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Communicable Disease Control Branch,
Disease Surveillance & Investigation Section

Surveillance of COVID-19 in South Australia, Annual Report, 2021

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SA Health

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Disclaimer

The data presented in this report were correct at the time of publication. Minor discrepancies with previous reports may occur as data adjustments are made retrospectively.

Abbreviations

ABS	Australian Bureau of Statistics
ARIA	Accessibility and Remoteness Index of Australia
CDCB	Communicable Disease Control Branch
COVID-19	Coronavirus disease 2019
ICU	Intensive care unit
LGA	Local Government Area
NNDSS	National Notifiable Diseases Surveillance System
NSW	New South Wales
PCR	Polymerase chain reaction
SA	South Australia
SACC	Standard Australian Classification of Countries
SARS-CoV-2	Severe acute respiratory syndrome coronavirus 2
SCSD	SA COVID-19 surveillance database
SoNG	Series of National Guidelines
VOC	Variant of concern
VOI	Variant of interest

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Background

Coronavirus Disease 2019 (COVID-19) is a highly infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The disease was first identified in Wuhan, China in December 2019. COVID-19 was declared a notifiable disease in South Australia (SA) under the *Public Health Act 2011* on 28 January 2020. The first notification of a COVID-19 case in SA was on 1 February 2020. The disease spread globally, and a pandemic was declared by the World Health Organization on 11 March 2020. As a result, on 22 March 2020, a Major Emergency was declared under the *Emergency Management Act 2004* in SA in response to the COVID-19 pandemic. The declaration gave the State Co-Ordinator, who was the Commissioner of Police, power to issue directions under the *Emergency Management Act 2004*. These directions were for the health, safety and welfare of the South Australian community and aimed to prevent, reduce, and mitigate the effects of the pandemic. The directions included measures such as lockdowns, capacity restrictions and quarantine orders. The Major Emergency declaration was in place for the entirety of 2021, however, the measures taken under the Act changed throughout 2021.

The South Australian Communicable Disease Control Branch (CDCB) aims to reduce communicable and infectious diseases in SA, including COVID-19. The CDCB plays a key role in the response to COVID-19 in SA by monitoring case numbers, conducting contact tracing, directing people to get tested, isolating cases and quarantining contacts. The CDCB also provides advice and guidance to health professionals, government agencies, businesses and the public on COVID-19 prevention and management. The CDCB works closely with a range of stakeholders to implement effective public health control measures and support COVID-19 affected individuals and communities.

The COVID-19 pandemic response in SA had two phases in 2021: elimination and suppression. The elimination phase began in 2020 with the closure of state and international borders and aimed to prevent any locally acquired community transmission of COVID-19. The closure of state and international borders continued through most of 2021. When South Australia reached vaccine uptake of 80% of people aged 12 years and over, the state borders were opened on 23 November 2021. Following the state border opening, the state moved to the suppression phase which aimed to reduce the level of transmission of COVID-19 in the community, with a focus on high-risk settings and populations. International borders were not opened until February 2022.

This annual surveillance report provides an epidemiological summary of COVID-19 cases reported in South Australia between 1 January 2021 to 31 December 2021.

Methods

The CDCB obtained data on COVID-19 cases, tests, hospitalisations, and outbreaks from various sources in South Australia. The SA COVID-19 surveillance database (SCSD) was used to store the data. All data included in this annual report was extracted on 22 June 2023 for the period of 1 January 2021 to 31 December 2021.

South Australia used the case definition in the Series of National Guidelines (SoNG) for COVID-19 prepared by the Communicable Diseases Network Australia for the Australian National Notifiable Diseases Surveillance System (NNDSS). The case definition changed many times during 2021. For simplicity, probable and historical cases are jointly referred to as probable cases throughout this report. Only confirmed and probable cases are included in this report. A summary of case definitions used is provided in Technical Annex 1.

Hospital admissions were defined as any person admitted to a South Australian public hospital with an acute admission type for greater than 24 hours who also tested positive for COVID-19.

Australian Bureau of Statistics (ABS) Estimated Resident Population, by age and sex -South Australia as of 30 June 2022 were used in age-specific rate calculations and are expressed per 100,000 population.

ABS Estimated Resident Population and Components, Local Government Areas, South Australia as of 30 June 2021 were used in crude rate calculations of cases and tests by local government area and are expressed per 100,000 population.

Accessibility and Remoteness Index of Australia (ARIA) areas were assigned using residential postcode and suburb of cases and people who had a COVID-19 test conducted. The concordance table is based on Australian Statistical Geography Standard data, with revisions and adjustments made for certain South Australian areas by experts in SA Health. In Local Government Area (LGA) maps presented in this report, Metropolitan Adelaide included LGAs in Major Cities of South Australia (as defined by ARIA).

ABS Standard Australian Classification of Countries, 2016 were used to define geographic region where cases most likely acquired their infection, based on their travel history.

Settings related to COVID-19 outbreaks in South Australia between 23 November 2021, and 31 December 2021 have been grouped by setting risk and type of setting as follows:

High-risk settings

- Residential Aged Care Facilities: Includes all aged care facilities.
- Disability Setting: Encompassing disability care providers, supported independent living, and supported residential facilities.
- Correctional Facilities: Covering correctional and detention facilities.
- Educational Settings: Includes private and public educational settings, Catholic schools, department schools, outside school hours care, and childcare facilities.
- Healthcare and Well-being: Encompassing healthcare provided by general practitioners, allied health professionals, outpatient specialists, and hospitals.
- Remote Aboriginal Communities: This category relates to outbreaks in remote or very remote (as defined by ARIA) Aboriginal communities.

Low-risk settings

- Recreational and Events: Covering community services, indoor and outdoor events/attractions, nightclubs, religious services, restaurants, bars, pubs, hotels, indoor gym/exercise groups, and outdoor exercise settings.
- Workplaces and Industry: Covering food processing, distribution, cold storage facilities, meat works, mining sites, offices, public transport, and shopping venues.
- Other Residential Facilities: Covering residential facilities other than aged care and disability care.
- Unknown
- Unknown type of site: Includes cases with unknown settings and those occurring in settings not covered by the specific categories.

The data were cleaned and analysed using R version 4.3.0. and RStudio version 1.1.453.

The data reported here is correct as of the time of publishing but is subject to change.

Case Numbers and Source of Infection

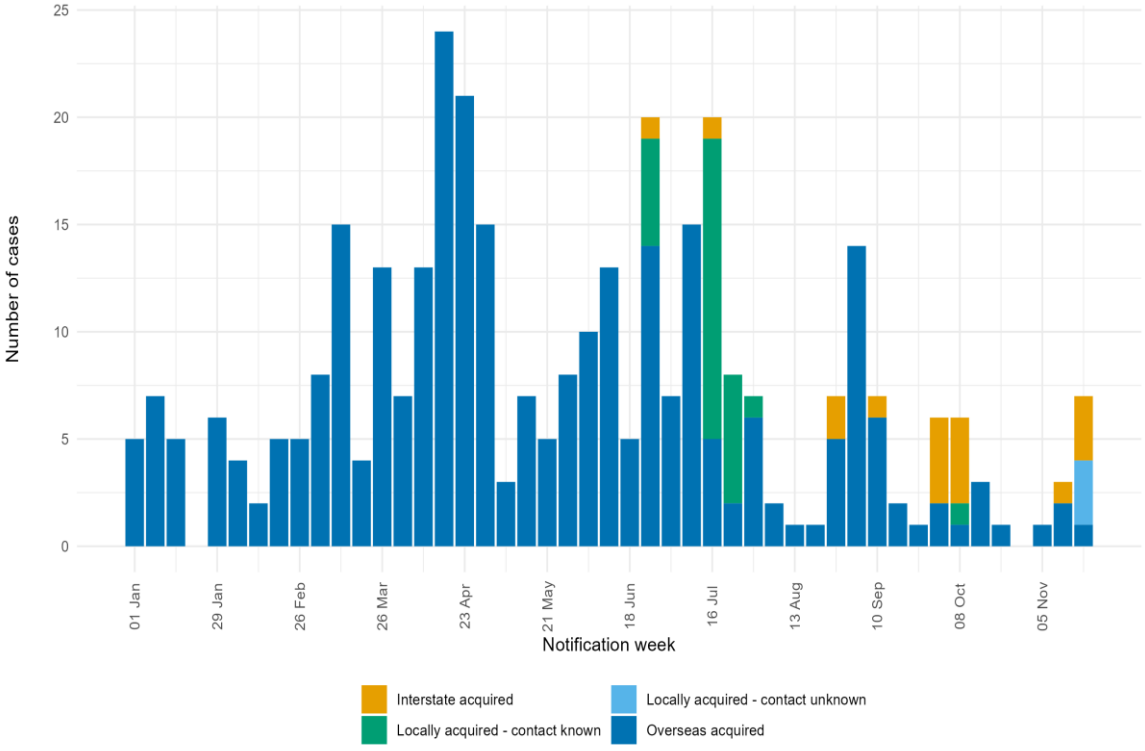
There were 12,664 cases of COVID-19 notified in South Australia between 1 January 2021 and 31 December 2021, inclusive. Most cases (97%; N = 12,322) were notified on or after 23 November 2021 when the state borders were opened, and community restrictions were eased. Among COVID-19 cases in 2021, 99% (N = 12,597) were reported as confirmed cases and only 1% (N = 67) were reported as probable cases.

Prior to the state borders opening on 23 November 2021, all cases notified between 1 January 2021 and 25 June 2021 acquired their infection overseas (Figure 1) and were identified during mandatory medihotel quarantine (see Quarantine location section for further information on medihotel quarantine). New cases peaked in the week starting 16 April 2021 where 24 cases were notified. The increased number of overseas acquired cases at that time was related to global increasing case numbers due to new strains of the virus.

There was an increase in cases in June 2021, partly related to an interstate traveller linked to an interstate outbreak. The case had returned to SA prior to testing positive to COVID-19 but subsequently infected five others in their household. As cases were contained to one household, this was not considered an outbreak, however some additional community restrictions were implemented in response to the locally acquired cases.

There was another increase in cases in July 2021 related to a community outbreak involving 22 cases. The community outbreak was related to a case who acquired their infection interstate and had significant family and community exposures whilst infectious in the community. Between August 2021 and November 2021, a number of interstate acquired cases were notified to CDCB. This is in line with the increasing number of cases notified in other Australian jurisdictions and the gradual reduction of restrictions.

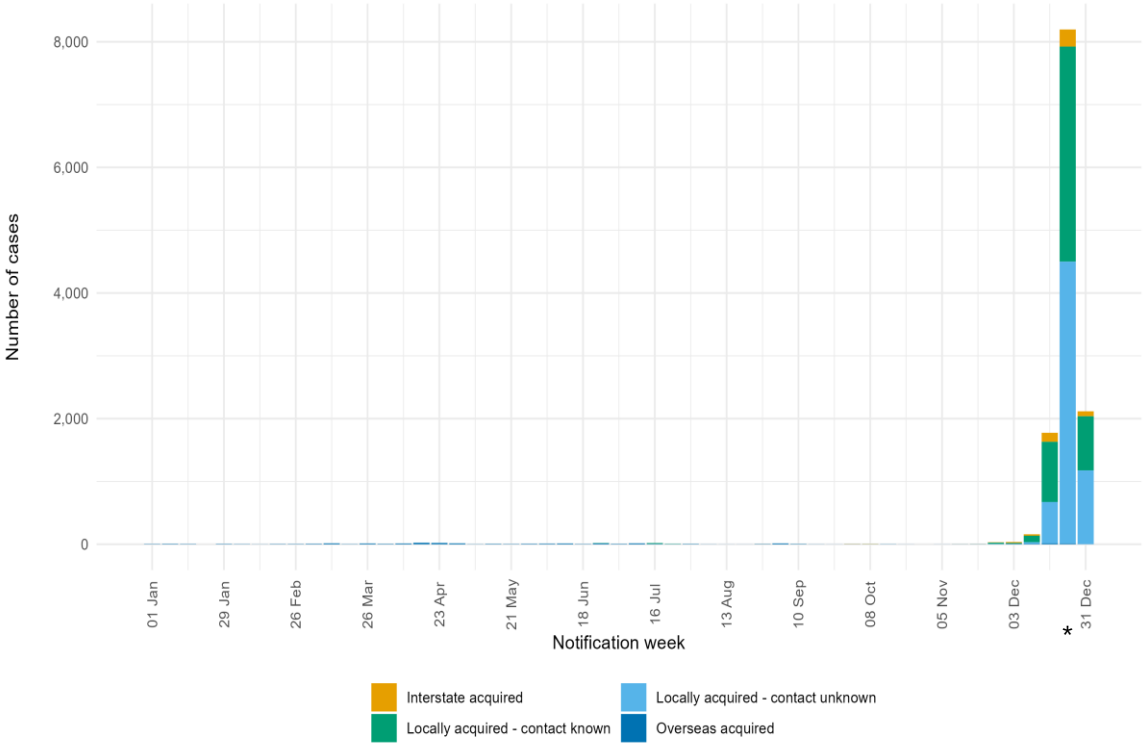
Figure 1: COVID-19 cases by source of infection and notification date, South Australia, 1 January 2021 - 25 November 2021*



*South Australian state borders opened on 23 November 2021

When the state borders were opened on 23 November 2021, case numbers increased exponentially. Cases increased each week, peaking in the week starting 24 December 2021 (N = 8, 196) (Figure 2). However, the last reporting week of the year only included one day 31 December 2021, and 1,174 cases were notified on that one day alone. The source of infection for these cases notified after the borders opened were primarily locally acquired, with or without known contact to a case or outbreak.

Figure 2: COVID-19 cases by source of infection and notification date, South Australia, 1 January 2021 - 31 December 2021



*Notification week starting 31 Dec only includes one day of data

Source of Infection

Of the 342 cases notified prior to the state borders opening, 301 (88%) acquired their infections overseas (Table 1). All cases prior to the borders opening were able to be linked to another confirmed case or location with known cases (epidemiologically linked) to determine the most likely way they were infected. This includes the overseas acquired cases where their assumed epidemiological link was the country they travelled from if COVID-19 was present in the community.

Of the 12,322 cases reported after the state borders opened, only 43 (<1%) acquired their infection overseas. A combined 11,736 (96%) cases acquired their infection locally in South Australia, with 5,379 (44%) having an identified epidemiological link and 6,357 (52%) without an identified epidemiological link.

Table 1: COVID-19 cases by source of infection and notification date, South Australia, 2021

Source of infection	Cases notified between 1 Jan 2021 - 22 Nov 2021		Cases notified between 23 Nov 2021 - 31 Dec 2021	
	Count	%	Count	%
Interstate acquired	14	4	543	4
Locally acquired - contact known	27	8	5,379	44
Locally acquired - contact unknown	0	0	6,357	52
Overseas acquired	301	88	43	<1

Country and Region of Acquisition

Prior to 23 November 2021, the highest proportion of overseas acquired cases were from countries in Southern and Central Asia (39%), Sub-Saharan Africa (14%) and North Africa and the Middle East (13%) (Table 2). After the state borders were opened on 23 November 2021, almost all cases acquired their infection locally in Australia.

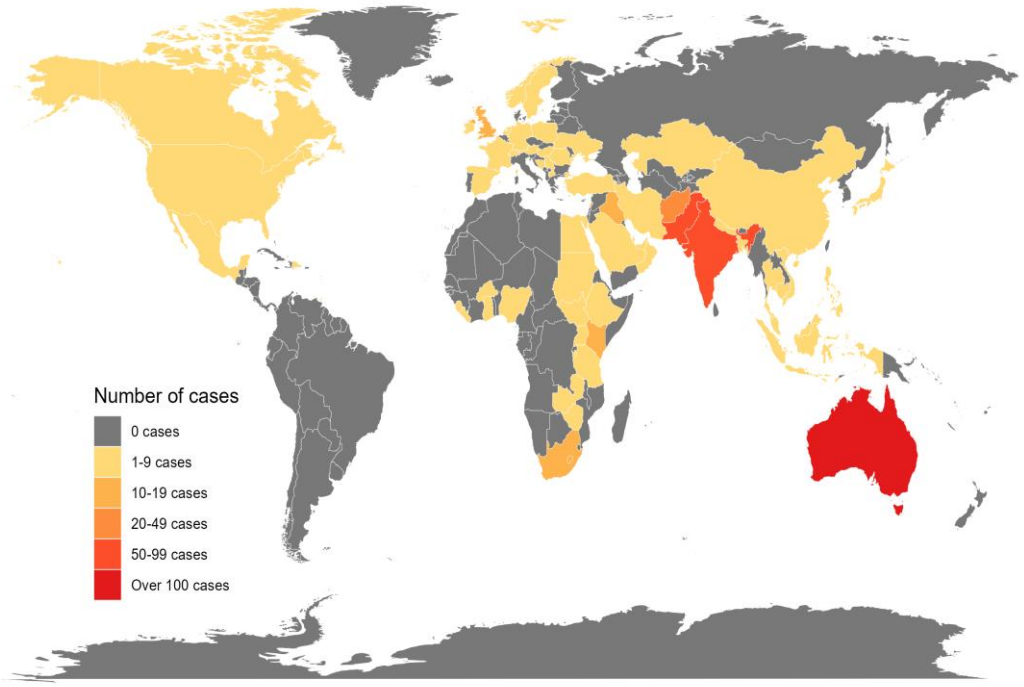
Table 2: COVID-19 cases by region of acquisition*, South Australia, 2021

Region of acquisition	Cases notified between 1 Jan 2021 - 22 Nov 2021		Cases notified between 23 Nov 2021 - 31 Dec 2021	
	Count	%	Count	%
Americas	10	3	2	<1
North Africa and the Middle East	44	13	1	<1
North-East Asia	6	2	2	<1
North-West Europe	20	6	6	<1
Oceania and Antarctica	41	12	12,278	100
Overseas (region not specified)	9	3	11	<1
South-East Asia	15	4	4	<1
Southern and Central Asia	135	39	3	<1
Southern and Eastern Europe	14	4	2	<1
Sub-Saharan Africa	48	14	13	<1

*Region of acquisition defined by Standard Australian Classification of Countries (SACC)

Figure 3 illustrates the country where cases acquired their infection. Cases notified in South Australia during 2021 were acquired from 62 different countries. Ninety-seven percent (N = 12,319) of cases acquired their infection in Australia. India (N = 52), Pakistan (N = 52) and Afghanistan (N = 30) were the next most commonly identified countries for source of infection.

Figure 3: COVID-19 cases by country of acquisition, South Australia, 2021



Case Demographics

Age and sex

In 2021, COVID-19 cases were reported evenly amongst males (N = 6,276, 50%) and females (N = 6,382, 50%) (Table 3). Cases ranged in age from less than one year to 105 years with a median age of 29 years.

The highest number of COVID-19 cases occurred in people aged 20-29 years and accounted for 30% of cases (N = 3,861). Children aged less than 10 years and young people aged 10-19 accounted for eight percent (N = 1,022) and 15% (N = 1,934) of cases, respectively. Persons aged 70 or older accounted for three percent (N = 405) of all cases.

Aboriginal Status

In 2021, Aboriginal and Torres Strait Islander status was ascertained for 11,687 cases (92%). Of these, 158 cases (1% of all COVID-19 cases) identified as Aboriginal and/or Torres Strait Islander.

Table 3: COVID-19 cases by confirmation status, sex, Aboriginal status and age group (years), South Australia, 2021

	Number of cases	% of cases
Total cases notified	**12,664**	**100**
Confirmation status		
Confirmed	12,597	99
Probable*	67	1
Sex		
Female	6,382	50
Male	6,276	50
Not Stated	6	<1
Aboriginal status		
Aboriginal and/or Torres Strait Islander	158	1
No	11,529	91
Not Stated	977	8
Age group (years)		
0-9	1,022	8
10-19	1,934	15
20-29	3,861	30
30-39	2,173	17
40-49	1,437	11
50-59	1,171	9
60-69	603	5
70-79	225	2
80-89	117	1
90+	63	<1
Unknown	58	<1

*Probable refers to probable and historical cases according to the SoNG

Age-specific rates

Age-specific rates provide a clearer picture of the relative impact of COVID-19 across age groups (Table 4). The age-specific rate is the number of cases in each age group divided by the total population in each age group. It is expressed as a rate per 100,000 people. The highest age-specific rate occurred in people aged 20-29 years, reaching 1,653 cases per 100,000 people. The next highest age-specific rates were in people aged 10-19 years and 30-39 years with 911 cases per 100,000 people and 885 cases per 100,000 people, respectively. People aged 90 years or older had a crude rate of 321 cases per 100,000 people.

Table 4: Age-specific rates of COVID-19 by ten-year age groups, South Australia, 2021

Age groups (years)	Number of cases	Estimated resident population	Crude rate (per 100,000)
0-9	1,022	202,999	503
10-19	1,934	212,384	911
20-29	3,861	233,568	1,653
30-39	2,173	245,556	885
40-49	1,437	219,465	655
50-59	1,171	230,780	507
60-69	603	217,389	277
70-79	225	164,645	137
80-89	117	74,798	156
90+	63	19,616	321
Unknown	58		

Vaccination status

On 22 February 2021, the COVID-19 vaccine roll out began in South Australia. Two doses of vaccine were required to be considered fully vaccinated. The roll out was staggered in phases, starting with high-risk groups and front-line health care workers to protect those most at risk of exposure and severe illness. The next phases expanded to broader priority groups and then the general population aged 16 years and above. People aged 12-15 years old became eligible to get vaccinated on 13 September 2021. On 8 November 2021, the booster vaccination program started for people over 18 years old and involved a third dose of vaccine for those who had already had two doses.

Between 22 February 2021 and 7 November 2021, inclusive, 43% of cases (N = 110) had received no doses of vaccine, 12% of cases (N = 31) had received one dose and 8% of cases (N = 21) had received two doses (Table 5). A third booster dose was not available during this period.

Between 8 November 2021 and 31 December 2021, inclusive, 2% of cases (N = 274) had received no vaccine and 5% of cases (N = 592) had received one dose. In the same period, 69% of cases (N = 7,706) had received two doses and 4% of cases (N = 471) had received three or more doses.

Table 5: COVID-19 cases aged 12 years and above by vaccination status, South Australia, 2021

Vaccination status	Cases notified between 22 Feb 2021 - 7 Nov 2021^		Cases notified between 8 Nov 2021 - 31 Dec 2021*	
	Count	%	Count	%
3 or more doses received	N/A	N/A	471	4
2 doses received	21	8	7,706	69
1 dose received	31	12	592	5
No doses received	110	43	274	2
Unknown	91	36	2,046	18

^General population, including children over 12 years old, eligible for two doses of vaccination

*Booster roll out for general population (third dose)

N/A = Not applicable

The COVID-19 vaccination rollout did not start until 22 Feb 2021 and people aged less than 12 years were not recommended for vaccination. Cases notified before 22 Feb 2021 and cases aged less than 12 years have been excluded from the table.

Residential location of cases

Most cases resided in Major Cities of South Australia (N = 9,948, 79%), or Inner Regional South Australia (N = 1,694, 13%) (Table 6). Four percent (N = 552) of cases had an interstate or overseas residential address.

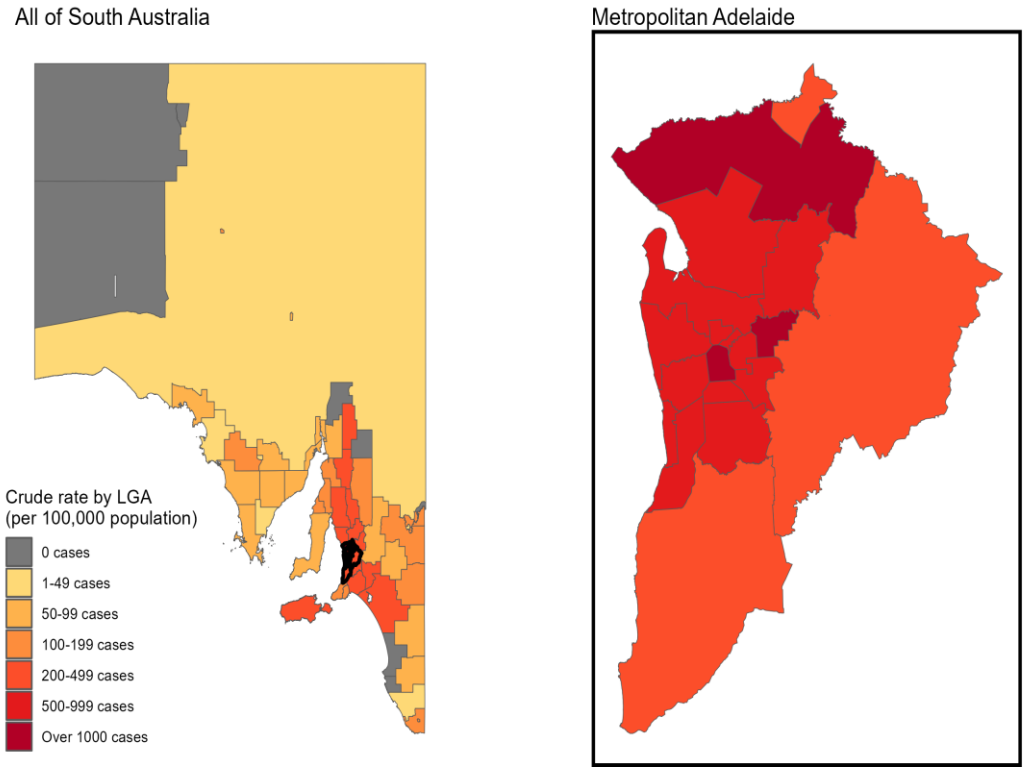
Table 6: COVID-19 cases by ARIA* classification, South Australia, 2021

ARIA classification	Number of cases	% of cases
Major Cities of South Australia	9,984	79
Inner Regional South Australia	1,718	14
Outer Regional South Australia	256	2
Remote South Australia	72	1
Very Remote South Australia	15	<1
Interstate	550	4
Overseas	2	<1
Unknown	67	1

*Accessibility and Remoteness Index of Australia

Figure 4 presents the crude rates of cases by LGA. The crude rate is the number of cases in each LGA divided by the total population in each LGA. It is expressed as a rate per 100,000 people. The LGA with the highest crude rate of cases was Campbelltown with a rate of 1,211 cases per 100,000 people. Other LGAs with high crude case rates were Playford (1,188 cases per 100,000 people), Adelaide (1,182 cases per 100,000 people), Walkerville (989 cases per 100,000 people) and Salisbury (923 cases per 100,000 people).

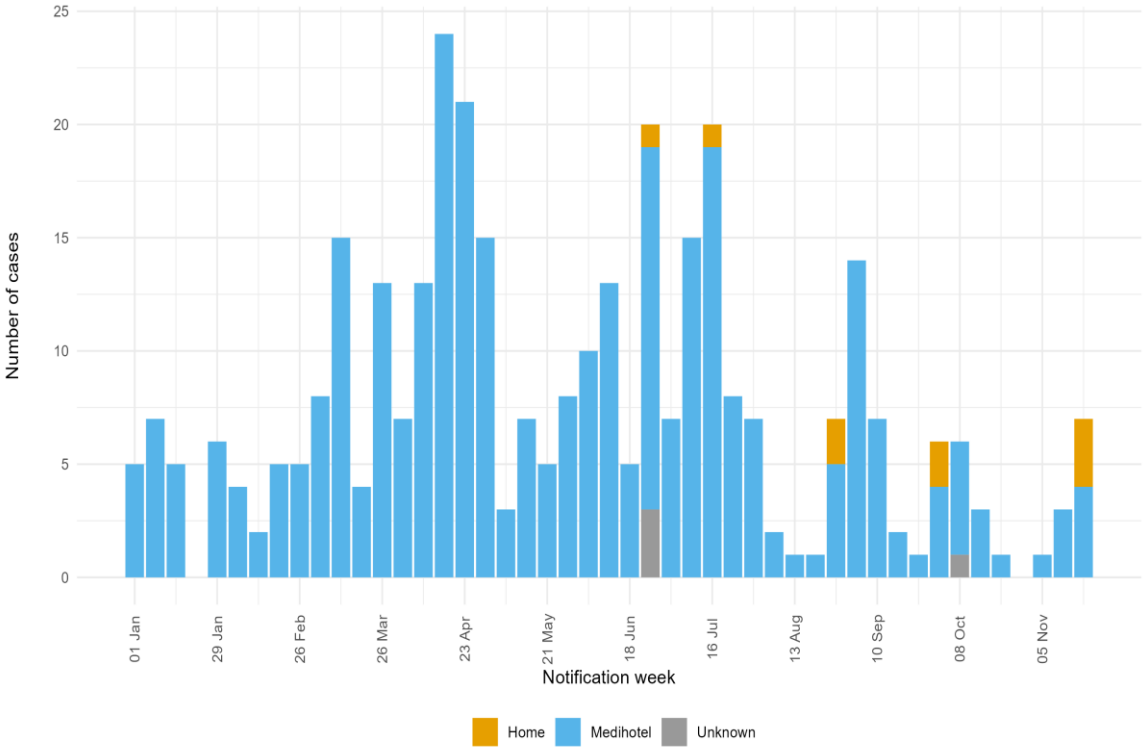
Figure 4: Crude rates of COVID-19 cases with locally acquired infection, by Local Government Area, South Australia, 2021



Isolation location

Between 1 January 2021 and 22 November 2021, cases were primarily isolated in government-operated medihotels. These medihotels were in the Adelaide central business district. The medihotels also accommodated people in quarantine due to being identified as a close contact of a case or being a returned traveller to the state. Prior to the state borders opening, 97% (N = 332) of cases were isolated in medihotels, with only two percent (N = 6) completing isolation at home (Figure 5).

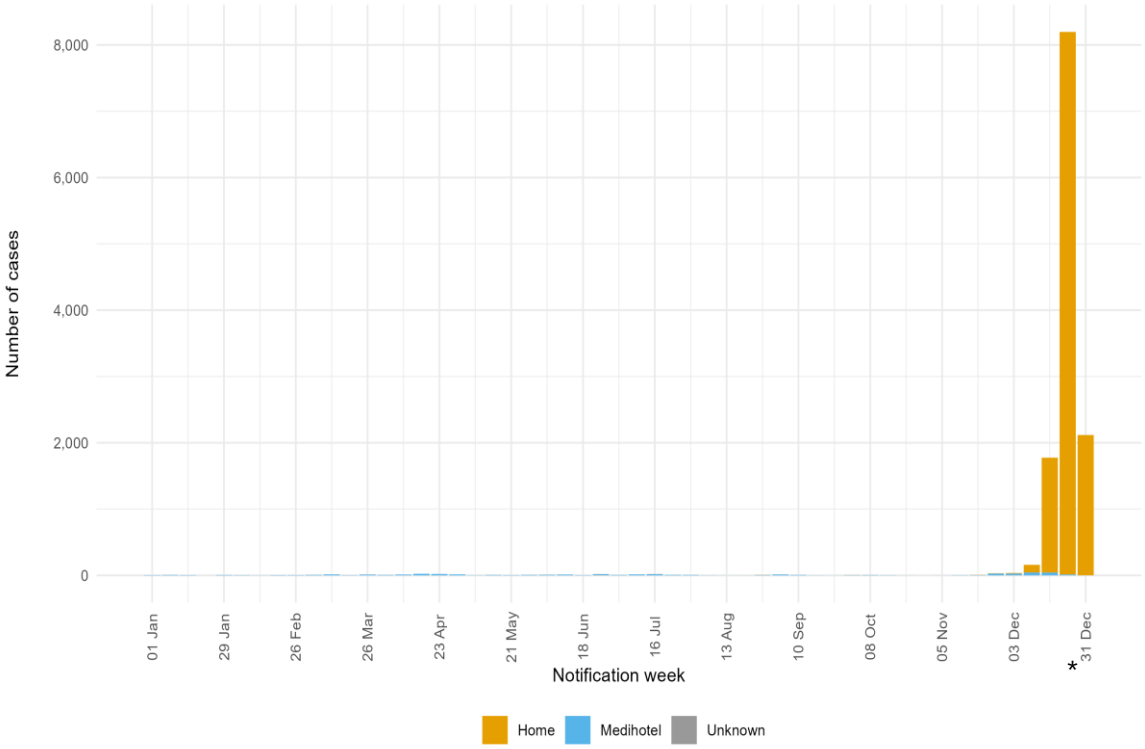
Figure 5: COVID-19 cases by isolation location, South Australia, 1 January 2021 - 25 November 2021*



*South Australian state borders opened on 23 November 2021

After the state borders opened on 23 November 2023, the rapid increase in cases meant it was not feasible to isolate all cases in medihotels. In this period, home isolation became the primary isolation location for cases (99%, N = 12,167). Medihotels were still operating during this time, with 154 cases (1%) completing isolation in a medihotel facility (Figure 6).

Figure 6: COVID-19 cases by isolation location, South Australia, 1 January 2021 - 31 December 2021



*Notification week starting 31 Dec only includes one day of data

Clinical Presentation and Severity

Symptoms

Symptoms were reported in 58% of cases (N = 7,388), at the time of first interview by a public health doctor or officer. Table 7 illustrates the most common symptoms experienced by cases were cough (41%), sore throat (34%), headache (32%), runny nose (31%) and fever (25%).

Table 7: COVID-19 cases by symptoms at time of interview, South Australia, 2021

Symptom	Number of cases	% of cases
Cough	5,132	41
Sore throat	4,359	34
Headache	4,106	32
Runny nose	3,873	31
Fever	3,201	25
Muscle pain	2,047	16
Joint pain	1,413	11
Shortness of breath	1,092	9
Loss of taste	1,028	8
Diarrhoea	880	7
Nausea/Vomiting	807	6
Abdominal pain	688	5
Loss of smell	680	5
Irritability/confusion	601	5
Chest pain	433	3
Acute respiratory distress	33	<1
Pneumonia	24	<1
Chills/rigors	0	0
Other symptoms	118	1
No symptoms recorded	5,276	42

Illnesses and conditions that increase risk of severe illness

No underlying health condition considered a risk factor for severe illness was reported at the time of first interview by a public health doctor or officer for 87% of cases (N = 10,991). The most common self-reported illness or condition that increased the risk of severe illness was asthma (N = 951), followed by diabetes (N = 219), obesity (N = 285), cardiac disease (excluding hypertension) (N = 123) and pregnancy (N = 117) (Table 8).

Table 8: COVID-19 cases by health risk factors*, South Australia, 2021

Risk factor	Number of cases	% of cases
Asthma	951	8
Obesity	285	2
Diabetes	219	2
Cardiac disease	123	1
Pregnancy	117	1
Neurological disorder	71	1
Immunosuppressive condition/therapy	68	1
Chronic respiratory disease	55	<1
Liver disease	49	<1
Renal disease	47	<1
Other medical risk factor	82	1
No risk factor recorded	10,991	87

*Includes illnesses and conditions that increase risk of severe illness

Disease severity

In 2021, 159 (1%) cases were hospitalised for COVID-19, with 21 (<1%) requiring admission to an intensive care unit (ICU). There were 22 deaths reported due to COVID-19 infection, resulting in a case fatality rate of 0.17% (Table 9).

Of the cases notified in 2021 that died due to COVID-19, 16 were females and six were males. Deceased cases ranged in age from less than five to 101 years with a median age of 88 years. No deaths were reported in people that identified as Aboriginal and/or Torres Strait Islander persons.

Table 9: COVID-19 cases by severity, South Australia, 2021

Level of severity	Number of cases	% of cases
Not admitted to hospital	12,535	99
Admitted to hospital*	159	1
Admitted to ICU	21	<1
Deaths	22	<1

*Only includes hospital admissions that met the CDCB hospital definition

Outbreaks

South Australia experienced different phases of the COVID-19 response during 2021 and this required different outbreak definitions. Before the state borders opened on 23 November 2021, South Australia implemented a community-wide outbreak response when there was any local transmission of COVID-19 outside of a quarantine facility, from known or unknown sources, to eliminate COVID-19 from the community. After the state borders opened, COVID-19 was circulating in the community, so outbreak responses became specific to higher risk settings, such as a residential aged care facility, educational facility, or health care facility.

Community outbreaks

From 1 January 2021 to 22 November 2021, a community outbreak was defined as two or more cases amongst individuals who reside in different households but have a common source of infection. The definition excluded linked cases where the infections were limited to one household or group of people isolating together.

There was one community outbreak in 2021 that met the above definition. On 19 July 2021, CDCB was notified of a laboratory confirmed case outside of hotel quarantine. This case was a returned international traveller, who completed mandatory quarantine in a medihotel in Sydney prior to entering South Australia. The case had significant family and community exposures whilst infectious in the community. An outbreak investigation was opened on 19 July 2021.

The outbreak resulted in a further 21 cases being notified to CDCB. Cases included 13 males and nine females ranging in age from two to 87 years old with a median age of 60 years. Calculated onset dates for the cases were between 16 July 2021 and 2 August 2021. The calculated onset date is the earliest date entered into SCSD; this may be the symptom onset date, specimen collection date, or notification date. Seven cases had received at least one dose of vaccine, 14 had received no doses and one had an unknown vaccination status. During the outbreak, six cases were hospitalised, including three requiring admissions to ICU. There were no deaths associated with the outbreak.

The COVID-19 virus from the 22 cases in the outbreak underwent further laboratory testing and the results identified that all 22 cases had the Delta variant, and the viruses were genetically related to each other. The virus in the first case in the outbreak was also found to be genetically related to a case notified in New South Wales (NSW), indicating the source of the infection was likely to be NSW.

Transmission in this community outbreak occurred within multiple households, a restaurant, and a winery. Over 70 public exposure sites were associated with this outbreak, including large retail outlets, supermarkets, food vendors and educational facilities. Digital messaging was used to complement phone calls to direct contacts into quarantine and undergo testing, due to the large number of exposure sites and identified contacts.

Additional restrictions and public health actions were applied to the South Australian community to eliminate transmission of COVID-19 during community outbreaks. Lockdown restrictions were implemented in South Australia from 6:00pm on 20 July 2021 until 12:01am on 28 July 2021. These restrictions were to prevent further spread of the virus in the community and allow time to undertake aggressive contact tracing, isolation and quarantine relating to all identified cases. During the seven-day lockdown, the only reasons to leave home included providing care, essential work, obtaining essential goods, exercise and health care. Some community restrictions, including mandatory mask wearing, limits to how many people could gather in a public or private venue and travel bans, remained until 5 August 2021. The outbreak was closed on 18 August 2021.

Setting outbreaks

From 23 November 2021 to 31 December 2021, COVID-19 became more widespread in the community, as elimination was no longer the target given that vaccination rates were high and the state borders had been opened. The approach to outbreak control was based on the known characteristics of the Delta variant. Outbreak definitions were applied to specific settings, to suppress the spread of COVID-19, specifically in settings where there were people at a higher risk of severe illness. The following were considered high-risk settings: residential aged care facilities, disability care settings, correctional facilities, remote Aboriginal communities, educational facilities and health care settings. Each setting had its own outbreak definition which evolved with the pandemic response.

Outbreaks in low-risk settings were encouraged to use the outbreak management advice provided on the SA Health website to businesses and the community. General surveillance was undertaken by CDCB, with the aim to identify and support large outbreaks in low-risk settings. However, prioritisation required low-risk settings to self-manage outbreaks as much as possible.

During this time, there were 447 outbreaks identified by CDCB in South Australia. Outbreaks in high-risk settings accounted for 42% (N = 188) of outbreaks (Table 10). Outbreaks in low-risk settings accounted for 38% (N = 170) of outbreaks and 20% (N = 89) of outbreaks were in sites where the type of site was not recorded. Of the 12,322 COVID-19 cases notified after the borders opened up until 31 December 2021, 1,040 (8%) were linked to at least one outbreak. There were 1,259 total exposures identified by CDCB. Exposures refers to a case of COVID-19 either being infectious or infected at a setting. To note, this is different to the number of COVID-19 cases as one case may have exposures related to multiple settings.

Table 10: Summary of outbreaks and exposures of COVID-19, by risk level*, South Australia, 23 November 2021 to 31 December 2021

Setting risk	No. of outbreaks	Cases			Exposures		
		Count	Median	Range	Count	Median	Range
High-risk setting	188	352	1	1 - 17	413	1	1 - 19
Low-risk setting	170	530	1	1 - 96	654	2	1 - 98
Unknown	89	158	1	1 - 32	192	1	1 - 32

*Risk level refers to the risk of severe illness in people related to the setting

Table 11 shows the high-risk settings with the most outbreaks were disability care settings (N = 91), residential aged care facilities (N = 54) and educational settings (N = 20). The median number of cases per outbreak for all high-risk settings ranged from one to two. Disability care settings had the highest number of cases involved in a single outbreak (N = 17), followed by educational settings (N = 15). The median number of exposures per outbreak for all high-risk settings ranged from one to three. Disability care settings and educational settings again had the highest individual exposures for any outbreak with a maximum of 19 and 15 exposures, respectively. The low median number of cases and exposures were a result of active investigation and public health action led by CDCB in these high-risk settings to reduce transmission of COVID-19.

There were 43 cases related to outbreaks that required hospitalisation. Residential aged care (N = 15) and disability care settings (N = 11) were the settings with the most related hospitalised cases. There were six deaths in cases related to high risk setting outbreaks; all were in residential aged care settings.

Table 11: Summary of outbreaks of COVID-19, in high-risk settings, South Australia, 23 November 2021 to 31 December 2021

Type of setting	No. of outbreaks	Cases			Exposures		
		Count	Median	Range	Count	Median	Range
Disability Care Settings	91	190	1	1 - 17	210	1	1 - 19
Residential Aged Care Facilities	54	80	1	1 - 6	80	1	1 - 6
Educational Settings	20	48	1	1 - 15	77	2	1 - 15
Healthcare and Well-being	18	22	1	1 - 3	33	1	1 - 9
Correctional Facilities	4	10	2	1 - 5	10	2	1 - 5
Remote Aboriginal Communities	1	2	2	2 - 2	3	3	3 - 3

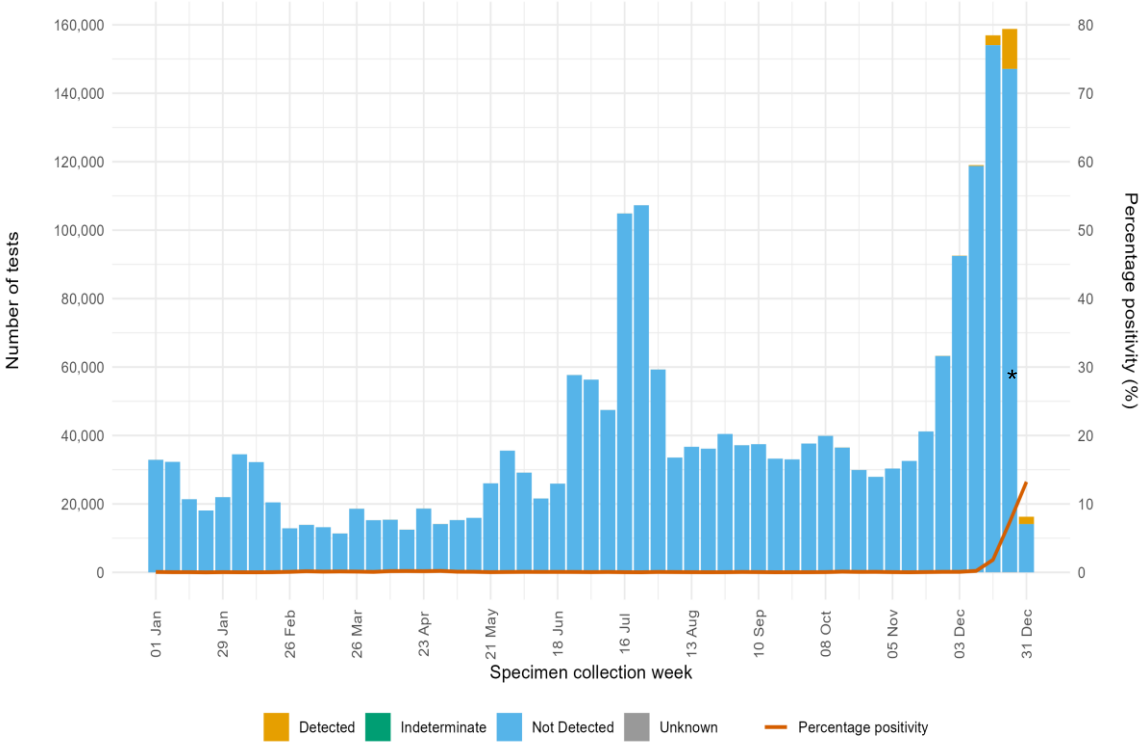
Laboratory Testing

Polymerase chain reaction tests

Notification of COVID-19 in 2021 required confirmation using a laboratory test. CDCB received all COVID-19 polymerase chain reaction (PCR) test results from public and private laboratories collected in South Australia. There were 2,132,999 PCR tests conducted during 2021. Testing numbers increased during the community outbreak that occurred in July and August 2021 and after the state borders opened (Figure 7).

Percent positivity is used to describe how many of the laboratory tests for COVID-19 were positive out of all the tests conducted. The percent positivity was seven percent for the last full reporting week of 2021 (24 December 2021 to 30 December 2021). For all of 2021 prior to the week starting 24 December 2021, the percent positivity remained below one percent.

Figure 7: COVID-19 laboratory PCR tests and percentage positivity, performed in South Australia, 2021



*Notification week starting 31 Dec only includes one day of data

In 2021, 53% (N = 1,140,816) of PCR tests in South Australia were conducted on specimens submitted by males, whilst 46% (N = 987,099) where conducted on specimens submitted by females. Tests were conducted on specimens submitted by people aged less than one to over 100 years with a median age of 38 years.

The highest number of COVID-19 PCR tests were conducted on specimens submitted from people aged 20-29 years for both males (N = 216,859) and females (N = 198,150). More tests were conducted on specimens submitted by males in all age groups except the 10-19 year old, 80-89 year old, 90 or older and unknown age groups, where females had the most tests conducted (Figure 8).

Figure 8: COVID-19 laboratory PCR tests by age group and sex, South Australia, 2021

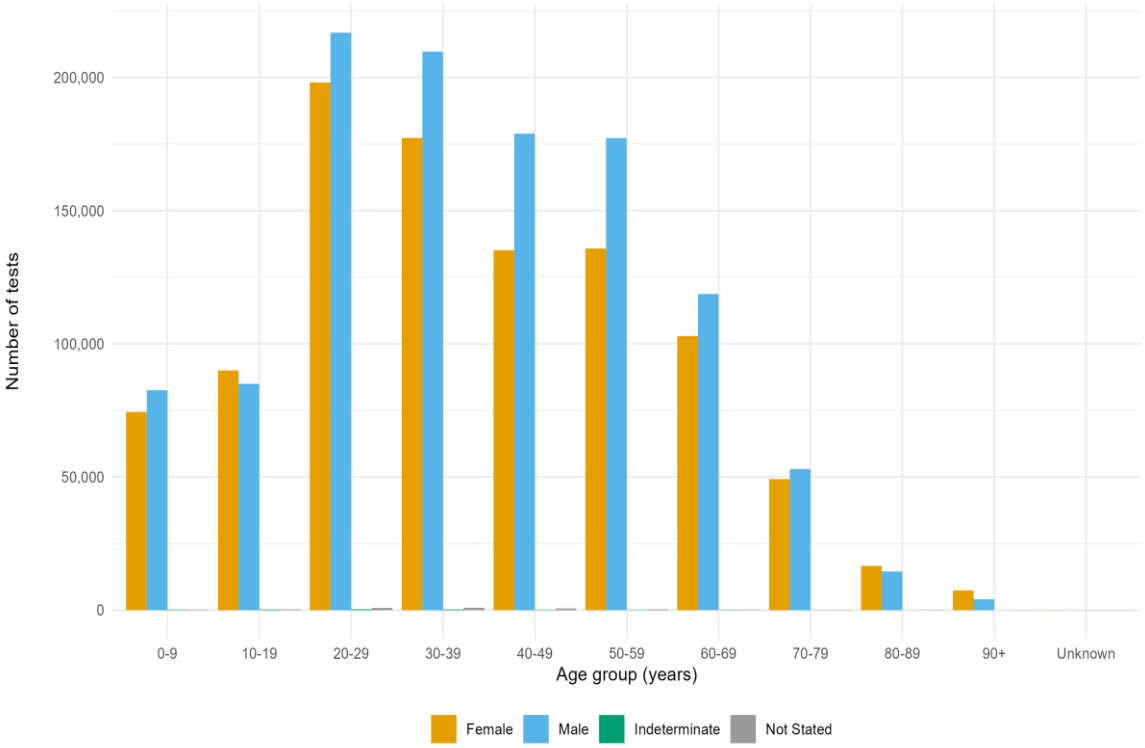
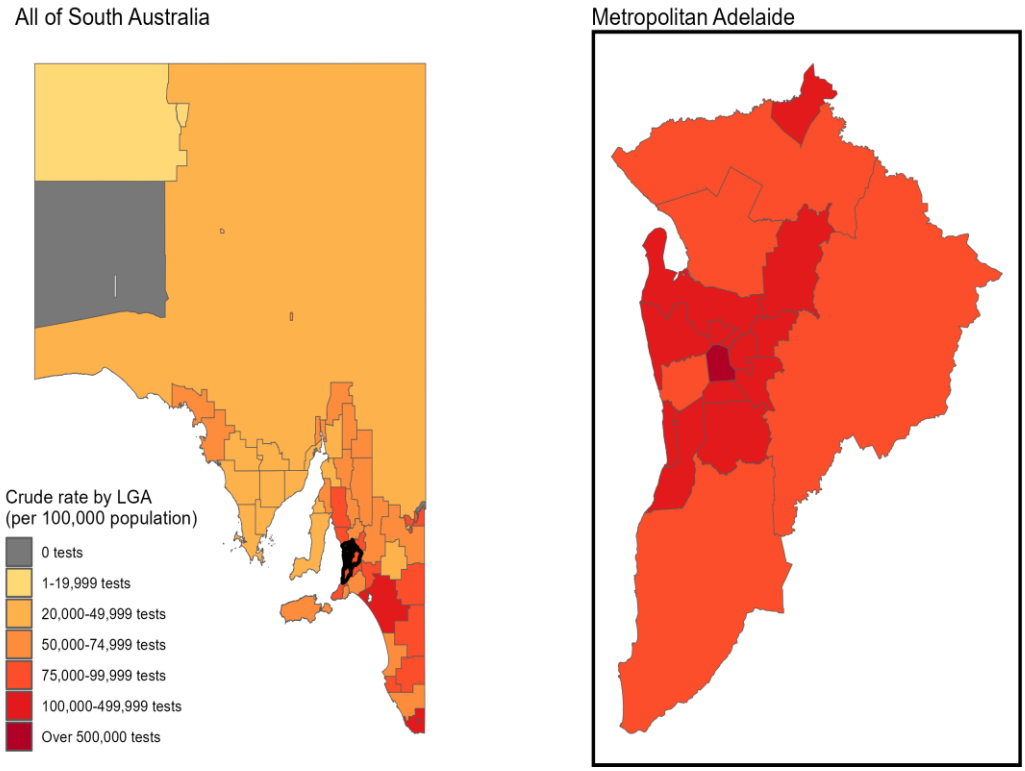


Figure 9 presents the crude rates of tests conducted on specimens collected from people residing in each LGA. The crude rate is the number of tests in each LGA divided by the total population in each LGA. It is expressed as a rate per 100,000 people. The LGA with the highest crude rate of tests was Adelaide with a rate of 536,511 tests per 100,000 people. Other LGAs with high crude test rates were Walkerville (152,256 tests per 100,000 people), Grant (136,425 tests per 100,000 people), Holdfast Bay (132,312 tests per 100,000 people) and Unley (130,062 tests per 100,000 people).

Figure 9: Crude rate of COVID-19 laboratory PCR tests by Local Government Area, South Australia, 2021



Whole genome sequencing

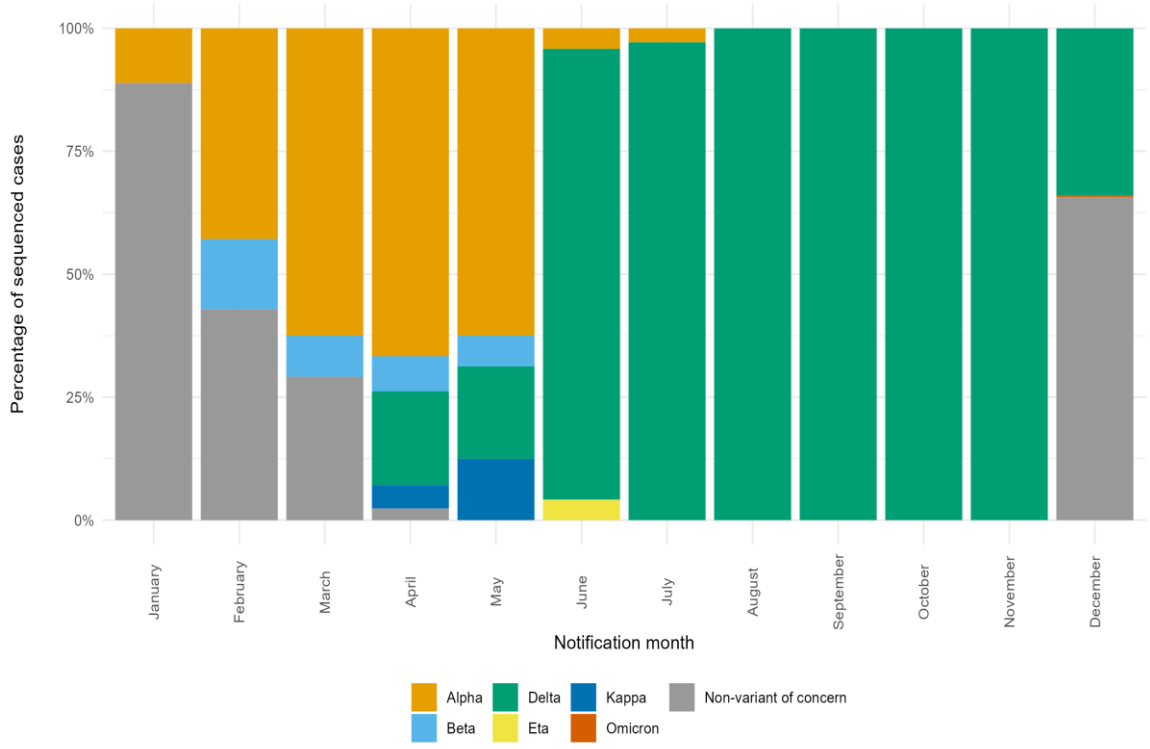
Whole genome sequencing is a laboratory test used to identify the different variants of SARS-CoV-2, the virus that leads to COVID-19. Surveillance of variants can be useful for monitoring variants of concern (VOC) and investigating outbreaks, especially when an epidemiological link between cases cannot be identified or multiple outbreaks occur simultaneously. Whole genome sequencing is not always possible due to availability of sample, the sample not containing enough virus for testing, or capacity of the laboratory.

Some variants of SARS-CoV-2 pose higher risk to public health because they spread easily and can cause more severe illnesses; these are classified as VOC. In 2021, five VOCs were identified in South Australia; Alpha, Beta, Kappa, Delta, and Omicron. If a new variant is identified and their risk is being investigated, they may be classified as a variant of interest (VOI). One VOI was identified in South Australia in 2021; Eta.

Of the 12,664 cases in South Australia in 2021, whole genome sequencing results were reported for 504 cases (4%).

Figure 10 illustrates that from January 2021 to May 2021, Alpha was the dominant VOC identified in South Australia. Delta was first identified in South Australia in April 2021 but did not become the dominant variant until June 2021, where it then remained the dominant variant for the rest of the year. The one Omicron case was notified on 23 December 2021.

Figure 10: COVID-19 whole genome sequencing results by variant of concern, South Australia, 2021



Delta was the dominant VOC in 2021, accounting for 42% (N = 212) of cases. Alpha accounted for 12% (N = 59) of cases whilst the other VOCs and VOI combined accounted for less than three percent of cases (Table 12).

Delta (N = 142) and Omicron (N = 1) were the only VOCs identified in cases who acquired their infection in Australia. The other 141 cases reported with either a VOC or VOI acquired their infections overseas.

Table 12: Summary of whole genome sequencing results in COVID-19 cases, South Australia, 2021

Variant*	Number of cases acquired overseas		Number of cases acquired in Australia		Total cases	
	Count	%	Count	%	Count	%
Variant of concern						
Alpha	59	36	0	0	59	12
Beta	7	4	0	0	7	1
Kappa	4	2	0	0	4	1
Delta	70	43	142	42	212	42
Omicron	0	0	1	<1	1	<1
Variant of interest						
Eta	1	1	0	0	1	<1
Non-variant of concern	23	14	197	58	220	44

*Variant labels taken from WHO

For more information

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Interpreter

www.ausgoal.gov.au/creative-commons

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