

COVID-19 Disease Indicators

For the August 2021
outbreak (interim report)

29 November 2021

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Current situation

On Tuesday 17 August 2021, the Ministry of Health was notified of a positive COVID-19 case in the community with no obvious connections to the border at that time. Later that evening, the Prime Minister announced that New Zealand would move to Alert Level 4 and the country went into lockdown at 11:59pm on 17 August 2021. Whole genome sequencing subsequently confirmed this case as the Delta variant, with a genomic link to the New South Wales COVID-19 outbreak in Australia.

As at 17 October 2021, a total of 1,994 cases have been identified in the community as part of the Delta outbreak. Figure 1 below shows the number of cases reported each day since 17 August 2021. All community cases of COVID-19 sequenced to date have been classified as the Delta variant.

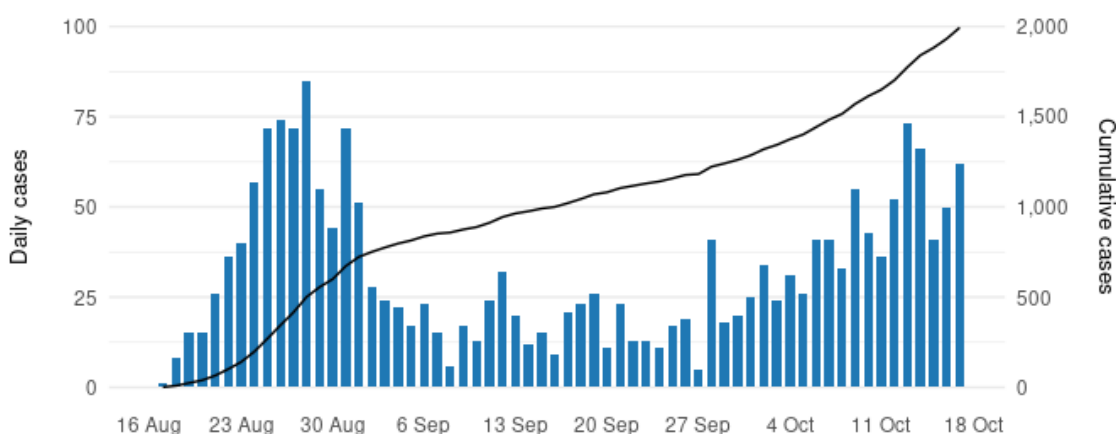


Figure 1: Number of cases reported by date. The blue bars represent daily cases and the black line represents cumulative cases.

The volume of contacts associated with this outbreak is unprecedented. As at 17 October 2021, a total of 39,417 Close Contacts have been identified. This is approximately 6 times the cumulative number of Close Contacts identified in association with all previous community outbreaks in New Zealand.

A summary of the Close Contacts identified in this outbreak to date is provided in Table 1 below. Figure 2 shows the daily and cumulative number of Close Contacts identified, by date and household member status. The cautious public health approach taken in response to the Delta variant means that most of the contacts identified to date have been Close Contacts. The daily number of contacts identified was much larger towards the start of the outbreak, due to the larger number of daily cases and associated large exposure events (e.g. schools, universities, church groups). At present, fewer new Close Contacts are being identified each day, which

reflects the larger proportion of cases made up of previously identified contacts (who were already isolating during their infectious period).

Table 1: Number of Close Contacts and percentage positive, by household member status

Household member*	Count	Positive result (%)
Total	39,417	3.8
Non-household	37,011	0.8
Household	2,406	49.6

*Close Contacts include household members of positive cases. Most of the Close Contacts who have tested positive for COVID-19 to date were household members.

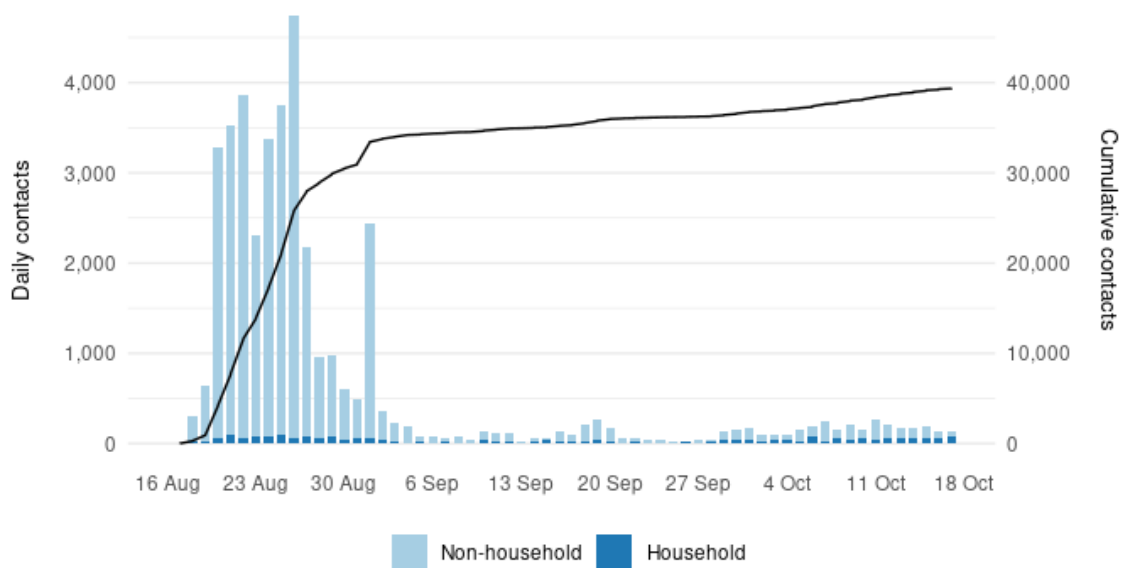


Figure 2: Number of new Close Contacts identified, by date and household member status. The blue bars represent daily contacts identified and the black line represents total cumulative contacts.

To respond to Delta, the contact tracing service is and will continue to scale up, using multiple communication channels to provide public health advice to identified individuals. Many of the COVID-19 disease indicators focus on the 'time to isolation' for identified contacts which relies on the formal measure of the time taken before the initial outbound call is made to contacts, by either a public health unit (PHU) or a contracted National Investigation and Tracing Centre (NITC) call provider.

In the first week of the August 2021 outbreak, the Ministry of Health sent out emails to identified individual contacts and provided a large amount of written

communication to affected groups (particularly school, workplace and church groups) in advance of the initial outbound call being made. The impact of this, in addition to public communication and inbound calls to Healthline, was that contacts were informed and adhering the public health advice, both self-isolating and testing, in advance of receiving the formal outbound call.

Figure 3 below shows the volume of initial outbound calls made to contacts, by day and completion status. The purpose of the outbound call is to formally notify a person of their exposure to COVID-19 and relevant isolation/testing information. Work is currently underway to record communication timing from other sources, including inbound calls to Healthline.

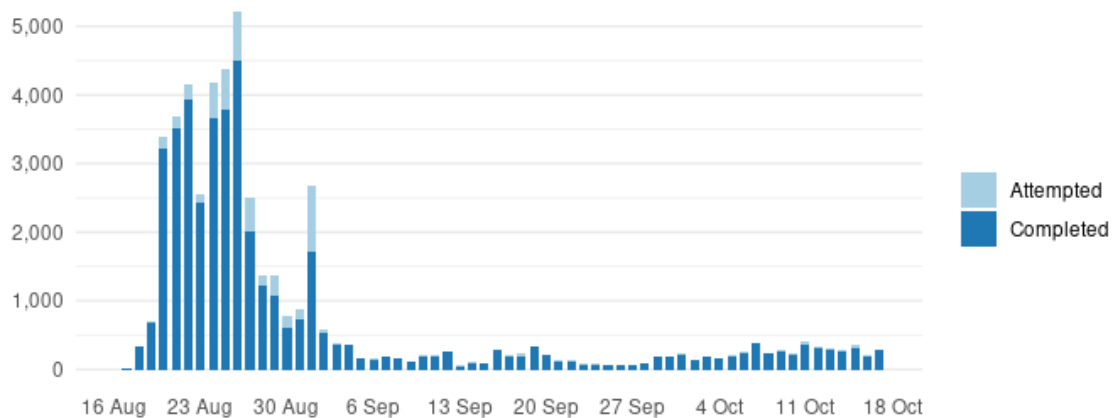


Figure 3: Initial outbound calls made to Close Contacts, by date and completion status.

The contact tracing service is confident that a high proportion of contacts at exposure events were provided the necessary public health advice, as evidenced by the number of test results that were received for individuals prior to them receiving official outbound calls, through other channels including direct communication from educational facilities and workplaces, inbound calls to Healthline, media, as well as the Locations of Interest page on the Ministry of Health website. In addition to this, New Zealand was at Alert Level 4 with significantly restricted movements from 11.59pm Tuesday 17 August.

Despite unprecedented contact volumes, the contact tracing service has been able to rapidly scale to meet demand. This has involved activating surge capacity and adapting existing processes to gain efficiencies.

Management of contacts includes ongoing daily check-ins until relevant isolation and testing requirements have been met. Figure 4 below shows the number of daily contact check-ins by day and completion status, while Figure 5 shows the number of completed daily check-ins by day and contact method. Most daily check-ins have been successful, with only a small proportion of daily check-ins remaining

incomplete each day throughout the outbreak. The proportion of completed daily check-ins has increased throughout the outbreak as volumes have decreased and the contact service has gained efficiencies. Note that most completed daily check-ins have been conducted via email, however a significant number of calls have still been completed each day, due to unprecedented total contact volumes.

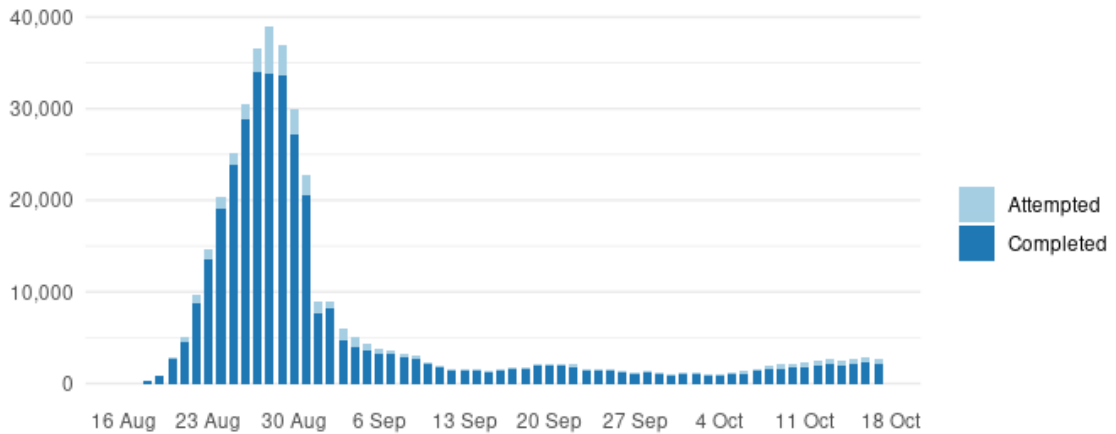


Figure 4: Close Contact daily check-ins, by date and completion status.

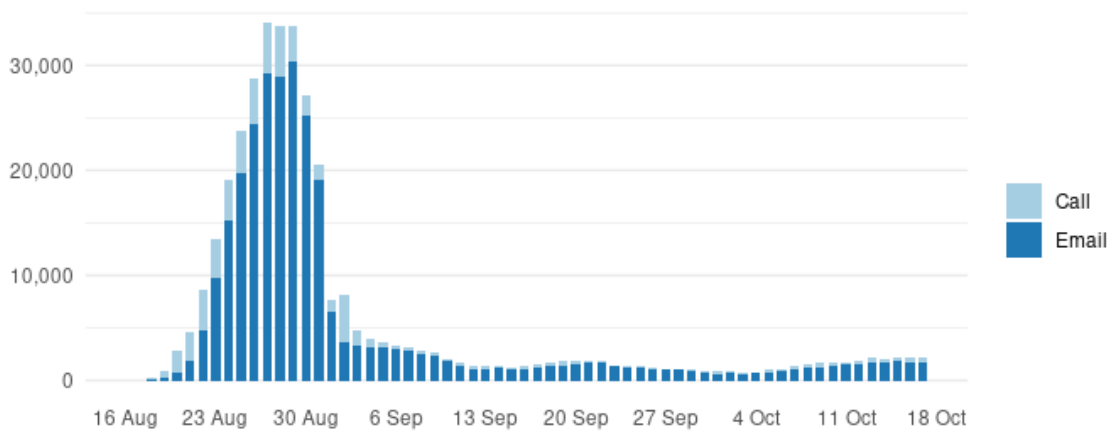


Figure 5: Completed daily check-ins, by date and contact method.

Indicator performance

The COVID-19 disease indicators were developed based on the recommendations in the *Rapid Audit of Contact Tracing for COVID-19 in New Zealand* (April 2020). These metrics provide an end-to-end view of the public health response to COVID-19 for cases and Close Contacts. The indicators are grouped by focus area:

- **System level indicators** provide a view of end-to-end impacts of the public health response and often bring together the collective efforts of a range of parties. These indicators are prefixed with an **S**.
- **Community level indicators** focus on community behaviours and provide measures of the impacts of communication, education, and societal attitudes. These indicators are prefixed with a **C**.
- **Laboratory sector indicators** provide insights into the effectiveness of the testing facilities and programmes. These indicators are prefixed with an **L**.
- **Public health sector indicators** focus on contact tracing and case and contact management. These indicators are prefixed with a **P**.

A list of the COVID-19 disease indicators by focus area is provided in Table 2 below. More detailed descriptions of each indicator are provided in the following sections.

Table 2: List of COVID-19 disease indicators, by focus area group

Group	Indicator	Target
System	S001: Time from exposure to contact isolation / quarantine	≥80% within 96 hours
	S002: Time from case first symptom to contact isolation / quarantine	≥80% within 96 hours
	S003: Time from test sample taken to close contact isolation / quarantine	≥80% within 72 hours
Community	C001: Time from first symptom to test sample taken for positive cases	≥80% within 48 hours
	C002: Average number of NZ COVID Tracer App scans over a 7-day period	Previous highest 7-day average
Laboratory	L001: Time from test sample taken to notification of positive result	≥80% within 24 hours
	L002: Time from receipt of swab at lab to notification of positive result	≥80% within 24 hours
	P001: Time from notification to case interview	≥80% within 24 hours

Group	Indicator	Target
Public health	P002: Time from case notification to isolation / quarantine of contact	≥80% within 48 hours
	P003: Time from close contact identification to isolated / quarantined	≥80% within 24 hours
	P004: Proportion of close contacts identified and traced within 48 hours	≥80% within 48 hours
	P005: Regular monitoring and follow-up of cases and contacts completed	≥90% monitoring of contacts is successful
	P006: Time from exposure event identification to contact identification	≥80% within 24 hours

The indicator targets were set prior to the emergence of the Delta variant. The heightened risk posed by Delta during this outbreak resulted in a cautious public health approach and a much larger proportion of potentially exposed individuals being identified as contacts. As highlighted in the previous section, this cautious approach also means that a greater proportion of identified contacts have been classified as Close (or Close Plus) Contacts – with the current total approximately 6 times the cumulative number of Close Contacts identified in association with all previous community outbreaks in New Zealand. Due to the unprecedented volumes of contacts the contact tracing service is prioritising their efforts to focus on high-risk contacts from higher risk locations (Close Plus Contacts), therefore a summary of indicator performance for Close Plus Contacts only is provided in the following sections.

This interim report summarises COVID-19 disease indicator performance for **cases and Close Plus Contacts** identified up to and including 17 October 2021, during the first nine weeks of the August 2021 outbreak.

Overview

Case and contact volumes associated with this outbreak are unprecedented. As shown in the figures from the previous section, the scale of this outbreak has evolved significantly over time. Figures 6 and 7 below show performance by week throughout the outbreak for key indicators.

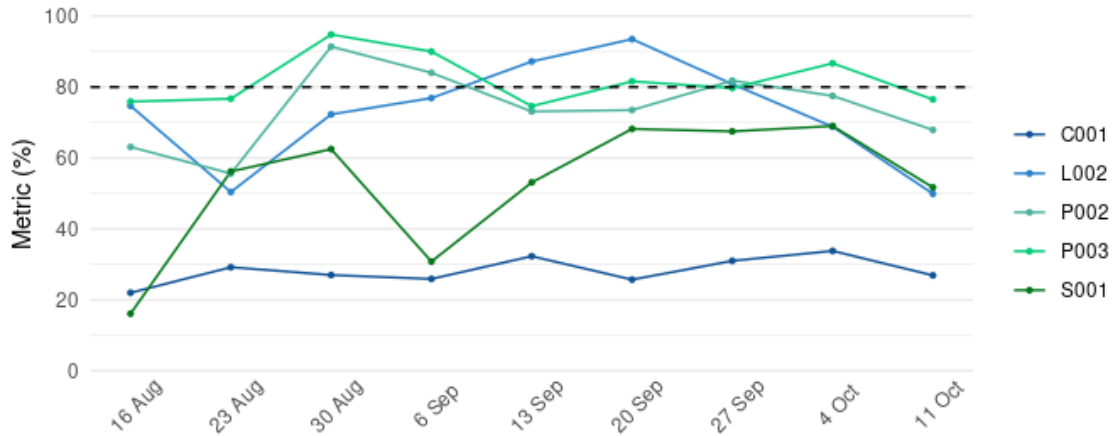


Figure 6: Performance against key indicators, by week case was reported. The dashed line represents the target percentage.

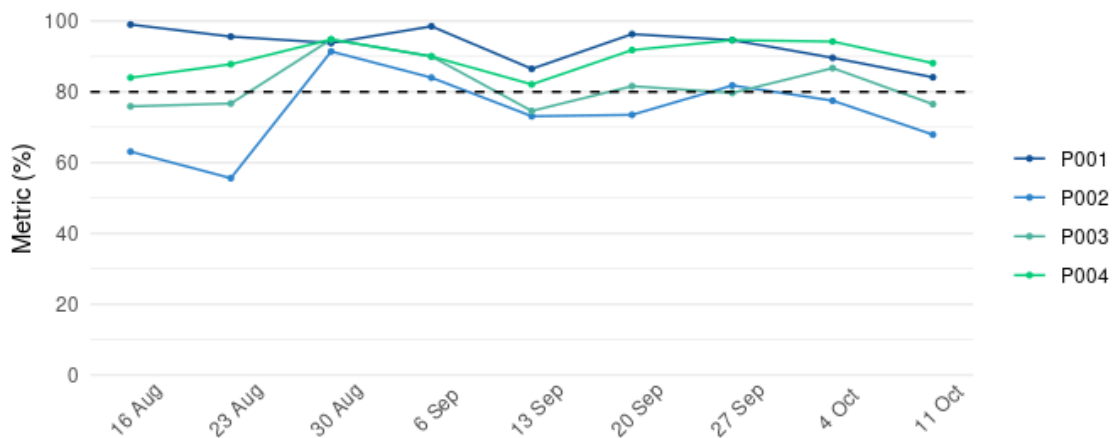


Figure 7: Performance against key public health sector indicators, by week case was reported. The dashed line represents the target percentage.

The indicator metrics for this outbreak have highlighted some system pressures that affect timeliness of the case investigation and contact tracing system performance. At certain times during the outbreak, case investigation took longer due to engagement with complex cases and due to additional information being provided

late in the process. This impacted the public health sector's ability to meet the P002 target of $\geq 80\%$ contacts isolated within 48 hours of case notification. Overall, the average time from case notification to case interview for all reported cases is 9.4 hours. The average time to case interview has fluctuated each week, with the weekly average ranging from 4.4 hours to 14.7 hours at different times during the outbreak.

Another critical point is the time taken to identify contacts, gather information, and load them into the National Contact Tracing Solution (NCTS) which must be completed before individual contact can be made. For exposure events in settings such as schools, workplaces, etc. this information may take time to gather and input into the NCTS, which affects the ability to meet the indicator target time frames (as the indicators are measured based on time points recorded in the NCTS). System improvements to capture a contact's interaction with the contact tracing system more accurately have been implemented through the development of a public facing webform to enable people to enter their details if they were at a Location of Interest (this went live on 28 August 2021). Additionally, recent improvements include a direct live feed from the national COVID-19 test result database into NCTS. This is estimated to have reduced the time between a positive result being reported and a case being loaded into NCTS by approximately 7.5 hours on average.

System level

Performance against the three system level indicators (**S001**, **S002**, and **S003**) is summarised in this section. The purpose and target of each indicator is described in the table below.

Table 3: System level indicators

Indicator	Description	Target
S001: Time from exposure to contact isolation / quarantine	A person is at risk of transmitting the disease from shortly after exposure to an index case until they are isolated / quarantined. This indicator measures the 'risk period' from exposure to isolation / quarantine.	≥80% within 96 hours
S002: Time from case first symptom to contact isolation / quarantine	The speed at which contacts are traced is critical to limiting the risk that a person could transmit the disease to others. This indicator measures the 'risk period' from case symptom development to isolation / quarantine of the close contact.	≥80% within 96 hours
S003: Time from test sample taken to close contact isolation / quarantine	This measures health system ability to respond to cases of disease by incorporating the identification, investigation, and contact tracing components of the health system.	≥80% within 72 hours

Performance by ethnicity group

Metrics for Māori, Pacific, Other, and Overall ethnicity groups are provided in the table below. Here ethnicity refers to the prioritised ethnicity of the Close Plus Contact.

Table 4: System level indicator metric performance by Māori, Pacific, Other, and Overall ethnicity groups

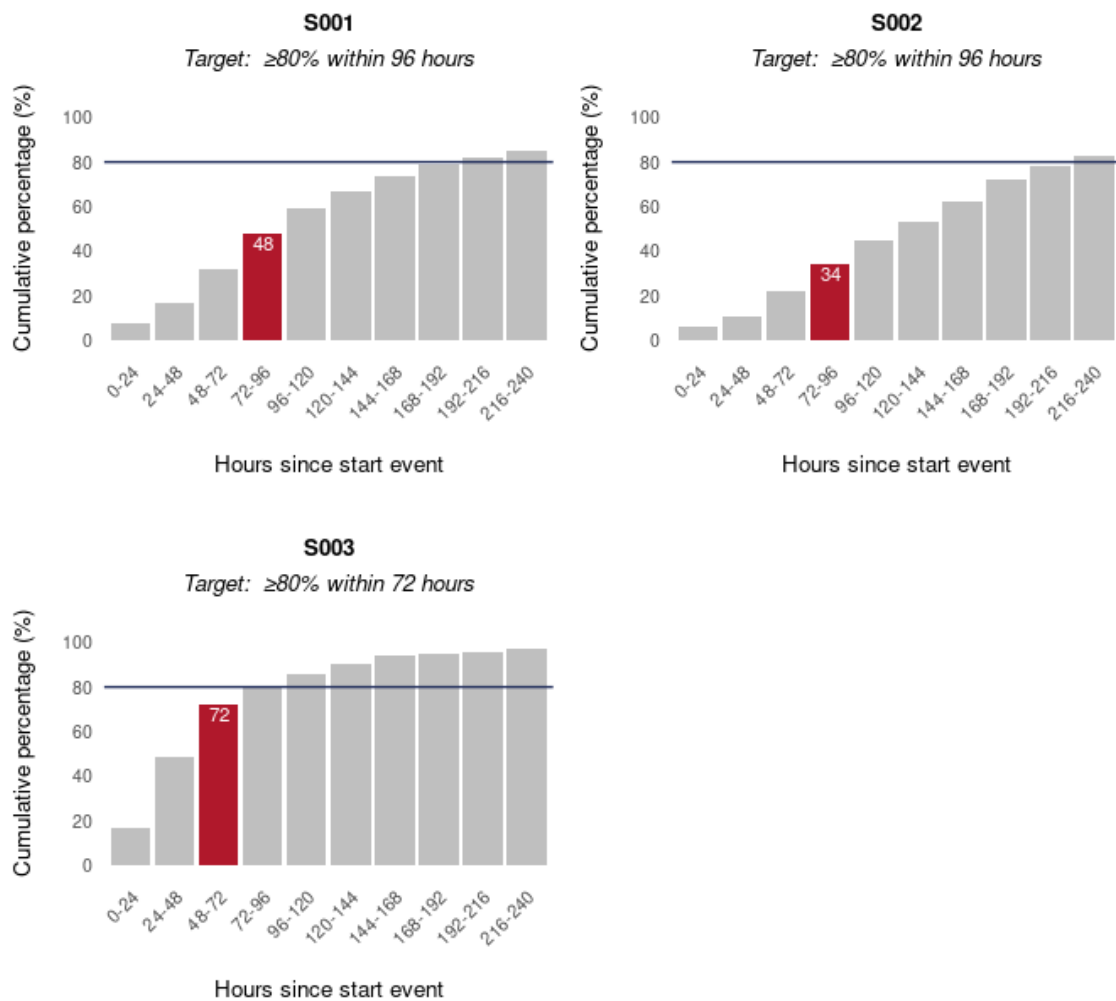
Indicator	Target	Metric (%)			
		Māori	Pacific	Other	Overall
S001: Time from exposure to contact isolation / quarantine	≥80% within 96 hours	49	51	45	48
S002: Time from case first symptom to contact isolation / quarantine	≥80% within 96 hours	38	36	26	34

Indicator	Target	Metric (%)			
		Māori	Pacific	Other	Overall
S003: Time from test sample taken to close contact isolation / quarantine	≥80% within 72 hours	74	76	65	72

Metrics marked '-' have no available data or are not applicable.

Performance plots

These plots show overall indicator performance by day (24 hours) since the indicator start event. The coloured bar represents the target time period, and whether this target was met (green) or not met (red). The horizontal line indicates the target percentage.



Community level

Performance against the two community level indicators (**C001** and **C002**) is summarised in this section. The purpose and target of each indicator is described in the table below.

Table 5: Community level indicators

Indicator	Description	Target
C001: Time from first symptom to test sample taken for positive cases	The speed at which a person recognises their symptoms and accesses testing is critical to limiting disease spread. This indicator takes into consideration matters of public communications and engagement, health literacy, as well as availability and access to testing facilities. The time period measured is from the symptom onset date, as recorded in EpiSurv, to the date/time the laboratory received the sample. The time between a sample taken and the receipt date/time of the sample at the laboratory, including transport time, will affect indicator performance.	≥80% within 48 hours
C002: Average number of NZ COVID Tracer App scans over a 7-day period	Having a high proportion of New Zealanders using the NZ COVID Tracer app is important to enhance our ability to contact trace when there is a community case. The longer it takes to identify and isolate an infected individual, the greater opportunity there is for onwards transmission of the virus.	Previous highest 7-day average

Performance by ethnicity group

Metrics for Māori, Pacific, Other, and Overall ethnicity groups are provided in the table below. Here ethnicity refers to the prioritised ethnicity of the case.

Table 6: Community level indicator metric performance by Māori, Pacific, Other, and Overall ethnicity groups

Indicator	Target	Metric (%)			
		Māori	Pacific	Other	Overall
C001: Time from first symptom to test sample taken for positive cases	≥80% within 48 hours	30	29	29	29
C002: Average number of NZ COVID Tracer App scans over a 7-day period	Previous highest 7-day average	-	-	-	-

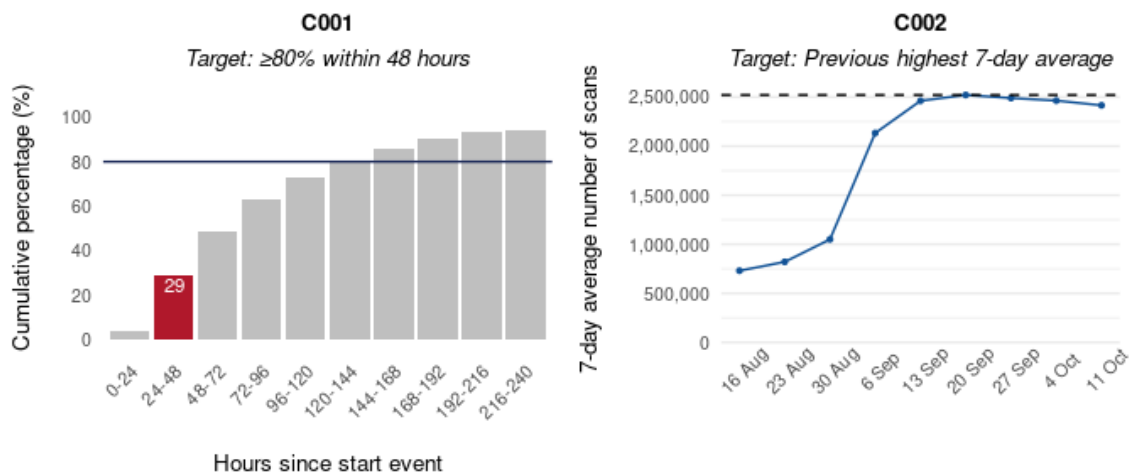
Metrics marked '-' have no available data or are not applicable.

Note that this tabular breakdown is not applicable for indicator **C002**, so performance against this indicator is presented in the following subsection.

Performance plots

The **C001** plot below shows overall indicator performance by day (24 hours) since the indicator start event. The coloured bar represents the target time period, and whether this target was met (green) or not met (red). The horizontal line indicates the target percentage.

The **C002** plot shows the weekly (7-day) average number of NZ COVID Tracer App scans, including manual entries, since the start of the outbreak. The dashed line represents the highest 7-day average for the entire NZ COVID Tracer App time series.



Laboratory sector

Performance against the two laboratory sector indicators (**L001** and **L002**) is summarised in this section. The purpose and target of each indicator is described in the table below.

Table 7: Laboratory sector indicators

Indicator	Description	Target
L001: Time from test sample taken to notification of positive result	Measures health system performance including ability to collect samples, transport the sample to the laboratory, analyse and report positive result to Medical Officer of Health.	≥80% within 24 hours
L002: Time from receipt of swab at lab to notification of positive result	Measures laboratory system ability to analyse and report a positive result to the Medical Officer of Health.	≥80% within 24 hours

Performance by ethnicity group

Metrics for Māori, Pacific, Other, and Overall ethnicity groups are provided in the table below. Here ethnicity refers to the prioritised ethnicity of the case.

Note that data is not yet available for indicator **L001**, as the time a test sample is taken is not consistently recorded in the national COVID-19 test result database. Data for this indicator will be available once electronic ordering of laboratory tests is implemented across the country, which will enable this time point to be consistently recorded in the national database.

Table 8: Laboratory sector indicator metric performance by Māori, Pacific, Other, and Overall ethnicity groups

Indicator	Target	Metric (%)			
		Māori	Pacific	Other	Overall
L001: Time from test sample taken to notification of positive result	≥80% within 24 hours	-	-	-	-
L002: Time from receipt of swab at lab to notification of positive result	≥80% within 24 hours	71	65	63	66

Metrics marked '-' have no available data or are not applicable.

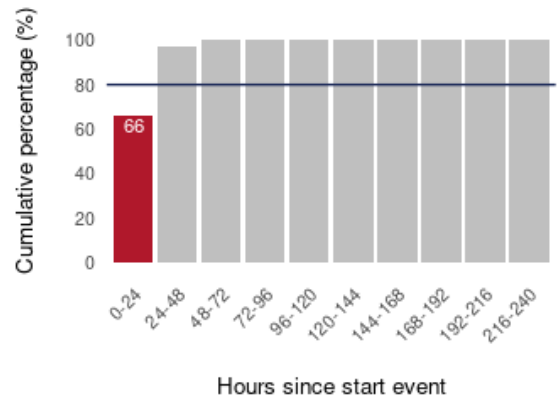
Performance plots

These plots show overall indicator performance by day (24 hours) since the indicator start event. The coloured bar represents the target time period, and whether this target was met (green) or not met (red). The horizontal line indicates the target percentage.

L001
Target: $\geq 80\%$ within 24 hours

No data for this period

L002
Target: $\geq 80\%$ within 24 hours



Public health sector

Performance against the six public health sector indicators (**P001**, **P002**, **P003**, **P004**, **P005**, and **P006**) is summarised in this section. The purpose and target of each indicator is described in the table below.

Table 9: Public health sector indicators

Indicator	Description	Target
P001: Time from notification to case interview	This indicator measures the resource capacity of the public health system to complete case interviews in a timely manner.	≥80% within 24 hours
P002: Time from case notification to isolation / quarantine of contact	This indicator measures the resource capacity of the public health system to interview cases, identify Close Contacts, place an outbound call to those Close Contacts, and ensure that they are isolated / quarantined.	≥80% within 48 hours
P003: Time from close contact identification to isolated / quarantined	The case interview, and subsequent investigation, leads to the identification of Close Contacts who should be contacted and isolated / quarantined as fast as possible to limit the risk of secondary transmission.	≥80% within 24 hours
P004: Proportion of close contacts identified and traced within 48 hours	Once a Close Contact is identified, as many contacts as possible should be reached and isolated / quarantined as soon as possible. This indicator measures the proportion of Close Contacts who are identified within 48 hours of case notification and are traced within that 48 hours.	≥80% within 48 hours
P005: Regular monitoring and follow-up of cases and contacts completed	Service providers are expected to contact and confirm isolation (monitoring of unwell people) and quarantine (follow-up of well people), health status and welfare check on people in isolation and quarantine at regular intervals. This indicator measures the proportion of people in isolation / quarantine who have been contacted at the expected frequency identified.	≥90% monitoring of contacts is successful
P006: Time from exposure event identification to contact identification	The case interview, and subsequent investigation, leads to the identification of Close Contacts who should be isolated / quarantined as fast as possible to limit the risk of onward transmission.	≥80% within 24 hours

Performance by ethnicity group

Metrics for Māori, Pacific, Other, and Overall ethnicity groups are provided in the table below. Depending on the indicator, ethnicity can refer to the prioritised ethnicity of the case or Close Plus Contact.

Table 10: Public health sector indicator metric performance by Māori, Pacific, Other, and Overall ethnicity groups

Indicator	Target	Metric (%)			
		Māori	Pacific	Other	Overall
P001: Time from notification to case interview ¹	≥80% within 24 hours	86	95	94	93
P002: Time from case notification to isolation / quarantine of contact ²	≥80% within 48 hours	73	77	64	72
P003: Time from close contact identification to isolated / quarantined ²	≥80% within 24 hours	82	85	76	81
P004: Proportion of close contacts identified and traced within 48 hours ²	≥80% within 48 hours	92	92	85	90
P005: Regular monitoring and follow-up of cases and contacts completed ³	≥90% monitoring of contacts is successful	62	76	75	73
P006: Time from exposure event identification to contact identification ²	≥80% within 24 hours	90	63	63	70

Metrics marked '-' have no available data or are not applicable.

¹Ethnicity refers to the prioritised ethnicity of the case.

²Ethnicity refers to the prioritised ethnicity of the Close Plus Contact.

³Ethnicity refers to the prioritised ethnicity of the relevant case or Close Plus Contact.

Performance plots

These plots show overall indicator performance by day (24 hours) since the indicator start event. The coloured bar represents the target time period, and whether this target was met (green) or not met (red). The horizontal line indicates the target percentage.

