily hospital census in the third dose scenario will rise to 10,750 by April 7, 2022 (Figure 22.3).

Deaths
- In our reference scenario, our model projects 28,000 cumulative reported deaths due to COVID-19 on August 1. This represents 2,400 additional deaths from April 4 to August 1. Daily reported COVID-19 deaths in the reference scenario will decline to zero by August 1, 2022 (Figure 22.4).
- Under our reference scenario, our model projects 39,000 cumulative total deaths due to COVID-19 on August 1. This represents 3,300 additional deaths from April 4 to August 1 (Figure 22.5).
• In our **80% mask use scenario**, our model projects 28,000 cumulative reported deaths due to COVID-19 on August 1. This represents 2,300 additional deaths from April 4 to August 1. Daily reported COVID-19 deaths in the **80% mask use scenario** will decline to zero by August 1, 2022 (Figure 22.4).

• In our **third dose scenario**, our model projects 28,000 cumulative reported deaths due to COVID-19 on August 1. This represents 2,400 additional deaths from April 4 to August 1. Daily reported COVID-19 deaths in the **third dose scenario** will decline to zero by August 1, 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 April through August 1, one country will have high or extreme stress on hospital beds (Figure 24.1). At some point from April through August 1, one country will have high or extreme stress on intensive care unit (ICU) capacity (Figure 25.1).
Model updates

Vaccine confidence data are from The Delphi Group at Carnegie Mellon University and University of Maryland COVID-19 Trends and Impact Surveys, in partnership with Facebook. In our previous estimates of the proportion of the population that is 12 years and older who would receive the COVID-19 vaccine if available, we included survey responses of “yes, probably” and “yes, definitely” when asked “If a vaccine to prevent COVID-19 were offered to you today, would you choose to get vaccinated?” In our analysis of vaccine uptake, we have seen that vaccination rates have largely plateaued at the level implied by the “yes, definitely” response level. Therefore, we have updated our estimates of willingness to accept the vaccine to include only survey responses of “yes, definitely.”
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>992</td>
<td>1</td>
</tr>
<tr>
<td>Stroke</td>
<td>981</td>
<td>2</td>
</tr>
<tr>
<td>COVID-19</td>
<td>857</td>
<td>3</td>
</tr>
<tr>
<td>Lower respiratory infections</td>
<td>597</td>
<td>4</td>
</tr>
<tr>
<td>Chronic kidney disease</td>
<td>528</td>
<td>5</td>
</tr>
<tr>
<td>Liver cancer</td>
<td>472</td>
<td>6</td>
</tr>
<tr>
<td>Tracheal, bronchus, and lung cancer</td>
<td>444</td>
<td>7</td>
</tr>
<tr>
<td>Alzheimer’s disease and other dementias</td>
<td>414</td>
<td>8</td>
</tr>
<tr>
<td>Cirrhosis and other chronic liver diseases</td>
<td>377</td>
<td>9</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>376</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 April 4, 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 April 4, 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 April 4, 2022

Figure 7.1: Mean effective R on March 24, 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 April 4, 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 April 4, 2022. This is estimated as the ratio of COVID-19 deaths to estimated daily COVID-19 infections.
### Critical drivers

**Table 2: Current mandate implementation**

| Country   | Primary school closure | Secondary school closure | Higher school closure | Entry restrictions for some non-residents | Entry restrictions for all non-residents | Individual movements restricted | Curfew for businesses | Individual curfew | Gathering limit: 6 indoor, 10 outdoor | Gathering limit: 10 indoor, 25 outdoor | Gathering limit: 25 indoor, 50 outdoor | Gathering limit: 50 indoor, 100 outdoor | Gathering limit: 100 indoor, 250 outdoor | Restaurants closed | Bars closed | Restaurants / bars closed | Gyms, pools, other leisure closed | Non-essential retail closed | Non-essential workplaces closed | Stay home order | Stay home fine | Mask mandate fine |
|-----------|------------------------|--------------------------|----------------------|-------------------------------------------|------------------------------------------|----------------------------------------|-----------------------|-------------------|-----------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|-----------------|-------------------------|-----------------------------|------------------------|---------------------------|------------------------|----------------|------------------------|
| Thailand  |                        |                          |                      |                                            |                                          |                                        |                      |                   |                                            |                                            |                                          |                                            |                                        |                 |                          |                             |           |                          |                          |
| Bangladesh|                        |                          |                      |                                            |                                          |                                        |                      |                   |                                            |                                            |                                          |                                            |                                        |                 |                          |                             |           |                          |                          |
| Bhutan    |                        |                          |                      |                                            |                                          |                                        |                      |                   |                                            |                                            |                                          |                                            |                                        |                 |                          |                             |           |                          |                          |
| India     |                        |                          |                      |                                            |                                          |                                        |                      |                   |                                            |                                            |                                          |                                            |                                        |                 |                          |                             |           |                          |                          |
| Indonesia |                        |                          |                      |                                            |                                          |                                        |                      |                   |                                            |                                            |                                          |                                            |                                        |                 |                          |                             |           |                          |                          |
| Maldives  |                        |                          |                      |                                            |                                          |                                        |                      |                   |                                            |                                            |                                          |                                            |                                        |                 |                          |                             |           |                          |                          |
| Myanmar   |                        |                          |                      |                                            |                                          |                                        |                      |                   |                                            |                                            |                                          |                                            |                                        |                 |                          |                             |           |                          |                          |
| Nepal     |                        |                          |                      |                                            |                                          |                                        |                      |                   |                                            |                                            |                                          |                                            |                                        |                 |                          |                             |           |                          |                          |
| Sri Lanka |                        |                          |                      |                                            |                                          |                                        |                      |                   |                                            |                                            |                                          |                                            |                                        |                 |                          |                             |           |                          |                          |
| Thailand  |                        |                          |                      |                                            |                                          |                                        |                      |                   |                                            |                                            |                                          |                                            |                                        |                 |                          |                             |           |                          |                          |
| Timor-Leste|                        |                          |                      |                                            |                                          |                                        |                      |                   |                                            |                                            |                                          |                                            |                                        |                 |                          |                             |           |                          |                          |

*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 April 4, 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 April 4, 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 April 4, 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>
</tr>
</thead>
<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>
<td>69%</td>
<td>94%</td>
<td>69%</td>
<td>71%</td>
<td>36%</td>
</tr>
<tr>
<td>CanSino</td>
<td>66%</td>
<td>62%</td>
<td>66%</td>
<td>62%</td>
<td>64%</td>
<td>61%</td>
<td>64%</td>
<td>61%</td>
<td>64%</td>
<td>61%</td>
<td>48%</td>
<td>32%</td>
</tr>
<tr>
<td>CoronaVac</td>
<td>50%</td>
<td>47%</td>
<td>50%</td>
<td>47%</td>
<td>49%</td>
<td>46%</td>
<td>49%</td>
<td>46%</td>
<td>49%</td>
<td>46%</td>
<td>37%</td>
<td>24%</td>
</tr>
<tr>
<td>Covaxin</td>
<td>78%</td>
<td>73%</td>
<td>78%</td>
<td>73%</td>
<td>76%</td>
<td>72%</td>
<td>76%</td>
<td>72%</td>
<td>76%</td>
<td>72%</td>
<td>57%</td>
<td>38%</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>
<td>76%</td>
<td>64%</td>
<td>76%</td>
<td>64%</td>
<td>57%</td>
<td>33%</td>
</tr>
<tr>
<td>Moderna</td>
<td>97%</td>
<td>92%</td>
<td>97%</td>
<td>92%</td>
<td>97%</td>
<td>91%</td>
<td>97%</td>
<td>91%</td>
<td>97%</td>
<td>91%</td>
<td>73%</td>
<td>48%</td>
</tr>
<tr>
<td>Novavax</td>
<td>89%</td>
<td>83%</td>
<td>89%</td>
<td>83%</td>
<td>86%</td>
<td>82%</td>
<td>86%</td>
<td>82%</td>
<td>86%</td>
<td>82%</td>
<td>65%</td>
<td>43%</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>
<td>95%</td>
<td>84%</td>
<td>95%</td>
<td>84%</td>
<td>72%</td>
<td>44%</td>
</tr>
<tr>
<td>Sinopharm</td>
<td>73%</td>
<td>68%</td>
<td>73%</td>
<td>68%</td>
<td>71%</td>
<td>67%</td>
<td>71%</td>
<td>67%</td>
<td>71%</td>
<td>67%</td>
<td>53%</td>
<td>35%</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>
<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>
<td>69%</td>
<td>73%</td>
<td>69%</td>
<td>55%</td>
<td>36%</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>
<td>88%</td>
<td>85%</td>
<td>88%</td>
<td>85%</td>
<td>67%</td>
<td>45%</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 April 4, 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: 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 August 01, 2022 for three scenarios

Figure 22.2: Daily COVID-19 reported cases until August 01, 2022 for three scenarios
Figure 22.3: Daily COVID-19 hospital census until August 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) [April 7, 2022], the SI-KJalpha model from the University of Southern California (SIKJalpha) [April 7, 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.