COVID-19 Results Briefing

The South-East Asia Region

July 30, 2021

This document contains summary information on the latest projections from the IHME model on COVID-19 in the South-East Asia Region. The model was run on July 27, 2021, with data through July 26, 2021.

Reported cases and deaths continue to increase at the regional level for South-East Asia, with some divergent trends at the country level. The Delta variant continues to fuel surges in Indonesia, Bangladesh, Myanmar, and Thailand; however, transmission continues to decline or remain relatively steady in India, Nepal, the Maldives, and Sri Lanka. While the implementation of social distancing mandates in some locations, like Bangladesh, Thailand, and some central and eastern Indian states, has kept mobility steady at the regional level, rising mobility in locations with recent observed peaks, like Nepal and some northern and southern Indian states, should be monitored closely if infections begin to increase. Low testing rates and slow vaccination rollouts due to supply constraints and hesitancy keep the threat of resurgence and stress on hospital resources high for all countries through early November. Compared to last week, daily reported infections at a regional level increased by 10.9% to 130,200 per day on average, and daily reported deaths increased by 19% to 2,500 per day on average. Estimated excess daily deaths are 2.9 times higher than reported daily deaths. Our reference scenario anticipates daily reported deaths to rise to a peak of 3,750 deaths per day by August 17, and cumulative reported deaths will reach 790,000 by November 1, representing an additional 242,000 reported deaths between July 26 and November 1. Universal masks could save an estimated 44,000 lives. Using vaccine coverage by vaccine type and our systematic analysis of vaccine effectiveness by variant, and also considering past infection and the protection that provides against the Delta variant, we expect that only 56% of people will be immune to non-escape variants, and 48% of people will be immune to identified escape variants by November 1. High levels of vaccine hesitancy in Indonesia, Myanmar, the Maldives, Timor-Leste, and some states in India are concerning and have likely been fueled by observed breakthrough infections within vaccinated populations. Strengthening public health communication that approved vaccines provide a level of protection against severe disease is critical; where vaccine choice is possible, available evidence shows high efficacy for the mRNA vaccines against the Delta variant. Additionally, mandating the use of masks and instituting social distancing measures in settings where there are rapid increases in severe cases and deaths is highly effective in curbing transmission. Routine collection and reporting of data on cases, hospitalizations, and deaths by age, sex, and vaccination status would greatly enhance the ability of each country to understand which groups among their population remain vulnerable. Additional genomic sequencing data will also be vital for tracking and identifying the spread of variants.
Current situation

- Daily reported cases in the last week (through July 26) increased to 130,200 per day on average compared to 117,400 the week before (Figure 1).
- Reported deaths due to COVID-19 in the last week increased to 2,500 per day on average compared to 2,100 the week before (Figure 2).
- Excess deaths due to COVID-19 in the last week increased to 6,900 per day on average compared to 5,800 the week before (Figure 2). This makes COVID-19 the number 1 cause of death in the South-East Asia Region this week (Table 1). Estimated excess daily deaths due to COVID-19 were 2.9 times larger than the reported number of deaths.
- The daily reported COVID-19 death rate is greater than 4 per million in Indonesia and Myanmar (Figure 3).
- The daily rate of excess deaths due to COVID-19 is greater than 4 per million in Bangladesh, Indonesia, Myanmar, and Sri Lanka (Figure 3).
- We estimated that 41% of people in the South-East Asia Region have been infected as of July 26 (Figure 5).
- Effective R, computed using cases, hospitalizations, and deaths, is greater than 1 in 12 locations, including Nepal, Myanmar, Thailand, Indonesia, Sri Lanka, and seven states in India (Figure 6).
- The infection-detection rate in the South-East Asia Region was close to 6% on July 26 (Figure 7).
- Based on the GISAID and various national databases, combined with our variant spread model, we estimate the current prevalence of variants of concern (Figure 8). We estimate that B.1.351 is circulating in no countries, that B.1.617 is circulating in eight countries, and that P.1 is circulating in no countries in the region.

Trends in drivers of transmission

- Mobility last week was 26% lower than the pre-COVID-19 baseline (Figure 10). Mobility was near baseline (within 10%) in Bangladesh. Mobility was lower than 30% of baseline in Indonesia, Maldives, Myanmar, Sri Lanka, and Timor-Leste.
- As of July 26, in the COVID-19 Trends and Impact Survey, 73% of people self-report that they always wore a mask when leaving their home compared to 74% last week (Figure 12).
- There were 111 diagnostic tests per 100,000 people on July 26 (Figure 14).
- In the South-East Asia Region, 82.6% of people say they would accept or would probably accept a vaccine for COVID-19. This is up by 0.1 percentage points from last week. The fraction of the population who are open to receiving a COVID-19 vaccine ranges from 57% in the Maldives to 87% in Thailand (Figure 18).
In our current reference scenario, we expect that 1.5 billion people will be vaccinated by November 1 (Figure 19).

In our current reference scenario, we expect that by November 1, 56% of people will be immune to non-escape variants and 48% of people will be immune to escape variants (Figure 20).

**Projections**

- In our reference scenario, which represents what we think is most likely to happen, our model projects 790,000 cumulative reported deaths due to COVID-19 on November 1. This represents 242,000 additional deaths from July 26 to November 1. Daily reported deaths will rise to 3,750 by August 17, 2021, then decline steadily through November 1, 2021 (Figure 21).

- Under our reference scenario, our model projects 2,190,000 cumulative excess deaths due to COVID-19 on November 1. This represents 629,000 additional deaths from July 26 to November 1. Daily excess deaths due to COVID-19 will rise to 9,940 by August 16, 2021, then decline steadily through November 1, 2021 (Figure 21).

- If universal mask coverage (95%) were attained in the next week, our model projects 44,000 fewer cumulative reported deaths compared to the reference scenario on November 1.

- If universal mask coverage (95%) were attained in the next week, our model projects 116,000 fewer cumulative excess deaths due to COVID-19 compared to the reference scenario on November 1.

- Under our worse scenario, our model projects 942,000 cumulative reported deaths on November 1, an additional 152,000 deaths compared to our reference scenario. Daily reported deaths in the worse scenario will rise to 4,790 by October 8, 2021, then decline steadily through November 1, 2021 (Figure 21).

- Under our worse scenario, our model projects 2,529,000 cumulative excess deaths due to COVID-19 on November 1, an additional 339,000 deaths compared to our reference scenario. Daily excess deaths due to COVID-19 in the worse scenario will rise to 11,210 by October 4, 2021, then decline steadily through November 1, 2021 (Figure 21).

- Daily infections in the reference scenario will decline to 872,660 by October 24, 2021 (Figure 22). Daily infections in the worse scenario will rise to 2,916,360 by September 13, 2021 (Figure 22).

- By November 1, we project that 97,300 lives will be saved by the projected vaccine rollout. This does not include lives saved through vaccination that has already been delivered.

- Figure 23 compares our reference scenario forecasts to other publicly archived models. Forecasts are widely divergent.
At some point from July through November 1, five countries will have high or extreme stress on hospital beds (Figure 24). At some point from July through November 1, eight countries will have high or extreme stress on intensive care unit (ICU) capacity (Figure 25).
Model updates

Our projections of SARS-CoV-2 infections and COVID-19 deaths in the worse scenario were updated to account for the possibility that population mobility may continue to increase, irrespective of vaccine coverage or infection levels. Specifically, a new mobility scenario was formulated in which all locations exhibit an 8-week linear increase in mobility to the regional maximum mobility level observed between the period 1/1/2020 and the last day of data. Furthermore, the new projections of mobility for the worse scenario assume that population mobility will remain elevated until COVID-19 mortality reaches a minimum of 15 deaths per million, at which point a location may re-impose all social distancing mandates for a period of six weeks, causing mobility to rapidly decline.
Figure 1. Reported daily COVID-19 cases, moving average

Table 1. Ranking of excess 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>COVID-19</td>
<td>48,546</td>
<td>1</td>
</tr>
<tr>
<td>Ischemic heart disease</td>
<td>39,868</td>
<td>2</td>
</tr>
<tr>
<td>Stroke</td>
<td>27,102</td>
<td>3</td>
</tr>
<tr>
<td>Chronic obstructive pulmonary disease</td>
<td>21,984</td>
<td>4</td>
</tr>
<tr>
<td>Diarrheal diseases</td>
<td>14,328</td>
<td>5</td>
</tr>
<tr>
<td>Lower respiratory infections</td>
<td>11,327</td>
<td>6</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>10,815</td>
<td>7</td>
</tr>
<tr>
<td>Neonatal disorders</td>
<td>10,504</td>
<td>8</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>9,152</td>
<td>9</td>
</tr>
<tr>
<td>Cirrhosis and other chronic liver diseases</td>
<td>8,514</td>
<td>10</td>
</tr>
</tbody>
</table>

covid19.healthdata.org 4 Institute for Health Metrics and Evaluation
Figure 2. Smoothed trend estimate of reported daily COVID-19 deaths (blue) and excess daily deaths due to COVID-19 (orange)
Figure 3. Daily COVID-19 death rate per 1 million on July 26, 2021

A. Daily reported COVID-19 death rate per 1 million

B. Daily excess COVID-19 death rate per 1 million
Figure 4. Cumulative COVID-19 deaths per 100,000 on July 26, 2021

A. Reported cumulative COVID-19 deaths per 100,000

B. Excess cumulative COVID-19 deaths per 100,000
Figure 5. Estimated percent of the population infected with COVID-19 on July 26, 2021

Figure 6. Mean effective R on July 15, 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 7.** 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-detection rate can exceed 100% at particular points in time.
**Figure 8.** Estimated percent of circulating SARS-CoV-2 for primary variant families on July 26, 2021

**A. Estimated percent B.1.1.7 variant**

**B. Estimated percent B.1.351 variant**
C. Estimated percent B.1.617 variant

D. Estimated percent P.1 variant
Figure 9. Infection-fatality ratio on July 26, 2021
**Critical drivers**

**Table 2. Current mandate implementation**

| Country                  | Primary school closure | Secondary school closure | Higher school closure | Borders closed to any non-resident | Borders closed to 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 only | Gyms, pools, other leisure closed | Non-essential retail closed only | Non-essential workplaces closed | Stay home order | Stay home fine | Mask mandate | Mask mandate fine |
|--------------------------|------------------------|--------------------------|-----------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------|-------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------|----------------|-------------------|----------------|--------------------|--------------------|
| Bangladesh               |                        |                          |                       |                                   |                                   |                                   |                      |                  |                                        |                                        |                                        |                                        |                                        |                |                  |                   |                |                    |                    |
| Bhutan                   |                        |                          |                       |                                   |                                   |                                   |                      |                  |                                        |                                        |                                        |                                        |                                        |                |                  |                   |                |                    |                    |
| Democratic People's Republic of Korea | |                          |                       |                                   |                                   |                                   |                      |                  |                                        |                                        |                                        |                                        |                                        |                |                  |                   |                |                    |                    |
| India                    |                        |                          |                       |                                   |                                   |                                   |                      |                  |                                        |                                        |                                        |                                        |                                        |                |                  |                   |                |                    |                    |
| Indonesia                |                        |                          |                       |                                   |                                   |                                   |                      |                  |                                        |                                        |                                        |                                        |                                        |                |                  |                   |                |                    |                    |
| Maldives                 |                        |                          |                       |                                   |                                   |                                   |                      |                  |                                        |                                        |                                        |                                        |                                        |                |                  |                   |                |                    |                    |
| Myanmar                  |                        |                          |                       |                                   |                                   |                                   |                      |                  |                                        |                                        |                                        |                                        |                                        |                |                  |                   |                |                    |                    |
| Nepal                    |                        |                          |                       |                                   |                                   |                                   |                      |                  |                                        |                                        |                                        |                                        |                                        |                |                  |                   |                |                    |                    |
| Sri Lanka                |                        |                          |                       |                                   |                                   |                                   |                      |                  |                                        |                                        |                                        |                                        |                                        |                |                  |                   |                |                    |                    |
| Thailand                 |                        |                          |                       |                                   |                                   |                                   |                      |                  |                                        |                                        |                                        |                                        |                                        |                |                  |                   |                |                    |                    |
| Timor-Leste              |                        |                          |                       |                                   |                                   |                                   |                      |                  |                                        |                                        |                                        |                                        |                                        |                |                  |                   |                |                    |                    |

*Not all locations are measured at the subnational level.*
Figure 10. Trend in mobility as measured through smartphone app use compared to January 2020 baseline.

Figure 11. Mobility level as measured through smartphone app use compared to January 2020 baseline (percent) on July 26, 2021.
**Figure 12.** Trend in the proportion of the population reporting always wearing a mask when leaving home.

**Figure 13.** Proportion of the population reporting always wearing a mask when leaving home on July 26, 2021.
Figure 14. Trend in COVID-19 diagnostic tests per 100,000 people

Figure 15. COVID-19 diagnostic tests per 100,000 people on July 26, 2021
Figure 16. Increase in the risk of death due to pneumonia on February 1 compared to August 1
Table 3. Estimates of vaccine efficacy for specific vaccines used in the model at preventing disease and infection. The SEIR model uses variant-specific estimates of vaccine efficacy at preventing symptomatic disease and at preventing 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>Efficacy at preventing disease: D614G &amp; B.1.1.7</th>
<th>Efficacy at preventing infection: D614G &amp; B.1.1.7</th>
<th>Efficacy at preventing disease: B.1.351, B.1.617, &amp; P.1</th>
<th>Efficacy at preventing infection: B.1.351, B.1.617, &amp; P.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>AstraZeneca</td>
<td>74%</td>
<td>52%</td>
<td>53%</td>
<td>47%</td>
</tr>
<tr>
<td>CoronaVac</td>
<td>50%</td>
<td>44%</td>
<td>40%</td>
<td>35%</td>
</tr>
<tr>
<td>Covaxin</td>
<td>78%</td>
<td>69%</td>
<td>62%</td>
<td>55%</td>
</tr>
<tr>
<td>Janssen</td>
<td>72%</td>
<td>72%</td>
<td>64%</td>
<td>56%</td>
</tr>
<tr>
<td>Moderna</td>
<td>94%</td>
<td>89%</td>
<td>83%</td>
<td>79%</td>
</tr>
<tr>
<td>Novavax</td>
<td>89%</td>
<td>79%</td>
<td>73%</td>
<td>64%</td>
</tr>
<tr>
<td>Pfizer/BioNTech</td>
<td>91%</td>
<td>86%</td>
<td>81%</td>
<td>77%</td>
</tr>
<tr>
<td>Sinopharm</td>
<td>73%</td>
<td>65%</td>
<td>47%</td>
<td>41%</td>
</tr>
<tr>
<td>Sputnik-V</td>
<td>92%</td>
<td>81%</td>
<td>73%</td>
<td>65%</td>
</tr>
<tr>
<td>Tianjin</td>
<td>66%</td>
<td>58%</td>
<td>53%</td>
<td>47%</td>
</tr>
<tr>
<td>CanSino</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other vaccines</td>
<td>75%</td>
<td>66%</td>
<td>60%</td>
<td>53%</td>
</tr>
<tr>
<td>Other vaccines</td>
<td>91%</td>
<td>86%</td>
<td>81%</td>
<td>77%</td>
</tr>
<tr>
<td>(mRNA)</td>
<td></td>
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</table>
**Figure 17.** Trend in the estimated proportion of the adult (18+) population that have been vaccinated or would probably or definitely receive the COVID-19 vaccine if available

![Trend in the estimated proportion of the adult (18+) population that have been vaccinated or would probably or definitely receive the COVID-19 vaccine if available](image)

**Figure 18.** This figure shows the estimated proportion of the adult (18+) population that has been vaccinated or would probably or definitely receive the COVID-19 vaccine if available

![This figure shows the estimated proportion of the adult (18+) population that has been vaccinated or would probably or definitely receive the COVID-19 vaccine if available](image)
Figure 19. 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.

Figure 20. Percentage of people who are immune to non-escape variants and the percentage of people who are immune to escape variants.
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 United Kingdom.

The worse scenario modifies the reference scenario assumptions in two ways:

- First, it assumes that variants B.1.351 or P.1 begin to spread within three weeks in adjacent locations that do not already have B.1.351 or P.1 community transmission.
- Second, it 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 21. Daily COVID-19 deaths until November 01, 2021 for three scenarios

A. Reported daily COVID-19 death per 100,000

B. Excess daily COVID-19 deaths per 100,000
**Figure 22.** Daily COVID-19 infections until November 01, 2021 for three scenarios

[The image shows a line graph with three scenarios for daily COVID-19 infections. The x-axis represents the months from January 2020 to November 2021, and the y-axis represents the number of daily infections. The graph includes three lines:

- Green line: Reference scenario
- Red line: Universal mask use
- Orange line: Worse scenario

Each scenario shows a projection of daily infections with peaks and troughs throughout the year. The graph indicates that the Universal mask use scenario has the lowest number of daily infections, followed by the Reference scenario, and then the Worse scenario.]
Figure 23. 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: Delphi from the Massachusetts Institute of Technology (Delphi), Imperial College London (Imperial), The Los Alamos National Laboratory (LANL), and the SI-KJalpha model from the University of Southern California (SIKJalpha). 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.** 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**.

![All hospital beds chart](chart.png)
Figure 25. 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.