

NSW Respiratory Surveillance Report - week ending 26 November 2022

COVID-19 Summary

- While hospitalisations and ICU admissions decreased this week, there were increases in the number of people notified with COVID-19 and in the proportion of PCR tests that are positive. This indicates ongoing high levels of transmission in the community.
- There is currently no dominant variant driving current case numbers. Both BA.2 and BA.5 sublineages are being commonly detected in community samples.
- There were 32,928 people diagnosed with COVID-19 this week, an increase of 15.2% since the previous week. PCR testing for COVID-19 has increased by 8.9% compared to the previous week. The proportion of PCR tests that were positive for COVID-19 has increased from 17% to 19%. Notification rates are highest in those over 80 years of age and are likely to reflect high testing rates in this age group.
- The seven-day rolling average of daily hospital admissions decreased to an average of 87 admissions by the end of this week, compared with 89 admissions at the end of the previous week. There were 609 people with COVID-19 admitted to hospital and 42 people admitted to ICU this week.
- Emergency department presentations for coronaviruses/SARS requiring an admission have increased to 374 from 321 admissions in the previous week.
- There were 25 COVID-19 deaths reported this week. Of these, 6 (24%) had not received three doses of vaccine. Three deaths were in people aged under 65 years. Deaths may not have occurred in the week in which they were reported.

Other respiratory viruses summary

- Influenza activity is currently at low levels but influenza vaccination continues to be recommended. If you are travelling to the northern hemisphere please make sure you are up-to-date with COVID and influenza vaccinations.

Data sources

The NSW Respiratory Surveillance Report consolidates data from a range of sources to provide an understanding of what is happening in the community. This data includes laboratory results, hospital administrative data, emergency department syndromic surveillance, death registrations and community surveys.

COVID-19 hospital admissions, intensive care unit admissions, and deaths

- COVID-19 vaccines are very effective in preventing the severe impacts of infections with the virus. Over 95 per cent of people aged 16 and over in NSW have received two doses of a COVID-19 vaccine, while more than 70 per cent of people eligible for their third dose have received it. With such high vaccination coverage in the community, a high proportion of people admitted to hospital or intensive care unit (ICU) with COVID-19 are now vaccinated with two or three doses. However, people who are not vaccinated remain more likely to suffer severe COVID-19. Note that some people with COVID-19 who are admitted to hospital or ICU are admitted for conditions unrelated to their COVID-19 infection, and these admissions will not be prevented by vaccination.
- Despite the substantial protection from COVID-19 provided by vaccination, older age remains a significant risk factor for serious illness and death with COVID-19, particularly when combined with significant underlying health conditions.

Figure 1. Daily seven-day rolling average of people with COVID-19 admitted to hospital within 14 days of their diagnosis, NSW, 01 July to 26 November 2022

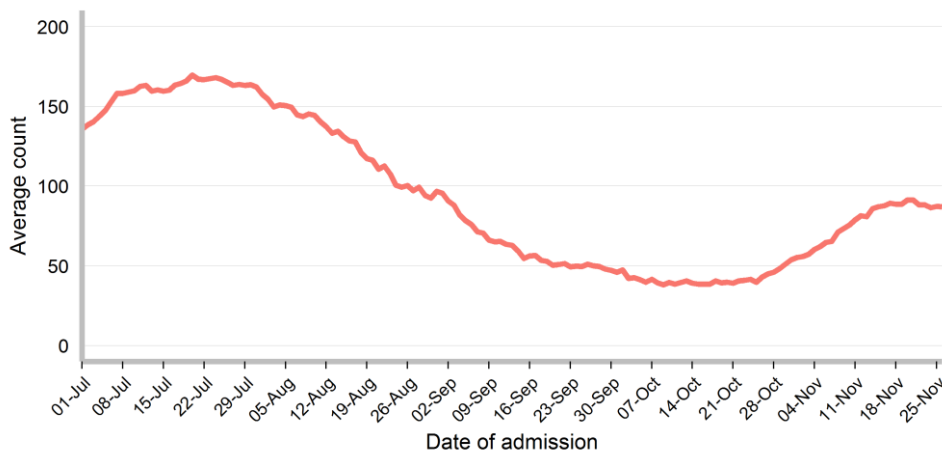


Figure 2. Daily seven-day rolling average of people with COVID-19 admitted to intensive care units, NSW, 01 July to 26 November 2022

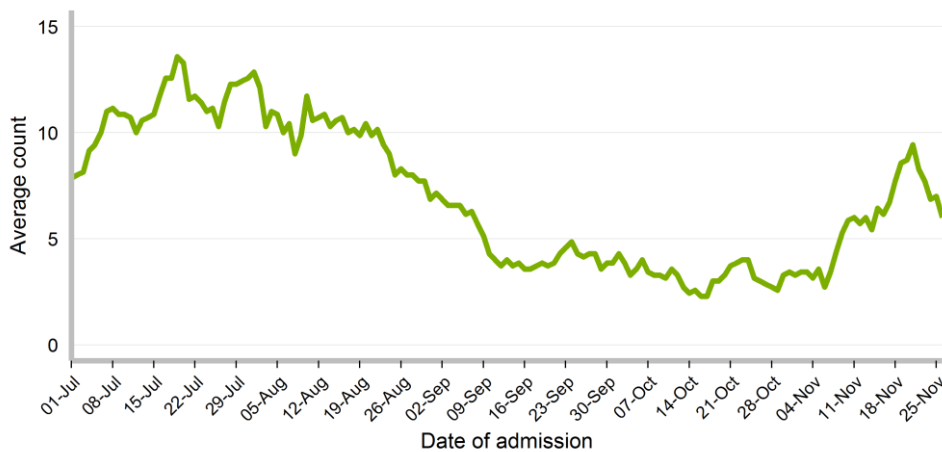
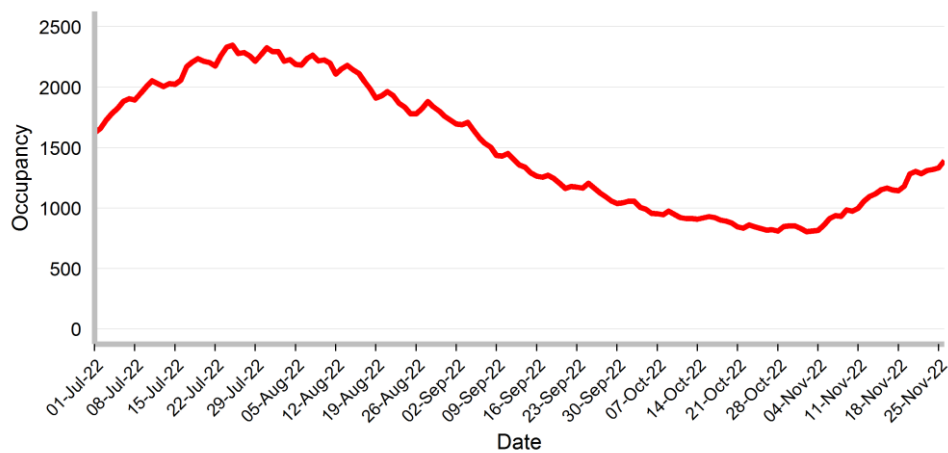


Figure 3. Number of people in hospital with COVID-19 by day, NSW, 01 July to 26 November 2022

- Hospital admissions in people with COVID-19 have decreased in the last week. ICU admissions for people with COVID-19 have decreased in the last week
- Six hundred nine people diagnosed with COVID-19 in the previous 14 days were admitted to a NSW public hospital. The seven-day rolling average of daily hospital admissions decreased to an average of 87 admissions by the end of this week, compared with 89 admissions at the end of the previous week.
- Forty two people diagnosed with COVID-19 were admitted to ICU. The seven-day rolling average of daily ICU admissions decreased to an average of 6 admissions by the end of this week, compared with 9 admissions at the end of the previous week.
- The number of people in hospital with COVID-19 has increased to 1,392 at the end of this week compared to 1,180 at the end of last week.

Table 1. People with a COVID-19 diagnosis in the previous 14 days who were admitted to hospital, admitted to ICU or reported as having died in the week ending 26 November 2022

	Admitted to hospital (but not to ICU)	Admitted to ICU	Deaths
Gender			
Female	289	21	11
Male	320	21	14
Age group (years)			
0-9	38	2	0
10-19	7	0	0
20-29	35	2	1
30-39	47	4	0
40-49	27	5	0
50-59	42	6	0
60-69	70	8	5
70-79	132	7	6
80-89	150	7	9
90+	61	1	4
Local Health District of residence*			
Central Coast	32	0	0
Illawarra Shoalhaven	47	3	2
Nepean Blue Mountains	17	3	0
Northern Sydney	72	5	1
South Eastern Sydney	75	3	3
South Western Sydney	124	11	5
Sydney	47	4	0
Western Sydney	50	1	1
Far West	2	0	0
Hunter New England	43	3	9
Mid North Coast	19	0	1
Murrumbidgee	15	2	1
Northern NSW	25	3	1
Southern NSW	7	1	0
Western NSW	26	2	1
Vaccination status[^]			
Four or more doses	249	12	12
Three doses	142	9	6
Two doses	80	10	5
One dose	6	0	0
No dose	3	0	1
Unknown	129	11	1
Total	609	42	25

*Excludes cases in correctional settings

[^]Vaccination status is determined by matching to Australian Immunisation Register (AIR) data. Name and date of birth need to be an exact match to that recorded in AIR for vaccination status to be determined. People with unknown vaccination status were those unable to be found in AIR. This may occur when names in AIR are different, for example shortened name or different spelling, to those used for the COVID-19 notification.

- Of the 25 people who were reported to have died with COVID-19, 18 (72%) were known to have received three or more doses of a COVID-19 vaccine, while 5 had received two doses, 0 had received one dose and 1 had received no doses of a COVID-19 vaccine. The vaccination status of the remaining 1 were unable to be determined.¹
- Twelve were aged care residents. Two of these people died in hospital and 10 died at an aged care facility.
- One of the deaths occurred at home and was diagnosed with COVID-19 prior to death.
- Deaths are identified from the NSW Registry of Births Deaths and Marriages (BDM). If a person dies in NSW, their death must be registered under the Births, Deaths and Marriages Registration Act 1995 (Part 7). NSW Health receives a secure feed from the BDM on a daily basis under the Public Health Act 2010 (Part 129A). Seventy five percent of COVID-19 deaths in 2022 have been registered in less than four weeks of death. Deaths reported to a coroner will be registered with the BDM, however cause of death information may be delayed as it is not recorded until there is a coronial determination. Deaths may be excluded if there was a clear alternative cause of death that was unrelated to COVID-19 (e.g. major trauma).

¹ The Australian Technical Advisory Group on Immunisation (ATAGI) recommends that everyone aged 16 years and over has three doses of a COVID-19 vaccine, with an additional winter dose recommended for other people at increased risk of severe illness.

Notifications of COVID-19

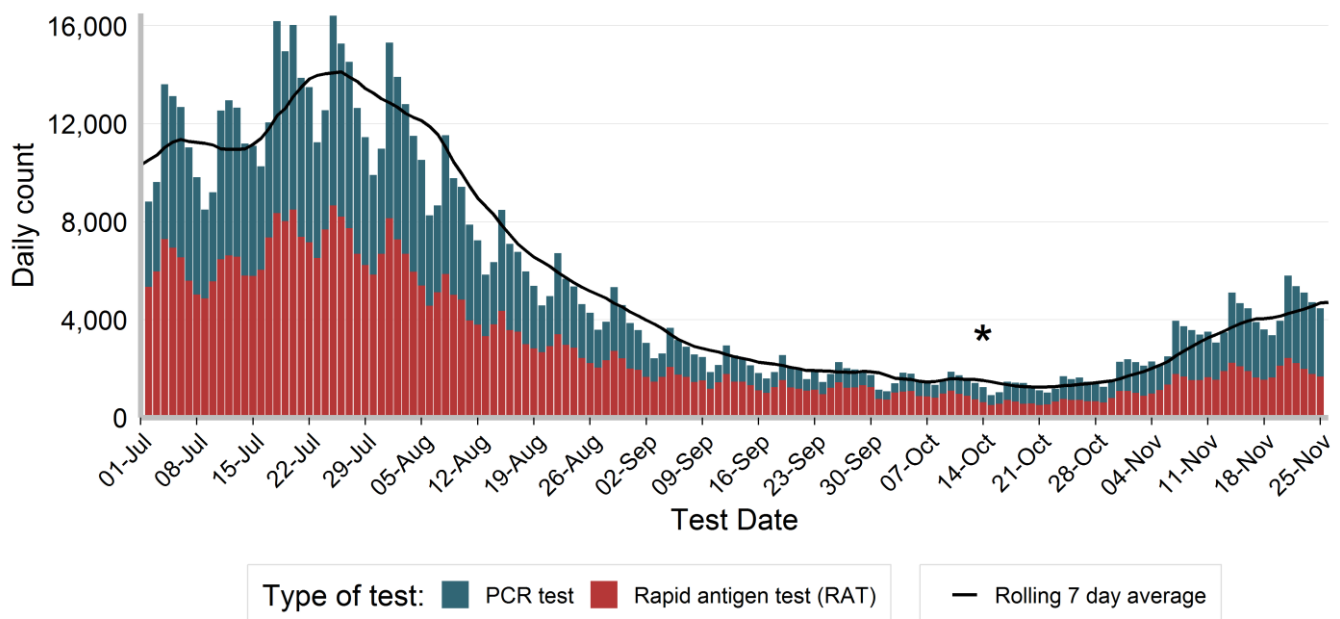
Table 2. Notifications of COVID-19 by gender, age group, Local Health District, NSW, tested in the week ending 26 November 2022

	Week ending 26 November 2022			Year to date*
	PCR	RAT	Total	Total
Gender				
Female	10,962 (54.8%)	7,711 (59.7%)	18,673 (56.7%)	1,679,862 (52.7%)
Male	9,037 (45.1%)	5,185 (40.2%)	14,222 (43.2%)	1,504,042 (47.2%)
Not stated / inadequately described	18 (0.1%)	15 (0.1%)	33 (0.1%)	4,547 (0.1%)
Transgender	0 (0.0%)	0 (0.0%)	0 (0.0%)	7 (0.0%)
Age group (years)				
0-4	623 (3.1%)	273 (2.1%)	896 (2.7%)	143,359 (4.5%)
5-9	324 (1.6%)	424 (3.3%)	748 (2.3%)	199,705 (6.3%)
10-19	1,058 (5.3%)	1,365 (10.6%)	2,423 (7.4%)	443,059 (13.9%)
20-29	2,900 (14.5%)	1,833 (14.2%)	4,733 (14.4%)	514,389 (16.1%)
30-39	3,244 (16.2%)	2,300 (17.8%)	5,544 (16.8%)	554,156 (17.4%)
40-49	2,547 (12.7%)	2,124 (16.5%)	4,671 (14.2%)	469,391 (14.7%)
50-59	2,854 (14.3%)	1,856 (14.4%)	4,710 (14.3%)	369,514 (11.6%)
60-69	2,772 (13.8%)	1,436 (11.1%)	4,208 (12.8%)	261,483 (8.2%)
70-79	2,108 (10.5%)	979 (7.6%)	3,087 (9.4%)	148,875 (4.7%)
80-89	1,150 (5.7%)	272 (2.1%)	1,422 (4.3%)	64,012 (2.0%)
90+	436 (2.2%)	49 (0.4%)	485 (1.5%)	20,268 (0.6%)
Local Health District of residence[#]				
Central Coast	677 (3.4%)	676 (5.3%)	1,353 (4.2%)	140,367 (4.4%)
Illawarra Shoalhaven	1,152 (5.8%)	660 (5.2%)	1,812 (5.6%)	180,168 (5.7%)
Nepean Blue Mountains	993 (5.0%)	601 (4.7%)	1,594 (4.9%)	162,343 (5.1%)
Northern Sydney	2,612 (13.2%)	1,744 (13.7%)	4,356 (13.4%)	378,161 (12.0%)
South Eastern Sydney	2,777 (14.0%)	1,483 (11.7%)	4,260 (13.1%)	360,564 (11.4%)
South Western Sydney	2,974 (15.0%)	1,211 (9.5%)	4,185 (12.9%)	392,335 (12.4%)
Sydney	2,084 (10.5%)	1,165 (9.2%)	3,249 (10.0%)	268,132 (8.5%)
Western Sydney	3,371 (17.0%)	1,462 (11.5%)	4,833 (14.9%)	424,940 (13.5%)
Far West	25 (0.1%)	40 (0.3%)	65 (0.2%)	10,405 (0.3%)
Hunter New England	1,907 (9.6%)	1,606 (12.6%)	3,513 (10.8%)	383,272 (12.1%)
Mid North Coast	157 (0.8%)	450 (3.5%)	607 (1.9%)	72,113 (2.3%)
Murrumbidgee	133 (0.7%)	463 (3.6%)	596 (1.8%)	104,520 (3.3%)
Northern NSW	265 (1.3%)	428 (3.4%)	693 (2.1%)	91,954 (2.9%)
Southern NSW	246 (1.2%)	367 (2.9%)	613 (1.9%)	76,988 (2.4%)
Western NSW	423 (2.1%)	357 (2.8%)	780 (2.4%)	109,798 (3.5%)
Aboriginal status[^]				
Aboriginal and/or Torres Strait Islander	291 (1.5%)	400 (3.1%)	691 (2.1%)	119,467 (3.7%)
Not Aboriginal or Torres Strait Islander	11,393 (56.9%)	10,945 (84.8%)	22,338 (67.8%)	2,562,268 (80.4%)
Not Stated / Unknown	8,333 (41.6%)	1,566 (12.1%)	9,899 (30.1%)	506,723 (15.9%)
Total	20,017 (100%)	12,911 (100%)	32,928 (100%)	3,188,458 (100%)

*Excludes 180,433 positive RATs registered up to 19 January 2022 for whom demographic information is not available.

[#]Excludes cases in correctional settings

[^]Aboriginal status is reported by COVID-19 cases when completing their RAT registration or responding to a short text message survey sent to cases detected by PCR. Not all cases respond to the question.

Figure 4. People notified with COVID-19, by date of test and type of test performed, NSW, 01 July to 26 November 2022

* from the 14th October RATs were no longer required to be notified

- There were 32,928 people diagnosed with COVID-19 this week, an increase of 15.2% since the previous week.
- On 14 October 2022 the mandatory reporting of positive rapid antigen tests in NSW was removed. PCR testing rates have almost halved from what they were at the beginning of the Omicron BA.4/5 wave in June-August 2022. The changes in COVID-19 testing and reporting means that notification numbers no longer reflect the level of community transmission in the same way as during the BA.4/5 wave.

Figure 5. Daily seven-day rolling average rate of COVID-19 notifications per 100,000 population, by age group and test date, NSW, 01 July to 26 November 2022

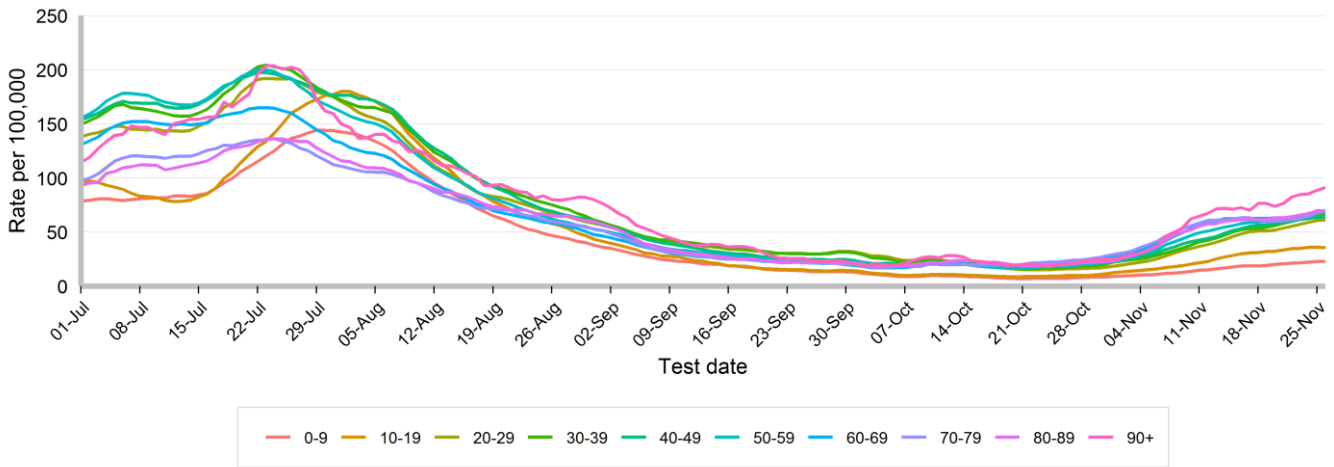


Figure 6. Daily seven-day rolling average rate of COVID-19 notifications per 100,000 population, by metropolitan Local Health District and test date, NSW, 01 July to 26 November 2022

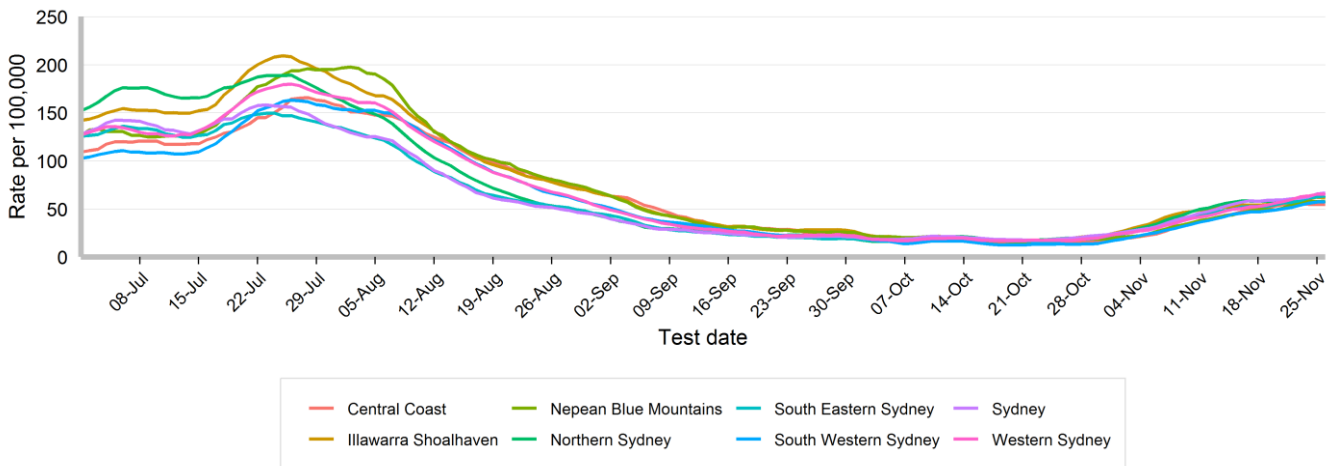
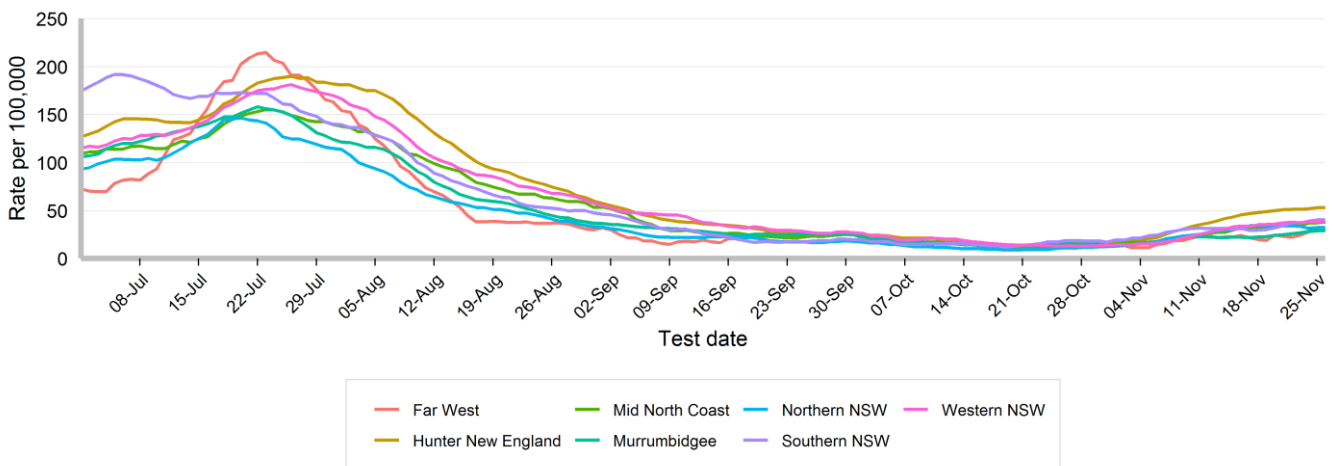


Figure 7. Daily seven-day rolling average rate of COVID-19 notifications per 100,000 population, by rural and regional Local Health District and test date, NSW, 01 July to 26 November 2022



Emergency department and community surveillance

Public Health Rapid, Emergency, Disease and Syndromic Surveillance (PHREDSS) system

The NSW Public Health Rapid, Emergency, Disease and Syndromic Surveillance (PHREDSS) system provides daily monitoring of most unplanned presentations to NSW public hospital emergency departments (EDs) and all emergency Triple Zero (000) calls to NSW Ambulance. Emergency hospital presentations and ambulance calls are grouped into related acute illness and injury categories.

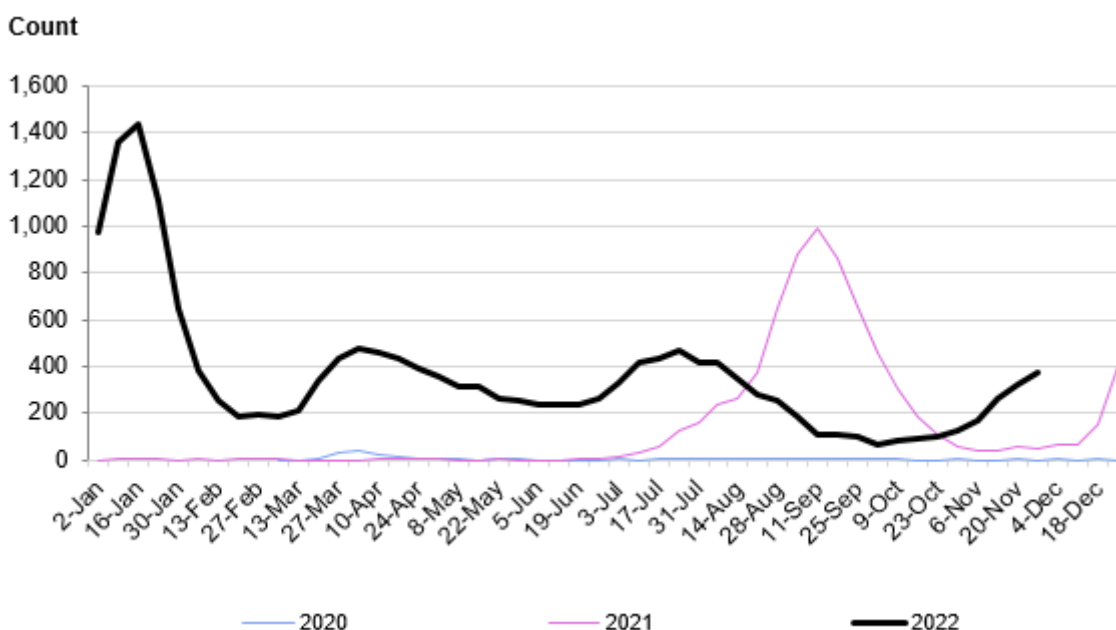
The number of presentations and calls in each category is monitored over time to quickly identify unusual patterns of illness. Unusual patterns could signify an emerging outbreak of disease or issue of public health importance in the population. PHREDSS is also useful for monitoring the impact of seasonal and known disease outbreaks, such as seasonal influenza or gastroenteritis, on the NSW population.

The 88 NSW public hospital EDs used in PHREDSS surveillance account for 95% of all ED activity in NSW public hospitals in 2020-2021, including most major metropolitan public hospitals (99%) and rural public hospitals (89%).

The emergency department 'influenza-like illness' surveillance syndrome includes provisional diagnoses of ILI, influenza, including pneumonia with influenza and avian and other new influenza viruses. Influenza-like illness does not include COVID-19. The number of emergency department presentations for ILI reflects only a fraction of the impact of influenza on emergency departments but it is a useful marker of seasonal timing and trends. The number of presenting patients requiring an admission also provides an indication of severity.

The emergency department 'coronaviruses/SARS' surveillance syndrome includes provisional diagnoses (SNOMEDCT and ICD-10-AM codes) for coronavirus infections SARS, MERS, COVID-19 or other coronaviruses, or clinical condition of Severe Acute Respiratory Syndrome (SARS). It excludes testing and suspected coronavirus codes. There are no IDC-9 codes for COVID-19, so COVID-19 ED presentations at Albury Hospital will be mapped to the fever/unspecified infection surveillance syndrome. A person with COVID-19 may be admitted for reasons other than COVID-19, and of this the number of admissions from ED with a diagnosis of coronaviruses/SARS will be less than the number of confirmed cases of COVID-19 who are in hospital.

Figure 8. Weekly counts of unplanned emergency department (ED) presentations for 'coronaviruses/SARS', that were admitted, for 2022 (black line), compared with the previous two years (coloured lines), persons of all ages, 88 NSW hospitals

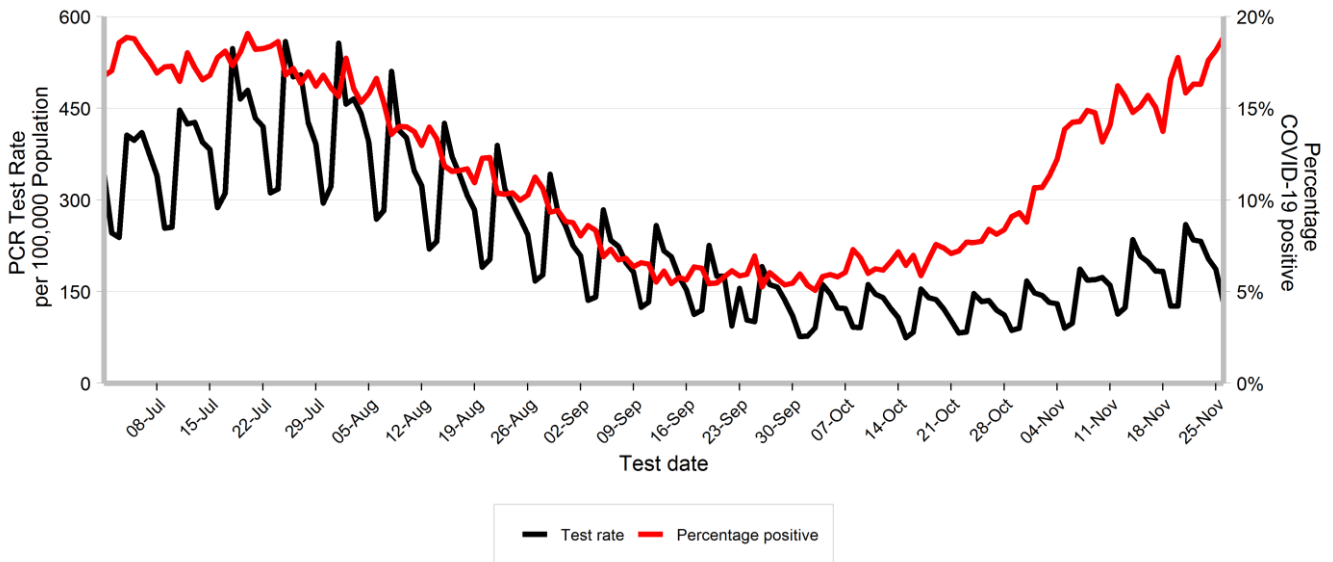


- Emergency department presentations for coronaviruses/SARS requiring an admission have increased to 374 from 321 admissions in the previous week.

Laboratory Surveillance

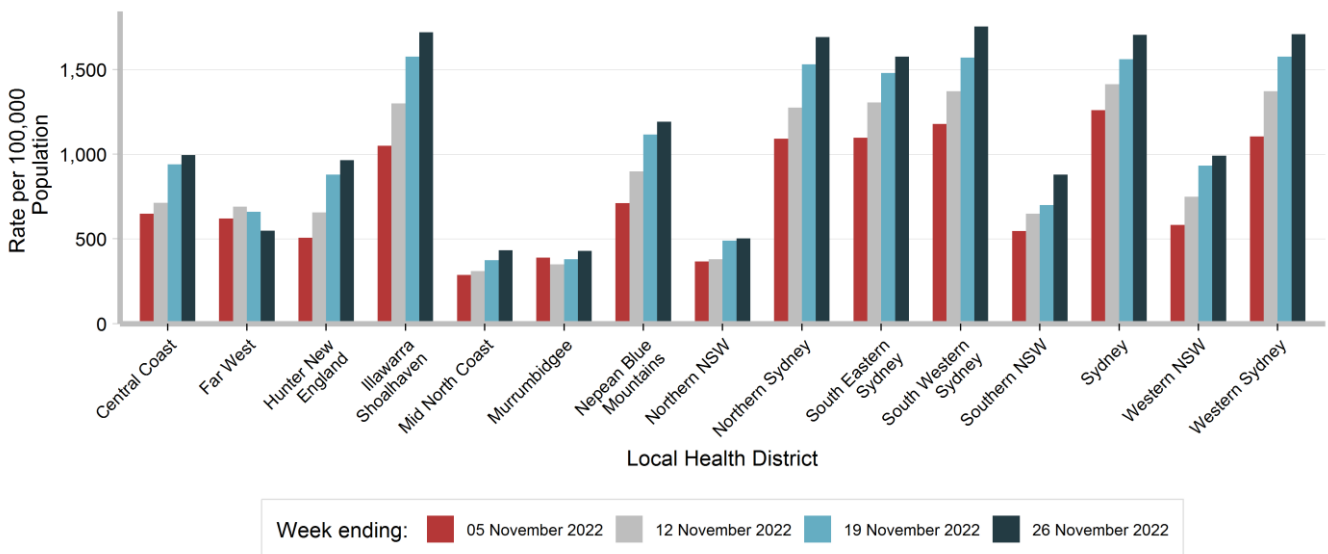
COVID-19 PCR testing

Figure 9. Rate of PCR tests for COVID-19 per 100,000 population per day, and percentage of PCR tests which were positive for COVID-19, by test date, NSW, 01 July to 26 November 2022



- There were 115,393 PCR tests reported this week. This is a 8.9% increase compared to 105,930 PCR tests reported in the previous week.
- The percentage of PCR tests that were positive for COVID-19 has increased to 18.9% compared to 16.6% at the end of the previous week admissions by the end of this week.

Figure 10. Rate of PCR tests for COVID-19 per 100,000 population by Local Health District and test date, NSW, in the four weeks to 26 November 2022



COVID-19 Whole Genome Sequencing

Whole genome sequencing (WGS) is a laboratory procedure that identifies the genetic profile of an organism. WGS can help understand how a virus transmits, responds to vaccination and the severity of disease it may cause. It can also help to monitor the spread of the virus by identifying specimens that have are genomically similar. WGS has been used in NSW since the start of the COVID-19 pandemic to inform epidemiological investigations, and to monitor for and analyse the behaviour of new SARS-CoV-2 variants circulating in the community. WGS is conducted at three NSW reference laboratories. Prior to August 2021, low community transmission meant that most positive specimens were able to be sequenced. However, since that time high case numbers have required prioritisation of specimens for sequencing.

Specimens from people with COVID-19 who are admitted to hospital or an ICU are prioritised to identify and understand lineages with increased disease severity. Specimens from overseas arrivals are also prioritised to monitor for the introduction of new variants into the community. This is not a random sample, therefore the proportion of sequences identified is not necessarily reflective of their distribution in the community. There is a lag between the date a PCR test is taken and the date that the results of WGS are reported, therefore the count of sequences for recent dates will increase over time.

Variants of Concern

- Like all viruses, the SARS-CoV-2 virus changes over time. The World Health Organization monitors these changes and classifies lineages according to the risk that they pose to global public health. Those that they identify as having changes that increase transmissibility, increase virulence, or decrease the effectiveness of vaccines or treatments are designated as variants of concern (VOCs).

Table 3. Variants of concern (VOCs) identified by whole genome sequencing (WGS) of virus from people who tested positive for SARS CoV-2 by PCR, by test date, NSW, in the four weeks to 19 November 2022

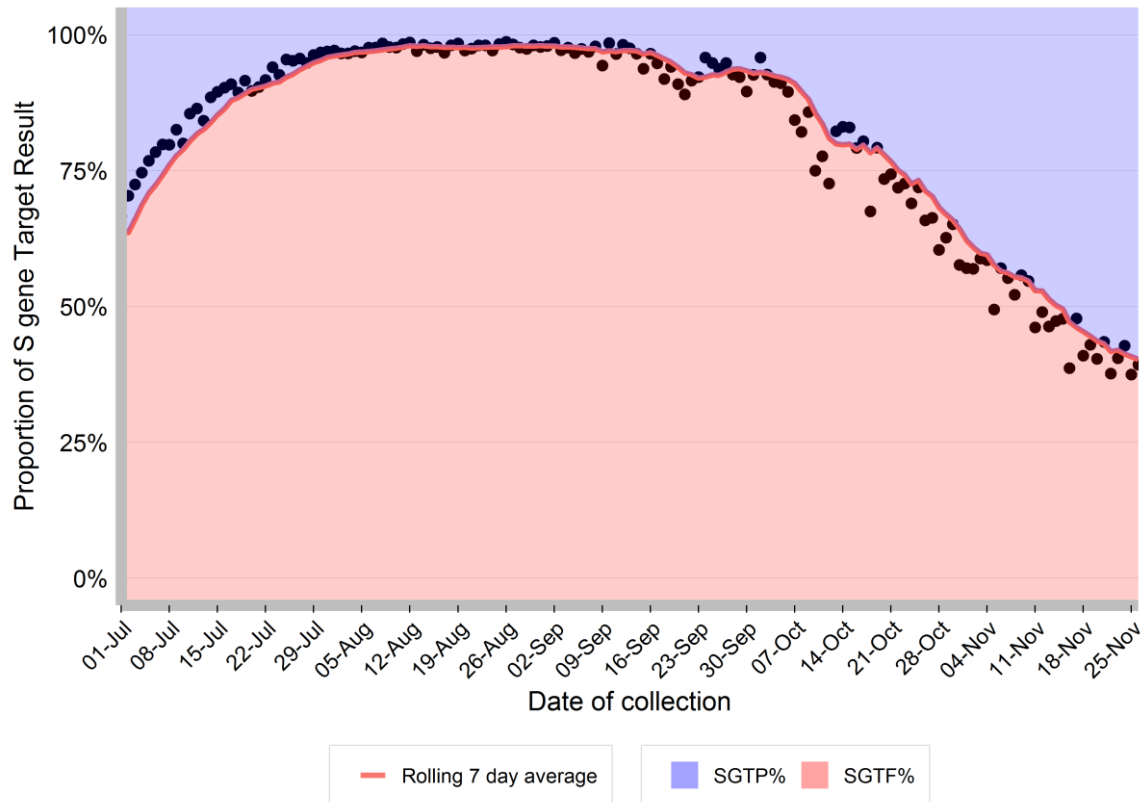
Variant	Week ending			
	29 October	05 November	12 November	19 November
Omicron (BA.2)	24 (4.2%)	22 (3.1%)	20 (2.8%)	11 (3%)
Omicron (BA.2.3.20)	1 (0.2%)	0 (0%)	0 (0%)	0 (0%)
Omicron (BA.2.75)	41 (7.2%)	92 (13%)	88 (12.1%)	58 (16%)
Omicron (BA.2.75.2)	6 (1%)	10 (1.4%)	10 (1.4%)	5 (1.4%)
Omicron (BA.4)	9 (1.6%)	0 (0%)	0 (0%)	0 (0%)
Omicron (BA.4.6)	15 (2.6%)	12 (1.7%)	18 (2.5%)	4 (1.1%)
Omicron (BA.5)	317 (55.3%)	324 (45.8%)	260 (35.8%)	79 (21.8%)
Omicron (BQ.1)	18 (3.1%)	25 (3.5%)	53 (7.3%)	26 (7.2%)
Omicron (BQ.1.1)	27 (4.7%)	52 (7.4%)	77 (10.6%)	52 (14.4%)
Omicron (BR.2)	70 (12.2%)	116 (16.4%)	132 (18.2%)	80 (22.1%)
Recombinant (XBB)	40 (7%)	38 (5.4%)	39 (5.4%)	25 (6.9%)
Recombinant (XBC)	5 (0.9%)	14 (2%)	16 (2.2%)	11 (3%)
Recombinant (XAZ)	0 (0%)	1 (0.1%)	1 (0.1%)	0 (0%)
Recombinant (XBF)	0 (0%)	1 (0.1%)	13 (1.8%)	11 (3%)
Total	573	707	727	362

- The Omicron variant is currently the dominant COVID-19 variant circulating in the NSW community. Most recent specimens have been identified as the BA.5 sub-lineage.
- The BA.1, BA.4 and BA.5 lineages of the Omicron variant have a mutation that results in a failure of certain PCR test platforms to detect the S gene (SGTF). This mutation is typically not present in the BA.2 lineage, and therefore the detection of an S gene (SGTP) can be used as a proxy to estimate the prevalence of BA.2 and its sub-lineages in the community (Figure 11).
- A PCR testing platform used by a large private pathology provider in NSW can routinely report on detection of the S gene in a specimen positive for SARS-CoV-2. Around 61% of SARS-CoV-2 positive specimens currently have an S gene detected (Figure 11). A sample of S gene detected specimens have been prioritised for WGS, with the majority of these now being identified as BA.2.75 and newly emerging recombinants including XBB.

Epidemiological week 47, ending 26 November 2022

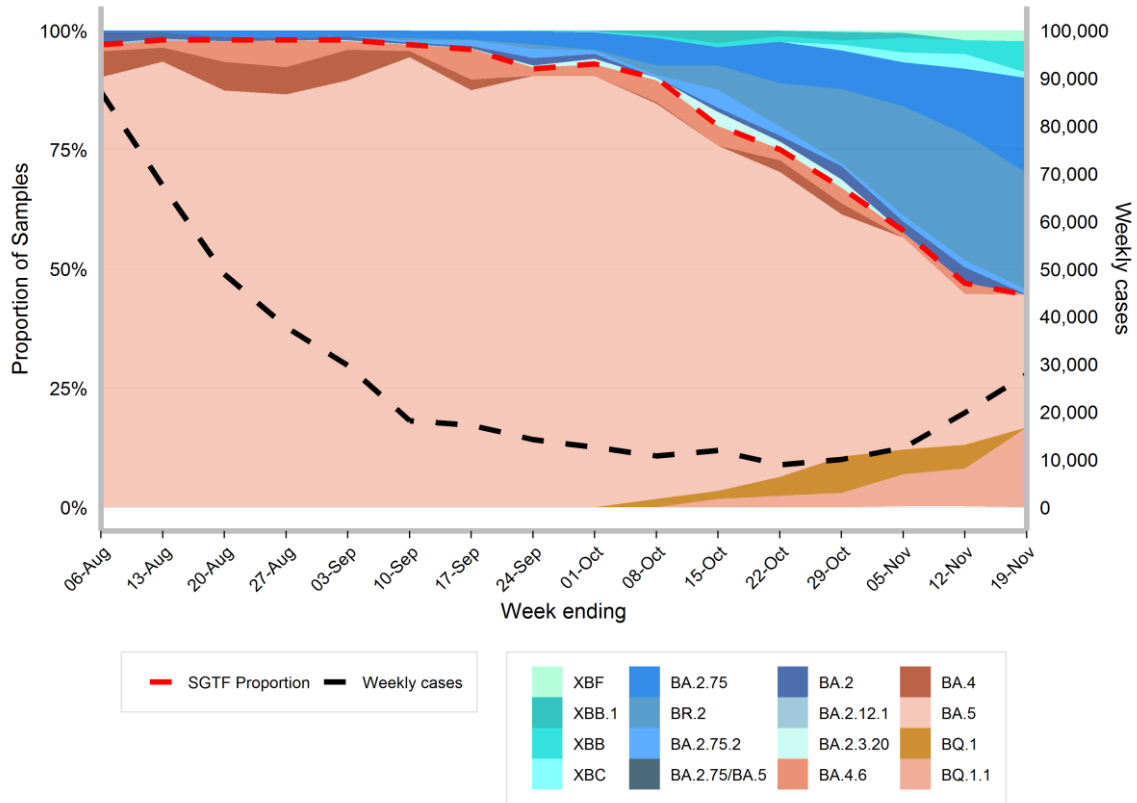
- Figure 12 shows the distribution of sub-lineages in the community estimated using the ratio of SGTP/SGTF (Figure 11). This figure provides an indication of the sub-lineages which may be circulating in the community. This sample does not include overseas arrivals, or tests taken from hospitalised cases.

Figure 11. Result of S gene target detection (percent positive (P) and negative(F)), 01 July to 26 November 2022



*SGTF is a failure to detect the presence of the S gene likely indicating a BA.1, BA.4 and BA.5 sub-lineage. SGTP is a positive detection of the presence of the S gene likely indicating a BA.2 sub-lineage.

Figure 12. Estimated distribution of COVID-19 sub-lineages in the community, 31 July 2022 to 19 November 2022



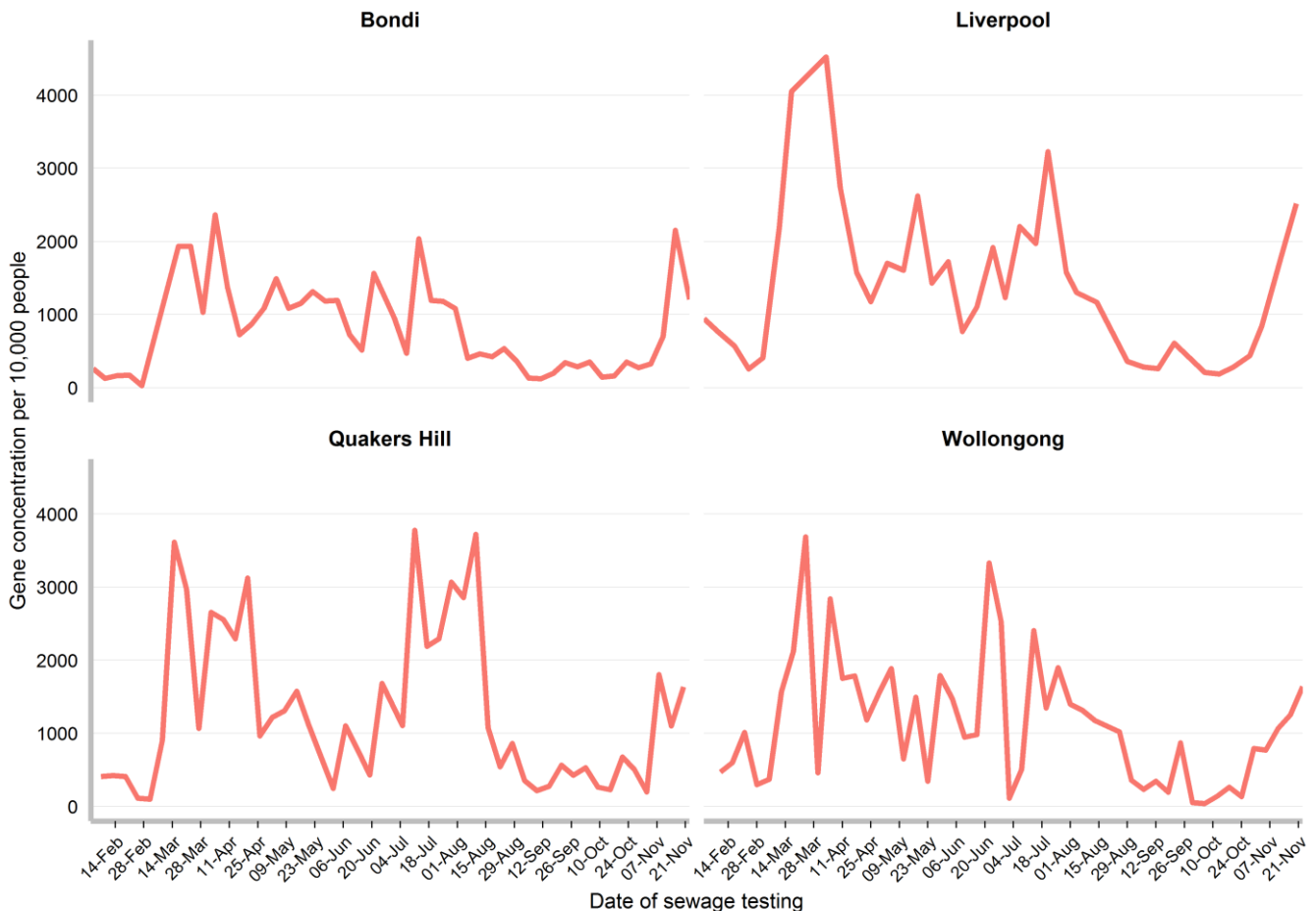
COVID-19 Sewage surveillance program

The NSW Sewage Surveillance Program tests untreated sewage for fragments of the SARS-CoV-2 virus that causes COVID-19. Gene copy numbers are influenced by many factors including virus shedding by people (which varies individually and over the course of the infection), dilution of virus within sewage – such as during rain, the period of time over which the sewage sample is collected, and the presence of chemicals and microorganisms in the sewage that affects how well the testing can detect SARS-CoV-2 virus fragments. Gene copy numbers are reported per 10,000 people in the catchment over time. Trends should be interpreted over an extended period to take into account these fluctuations in environmental conditions.

Trends are presented for Sydney Bondi, Quakers Hills, Liverpool and Wollongong sewage catchments from 5 February 2022 to the week ending 26 November 2022. Peaks in gene copy numbers can be seen that relate to peaks in COVID-19 notifications during March and July 2022. Dips in the graph in early April and July are due to heavy rain. Gene copy numbers have stabilised to low levels in recent weeks.

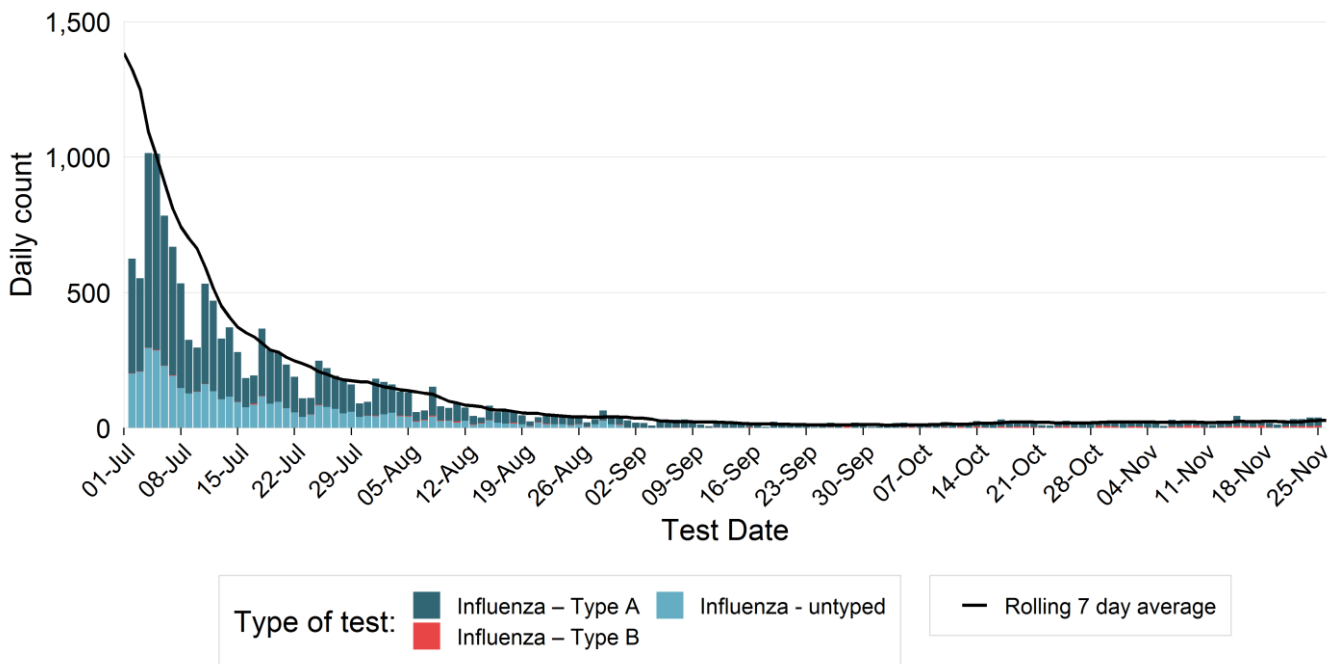
For more results, please see the COVID-19 Sewage Surveillance Program website: <https://health.nsw.gov.au/Infectious/covid-19/Pages/sewage-surveillance-weekly-result.aspx>.

Figure 13. Gene concentration, per 10,000 people in each sewage catchment, 5 February 2022 to 26 November 2022



Influenza and other respiratory viruses

Figure 14. People notified with influenza, by date of test and virus type, NSW, 01 July to 26 November 2022



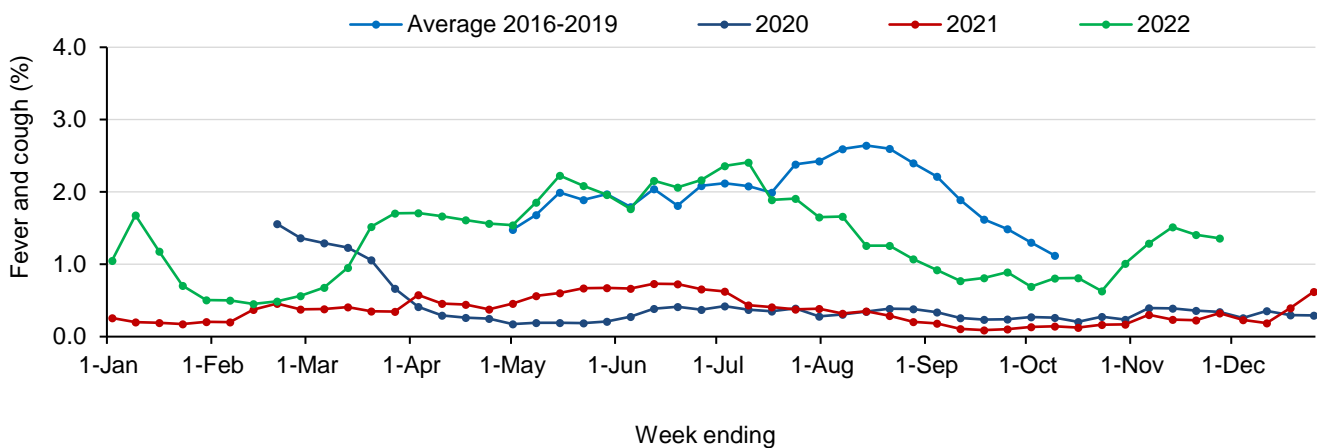
- There were 202 people diagnosed with influenza this week, an increase of 14.8% since the previous week.

FluTracking

FluTracking is an online health surveillance system used to detect epidemics of influenza across Australia and New Zealand. Participants complete an online survey each week to provide community level influenza-like illness surveillance, consistent surveillance of influenza activity across all jurisdictions over time, and year to year comparisons of the timing, attack rates and seriousness of influenza in the community.

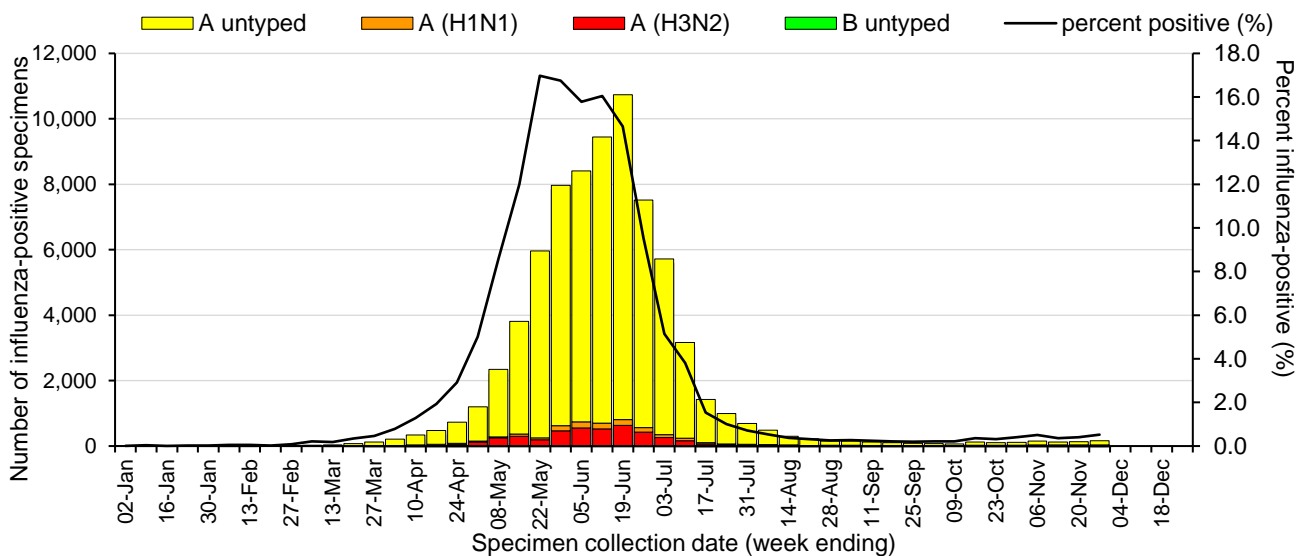
The FluTracking weekly sample size is currently in a decreased inter-seasonal period. Between 31 October 2022 and 1 April 2023 participants are able to opt out of completing the weekly survey. In previous years roughly two thirds of participants continue to complete the weekly survey. Should there be a surge in COVID-19 or influenza activity, participants who have consented will be asked if they would like to recommence surveys earlier. Additional FluTracking reports are available at: <https://info.flutracking.net/reports-2/australia-reports/>

Figure 15. Proportion of FluTracking participants reporting influenza-like illness, NSW, 1 January to 26 November 2022

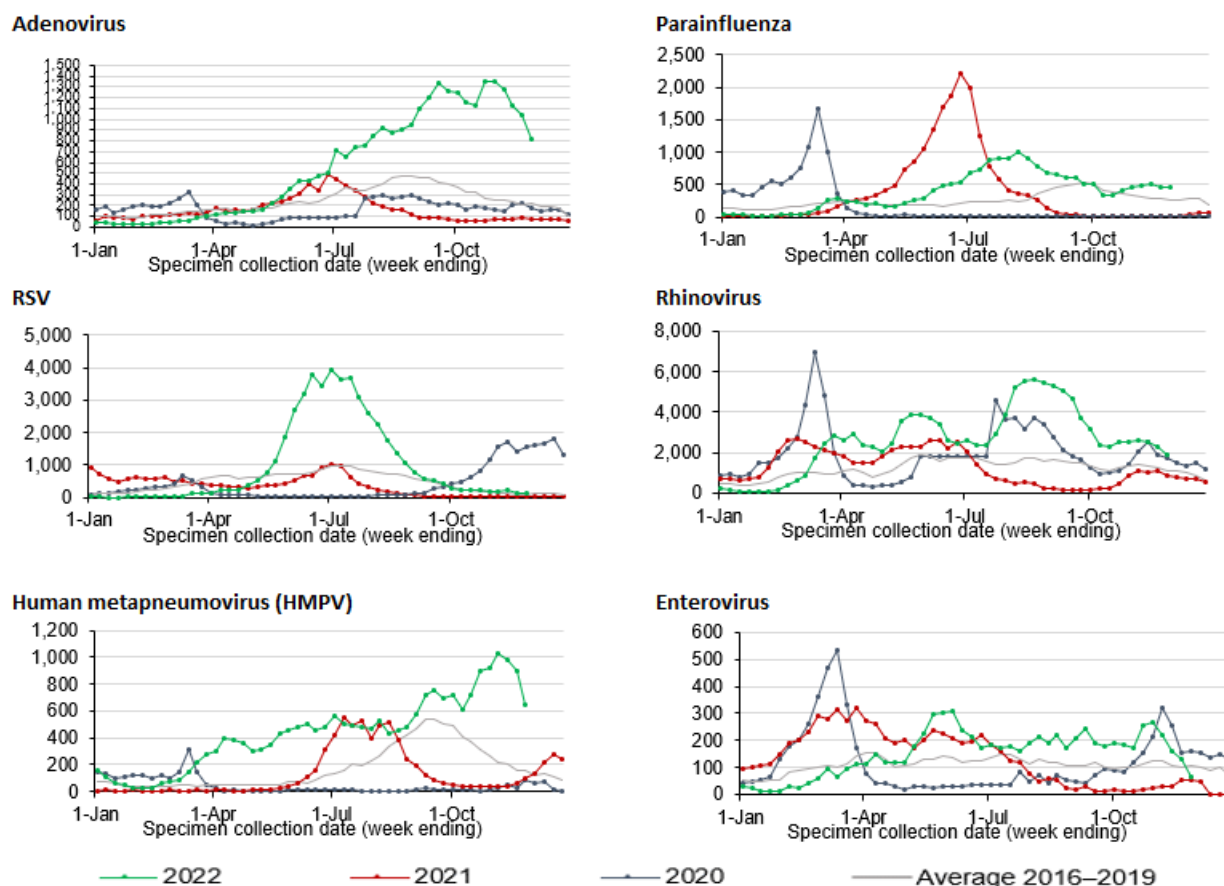


- The proportion of FluTracking participants reporting influenza-like illness decreased this week. The NSW sentinel laboratory network comprises of 13 public and private laboratories throughout NSW who provide additional data on positive and negative test results. This helps us to understand which respiratory viruses are circulating as well as how much.

Figure 16. Number and proportion of tests positive for influenza at sentinel NSW laboratories, 1 January to 26 November 2022



- Of the 30,375 tests conducted for influenza, the proportion positive has remained stable at below 1%.

Figure 17. Number of positive PCR test results for other respiratory viruses at sentinel NSW laboratories, 1 January to 26 November 2022.

- Recent data is subject to change. For the week ending 26 November 2022, 9 out of 13 sentinel laboratories have provided testing data at the time of reporting.

Table 4. Total number of respiratory disease notifications from sentinel laboratories, NSW in the four weeks to 26 November 2022

	Week ending				Year to date
	06 November	13 November	20 November	27 November*	
Adenovirus	1,277	1,127	1,032	820	26,873
Respiratory syncytial virus (RSV)	178	209	147	150	46,332
Rhinovirus	2,616	2,540	2,275	1,889	124,444
Human metapneumovirus (HMPV)	1,024	978	893	649	20,919
Enterovirus	222	161	130	64	7,265
Number of PCR tests conducted	30,902	33,762	32,963	30,375	1,984,314

*Recent data is subject to change. For the week ending 26 November 2022, 9 out of 13 sentinel laboratories have provided testing data at the time of reporting.