



**Australian Government**

**Department of Health  
and Aged Care**

2023 · Volume 47

# **Communicable Diseases Intelligence**

## **COVID-19 Australia: Epidemiology Report 69**

Reporting period ending 18 December 2022

COVID-19 Epidemiology and Surveillance Team

<https://doi.org/10.33321/cdi.2023.47.7>

Electronic publication date: 31/1/2023

<http://health.gov.au/cdi>

# Communicable Diseases Intelligence

ISSN: 2209-6051 Online

This journal is indexed by Index Medicus and Medline.

Creative Commons Licence - Attribution-NonCommercial-NoDerivatives CC BY-NC-ND

© 2023 Commonwealth of Australia as represented by the Department of Health and Aged Care

This publication is licensed under a Creative Commons Attribution-Non-Commercial NoDerivatives 4.0 International Licence from <https://creativecommons.org/licenses/by-nc-nd/4.0/legalcode> (Licence). You must read and understand the Licence before using any material from this publication.

## Restrictions

The Licence does not cover, and there is no permission given for, use of any of the following material found in this publication (if any):

- the Commonwealth Coat of Arms (by way of information, the terms under which the Coat of Arms may be used can be found at [www.itsanhonour.gov.au](http://www.itsanhonour.gov.au));
- any logos (including the Department of Health and Aged Care's logo) and trademarks;
- any photographs and images;
- any signatures; and
- any material belonging to third parties.

## Disclaimer

Opinions expressed in Communicable Diseases Intelligence are those of the authors and not necessarily those of the Australian Government Department of Health and Aged Care or the Communicable Diseases Network Australia. Data may be subject to revision.

## Enquiries

Enquiries regarding any other use of this publication should be addressed to the Communication Branch, Department of Health and Aged Care, GPO Box 9848, Canberra ACT 2601, or via e-mail to: [copyright@health.gov.au](mailto:copyright@health.gov.au)

## Communicable Diseases Network Australia

Communicable Diseases Intelligence contributes to the work of the Communicable Diseases Network Australia.  
<http://www.health.gov.au/cdna>



Communicable Diseases Intelligence (CDI) is a peer-reviewed scientific journal published by the Office of Health Protection and Response, Department of Health and Aged Care. The journal aims to disseminate information on the epidemiology, surveillance, prevention and control of communicable diseases of relevance to Australia.

## Editor

Noel Lally

## Deputy Editor

Simon Petrie

## Design and Production

Kasra Yousefi

## Editorial Advisory Board

David Durrheim,  
Mark Ferson, John Kaldor,  
Martyn Kirk and Linda Selvey

## Website

<http://www.health.gov.au/cdi>

## Contacts

CDI is produced by the Office of Health Protection and Response, Australian Government Department of Health and Aged Care, GPO Box 9848, (MDP 6) CANBERRA ACT 2601

## Email:

[cdi.editor@health.gov.au](mailto:cdi.editor@health.gov.au)

## Submit an Article

You are invited to submit your next communicable disease related article to the Communicable Diseases Intelligence (CDI) for consideration. More information regarding CDI can be found at: <http://health.gov.au/cdi>.

Further enquiries should be directed to:

[cdi.editor@health.gov.au](mailto:cdi.editor@health.gov.au)

## Surveillance summary

# COVID-19 Australia: Epidemiology Report 69

Reporting period ending 18 December 2022

COVID-19 Epidemiology and Surveillance Team

## Summary

### Four-week reporting period (21 November – 18 December 2022)

*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** – Nationally, COVID-19 case notifications have increased since late October 2022, consistent with a fourth wave of transmission driven by a combination of existing and newly emerging Omicron subvariants. In the four-week period 21 November – 18 December 2022, there were 167,208 confirmed and 257,771 probable cases of COVID-19 reported in Australia to NNDSS. In the latter reporting fortnight, a total of 223,115 confirmed and probable cases were notified (an average of 15,937 cases per day), compared to 201,864 in the previous fortnight (14, 419 cases per day).

**Age group** – Since late October 2022, there has been an increase in notification rates across all age groups, with rates highest among adults aged 70 years and over. In the reporting period 21 November – 18 December 2022, the highest notification rate was observed among adults aged 80 years and over, whilst the lowest rate was among children aged 5 to 11 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 – 18 December 2022), the highest notification rate has been in adults aged 18 to 29 years.

**Aboriginal and Torres Strait Islander people** – In the reporting period 21 November – 18 December 2022, there were 10,396 new cases notified in Aboriginal and Torres Strait Islander people. In the current Omicron wave (15 December 2021 – 18 December 2022) there have been 382,854 cases notified in Aboriginal and Torres Strait Islander people, representing 3.7% (382,854 /10,465,271) 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 0.17%, which is slightly less than the rate observed during the third wave (0.20%), greater than the rate observed in the first and second waves (0.13% and 0.09% respectively), and notably less than observed during the Delta wave (0.69%). Since the start of the pandemic to 18 December 2022, there have been 164 cases of paediatric inflammatory multisystem syndrome temporally associated with SARS-CoV-2 (PIMS-TS) reported to PAEDS, including 130 cases reported in 2022.

**Virology** – For samples collected in the four-week period 21 November – 18 December 2022, all 7,329 samples were assigned against Omicron or against recombinants consisting of two Omicron lineages. There is currently significant diversity in the range of sub- and sub-sub-lineages circulating within Australia. BA.5 is currently the predominant sub-lineage being sequenced, representing 39.4% of sequences collected in the reporting period and available for analysis in AusTrakka. By contrast, recombinant lineages made up 14.0% of sequences available in AusTrakka during the same period. Of the Omicron sequences in AusTrakka to date, 21.06% are BA.1; 39.15% are BA.2; < 0.001% are BA.3; 4.02% are BA.4 and 32.63% are BA.5. Recombinant strains make up 3.09% of all Omicron sequences to date.

**International situation** – According to the World Health Organization (WHO), cumulative global COVID-19 cases stood at over 649 million COVID-19 cases and over 6.6 million deaths as of 18 December 2022. For the South-East Asia and Western Pacific regions combined, there were 6,399,285 new cases and 10,963 deaths in the four-week period to 18 December 2022. Compared to the previous four-week reporting period, new cases and new deaths increased in both the Western Pacific and South-East Asia regions. In total, since the start of the pandemic, over 170 million cases and over one 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 21 November – 18 December 2022. Within this period, data for each week is compared. The previous reporting period was the preceding four weeks (24 October – 20 November 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, the majority of 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.

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 18 December 2022, jurisdictions within Australia have reported 10,699,888 COVID-19 cases to the NNDSS (Table 1). Nationally, case notifications have been increasing since late October 2022. In the four-week period 21 November – 18 December 2022, there were 167,208 confirmed and 257,771 probable cases of COVID-19 reported in Australia to NNDSS (Table 1). In the most recent reporting fortnight, a total of 223,115 confirmed and probable cases were notified (an average of 15,937 cases per day), compared to 201,864 in the previous fortnight (an average of 14,419 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. Since late October 2022, case numbers increased, reflecting a fourth wave of transmission driven by a combination of existing and newly emerging Omicron subvariants (Figure 1).

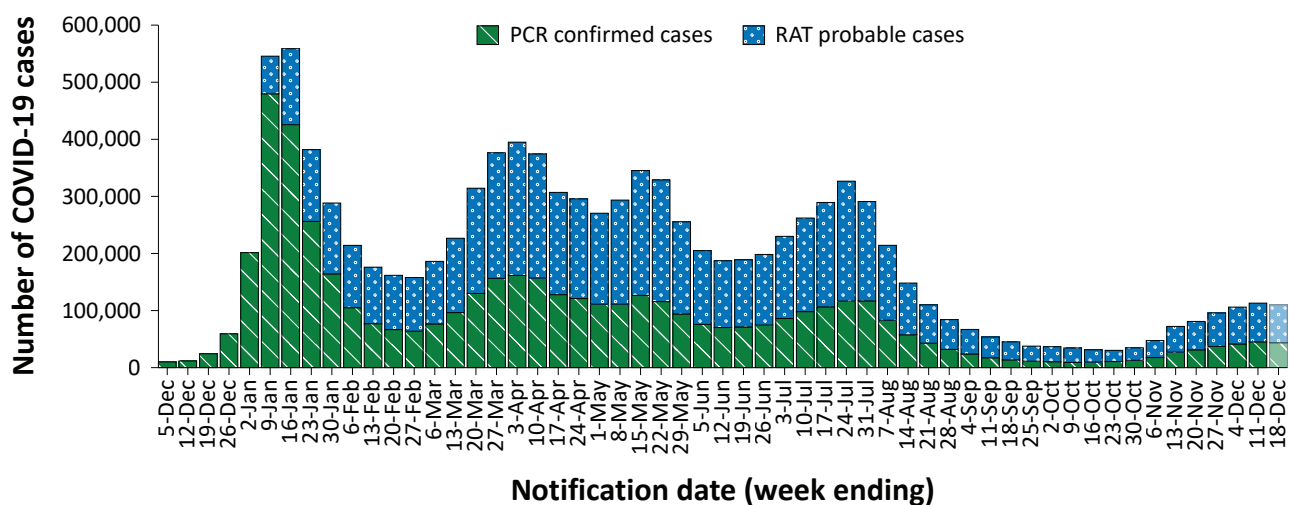
**Table 1: Confirmed and probable COVID-19 cases by jurisdiction and date of notification, Australia, 15 December 2021 – 18 December 2022<sup>a,b</sup>**

Jurisdiction	Reporting period						Current Omicron wave		
	21 November – 4 December 2022			5–18 December 2022			15 December 2021 – 18 December 2022		
	Confirmed	Probable	Total	Confirmed	Probable	Total	Confirmed	Probable	Total
ACT	1,601 (37.2%)	2,698 (62.8%)	4,299	2,551 (42.4%)	3,466 (57.6%)	6,017	126,640 (57.4%)	94,109 (42.6%)	220,749
NSW	44,108 (61.0%)	28,203 (39.0%)	72,311	49,001 (60.2%)	32,442 (39.8%)	81,443	1,991,806 (56.8%)	1,513,715 (43.2%)	3,505,521
NT	288 (23.0%)	963 (77.0%)	1,251	493 (30.0%)	1,152 (70.0%)	1,645	22,417 (21.9%)	80,133 (78.1%)	102,550
Qld	4,881 (23.8%)	15,662 (76.2%)	20,543	7,373 (25.9%)	21,075 (74.1%)	28,448	652,716 (41.0%)	941,022 (59.0%)	1,593,738
SA	9,726 (47.5%)	10,759 (52.5%)	20,485	10,266 (45.4%)	12,334 (54.6%)	22,600	493,847 (58.3%)	352,924 (41.7%)	846,771
Tas.	1,665 (22.9%)	5,602 (77.1%)	7,267	1,819 (22.8%)	6,149 (77.2%)	7,968	62,085 (22.6%)	212,132 (77.4%)	274,217
Vic.	12,337 (23.4%)	40,361 (76.6%)	52,698	13,083 (25.8%)	37,718 (74.2%)	50,801	1,060,314 (39.6%)	1,614,493 (60.4%)	2,674,807
WA	4,005 (17.4%)	19,005 (82.6%)	23,010	4,011 (16.6%)	20,182 (83.4%)	24,193	487,505 (39.1%)	759,413 (60.9%)	1,246,918
<b>Australia</b>	<b>78,611 (38.9%)</b>	<b>123,253 (61.1%)</b>	<b>201,864</b>	<b>88,597 (39.7%)</b>	<b>134,518 (60.3%)</b>	<b>223,115</b>	<b>4,897,330 (46.8%)</b>	<b>5,567,941 (53.2%)</b>	<b>10,465,271</b>

a Source: NNDSS extract from 10 January 2023 for notifications from 15 December 2021 to 18 December 2022.

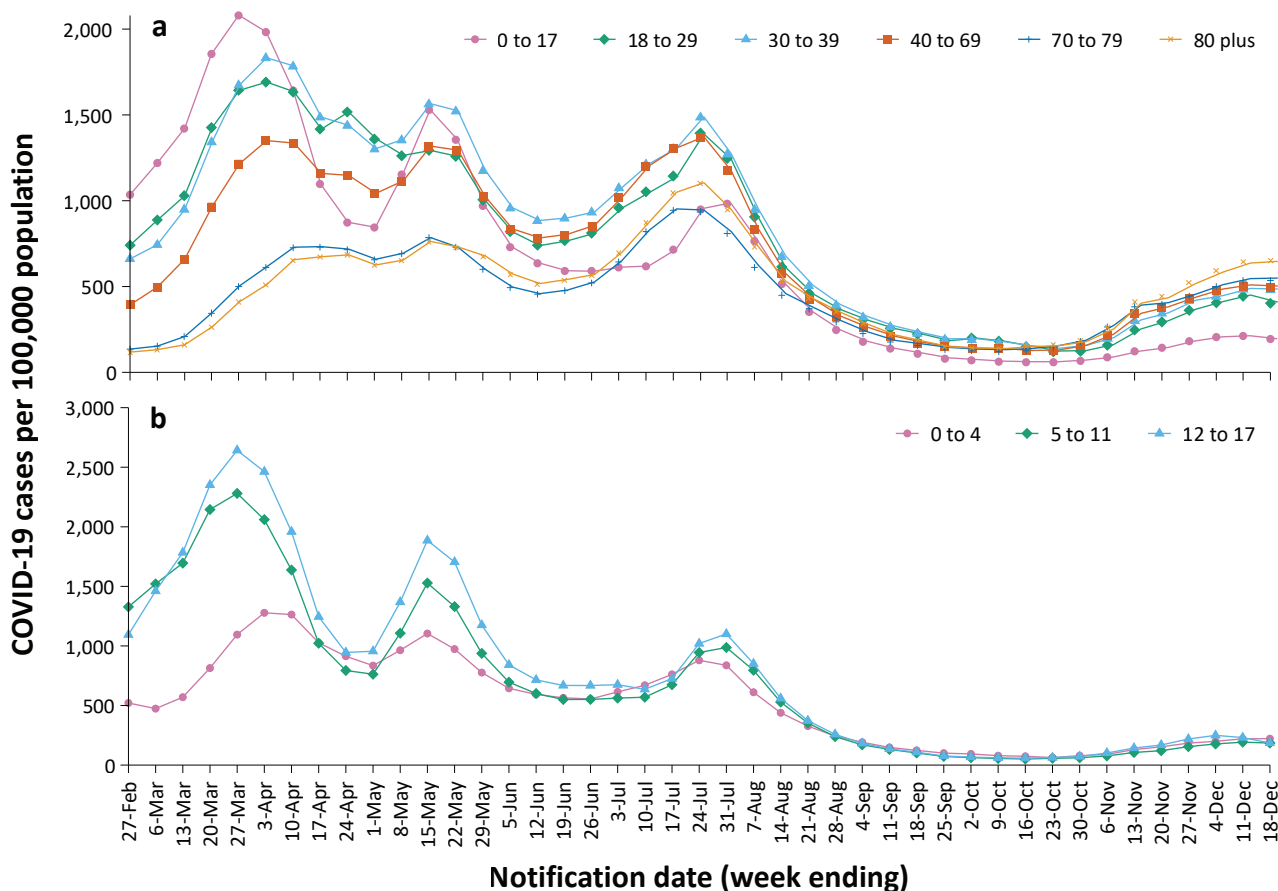
b ACT: Australian Capital Territory; NSW: New South Wales; NT: Northern Territory; Qld: Queensland; SA: South Australia; Tas.: Tasmania; Vic.: Victoria; WA: Western Australia.

**Figure 1: Confirmed and probable weekly COVID-19 notified cases by notification date, Australia, 29 November 2021 – 18 December 2022<sup>a</sup>**



a Source: NNDSS extract from 10 January 2023 for notifications from 29 November 2021 to 18 December 2022.

**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 – 18 December 2022<sup>a</sup>**



a Source: NNDSS extract from 10 January 2023 for notifications from 21 February to 18 December 2022.

**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 – 18 December 2022<sup>a</sup>**

Jurisdiction	21–27 November 2022	28 November – 4 December 2022	5–11 December 2022	12–18 December 2022	15 December 2021 – 18 December 2022 (Omicron wave)
ACT <sup>a</sup>	22	28	34	36	3,950
NSW	770	960	1,062	1,047	128,302
NT	61	108	177	152	24,771
Qld <sup>b</sup>	424	517	628	645	95,932
SA	152	152	177	151	22,274
Tas	143	204	183	168	15,944
Vic	298	316	271	246	34,786
WA	244	286	333	401	56,895
<b>Australia</b>	<b>2,114</b>	<b>2,571</b>	<b>2,865</b>	<b>2,846</b>	<b>382,854</b>

<sup>a</sup> Source: NNDSS extract from 10 January 2023 for notifications from 15 December 2021 to 18 December 2022.

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 October 2022, notification rates have increased across all age groups, with rates highest among adults aged 70 years and over. In the current reporting period 21 November – 18 December 2022, the highest notification rate was observed among adults aged 80 years and over, whilst the lowest rate was among children aged 5 to 11 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). For the entire Omicron wave to date (15 December 2021 – 18 December 2022), the highest notification rate has been in adults aged 18 to 29 years. 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 beginning to stabilise 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% 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 10,396 new cases notified in Aboriginal and Torres Strait Islander people (Table 2). In the Omicron wave (15 December 2021 – 18 December 2022) there have been 382,854 cases notified in Aboriginal and Torres Strait Islander people, representing 3.7% (382,854/10,465,271) of all cases in the Omicron wave to date.

**Table 3: COVID-19 cases among Aboriginal and Torres Strait Islander people by area of remoteness, Australia, 15 December 2021 – 18 December 2022<sup>a</sup>**

Jurisdiction <sup>b,c</sup>	Major city	Inner regional	Outer regional	Remote <sup>d</sup>
ACT	3,899	35	11	1
NSW	69,099	41,420	14,193	2,903
NT	64	18	7,734	16,091
Qld	34,903	22,110	28,300	10,520
SA	12,059	2,398	4,707	2,997
Tas.	202	9,693	5,634	278
Vic.	19,854	11,181	3,701	15
WA	29,676	4,082	7,104	15,447
<b>Australia</b>	<b>169,756</b>	<b>90,937</b>	<b>71,384</b>	<b>48,252</b>

a Source: NNDSS extract from 10 January 2023 for notifications from 15 December 2021 to 18 December 2022. 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'.

**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 18 December 2022**

Age group (years)	15 December 2021 – 18 December 2022 (Omicron wave)				16 June 2021 – 14 December 2021 (Delta wave)				1 January 2020 – 18 December 2022 (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	56	2	57	17.6	8	0	8	2.5	64	2	65	20.0
18–59	240	87	311	74.5	86	11	90	21.6	327	98	402	96.3
60+	129	188	289	512.1	29	15	36	63.8	160	203	327	579.4
<b>All</b>	<b>425</b>	<b>277</b>	<b>657</b>	<b>82.3</b>	<b>123</b>	<b>26</b>	<b>134</b>	<b>16.8</b>	<b>551</b>	<b>303</b>	<b>794</b>	<b>99.5</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.



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% (210,573/380,329) 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% (50,985/71,384) and 73% (14,670/20,115), 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 303 associated deaths reported in Aboriginal and Torres Strait Islander people from the start of the pandemic to 18 December 2022 (Table 4). This comprises 100 from New South Wales;

89 from Queensland; 44 from the Northern Territory; 36 from Western Australia; 20 from South Australia; 10 from Victoria; and two each from the Australian Capital Territory and Tasmania. An additional 551 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 was 82.3 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.

**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 – 18 December 2022<sup>a</sup>**

Comorbidity	ICU cases <sup>a</sup> (n = 3,370) (%)
Cardiac disease (n = 3,348)	927 (28%)
Chronic respiratory condition (n = 3,352) <sup>b</sup>	821 (25%)
Diabetes (n = 3,323)	1,101 (33%)
Obesity (n = 3,305)	712 (22%)
Chronic renal disease (n = 3,341)	534 (16%)
Chronic neurological condition (n = 3,339)	271 (8%)
Malignancy (n = 3,350)	505 (15%)
Chronic liver disease (n = 3,345)	198 (6%)
Immunosuppression (n = 3,309)	598 (18%)
<b>Number of specified comorbidities (n = 3,370)<sup>c</sup></b>	
No comorbidities	762 (23%)
One or more	2,608 (77%)
Two or more	1,666 (49%)
Three or more	860 (26%)

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.

## Severity (NNDSS, SPRINT-SARI)

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). Since the start of the fourth Omicron wave in late October 2022, there has been a gradual increase in the notification rate of cases with severe illness, although rates appear to have stabilised over the current reporting period. Rates of severe cases continue to be greater in older age groups; since the start of the fourth Omicron wave, rates of severe illness in those aged 80 years and over have been increasing, while rates in all other age groups have remained relatively stable (Figure 4).

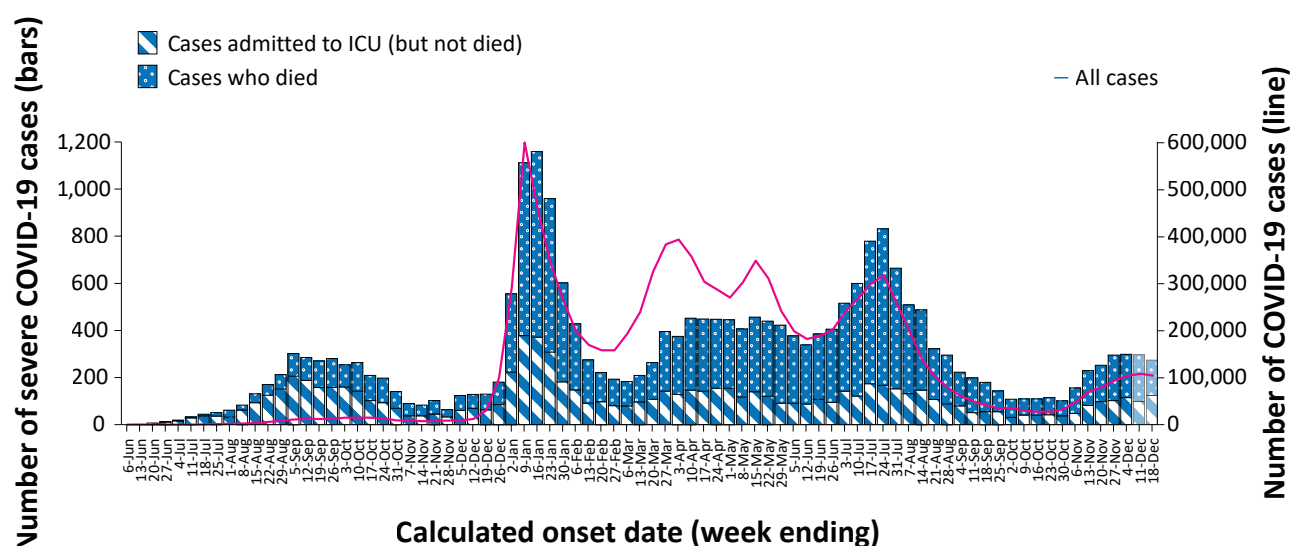
## ICU admissions

From the start of the Omicron wave to 18 December 2022, there were 4,841 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 237 of these admitted during this reporting period (21 November – 18 December 2022).

## 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% (2,608/3,370) had at least one of the listed comorbidities.

**Figure 3: COVID-19 cases, deaths and ICU admissions, Australia, by date of onset, Australia, 31 May 2021 to 18 December 2022<sup>a,b</sup>**



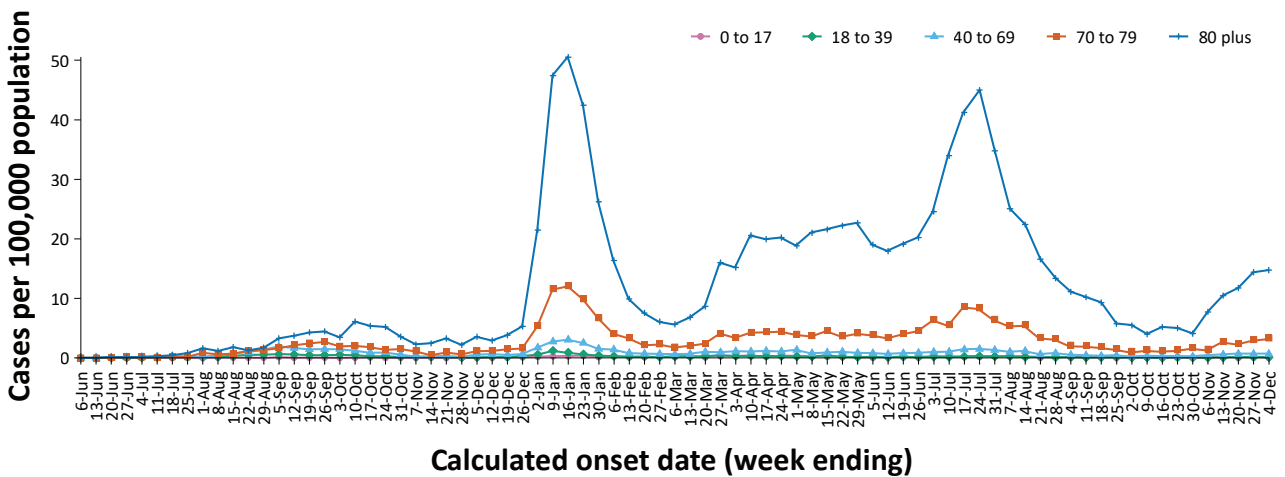
- a Source: NNDSS extract from 10 January 2023 for notifications to 18 December 2022. The Australian Capital Territory did not supply hospitalisation data from 12 November to 24 November 2022 due to technical reasons.
- b The shaded bars at the right represent the most recent two reporting weeks and should be interpreted with caution, as cases with an illness onset in these weeks may not have yet developed severe disease.

**PIMS-TS**  
(PAEDS)

Since the start of the pandemic to 18 Dec 2022, there have been 164 cases of paediatric inflammatory multisystem syndrome temporally associated with SARS-CoV-2 (PIMS-TS) reported to Paediatric Active Enhanced Disease Surveillance (PAEDS), including 130 cases

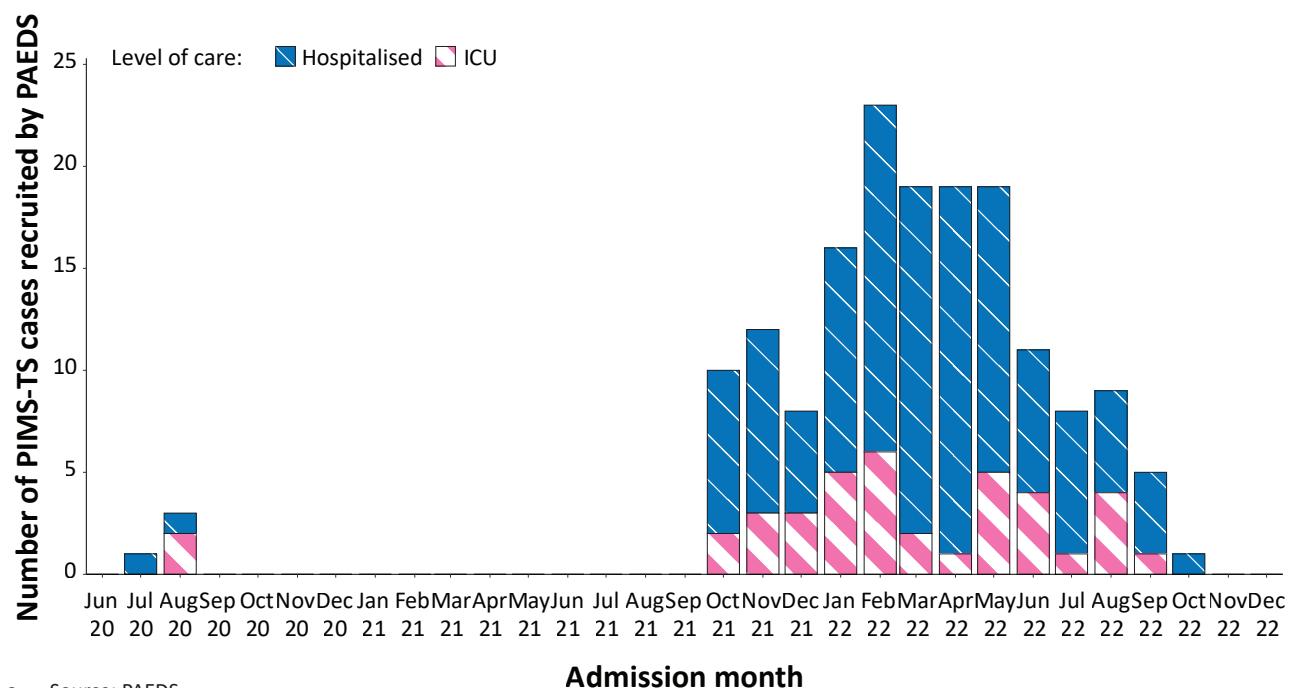
reported in 2022, zero in the current reporting period and six new cases from previous reporting periods; two of them were reported by a non-PAEDS site. The majority of PIMS-TS cases to date have occurred in those aged 5 to < 12 years (52%; 86/164), followed by those aged 6 months to < 5 years (28%; 46/164). To date, there have been no PIMS-TS associated deaths.

**Figure 4: Age-specific rates of COVID-19 cases admitted to ICU or died, by date of diagnosis, Australia, 31 May 2021 to 4 December 2022<sup>a</sup>**



<sup>a</sup> Source: NNDSS extract from 10 January 2023 for notifications to 18 December 2022. Includes cases with an illness onset from 31 May 2021 to 4 December 2022; cases with an illness onset in the last two weeks (5–18 December 2022) 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.

**Figure 5: PIMS-TS cases reported to PAEDS, by sample month and level of care required, Australia, 1 June 2020 – 18 December 2022<sup>a</sup>**



<sup>a</sup> Source: PAEDS.

**Table 6: Deaths associated with COVID-19 by reporting period, Australia, 1 January 2020 – 18 December 2022<sup>a,b</sup>**

Jurisdiction <sup>c</sup>	21 November – 4 December 2022	5–18 December 2022	15 December 2021 – 18 December 2022 (Omicron wave)	1 January 2020 – 18 December 2022 (Pandemic to date)
ACT	4 (1.2%)	3 (0.7%)	134 (1.0%)	150 (0.9%)
NSW	121 (35.2%)	109 (27.1%)	5,133 (36.8%)	5,876 (35.9%)
NT	3 (0.9%)	3 (0.7%)	86 (0.6%)	87 (0.5%)
Qld	43 (12.5%)	65 (16.2%)	2,461 (17.7%)	2,493 (15.2%)
SA	17 (4.9%)	33 (8.2%)	1,135 (8.1%)	1,154 (7.0%)
Tas.	8 (2.3%)	10 (2.5%)	198 (1.4%)	214 (1.3%)
Vic.	110 (32.0%)	144 (35.8%)	3,951 (28.4%)	5,558 (34.0%)
WA	38 (11.0%)	35 (8.7%)	836 (6.0%)	839 (5.1%)
<b>Australia</b>	<b>344 (100.0%)</b>	<b>402 (100.0%)</b>	<b>13,934 (100.0%)</b>	<b>16,371 (100.0%)</b>

a Source: NNDSS, extract from 22 November 2022 for deaths to 18 December 2022.

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.

## COVID-19 deaths

There were 746 COVID-19-associated deaths among cases notified during the reporting period (21 November – 18 December 2022). In total there have been 16,371 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 0.17%, which is slightly less than the rate observed during the third wave (0.20%), greater than the rates observed in the first and second waves (0.13% and 0.09% respectively), and notably less than observed during the Delta wave (0.69%) (Table 7).

## Genomic surveillance and virology

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

Nationally, 3.19% 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 7: COVID-19 associated case fatality rates, among cases notified to NNDSS, by age group and date of onset, 1 January 2020 to 4 December 2022<sup>a,b,c</sup>**

Age group	Fourth Omicron wave 24 October – 4 December 2022	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 – 4 December 2022	Delta 16 June – 14 December 2021	Pandemic 1 January 2020 – 4 December 2022
0–4	0.00%	< 0.05%	< 0.05%	< 0.05%	< 0.05%	0.00%	< 0.05%
5–11	0.00%	0.00%	0.00%	< 0.05%	< 0.05%	< 0.05%	< 0.05%
12–15	0.00%	< 0.05%	0.00%	< 0.05%	< 0.05%	< 0.05%	< 0.05%
16–17	0.00%	0.00%	< 0.05%	0.00%	< 0.05%	0.00%	< 0.05%
18–29	< 0.05%	< 0.05%	< 0.05%	< 0.05%	< 0.05%	< 0.05%	< 0.05%
30–39	< 0.05%	< 0.05%	< 0.05%	< 0.05%	< 0.05%	0.06%	< 0.05%
40–49	< 0.05%	< 0.05%	< 0.05%	< 0.05%	< 0.05%	0.18%	< 0.05%
50–59	< 0.05%	< 0.05%	< 0.05%	0.05%	< 0.05%	0.65%	< 0.05%
60–69	0.10%	0.14%	0.10%	0.24%	0.14%	1.93%	0.17%
70–79	0.34%	0.64%	0.44%	1.13%	0.59%	6.13%	0.69%
80–89	1.32%	2.48%	2.03%	5.01%	2.47%	14.75%	2.81%
90+	3.15%	6.64%	5.84%	10.76%	6.29%	27.73%	6.93%
Unknown	< 0.05%	0.00%	0.00%	0.00%	< 0.05%	0.00%	< 0.05%
<b>Australia</b>	<b>0.17%</b>	<b>0.20%</b>	<b>0.09%</b>	<b>0.13%</b>	<b>0.13%</b>	<b>0.69%</b>	<b>0.15%</b>

a Source: NNDSS, extract from 22 November 2022 for deaths to 18 December 2022.

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.

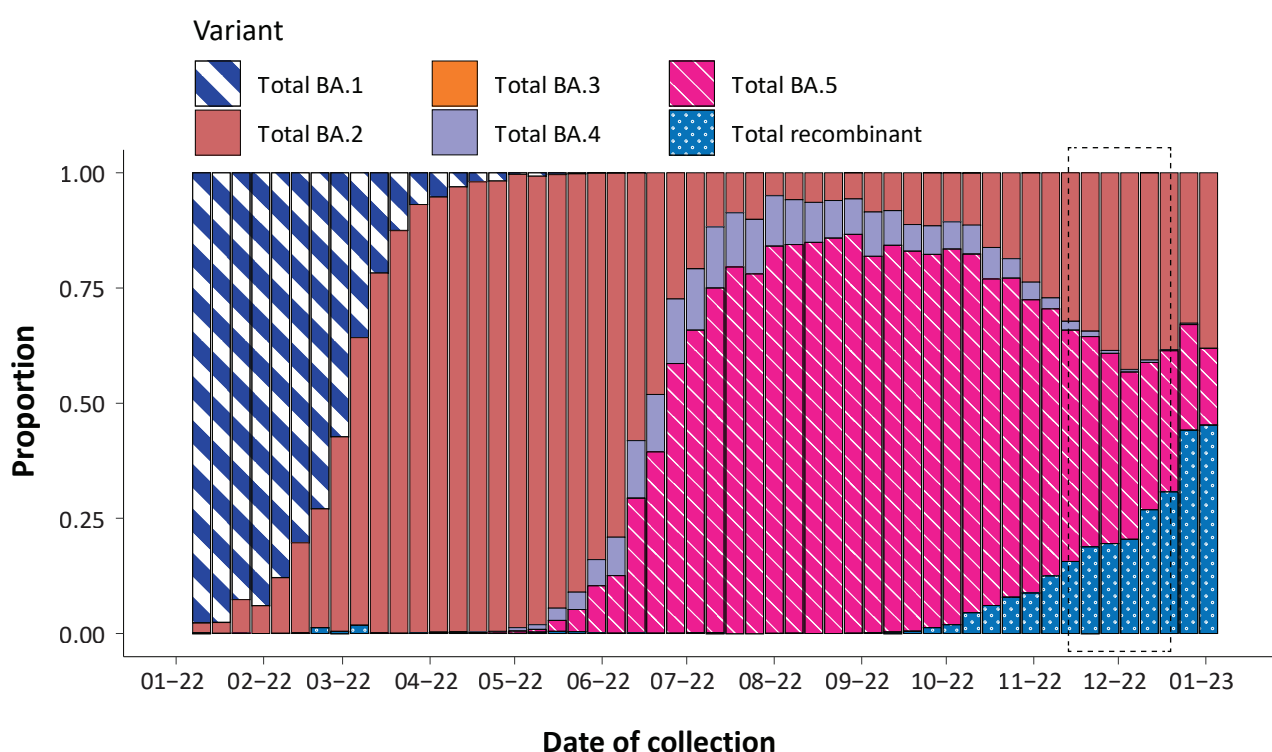
c A value of 0.00% indicates that no COVID-19 associated fatalities occurred during the indicated period for the specified age group.

**Table 8: Australian SARS-CoV-2 genome sequences and proportion of positive cases sequenced, 21 November – 18 December 2022 and cumulative to date**

Measure	Reporting period 21 November – 18 December 2022	Cumulative 23 January 2020 – 18 December 2022
SARS-CoV-2 cases sequenced <sup>a</sup>	7,328	167,425
Percentage of positive cases sequenced <sup>b</sup>	4.01%	3.19%

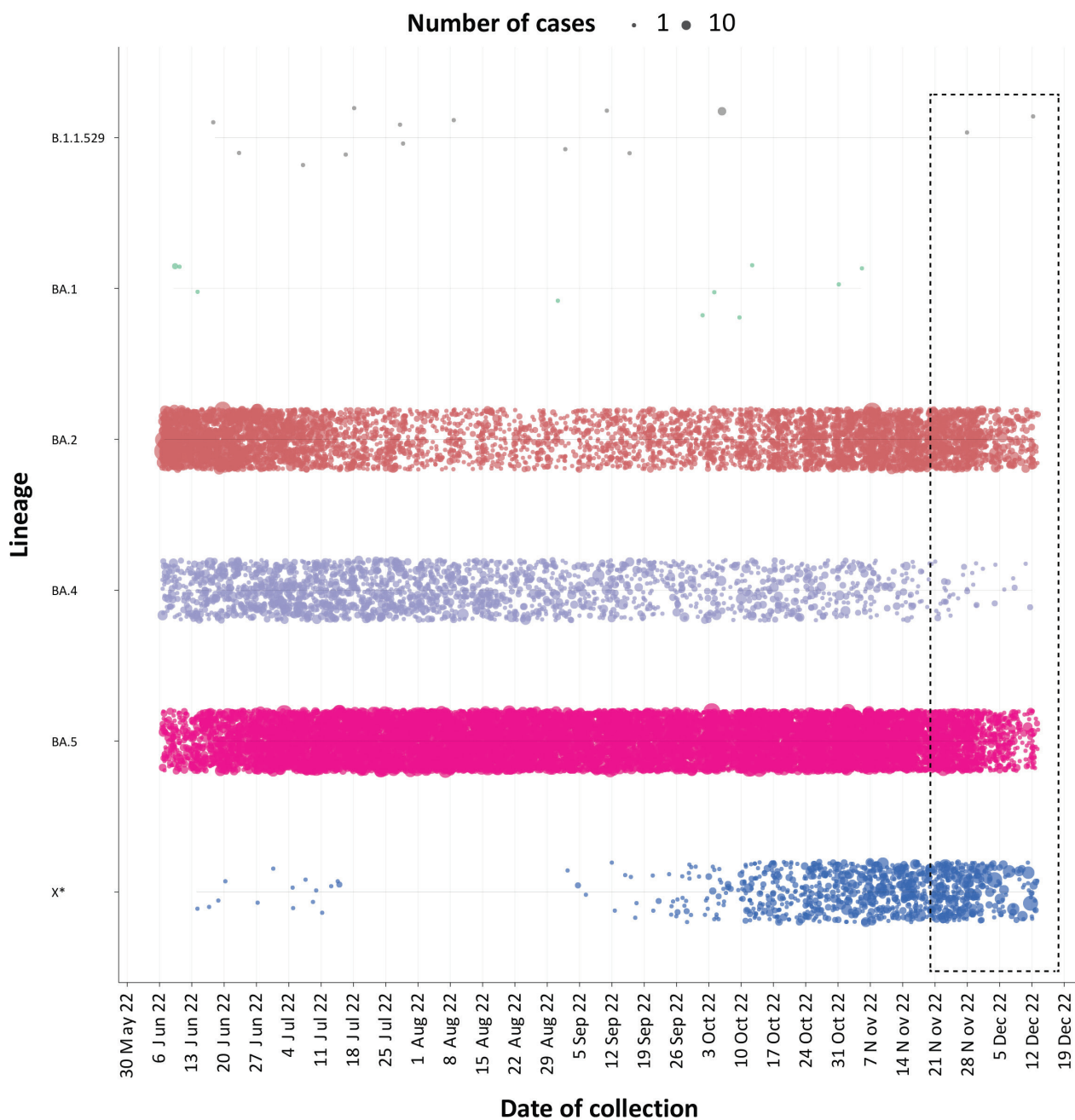
- a Total SARS-CoV-2 case numbers as reported by jurisdictional laboratories based on PCR results only. Cases identified via rapid antigen testing are reported differently by each jurisdiction and cannot be followed up for sequencing. They are therefore not included in the sequencing proportions reported 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.

**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 (21 November to 18 December 2022) 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 in the past 28 weeks, by lineage and date of collection<sup>a,b</sup>



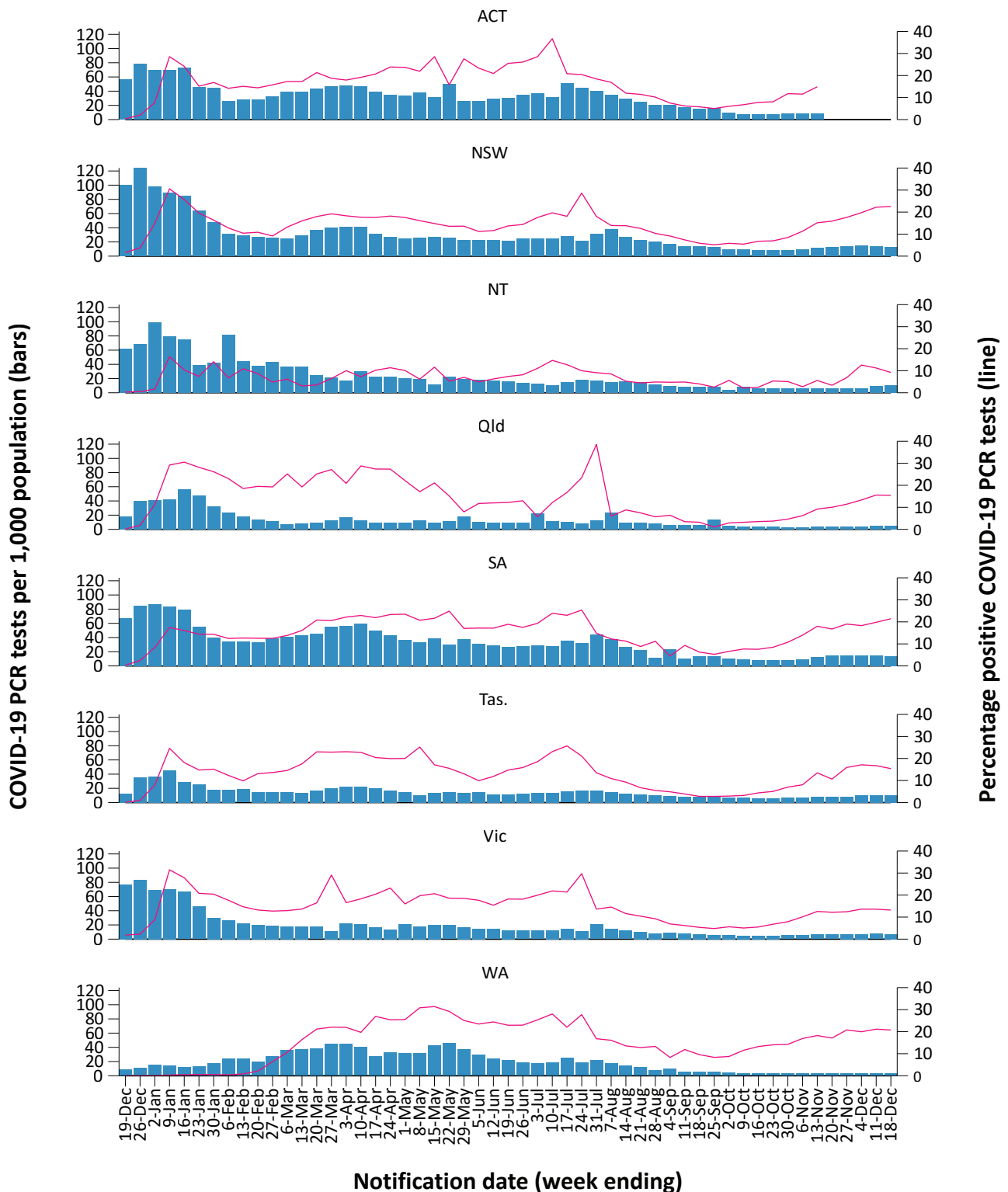
- a The current reporting period (21 November to 18 December 2022) is marked by the dashed lines. The size of each dot is proportional to the number of sequences observed in each jurisdiction each day.
- b Newly designated Omicron sub-lineages have been collapsed into parent lineages BA.1, BA.2, BA.3, 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. Further information on variants is available in the Technical Supplement.<sup>2</sup>

**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 – 18 December 2022<sup>a</sup>**



<sup>a</sup> Source: testing data provided by jurisdictions to the NIR daily, current to 18 December 2022; case data extracted from NNDSS on 10 January 2023 for cases with a notification date up to 18 December 2022; population data based on Australian Bureau of Statistics (ABS) Estimated Resident Population (ERP) as at June 2021. The Australian Capital Territory did not supply testing data from 12 November 2022 due to technical reasons.



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) and XBF (recombinant of BA.2.75 and BA.5) 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 7,329 sequences from samples collected within the reporting period were assigned to Omicron or to recombinants consisting of two Omicron lineages. BA.5 is currently the predominant sub-lineage being sequenced, representing 39.4% of sequences collected in the reporting period and available for analysis in AusTrakka. By contrast, recombinant lineages made up 14.0% of sequences available in AusTrakka during the same period.

Of the Omicron sequences in AusTrakka to date, 21.06% are BA.1; 39.15% are BA.2; < 0.001% are BA.3; 4.02% are BA.4; and 32.63% are BA.5. All sub-sub-lineages have been collapsed into respective major sub-lineage. Recombinants make up 3.09% of all Omicron sequences to date.

## Testing

*(State and territory reporting)*

From the commencement of the pandemic to 18 December 2022, 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 percent positivity calculations are currently not available for the Australian Capital Territory.

During the four-week reporting period (21 November – 18 December 2022), PCR testing rates increased in the Northern Territory and remained relatively stable in all other jurisdictions. There was an overall increase in percent positivity in all jurisdictions, except in the Northern Territory and Tasmania where percent positivity decreased over the reporting period. In the week ending 18 December 2022, the highest PCR percent positivity was observed in New South Wales at 23% (Figure 8).

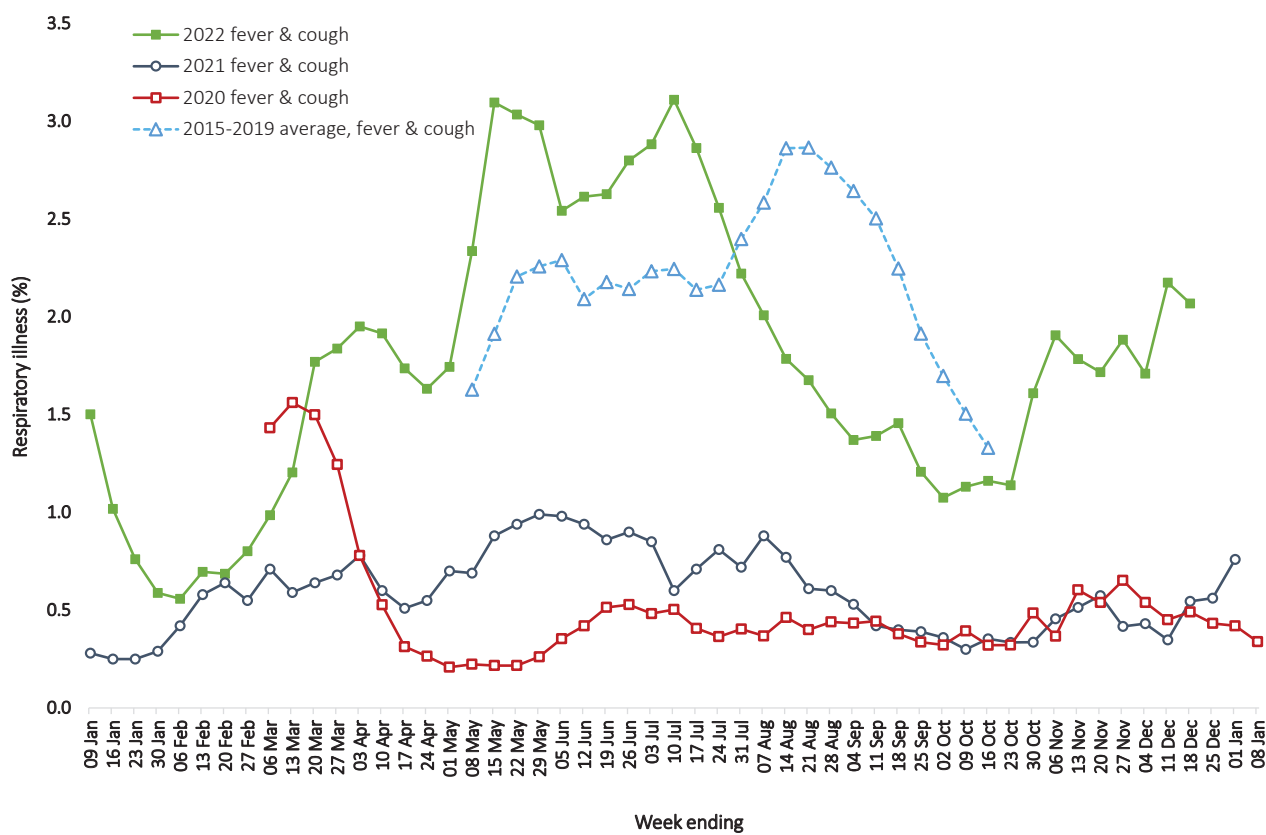
## Acute respiratory illness

*(FluTracking, ASPREN, and Commonwealth Respiratory Clinics)*

Based on self-reported FluTracking data,<sup>6</sup> there has been an overall increasing trend in the prevalence of fever and cough in the community since late October 2022 (Figure 9). Over the same period, the prevalence of runny nose and sore throat symptoms in the community has remained relatively stable, with a slight increase observed in the latest reporting fortnight (Figure 10).

Over the reporting period, FluTracking data indicated that 22.4% of participants with 'fever and cough' were tested for SARS-CoV-2 with a PCR test and 89.5% 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, 9% were tested for SARS-CoV-2 using a PCR test and 74% were tested using a RAT. In the current reporting period, the percent positivity for fever

**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 – 18 December 2022<sup>a,b</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.

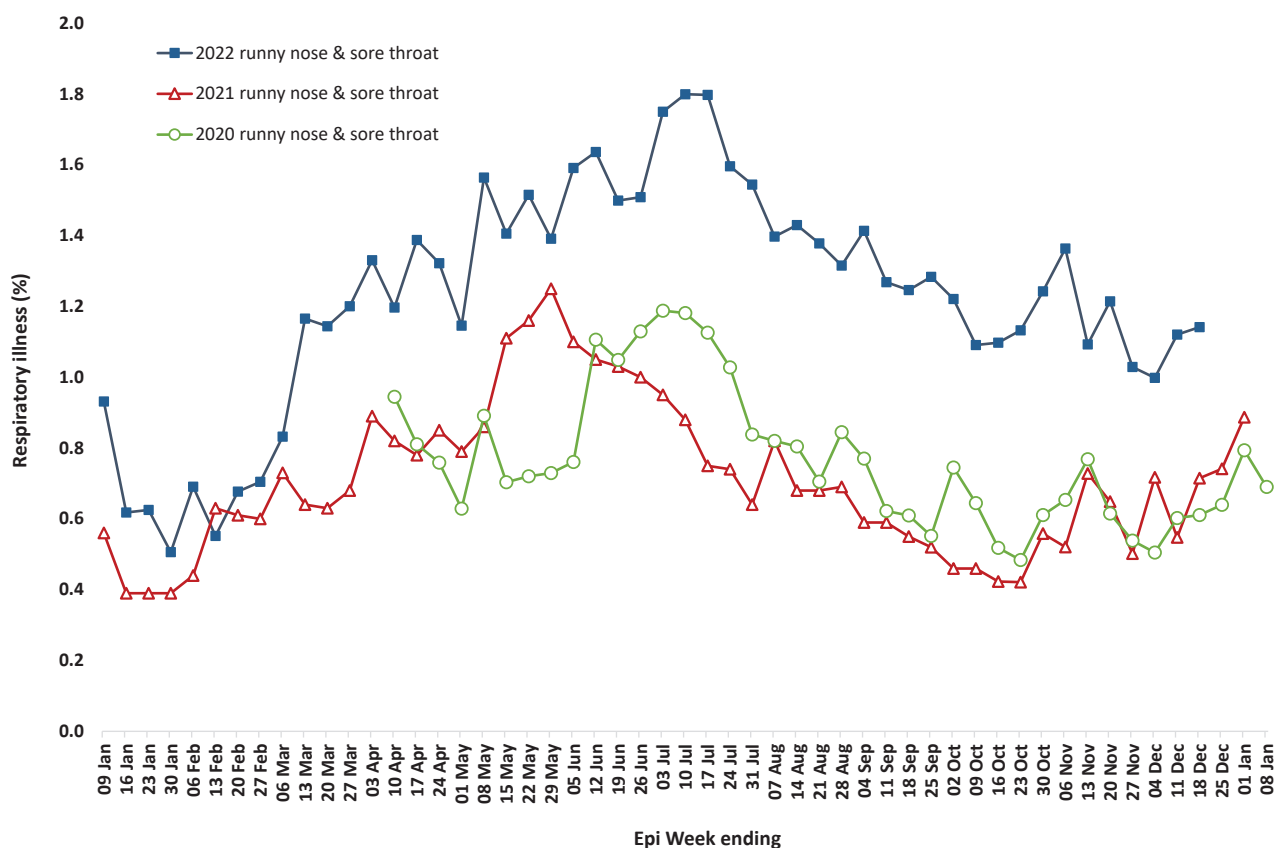
and cough symptoms increased compared to the previous reporting period for both PCR and RAT, to 56% and 64%, respectively. For runny nose and sore throat symptoms, the percent positivity increased for PCR and RAT to 17% and 12%, respectively. Note that participants with one set of symptoms are not excluded 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.

From 21 November to 18 December 2022, of presentations to Commonwealth Respiratory Clinics that were tested for SARS-CoV-2, 16.9% (6,467/38,106) were found to be positive. Since

the start of the pandemic, the most commonly reported symptom amongst presentations that tested positive for COVID-19 was sore throat (57%), followed by cough (56%) and tiredness (44%).

Since the start of 2022, of those presenting to sentinel ASPREN sites with influenza-like illness who were tested for respiratory viruses, 56% (581/1,031) tested positive. Among those positive, the most common virus detected was influenza A (28%; 162/581), followed by rhinovirus (27%; 155/581); of those testing positive, 13% (73/581) were positive for SARS-CoV-2.

**Figure 10: Weekly trends in runny nose and sore throat amongst FluTracking survey participants (age-standardised), Australia, 29 March 2020 – 18 December 2022<sup>a,b</sup>**



a 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.

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

According to WHO, countries and territories in the South-East Asia and Western Pacific regions reported 6,399,285 new cases and 10,963 deaths in the four-week period to 18 December 2022.<sup>7</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>7</sup> In total, since the start of the pandemic, over 170 million cases and over one million deaths have been reported in the two regions.<sup>8</sup>

In the four-week period 21 November to 18 December 2022, 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). Among the two regions,

the greatest increase in new cases (142%) and new deaths (170%) in the previous four weeks, was observed in Australia (Table 9).

As of 18 December 2022, over 649 million COVID-19 cases and over 6.6 million deaths have been reported globally since the start of the pandemic, with a global case fatality rate (CFR) of approximately 1.02%. The two regions reporting the largest burden of disease over the past four weeks were the Western Pacific (46% of total cases) and the European (30% of total cases).<sup>7</sup>

**Table 9: Cumulative cases and deaths, and new cases and deaths reported in the four-week period to 18 December 2022 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	6,709,597	101,230	-26%	160,398	1,019	+7%
Thailand	4,718,908	16,578	+33%	33,505	399	+117%
India	44,675,952	6,937	-74%	530,672	98	-94%
Bangladesh	2,036,928	561	-75%	29,438	8	-53%
Myanmar	633,555	550	-77%	19,488	1	-91%
<b>Western Pacific region</b>						
Japan	27,116,473	3,344,688	+88%	53,319	5,038	+151%
Republic of Korea	28,188,293	1,629,528	+29%	31,395	1364	+31%
China	10,051,042	587,663	-27%	31,235	1,509	-21%
New Zealand	2,027,981	133,823	+62%	2,288	106	+22%
<b>Australia</b>	<b>10,938,096</b>	<b>405,730</b>	<b>+142%</b>	<b>15,937</b>	<b>791</b>	<b>+170%</b>

a Source: World Health Organization Coronavirus (COVID-19) Dashboard, accessed 12 January 2023, for data until 18 December 2022.

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

## 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.

## Author details

### Corresponding author

COVID-19 Epidemiology and Surveillance Team

Australian Government Department of Health and Aged Care, GPO Box 9484, MDP 14, Canberra, ACT 2601.

Email: [epi.coronavirus@health.gov.au](mailto:epi.coronavirus@health.gov.au)

## References

1. COVID-19 National Incident Room Surveillance Team. COVID-19 Australia: Epidemiology Report 68: Reporting period ending 20 November 2022. *Commun Dis Intell* (2018). 2022;46. doi: <https://doi.org/10.33321/cdi.2022.46.86>.
2. COVID-19 National Incident Room Surveillance Team. Technical supplement. COVID-19 Australia: Epidemiology reporting. *Commun Dis Intell* (2018). 2021;45. doi: <https://doi.org/10.33321/cdi.2021.45.2>.
3. Australian Government Department of Health and Aged Care. Coronavirus (COVID-19) – CDNA National Guidelines for Public Health Units. [Internet.] Canberra: Australian Government Department of Health and Aged Care; 14 October 2022. [Accessed on 9 November 2022.] Available from: <https://www.health.gov.au/resources/publications/coronavirus-covid-19-cdna-national-guidelines-for-public-health-units>.
4. Australian and New Zealand Intensive Care Research Centre (ANZIC-RC). SPRINT-SARI: Short period incidence study of severe acute respiratory infection. [Internet.] Melbourne: Monash University, ANZIC-RC; 2020. Available from: <https://www.monash.edu/medicine/sphpm/anzicrc/research/sprint-sari>.
5. Communicable Diseases Genomics Network (CDGN). AusTrakka. [Website.] Melbourne: CDGN; 2020. Available from: <https://www.cdgn.org.au/austrakka>.
6. Dalton C, Durrheim D, Fejsa J, Francis L, Carlson S, d’Espaignet ET et al. Flutracking: a weekly Australian community online survey of influenza-like illness in 2006, 2007 and 2008. *Commun Dis Intell Q Rep*. 2009;33(3):316–22.
7. World Health Organization (WHO). Weekly epidemiological update on COVID-19 – 21 December 2022. [Internet.] Geneva: WHO; 21 December 2022. [Accessed on 18 January 2023.] Available from: <https://www.who.int/publications/m/item/covid-19-weekly-epidemiological-update--21-december-2022>.
8. WHO. WHO Coronavirus Disease (COVID-19) dashboard. [Internet.] Geneva: WHO; 2021. Available from: <https://covid19.who.int/>.

## 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 – 18 December 2022<sup>a,b,c</sup>**

Age group	Four-week reporting period						Current 'Omicron' wave					
	21 November – 18 December 2022			15 December 2021 – 18 December 2022			15 December 2021 – 18 December 2022			15 December 2021 – 18 December 2022		
	Cases		People <sup>d</sup>	Rate per 100,000 population		People <sup>d</sup>	Cases		People <sup>d</sup>	Rate per 100,000 population		People <sup>d</sup>
Male	Female		Male	Female		Male	Female		Male	Female		
0–4	5,869	5,761	12,576	750.0	780.2	826.9	207,235	197,471	457,731	26,481.9	26,744.3	30,095.6
5–11	7,835	7,439	16,244	667.1	668.0	709.9	415,470	395,129	910,711	35,376.5	35,480.9	39,802.7
12–15	4,648	4,912	10,103	711.8	794.1	794.5	247,874	248,848	557,328	37,958.9	40,230.3	43,830.1
16–17	2,496	3,511	6,363	822.5	1,226.2	1,078.8	113,347	129,910	266,729	37,350.4	45,368.8	45,222.8
18–29	23,862	38,829	65,665	1,152.0	1,951.7	1,617.0	882,690	1,054,844	2,087,160	42,613.4	53,021.6	51,397.1
30–39	25,783	40,190	69,025	1,382.9	2,097.3	1,825.8	765,228	929,417	1,843,134	41,045.3	48,502.2	48,732.6
40–49	22,978	36,295	61,754	1,407.3	2,183.4	1,874.2	628,484	773,966	1,525,201	38,493.1	46,560.0	46,288.1
50–59	23,046	35,751	61,369	1,501.6	2,222.1	1,952.2	501,734	603,941	1,193,803	32,690.8	37,538.1	37,974.9
60–69	21,871	29,164	53,165	1,649.1	2,066.0	1,941.8	351,774	398,230	803,446	26,523.8	28,210.9	29,345.6
70–79	17,776	19,816	39,344	1,879.2	1,968.4	2,014.9	213,754	216,823	455,071	22,597.5	21,537.8	23,305.5
80–89	8,631	10,109	19,686	2,227.1	2,068.2	2,246.4	91,334	102,054	202,055	23,567.3	20,879.2	23,057.0
90+	2,230	4,289	6,825	2,866.8	2,975.2	3,075.1	22,520	41,088	65,771	28,950.5	28,502.5	29,634.1

a Source: NNDS, extract from 10 January 2023 for notifications to 18 December 2022.

b Population data based on Australian Bureau of Statistics (ABS) Estimated Resident Population (ERP) as at June 2021.

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.