

COVID-19 Monitor

COVID-19 cases, variants, vaccines, hospitalisations and deaths 16 December 2021

Table 1: NSW key indicators as at 12 December 2021*

Key indicators**	Date: 12 Dec (change from: 5 Dec)
Average daily COVID-19 cases, week to 12 Dec (previous week)	455 (+191)
Growth factor for cases	1.08
Average daily COVID-19 deaths, week to 12 Dec (previous week)	1 (0)
COVID-19 patients under the care of NSW Health, as at 12 Dec (previous week)	3,287 (+910)
COVID-19 patients in hospital, as at 12 Dec (previous week)	171 (+19)
Percentage who were unvaccinated	58.6%
Percentage who were fully vaccinated	29.9%
COVID-19 patients in intensive care units (ICUs), as at 12 Dec (previous week)	24 (0)
Percentage who were unvaccinated	72.0%
Percentage who were fully vaccinated	20.0%
Percentage of total ICU beds with COVID-19 patients (previous week)	4.9% (+0.1%)
Rates per million	
Average daily COVID-19 cases, week to 12 Dec (previous week)	54.0 (+22.7)
COVID-19 under the care of NSW Health, as at 12 Dec	390.6
COVID-19 patients in hospital, as at 12 Dec	20.3
Hospital rate among unvaccinated / fully vaccinated 12+ population	176.4 / 7.3
COVID-19 patients in ICU, as at 12 Dec	2.9
ICU rate among unvaccinated / fully vaccinated 12+ population	34.1 / 1.0
COVID-19 vaccination, as at 12 Dec	
Percentage of eligible population (aged 12+) fully vaccinated	91.4%
Percentage of total population fully vaccinated	77.3%

*See [NSW key indicators: notes and sources](#) at the end of this document. **From 15th November onwards data for all indicators are no longer presented for only locally acquired cases, but for all confirmed COVID-19 cases, including any overseas or interstate acquired.

International reflections

- Cases of COVID-19 are increasing in Belgium, Denmark and the UK.¹ [Anecdotal reports](#) suggest outbreaks following social gatherings, even after the COVID-19 booster.²
- Omicron has now been detected in [~63 countries](#).³ [China](#) reported its first case of the variant.⁴
- The [UK](#) reported its first Omicron death.⁴ Fully vaccinated contacts of people with COVID-19 in [England](#) are advised to take a rapid lateral flow test every day for seven days to slow the spread of the virus.⁵
- The US Food and Drug Administration has granted emergency use authorisation to [monoclonal antibodies as an alternative to vaccination](#) in immunocompromised groups.⁶
- In Australia, [NSW](#) reported its first Omicron hospitalisation and [ATAGI shortened the wait time for booster shots](#) from six months to five months.^{7, 8}

Table 2: Summary of public health, healthcare and vaccination measures (select countries, Canadian provinces and NSW) as at 12 December 2021*

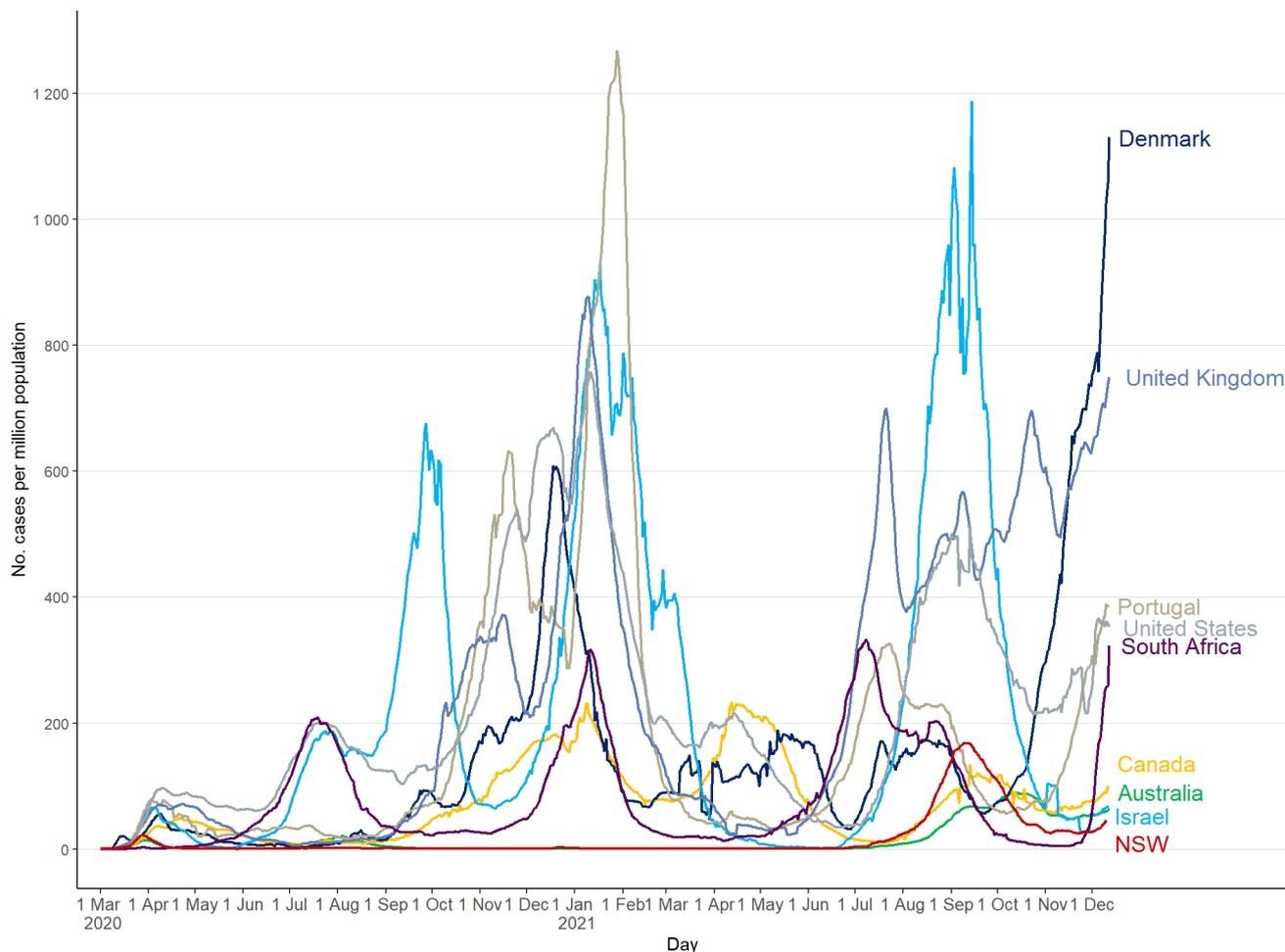
	7-day average confirmed cases	7-day average confirmed cases (per million)	7-day average deaths (per million)	% total population fully vaccinated	COVID-19 patients in hospital	COVID-19 patients in hospital (per million)	COVID-19 patients in ICU	COVID-19 patients in ICU (per million)
NSW	455	54.1	0.1	77.3%	170	20.2	23	2.7
Australia	1,664	64.5	0.3	74.7%	569	22.1	103	4.0
Belgium	14,615	1,256.4	4.1	75.1%	3,579	307.7	809	69.5
Canada	3,712	97.5	0.5	76.7%	1,354	35.6	450	11.8
Ontario	1,194	80.5	0.4	76.4%	253	17.1	161	10.9
Quebec	1,550	180.1	0.3	77.3%	268	31.1	73	8.5
Denmark	6,569	1,130.0	1.7	77.2%	447	76.9	58	10.0
Israel	614	66.1	0.2	62.3%	156	16.8	57	6.1
Japan	113	0.9	0.0	77.8%	1,085	8.6	26	0.2
Portugal	3,929	386.4	1.7	88.8%	911	89.6	134	13.2
Singapore	593	108.7	0.9	87.0%	575	97.5	33	5.6
South Africa	19,400	323.1	0.4	25.5%	6,198	103.2	420	7.0
United Kingdom	51,125	749.6	1.8	68.5%	7,413	108.7	900	13.2
United States	117,364	352.5	3.8	60.4%	60,419	181.5	15,143	45.5

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

COVID-19 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, Israel, Portugal, and South Africa, from March 2020 to December 2021.

Figure 1: Daily rates of COVID-19 cases (select countries and NSW), March 2020 – December 2021



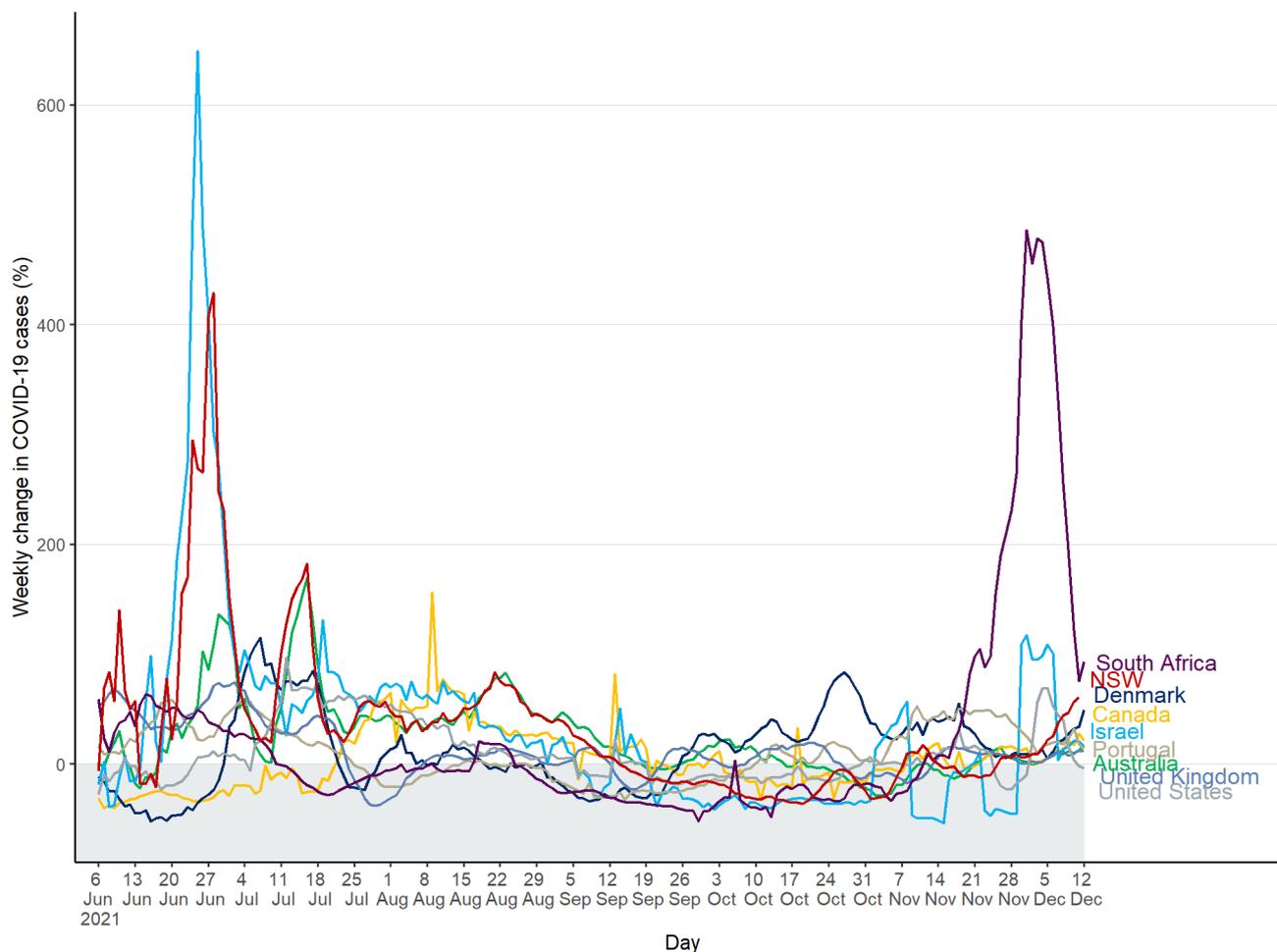
Note: Limited testing and delayed reporting likely result in underestimation of the actual number of confirmed cases.

Source: Data for the selected countries sourced from [Our World in Data](#).¹ Data for NSW sourced from NSW Health via Notifiable Conditions Information Management System.⁹ Both accessed 14 December 2021.

Weekly change in COVID-19 confirmed cases

Figure 2 shows the weekly percentage change of COVID-19 cases, Australia, United Kingdom, United States, Canada, Denmark, Israel, Portugal, and South Africa, from June to December 2021.

Figure 2: Weekly change in COVID-19 cases (select countries and NSW), June – December 2021



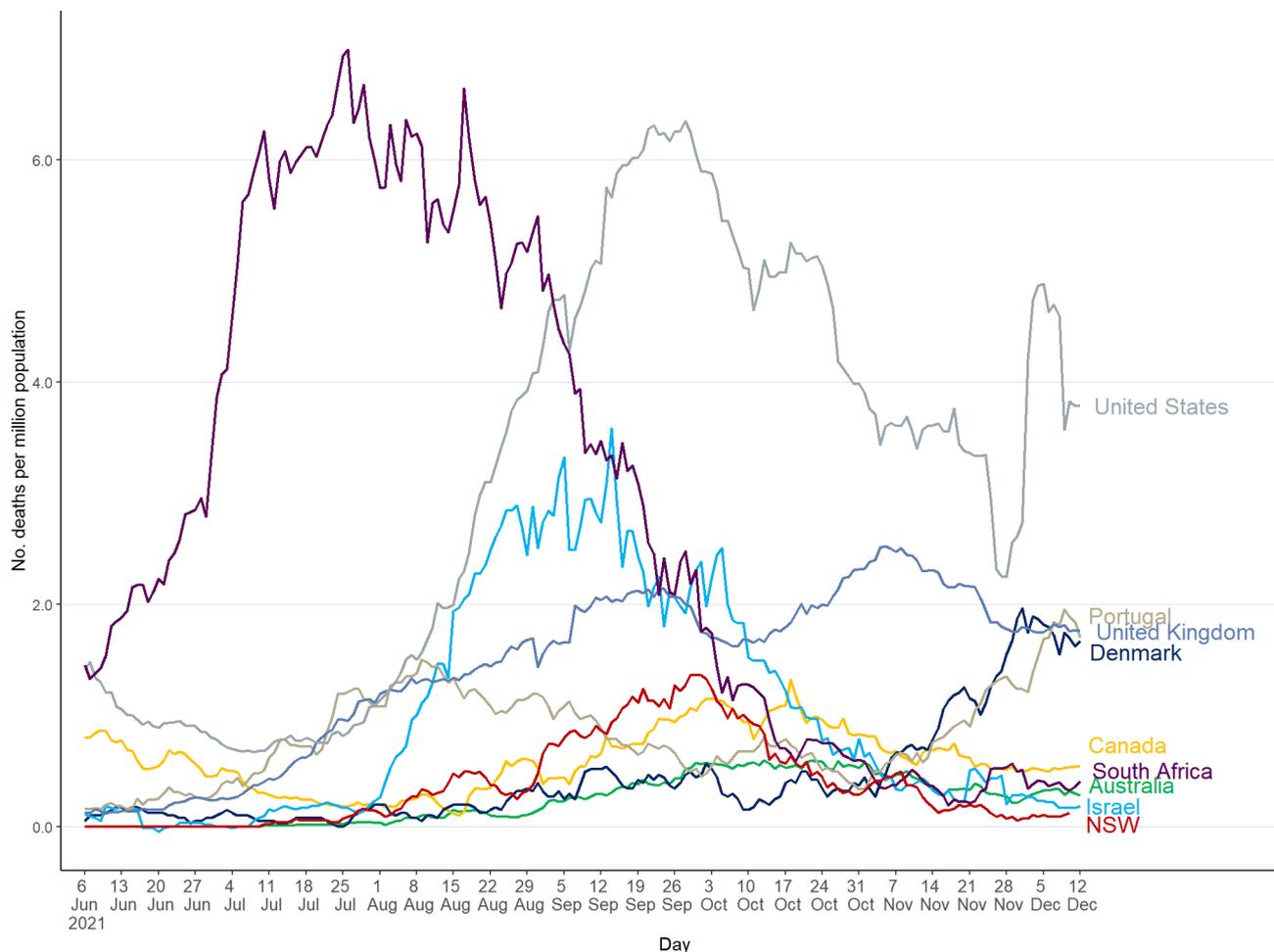
Note: The weekly change of COVID-19 cases on any given day is measured as the percentage change in the number of confirmed cases in the last seven days compared with the number in the previous seven days. Limited testing and delayed reporting likely result in underestimation of the actual number of confirmed cases. On 12th Dec, 37,875 new cases were reported in South Africa, comprising 19,840 retrospective cases and 18,035 new cases. This may represent an overestimation in the data seen on that date.

Source: Data for the selected countries sourced from [Our World in Data](#).¹ Data for NSW sourced from NSW Health via Notifiable Conditions Information Management System.⁹ Both accessed 14 December 2021.

COVID-19 mortality rates

Figure 3 shows the daily (rolling seven-day average) mortality rate per million population in NSW, Australia, United Kingdom, United States, Canada, Denmark, Israel, Portugal, and South Africa, from June to December 2021.

Figure 3: Daily mortality rates (select countries and NSW), June – December 2021



Note: Limited testing and challenges in the attribution of the cause of death means that the number of confirmed deaths may not be an accurate count of the true number of deaths from COVID-19.

Source: Data for the selected countries sourced from [Our World in Data](#).¹ Data for NSW sourced from NSW Health via the Notifiable Conditions Information Management System.⁹ Both accessed 14 December 2021.

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

The following graphs (figures 4-9) show COVID-19 cases and vaccination rates; hospitalisation and death rates; and the variant distribution for NSW, Australia, United Kingdom, United States, Canada 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 December 2021. They include:

- the daily rate per million population (rolling seven-day average) of confirmed COVID-19 cases
- the cumulative number of people who have received at least one vaccine dose (per 100 population)
- the cumulative number of people fully 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 fully vaccinated) is based on the full population (all ages) for all locations and countries, including NSW, to enable accurate comparability. USA, Canada and Israel commenced vaccinating children aged 5-11 years in November 2021. Australia and the United Kingdom are vaccinating the 12+ population only. The number of people fully vaccinated in Australia is only available from late May 2021 onwards.

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 December 2021.

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 June 2021 to December 2021.

Data for the variants of concern (Alpha (B.1.1.7), Beta (B.1.351), Gamma (P.1) and Delta (B.1.617.2)) are displayed for each selected country. Data on the recently identified variant Omicron (B.1.1.529) is not yet available in sufficient numbers for the selected countries but may become available in the coming weeks.

For most countries, weekly counts are shown; however, only monthly counts were available for Canada. No information on variants is available for NSW.

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.

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

NSW

Figure 4a: COVID-19 cases and vaccinations, NSW, March 2020 – December 2021

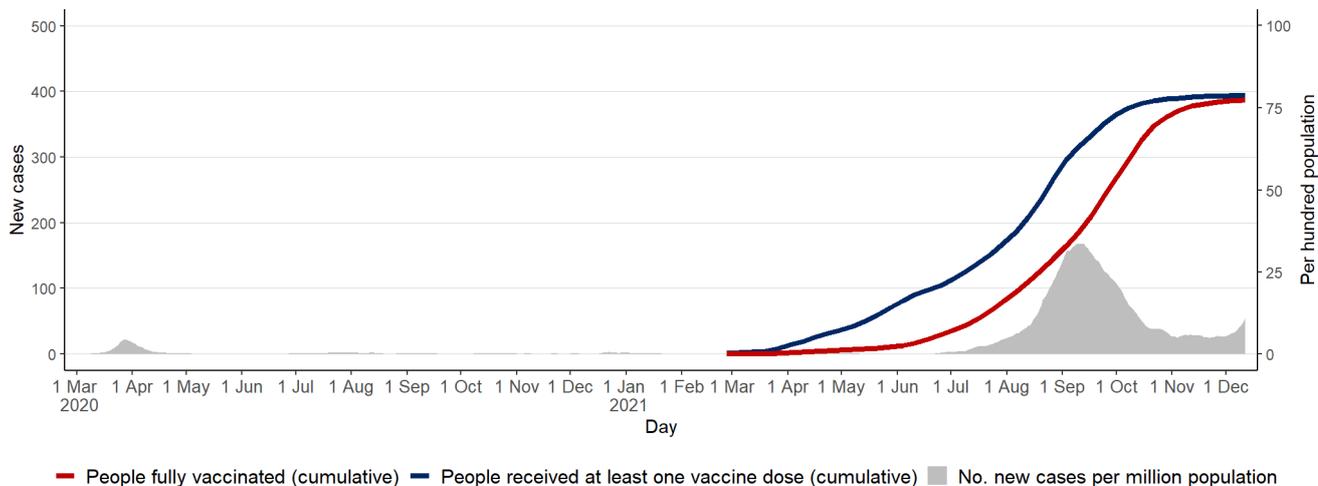
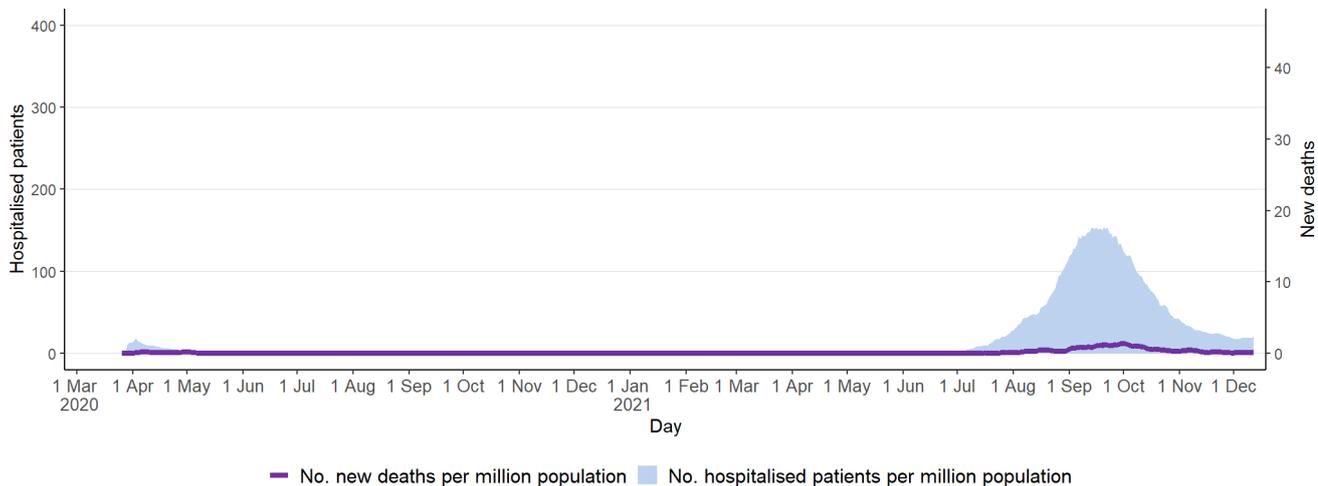


Figure 4b: COVID-19 hospitalisation and mortality rates, NSW, March 2020 – December 2021



Australia

Figure 5a: COVID-19 cases and vaccinations, Australia, March 2020 – December 2021

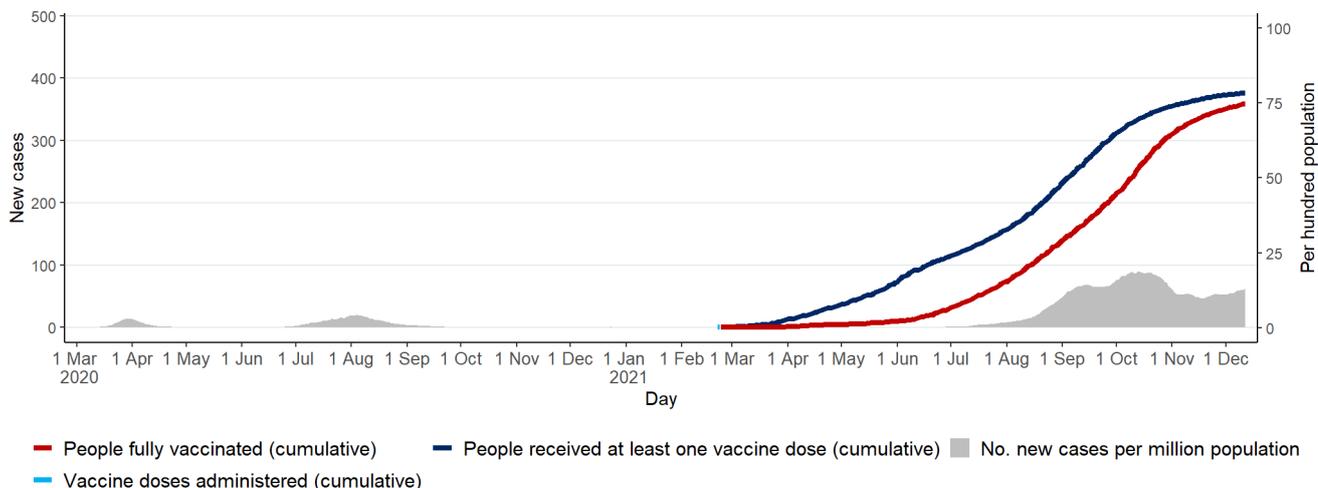


Figure 5b: COVID-19 hospitalisation and mortality rates, Australia, March 2020 – December 2021

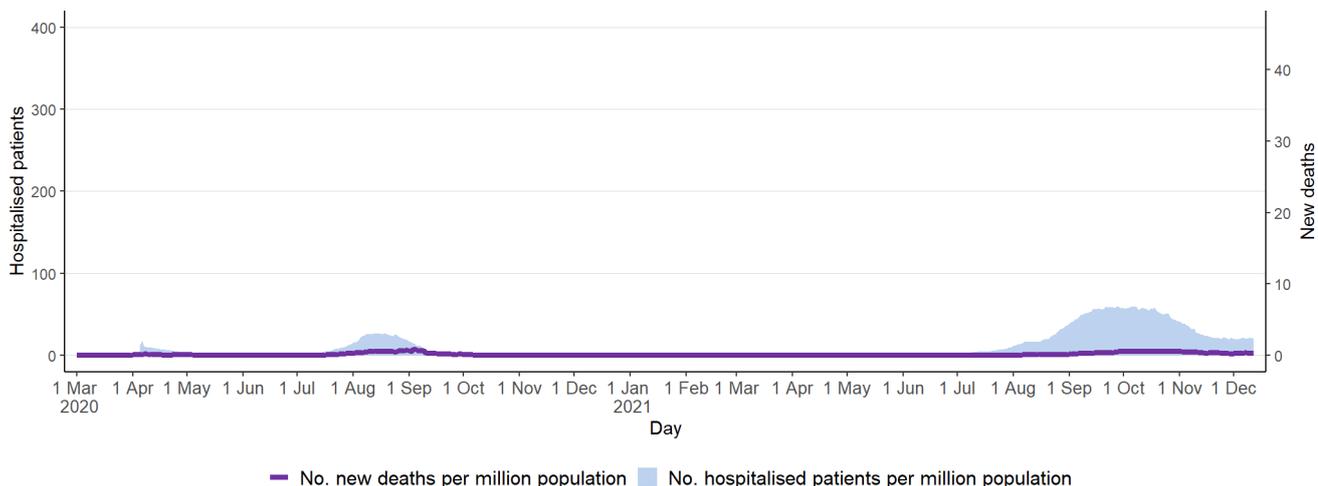
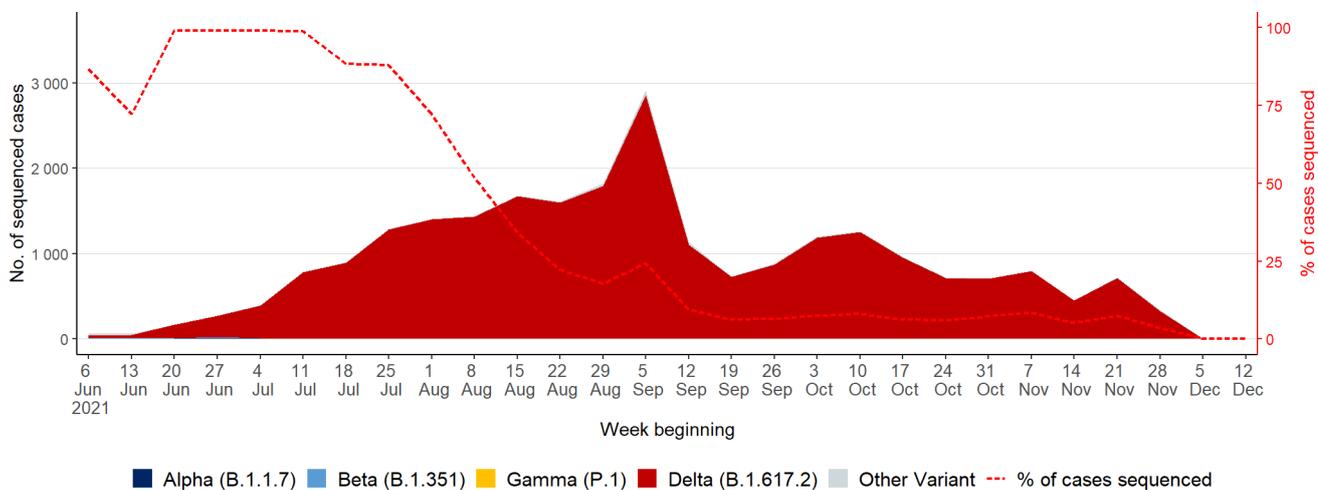


Figure 5c: COVID-19 variant distribution for sample of cases that have been sequenced, Australia, June – December 2021



United Kingdom

Figure 6a: COVID-19 cases and vaccinations, United Kingdom, March 2020 – December 2021

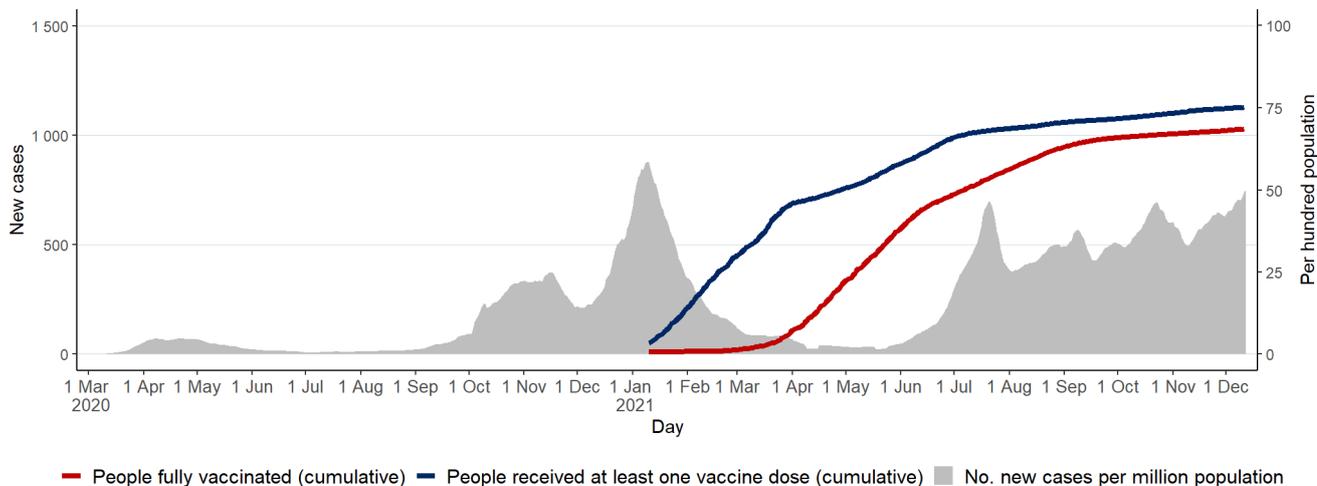


Figure 6b: COVID-19 hospitalisation and mortality rates, United Kingdom, March 2020 – December 2021

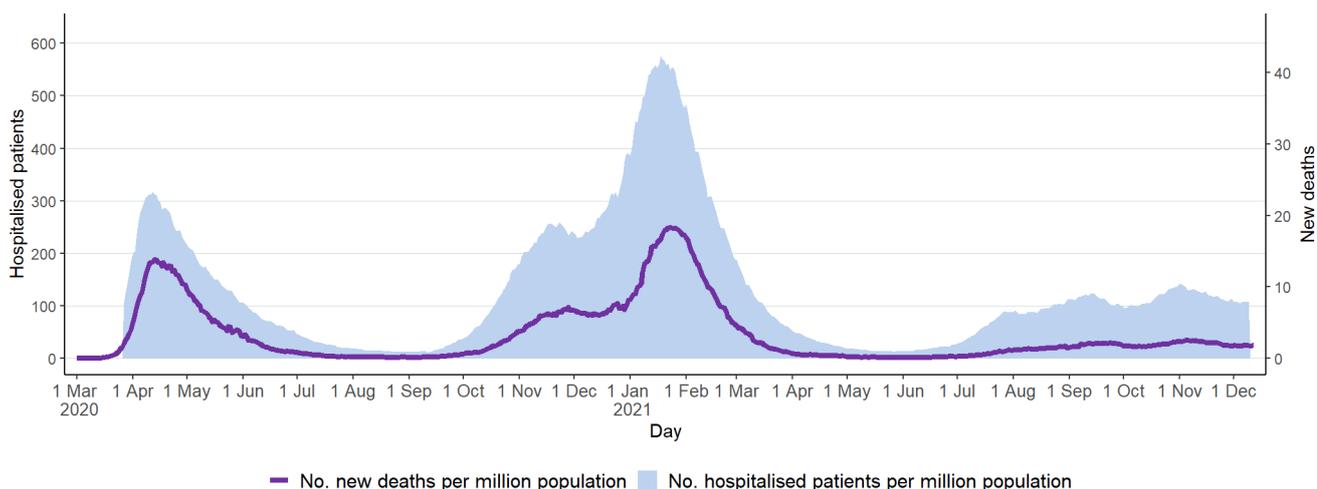
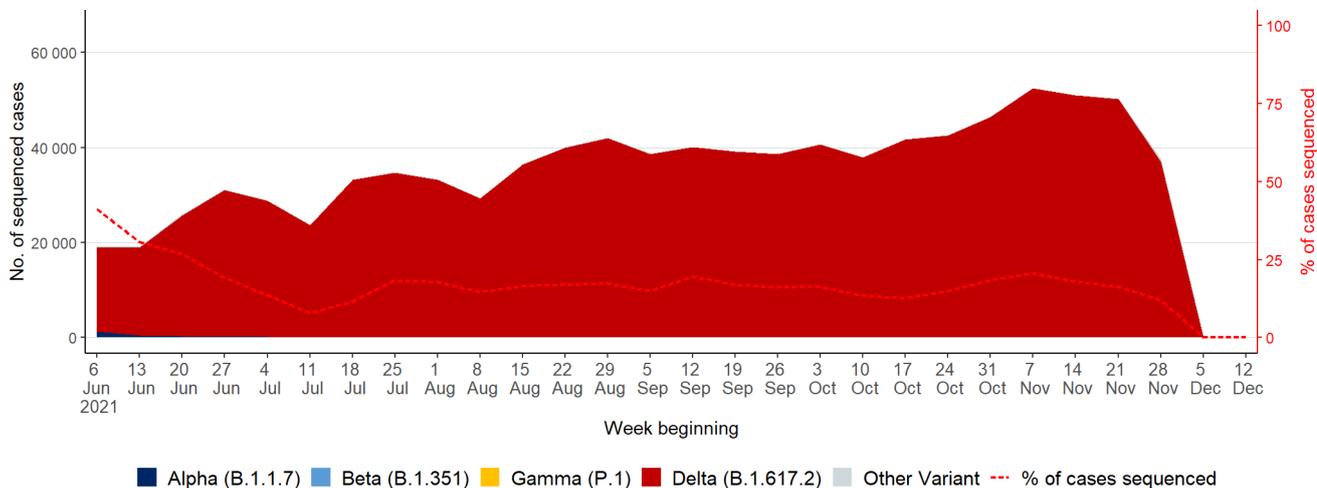


Figure 6c: COVID-19 variant distribution for sample of cases that have been sequenced, United Kingdom, June – December 2021



United States

Figure 7a: COVID-19 cases and vaccinations, United States, March 2020 – December 2021

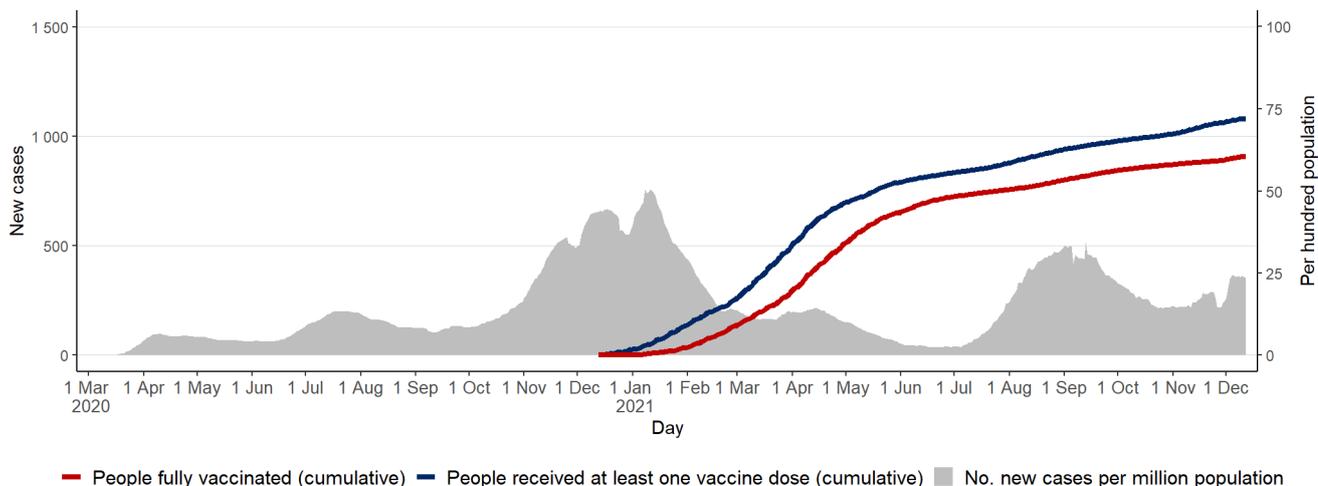


Figure 7b: COVID-19 hospitalisation and mortality rates, United States, March 2020 – December 2021

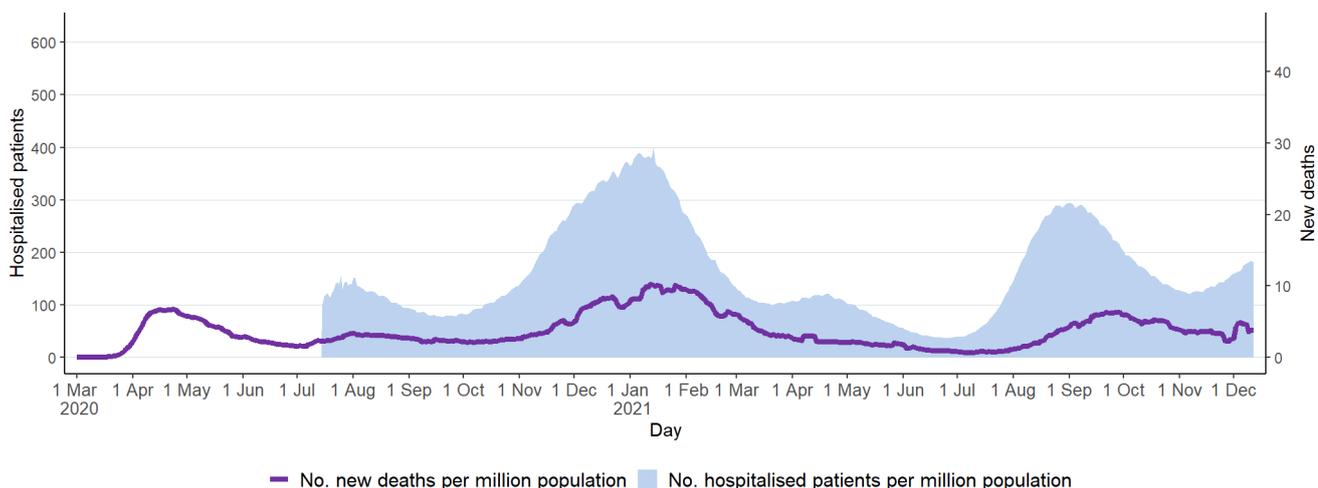
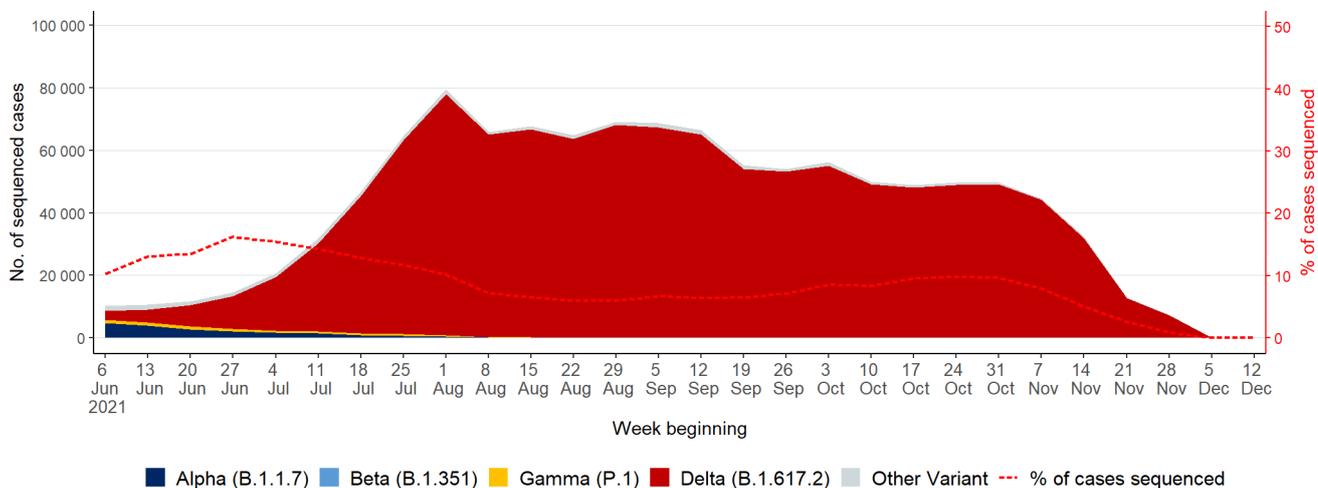


Figure 7c: COVID-19 variant distribution for a sample of cases that have been sequenced, United States, June – December 2021



Canada

Figure 8a: COVID-19 cases and vaccinations, Canada, March 2020 – December 2021

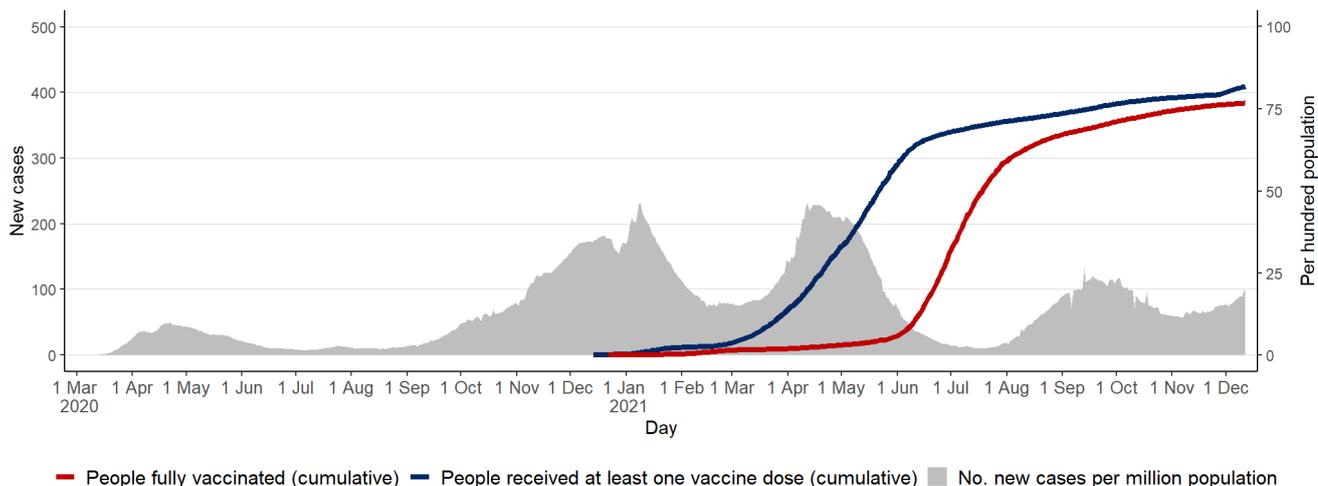


Figure 8b: COVID-19 hospitalisation and mortality rates, Canada, March 2020 – December 2021

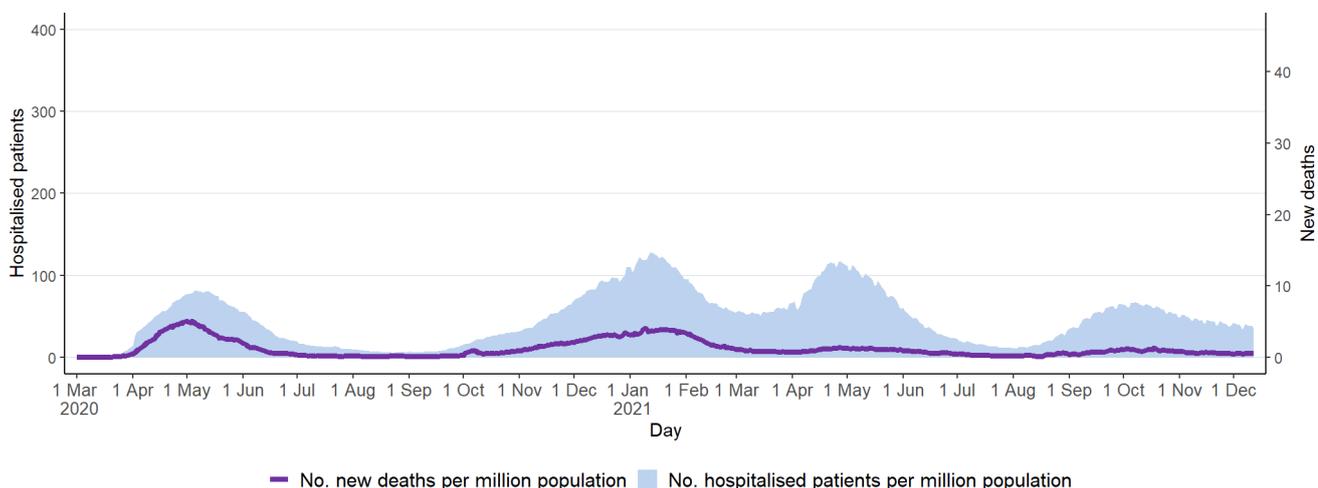
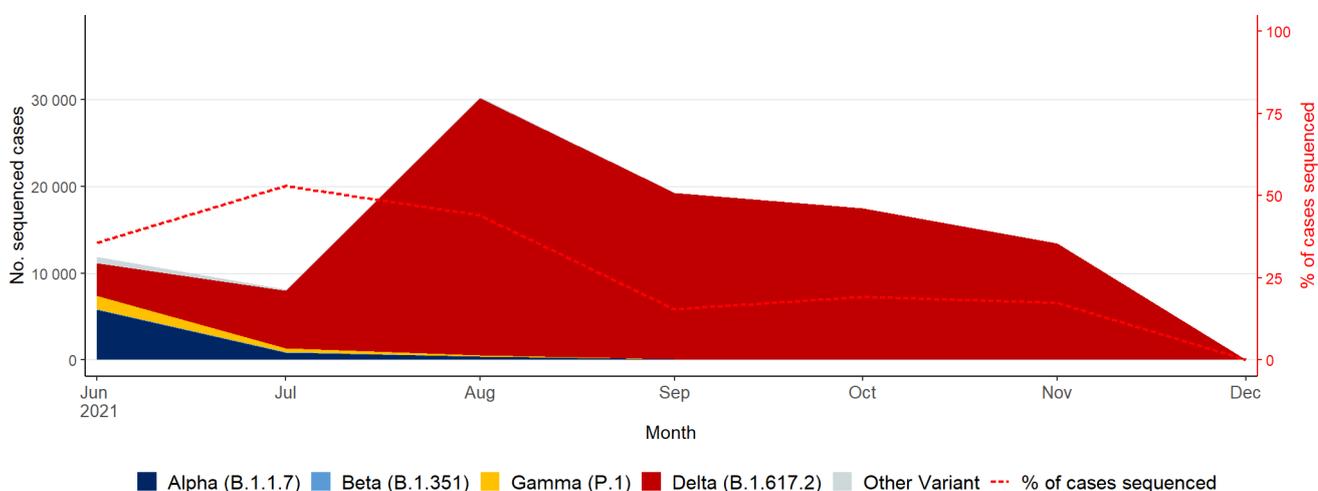


Figure 8c: COVID-19 variant distribution for a sample of cases that have been sequenced, Canada, June – December 2021



Israel

Figure 9a: COVID-19 cases and vaccinations, Israel, March 2020 – December 2021

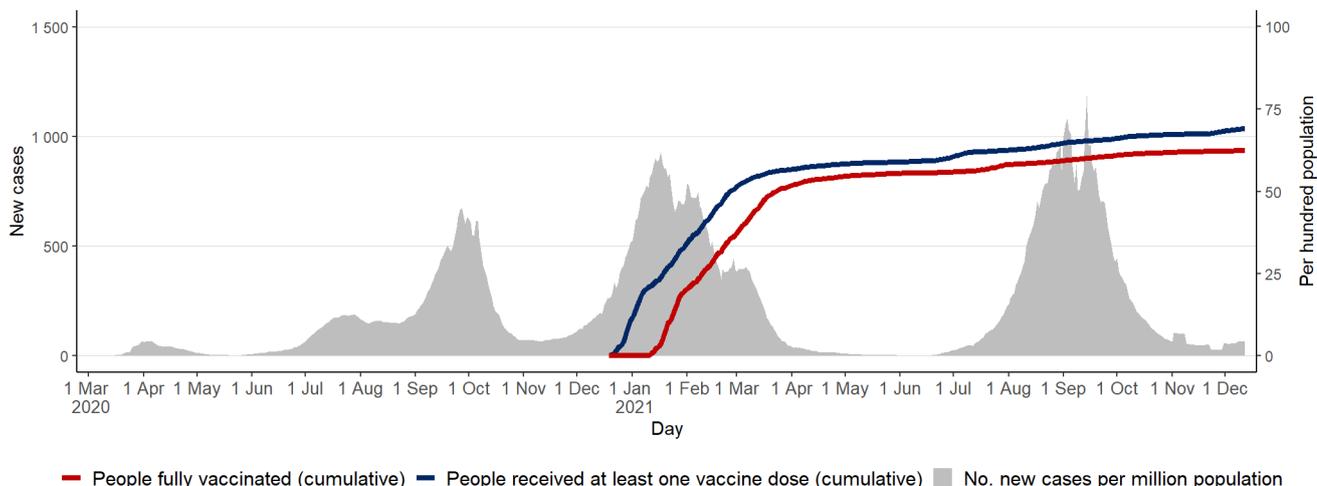


Figure 9b: COVID-19 hospitalisation and mortality rates, Israel, March 2020 – December 2021

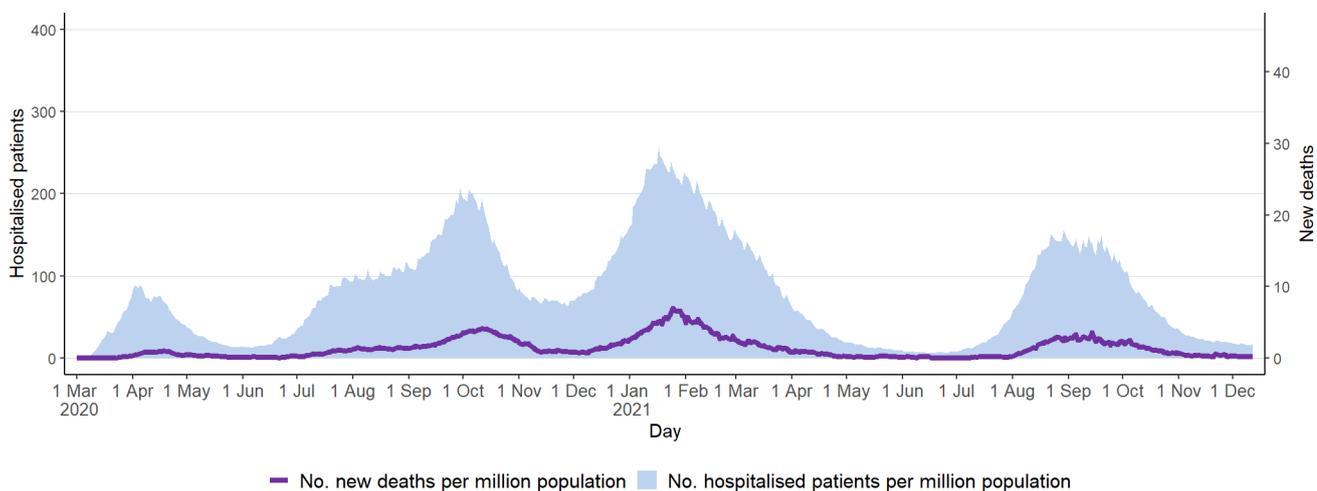
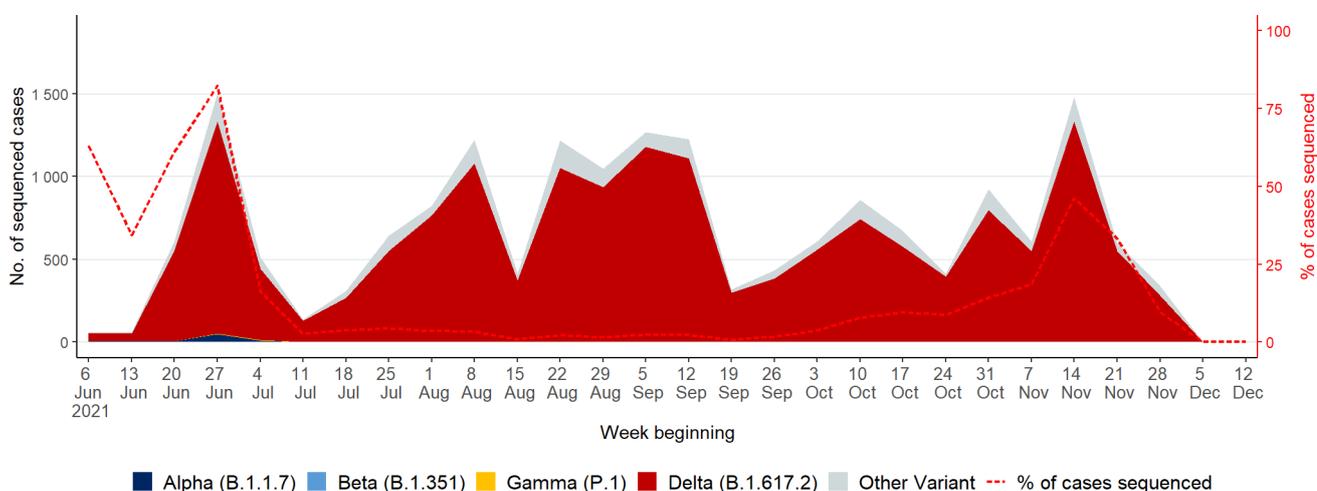


Figure 9c: COVID-19 variant distribution for a sample of cases that have been sequenced, Israel, June – December 2021



NSW key indicators

Notes

- Data are presented for all indicators for 12 December 2021 (previous week, 5 December 2021), data accessed on 14 December 2021.
- Average daily cases and average daily deaths are based on the seven days to 12 December 2021 (previous week, seven days to 5 December 2021).
- 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.¹⁰
- 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.¹¹
- 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 fully 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 14 December 2021.⁹
- Vaccination data sourced from NSW Health via the Australian Government Department of Health Australian Immunisation Register; accessed 14 December 2021.¹¹
- Hospital capacity, admissions and proportion of vaccinated cases data is sourced from NSW Health via the Patient Flow Portal and is taken from a 7pm snapshot, 12 December 2021; accessed 14 December 2021.¹²

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

Notes

- Data are presented for all indicators for 12 December 2021. If unavailable, the latest available data are shown.
- Average daily confirmed cases and average daily deaths are based on a seven-day average.
- Proportions for the fully 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.¹¹
- For NSW, estimated per million population rates for all indicators other than vaccination are calculated using population estimates at 30 June 2021 based on the Australian Bureau of Statistics estimated

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resident population and population projections based on data from the NSW Department of Planning, Industry and Environment.¹⁰

- Patients in hospital include both cases on the ward and in ICUs. For Japan, patients in hospital also include those receiving care at a dedicated facility or receiving treatment at home. Therefore, numbers are not directly comparable to other locations. 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, patients in hospital per million and patients in ICU per million, highest three rates are highlighted in red, lowest three rates highlighted in green
 - For 7-day average deaths per million, highest three rates are highlighted in red
 - For percentage of total population fully vaccinated, percentages greater than or equal to 75% are highlighted in green

Sources

- New cases for selected countries sourced from [Our World in Data](#).¹ New cases for NSW sourced from NSW Health via the Notifiable Conditions Information Management System.⁹ New cases for Ontario and Quebec sourced from [COVID-19 Tracker Canada](#).¹³ All accessed 14 December 2021.
- COVID-19 deaths for selected countries sourced from [Our World in Data](#).¹ COVID-19 deaths for NSW sourced from NSW Health via the Notifiable Conditions Information Management System.⁹ COVID-19 deaths for Ontario and Quebec sourced from [COVID-19 Tracker Canada](#).¹³ All accessed 14 December 2021.
- Vaccination data for selected countries sourced from [Our World in Data](#).¹ Vaccination data for NSW sourced from NSW Health via the Australian Government Department of Health Australian Immunisation Register.¹¹ Vaccination data for Ontario and Quebec sourced from [COVID-19 Tracker Canada](#).¹³ All accessed 14 December 2021.
- Data on the number of COVID-19 patients in hospital and ICUs were sourced on 14 December 2021 from:
 - [Our World in Data](#) for all countries (aside from Australia, Japan, and Singapore)¹
 - [COVID LIVE](#) for Australia, which verifies data against Australian state and territory government health departments¹⁴
 - [Singapore Ministry of Health](#) for Singapore¹⁵
 - [Japan Ministry of Health](#) for Japan¹⁶
 - [The National Institute for Communicable Diseases](#) for South Africa¹⁷
 - NSW Health via the Patient Flow Portal for NSW, taken from a 7pm snapshot, 12 December 2021¹²
 - [COVID-19 Tracker Canada](#) for Ontario and Quebec¹³

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

Notes

- 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.¹⁸
- 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 15th 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 is very low. As a result, this report does not indicate the true prevalence of the variants but rather a best estimate currently available.
- All data used to generate these graphs is subject to the GISAID [terms and conditions](#).¹⁹

Sources

- Data on variants enabled by [GISAID](#); accessed 14 December 2021.¹⁸
- Data on total number of cases and vaccinations for the selected countries are sourced from [Our World in Data](#); accessed 14 December 2021.¹
- Data on total number of cases for NSW are sourced from NSW Health via the Notifiable Conditions Information Management System.⁹ Data on vaccinations for NSW are sourced from NSW Health via the Australian Government Department of Health Australian Immunisation Register.¹¹ All accessed 14 December 2021.
- Data on the number of hospitalisations and new deaths for the United Kingdom, the United States, Canada and Israel were sourced from [Our World in Data](#).^{1, 14} Data on the number of hospitalisations and new deaths for Australia were sourced from [COVID LIVE](#), which verifies data against Australian state and territory government health departments.¹³ Data on the number of hospitalisations for NSW were sourced from NSW Health via the Patient Flow Portal.¹² Data on the number of deaths for NSW are sourced from NSW Health via the Notifiable Conditions Information Management System.⁹ All accessed 14 December 2021.

Method

The NSW Health Critical Intelligence Unit maintains living evidence tables on [COVID-19 vaccines](#) and [SARS-CoV-2 variants](#).^{20, 21} To inform this brief, a review of the daily evidence digest and Google searches were undertaken on 13 and 14 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).

The final COVID-19 monitor for 2021 will be released on 16 December and the service will resume on 20 January 2022.

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