NSW Respiratory Surveillance Report - week ending 15 October 2022

COVID-19 Summary

- Transmission in NSW is at low levels. New hospitalisations continue to decline.
- BA.4 and BA.5 Omicron subvariants continue to be the dominant (83%) strains.
- We are closely monitoring S-gene target samples and sequencing data in relation to BA.2 sub-lineages. XBB, a combination of BA.2.10.1 and BA.2.75 sub-lineages, has been detected in recent weeks.
- PCR testing for COVID-19 has increased by 3.3% compared to the previous week. The proportion of PCR tests that were positive for COVID-19 has remained stable around 7%.
- The number of people in hospital with COVID-19 has decreased by 2.9%. At the end of this week 919 people were hospitalised compared to 946 at the end of last week. There were 211 people with COVID-19 admitted to hospital and 17 people admitted to ICU this week. Hospital admissions include people with COVID-19 who are admitted for other reasons.
- There were 30 COVID-19 deaths reported this week. Four 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.

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 68 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 far 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, 1 January to 15 October 2022

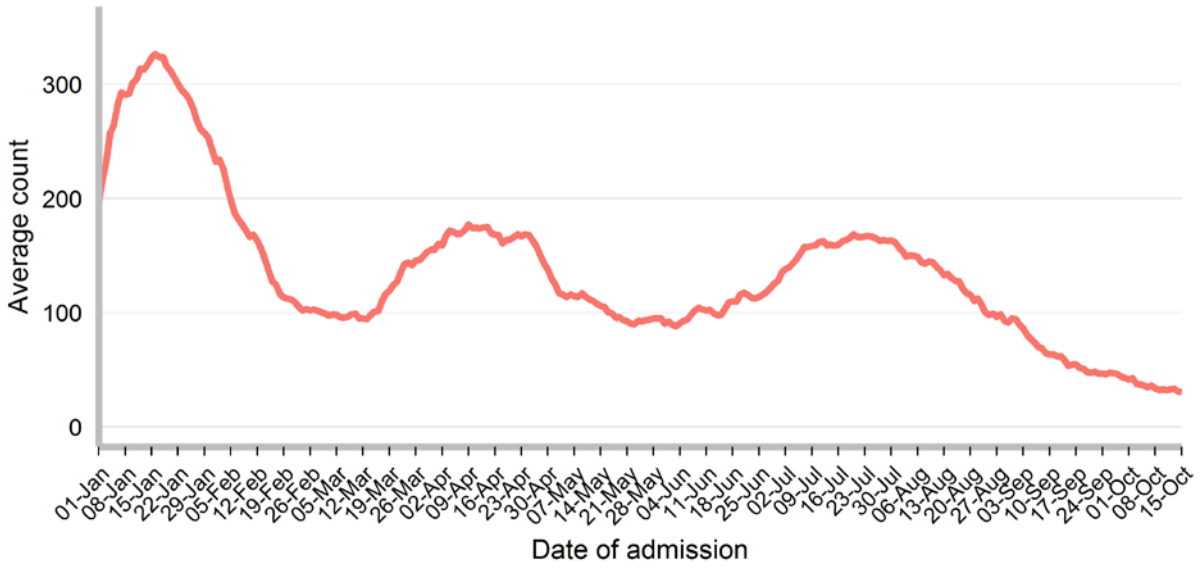


Figure 2. Daily seven-day rolling average of people with COVID-19 admitted to intensive care units, NSW, 1 January to 15 October 2022

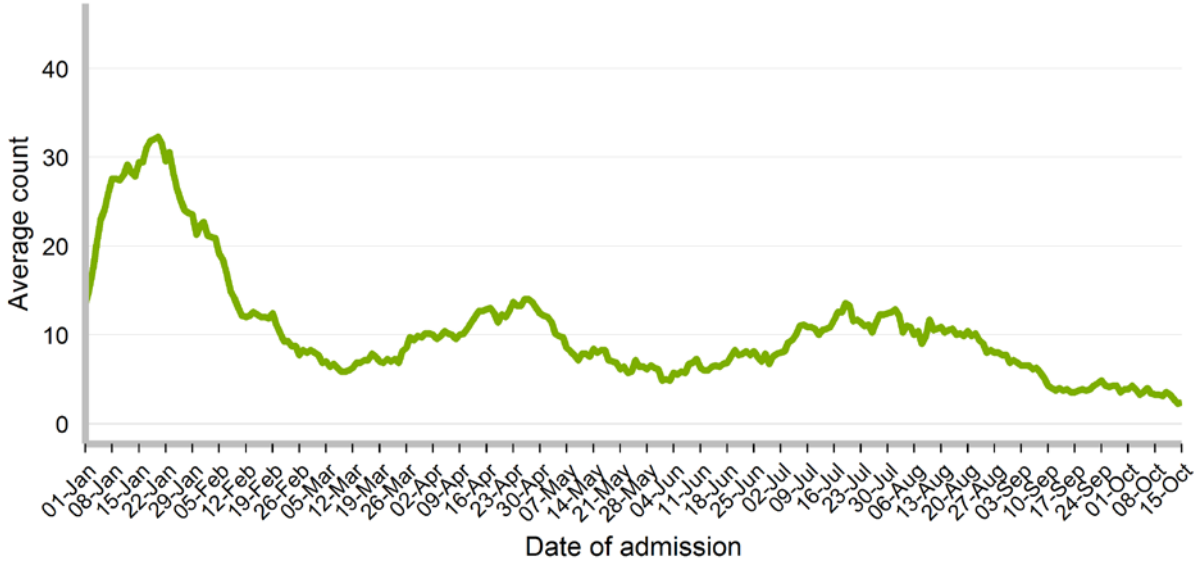
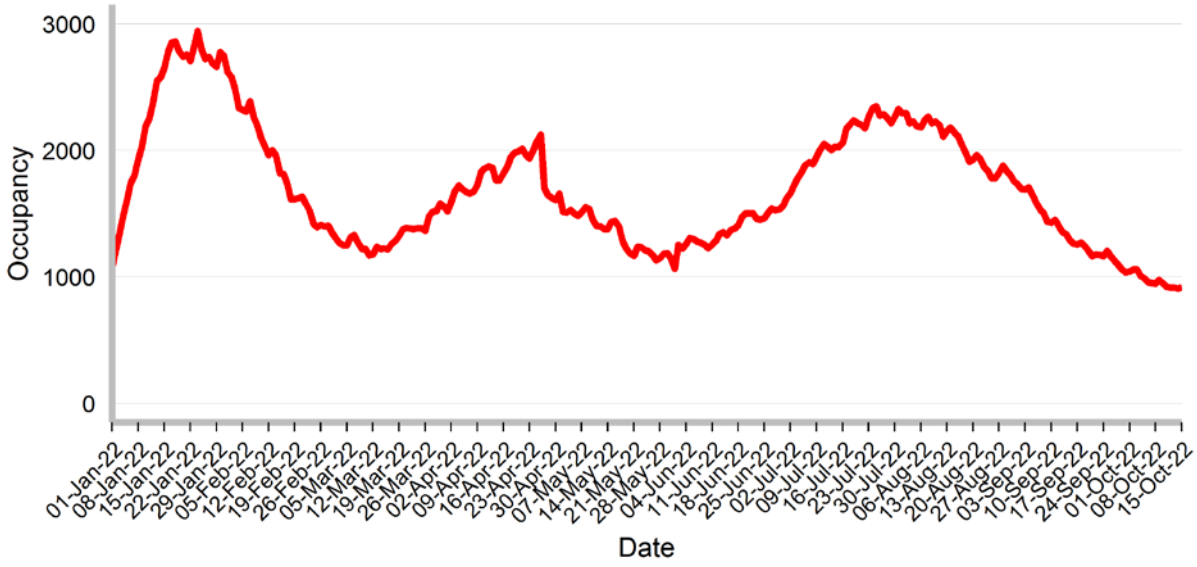


Figure 3. Number of people in hospital with COVID-19 by day, NSW, 1 January to 15 October 2022



- 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
- Two hundred eleven 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 30 admissions by the end of this week, compared with 34 admissions at the end of the previous week.
- Seventeen people diagnosed with COVID-19 were admitted to ICU. The seven-day rolling average of daily ICU admissions decreased to an average of 2 admissions by the end of this week, compared with 3 admissions at the end of the previous week
- The number of people in hospital with COVID-19 has decreased to 919 at the end of this week compared to 946 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 15 October 2022

	Admitted to hospital (but not to ICU)	Admitted to ICU	Deaths
Gender			
Female	102	8	15
Male	109	9	15
Age group (years)			
0-9	11	1	0
10-19	2	0	0
20-29	8	2	0
30-39	8	0	0
40-49	11	0	0
50-59	14	3	4
60-69	25	3	0
70-79	56	6	7
80-89	58	2	8
90+	18	0	11
Local Health District of residence*			
Central Coast	5	1	1
Illawarra Shoalhaven	20	2	2
Nepean Blue Mountains	10	2	0
Northern Sydney	28	1	1
South Eastern Sydney	31	1	4
South Western Sydney	29	3	8
Sydney	26	1	2
Western Sydney	9	0	1
Far West	3	0	0
Hunter New England	21	4	5
Mid North Coast	5	0	2
Murrumbidgee	6	0	2
Northern NSW	5	1	0
Southern NSW	2	0	2
Western NSW	5	1	0
Vaccination status^			
Four or more doses	77	3	16
Three doses	56	6	5
Two doses	31	3	4
One dose	3	0	0
No dose	0	0	2
Unknown	44	5	3
Total	**211**	**17**	**30**

*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. People with unknown vaccination status were unable to be found in AIR, though may have vaccination details recorded in AIR under a shortened name or different spelling.

- Of the 30 people who were reported to have died with COVID-19, 21 (70%) were known to have received three or more doses of a COVID-19 vaccine, while 4 had received two doses, 0 had received one dose and 2 had received no doses of a COVID-19 vaccine. The vaccination status of the remaining 3 were unable to be determined.[1]
- Sixteen were aged care residents. Five of these people died in hospital and 11 died at an aged care facility.
- Four of the deaths occurred at home. Of these, four were diagnosed with COVID-19 prior to death.
- Reported deaths were classified as COVID-19 deaths if they met the surveillance definition in the Communicable Diseases Network of Australia's COVID-19 National Guidelines for Public Heath Units. Under this definition, deaths are considered COVID-19 deaths for surveillance purposes if the person died with COVID-19, not necessarily because COVID-19 was the cause of death. Deaths may be excluded if there was a clear alternative cause of death that was unrelated to COVID-19 (e.g. major trauma).
- COVID-19 related deaths are notified to NSW Health from a range of sources, including public and private hospitals, aged care facilities, and the Coroner. Not all deaths reported by NSW Health occurred in the week in which they are reported as there is sometimes a delay between a death occurring and it being reported to NSW Health. NSW Health does not report deaths under investigation by the Coroner until the Coroner issues their findings on the cause of death.

[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 and Influenza

Table 2. Notifications of COVID-19 and Influenza, by gender, age group, Local Health District, NSW, tested in the week ending 15 October 2022

	Week ending 15 October 2022		Year total	
	COVID-19	Influenza	COVID-19 *	Influenza
Gender				
Female	5,339 (54.6%)	48 (41.7%)	1,612,104 (52.5%)	59,686 (52.5%)
Male	4,431 (45.3%)	67 (58.3%)	1,451,904 (47.3%)	53,816 (47.3%)
Not stated / inadequately described	11 (0.1%)	0 (0.0%)	4,446 (0.1%)	157 (0.1%)
Transgender	0 (0.0%)	0 (0.0%)	4 (0.0%)	0 (0.0%)
Age group (years)				
0-4	325 (3.3%)	4 (3.5%)	140,222 (4.6%)	15,951 (14.0%)
5-9	265 (2.7%)	8 (7.0%)	196,877 (6.4%)	19,413 (17.1%)
10-19	632 (6.5%)	20 (17.4%)	434,425 (14.2%)	21,351 (18.8%)
20-29	1,563 (16.0%)	14 (12.2%)	498,200 (16.2%)	13,440 (11.8%)
30-39	1,643 (16.8%)	15 (13.0%)	534,965 (17.4%)	15,891 (14.0%)
40-49	1,413 (14.4%)	11 (9.6%)	452,313 (14.7%)	11,094 (9.8%)
50-59	1,310 (13.4%)	18 (15.7%)	352,284 (11.5%)	6,698 (5.9%)
50-69	1,164 (11.9%)	10 (8.7%)	245,039 (8.0%)	4,888 (4.3%)
70-79	872 (8.9%)	7 (6.1%)	136,701 (4.5%)	3,000 (2.6%)
80-89	471 (4.8%)	6 (5.2%)	58,640 (1.9%)	1,447 (1.3%)
90+	123 (1.3%)	2 (1.7%)	18,605 (0.6%)	467 (0.4%)
Local Health District of residence#				
Central Coast	419 (4.4%)	5 (4.3%)	135,428 (4.5%)	7,257 (6.4%)
Illawarra Shoalhaven	536 (5.6%)	9 (7.8%)	173,157 (5.7%)	6,517 (5.7%)
Nepean Blue Mountains	501 (5.2%)	2 (1.7%)	156,684 (5.2%)	6,259 (5.5%)
Northern Sydney	1,335 (13.9%)	22 (19.1%)	361,778 (11.9%)	11,947 (10.5%)
South Eastern Sydney	1,197 (12.5%)	27 (23.5%)	345,350 (11.4%)	11,904 (10.5%)
South Western Sydney	1,078 (11.2%)	13 (11.3%)	378,174 (12.4%)	16,664 (14.7%)
Sydney	932 (9.7%)	6 (5.2%)	256,327 (8.4%)	7,156 (6.3%)
Western Sydney	1,286 (13.4%)	9 (7.8%)	408,085 (13.4%)	16,491 (14.5%)
Far West	27 (0.3%)	0 (0.0%)	10,168 (0.3%)	264 (0.2%)
Hunter New England	1,064 (11.1%)	4 (3.5%)	370,660 (12.2%)	14,506 (12.8%)
Mid North Coast	213 (2.2%)	5 (4.3%)	69,908 (2.3%)	1,751 (1.5%)
Murrumbidgee	284 (3.0%)	2 (1.7%)	102,008 (3.4%)	3,164 (2.8%)
Northern NSW	196 (2.0%)	5 (4.3%)	89,066 (2.9%)	2,286 (2.0%)
Southern NSW	203 (2.1%)	1 (0.9%)	74,560 (2.5%)	2,054 (1.8%)
Western NSW	339 (3.5%)	2 (1.7%)	106,904 (3.5%)	5,102 (4.5%)
Aboriginal status^				
Aboriginal and/or Torres Strait Islander	412 (4.2%)	2 (1.7%)	116,459 (3.8%)	4,134 (3.6%)
Not Aboriginal or Torres Strait Islander	7,080 (72.4%)	65 (56.5%)	2,478,675 (80.8%)	58,137 (51.2%)
Not Stated / Unknown	2,289 (23.4%)	48 (41.7%)	473,324 (15.4%)	51,388 (45.2%)
Total	**9,781 (100%)**	**115 (100%)**	**3,068,458 (100%)**	**113,659 (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. For influenza cases, Aboriginal status is only known if it is collected and reported by the laboratory, which is not routine.

Figure 4. People notified with COVID-19, by date of test and type of test performed, NSW, 1 January to 15 October 2022

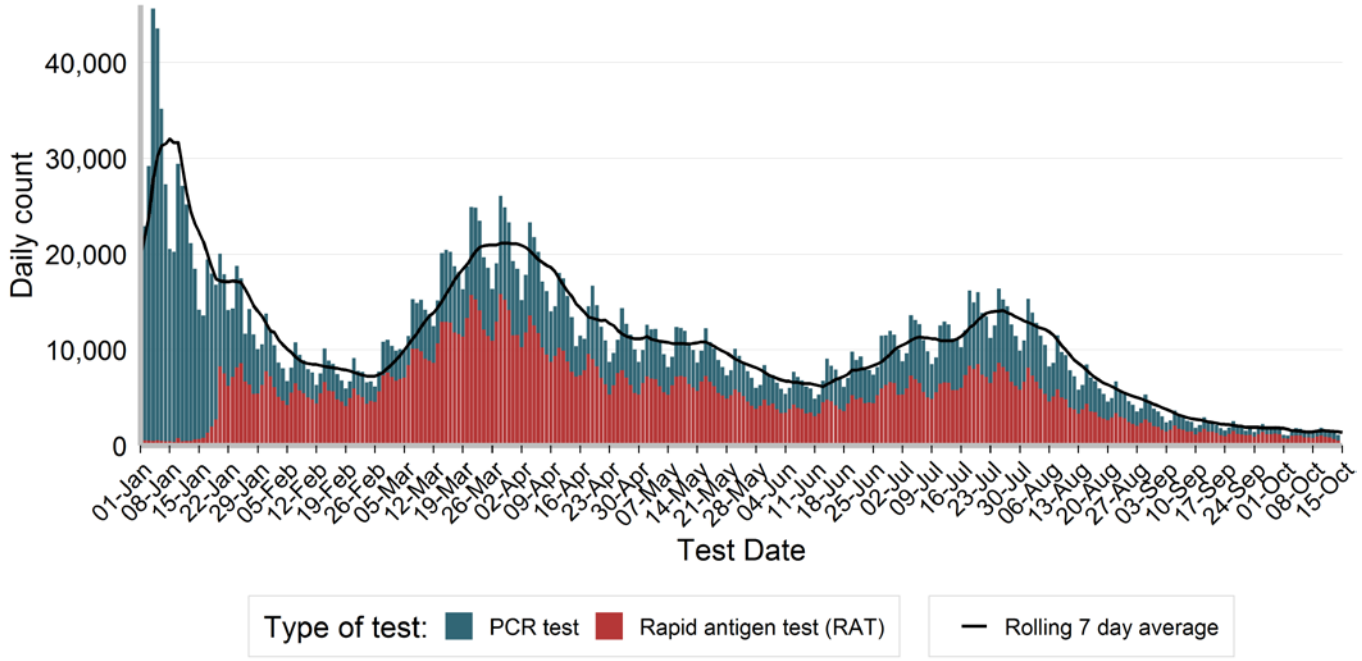
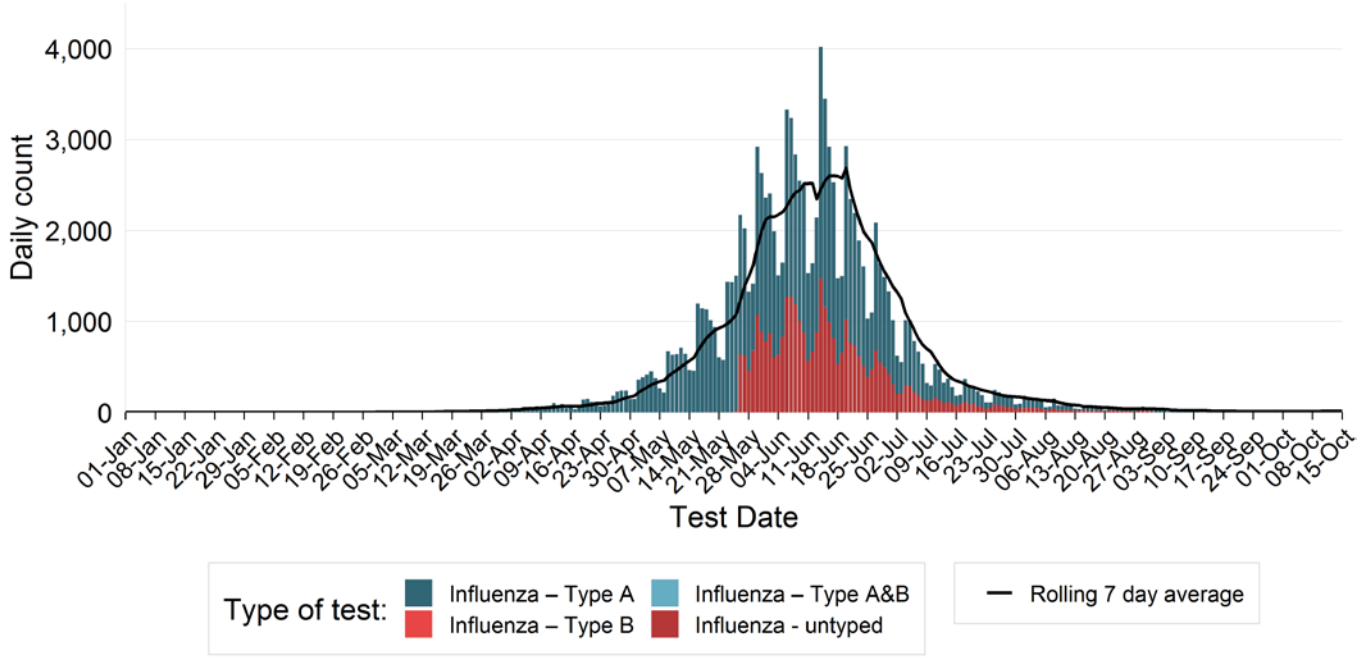


Figure 5. People notified with influenza, by date of test and virus type, NSW, 1 January to 15 October 2022



- There were 9,781 people diagnosed with COVID-19 this week, a decrease of 4.5% since the previous week.
- There were 115 people diagnosed with influenza this week, an increase of 36.9% since the previous week.

Figure 6. Daily seven-day rolling average rate of COVID-19 notificiations per 100,000 population, by age group and test date, NSW, 1 January to 15 October 2022

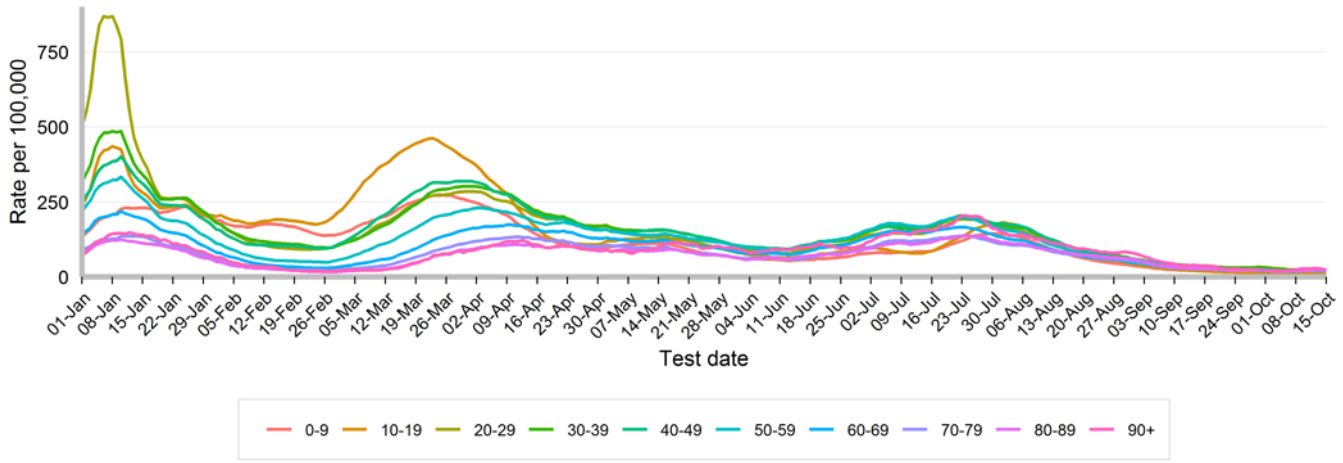


Figure 7. Daily seven-day rolling average rate of COVID-19 notifications per 100,000 population, by metropolitan Local Health District and test date, NSW, 1 January to 15 October 2022

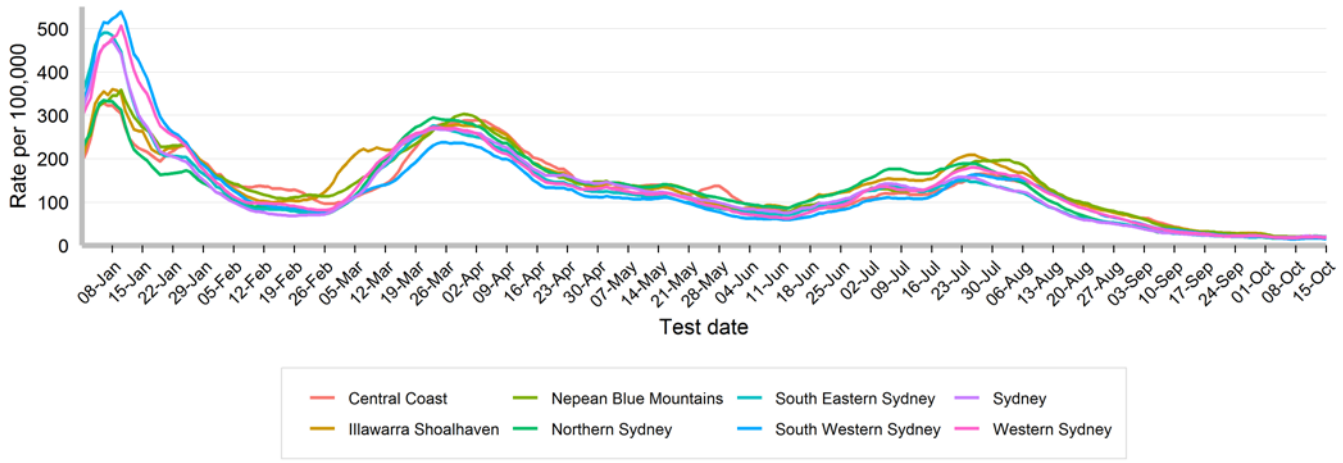


Figure 8. Daily seven-day rolling average rate of COVID-19 notifications per 100,000 population, by rural and regional Local Health District and test date, NSW, 1 January to 15 October 2022

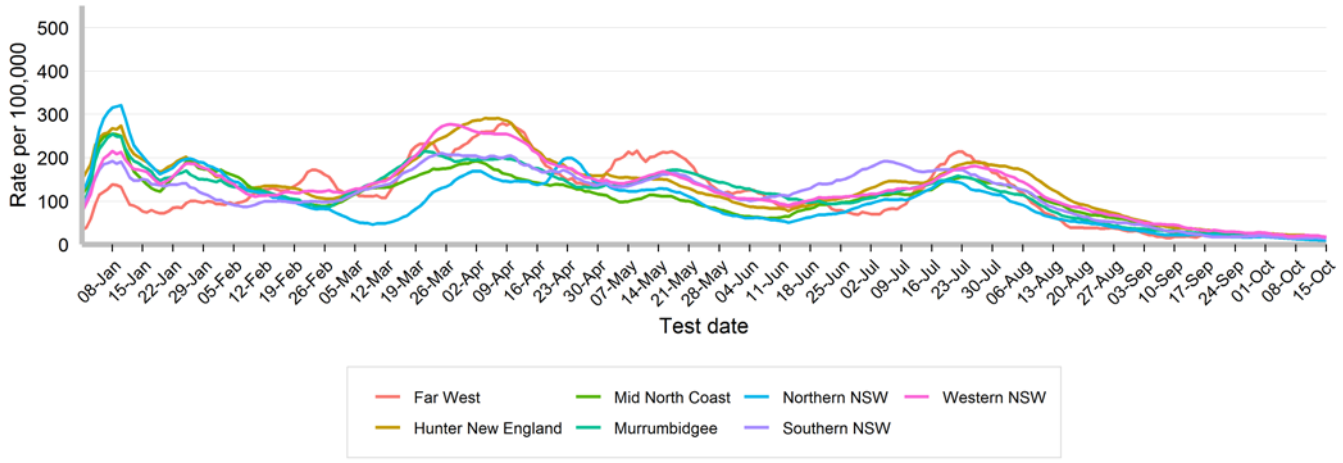


Figure 9. Daily seven-day rolling average rate of influenza notifications per 100,000 population, by age group and test date, NSW, 1 January to 15 October 2022

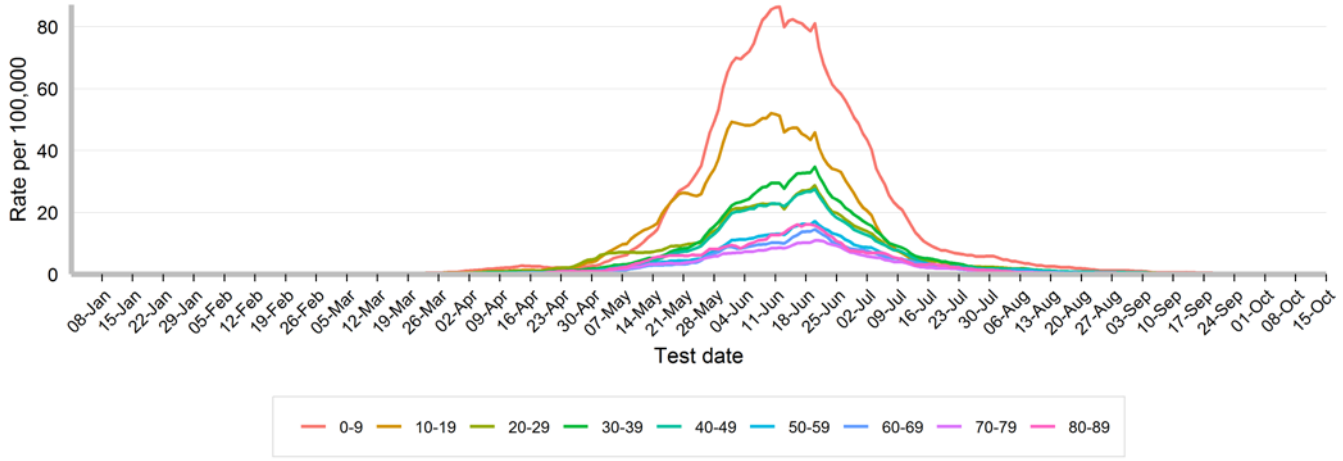


Figure 10. Daily seven-day rolling average rate of influenza notifications per 100,000 population, by metropolitan Local Health District and test date, NSW, 1 January to 15 October 2022

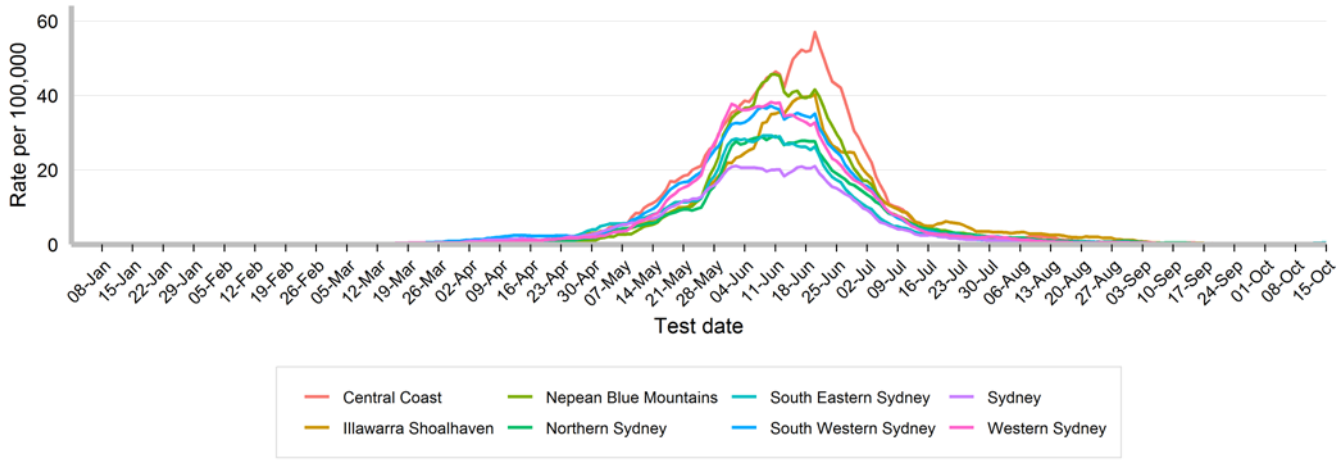
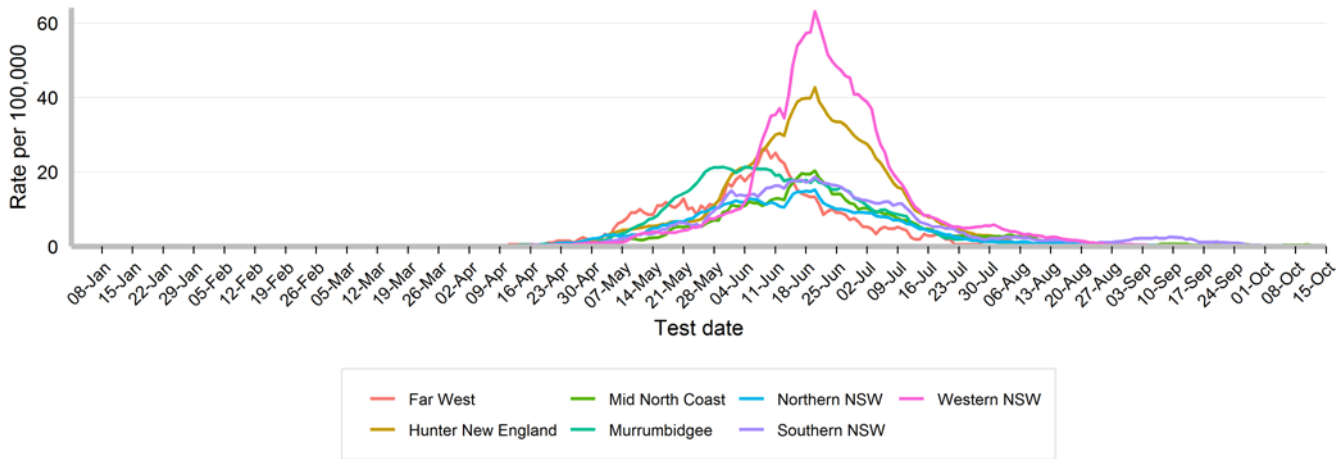


Figure 11. Daily seven-day rolling average rate of influenza notifications per 100,000 population, by rural and regional Local Health District and test date, NSW, 1 January to 15 October 2022



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.

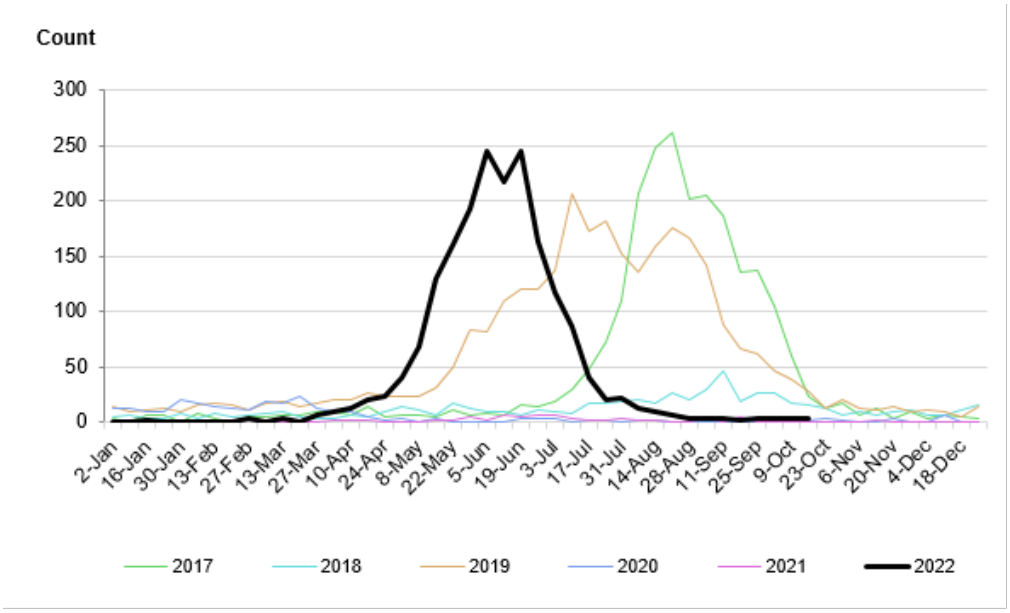
The number of presentations and calls in each category is monitored over time to quickly identify unusual patterns of illness. Unusual patterns could signify an emerging outbreak of disease or issue of public health importance in the population. PHREDSS is also useful for monitoring the impact of seasonal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

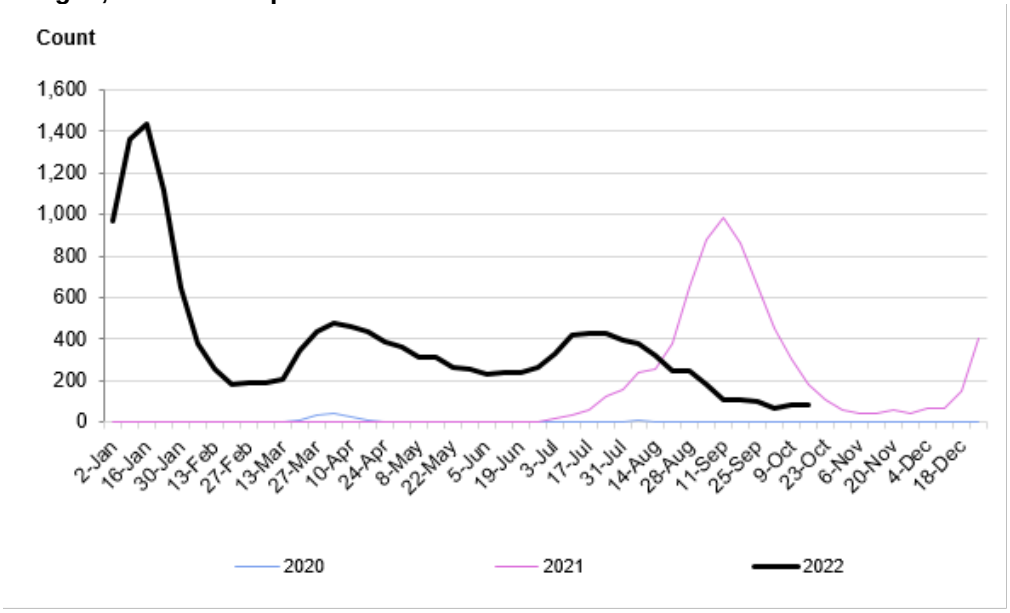
The emergency department *'coronaviruses/SARS'* surveillance syndrome includes provisional diagnoses (SNOMEDCT and ICD-10-AM codes) for coronavirus infections SARS, MERS, COVID-19 or other coronaviruses, or clinical condition of Severe Acute Respiratory Syndrome (SARS). It excludes testing and suspected 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 12. Weekly counts of unplanned emergency department (ED) presentations for *'influenza-like illness'*, that were admitted, for 2022 (black line), compared with the previous five years (coloured lines), persons of all ages, 88 NSW hospitals



- Emergency department presentations for 'influenza-like illness' (ILI) requiring an admission have remained stable at 4 admissions. This represents 10% of all ILI emergency department presentations this week, which is a slight increase from 13% in the previous week.

Figure 13. 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

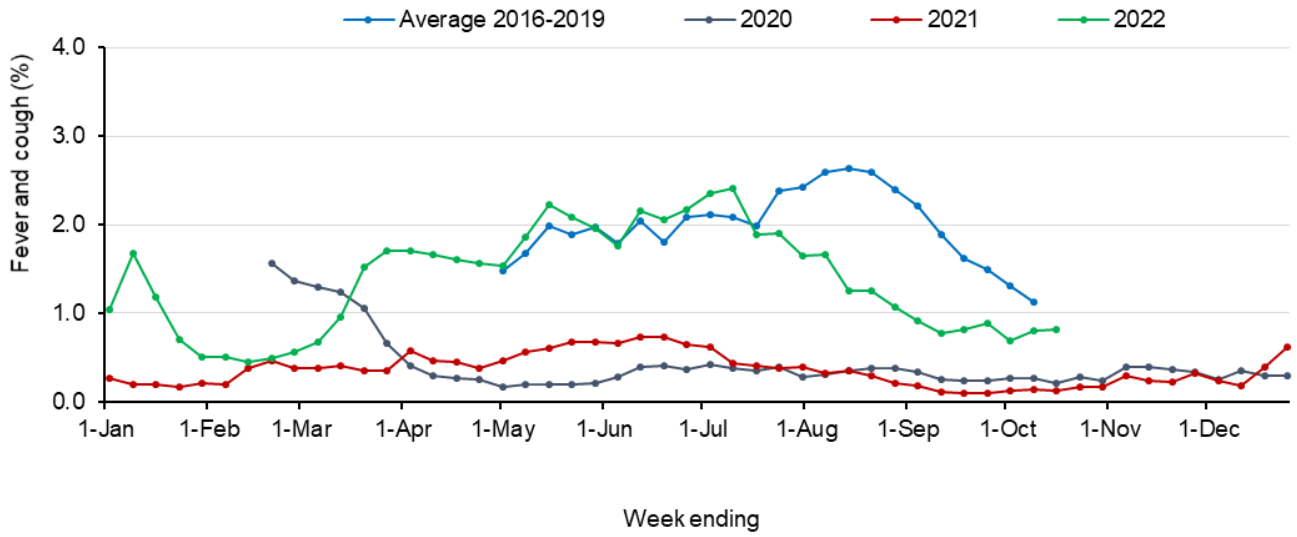


- Emergency department presentations for coronaviruses/SARS requiring an admission have increased to 88 from 82 admissions in the previous week.

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. More information about FluTracking and ways to be involved are available here: https://info.flutracking.net/about/

Figure 14. Proportion of FluTracking participants reporting influenza-like illness, NSW, 1 January to 16/10/2022

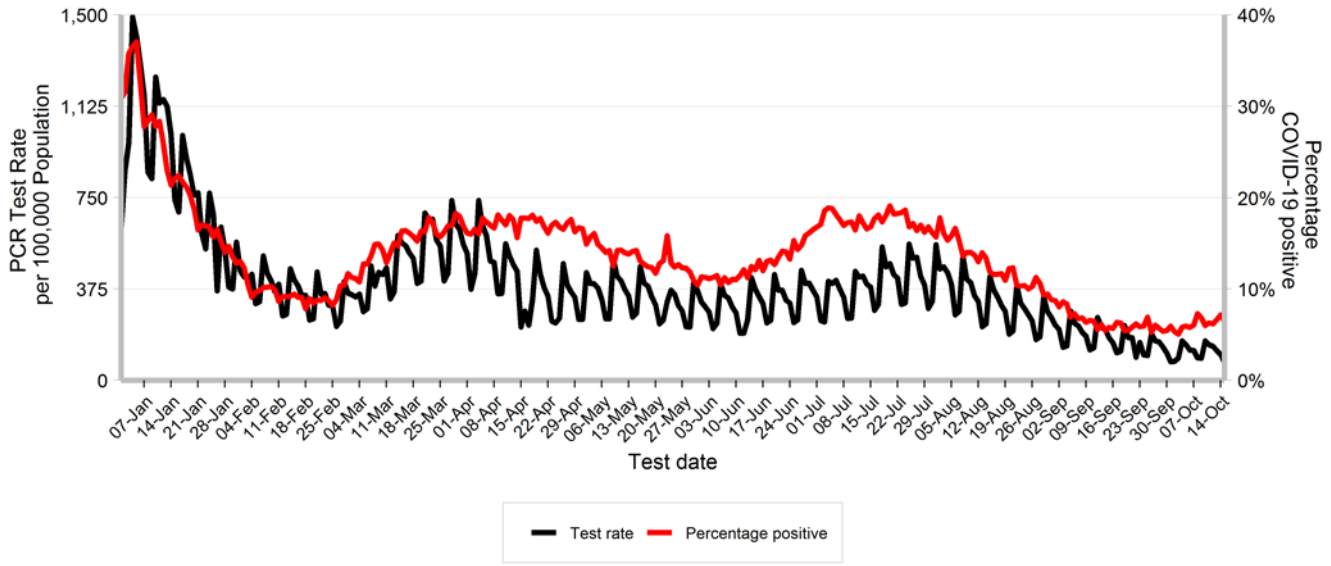


- The proportion of FluTracking participants reporting influenza-like illness remained low this week.
- Additional FluTracking reports are available at: https://info.flutracking.net/reports-2/australia-reports/

LABORATORY SURVEILLANCE

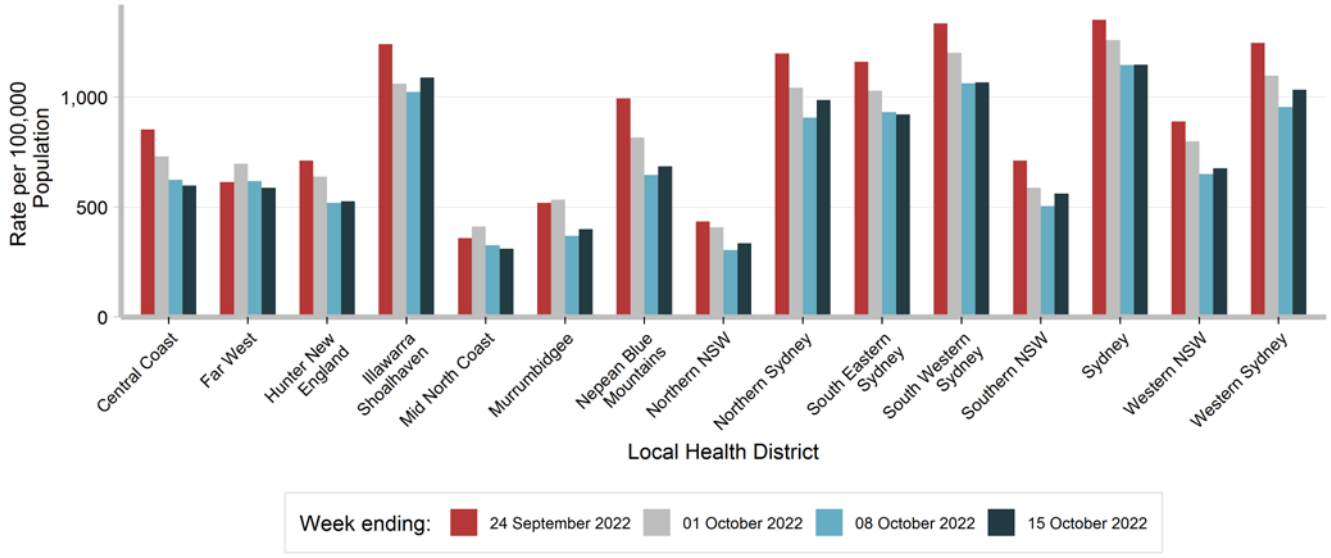
COVID-19 PCR testing

Figure 15. 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, 1 January to 15 October 2022



- There were 71,104 PCR tests reported this week. This is a 3.3% increase compared to 68,854 PCR tests reported in the previous week.
- The percentage of PCR tests that were positive for COVID-19 has decreased to 6.5% compared to 7.3% at the end of the previous week.

Figure 16. Rate of PCR tests for COVID-19 per 100,000 population by Local Health District and test date, NSW, in the four weeks to 15 October 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).
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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 08 October 2022

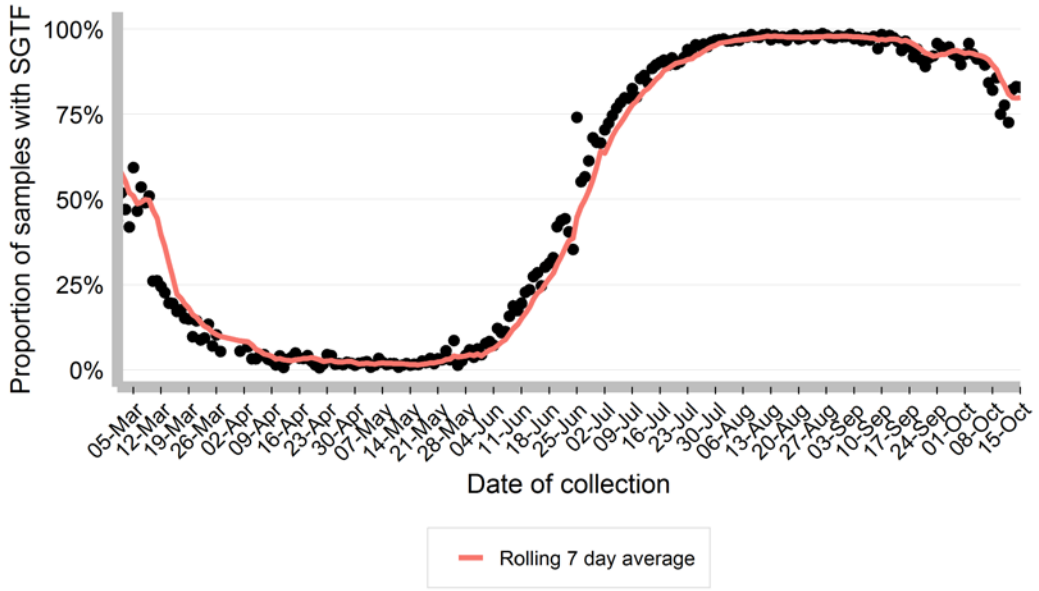
Variant	Week ending			
	17 September	24 September	01 October	08 October
Omicron (BA.2)	14 (4.5%)	22 (7.8%)	27 (7.8%)	7 (1.9%)
Omicron (BA.2.12.1)	1 (0.3%)	0 (0%)	0 (0%)	0 (0%)
Omicron (BA.2.3.20)	0 (0%)	0 (0%)	1 (0.3%)	0 (0%)
Omicron (BA.2.75)	45 (14.4%)	38 (13.4%)	48 (13.9%)	33 (8.8%)
Omicron (BA.2.75.2)	20 (6.4%)	15 (5.3%)	9 (2.6%)	4 (1.1%)
Omicron (BA.4)	6 (1.9%)	3 (1.1%)	0 (0%)	1 (0.3%)
Omicron (BA.4.6)	14 (4.5%)	5 (1.8%)	15 (4.3%)	12 (3.2%)
Omicron (BA.5)	211 (67.6%)	200 (70.7%)	234 (67.6%)	302 (80.3%)
Omicron (BJ.1)	0 (0%)	0 (0%)	0 (0%)	1 (0.3%)
Omicron (BQ.1.1)	0 (0%)	0 (0%)	9 (2.6%)	5 (1.3%)
Recombinant (XBB)	0 (0%)	0 (0%)	2 (0.6%)	11 (2.9%)
Recombinant (XBC)	1 (0.3%)	0 (0%)	1 (0.3%)	0 (0%)
Total	312	283	346	376

- 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.

S Gene detection as a proxy for the BA.2 omicron sub-lineage

- The BA.1, BA.4 and BA.5 subvariant of the Omicron variant have a mutation that results in a failure of certain PCR test platforms to detect the S gene. This mutation is typically not present in the BA.2 subvariant, and therefore the detection of an S gene can be used as a proxy to estimate the prevalence of BA.2 in the community.
- 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 17% of SARS-CoV-2 positive specimens currently have an S gene detected. A sample of S gene detected specimens have been prioritised for WGS. The XBB (a recombinant lineage of BA.2.10.1 and BA.2.75) has been identified in these samples in recent weeks.
- We are closely monitoring S-gene target and sequencing data in relation to BA.2 and BA.5 sub-variants.

Figure 17. Proportion of samples with S gene target failure (SGTF), 1 March 2022 to 15 October 2022



COVID-19 Sewage surveillance program

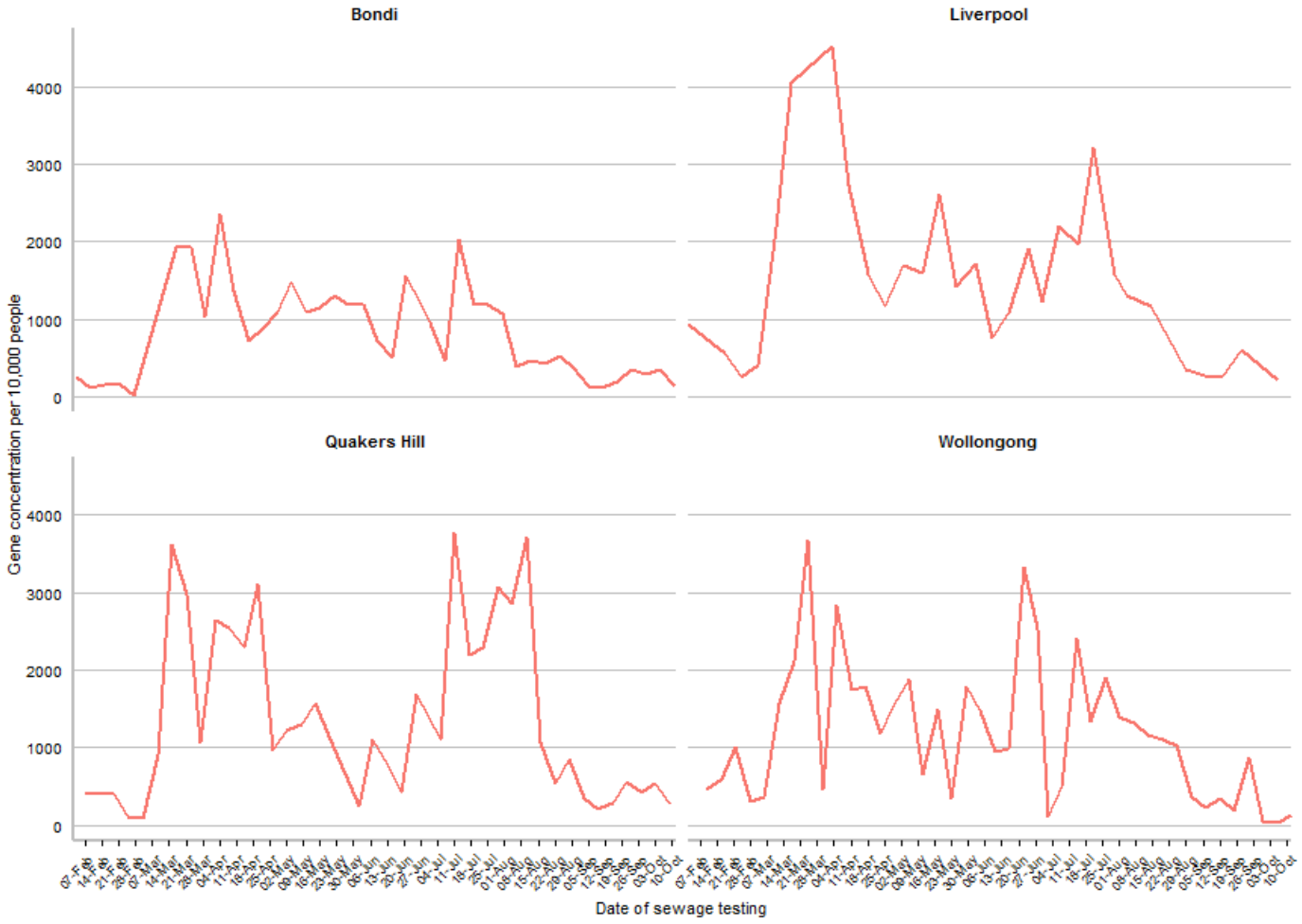
The NSW Sewage Surveillance Program tests untreated sewage for fragments of the SARS-CoV-2 virus that causes COVID-19. Gene copy numbers are influenced by many factors including virus shedding by people (which varies individually and over the course of the infection), dilution of virus within sewage – 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 15 October 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. In the week ending 15 October 2022, gene copy numbers decreased in Bondi and Quakers Hill, and increased in Wollongong. Results are not yet available for Liverpool. In the week ending 8 October 2022, gene copy numbers in Wollongong were stable and reduced in Liverpool compared to the previous week. For more results, please see the COVID-19 Sewage Surveillance Program website.

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.

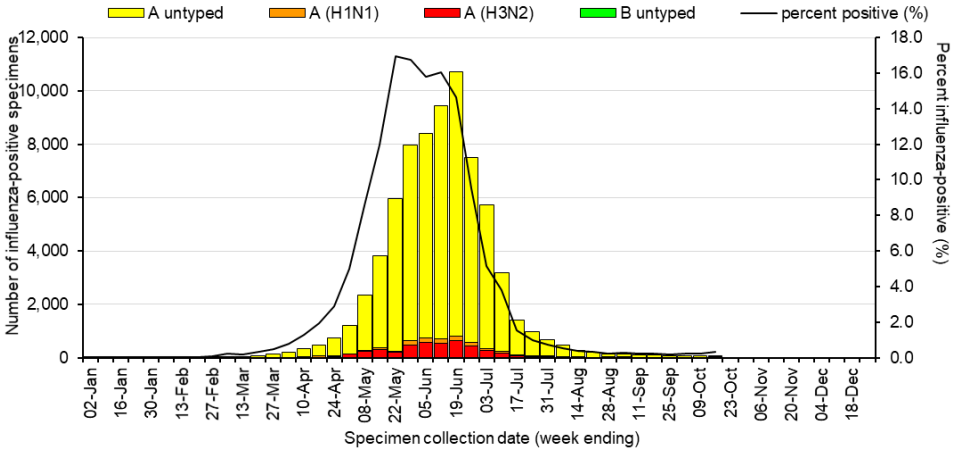
Figure 18. Gene concentration, per 10,000 people in each sewage catchment, 5 February 2022 to 15 October 2022



Influenza and other respiratory viruses

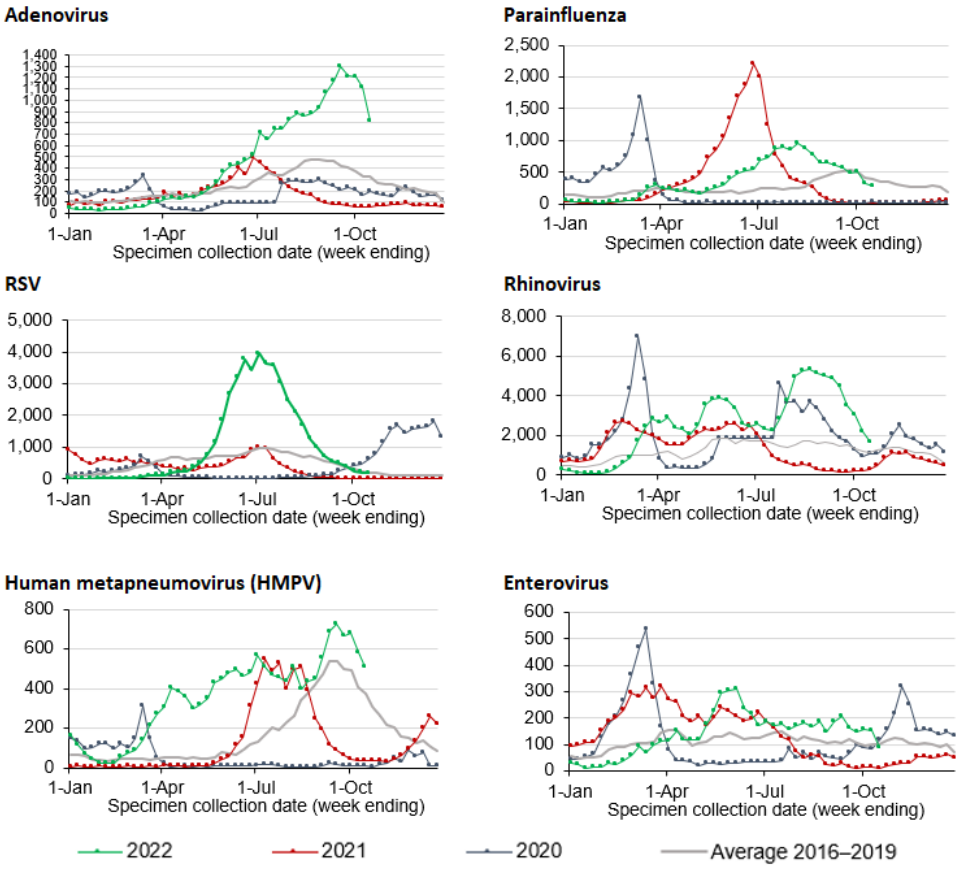
The NSW sentinel laboratory network comprises of 13 public and private laboratories throughout NSW who provide additional data on positive and negative test results. This helps us to understand which respiratory viruses are circulating as well as how much.

Figure 19. Number and proportion of tests positive for influenza at sentinel NSW laboratories, 1 January to 16 October 2022



- Of the 18,735 tests conducted for influenza, the proportion positive has remained stable at below 1%.

Figure 20. Number of positive PCR test results for other respiratory viruses at sentinel NSW laboratories, 1 January to 16 October 2022.



- Recent data is subject to change. For the week ending 16 October 2022, 7 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 16 October, 2022

	Week ending				Year to date
	25 September	02 October	09 October	16 October*	
Adenovirus	1,211	1,203	1,112	818	19,265
Respiratory syncytial virus (RSV)	392	244	196	185	44,412
Rhinovirus	3,477	3,010	2,203	1,631	106,692
Human metapneumovirus (HMPV)	663	678	582	511	14,978
Enterovirus	149	158	153	89	5,772
Number of PCR tests conducted	38,678	34,292	30,008	18,735	1,750,670

*Recent data is subject to change. For the week ending 16 October 2022, 7 out of 13 sentinel laboratories have provided testing data at the time of reporting.