

# COVID-19 Monitor

COVID-19 cases, variants, vaccines, hospitalisations and deaths

20 January 2022

Table 1: NSW key indicators, as at 16 January 2022\*

Key indicators	Date: 16 Jan (change from: 9 Jan)
<b>7-day average daily COVID-19 cases, week to 16 Jan</b>	<b>25,701 (-6,363)</b>
Growth factor for cases	0.97
<b>7-day average daily COVID-19 deaths, week to 16 Jan</b>	<b>19 (+7)</b>
<b>COVID-19 patients under the care of NSW Health, as at 16 Jan</b>	<b>12,301 (-2,929)</b>
<b>COVID-19 patients in hospital, as at 16 Jan</b>	<b>2,776 (+746)</b>
Percentage who were unvaccinated	27.6%
Percentage who were double vaccinated	70.2%
<b>COVID-19 patients in intensive care units (ICUs), as at 16 Jan</b>	<b>203 (+44)</b>
Percentage who were unvaccinated	43.8%
Percentage who were double vaccinated	53.7%
Percentage of total occupied ICU beds with COVID-19 patients	40.4% (+7.4%)
<b>Rates per million</b>	
7-day average daily COVID-19 cases, week to 16 Jan	3054.2 (-756.1)
COVID-19 patients under the care of NSW Health, as at 16 Jan	1461.8
COVID-19 patients in hospital, as at 16 Jan	329.9
Hospital rate among unvaccinated / double vaccinated population (aged 12+)	1,406.7 / 266.0
COVID-19 patients in ICU, as at 16 Jan	24.1
ICU rate among unvaccinated / double vaccinated population (aged 12+)	181.2 / 14.5
<b>COVID-19 vaccination, as at 16 Jan</b>	
Percentage of population (aged 12+) double vaccinated	92.6%
Percentage of eligible population (aged 5+) double vaccinated	83.9%
Percentage of total population double vaccinated	78.4%

\*See [NSW key indicators: notes and sources](#) at the end of this document.

## International reflections

- Cases of COVID-19 are increasing in Australia, Belgium, Denmark, Israel and the US.
- The UK has reported the [lowest daily case numbers](#) since mid-December 2021, however the figures do not include new Scottish infections.<sup>1</sup>
- In the US, hospitals in 46 states are reporting [rising hospitalisations](#); 34 states are reporting rising death rates.<sup>2</sup>
- The US CDC has reported [COVID-19 related paediatric hospitalisations](#) are at the highest level since the start of the pandemic.<sup>3</sup> High rates of paediatric hospitalisations may be due to a higher number of overall cases as well as low vaccination rates in children. Most children are [asymptomatic or have mild illness](#).<sup>4</sup>
- Omicron is [less severe](#) than Delta and less effective at infecting lung tissue.<sup>5</sup> A [preprint study](#) reported illness was shorter and hospitalisations half as likely among those with Omicron compared to Delta.<sup>6</sup>

**Table 2: Summary of public health, healthcare and vaccination measures (select countries, Canadian provinces and NSW), as at 16 January 2022\***

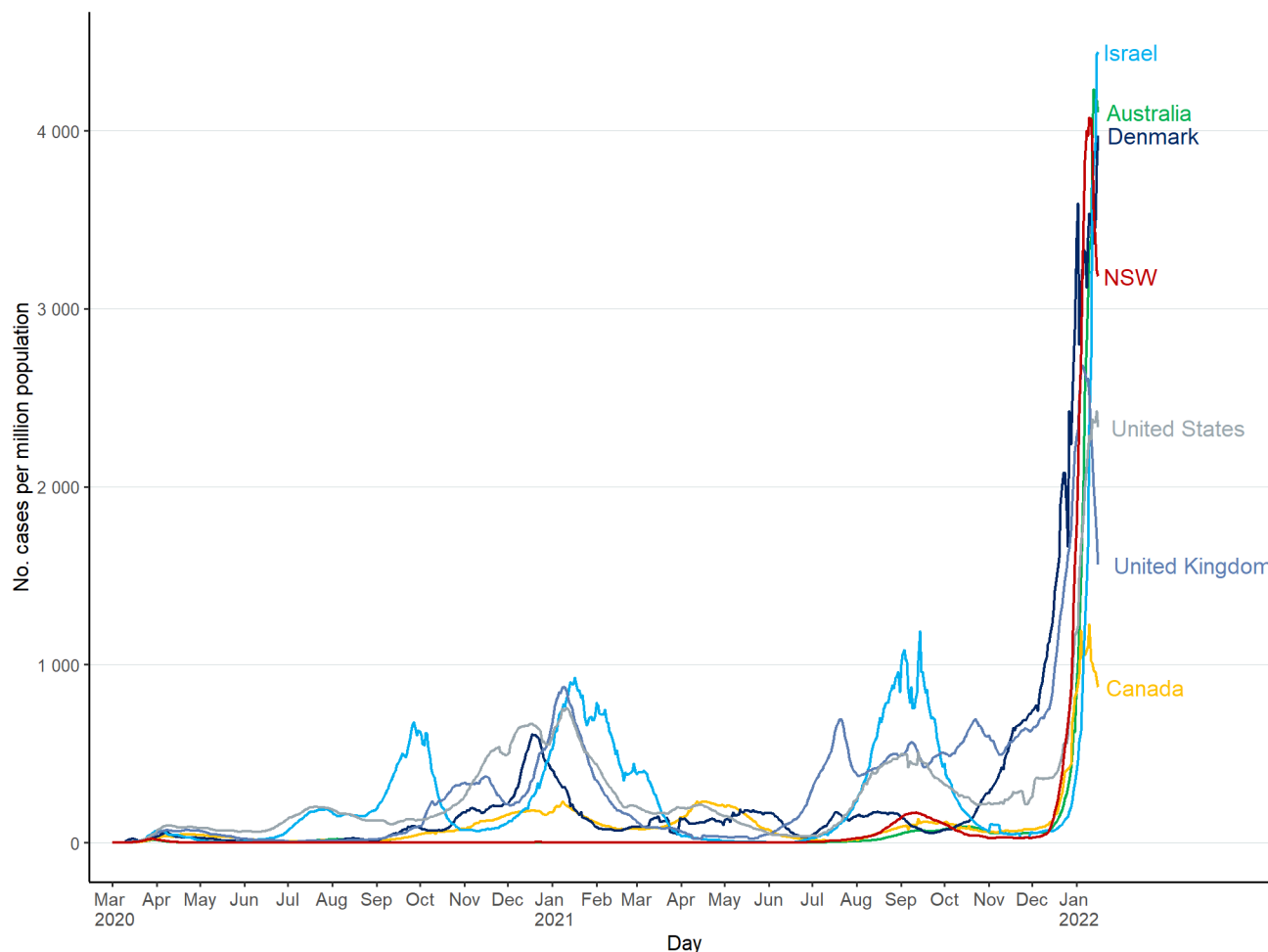
	7-day average confirmed cases	7-day average confirmed cases (per million)	7-day average deaths (per million)	% total population double vaccinated	COVID-19 patients in hospital	COVID-19 patients in hospital (per million)	COVID-19 patients in ICU	COVID-19 patients in ICU (per million)
<b>NSW</b>	25,701	3,054.2	2.3	78.4%	2,776	329.9	203	24.1
<b>Australia</b>	105,817	4,103.3	1.7	77.6%	5,043	195.6	411	15.9
<b>Belgium</b>	25,578	2,198.9	1.9	76.0%	2,106	181.0	410	35.2
<b>Canada</b>	33,255	873.6	2.9	78.0%	9,231	242.5	1,119	29.4
<b>Ontario</b>	10,143	684.2	2.1	77.9%	3,887	262.2	578	39.0
<b>Quebec</b>	8,788	1,021.4	6.2	78.2%	3,381	392.9	286	33.2
<b>Denmark</b>	23,103	3,974.2	2.7	80.5%	734	126.3	59	10.1
<b>Israel</b>	41,293	4,444.4	0.8	64.8%	1,303	140.2	446	48.0
<b>Japan</b>	16,743	132.8	0.0	79.0%	6,642	52.7	243	1.9
<b>Singapore</b>	886	162.5	0.1	86.7%	217	36.8	13	2.2
<b>United Kingdom</b>	106,512	1,561.6	3.9	70.2%	19,345	283.6	746	10.9
<b>United States</b>	777,453	2,335.3	5.4	62.5%	148,802	447.0	25,573	76.8

\*See [Summary of public health: notes and sources](#) at the end of this document.

## COVID-19 daily rates of confirmed cases

Figure 1 shows the daily rate per million population (rolling seven-day average) of confirmed COVID-19 cases in NSW, Australia, United Kingdom, United States, Canada, Denmark and Israel, from March 2020 to January 2022.

**Figure 1: Daily rates of COVID-19 cases (select countries and NSW), March 2020 – January 2022**

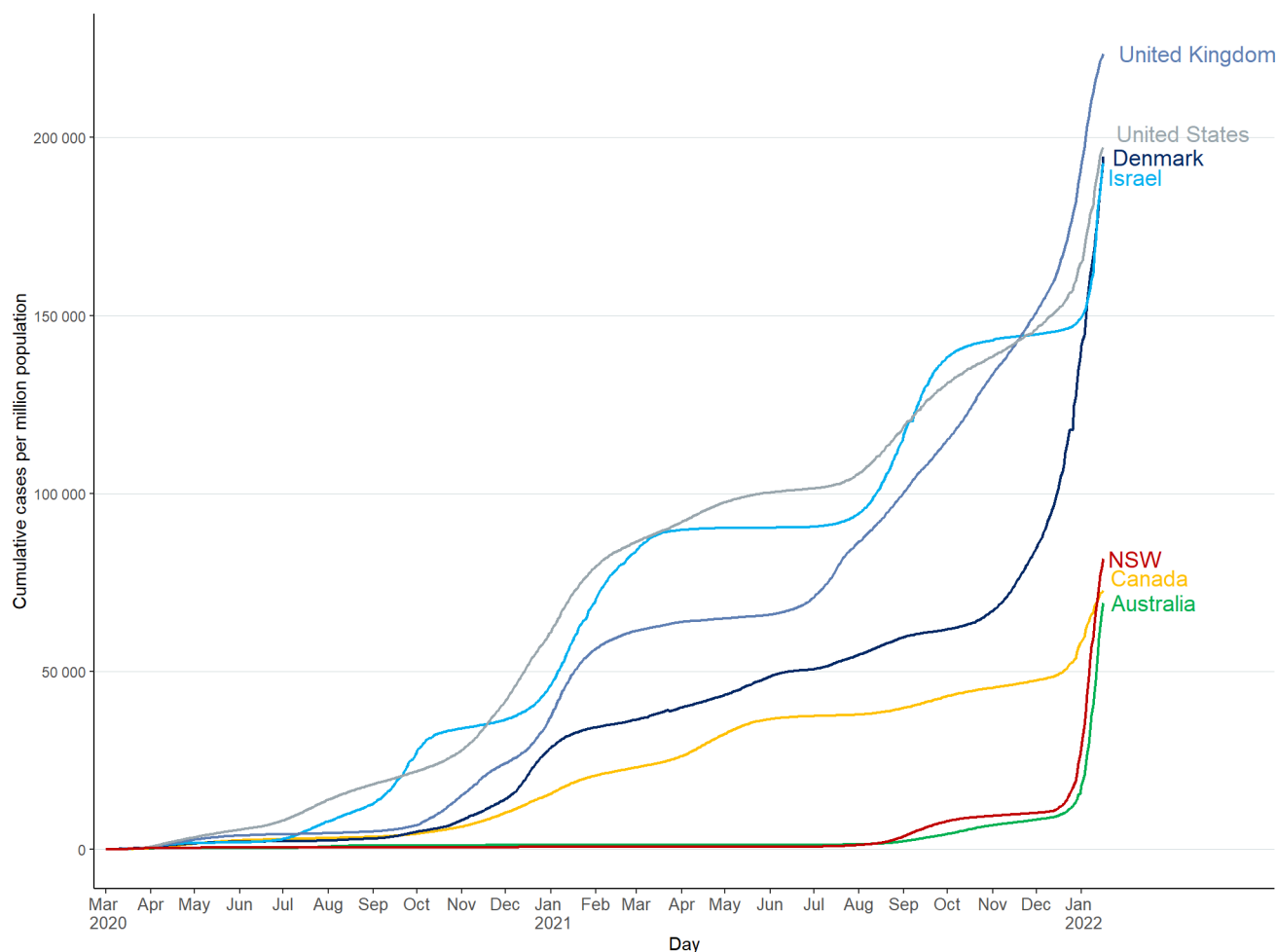


Note: See [COVID-19 daily rates: notes and sources](#) at the end of this document.

## COVID-19 cumulative confirmed cases

Figure 2 shows the cumulative rate per million population of confirmed COVID-19 cases in NSW, Australia, United Kingdom, United States, Canada, Denmark and Israel, from March 2020 to January 2022.

**Figure 2: Cumulative confirmed COVID-19 cases per million population, (select countries and NSW), March 2020 – January 2022**

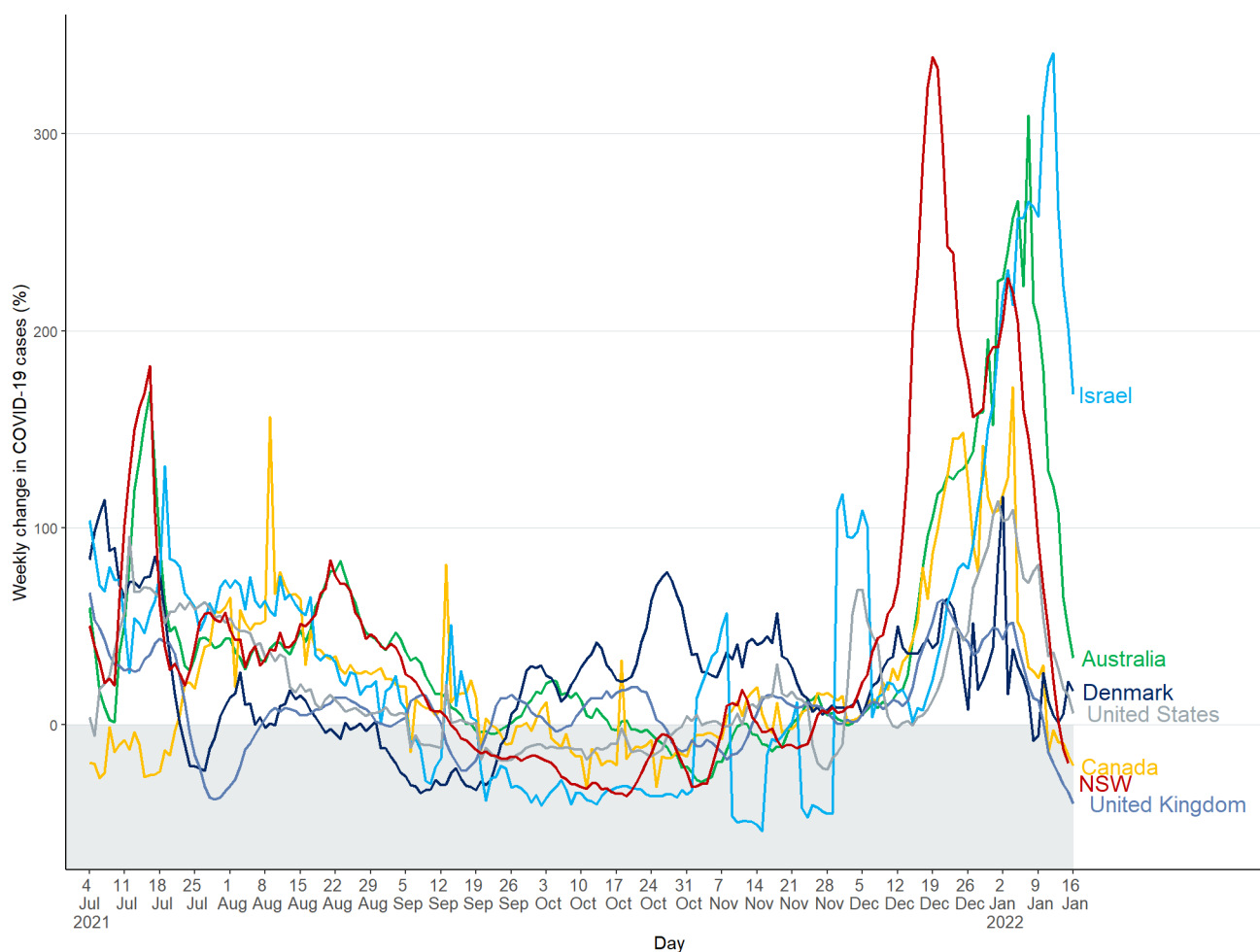


Note: See [COVID-19 daily rates: notes and sources](#) at the end of this document.

## Weekly change in COVID-19 confirmed cases

Figure 3 shows the weekly percentage change of COVID-19 cases for NSW, Australia, United Kingdom, United States, Canada, Denmark and Israel, from July 2021 to January 2022. The weekly change of COVID-19 cases on any given day is measured as the percentage change in the number of confirmed cases in the last seven days, compared with the number in the previous seven days.

**Figure 3: Weekly change in COVID-19 cases (select countries and NSW), July 2021 – January 2022**

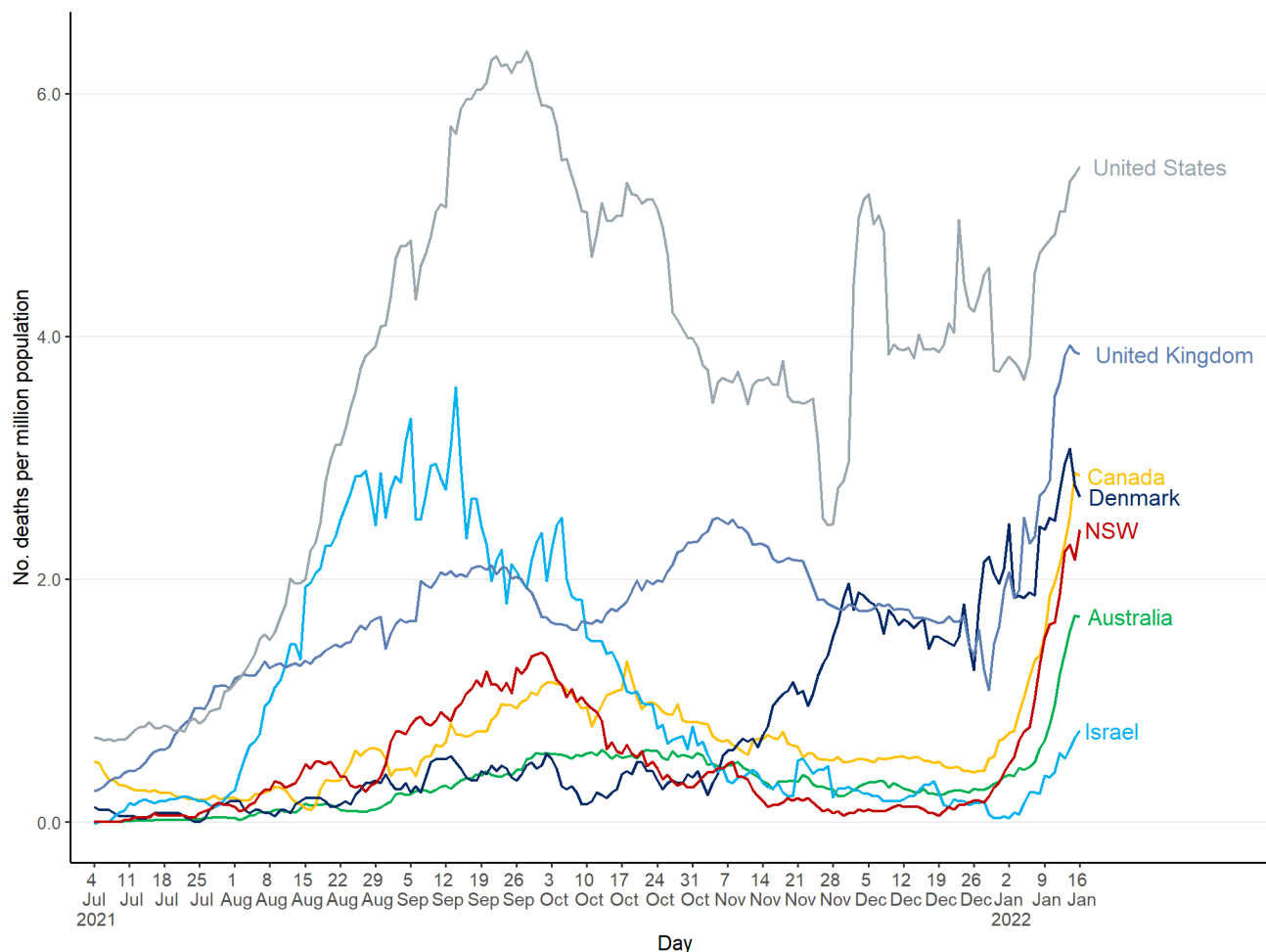


Note: See [COVID-19 daily rates: notes and sources](#) at the end of this document.

## COVID-19 daily mortality rates

Figure 4 shows the daily mortality rate per million population (rolling seven-day average) in NSW, Australia, United Kingdom, United States, Canada, Denmark and Israel, from July 2021 to January 2022.

**Figure 4: Daily mortality rates (select countries and NSW), July 2021 – January 2022**

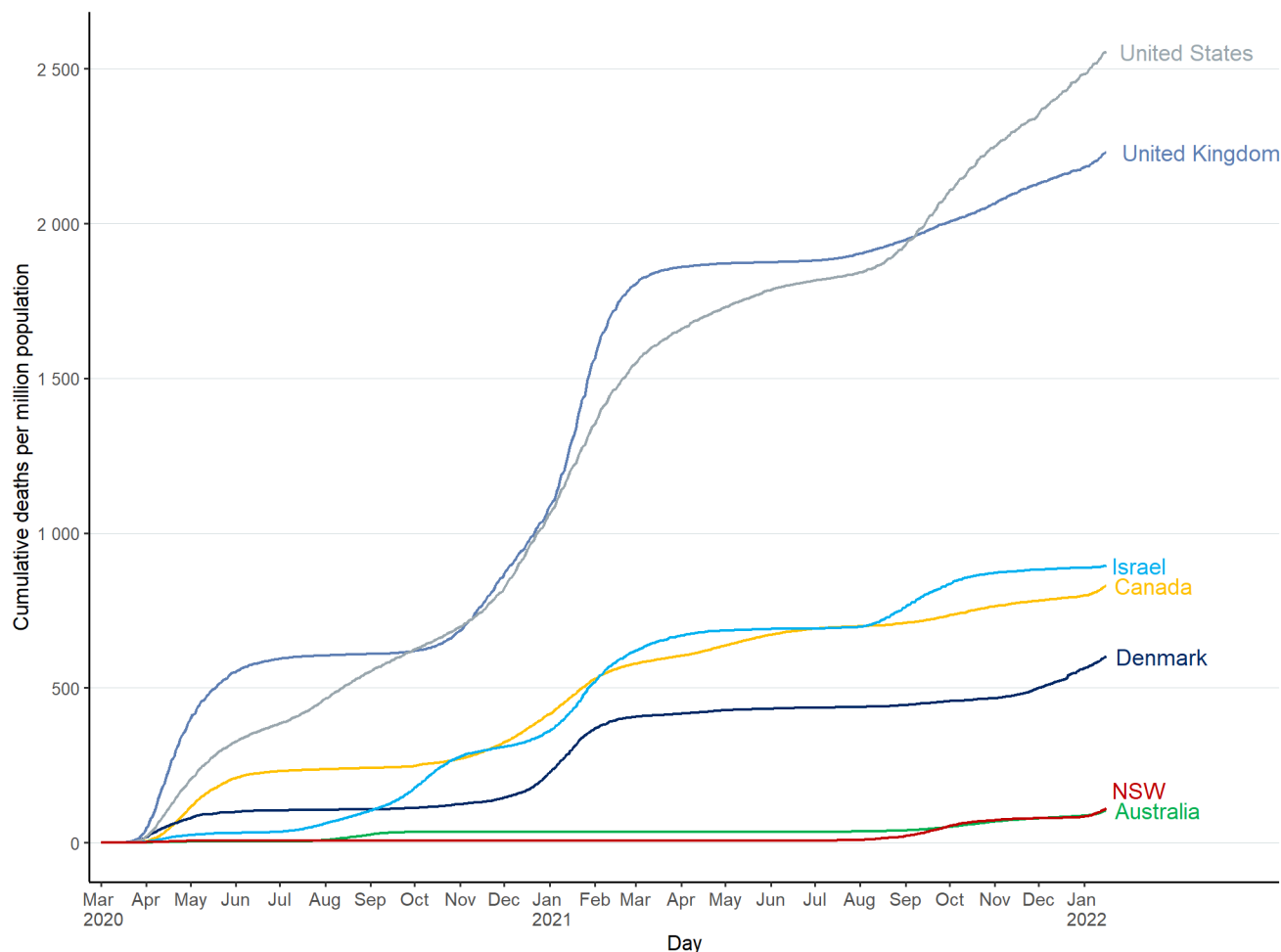


Note: See [COVID-19 daily rates: notes and sources](#) at the end of this document.

## COVID-19 cumulative mortality rates

Figure 5 shows the cumulative mortality rate per million population in NSW, Australia, United Kingdom, United States, Canada, Denmark and Israel, from March 2020 to January 2022.

**Figure 5: Cumulative mortality rates (select countries and NSW), March 2020 – January 2022**

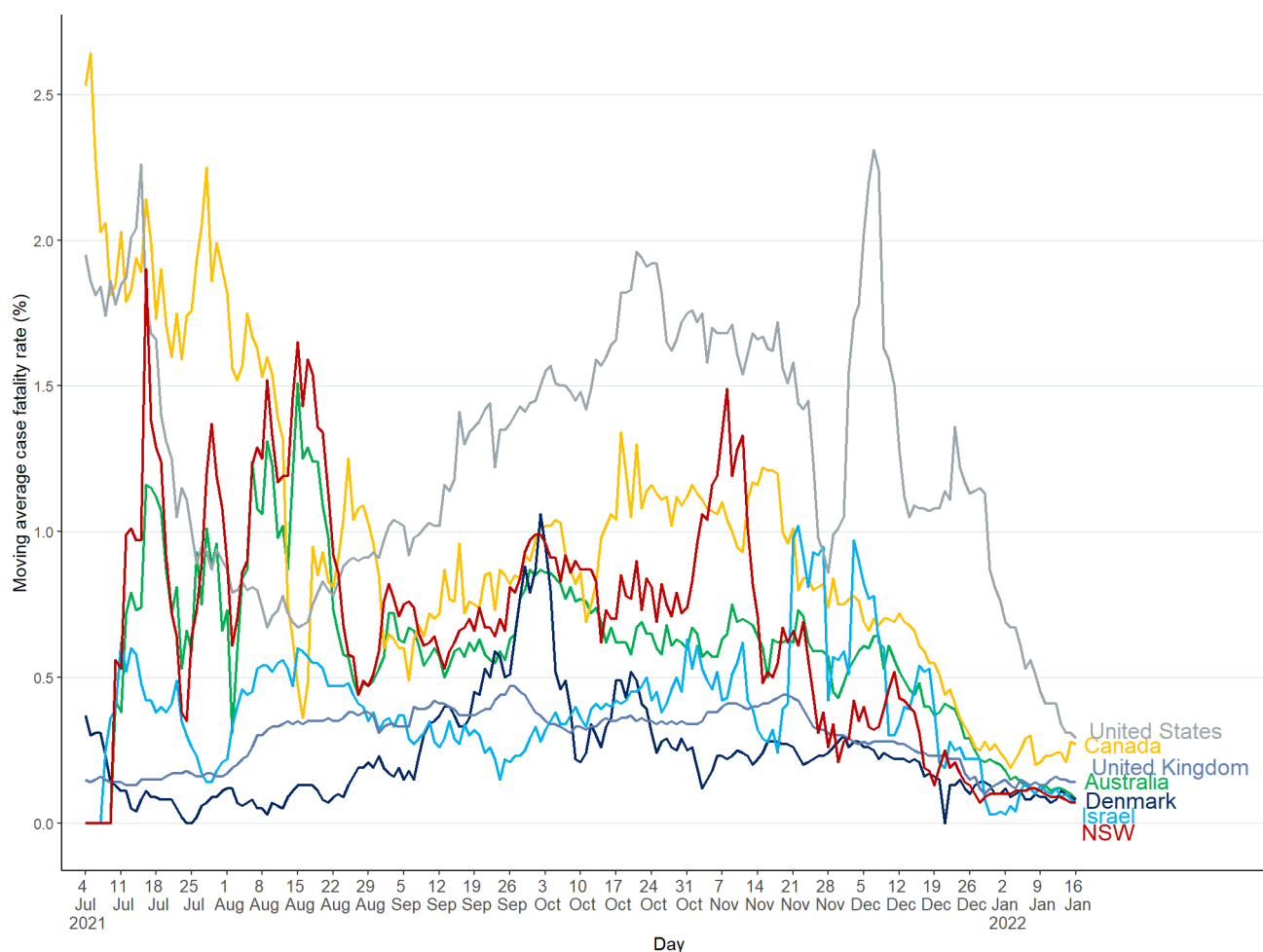


Note: See [COVID-19 daily rates: notes and sources](#) at the end of this document.

## Case fatality rate for COVID-19

Figure 6 shows the case fatality rate (moving average) of COVID-19 in NSW, Australia, United Kingdom, United States, Canada, Denmark and Israel, from July 2021 to January 2022. The moving average case fatality rate on any given day is calculated as the ratio between the 7-day average number of confirmed deaths and the 7-day average number of confirmed cases 10 days earlier.

**Figure 6: Case fatality rate of COVID-19 (select countries and NSW), July 2021 – January 2022**



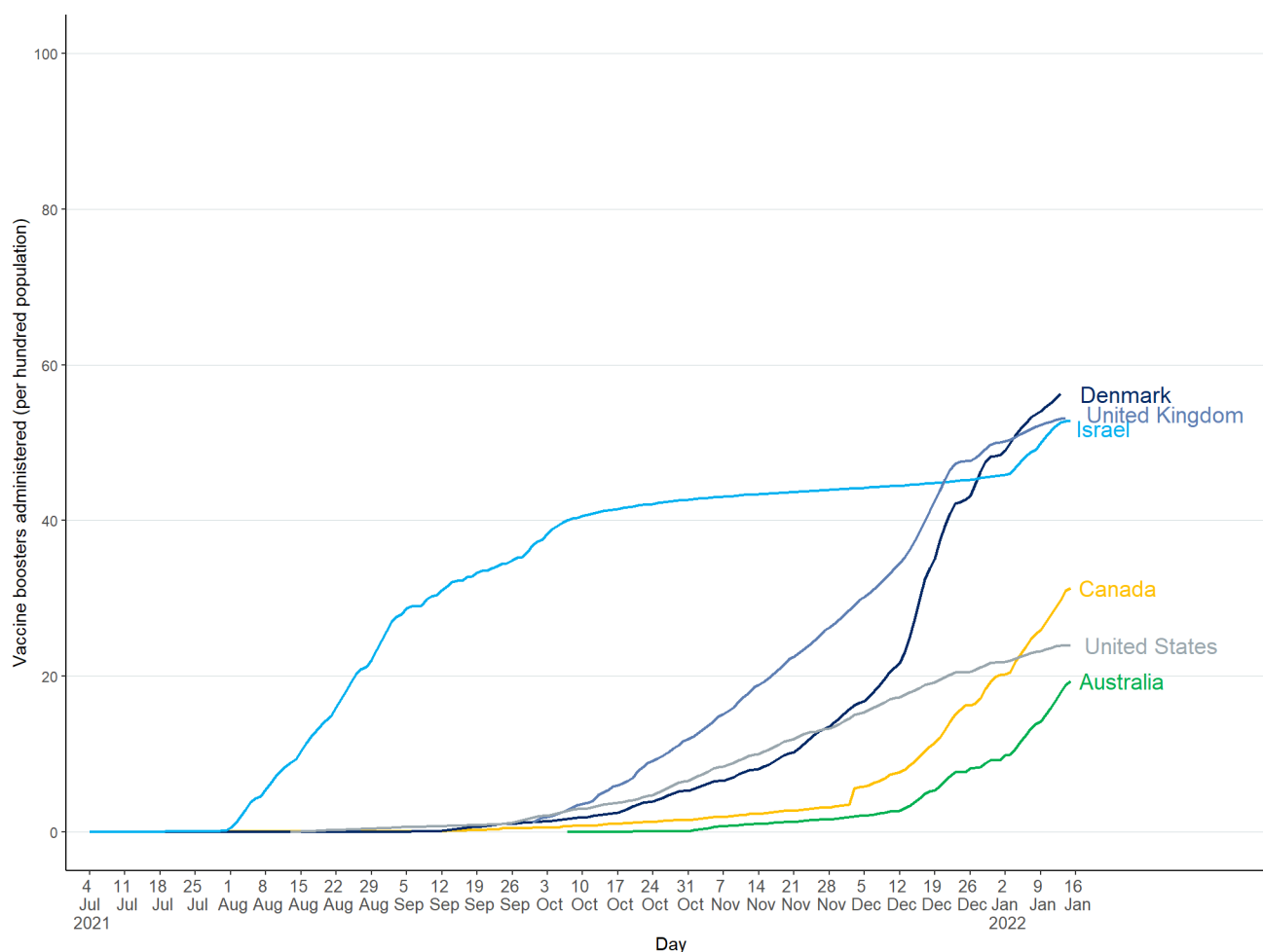
Note: See [COVID-19 daily rates: notes and sources](#) at the end of this document.



## COVID-19 vaccine boosters

Figure 7 shows the total number of COVID-19 vaccine booster doses administered per hundred population in Australia, United Kingdom, United States, Canada, Denmark and Israel, from July 2021 to January 2022. Booster doses are defined as doses administered after the original two dose vaccination protocol.

**Figure 7: Number of COVID-19 vaccine boosters administered (select countries), July 2021 – January 2022**

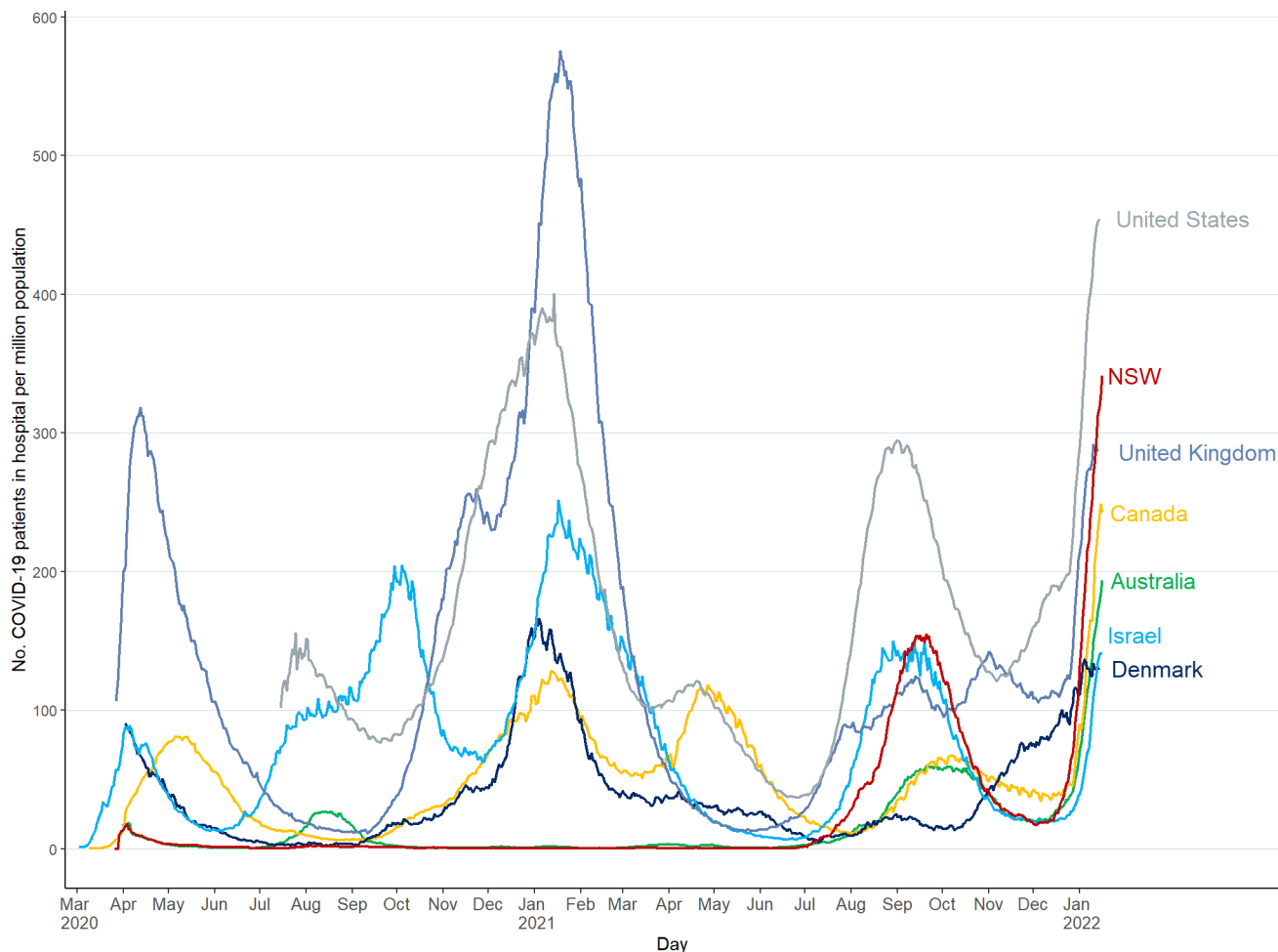


Note: See [COVID-19 daily rates: notes and sources](#) at the end of this document.

## COVID-19 patients in hospital

Figure 8 shows the daily number of COVID-19 patients in hospital per million population in NSW, Australia, United Kingdom, United States, Canada, Denmark and Israel, from March 2020 to January 2022.

**Figure 8: Number of COVID-19 patients in hospital (select countries and NSW), March 2020 – January 2022**

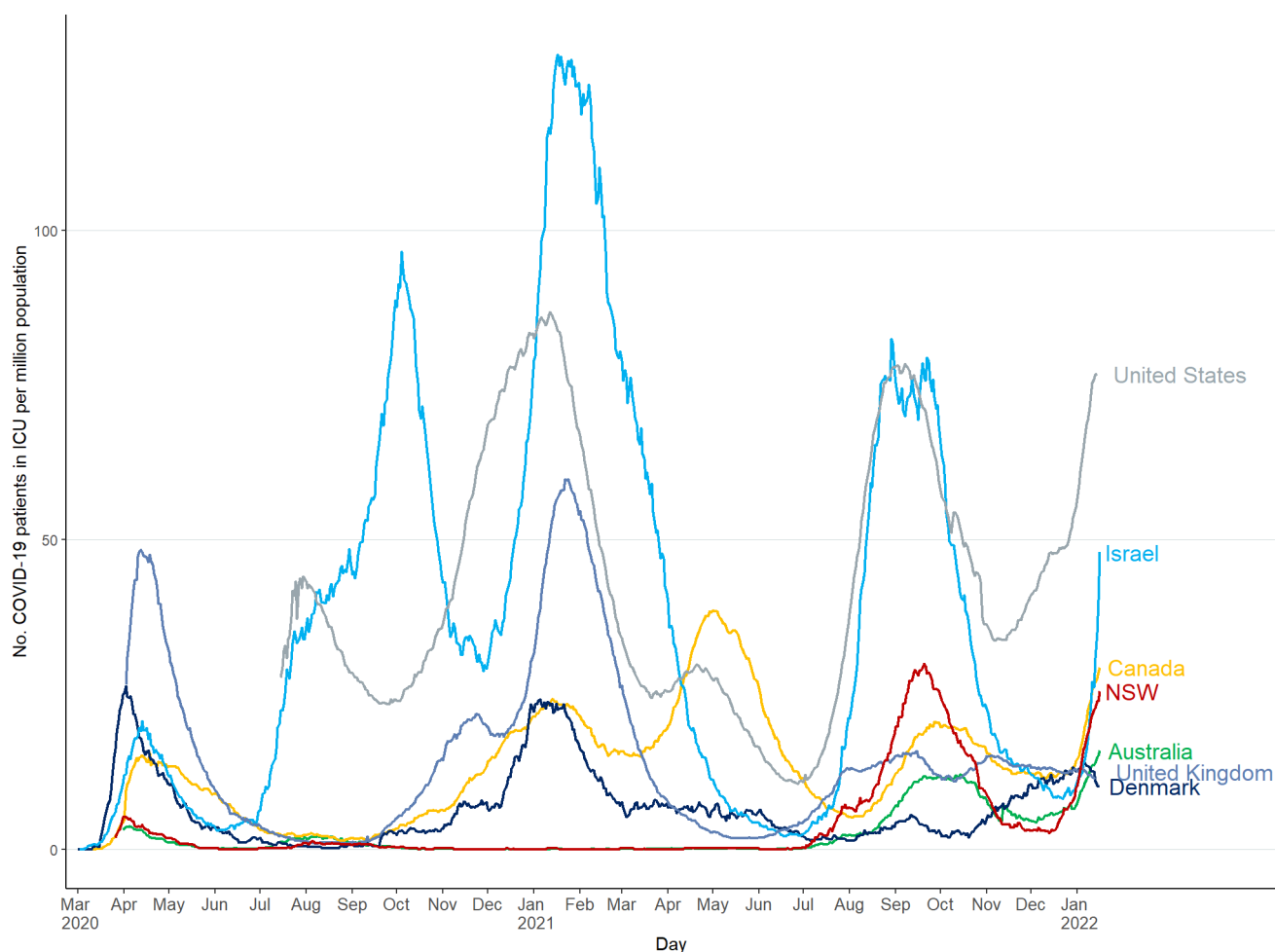


Note: See [COVID-19 daily rates: notes and sources](#) at the end of this document.

## COVID-19 patients in intensive care units

Figure 9 shows the daily number of COVID-19 patients in intensive care units per million population in NSW, Australia, United Kingdom, United States, Canada, Denmark and Israel, from March 2020 to January 2022.

**Figure 9: Number of COVID-19 patients in intensive care units (select countries and NSW), March 2020 – January 2022**



Note: See [COVID-19 daily rates: notes and sources](#) at the end of this document.

## COVID-19 cases, testing, variants, vaccines, hospitalisations and deaths\*

The following graphs (figures 10 to 16) show COVID-19 cases and vaccination rates; hospitalisation and death rates; and the variant distribution for NSW, Australia, United Kingdom, United States, Canada, Denmark and Israel.

### Series a: COVID-19 cases and vaccinations

The graphs in series 'a' show COVID-19 cases and vaccination rates for NSW and each of these countries from March 2020 to January 2022. They include the:

- daily rate per million population (rolling seven-day average) of confirmed COVID-19 cases
- cumulative number of people who have received at least one vaccine dose (per 100 population)
- cumulative number of people double vaccinated (per 100 population).

These graphs should be interpreted with caution as there are other factors that may influence the number of cases in addition to vaccination rates, including the level of social restrictions.

The cumulative number of people vaccinated per hundred population (at least one dose or double vaccinated) is based on the full population (all ages) for all locations and countries, including NSW, to enable accurate comparability. At the time of reporting, Australia (including NSW), Canada, Denmark, Israel and the United States had commenced vaccinating children aged 5-11 years. The United Kingdom is vaccinating the 12+ population only.

Note, there is variation in both 'x' axis and 'y' axis scales, and some gaps in time series across these graphs due to missing data.

### Series b: COVID-19 hospitalisation and death rates

The graphs in series 'b' show COVID-19 hospitalisation and death rates for NSW and each of these countries. Specifically, they show the daily number of hospitalised patients (per million population) and the daily number of new deaths (rolling seven-day average and per million population), from March 2020 to January 2022.

Note, there is variation in both 'x' axis and 'y' axis scales and some gaps in time series across these graphs due to missing data.

### Series c: COVID-19 variant distribution

The stacked area graphs in series 'c' show the COVID-19 variant distribution for each of these countries. Specifically, they show COVID-19 variant distribution for cases sequenced, and the percentage of total COVID-19 cases sequenced, from July 2021 to January 2022.

For most countries, weekly counts are shown; however, only monthly counts are available for Canada.

Note, there is variation in both 'x' axis and 'y' axis scales and some gaps in time series across these graphs due to missing data.

\*See further [COVID-19 cases: notes and sources](#) at the end of this document.

## NSW

Figure 10a: COVID-19 cases and vaccinations, NSW, March 2020 – January 2022

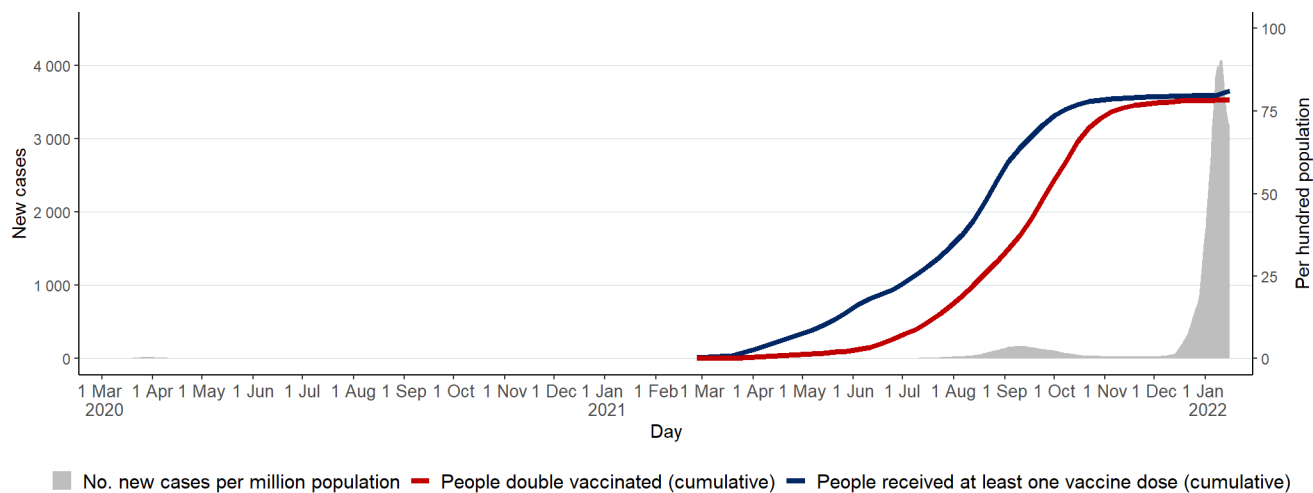
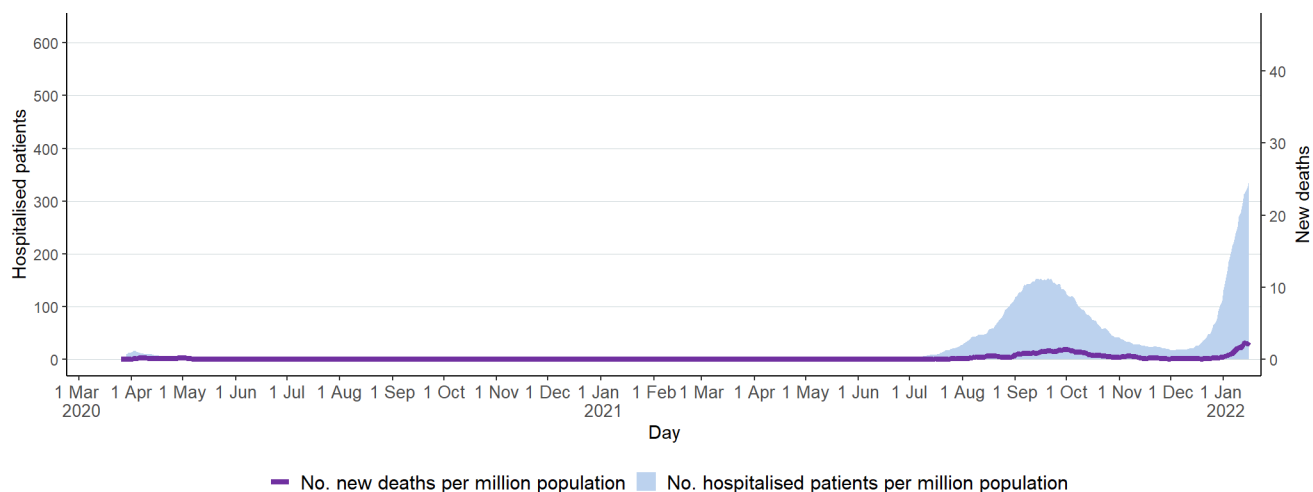


Figure 10b: COVID-19 hospitalisation and mortality rates, NSW, March 2020 – January 2022



## Australia

Figure 11a: COVID-19 cases and vaccinations, Australia, March 2020 – January 2022

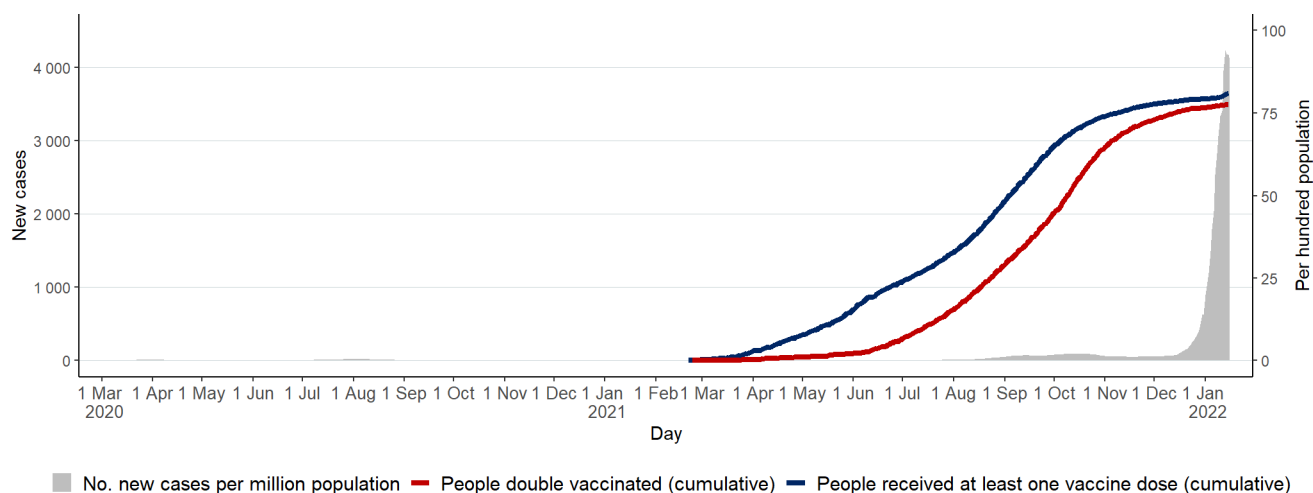


Figure 11b: COVID-19 hospitalisation and mortality rates, Australia, March 2020 – January 2022

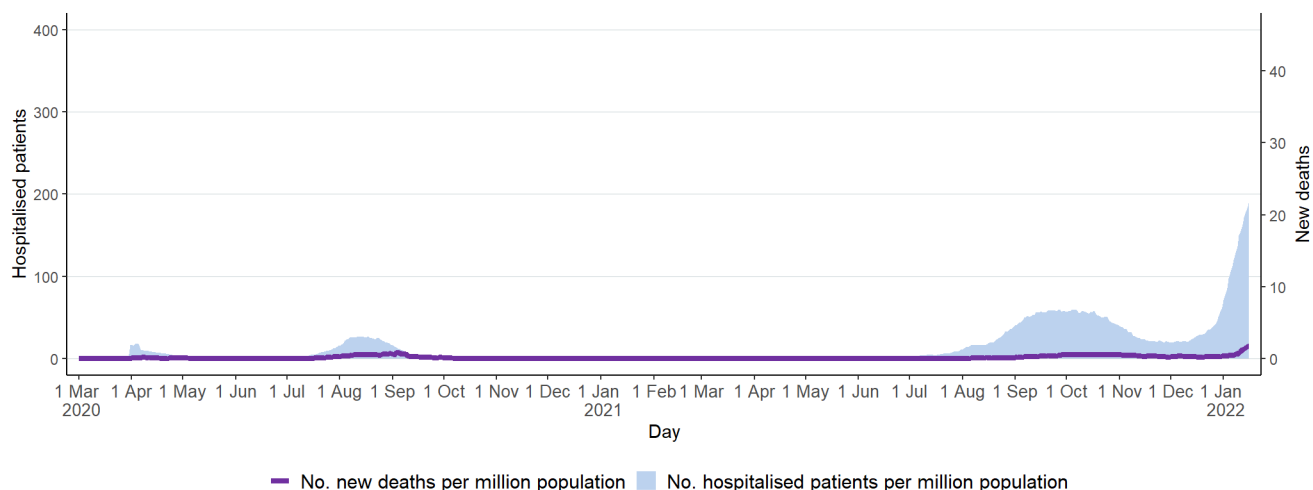
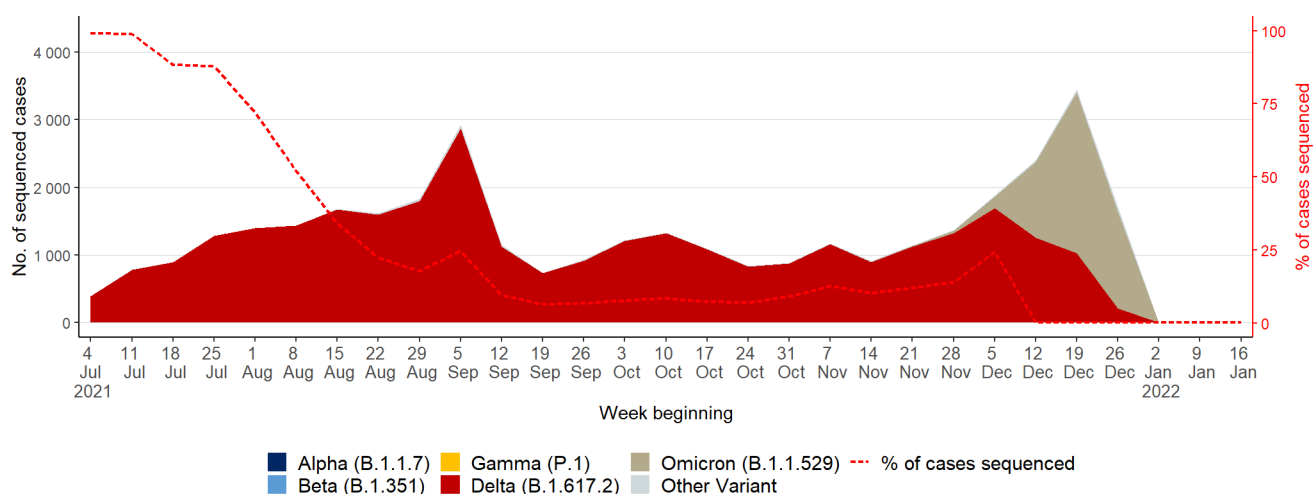


Figure 11c: COVID-19 variant distribution for sample of cases that have been sequenced, Australia, June 2021 – January 2022



## United Kingdom

Figure 12a: COVID-19 cases and vaccinations, United Kingdom, March 2020 – January 2022

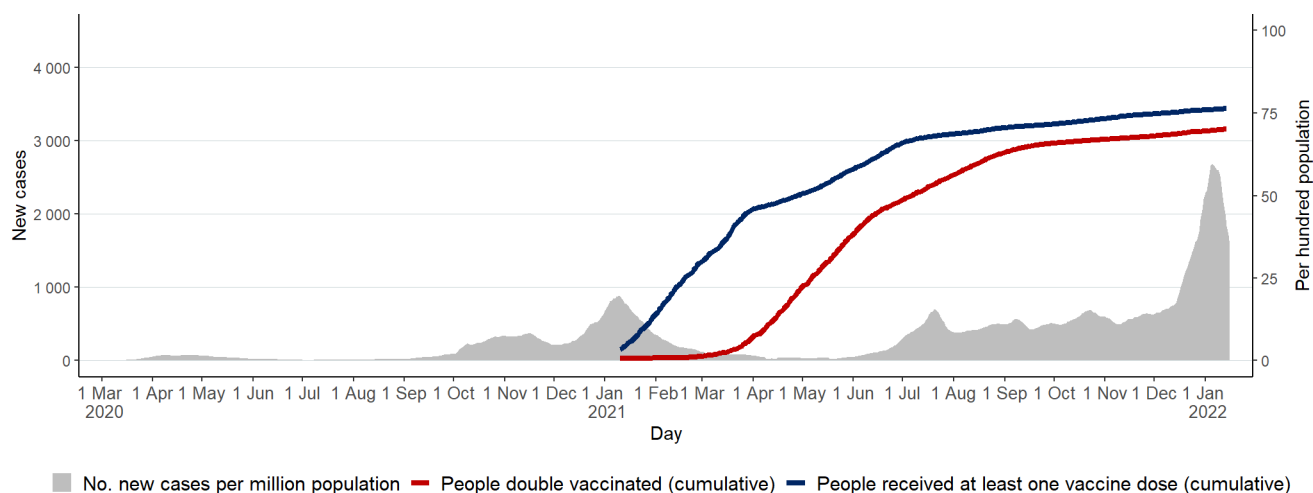


Figure 12b: COVID-19 hospitalisation and mortality rates, United Kingdom, March 2020 – January 2022

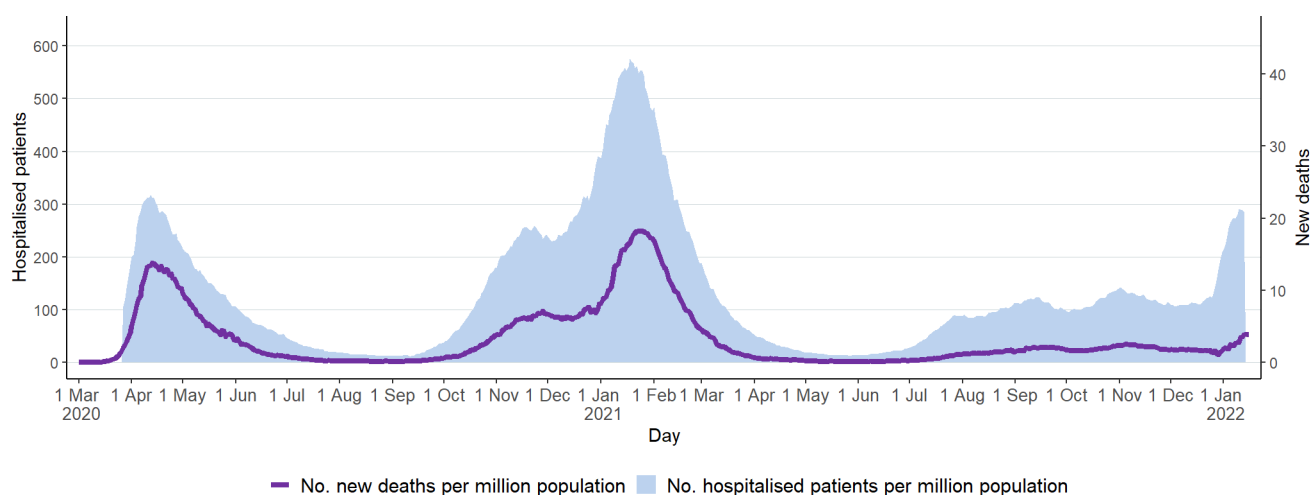
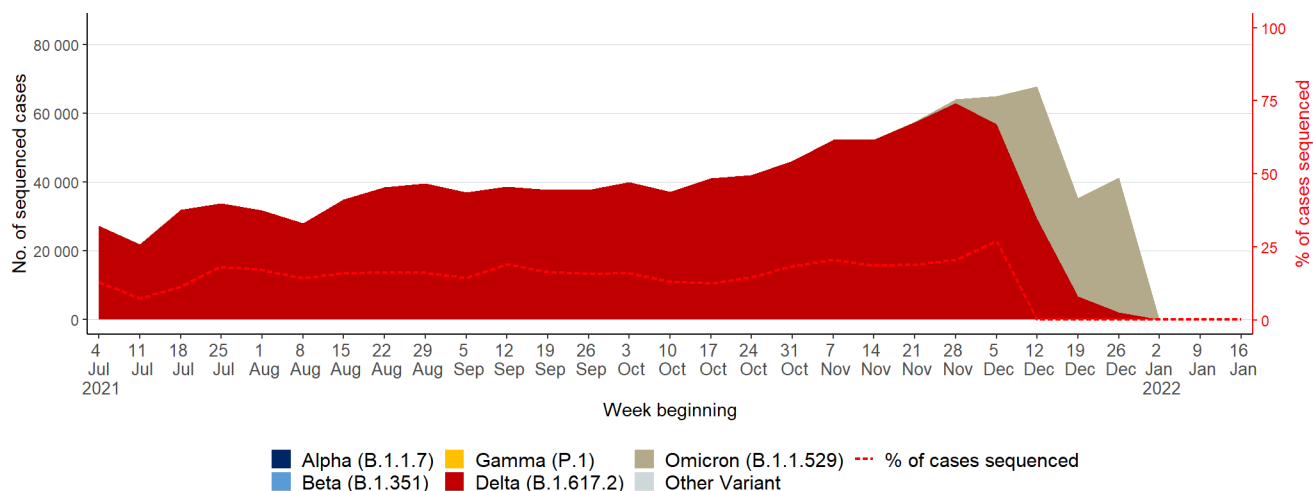


Figure 12c: COVID-19 variant distribution for sample of cases that have been sequenced, United Kingdom, July 2021 – January 2022



## United States

Figure 13a: COVID-19 cases and vaccinations, United States, March 2020 – January 2022

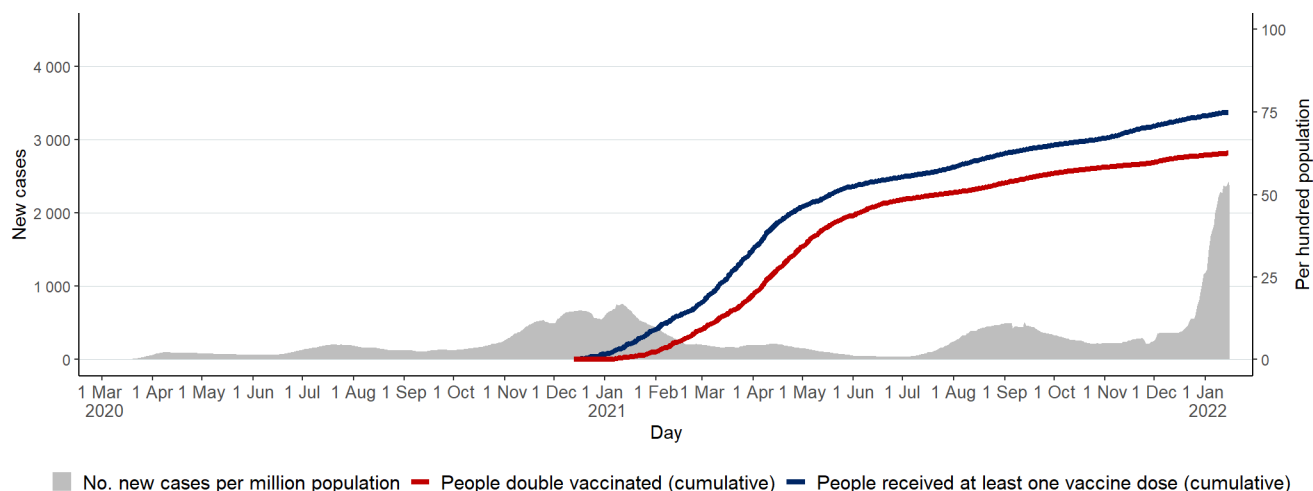


Figure 13b: COVID-19 hospitalisation and mortality rates, United States, March 2020 – January 2022

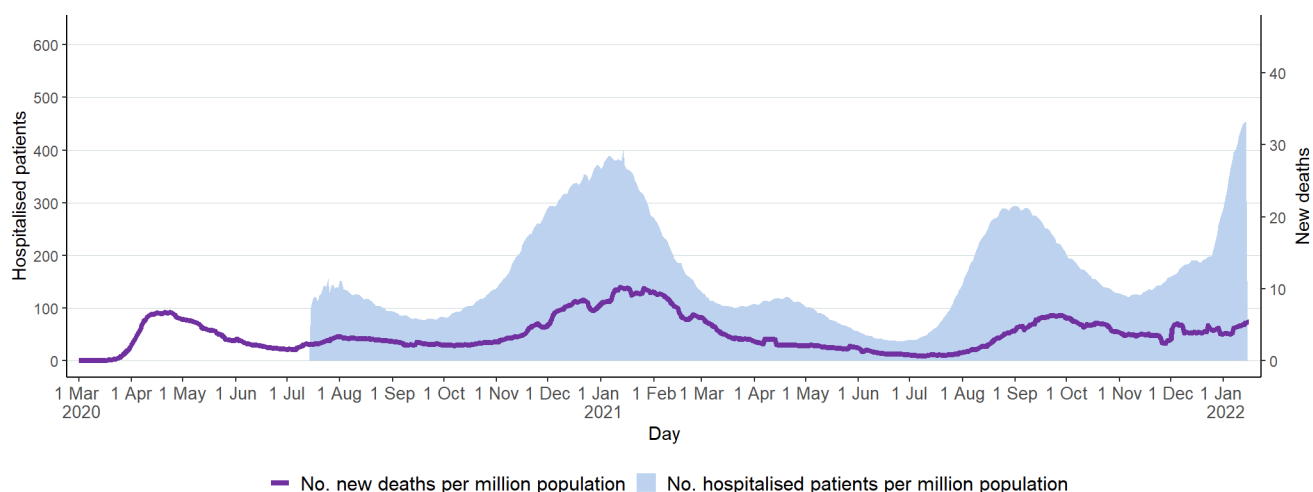
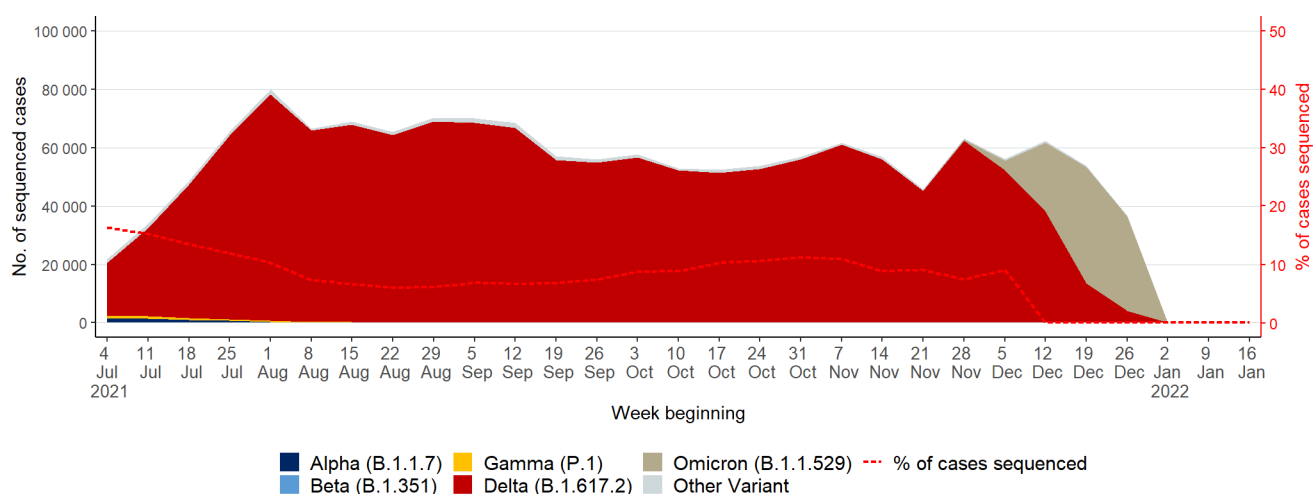


Figure 13c: COVID-19 variant distribution for a sample of cases that have been sequenced, United States, July 2021 – January 2022





## Canada

Figure 14a: COVID-19 cases and vaccinations, Canada, March 2020 – January 2022

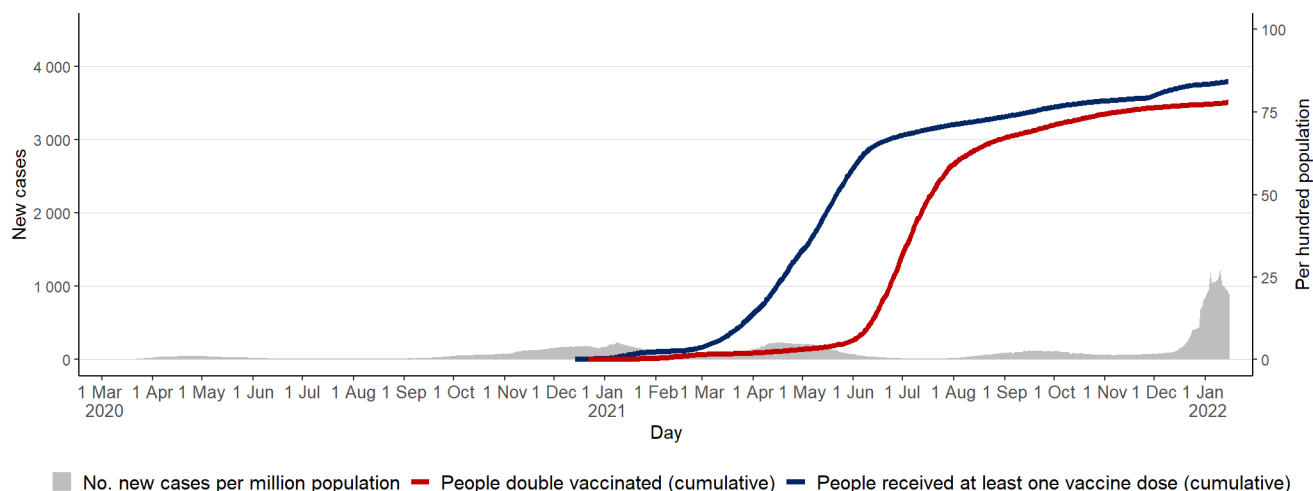


Figure 14b: COVID-19 hospitalisation and mortality rates, Canada, March 2020 – January 2022

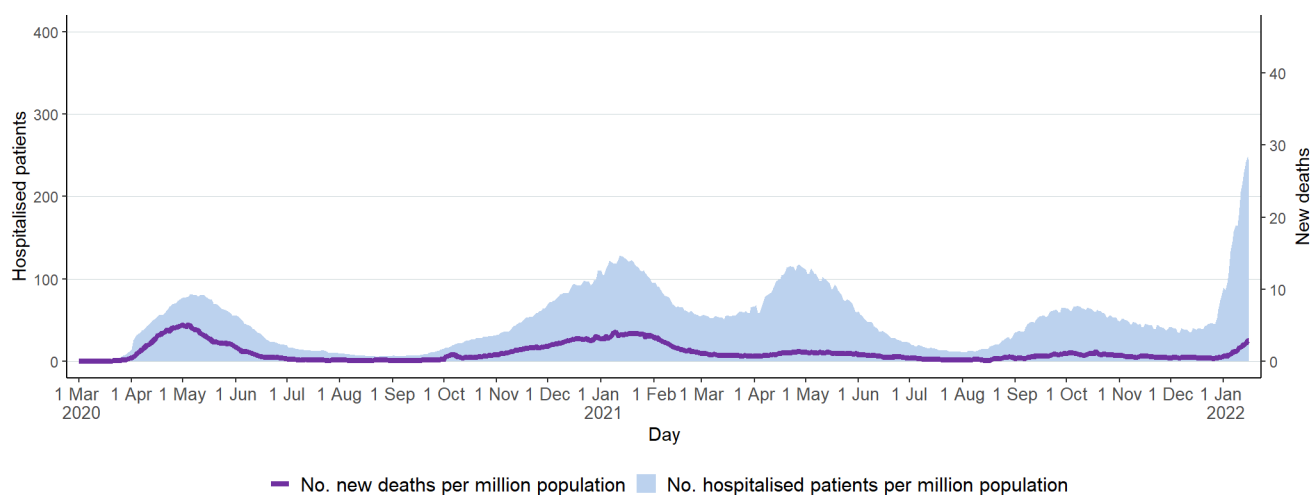
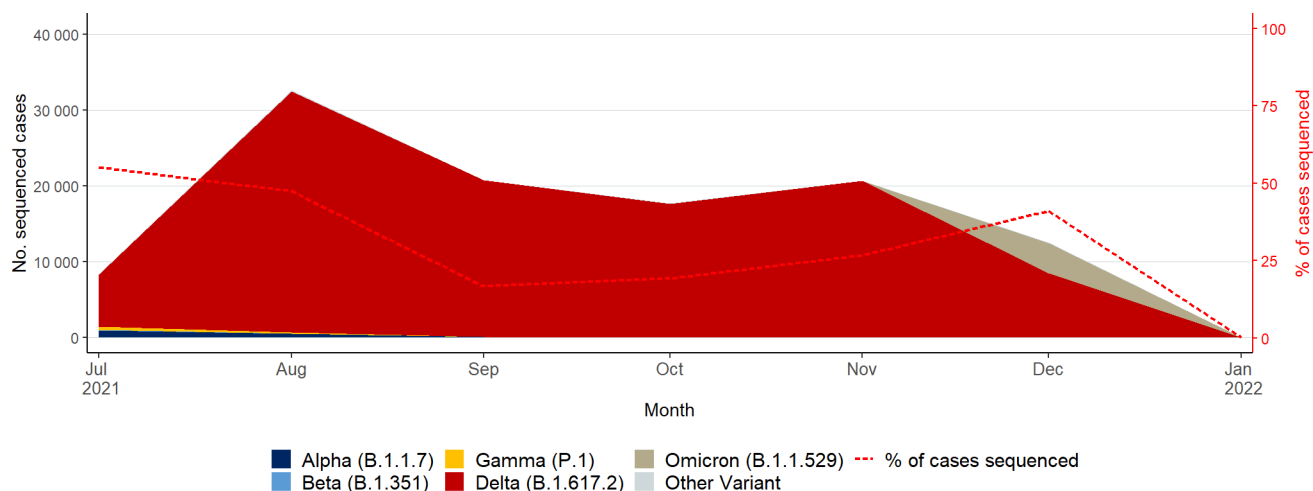


Figure 14c: COVID-19 variant distribution for a sample of cases that have been sequenced, Canada, July 2021 – January 2022



## Denmark

Figure 15a: COVID-19 cases and vaccinations, Denmark, March 2020 – January 2022

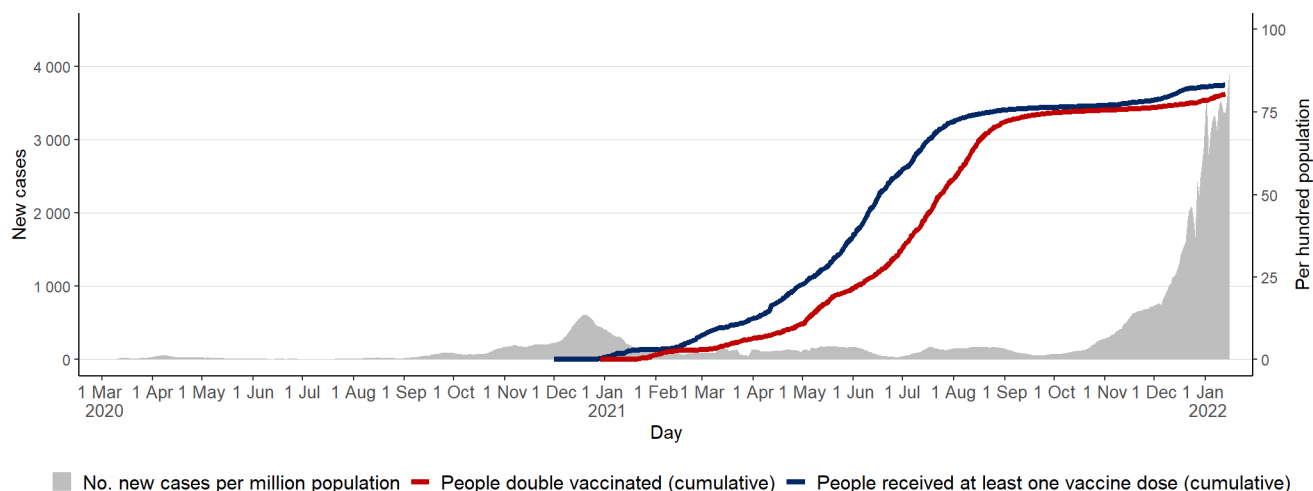


Figure 15b: COVID-19 hospitalisation and mortality rates, Denmark, March 2020 – January 2022

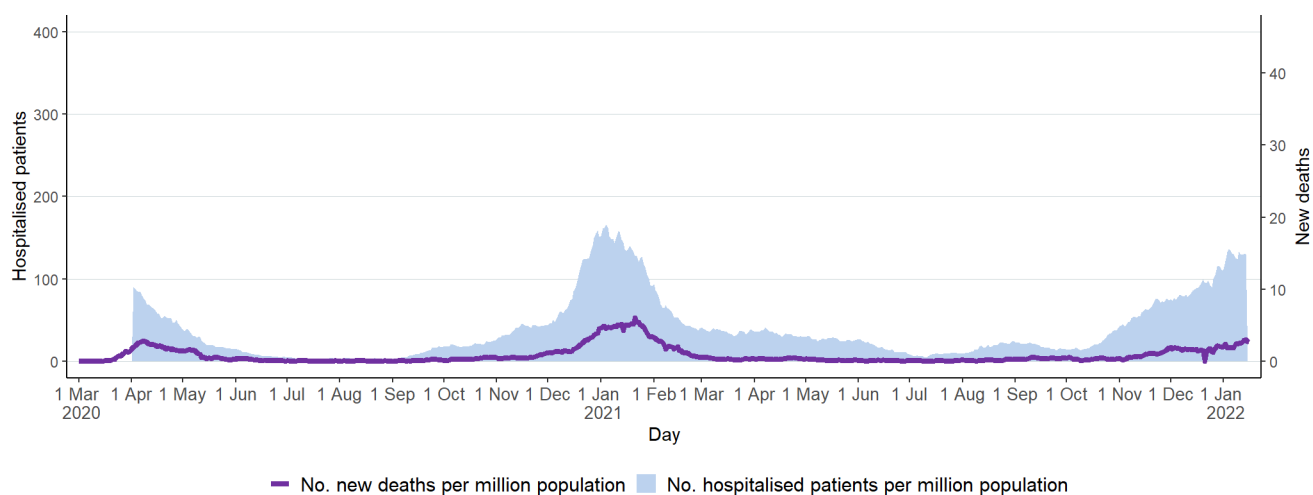
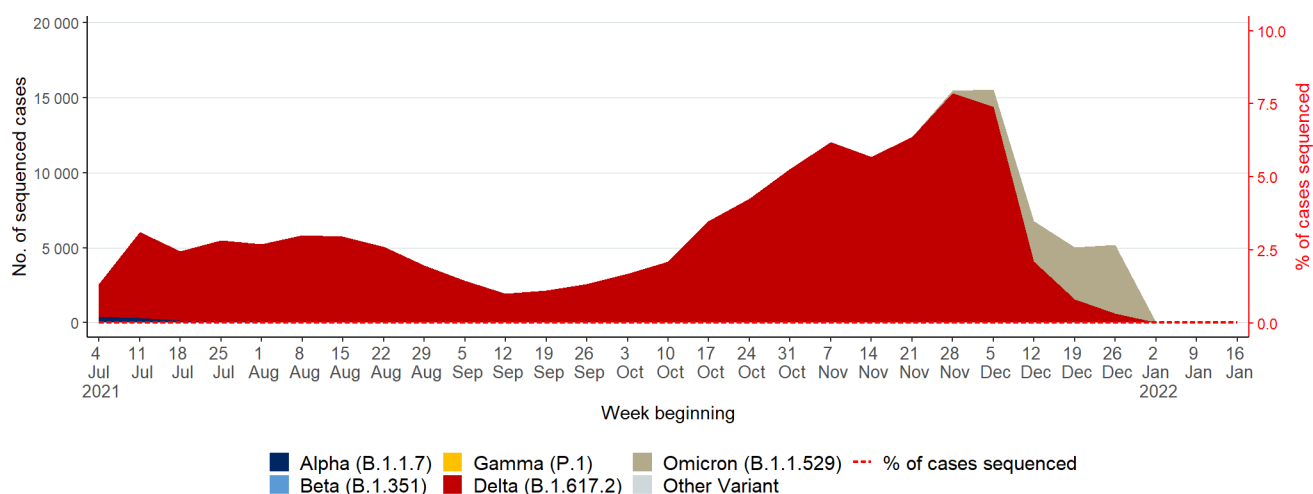


Figure 15c: COVID-19 variant distribution for a sample of cases that have been sequenced, Denmark, July 2021 – January 2022



## Israel

Figure 16a: COVID-19 cases and vaccinations, Israel, March 2020 – January 2022

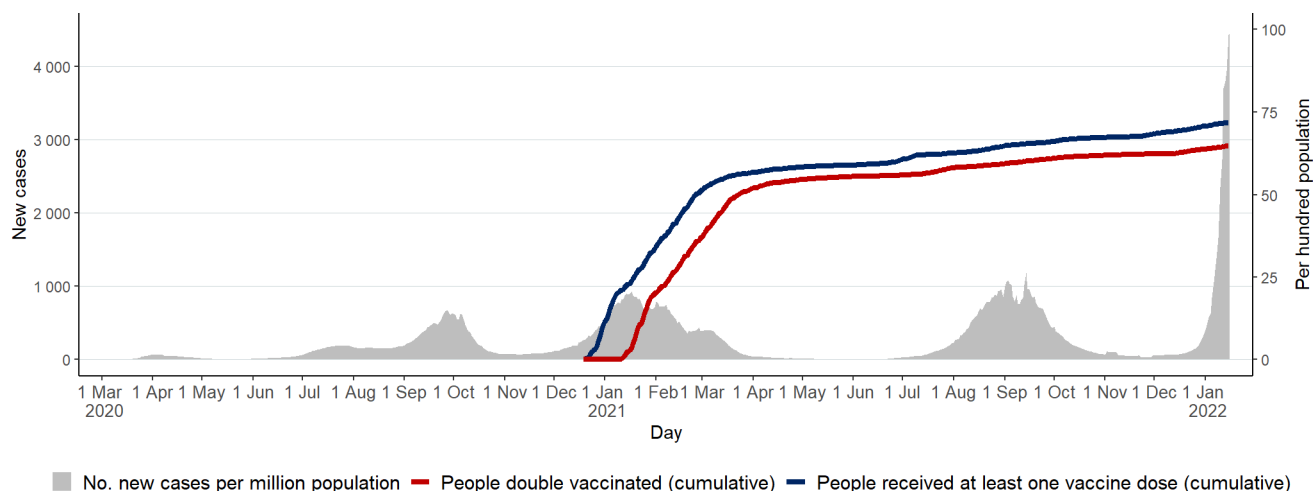


Figure 16b: COVID-19 hospitalisation and mortality rates, Israel, March 2020 – January 2022

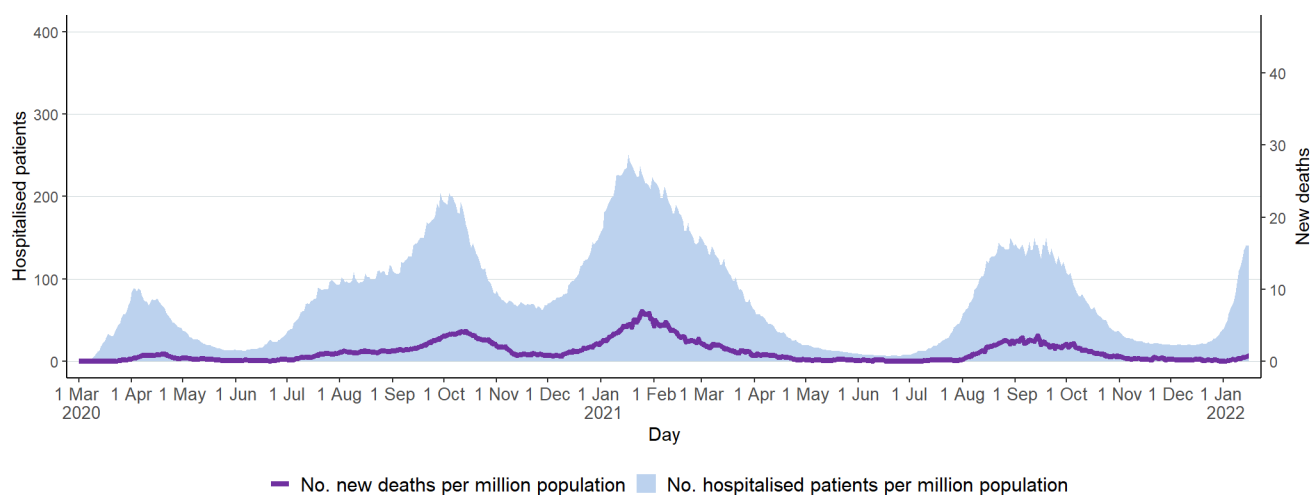
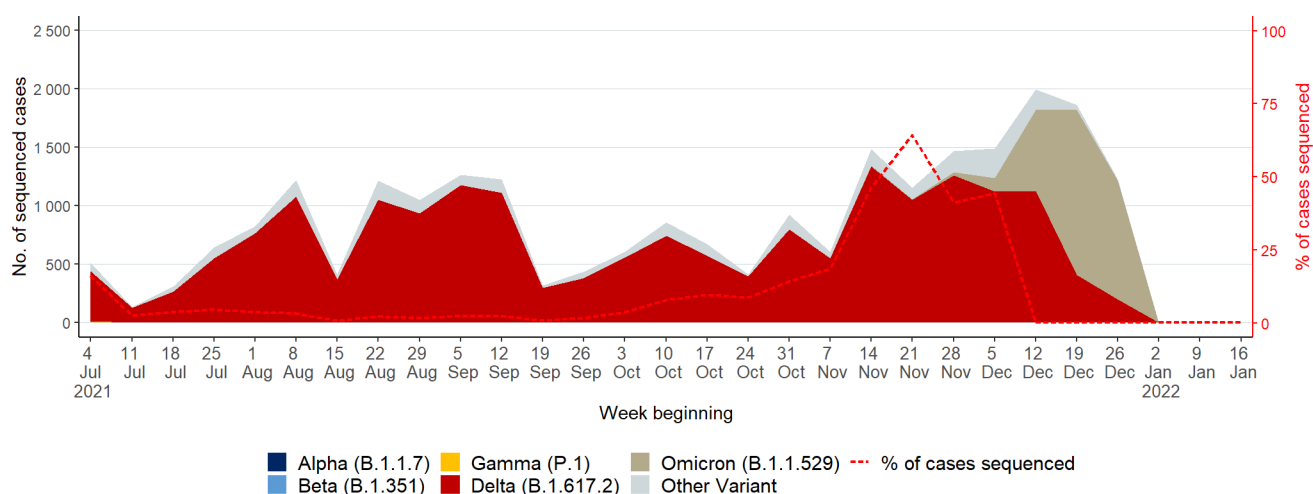


Figure 16c: COVID-19 variant distribution for a sample of cases that have been sequenced, Israel, July 2021 – January 2022



## NSW key indicators

### Notes

- Data are presented for all indicators as at 16 January 2022 (previous week, 9 January 2022), with data accessed on 18 January 2022.
- Data on cases refer to cases identified through polymerase chain reaction (PCR) tests only.
- Average daily cases and average daily deaths are based on the seven days to 16 January 2022 (previous week, seven days to 9 January 2022).
- For any given day, the growth factor for COVID-19 cases is a ratio of cases notified in the seven days ending that day, to the cases notified in the seven days ending the day before.
- Patients in hospital include cases on the ward and in ICUs.
- Estimated per million population rates calculated using population estimates at 30 June 2021, based on the Australian Bureau of Statistics estimated resident population and population projections based on data from the NSW Department of Planning, Industry and Environment.<sup>7</sup>
- Estimates for the full population and 12+ population figures used in calculating per million population rates for vaccination are drawn from NSW Health via the Australian Government Department of Health Australian Immunisation Register.<sup>8</sup>
- The rate of hospitalisation and ICU admission (per million) among the unvaccinated population is calculated as the number of unvaccinated COVID-19 cases in hospital against the estimated total number of the unvaccinated population. The rate of hospitalisation and ICU admission (per million) among the vaccinated population is calculated as the number of COVID-19 cases in hospital who have received at least two doses of vaccination, against the estimated total number of the double vaccinated population. Rolling seven-day average was applied. Rates were age-standardised to NSW 2021 population estimates.

### Sources

- New cases for NSW sourced from NSW Health via Notifiable Conditions Information Management System; accessed 18 January 2022.<sup>9</sup>
- Vaccination data sourced from NSW Health via the Australian Government Department of Health Australian Immunisation Register; accessed 18 January 2022.<sup>8</sup>
- Data for hospital capacity, admissions and proportion of vaccinated cases are sourced from NSW Health via the Patient Flow Portal and taken from a 7pm snapshot, 16 January 2022; accessed 18 January 2022.<sup>10</sup>

## Summary of public health, healthcare and vaccination measures (select countries, Canadian provinces and NSW)

### Notes

- Data are presented for all indicators as at 16 January 2022. If unavailable, the latest available data are shown.
- For the selected countries and Canadian provinces, data on confirmed COVID-19 cases may include both cases identified via PCR tests and cases identified via rapid antigen tests (RAT), depending on differences in reporting procedures. For NSW, data on cases refers to cases identified through PCR tests only.
- Average daily confirmed cases and average daily deaths are based on a seven-day average.

- Proportions for the double vaccinated are based on the full population. Population figures to calculate proportion covered for NSW are drawn from NSW Health via the Australian Government Department of Health Australian Immunisation Register.<sup>8</sup>
- For NSW, estimated per million population rates for all indicators other than vaccination are calculated using population estimates at 30 June 2021. This is based on the Australian Bureau of Statistics estimated resident population and population projections, based on data from the NSW Department of Planning, Industry and Environment.<sup>7</sup>
- Patients in hospital include both cases on the ward and in ICUs. For Ontario and Quebec, patients in hospital may be lower than patients in ICU, as the in-hospital numbers only include people still testing positive for COVID-19, while patients in ICU also include those who are in ICU due to COVID-19 but have since tested negative.
- Cell colouring has been applied according to the following criteria:
  - For 7-day average cases per million, rates over 3,000 per million are highlighted in red, and the lowest three rates highlighted in green.
  - For 7-day average deaths per million, rates over 3.0 per million are highlighted in red, and rates under 0.5 per million are highlighted in green.
  - For percentage of total population double vaccinated, percentages greater than or equal to 75% are highlighted in green.
  - For patients in hospital per million, rates over 300 per million are highlighted in red, and the lowest three rates highlighted in green.
  - For patients in ICU per million, rates over 30 per million are highlighted in red, and the lowest three rates highlighted in green.

### Sources

- New cases for selected countries sourced from [Our World in Data](#).<sup>11</sup> New cases for NSW sourced from NSW Health via the Notifiable Conditions Information Management System.<sup>9</sup> New cases for Ontario and Quebec sourced from [COVID-19 Tracker Canada](#).<sup>12</sup> All accessed 18 January 2022.
- COVID-19 deaths for selected countries sourced from [Our World in Data](#).<sup>11</sup> COVID-19 deaths for NSW sourced from NSW Health via the Notifiable Conditions Information Management System.<sup>9</sup> COVID-19 deaths for Ontario and Quebec sourced from [COVID-19 Tracker Canada](#).<sup>12</sup> All accessed 18 January 2022.
- Vaccination data for selected countries sourced from [Our World in Data](#).<sup>11</sup> Vaccination data for NSW sourced from NSW Health via the Australian Government Department of Health Australian Immunisation Register.<sup>8</sup> Vaccination data for Ontario and Quebec sourced from [COVID-19 Tracker Canada](#).<sup>12</sup> All accessed 18 January 2022.
- Data on the number of COVID-19 patients in hospital and ICUs were sourced on 18 January 2022 from:
  - [Our World in Data](#) for all countries (aside from Japan ICU data and Singapore)<sup>11</sup>
  - [Singapore Ministry of Health](#) for Singapore<sup>13</sup>
  - NSW Health via the Patient Flow Portal for NSW, taken from a 7pm snapshot, 16 January 2022<sup>10</sup>
  - [COVID-19 Tracker Canada](#) for Ontario and Quebec.<sup>12</sup>

### COVID-19 daily rates of cases, deaths, hospitalisations and vaccination

#### Notes

- Limited testing and delayed reporting likely result in underestimated actual number of confirmed cases.

- For the selected countries, data on confirmed COVID-19 cases may include both cases identified via PCR tests and cases identified via RATs, depending on differences in reporting procedures. For NSW, data on cases refers to cases identified via PCR tests only.
- Challenges in the attribution of the cause of death means the number of confirmed deaths may not be an accurate count of the true number of deaths from COVID-19.
- Patients in hospital include cases on the ward and in ICUs.
- Data for some countries may appear unstable at times (e.g. over the Christmas and New Year period) due to reasons such as reduced testing and unavailability of accurate data from the various countries.

### Sources

- Cases and deaths data for selected countries sourced from [Our World in Data](#).<sup>11</sup> Cases and deaths data for NSW sourced from NSW Health via the Notifiable Conditions Information Management System.<sup>9</sup> Both accessed 18 January 2022.
- Vaccination data for selected countries sourced from [Our World in Data](#); accessed 18 January 2022.<sup>11</sup>
- Hospital and ICU data for selected countries sourced from [Our World in Data](#).<sup>11</sup> Hospital and ICU data for NSW sourced from NSW Health via the Patient Flow Portal.<sup>10</sup> Both accessed 18 January 2022.

## COVID-19 cases, variants, vaccines, hospitalisations and deaths

### Notes

- For the selected countries, data on confirmed COVID-19 cases may include both cases identified via PCR tests and cases identified via RATs, depending on differences in reporting procedures. For NSW, data on cases refers to cases identified via PCR tests only.
- With regards to the figures on COVID-19 variants, all severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) sequences were downloaded from the [GISAID EpiCoV™ Database](#). PANGO lineage (variant) classification for each individual sequence was provided by GISAID.<sup>14</sup>
- Dates are based on the sample collection date. Sequences with dates specifying the year only were excluded, while collection dates specifying the year and month were assigned to the 15<sup>th</sup> of that month.
- Sequences with lengths  $\leq 20,000$  base pairs were removed from the analysis, as were non-human hosts.
- Only a non-random sample of cases are sequenced. For many countries, the proportion of cases sequenced and submitted to GISAID may be very low. As a result, this report does not indicate the true prevalence of the variants but rather a best estimate currently available. Furthermore, variant frequencies may differ from numbers reported in media releases which may be based on detection of the variant using faster alternate methodologies (such as PCR testing).
- All data used to generate these graphs is subject to the GISAID [terms and conditions](#).<sup>15</sup>

### Sources

- Data on variants enabled by [GISAID](#); accessed 18 January 2022.<sup>14</sup>
- Data on total number of cases and vaccinations for the selected countries are sourced from [Our World in Data](#); accessed 18 January 2022.<sup>11</sup>
- Data on total number of cases for NSW are sourced from NSW Health via the Notifiable Conditions Information Management System.<sup>9</sup> Data on vaccinations for NSW are sourced from NSW Health via the Australian Government Department of Health Australian Immunisation Register.<sup>8</sup> All accessed 18 January 2022.

- Data on the number of hospitalisations and new deaths for the selected countries were sourced from [Our World in Data](#).<sup>11, 16</sup> Data on the number of hospitalisations for NSW were sourced from NSW Health via the Patient Flow Portal.<sup>10</sup> Data on the number of deaths for NSW are sourced from NSW Health via the Notifiable Conditions Information Management System.<sup>9</sup> All accessed 18 January 2022.

### Method

The NSW Health COVID-19 Critical Intelligence Unit maintains living evidence tables on [COVID-19 vaccines](#) and [SARS-CoV-2 variants](#).<sup>17, 18</sup> To inform this brief, a review of the daily evidence digest and Google searches were undertaken on 17 and 18 December 2021.

Countries were chosen based on contemporary relevance with regards to the variables of interest in the NSW and Australian context (cases, variants, vaccines and patient outcomes).



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