

COVID-19 WEEKLY SURVEILLANCE IN NSW

EPIDEMIOLOGICAL WEEK 26, ENDING 27 JUNE 2020

Published 1 July 2020

SUMMARY FOR THE WEEK ENDING 27 JUNE

- Testing rates continue to increase throughout NSW and case counts remain low, indicating limited transmission of COVID-19 in NSW.
- While an increase in COVID-19 testing rates occurred across all age groups in the week ending 27 June, rates continue to be lower in people aged 18 to 29 years and over 50 years.
- The recent increase in cases in Victoria serves as a timely reminder that infections can spread rapidly in the community.
- While current data indicates limited influenza transmission, increasing reports of rhinovirus highlights the current potential for respiratory viruses to circulate in the community.
- NSW Health urges anyone who develops respiratory symptoms, regardless of how mild, to get tested for COVID-19 and stay at home until symptoms have resolved and a COVID-19 infection has been excluded.
- Measures to prevent the spread of infection including handwashing, covering coughs and social distancing are especially important as we approach school holidays where people may be mixing more with others.

In Focus – COVID-19 in young adults (18 to 29 years): 1 January to 27 June 2020

The data in the report shows that:

- Young people have recorded the highest rates of locally acquired COVID-19 infection and account for a quarter of all cases diagnosed in NSW.
- While testing has increased in all age groups in recent weeks, young people continue to have the lowest rates of all adult age groups with lower rates in males compared with females.
- Approximately half of the cases have been in overseas acquired cases while the other half were locally acquired.
- Among the locally acquired cases with a known source of infection, approximately 70% were infected outside the home.
- Prior to the introduction of social distancing measures, a number of outbreaks occurred among young adults at social events in metropolitan Sydney.
- The marked decline in clusters since this time suggests young people have been complying with physical distancing.

The data serves to highlight that young adults are an important group that can assist in controlling the spread of COVID-19 in the community by getting tested as soon as symptoms develop, staying at home if unwell and complying with physical distancing measures.

SECTION 1: HOW IS THE OUTBREAK TRACKING IN NSW?

Table 1. COVID-19 cases and tests reported in NSW, up to 27 June 2020

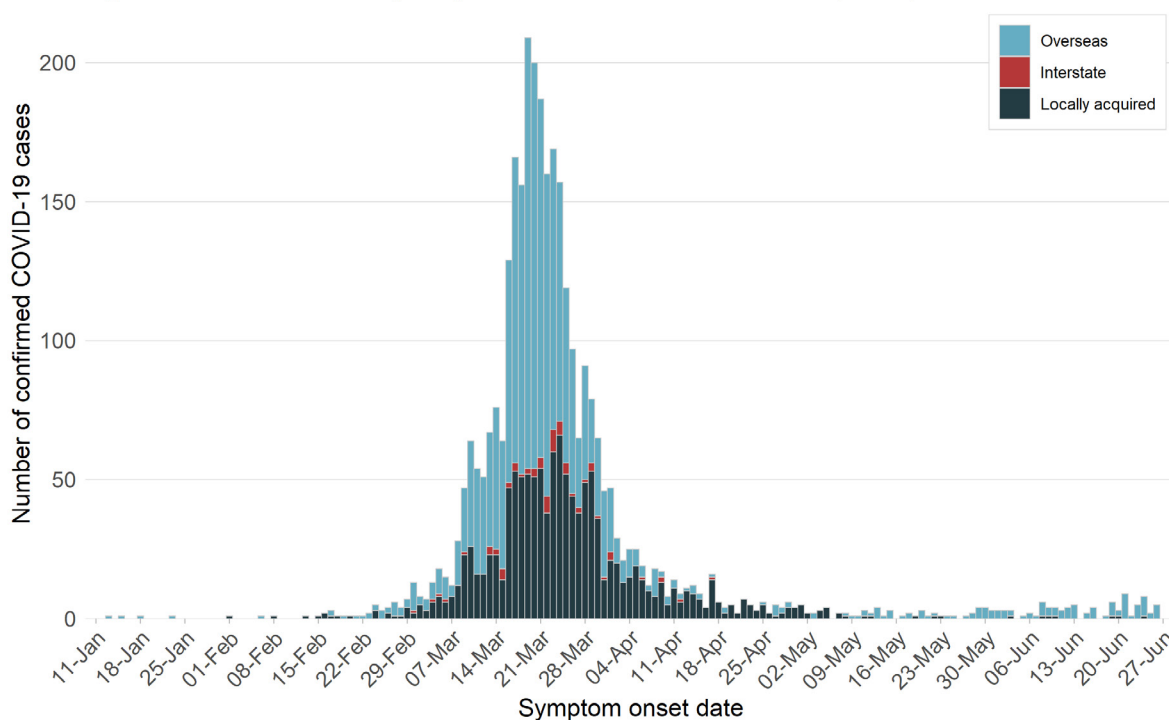
	Week ending 27 June	Week ending 20 June	% change	Total to 27 June
Number of cases	37	22	+63.6%	3,184
<i>Overseas acquired</i>	34	21	+57.1%	1,870
<i>Interstate acquired</i>	0	0	-	69
<i>Locally acquired</i>	3	1	-	1,245
Number of deaths	1	0	-	51
Number of tests	107,974	91,584	+17.9%	853,894

Note: The case numbers reported for previous weeks is based on the most up to date information from public health investigations.

The death in April of an 85-year-old man has been reclassified as COVID-19 related. The change follows new national guidance on the classification of deaths and means NSW has now recorded 51 deaths from COVID-19. The man was a resident of an aged care facility, and was diagnosed with COVID-19 on 7 April. He died on 27 April, after two negative swabs had been recorded.

To understand how the outbreak is tracking we look at how many new cases are reported each day and the number of people being tested. Each bar in the graph below represents the number of new cases based on the **date of symptom onset**.

Figure 1. COVID-19 cases by likely infection source and illness onset, NSW, 2020



The date of the first positive test is used for cases who did not report symptoms.

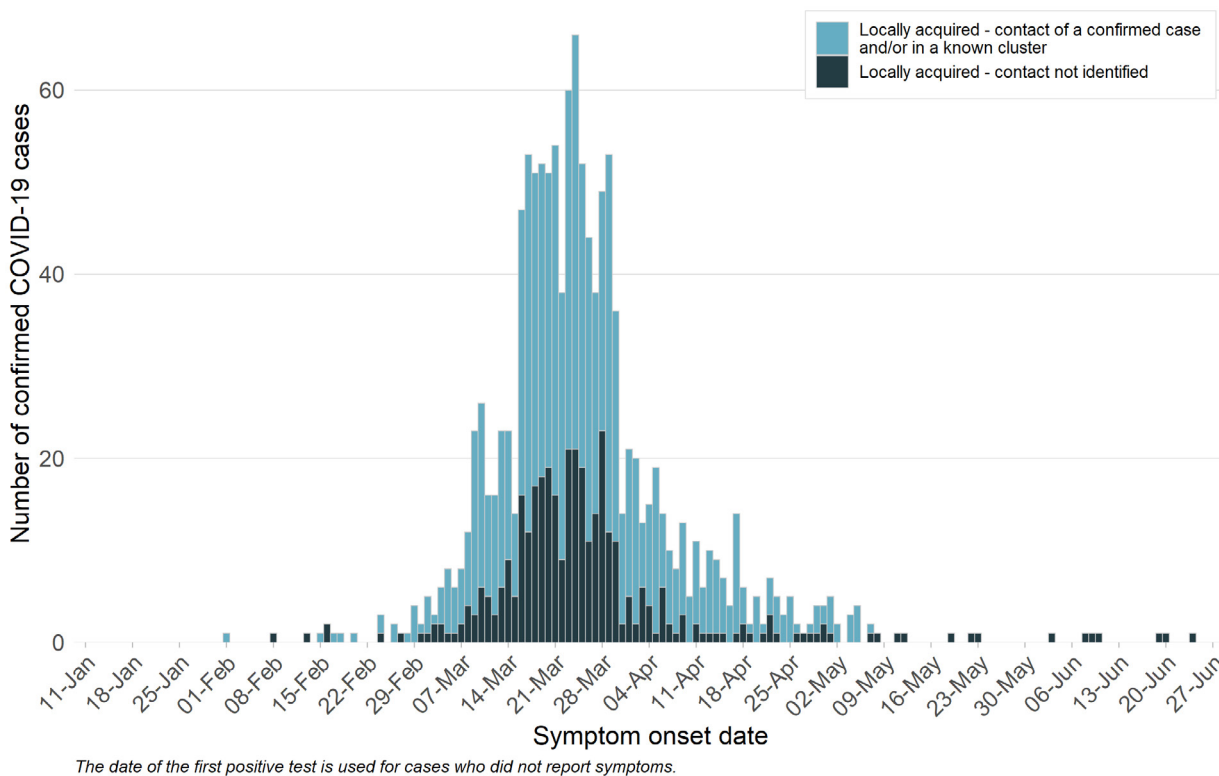
Interpretation: Approximately 60% of COVID-19 infections diagnosed in NSW to 27 June have been **overseas acquired** and the remaining 40% have been **locally acquired**. The number of new cases diagnosed in NSW has decreased significantly since the peak in mid-March. The recent increase in overseas acquired cases is largely due to a program of screening all overseas travellers 10 days after arrival in NSW.

How much transmission is occurring in NSW?

All new cases who have not travelled outside of NSW are investigated by public health staff to determine the likely source of infection and identify **clusters**. To understand the extent of community transmission, locally acquired cases who have had contact with a case or who are part of a known cluster are considered separately to those with an unidentified source of infection. Cases with no source identified suggest that there are people infected with COVID-19 in the community who have not been diagnosed.

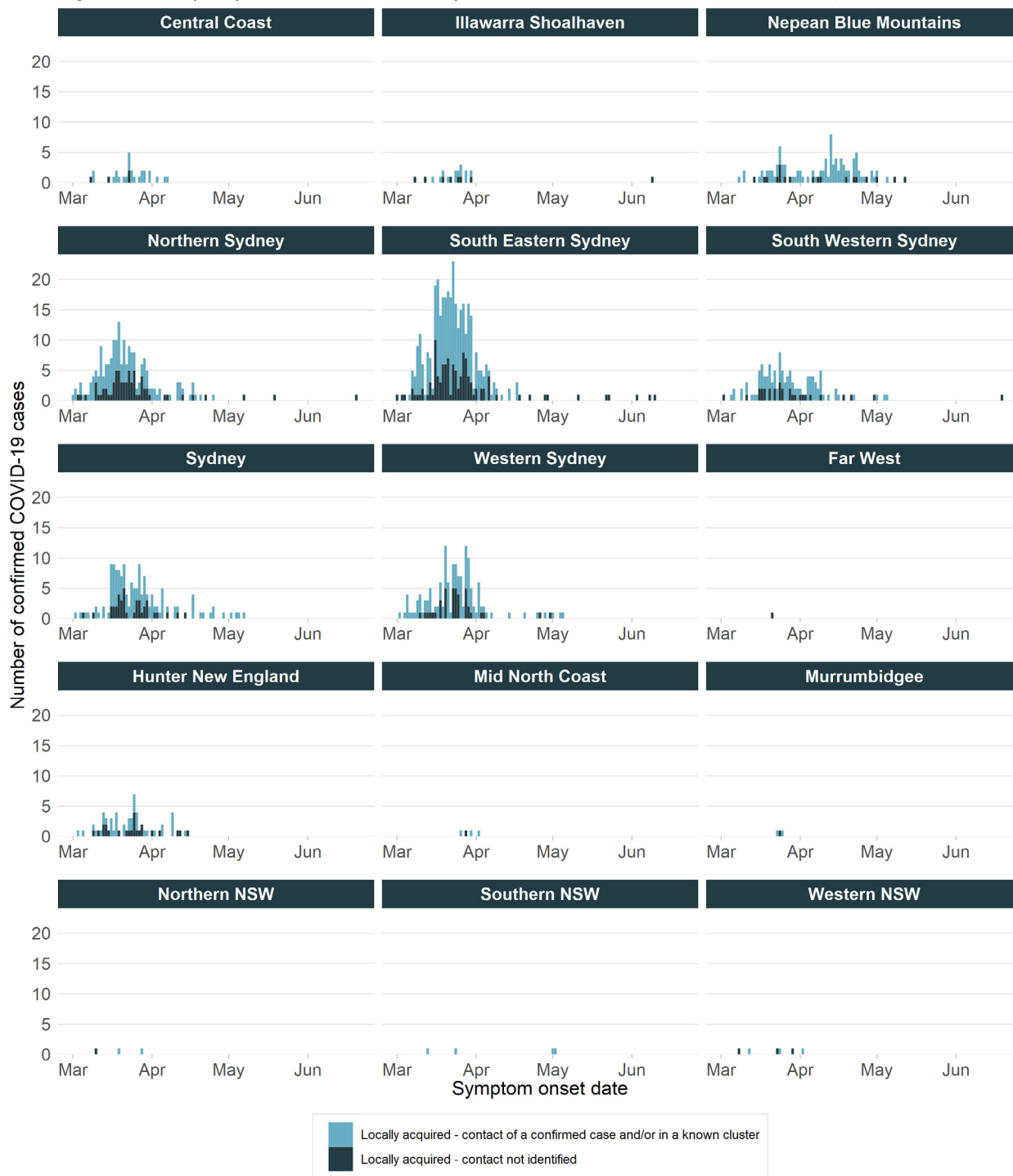
In March, when the number of new cases diagnosed each day was high, public health efforts were focussed on contact tracing to limit further spread in the community. With a decline in cases, increased attention is given to identifying the source of infection for every case. High rates of testing are needed to ensure cases are identified as quickly as possible. Careful attention is given to understanding where transmission is occurring as social distancing measures are relaxed.

Figure 2. Locally acquired COVID-19 cases by likely infection source and illness onset, NSW, 2020



Interpretation: Larger clusters occurred in NSW before many of the strict social distancing rules were introduced. Since this time, there has been a decline in COVID-19 cases both with a known and unknown source of infection.

Figure 3. Locally acquired COVID-19 cases by LHD of residence and illness onset, NSW, 2020



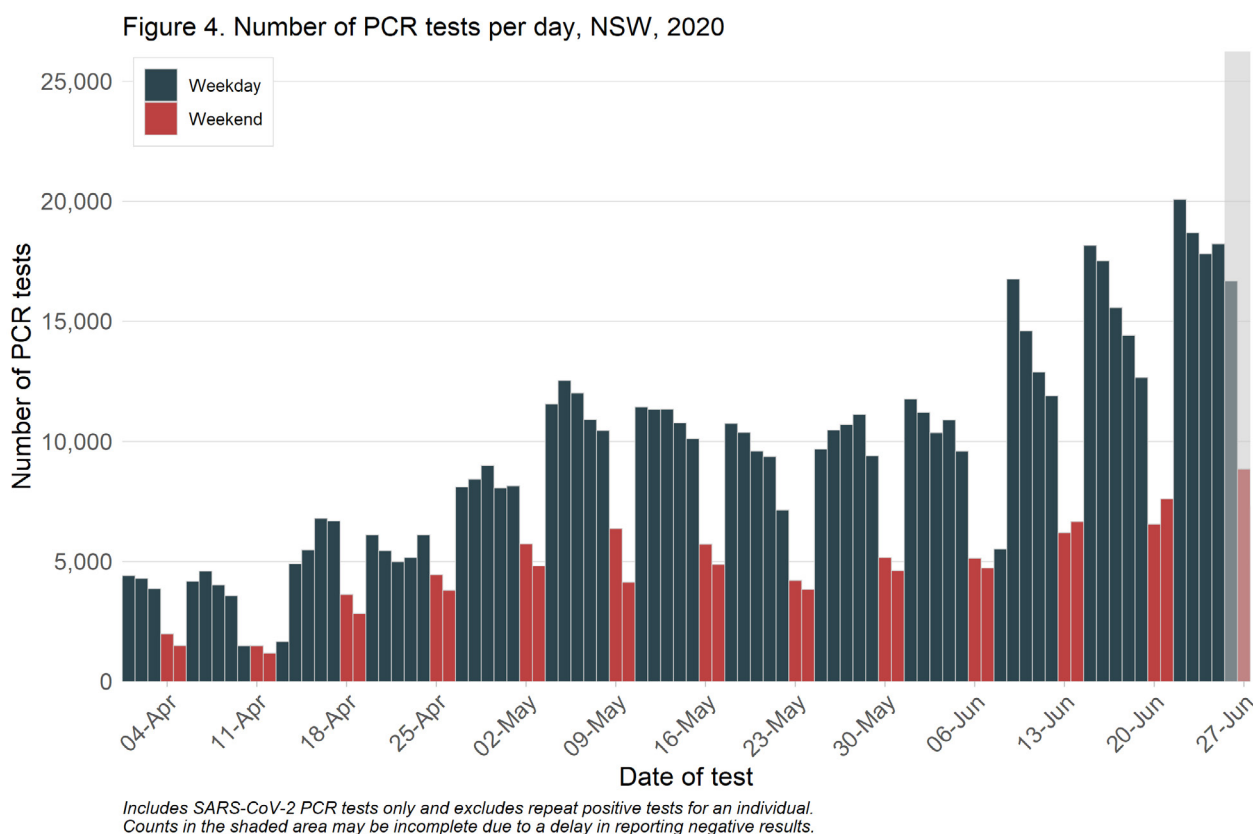
The date of the first positive test is used for cases who did not report symptoms.

Interpretation: Early in the outbreak infections were more common in residents of metropolitan Sydney (particularly in South Eastern Sydney and Northern Sydney Local Health Districts (LHDs)) and this likely reflected the residence of travellers who returned from countries with COVID-19 transmission. During April there was an increase in cases in Nepean Blue Mountains LHD, largely due to an outbreak in the Anglicare Newmarch House aged care facility. This outbreak has since ended with no new cases since 4 May. No cases have been diagnosed in residents of rural or regional LHDs since May with the small number of recent cases being reported in residents of metropolitan Sydney.

How much testing is happening?

High rates of testing are essential to identify and isolate people who are infectious and to allow contact tracing (quarantining of all people potentially infected by a case) to limit the spread of infection. Testing is not recommended for those in the community without symptoms except in special settings when cases have been identified such as aged care, health care, disability homes and schools.

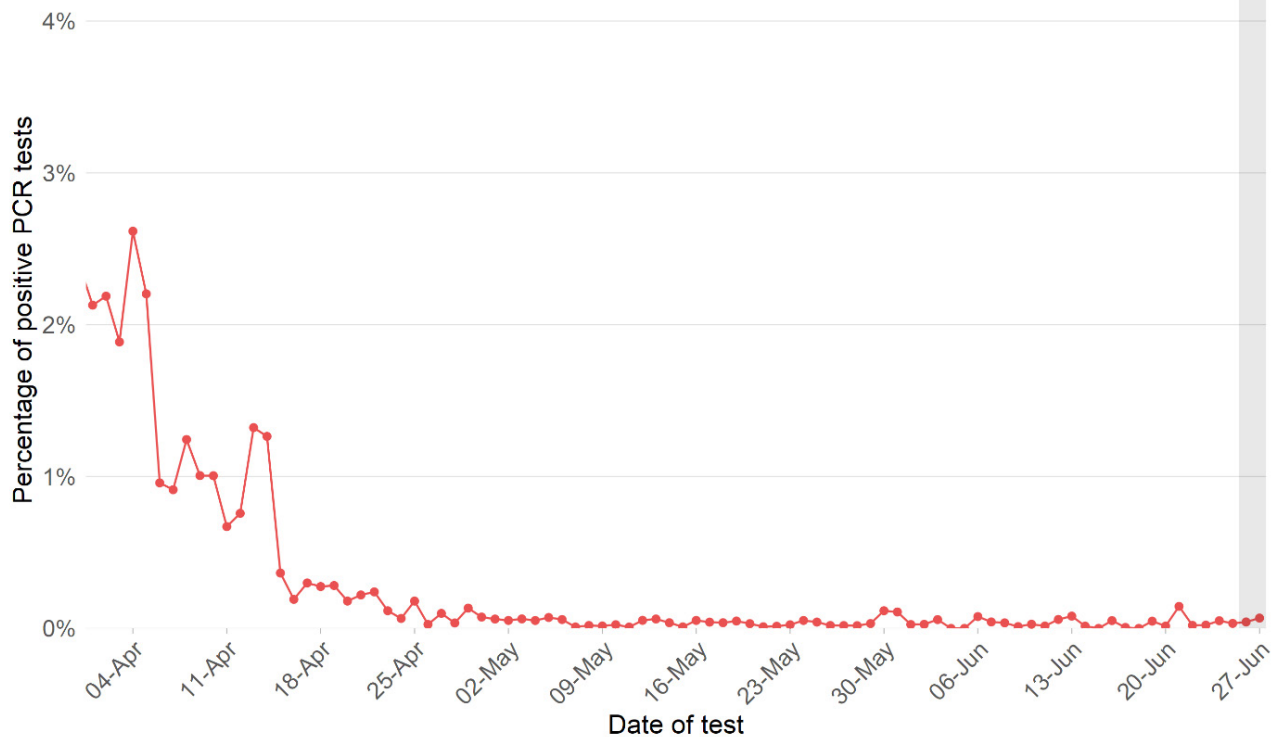
The bars on the graph below show the number of tests by the date a person presented for the test.¹ While public health facilities are open seven days a week, less testing occurs through GPs and private collection centres on weekends and public holidays. This explains the lower number of tests on weekends.



Interpretation: COVID-19 testing has increased significantly since April in line with the changes in testing criteria and increased availability of testing. Early in the outbreak the focus was on returned travellers and close contacts of confirmed cases, whereas now testing is recommended for anyone with even mild respiratory symptoms or unexplained fever. Throughout June testing rates have increased weekly with a record daily number of 20,085 tests carried out on Monday 22 June.

¹ The number of tests per day displayed below is different to the 24 hour increase in tests reported each day as there are delays in some laboratories providing negative results to NSW Health.

Figure 5. Proportion of PCR tests positive for COVID-19, NSW, 2020

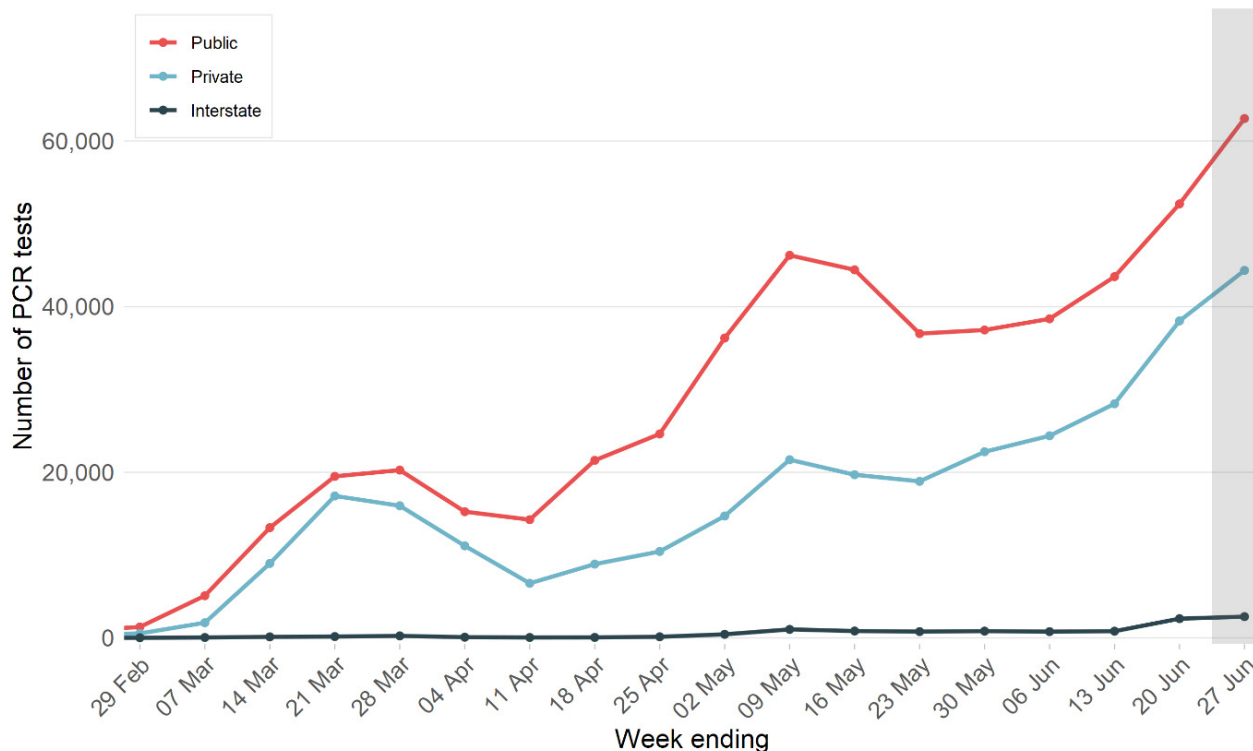


Includes SARS-CoV-2 PCR tests only and excludes repeat positive tests for an individual. Counts in the shaded area may be incomplete due to a delay in reporting negative results.

Interpretation: The proportion of tests positive for COVID-19 in NSW declined since mid-March to early May, and has stabilised at very low levels since, despite the high rates of testing. This suggests there is currently limited transmission in the community.

Which laboratories are doing the testing?

Figure 6. Number of PCR tests by week and facility type, NSW, 2020



*Includes SARS-CoV-2 PCR tests only and excludes repeat positive tests for an individual.
Counts in the shaded area may be incomplete due to a delay in reporting negative results.*

Interpretation: In the week ending 27 June, approximately 60% of tests were done in public laboratories. The recent increases in testing have occurred in both public and private laboratories.

SECTION 2: COVID-19 TRANSMISSION IN NSW IN THE LAST FOUR WEEKS

To understand the extent of COVID-19 transmission in the community, public health staff carefully consider information collected from each new case at the time of diagnosis. The following is a review of locally acquired cases based on the date of symptom onset.²

Information from cases who became unwell in the last 28 days is used to understand where COVID-19 is spreading in the community. This takes into account the **incubation period** and the time it takes for people to seek testing and the laboratory to perform the test. Some people who have tested positive to COVID-19 do not report having any symptoms despite thorough investigation. As it is not possible to determine when these cases were infected they are excluded in a review of recent transmission.

Table 2. Symptomatic locally acquired COVID-19 cases in NSW, by week of onset and source of infection, 31 May to 27 June 2020

Locally acquired cases	Week of onset			
	27 June	20 June	13 June	6 June
Contact of a confirmed case and/or part of a known cluster	0	0	0	0
Source not identified	0	2	3	1
Total	0	2	3	1

Interpretation: No links have been identified between the six cases with a symptom onset in the last four weeks. Four of the recent cases each attended a different school during their infectious period. All four schools were located in metropolitan Sydney and, following diagnosis, cases were promptly isolated and close contacts were quarantined. The quarantine period is over for close contacts at two schools as it has been 14 days since the last day the case attended school while infectious. A total of 533 close contacts were identified across the two schools. Of these, 228 underwent COVID-19 testing and no additional cases were identified.

While it is encouraging that the number of cases remains low, high rates of testing are required to rapidly identify cases to prevent the spread of infection. This is especially important as social distancing rules relax. Maintaining 1.5 m distance between people outside the household limits the opportunity for transmission.

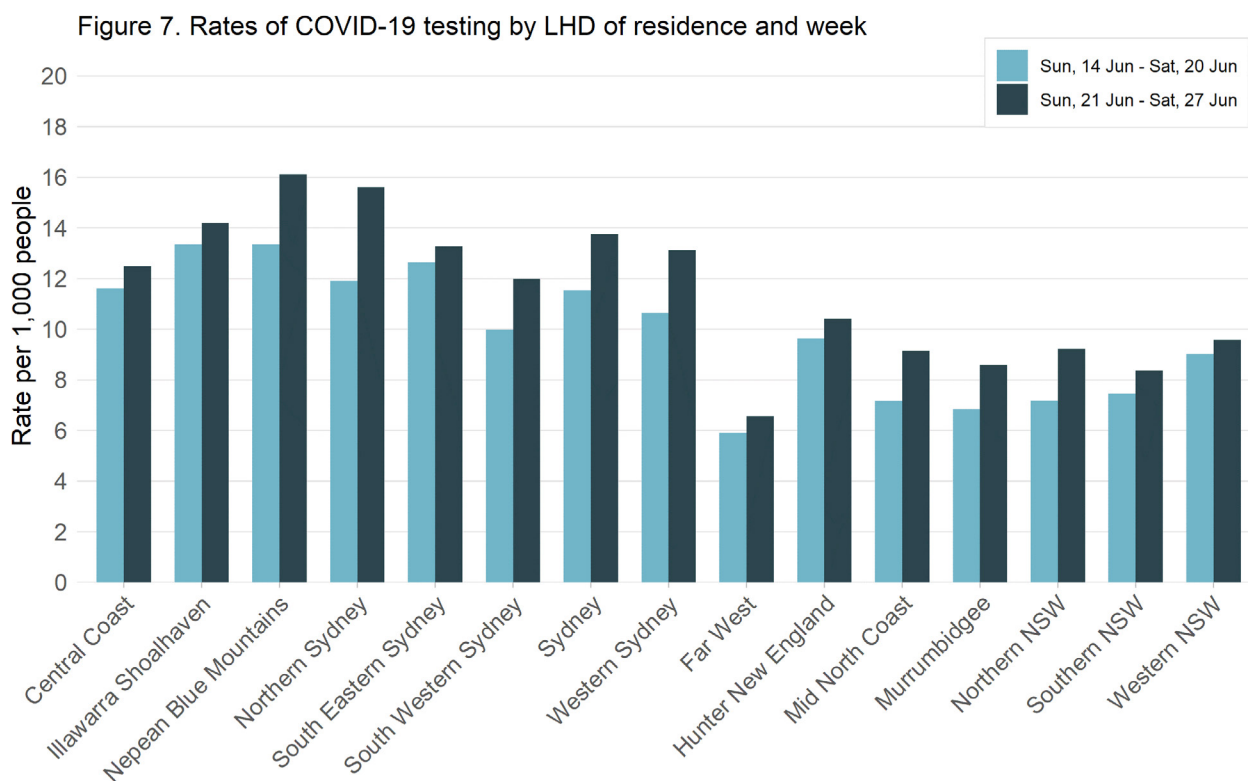
² This analysis differs from Table 1, which is presented by date of report.

Cases and testing by Local Health District of residence

Table 3. Symptomatic locally acquired COVID-19 cases by LHD of residence and week of onset, 31 May to 27 June 2020

Local Health District	Week of symptom onset				Total
	27 June	20 June	13 June	6 June	
Central Coast	0	0	0	0	0
Far West	0	0	0	0	0
Hunter New England	0	0	0	0	0
Illawarra Shoalhaven	0	0	1	0	1
Mid North Coast	0	0	0	0	0
Murrumbidgee	0	0	0	0	0
Nepean Blue Mountains	0	0	0	0	0
Northern NSW	0	0	0	0	0
Northern Sydney	0	1	0	0	1
South Eastern Sydney	0	0	2	1	3
South Western Sydney	0	1	0	0	1
Southern NSW	0	0	0	0	0
Sydney	0	0	0	0	0
Western NSW	0	0	0	0	0
Western Sydney	0	0	0	0	0
Grand Total	0	2	3	1	6

Interpretation: The six cases with symptom onset in the last four weeks included three residents of South Eastern Sydney LHD and one resident each from Illawarra Shoalhaven, Northern Sydney and South Western Sydney LHD. It is unknown where the cases were infected.



Includes SARS-CoV-2 PCR tests only and excludes notifications with missing postcode of residence.

Statewide testing rates were higher in the week ending 27 June compared to the previous week (13 per 1,000 vs 11 per 1,000).

Interpretation: All LHDs reported higher rates of testing in the week ending 27 June when compared to the previous week with the highest rates reported in Nepean Blue Mountains, Northern Sydney and Illawarra Shoalhaven LHDs. Refer to Appendix A for testing rates by LGA.

Testing in areas of residence of COVID-19 cases with an unknown source

Cases with no source identified suggest that there may be people infected with COVID-19 in the community who have not been diagnosed. High rates of testing are necessary to identify other cases and enable public health action to limit the spread of infection. The following analysis is based on the date that the case was reported to NSW Health.

Table 4. Testing in areas for locally acquired cases where no source was identified, reported from 31 May to 27 June 2020

LGA	Cases				Tests				Tests per 1,000 population			
	27 June	20 June	13 June	6 June	27 June	20 June	13 June	6 June	27 June	20 June	13 June	6 June
Lane Cove	1	0	0	0	1,693	940	794	711	42.2	23.4	19.8	17.7
Camden	1	0	0	0	2,494	1,655	1,113	969	24.6	16.3	11.0	9.5
Penrith	1	0	0	0	3,517	2,941	2,157	1,900	16.5	13.8	10.1	8.9

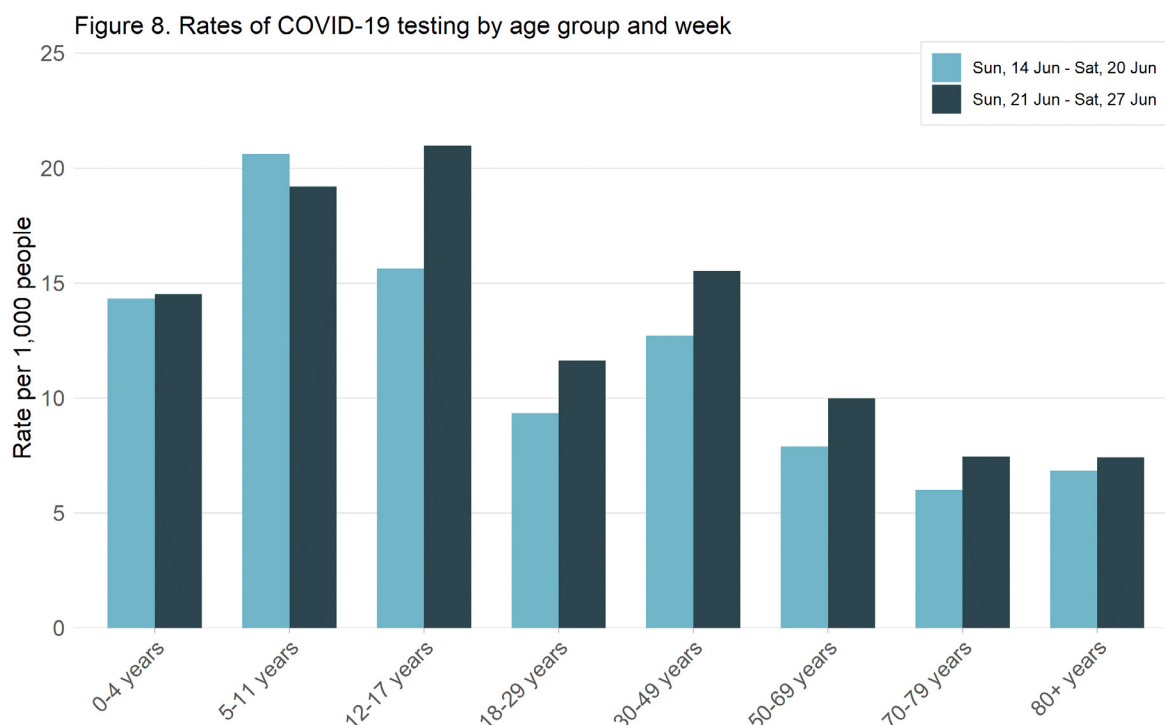
Interpretation: Rates of testing in these LGAs exceeded the state rate each week for the last four weeks and only a single case was identified in each, indicating low rates of illness in the community.

Cases and testing by age group

Table 5. Symptomatic locally acquired COVID-19 cases by age group and week of onset, 31 May to 27 June 2020

Age group	Week ending				Total
	27 June	20 June	13 June	6 June	
0-4 years	0	0	0	0	0
5-11 years	0	1	0	0	1
12-17 years	0	1	0	0	1
18-29 years	0	0	2	1	3
30-49 years	0	0	1	0	1
50-69 years	0	0	0	0	0
70-79 years	0	0	0	0	0
80+ years	0	0	0	0	0
All ages	0	2	3	1	6

Interpretation: The six recent cases included a primary school-aged child, a secondary school-aged child and four adults aged less than 50 years.



Includes SARS-CoV-2 PCR tests only and excludes notifications with age missing.

Interpretation: Testing rates increased in the week ending 27 June in all adult age groups and in high school-aged children. Lower rates of testing continue to be observed in young adults (18 to 29 years) and those aged over 50 years.

Cases and testing by gender

The six recent cases included four males and two females.

Table 6. Rates of COVID-19 testing by gender, up to 27 June 2020*

Gender	Week ending 27 June		Week ending 20 June		Total to 27 June	
	No. tests	No. tests per 1,000 population	No. tests	No. tests per 1,000 population	No. tests	No. tests per 1,000 population
Female	59,171	14.5	50,134	12.3	480,020	117.8
Male	48,581	12.1	41,308	10.3	370,936	92.4

*Excludes cases with unavailable information on gender.

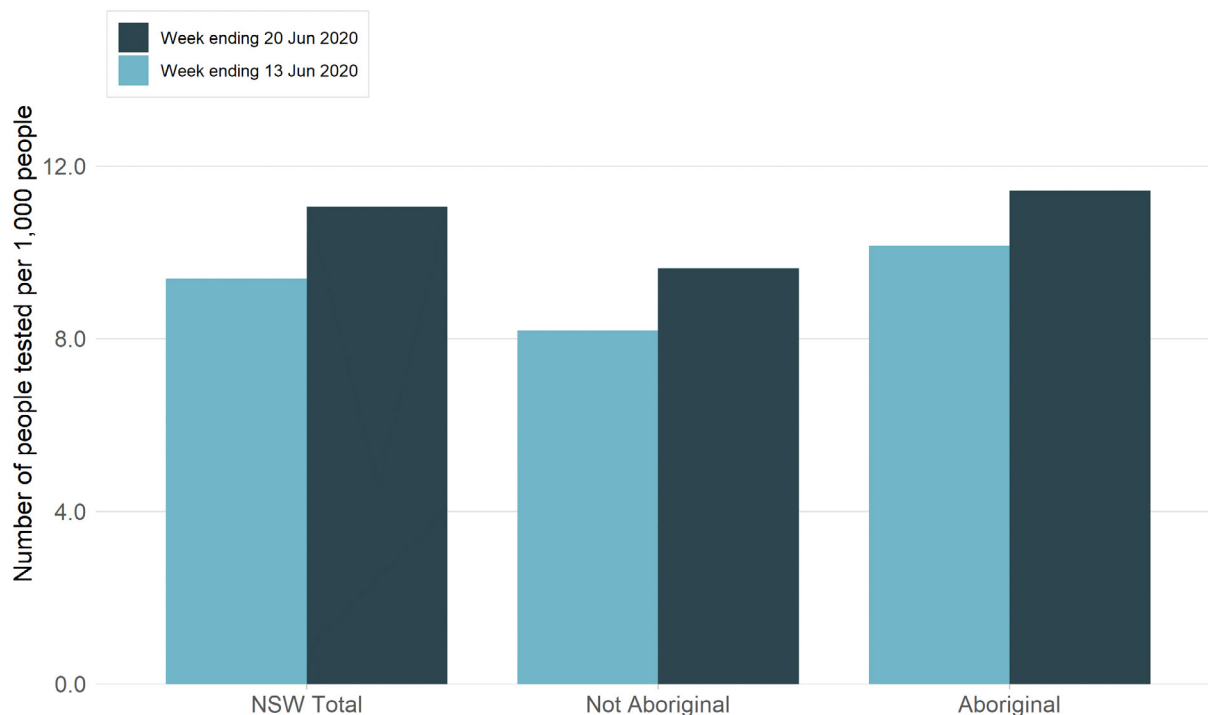
Interpretation: Testing increased by approximately 15% among both males and females in the week ending 27 June compared with the previous week. Females continue to have a higher rate of testing compared to males.

Cases and testing in Aboriginal people

No new cases among Aboriginal people were reported in the week ending 27 June. The most recent COVID-19 case in an Aboriginal person was an overseas acquired case reported in the week ending 30 May.

While Aboriginal status is collected by public health staff on interview with the case at the time of diagnosis, those who test negative are not interviewed. Aboriginal status for those tested can be ascertained through linkage with other health information systems but there is a delay in getting this information. Results of the most recent linkage are available for people tested up to 20 June 2020 with Aboriginal status ascertained for approximately 90% of all COVID-19 records.

Figure 9. Testing Rate per 1,000 by Aboriginality and week, NSW



Note: NSW Total includes persons tested in NSW without Aboriginality recorded.

*Total rates include people with unknown Aboriginality status.

Interpretation: Testing rates in Aboriginal people are comparable with non-Aboriginal people. Among Aboriginal people, testing rates were higher in the week ending 20 June compared with the previous week.

The high rates of testing and low case counts suggest limited COVID-19 transmission is occurring amongst Aboriginal people currently. Continued testing of symptomatic people is critical to prevent transmission in the community in general and is especially important in the Aboriginal population. Higher rates of chronic disease, factors such as high numbers of people per household, and barriers to accessing health care make Aboriginal people a vulnerable group.

Cases in pregnant women

There were no new cases in pregnant women in the week ending 27 June.

How long does it take to get a positive COVID-19 test result?

To enable prompt public health action, laboratories prioritise the notification of positive COVID-19 test results to NSW Health. In certain circumstances, NSW Health may be informed of a potential positive result in samples undergoing further laboratory investigation prior to the final diagnosis. The time taken to receive a negative result is typically longer (data not shown).

Despite marked increases in testing since January, the median time from testing to notification of a positive result (measured in whole days) has remained stable at one day from test to notification for cases reported each week in the period 28 March to 16 May. Since 17 May, a total of 11 locally acquired cases have been diagnosed out of 452,477 tests.

Table 7. Time from testing to notification for locally acquired COVID-19 cases reported from 31 May to 27 June 2020

Time from test to notification	Cases
Same day	1
1 day	2
2 days	3
3 days	1

Interpretation: Three of the seven newly diagnosed cases diagnosed in the four weeks ending 27 June were notified to NSW Health within one day of the test being conducted.

How quickly are locally acquired cases getting tested after symptoms begin?

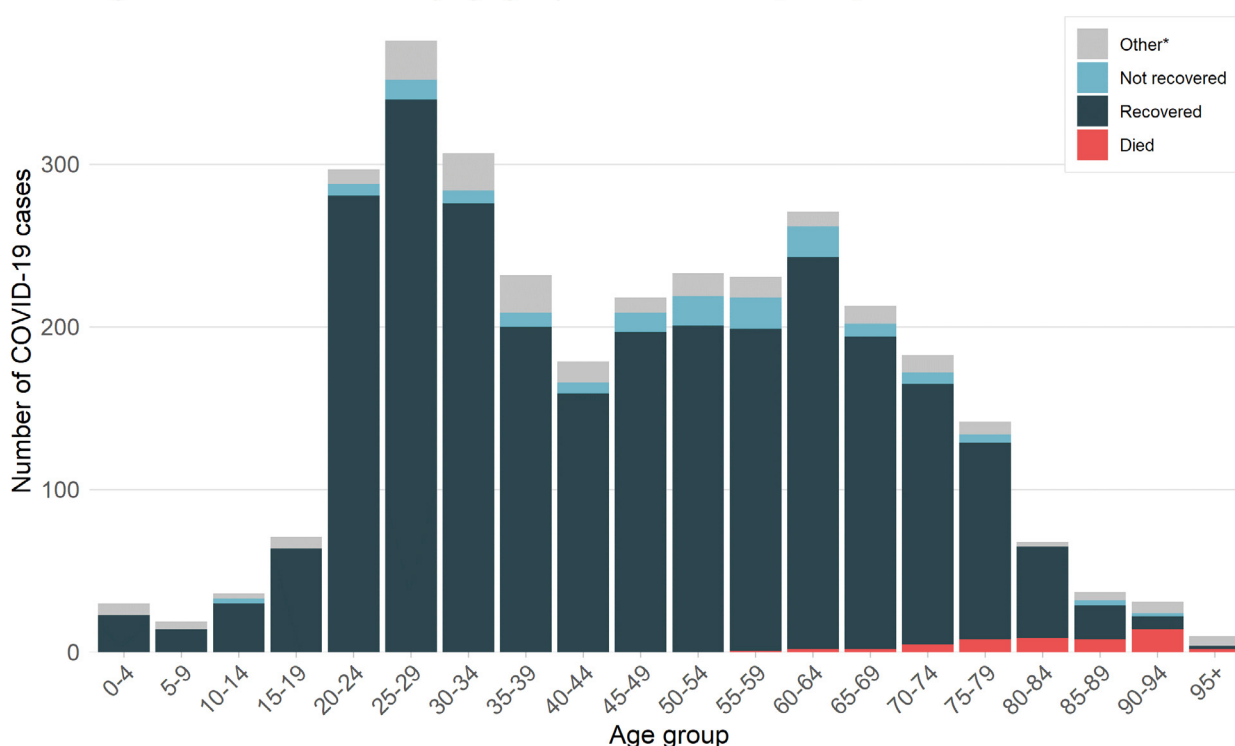
All people who undergo testing are advised to stay at home while they are waiting for test results to avoid spreading infection to others. Diagnosis as close as possible to the time symptoms start is important as it enables close contacts to be quarantined early, which reduces the risk of further transmission. Of the symptomatic cases reported in the week ending 27 June, one was tested two days and the third three days after symptom onset.

SECTION 3: RECOVERY AND DEATHS

How many cases have recovered?

In NSW, recovery status for COVID-19 is assessed three weeks after the onset of illness by interviewing the case. Cases reporting resolution of all COVID-19 symptoms are considered to have recovered. Cases who have not recovered at three weeks are called in the following weeks until recovery. The bars on the figure below show the total number of cases by age group and health status up to 27 June. This includes all cases reported in NSW (acquired locally and overseas).

Figure 10. COVID-19 cases by age group and health status, NSW, 2020



*Cases with recovery data unavailable (including those within 3 weeks of symptom onset). Includes both local and overseas acquired cases.

Interpretation: Overall, more than 85% of cases have recovered.

How many people have died as a result of COVID-19?

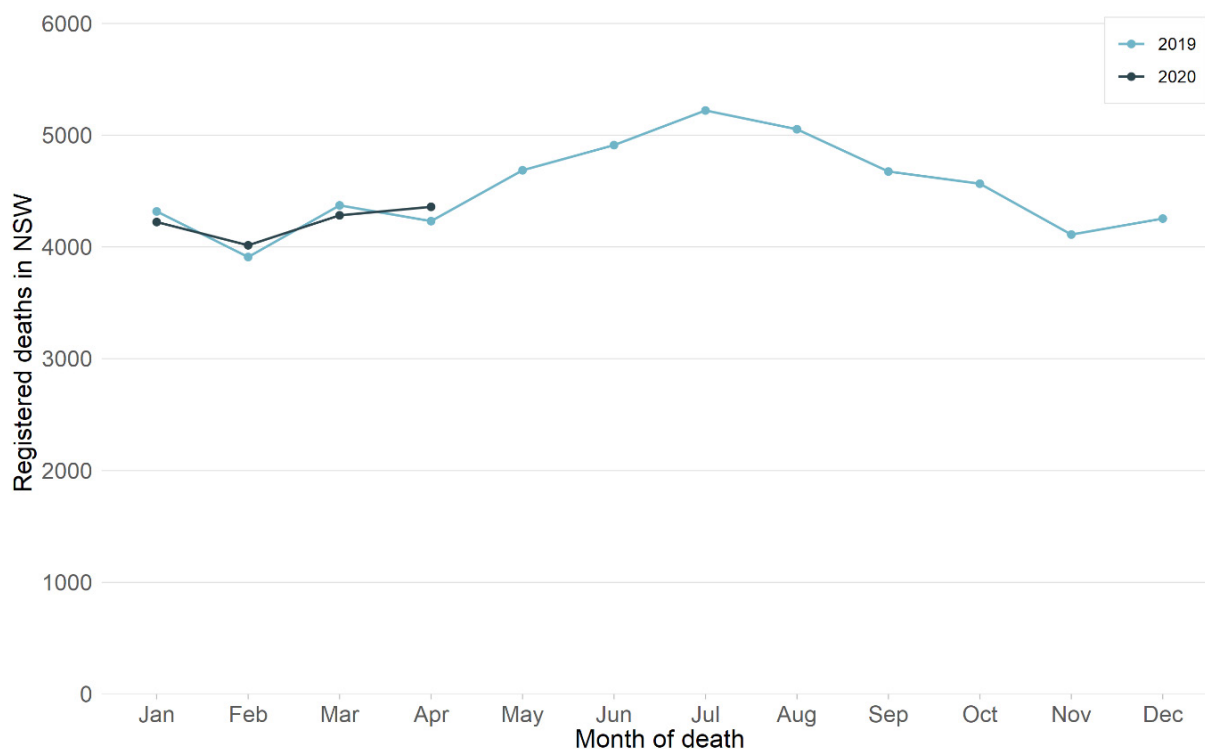
In total, 1.6% of cases (51 people) have died as a result of COVID-19 infection, most of whom were 70 years of age or older. Approximately half of the deaths (55%, 28 deaths) were in residents of aged care facilities with known COVID-19 outbreaks. Approximately one-quarter of the deaths were in overseas acquired cases.

Internationally it is estimated that 5.0% of COVID-19 cases are reported to have died as a result of their infection.³ Countries such as Italy, the United Kingdom and Spain have reported higher mortality rates (14.5%, 14.0% and 11.4%), while NSW reports similar rates to South Korea (2.2%) and New Zealand (1.9%).

How many people have died in NSW from any cause of death?

NSW Health receives notifications of all deaths notified to the NSW Registry of Births Deaths and Marriages. Deaths from any cause are seasonal, increasing in winter and decreasing in summer. On average there is a delay of about 14 days for a death to be registered and notified to NSW Health, and deaths referred to a coroner may take longer to register.

Figure 11. Deaths from any cause registered in NSW up to 25 June, 2020

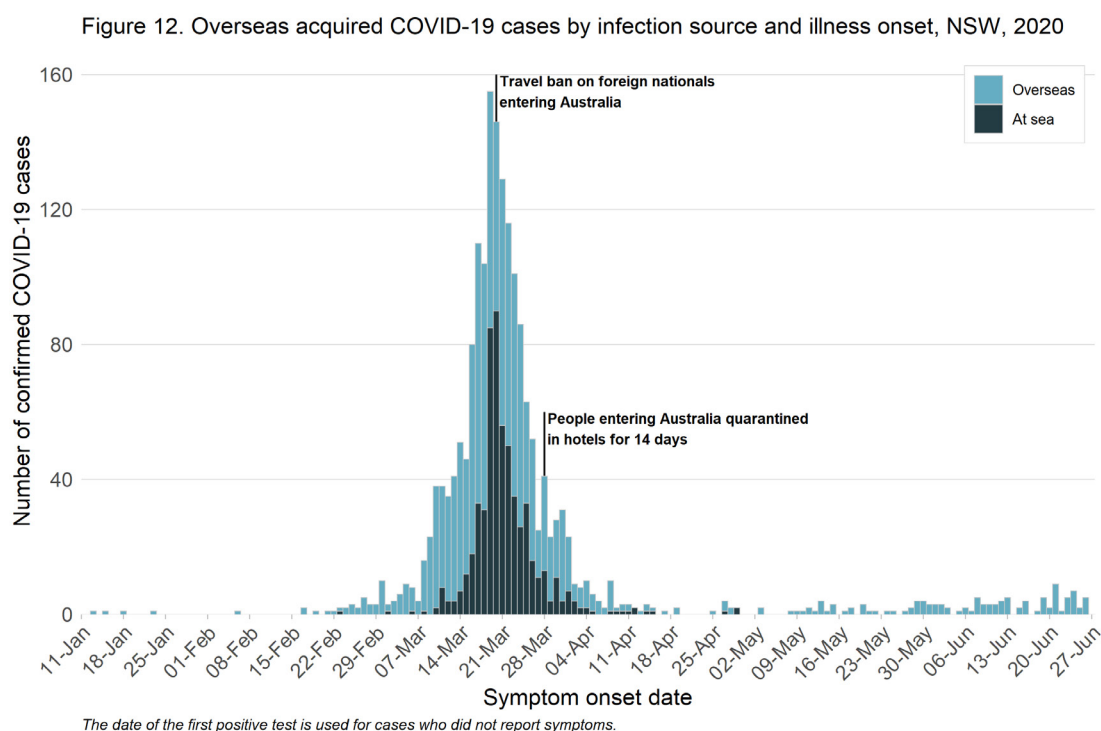


Interpretation: When compared to the same period in 2019, the numbers of registered deaths were slightly lower in March and slightly higher in April. While there is a lag in notification of deaths, there is no indication to date that the COVID-19 pandemic in NSW is causing an overall increase in mortality.

³ WHO Coronavirus disease (COVID-19) Situation Report - 161
<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports>

SECTION 4: COVID-19 IN RETURNED TRAVELLERS

To limit the spread of COVID-19 into NSW, travel restrictions were introduced for all non-Australian citizens and permanent residents. In addition, since 28 March returned travellers have been quarantined in hotels for a 14-day period and travellers who develop symptoms are isolated until no longer infectious. The graph below shows the number of cases in returned travellers by the date of symptom onset. Cases acquired at sea refers to those cruise ship passengers who acquired their infection prior to disembarking in NSW.



Interpretation: To 27 June, cruise ship passengers accounted for the largest number of overseas acquired infections (581 cases). Following this, cases were most commonly returning from the United Kingdom (324 cases), United States (274 cases) and Pakistan (68 cases).

Overall the number of new cases in returned travellers has decreased markedly in line with travel restrictions. However, given the low level of community transmission, returned travellers account for almost all cases (93%, 90 cases) reported in NSW in the last four weeks.

Most travellers diagnosed in quarantine are returning Australian nationals and the country where people acquired their infection in recent weeks can be influenced by the numbers and size of arriving repatriation flights. Effective hotel quarantine minimises the risk of transmission to the community. In the four weeks ending 27 June, cases had most commonly returned from Pakistan (58 cases).

Airport screening

Health screening of returning travellers was introduced for people returning from particular countries early in the outbreak but was expanded to all returning travellers on 21 March 2020. As part of the health screening passengers are asked to complete a questionnaire about their health upon arrival into Sydney International Airport. People with symptoms are assessed by an onsite health team and tested for COVID-19.

During the week ending 27 June, a total of 4,210 people were screened at Sydney International Airport and 54 were referred for testing. Since screening began on 2 February, a total of 87,078 people have been screened with 976 referred for onsite health assessment and testing.

SECTION 5: OTHER RESPIRATORY INFECTIONS IN NSW

Influenza and other respiratory virus cases and tests reported in NSW, up to 21 June 2020

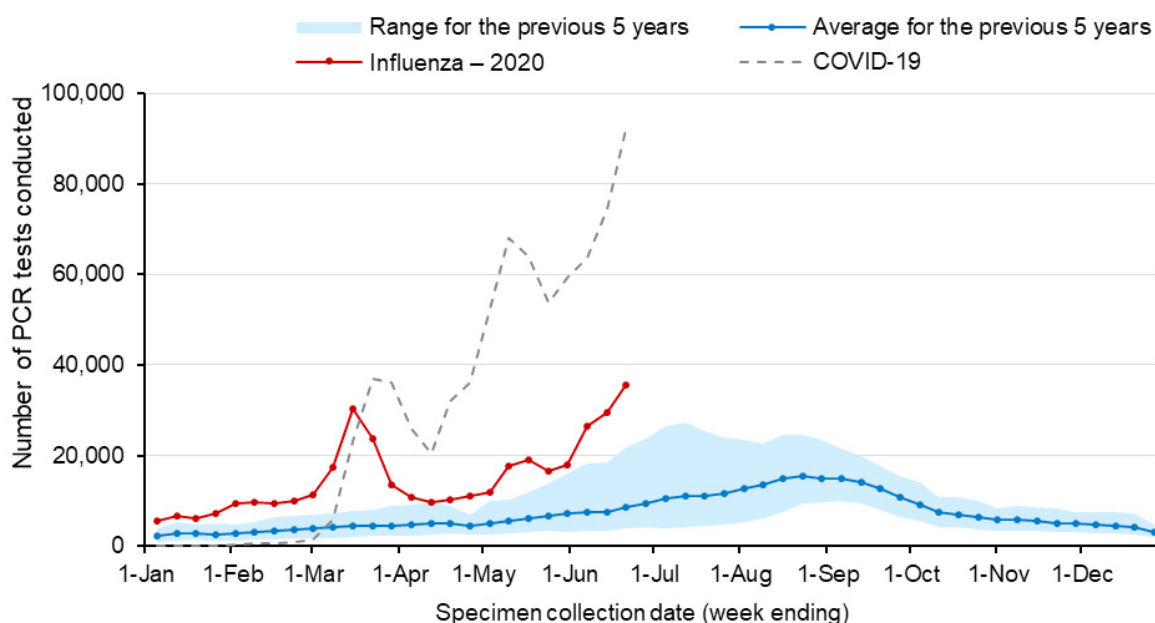
In NSW, routine surveillance for influenza and other respiratory viruses is conducted through sentinel laboratories. The number of all PCR tests (positive and negative) are provided to NSW Health by participating laboratories each week. Testing counts reflect the number of influenza PCR tests conducted; not all samples are tested for all respiratory viruses.

The most recent data available is for testing carried out to 21 June. A total of 377,785 influenza tests have been performed at participating laboratories to 21 June, with 35,652 tests conducted in the most recent week. Refer to Appendix B for PCR testing results for a range of respiratory viruses.

How much influenza testing is happening?

The red line in the figure below shows the number of PCR tests for influenza carried out each week. The blue line shows the average number of tests carried out for the same week in the last five years and the shaded area shows the range of counts reported in the previous five years. The grey line shows the number of COVID-19 tests.

Figure 13. Testing for influenza and COVID-19 by week, to 21 June 2020

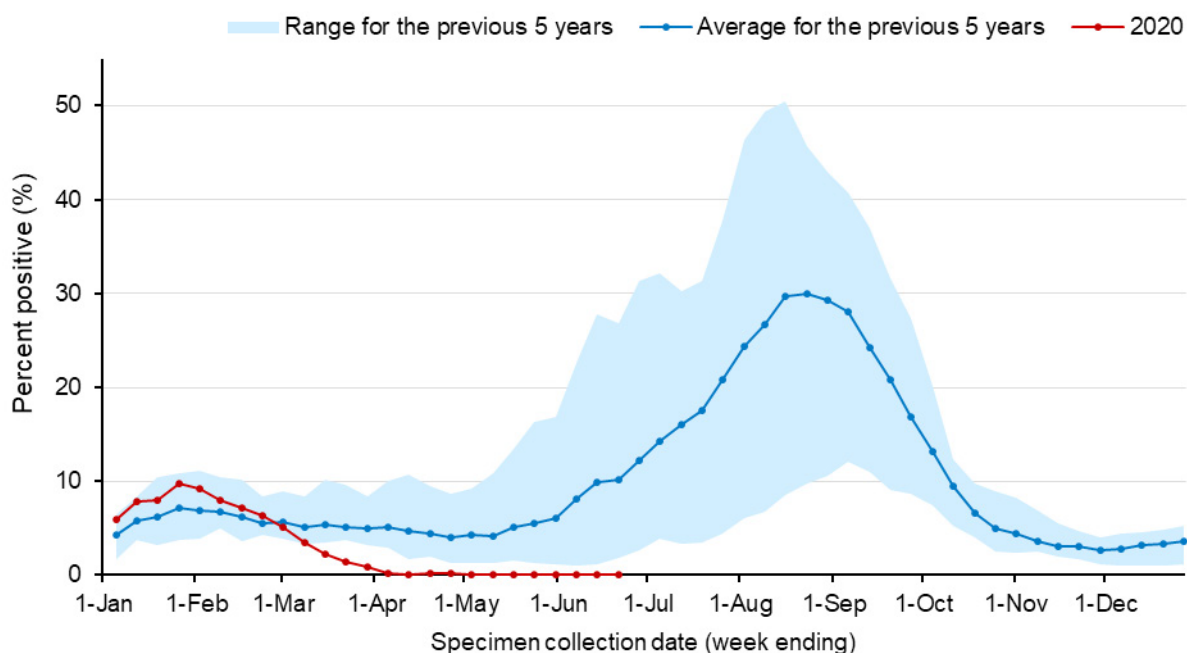


Interpretation: The number of influenza tests performed has exceeded the previous five year average every week this year. The peak in March corresponds to an increase in testing for COVID-19 virus. The subsequent decline of influenza testing, and sharp increase in COVID-19 testing from early April, reflects changes in testing practices for COVID-19 introduced in late March so that testing for influenza and other respiratory viruses was by exception to enable laboratories to increase COVID-19 testing using common equipment. Influenza testing has since increased with the highest weekly count this year reported in the week ending 21 June.

How much influenza is circulating?

The graph below shows the proportion of tests found to be positive for influenza with the red line showing weekly counts for 2020, the blue line showing the average for the past five years and the shaded area showing the range recorded in the previous five years.

Figure 14. Proportion of tests positive for influenza, to 21 June 2020

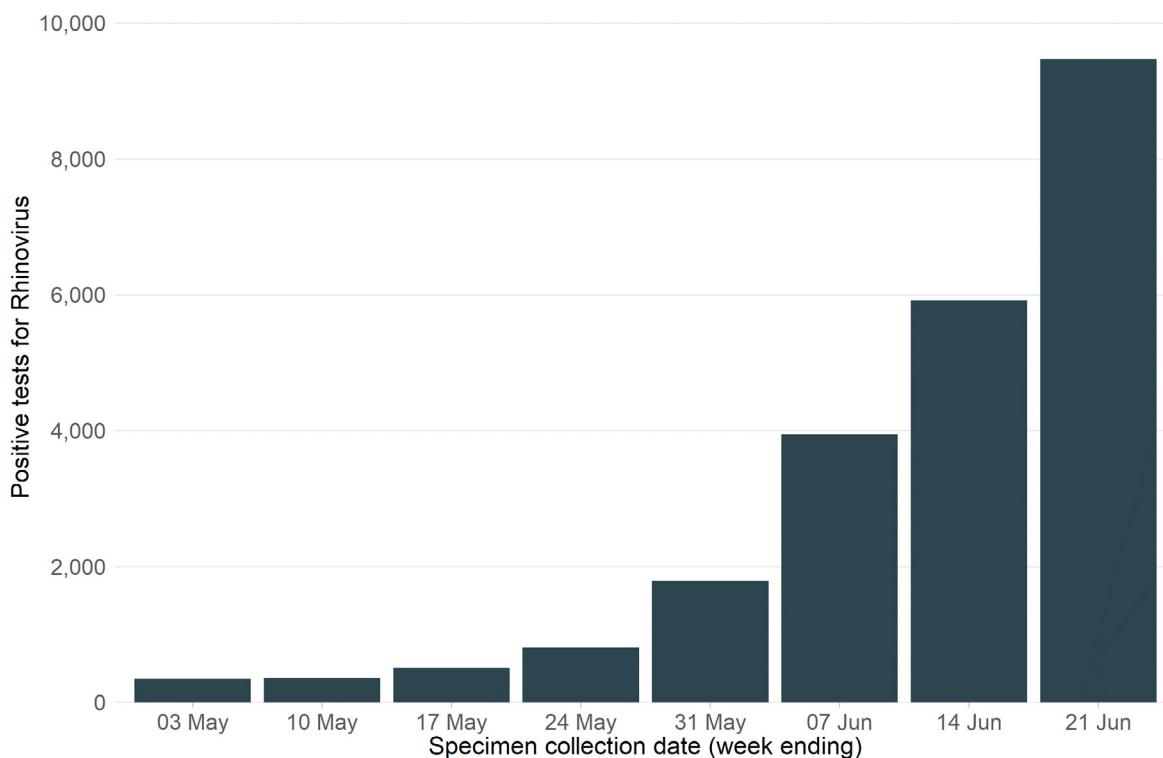


Interpretation: The percent of influenza tests that were positive in the week ending 21 June continues to be very low (less than 0.1%) indicating limited influenza transmission in the community.

How much rhinovirus is circulating?

Rhinovirus is the virus that causes the common cold and has been the most frequently identified respiratory virus by sentinel laboratories this year to 21 June 2020.

Figure 15. Rhinovirus diagnosed at sentinel NSW laboratories, 26 April to 21 June 2020



Interpretation: The number of positive tests for rhinovirus has markedly increased, from 812 positive tests in the week ending 24 May to 9,472 positive tests in the week ending 21 June. This indicates that transmission is increasing in the community.

How many people have died as a result of influenza?

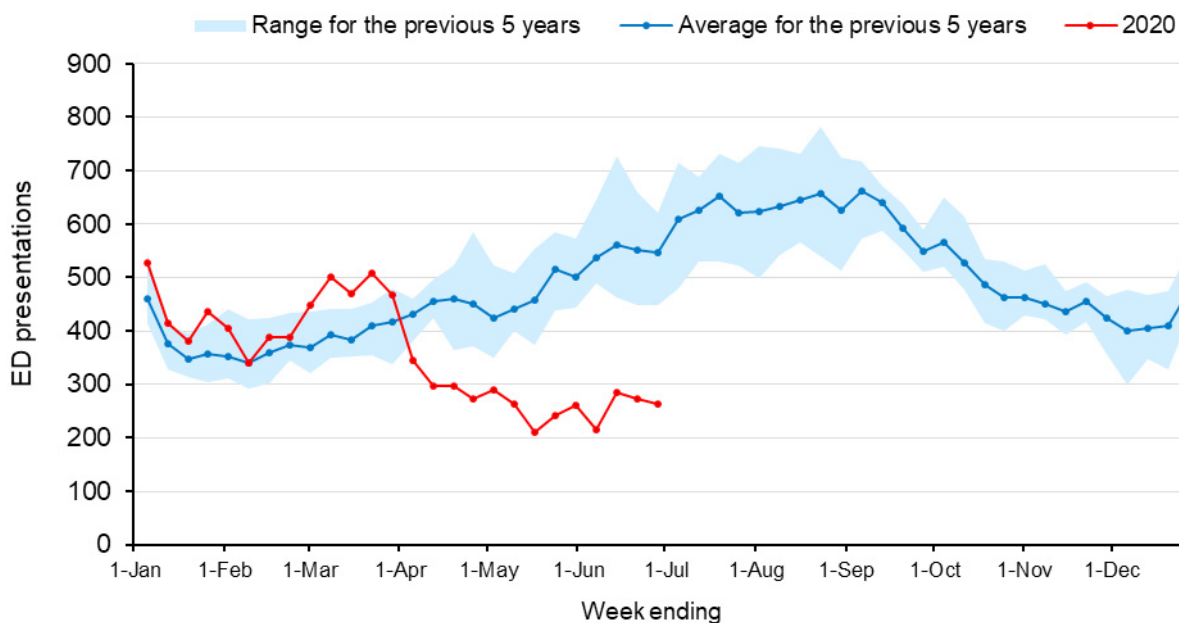
No influenza deaths were reported in the week ending 21 June. The number of influenza-related deaths identified via Coroner’s reports and death registrations from 1 January to 21 June 2020 is lower than the same period last year (12 deaths in 2020 compared with 57 in 2019).⁴ Two-thirds of the deaths were in people aged 65 years and over.

How are emergency department presentations for pneumonia tracking?

The figure below shows weekly pneumonia presentations to Emergency Departments in NSW. This includes presentations with diagnoses of viral, bacterial, atypical or unspecified pneumonia, and Legionnaires’ disease, but excludes ‘pneumonia with influenza’ and provides an indicator of more severe respiratory conditions using PHREDSS.⁵

The red line shows the weekly counts for 2020, the blue line shows the average for the same week for the past five years and the shaded area shows the range recorded in the previous five years.

Figure 16. Emergency Department pneumonia presentations in NSW by week, to 21 June 2020



Interpretation: Pneumonia presentations decreased from the end of March and have continued to remain well below the usual range for this time of year.

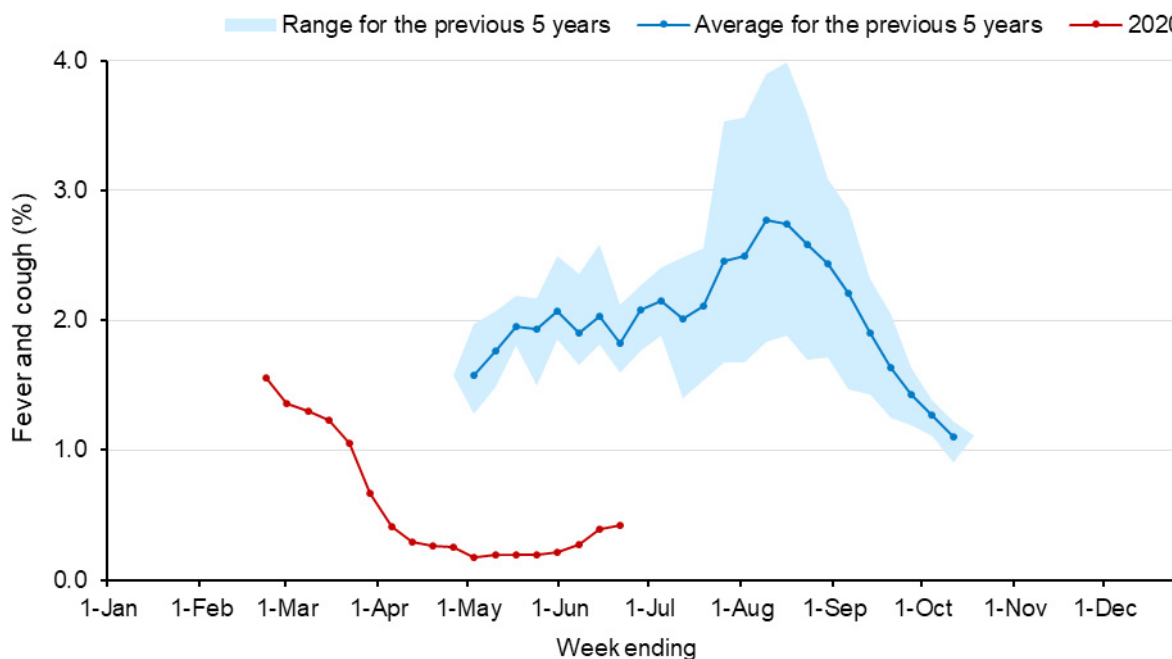
⁴ Includes deaths in people with laboratory-confirmed influenza.

⁵ NSW Health Public Health Rapid, Emergency Disease and Syndromic Surveillance (PHREDSS) system, CEE, NSW Ministry of Health. Comparisons are made with data for the preceding 5 years. Includes unplanned presentations to 67 NSW emergency departments (accounts for 87% of total public ED activity).

How many people have flu-like symptoms in the community?

FluTracking is an online survey that asks participants to report flu-like symptoms, such as fever or cough, in the last week. Across NSW approximately 25,000-30,000 people participate each week. The survey usually commences at the beginning of May in line with the flu season but commenced at the end of February this year given the COVID-19 outbreak.

Figure 17. Proportion of FluTracker participants in NSW reporting influenza-like illness, to 21 June 2020



Interpretation: In NSW in the week ending 21 June, of the 25,248 people surveyed, 106 people (0.4%) reported flu-like symptoms. The proportion of people reporting symptoms is gradually increasing but remains well below the usual range for this time of year.

IN FOCUS

COVID-19 IN YOUNG ADULTS (18 TO 29 YEARS)

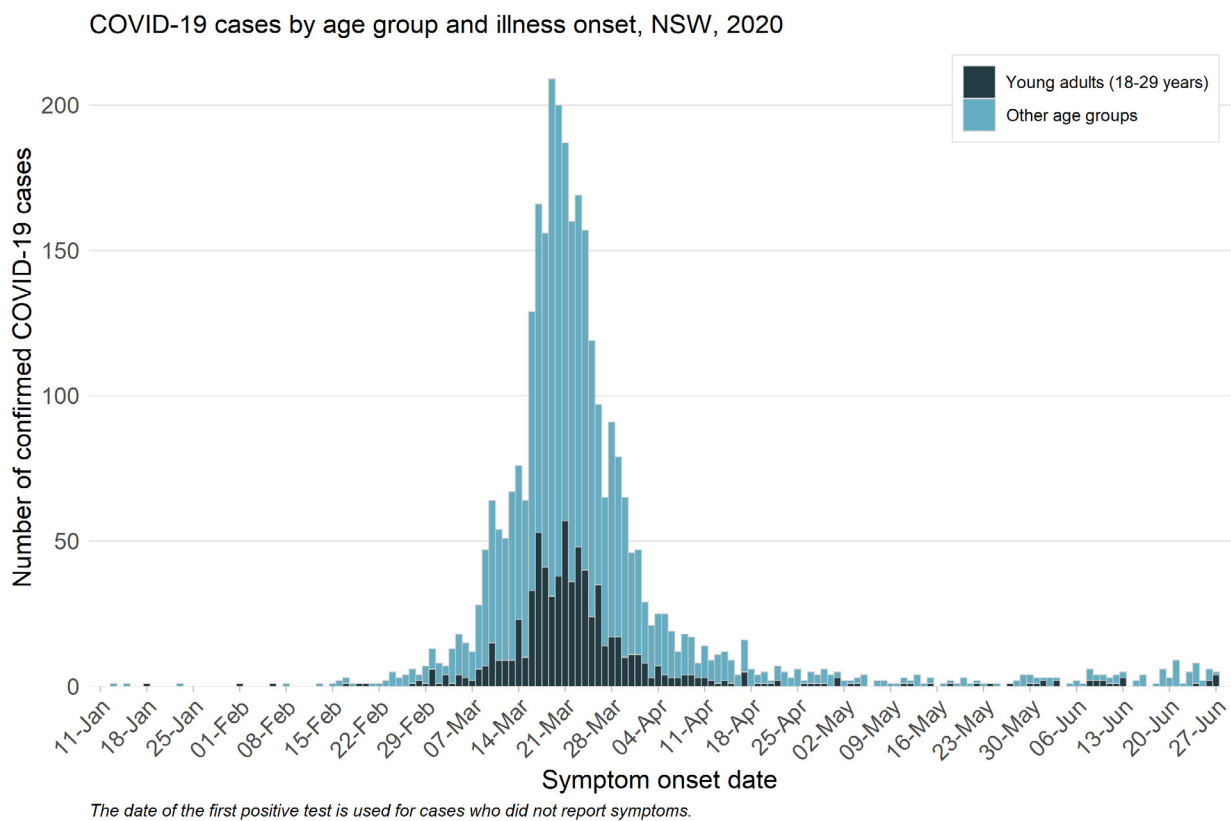
Reporting period: 1 January to 27 June 2020

This is a summary of all COVID-19 infections in young adults in NSW (including those who were infected overseas and those infected in NSW) in the period 1 January to 27 June 2020.

How many young adults have been diagnosed with COVID-19 in NSW?

In total, 728 young adults (aged 18 to 29 years) have been diagnosed with COVID-19 in NSW.

Each bar in the below figure shows the number of new cases in young adults compared with other age groups, based on the date of symptom onset.



Interpretation: Approximately a quarter of cases to 27 June have been in young adults with the majority developing symptoms from early March through to mid-April. Since this time the number of cases has decreased significantly in young adults as well as all other age groups.

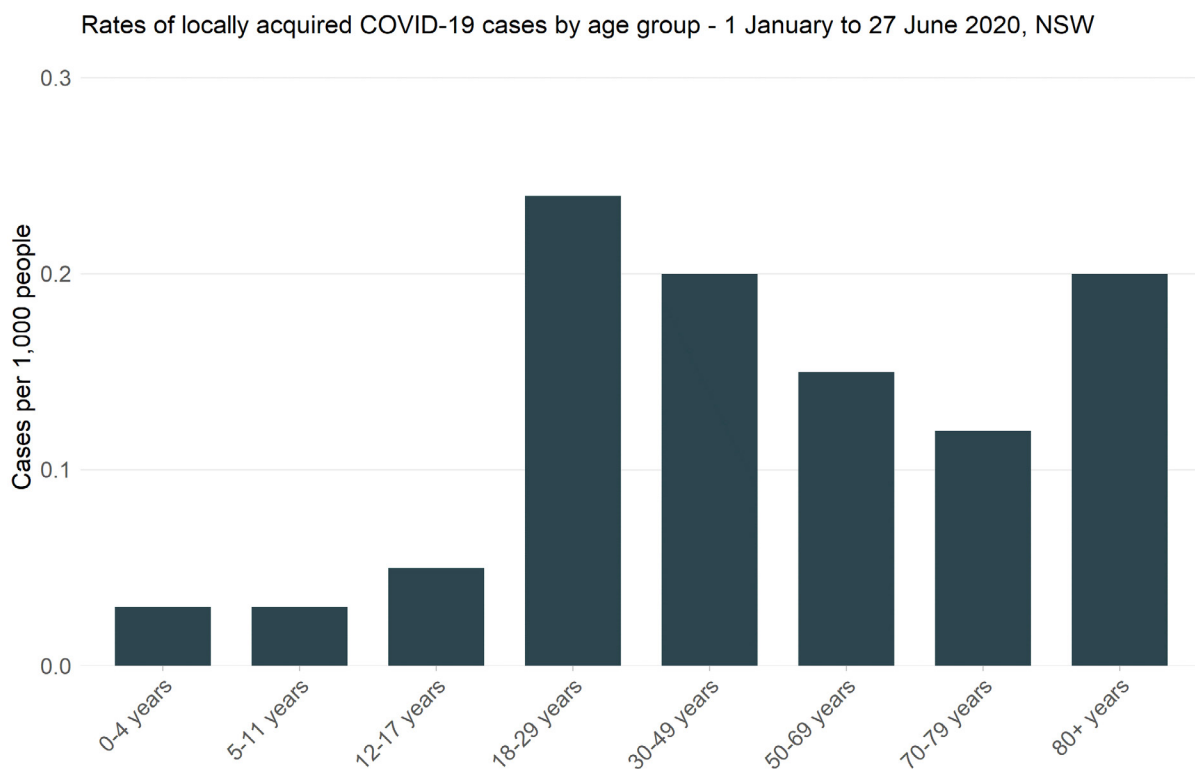
How do infection rates in young adults compare with other age groups?

The rate of COVID-19 diagnosed in each age group takes into account the different number of people in the population in each age group so is a better way to compare infections than the number of cases in each age group.

Overall, the rate of diagnosed infection was 0.5 per 1,000 young adults (or 5 per 10,000).

Among the overseas acquired cases diagnosed in NSW, young adults had the highest rates of infection among all age groups less than 50 years; likely influenced by the relatively higher proportion of overseas travellers. The highest infection rates in returned travellers were reported in people aged 50 to 79 years, which reflects the older age of travellers returning from cruise ships with known COVID-19 outbreaks.

The figure below compares the infection rates for locally acquired cases (excluding returning travellers).

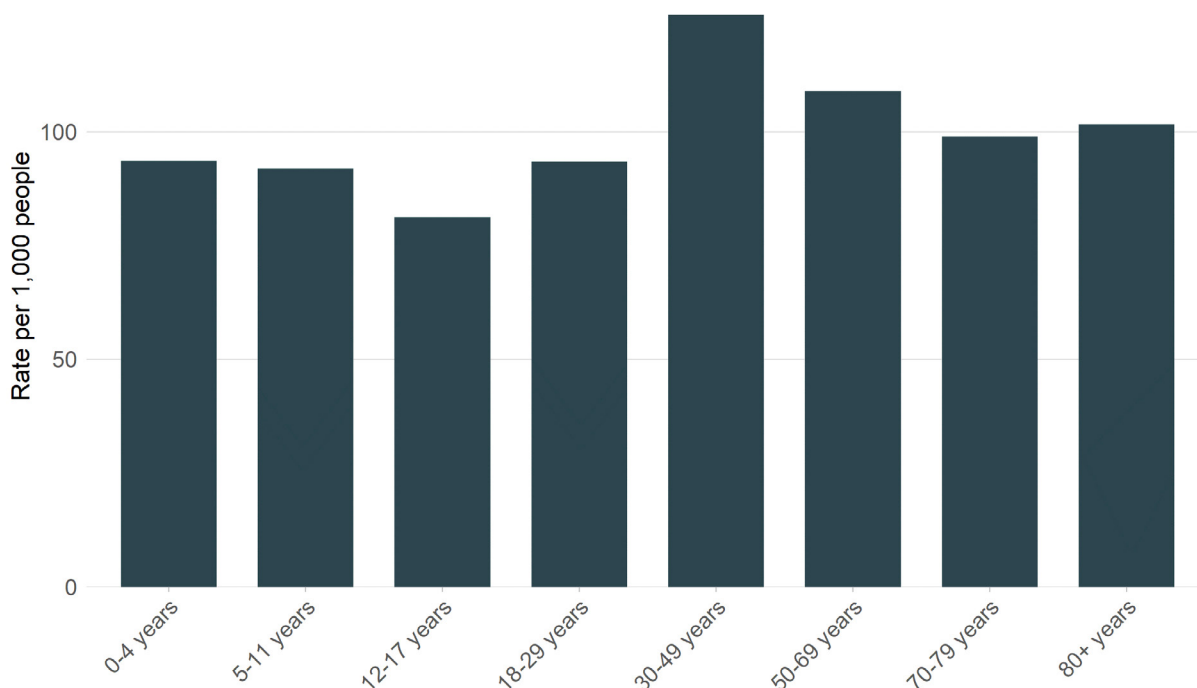


Interpretation: To 27 June, the rate of locally acquired infection was highest in young adults.

How much testing is happening in young adults?

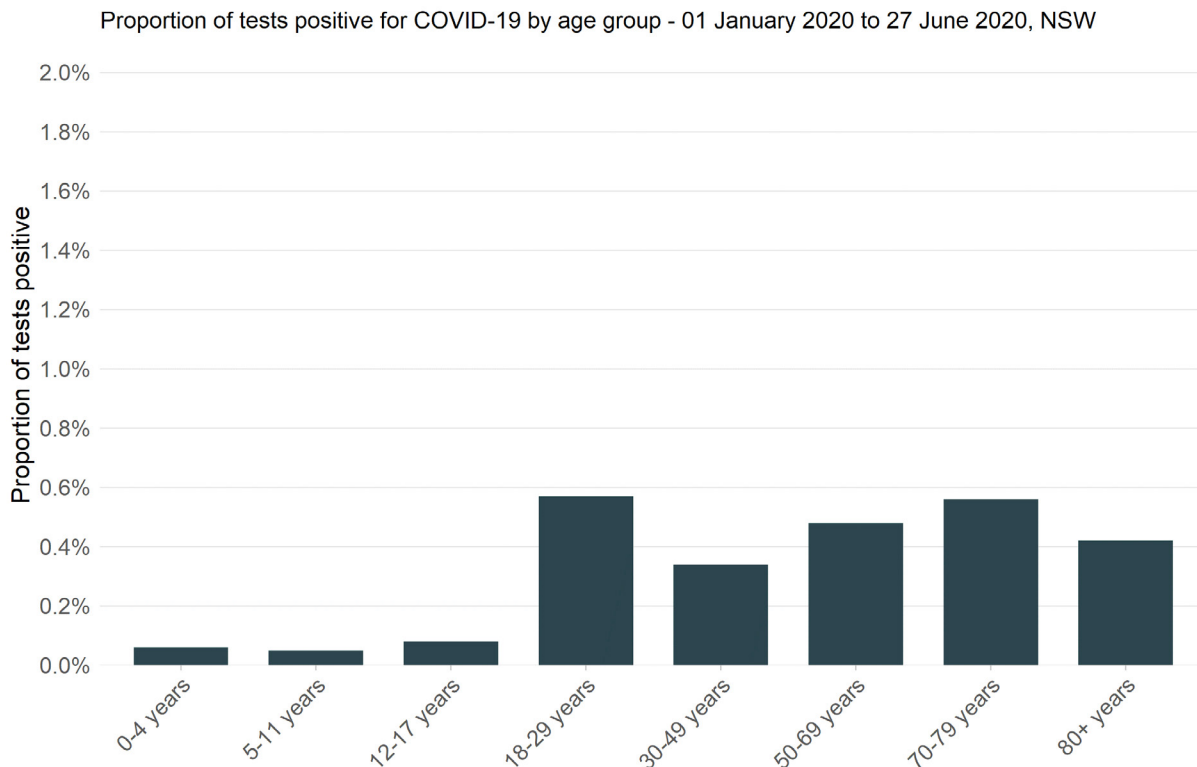
It is not possible to separate testing that was done to diagnose COVID-19 infections acquired overseas from testing done in people in the community who had not travelled. However, with the introduction of travel restrictions in March, the volume of returning travellers dropped markedly so that the majority of testing since this time reflects testing to detect community transmission.

Rates of COVID-19 testing by age group - 01 January 2020 to 27 June 2020, NSW



Interpretation: Among adult age groups, testing rates were lowest in those aged 18 to 29 years. As seen in Section 2, while testing rates have increased in recent weeks, rates of testing in young adults continue to be lower when compared with other age groups.

What proportion of young adults are diagnosed with COVID-19?



Interpretation: The proportion of tests that were positive for COVID-19 was less than 1% across all age groups, indicating low rates of COVID-19 infection in NSW. Among young adults, the proportion of tests that were positive were similar to those aged 70 to 79 years and higher than all other age groups. The comparatively lower rates of testing and higher proportion positive indicates more infection among young adults when compared with those aged 30 to 69 years.

Is infection more common in males or females?

A slightly higher number of infections were diagnosed in young females compared with males (400 females, 55% vs 328 males, 45%).

The below table shows the number of tests per 1,000 people in NSW by age group and gender, between 1 January and 27 June 2020.

COVID-19 testing rates by age group and gender, to 27 June 2020

Age group	Males	Females
	Tests per 1,000 population	Tests per 1,000 population
0-4 years	99.2	87.0
5-11 years	94.5	89.0
12-17 years	82.3	79.9
18-29 years	73.4	113.4
30-49 years	102.8	148.4
50-69 years	90.0	126.5
70-79 years	100.1	97.5
80+ years	114.4	92.1

Interpretation: To 27 June, the testing rate in young adult females was nearly 40% higher than in males of the same age group. Young adult males had the lowest number of tests per 1,000 people across all age groups.

How are young adults getting infected?

All cases of COVID-19 are investigated by public health staff to understand the source of the infection. The table below shows the likely source of infection among young adults.

COVID-19 cases in young adults by likely source of infection, to 27 June 2020

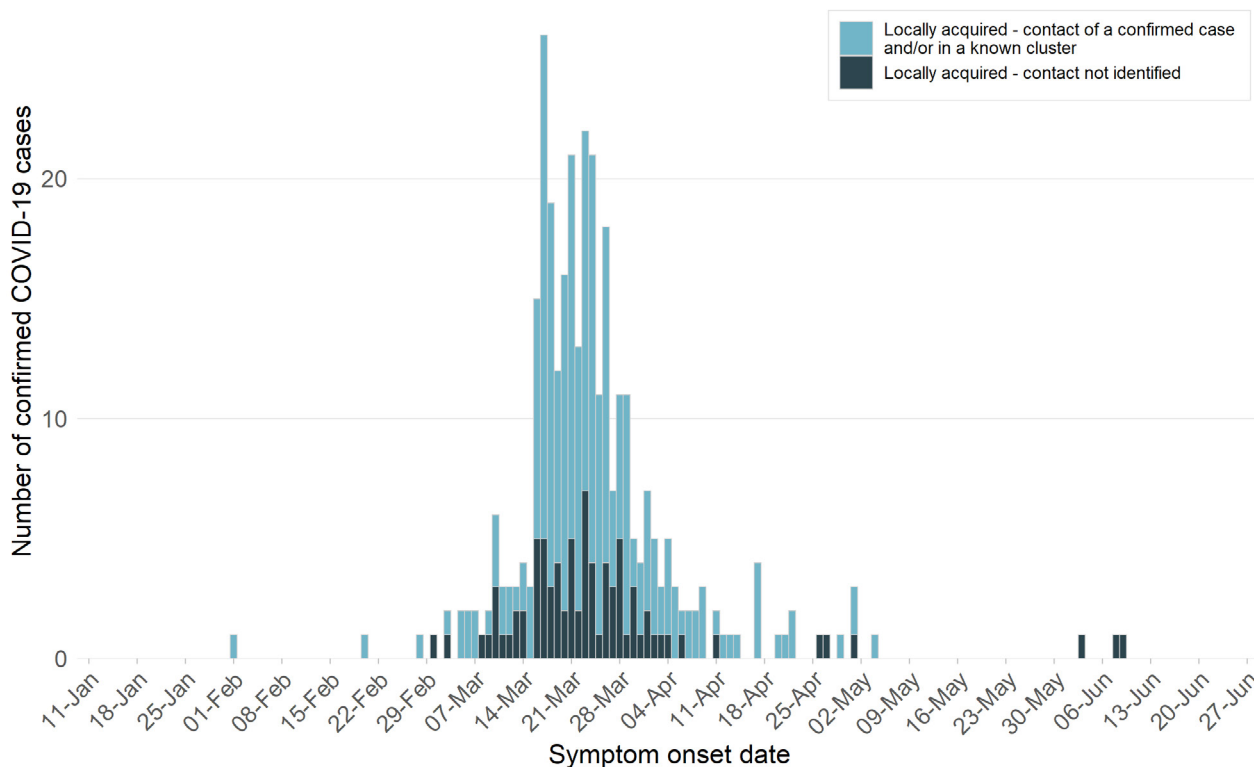
Source of infection	Number of cases	Percentage
Acquired locally	324	45%
- Household member/s	75	
- Confirmed case/s outside the home	168	
- Source not identified	81	
Acquired interstate	11	2%
Acquired overseas	393	54%
Total	728	100%

Interpretation: Approximately half of the cases diagnosed in young adults to 27 June were in travellers returning from overseas while the other half were locally acquired. Among the locally acquired cases with a known source of infection, approximately 70% were infected outside the home. Prior to the introduction of social distancing measures, a number of outbreaks occurred among young adults at social events in metropolitan Sydney.

Reporting period: 1 January to 27 June 2020

Each bar in the below figure shows the number of locally acquired cases in young adults by the source of likely infection and the date of symptom onset.

Locally acquired COVID-19 cases in young adults by illness onset, NSW, 2020



The date of the first positive test is used for cases who did not report symptoms and cases who have not had an initial interview by public health staff.

Interpretation: Locally acquired cases in young adults peaked in mid-March prior to the introduction of strict social distancing measures including restrictions on gatherings of large groups. The decrease since this time suggests young adults were compliant with social distancing measures.

Where do young adults with COVID-19 live in NSW?

Over 80% of the locally acquired cases in young adults were metropolitan Sydney residents with nearly 40% of cases reported residing in either inner Sydney or the eastern suburbs.

Have young Aboriginal adults been infected?

Nine young Aboriginal adults were diagnosed to 27 June which represented 1% of COVID-19 infections diagnosed in young adults and 30% of infections diagnosed in Aboriginal people. Three cases were acquired overseas and six were locally acquired, including three cases who reported contact with people known to have COVID-19 and three whose source remains unknown. The three cases with an unknown source each resided in different LHDs and had no known links.

What are the symptoms in young adults?

The majority (95%) of young adults experienced respiratory symptoms prior to diagnosis.¹ The table below shows the most commonly reported symptoms.

Frequency of symptoms reported in young adults at the time of diagnosis with COVID-19, to 27 June 2020

	Symptomatic cases (n = 692)	
Symptom	Number	Percentage
Cough	425	72%
Headache	385	69%
Fatigue	386	69%
Sore throat	325	58%
Fever	292	53%
Runny nose	278	52%
Malaise	222	45%
Body pain	191	38%
Chills or rigors	170	34%
Joint pain	140	29%
Shortness of breath	137	27%
Diarrhoea	106	22%

Interpretation: Cough, headache and fatigue were the most common symptoms reported by young adults at the time of diagnosis.

How quickly are young adults getting tested?

The median duration of symptoms prior to testing was three days both for all cases in young adults and those acquired locally. This was similar to other adult age groups.

How many cases have recovered?

Recovery information was available for 673 young adults, all of whom had recovered. No deaths have been reported among young adults diagnosed with COVID-19 in NSW.

¹ Information collected by public health staff on interview at the time of diagnosis.

APPENDIX A: COVID-19 PCR TESTS IN NSW

Local Health District	Local Government Area	Week ending					
		27 June		20 June		Total	
		No.	Tests per 1,000 population	No.	Tests per 1,000 population	No.	Tests per 1,000 population
Central Coast	Central Coast / LHD Total ²	4409	12.49	4098	11.61	37624	106.62
Far West	Balranald	5	2.14	8	3.42	85	36.36
	Broken Hill	99	5.66	106	6.06	1336	76.43
	Central Darling	10	5.44	9	4.89	84	45.68
	Wentworth	84	11.91	55	7.8	480	68.06
	LHD Total ²	198	6.57	178	5.9	1985	65.85
Hunter New England	Armidale Regional	227	7.38	231	7.51	3328	108.13
	Cessnock	575	9.59	564	9.4	4889	81.5
	Dungog	65	6.9	52	5.52	667	70.78
	Glen Innes Severn	47	5.3	66	7.44	648	73.05
	Gunnedah	84	6.62	88	6.94	685	54.02
	Gwydir	20	3.74	23	4.3	204	38.11
	Inverell	132	7.82	96	5.68	1360	80.52
	Lake Macquarie	2264	11	2024	9.83	23849	115.83
	Liverpool Plains	100	12.65	59	7.47	677	85.66
	Maitland	1079	12.67	1098	12.89	11020	129.39
	Mid-Coast	785	8.37	646	6.88	7209	76.83
	Moree Plains	65	4.9	90	6.79	967	72.92
	Muswellbrook	192	11.72	166	10.14	1196	73.03
	Narrabri	68	5.18	78	5.94	857	65.25
	Newcastle	2170	13.11	1951	11.78	22871	138.13
	Port Stephens	848	11.54	786	10.7	7354	100.08
	Singleton	321	13.68	377	16.07	2654	113.12
	Tamworth Regional	617	9.87	562	8.99	7602	121.55
	Tenterfield	31	4.7	40	6.07	315	47.77
	Upper Hunter Shire	178	12.55	155	10.93	1189	83.85
	Uralla	30	4.99	24	3.99	403	67.03
Walcha	21	6.7	25	7.98	278	88.7	
LHD Total ²	9912	10.41	9194	9.65	100150	105.16	
Illawarra Shoalhaven	Kiama	438	18.73	351	15.01	2622	112.12
	Shellharbour	1282	17.51	1356	18.52	8204	112.03
	Shoalhaven	1141	10.8	1106	10.47	9645	91.29
	Wollongong	3097	14.2	2787	12.78	20609	94.49
	LHD Total ²	5958	14.2	5600	13.35	41080	97.9

Local Health District	Local Government Area	Week ending					
		27 June		20 June		Total	
		No.	Tests per 1,000 population	No.	Tests per 1,000 population	No.	Tests per 1,000 population
Mid North Coast	Bellingen	123	9.46	91	7	994	76.49
	Coffs Harbour	706	9.14	538	6.96	5659	73.23
	Kempsey	217	7.3	221	7.43	2471	83.07
	Nambucca	142	7.17	129	6.51	1329	67.1
	Port Macquarie-Hastings	874	10.34	639	7.56	6140	72.64
	<i>LHD Total²</i>	2062	9.14	1618	7.17	16593	73.53
Murrumbidgee	Albury	383	7.05	323	5.94	2719	50.02
	Berrigan	67	7.66	38	4.34	443	50.63
	Bland	51	8.54	45	7.54	354	59.28
	Carrathool	5	1.79	2	0.71	70	25.01
	Coolamon	38	8.75	16	3.69	312	71.87
	Cootamundra-Gundagai Regional	106	9.43	99	8.81	777	69.16
	Edward River	122	13.43	58	6.38	612	67.37
	Federation	96	7.72	37	2.97	543	43.66
	Greater Hume Shire	88	8.18	73	6.78	589	54.72
	Griffith	286	10.58	206	7.62	1821	67.37
	Hay	11	3.73	9	3.05	148	50.19
	Hilltops	184	9.84	114	6.09	1038	55.5
	Junee	41	6.13	36	5.39	270	40.4
	Lachlan ¹	35	5.76	27	4.44	190	31.28
	Leeton	87	7.6	62	5.42	626	54.7
	Lockhart	22	6.7	26	7.91	230	70.02
	Murray River	7	0.58	2	0.17	45	3.71
	Murrumbidgee	29	7.4	15	3.83	197	50.29
	Narrandera	45	7.63	36	6.1	276	46.79
	Snowy Valleys	112	7.74	154	10.64	962	66.44
Temora	45	7.13	50	7.93	393	62.31	
Wagga Wagga	727	11.14	627	9.61	6375	97.69	
<i>LHD Total²</i>	2557	8.58	2042	6.85	18896	63.39	
Nepean Blue Mountains	Blue Mountains	1500	18.96	1226	15.5	11822	149.42
	Hawkesbury	1122	16.67	919	13.66	8018	119.15
	Lithgow	206	9.53	157	7.27	1847	85.49
	Penrith	3517	16.51	2941	13.81	29782	139.84
	<i>LHD Total²</i>	6298	16.11	5215	13.34	51194	130.93

Local Health District	Local Government Area	Week ending					
		27 June		20 June		Total	
		No.	Tests per 1,000 population	No.	Tests per 1,000 population	No.	Tests per 1,000 population
Northern NSW	Ballina	462	10.35	370	8.29	4311	96.6
	Byron	417	11.89	324	9.24	3554	101.31
	Clarence Valley	359	6.95	249	4.82	3285	63.59
	Kyogle	49	5.57	31	3.52	390	44.34
	Lismore	510	11.67	370	8.47	3890	89.03
	Richmond Valley	206	8.78	177	7.54	1746	74.41
	Tenterfield	31	4.7	40	6.07	315	47.77
	Tweed	856	8.82	698	7.2	7004	72.21
	<i>LHD Total^P</i>	2864	9.23	2228	7.18	24255	78.15
Northern Sydney	Hornsby	1992	13.1	1617	10.63	13655	89.8
	Hunters Hill	477	31.84	352	23.5	3656	244.06
	Ku-ring-gai	2686	21.12	1819	14.31	15772	124.04
	Lane Cove	1693	42.16	940	23.41	9928	247.24
	Mosman	453	14.62	382	12.33	4059	131.02
	North Sydney	843	11.24	739	9.85	7482	99.73
	Northern Beaches	3771	13.79	3149	11.51	31184	114.02
	Parramatta ¹	2702	10.51	2098	8.16	18941	73.64
	Ryde	1535	11.69	1200	9.14	13226	100.75
	Willoughby	956	11.77	798	9.83	6786	83.58
	<i>LHD Total^P</i>	14919	15.61	11381	11.91	109419	114.46
South Eastern Sydney	Bayside	1756	9.84	1568	8.79	14463	81.07
	Georges River	1615	10.13	1535	9.63	12503	78.4
	Randwick	2437	15.66	2088	13.41	22274	143.1
	Sutherland Shire	3968	17.21	4218	18.29	29185	126.56
	Sydney ¹	2861	11.61	2315	9.4	28663	116.35
	Waverley	1215	16.35	1139	15.33	14666	197.4
	Woollahra	1025	17.26	996	16.77	10978	184.86
	<i>LHD Total^P</i>	12741	13.28	12117	12.63	112748	117.56
South Western Sydney	Camden	2494	24.59	1655	16.32	13481	132.9
	Campbelltown	2558	14.96	2214	12.95	17574	102.81
	Canterbury-Bankstown ¹	3510	9.29	3352	8.87	31381	83.04
	Fairfield	1673	7.9	1291	6.1	11482	54.24
	Liverpool	2590	11.38	2463	10.82	19206	84.39
	Wingecarribee	815	15.94	684	13.38	6291	123.03
	Wollondilly	617	11.61	437	8.22	3862	72.66
	<i>LHD Total^P</i>	12451	11.99	10359	9.97	87192	83.96

Local Health District	Local Government Area	Week ending					
		27 June		20 June		Total	
		No.	Tests per 1,000 population	No.	Tests per 1,000 population	No.	Tests per 1,000 population
Southern NSW	Bega Valley	287	8.32	217	6.29	2070	60.04
	Eurobodalla	327	8.5	303	7.88	3024	78.6
	Goulburn Mulwaree	370	11.88	340	10.92	2886	92.7
	Queanbeyan-Palerang Regional	457	7.48	449	7.35	4157	68.04
	Snowy Monaro Regional	190	9.14	137	6.59	1392	66.94
	Upper Lachlan Shire	94	11.66	84	10.42	592	73.46
	Yass Valley	93	5.44	89	5.21	991	58
	<i>LHD Total²</i>	1818	8.38	1619	7.46	15113	69.62
Sydney	Burwood	321	7.9	304	7.49	2625	64.64
	Canada Bay	1453	15.12	1133	11.79	12122	126.17
	Canterbury-Bankstown ¹	3510	9.29	3352	8.87	31381	83.04
	Inner West	3334	16.6	2681	13.35	28480	141.82
	Strathfield	571	12.17	481	10.25	4525	96.43
	Sydney ¹	2861	11.61	2315	9.4	28663	116.35
	<i>LHD Total²</i>	9584	13.75	8039	11.54	83470	119.8
Western NSW	Bathurst Regional	513	11.76	466	10.68	4014	92.03
	Blayney	91	12.33	73	9.89	770	104.35
	Bogan	27	10.47	19	7.36	166	64.34
	Bourke	27	10.42	17	6.56	90	34.75
	Brewarrina	8	4.97	19	11.79	103	63.94
	Cabonne	68	4.99	97	7.11	692	50.76
	Cobar	27	5.8	12	2.58	158	33.92
	Coonamble	24	6.06	16	4.04	273	68.97
	Cowra	112	8.79	93	7.3	785	61.6
	Dubbo Regional	518	9.64	521	9.7	3731	69.45
	Forbes	42	4.24	105	10.6	362	36.54
	Gilgandra	19	4.48	15	3.54	177	41.76
	Lachlan ¹	35	5.76	27	4.44	190	31.28
	Mid-Western Regional	283	11.21	276	10.93	1904	75.4
	Narromine	52	7.98	45	6.91	339	52.02
	Oberon	41	7.58	30	5.54	410	75.77
	Orange	539	12.7	496	11.68	4478	105.49
	Parkes	102	6.87	68	4.58	758	51.09
	Walgett	37	6.22	51	8.57	407	68.37
	Warren	49	18.17	33	12.24	287	106.41
Warrumbungle Shire	102	10.99	84	9.05	643	69.3	
Weddin	19	5.26	21	5.81	179	49.54	
<i>LHD Total²</i>	2730	9.58	2570	9.02	20833	73.1	

Local Health District	Local Government Area	Week ending					
		27 June		20 June		Total	
		No.	Tests per 1,000 population	No.	Tests per 1,000 population	No.	Tests per 1,000 population
Western Sydney	Blacktown	5659	15.11	4756	12.7	38738	103.45
	Cumberland	2500	10.35	2140	8.86	18907	78.28
	Parramatta ¹	2702	10.51	2098	8.16	18941	73.64
	The Hills Shire	3384	19.01	2535	14.24	21110	118.62
	LHD Total ²	13817	13.12	11211	10.64	94656	89.85
NSW Total³		107,974	13.35	91,584	11.32	853,894	105.55

¹Local Government Area (LGA) spans multiple Local Health Districts.

²Local Health District total counts and rates includes tests for LHD residents only. Murrumbidgee includes Albury LGA residents.

³NSW Total counts and rates include tests where residential information is incomplete.

See <https://www.health.nsw.gov.au/Infectious/covid-19/Pages/counting-tests.aspx> for detail on how tests are counted.

APPENDIX B: NUMBER OF POSITIVE PCR TEST RESULTS FOR INFLUENZA AND OTHER RESPIRATORY VIRUSES AT SENTINEL NSW LABORATORIES, 1 JANUARY TO 7 JUNE 2020

The reported testing numbers reflect the number of influenza PCR tests conducted. Not all samples are tested for all of the other respiratory viruses. Therefore, data presented may tend to under-represent current respiratory virus activity in NSW.

Specimen collection date	Total PCR tests conducted	Influenza A	Influenza B	Adenovirus	Para-influenza	RSV	Rhinovirus	HMPV**	Enterovirus
1 Jan — 21 June 2020									
Count	377,785	6,565	942	3,402	8,833	4,462	56,396	1,869	3,328
% Positive		1.7%	0.2%	0.9%	2.3%	1.2%	14.9%	0.5%	0.9%
Month ending									
3/02/2020*	34,953	2,508	401	846	1,900	752	5,036	599	335
1/03/2020	40,575	2,363	315	798	2,435	1,118	8,245	437	1,007
29/03/2020	85,238	1,549	200	898	4,117	1,977	18,088	664	1,502
3/05/2020*	53,809	70	13	171	264	399	2,213	46	210
31/05/2020	71,417	35	5	231	62	100	3,474	27	112
Week ending									
7/06/2020	26,632	8	2	147	23	27	3,950	20	45
14/06/2020	29,509	19	3	132	13	39	5,918	40	50
21/06/2020	35,652	13	3	179	19	50	9,472	36	67

Notes: Preliminary laboratory data is provided by participating sentinel laboratories on a weekly basis and are subject to change. Serological diagnoses are not included.

HMPV - Human metapneumovirus

RSV - Respiratory syncytial virus

*Five-week period

GLOSSARY

Term	Description
Case	<p>A person infected who has tested positive to a validated specific SARS-CoV-2 nucleic acid test or has had the virus identified by electron microscopy or viral culture. Blood tests (serology) is only used in special situations following a public health investigation and require other criteria to be met in addition to the positive serology result (related to timing of symptoms and contact with known COVID-19 cases).</p> <p>Case counts include:</p> <ul style="list-style-type: none">- NSW residents diagnosed in NSW who were infected overseas or in Australia (in NSW or interstate), and- interstate or international visitors diagnosed in NSW who were under the care of NSW Health at the time of diagnosis.
Incubation period	The time in which the case was infected. The incubation period for COVID-19 is between 1 and 14 days prior to symptom onset.
Overseas acquired case	Case who travelled overseas during their incubation period. While testing rates in NSW are high and case counts are low, cases who have travelled overseas in their incubation period are considered to have acquired their infection overseas.
Interstate acquired case	Case who travelled interstate during their infection and the public health investigation concludes the infection was likely acquired interstate.
Cluster	Group of cases sharing a common source of infection or are linked to each other in some way.

Dates used in COVID-19 reporting

Event	Date name	Source
Person first starts to feel unwell	Date of symptom onset	Public health staff interview all cases at the time of diagnosis. This is the date provided to NSW Health by the case.
Person has a swab taken	Date of test	This date is provided to NSW Health by the laboratory when the test result (positive or negative) is notified.
Laboratory notifies NSW Health of result	Date of notification	<p>This date is provided to NSW Health by the laboratory. Laboratories prioritise notification of positive results to allow prompt public health action.</p> <p>Positive cases: The date of notification is collected by NSW Health on the day of notification. Cases are informed of their diagnosis by their doctor or public health staff as soon as the result is available. The date of notification to NSW Health is usually the same day as the date the case finds out about the result.</p> <p>Negative cases: Some laboratories notify NSW Health of negative results in batches at regular intervals. For these laboratories the date of notification to NSW Health does not reflect the date the negative result was available at the laboratory. NSW Health does not collect information on the date the person was informed of the result.</p>