COVID-19 Monitor

COVID-19 cases, variants, vaccines, hospitalisations and deaths   4 January 2022

Table 1: NSW key indicators, as at 2 January 2022*

Key indicators	Date: 2 Jan 2022 (change from: 26 Dec, 2021)
7-day average daily COVID-19 cases, week to 2 Jan	**16,656** (+11,207)
Growth factor for cases	1.17
7-day average daily COVID-19 deaths, week to 2 Jan	**3** (+2)
COVID-19 patients under the care of NSW Health, as at 2 Jan	**12,783** (+1,789)
COVID-19 patients in hospital, as at 2 Jan	**1,204** (+684)
Percentage who were unvaccinated	29.9%
Percentage who were fully vaccinated	67.4%
COVID-19 patients in intensive care units (ICUs), as at 2 Jan	**95** (+40)
Percentage who were unvaccinated	48.4%
Percentage who were fully vaccinated	50.5%
Percentage of total occupied ICU beds with COVID-19 patients	19.9% (+7.2%)
Rates per million	
7-day average daily COVID-19 cases, week to 2 Jan	1,979.3 (+1,331.7)
COVID-19 patients under the care of NSW Health, as at 2 Jan	1,519.1
COVID-19 patients in hospital, as at 2 Jan	143.1
Hospital rate among unvaccinated / fully vaccinated population (aged 12+)	578.2 / 83.4
COVID-19 patients in ICU, as at 2 Jan	11.3
ICU rate among unvaccinated / fully vaccinated population (aged 12+)	82.5 / 4.7
COVID-19 vaccination, as at 19 Dec 2021	
Percentage of eligible population (aged 12+) fully vaccinated	**91.6%**
Percentage of total population fully vaccinated	**77.6%**

See NSW key indicators: notes and sources at the end of this document.

International reflections

- Cases of COVID-19 are increasing in Australia, Canada, Denmark, Israel, Portugal, the United Kingdom and the United States; while cases are decreasing in Belgium and South Africa.

- NSW reported more than 23,000 new cases and 1,300 hospitalisations as the Omicron variant accounts for the majority of cases.

- Changes to testing and isolation have occurred with the rise in case numbers due to Omicron:
  - In NSW, a COVID-19 positive case needs to isolate for seven days and rapid antigen tests (RATs) are now advised for close contacts to reduce the pressure on polymerase chain reaction (PCR) testing capacity.
  - In the United States, isolation for a positive COVID-19 case has been reduced to five days.[4]
  - Canada also has a five-day isolation, and people with a positive RAT are not required to get a confirmatory PCR. Additional measures are being put in place for schools.

- Like many countries internationally, NSW has reinstated mask mandates.

- While transmission is a major concern for Omicron, hospital admissions are 50 to 70% less likely.

- In Australia, the Australian Technical Advisory Group on Immunisation (ATAGI) shortened the wait time for COVID-19 booster shots from five to four months.

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

	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	16,656	1,979.3	0.4	77.6%	1,203	143.0	94	11.2
Australia	26,012	1,008.7	0.4	76.7%	1,770	68.6	148	5.7
Belgium	9,605	825.7	2.2	75.6%	1,761	151.4	532	45.7
Canada	33,314	875.1	0.7	77.3%	3,289	86.4	574	15.1
Ontario	12,496	842.8	0.5	77.7%	1,232	83.1	248	16.7
Quebec	12,837	1,491.9	1.1	77.3%	1,396	162.2	181	21.0
Denmark	20,886	3,592.7	2.5	78.7%	709	122.0	76	13.1
Israel	4,308	463.6	0.0	63.8%	264	28.4	46	5.0
Japan	380	3.0	0.0	78.3%	3,328	26.4	52	0.4
Portugal	20,604	2,026.4	1.6	89.5%	943	92.7	152	14.9
Singapore	361	66.2	0.2	87.0%	183	31.0	17	2.9
South Africa	8,414	140.1	1.0	26.4%	9,283	154.6	702	11.7
United Kingdom	192,570	2,823.3	2.1	69.5%	11,918	174.7	868	12.7
United States	403,385	1,211.7	3.7	61.5%	97,463	292.8	18,936	56.9

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 January 2022.

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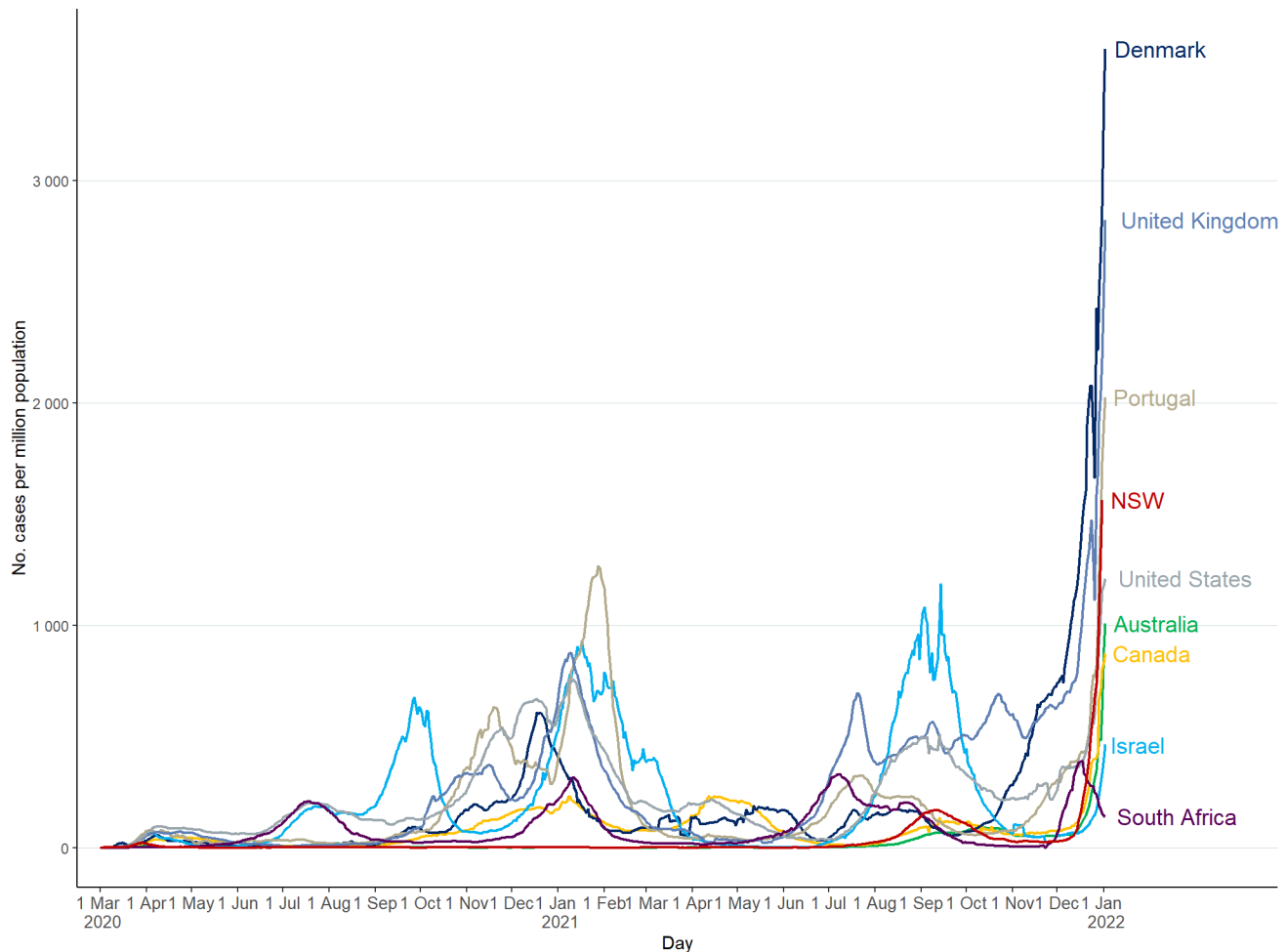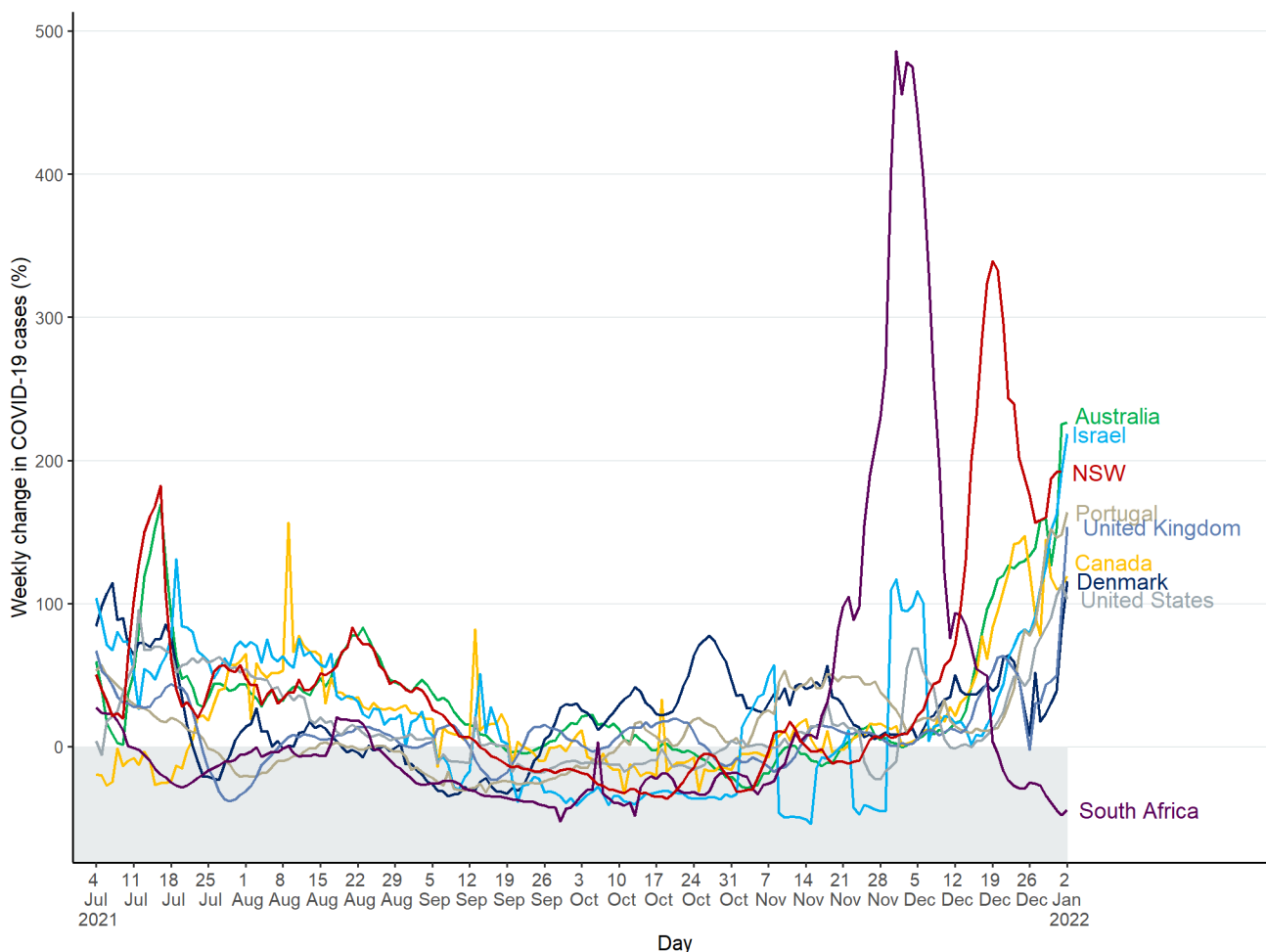

Note: Limited testing and delayed reporting likely result in underestimated actual number of confirmed cases. Data for some countries may appear unstable at times (e.g. over the Christmas and New Year period) due to reasons such as reduced testing and unavailability of accurate data from the various countries.

Source: Data for the selected countries sourced from Our World in Data.[9] Data for NSW sourced from NSW Health via Notifiable Conditions Information Management System.[10] Both accessed 4 January 2022.

Weekly change in COVID-19 confirmed cases

Figure 2 shows the weekly percentage change of COVID-19 cases for NSW, Australia, United Kingdom, United States, Canada, Denmark, Israel, Portugal and South Africa, from July 2021 to January 2022.

Figure 2: Weekly change in COVID-19 cases (select countries and NSW), July 2021 – January 2022


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. 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.

Source: Data for the selected countries sourced from Our World in Data.[9] Data for NSW sourced from NSW Health via Notifiable Conditions Information Management System.[10] Both accessed 4 January 2022.

COVID-19 variant distribution for sequenced cases

Figure 3 shows the variant distribution for analysed COVID-19 sequences for NSW, Australia, United Kingdom, United States, Canada, Denmark, Israel, Portugal and South Africa, in the two weeks to 27 December 2021.

Figure 3: Variant distribution among sequenced cases (select countries and NSW), 14 – 27 December 2021
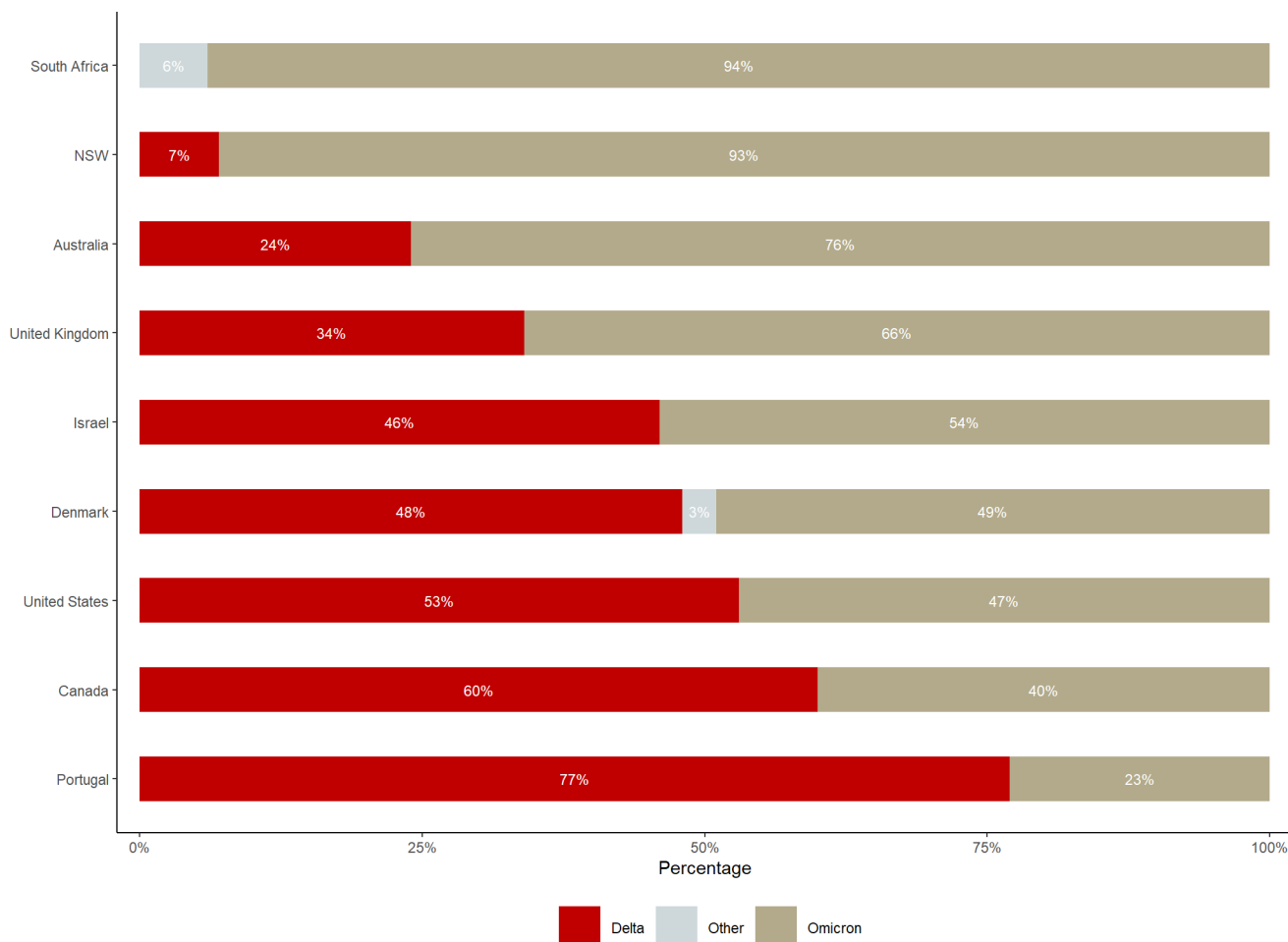
Note: Only a non-random sample of cases are sequenced. For many countries, the proportion of cases sequenced may be very low. As a result, the data may not indicate the true prevalence of the variants but rather a best estimate currently available. Furthermore, cases suspected to be recently-discovered or actively-monitored variants are likely to be prioritised for sequencing, which may result in overrepresentation of these variants.

In NSW: Identification of the Omicron variant is based on the S gene target failure method in PCR testing. Isolates with an S-gene target failure are presumed Omicron and those with non-failure are presumed Delta.

Source: Data for the selected countries sourced from Our World in Data.[9] Data for NSW sourced from NSW Health via Notifiable Conditions Information Management System.[10] Both accessed 4 January 2022.

COVID-19 mortality rates

Figure 4 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 July 2021 to January 2022.

Figure 4: Daily mortality rates (select countries and NSW), July 2021 –January 2022
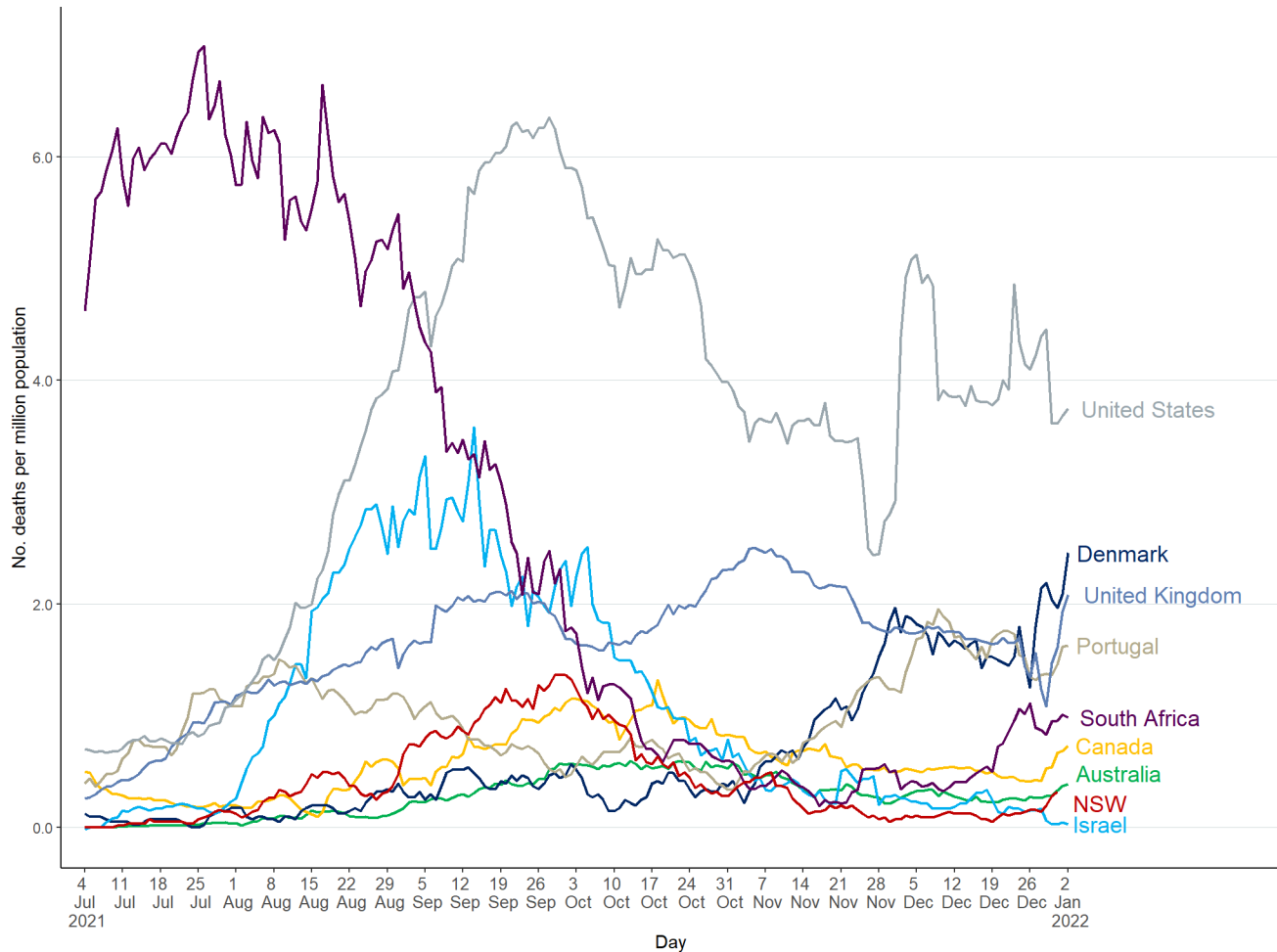
Note: Limited testing and challenges in the attribution of the cause of death means the number of confirmed deaths may not be an accurate count of the true number of deaths from COVID-19. Data for some countries may appear unstable at times (e.g. over the Christmas and New Year period) due to reasons such as reduced testing and unavailability of accurate data from the various countries.

Source: Data for the selected countries sourced from Our World in Data.[9] Data for NSW sourced from NSW Health via the Notifiable Conditions Information Management System.[10] Both accessed 4 January 2022.

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

The following graphs (figures 5-10) 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 January 2022. 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. At the time of reporting, the USA, Canada and Israel commenced vaccinating children aged 5-11 years in November 2021. Australia and the UK 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 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 were 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.

*Please see further COVID-19 cases: notes and sources at the end of this document.

NSW

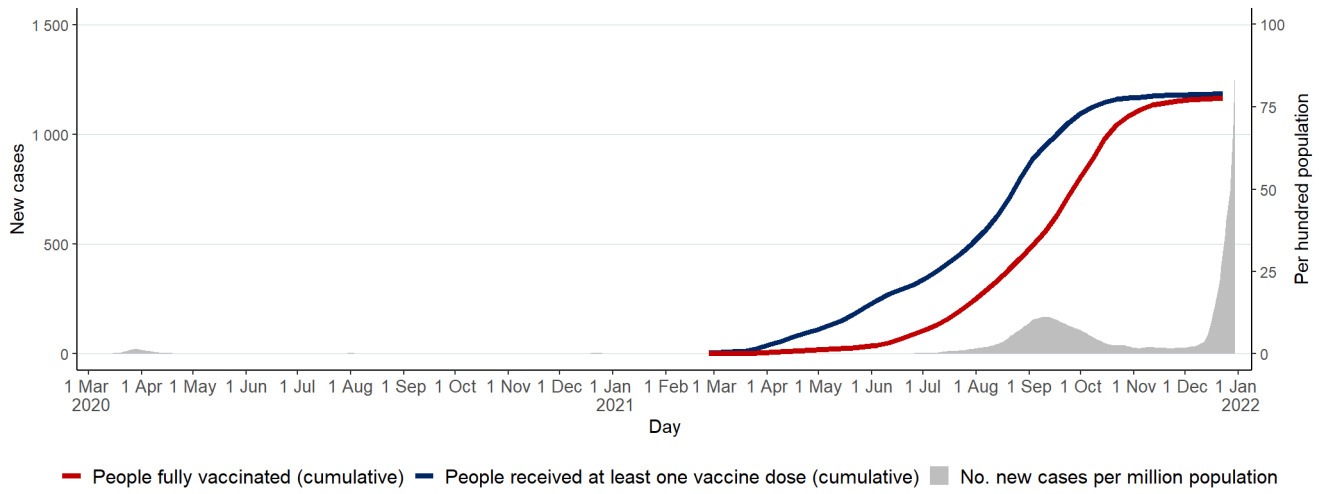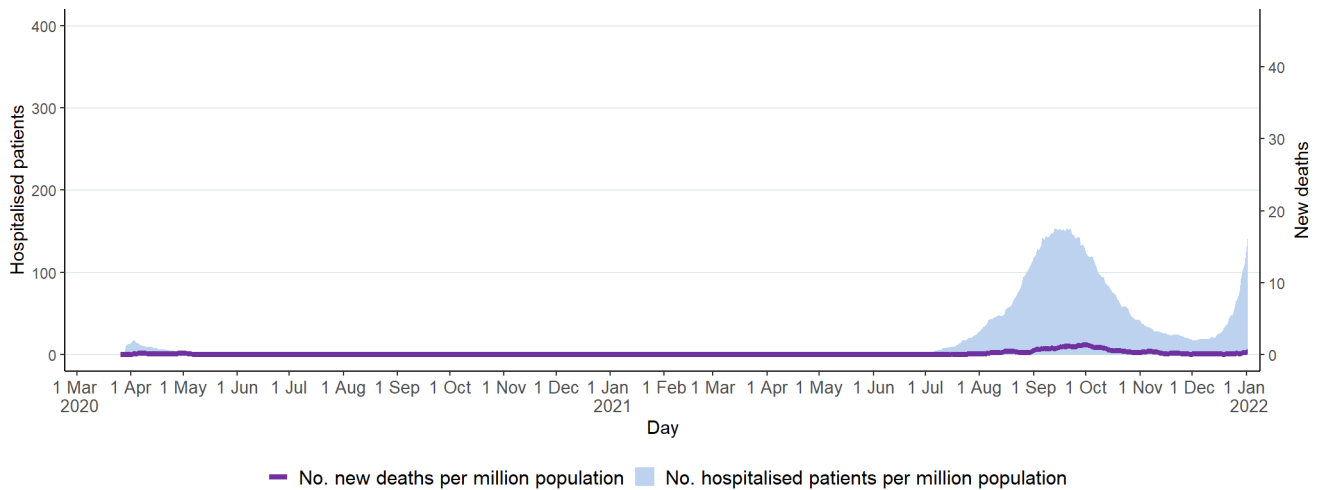## Figure 5a: COVID-19 cases and vaccinations, NSW, March 2020 – January 2022

Legend: People fully vaccinated (cumulative) — People received at least one vaccine dose (cumulative) — No. new cases per million population

Figure 5b: COVID-19 hospitalisation and mortality rates, NSW, March 2020 – January 2022

Legend: No. new deaths per million population — No. hospitalised patients per million population

Australia

Figure 6a: COVID-19 cases and vaccinations, Australia, March 2020 – January 2022

- People fully vaccinated (cumulative)
- People received at least one vaccine dose (cumulative)
- No. new cases per million population
- Vaccine doses administered (cumulative)
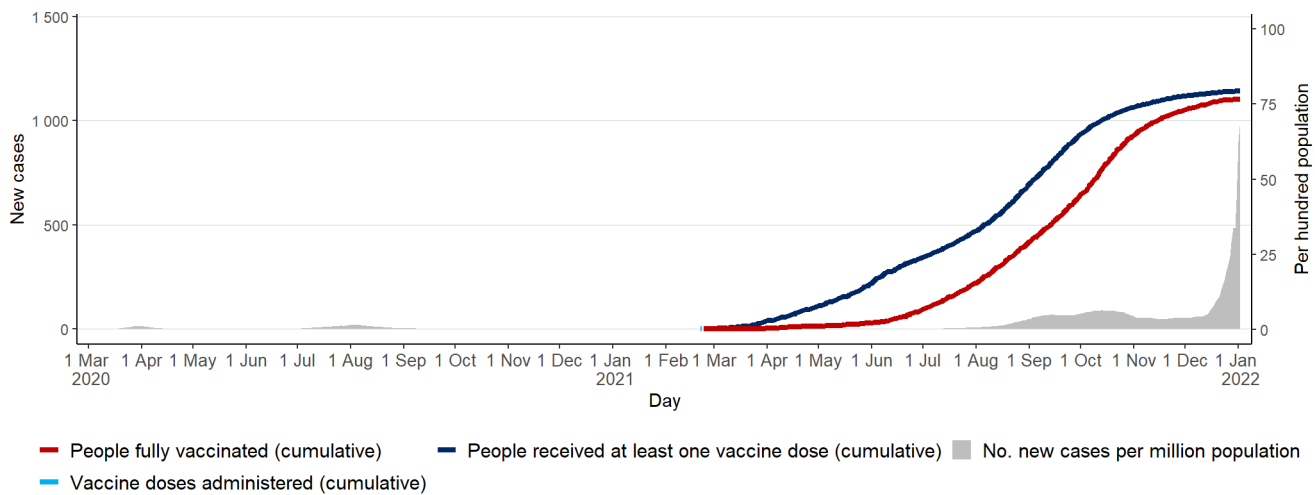
Figure 6b: COVID-19 hospitalisation and mortality rates, Australia, March 2020 – January 2022

- No. new deaths per million population
- No. hospitalised patients per million population
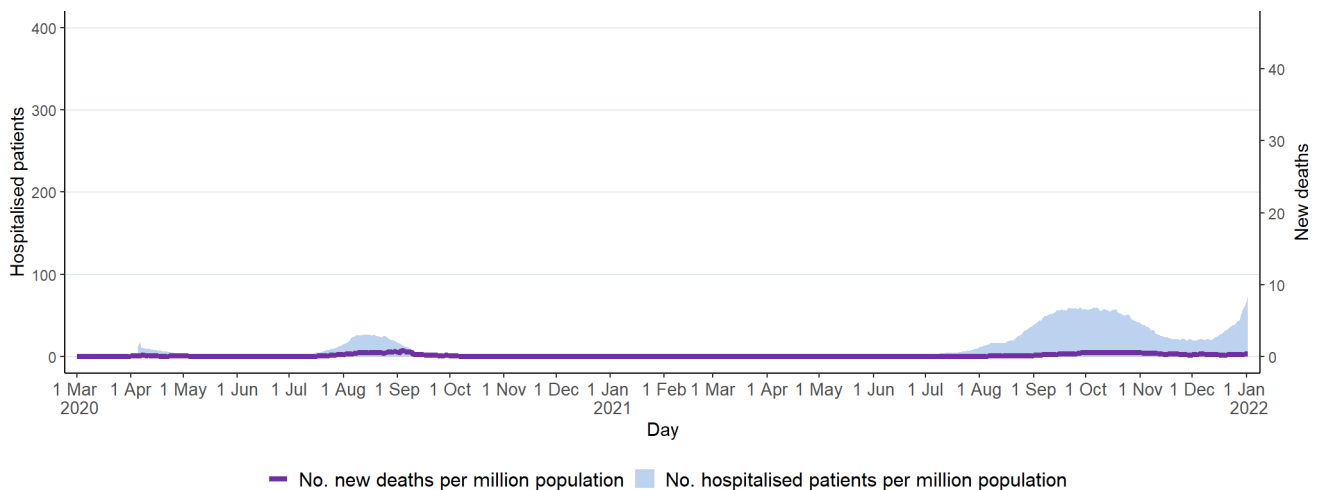
Figure 6c: COVID-19 variant distribution for sample of cases that have been sequenced, Australia, June 2021 – January 2022

- Alpha (B.1.1.7)
- Beta (B.1.351)
- Gamma (P.1)
- Delta (B.1.617.2)
- Omicron (B.1.1.529)
- Other Variant
- % of cases sequenced
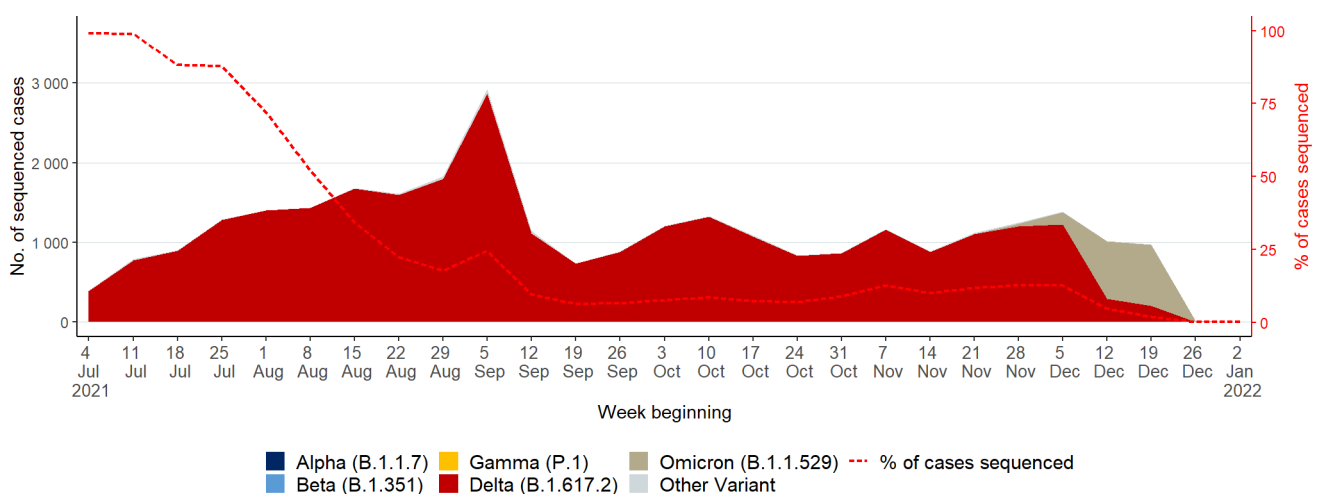
United Kingdom

Figure 7a: COVID-19 cases and vaccinations, United Kingdom, March 2020 – January 2022
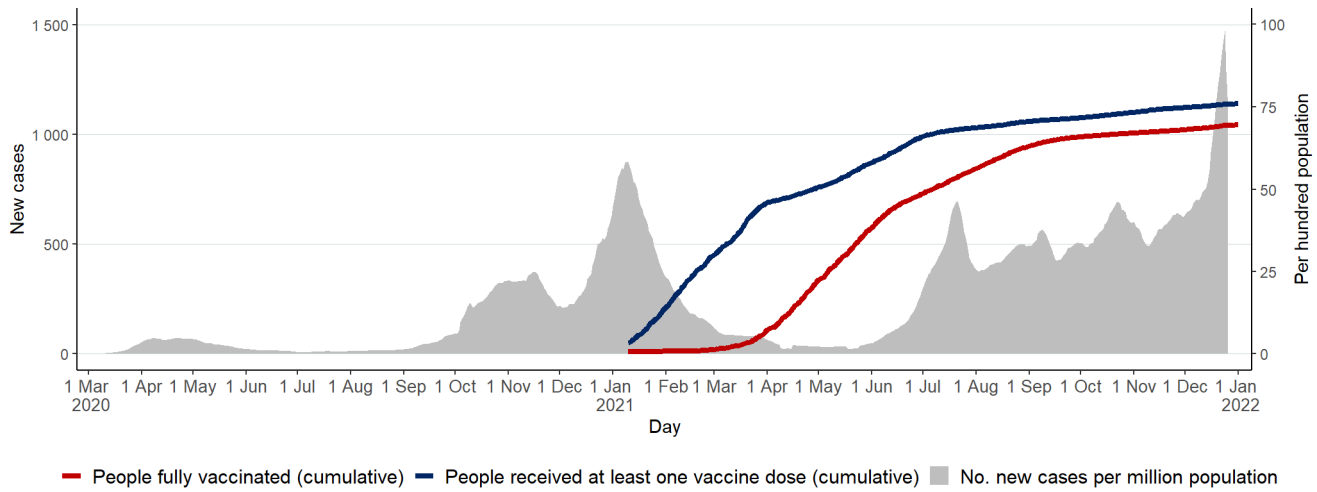

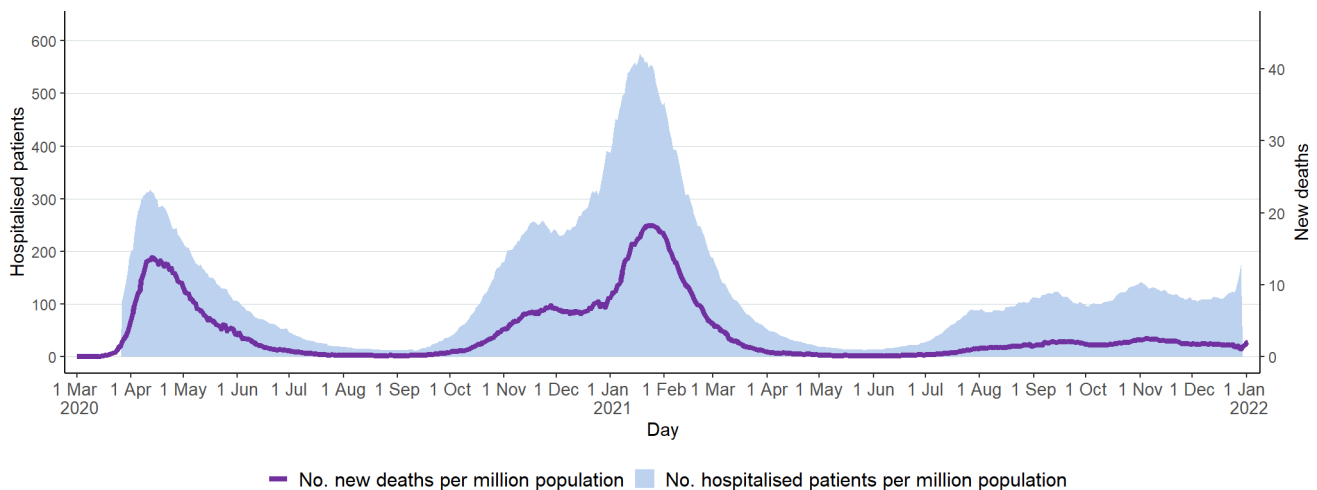**Figure 7b: COVID-19 hospitalisation and mortality rates, United Kingdom, March 2020 – January 2022**
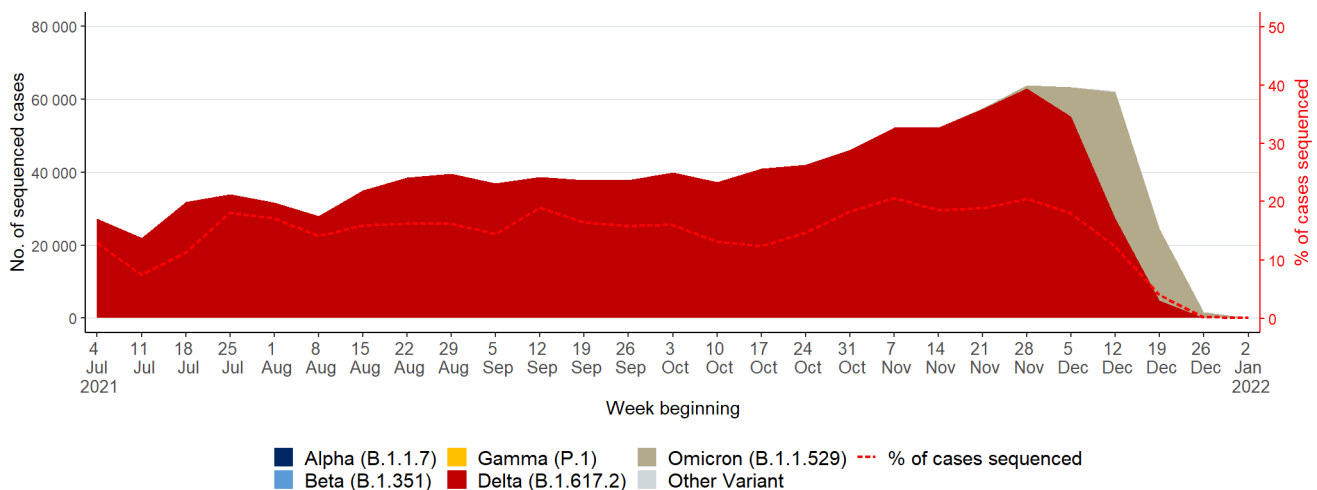

Figure 7c: COVID-19 variant distribution for sample of cases that have been sequenced, United Kingdom, July 2021 – January 2022

United States

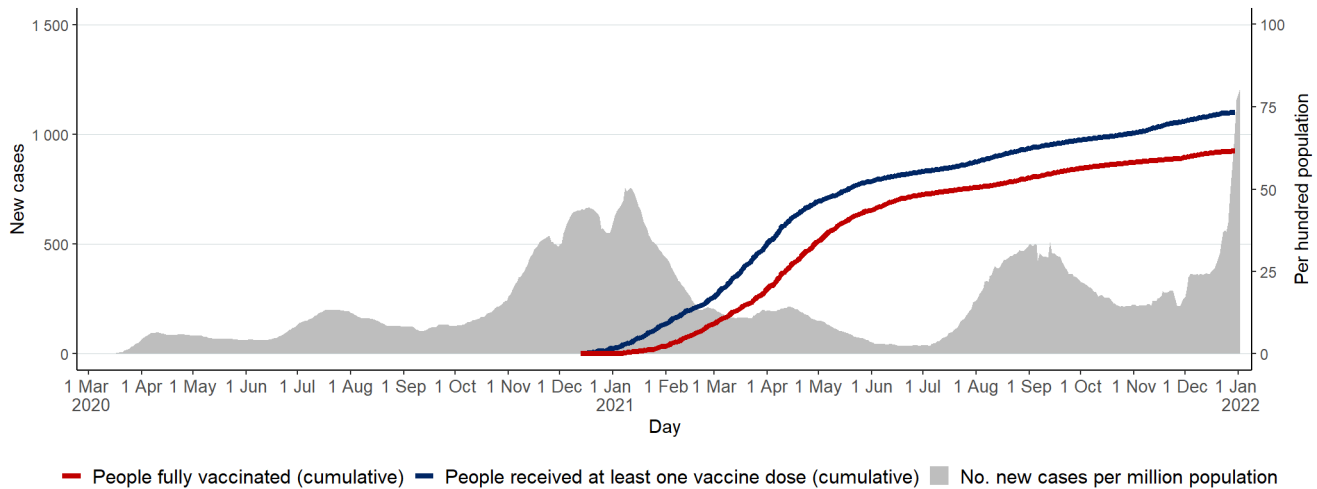**Figure 8a: COVID-19 cases and vaccinations, United States, March 2020 – January 2022**

Legend: People fully vaccinated (cumulative) — People received at least one vaccine dose (cumulative) — No. new cases per million population

Figure 8b: COVID-19 hospitalisation and mortality rates, United States, March 2020 – January 2022

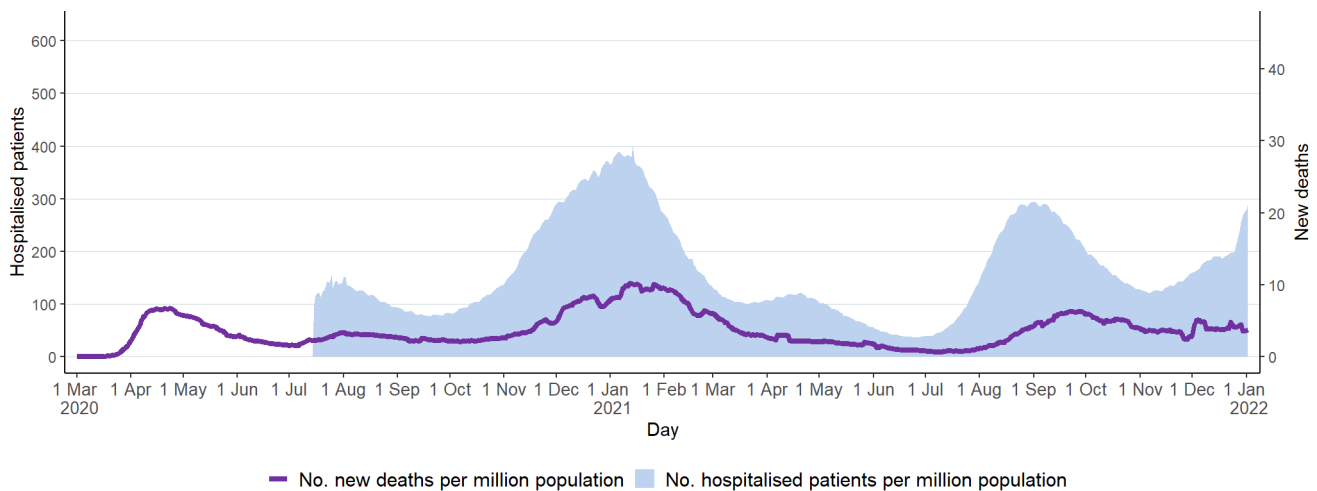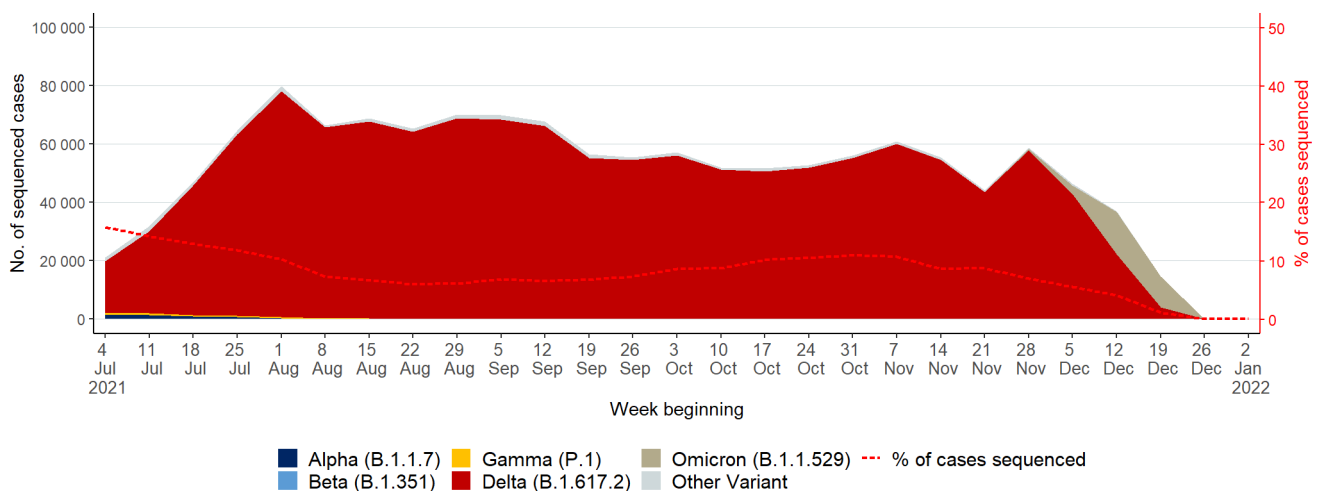Legend: No. new deaths per million population — No. hospitalised patients per million population

Figure 8c: COVID-19 variant distribution for a sample of cases that have been sequenced, United States, July 2021 – January 2022

Legend: Alpha (B.1.1.7) — Gamma (P.1) — Omicron (B.1.1.529) — % of cases sequenced — Beta (B.1.351) — Delta (B.1.617.2) — Other Variant

Canada

Figure 9a: COVID-19 cases and vaccinations, Canada, March 2020 – January 2022

Legend: People fully vaccinated (cumulative) — People received at least one vaccine dose (cumulative) — No. new cases per million population

Figure 9b: COVID-19 hospitalisation and mortality rates, Canada, March 2020 – January 2022

Legend: No. new deaths per million population — No. hospitalised patients per million population

Figure 9c: COVID-19 variant distribution for a sample of cases that have been sequenced, Canada, July 2021 – January 2022

Legend: Alpha (B.1.1.7) — Gamma (P.1) — Omicron (B.1.1.529) — % of cases sequenced; Beta (B.1.351) — Delta (B.1.617.2) — Other Variant

Israel

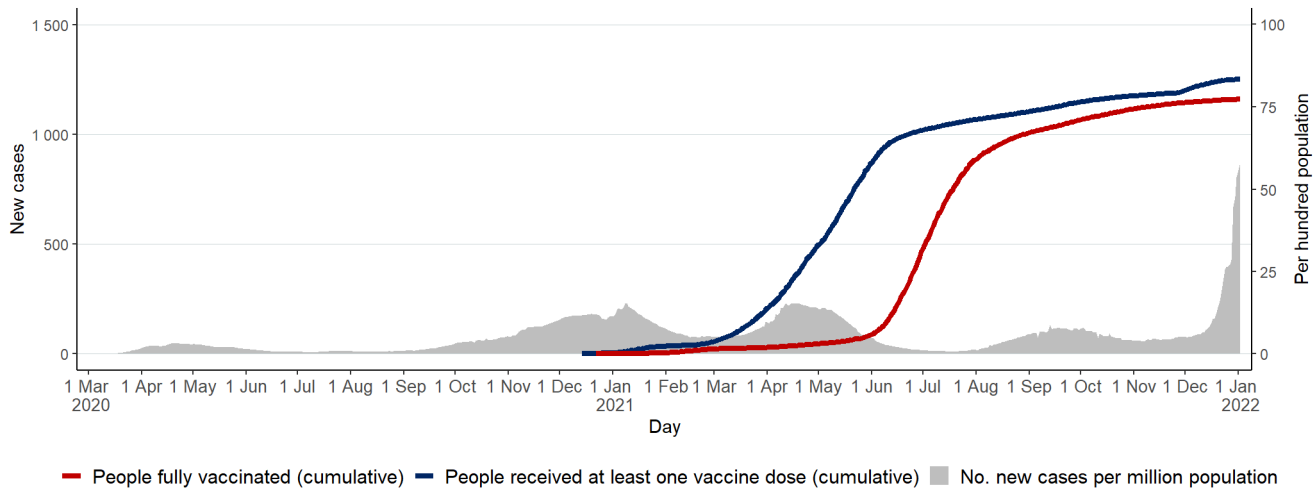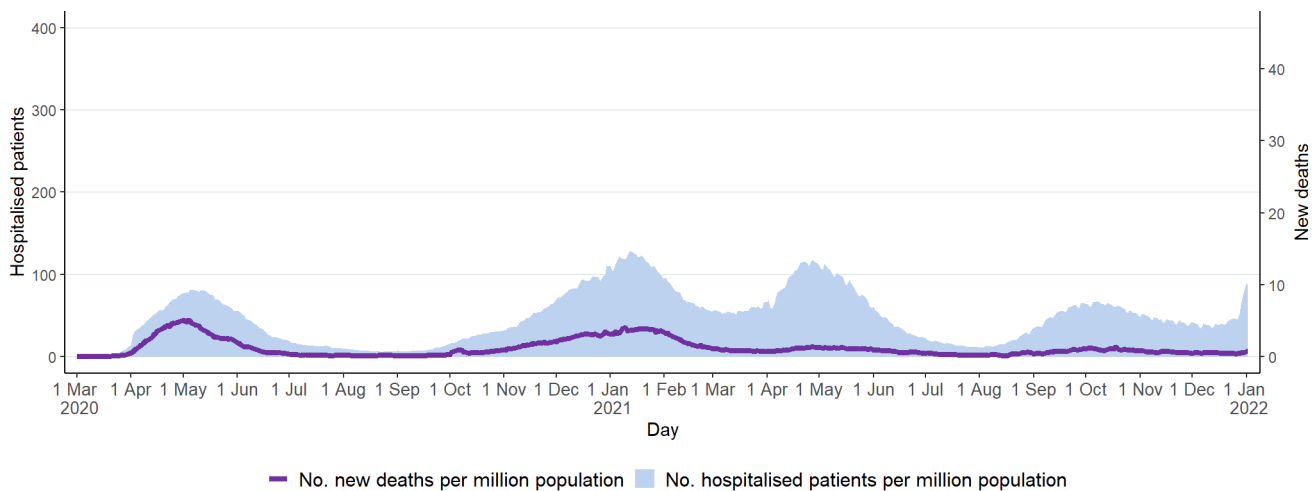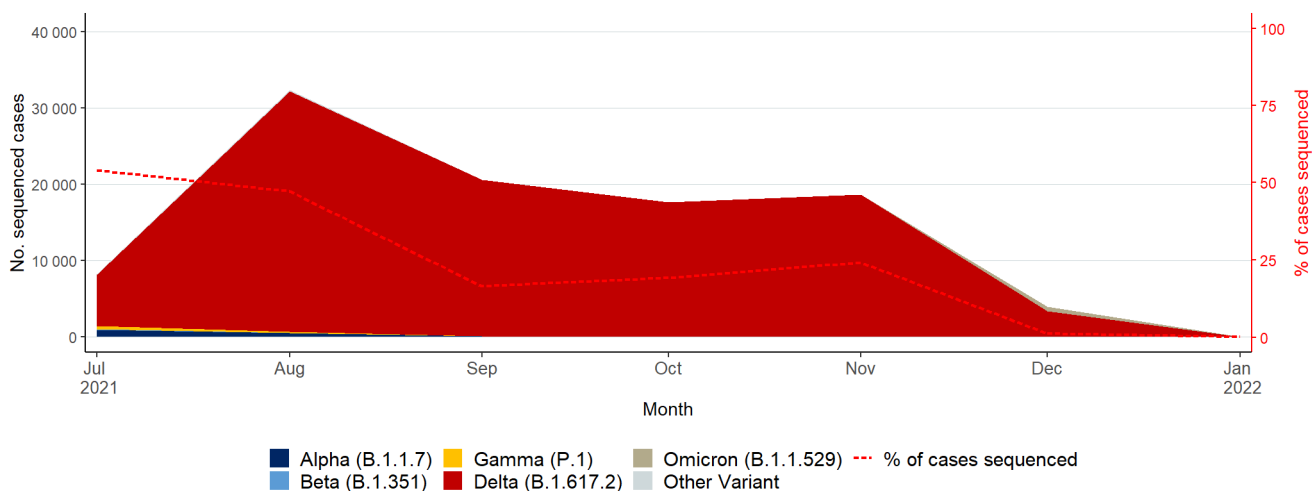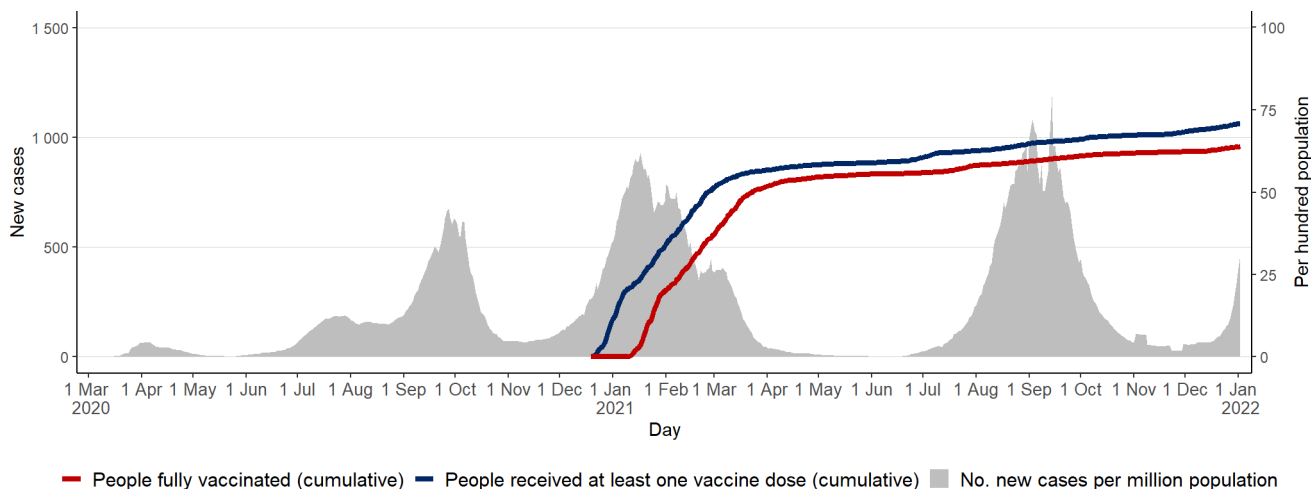### Figure 10a: COVID-19 cases and vaccinations, Israel, March 2020 – January 2022

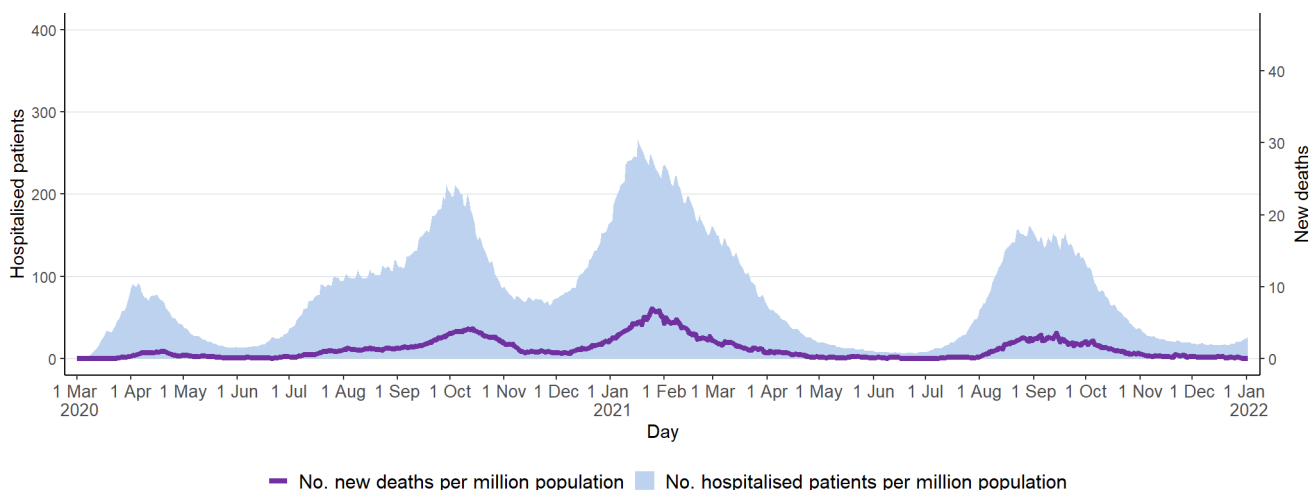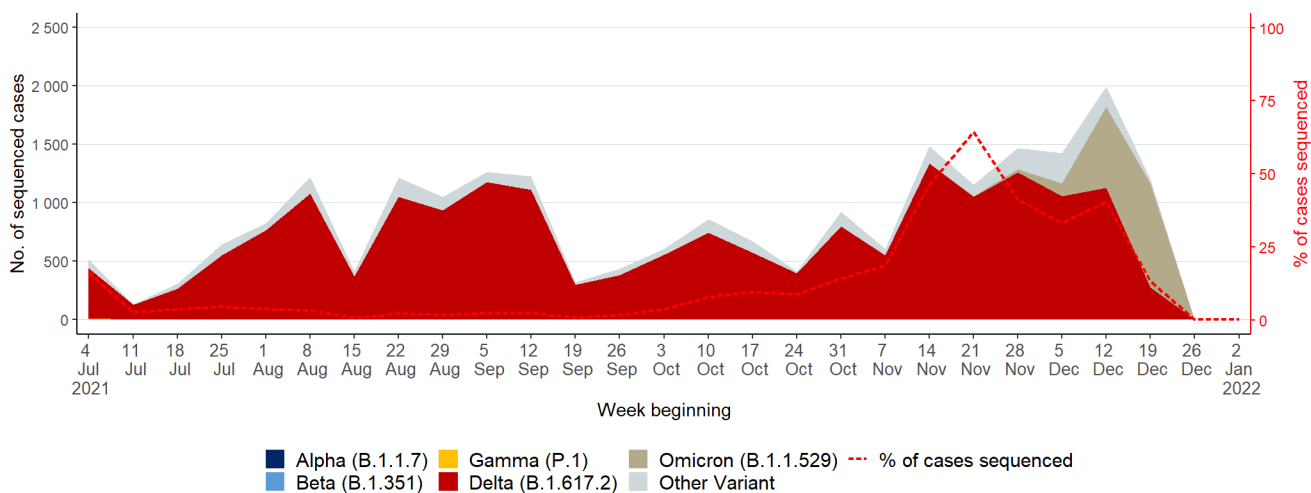### Figure 10b: COVID-19 hospitalisation and mortality rates, Israel, March 2020 – January 2022

Figure 10c: 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 2 January 2022 (previous week, 26 December 2021), with data accessed on 4 January 2022.

- Average daily cases and average daily deaths are based on the seven days to 2 January 2022 (previous week, seven days to 26 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.[11]

- 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.[12]

- 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 4 January 2022.[10]

- Vaccination data sourced from NSW Health via the Australian Government Department of Health Australian Immunisation Register; accessed 4 January 2022.[12]

- Hospital capacity, admissions and proportion of vaccinated cases data are sourced from NSW Health via the Patient Flow Portal and is taken from a 7pm snapshot, 2 January 2022; accessed 4 January 2022.[13]

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

Notes

- Data are presented for all indicators as at 2 January 2022. 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.[12]

- 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.[11]

- 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:

  o For 7-day average cases per million, rates over 1,000 per million are highlighted in red, and the lowest three rates highlighted in green.

  o For 7-day average deaths per million, the highest three rates are highlighted in red.

  o For patients in hospital per million, rates over 150 per million are highlighted in red, and the lowest three rates highlighted in green.

  o For patients in ICU per million, rates over 15 per million are highlighted in red, and the lowest three rates highlighted in green.

  o 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.[9] New cases for NSW sourced from NSW Health via the Notifiable Conditions Information Management System.[10] New cases for Ontario and Quebec sourced from COVID-19 Tracker Canada.[14] All accessed 4 January 2022.

- COVID-19 deaths for selected countries sourced from Our World in Data.[9] COVID-19 deaths for NSW sourced from NSW Health via the Notifiable Conditions Information Management System.[10] COVID-19 deaths for Ontario and Quebec sourced from COVID-19 Tracker Canada.[14] All accessed 4 January 2022

- Vaccination data for selected countries sourced from Our World in Data.[9] Vaccination data for NSW sourced from NSW Health via the Australian Government Department of Health Australian Immunisation Register.[12] Vaccination data for Ontario and Quebec sourced from COVID-19 Tracker Canada.[14] All accessed 4 January 2022.

- Data on the number of COVID-19 patients in hospital and ICUs were sourced on 4 January 2022 from:

  o Our World in Data for all countries (aside from Australia, Japan and Singapore)[9]

  o COVID LIVE for Australia, which verifies data against Australian state and territory government health departments[15]

  o Singapore Ministry of Health for Singapore[16]

  o Japan Ministry of Health for Japan[17]

  o The National Institute for Communicable Diseases for South Africa[18]

  o NSW Health via the Patient Flow Portal for NSW, taken from a 7pm snapshot, 2 January 2022[13]

  o COVID-19 Tracker Canada for Ontario and Quebec[14].

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.[19]

- 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 ≤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.[20]

Sources

- Data on variants enabled by GISAID; accessed 4 January 2022.[19]

- Data on total number of cases and vaccinations for the selected countries are sourced from Our World in Data; accessed 4 January 2022.[9]

- Data on total number of cases for NSW are sourced from NSW Health via the Notifiable Conditions Information Management System.[10] Data on vaccinations for NSW are sourced from NSW Health via the Australian Government Department of Health Australian Immunisation Register.[12] All accessed 4 January 2022.

- 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.[9, 15] 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.[13] Data on the number of deaths for NSW are sourced from NSW Health via the Notifiable Conditions Information Management System.[10] All accessed 4 January 2022.

Method

The NSW Health COVID-19 Critical Intelligence Unit maintains living evidence tables on COVID-19 vaccines and SARS-CoV-2 variants.[21, 22] 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).

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