

## NSW Respiratory Surveillance Report - week ending 07 January 2023

### COVID-19 Summary

- Key indicators for transmission, including PCR positivity, hospital admissions and admissions from emergency departments are declining.
- There is still a highly mixed group of sub-variants circulating, the BR.2 sub-variant is the most common. NSW Health continues to monitor emerging sub-variants including XBB.1.5 and XBF.
- There were 15,364 people diagnosed with COVID-19 this week, a decrease of 33% since the previous week. PCR testing for COVID-19 has decreased by 11% compared to the previous week. The proportion of PCR tests that were positive for COVID-19 has decreased from 16% to 13%.
- The seven-day rolling average of daily hospital admissions decreased to an average of 84 admissions by the end of this week, compared with 125 admissions at the end of the previous week. There were 588 people with COVID-19 admitted to hospital and 59 people admitted to ICU this week.
- Emergency department presentations for coronaviruses requiring an admission have decreased to 302 from 549 admissions in the previous week.
- There were 92 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. This includes deaths not reported over the holiday period due to delays in registrations.

### Other respiratory viruses summary

- Influenza activity is currently at low levels but shows signs of increasing activity with PCR positivity around 2% for tests reported by the NSW sentinel laboratory network. Influenza activity in the northern hemisphere remains high and vaccination continues to be recommended.

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### 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. Data in this report are collected for surveillance purposes and are indicative of trends. Data should not be compared between reports as data for previous weeks are updated when new information becomes available.

### Changes to this report

Vaccination status of cases admitted to hospital, admitted to ICU and those who die are no longer reported here. These data were included from 2021 when vaccines were first rolled out to monitor trends in the relationship between vaccination and serious outcomes. Now most of the population have received at least two doses of vaccine (aged 16+ 95.8%, close to 100% in those aged 65+)<sup>1</sup>, and the majority of the population have also had prior COVID-19 infection (likely more than 80%)<sup>2</sup>. There are also differences in timings of booster dosing across different age groups. Age is a primary factor in vaccination coverage and driver of serious outcomes, as are underlying conditions. Given this complexity, the relationship between vaccination and risk of serious outcomes cannot be determined using these surveillance data alone. NSW data is contributing to studies where these factors can be taken into account.

Staying up to date with COVID-19 vaccinations, as recommended by ATAGI<sup>3</sup>, is the most important factor to protect against serious outcomes from infection.

For research about vaccine effectiveness see: <https://aci.health.nsw.gov.au/covid-19/critical-intelligence-unit/covid-19-vaccines>

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<sup>1</sup> <https://www.health.gov.au/sites/default/files/2023-01/covid-19-vaccine-rollout-update-06-january-2023.pdf>

<sup>2</sup> <https://kirby.unsw.edu.au/project/serosurveillance-sars-cov-2-infection-inform-public-health-responses>

<sup>3</sup> <https://www.health.gov.au/our-work/covid-19-vaccines/who-can-get-vaccinated>

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

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 07 January 2023

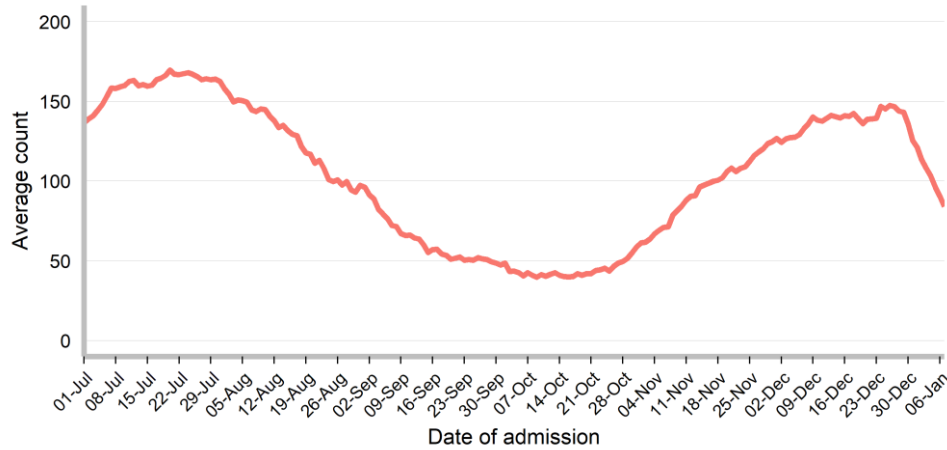
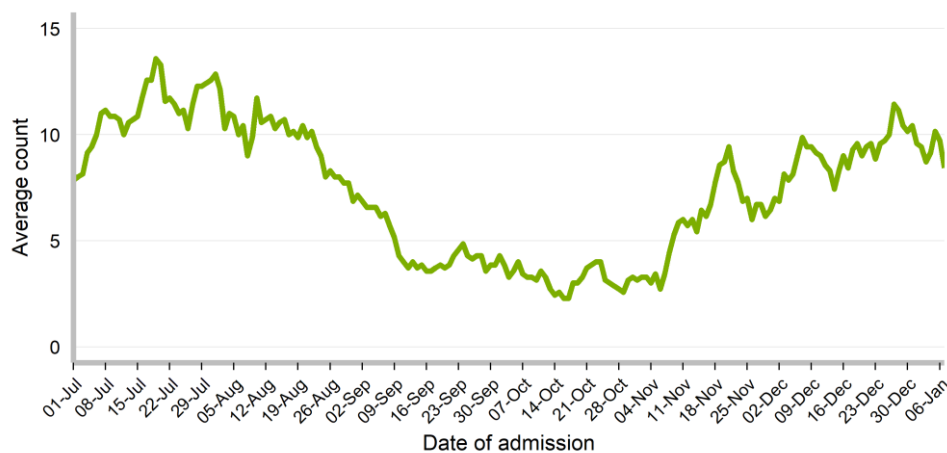


Figure 2. Daily seven-day rolling average of people with COVID-19 admitted to intensive care units, NSW, 01 July to 07 January 2023



- 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
- Five hundred eighty eight 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 84 admissions by the end of this week, compared with 125 admissions at the end of the previous week.
- Fifty nine people diagnosed with COVID-19 were admitted to ICU. The seven-day rolling average of daily ICU admissions decreased to an average of 8 admissions by the end of this week, compared with 10 admissions at the end of the previous 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 07 January 2023**

	Admitted to hospital (but not to ICU)	Admitted to ICU	Deaths
<b>Gender</b>			
Female	269	30	46
Male	319	29	45
Not stated / inadequately described	0	0	1
<b>Age group (years)</b>			
0-9	30	2	0
10-19	16	1	0
20-29	26	1	0
30-39	36	0	1
40-49	27	8	0
50-59	31	6	2
60-69	57	12	4
70-79	133	17	16
80-89	166	11	37
90+	66	1	32
<b>Local Health District of residence*</b>			
Central Coast	46	3	6
Illawarra Shoalhaven	43	1	6
Nepean Blue Mountains	19	2	6
Northern Sydney	57	6	12
South Eastern Sydney	80	9	14
South Western Sydney	57	4	14
Sydney	61	8	5
Western Sydney	51	8	5
Far West	6	0	0
Hunter New England	49	7	9
Mid North Coast	16	1	5
Murrumbidgee	13	1	5
Northern NSW	38	2	0
Southern NSW	17	1	2
Western NSW	24	3	2
<b>Total</b>	<b>588</b>	<b>59</b>	<b>92</b>

\*Excludes cases in correctional settings

- Thirty six were aged care residents. Fourteen of these people died in hospital and 22 died at an aged care facility.
- Seven of the deaths occurred at home. Of these, seven were 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).

Epidemiological week 1, ending 7 January 2023

## Notifications of COVID-19

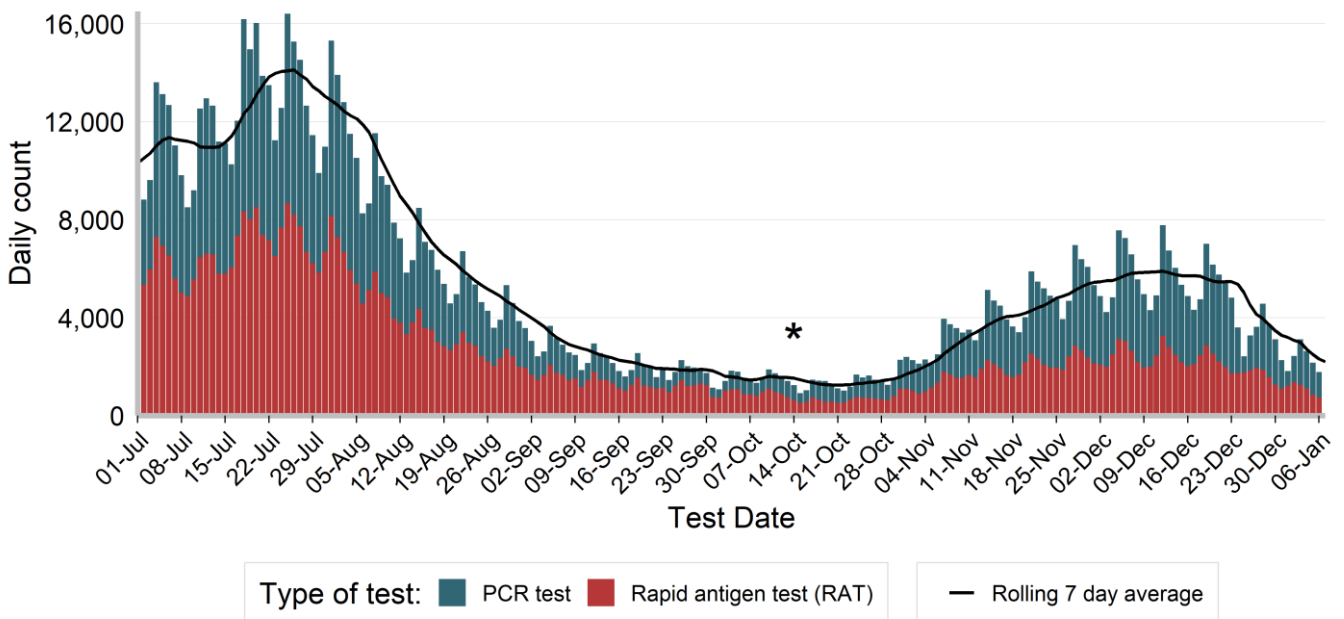
**Table 2. Notifications of COVID-19 by gender, age group, Local Health District, NSW, tested in the week ending 07 January 2023**

	Week ending 07 January 2023			Year to date*
	PCR	RAT	Total	Total
<b>Gender</b>				
Female	4,559 (53.6%)	4,052 (59.1%)	8,611 (56.0%)	8,611 (56.0%)
Male	3,922 (46.1%)	2,792 (40.7%)	6,714 (43.7%)	6,714 (43.7%)
Not stated / inadequately described	26 (0.3%)	13 (0.2%)	39 (0.3%)	39 (0.3%)
Transgender	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
<b>Age group (years)</b>				
0-4	347 (4.1%)	180 (2.6%)	527 (3.4%)	527 (3.4%)
5-9	125 (1.5%)	149 (2.2%)	274 (1.8%)	274 (1.8%)
10-19	343 (4.0%)	421 (6.1%)	764 (5.0%)	764 (5.0%)
20-29	1,076 (12.7%)	973 (14.2%)	2,049 (13.3%)	2,049 (13.3%)
30-39	1,211 (14.2%)	1,138 (16.6%)	2,349 (15.3%)	2,349 (15.3%)
40-49	931 (11.0%)	1,057 (15.4%)	1,988 (12.9%)	1,988 (12.9%)
50-59	1,046 (12.3%)	1,054 (15.4%)	2,100 (13.7%)	2,100 (13.7%)
60-69	1,161 (13.7%)	957 (14.0%)	2,118 (13.8%)	2,118 (13.8%)
70-79	1,088 (12.8%)	621 (9.1%)	1,709 (11.1%)	1,709 (11.1%)
80-89	832 (9.8%)	246 (3.6%)	1,078 (7.0%)	1,078 (7.0%)
90+	342 (4.0%)	61 (0.9%)	403 (2.6%)	403 (2.6%)
<b>Local Health District of residence#</b>				
Central Coast	420 (5.1%)	380 (5.6%)	800 (5.3%)	800 (5.3%)
Illawarra Shoalhaven	473 (5.7%)	339 (5.0%)	812 (5.4%)	812 (5.4%)
Nepean Blue Mountains	359 (4.3%)	309 (4.6%)	668 (4.4%)	668 (4.4%)
Northern Sydney	1,028 (12.4%)	751 (11.2%)	1,779 (11.8%)	1,779 (11.8%)
South Eastern Sydney	936 (11.3%)	577 (8.6%)	1,513 (10.1%)	1,513 (10.1%)
South Western Sydney	955 (11.5%)	582 (8.6%)	1,537 (10.2%)	1,537 (10.2%)
Sydney	817 (9.8%)	466 (6.9%)	1,283 (8.5%)	1,283 (8.5%)
Western Sydney	1,409 (16.9%)	652 (9.7%)	2,061 (13.7%)	2,061 (13.7%)
Far West	9 (0.1%)	29 (0.4%)	38 (0.3%)	38 (0.3%)
Hunter New England	1,028 (12.4%)	1,126 (16.7%)	2,154 (14.3%)	2,154 (14.3%)
Mid North Coast	133 (1.6%)	347 (5.2%)	480 (3.2%)	480 (3.2%)
Murrumbidgee	119 (1.4%)	320 (4.8%)	439 (2.9%)	439 (2.9%)
Northern NSW	208 (2.5%)	320 (4.8%)	528 (3.5%)	528 (3.5%)
Southern NSW	131 (1.6%)	263 (3.9%)	394 (2.6%)	394 (2.6%)
Western NSW	291 (3.5%)	272 (4.0%)	563 (3.7%)	563 (3.7%)
<b>Aboriginal status^</b>				
Aboriginal and/or Torres Strait Islander	151 (1.8%)	306 (4.5%)	457 (3.0%)	457 (3.0%)
Not Aboriginal or Torres Strait Islander	4,667 (54.9%)	6,004 (87.6%)	10,671 (69.5%)	10,671 (69.5%)
Not Stated / Unknown	3,689 (43.4%)	547 (8.0%)	4,236 (27.6%)	4,236 (27.6%)
<b>Total</b>	<b>8,507 (100%)</b>	<b>6,857 (100%)</b>	<b>15,364 (100%)</b>	<b>15,364 (100%)</b>

#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.

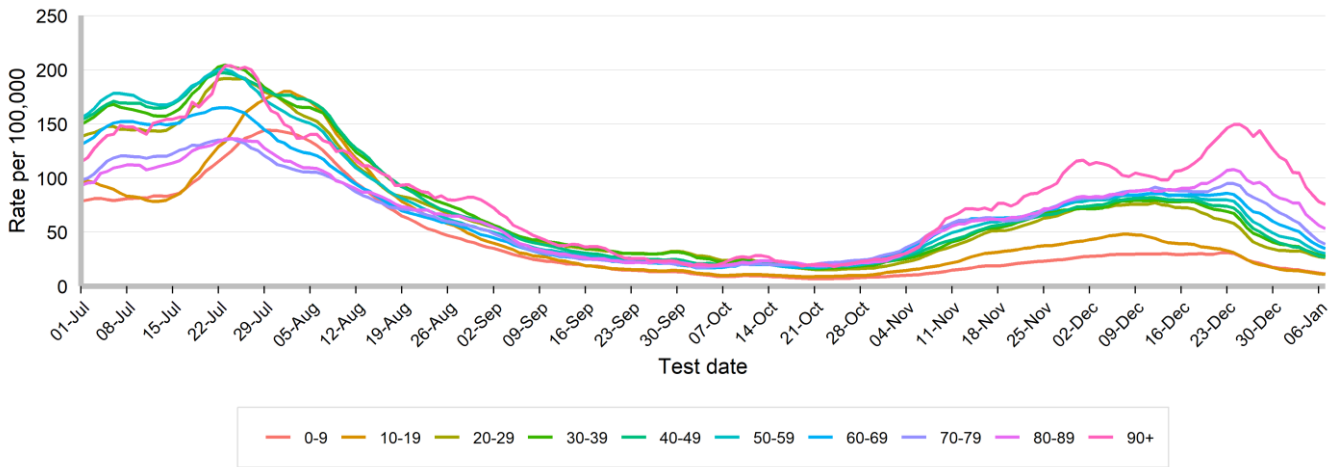
**Figure 3. People notified with COVID-19, by date of test and type of test performed, NSW, 01 July to 07 January 2023**



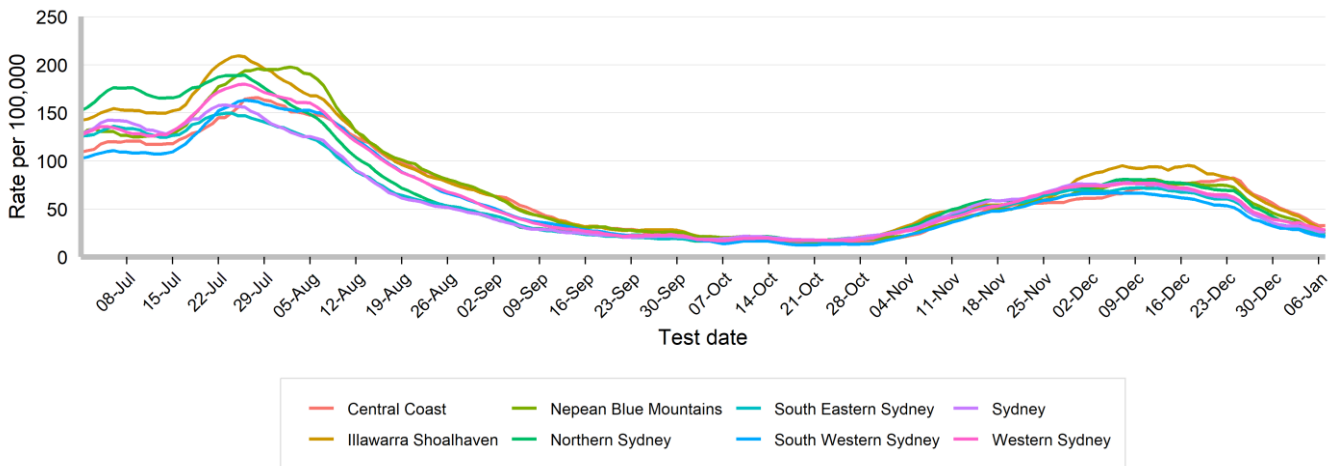
\* from the 14th October RATs were no longer required to be notified

- There were 15,364 people diagnosed with COVID-19 this week, a decrease of 33.1% 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.

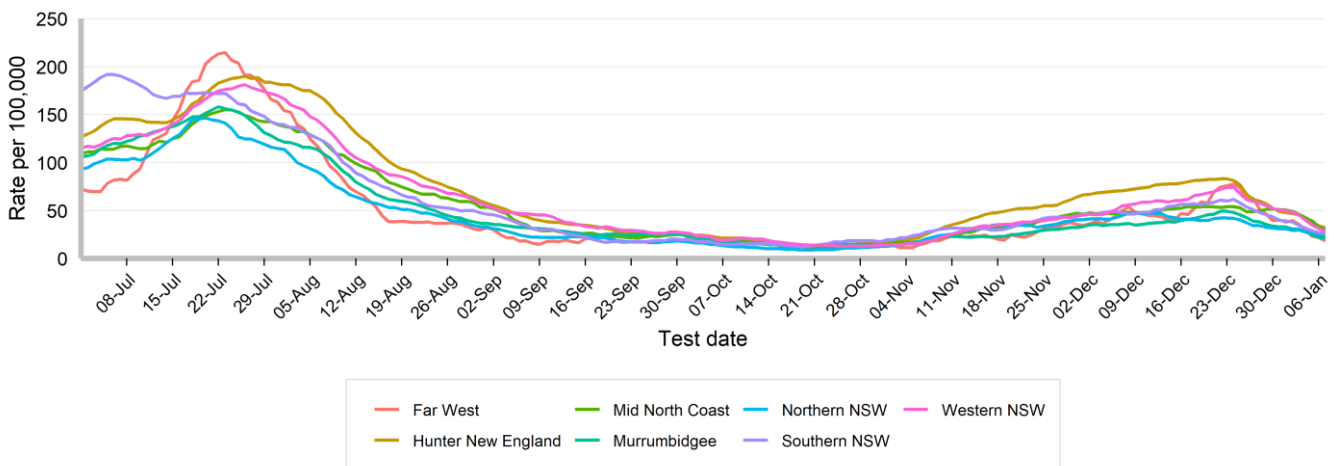
**Figure 4. Daily seven-day rolling average rate of COVID-19 notifications per 100,000 population, by age group and test date, NSW, 01 July to 07 January 2023**



**Figure 5. 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 07 January 2023**



**Figure 6. 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 07 January 2023**



## 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.

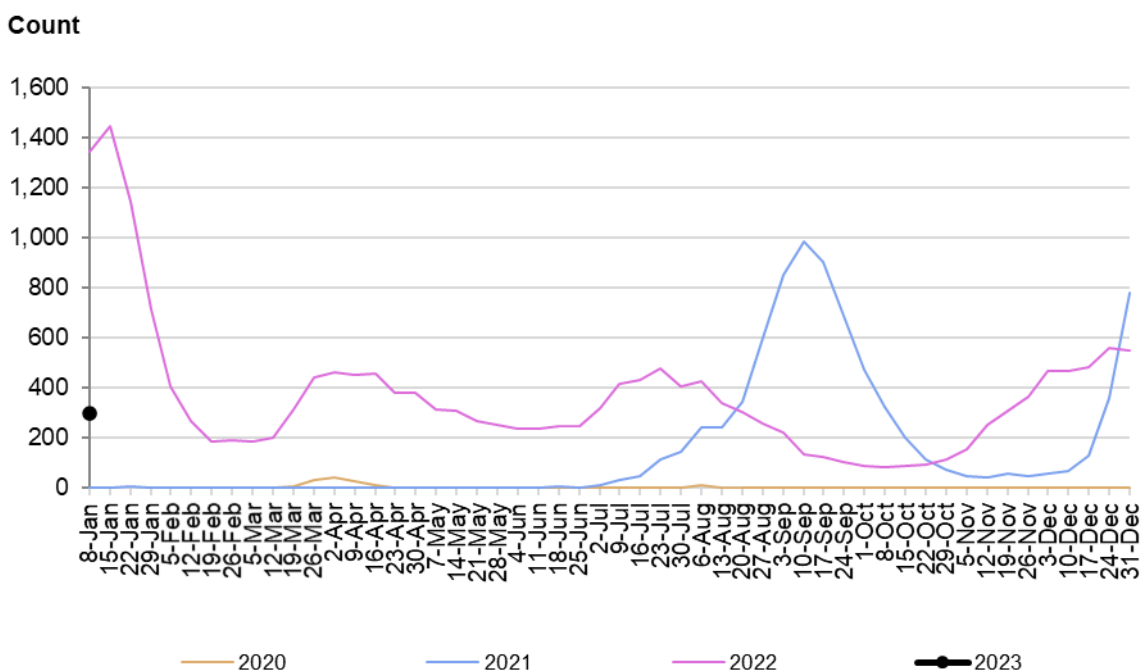
The number of presentations and calls in each category is monitored over time to quickly identify unusual patterns of illness. Unusual patterns could signify an emerging outbreak of disease or issue of public health importance in the population. PHREDSS is also useful for monitoring the impact of seasonal 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 7. 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**

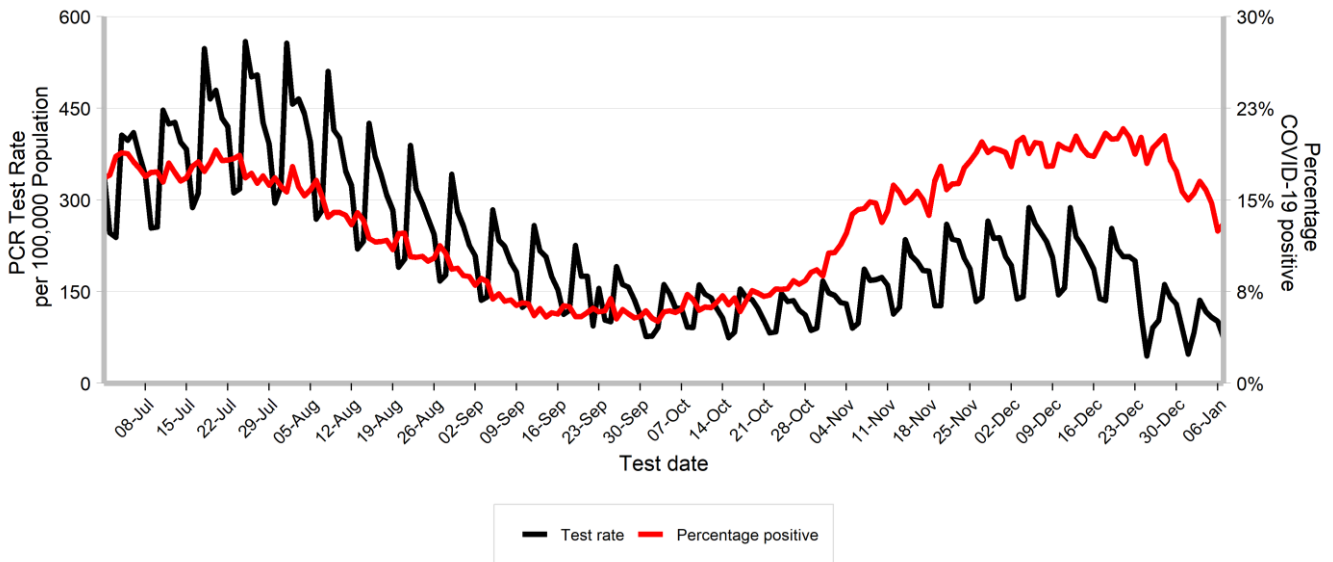


- Emergency department presentations for coronaviruses/SARS requiring an admission have decreased to 302 from 549 admissions in the previous week.

## Laboratory Surveillance

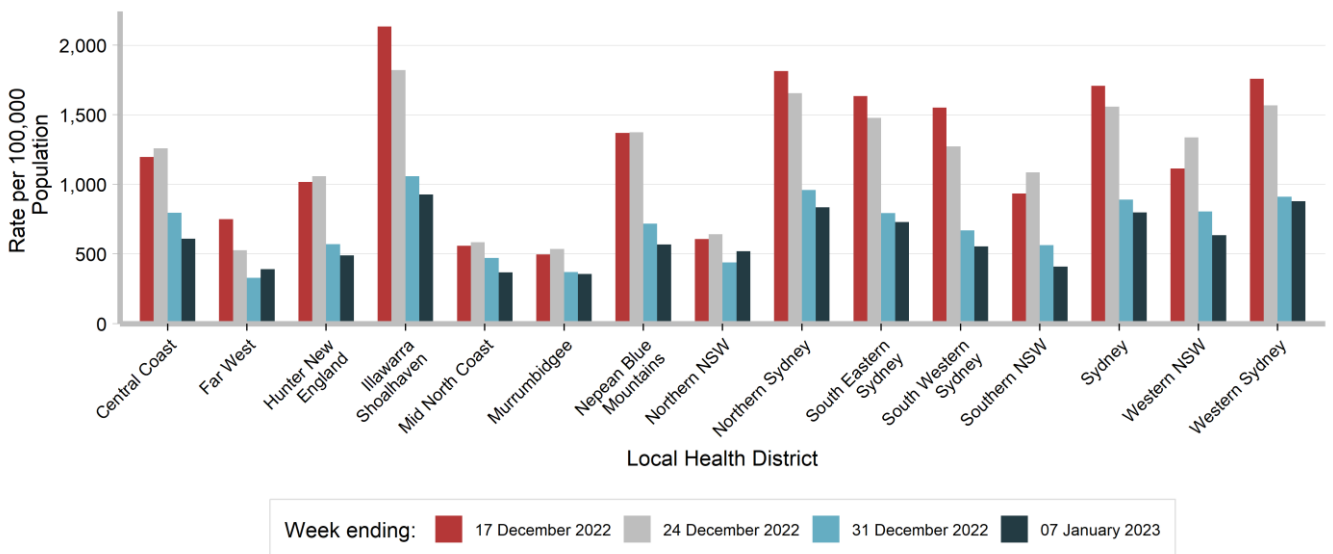
### COVID-19 PCR testing

**Figure 8. 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 07 January 2023**



- There were 58,023 PCR tests reported this week. This is a 10.8% decrease compared to 65,070 PCR tests reported in the previous week.
- The percentage of PCR tests that were positive for COVID-19 has decreased to 13.1% compared to 15.7% at the end of the previous week.

**Figure 9. Rate of PCR tests for COVID-19 per 100,000 population by Local Health District and test date, NSW, in the four weeks to 07 January 2023**





## 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).

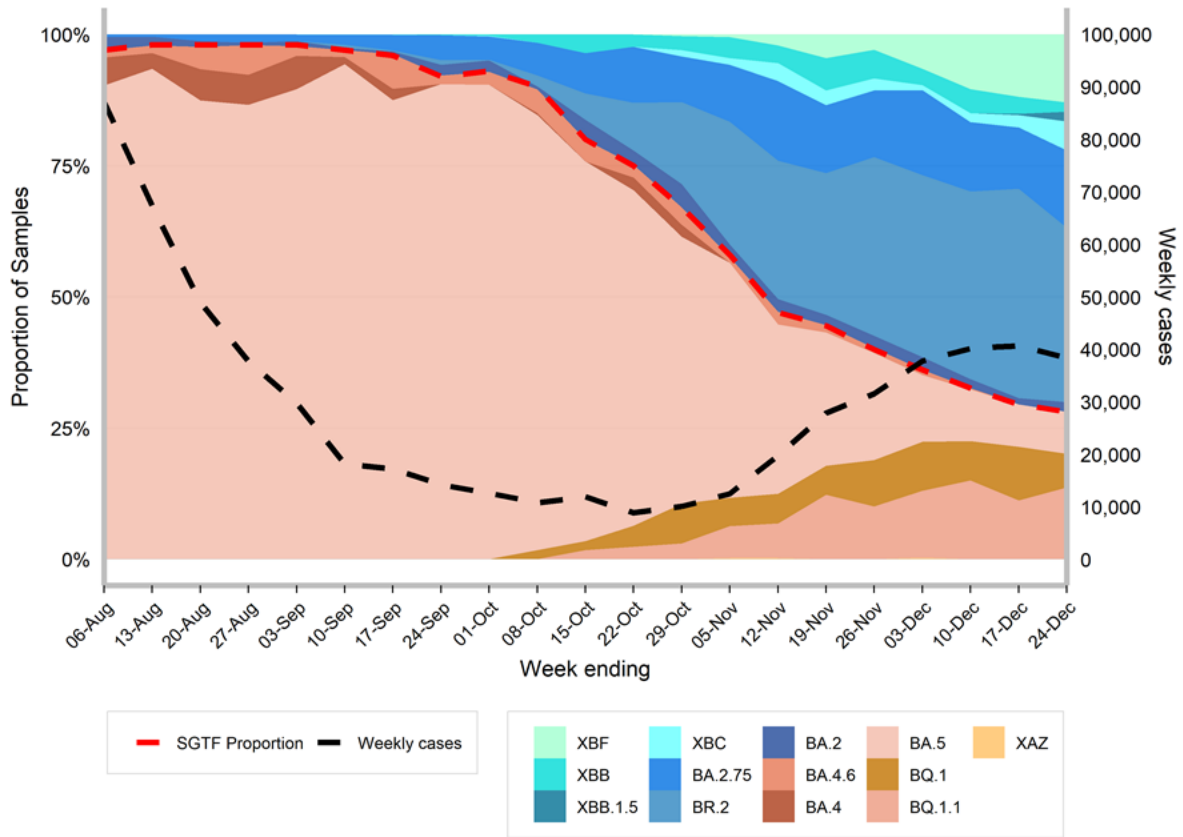
**Table 3. Variants of concern (VOCs) identified by whole genome sequencing (WGS) of virus from people who tested positive for SARS CoV-2 by PCR, by test date, NSW, in the four weeks to 31 December 2022**

Variant	Week ending			
	10 December	17 December	24 December	31 December
Omicron (BA.2)	12 (1.6%)	7 (1.2%)	5 (1.8%)	1 (0.5%)
Omicron (BA.2.3.20)	2 (0.3%)	0 (0%)	0 (0%)	0 (0%)
Omicron (BA.2.75)	111 (14.4%)	83 (13.8%)	39 (14%)	31 (14.3%)
Omicron (BA.2.75.2)	2 (0.3%)	2 (0.3%)	0 (0%)	0 (0%)
Omicron (BA.4.6)	2 (0.3%)	1 (0.2%)	0 (0%)	0 (0%)
Omicron (BA.5)	79 (10.2%)	48 (8%)	30 (10.8%)	22 (10.1%)
Omicron (BQ.1)	66 (8.5%)	62 (10.3%)	17 (6.1%)	18 (8.3%)
Omicron (BQ.1.1)	119 (15.4%)	82 (13.6%)	37 (13.3%)	18 (8.3%)
Omicron (BR.2)	270 (34.9%)	213 (35.4%)	93 (33.5%)	77 (35.5%)
Recombinant (XAY)	1 (0.1%)	0 (0%)	0 (0%)	0 (0%)
Recombinant (XAZ)	0 (0%)	1 (0.2%)	0 (0%)	0 (0%)
Recombinant (XBB)	31 (4%)	27 (4.5%)	10 (3.6%)	4 (1.8%)
Recombinant (XBB.1.5)	0 (0%)	2 (0.3%)	2 (0.7%)	0 (0%)
Recombinant (XBC)	10 (1.3%)	11 (1.8%)	8 (2.9%)	3 (1.4%)
Recombinant (XBF)	68 (8.8%)	62 (10.3%)	37 (13.3%)	43 (19.8%)
Total	773	601	278	217

- 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 78% 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.

- 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.

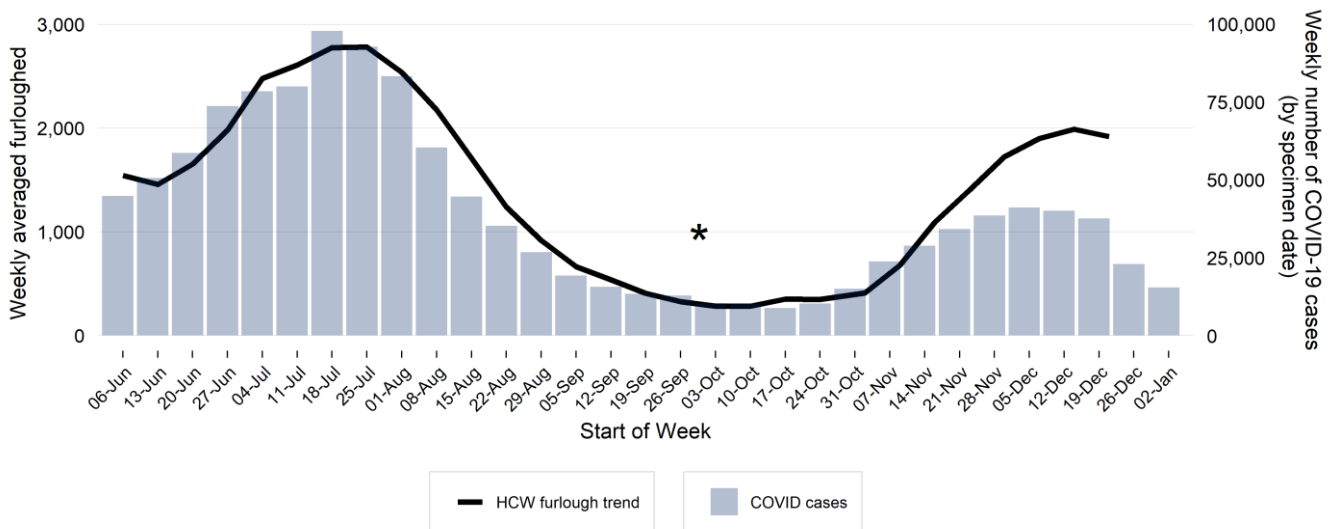
**Figure 10. Estimated distribution of COVID-19 sub-lineages in the community, 31 July 2022 to 31 December 2022**



### NSW Healthcare worker furloughing

NSW Health collects data on the workforce impacts of COVID-19 within Local Health Districts. Healthcare workers are included in these statistics if they are in isolation and unable to work due to testing positive to COVID-19, exposure to COVID-19, and/or whilst waiting a negative test result. As healthcare workers can be exposed to COVID-19 within the community when the amount of COVID-19 circulating in the community increases the risk of exposure and transmission also increases leading to increased numbers of healthcare workers being furloughed (absent) from work. This indicator is helpful to assess the level of COVID-19 circulating in the community when community testing decreases. These data also provide an insight into the stress experienced within the healthcare system due to reduced staffing capacity.

**Figure 11. Average number of healthcare worker furloughing and number of COVID-19 notifications by week in NSW, 1 June to 26 December 2022<sup>1</sup>**



\* From 30 September 2022 onwards, reporting changed from average number of staff furloughed by week to number of staff furloughed as of Tuesday at 8pm.

<sup>1</sup>Data for health care worker furloughing has not been collected over the Christmas period. These data will continue to be updated from next week.

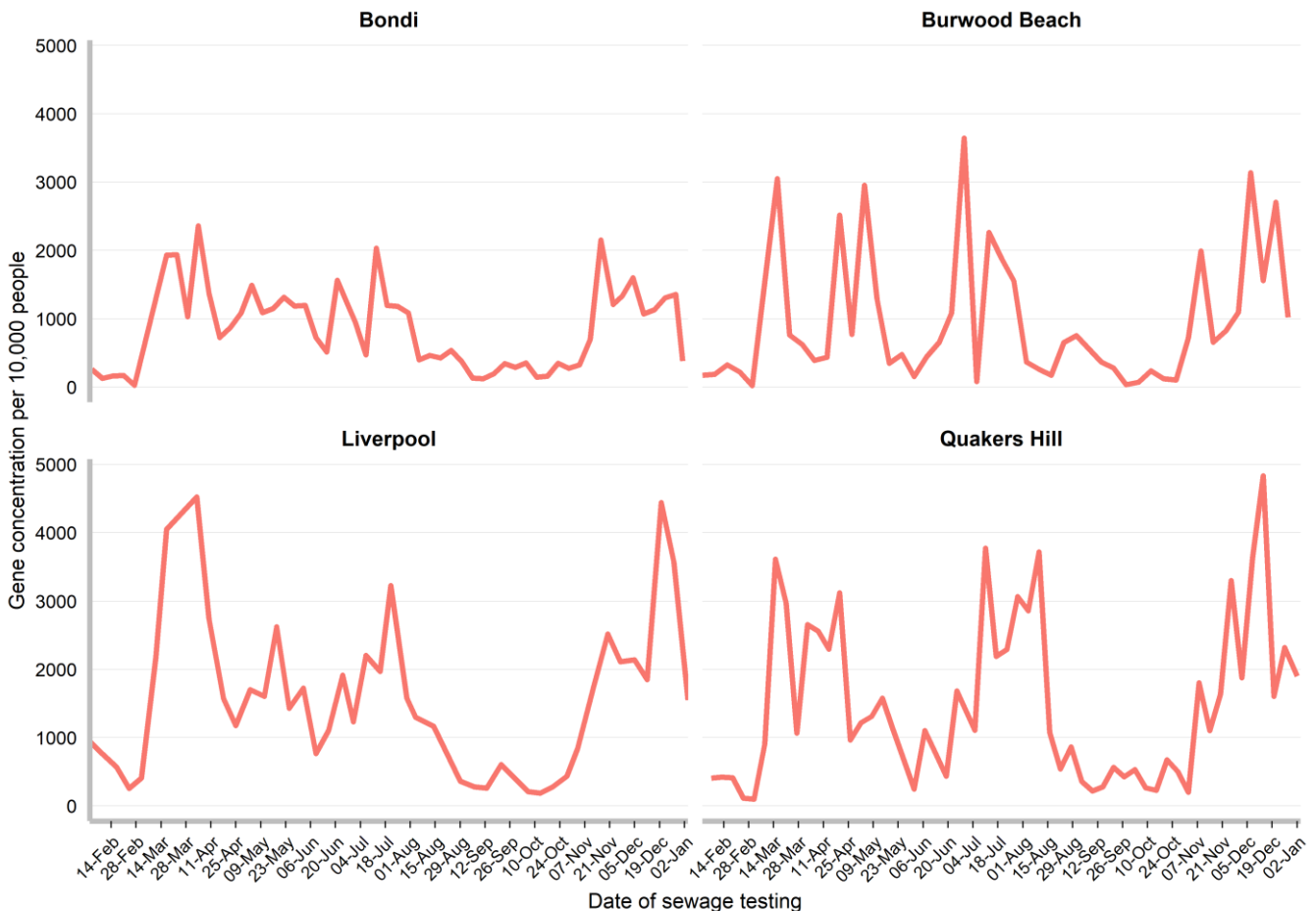
### COVID-19 Sewage surveillance program

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 Bondi, Quakers Hills, Liverpool and Burwood Beach sewage catchments from 5 February 2022 to the week ending 07 January 2023. 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.

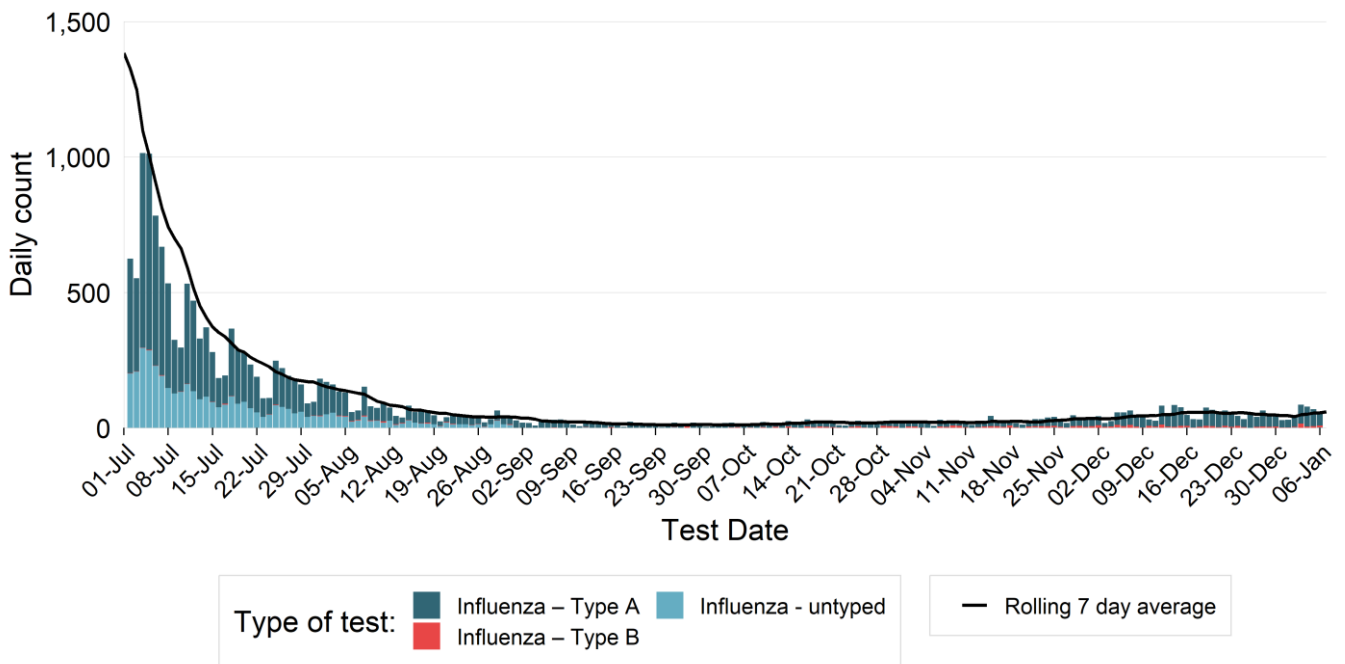
For more results, please see the COVID-19 Sewage Surveillance Program website: <https://health.nsw.gov.au/Infectious/covid-19/Pages/sewage-surveillance-weekly-result.aspx>.

**Figure 12. Gene concentration, per 10,000 people in each sewage catchment, 5 February 2022 to 07 January 2023**



### Influenza and other respiratory viruses

Figure 13. People notified with influenza, by date of test and virus type, NSW, 01 July to 07 January 2023



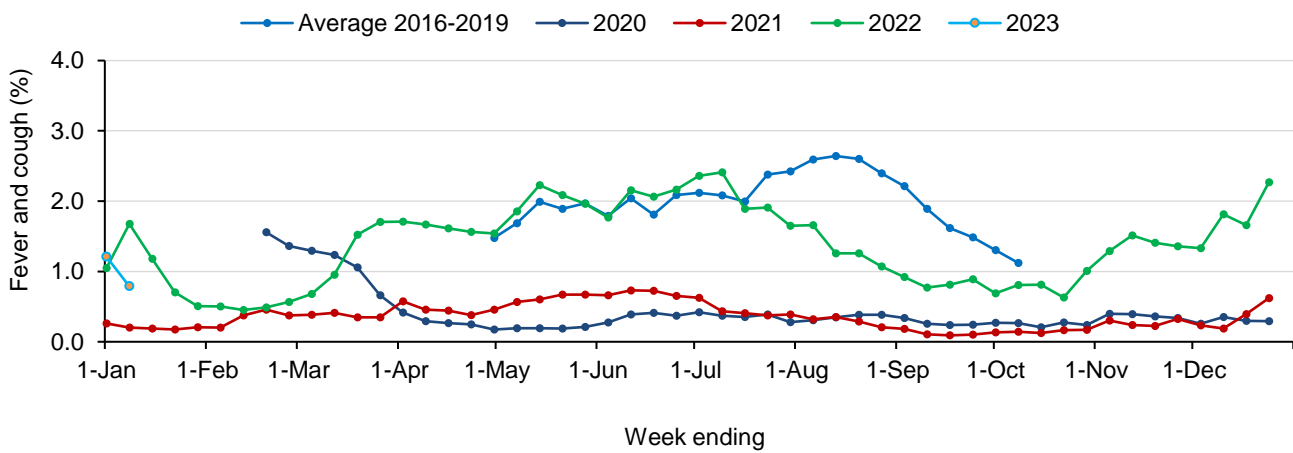
- There were 418 people diagnosed with influenza this week, an increase of 30.6% since the previous week.

### 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/>

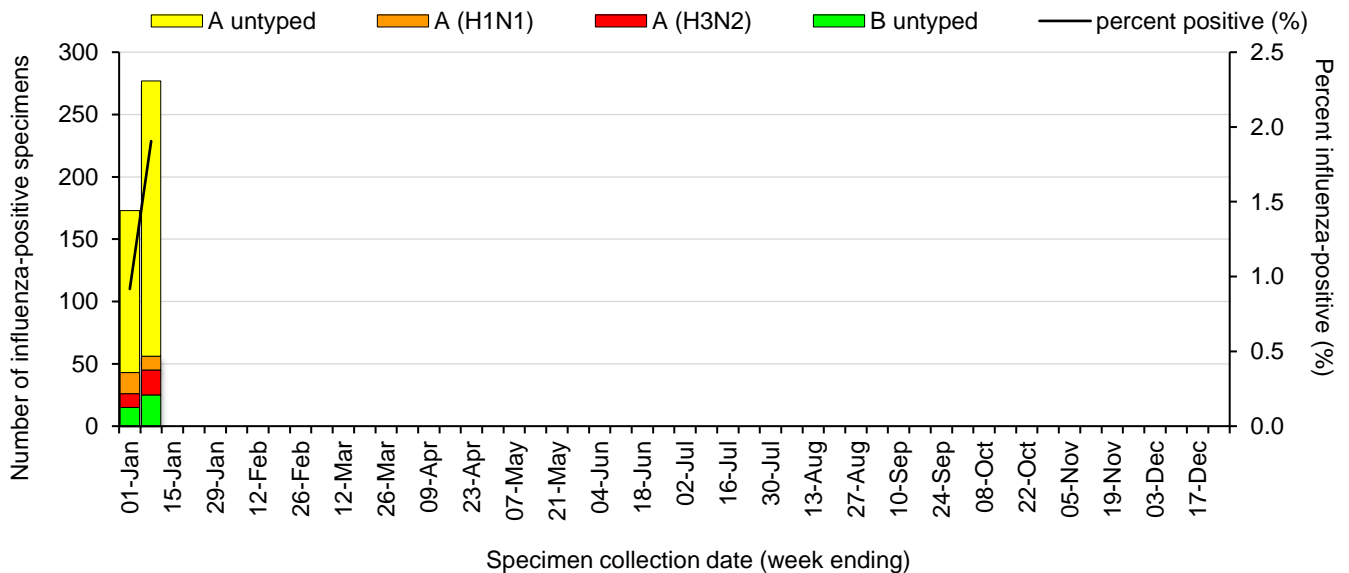
**Figure 14. Proportion of FluTracking participants reporting influenza-like illness, NSW, 1 January to 7 January 2023**



- 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. Recent data is subject to change. For the week ending 7 January 2023, 9 out of 13 sentinel laboratories have provided testing data at the time of reporting.

**Figure 15. Number and proportion of tests positive for influenza at sentinel NSW laboratories, 1 January to 7 January 2023**



- Of the 14,537 tests conducted for influenza; the proportion positive has increased to 2% from 1%.

Figure 16. Number of positive PCR test results for other respiratory viruses at sentinel NSW laboratories, 1 January to 7 January 2023.

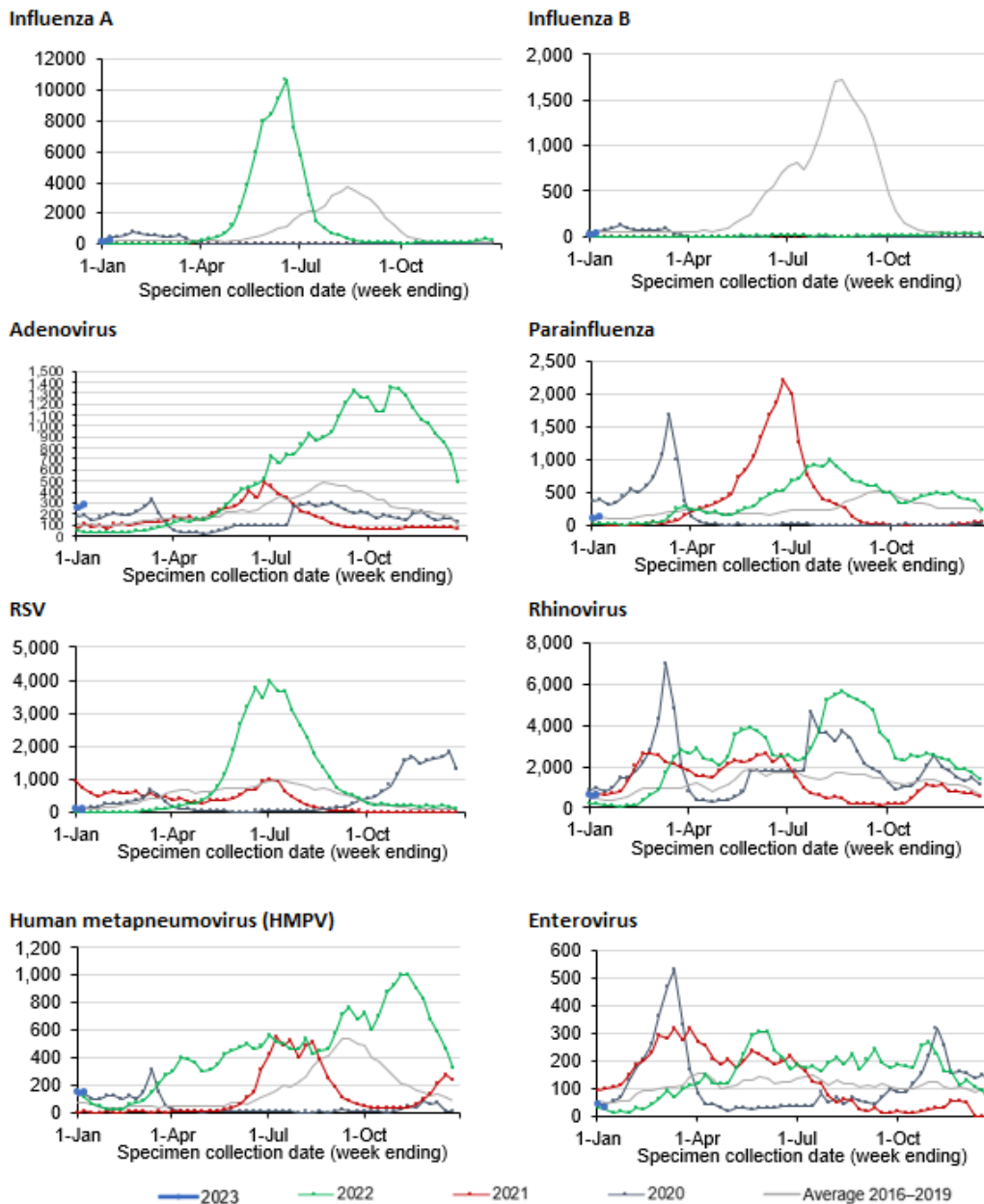


Table 4. Total number of respiratory disease notifications from sentinel laboratories, NSW in the two weeks to 7 January, 2023.

	Week ending				Year to date
	18 December	25 December	01 January	08 January*	
Adenovirus			252	285	537
Respiratory syncytial virus (RSV)			93	91	184
Rhinovirus			580	603	1,183
Human metapneumovirus (HMPV)			149	154	303
Enterovirus			41	30	71
Number of PCR tests conducted			18,865	14,537	33,402

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