COVID-19 Results Briefing

Spain

June 13, 2022

This document contains summary information on the latest projections from the IHME model on COVID-19 in Spain. The model was run on June 8, 2022, with data through June 6, 2022.

Current situation

- Daily infections in the last week decreased to 60,000 per day on average compared to 67,000 the week before (Figure 1.1). Daily hospital census in the last week (through June 6) decreased to 6,500 per day on average compared to 7,700 the week before.
- Daily reported cases in the last week remained the same at 11,000 per day on average compared to the week before (Figure 2.1).
- Reported deaths due to COVID-19 in the last week decreased to 52 per day on average compared to 63 the week before (Figure 3.1).
- Total deaths due to COVID-19 in the last week decreased to 83 per day on average compared to 99 the week before (Figure 3.1). This makes COVID-19 the number four 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 no autonomous communities (Figure 4.1).
- The daily rate of total deaths due to COVID-19 is greater than 4 per million in two autonomous communities (Figure 4.2).
- We estimate that 75% of people in Spain have been infected at least once as of June 6 (Figure 6.1). Effective R, computed using cases, hospitalizations, and deaths, is greater than 1 in one autonomous community. (Figure 7.1).
- The infection-detection rate in Spain was close to 16% on June 6 (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 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 11.1). Mobility was lower than 15% of baseline in six autonomous communities (Figure 12.1).
- As of May 29, in the COVID-19 Trends and Impact Survey, 24% of people self-reported that they always wore a mask when leaving their home compared to 25% the previous week (Figure 13.1).
- There were 141 diagnostic tests per 100,000 people on June 6 (Figure 15.1).
- As of June 6, 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 17.1 and 17.2). 89% of people in Spain have received at least one vaccine dose, and 84% are fully vaccinated.
- In Spain, 93.5% of the population that is 12 years and older say they would accept a vaccine for COVID-19 (Figure 18.1). This is the same as the previous week. In Spain, 93.5% of the population that is 12 years and older say they would accept a vaccine for COVID-19 (Figure 18.1). This is the same as the previous week. The proportion of the population who are open to receiving a COVID-19 vaccine is 93.5%.
vaccine ranges from 86% in Balearic Islands to 100% in Extremadura (Figure 19.1). Note that vaccine acceptance is calculated using survey data from the 18+ population.

- As of May 30, 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 41.0 million people will be vaccinated with at least one dose by October 1 (Figure 21.1). We expect that 84% of the population will be fully vaccinated by October 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 have had two doses of vaccine (or one dose for Johnson & Johnson) receive a third dose at six months after their second dose.
- Antiviral utilization for COVID-19 risk prevention in high-risk populations will reach 80% between June 15, 2022, and July 31, 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 30, 2022.

**Infections**

- Daily estimated infections in the reference scenario will rise to 94,710 by October 1, 2022 (Figure 23.1).
- Daily estimated infections in the 80% mask use scenario will decline to 4,260 by August 23, 2022 (Figure 23.1).
- Daily estimated infections in the antiviral access scenario will rise to 94,710 by October 1, 2022 (Figure 23.1).

**Cases**

- Daily estimated cases in the reference scenario will rise to 13,830 by October 1, 2022 (Figure 23.2).
- Daily estimated cases in the 80% mask use scenario will rise to 10,840 by June 11, 2022 (Figure 23.2).
- Daily estimated cases in the antiviral access scenario will rise to 13,830 by October 1, 2022 (Figure 23.2).

**Hospitalizations**

- Daily hospital census in the reference scenario will decline to 1,400 by August 22, 2022 (Figure 23.3).
- Daily hospital census in the 80% mask use scenario will decline to 130 by September 10, 2022 (Figure 23.3).
• Daily hospital census in the antiviral access scenario will decline to 1,400 by August 22, 2022 (Figure 23.3).

Deaths

• In our reference scenario, our model projects 119,000 cumulative reported deaths due to COVID-19 on October 1. This represents 1,800 additional deaths from June 6 to October 1. Daily reported COVID-19 deaths in the reference scenario will decline to 10 by August 30, 2022 (Figure 23.4).
• Under our reference scenario, our model projects 180,000 cumulative total deaths due to COVID-19 on October 1. This represents 2,900 additional deaths from June 6 to October 1 (Figure 23.5).
• In our 80% mask use scenario, our model projects 118,000 cumulative reported deaths due to COVID-19 on October 1. This represents 1,100 additional deaths from June 6 to October 1. Daily reported COVID-19 deaths in the 80% mask use scenario will decline to zero by September 19, 2022 (Figure 23.4).
• In our antiviral access scenario, our model projects 119,000 cumulative reported deaths due to COVID-19 on October 1. This represents 1,800 additional deaths from June 6 to October 1. Daily reported COVID-19 deaths in the antiviral access scenario will decline to 10 by August 30, 2022 (Figure 23.4).
• Figure 24.1 compares our reference scenario forecasts to other publicly archived models. Forecasts are widely divergent.
Model updates

This month, we have made three alterations to our reference assumptions in the model. First, we expect the recent rollout of Paxlovid treatments in high-income settings to greatly reduce severe disease and death outcomes. We do not currently have data to inform levels of coverage, so we have introduced a simple scale-up model that assumes individuals over the age of 65 will be targeted for treatment, and access to treatment among this group will rise from 0% on June 15, 2022, to a maximum of 80% on July 31, 2022. Clinical trials suggest a Paxlovid provides an 88% reduction in the risk of hospitalization and death among people treated within five days of symptom onset. We make a slightly more conservative assumption that the hospitalization and death rates will be reduced by 80% to account for variations in treatment timing and patient adherence in a real-world setting.

Second, survey data suggest that mask use is continuing to decline in most world locations. We have updated our reference mask use forecast to introduce a linear decline in mask use prevalence down to 50% of the minimum use level between January 1, 2021, and May 1, 2022, in each location. We have kept our previous assumption that mask use will continue at current levels in China, South Korea, Japan, Taiwan, Singapore, and South Africa, as current data do not suggest an imminent reduction.

Finally, similar to mask use, observed mobility continues to increase in much of the world. We have replaced our previous reference scenario that assumed current levels of mobility would persist indefinitely with a scenario that has mobility increase to match vaccine coverage. We continue to produce three scenarios when projecting COVID-19, but we have replaced the increased booster coverage scenario with an antiviral access scenario that examines the impact of more equitable distribution of Paxlovid to low- and middle-income countries (LMICs).
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>Stroke</td>
<td>713</td>
<td>2</td>
</tr>
<tr>
<td>Chronic obstructive pulmonary disease</td>
<td>601</td>
<td>3</td>
</tr>
<tr>
<td>COVID-19</td>
<td>578</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>
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<tr>
<td>Chronic kidney disease</td>
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<td>8</td>
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<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 June 6, 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 June 6, 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 June 6, 2022

Figure 7.1: Mean effective R on May 26, 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 June 6, 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 June 6, 2022. This is estimated as the ratio of COVID-19 deaths to estimated daily COVID-19 infections.
## Critical drivers

### Table 2: Current mandate implementation

| Community                  | Primary school closure | Secondary 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 | 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                  |                        |                          |                                           |                                          |                                       |                        |                | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate | No mandate | No mandate | No mandate | No mandate | No mandate |
| Aragon                     |                        |                          |                                           |                                          |                                       |                        |                | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate | No mandate | No mandate | No mandate | No mandate | No mandate |
| Asturias                   |                        |                          |                                           |                                          |                                       |                        |                | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate | No mandate | No mandate | No mandate | No mandate | No mandate |
| Balearic Islands           |                        |                          |                                           |                                          |                                       |                        |                | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate | No mandate | No mandate | No mandate | No mandate | No mandate |
| Basque Country             |                        |                          |                                           |                                          |                                       |                        |                | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate | No mandate | No mandate | No mandate | No mandate | No mandate |
| Canary Islands             |                        |                          |                                           |                                          |                                       |                        |                | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate | No mandate | No mandate | No mandate | No mandate | No mandate |
| Cantabria                  |                        |                          |                                           |                                          |                                       |                        |                | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate | No mandate | No mandate | No mandate | No mandate | No mandate |
| Castile and León           |                        |                          |                                           |                                          |                                       |                        |                | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate | No mandate | No mandate | No mandate | No mandate | No mandate |
| Castilla–La Mancha        |                        |                          |                                           |                                          |                                       |                        |                | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate | No mandate | No mandate | No mandate | No mandate | No mandate |
| Catalonia                  |                        |                          |                                           |                                          |                                       |                        |                | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate | No mandate | No mandate | No mandate | No mandate | No mandate |
| Ceuta                      |                        |                          |                                           |                                          |                                       |                        |                | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate | No mandate | No mandate | No mandate | No mandate | No mandate |
| Community of Madrid        |                        |                          |                                           |                                          |                                       |                        |                | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate | No mandate | No mandate | No mandate | No mandate | No mandate |
| Extremadura                |                        |                          |                                           |                                          |                                       |                        |                | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate | No mandate | No mandate | No mandate | No mandate | No mandate |
| Galicia                    |                        |                          |                                           |                                          |                                       |                        |                | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate | No mandate | No mandate | No mandate | No mandate | No mandate |
| La Rioja                   |                        |                          |                                           |                                          |                                       |                        |                | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate | No mandate | No mandate | No mandate | No mandate | No mandate |
| Melilla                    |                        |                          |                                           |                                          |                                       |                        |                | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate | No mandate | No mandate | No mandate | No mandate | No mandate |
| Murcia                     |                        |                          |                                           |                                          |                                       |                        |                | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate | No mandate | No mandate | No mandate | No mandate | No mandate |
| Navarre                    |                        |                          |                                           |                                          |                                       |                        |                | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate | No mandate | No mandate | No mandate | No mandate | No mandate |
| Valencian Community        |                        |                          |                                           |                                          |                                       |                        |                | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate                        | No mandate | No mandate | No mandate | No mandate | No mandate | No mandate |

Mandate in place
Mandate in place (imposed this week)
Mandate in place (updated from previous reporting)
No mandate
No mandate (imposed this week)
No mandate (updated from previous reporting)
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 June 6, 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 June 6, 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 June 6, 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](https://covid19.healthdata.org).

<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>
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<td>AstraZeneca</td>
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<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>
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<td>61%</td>
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<td>83%</td>
<td>89%</td>
<td>83%</td>
<td>86%</td>
<td>82%</td>
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<tr>
<td>Pfizer/BioNTech</td>
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<td>86%</td>
<td>95%</td>
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<tr>
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<td>68%</td>
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<td>86%</td>
<td>92%</td>
<td>86%</td>
<td>89%</td>
<td>85%</td>
</tr>
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<td>70%</td>
<td>75%</td>
<td>70%</td>
<td>73%</td>
<td>69%</td>
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<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>
Spain

Percent of the population having received at least one dose (17.1) and fully vaccinated against SARS-CoV-2 (17.2) by June 6, 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: Estimated proportion of the total population that is not vaccinated but willing to be vaccinated as of May 30, 2022
Figure 21.1: Percent of people who receive at least one dose of a COVID-19 vaccine and those who are fully vaccinated

Figure 22.1: 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 23.1: Daily COVID-19 infections until October 01, 2022 for three scenarios

Figure 23.2: Daily COVID-19 reported cases until October 01, 2022 for three scenarios
Figure 23.3: Daily COVID-19 hospital census until October 01, 2022 for three scenarios
Figure 23.4: Reported daily COVID-19 deaths per 100,000
Figure 23.5: Total daily COVID-19 deaths per 100,000
Figure 24.1: 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) [May 29, 2022], and the SI-KJalpha model from the University of Southern California (SIKJalpha) [June 10, 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.