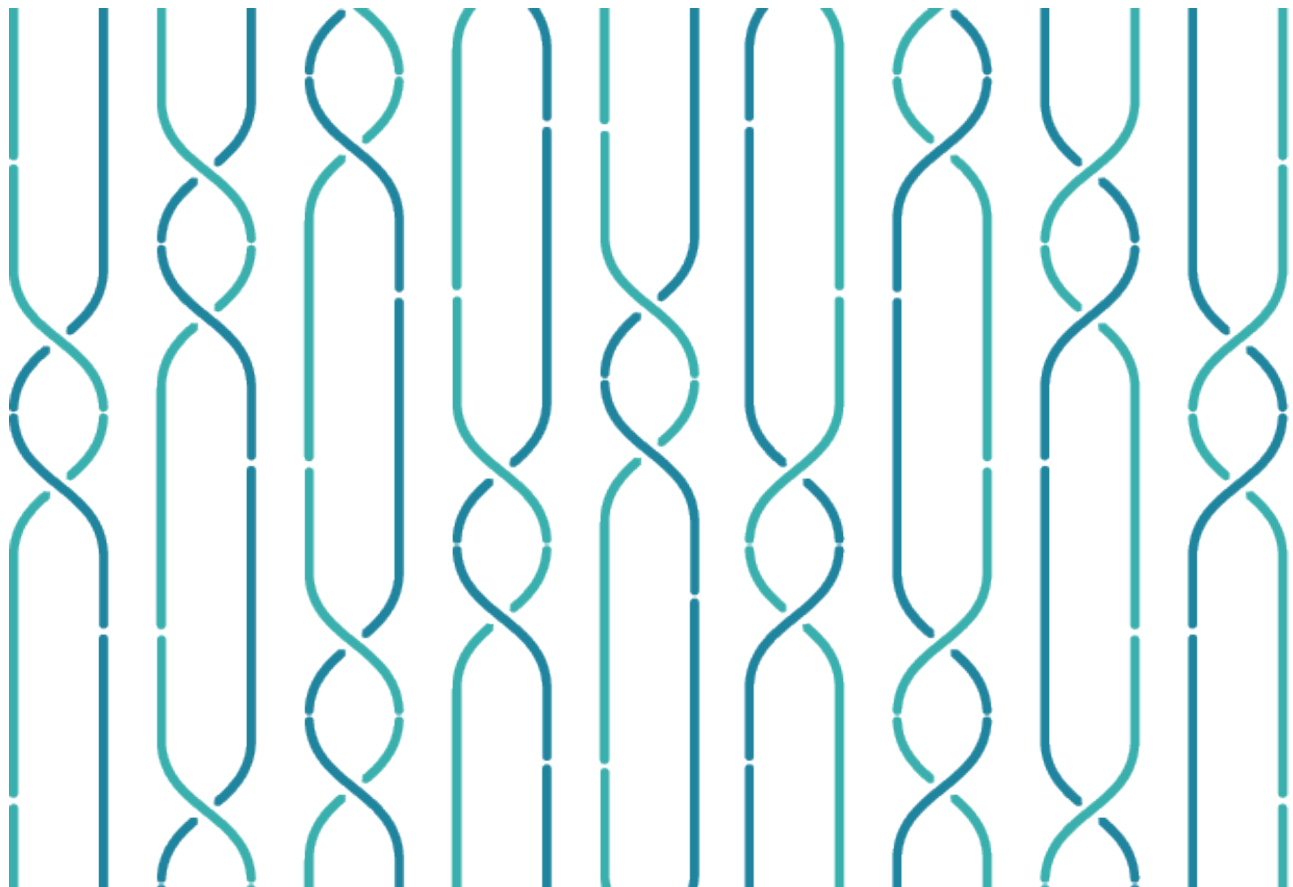




COVID-19 TRENDS AND INSIGHTS REPORT

30 September 2022



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Purpose of report

This report comments on trends in the New Zealand COVID-19 outbreak, including cases, hospitalisations and mortality. It also comments on international COVID-19 trends and the latest scientific insights related to outbreak management. The report relies on data that may be subject to change or are incomplete. An unknown proportion of infections are not reported as cases, this proportion may differ by characteristics such as ethnicity or deprivation group. Therefore, any differences in reported case rates must be interpreted with caution.

Executive summary

Overall, all the key measures (levels of viral RNA in wastewater, reported case rates, hospital admission rates and mortality) used to monitor the COVID-19 epidemic have declined in the last two months. Trends are tracking to levels last seen in late February 2022. In the most recent 2 weeks, wastewater RNA levels and reported case rates have stabilised, hospital admission rates and mortality counts have continued to decrease.

BA.5 is the dominant subvariant accounting for an estimated 91% of cases; this is consistent with wastewater findings. In the two weeks ending 16 September, variants BA.5, BA.4, BA.4.6 and BA.2 (including BA.2.75 and BA.2.75.2) were detected in community samples. While we may see one of these sub-variants slowly predominate over the next few months, they are not expected to cause a distinct wave.

Over the next couple of weeks, it is probable that cases, hospitalisations and mortality will continue to stabilise or slightly increase. As immunity decreases over time or if a substantially more transmissible variant emerges, incidence of infection may increase in the future.



Key insights

National Trends

Cases	The 7-day rolling average of reported case rates was 28.1 per 100,000 population for the week ending 25 September. This was a 4.5% increase from the previous week, which was 26.9 per 100,000.
Wastewater	Wastewater quantification indicates a slight decrease in the past week.
Hospitalisations	The COVID-19 hospital admissions rate has been decreasing since the mid-July 7-day rolling average peak of 2.5 per 100,000, to a 7-day rolling average of 0.6 per 100,000 for the week ending 18 September.
Mortality	As of 25 September, there were 1,979 deaths attributed to COVID-19 in 2022. The weekly number of deaths attributed to COVID-19 has continued to decrease.
Variants of Concern	BA.5 makes up 91% of sequenced community cases seen in two weeks (03 September to 16 September), followed by BA.4.6 (3% of cases), BA.4 (3% of cases) and BA.2 (2% of cases).

Māori

Cases	The 7-day rolling average of reported case rates was 20.9 per 100,000 population on 25 September, lower than for European or Other, however there may be case ascertainment biases.
Hospitalisations	The age-standardised Māori cumulative hospitalisation rate for COVID-19 is 2.1 times higher than European or Other.
Mortality	The age-standardised cumulative mortality rate for Māori is 2.0 times higher than European or Other

Pacific peoples

Cases	The 7-day rolling average of reported case rates was 19.5 per 100,000 population on 25 September; there is likely ascertainment bias, but also to note that this rate is not age adjusted.
Hospitalisations	Pacific peoples have the highest cumulative rate of hospitalisation with COVID-19 which is approximately 2.8 times higher than European or Other.
Mortality	Pacific peoples have the highest age-standardised cumulative mortality risk of any ethnicity, 2.5 times that of European or Other.



International Insights

Globally, in the week ending 25 September, the number of new weekly cases decreased as compared to the previous week, with over 3.0 million new cases reported. The number of new weekly deaths decreased by 18% compared to the previous week, with over 8,900 fatalities reported.

Globally, between 26 August to 26 September 2022, 106,735 SARS-CoV-2 sequences were submitted to GISAID, with Omicron accounting for 99.9% of sequences.



National summary of epidemic trends

Case trends

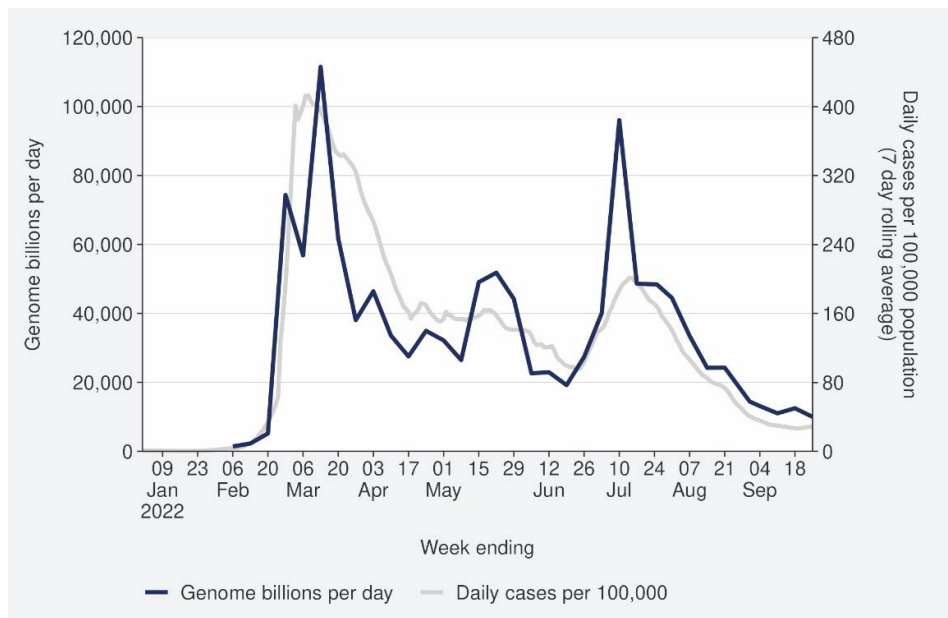
All evidence continues to support stabilisation in incidence in the community: reported¹ case rates and levels of viral ribonucleic acid (RNA) in wastewater have been declining since 10 July but both measures have been relatively constant in the recent weeks to 25 September (**Figure 1**).

Modelling scenarios that account for changes in masking and contact quarantine on 12 September and assume no new variants, indicate case rates are expected to remain stable or slightly increase in the coming months (see **Figure 2**)².

The general population reported case rate for the week ending 25 September was 28.1 per 100,000, a 4.5% increase from the previous weeks 26.9 per 100,000. The trend was similar for all regions (see **Figure 3: Regional reported case rates from January to 25 September 2022** **Figure 3**) and age groups (see **Figure 4**).

Table 1 in the appendix provides information on specific rates.

Figure 1: National wastewater trends (SARS-CoV-2 genome copies)³ compared with reported cases



Sources: ESR SARS-CoV-2 in wastewater update for week ending 25 September 2022 and NCTS/EpiSurv as at 2359hrs 25 September 2022

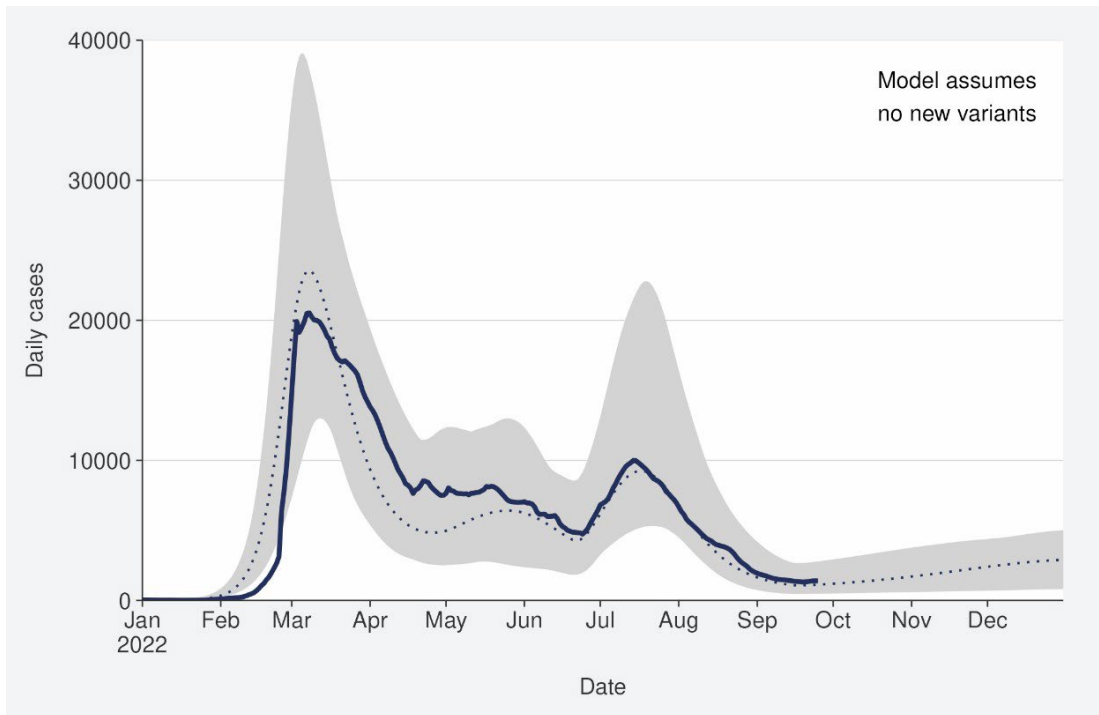
¹ Since 24 February 2022, most testing has been through self-administered rapid antigen tests (RATs) which require self-reporting of results. Therefore, it is likely that many infections are not detected or reported, and the proportion of infections reported ('reported cases') may differ by age, ethnicity and deprivation.

² See the online glossary for modelling assumptions.

³ Wastewater levels cannot be used to predict numbers of cases but does indicate trends in the infection rates.



Figure 2: COVID-19 Modelling Aotearoa scenarios⁴ compared with national reported case numbers

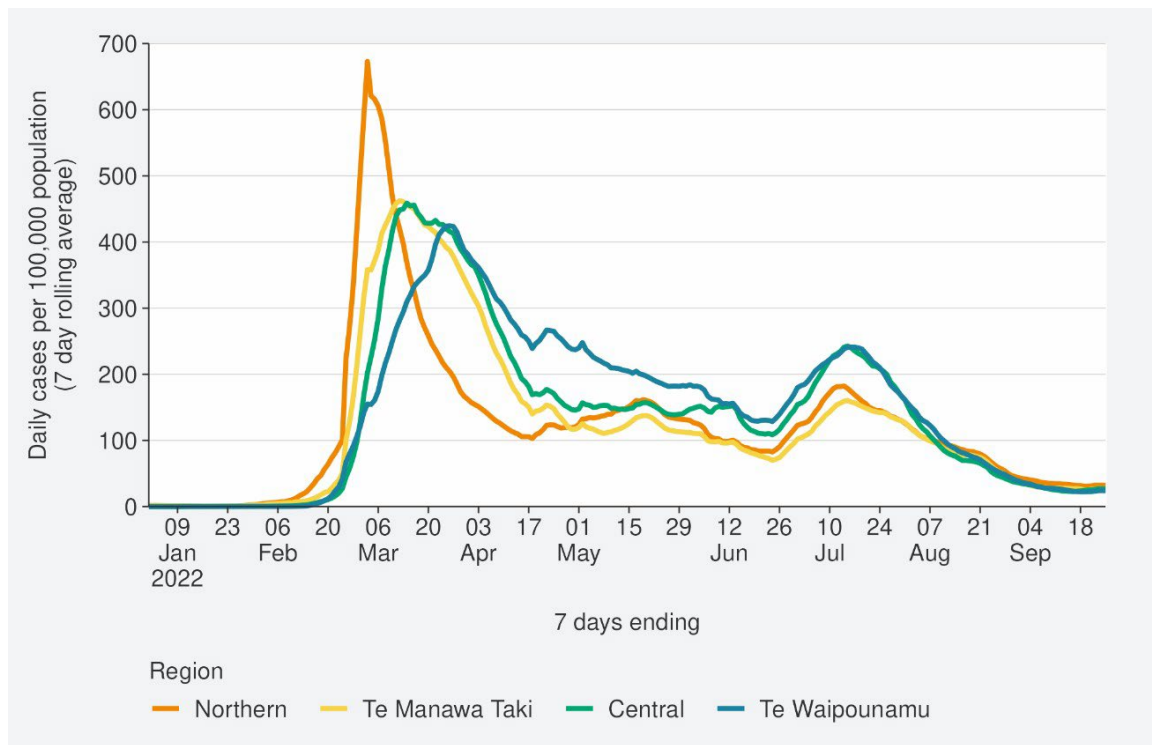


Sources: COVID-19 Modelling Aotearoa, ordinary differential equation model, September 2022, and NCTS/EpiSurv as at 2359hrs 25 September 2022

⁴ The 'July' BA.5 scenario assumes previous infection provides greater protection against reinfection and severe disease, consistent with emerging international evidence. It also incorporates updated data and future projections of uptake of second boosters, and an earlier transition to BA.5, consistent with the timing of cases and hospitalisations in New Zealand.

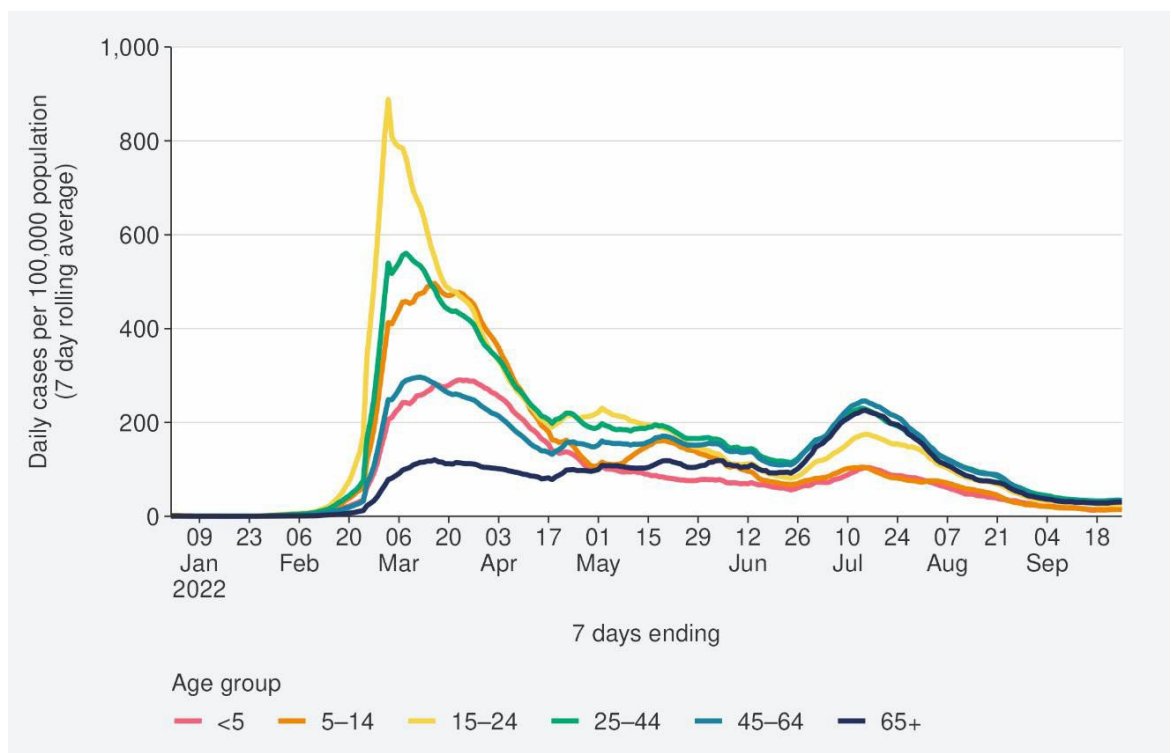


Figure 3: Regional reported case rates from January to 25 September 2022



Source: NCTS/EpiSurv as at 2359hrs 25 September 2022

Figure 4: National reported case rates by age from January to 25 September 2022



Source: NCTS/EpiSurv as at 2359hrs 25 September 2022

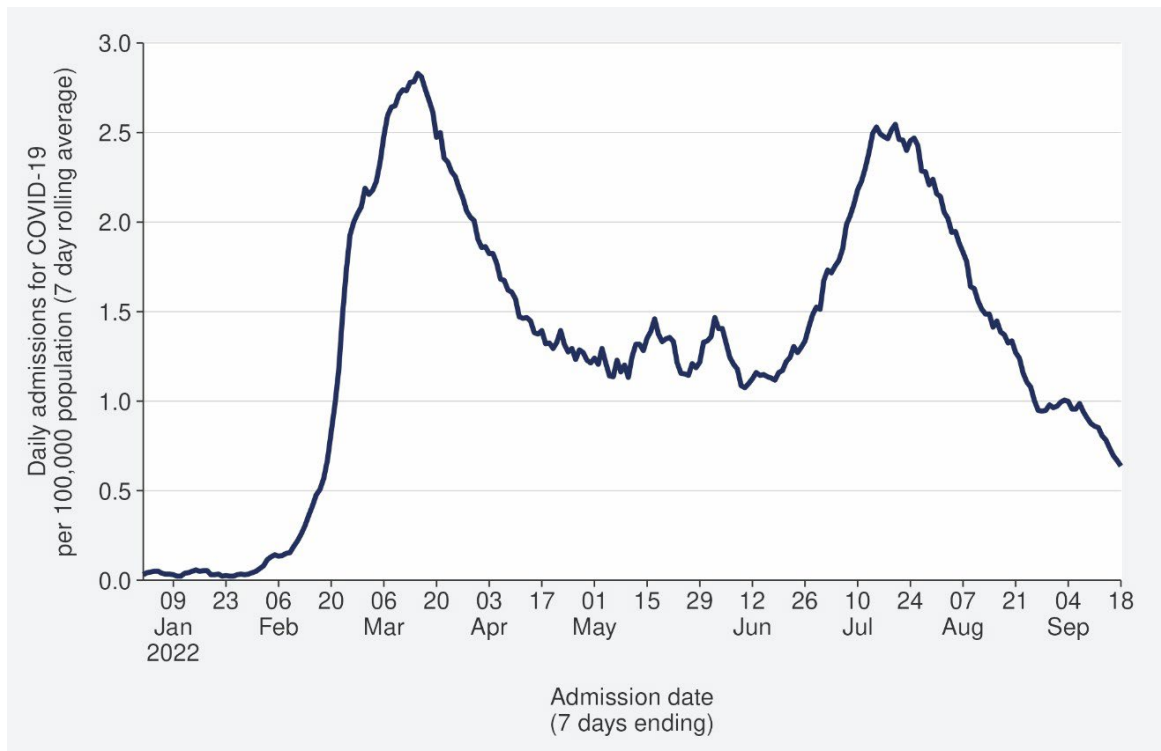


Hospitalisation and mortality trends

Hospitalisation

As seen in **Figure 5**, the national COVID-19 hospital admissions rate “for” COVID-19 has been decreasing since mid-July, to a 7-day rolling average of 0.6 per 100,000 of population for the week ending 18 September.⁵ Despite case rates in the most recent July peak being half that of in the March peak (201.2 and 413.2 per 100,000, respectively), the hospitalisation rate in the July peak was only slightly lower than that in March. This can be explained by the strong association between age and poor outcomes after infection. The reported case rates in those aged >65 years peaked 75% higher in July than in March (refer back to **Figure 4**). Modelling scenarios suggest that current hospital occupancy is tracking near the higher range of the prediction and is expected to remain stable or slightly increase in the coming months (see **Figure 6**).

Figure 5: National hospital admissions rate for COVID-19, February to 18 September 2022

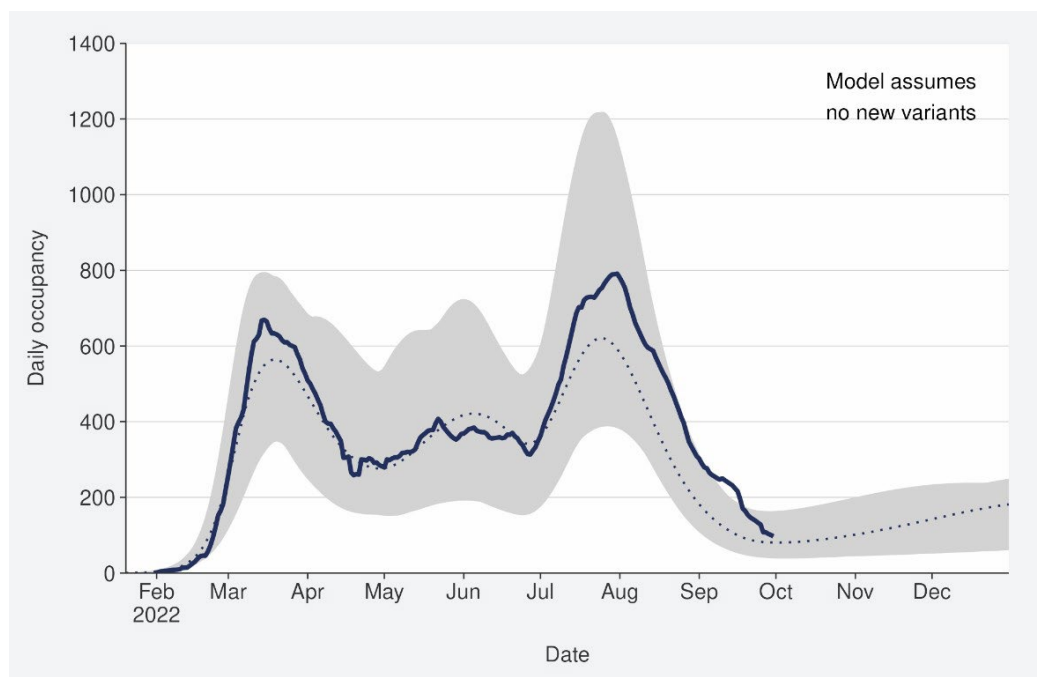


Source: NMDS/Inpatient's admissions feed as of 20 September 2022 data up to 18 September 2022

⁵New hospital admissions who had COVID-19 at the time of admission or while in hospital; excluding hospitalisations that were admitted and discharged within 24hrs. The 'For' measure excludes those who are identified as incidental with COVID-19, such as injuries. Recent trends are subject to revision. Please see glossary for further caveats.



Figure 6: COVID-19 Modelling Aotearoa hospital occupancy⁶ scenario⁷ compared with national observed occupancy



Sources: COVID-19 Modelling Aotearoa, ordinary differential equation model, September 2022, and Ministry of Health reported hospital occupancy data 25 September 2022

Mortality

From the first week of January to 25 September 2022, there were 2,974 deaths among people who died within 28 days of being reported as a case and/or with the cause being attributable to COVID-19 (that is an underlying or contributory cause) (see **Figure 7**)⁸.

Of these deaths in 2022 that have been formally coded by cause of death, 1,246 (47%) were determined to have COVID-19 as the main underlying cause. COVID-19 contributed to a further 733 (28%) deaths and another 669 (25%) people died of an unrelated cause (**Figure 7**). Deaths have been declining after peaking in the last week of July, when just over 150 people died with COVID-19 as their underlying or a contributing cause. As seen with hospitalisations, due to the strong association of increasing age and increasing mortality risk, the patterns in mortality over time strongly reflect the case rates in those aged >65 years.

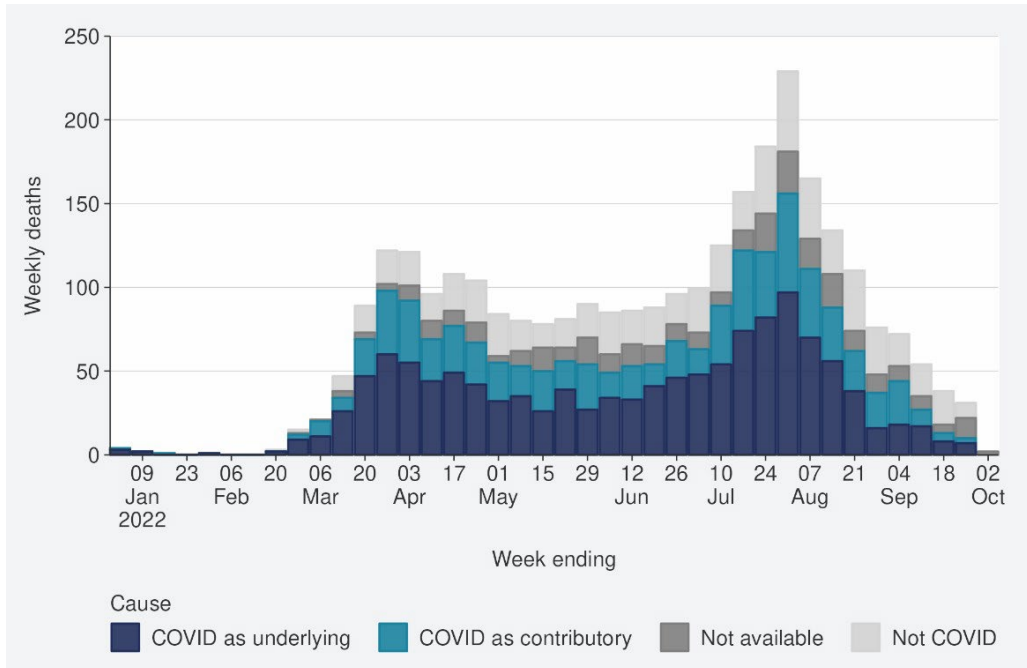
Deaths are currently tracking below the lower range of the modelled scenario and are predicted to slightly increase in the coming months (see **Figure 8**).

⁶ These data are for all hospitalisations with COVID-19, including those that were incidental, such as injuries.

⁷ The 'July' scenario assumes previous infection provides greater protection against reinfection and severe disease, consistent with emerging international evidence. It also incorporates updated data and future projections of uptake of second boosters, and an earlier transition to BA.5, consistent with the timing of cases and hospitalisations in New Zealand

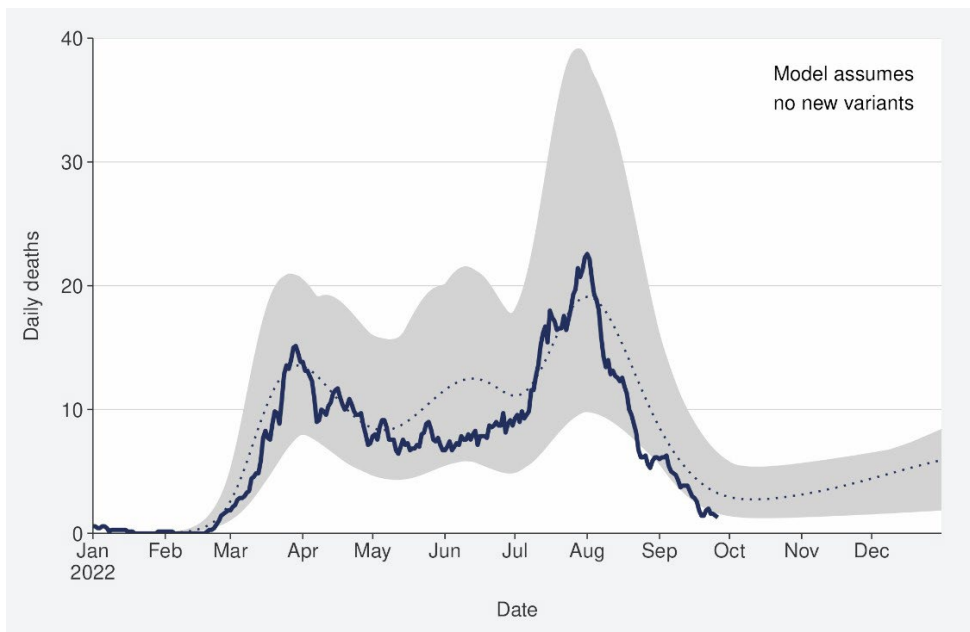
⁸ There were 55 deaths before the first week of 2022.

Figure 7: National weekly death counts by cause of death⁹, February to 25 September 2022



Source: Ministry of Health.

Figure 8: COVID-19 Modelling Aotearoa death count compared with national observed deaths attributed to COVID-19



Sources: COVID-19 Modelling Aotearoa, ordinary differential equation model, September 2022, and Ministry of Health reported attributed deaths data 25 September 2022

⁹ Mortality data are affected by a delay due to time taken for reporting and death coding, the most recent weeks should be interpreted with caution.



Whole Genomic Sequencing

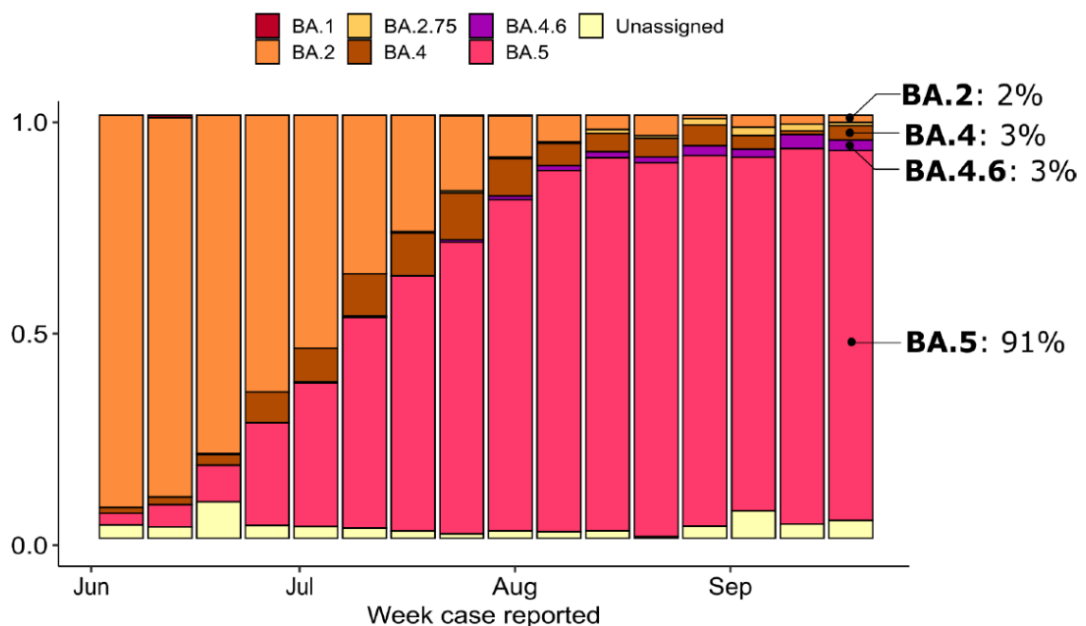
Community cases and wastewater

Whole Genomic Sequencing data is updated on a fortnightly basis, and has not been updated this week.

Figure 9 shows the proportions of variants in community cases have remained similar since late August, with BA.5 making up 91% of sequenced cases in the week to 16 September. Similar patterns have been seen in wastewater: BA.4/5 was also detected at all wastewater sites (14 of 20 sites were 100% BA.4/5) in the two weeks ending 18 September.

In the two weeks to 16 September, BA.4.6, BA.4 and BA.2 made up 3%, 3% and 2% of samples, respectively; Omicron sub-variant BA.2.75 (including BA.2.75.2) was also detected in community samples at a lower level and is likely spreading within the community. Additionally, BA.4.6 will likely increase as a proportion of cases, but its ability to compete against the dominant BA.5 variant is currently unknown.

Figure 9: Proportion of Variants of Concern in community cases



Source: ESR COVID-19 Genomics Insights Report #23, EpiSurv/Microreact 0900hrs 17 September 2022

Hospitalised cases

Of 81 successful sequences of COVID-19 positive hospital cases in the two weeks to 16 September 2022, 87% were BA.5, 7% were BA.4 (including BA.4.6), 2% were BA.2.75, and 2% were BA.2.

Reinfection

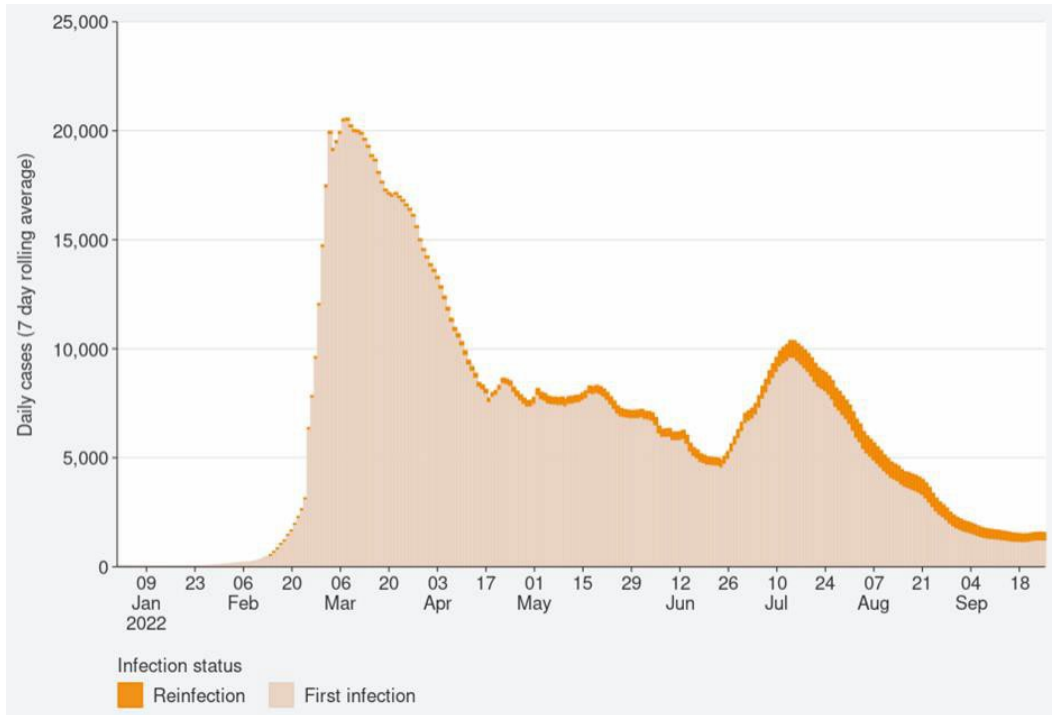
'Reinfection' is now defined as a case reported at least 29 days after the last time a person reported a positive test for COVID-19. The definition of reinfection changed on 30 June; prior to this, reinfection was based on reports at least 90 days apart (based on the international literature at the time). Up until 30 June 2022, the vast majority of positive results that were detected within 90 days of the prior infection were not recorded in the system; some potential reinfections within 90 days were recorded but were not representative of the general population.

'Reinfection' in general refers to a second or subsequent infection, after the prior infection has cleared. In this analysis, we are not able to distinguish between reinfection with the same variant or different variants. Reinfection with a different variant to the first infection is more likely than reinfection with the same variant. Technically these data report on 'redetections' rather than true reinfections. True 'reinfections' cannot be definitively captured in the data for a range of reasons. For example, a person with persistent infection due to being immunocompromised who undergoes repeated testing due to regular hospital or clinical visits, would appear in the data as a 'reinfection' when in reality, they may be a chronic or persistent infection.

Figure 10 characterises the average number of cases per week by first infection and reinfection. Reinfections made up 11% of reported cases in the week ending 25 September. **Figure 11** shows how many first infections and reinfections have been reported cumulatively over time. Cumulatively, reinfections have made up 2.1% of total cases reported in 2022. The proportion of cases that are reinfections is expected to increase over time. The true number of reinfections is likely higher than reported here. In general, reporting of cases is expected to decline over time. Due to under-ascertainment of the first infection and subsequent infections, and as both are required to detect a reinfection, there is likely to be under-reporting of reinfections.

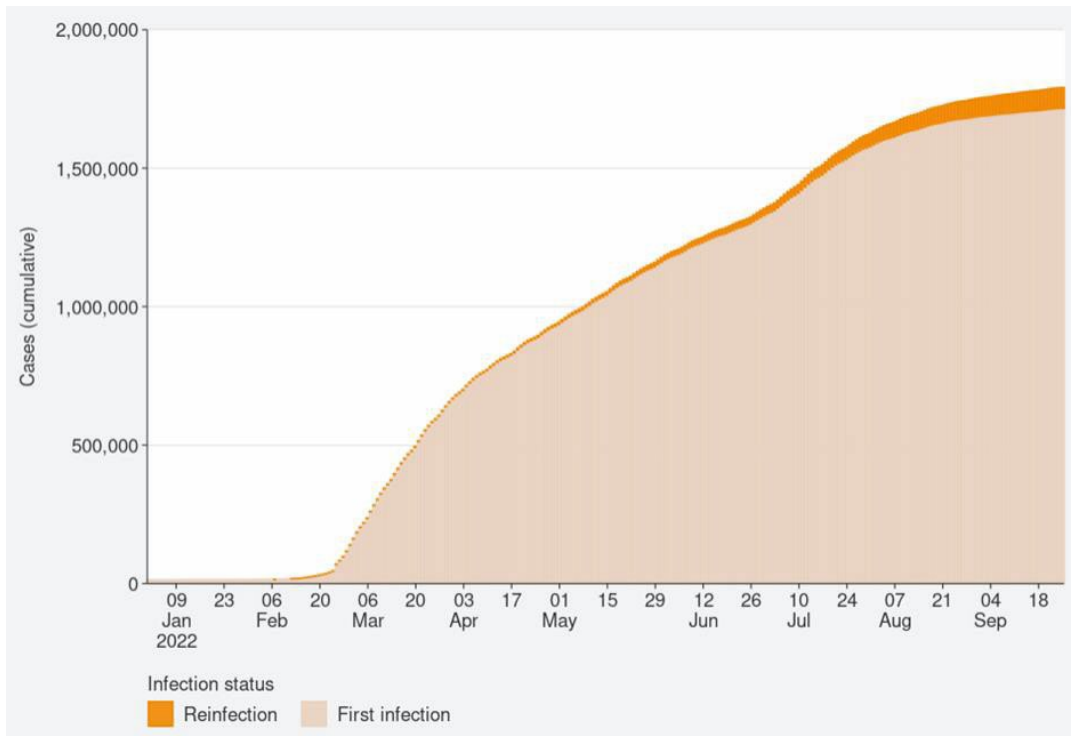


Figure 10: Reinfections 7 day rolling average from 01 January to 25 September 2022



Source: NCTS/EpiSurv as at 2359hrs 25 September 2022

Figure 11: Reinfections cumulatively from 01 January to 25 September 2022



Source: NCTS/EpiSurv as at 2359hrs 25 September 2022

Comparison of epidemic trends by ethnicity

The age-standardised reported case rates have remained relatively stable for all ethnicities (see **Figure 12**); with all ethnicities having a similar rate between 19 and 31 per 100,000 population. However, the cumulative total for the year shows that Māori and Pacific peoples have overall had a slightly higher risk of being reported as a case.

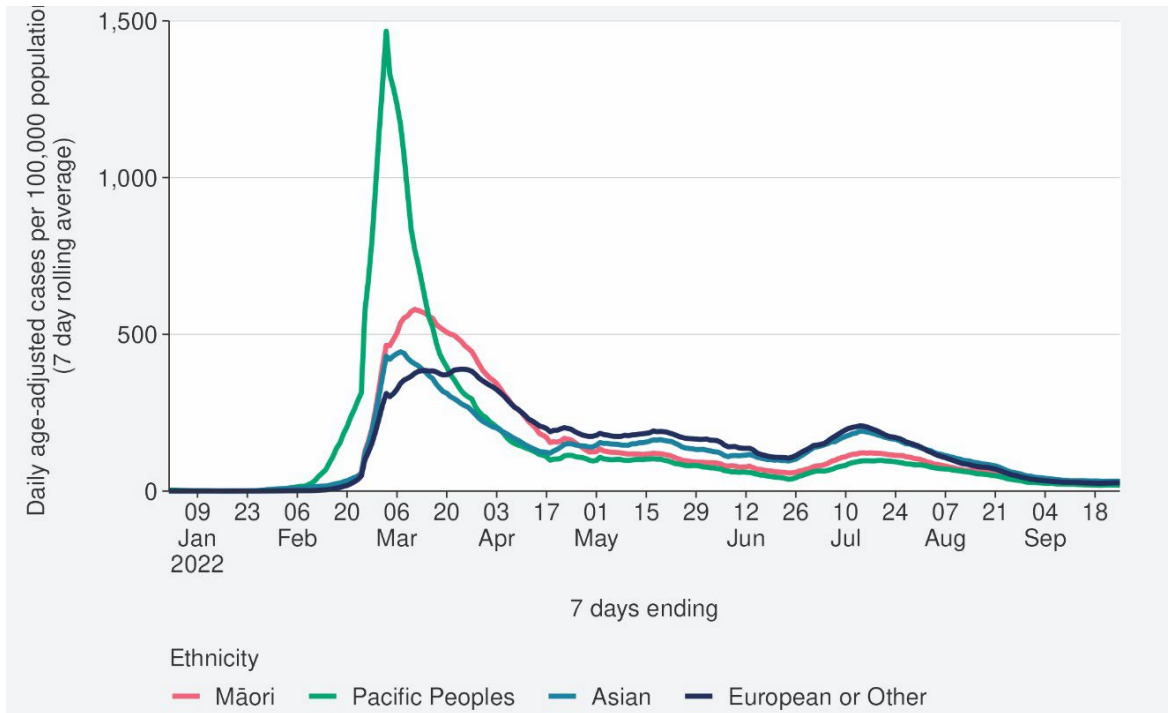
Figure 13 and **Figure 14** shows that the age standardised rates for hospitalisation for COVID-19 are also declining for all ethnicities, but unlike the pattern in cases, Māori had the highest hospitalisation rate in the week ending 18 September, approximately 2-fold higher than European and Other. This has been a relatively consistent pattern across the year. The cumulative total for the year shows that overall Pacific peoples and Māori have had the highest risks of hospitalisation for COVID-19 – 2.8 and 2.1 times the risk of European and Other, respectively. Asian people have had a hospitalisation rate approximately 10% lower than European and Other.

The cumulative age standardised mortality rate for 1 January to 18 September shows that Pacific peoples have had the highest risk, 2.5 times that of European and Other, followed by Māori at 2 times that of European and Other. Asian people have had the lowest risk of Mortality, 35% lower than European and Other (see **Figure 15**).

The lower reported case rates and higher hospitalisation and death rates for Māori and Pacific peoples suggests they may have lower levels of case ascertainment and/or a higher risk of poor outcomes after infection compared with Asian and European and Other ethnicities.

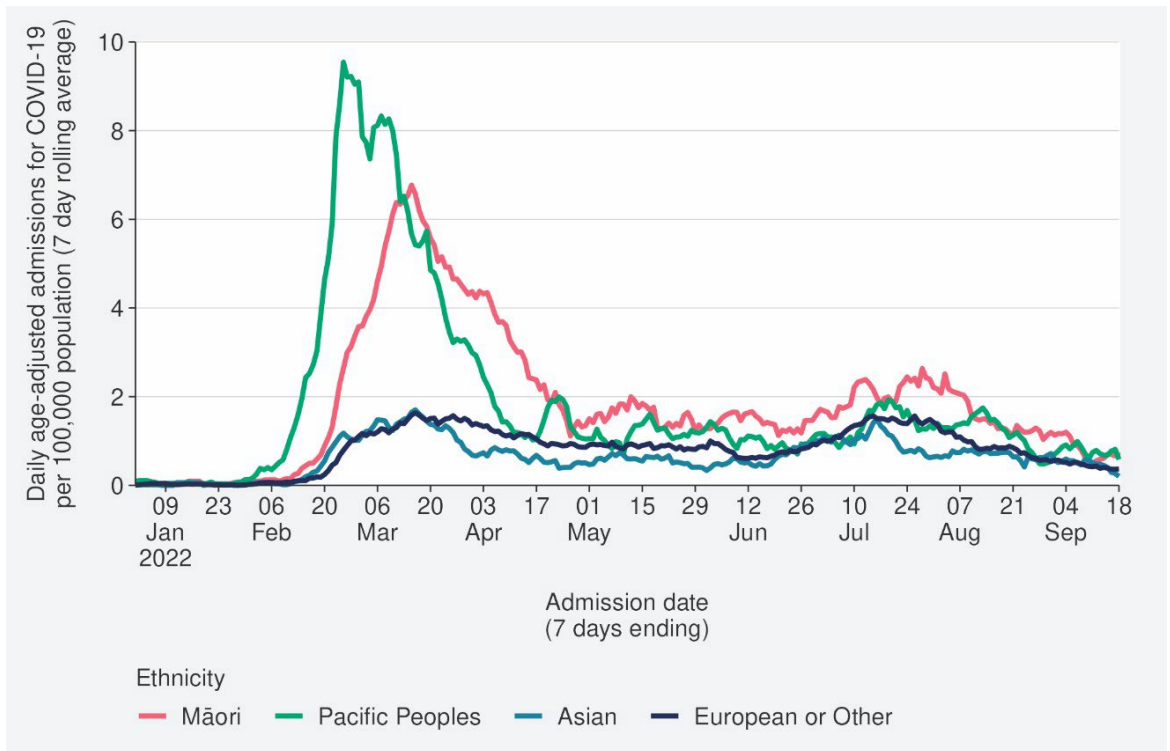


Figure 12: National age-standardised reported case rates by ethnicity from January to 25 September 2022



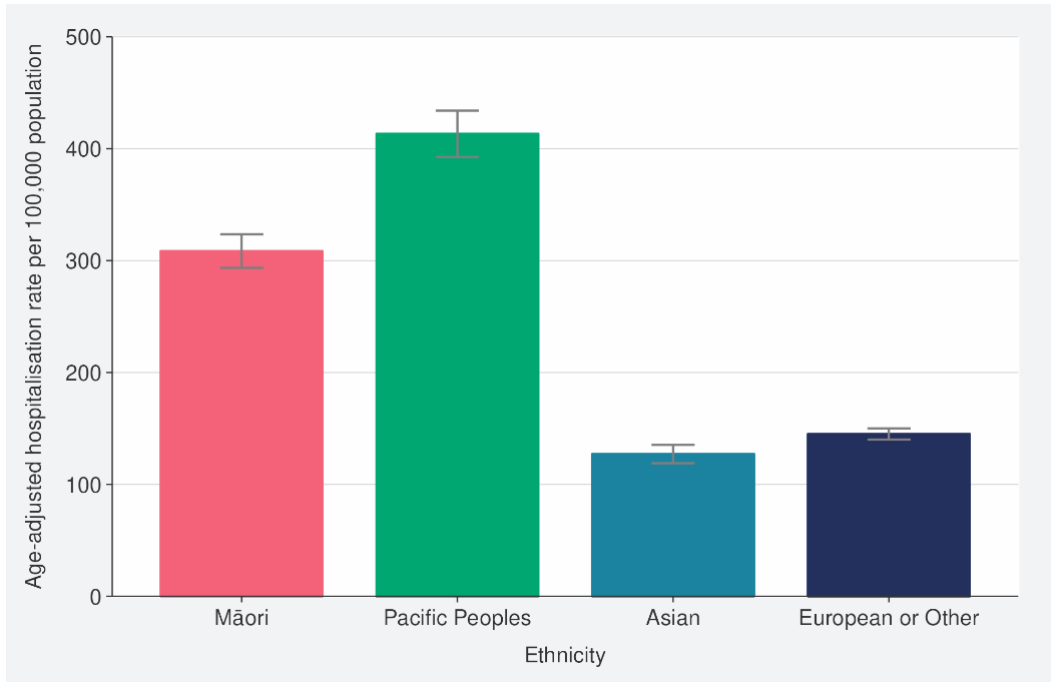
Source: NCTS/EpiSurv as at 2359hrs 25 September 2022

Figure 13: National age-standardised hospitalisation rates by ethnicity from January to 18 September 2022



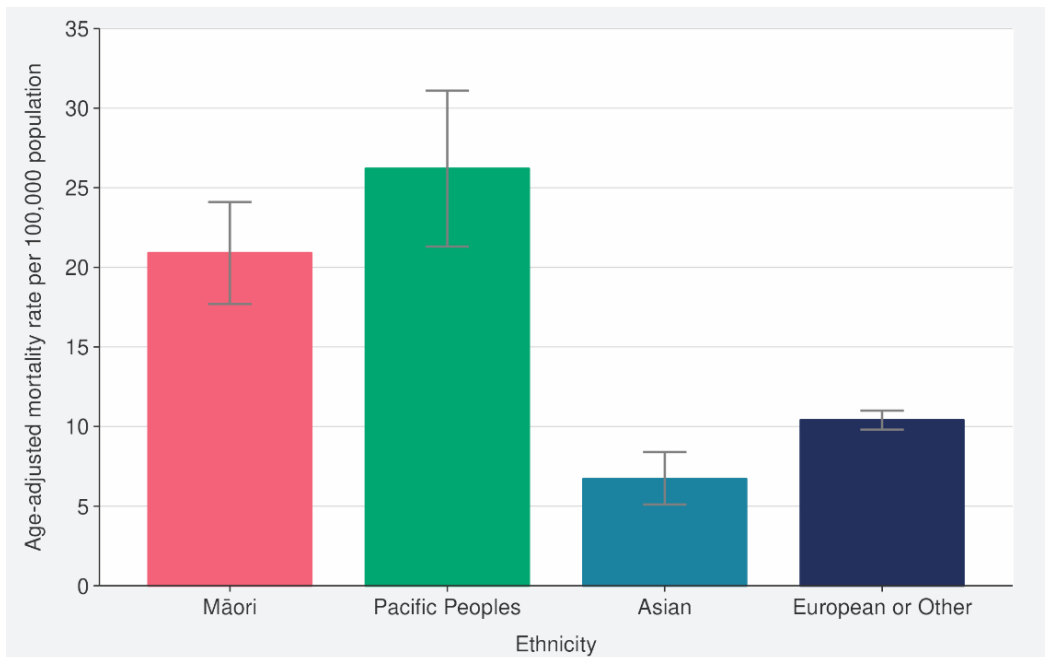
Source: NCTS/EpiSurv as at 2359hrs 18 September 2022

Figure 14: Age-standardised cumulative incidence (and 95% confidence intervals) of hospitalisation for COVID-19 by ethnicity, 01 January 2022 to 18 September 2022



Source: NCTS/EpiSurv, NMDS, Inpatient Admissions dataset and CVIP population estimates, 01 January 2022 to 18 September 2022

Figure 15: Age-standardised cumulative incidence (and 95% confidence intervals) of mortality attributed to COVID-19 by ethnicity, 01 January 2022 to 18 September 2022



Source: NCTS/EpiSurv, NMDS, Inpatient Admissions dataset and CVIP population estimates, 01 January 2022 to 18 September 2022



Comparison of epidemic trends by deprivation

Figure 16 shows the 7-day rolling average for reported case rates by residential area deprivation level (based on NZDep2018).¹⁰ Rates for all deprivation levels slightly increased in the week ending 25 September; rates in the past week were slightly higher in areas of least and mid-range deprivation, the differences were more substantial during July where those most-deprived had the lowest rate. Prior to May, case rates in those most deprived were higher than the mid-range and least deprived groups.

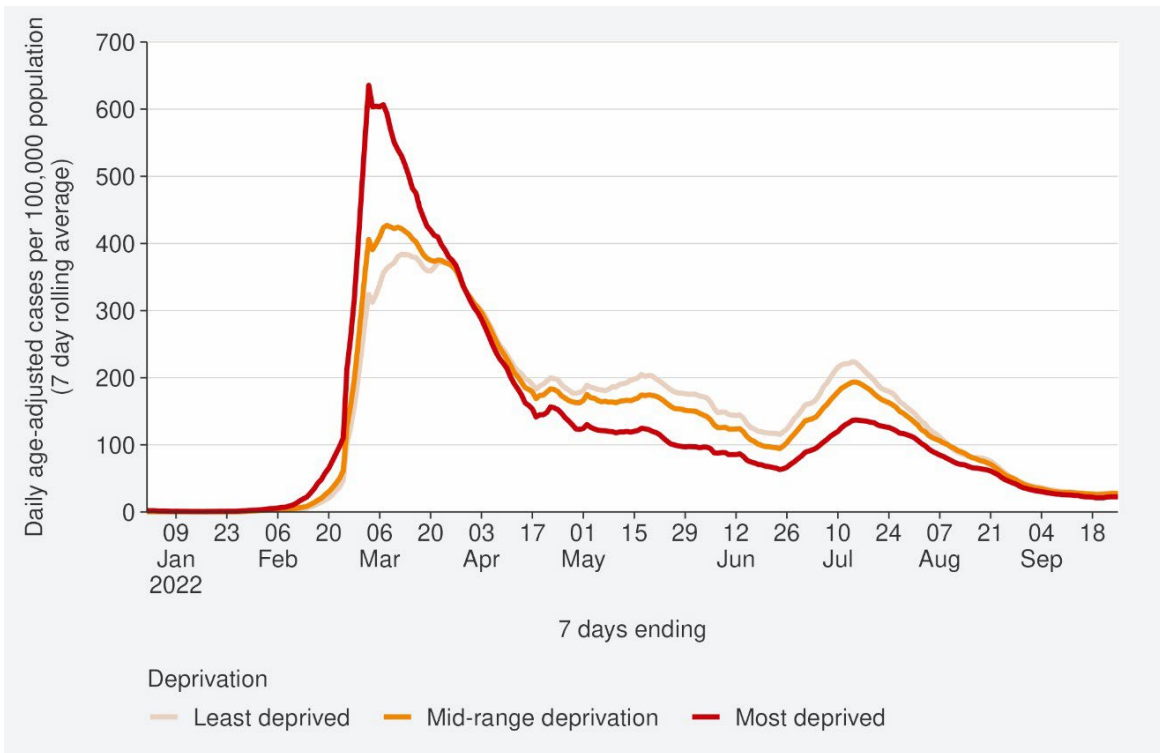
However, **Figure 17** and **Figure 18** show that those most deprived have had and continue to have the highest rates of hospitalisation, both recently and cumulatively during 2022. Those most deprived have had 2.1 times the risk of hospitalisation compared with those who are least deprived.

Cumulative rates of mortality are also highest for those most deprived (**Figure 19**).

As lower case rates have been reported among those most deprived, their continued higher hospitalisation and death rates suggest those who are most deprived may have lower levels of case ascertainment and/or a higher risk of poor outcomes after infection compared with those who are least deprived.

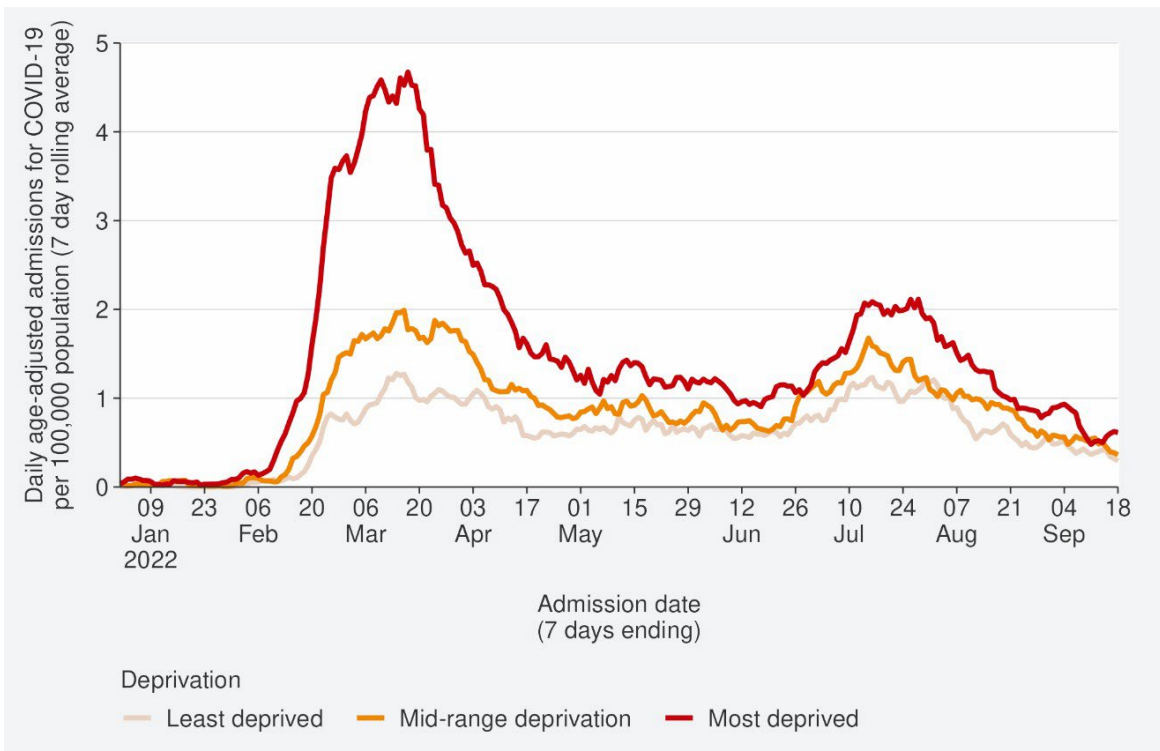
¹⁰ Atkinson J, Salmond C, Crampton P (2019). NZDep2018 Index of Deprivation, Final Research Report, December 2020. Wellington: University of Otago

Figure 16: National age-standardised reported case rates by deprivation status for weeks 01 January – 25 September 2022



Source: NCTS/EpiSurv as at 2359hrs 25 September 2022

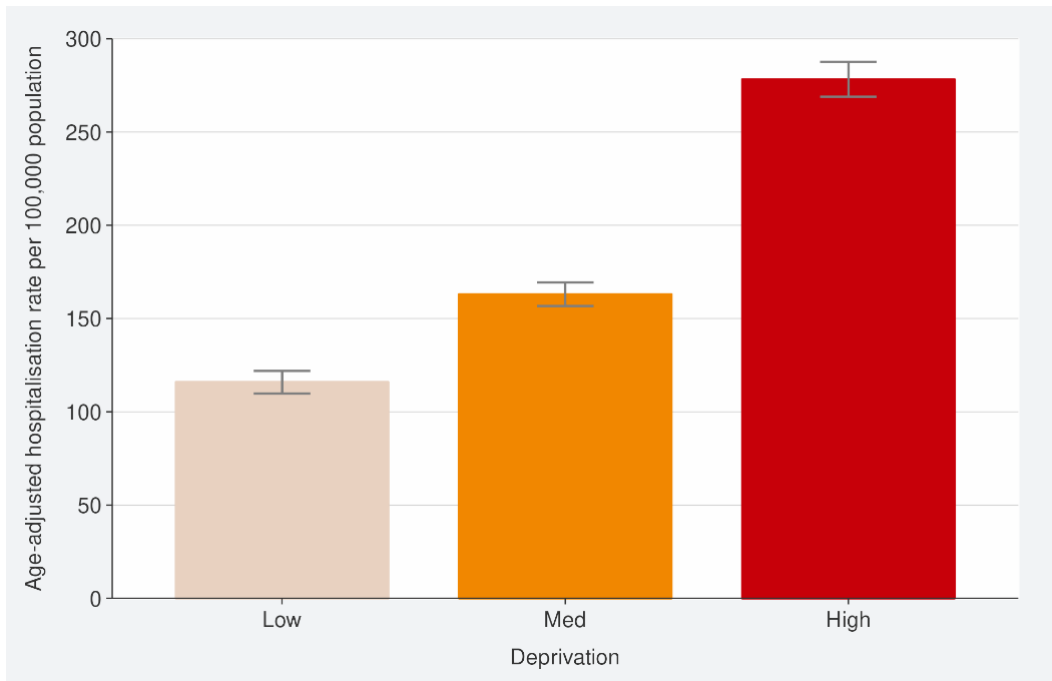
Figure 17: Age-standardised hospital admission rates for COVID-19 by deprivation from January to 18 September 2022



Source: NMDS/Inpatients admissions feed as of 20 September 2022 data up to 18 September 2022

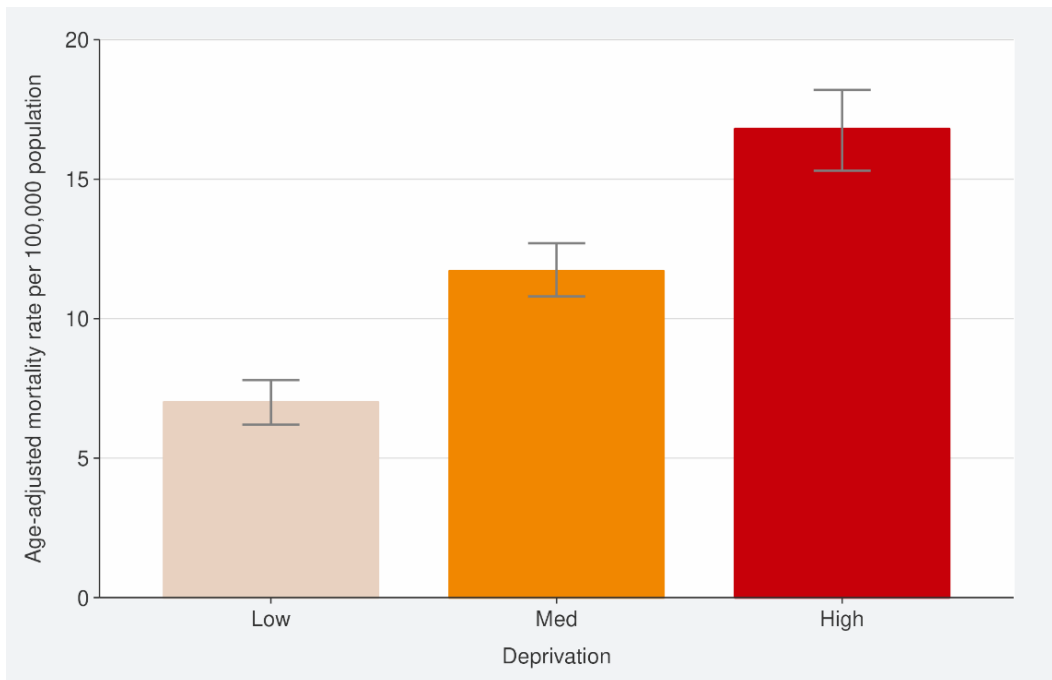


Figure 18: Age-standardised cumulative incidence (and 95% confidence intervals) of hospitalisation for COVID-19 by deprivation, 01 January 2022 to 18 September 2022



Source: NCTS/EpiSurv, NMDS, Inpatient Admissions dataset and CVIP population estimates 01 January 2022 to 18 September 2022

Figure 19: Age-standardised cumulative incidence (and 95% confidence intervals) of mortality attributed to COVID-19 by deprivation, 01 January 2022 to 18 September 2022



Source: EpiSurv, Death Documents, The Healthcare User database, Mortality Collections database and CVIP population estimates, 01 January 2020 to 18 September 2022

Global pandemic summary

We expect the global situation for the COVID-19 pandemic in the next few months to be driven by the ongoing emergence of new variants, waning immunity and the northern hemisphere heading towards the winter season.

- Globally, in the week ending 25 September, the number of new weekly cases decreased by 11% as compared to the previous week, with over 3.0 million new cases reported.
- The number of new weekly deaths decreased by 18% compared to the previous week, with over 8,900 fatalities reported.
- Globally, as of 25 September 2022, over 612 million confirmed cases and over 6.5 million deaths have been reported.
- There continues to be increased diversity within Omicron and within its descendent lineages. A number of these descendant lineages are under monitoring.
- BA.2 descendent lineages (including BA.2.75) still shows a relatively low (2.9% as of 11 September) prevalence globally.
- BA.5 Omicron descendent lineages continue to be dominant globally, with an increase in weekly prevalence from 76.6% to 81.2%.
- Decreases in countries frequency of submitting COVID-19 genomes to GISAID, make detecting accurate international representations of variant prevalence difficult.

Sources: World Health Organisation: Weekly epidemiological update on COVID-19 – 21 September 2022

Please note, global trends in cases and deaths should be interpreted with caution as several countries have been progressively changing COVID-19 testing strategies, resulting in lower overall numbers of tests performed and consequently lower numbers of cases detected.



Appendix: Table of summary statistics

Table 1: Reported 7-day rolling average of case rates and hospital admissions, by region, age group, ethnicity and deprivation

	Reported Cases (7-day rolling average)					Hospital admissions (7-day rolling average)				
	Week ending 18/09/2022		Week ending 25/09/2022		% Change	Week ending 11/09/2022		Week ending 18/09/2022		% Change
	Number	Rate (per 100,000 population)	Number	Rate (per 100,000 population)		Number	Rate (per 100,000 population)	Number	Rate (per 100,000 population)	
National	1337.1	26.9	1397.6	28.1	4.5%	32.0	0.9	23.7	0.6	-25.9%
Region										
Northern	600.3	31.6	605.4	31.9	0.9%	13.1	0.7	7.3	0.4	-44.6%
Te Manawa Taki	258.0	26.6	264.9	27.3	2.7%	5.4	1.3	4.1	1.0	-23.7%
Central	221.6	23.6	250.4	26.7	13.0%	4.4	0.9	3.7	0.8	-16.1%
Te Waipounamu	256.1	22.4	275.6	24.1	7.6%	9.0	1.0	8.6	0.9	-4.8%
Age group										
<5	43.0	13.6	48.9	15.5	13.6%	1.1	0.5	1.0	0.4	-12.5%
5-14	97.9	14.5	96.3	14.3	-1.6%	0.9	0.2	0.7	0.1	-16.7%
15-24	166.9	26.9	152.3	24.6	-8.7%	0.1	-	1.0	0.2	600.0%
25-44	443.6	32.9	460.4	34.1	3.8%	2.0	0.2	1.9	0.2	-7.1%



45-64	371.7	29.8	405.9	32.5	9.2%	5.0	0.5	5.7	0.6	14.3%
65+	214.1	28.1	233.9	30.7	9.2%	22.9	4.3	13.4	2.5	-41.3%
Ethnicity										
Māori	147.3	19.3	159.7	20.9	8.4%	2.1	0.4	3.6	0.7	66.7%
Pacific peoples	75.7	20.7	71.6	19.5	-5.5%	2.7	0.8	2.0	0.6	-26.3%
Asian	253.3	34.5	246.9	33.7	-2.5%	3.6	0.5	1.6	0.2	-56.0%
European or Other	847.7	27.5	910.1	29.5	7.4%	23.4	1.1	16.4	0.7	-29.9%
Deprivation										
Least deprived	418.7	29.1	448.6	31.2	7.1%	7.9	0.7	5.7	0.5	-27.3%
Mid-range deprivation	538.4	28.4	561.4	29.6	4.3%	14.0	1.0	8.3	0.6	-40.8%
Most deprived	353.6	23.7	362.1	24.3	2.4%	9.3	0.9	8.9	0.8	-4.6%

