COVID-19 Results Briefing

Spain

July 19, 2022

This document contains summary information on the latest projections from the IHME model on COVID-19 in Spain. The model was run on July 15, 2022, with data through July 13, 2022.

Current situation

- Daily infections in the last week decreased to 166,000 per day on average compared to 208,000 the week before (Figure 1.1). Daily hospital census in the last week (through July 13) increased to 14,000 per day on average compared to 12,000 the week before.
- Daily reported cases in the last week increased to 25,000 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 76 per day on average compared to 58 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 94 the week before (Figure 3.1). This makes COVID-19 the number two cause of death in Spain this week (Table 1). Estimated total daily deaths due to COVID-19 in the past week were 1.6 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 four autonomous communities (Figure 4.1).
- The daily rate of total deaths due to COVID-19 is greater than 4 per million in 11 autonomous communities (Figure 4.2).
- We estimate that 83% of people in Spain have been infected at least once as of July 11 (Figure 6.1). Effective R, computed using cases, hospitalizations, and deaths, is greater than 1 in four autonomous communities. (Figure 7.1).
- Based on the GISAID and various national databases, combined with our variant spread model, we estimate the current prevalence of variants of concern (Figures 8.1-8.5). We estimate that the Alpha variant is circulating in 19 autonomous communities, that the Beta variant is circulating in four autonomous communities, that the Delta variant is circulating in 19 autonomous communities, that the Gamma variant is circulating in seven autonomous communities, and that the Omicron variant is circulating in 19 autonomous communities.

Trends in drivers of transmission

- Mobility last week was 8% lower than the pre-COVID-19 baseline (Figure 10.1). Mobility was lower than 15% of baseline in five autonomous communities (Figure 11.1).
- As of June 24, in the COVID-19 Trends and Impact Survey, 17% of people self-reported that they always wore a mask when leaving their home compared to 18% the previous week (Figure 12.1).
- There were 142 diagnostic tests per 100,000 people on July 11 (Figure 14.1).
- As of July 11, 19 autonomous communities have reached 70% or more of the population who have received at least one vaccine dose, and 19 autonomous communities have reached 70% or more of the population who are fully vaccinated (Figures 16.1 and 16.2). 89% of people in Spain have received at least one vaccine dose, and 84% are fully vaccinated.
- As of June 24, 2022, zero percent of the population in Spain say they would accept a vaccine for COVID-19 but have not yet been vaccinated.
- In our current reference scenario, we expect that 41.1 million people will be vaccinated with at least one dose by November 1 (Figure 18.1). We expect that 84% of the population will be fully vaccinated by November 1.
Projections and scenarios

We produce three scenarios when projecting COVID-19. The reference scenario is our forecast of what we think is most likely to happen:

- Vaccines are distributed at the expected pace. Brand- and variant-specific vaccine efficacy is updated using the latest available information from peer-reviewed publications and other reports.
- Future mask use will decline to 50% of the minimum level it reached between January 1, 2021, and May 1, 2022. This decline begins after the last observed data point in each location and transitions linearly to the minimum over a period of six weeks.
- Mobility increases as vaccine coverage increases.
- 80% of those who are fully vaccinated (two doses for most vaccines, or one dose for Johnson & Johnson) receive an additional dose six months after becoming fully vaccinated, and 80% of those who receive an additional dose receive a second additional dose six months later.
- Antiviral utilization for COVID-19 risk prevention has reached 80% in high-risk populations and 50% in low-risk populations between March 1, 2022, and June 1, 2022. This applies in high-income countries, but not low- and middle-income countries, and this rollout assumption follows a similar pattern to global vaccine rollouts.

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

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

Infections

- Daily estimated infections in the reference scenario will decline to 32,610 by September 9, 2022 (Figure 20.1).
- Daily estimated infections in the 80% mask use scenario will decline to 4,070 by September 23, 2022 (Figure 20.1).
- Daily estimated infections in the antiviral access scenario will decline to 32,610 by September 9, 2022 (Figure 20.1).

Cases

- Daily estimated cases in the reference scenario will rise to 26,790 by July 17, 2022 (Figure 20.2).
- Daily estimated cases in the 80% mask use scenario will rise to 26,100 by July 16, 2022 (Figure 20.2).
- Daily estimated cases in the antiviral access scenario will rise to 26,790 by July 17, 2022 (Figure 20.2).

Hospitalizations

- Daily hospital census in the reference scenario will decline to 1,610 by September 22, 2022 (Figure 20.3).
- Daily hospital census in the 80% mask use scenario will decline to 180 by October 9, 2022 (Figure 20.3).
- Daily hospital census in the antiviral access scenario will decline to 1,610 by September 22, 2022 (Figure 20.3).

Deaths

- In our reference scenario, our model projects 123,000 cumulative reported deaths due to COVID-19 on November 1. This represents 3,600 additional deaths from July 11 to November 1. Daily reported
COVID-19 deaths in the reference scenario will rise to 110 by July 17, 2022 (Figure 20.4).

- Under our reference scenario, our model projects 186,000 cumulative total deaths due to COVID-19 on November 1. This represents 5,800 additional deaths from July 11 to November 1 (Figure 20.5).

- In our 80% mask use scenario, our model projects 122,000 cumulative reported deaths due to COVID-19 on November 1. This represents 2,600 additional deaths from July 11 to November 1. Daily reported COVID-19 deaths in the 80% mask use scenario will rise to 110 by July 17, 2022 (Figure 20.4).

- In our antiviral access scenario, our model projects 123,000 cumulative reported deaths due to COVID-19 on November 1. This represents 3,600 additional deaths from July 11 to November 1. Daily reported COVID-19 deaths in the antiviral access scenario will rise to 110 by July 17, 2022 (Figure 20.4).

- Figure 21.1 compares our reference scenario forecasts to other publicly archived models. Forecasts are widely divergent.
Model updates

This month, we have made two alterations to our reference scenario assumptions and one alteration to our antiviral scenario assumptions in the model. First, in the reference scenario, we included an estimate for an additional vaccination dose (second booster). As was previously done with the first booster, we assumed 80% of those who are fully vaccinated (two doses for most vaccines, or one dose for Johnson & Johnson), receive an additional dose six months after becoming fully vaccinated. In this model, we assume 80% of those who receive an additional dose (first booster) receive a second additional dose (second booster) 4-6 months later. Distribution assumptions were time-corrected based on reported data. We estimated each vaccination course using the doses administered in the previous course, taking into account the number of doses available based on manufacturer distribution data. We updated this process to estimate supply and demand on a daily basis rather than periodically.

Second, we expect the recent rollout of Paxlovid treatments in high-income settings to greatly reduce severe disease and death outcomes. We only currently have data from the United States to inform levels of antiviral coverage and have used these data to update our scale-up model from last month. The model assumes individuals in high-income countries had been targeted for treatment, and access to treatment among this group had risen from 0% on March 15, 2022, to a maximum of 80% for high-risk individuals and 50% for low-risk individuals by June 1, 2022. This rollout assumption follows a similar pattern to global vaccine rollouts. Clinical trials suggest that Paxlovid provides an 88% reduction in the risk of hospitalization and death among people treated within five days of symptom onset. We made an additional assumption that if roughly 70% of deaths and 50% of admissions are incidental (defined as patients who test positive for COVID after being admitted to the hospital for other reasons), Paxlovid effectiveness among patients admitted primarily for COVID treatment would be 25-30% for deaths and 40-50% for admissions.

Lastly, we have made one alteration to our antiviral scenario assumptions in the model. Our scale-up model assumes that global distribution of antivirals will extend to all low- and middle-income countries between August 15, 2022, and September 15, 2022. Similar to the reference scenario, we assume a linear scale-up to a maximum of 80% access for high-risk individuals and 50% for low-risk individuals during this time frame.
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>1,031</td>
<td>1</td>
</tr>
<tr>
<td>COVID-19</td>
<td>859</td>
<td>2</td>
</tr>
<tr>
<td>Stroke</td>
<td>713</td>
<td>3</td>
</tr>
<tr>
<td>Chronic obstructive pulmonary disease</td>
<td>601</td>
<td>4</td>
</tr>
<tr>
<td>Alzheimer’s disease and other dementias</td>
<td>562</td>
<td>5</td>
</tr>
<tr>
<td>Tracheal, bronchus, and lung cancer</td>
<td>472</td>
<td>6</td>
</tr>
<tr>
<td>Colon and rectum cancer</td>
<td>385</td>
<td>7</td>
</tr>
<tr>
<td>Chronic kidney disease</td>
<td>282</td>
<td>8</td>
</tr>
<tr>
<td>Lower respiratory infections</td>
<td>273</td>
<td>9</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>195</td>
<td>10</td>
</tr>
</tbody>
</table>

Figure 3.1: Smoothed trend estimate of daily COVID-19 deaths
Daily COVID-19 death rate per 1 million on July 11, 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 July 11, 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 July 11, 2022

Figure 7.1: Mean effective $R$ on June 30, 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.
Estimated percent of circulating SARS-CoV-2 for primary variant families on July 11, 2022

Figure 8.1: Estimated percent of new infections that are Alpha variant

Figure 8.2: Estimated percent of new infections that are Beta variant
Figure 8.3: Estimated percent of new infections that are Delta variant

Figure 8.4: Estimated percent of new infections that are Gamma variant
Figure 8.5: Estimated percent of new infections that are Omicron variant
Figure 9.1: Infection-fatality rate on July 11, 2022. This is estimated as the ratio of COVID-19 deaths to estimated daily COVID-19 infections.
### Critical drivers

#### Table 2: Current mandate implementation

| Primary school closure | Secondary school closure | Entry restrictions for some non-residents | Entry restrictions for all non-residents | Curfew for businesses | Individual movements restricted | 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 | Restaurants / bars curbside only | Gyms, pools, other leisure closed | Non-essential retail closed | Non-essential workplaces closed | Stay home order | Stay home fine | Mask mandate | Mask mandate fine |
|------------------------|--------------------------|------------------------------------------|------------------------------------------|----------------------|-------------------------------|-----------------|--------------------------------------|--------------------------------------|--------------------------------------|-------------------------------------|--------------------------------------|----------------|-----------|-----------------------------|--------------------------|------------------------|----------------------|------------------------|----------------|----------------|------------------|
| Andalucia              |                          |                                          |                                          |                      |                               |                 |                                      |                                      |                                      |                                      |                                      |                |           |                             |                          |                        |                      |                        |                |               |                  |
| Aragon                 |                          |                                          |                                          |                      |                               |                 |                                      |                                      |                                      |                                      |                                      |                |           |                             |                          |                        |                      |                        |                |               |                  |
| Asturias               |                          |                                          |                                          |                      |                               |                 |                                      |                                      |                                      |                                      |                                      |                |           |                             |                          |                        |                      |                        |                |               |                  |
| Balearic Islands       |                          |                                          |                                          |                      |                               |                 |                                      |                                      |                                      |                                      |                                      |                |           |                             |                          |                        |                      |                        |                |               |                  |
| Basque Country         |                          |                                          |                                          |                      |                               |                 |                                      |                                      |                                      |                                      |                                      |                |           |                             |                          |                        |                      |                        |                |               |                  |
| Canary Islands         |                          |                                          |                                          |                      |                               |                 |                                      |                                      |                                      |                                      |                                      |                |           |                             |                          |                        |                      |                        |                |               |                  |
| Cantabria              |                          |                                          |                                          |                      |                               |                 |                                      |                                      |                                      |                                      |                                      |                |           |                             |                          |                        |                      |                        |                |               |                  |
| Castile and León       |                          |                                          |                                          |                      |                               |                 |                                      |                                      |                                      |                                      |                                      |                |           |                             |                          |                        |                      |                        |                |               |                  |
| Castilla–La Mancha     |                          |                                          |                                          |                      |                               |                 |                                      |                                      |                                      |                                      |                                      |                |           |                             |                          |                        |                      |                        |                |               |                  |
| Catalonia              |                          |                                          |                                          |                      |                               |                 |                                      |                                      |                                      |                                      |                                      |                |           |                             |                          |                        |                      |                        |                |               |                  |
| Ceuta                  |                          |                                          |                                          |                      |                               |                 |                                      |                                      |                                      |                                      |                                      |                |           |                             |                          |                        |                      |                        |                |               |                  |
| Community of Madrid    |                          |                                          |                                          |                      |                               |                 |                                      |                                      |                                      |                                      |                                      |                |           |                             |                          |                        |                      |                        |                |               |                  |
| Extremadura            |                          |                                          |                                          |                      |                               |                 |                                      |                                      |                                      |                                      |                                      |                |           |                             |                          |                        |                      |                        |                |               |                  |
| Galicia                |                          |                                          |                                          |                      |                               |                 |                                      |                                      |                                      |                                      |                                      |                |           |                             |                          |                        |                      |                        |                |               |                  |
| La Rioja               |                          |                                          |                                          |                      |                               |                 |                                      |                                      |                                      |                                      |                                      |                |           |                             |                          |                        |                      |                        |                |               |                  |
| Melilla                |                          |                                          |                                          |                      |                               |                 |                                      |                                      |                                      |                                      |                                      |                |           |                             |                          |                        |                      |                        |                |               |                  |
| Murcia                 |                          |                                          |                                          |                      |                               |                 |                                      |                                      |                                      |                                      |                                      |                |           |                             |                          |                        |                      |                        |                |               |                  |
| Navarre                |                          |                                          |                                          |                      |                               |                 |                                      |                                      |                                      |                                      |                                      |                |           |                             |                          |                        |                      |                        |                |               |                  |
| Valencian Community    |                          |                                          |                                          |                      |                               |                 |                                      |                                      |                                      |                                      |                                      |                |           |                             |                          |                        |                      |                        |                |               |                  |
Figure 10.1: Trend in mobility as measured through smartphone app use, compared to January 2020 baseline

-60
-30
0
30
Percent reduction from average mobility

-60
-30
0
30
Russian Federation Spain United Kingdom Turkey

Russian Federation  Spain  United Kingdom  Turkey

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Figure 11.1: Mobility level as measured through smartphone app use, compared to January 2020 baseline (percent) on July 11, 2022

=<=−50
−49 to −45
−44 to −40
−39 to −35
−34 to −30
−29 to −25
−24 to −20
−19 to −15
−14 to −10
>−10
Figure 12.1: Trend in the proportion of the population reporting always wearing a mask when leaving home

Figure 13.1: Proportion of the population reporting always wearing a mask when leaving home on July 11, 2022
Figure 14.1: Trend in COVID-19 diagnostic tests per 100,000 people

Figure 15.1: COVID-19 diagnostic tests per 100,000 people on July 11, 2022
Table 3: Estimates of vaccine effectiveness for specific vaccines used in the model at preventing severe disease and infection. We use data from clinical trials directly, where available, and make estimates otherwise. More information can be found on our website.

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Ancestral</th>
<th>Alpha</th>
<th>Beta</th>
<th>Gamma</th>
<th>Delta</th>
<th>Omicron</th>
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<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>
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<td>62%</td>
<td>66%</td>
<td>62%</td>
<td>64%</td>
<td>61%</td>
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<tr>
<td>CoronaVac</td>
<td>50%</td>
<td>47%</td>
<td>50%</td>
<td>47%</td>
<td>49%</td>
<td>46%</td>
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<tr>
<td>Covaxin</td>
<td>78%</td>
<td>73%</td>
<td>78%</td>
<td>73%</td>
<td>76%</td>
<td>72%</td>
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<tr>
<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>97%</td>
<td>92%</td>
<td>97%</td>
<td>91%</td>
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<tr>
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<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>
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<tr>
<td>Sputnik-V</td>
<td>92%</td>
<td>86%</td>
<td>92%</td>
<td>86%</td>
<td>89%</td>
<td>85%</td>
</tr>
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<td>Other vaccines</td>
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<td>85%</td>
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<tr>
<td>mRNA</td>
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</table>

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Percent of the population having received at least one dose (16.1) and fully vaccinated against SARS-CoV-2 (16.2) by July 11, 2022

**Figure 16.1:** Percent of the population having received one dose of a COVID-19 vaccine

**Figure 16.2:** Percent of the population fully vaccinated against SARS-CoV-2
Figure 17.1: Estimated proportion of the total population that is not vaccinated but willing to be vaccinated as of June 24, 2022
Figure 18.1: Percent of people who receive at least one dose of a COVID-19 vaccine and those who are fully vaccinated

Figure 19.1: 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 20.1: Daily COVID-19 infections until November 01, 2022 for three scenarios

Figure 20.2: Daily COVID-19 reported cases until November 01, 2022 for three scenarios
Figure 20.3: Daily COVID-19 hospital census until November 01, 2022 for three scenarios

- **Reference**
- **Antiviral access**
- **80% mask use**
Figure 20.4: Reported daily COVID-19 deaths per 100,000
Figure 20.5: Total daily COVID-19 deaths per 100,000
Figure 21.1: 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) [July 18, 2022]. Regional values are aggregates from available locations in that region.
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.