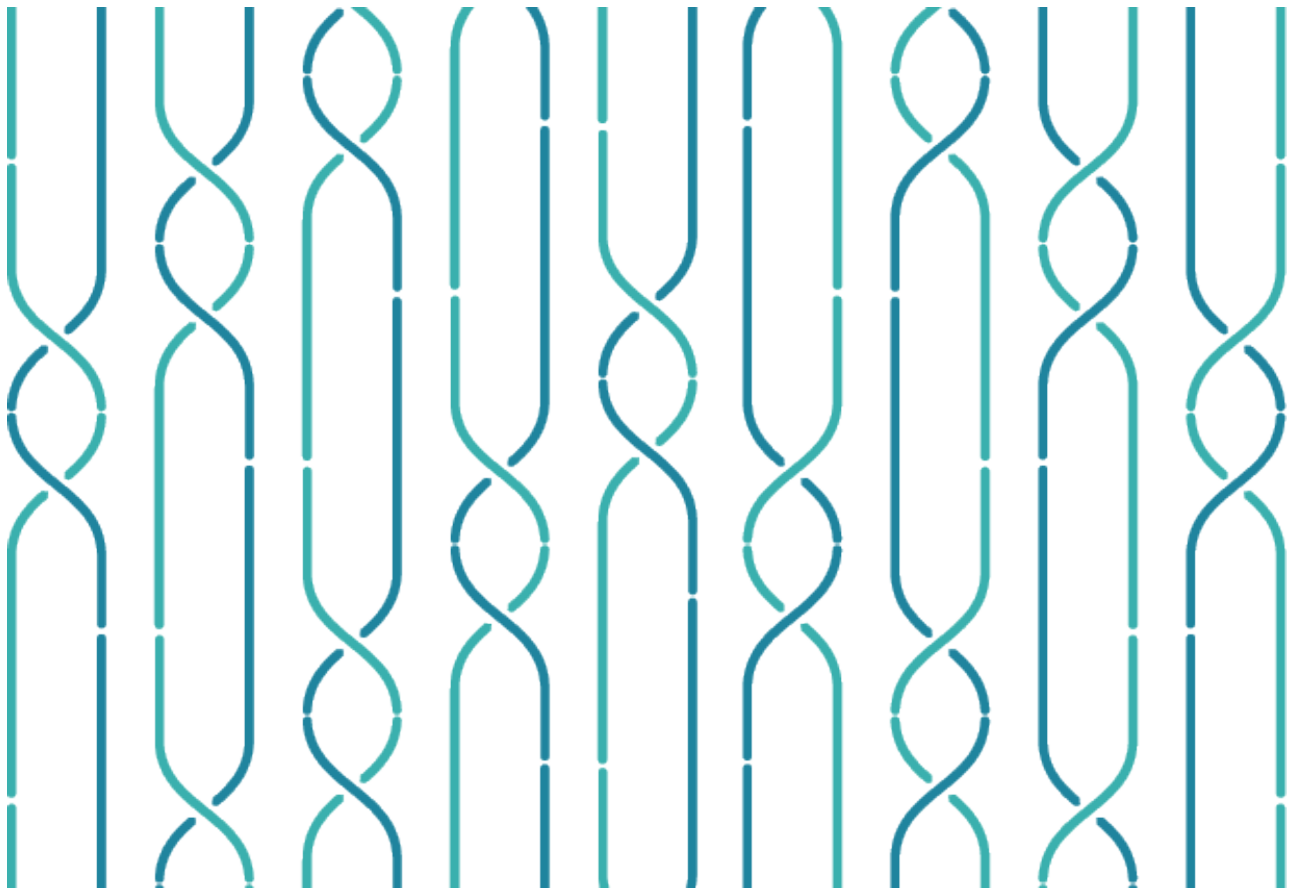




COVID-19 TRENDS AND INSIGHTS REPORT

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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, the key measures of infection (i.e. the levels of viral RNA in wastewater and reported case rates) used to monitor the COVID-19 epidemic show mixed trends in the past week. Case rates have increased; whilst wastewater quantification has remained stable, hospital admissions and mortality have started to stabilise.

BA.5 was the dominant subvariant accounting for an estimated 44% of cases, with the proportion of BA.5 declining over the previous weeks. Detections of BA.2.75 and BQ.1.1 are trending upward, both in WGS and wastewater.

It is possible cases, hospitalisations and mortality could increase over the next few weeks. However, the size, timing, and duration of the peak, as well as new baseline trends of cases, hospitalisations, and mortality are uncertain.



Key insights

National Trends

Cases	The 7-day rolling average of reported case rates was 73.8 per 100,000 population for the week ending 27 November. This was an increase from the previous week, which was 65.6 per 100,000. This week rates were highest in the 25-44 age group, followed by 45-64 (86.2 and 81.7 per 100,000). The proportion of cases that were reinfections has increased this week, making up 24% of cases.
Wastewater	Wastewater quantification indicated a potential stabilisation in infections in the past week. However, it could be that recent trends have been affected by heavy rain across the motu.
Hospitalisations	The COVID-19 hospital admissions rate decreased substantially from mid-July but then increased from early October to early November. However, in the week ending 20 November, the 7-day rolling average of hospital admissions was 1.4 per 100,000 population which was similar to the previous week. The rate was highest in the 65+ age group (4.6 per 100,000).
Mortality	As of 27 November, there were 2,158 deaths attributed to COVID-19 in 2022. The weekly number of deaths attributed to COVID-19 declined substantially after peaking early August, however, mortality has been higher in November than in October.
Variants of Concern	<p>Prevalence of non-BA.5 variants continues to increase slowly. BA.5 accounts for 44% of sequenced community cases seen in the week 12 November to 25 November, followed by BA.2.75 (32%), BQ.1.1 (15%), and XBC (4%).</p> <p>Wastewater variant analysis for the fortnight ending 25 November reports the following proportions: BA.4/5 40%, BA.2.75 39%, BQ.1.1 12%, XBC 7% and XBB 3%..</p>



Māori

Cases	The 7-day rolling average of age-standardised reported case rates have been increasing for the past three weeks to 62.0 per 100,000 population on 27 November, lower than for European or Other, however there may be case ascertainment biases. Rates were highest in those aged 25-44 (80.9 per 100,000)
Hospitalisations	The age-standardised cumulative hospital admission risk for 2022 was 1.8 times higher in Māori than European or Other. The 7-day rolling average to 20 November was 0.9 per 100,000 and is highest in those aged 80+ (6.1 per 100,000).
Mortality	The age-standardised cumulative mortality rate for Māori was 1.9 times higher than European or Other in 2022.

Pacific peoples

Cases	The 7-day rolling average of age standardised reported case rates have been increasing for the past three weeks to 67.6 per 100,000 population on the 27 November, lower than European or Other, however there may be case ascertainment biases. Rates were highest in those aged 25-44 (99.4 per 100,000).
Hospitalisations	Pacific peoples have the highest age-standardised cumulative risk of hospital admission in 2022, 2.2 times higher than European or Other. The 7-day rolling average to 20 November was 1.4 per 100,000 and is highest in those aged 80+ (10.2 per 100,000)
Mortality	Pacific peoples have the highest age-standardised cumulative mortality risk of any ethnicity in 2022, 2.3 times that of European or Other.

International Insights

Globally, in the week ending 27 November, the number of new weekly cases remained stable (+2%) as compared to the previous week, with over 2.7 million new cases reported. The number of new weekly deaths decreased by 5% as compared to the previous week, with over 8,400 new fatalities reported

BA.5 Omicron descendent lineages continue to be dominant globally, with a stable weekly prevalence of approximately 73.0% as of 13 November. Proportions of BQ.1.1 and XBB and other subvariants of Omicron are increasing globally.

At the country level, the highest numbers of new weekly cases were reported from Japan, the Republic of Korea, the United States of America, France and Italy.

In Australia, in the 14 days to 25 November 2022, there were 584 new cases per 100,000 population. This is a large increase from the week prior (14 days to 18 November 2022) where there were 482 per 100,000 population.



National summary of epidemic trends

Case trends

Evidence suggests the incidence in the community has not varied substantially in the past few weeks. Reported¹ case rates have increased in the week to 27 November whereas levels of viral ribonucleic acid (RNA) in wastewater² remained stable (see **Figure 1**). Wastewater quantification indicated a decrease in infections in the past week. Based on combining wastewater data and reported cases, a preliminary estimate of case ascertainment rate (the proportion of infections reported as cases) is 44% (90% Uncertainty Interval: 0.36 to 0.53) for the fortnight to 27 November³.

Reported cases have been tracking above the modelled median that assumes 10 % higher transmission, since early October and have steadily increased over the past four weeks. However, in the week ending 27 November cases tracked below the modelled median rate. The updated model scenarios assuming a 10% increase in transmissibility caused by new variants, waning immunity, changes in masking and contact quarantine on 12 September, indicate that case rates are expected to increase (see **Figure 2**)⁴. The variant model is hypothetical but based on the properties of lineages recently reported overseas. **Figure 3** shows the national reported cases and the modelled scenario which assumes no new variant.

The reported case rate for the week ending 27 November was 73.8 per 100,000, a 12.5% increase compared to the previous week (65.6 per 100,000). Case rates increased in all regions; the rate was highest in Northern region (80.8 per 100,000) and lowest in Te Manawa Taki (60.0 per 100,000) (See **Figure 4**).

Case rates across all age groups (under 5, 15-24, 25-44, 45-64) have increased except for those aged +65, which remained relatively stable compared to the week prior. The highest rates across all age groups were in those aged 25-44, 45-64 and +65 (86.2, 81.7 and 78.3 per 100,000, respectively). The lowest rates were among under 5 years and 5-14-year-olds (36.1 and 41.4 per 100,000, respectively) (see **Figure 5**).

Table 1 of the appendix provides information on specific rates.

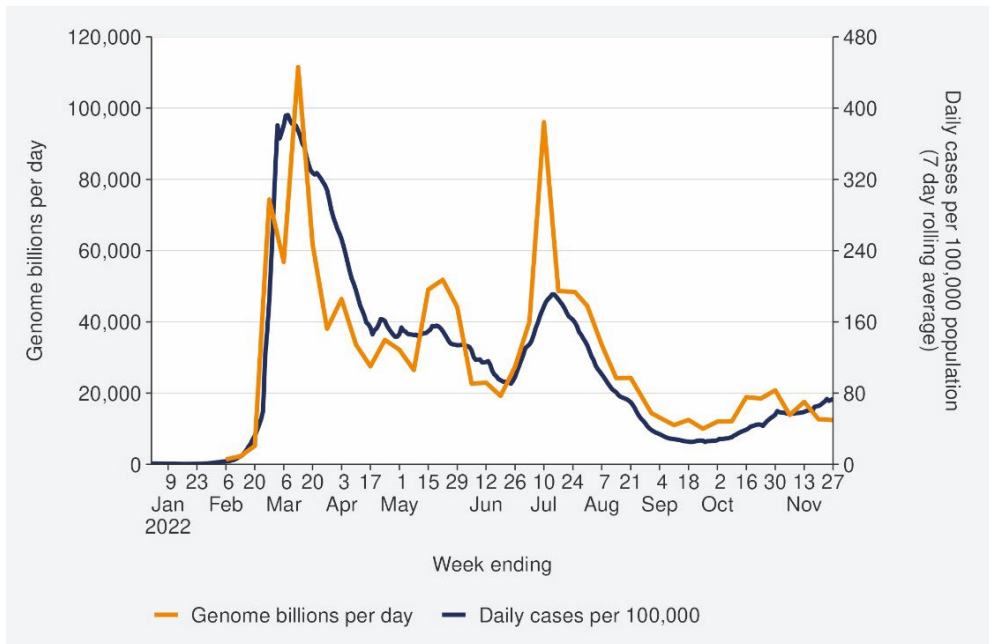
¹ Since 24 February 2022, most testing has been through self-administered rapid antigen tests (RATs) which require self-reporting of results. Therefore, it is likely that many infections are not detected or reported, and the proportion of infections reported ('reported cases') may differ by age, ethnicity,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

³ Case ascertainment has declined from peak ascertainment in March. Work is underway to provide estimates of the peak ascertainment and current ascertainment levels. However, it could be that recent trends have been affected by heavy rain across the motu

⁴ See the online glossary for modelling assumptions.

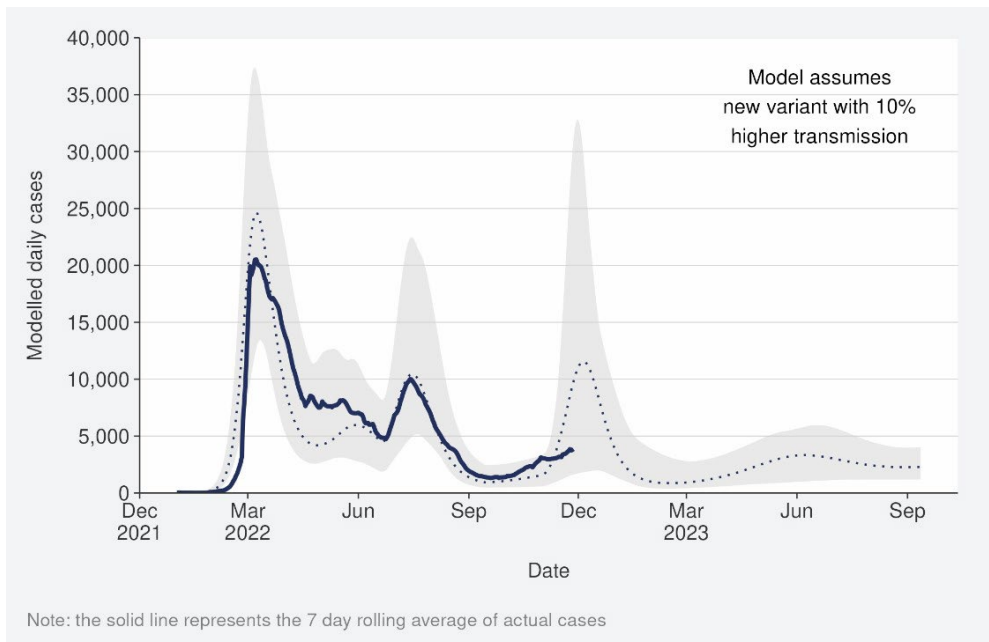


Figure 1: National wastewater trends (SARS-CoV-2 genome copies)⁵ and reported cases to 27 November 2022



Sources: ESR SARS-CoV-2 in wastewater update for week ending 27 November 2022 and NCTS/EpiSurv as at 2359hrs 27 November 2022

Figure 2: COVID-19 Modelling Aotearoa scenarios⁶ compared with national reported case numbers with 10% higher transmission



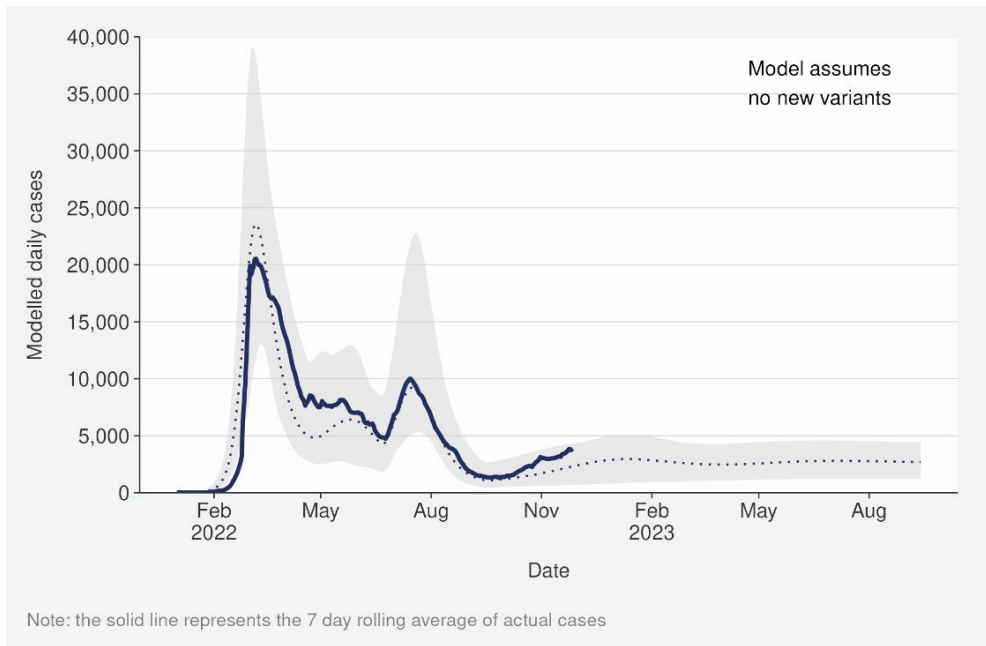
Sources: COVID-19 Modelling Aotearoa, ordinary differential equation model, October 2022, and NCTS/EpiSurv as at 2359hrs 27 November 2022

⁵ Wastewater levels cannot be used to predict numbers of cases but do indicate trends in the infection rates.

⁶ The 'July' BA.5 scenario assumes that previous infection provides greater protection against reinfection and severe disease, this is 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.

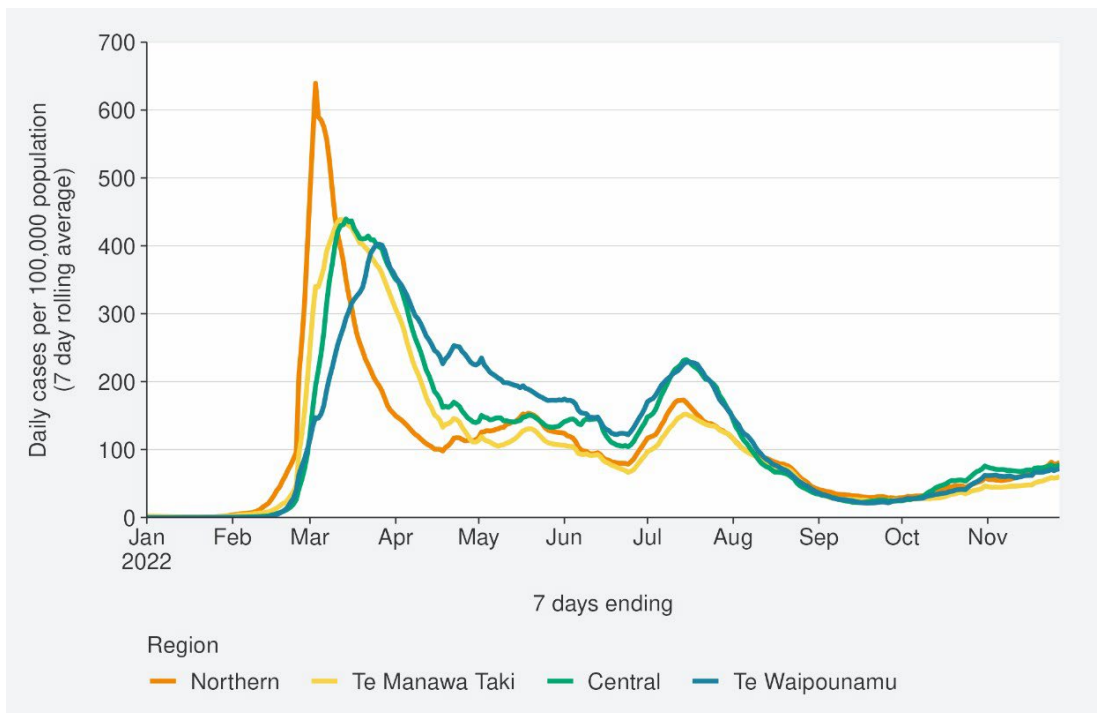


Figure 3: COVID-19 Modelling Aotearoa scenarios compared with national reported case numbers



Sources: COVID-19 Modelling Aotearoa, ordinary differential equation model, October 2022, and NCTS/EpiSurv as at 2359hrs 27 November 2022

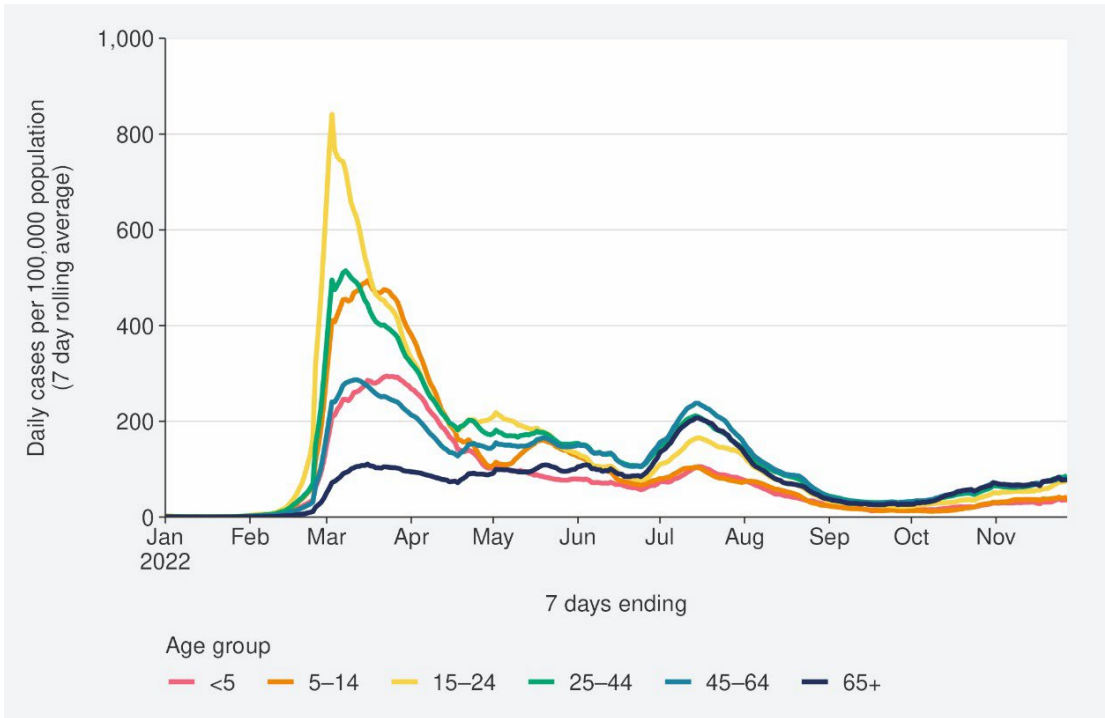
Figure 4: Regional reported case rates from 01 January to 27 November 2022



Source: NCTS/EpiSurv as at 2359hrs 27 November 2022



Figure 5: National reported case rates by age from 01 January to 27 November 2022



Source: NCTS/EpiSurv as at 2359hrs 27 November 2022



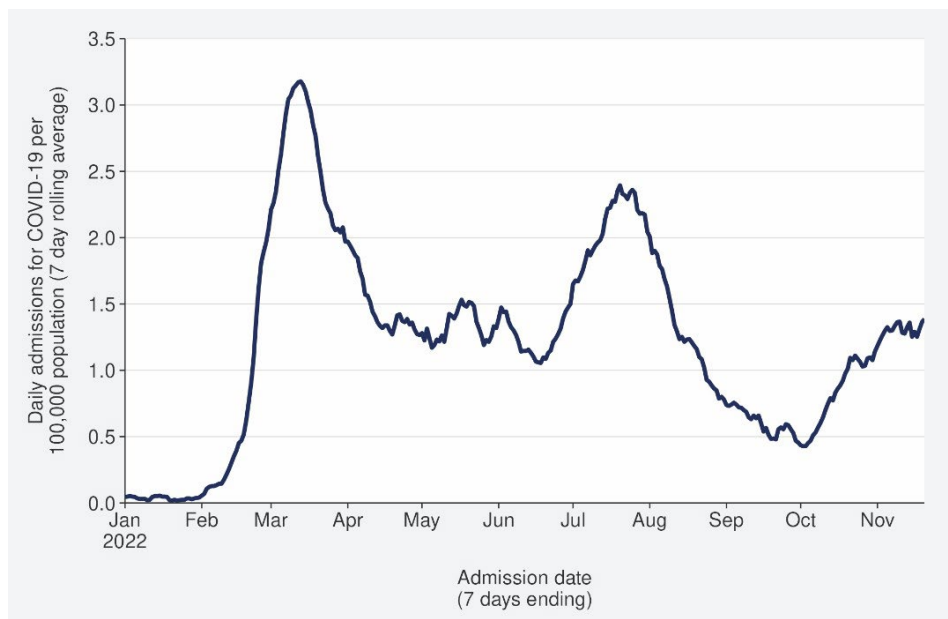
Hospitalisation and mortality trends

Hospitalisation

As seen in **Figure 6**, the national COVID-19 hospital admissions rate 'for' COVID-19, decreased substantially from mid-July but has increased since early October. In the past three weeks admissions have been variable and may be stabilising. In the week ending 20 November⁷, the 7-day rolling average of hospital admissions was 1.4 per 100,000 population, similar to the previous weeks (1.3 per 100,000). The rate was highest in the 65+ age group (4.6 per 100,000).

Modelling scenarios suggest current hospital admissions are tracking near the median range of the prediction and indicate admissions are expected to increase. The variant model is hypothetical but based on the properties of lineages recently reported overseas (**Figure 7**). **Figure 8** shows the national hospital admissions and the modelled scenario which assumed no new variant.

Figure 6: National⁸ hospital admissions rate for COVID-19, 01 January to 20 November 2022



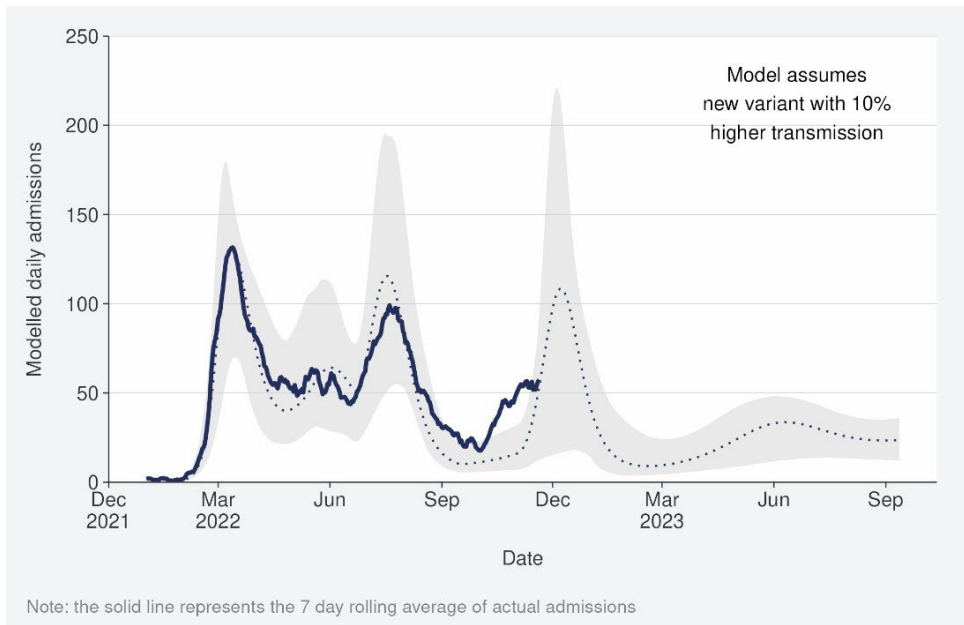
Source: NMDS/Inpatient's admissions feed as of 27 November 2022 data up to 20 November 2022

⁷New 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.

⁸Data are from Districts with tertiary hospitals; these Districts are Auckland, Canterbury, Southern, Counties Manukau, Waikato, Capital & Coast, Waitemata, and Northland.

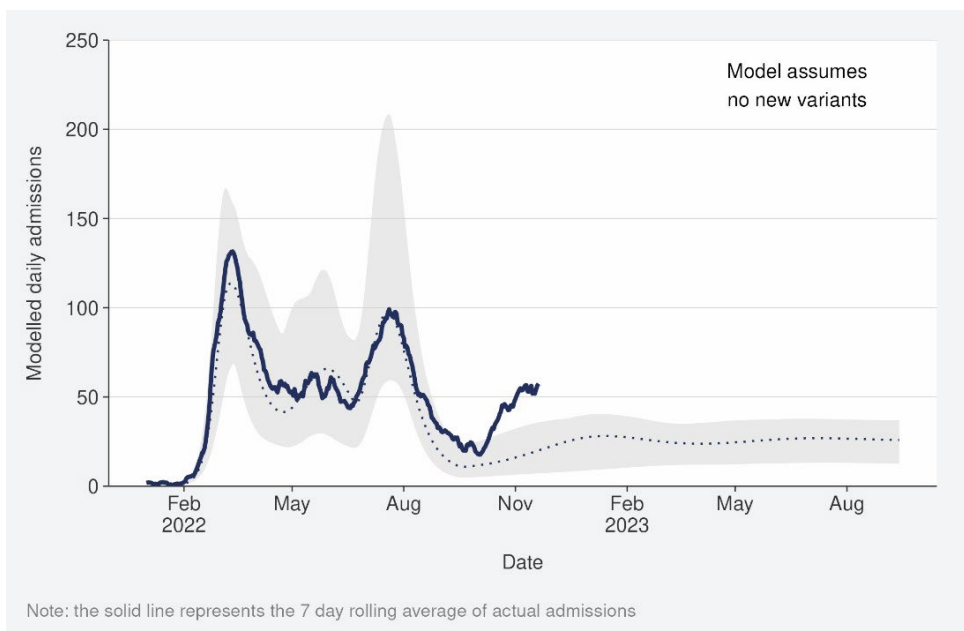


Figure 7: COVID-19 Modelling Aotearoa hospital admissions scenario⁹ compared with national admissions with 10% higher transmission



Sources: COVID-19 Modelling Aotearoa, ordinary differential equation model, October 2022, and Ministry of Health reported hospital admission data 20 November 2022

Figure 8: COVID-19 Modelling Aotearoa hospital admissions scenario compared with national admissions



Sources: COVID-19 Modelling Aotearoa, ordinary differential equation model, October 2022, and Ministry of Health reported hospital admission data 20 November 2022

⁹ The 'October' scenario assumes previous infection provides greater protection against reinfection, severe disease, consistent with emerging international evidence, and transmissibility of an emerging variant is increased by 10%. 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.



Mortality

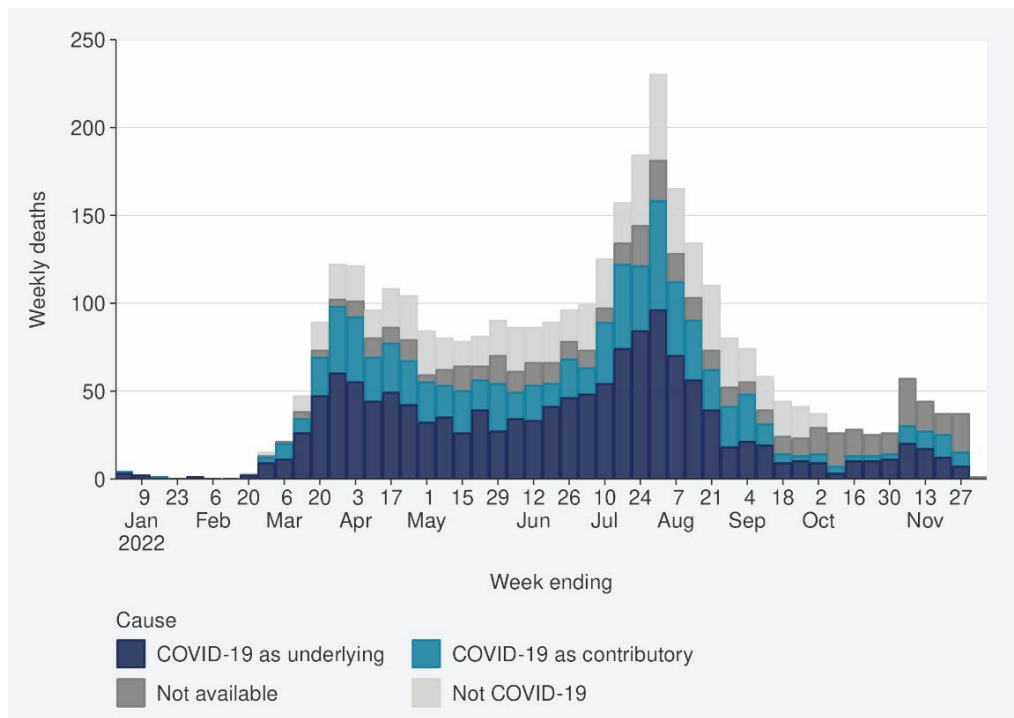
From the first week of January to 27 November 2022, there were 3,318 deaths among people who died within 28 days of being reported as a case and/or with the cause being attributable to COVID-19 (that is an underlying or contributory cause) (see **Figure 9**)¹⁰.

Of these deaths that have been formally coded by cause of death, 1,358 (48%) were determined to have COVID-19 as the main underlying cause. COVID-19 contributed to a further 800 (28%) deaths and another 694 (24%) people died of an unrelated cause (**Figure 9**). As of 27 November, there were 2,158 deaths attributed to COVID-19 in 2022. Deaths peaked in the last week of July, and in the past few weeks the trend has been relatively stable.

Deaths are currently tracking close to the median of the modelled scenario and may increase in the coming months if variant assumptions are borne out in the New Zealand context (see **Figure 10**).

Figure 11 shows the national death count and the modelled scenario which assumed no new variant.

Figure 9: National weekly death counts by cause of death¹¹, 01 January to 27 November 2022

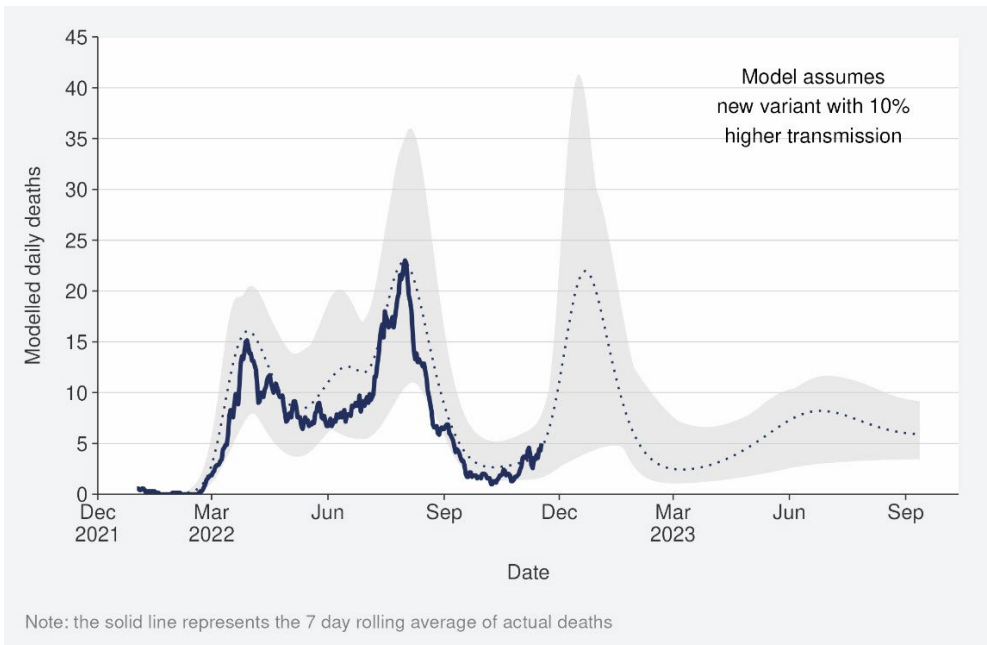


Source: Ministry of Health, 27 November 2022

¹⁰ There were 56 deaths before the first week of 2022.

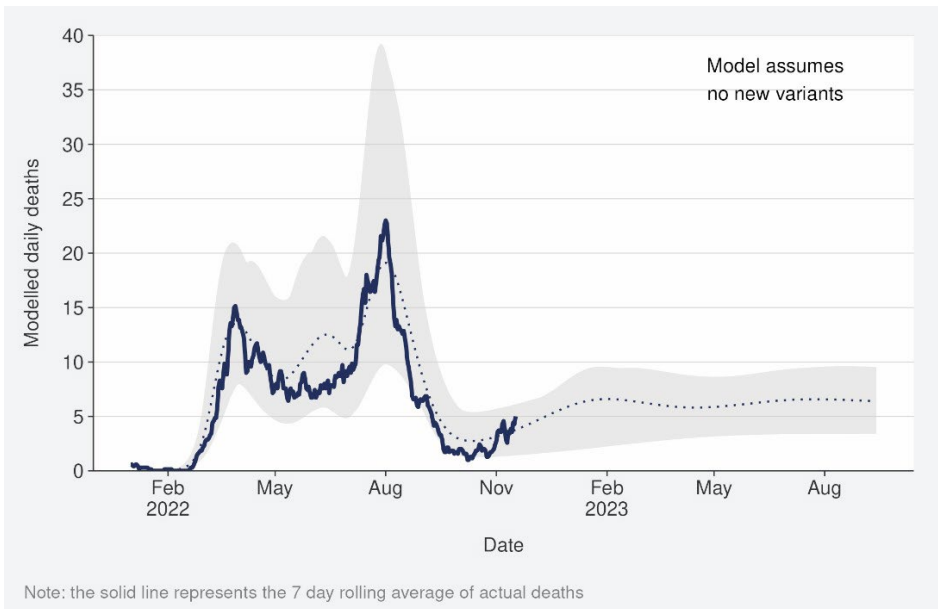
¹¹ Mortality data are affected by a delay due to time taken for reporting and death coding, the most recent weeks should be interpreted with caution.

Figure 10: COVID-19 Modelling Aotearoa death count compared with national observed deaths attributed to COVID-19



Sources: COVID-19 Modelling Aotearoa, ordinary differential equation model, October 2022, and Ministry of Health reported attributed deaths data 20 November 2022

Figure 11: COVID-19 Modelling Aotearoa death count compared with national observed deaths attributed to COVID-19



Sources: COVID-19 Modelling Aotearoa, ordinary differential equation model, October 2022, and Ministry of Health reported attributed deaths data 20 November 2022



Whole Genomic Sequencing

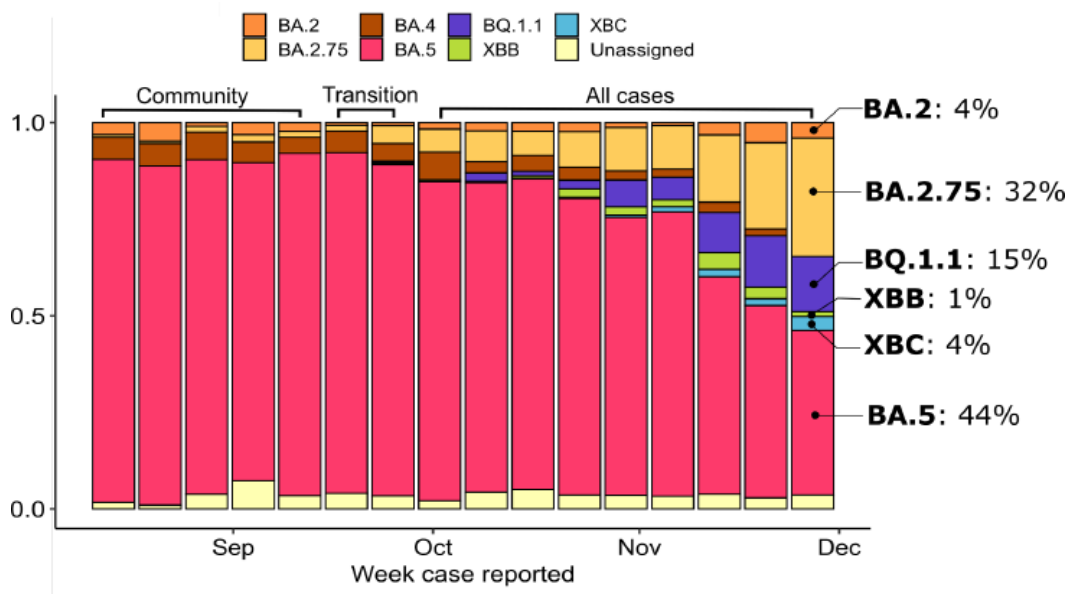
Wastewater and Community cases

Whole genomic sequencing data are updated on a fortnightly basis; the data has been updated in this weeks report.

Wastewater variant analysis for the fortnight ending 25 November reports the following proportions: BA.4/5 40%, BA.2.75 39%, BQ.1.1 12%, XBC 7% and XBB 3%.

Figure 12 shows the proportions of variants in community cases, with BA.5 accounting for 44% of sequenced cases in the week to 25 November. Proportions of the BA.5 subvariant in the community have continued to decrease over the last few weeks, as the proportion of other variants increase: BA.2.75 (32%), BQ.1.1 (15%), and XBC (4%). 20 cases were identified with recombinant lineage XBC.; a recombinant lineage of Delta and Omicron variants that has been present in Australia and South-East Asia for some time, with no indication of increased disease severity. This lineage is not overrepresented among hospitalised cases in New Zealand at present.

Figure 12: Proportion of Variants of Concern in community cases¹²



Source: ESR COVID-19 Genomics Insights Report #28, EpiSurv/Microreact 0900hrs251 November 2022

Hospitalised cases

Of samples collected from PCR positive hospital admissions for the fortnight ending 25 November 202/393 samples were successfully sequenced. As of 28 November; 59% were BA.5, 22% BA.2.75, 11% BQ.1.1, 3% BA.2, 2% XBC, 1%, XBB and <1% were BA.4.

¹² Before the end of the COVID-19 Protection Framework, only data from community cases are presented. In the period marked as "transition", cases known to be associated with the border were removed, but not all such cases can be reliably identified. Since the transition, data from all cases is used. Results before and after this transition are not directly comparable.



Overall Variant Risk Status

In the second half of 2022, many new Omicron sub-variants have been reported. These variants demonstrate convergent evolution which is a process whereby variants from different lineages accumulate similar mutations. Mutations in the spike protein appear to be responsible for the enhanced characteristics of these variants, compared to previous Omicron variants.

Although many of these new sub-variants demonstrate a transmission advantage over earlier sub-variants (which can come from increases in innate transmissibility or from immune evasion), there is currently no evidence of an increase in severity of disease caused by these variants.

Subvariants detected in cases in New Zealand such as BQ.1.1, BA.2.75 sub-lineages (including CH.1.1), XBB and XBC. BQ.1.1 and XBB have demonstrated substantial immune evasion in laboratory testing compared to prior Omicron variants. Cases of these subvariants are likely to increase relative to BA.5 in the coming weeks. CH.1.1 may have driven growth in BA.2.75 and its sub-variants in New Zealand in November and is likely to further increase (relative to BA.5). However, it is unknown if one or more variants will cause a wave or produce overall higher baseline incidence.

There is no strong evidence of an increase in disease severity associated with these variants.

Refer to the appendix for further details on the risk assessments for BQ.1.1 and XBB, respectively.

Further information on variants of concern is also available on the **Ministry of Health COVID-19 Science News Webpage**.



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 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.

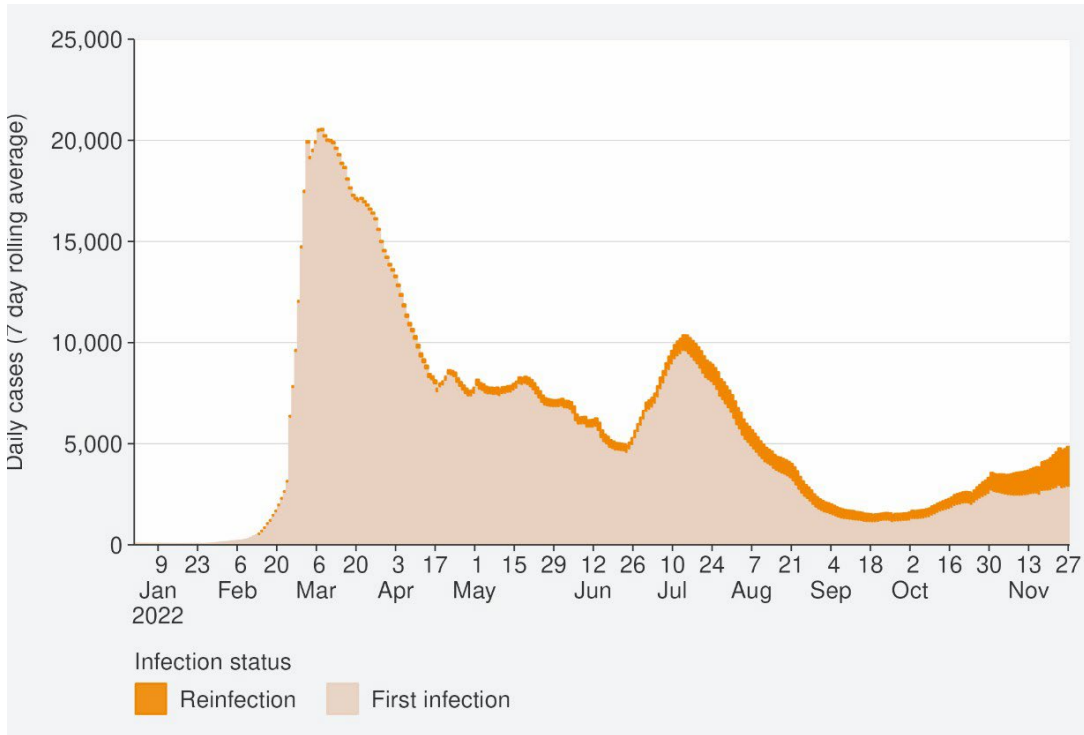
In general, reinfection refers to a second or subsequent infection after the prior infection has cleared. In this analysis, we are not able to distinguish between reinfection with the same variant or different variants. Reinfection with a different variant to the first infection is more likely than reinfection with the same variant.

It is important to highlight, this data likely reports more 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 they may have a chronic or persistent infection.

Figure 13 characterises the average number of cases per week by first infection and reinfection. Reinfections made up 24.0% of reported cases in the week ending 27 November. The proportion of reported cases that were reinfections has increased in the last three weeks, after being stable in the prior weeks. **Figure 14** shows how many first infections and reinfections have been reported cumulatively over time. Cumulatively, reinfections have made up 3.3% of total cases reported in 2022. The proportion of cases that are reinfections is expected to increase over time.

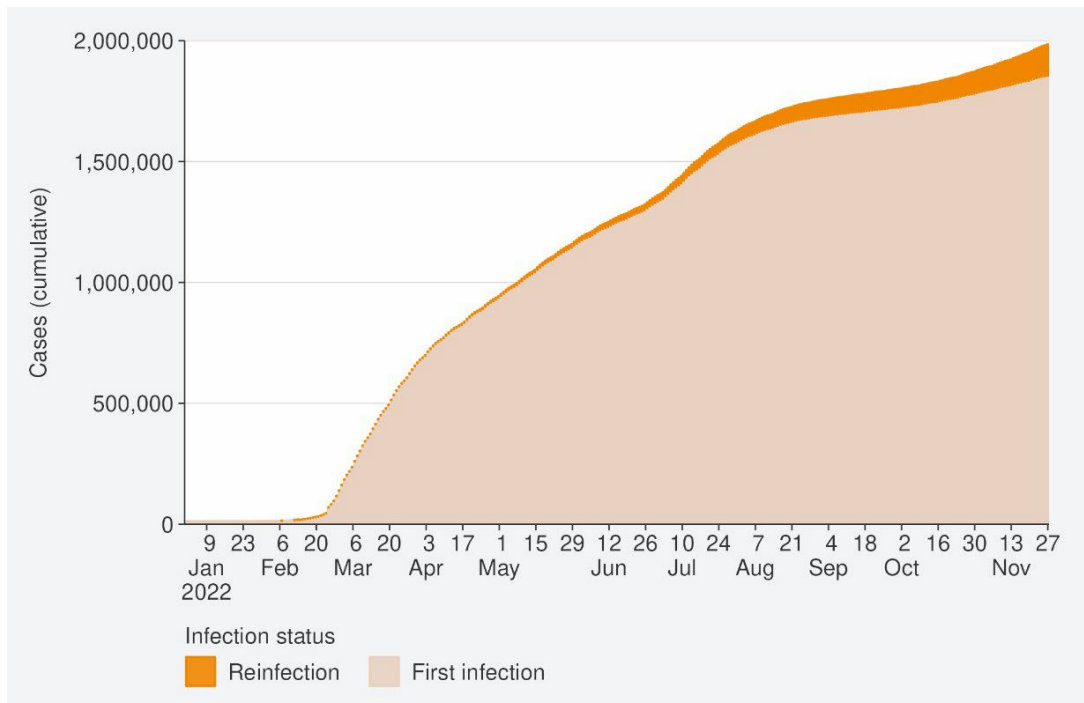
The true number of reinfections is likely higher than reported here. In general, reporting of cases is expected to decline over time. Due to under-ascertainment of the first infection and subsequent infections and, as both are required to detect a reinfection, there is likely to be under-reporting of reinfections.

Figure 13: Reinfections 7 day rolling average from 01 January to 27 November 2022



Source: NCTS/EpiSurv as at 2359hrs 27 November 2022

Figure 14: Reinfections cumulatively from 01 January to 27 November 2022



Source: NCTS/EpiSurv as at 2359hrs 27 November 2022



Comparison of epidemic trends by ethnicity

For all ethnicities age-standardised reported case rates were similar and have increased for the week ending 27 November. Increases compared to the previous week ending 20 November were; 36.8% Pacific peoples, 19.5% Māori, 12.0% European or Other, and 8.2% Asian (see **Figure 15**). The highest reported case rates were in European or Other (71.8 per 100,000); Pacific peoples and Asian had similar rates (67.6 and 67.4 per 100,000 respectively); Māori had the lowest rate (62.0 per 100,000).

For all ethnicities, those in the 25-44 age group had the highest reported case rates for the week ending 27 November; rates in this age group were highest among Pacific peoples (99.4 per 100,000); followed by European or Other (88.4 per 100,000); Asian and Māori had similar case rate for those aged 25-44 (80.9 and 80.8 per 100,000 respectively). Refer to in the appendix for non-age-standardised rates by ethnicity.

Figure 16 shows the age standardised hospitalisation rates for COVID-19 increased for Pacific peoples, decreased for Māori and Asian, and remained stable for European or Other for the week ending 27 November as compared to the week prior. Pacific peoples had the highest age standardised hospitalisation rate (1.4 per 100,000) for the week ending 20 November; followed by European or Other (1.0 per 100,000); rates were similar for Māori and Asian (0.9 per 100,000). For all ethnicities those aged 80+ had the highest hospitalisation rates. Pacific peoples aged 80+ had the highest hospitalisation rate (10.2 per 100,000); followed by European or Other (8.4 per 100,000); Asian and Māori had the lowest hospitalisation rate for those aged 80+ (6.5 and 6.1 per 100,000 respectively).

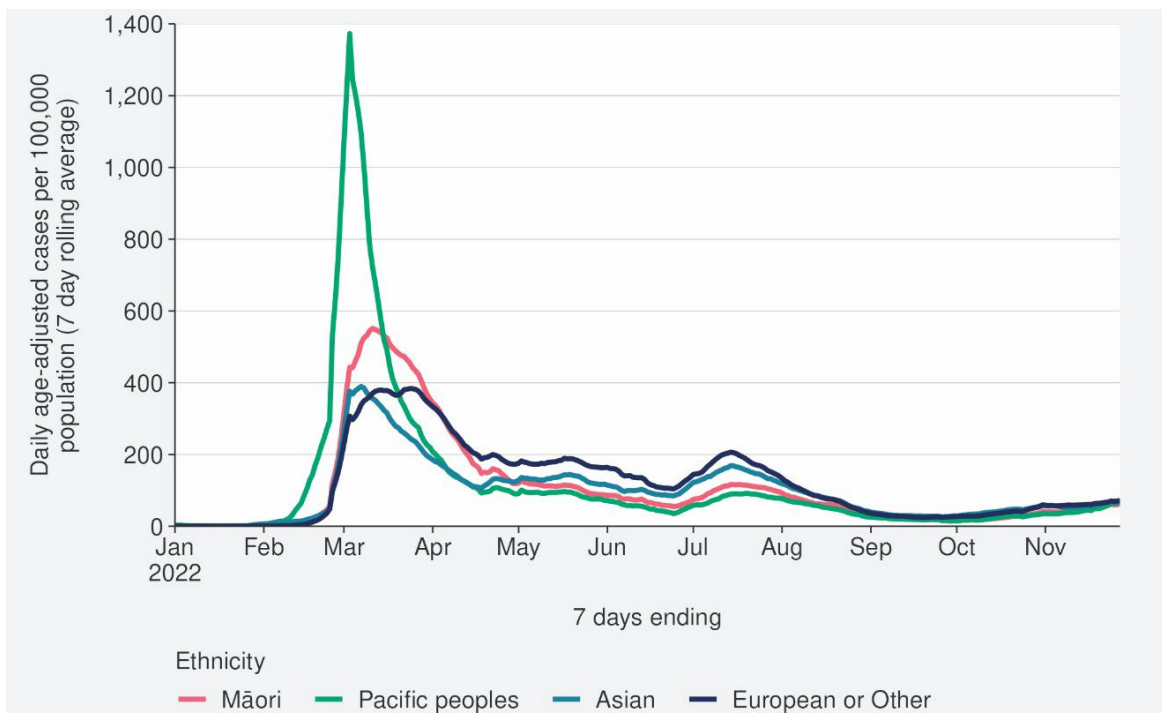
The cumulative total for the year shows that overall, Pacific peoples and Māori have had the highest risks of hospitalisation for COVID-19, 2.2 and 1.8 times the risk of European or Other, respectively for 01 January to 27 November. Asian people have had a hospitalisation rate almost 10% lower than European or Other (**Figure 17**).

The cumulative age-standardised mortality rate for 01 January to 27 November shows that Pacific peoples have had the highest risk, 2.3 times that of European or Other, followed by Māori at 1.9 times that of European or Other. Asian people have had the lowest risk of Mortality, 39% lower than European or Other (see **Figure 18**).¹³

The lower reported case rates, but 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 or Other ethnicities.

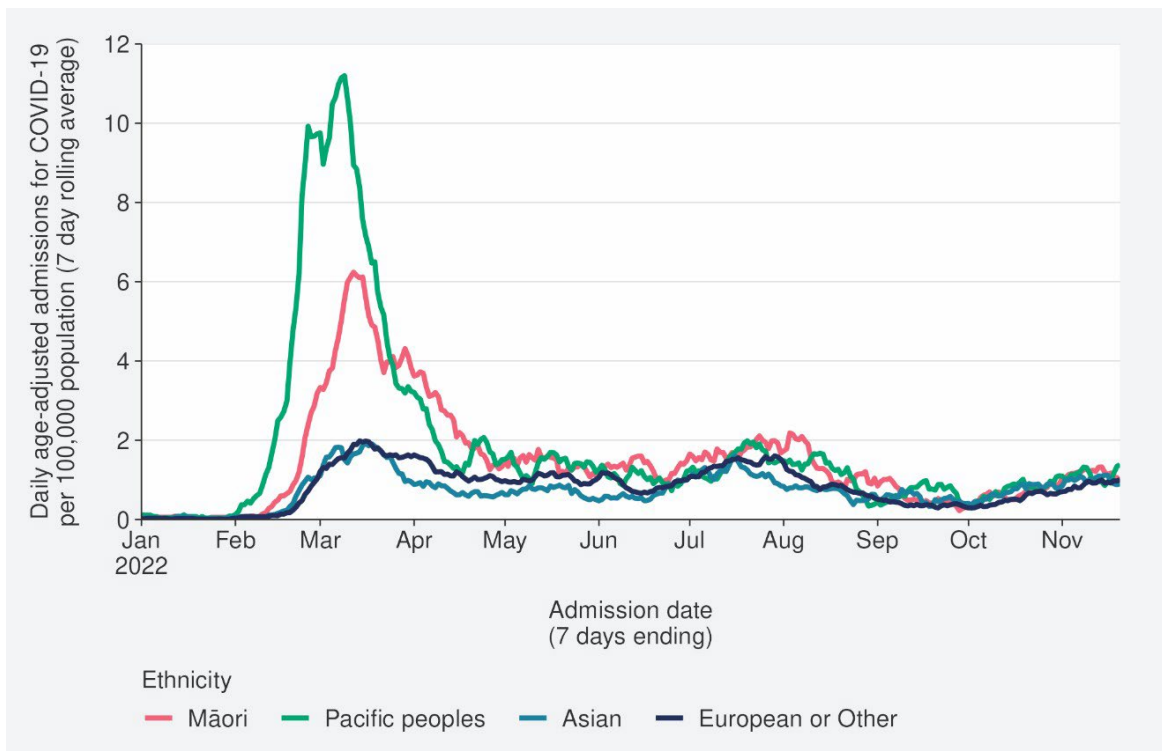
¹³ These calculations are based on 2,158 deaths occurring between January 2022 and 27 November 2022 (excludes deaths in the last 2 weeks and deaths where ethnicity was unknown).

Figure 15: National age-standardised reported case rates by ethnicity from 01 January to 27 November 2022



Source: NCTS/EpiSurv as at 2359hrs 27 November 2022

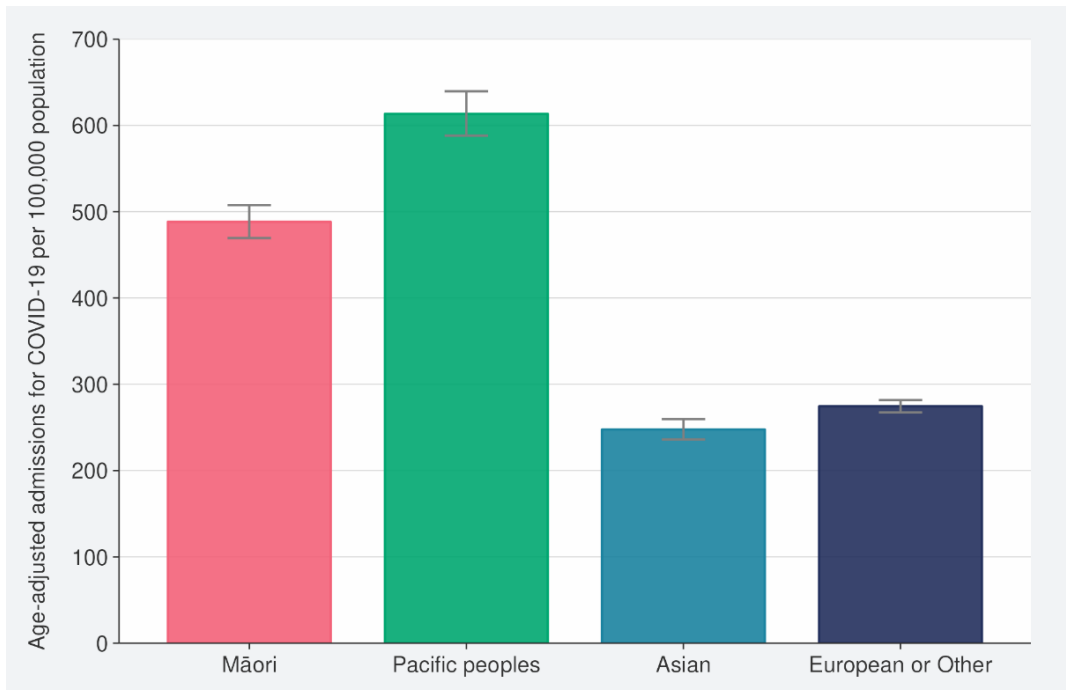
Figure 16: National age-standardised hospitalisation rates by ethnicity from 01 January to 20 November 2022



Source: NCTS/EpiSurv as at 2359hrs 20 November 2022

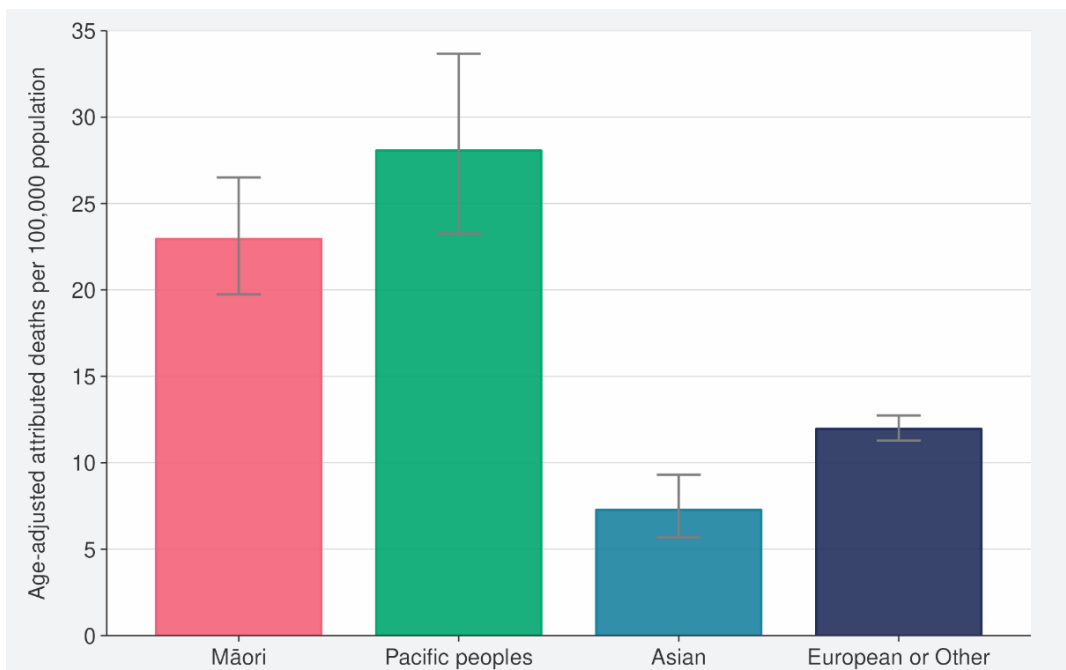


Figure 17: Age-standardised cumulative incidence (and 95% confidence intervals) of hospitalisation for COVID-19 by ethnicity, 01 January 2022 to 27 November 2022



Source: NCTS/EpiSurv, NMDS, Inpatient Admissions dataset and CVIP population estimates, 01 January 2022 to 27 November 2022

Figure 18: Age-standardised cumulative incidence (and 95% confidence intervals) of mortality attributed to COVID-19 by ethnicity, 01 January 2022 to 27 November 2022



Source: NCTS/EpiSurv, NMDS, Inpatient Admissions dataset and CVIP population estimates, 01 January 2022 to 27 November 2022

Comparison of epidemic trends by deprivation

Figure 19 shows the 7-day rolling average for reported case rates by residential area deprivation level (based on NZDep2018)¹⁴. Age-standardised case rates increased in all deprivation levels in the week ending 27 November. Refer to the appendix for non-age-standardised rates by deprivation.

Figure 20 and **Figure 21** 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 around two times the risk of hospitalisation compared with those who are least deprived.

Cumulative rates of mortality are also highest for those most deprived; 2.3 times higher than the risk of those least deprived (**Figure 22**).¹⁵

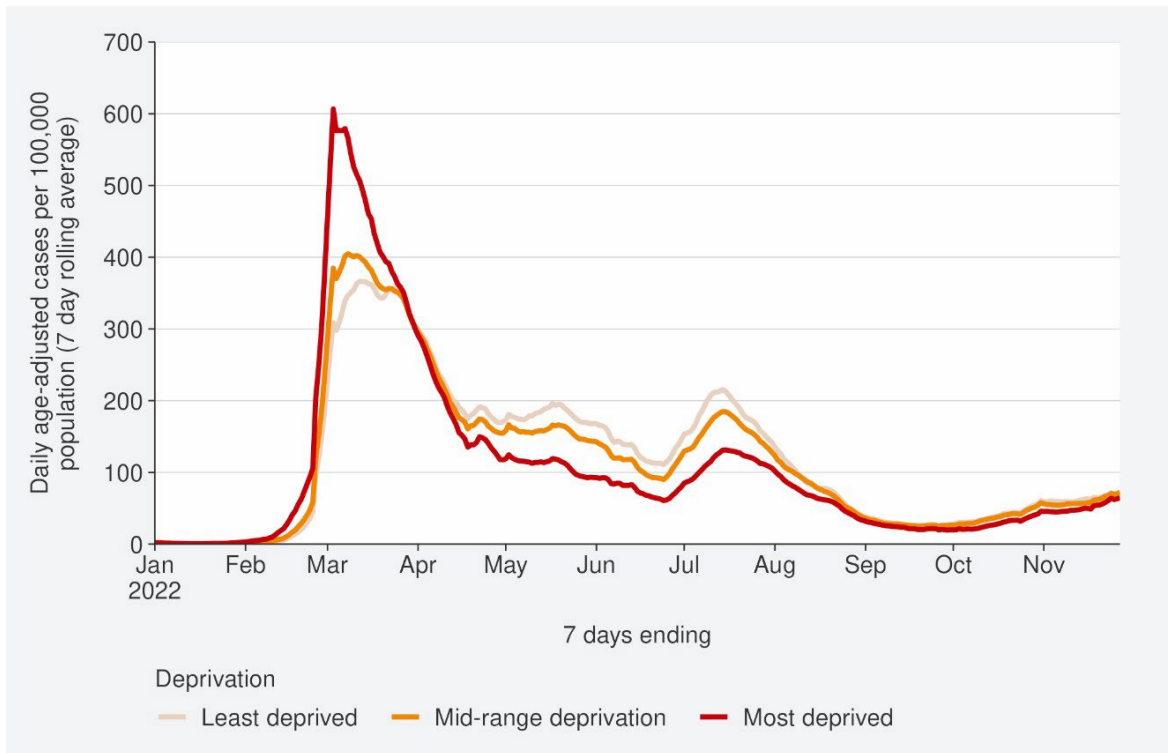
As lower case rates have been reported among those most deprived, continued higher hospitalisation and death rates suggest those who are most deprived may have lower levels of case ascertainment and/or a higher risk of poor outcomes after infection compared with those who are least deprived.

¹⁴ Atkinson J, Salmond C, Crampton P (2019). NZDep2018 Index of Deprivation, Final Research Report, December 2020. Wellington: University of Otago.

¹⁵ These calculations are based on 2,128 deaths occurring between January 2022 and 20 November 2022 (excludes deaths in the last 2 weeks and deaths where the level of deprivation was unknown).

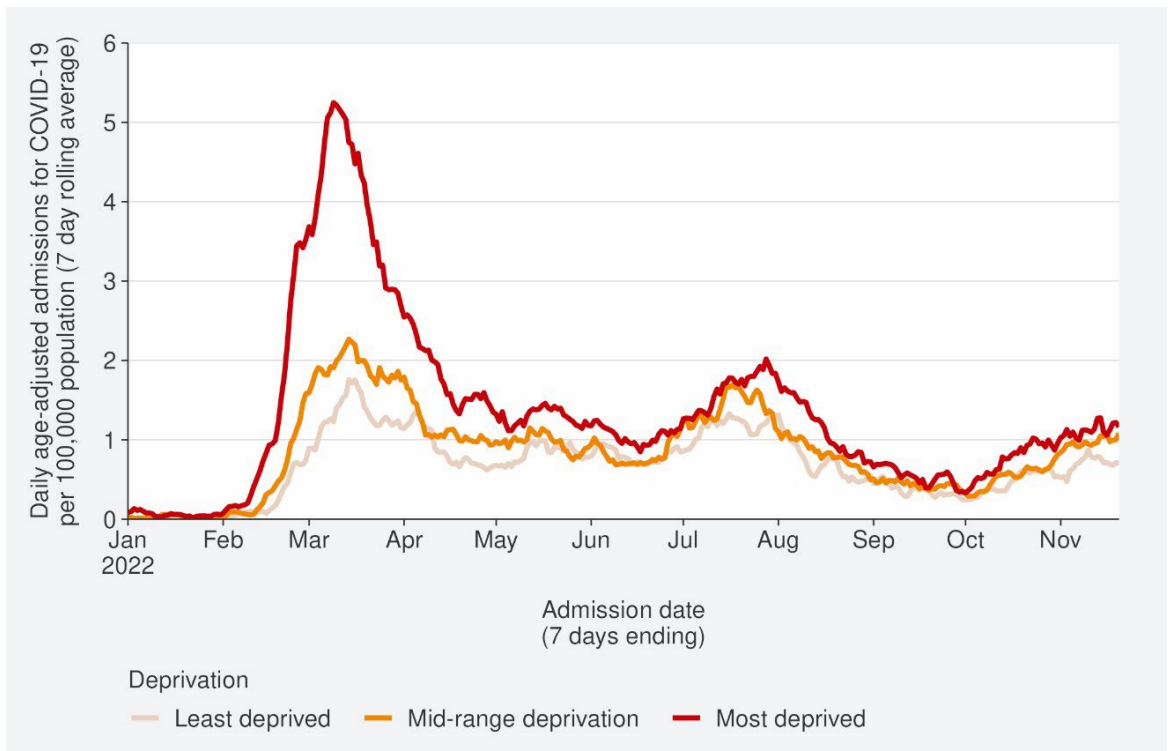


Figure 19: National age-standardised reported case rates by deprivation status for weeks 01 January to 27 November 2022



Source: NCTS/EpiSurv as at 2359hrs 27 November 2022

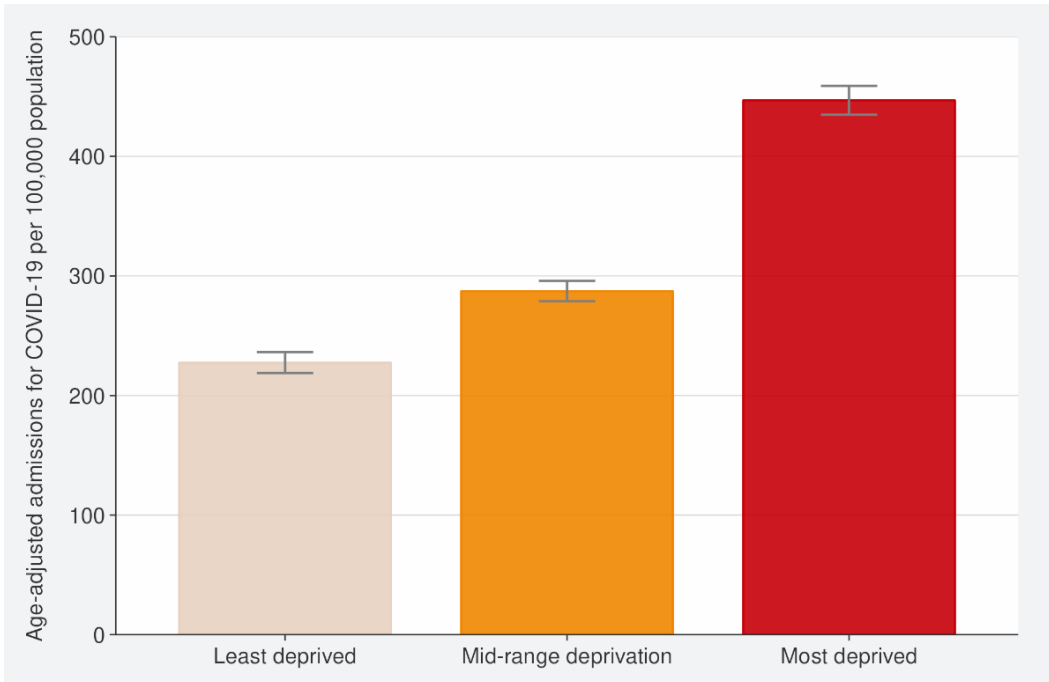
Figure 20: Age-standardised hospital admission rates for COVID-19 by deprivation from 01 January to 20 November 2022



Source: NMDS/Inpatients admissions feed as of 27 November 2022 data up to 20 November 2022

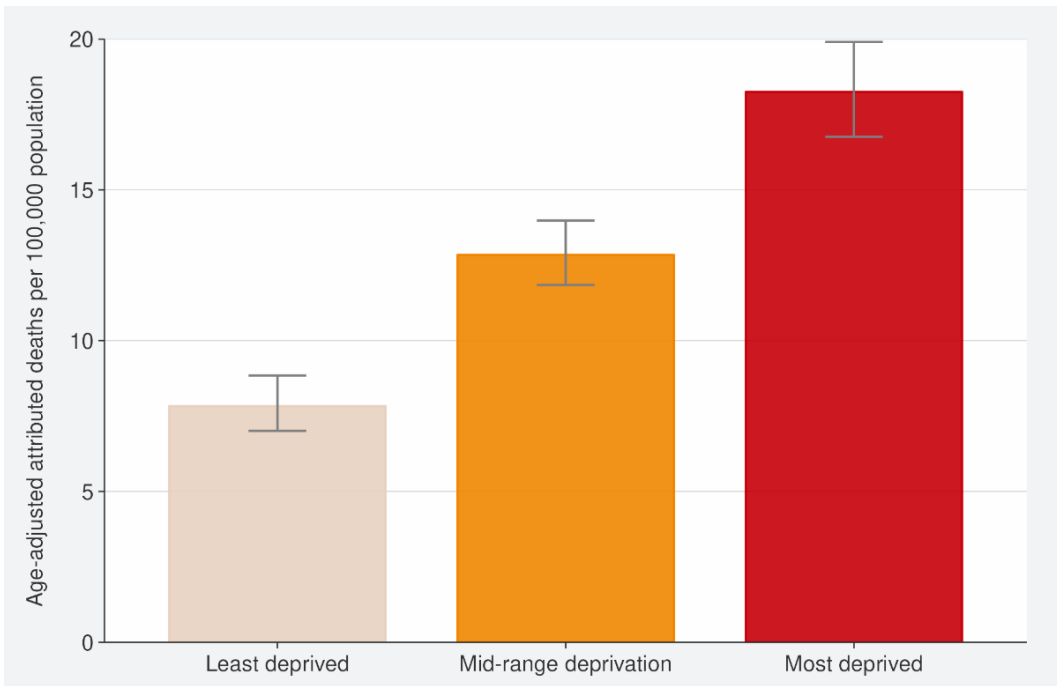


Figure 21: Age-standardised cumulative incidence (and 95% confidence intervals) of hospitalisation for COVID-19 by deprivation, 01 January 2022 to 27 November 2022



Source: NCTS/EpiSurv, NMDS, Inpatient Admissions dataset and CVIP population estimates 01 January 2022 to 27 November 2022

Figure 22: Age-standardised cumulative incidence (and 95% confidence intervals) of mortality attributed to COVID-19 by deprivation, 01 January 2022 to 27 November 2022



Source: EpiSurv, Death Documents, The Healthcare User database, Mortality Collections database and CVIP population estimates, 01 January 2020 to 27 November 2022



Global pandemic summary

Over the next few months, we expect the global situation for the COVID-19 pandemic to be driven by the ongoing emergence of new variants, waning immunity, and particularly with the Northern Hemisphere heading into winter.

- Globally, in the week ending 27 November, the number of new weekly cases remained stable (+2%) as compared to the previous week, with over 2.7 million new cases reported. However, the true number of incident cases is likely to be underestimated due to a decline in testing internationally.
- The number of new weekly deaths decreased by 5% as compared to the previous week, with over 8400 new fatalities reported.
- As of 27 November 2022, over 637 million confirmed cases and over 6.6 million have been reported globally.
- The global variant circulation indicates slow replacement of previously dominating BA.5 descendent lineages by the most recently emerging variants BQ.1 and XBB (a recombinant of BA.2.10.1 and BA.2.75)
- BA.5 and its descendent lineages continued to be dominant globally, accounting for 73.0% of sequences submitted to GISAID as of 13 November.
- BA.4 descendent lineages accounted for 2.8% of all cases, declined from 3.4% from last week as of 13 November.
- BA.2 descendent showed an increase of sequence prevalence from 7.9% to 10.1% for the week ending 13 November from the previous week.
- BQ.1 and its descendent lineages increased from 23.1% to 27.3% in the week ending 13 November. As of 28 November, BQ.1 has over 30 descendent lineages (BQ.1*). Similarly, the prevalence of XBB and its descendent lineages also increased, rising from 2.7% to 3.8% during the same reporting period.
- Unassigned sequences (presumed to be Omicron) account for 10.1% of sequences submitted to GISAID as of 13 November.
- In Australia, as of 18 November, cases and hospitalisations increased. In the 7 days to 25 November 2022, there were 584 new cases per 100,000 population. This was a large increase from the week prior (14 days to 18 November 2022) where there were 482 per 100,000 population.

Sources: **Weekly epidemiological update on COVID-19 - 30 November 2022 (who.int)**/ **Australian Government: Coronavirus (COVID-19) common operating picture / The Guardian**

Please note, global trends in cases, hospitalisations 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. Furthermore, approaches of counting hospitalisations and deaths can differ from country to country.



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 20/11/2022		Week ending 27/11/2022		% Change	Week ending 13/11/2022		Week ending 20/11/2022		% 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	3434.7	65.6	3862.6	73.8	+12.5%	54.8	1.3	57.4	1.4	+4.7%
Region										
Northern	1368.7	68.5	1613.7	80.8	17.9	31.3	1.6	32.4	1.6	3.7
Te Manawa Taki	544.3	53.2	614.0	60.0	12.8	5.4	1.2	7.3	1.6	34.2
Central	714.9	73.1	760.3	77.7	6.4	4.4	0.9	4.1	0.9	-6.5
Te Waipounamu	800.7	66.3	868.0	71.9	8.4	13.7	1.1	13.6	1.1	-1.0
Age group										
<5	96.7	31.1	112.3	36.1	16.1	5.3	2.2	4.7	1.9	-10.8%
5-14	254.9	37.6	280.9	41.4	10.2	2.3	0.4	1.3	0.2	-43.7%
15-24	392.9	60.1	498.4	76.2	26.9	3.1	0.6	2.1	0.4	-31.8%
25-44	1100.9	74.9	1266.7	86.2	15.1	8.4	0.7	8.4	0.7	0%



45-64	958.1	74.3	1053.7	81.7	10.0	7.7	0.8	12.0	1.2	55.6%
65+	631.3	76.0	650.6	78.3	3.1	28.0	4.4	28.9	4.6	3.1%
Ethnicity										
Māori	415.9	51.9	496.9	61.9	19.5	6.9	1.3	4.7	0.9	-31.3%
Pacific peoples	202.3	51.7	277.3	70.9	37.1	3.7	1.0	5.0	1.4	34.6%
Asian	553.3	66.3	596.4	71.5	7.8	8.4	1.1	7.0	0.9	-16.9%
European or Other ¹⁶	2240.3	70.7	2469.9	78.0	10.2	35.7	1.4	40.7	1.7	14%
Deprivation										
Least deprived	1090.9	72.1	1183.0	78.1	8.4	13.3	1.0	14.1	1.1	6.5%
Mid-range deprivation	1357.7	67.7	1538.9	76.7	13.3	21.0	1.3	23.3	1.4	10.9%
Most deprived	922.7	58.8	1073.4	68.4	16.3	19.3	1.7	18.0	1.6	-6.7%

¹⁶ 'Other' referring to all ethnicities other than Māori, Pacific peoples, Asian and European, specifically MELAA; Middle Eastern, Latin American and African. See Table 2 for breakdowns of MELAA ethnicities.



Table 2: Cumulative reported cases and hospitalisations admissions from 01 January 2022 to 27 November by level 2 ethnicity.

Ethnicity	Level 2 Ethnicity	Cumulative reported cases of COVID-19	Cases per 1,000 population	Cumulative hospitalisation for COVID-19	Hospitalisations per 1,000 population	Population
Asian	Asian NFD	9,360	419	31	1	22,320
Asian	Chinese	64,980	276	549	2	235,331
Asian	Indian	101,104	413	854	3	245,079
Asian	Other Asian	49,182	404	339	3	121,732
Asian	Southeast Asian	56,563	519	278	3	108,939
Māori	Māori	282,729	371	3392	4	762,780
MELAA	African	10,283	390	124	5	26,364
MELAA	Latin American / Hispanic	14,192	489	80	3	28,998
MELAA	Middle Eastern	10,147	313	171	5	32,395
Pacific Peoples	Cook Island Māori	19,890	373	303	6	53,299
Pacific Peoples	Fijian	18,144	443	203	5	40,956
Pacific Peoples	Niuean	8,136	418	126	6	19,477
Pacific Peoples	Other Pacific Island	7,086	490	76	5	14,466
Pacific Peoples	Pacific Island NFD	1,685	460	6	2	3,663
Pacific Peoples	Samoan	69,995	452	1094	7	154,997
Pacific Peoples	Tokelauan	2,942	429	47	7	6,863
Pacific Peoples	Tongan	30,498	419	533	7	72,703



Public Health Risk assessment for BQ.1.1 (Cerberus) and XBB (Gryphon)

The 'Overall risk assessment' is presented in comparison to the prior or current predominant variant, in this case BA.5. 'Increased risk' indicates the assessed variant as worse than the previous predominant variant with regards to that characteristic; 'no change' means that the assessed variant poses equivalent risk; and 'decreased risk' means that the assessed variant is better than the previous predominant variant.

'Confidence level' indicates the overall quality of data that are available to make the risk assessment: 'High' (high quality, robust data); 'Moderate' (good data with limitations); 'Low' (very little data available). 'Insufficient data' indicates that there are no data of reasonable quality on which to base an assessment at this time.

Table 3: Public Health Risk assessment for BQ.1.1 (Cerberus), 16 November 2022

BQ.1.1 is related to BA.5.3 but with Spike protein mutations 444T, 460K, 346T

	Overall risk assessment	Confidence level	Assessment and rationale
Overall growth advantage	Increased risk	Moderate	<p>Evidence of a growth advantage compared to BA.5. BQ.1.1 variant has an estimated growth advantage of 63% per week (95% Credible Interval: 59 – 68) compared to BA.5 in the UK (on 20 October 2022). Currently present in New Zealand and is growing relative to BA.5. In the fortnight ending 11 November 2022 it made up 10% of sequenced cases and 5% of isolates from hospital cases.</p>
Transmissibility	Insufficient data	Insufficient data	<p>No direct data on intrinsic transmissibility and there is no current ability to measure from surveillance data. There is some laboratory evidence that ACE2 binding is increased for BQ.1.1 compared to prior Omicron variants which may affect transmissibility/infectivity.</p>



Immune evasion	Increased risk	Moderate	Evidence of increased immune evasion. More resistant to neutralisation from sera of vaccinated and breakthrough infected individuals. At least 2 small studies show that mRNA bivalent BA.4/5 vaccine produces robust neutralising activity against BQ.1.1 compared to monovalent wild type vaccine.
Severity	Insufficient data	Insufficient data	No evidence of a change in severity compared to BA.5 Evidence from a surge of cases of this variant in France suggests it is not causing increased rates of hospitalisations and deaths.
Therapeutics	Increased risk	Low	One <i>in vitro</i> study showed loss of efficacy of all currently approved clinical monoclonal antibody therapies including Evusheld and Bebtelovimab.
Testing	Insufficient data	Insufficient data	Evidence that suggests a clinically relevant decrease in the performance of RATs for detection of the Omicron variant (varies by device), but it is uncertain how this will affect sensitivity specifically for BQ.1.1.
Overall Assessment	There is an increase in overall risk from the previous predominant variant, BA.5. (Moderate confidence) BQ.1.1 is increasing in frequency overseas and appears to be more transmissible and immune evasive.		

Source: SARS-CoV-2 Variants of Concern Update – Manatū Hauora, Ministry of Health

Table 4: Public Health Risk assessment for XBB (Gryphon), 16 November 2022

XBB is a recombinant virus (related to BA.2 and BJ.1) with additional spike protein mutations 364T, 445P, 446S and 490V

	Overall risk assessment	Confidence level	Assessment and rationale
Overall growth advantage	Increased risk	Low	Evidence of a growth advantage compared to BA.5 Cases are increasing in Singapore against a background of BA.5. Currently present in New Zealand and is growing. In the fortnight ending 11 November 2022 it made up 3% of all sequenced cases and 2% of isolates from hospital cases.



Transmissibility	Insufficient data	Insufficient data	No direct data on intrinsic transmissibility and there is no current ability to measure from surveillance data. There is some laboratory evidence that ACE2 binding is increased for XBB compared to prior Omicron variants which may affect transmissibility/infectivity.
Immune evasion	Increased risk	Moderate	<i>Evidence of increased immune evasion.</i> More resistant to neutralisation from sera of vaccinated and breakthrough infected individuals.
Severity	Insufficient data	Insufficient data	In late October 2022 the World Health Organization Technical Advisory Group on SARS-CoV-2 Virus Evolution noted that current (limited) information does not indicate an increase in severity for XBB.
Therapeutics	Increased risk	Low	One <i>in vitro</i> study showed loss of efficacy of all currently approved clinical monoclonal antibody therapies including Evusheld and Bebtelovimab.
Testing	Insufficient data	Insufficient data	Evidence that suggests a clinically relevant decrease in the performance of RATs for detection of the Omicron variant (varies by device), but it is uncertain how this will affect sensitivity specifically for XBB.
Overall Assessment	No change in risk		

Source: SARS-CoV-2 Variants of Concern Update – Manatū Hauora, Ministry of Health

