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## **COVID-19 Australia: Epidemiology Report 70**

Reporting period ending 15 January 2023

COVID-19 Epidemiology and Surveillance Team

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# Communicable Diseases Intelligence

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# COVID-19 Australia: Epidemiology Report 70

Reporting period ending 15 January 2023

COVID-19 Epidemiology and Surveillance Team

## Summary

### Four-week reporting period (19 December 2022 – 15 January 2023)

*Case definitions for confirmed and probable cases are in accordance with the coronavirus disease 2019 (COVID-19) Series of National Guidelines for Public Health Units (SoNG).*

The Australian Capital Territory did not supply hospitalisation data from 12 November to 24 November 2022 and testing data from 12 November 2022, due to technical reasons.

**Trends** – A fourth wave of COVID-19 Omicron transmission began in late October 2022, driven by a combination of existing and newly emerging Omicron subvariants. Following the peak of this wave in mid-December 2022, case numbers have been decreasing nationally. In the four-week period 19 December 2022 – 15 January 2023, there were 93,122 confirmed and 152,896 probable cases of COVID-19 reported in Australia to the National Notifiable Diseases Surveillance System (NNDSS). In the most recent reporting fortnight, a total of 82,277 confirmed and probable cases were notified (an average of 5,877 cases per day), compared to 163,741 in the previous fortnight (an average of 11,696 cases per day).

**Age group** – Since late December 2022, notification rates have decreased across all age groups, with rates highest among adults aged 70 years and over. In the reporting period 19 December 2022 – 15 January 2023, the highest notification rate was observed among adults aged 80 years and over, whilst the lowest rate was among children aged 12 to 15 years. Children aged 17 years or less continue to experience lower notification rates than adults. For the entire Omicron wave to date (15 December 2021 – 15 January 2023), the highest notification rate has been in adults aged 18 to 29 years.

**Aboriginal and Torres Strait Islander people** – In the reporting period 19 December 2022 – 15 January 2023, there were 7,128 new cases notified in Aboriginal and Torres Strait Islander people. In the current Omicron wave (15 December 2021 – 15 January 2023) there have been 390,078 cases notified in Aboriginal and Torres Strait Islander people, representing 3.6% (390,078/10,712,230) of all COVID-19 cases in the Omicron wave to date.

**Severity** – The overall crude case fatality rate in the current fourth Omicron wave is 0.24%, which is higher than the rate observed during the first (0.14%), second (0.09%) and third waves (0.20%), and notably less than observed during the Delta wave (0.71%). The current case fatality rate is likely overestimated due to changes in case ascertainment and under-reporting of non-severe cases.

Since the start of the pandemic to 15 January 2023, there have been 166 cases of paediatric inflammatory multisystem syndrome temporally associated with SARS-CoV-2 (PIMS-TS) reported to PAEDS, including 132 cases reported in 2022. There have been no new cases reported in 2023.

**Virology** – For samples collected in the four-week period 19 December 2022 – 15 January 2023, all 3,865 samples were assigned against Omicron or recombinants involving Omicron lineages. There is currently significant diversity in the range of sub- and sub-sub-lineages circulating within Australia. BA.2 is now the predominant sub-lineage being sequenced, making up 40% of sequences collected in the reporting period and available for analysis in AusTrakka, compared with 26.5% for BA.5. Recombinant lineages account for 33% of sequences available in AusTrakka during the same period. Of the Omicron sequences in AusTrakka to date, 20.7% are BA.1; 39.2% are BA.2; < 0.001% are BA.3; 3.96% are BA.4 and 32.6% are BA.5. All sub-lineages have been collapsed into respective major sub-lineages. Recombinants make up 3.45% of all Omicron sequences to date.

**International situation** – According to the World Health Organization (WHO), cumulative global COVID-19 cases stood at over 662 million COVID-19 cases and over 6.7 million deaths as of 15 January 2023. For the South-East Asia and Western Pacific regions combined, there were 7,129,662 new cases and 15,364 deaths in the four-week period to 15 January 2023. Compared with the previous four-week reporting period, new cases and new deaths increased in the Western Pacific region and decreased in the South-East Asia region. In total, since the start of the pandemic, over 171 million cases and over 1.1 million deaths have been reported in the two regions.

Keywords: SARS-CoV-2; novel coronavirus; 2019-nCoV; coronavirus disease 2019; COVID-19; acute respiratory disease; epidemiology; Australia

This reporting period covers the four-week period of 19 December 2022 – 15 January 2023. Within this period, data for each week is compared. The previous reporting period was the preceding four weeks (21 November – 18 December 2022).<sup>1</sup> The focus of this report is on the epidemiological situation in Australia since the beginning of the Omicron wave. For the purposes of this report, 15 December 2021 is used as a proxy for the beginning of this wave. This date was chosen as from this date onwards, most sequenced strains from cases were Omicron. Readers are encouraged to consult prior reports in this series for information on the epidemiology of coronavirus disease 2019 (COVID-19) in Australia.

Methods of data analysis in these reports have periodically changed over the course of

this reporting series to date. Please refer to the Technical Supplement for details of such changes, and for definitions of terminology.<sup>2</sup>

Unless otherwise specified, tabulated data, data within the text, and figures, except those relating to severity, are extracted from the National Notifiable Diseases Surveillance System (NNDSS) based on ‘notification received date’. All tables and figures related to severity data extracted from NNDSS are based on ‘diagnosis date’ to better capture the true onset of severe illness and to enable a more accurate understanding of infection risk and disease severity.

The case data provided includes both confirmed cases and probable cases reported to the NNDSS, as defined in accordance with the COVID-19 series of national guidelines (SoNG).<sup>3</sup> For the purposes of this report, only probable cases from 5 January 2022 are included.

**Table 1: Confirmed and probable COVID-19 cases by jurisdiction and date of notification, Australia, 15 December 2021 – 15 January 2023<sup>a</sup>**

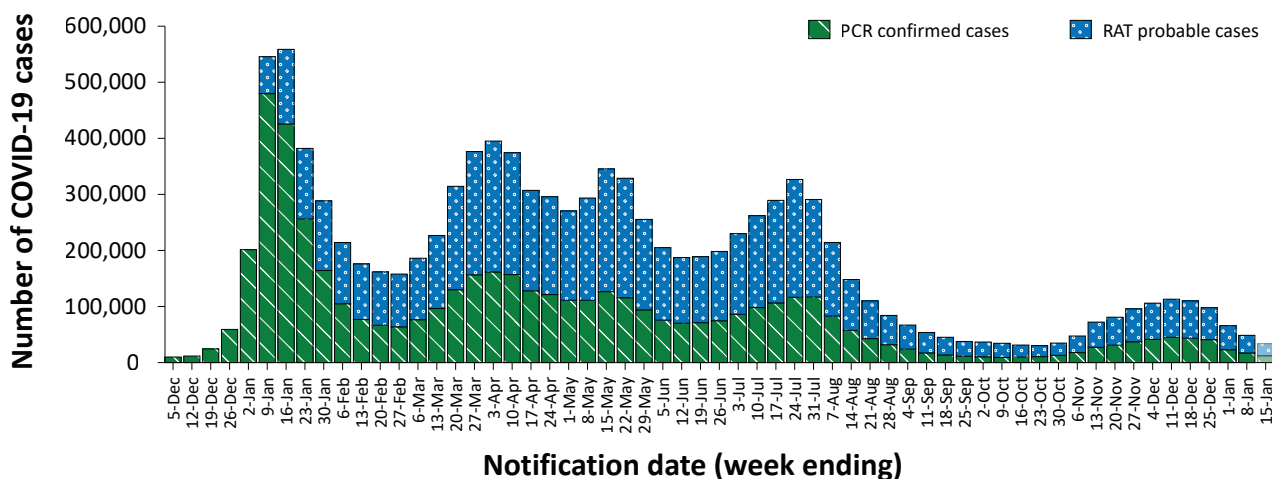
Jurisdiction <sup>b,c</sup>	Reporting period						Current Omicron wave		
	19 December 2022 – 1 January 2023			2–15 January 2023			15 December 2021 – 15 January 2023		
	Confirmed	Probable	Total	Confirmed	Probable	Total	Confirmed	Probable	Total
ACT	1,754 (37.5%)	2,926 (62.5%)	4,680	707 (33.5%)	1,404 (66.5%)	2,111	129,103 (56.7%)	98,437 (43.3%)	227,540
NSW	34,677 (57.4%)	25,772 (42.6%)	60,449	14,997 (54.0%)	12,757 (46.0%)	27,754	2,041,471 (56.8%)	1,552,223 (43.2%)	3,593,694
NT	337 (38.0%)	549 (62.0%)	886	278 (37.2%)	470 (62.8%)	748	23,033 (22.1%)	81,152 (77.9%)	104,185
Qld	5,323 (25.5%)	15,525 (74.5%)	20,848	3,729 (25.9%)	10,687 (74.1%)	14,416	661,778 (40.6%)	967,312 (59.4%)	1,629,090
SA	8,394 (48.1%)	9,044 (51.9%)	17,438	3,682 (48.3%)	3,935 (51.7%)	7,617	506,954 (58.1%)	365,774 (41.9%)	872,728
Tas.	1,500 (21.7%)	5,400 (78.3%)	6,900	605 (23.1%)	2,015 (76.9%)	2,620	64,172 (22.6%)	219,545 (77.4%)	283,717
Vic.	9,290 (26.4%)	25,838 (73.6%)	35,128	3,417 (21.6%)	12,380 (78.4%)	15,797	1,073,035 (39.4%)	1,652,697 (60.6%)	2,725,732
WA	2,705 (15.5%)	14,707 (84.5%)	17,412	1,727 (15.4%)	9,487 (84.6%)	11,214	491,949 (38.6%)	783,595 (61.4%)	1,275,544
<b>Australia</b>	<b>63,980 (39.1%)</b>	<b>99,761 (60.9%)</b>	<b>163,741</b>	<b>29,142 (35.4%)</b>	<b>53,135 (64.6%)</b>	<b>82,277</b>	<b>4,991,495 (46.6%)</b>	<b>5,720,735 (53.4%)</b>	<b>10,712,230</b>

a Source: NNDSS extract from 2 February 2023 for notifications from 15 December 2021 to 15 January 2023.

b ACT: Australian Capital Territory; NSW: New South Wales; NT: Northern Territory; Qld: Queensland; SA: South Australia; Tas.: Tasmania; Vic.: Victoria; WA: Western Australia.

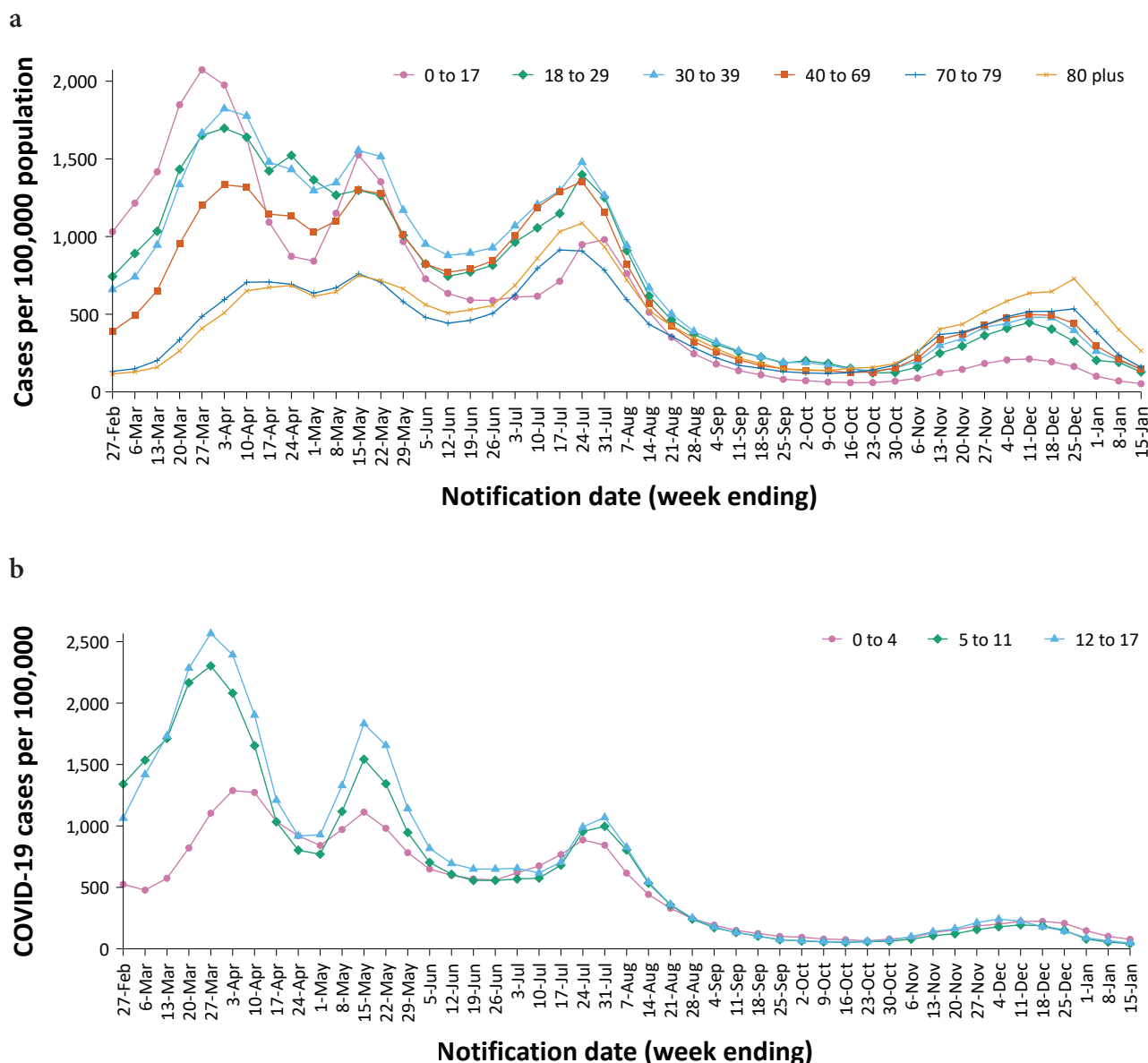
c Cases are classified based on jurisdiction of notification not jurisdiction of residence. Some cases are notified to a different jurisdiction than their location of residence.

**Figure 1: Confirmed and probable weekly COVID-19 notified cases by notification date, Australia, 29 November 2021 – 15 January 2023<sup>a</sup>**



a Source: NNDSS extract from 2 February 2023 for notifications from 29 November 2021 to 15 January 2023.

Figure 2: Confirmed and probable COVID-19 notification rates for (a) all ages and (b) children, by age group by notification week, Australia, 27 February 2022 – 15 January 2023<sup>a</sup>



a Source: NNDSS extract from 2 February 2023 for notifications from 21 February 2022 to 15 January 2023

Due to the dynamic nature of data in the NNDSS, numbers may be subject to revision and may vary from numbers previously reported and from case notifications released by states and territories.

### Background and data sources

See the Technical Supplement for general information on COVID-19 including modes of transmission, common symptoms, and severity.<sup>2</sup>

### Activity

#### COVID-19 trends

(NNDSS and jurisdictional reporting to the National Incident Centre)

Cumulatively, from the beginning of the pandemic to 15 January 2023, jurisdictions within Australia have reported 10,946,856 COVID-19 cases to the NNDSS. Nationally, case notifications have been decreasing since late December

2022. In the four-week period 19 December 2022 – 15 January 2023, there were 93,122 confirmed and 152,896 probable cases of COVID-19 reported in Australia to NNDSS (Table 1). In the most recent reporting fortnight, a total of 82,277 confirmed and probable cases were notified (an average of 5,877 cases per day), compared to 163,741 in the previous fortnight (an average of 11,696 cases per day).

Since the emergence of the Omicron variant in Australia, there have been four distinct waves of transmission, defined by the predominant Omicron subvariant circulating. The first wave, driven by the BA.1 subvariant, occurred from mid-December 2021 to February 2022, with a peak in cases observed in early January 2022. From March 2022, the BA.2 subvariant was the predominant strain; in this second Omicron wave, there was a primary peak in early April and a secondary peak in late May 2022 (Figure 1). In early July 2022, BA.5 (including sub-lineages) became the predominant subvariant detected in Australia, driving a third wave of transmission which peaked in the week ending 24 July 2022. A fourth wave of transmission commenced in

late October 2022, driven by a combination of existing and newly emerging Omicron subvariants. This wave peaked during the week ending 11 December 2022 and notifications have been steadily decreasing since then (Figure 1).

In October 2022, mandatory reporting of positive rapid antigen tests (RATs) ceased in several jurisdictions. Therefore, the current data in NNDSS will underestimate the true incidence of disease in the community.

### Demographic features (NNDSS)

Since late December 2022, notification rates have decreased across all age groups, with rates highest among adults aged 70 years and over (Figure 2a). In the current reporting period 19 December 2022 – 15 January 2023, the highest notification rate was observed among adults aged 80 years and over whilst the lowest rate was among children aged 12 to 15 years (Appendix A, Table A.1). Children aged 17 years or less continue to experience considerably lower notification rates than the adult population (Figure 2a).

**Table 2: Confirmed and probable cases of COVID-19 among Aboriginal and Torres Strait Islander peoples by jurisdiction and date of notification, Australia, 15 December 2021 – 15 January 2023<sup>a</sup>**

Jurisdiction <sup>b,c</sup>	19–25 December 2022	26 December 2022 – 1 January 2023	2–8 January 2023	9–15 January 2023	15 December 2021 – 15 January 2023 (Omicron wave)
ACT	41	18	21	13	4,043
NSW	946	691	487	376	130,831
NT	121	87	86	99	25,165
Qld	460	433	449	287	97,560
SA	149	118	92	54	22,758
Tas.	168	139	95	53	16,396
Vic.	196	138	106	68	35,293
WA	312	263	284	278	58,032
<b>Australia</b>	<b>2,393</b>	<b>1,887</b>	<b>1,620</b>	<b>1,228</b>	<b>390,078</b>

a Source: NNDSS extract from 2 February 2023 for notifications from 15 December 2021 to 15 January 2023.

b ACT: Australian Capital Territory; NSW: New South Wales; NT: Northern Territory; Qld: Queensland; SA: South Australia; Tas.: Tasmania; Vic.: Victoria; WA: Western Australia.

c Cases are classified based on jurisdiction of notification not jurisdiction of residence. Some cases are notified to a different jurisdiction than their location of residence.

**Table 3: COVID-19 cases among Aboriginal and Torres Strait Islander people by area of remoteness, Australia, 15 December 2021 – 15 January 2023<sup>a</sup>**

Jurisdiction <sup>b,c</sup>	Major city	Inner regional	Outer regional	Remote <sup>d</sup>
ACT	3,990	37	11	1
NSW	70,424	42,232	14,513	2,965
NT	67	18	7,833	16,266
Qld	35,676	22,463	28,682	10,635
SA	12,373	2,453	4,801	3,025
Tas.	203	9,979	5,788	287
Vic.	20,126	11,364	3,752	17
WA	30,282	4,159	7,216	15,783
<b>Australia</b>	<b>173,141</b>	<b>92,705</b>	<b>72,596</b>	<b>48,979</b>

- a Source: NNDSS extract from 2 February 2023 for notifications from 15 December 2021 to 15 January 2023. Excludes cases with an overseas place of residence, and where place of residence is unknown.
- b ACT: Australian Capital Territory; NSW: New South Wales; NT: Northern Territory; Qld: Queensland; SA: South Australia; Tas.: Tasmania; Vic.: Victoria; WA: Western Australia.
- c Cases are classified based on jurisdiction of notification not jurisdiction of residence. Some cases are notified to a different jurisdiction than their location of residence.
- d 'Remote' here also includes areas classified as 'very remote'.

For the entire Omicron wave to date (15 December 2021 – 15 January 2023), the highest notification rate has been in adults aged 18 to 29 years (Appendix A, Table A.1). For this age group, the weekly notification rate peaked in the week ending 9 January 2022 at 5,605 cases per 100,000 population (not depicted). Notification rates have been comparable across all paediatric age groups since late August 2022, with rates decreasing in the current reporting period (Figure 2b).

### Aboriginal and Torres Strait Islander persons (NNDSS)

Overall, since the start of the pandemic, Indigenous status is unknown for approximately 13.4% of COVID-19 cases in NNDSS. Therefore, the number of cases classified as Aboriginal and Torres Strait Islander people is likely an under-representation. During the reporting period, there were 7,128 new cases notified in Aboriginal and Torres Strait Islander people (Table 2). In the Omicron wave (15 December 2021 – 15 January 2023), there have

been 390,078 cases notified in Aboriginal and Torres Strait Islander people, representing 3.6% (390,078/10,712,230) of all cases in the Omicron wave to date.

Of the COVID-19 cases notified in Aboriginal and Torres Strait Islander people from 15 December 2021 to date, and where location of residence was known, 55.3% (214,280/387,421) lived in a regional or remote area (Table 3). Most cases reported in outer regional and remote areas since the start of the Omicron wave were diagnosed using RATs, at 71.5% (51,918/72,596) and 73.6% (36,037/48,979), respectively. It should be noted that the reliance on RATs for diagnosing COVID-19 is greater in regional and remote areas than in major cities, resulting in a larger under-representation of cases in regional and remote areas than in major cities, due to the changes in reporting requirements of positive RATs.

Nationally, there have been 312 associated deaths reported in Aboriginal and Torres Strait Islander people from the start of the



**Table 4: Confirmed and probable COVID-19 cases in Aboriginal and Torres Strait Islander people by age and highest level of illness severity, Australia, 1 January 2020 to 15 January 2023**

Age group (years)	15 December 2021 – 15 January 2023 (Omicron wave)				16 June 2021 – 14 December 2021 (Delta wave)				1 January 2020 – 15 January 2023 (Pandemic to date)			
	ICU <sup>a,c</sup>	Died <sup>a</sup>	ICU or died <sup>a,c</sup>	Rate ICU or died <sup>b,c</sup>	ICU <sup>a,c</sup>	Died <sup>a</sup>	ICU or died <sup>a</sup>	Rate ICU or died <sup>b</sup>	ICU <sup>a,c</sup>	Died <sup>a</sup>	ICU or died <sup>a,c</sup>	Rate ICU or died <sup>b,c</sup>
0–17	59	2	60	18.5	8	0	8	2.5	67	2	68	20.9
18–59	250	86	320	76.7	86	11	90	21.6	337	97	411	98.5
60+	136	198	305	540.4	29	15	36	63.8	167	213	343	607.8
<b>All</b>	<b>445</b>	<b>286</b>	<b>685</b>	<b>85.8</b>	<b>123</b>	<b>26</b>	<b>134</b>	<b>16.8</b>	<b>571</b>	<b>312</b>	<b>822</b>	<b>103.0</b>

a 'ICU' and 'died' are not mutually exclusive categories; 'died' can include cases who died with or without prior admission to ICU. Therefore, the number of cases admitted to ICU or having died will not equal the sum of cases in ICU or died.

b Rate per 100,000 population for the given time period.

c The Australian Capital Territory did not supply hospitalisation data from 12 November to 24 November 2022 due to technical reasons.

pandemic to 15 January 2023 (Table 4). This comprises 102 from New South Wales; 93 from Queensland; 45 from the Northern Territory; 36 from Western Australia; 20 from South Australia; 12 from Victoria; and two each from the Australian Capital Territory and Tasmania. Additionally, 571 Aboriginal and Torres Strait Islander cases have been admitted to intensive care units (ICU) nationally. During the Omicron wave to date, the overall notification rate, to NNDSS, of severe cases (measured as those who were admitted to ICU or died) in Aboriginal and Torres Strait Islander people is 85.8 per 100,000 population, compared to 16.8 per 100,000 population during the Delta wave (Table 4). The higher rates of severe illness during the Omicron wave are attributed to the significantly higher levels of disease transmission in the community during the Omicron wave, rather than the Omicron variant inherently causing more severe illness compared to the Delta variant. It should be noted that ICU status in NNDSS is likely incomplete.

## Severity

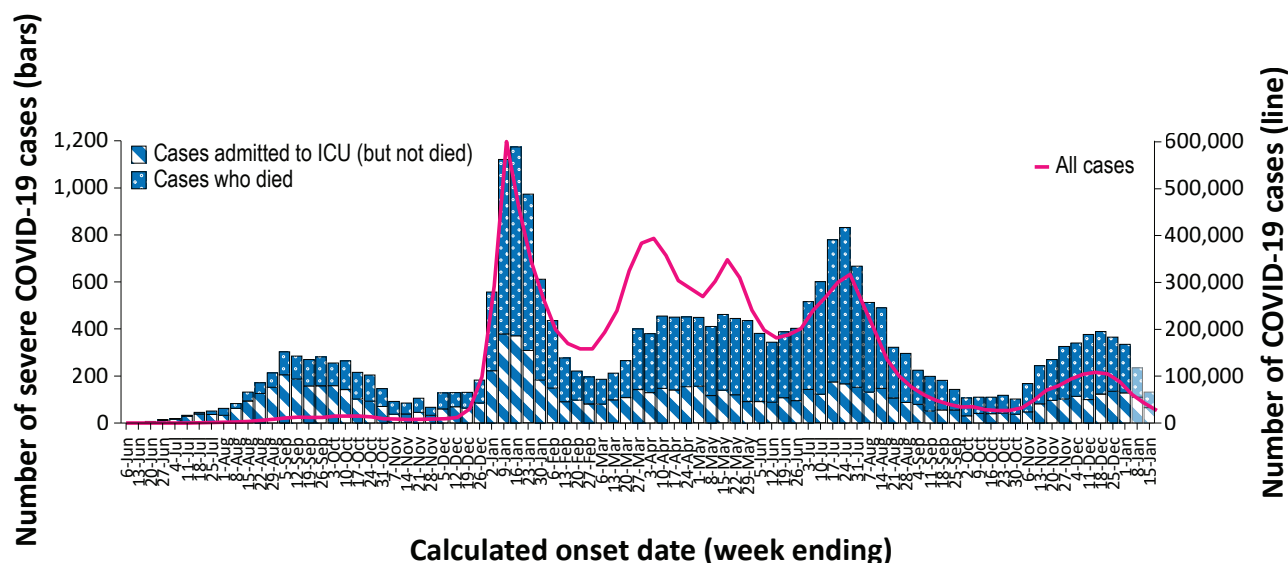
(NNDSS, SPRINT-SARI, FluCAN)

Given the delay between illness onset and severe illness, and so as to provide a more accurate assessment of severity, cases with an onset

in the last two weeks have been excluded from analyses on the weekly rate of cases with severe illness (defined as cases admitted to ICU or died) and on the proportion of cases admitted to ICU or died.

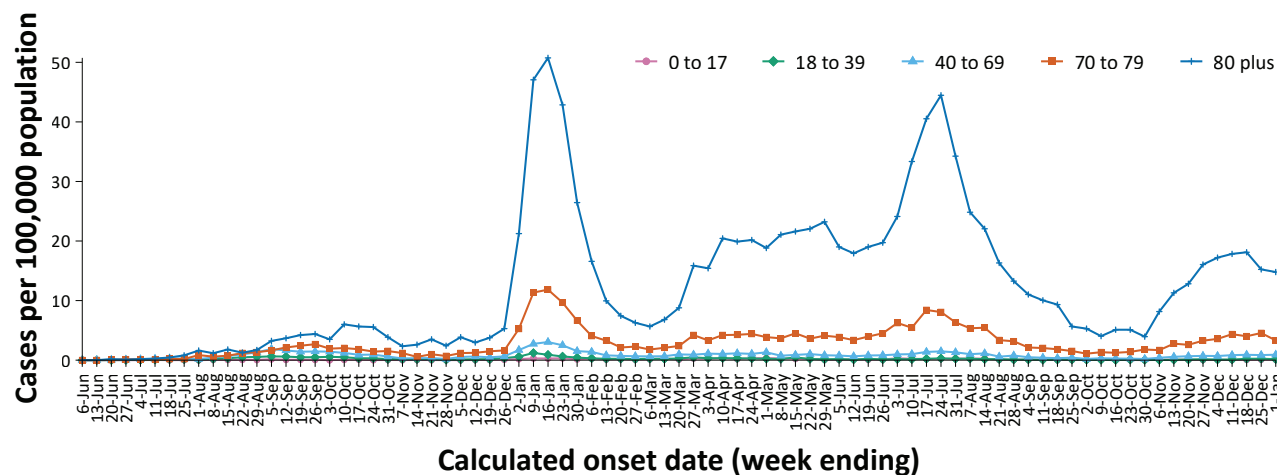
In the Omicron wave, the notification rate of cases with severe illness peaked in the week ending 16 January 2022, at approximately 4.5 severe cases per 100,000 population per week (Figure 3). From the start of the fourth Omicron wave in late October 2022, there was a gradual increase in the notification rate of cases with severe illness, with a peak observed in the week ending 18 December 2022; since then, rates of severe illness have continued to decrease (Figure 3). Rates of severe illness continue to be greater in older age groups; from the start of the fourth Omicron wave, severe illness rates in those aged 80 years and over increased until the week ending 25 December 2022 and have subsequently declined. In comparison, rates of severe illness in all other age groups have remained relatively stable throughout the fourth wave (Figure 4).

**Figure 3: COVID-19 cases, deaths and ICU admissions, Australia, by date of onset, Australia, 31 May 2021 to 15 January 2023<sup>a,b</sup>**



- a Source: NNDSS extract from 2 February 2023 for notifications to 15 January 2023. The Australian Capital Territory did not supply hospitalisation data from 12 November to 24 November 2022 due to technical reasons.
- b The shaded bars at the right represent the most recent two reporting weeks and should be interpreted with caution, as cases with an illness onset in these weeks may not have yet developed severe disease.

**Figure 4: Age-specific rates of COVID-19 cases admitted to ICU or died, by date of diagnosis, Australia, 31 May 2021 to 1 January 2023<sup>a</sup>**



- a Source: NNDSS extract from 2 February 2023 for notifications to 15 January 2023. Includes cases with an illness onset from 31 May 2021 to 1 January 2023; cases with an illness onset in the last two weeks (2–15 January 2023) were excluded to account for the delay between onset and development of severe illness. The Australian Capital Territory did not supply hospitalisation data from 12 November to 24 November 2022 due to technical reasons.

## Hospitalisation and ICU admissions

Between 15 December 2021 and 15 January 2023, there were 12,405 hospital admissions with confirmed COVID-19 reported at Influenza Complications Alert Network (FluCAN) sentinel sites, including 6% (709/12,405) admitted directly to ICU. In the current reporting period to 15 January 2023, there were 250 admissions with COVID-19 reported at FluCAN sentinel sites, including 6% (16/250) who were admitted directly to ICU. From the start of the Omicron wave to 15 January 2023, there were 5,249 COVID-19 cases admitted to ICUs participating in the sentinel surveillance system, Short Period Incidence Study of Severe Acute Respiratory Infection (SPRINT-SARI),<sup>4</sup> with 272 of these admitted during this reporting period (19 December 2022 – 15 January 2023).

During the fourth Omicron wave, for patients admitted to FluCAN sentinel sites with confirmed COVID-19, the median length of stay was 3 days (interquartile range, IQR: 2–6); mean (standard deviation, SD) = 4.2 days (17.3).

## Risk factors for severe disease

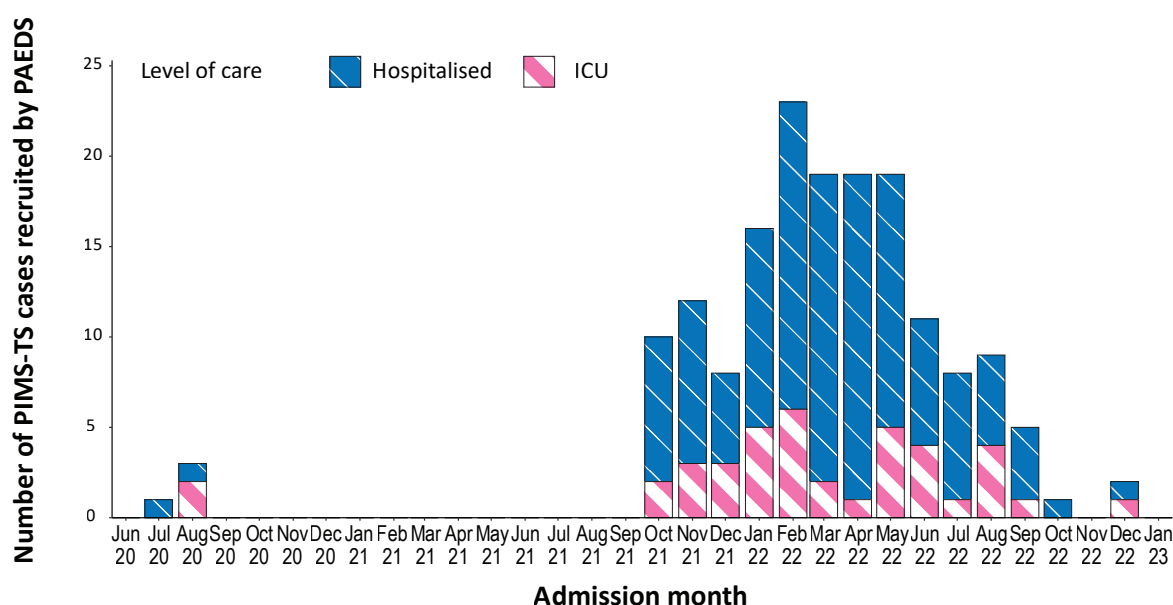
Comorbidity data extracted from SPRINT-SARI reflect the sickest patients with COVID-19

who are managed in ICU; data are therefore not generalisable to all cases (Table 5). In adult patients admitted to ICU with COVID-19 since 15 December 2021, where comorbidity information was available, the most prevalent comorbidity was diabetes, followed by cardiac disease. Of those adult patients admitted to ICU since 15 December 2021 for whom comorbidity data was known, 77% (2,891/3,744) had at least one of the listed comorbidities.

## Paediatric inflammatory multisystem syndrome - temporally associated with SARS-CoV-2 (Paediatric Active Enhanced Disease Surveillance)

Since the start of the pandemic to 15 January 2023, there have been 166 cases of paediatric inflammatory multisystem syndrome temporally associated with SARS-CoV-2 (PIMS-TS) reported to Paediatric Active Enhanced Disease Surveillance (PAEDS), including 132 cases reported in 2022, no cases (n = 0) in the current reporting period and two new cases from previous reporting periods in 2022 (Figure 5). The majority of PIMS-TS cases to date have occurred in those aged 5 to < 12 years (52%; 86/166), followed by those aged 6 months to < 5 years (28%; 47/166). To date, there have been no PIMS-TS associated deaths.

**Figure 5: PIMS-TS cases reported to PAEDS, by sample month and level of care required, Australia, 1 June 2020 – 15 January 2023<sup>a</sup>**



a Source: PAEDS.

**Table 5: Comorbidities for adult COVID-19 cases (aged greater than or equal to 18 years) amongst those admitted to ICU, Australia, 15 December 2021 – 15 January 2023<sup>a</sup>**

Comorbidity	ICU cases <sup>a</sup> (n = 3,744) (%)
Cardiac disease (n = 3,721)	1,045 (28%)
Chronic respiratory condition (n = 3,721) <sup>b</sup>	908 (24%)
Diabetes (n = 3,674)	1,209 (33%)
Obesity (n = 3,677)	760 (21%)
Chronic renal disease (n = 3,710)	600 (16%)
Chronic neurological condition (n = 3,710)	300 (8%)
Malignancy (n = 3,722)	563 (15%)
Chronic liver disease (n = 3,705)	221 (6%)
Immunosuppression (n = 3,680)	666 (18%)
<b>Number of specified comorbidities (n = 3,744)<sup>c</sup></b>	
No comorbidities	853 (23%)
One or more	2,891 (77%)
Two or more	1,833 (49%)
Three or more	951 (25%)

a Source: SPRINT-SARI. Only includes adult cases ( $\geq 18$  years old) and excludes those with missing data on comorbidities or where comorbidity is unknown.

b Includes asthma.

c Includes chronic respiratory conditions, cardiac disease (excluding hypertension), immunosuppressive condition/therapy, diabetes, obesity, liver disease, renal disease, and neurological disorder.

**Table 6: Deaths associated with COVID-19 by reporting period, Australia, 1 January 2020 – 15 January 2023<sup>a,b</sup>**

Jurisdiction <sup>c</sup>	19 December 2022 – 1 January 2023	2–15 January 2023	15 December 2021 – 15 January 2023 (Omicron wave)	1 January 2020 – 15 January 2023 (Pandemic to date)
ACT	3 (0.5%)	3 (0.8%)	134 (0.9%)	149 (0.9%)
NSW	188 (33.5%)	91 (22.9%)	5,461 (36.0%)	6,163 (35.2%)
NT	0 (0.0%)	1 (0.3%)	88 (0.6%)	89 (0.5%)
Qld	103 (18.4%)	57 (14.4%)	2,633 (17.4%)	2,640 (15.1%)
SA	24 (4.3%)	33 (8.3%)	1,213 (8.0%)	1,233 (7.0%)
Tas.	12 (2.1%)	8 (2.0%)	222 (1.5%)	237 (1.4%)
Vic.	198 (35.3%)	177 (44.6%)	4,517 (29.8%)	6,090 (34.8%)
WA	33 (5.9%)	27 (6.8%)	901 (5.9%)	911 (5.2%)
<b>Australia</b>	<b>561 (100.0%)</b>	<b>397 (100.0%)</b>	<b>15,169 (100.0%)</b>	<b>17,512 (100.0%)</b>

a Source: NNDSS, extract from 2 February 2023 for deaths to 15 January 2023.

b Deaths are categorised into time periods using date of death. Deaths with a missing date of death are classified using date of illness onset.

c ACT: Australian Capital Territory; NSW: New South Wales; NT: Northern Territory; Qld: Queensland; SA: South Australia; Tas.: Tasmania; Vic.: Victoria; WA: Western Australia.

**Table 7: COVID-19 associated case fatality rates, among cases notified to NNDSS, by age group and date of onset, 1 January 2020 to 1 January 2023<sup>a,b,c,d</sup>**

Age group	Fourth Omicron wave 24 October 2022 – 1 January 2023	Third Omicron wave 15 June – 23 October 2022	Second Omicron wave 1 March – 14 June 2022	First Omicron wave 15 December 2021 – 28 February 2022	Omicron 15 December 2021 – 1 January 2023	Delta 16 June – 14 December 2021	Pandemic 1 January 2020 – 1 January 2023
0–17	0.00%	< 0.05%	< 0.05%	< 0.05%	< 0.05%	< 0.05%	< 0.05%
18–39	< 0.05%	< 0.05%	< 0.05%	< 0.05%	< 0.05%	< 0.05%	< 0.05%
40–69	0.06%	0.05%	< 0.05%	0.07%	0.05%	0.70%	0.06%
70–79	0.48%	0.64%	0.44%	1.14%	0.62%	6.18%	0.72%
80 +	2.37%	3.56%	2.96%	6.48%	3.50%	18.27%	3.91%
Unknown	<0.05%	0.00%	0.00%	0.00%	< 0.05%	0.00%	< 0.05%
<b>Australia</b>	<b>0.24%</b>	<b>0.20%</b>	<b>0.09%</b>	<b>0.14%</b>	<b>0.14%</b>	<b>0.71%</b>	<b>0.16%</b>

a Source: NNDSS, extract from 2 February 2023 for deaths to 1 January 2023.

b To account for the lag between illness onset and the development of severe illness, cases with an onset date in the last two weeks have been excluded from calculations of the case fatality rate.

c A value of 0.00% indicates that no COVID-19 associated fatalities occurred during the indicated period for the specified age group.

d Crude case fatality rates reflect number of deaths as a proportion of reported COVID-19 cases during specific periods, noting that these rates are likely overestimated due to under-reporting of cases.

## COVID-19 deaths

There were 958 COVID-19-associated deaths among cases notified during the reporting period (19 December 2022 – 15 January 2023). In total there have been 17,512 COVID-19-associated deaths reported in NNDSS since the start of the pandemic (Table 6). The overall crude case fatality rate in the current fourth Omicron wave is 0.24%, which is higher than the rate observed during the first (0.14%), second (0.09%) and third waves (0.20%), and notably less than observed during the Delta wave (0.71%) (Table 7). It should be noted that the current case fatality rate is likely to be overestimated due to changes in case ascertainment and under-reporting of non-severe cases.

## Genomic surveillance and virology

*(Communicable Disease Genomics Network, AusTrakka and jurisdictional sequencing laboratories)*

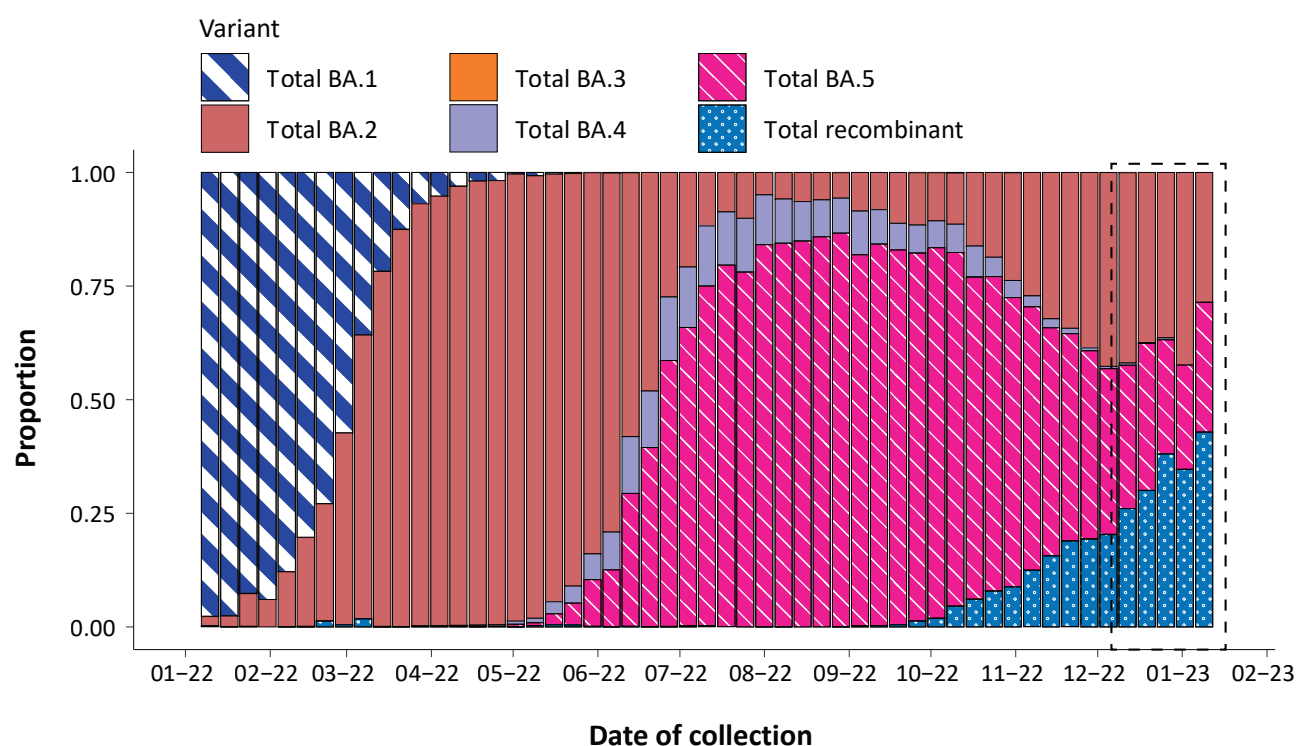
Nationally, 3.74% of COVID-19 cases have been sequenced since the start of the pandemic in January 2020, based on jurisdictional reporting of confirmed cases (Table 8). Case numbers and sequencing proportion are based on polymerase chain reaction (PCR) results only, as rapid antigen tests do not allow for sequencing. A significant rise in case numbers nationally at the start of 2022, and a change in the pandemic response across Australia, saw jurisdictional laboratories move towards sequencing for surveillance purposes. This resulted in a drop in the overall sequencing proportion in 2022. However, as the sequencing output has remained steady, any drop in recorded case numbers related to significant changes in testing and isolation requirements – such as that observed prior to the start of the fourth Omicron wave – may cause the sequencing proportion to rise again.

**Table 8: Australian SARS-CoV-2 genome sequences and proportion of positive cases sequenced, 19 December 2022 – 15 January 2023 and cumulative to date**

Measure <sup>a,b</sup>	Reporting period <sup>c</sup> 19 December 2022 – 15 January 2023	Cumulative 23 January 2020 – 15 January 2023
SARS-CoV-2 cases sequenced	3,865	172,196
Percentage of positive cases sequenced	3.74%	3.37%

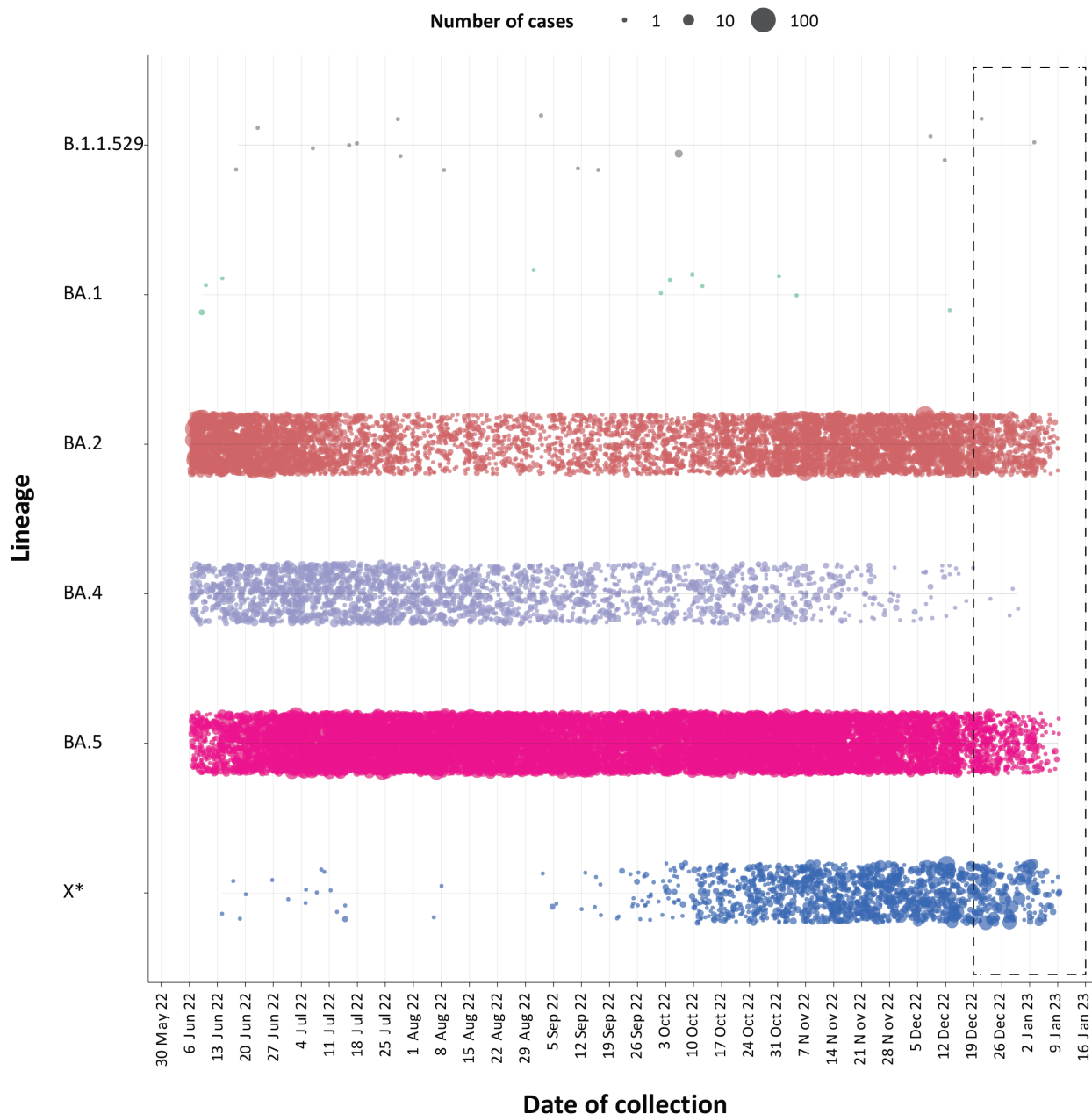
- a Total SARS-CoV-2 case numbers as reported by jurisdictional laboratories based on PCR results only. Cases identified via rapid antigen testing are reported differently by each jurisdiction and cannot be followed up for sequencing. They are therefore not included in the sequencing proportions reported here. Sequencing of samples from cases identified in the reporting period may be in process at the time of reporting. Remaining unsequenced samples may be due to jurisdictional sequencing strategy, or where samples have been deemed unsuitable for sequencing (typically because viral loads were too low for sequencing to be successful).
- b Based on individual jurisdictional reports of sequences and case numbers. Calculations of the percentage of cases sequenced based on the number of sequences available in AusTrakka may not always be up to date, since this may include duplicate samples from cases and may not represent all available sequence data.
- c Updated numbers for this reporting period from the Australian Capital Territory and Western Australia were unavailable at time of the report.

**Figure 6: Omicron sub-lineages proportions in Australia since 1 January 2022 by sample collection date<sup>a,b,c</sup>**



- a Sequences in AusTrakka; aggregated by week.
- b The current reporting period (19 December 2022 to 15 January 2023) is marked by the dashed lines.
- c Proportions in the figure may not be representative when sequence numbers are small. Data may change week-to-week as sequences with older collection dates are uploaded. These numbers are not equivalent to number of cases, as there may be duplicates in the AusTrakka data. Newly designated Omicron sub-lineages have been collapsed into parent lineages BA.1, BA.2, BA.3, BA.4 and BA.5 or as recombinants of these lineages.

Figure 7: Samples in AusTrakka since 30 May 2022, by lineage and date of collection<sup>a,b</sup>



- a The current reporting period (19 December 2022 to 15 January 2023) is marked by the dashed lines. The size of each dot is proportional to the number of sequences observed in each jurisdiction each day.
- b Newly designated Omicron sub-lineages have been collapsed into parent lineages BA.1, BA.2, BA.3, BA.4 and BA.5 and recombinants are designated by X\*.

### Variants of concern (VOC)

AusTrakka<sup>5</sup> is actively monitoring and reporting on one lineage and its associated sub- and sub-sub-lineages, currently designated as a Variant of Concern (VOC) by international organisations, including the World Health Organization (WHO): Omicron (B.1.1.529).

The Omicron variant displays a characteristic set of mutations, including a number of variations in the genomic region encoding the spike protein thought to have the potential to increase transmissibility and/or immune evasion.<sup>6,7</sup> Further information on variants is available in the Technical Supplement.<sup>2</sup>

Unlike previous periods in Australia's COVID-19 waves, where one or two dominant lineages were the main driver of disease, there is currently significant diversity in the range of sub-sub-lineages circulating within Australia. During this reporting period, more than 200 unique lineages have been identified, and it is likely that there are more that are not being characterised through whole genome sequencing. This diversity of circulating lineages has sometimes been referred to as a 'variant soup'. Many of these circulating lineages will die out without causing a significant disease burden, but others appear to have stronger growth potential.

Lineages such as BQ.1 (sub-sub-lineage of BA.5), BA.2.75 and associated sub-lineages such as BR, XBB (recombinant of BJ.1/BA.2.10 and BM.1.1.1/BA.2.75.3), including the sub-lineage XBB.1.5 which is showing significant growth in the United States of America, have emerged with strong signals both within and across different jurisdictions and are being monitored by AusTrakka and the Communicable Disease Genomics Network (CDGN) VOC working group due to their increasing prevalence.

All 2,548 sequences from samples collected within the reporting period were assigned to Omicron or recombinants consisting of Omicron lineages. BA.2 is now the predominant sub-lineage being sequenced, making up 40% of sequences collected in the reporting period and available for analysis in AusTrakka, compared with 26.5% for BA.5. Recombinant lineages account for 33% of sequences available in AusTrakka during the same period.

Of the Omicron sequences in AusTrakka to date, 20.7% are BA.1; 39.2% are BA.2; < 0.001% are BA.3; 3.96% are BA.4 and 32.6% are BA.5. All sub-lineages have been collapsed into respective major sub-lineages. Recombinants make up 3.45% of all Omicron sequences to date.

## Testing

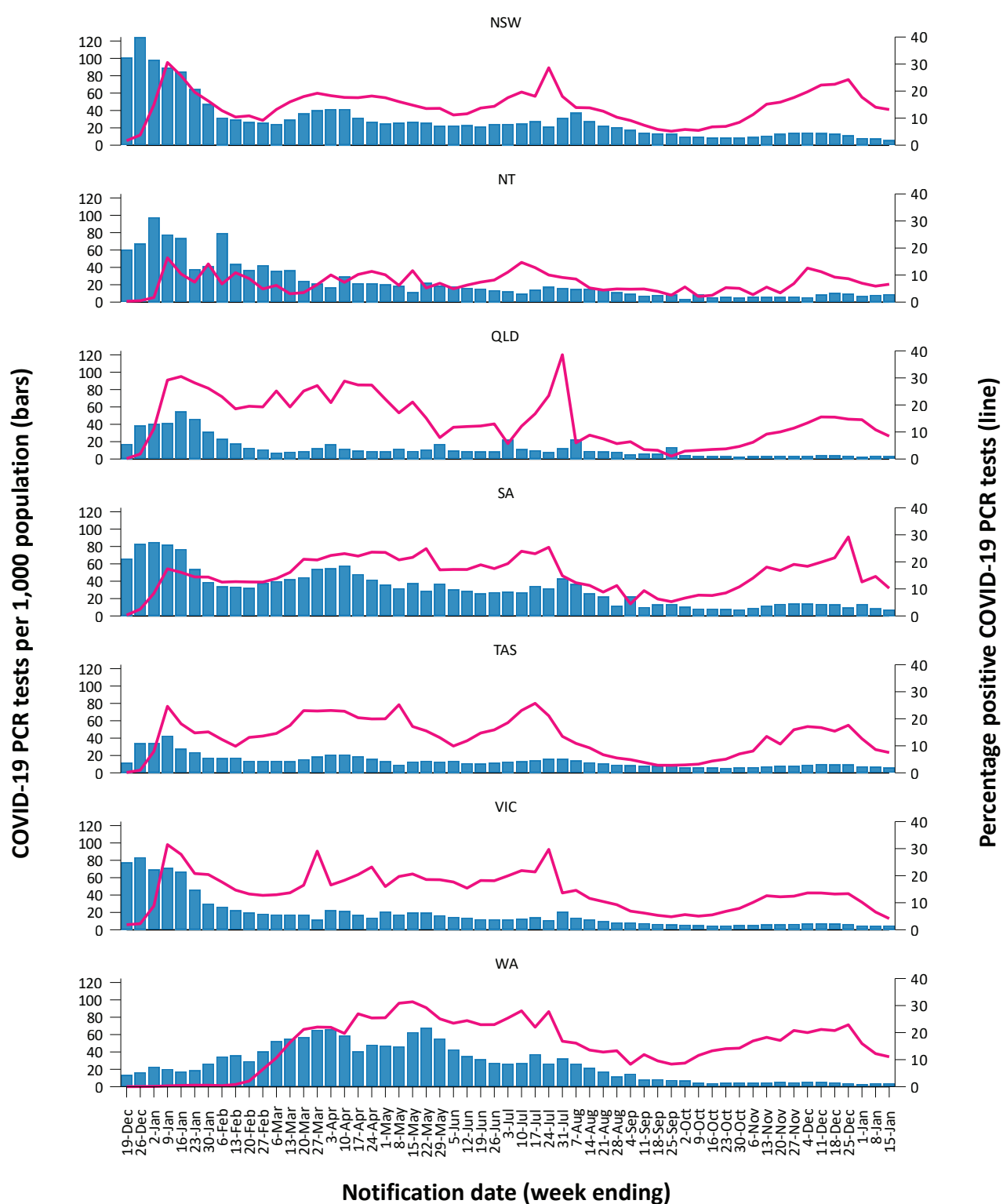
*(State and territory reporting)*

From the commencement of the pandemic to 15 January 2023, over 80 million PCR tests for SARS-CoV-2 have been conducted nationally. Jurisdictional PCR testing rates are driven by current case numbers, testing policies and numbers of people experiencing symptoms. The number, rates, and percent positivity of RATs cannot be calculated, as there is currently no reporting of negative RATs. The Australian Capital Territory (ACT) did not supply testing data from 12 November 2022 due to technical reasons, therefore testing rates and percent positivity calculations are currently not available for the Australian Capital Territory.

During the four-week reporting period (19 December 2022 – 15 January 2023), PCR testing rates increased in the Northern Territory, decreased in New South Wales, South Australia, and Tasmania, and remained relatively stable in all other jurisdictions. There was an overall decrease in percent positivity in all jurisdictions over the reporting period. In the week ending 15 January 2023, the highest PCR percent positivity was observed in New South Wales at 13.2% (Figure 8).

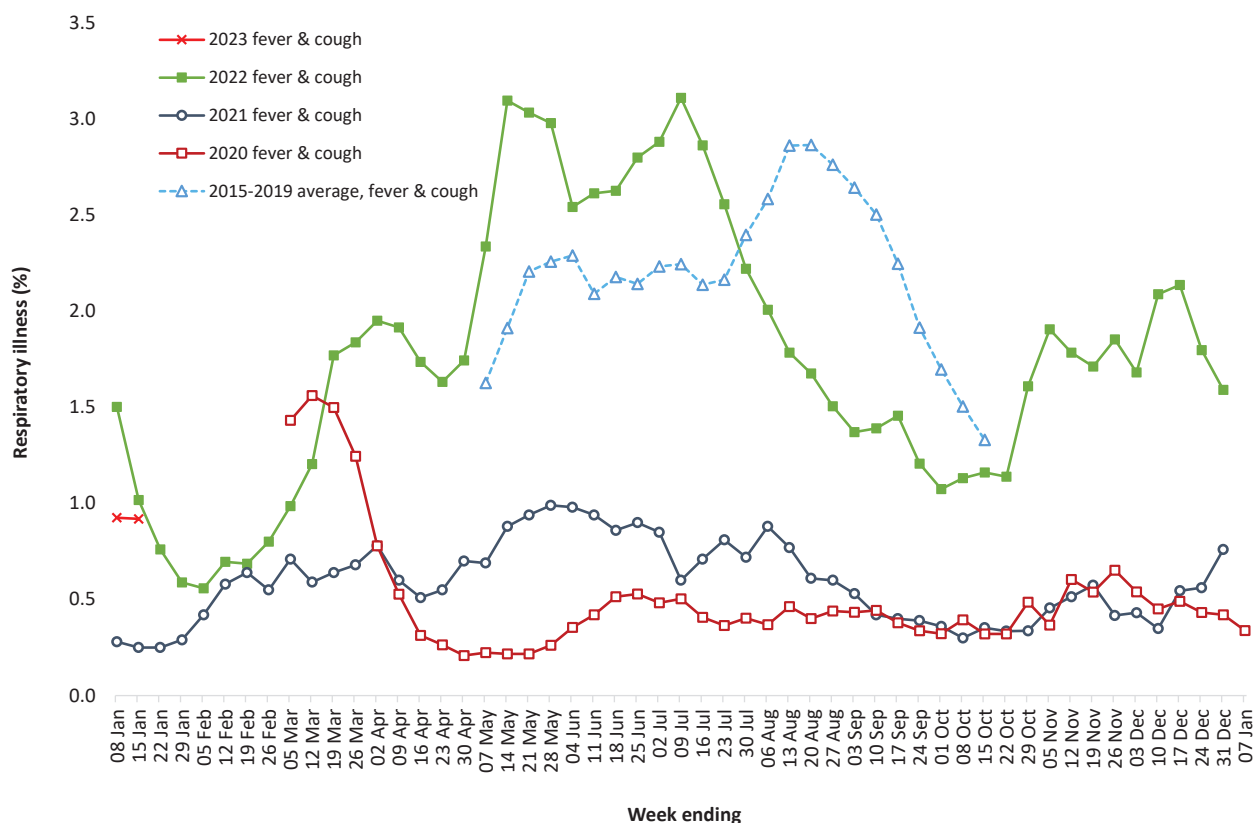


**Figure 8: SARS-CoV-2 polymerase chain reaction (PCR) testing rates per 1,000 population and percent positivity by jurisdiction and date of notification, 13 December 2021 – 15 January 2023<sup>a</sup>**



a Source: testing data provided by jurisdictions to the NIR daily, current to 15 January 2023; case data extracted from NNDSS on 2 February 2023 for cases with a notification date up to 15 January 2023; population data based on Australian Bureau of Statistics (ABS) Estimated Resident Population (ERP) as at June 2022. The Australian Capital Territory did not supply testing data from 12 November 2022 due to technical reasons.

**Figure 9: Weekly trends in fever and cough amongst FluTracking survey participants (age-standardised) compared to the average of the previous five years, Australia, 1 January 2020 – 15 January 2023<sup>a</sup>**



a In years prior to 2020, FluTracking was activated during the main Influenza season from May to October. A historical average beyond the week ending 11 October (epidemiological week 41) is therefore not available. In 2020, FluTracking commenced ten weeks early to capture data for COVID-19.

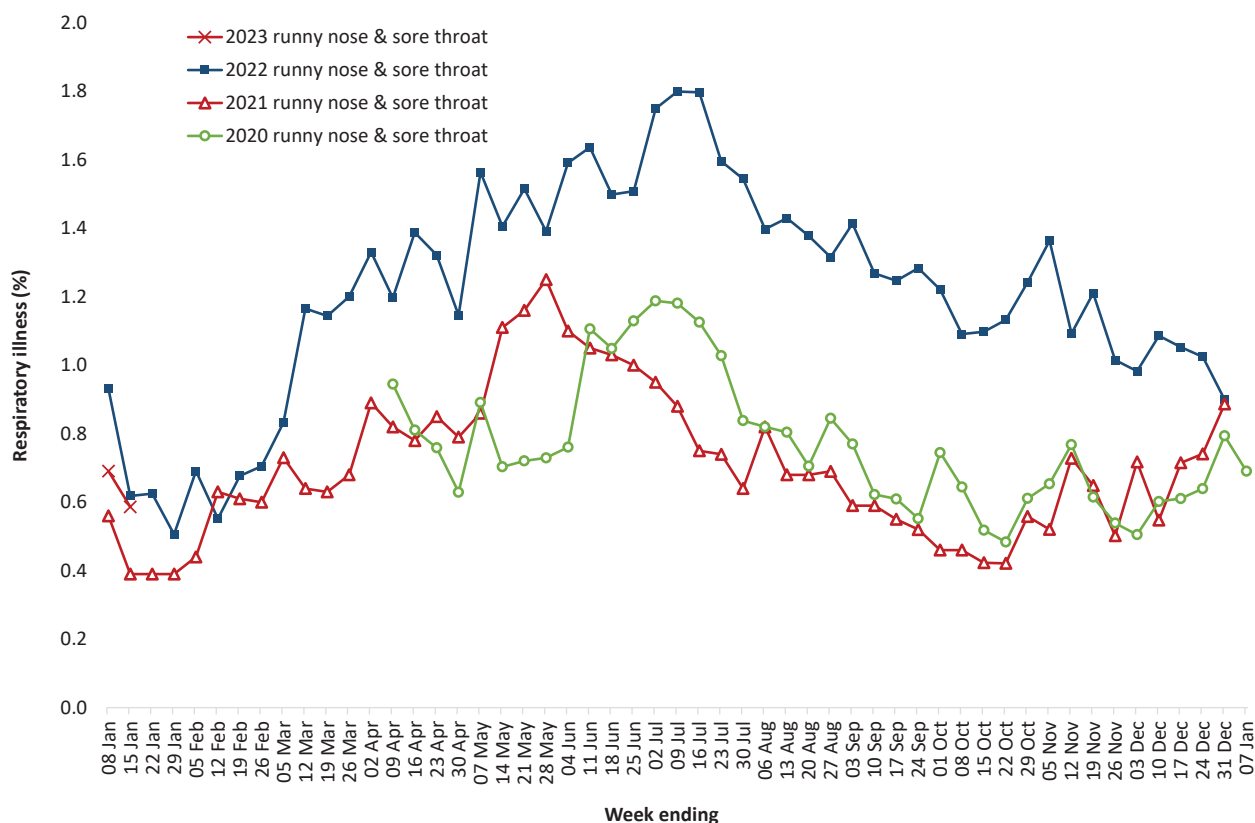
### Acute respiratory illness (FluTracking, ASPREN, and Commonwealth Respiratory Clinics)

Based on self-reported FluTracking data,<sup>8</sup> there has been an overall decreasing trend in the prevalence of both ‘fever and cough’ and ‘runny nose and sore throat’ symptoms in the community since late December 2022 (Figure 9; Figure 10).

Over the reporting period, FluTracking data indicated that 19.1% of participants with ‘fever and cough’ were tested for SARS-CoV-2 with a PCR test and 89.4% were tested using a RAT (noting that in some instances RATs will be followed up by a PCR test for the same case). Of those with runny nose and sore throat, 6.8% were tested for SARS-CoV-2 using a PCR test and

69.8% were tested using a RAT. In the current reporting period, the percent positivity for fever and cough symptoms was decreased slightly compared to the previous reporting period for both PCR and RAT, to 49.6% and 60.6%, respectively. For runny nose and sore throat symptoms, the percent positivity decreased for PCR and increased slightly for RAT to 10.0% and 13.6%, respectively. Note that participants with one set of symptoms are not excluded from having the other. It is important to acknowledge that there may be legitimate reasons why people did not get tested, including barriers to accessing testing. Symptoms reported to FluTracking are not specific to COVID-19 and may also be due to infections with other respiratory pathogens and to chronic diseases, such as asthma.

**Figure 10: Weekly trends in runny nose and sore throat amongst FluTracking survey participants (age-standardised), Australia, 29 March 2020 – 15 January 2023<sup>a</sup>**



<sup>a</sup> Data on runny nose and sore throat were only collected systematically after 29 March 2020, therefore a historical average for this symptom profile is unavailable.

From 19 December 2022 to 15 January 2023, of presentations to Commonwealth Respiratory Clinics that were tested for SARS-CoV-2, 12.4% (1,494/ 12,008) were found to be positive. Since the start of the pandemic, the most commonly reported symptoms among presentations that tested positive for SARS-CoV-2 were sore throat (57%) and cough (57%), followed by tiredness (45%).

Since the start of 2022 to 15 January 2023, of those presenting to sentinel ASPREN sites with influenza-like illness who were tested for respiratory viruses, 56% (591/1,051) tested positive. Among those positive, the most common virus detected was influenza A (27%; 162/591), followed by rhinovirus (27%; 158/591) and an equal proportion (13%) were positive for SARS-CoV-2 (78/591) and respiratory syncytial virus (76/591).

### Countries and territories in Australia’s near region

According to WHO, countries and territories in the South-East Asia and Western Pacific regions reported 7,129,662 new cases and 15,364 deaths in the four-week period to 15 January 2023.<sup>9</sup> Compared with the previous four-week reporting period, new cases and new deaths increased in the Western Pacific region and decreased in the South-East Asia region.<sup>9</sup> In total, since the start of the pandemic, over 171 million cases and over 1.1 million deaths have been reported in the two regions.<sup>10</sup>

In the four-week period from 19 December 2022 to 15 January 2023, changes in COVID-19 cases and deaths are highlighted in selected countries in the South-East Asia region and the Western Pacific region (Table 9). In the last four

**Table 9: Cumulative cases and deaths, and new cases and deaths reported in the four-week period to 15 January 2023 for selected countries in Australia’s near region according to WHO<sup>a</sup>**

Country	Cumulative cases	New cases reported in the last 4 weeks	Change in new cases in the last 4 weeks <sup>b</sup>	Cumulative deaths	New deaths reported in the last 4 weeks	Change in new deaths in the last 4 weeks <sup>b</sup>
<b>South-East Asia region</b>						
Indonesia	6,726,086	16,489	-84%	160,727	329	-68%
Thailand	4,725,885	6,977	-58%	33,792	287	-28%
India	44,681,040	5,088	-27%	530,726	54	-45%
Bangladesh	2,037,368	440	-22%	29,441	3	-62%
Myanmar	633,750	195	-65%	19,490	2	+100%
<b>Western Pacific region</b>						
Japan	31,308,352	4,191,879	+25%	62,264	8,945	+78%
Republic of Korea	29,806,891	1,618,598	-1%	32,949	1,554	+14%
China	10,900,244	849,202	+45%	33,923	2,688	+78%
New Zealand	2,097,686	69,705	-48%	2,393	105	-1%
<b>Australia</b>	<b>11,238,924</b>	<b>300,828</b>	<b>-26%</b>	<b>16,679</b>	<b>742</b>	<b>-6%</b>

a Source: World Health Organization Coronavirus (COVID-19) Dashboard, accessed 27 January 2023, for data until 15 January 2023.

b Percent change in the number of newly confirmed cases/deaths in the most recent four-week period compared to the four weeks prior.

weeks, large increases in new cases and deaths were seen in China (+45% and +78%) and Japan (+28% and +78%). New cases and new deaths were substantially lower across the highlighted countries in the South-East Asia region during the last four weeks than in the previous four-week period (Table 9).

As of 15 January 2023, over 662 million COVID-19 cases and over 6.7 million deaths have been reported globally since the start of the pandemic, with a global case fatality rate (CFR) of approximately 1.01%. The two regions reporting the largest burden of disease over the past four weeks were the Western Pacific (55% of total cases) and the Americas (26% of total cases).<sup>9</sup>

## Acknowledgements

We thank public health staff from incident emergency operations centres and public health units in state and territory health departments, and the Australian Government Department of Health and Aged Care, along with state and territory public health laboratories. We thank those who have provided data from surveillance systems, such as Commonwealth respiratory clinics, ASPREN, FluTracking, FluCAN, SPRINT-SARI, Communicable Disease Genomics Network, AusTrakka and jurisdictional sequencing laboratories.

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## Appendix A: Supplementary figures and tables

**Table A.1: COVID-19 cases and rates per 100,000 population, by age group, sex, and notification received date, Australia, 15 December 2021 – 15 January 2023<sup>a,b,c</sup>**

Age group	Four-week reporting period						Current 'Omicron' wave								
	19 December 2022 – 15 January 2023			15 December 2021 – 15 January 2023			15 December 2021 – 15 January 2023			15 December 2021 – 15 January 2023					
	Cases		Rate per 100,000 population	Cases		Rate per 100,000 population	Cases		Rate per 100,000 population	Cases		Rate per 100,000 population			
Male	Female	People <sup>d</sup>	Male	Female	People <sup>d</sup>	Male	Female	People <sup>d</sup>	Male	Female	People <sup>d</sup>	Male	Female	People <sup>d</sup>	
0–4	3,794	3,543	8,047	488.9	482.9	533.0	211,103	201,055	465,779	27,204.7	27,402.7	30,852.7	27,402.7	27,402.7	30,852.7
5–11	3,475	3,489	7,401	298.2	316.9	326.6	419,142	398,798	918,139	35,970.4	36,221.1	40,513.5	36,221.1	36,221.1	40,513.5
12–15	1,870	2,147	4,212	278.1	338.6	322.4	249,877	251,156	561,554	37,158.9	39,610.9	42,981.2	39,610.9	39,610.9	42,981.2
16–17	1,038	1,245	2,410	330.0	421.4	395.1	114,435	131,240	269,146	36,382.6	44,424.0	44,125.3	44,424.0	44,424.0	44,125.3
18–29	12,121	20,467	34,259	585.5	1,034.6	846.2	895,099	1,075,777	2,121,484	43,234.5	54,378.9	52,400.0	54,378.9	54,378.9	52,400.0
30–39	13,992	22,379	38,229	743.7	1,167.0	1,006.2	779,437	952,104	1,881,394	41,426.3	49,647.6	49,520.4	49,647.6	49,647.6	49,520.4
40–49	12,546	19,869	33,808	763.7	1,182.0	1,017.1	641,204	794,097	1,559,037	39,030.9	47,239.2	46,904.9	47,239.2	47,239.2	46,904.9
50–59	13,034	20,507	34,851	831.4	1,266.6	1,093.6	514,914	624,655	1,228,679	32,844.2	38,581.6	38,555.3	38,581.6	38,581.6	38,555.3
60–69	13,576	18,251	33,066	1,003.4	1,266.0	1,183.2	365,454	416,641	836,559	27,011.5	28,899.9	29,934.6	28,899.9	28,899.9	29,934.6
70–79	12,336	13,264	26,600	1,271.2	1,266.0	1,318.1	226,221	230,238	481,838	23,312.5	21,974.8	23,875.6	23,312.5	21,974.8	23,875.6
80–89	6,786	8,110	15,693	1,686.2	1,628.2	1,742.6	98,274	110,425	218,044	24,419.2	22,168.9	24,212.2	24,419.2	22,168.9	24,212.2
90+	1,938	3,894	6,184	2,555.5	2,803.3	2,879.7	24,550	45,235	72,203	32,372.5	32,564.7	33,622.8	32,372.5	32,564.7	33,622.8

a Source: NNDS, extract from 2 February 2023 for notifications to 15 January 2023.

b Population data based on Australian Bureau of Statistics (ABS) Estimated Resident Population (ERP) as at June 2022.

c Excludes cases where age was unknown.

d Total cases includes those where sex was unknown and those classified as X, i.e., persons who reported their sex as another term, other than male or female.