COVID-19

Trends and Insights Report

Updated 03 June 2022

Please note that this report should only be distributed beyond the intended recipients on a need-to-know basis and is not for public consumption.

Purpose of report

This report focuses on a broad national and regional overview with key insights based on the quantitative trends in the New Zealand COVID-19 pandemic, including the trends and scale of infection and diagnosis as well as morbidity and mortality. In interpreting and using these data, readers need to be aware of surveillance data limitations.

Key insights from past 7 days

Infection Trends

- **Nationally, the weekly case rate was 9.6 per 1,000** population for the week ending 29 May. This rate has decreased from 10.8 per 1,000 population in the previous week.
- **For the week ending 15 May**, the estimates suggest that **2.1% (638/29,824) of healthcare workers** and **1.4% (295/20,389) of border workers tested positive.** While these are not representative samples of New Zealanders, **border workers' risk is very similar to the general community risk** (but more reflective of the Auckland population).
- **Border worker comparisons with Auckland** case rates suggest **substantial under ascertainment of cases (1.4% [14 per 1,000] versus 10.1 per 1,000**, respectively).
- Levels of viral RNA in **wastewater have decreased in Auckland Metro and Central region** reversing the trend seen in the past month; however, **the decreases are not as substantial** as seen in the case rates. **Levels remained stable in Te Manawa Taki and Southern regions.**
- Contradictory to other evidence, **this could indicate there was no substantial decrease in any region in the underlying level of new infections for the past 2 months.**
- In the past week, **three out of 19 DHBs experienced an increase in case rates.** These were a 12% increase in Nelson Marlborough; 7% increase in South Canterbury and a 4% increase in Capital and Coast.

Demographic Trends in Case Rates

- The **lowest case rates** are in **Pacific peoples (5.5 per 1,000)**; case rates in this group have decreased by **14.5% in the past week. Māori case rates have also declined** and are now **6.2 per 1,000.**
- **For the 65+ age group,** case rates in the Northern region decreased by 14.8%, Te Manawa Taki decreased by 15.9%, Central decreased by 3.3% and Southern increased by 0.4% in the past week.
- Case rates for those at higher risk of complications or severe illness from COVID-19, those aged 45-64 and those aged 65+ were highest in European or Other (45-64 at 11.7 per 1,000 and 65+ at 7.9 per 1,000). **Cases in Māori aged 65+ have been decreasing for the past two weeks**; the rate decreased from 7.7 per 1,000 last week to 5.9 per 1,000 in the week ending 29 May.

Whole Genome Sequencing

- The previous weeks mark the **first detection of BA.5 and a further detection of BA.2.12.1 in the community.** In addition, **variants of concern (BA.4, BA.5 and BA.2.12.1) were detected in the wastewater across multiple North Island sites in the past week.**
- Among Omicron cases, BA.1 was the dominant subvariant (~60% at the start of February 2022) but has since been outcompeted by BA.2, which made up about 99% of sequenced community cases in the past two weeks.
- Based on WGS data generated over the course of the Omicron wave, **ESR estimates that 83% of all community cases (~1.14 million cases) reported since 20 January 2022 have been the BA.2 variant.**
- As of 29 May, ESR had received samples from 117 of the 250 PCR positive cases who were hospitalised in the week to 27 May 2022. Of these, 87% had a BA.2 genome, 3% were Omicron of unassigned sub-variant, 7% failed WGS and <1% were BA.1, BA.5, or BA.2.12.1.

Border Surveillance

- In the week ending 22 May, there were 34,288 border arrivals, of which **91.8 % (31,463) uploaded a RAT result upon arrival.** This is slightly lower than the 92.6% from the week prior.
- In the week ending 22 May, about 3% of arrivals tested positive (via RAT).
- In the week ending 22 May, the percentage of PCR positive border arrivals with WGS complete was 42.3%. However, please note that WGS can be incomplete for recent cases. **This percentage was at 65.1% for the week ending 15 May and 66.7% for the week ending 08 May.**

Hospitalisation and Mortality

- For the week ending 29 May, the **national hospital occupancy rate was 7.2 per 100,000 population, a decrease of 12.5% in the past week.** Hospital occupancy rates have continued to vary across regions in the past week. Central region (7.8 per 1,000) increased by 19% and Southern (9.2 per 1,000) increased by 3%, while the Northern region (7.1 per 1,000) decreased by 29% and Te Manawa Taki (5.6 per 1,000) decreased by 22% in the past week.
- As of 01 June 2022, **1,197 people have died** with or after COVID-19 infection. Of these, **1,151 have died within 28 days** of being reported as a case.

International and Scientific Insights

- **Globally, the number of new weekly cases has continued to decline** since a peak in January 2022. In the week ending 29 May 2022, over 3.3 million cases were reported, an 11% decrease as compared to the previous week. The **number of new weekly deaths also continues to decline,** with over 9,600 fatalities reported, a 3% decrease as compared to the previous week.
- The scientific insights section includes studies on outbreak management, economic evaluations, transmission dynamics and modelling studies.

Health System Capacity

- For the week ending 19 May, **23% of the 656 Aged Residential Care (ARC) facilities have at least one active COVID-19 case (154 of 656 facilities).**

- **ED attendances for the week ending 26 May are among the highest since reporting commenced.** Overall volumes increased by 2% last week, from 22,637 to 23,194 nationally. Shorter stays in ED stayed static at 74% nationally. The number of admitted patients has gone up over the past eight weeks, which is in line with the reported hospital occupancy of over 90% rising steadily. Number of ED presentations shows the same pattern as number of admitted patients.

Domestic epidemic outlook

Infection outlook

- Since the March peak, case rates were declining leading up to the week of 17 April, after which a plateau has been observed in national case trends.
- The overall national picture shows a relative decrease in cases compared to the past four weeks of plateau; driven by decrease in Northern and Te Manawa Taki regions.
- The current decrease seen across the motu is unlikely to be related to testing behaviours as a similar decrease as been observed in border workers who undergo routine testing and there were also decreased in the wastewater RNA levels.
- Infection levels are likely to be higher than the self-reported cases indicate as wastewater RNA has not decreased since early April up until the slight decrease in the past week, despite an overall substantial decrease in cases rates since the March peak.
- Fatigue from following public health orders, misconception about level of infection risk and infection trends from reported cases could be impacting infection prevention and control behaviours and public health measures, which may be increasing risk of infection, especially among vulnerable populations.
- The combined effects of the reduction in mandated public health measures with the move to Orange, e.g. mask wearing in some settings, and the return of schools from term break on 04 May could explain the net increase of 16% in cases rates among 5–14 year-olds in the past three weeks ending 29 May 2022 compared to previous three weeks ending 08 May 2022.
- The previous weeks mark the **first detection of BA.5 and a further detection of BA.2.12.1 in the community**. In addition, **variants of concern (BA.4, BA.5 and BA.2.12.1) were detected in the wastewater in multiple North Island sites in the past week.**

Tertiary Care outlook

- There remains a substantial increase in risk for the elderly as infection in the older age groups has been increasing.
- It is likely the highest case hospitalisation and mortality risk will be for at-risk populations such as those residing in age residential care, with co-morbidities and in conditions of high deprivation.

Outbreak Management Outlook

- Given COVID-19 vaccine waning immunity, reduced vaccine uptake for booster dose, and uncertainty around the impact of other respiratory illness, the importance of other public health measures should continue to be emphasized.
- The domestic epidemic outlook is affected by the interactions of both modifiable and non-modifiable risk (and protective) factors. Modifiable factors are ones that can be influenced or more directly changed. Non-modifiable factors cannot be regulated or are very difficult to regulate.
    - **Modifiable factors** – masking, gathering limits, contact tracing, testing, and isolation, welfare and income to enable adherence to PH measures.
    - **Non-modifiable factors** – winter seasons, variants, other respiratory pathogens, behavioural changes in adherence to public health measures and social mixing (e.g. schools back and university back).

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Infection Trends

Summary of evidence for infection and case ascertainment trends

Currently, **the national border workforce case rates in the past week (14.5 per 1,000) are higher than the general population (9.6 per 1,000);** these rates were similar when comparing border workforce rates in the Northern region among 25-44 year-olds at 14.9 per 1000 (where the greatest proportion of the workforce is concentrated). This continues to suggest the **underlying level of infection could be substantially higher than diagnosed rates**. Consistent with the trend in general population diagnoses **at a national level, rates have again decreased in the previous week and are now lower than they were at the beginning of May**.

All regions saw a decrease in case rates, border worker rates have also been decreasing, which suggests that this decrease is not an artifact of testing behaviours. Levels of viral RNA in **wastewater have decreased in Auckland Metro and Central region** reversing the trend seen in the past month; however, **the decreases are not as substantial** as seen in the case rates. **Levels remained stable in Te Manawa Taki and Southern regions.** Contradictory to other evidence, **this could indicate there was no substantial decrease in any region in the underlying level of new infections for the past 2 months.**

Case rates are tracking closely to 'C' the worst-case scenario which assumes an increase in transmission as people return towards pre-COVID levels of social and work mixing after the initial Omicron peak. EpiNow nowcasting reports a median **effective R of 0.9,** meaning cases trends are likely to remain the same over the next week or so.

Approximation of underlying infection incidence

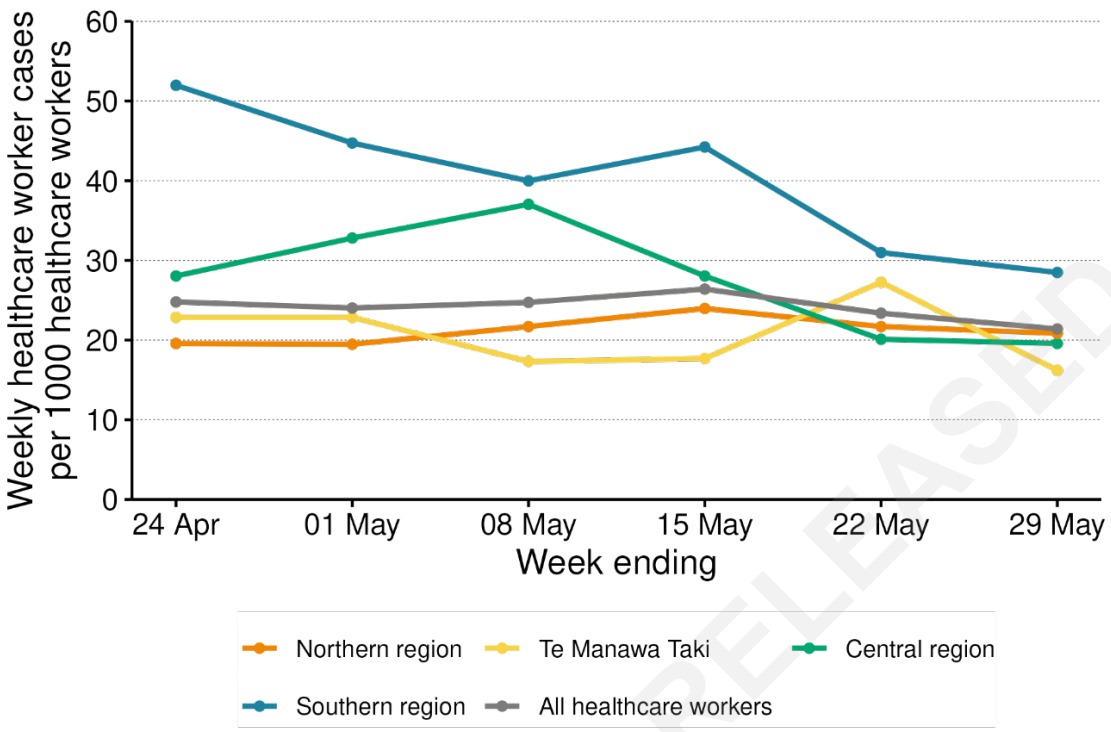
Underlying infection incidence has been gauged using case rates for routinely tested healthcare workers and border workers where there was evidence of regular testing.[1] While these workforces are not a representative sample of New Zealanders, **the border workers are now likely to have a similar risk to the general population (but more indicative of Auckland)** as their risk of infection from the community is likely to be much higher than the risk faced in their workplace.

For the week ending 29 May, estimates suggest that 2.1% (638/29,824) of healthcare workers (**Figure 1**) and 1.4% (295/20,389) of border workers[2] (**Figure 2**) have tested positive (for the first time). The border workforce is concentrated in the Nothern region (56% of the total workforce) in the 25-to-44-year age group; the rate for Northern border workers in this age group was 1.5%.

[1] The population has been identified based on ever having a surveillance code related to the respective workforce and having at least 2 tests (at least one of which was negative) in 2022. A sensitivity check was run using at least 3 tests and while these numbers reduced, the incidence estimates remained very similar.

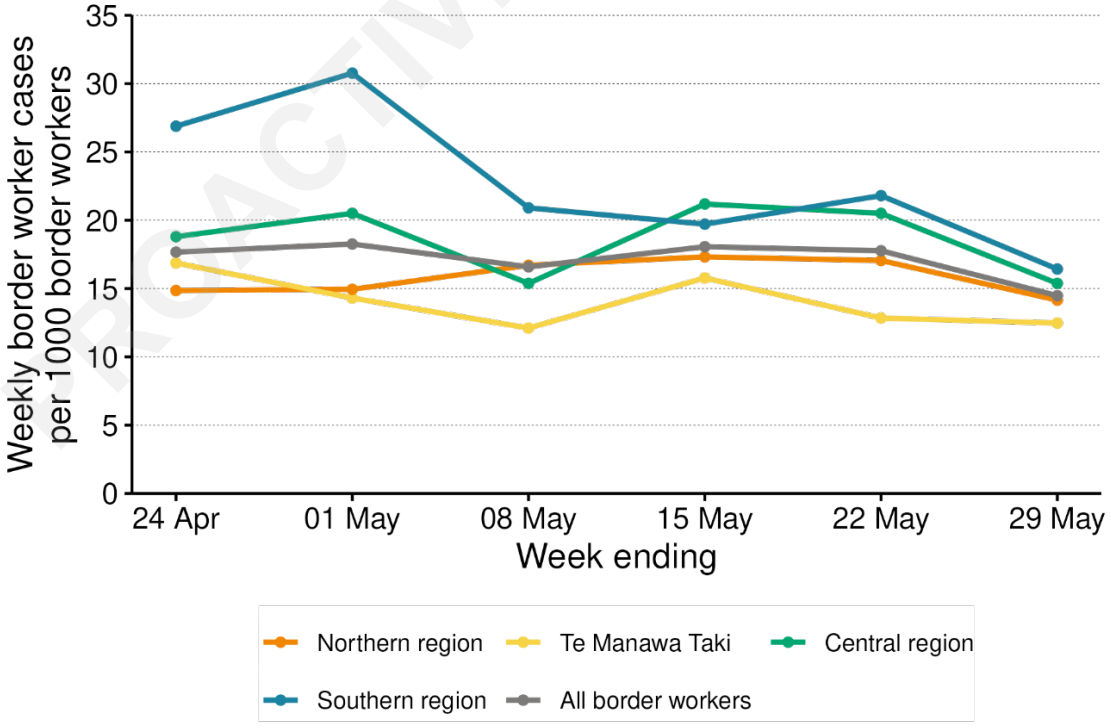
[2] This rate may be underestimated as not all border workers are rostered on and therefore not required to undertake testing.

Figure 1: ***Regional weekly case rates of health care workers for weeks 24 April – 29 May 2022***



Source: Éclair/Episurv, 2359hrs 29 May 2022

Figure 2: ***Regional weekly case rates of border workers for weeks 24 April – 29 May 2022***

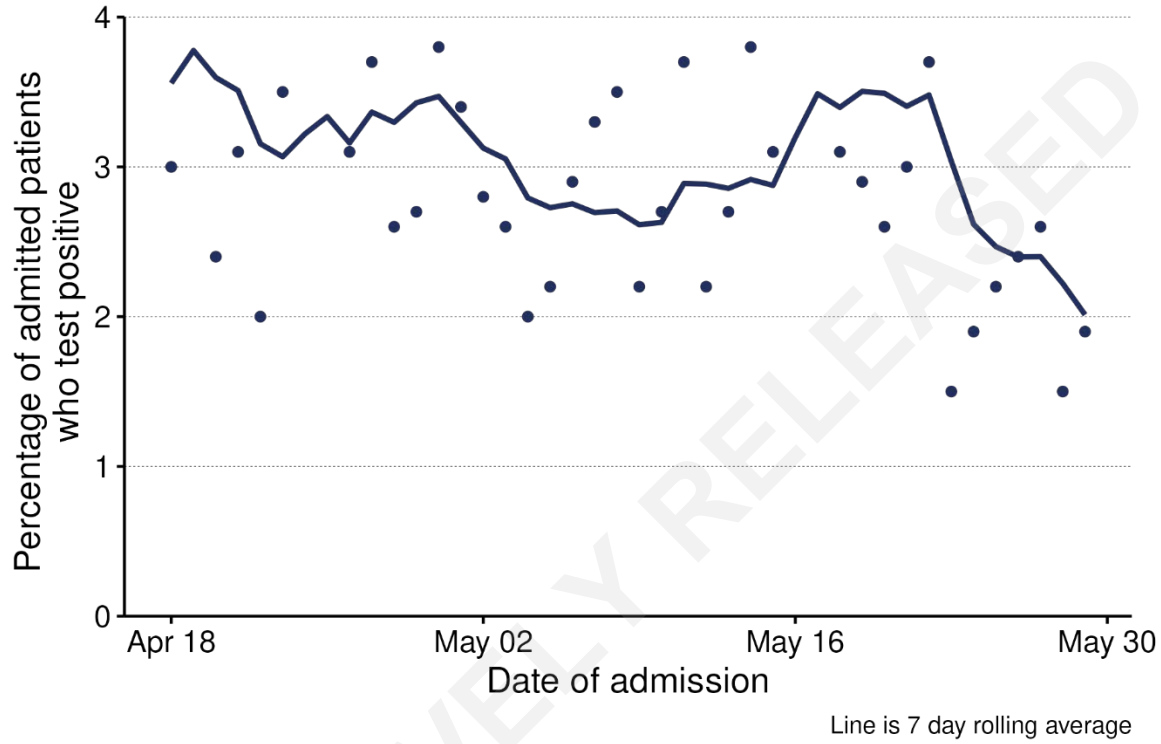


Source: Éclair/Episurv, 2359hrs 29 May 2022

Test positivity trends in Northern region hospital admissions

The Northern region inpatient positivity is shown in **Figure 3**. Since **peaking at ~15% in early March,** the Northern region hospital admissions **positivity has declined** with a 7-day rolling average of 3.5% (266/7644) in the week ending 22 May to 2% (154/7652) in the week ending 29 May.

Figure 3: ***Percent of tests positive among Northern region hospital admissions***



Source: Northern Region hospitalisation data, NCTS & EpiSurv as at 2359hrs 29 May 2022

Wastewater quantification

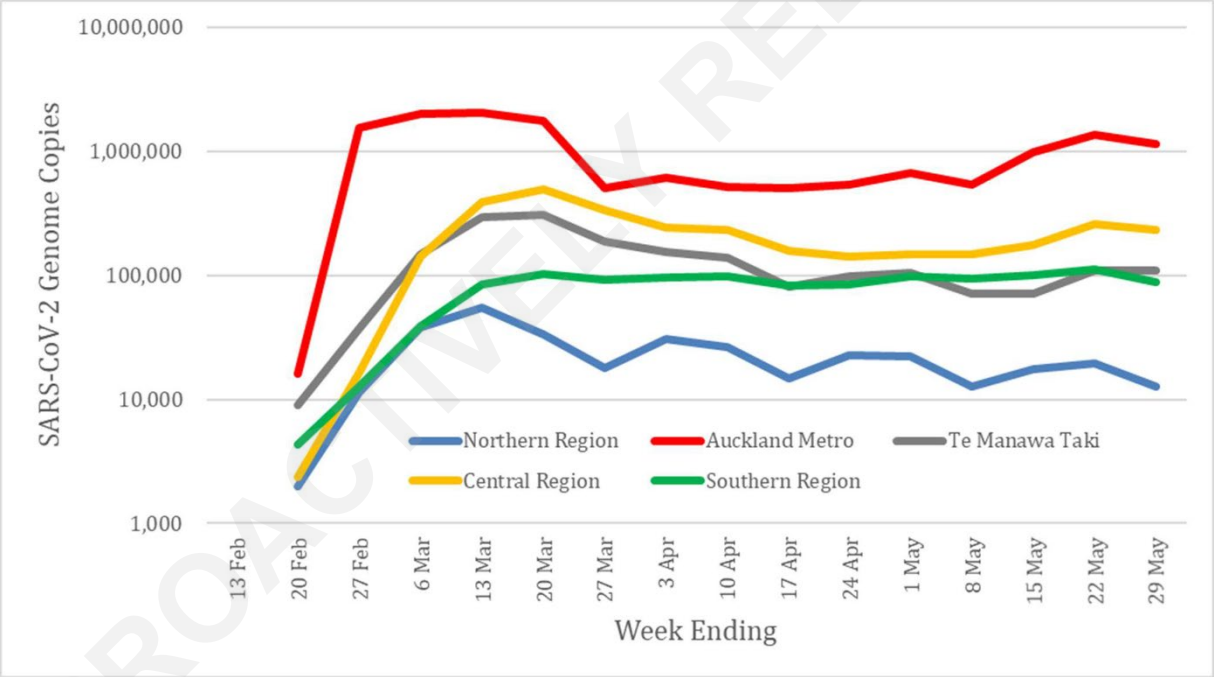
Figure 4 provides an overview of wastewater results by region. Please note that it is not appropriate to compare SARS-CoV-2 absolute levels by region; this figure can only be used to assess the trends *within* each region.

The SARS-CoV-2 RNA levels in wastewater **in the Northern region** (excluding Auckland Metro) **have had small variations since peaking in mid-March, but overall have followed a downward trend.** Overall, **Auckland Metro rates have substantially increased** in the past three weeks ending May 29.

Te Manawa Taki has remained relatively steady since Mid-April and **Central region trends have been increasing** since the week ending 08 May, **but have plateaued in the past week**. **Southern region wastewater trends have been stable** for the past two months.

The trends in each catchment area are **not necessarily consistent within each region;** within region trends are available in ESR's weekly wastewater report.

Figure 4: ***Regional wastewater trends in SARS-CoV-2 genome quantification for weeks 20 February – 29 May 2022***



Source: ESR SARS-CoV-2 in Wastewater update for week ending 29 May 2022

Trends in diagnosed cases

Overall, **the weekly case rate was 9.6 per 1,000** population for the week ending 29 May. This is a **decrease from the previous week,** which was 10.8 per 1,000.

Figure 5 shows that case rates have decreased across all regions in the past week. Northern region (9.1 per 1,000) and Te Manawa Taki (7.8 per 1,000) both decreased by 17%, while Central region (9.6 per 1,000) decreased by 9% and Southern region (12.5 per 1,000) decreased by 5%.

In the past week, **three DHBs experienced an increase in case rates**. These were a 12% increase in Nelson Marlborough; 7% increase in South Canterbury and a 4% increase in Capital and Coast.

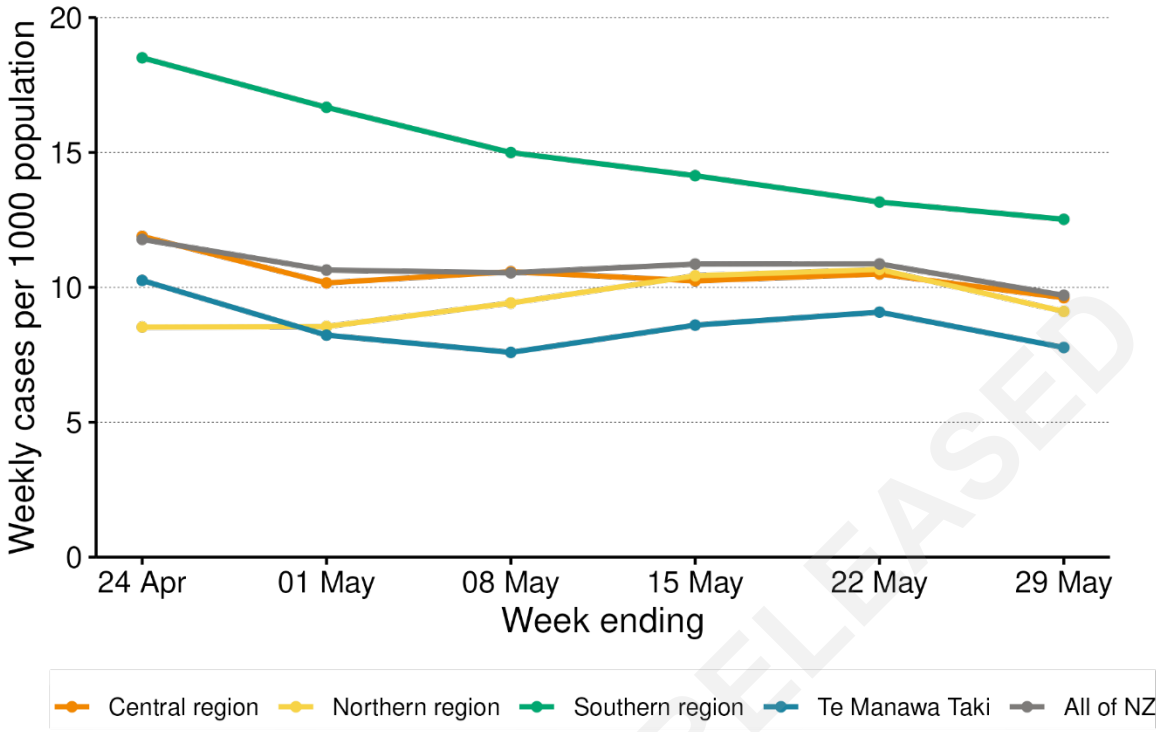
In the Northern region, the weekly case rate was highest for **Waitematā (10.9 per 1,000)** followed closely by Auckland DHB (10.1 per 1,000).

In Te Manawa Taki, weekly case rates were highest in **Taranaki (11.9 per 1,000)**. Other DHBs in Te Manawa Taki had weekly case rates between 5 and 9 per 1,000.

The highest weekly case rates in the Central region were in **Capital and Coast (12.0 per 1,000)**. Other DHBs in the Central region had weekly case rates between 7 and 10 per 1,000.

In the Southern region, the highest case rates were in **West Coast (16.9 per 1,000)** followed by South Canterbury DHB (15.2 per 1,000) and Canterbury DHB (13.2 per 1,000).

Figure 5: ***Regional weekly case rates for weeks 24 April – 29 May 2022***



Source: NCTS/EpiSurv as at 2359hrs 29 May 2022

Modelled and actual cases

COVID-19 Modelling Aotearoa (CMA) have published three "April" scenarios for how case prevalence may develop during the rest of 2022. The three scenarios cover different possibilities for how transmission may develop as the population responds to easing of public health interventions after the March 2022 national peak (**Figure 6**). The scenarios are:

A. Small increase in mixing after the national peak in cases
B. Medium increase in mixing after the national peak in cases
C. Large increase in mixing after the national peak in cases and a shift in the distribution of cases towards older groups at the beginning of July, which has significant flow-on effects on hospitalisation and fatalities.

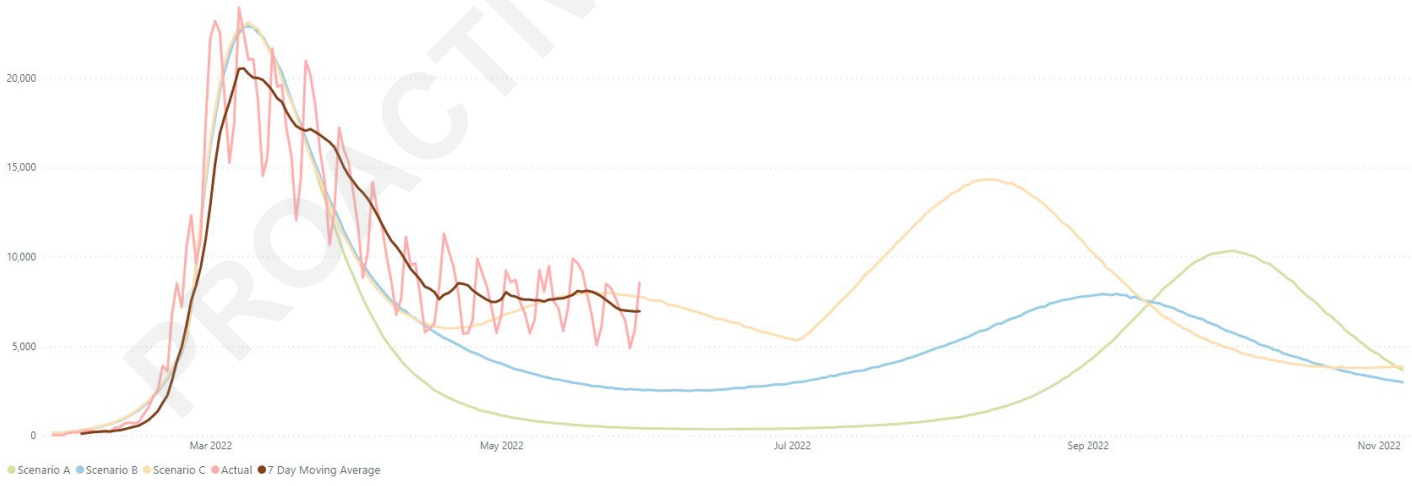
These scenarios allow for waning immunity after vaccination and/or infection. This addition in the modelling scenario leads to a second wave sometime from July. Increase in transmission will occur from waning immunity, which also interacts with changes in population behaviour and adherence to public health measures.

The size and timing of a second wave will be affected by a combination of changes in modifiable exposure risk factors such as gathering size limits, masking, contact tracing, testing and isolation along with pharmaceutical interventions such as boosters and anti-virals. Furthermore, changes in the distribution of infections in older and more at-risk populations will also impact the size and timing of the second wave.

These scenarios are based on the current Omicron BA.2 variant. Any significant changes in the virus could cause significantly different case numbers. Scenarios for BA.4 and possible future Variants of Concern will be reported shortly.

Currently cases are tracking closely to 'C', the scenario with the largest increase in transmission .

Figure 6: *COVID Modelling Aotearoa scenarios compared with reported cases nationally*



Sources: COVID-19 Modelling Aotearoa Branching Process Model April 2022, and Ministry of Health reported case data 31 May 2022

Effective reproduction rate, and forecasts of cases and infections

These estimates used the *EpiNow2* package on 30 May using data to 28 May.[3] The median estimate of **effective R (R_{eff}) nationally is 0.9** (90% Credible Interval [CI]: 0.8-1.1) for cases to 28 May, after adjusting for data lags; this is a decrease from 1.0 the week prior. The confidence interval indicates a low to moderate level of uncertainty for this estimate.

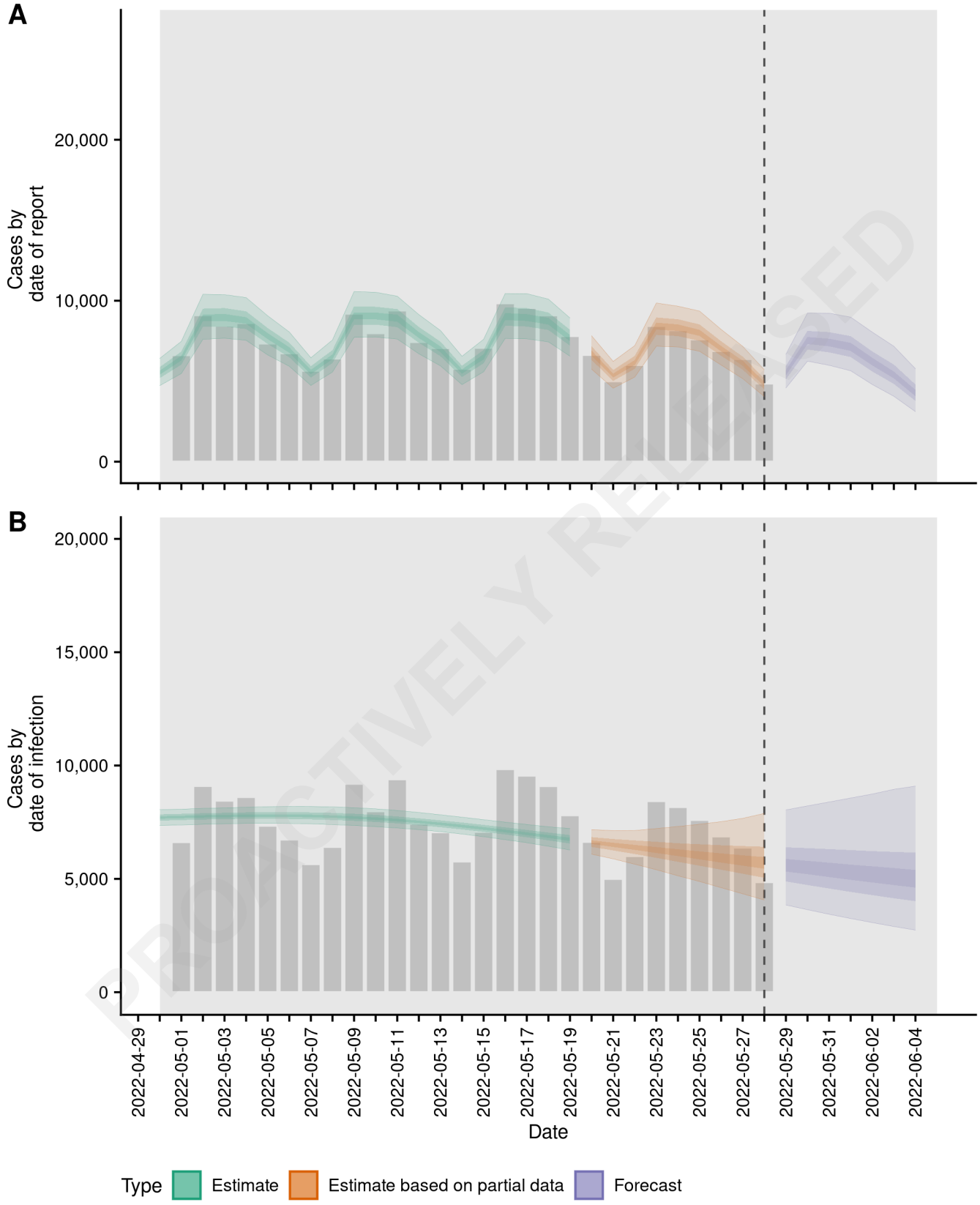
Figure 7 compares the previous week's model median estimate for 28 May 2022 of 5,234 cases per day with a 50% credible interval of 4,591 – 5,960 to the actual reported cases of 4,806. This was an 8% overestimate of the actual number, but within the 50% credible interval.

For most Public Health Units (PHU) the model is estimating a **median R_{eff} of 0.9 or 1.0.** The exceptions are Nelson Marlborough (1.1), Toi te Ora (0.8), Tairāwhiti (0.7) and Hawkes Bay (0.7).

The model's median estimate is that national reported cases could be 4,262 cases per day by 04 June (50% credible interval: 3,778 - 4,793). However, the credible intervals for the projected cases would be even wider if the possibility of continuing trend changes in effective R were included.

[3] The EpiNow package 'now-casts' and forecasts cases to measure current, past and future transmission nationally by calculating and then extrapolating the effective reproduction number, R_{eff}. The model does not consider several factors that may impact transmission, such as rapid changes in public health measures, population behaviour, mobility, or school holidays. This model requires sustained daily cases before it can make predictions. It only counts cases that become confirmed at some stage.

Figure 7: ***Projected national cases by (A) date of report and (B) date of infection***



Source: EpiNow 28 May 2022

Demographic trends in case rates

Ethnicity trends over time and by region

Figure 8 shows national case rates by ethnicity. **Figure 10** shows regional case rates by ethnicity.

In the past week, **case rates declined for all ethnicities. Rates in Asian and European or Other ethnicities remain higher than those for Māori and Pacific Peoples**. **European or Other** continue to have the **highest weekly case rate at 11.1 per 1,000,** which is a decrease from last week (12.1 per 1,000). The **lowest case rates continue to be in Pacific Peoples (5.5 per 1,000)** which is a 14.5% decrease from last week (6.3 per 1,000). Māori have had an even larger decrease from 7.5 per 1,000 to 6.2 per 1,000.

Case rates in the Northern region for European or Other were 11.3 per 1,000 and rates for Asian were 8.6 per 1,000. Māori had the second lowest case rate at 5.9 per 1,000. Pacific Peoples (4.9 per 1,000) continued to have the lowest case rates in this region.

Case rates for Te Manawa Taki were highest for European or Other (8.8 per 1,000), comparable to Asian (8.0 per 1,000), which also decreased in the past week. Pacific Peoples had the second lowest case rate at 6.7 per 1,000 and Māori (5.0 per 1,000) continued to have the lowest case rates in this region.

Central region rates for Asian (9.8 per 1,000), have remained stable, while rates for European or Other (10.8 per 1,000), Pacific Peoples (5.6 per 1,000) and Māori (6.3 per 1,000) have decreased from the previous week.

In the Southern region, case rates were highest for European or Other (12.9 per 1,000) and Asian (12.4 per 1,000). Pacific Peoples continue to have the lowest case rate at 9.3 per 1,000. Māori have the next lowest case rate at 9.7 per 1,000; a 19.4% decrease from last week.

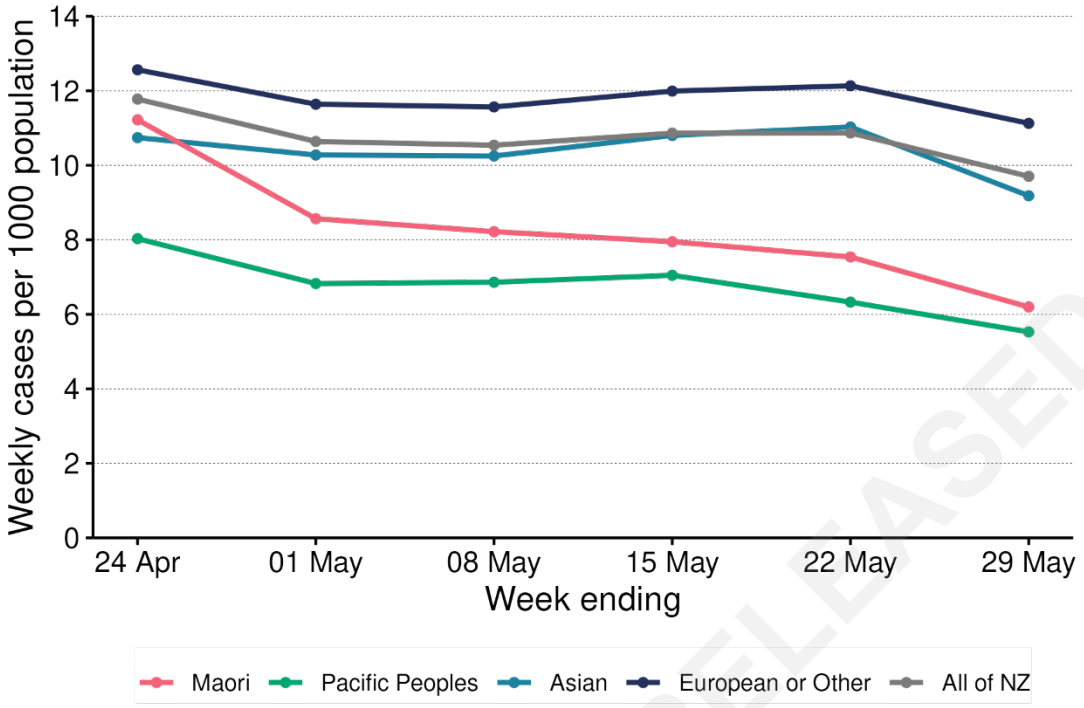
Figure 9 shows national case rates by ethnicity and further breakdown by age group. The **highest case rates** out of any cohort are **within those aged 25-44 of European or Other ethnicity (13.1 per 1,000)** whilst the lowest case rates were in those aged 0-4 of Pacific Peoples ethnicity (2.4 per 1,000). For both Māori and Pacific Peoples, case rates are highest in the 25-44 and 45-64 age groups. For Asian people, case rates are highest in the 15-24 and 25-44 age groups. For European or Other, case rates have converged for all age groups between the ages of 5 and 64.

Case rates for Asians aged 65+ have remained relatively stable in the past month, with a case rate of 4.6 per 1,000 in the week ending 29 May. **Case rates for European or Other aged 65+** have also remained relatively stable in the past month, with a case rate of 7.9 per 1,000 in the week ending 29 May. **Cases in Pacific People aged 65+ have decreased** from 6.6 per 1,000 in the previous week to 4.7 per 1,000 in the week ending 29 May. **Cases in Māori aged 65+ have also decreased** from 7.7 per 1,000 last week to 5.9 per 1,000.

Case rates for those at higher risk of complications or severe illness from COVID-19, those aged 45-64 and those aged 65+ were highest in European or Other (45-64 at 11.7 per 1,000 and 65+ at 7.9 per 1,000).

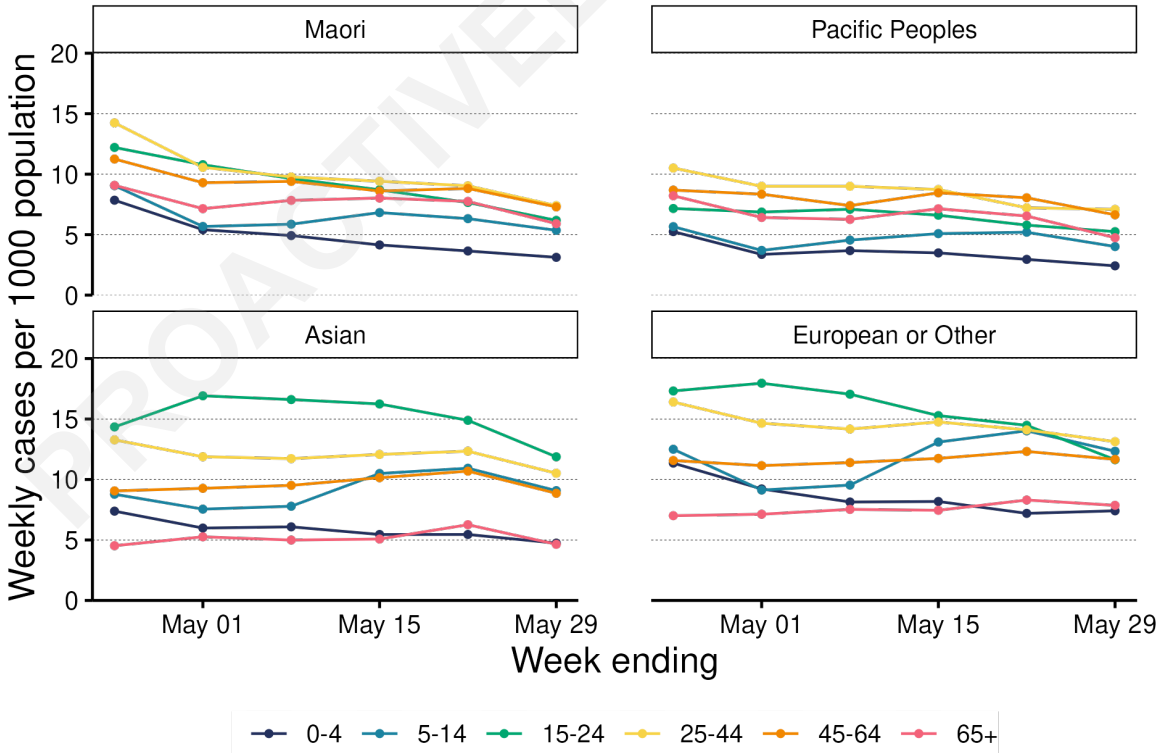
It is important to note that Māori and Pacific Peoples have lower life expectancies than other ethnicities in Aotearoa New Zealand. This could mean an increased risk for COVID-19 complications at a lower age than other ethnicities.

Figure 8: ***National weekly case rates by ethnicity for weeks 24 April – 29 May 2022***



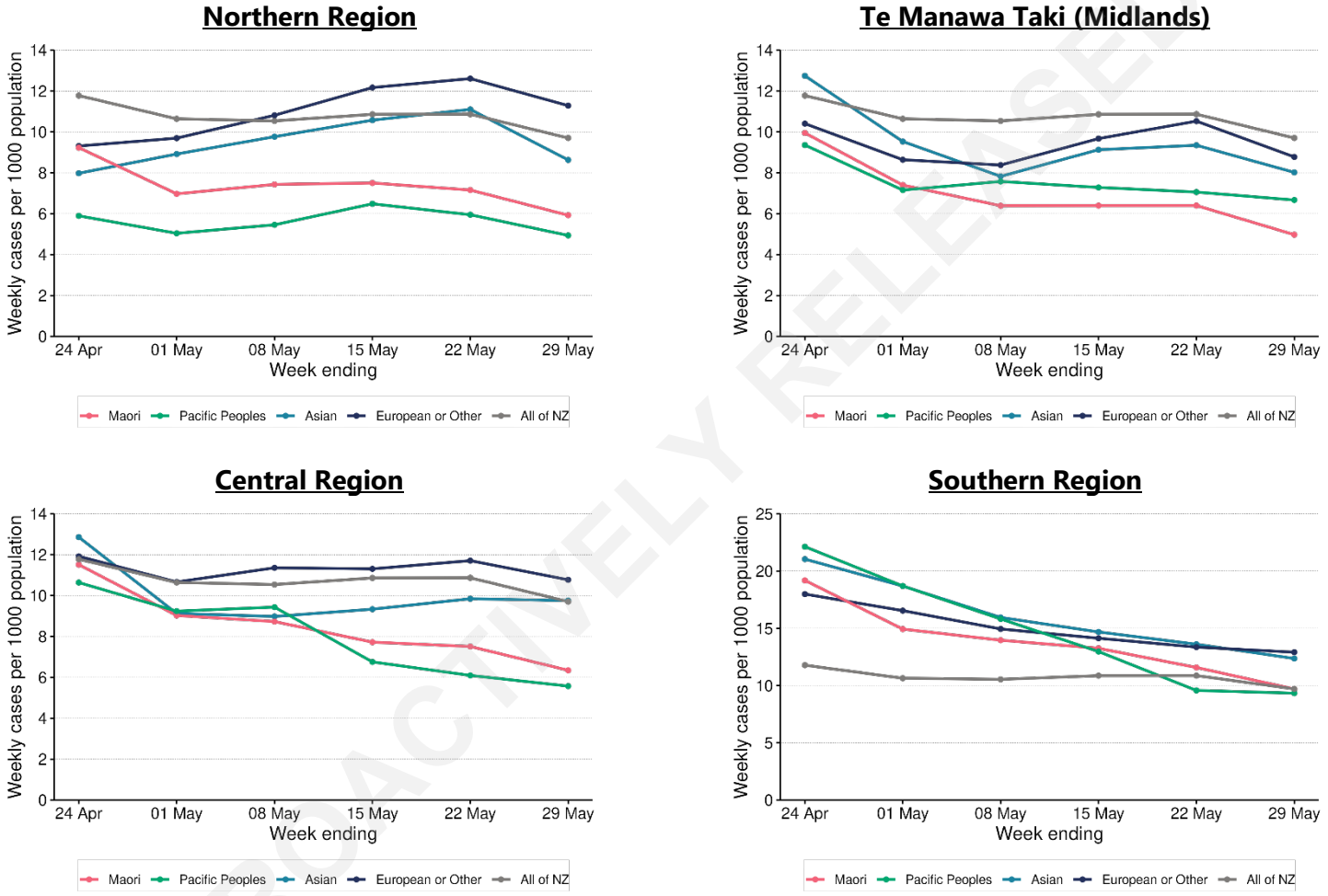
Source: NCTS/EpiSurv as at 2359hrs 29 May 2022

Figure 9: ***National ethnicity-specific weekly case rates by age group for weeks 24 April – 29 May 2022***



Source: NCTS/EpiSurv as at 2359hrs 29 May 2022

Figure 10: ***Regional weekly case rates by ethnicity for weeks 24 April – 29 May 2022***



Source: NCTS/EpiSurv as at 2359hrs 29 May 2022

Age trends over time and by region

Figure 11 shows community cases by age nationally. Case rates in all age groups have decreased in the past week.

Nationally, **case rates were relatively similar for 5-14, 15-24 and 45-64 age groups (9.4, 9.9 and 10.5 per 1,000 respectively)** in the past week. Those aged 0-4 continued to have the lowest weekly case rate at 5.3 per 1,000, followed by the 65+ age group (7.4 per 1000). The 25-44 age group had the highest case rate at 11.3 per 1000 in the past week.

Regional patterns of age group infection were similar to the pattern observed nationally, with case rates for most groups trending between 5 per 1,000 and 15 per 1,000 since late April.

For the 0-4 age group, case rates in the Northern region decreased by 4.5%, Te Manawa Taki decreased by 0.6%, Central increased by 1% and Southern decreased by 7.8% in the past week.

For the 5-14 age group, case rates in the Northern region decreased by 16%, Te Manawa Taki decreased by 22.4%, Central decreased by 17% and Southern decreased by 6.7% in the past week.

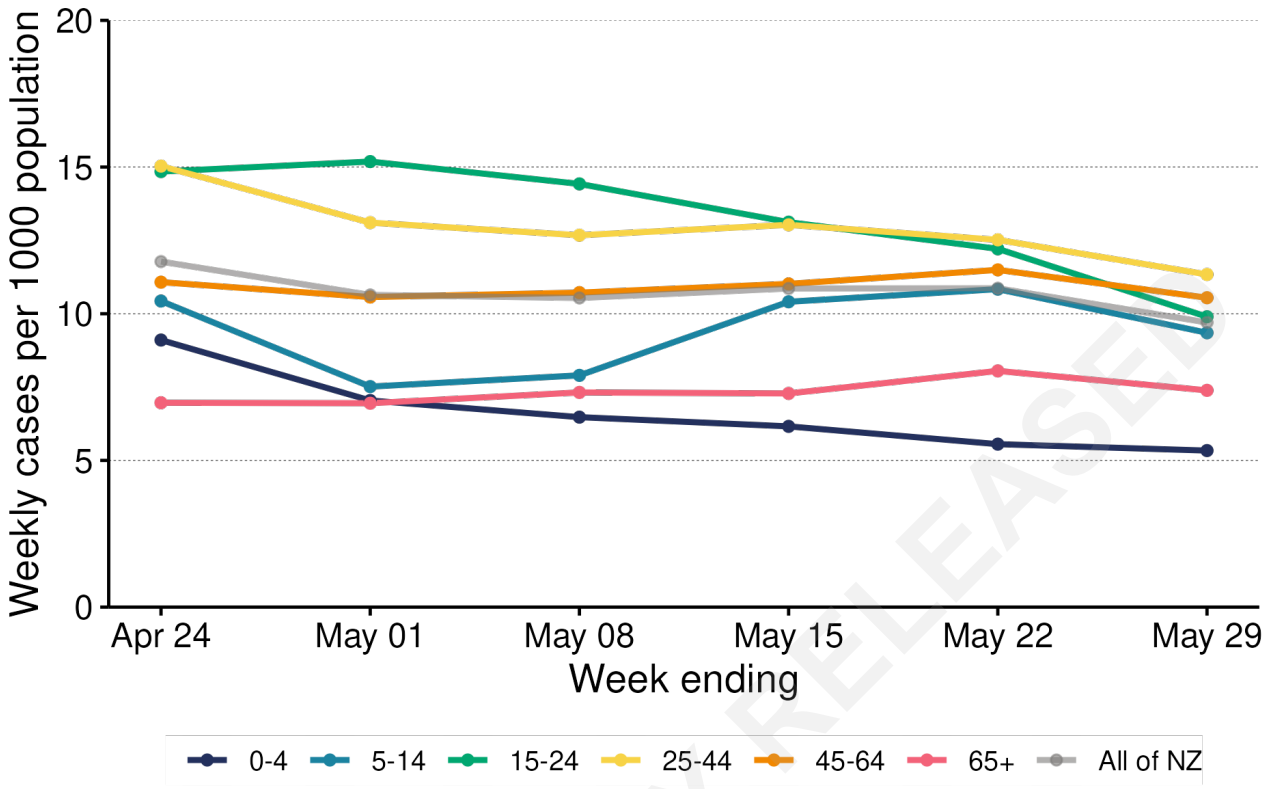
For the 15-24 age group, case rates in the Northern region decreased by 24.3%, Te Manawa Taki decreased by 28%, Central decreased by 9.9% and Southern decreased by 11.6% in the past week.

For the 25-44 age group, case rates in the Northern region decreased by 13.2%, Te Manawa Taki decreased by 12.2%, Central decreased by 5.8% and Southern decreased by 7.4% in the past week.

For the 45-64 age group, case rates in the Northern region decreased by 11.5%, Te Manawa Taki decreased by 15.9%, Central decreased by 9.3% and Southern increased by 0.3% in the past week.

For the 65+ age group, case rates in the Northern region decreased by 14.8%, Te Manawa Taki decreased by 15.9%, Central decreased by 3.3% and Southern increased by 0.4% in the past week.

Figure 11: ***National weekly case rates by age for weeks 24 April – 29 May 2022***



Source: NCTS/EpiSurv as at 2359hrs 29 May 2022

Deprivation trends over time, by ethnicity and by region

Figure 12 shows case rates based on the NZDep2018.[4] Deprivation is a structural determinant of COVID-19 both in terms of risk and protection. Areas of high deprivation are ones where there is poor access to the internet, low incomes, higher number of welfare recipients, increased unemployment, single parent families, and higher prevalence of people living in rented accommodation and/or in homes that are overcrowded and damp. These factors impact the ability to sustain self-isolation for cases and their household members.

Overall, in the past week, **case rates continue to be highest in the areas of least deprivation (12.1 per 1,000 population),** followed by areas of mid-range deprivation (10.4 per 1,000) and areas most deprived (6.7 per 1,000).

Access to RATs and to an internet connection to report RAT results is likely associated with lower levels of deprivation. Thus, it is unlikely that as large a difference in case rates exists between those of low and high deprivation and that a higher level of case under-ascertainment exists in areas of higher deprivation.

Comparison of national case rates of deprivation by ethnicity in the past week for areas most deprived shows that case rates were highest in the European or Other followed by Asian ethnicity (8.8 and 8.1 per 1,000 respectively). Cases in Pacific Peoples were the lowest in areas most deprived (4.1 per 1,000) and lowest in areas least deprived alongside Asian ethnicity (9.8 per 1,000). European or Other had the highest case rates in areas least deprived at 12.7 per 1,000 followed by Māori (10.5 per 1,000).

For the most deprived areas, cases in Māori made up 18% of cases. The proportion of cases in the most deprived areas for Pacific Peoples was 10%, for Asian 16% and for European and Other, 56%. Following this, 80% of cases in areas of least deprivation were European and Other compared with 11% Asian, 6% Māori and 3% Pacific Peoples.

In the Northern region, case rates were highest in the least deprived areas (11.4 per 1,000 population) followed by areas of mid-range deprivation (10.2 per 1,000) and areas most deprived (5.8 per 1,000).

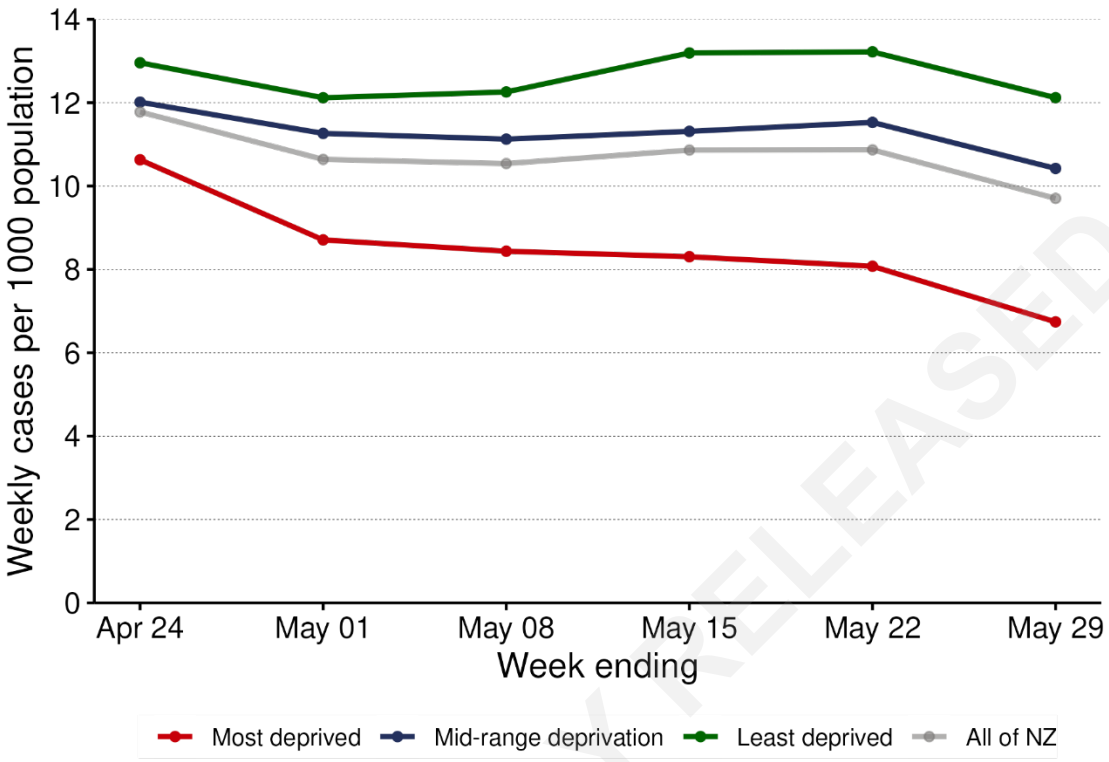
In Te Manawa Taki region, case rates were highest in the least deprived areas (9.4 per 1,000) followed by areas of mid-range deprivation (8.5 per 1,000) and areas most deprived (6.1 per 1,000).

In the Central region, case rates were highest in the least deprived areas (12.1 per 1,000) followed by areas of mid-range deprivation (10.3 per 1,000) and areas most deprived (6.5 per 1,000).

In the Southern region, case rates were highest in the least deprived areas (14.4 per 1,000) followed by areas of mid-range deprivation (12.3 per 1,000) and areas most deprived (10.2 per 1,000).

[4] Contents (otago.ac.nz)

Figure 12: ***National weekly COVID-19 case rates by deprivation status for weeks 24 April – 29 May 2022***



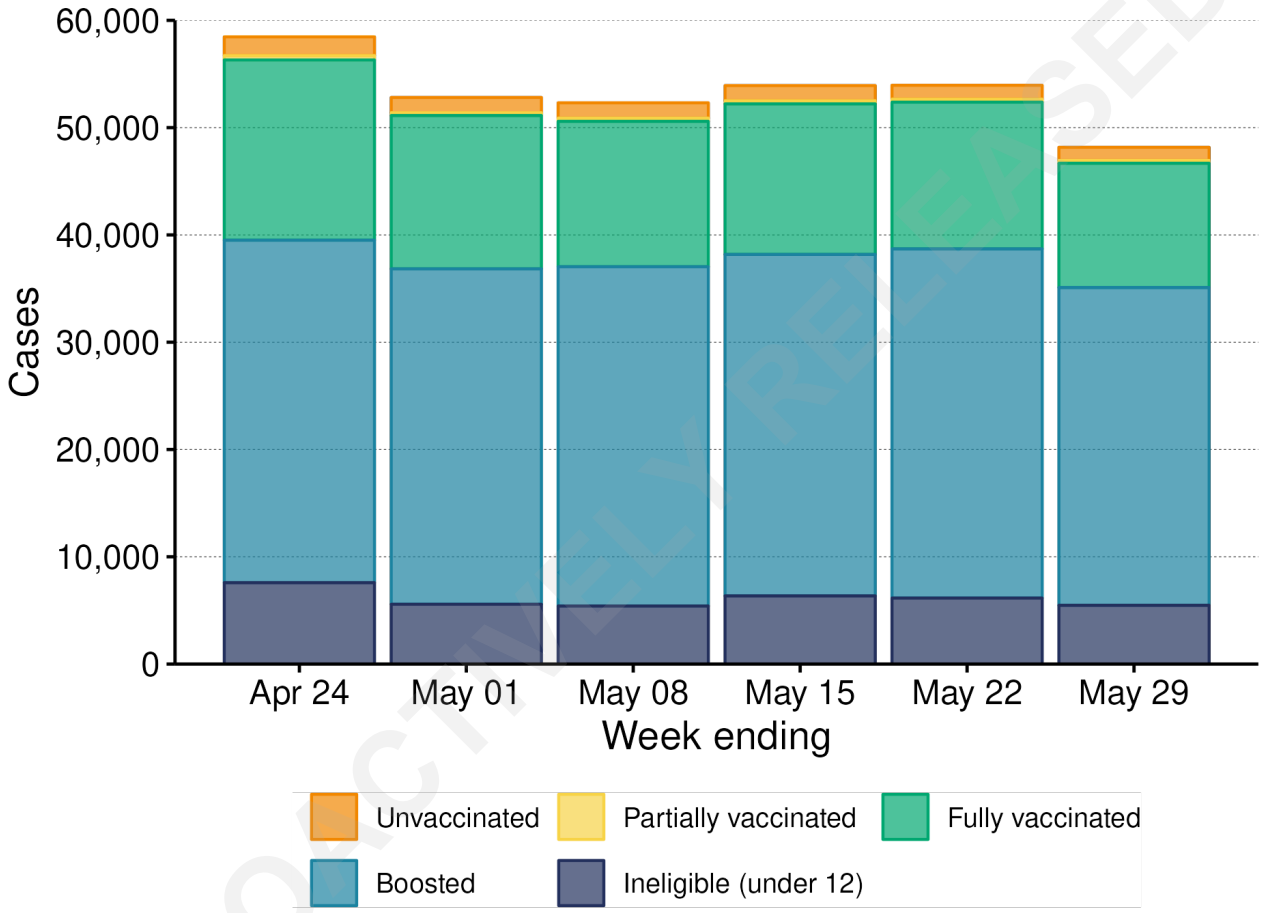
Source: NCTS/EpiSurv as at 2359hrs 29 May 2022

Vaccination trends over time

Figure 13 shows community case numbers by vaccination status nationally. The proportion of boosted cases is very similar to the week prior at 61% of all cases in the week ending 29 May. The proportion reported as fully vaccinated is also similar to the week prior at 24% of all cases in the past week.

The proportion of cases amongst those who are categorised as ineligible due to being under 12 years old[5] is 11.4%. The proportion of cases reported as partially vaccinated remains constant at 0.5%, while cases reported in those unvaccinated remains similar to the week prior at 2.5%.

Figure 13: ***National weekly case numbers by vaccination status for weeks 24 April – 29 May 2022***



Source: NCTS/EpiSurv as at 2359hrs 29 May 2022

[5] Cases deemed Ineligible (under 12) are currently all cases that fall under the age of 12. Modifications to vaccination categories are being developed, which will include under 12s.

PCR and RAT testing trends

Since New Zealand entered Phase 3 of the Omicron response, most testing is by rapid antigen tests (RATs) rather than PCR tests. RATs are self-administered and therefore require the individual to self-report their results, which may result in under-reporting. In addition, RATs are more likely than PCR tests to return a false-positive or a false-negative result, especially if used during early periods of infection. On the other hand, increased availability of RATs may mean that more people have tested than would have otherwise had PCR tests continued to be the main surveillance method. Test positivity for RATs would require data on the total number of RATs used, especially negative results. As PCR testing is only used to monitor priority populations and confirm positive RATs in specific situations, these rate and positivity data are not fully representative of the current testing state of New Zealand.

Whole Genomic Sequencing of Community cases

This week marks the first detection of BA.5 in a community sample (unlinked to the border), and a further detection of BA.2.12.1 in a community sample (BA.2.12.1 was first detected in the community last week). Wastewater variant analysis detected BA.2 at all sentinel sites, and also detected BA.4/BA.5 and BA.2.12.1 lineages in a number of North Island sites.

As the BA.5 and BA.2.12.1 lineages have been detected in community samples; given the relatively small proportion of community samples referred for sequencing, this result suggests that these lineages have a foothold in a number of North Island sites and will likely grow in proportion in coming weeks. Wastewater data coupled with community case WGS results, strongly suggests that BA.4/5 and BA.2.12.1 are circulating within the wider NZ population, at least on the North Island.

Figure 14 shows that Omicron is the dominant variant in New Zealand, having outcompeted Delta which made up ~70% of all sequenced cases in the start of January 2022 but fell to less than 10% of sequenced cases by the end of January 2022.

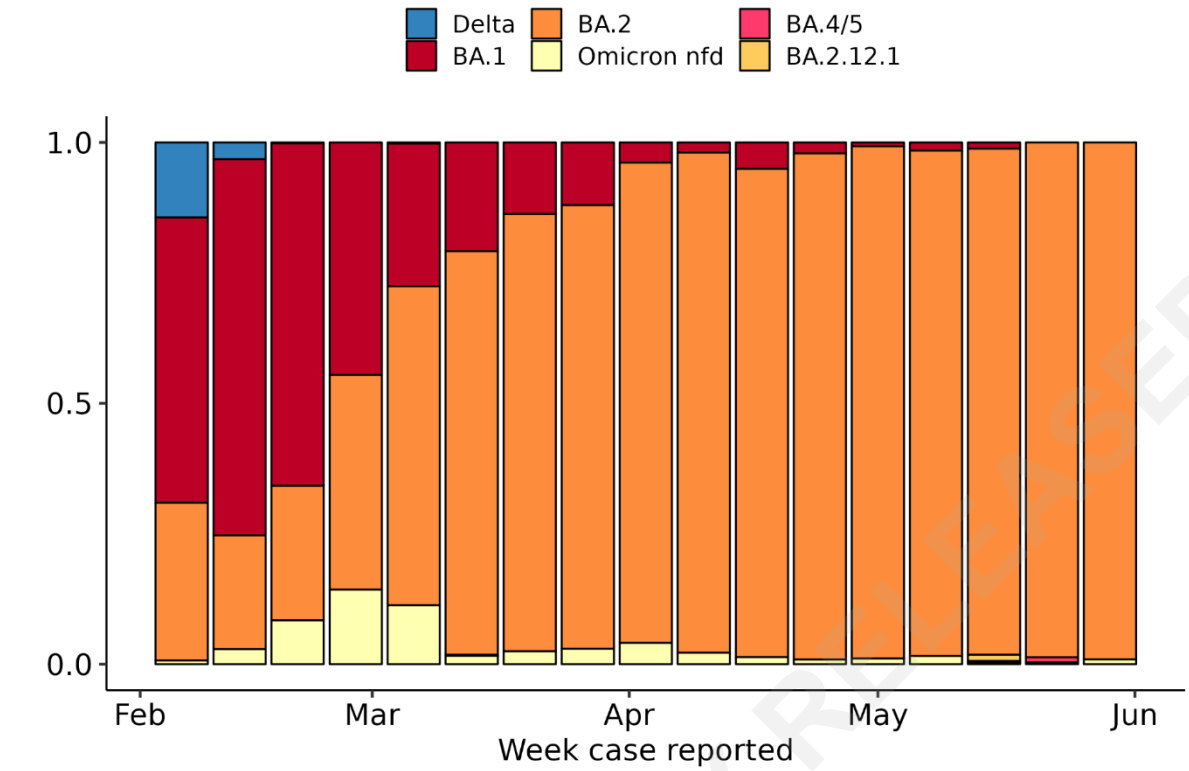
Among Omicron cases, BA.1 was the dominant subvariant (~60% at the start of February 2022) but has since been outcompeted by BA.2, which made up about 99% of sequenced community cases in the past two weeks. This matches international phylodynamic trends as BA.2 has enhanced transmission advantage compared to the BA.1 subvariant.

Based on WGS data generated over the course of the Omicron wave, ESR estimate that 83% of all community cases (~1.14 million cases) reported since 20 January 2022 have been the BA.2 variant (**Figure 15**).

This places New Zealand in a different position to many other countries that are currently experiencing BA.4, BA.5, XE or BA.2.12.1 waves. BA.2 is closer to this most recent group of subvariants than BA.1. Therefore, due to a different variant history, it is not a given that waves seen overseas will necessarily translate to a wave of similar magnitude in New Zealand.

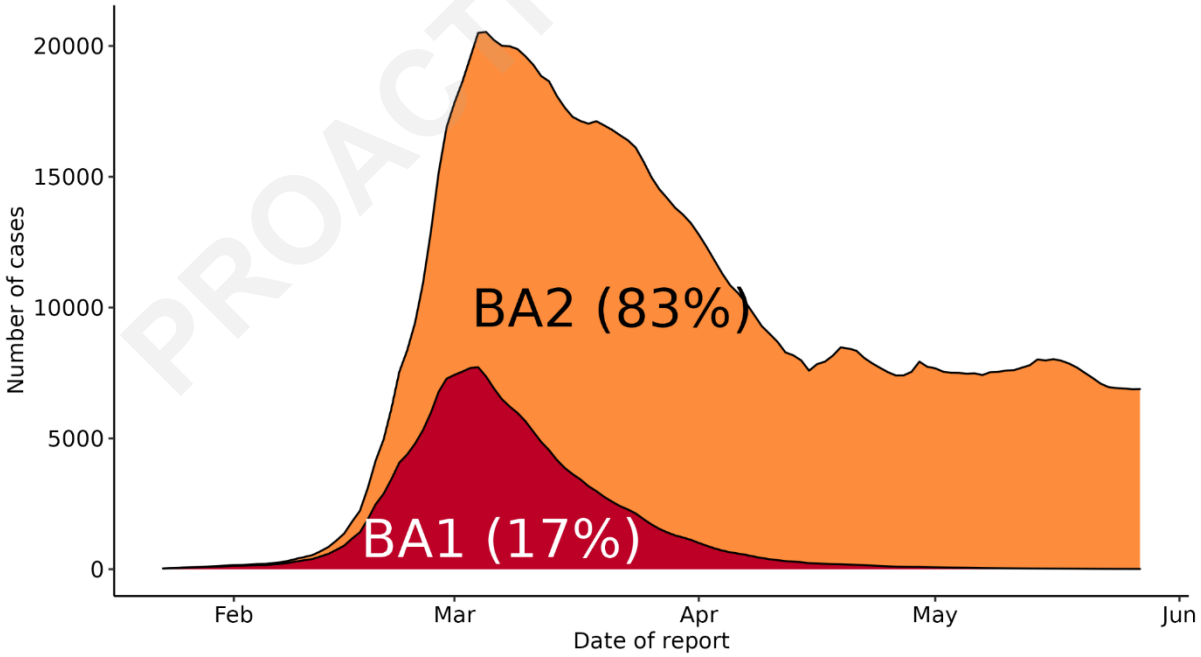
Please see the caveats in the **Glossary at the end of this document.**

Figure 14: ***Frequency of Variants of Concern in community cases in New Zealand***



Source: ESR COVID-19 Genomics Insights Report #9, EpiSurv/Microreact 0900hrs 30 May 2022

Figure 15: ***Estimated contribution of BA.1 and BA.2 community cases in New Zealand since 20 January 2022***



Source: ESR COVID-19 Genomics Insights Report #9, 0900hrs 30 May 2022

Border Surveillance

Cases detected at the Air Border

Imported cases initially increased as travel volumes increase, but are reducing since early May.

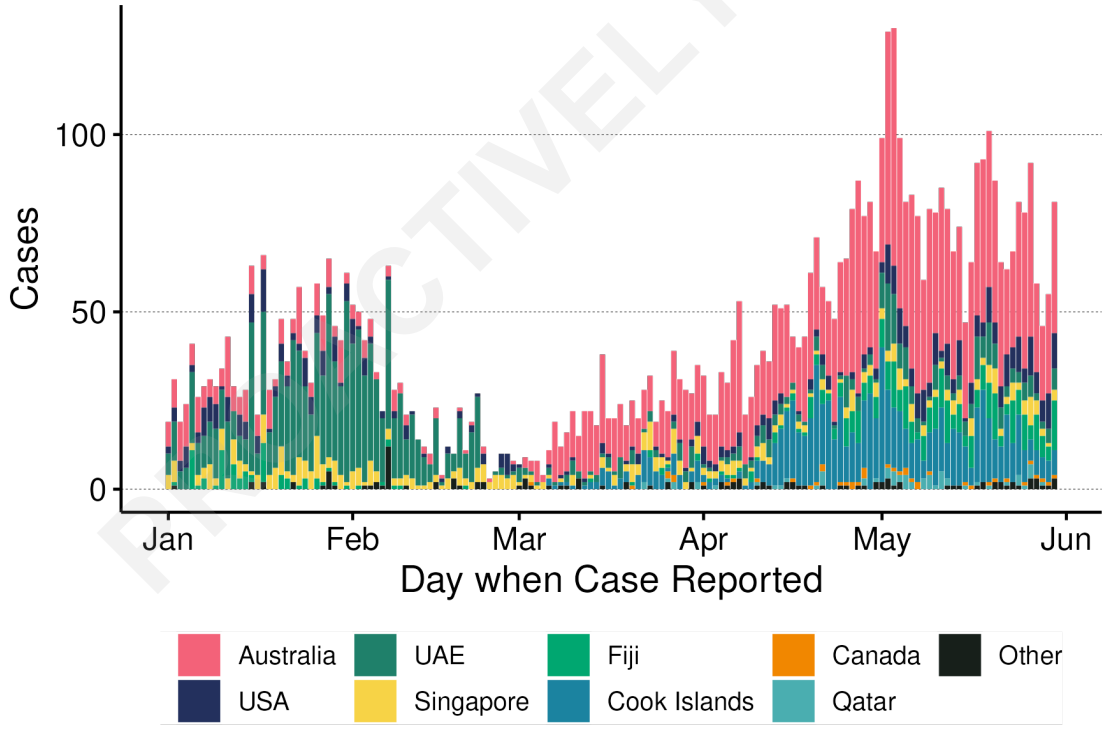
More than 2% of recent arrivals were reported as cases. This is above the rates seen in arrivals from Australia during quarantine-free travel in 2021, and above the 1% estimate used for planning Reconnecting New Zealand.

Figure 16 shows the number of RAT-positive cases in arrivals since January 2022. Before Reconnecting New Zealand dropped most of the quarantine requirements, most active cases were on the long-haul flights via the UAE. Since early March, most cases have arrived on flights from Australia, followed by the Cook Islands and Fiji.

The spike in cases on 2 May was on the first day that citizens of visa-waiver countries could enter without quarantine.

Flights from Australia include both short-haul, trans-Tasman flights, and long-haul flights that transit through an Australian airport. It is no longer possible to accurately track the first country in a multi-stage flight, as arrival cards are no longer scanned and data in the New Zealand Traveller Declaration system is incomplete.

Figure 16: ***Cases reported in post-arrival testing by country of flight departure, 01 January – 31 May 2022***



All cases in recent air arrivals to 02:58 PM, Tuesday 31 May 2022
Cases counted from midnight to midnight

Source: NCTS/EpiSurv as at 2359hrs 31 May 2022

Testing of Border arrivals

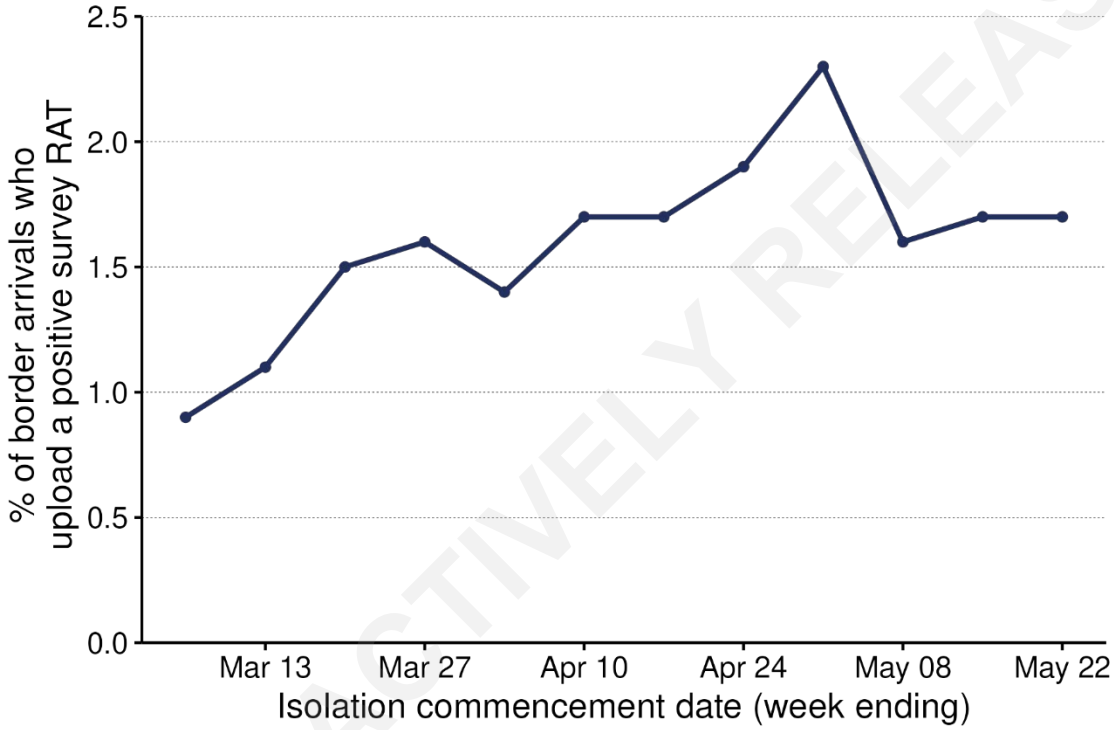
Figure 17 shows that the percentage of positive tests among border arrivals (who reported a test) was mostly between 1 and 2.5% for the period 13 March – 22 May 2022.

About 10% of arriving passengers leave the country before they are due to take a Day 5 test.

It is important to note that testing and reporting of RATs at the border relies heavily on a 'high-trust' model and as such, it is not expected that there will be 100% compliance with testing amongst travellers.

Sources: NCTS/EpiSurv/Éclair as at 2359hrs 26 May 2022

Figure 17: ***Percentage of positive tests from border arrivals who complete RAT tests, 28 February – 22 May 2022***



Whole Genomic Sequencing of Imported cases

Figure 18 shows the completion metrics for border returnee testing and WGS. For the period 07 March – 22 May 2022, the percentage of arrivals uploading a RAT test has been constant with an average of 92.1%.

Figure 19 shows the border returnee testing and WGS metrics for arrivals. In the week ending 22 May, there were 34,288 border arrivals, of which 91.8% (31,463) uploaded a RAT result upon arrival. This is slightly lower than the 92.6% from the week prior.

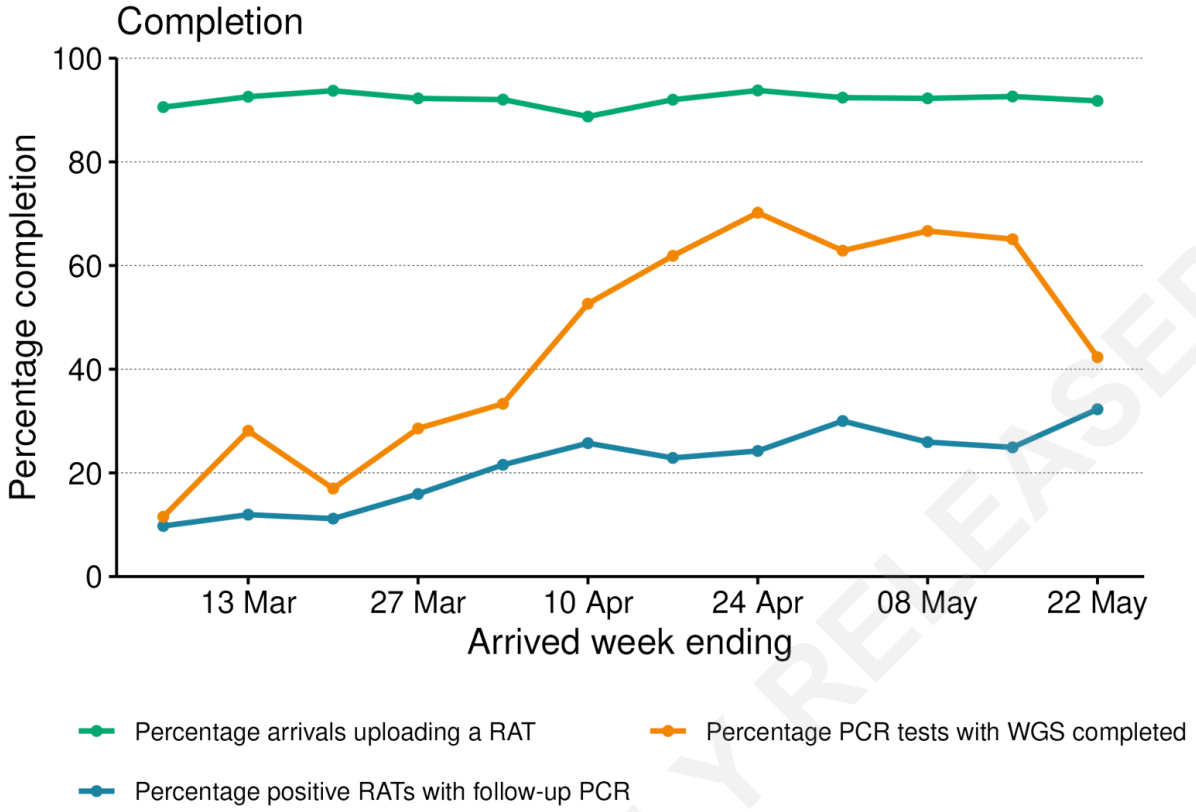
From early March to the week ending 22 May, there has been a steady increase in the number of border arrivals returning positive RATs. In the week ending 22 May, 32.3% of border arrivals who returned a positive RAT had a follow-up PCR test. This has increased from 24.9% the week prior.

In the week ending 22 May, the percentage of PCR positive border arrivals with WGS complete was 42.3%. **However, please note that WGS can be incomplete for recent cases.** This percentage was at 65.1% for the week ending 15 May and 66.7% for the week ending 08 May.

A case can only be referred to ESR for whole genomic sequencing (WGS) if the traveller is referred to PCR testing and the lab then sends the PCR sample on.

Labs are notified of all positive RAT results that are known to be from recent arrivals. However, up to 10% of arrivals have not completed a New Zealand Traveller Declaration that enables data linkage and others may not be reporting RAT results.

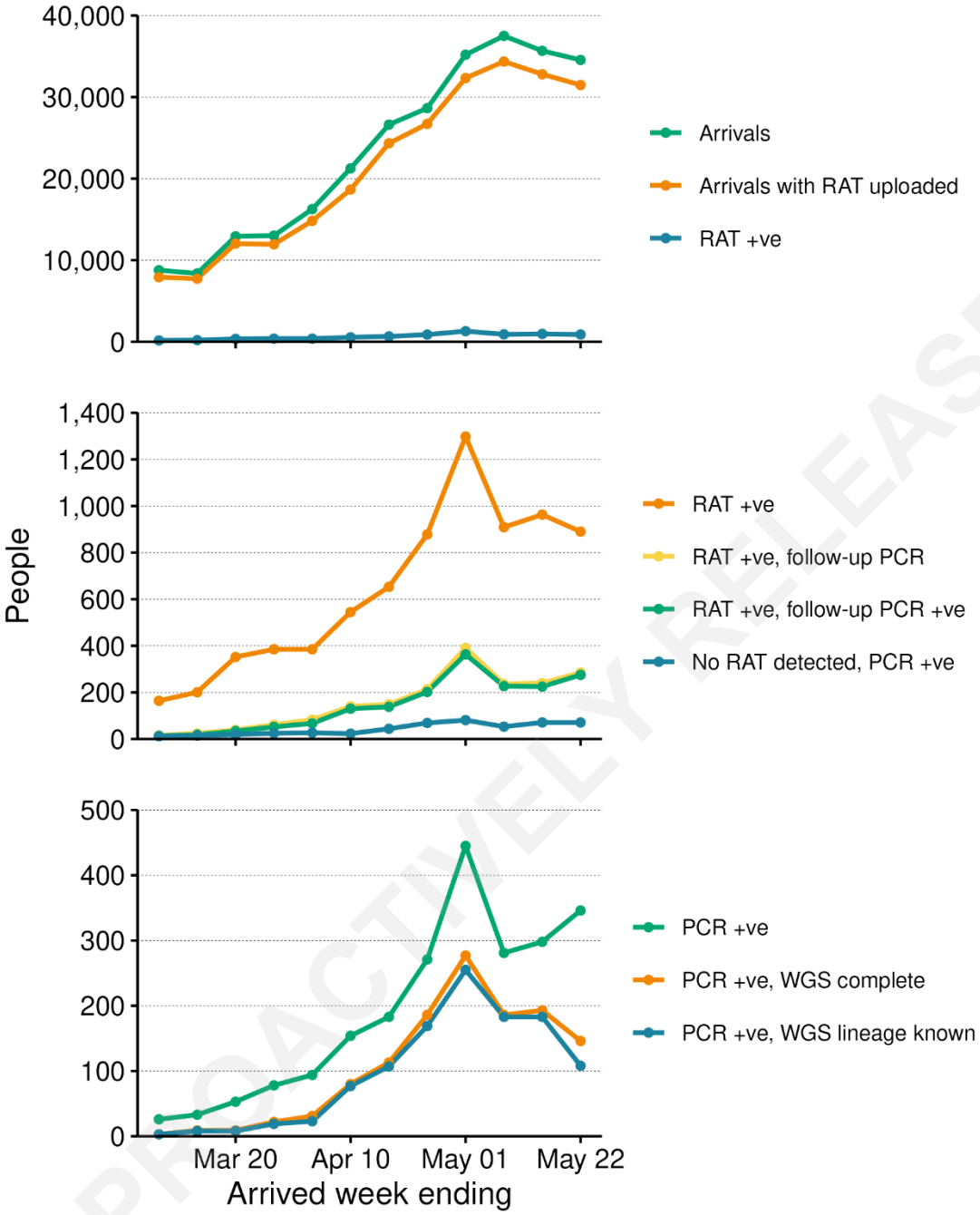
Figure 18: ***Completion metrics for border returnee testing and WGS for arrivals, 07 March – 22 May 2022***



Sources: NCTS/EpiSurv/Éclair as at 2359hrs 26 May 2022, ESR WGS 26 May 2022[6]

[6] Please note that WGS may not be completed/uploaded yet for more recent cases

Figure 19: ***Border returnee testing and WGS metrics for arrivals, 07 March – 22 May 2022***



Sources: NCTS/EpiSurv/Éclair as at 2359hrs 26 May 2022, ESR WGS 26 May 2022[7]

[7] Please note that WGS may not be completed/uploaded yet for more recent cases

Hospitalisation and Mortality

Hospitalisation Rates

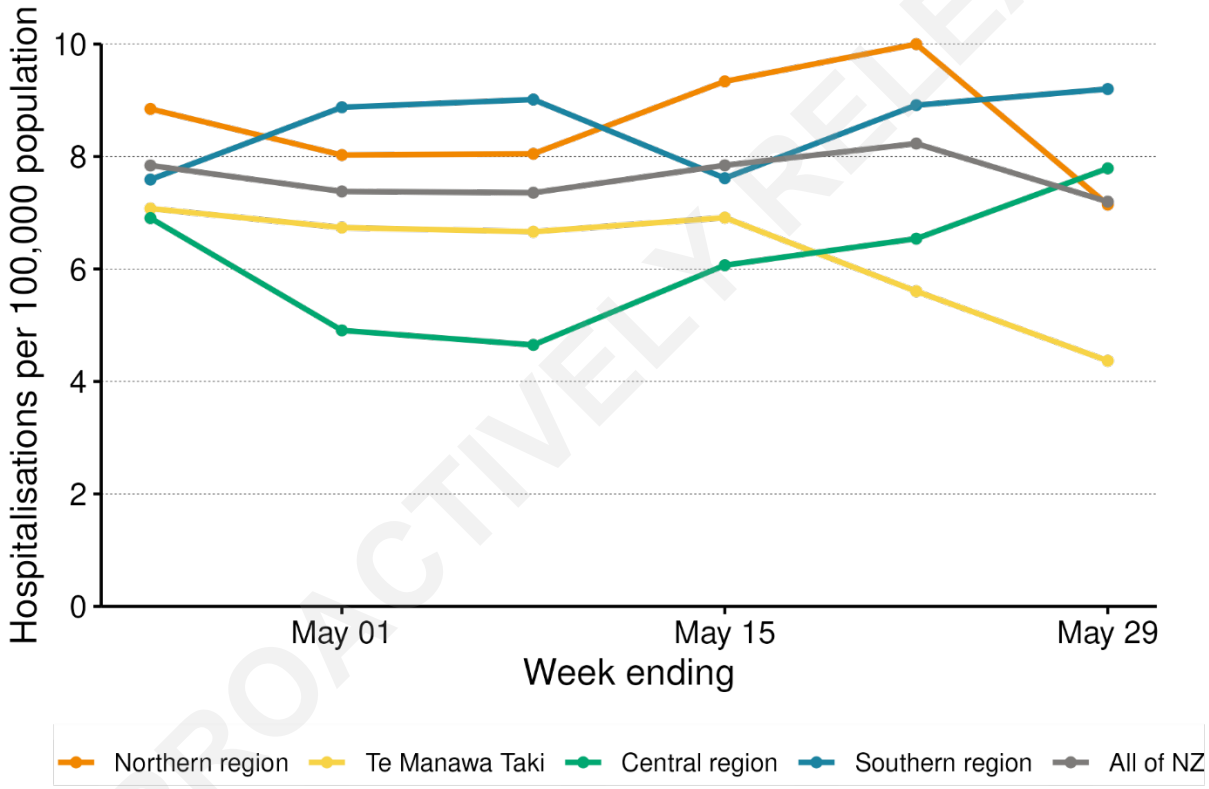
Due to varying definitions of an active case, there may be regional differences in the coding of COVID-19 infection status for hospitalisations.

Hospital Occupancy

For the week ending 29 May, the **national hospital occupancy rate was 7.2 per 100,000 population, a decrease of 12.5% in the past week** (**Figure 20**).

Hospital occupancy rates have continued to vary across regions in the past week. **Central region (7.8 per 1,000) increased by 19% and Southern (9.2 per 1,000) increased by 3%**, while the Northern region (7.1 per 1,000) decreased by 29% and Te Manawa Taki (5.6 per 1,000) decreased by 22% in the past week.

Figure 20: ***Regional weekly hospital occupancy rate per 100,000 population, 18 April – 29 May 2022***



Source: Daily hospital questionnaire as of 29 May 2022

Whole Genomic Sequencing of hospitalised cases

As of 29 May, ESR received samples from 117 of the 250 PCR positive cases who were hospitalised in the week to 27 May 2022. Of these, 87% had a BA.2 genome, 3% were Omicron of unassigned sub-variant, 7% failed WGS and <1% were BA.1, BA.5, or BA.2.12.1.

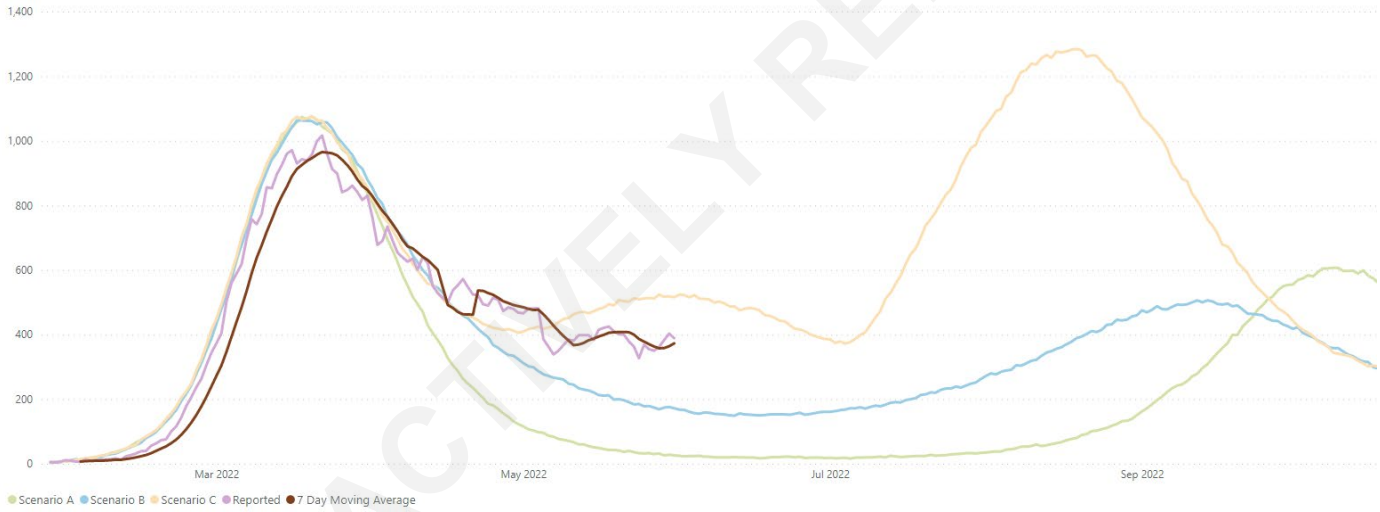
ESR now receives a daily list of active COVID-19 cases who tested positive in the past 14 days and were hospitalised in the past 7 days. ESR is working with the Ministry of Health to receive information on which cases have been admitted to ICU/HDU.

Modelled and actual hospital occupancy rate

COVID-19 Modelling Aotearoa's modelling scenarios include hospitalisations of people with COVID-19 infections (**Figure 21**).

The number of hospital beds occupied by people with confirmed COVID-19 infections is approximately 4 per 100,000 population. This count includes people hospitalised for any reason, and at a national level is tracking between the modelled scenarios B and C.

Figure 21: CMA Hospital occupancy scenarios compared to actual hospital occupancy



Sources: COVID-19 Modelling Aotearoa (CMA) Branching Process Model April 2022, and DHB reports to TAS of daily hospital occupancy (all COVID-19 positive people admitted as inpatients) as of 31 May 2022.

Mortality

As of 01 June 2022, 1,197 people have died with or from COVID-19 infection. Of these, 1,151 have died within 28 days of being reported as a case. **Figure 22** shows the 7-day rolling average of deaths by date of death, which is 9 as of 29 May 2022.

Currently deaths are tracking closely to 'C', the worst-case scenario.

All deaths where someone has died within 28 days of being reported as having a positive test result for COVID-19 are now reported. This approach is in line with that taken by other countries such as the United Kingdom; it ensures that all cases of COVID-19 who die are formally recorded to help provide an accurate assessment of the impact of COVID-19.

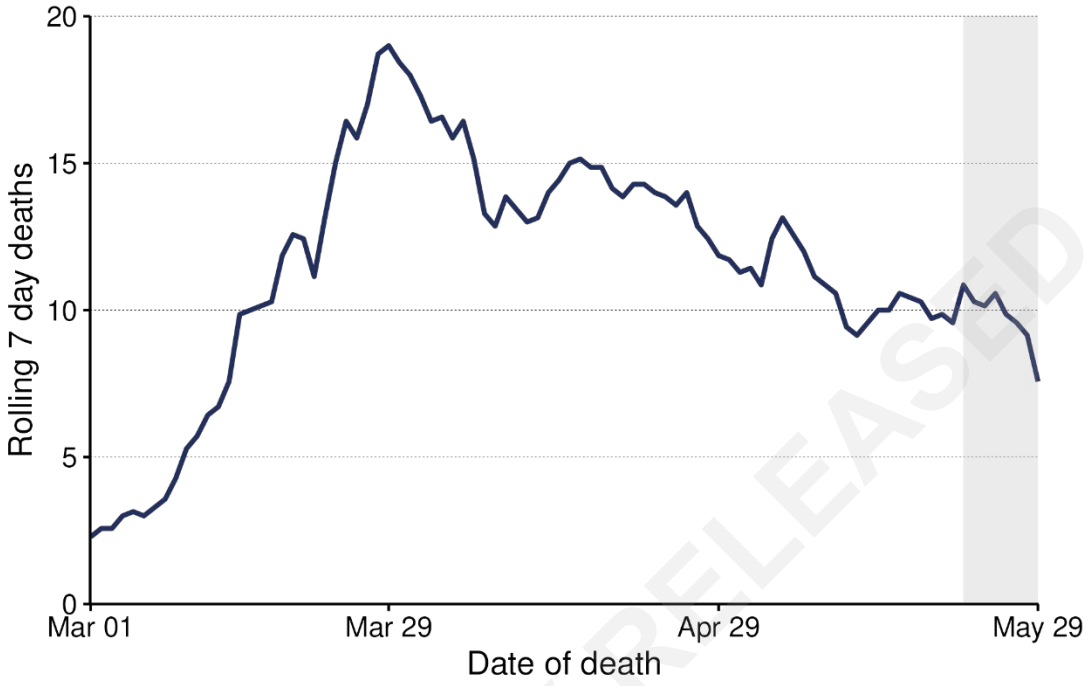
All of the deaths within 28 days of a positive test report are fast-tracked for clinical coding to determine whether the infection caused the death, contributed to the death, or was unrelated to the death. An example of an unrelated death is a car accident; an example of a COVID-19 contributing is a person who dies with an existing health condition combined with COVID-19.

Figure 23 shows mortality by age and ethnicity since the beginning of the pandemic to the week ending 29 May 2022. The trend is as expected across all age groups, with the older population dying with COVID-19 at a higher rate than the younger population. **Pacific Peoples of age 80-89 and 90+ have a much higher mortality rate than other ethnicities for the same age groups, however this is probably due in part to the relatively small population sizes of 80-89 and 90+ year old Pacific Peoples**. Māori and Pacific Peoples have a higher mortality rate than Asian and European or Other across all age groups.

The overall mortality rate from the beginning of the pandemic to the week ending 29 May is 5.3 per 1000 population. The mortality rate for those aged 90+ is highest at 23.6 per 1,000 population. The mortality rate for those aged 80-89 is 6.2 per 1,000; and for those aged 70-79 is 1.5 per 1,000. The mortality rate for younger age groups is below 1 per 1,000 population.

For people aged 90+, Pacific Peoples have the highest mortality rate at 54.5 per 1,000 population, while Asian is the lowest at 6.2 per 1,000. For people aged 80-89, Pacific Peoples have the highest mortality rate at 14.7 per 1,000 population, while Asian is again the lowest at 1.7 per 1,000.

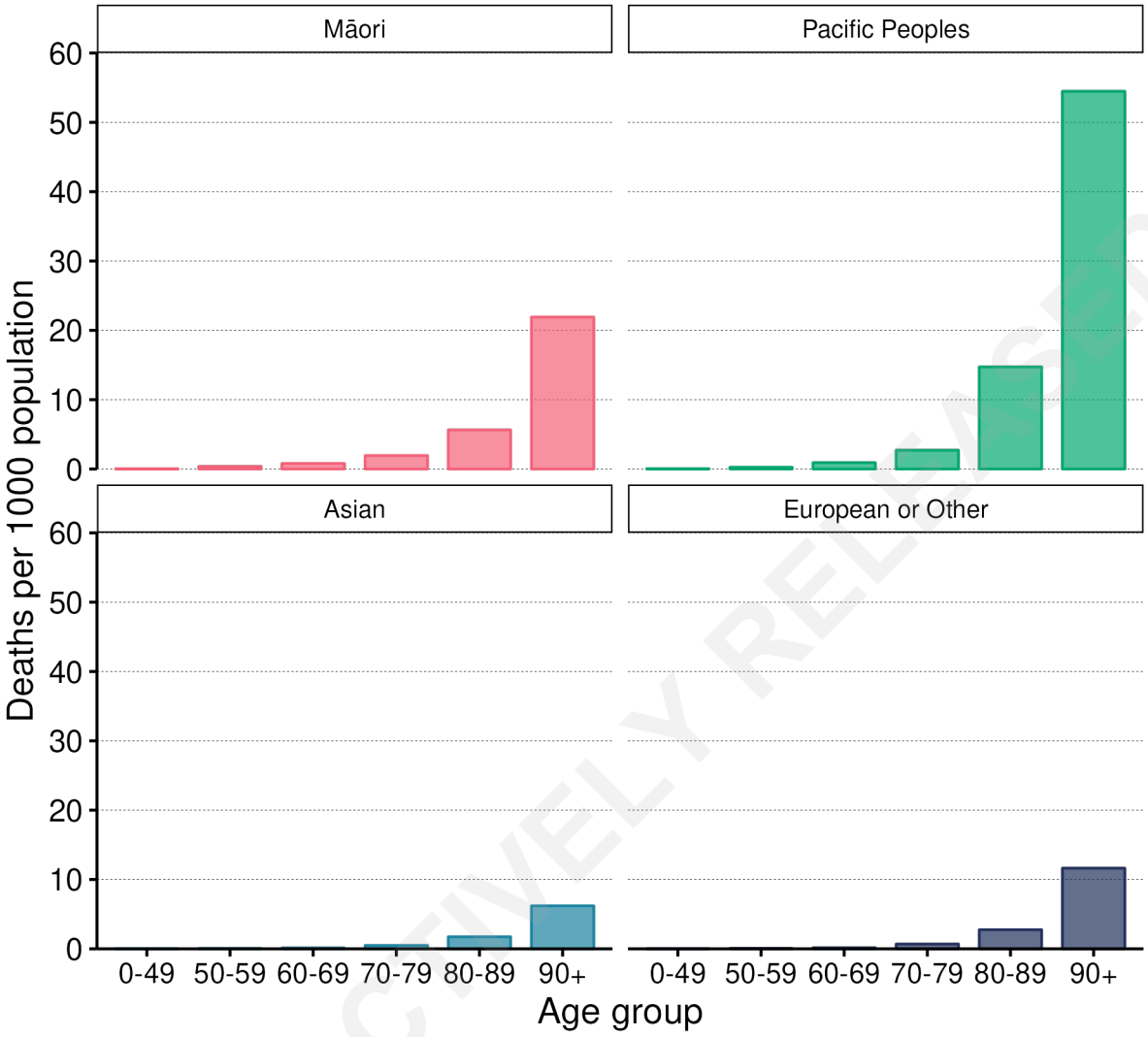
Figure 22: ***7-day rolling average of COVID-19 deaths by date of death, 01 March – 29 May 2022***



Source: NCTS/EpiSurv as of 29 May 2022[8]

[8] Note, this is a 7-day rolling average of deaths by date of death. In the shaded grey area, additional deaths may still be pending report.

Figure 23: Rates of all deaths with or after COVID-19 infection per 1000 population, by Age and Ethnicity, to 29 May 2022



All cause death rates

This section is under review and we have removed it from this week's edition of the Trends and Insights report.

International and Scientific Insights

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.

Overseas waves and the likely impacts of new variants, policy changes and waning immunity

Globally, the number of new weekly cases has continued to decline since a peak in January 2022. In the week to 29 May 2022, over 3.3 million cases were reported, an 11% decrease as compared to the previous week. The number of new weekly deaths also continues to decline, with over 9,600 fatalities reported, a 3% decrease as compared to the previous week.

At the regional level, the number of new weekly cases increased in the American Region (+9%) and in the Eastern Mediterranean Region (+1%), while it decreased in the remaining four WHO regions. The number of new weekly deaths increased in the Western Pacific Region (+18%), in the African Region (+15%), and in the Region of the Americas (+13%), while decreasing trends were observed in the remaining three regions. As of 29 May 2022, over 526 million confirmed cases and over six million deaths have been reported globally.

The Omicron VOC remains the dominant variant circulating globally, accounting for nearly all sequences reported. Among the Omicron sublineages, BA.2 is the dominant sublineage, despite declining from 78% to 75% of Omicron sequences submitted in the last 30 days. The BA.1 sublineage has also declined in prevalence from 7% to 4%. In the last 30 days, BA.2.12.1 has risen from 11% to 16%; BA.4 has risen from 2% to 3%; and BA.5 has risen from 1% to 2%. During the same period, the prevalence of BA.3 has declined to <1%.

USA and Canada

The BA.2.12.1 variant continues to increase in prevalence in the US, making up over 50% of all sequenced cases in the US, with prevalence as high as 78% in the Northeast. However, cases have remained relatively stable in the past fortnight around 100,000 cases per day. Though the number of COVID-19 patients hospitalised nationwide remains far below peak levels, it has increased by 7% in the past week to an average of more than 22,600 per day. However, a recent pre-print study assessing infection rates in New York City indicated that around 22% of those surveyed had COVID-19 over the 2-week period to May 8. If extrapolated to the population of New York, this would equal roughly 1.5 million people, indicating that the true magnitude of the BA.2/BA.2.12.1 surge In New York was vastly underestimated by routine SARS-CoV-2 surveillance.

The variant is also growing quickly in prevalence in Canada, making up around 20% of sequenced cases currently, though this does not yet appear to be leading to an increase in cases, which have been declining since mid-April.

Australia

Growth in case numbers continues to slow in Australia as the Western Australia outbreak peaks. In the two weeks ending 30 May, 80% of sequences have been identified as BA.2, though BA.4 (3%), BA.5 (9%) and BA.2.12.1 (5%) have all been reported at low levels and are increasing prevalent. Note data points may have low levels of sequencing data and may change as more sequences are included.

Primary evidence on effectiveness of infection prevention and control measures

This section outlines some of the available literature about the effectiveness of infection prevention and control (IPC) and public health measures. It is not intended to be a systematic review of all available evidence, but to provide an overview of available evidence.

- An evaluation of COVID-19 policies in 50 different countries and territories has been released. The analysis considers both pharmaceutical and non-pharmaceutical interventions and assesses a jurisdictions success at containing COVID-19 both prior to and after vaccination. New Zealand was found to be one of the most successful due to early lockdowns and swift vaccination policies in response to the Delta variant. Singapore was also successful at containing the virus due to responding to what was initially rapid virus spread with increased health system policies, lockdown efficiency and vaccination. Taiwan was exemplary, managing to suppress cases after a surge during low vaccination coverage within 2-3 months. Overall, the study found rigorous policies and lockdowns, especially early in the pandemic, were key to top performing nations. Additionally, the ability to make lockdowns appropriate to the level of risk and flexible was key to avoiding damage to other areas of society.
- An observational study on the impact of contact tracing and testing on controlling COVID-19 without lockdown in Hong Kong found that i) restoring social distancing measures without maintaining tracing and testing efficiency was not enough to prevent growth of the outbreak; ii) a rise in number of daily cases increased the probability of confirmation delay among contact-traced cases; iii) testing at-risk groups reduced the probability and the duration of confirmation delay among contact-traced cases.
- A cross-sectional study comparing OECD countries in evaluating economic outcomes found that non-pharmaceutical interventions effectively contained the outbreaks and had positive impacts in lowering unemployment rates.
- A modelling study points to the role of super-spreader events in the contribution of novel variant predominance from a public health perspective, the results give weight to the need to focus NPIs on preventing large super-spreader events (10 or 20 secondary infections from single infected individual).
- A preprint study on social gatherings and transmission found that small gatherings, due to their frequency, can be important contributors to transmission dynamics. Further, because gathering size distributions are "heavy-tailed", a meaningful reduction in new cases only occurs once restrictions are set quite low (to achieve reduction in cases of 50% or more, restrictions must be set below 30 in most settings).
- An Australian study found that in the early phase of an outbreak, containing a wild type-dominant epidemic to a low level (≤10 cases/day) would require effective combinations of social distancing and face mask use interventions to be commenced before the number of daily reported cases reaches 6. Containing an Alpha-dominant epidemic would require more stringent interventions that commence earlier. For the Delta variant, public health interventions alone would not contain the epidemic unless the vaccination coverage was ≥70%.

- A systematic review of economic evaluations of COVID-19 interventions found that treatment, public information campaigns, quarantining identified contacts/cases, cancelling public events and social distancing were deemed highly cost-effective. The authors also concluded that accounting for broad non-health impacts and distributional effects is essential for a comprehensive assessment of interventions' values.

Health System Capacity

Omicron Dashboard

The Omicron dashboard (**Figure 24**) provides oversight of how the health system is being impacted by the Omicron outbreak. It uses data gathered from various clinical and health sector indicators. On the following page is the summary of indicators for the week ending 26 May 2022.

Figure 24: *Omicron Health Sector Clinical Indicators Dashboard summary, week ending 26 May 2022*

Sector	Summary of data
General Practice	Sector leaders have not raised any new items of concern over the past week. Changes in GPQED rates vary widely by geographical area, encounter rates are only 1.3% higher than at the same time last year.
Aged Residential Care	23% of the 656 Aged Residential Care (ARC) facilities have at least one active COVID-19 case (154 of 656 facilities). This is an increase in the number of facilities with cases from last week of 134 facilities impacted. Total case numbers have increased again this week, with highest case numbers in Southern, Auckland and Waitemata DHB regions
Māori Health	There were 24 responses to May 23 survey (12.2%), an increased response rate from previous surveys. Similar to the last survey results, providers are mostly concerned about staff wellbeing and sustainability
Pacific Health	Pacific providers continue to use innovative ways to promote vaccination across community groups
Emergency Ambulance Service	111 calls and EAS incidents were up 11% last week for St John. The overall cycle time remains high which is a continued result of on-scene, at hospital and travel times remaining high.
Disability providers	The Ministry continues to work with key stakeholders and communities within the disability system, across the wider Health sector and through interagency work, to ensure the Omicron response meets the needs of disabled people and continues to protect those at greater risk.
Hospital	Nationally occupancy of over 90% increased to 47% (previously 44%). Four hospitals reported 21/21 censuses: Wellington, Kenepuru, Rotorua, Dunedin. Hospital capacity continues to be constrained by patients with a LOS (Length of Stay) of 7 days or over and hospitalised COVID-19 cases, although numbers in hospital with COVID-19 have reduced by 70 patients in the last week.
ED	ED attendances this week are among the highest numbers since reporting commenced. Overall volumes increased 2% last week, from 22,637 to 23,194 nationally. Shorter stays in ED Stayed static at 74% nationally. Number of admitted patients has gone up over the past eight weeks, which goes in line with the reported hospital occupancy of over 90% rising steadily. Number of ED presentations shows the same pattern as number of admitted patients.
Planned Care (Hospital)	Planned care continues to be reduced across the motu however levels vary depending on region.
Pharmacy	Similar to last week, Pharmacies are experiencing staff shortages (locums and permanent), reduced operating hours for some and staff are fatigued
Home and Community Support	Large HCSS providers note that Bay of Plenty region and Hibiscus West are experiencing relatively more strain on services as compared to other regions. Continue to see a reduction in total numbers of employees compared with Oct-Dec last year (10% decline). Continue to see a decline in total services delivered compared with Oct-Dec last year (5% decline).
COVID care in the community	The percentage of cases contacted has remained consistent in the past week and has been consistently over 98%. Between 14 May and 20 May 2022, 24,624 clinical assessments were completed. The last week shows a decrease in both assessments completed within 24 and 48 hours. Assessments completed within 24 hours decreased by 70.6% to 60.7%.
Rural Health	Rural hospitals continue to be constrained by long term doctor shortage and COVID-19 related staff sickness

Sources: Omicron Health Sector Clinical Indicators Dashboard, 26 May 2022

Glossary

Data Sources

Community Cases

Data on community cases is sourced from a combination of the National Contact Tracing Service (NCTS) and EpiSurv (New Zealand's public health surveillance platform).

Whole genome sequencing (WGS)

All information on WGS is sourced from the ESR COVID-19 Genomics Insights (CGI) Report, which provides a weekly overview of SARS-CoV-2 genomic surveillance across the country.

Prevalence Estimates

National estimates of underlying infection incidence are based on the weekly test positivity in routinely asymptomatically tested populations, assuming therefore that their positivity rates are indicative of their underlying infection rates. The populations identified for these estimates using surveillance codes provided for testing data are border, emergency and healthcare work forces, as well as hospital inpatients. Inpatient estimates are also produced based on a direct data feed from the Northern Region rather than identifying inpatients in the national testing database; they are therefore more accurate than the national figures. However, this data is currently only available for the Northern Region.

Wastewater quantification

The wastewater analysis has been undertaken at the ESR Kenepuru and Christchurch Laboratories.

Data limitations

Prevalence estimates based on routinely tested populations

- The groups of routine testers that have been identified (healthcare, border and emergency workers, and hospital inpatients) are not a representative sample of New Zealanders, overall, they are higher risk of COVID-19 infection than the general population.
- The identification of these groups at a national level is based on surveillance codes, which may not be completed accurately, particularly since the introduction of RAT testing.
- The national estimate is for people who have uploaded at least one test result in the week, so will be an over-estimate if negative test results are not being recorded for these groups.
- National level estimates will be masking differing trends by region.
- Northern region hospital inpatient data, while likely to be more accurate than the national level data, still reflect a higher-risk group, and neither the estimates nor the trends are generalisable outside of the Northern Region
- The identification of these groups is based on surveillance codes, which may not be completed accurately, particularly since the introduction of RAT testing.
- The population has been identified based on ever having a surveillance code related to the respective workforce and having at least 2 tests (at least one of which was negative) in 2022. A sensitivity check was run using at least 3 tests and while these numbers reduced, the incidence estimates remained very similar.

Wastewater quantification

- Approximately 1 million people in New Zealand are not connected to reticulated wastewater systems.
- Samples may be either grab or 24 hour composite samples. Greater variability is expected with grab samples.
- While a standard method is being used, virus recovery can vary from sample to sample.
- SARS-CoV-2 RNA concentrations should not be compared between wastewater catchments.
- Day-to-day variability in SARS-CoV-2 RNA concentrations especially in smaller catchment is to be expected.
- Recent changes to the way case data is collected and processed may have resulted in some uncertainties in the cases counts and the catchments to which they are mapped. While this is being resolved, the case data presented in this report should be used as a guide only and is subject to change. ESR are continuing work to improve the algorithms for how cases are assigned to wastewater catchments, including integrating a new meshblock data feed recently made available from NCTS.

COVID-19

Trends and Insights Report

Updated 03 June 2022

Appendix Document

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Data & Notes

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Acknowledgements

ESR – routine testing estimates and wastewater quantification. Thomas Lumley for advice on proxy indicators.

Case Demographic Tables

DHB	Community cases reported since 23 May to 29 May 2022	Rate per 1,000
Northland	1418	7.3
Waitemata	6836	10.9
Auckland	4953	10.1
Counties Manukau	4066	6.9
Bay of Plenty	1438	5.5
Waikato	3560	8.3
Tairawhiti	276	5.4
Lakes	813	7.1
Taranaki	1452	11.8
Hawke's Bay	1292	7.4
Whanganui	504	7.4
MidCentral	1522	8.4
Hutt Valley	1442	9.3
Capital and Coast	3768	12.0
Wairarapa	460	9.5
Nelson Marlborough	1996	12.7
West Coast	541	16.7
Canterbury	7395	13.1
South Canterbury	923	15.1
Southern	3465	10.3
Unknown	47	
Total	**48167**	**9.6**

Regions	Community cases reported since 23 May to 29 May 2022	Rate per 1,000
Northern	17273	9.1
Te Manawa Taki	7539	7.7
Central	8988	9.5
Southern	14320	12.4
Unknown	47	-
Total	**48167**	**9.6**

Ethnicity	Community cases reported since 23 May to 29 May 2022	Rate per 1,000
Māori	4717	6.2
Pacific Peoples	2023	5.5
Asian	6726	9.2
European or Other	34292	11.0
Unknown	409	-
Total	**48167**	**9.6**

Sex	Community cases reported since 23 May to 29 May 2022	Rate per 1,000
Female	26204	11.2
Male	21906	10.0
Unknown	57	-
Total	**48167**	**9.6**

Age	Community cases reported since 23 May to 29 May 2022	Rate per 1,000
0-9	4099	6.3
10-19	6964	10.9
20-29	6590	9.8
30-39	7799	11.3
40-49	7908	12.6
50-59	6604	10.3
60-69	4501	8.4
70+	3702	6.8
Total	**48167**	**9.6**

Rate per 1,000

National	Māori	Pacific Peoples	Asian	European or Other	Total
Total	6.2	5.5	9.2	11.0	9.6

Northern	Māori	Pacific Peoples	Asian	European or Other	Total
Northland	5.4	5.4	5.9	8.6	7.3
Waitemata	8.1	7.1	9.7	12.2	10.9
Auckland	7.2	5.2	0.9	12.3	10.1
Counties Manukau	4.3	4.1	7.5	9.6	6.9
Total	**5.9**	**4.9**	**8.6**	**11.2**	**9.1**

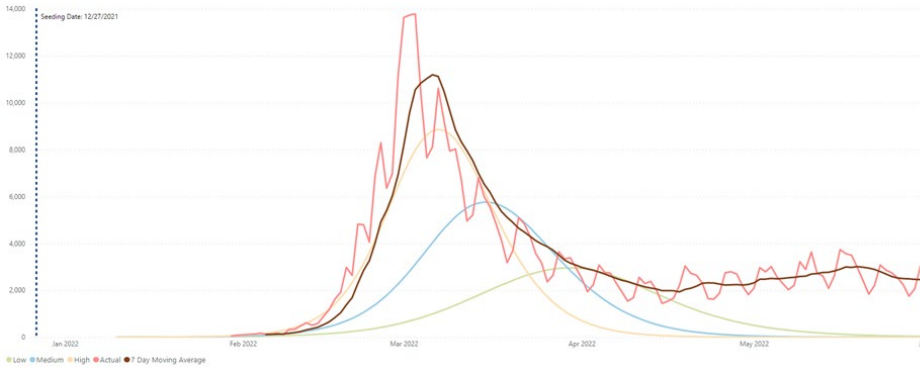
Te Manawa Taki	Māori	Pacific Peoples	Asian	European or Other	Total
Bay of Plenty	3.3	8.5	5.3	6.3	5.5
Waikato	5.6	7.9	8.5	9.1	8.3
Tairawhiti	4.2	0.8	12.2	6.1	5.4
Lakes	4.8	3.7	6.3	8.8	7.1
Taranaki	7.5	11.2	14.1	12.7	11.8
Total	**4.9**	**7.4**	**8.0**	**8.7**	**7.7**

Central	Māori	Pacific Peoples	Asian	European or Other	Total
Hawkes Bay	5.1	3.7	7.4	8.5	7.4
Whanganui	5.0	3.7	9.6	8.4	7.4
MidCentral	6.6	5.2	6.8	9.2	8.4
Hutt Valley	6.0	5.5	7.2	11.1	9.3
Capital and Coast	8.2	6.1	12.1	13.2	12.0
Wairarapa	7.2	11.3	14.4	9.7	9.5
Total	**6.3**	**5.5**	**9.7**	**10.7**	**9.5**

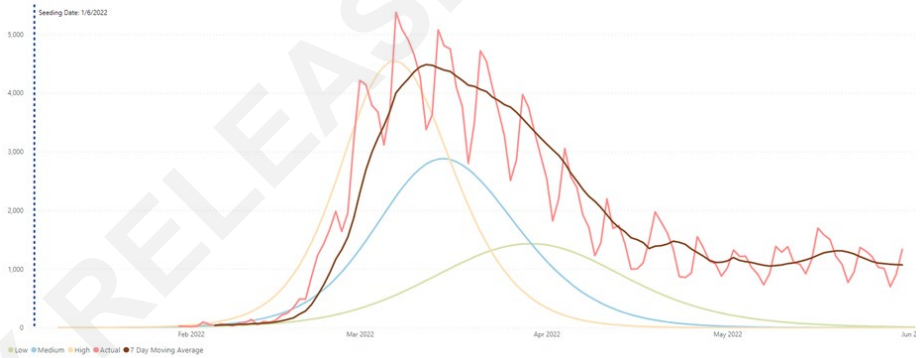
Southern	Māori	Pacific Peoples	Asian	European or Other	Total
Nelson Marlborough	10.2	26.4	13.0	12.5	12.7
West Coast	16.9	19.0	23.6	16.4	16.7
Canterbury	10.4	7.2	12.2	13.7	13.1
South Canterbury	7.9	5.0	19.0	15.7	15.1
Southern	7.5	7.9	11.0	10.6	10.3
Total	**9.6**	**9.3**	**12.3**	**12.8**	**12.4**

COVID Modelling Aotearoa

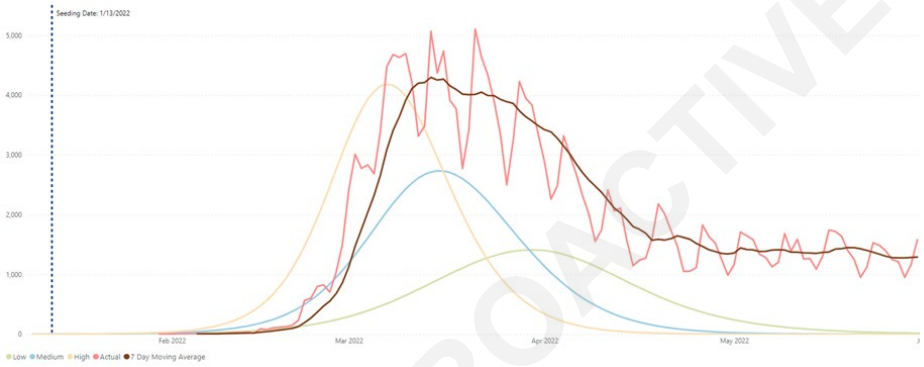
Northern Region



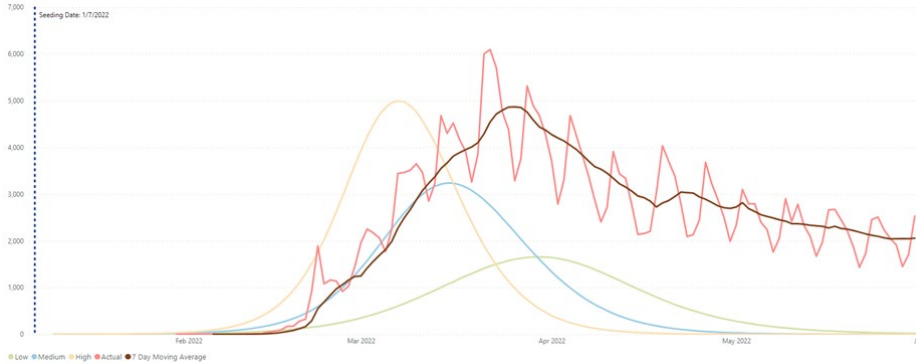
Te Manawa Taki (Midlands)



Central Region



Southern Region



Sources: TAS, based on COVID-19 Modelling Aotearoa Branching Process Model 14 April 2022, and Ministry of Health reported case data to 30 May 2022

EpiNow

Table 1: ***Estimated median effective R (R_{eff}) by Public Health Unit region, for cases to 28 May*** **2022**

Public Health Unit region	**R_{eff} (90% Credible Interval [CI])**
Northland	0.9 (0.7-1.2)
Auckland	0.9 (0.7-1.1)
Taranaki	0.9 (0.7-1.2)
Waikato	0.9 (0.7-1.2)
Toi Te Ora	0.8 (0.5-1.1)
Tairawhiti	0.7 (0.3-1.0)
Regional Public Health (Wellington Region)	1.0 (0.9-1.2)
Mid Central	0.9 (0.7-1.1)
Hawkes Bay	0.7 (0.5-1.0)
Canterbury/ South Canterbury	1.0 (0.8-1.2)
Southern	0.9 (0.8-1.0)
Nelson Marlborough	1.1 (0.7-1.6)
West Coast	1.0 (0.9-1.2)
National	**0.9 (0.8-1.1)**

ESR Wastewater

Interpreting site graphs

Sample collection method. Results based on autosampler may be more representative than grab sample-based results.

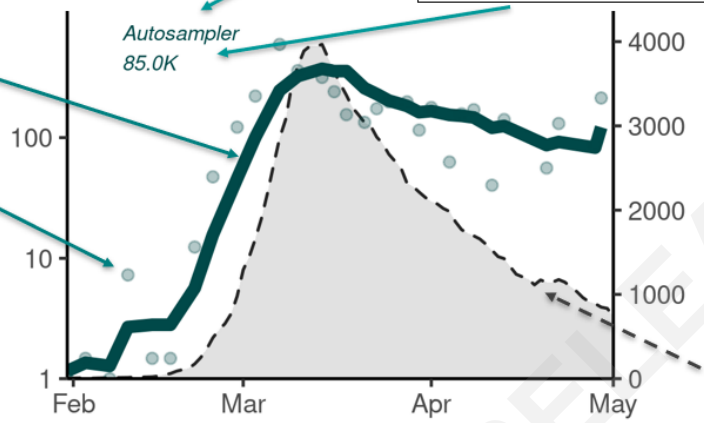
Wastewater Results

Rolling 14-day average of genome copies/day/person **shown as solid line**

Individual wastewater sample results are shown as **circles**

Log_{10} scale

Population of wastewater catchment



Rolling seven-day average **new cases** in the catchment based on onset date of illness, or if not available the laboratory sample date

Dotted line (shaded)

Linear scale

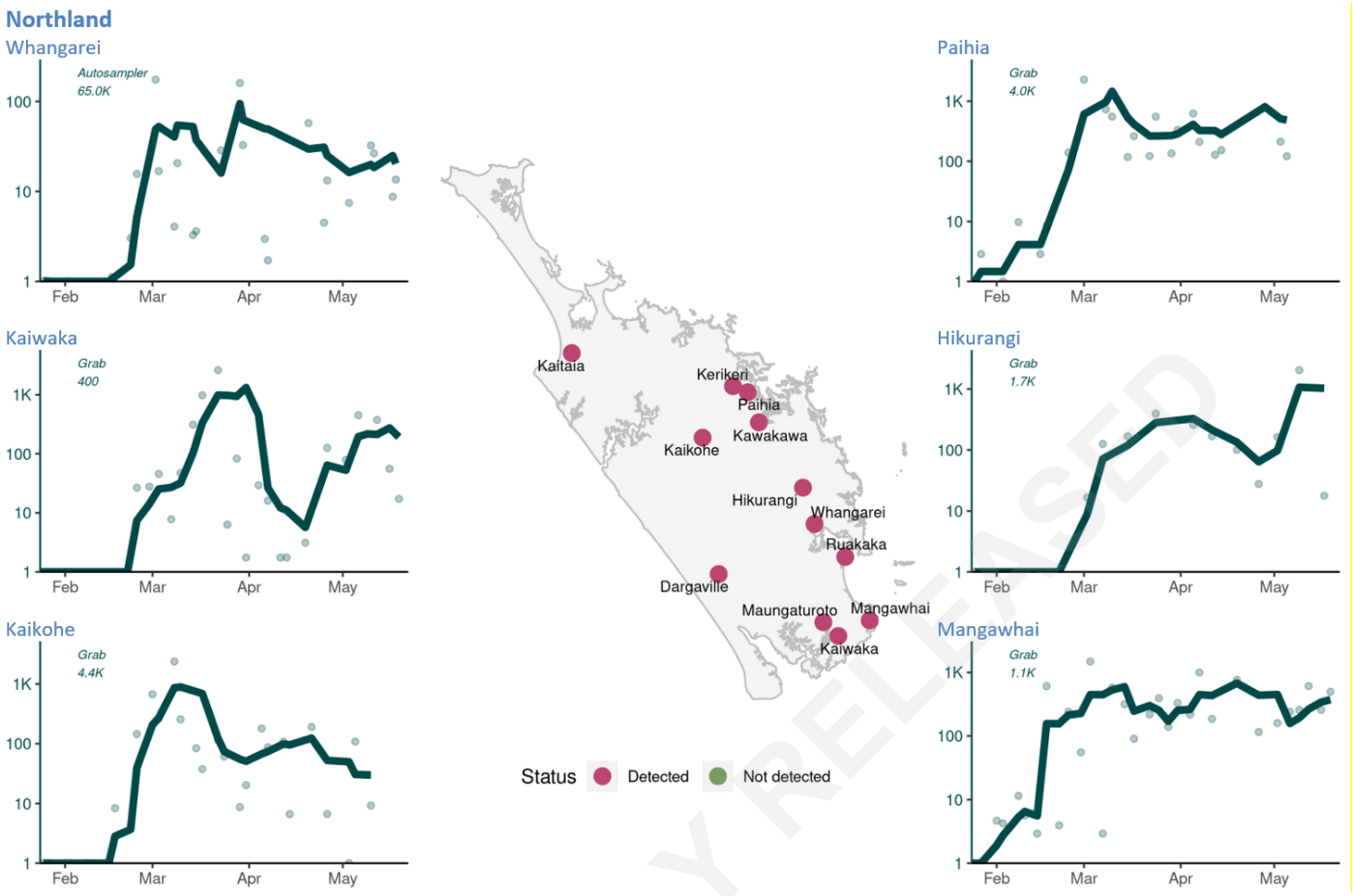
Genome copies/mL x Daily wastewater influent (m^3) = genome copies x 10^4/day

Genome copies/day ÷ population = genome copies x 10^4/day/person

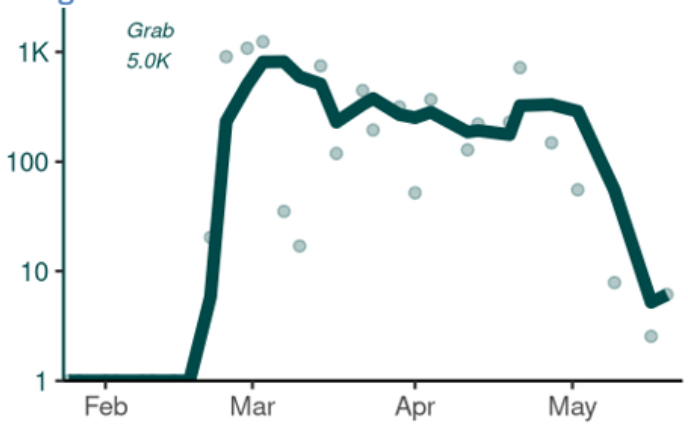
Note the scales may differ for each graph

Wastewater results are on log_{10} scale, while case data is on a linear scale.

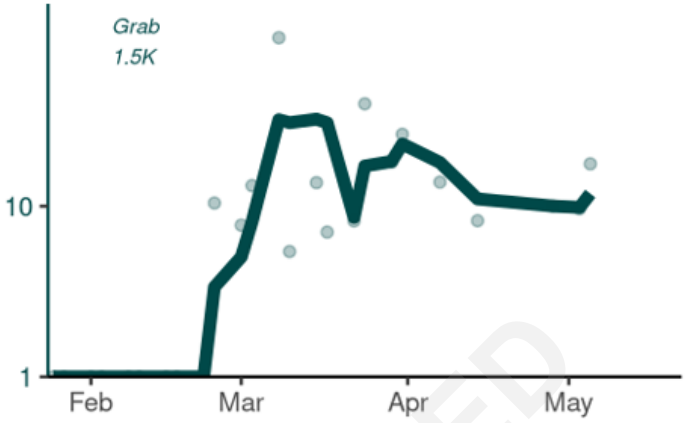
Northland



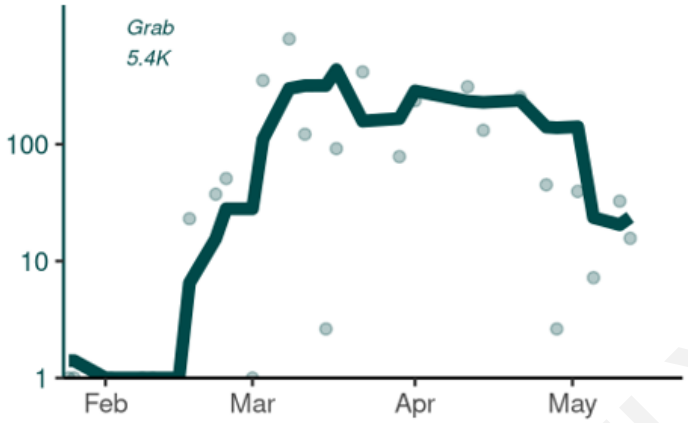
Dargaville



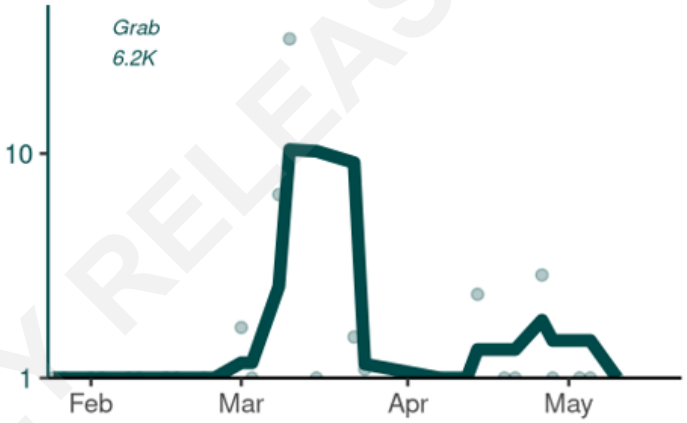
Kawakawa



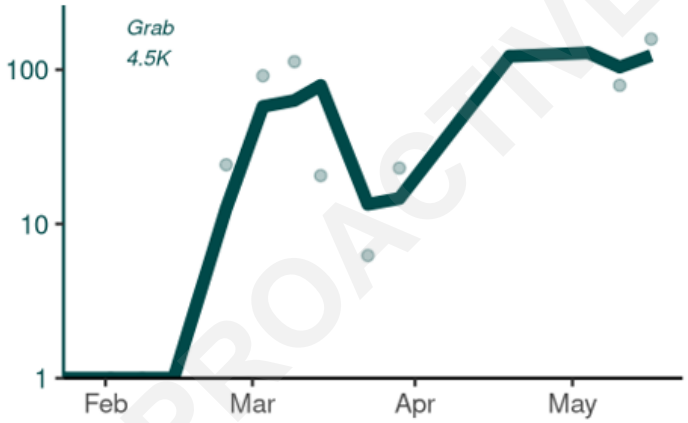
Kaitaia



Kerikeri

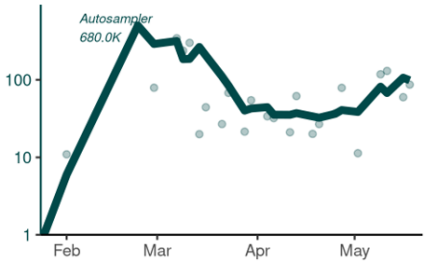


Ruakaka

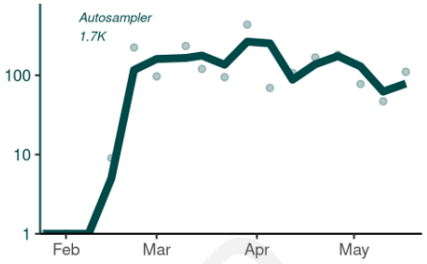


Auckland

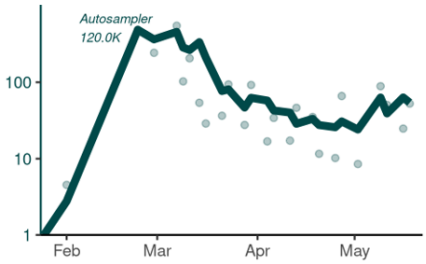
Auckland East

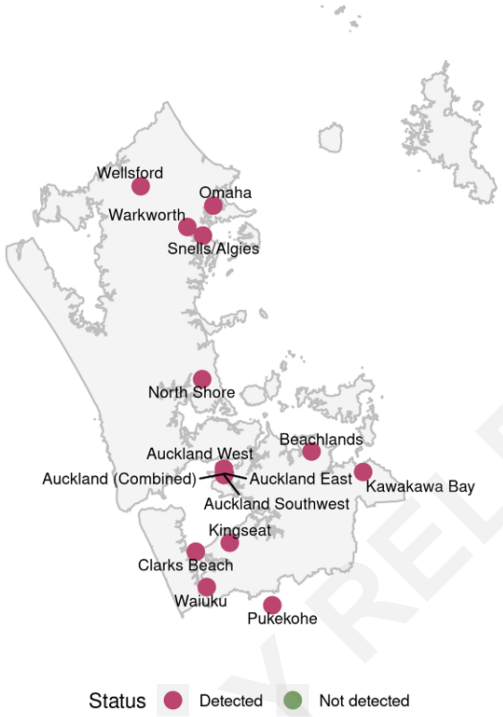


Wellsford

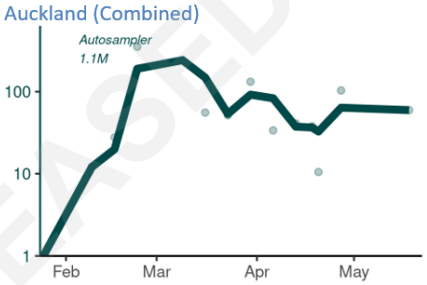


Auckland Southwest

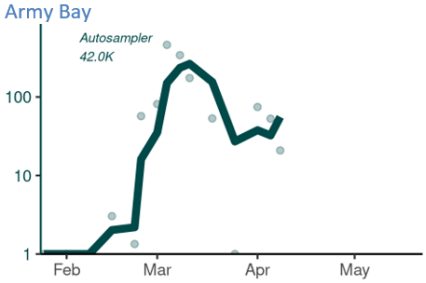




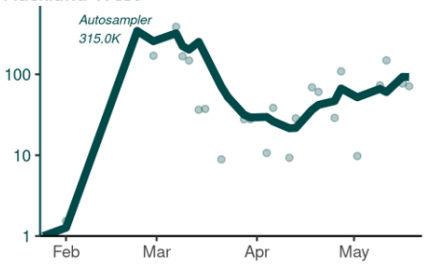
Auckland (Combined)



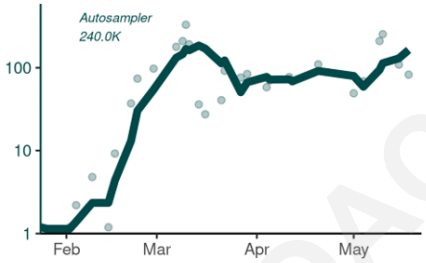
Army Bay



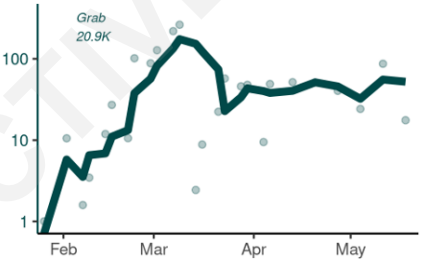
Auckland West



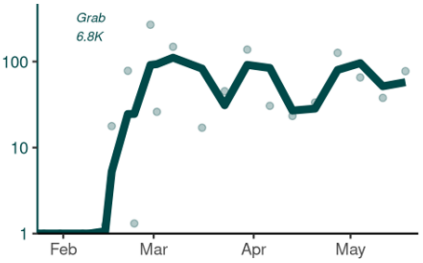
North Shore



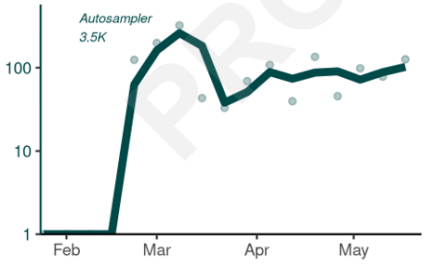
Pukekohe



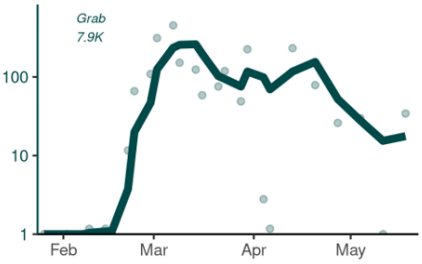
Beachlands



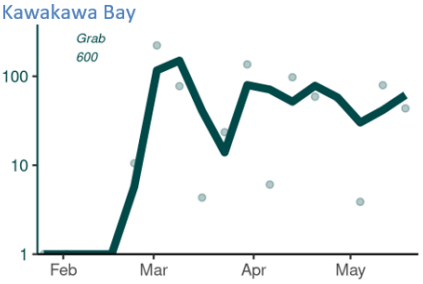
Warkworth



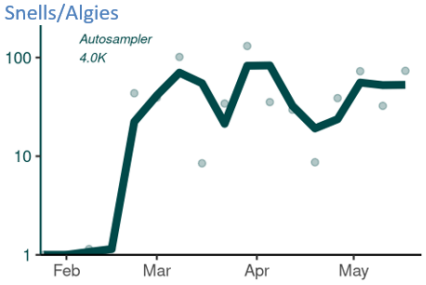
Waiuku



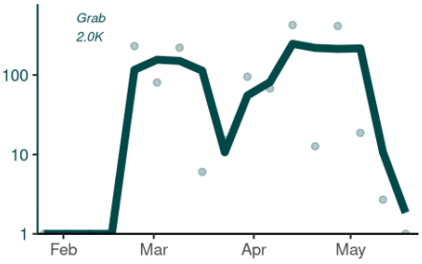
Kawakawa Bay



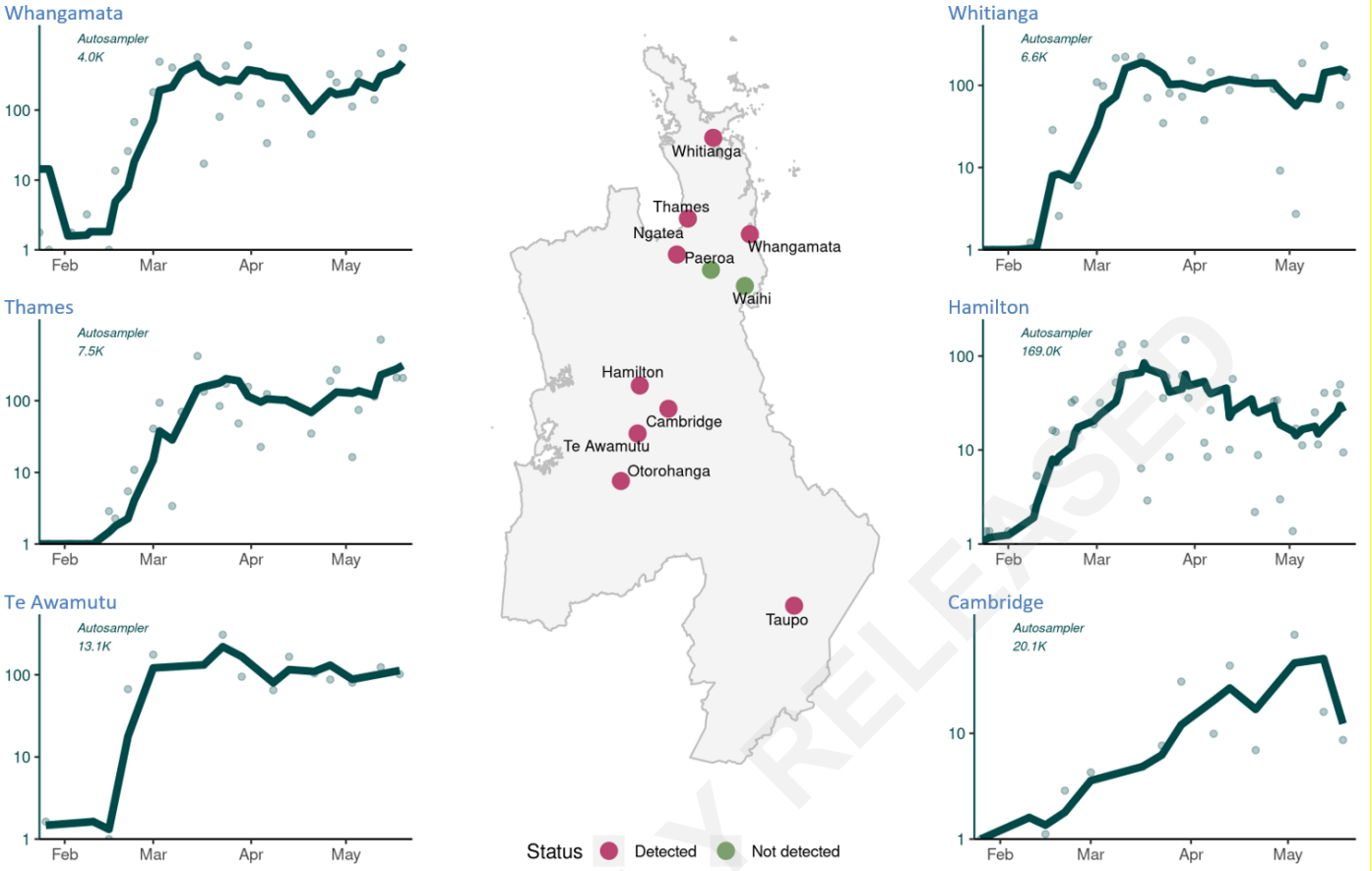
Snells/Algies

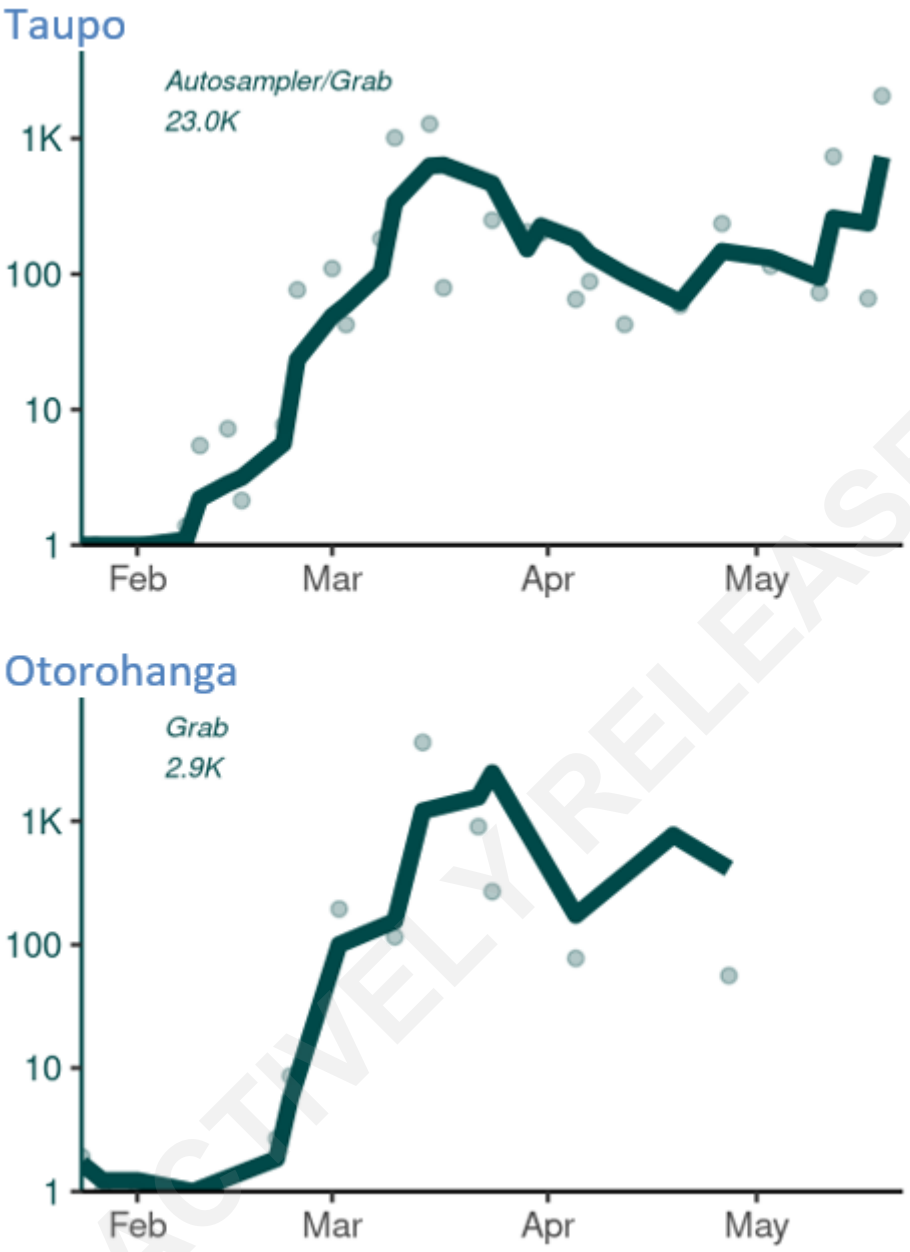


Clarks Beach

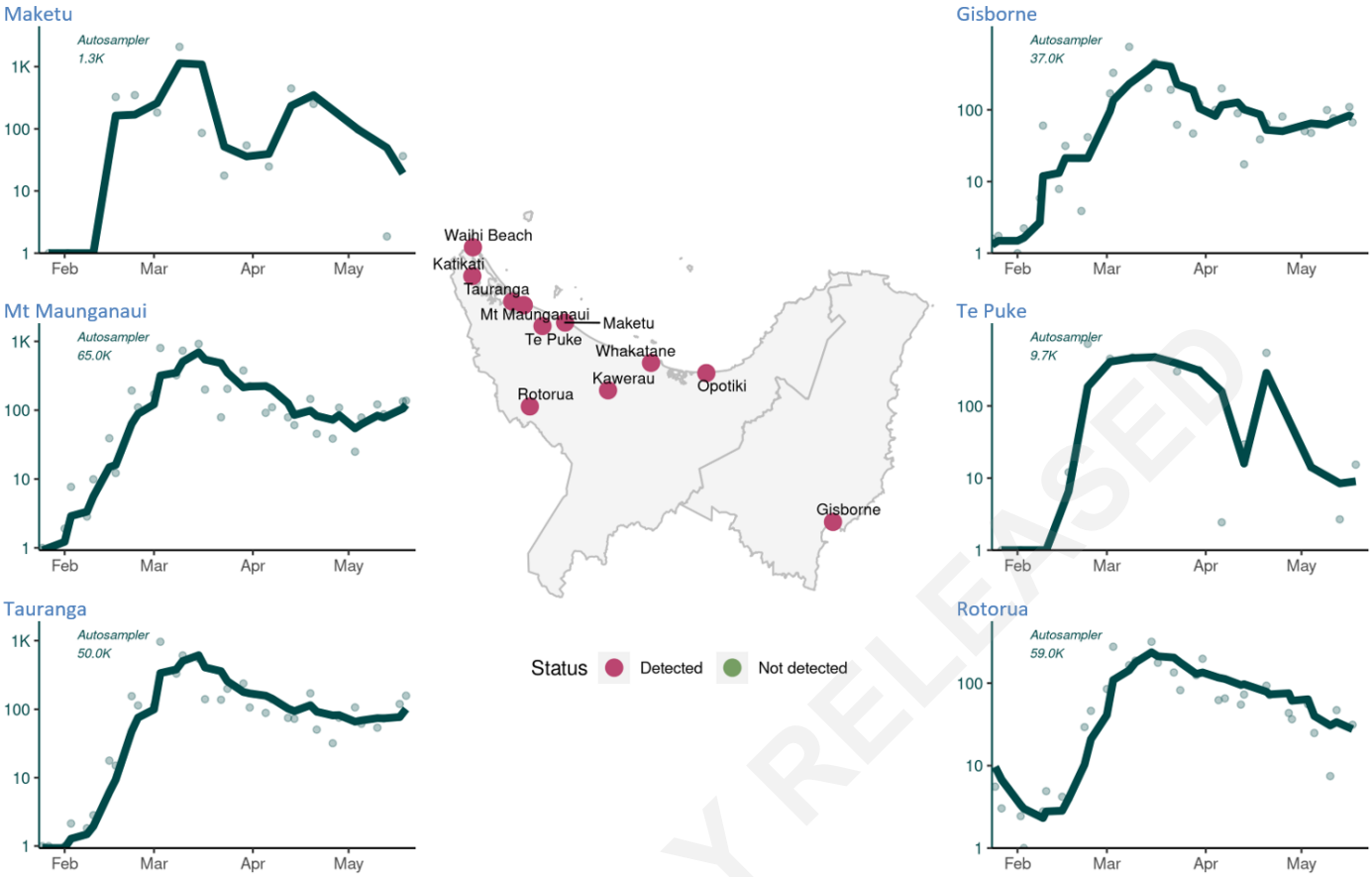


Waikato

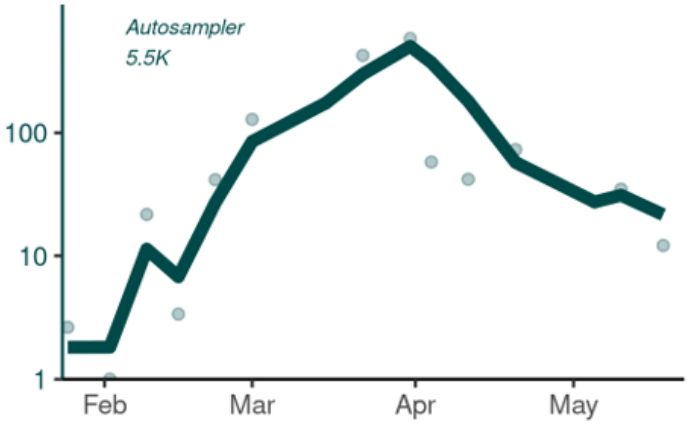




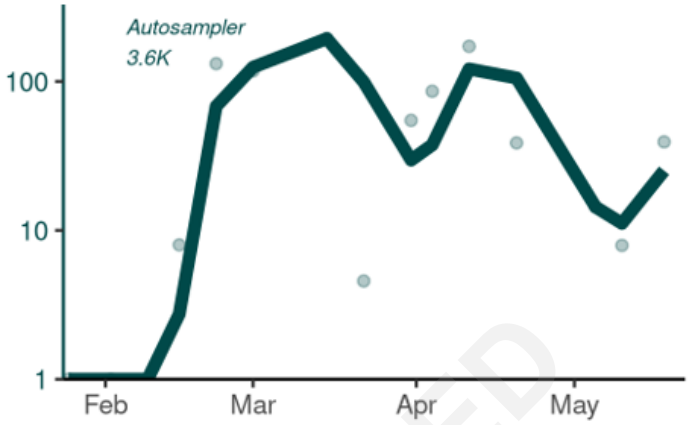
Bay of Plenty and Gisborne



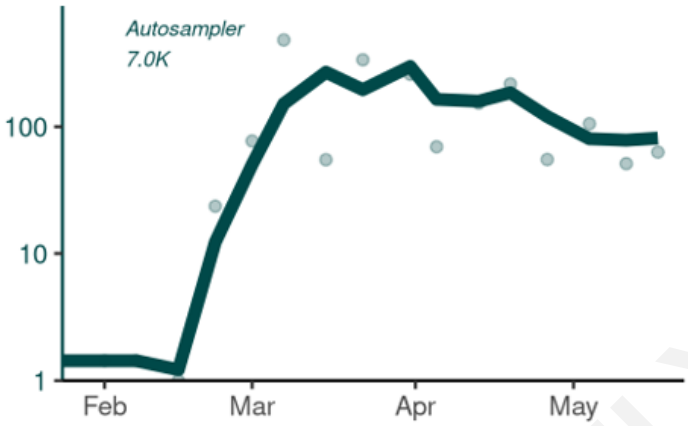
Katikati



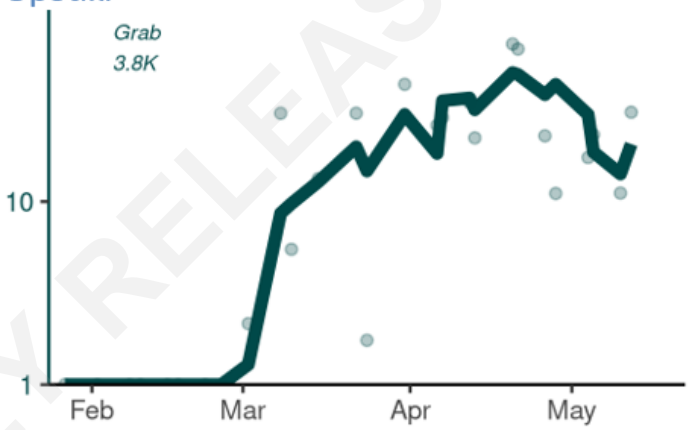
Waihi Beach



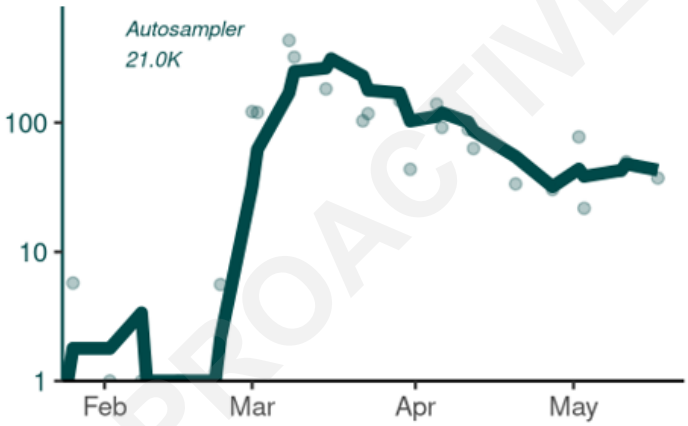
Kawerau

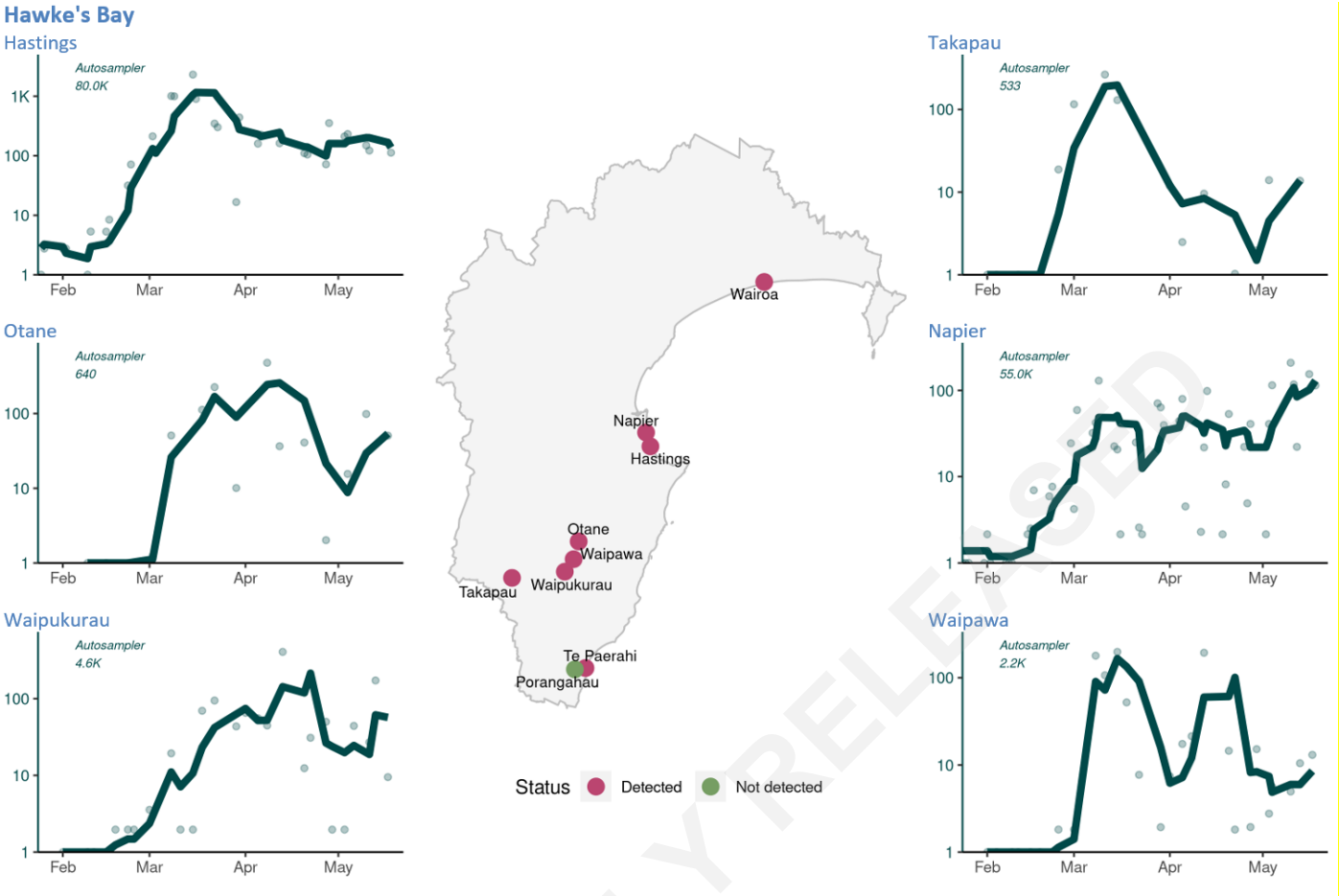


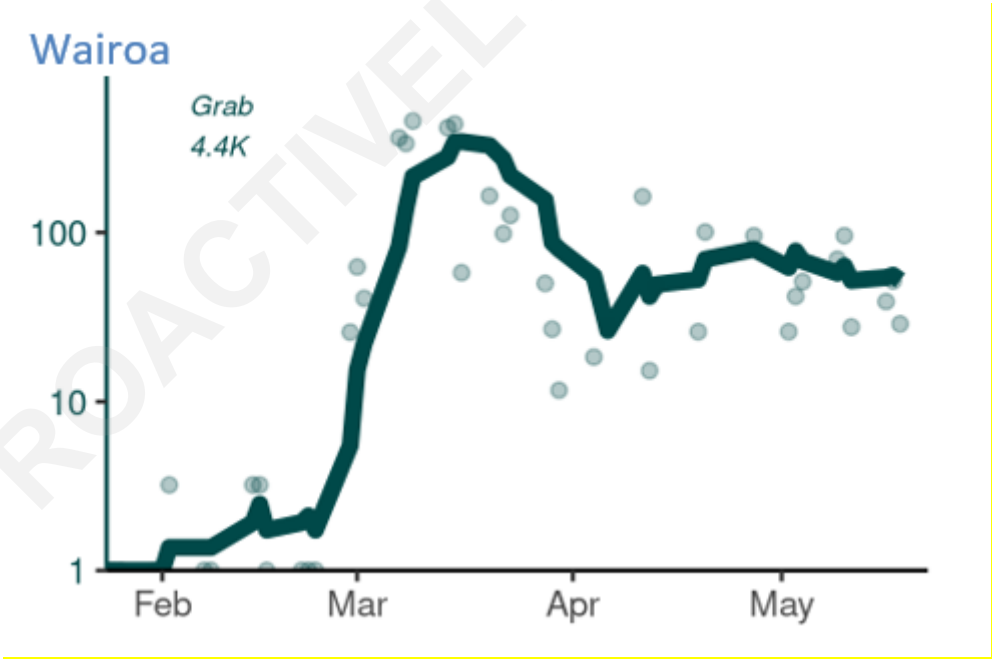
Opotiki

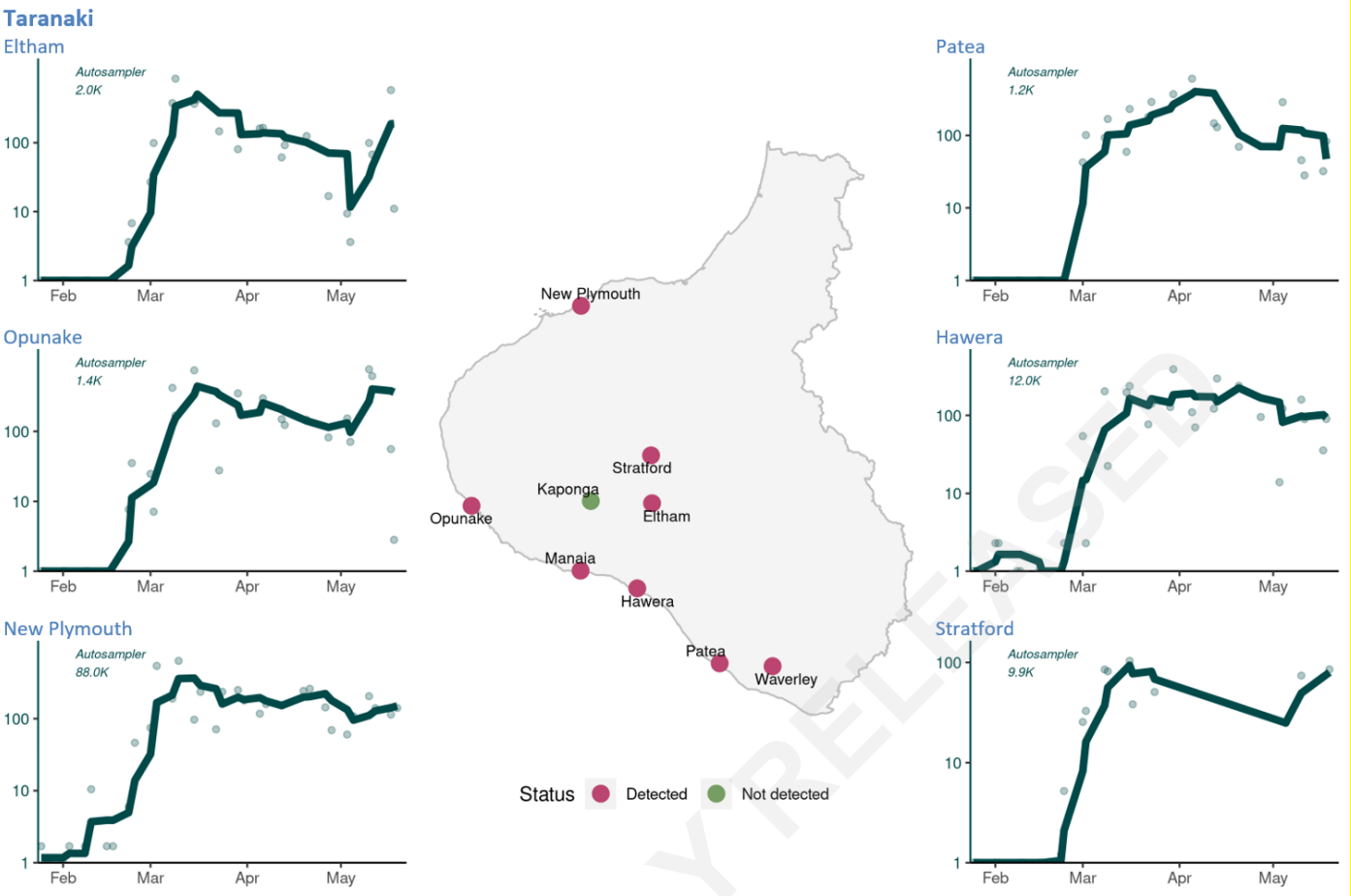


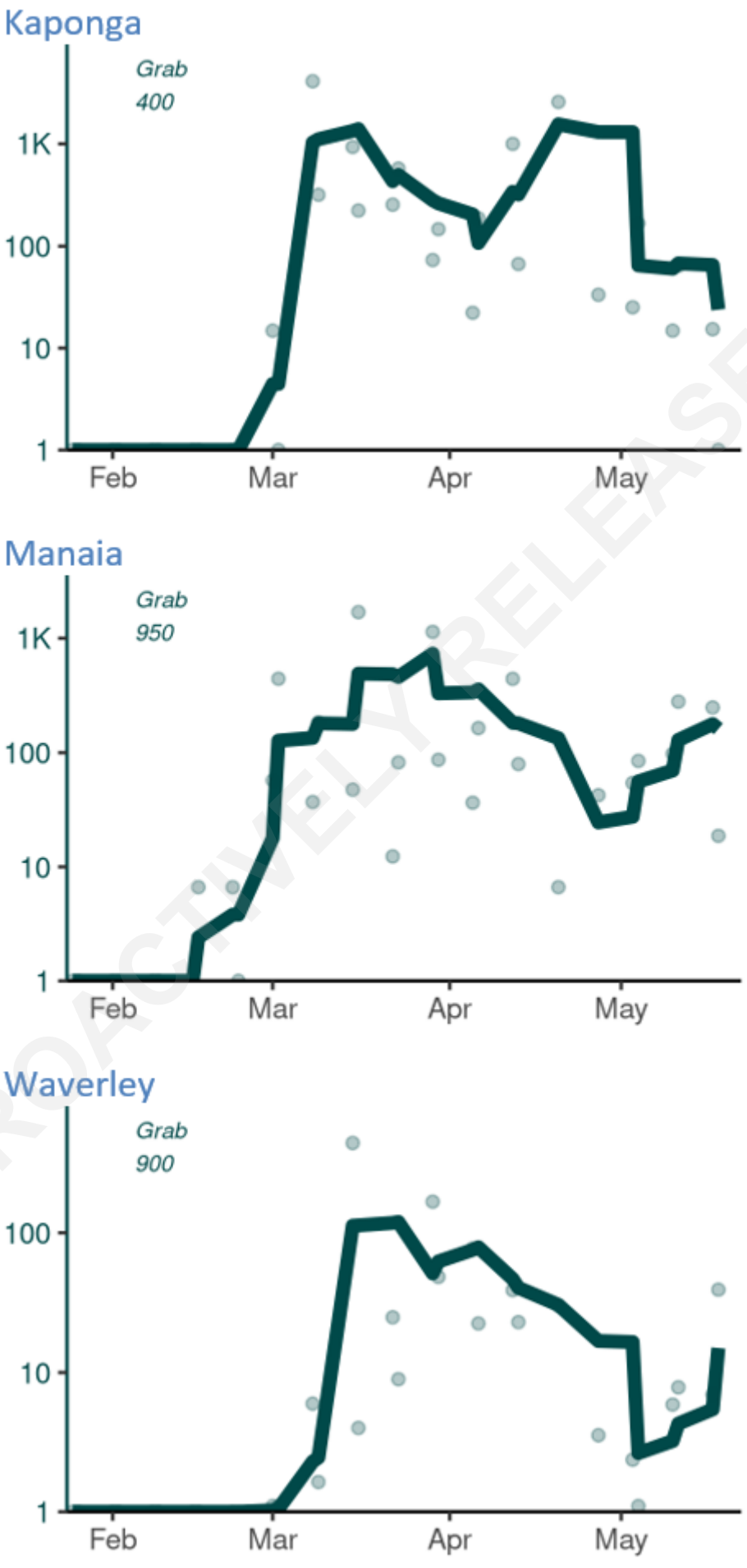
Whakatane



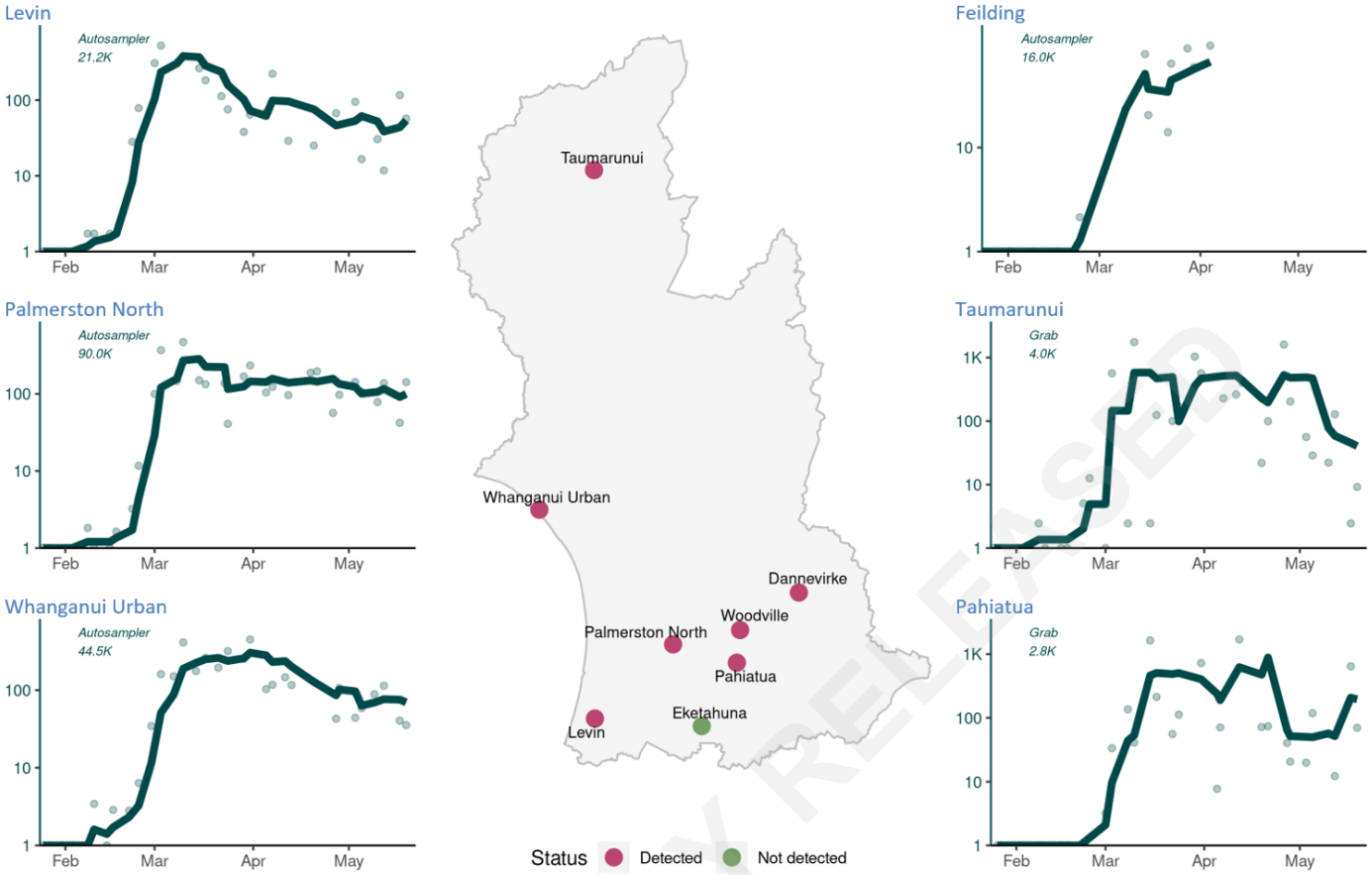


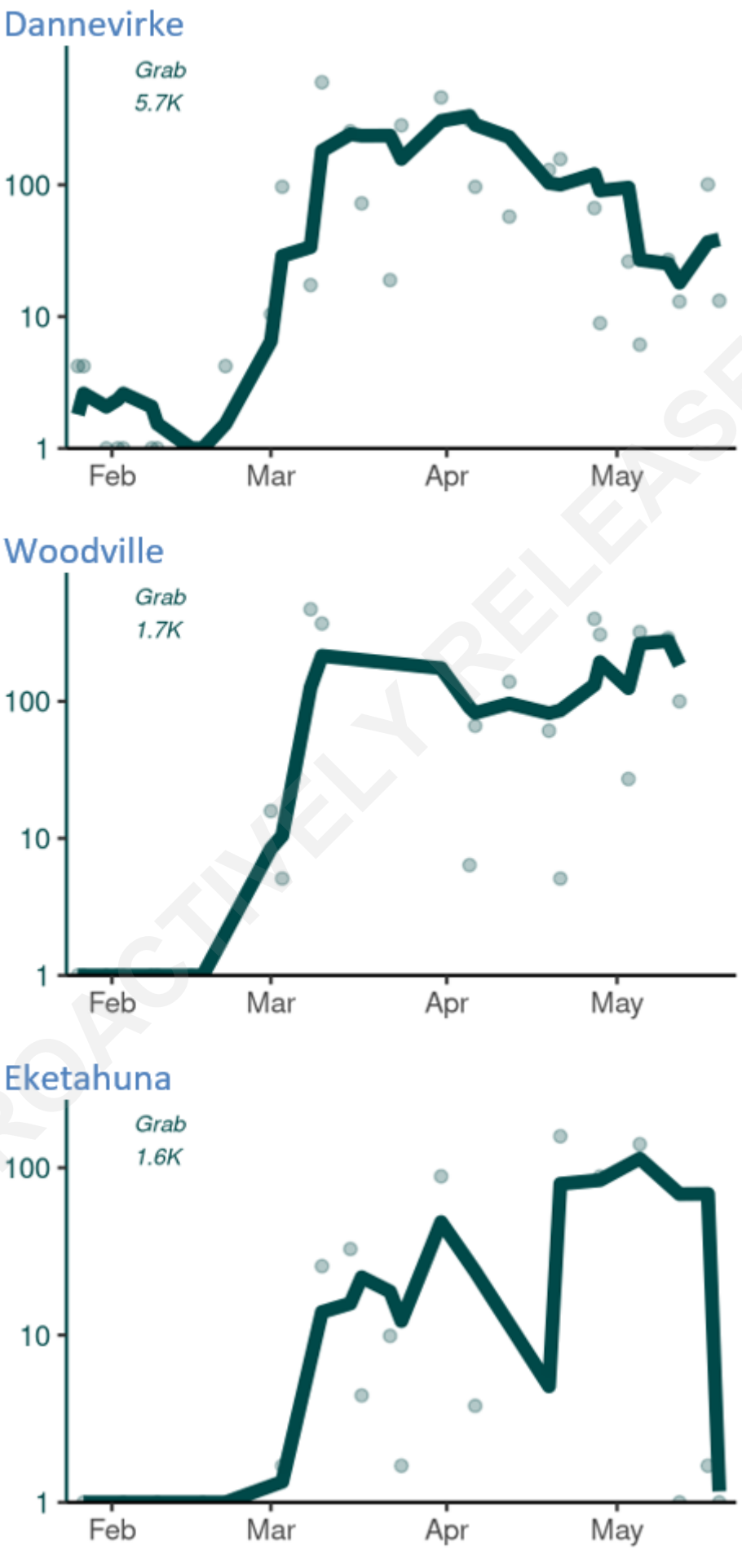






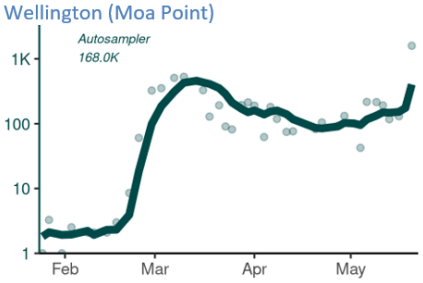
Manawatu-Wanganui



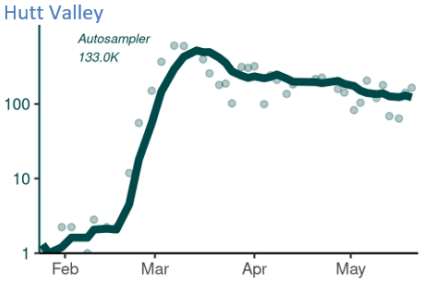


Wellington

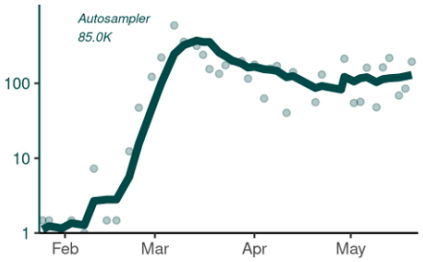
Wellington (Moa Point)



Hutt Valley

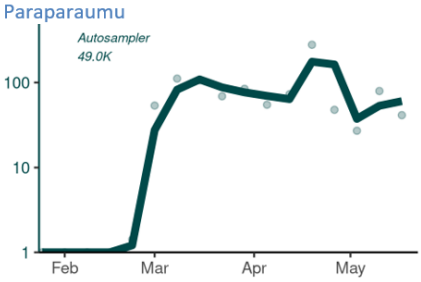


Porirua

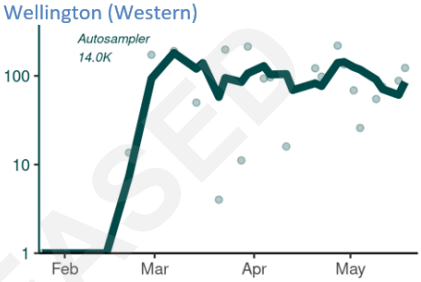


Status Detected Not detected

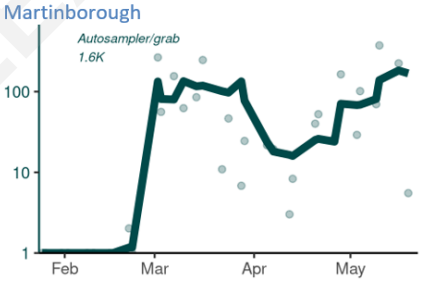
Paraparaumu



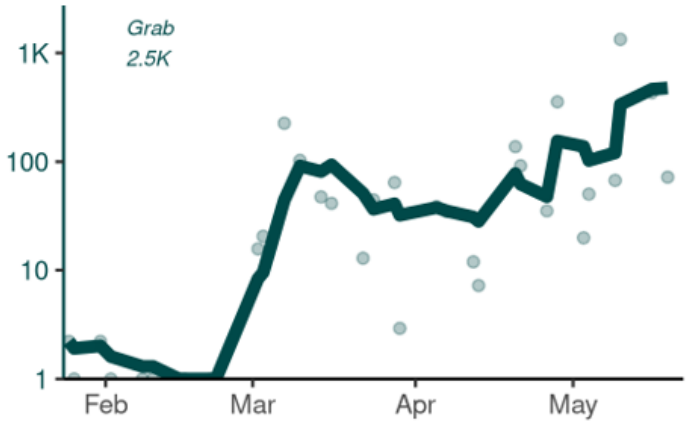
Wellington (Western)



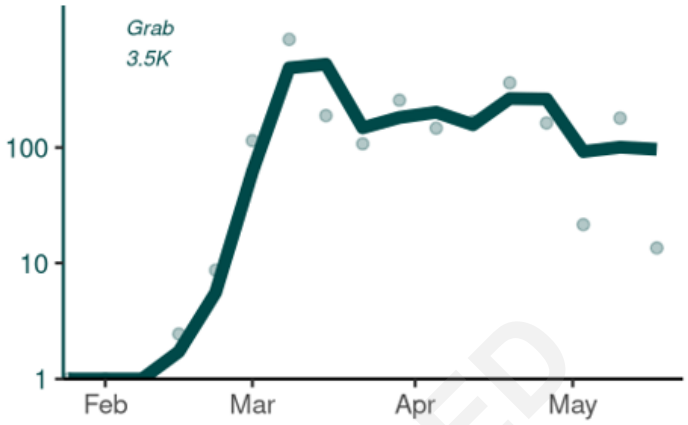
Martinborough



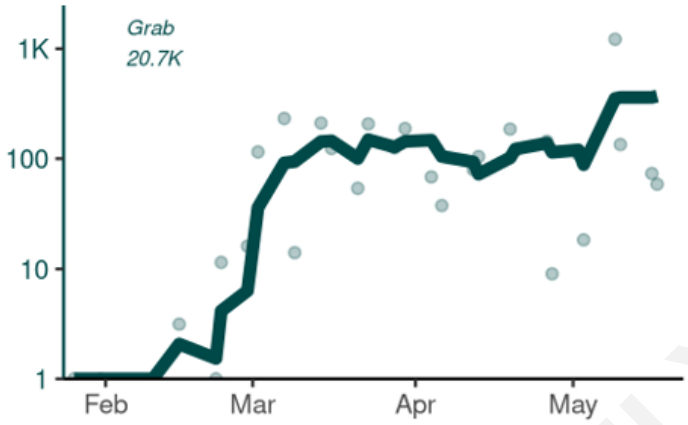
Featherston



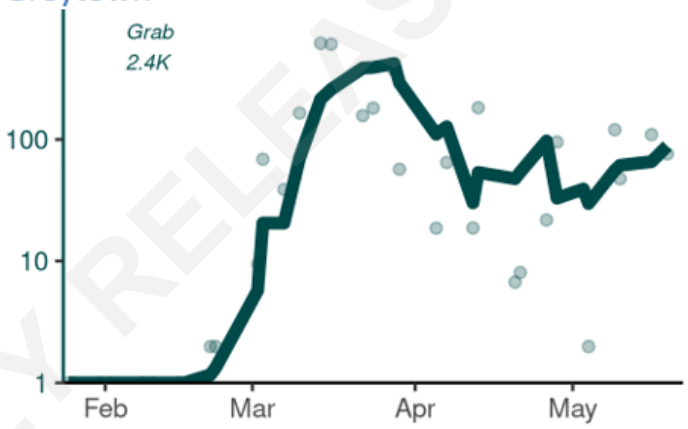
Otaki



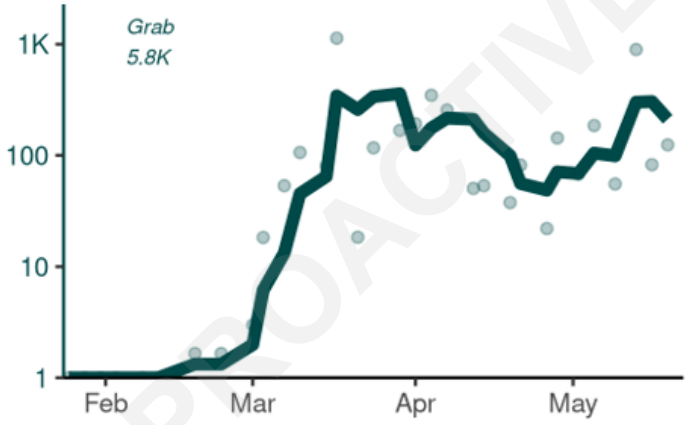
Masterton



Greytown

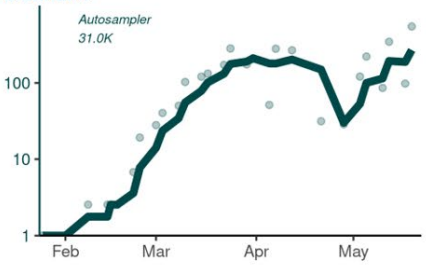


Carterton

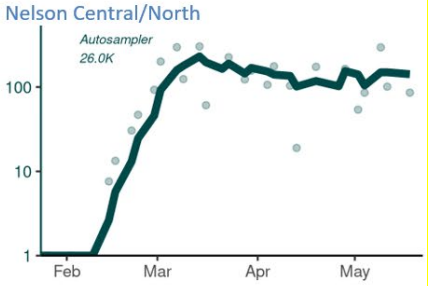


Tasman, Nelson, and Marlborough

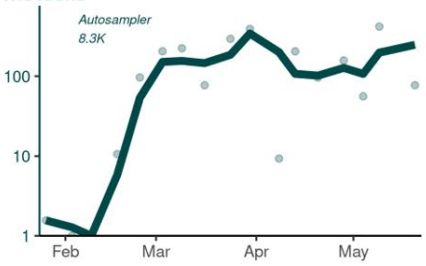
Blenheim



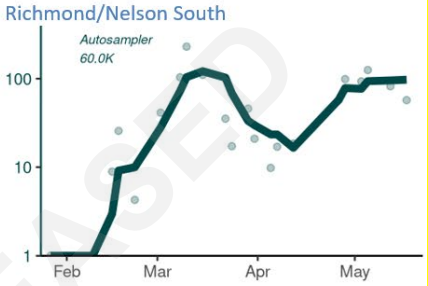
Nelson Central/North



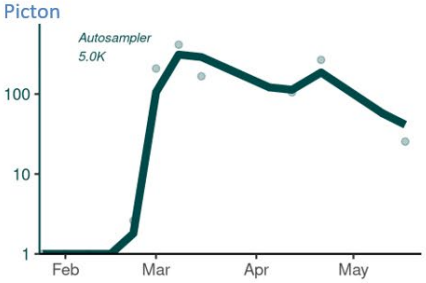
Motueka



Richmond/Nelson South

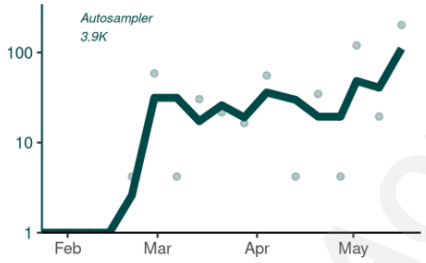


Picton

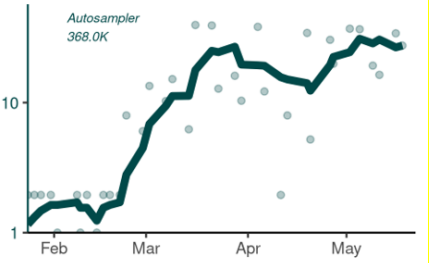


West Coast and Canterbury

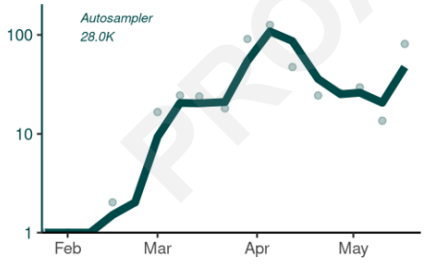
Leeston

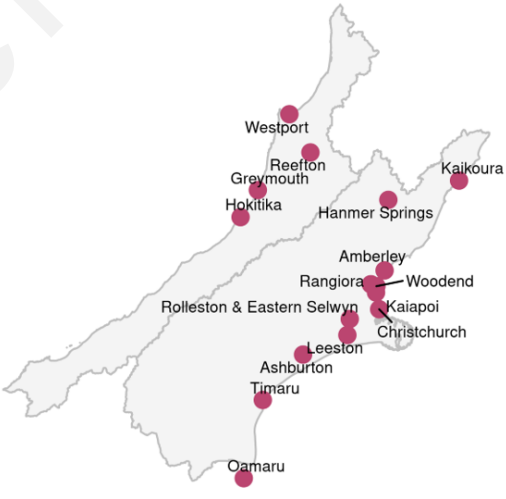


Christchurch

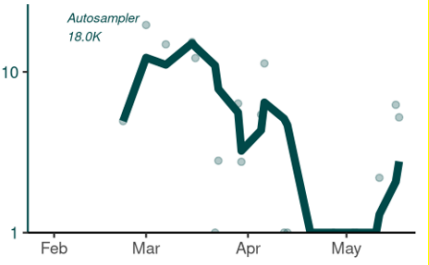


Timaru

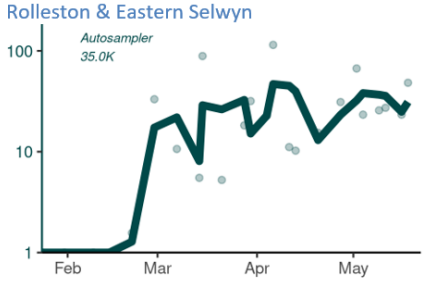




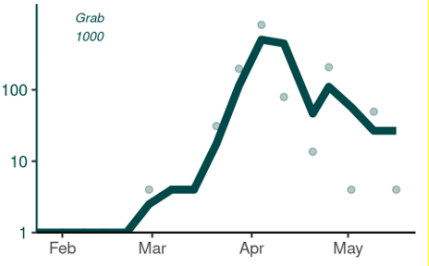
Ashburton



Rolleston & Eastern Selwyn

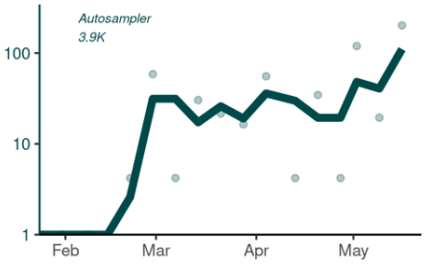


Reefton

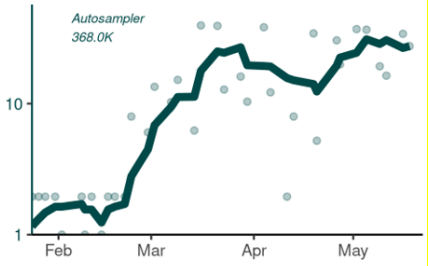


West Coast and Canterbury

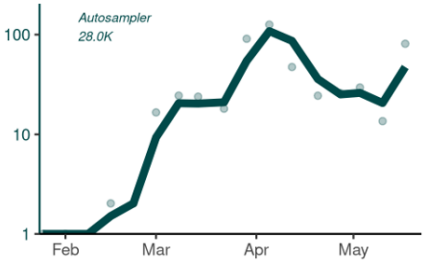
Leeston



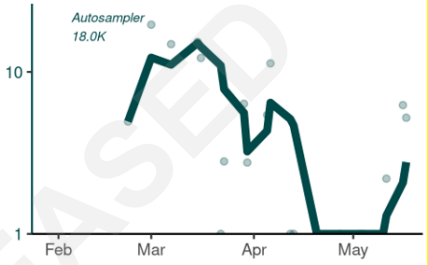
Christchurch



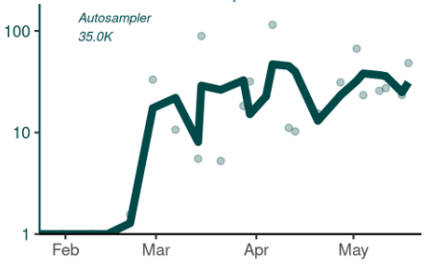
Timaru



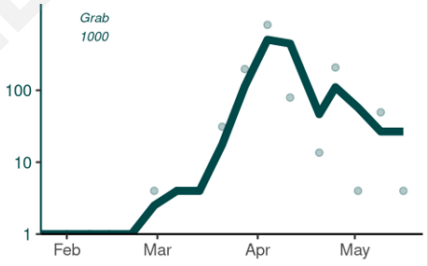
Ashburton



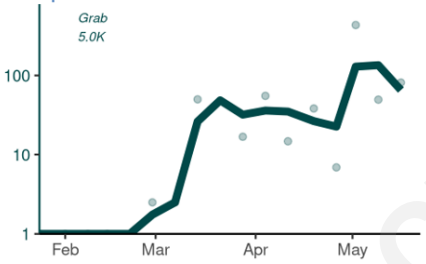
Rolleston & Eastern Selwyn



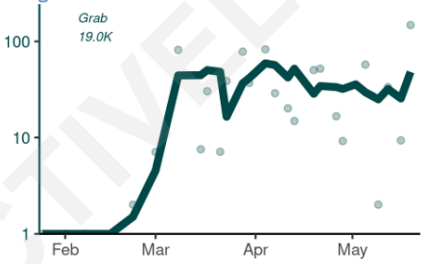
Reefton



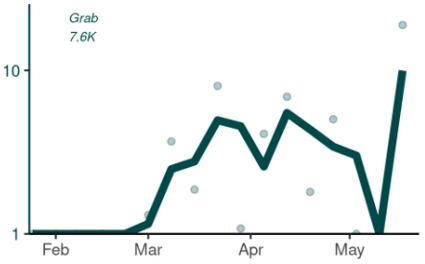
Westport



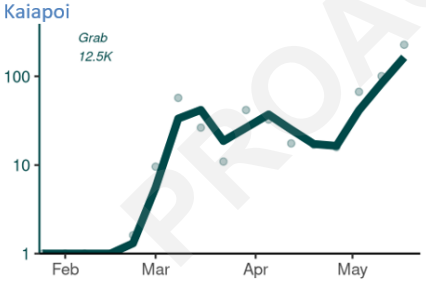
Rangiora



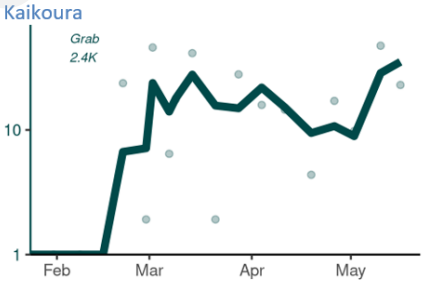
Woodend



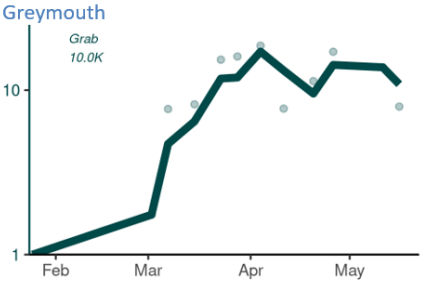
Kaiapoi



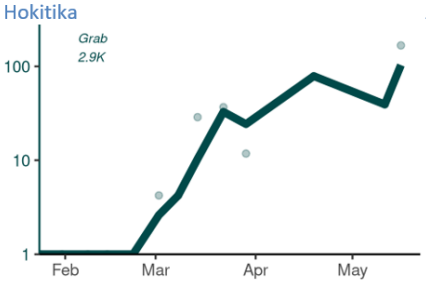
Kaikoura



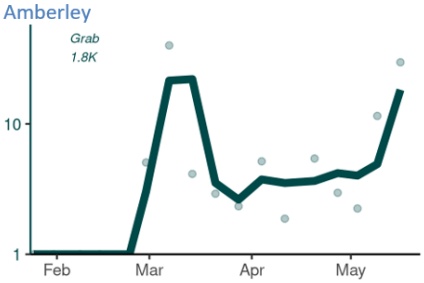
Greymouth



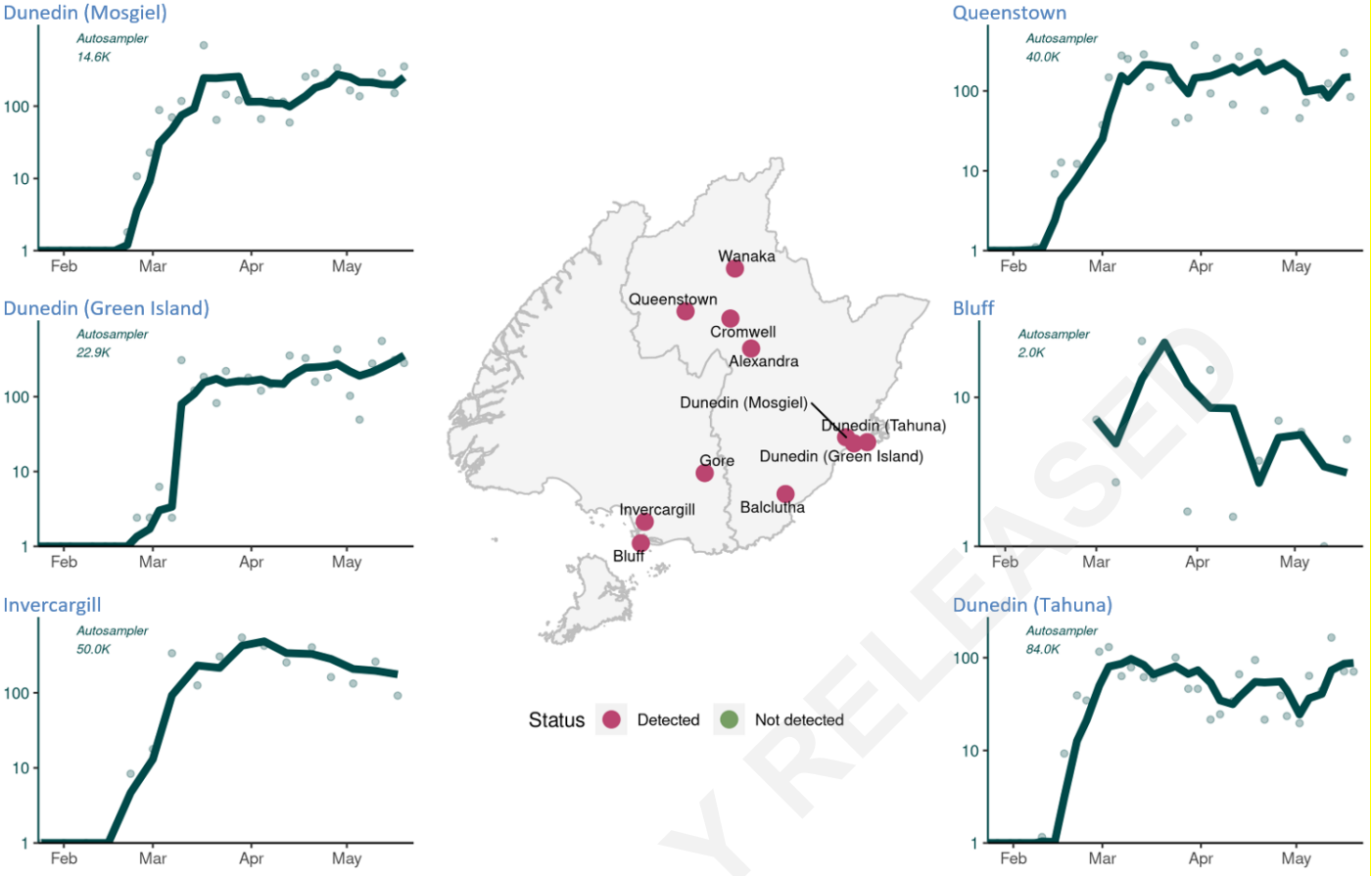
Hokitika



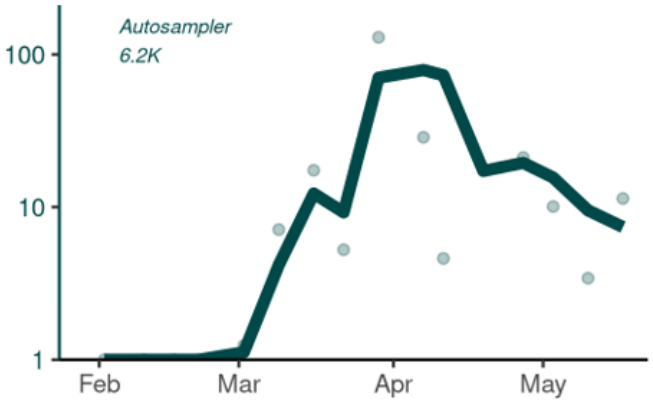
Amberley



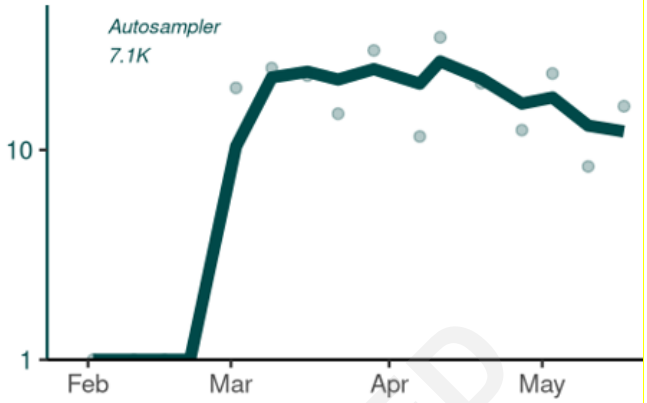
Otago and Southland



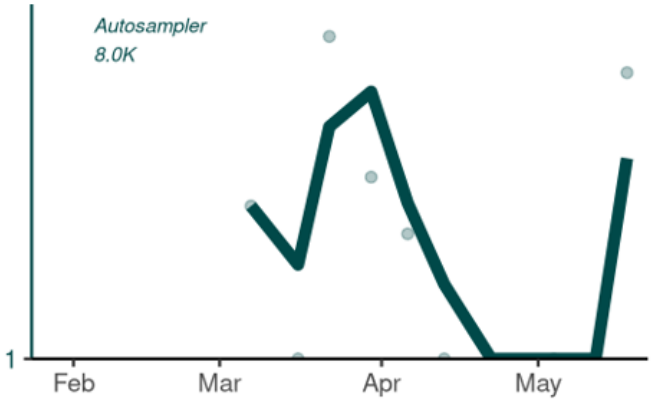
Alexandra



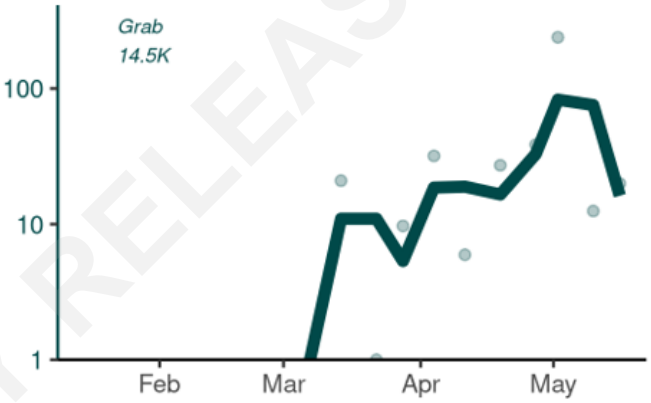
Cromwell



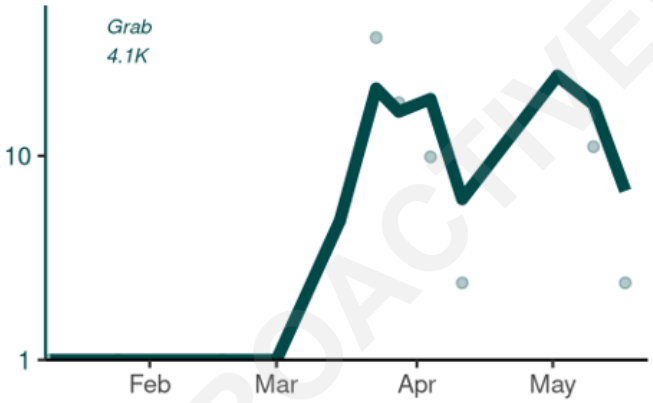
Gore



Wanaka

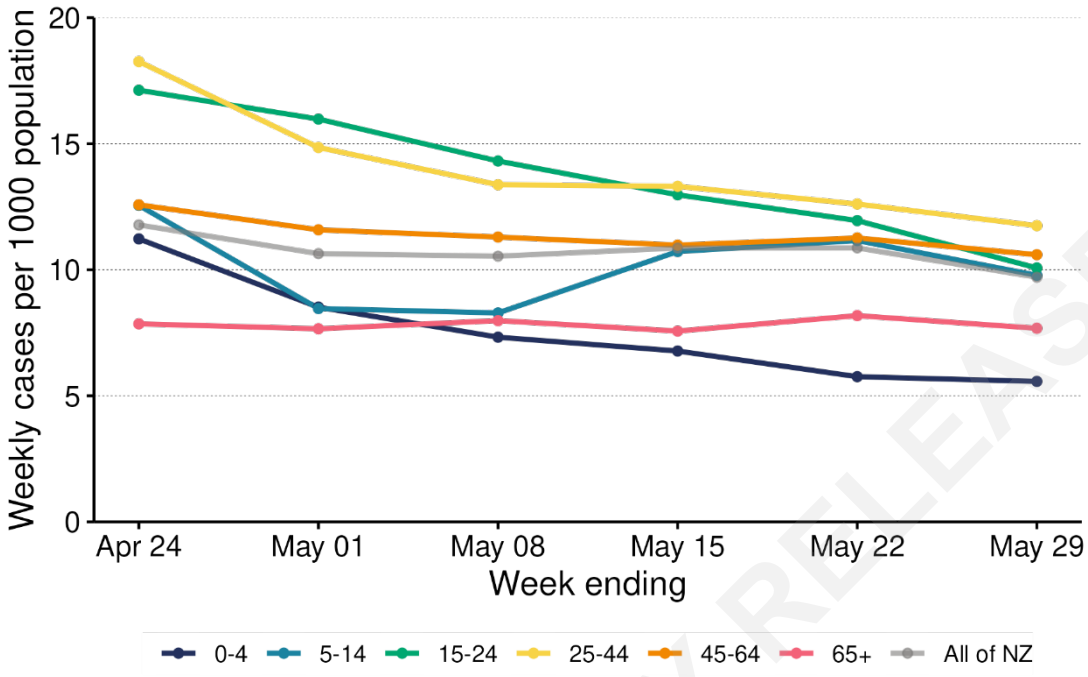


Balclutha

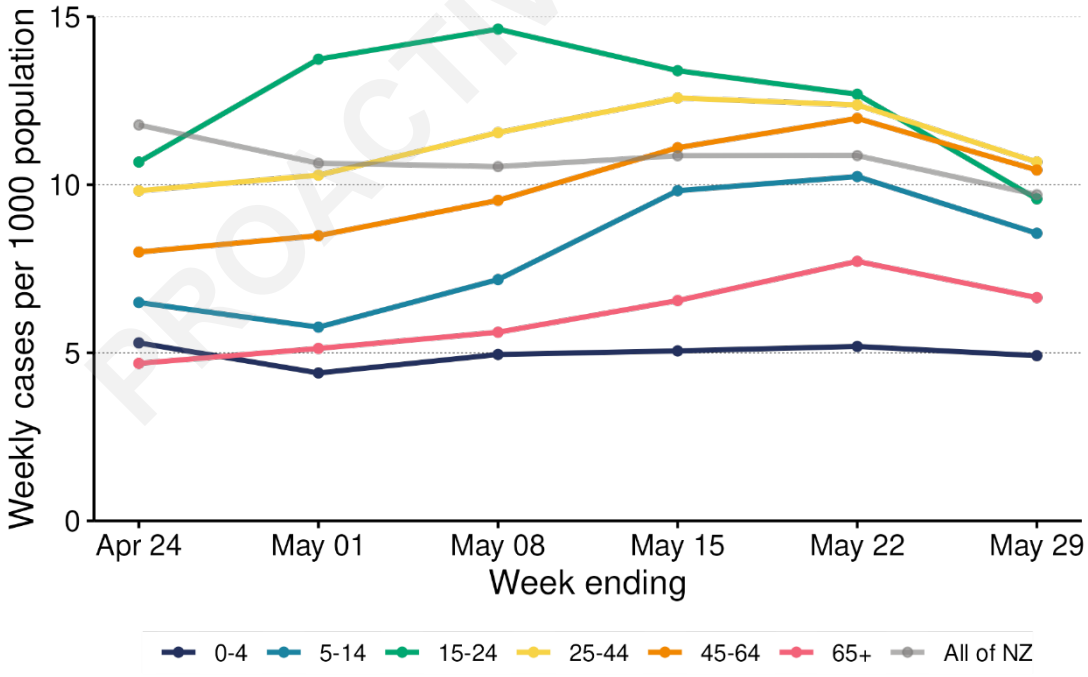


Age Graphs

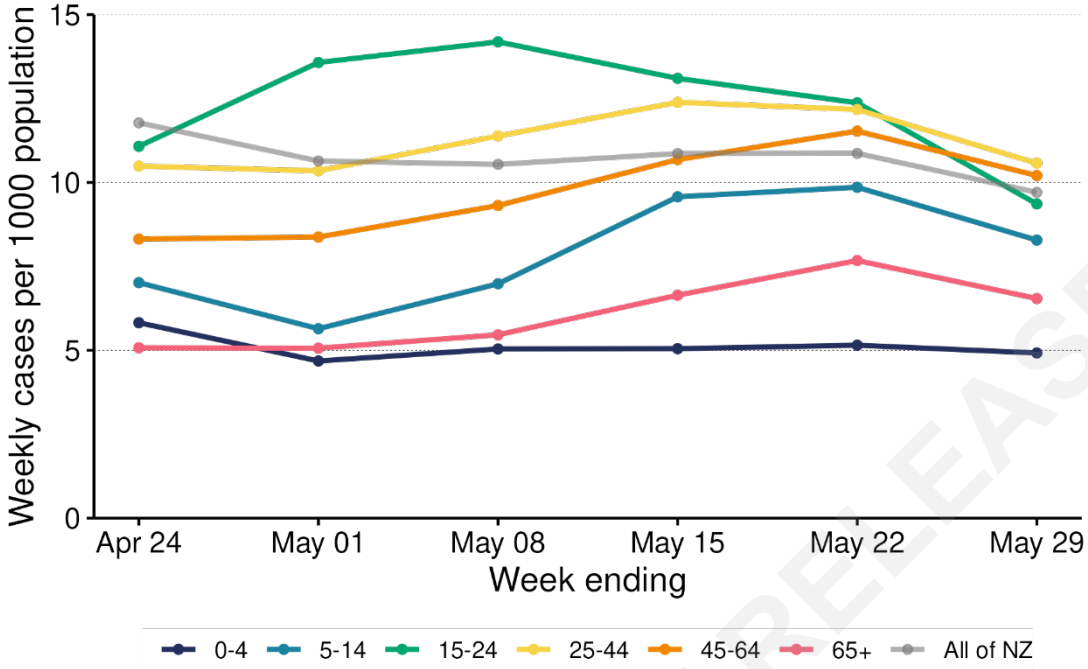
NZ Excluding Auckland Region



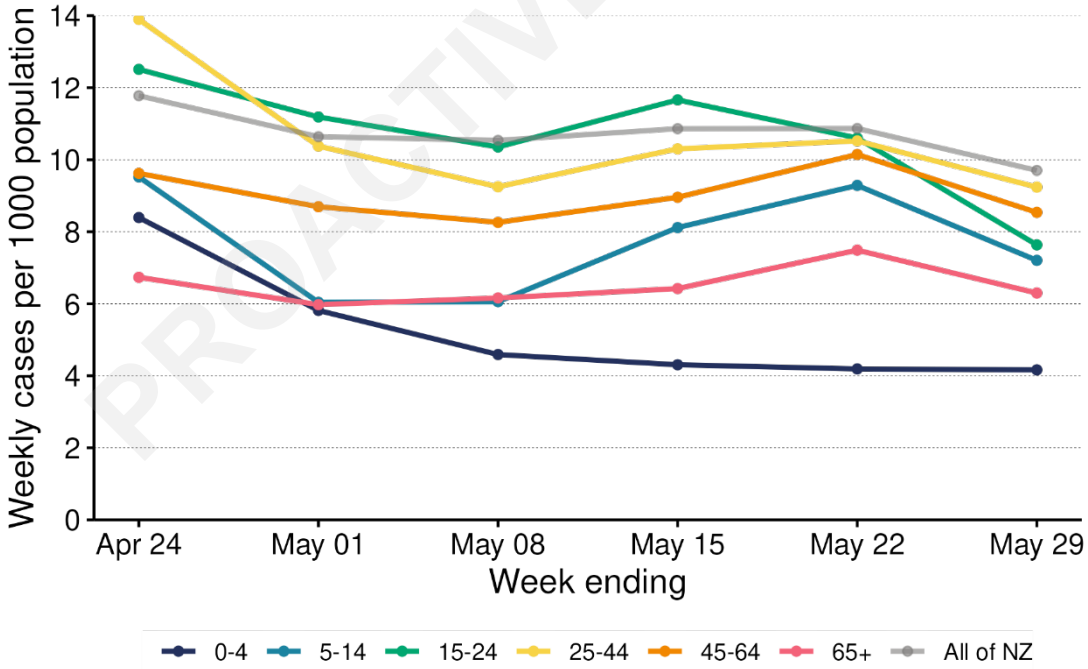
Auckland Region



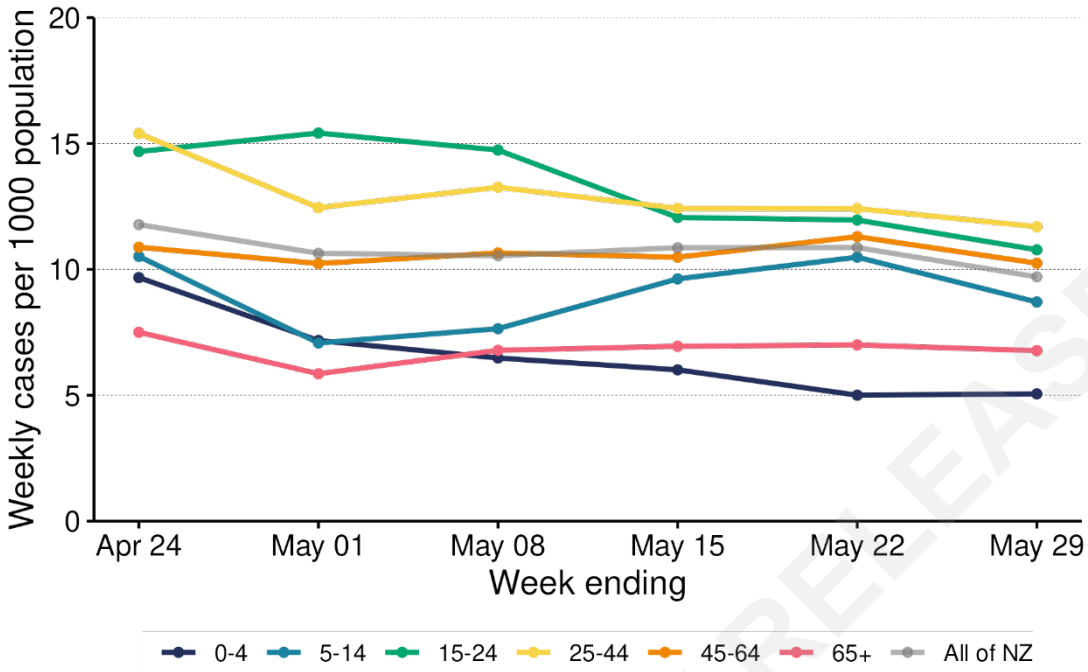
Northern Region



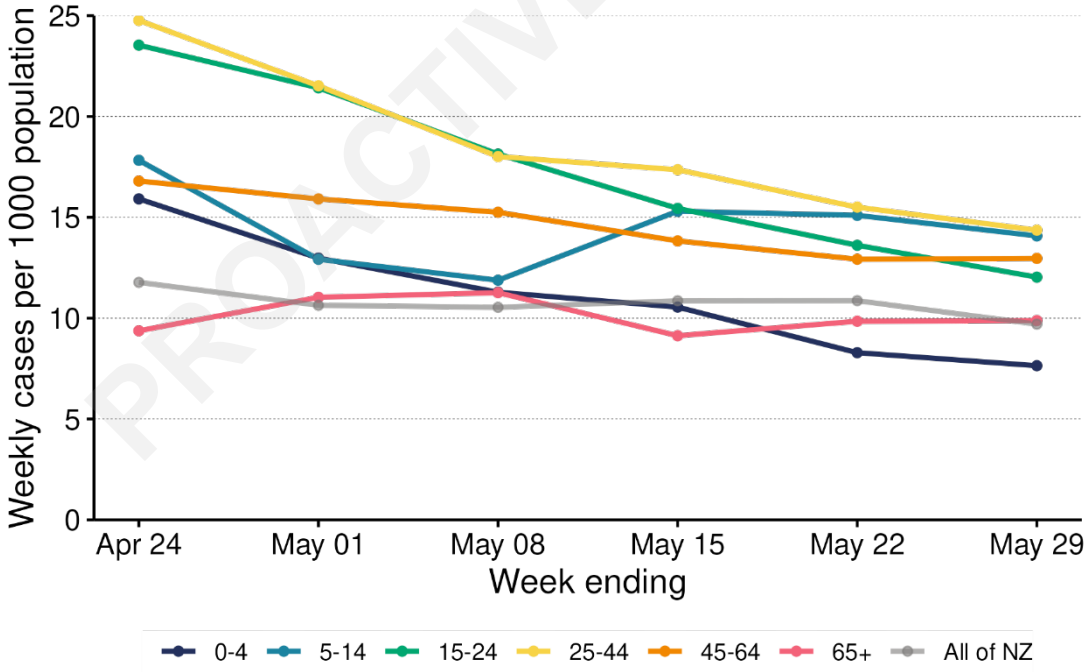
Te Manawa Taki



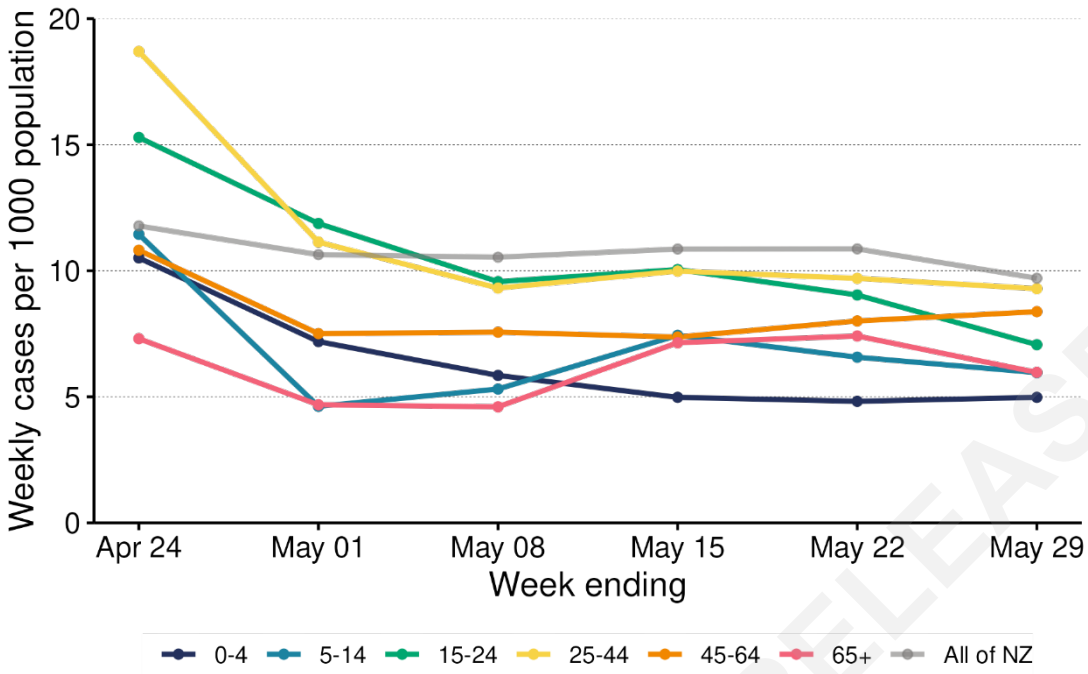
Central Region



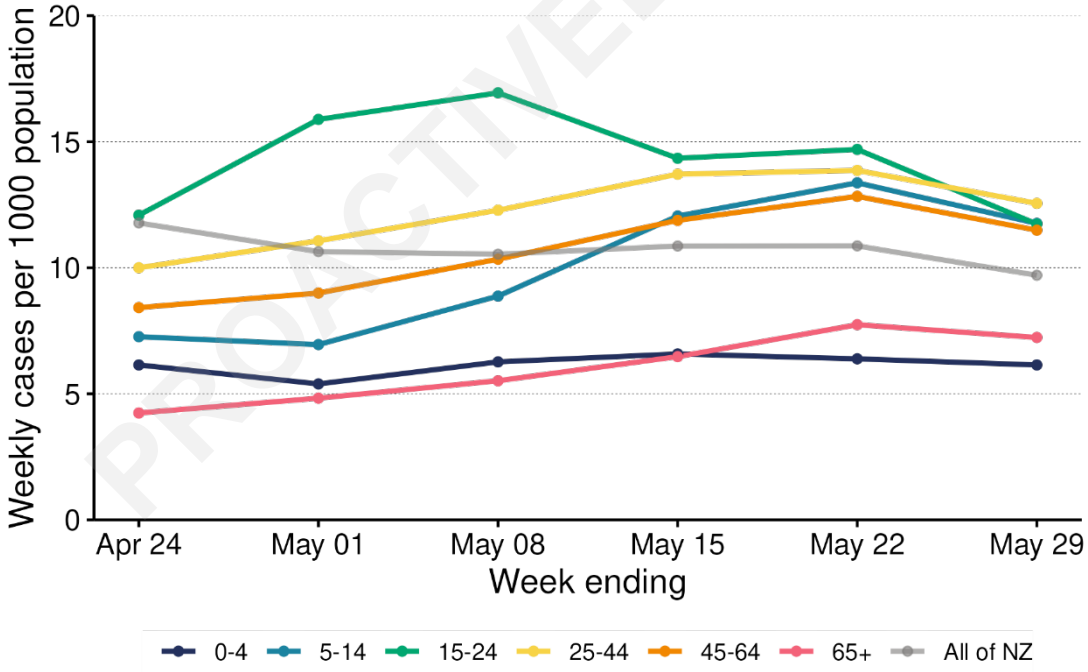
Southern Region



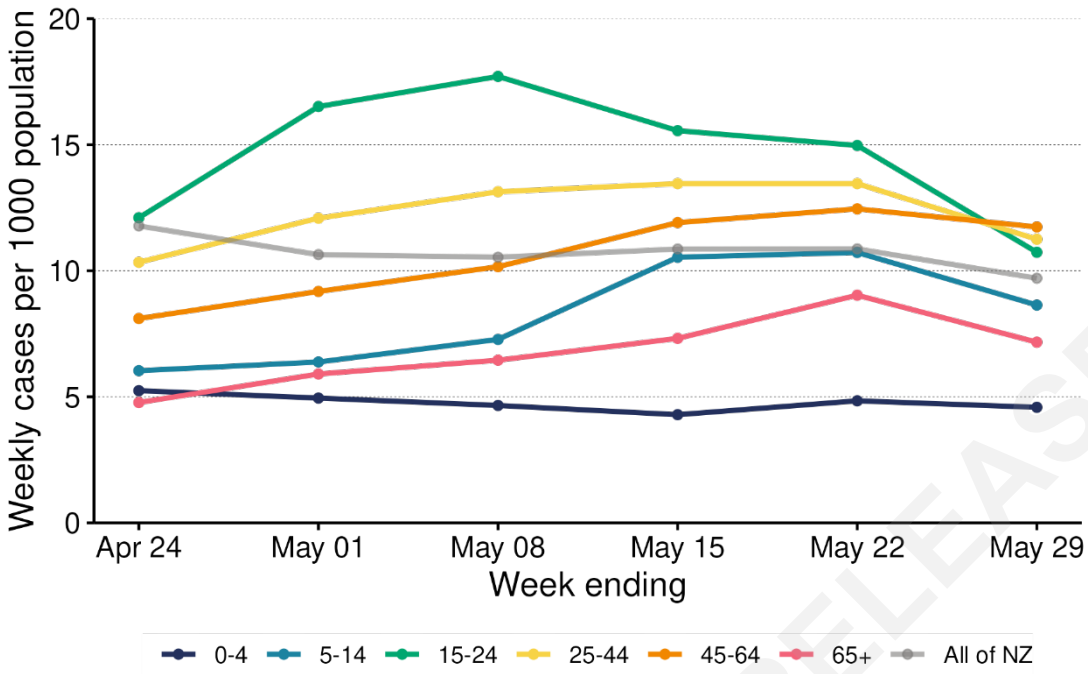
Northland DHB



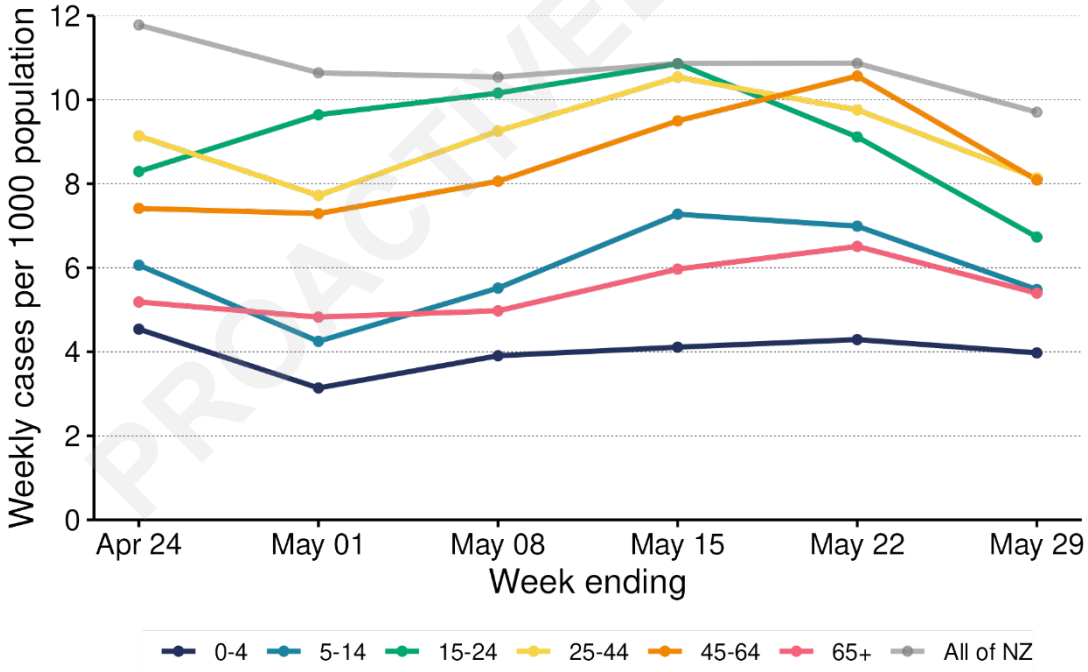
Waitemata DHB



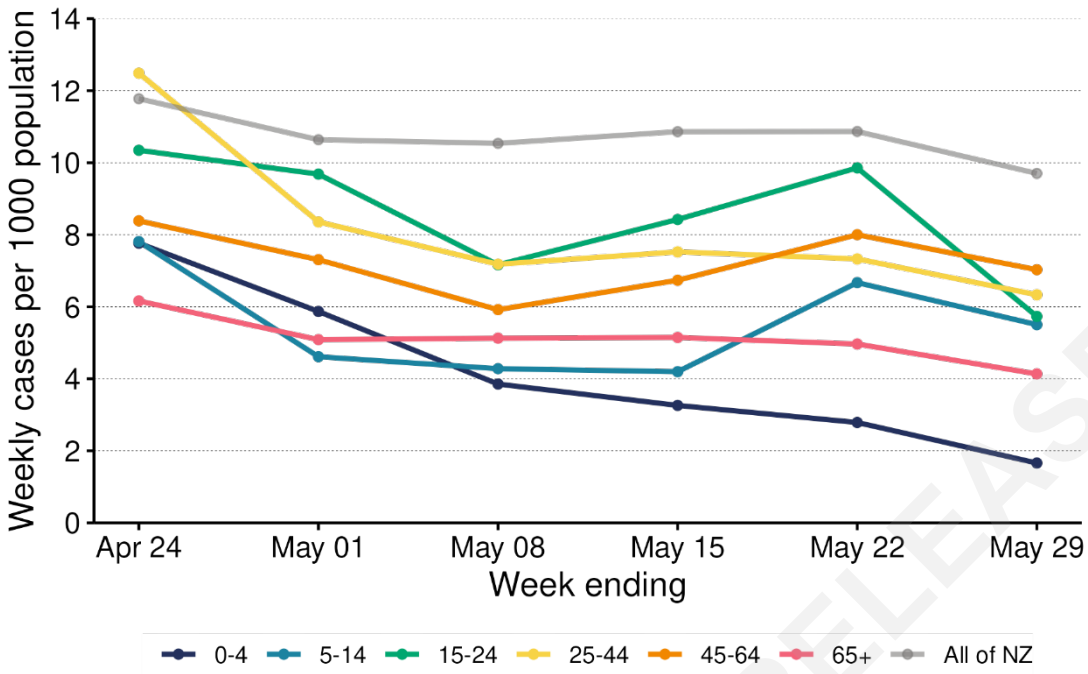
Auckland DHB



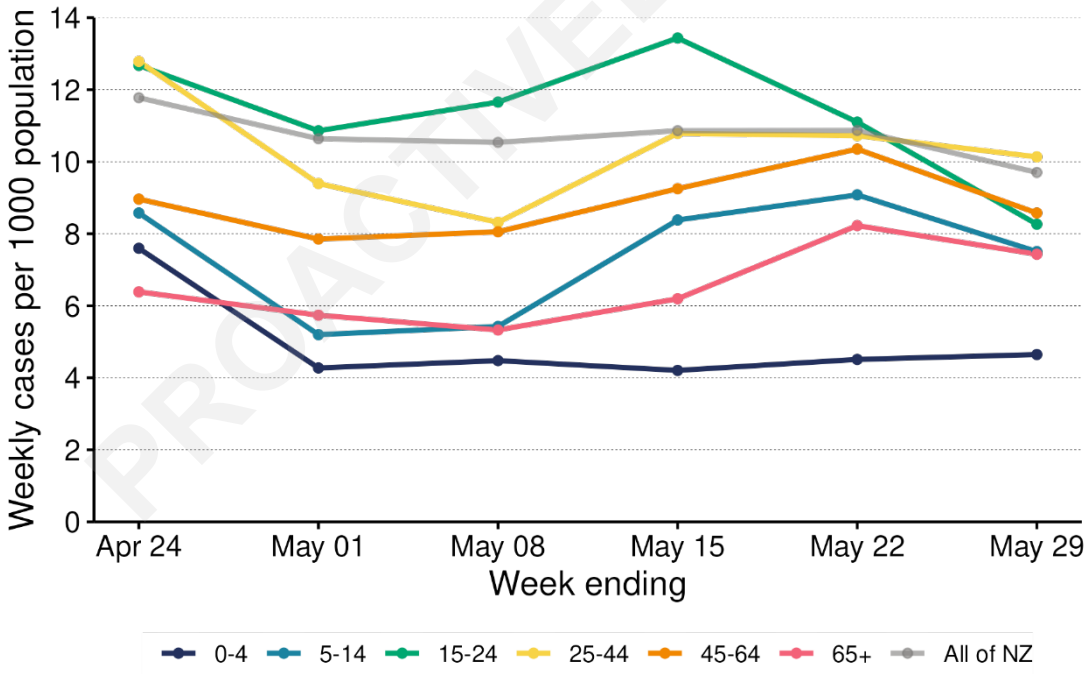
Counties Manukau DHB



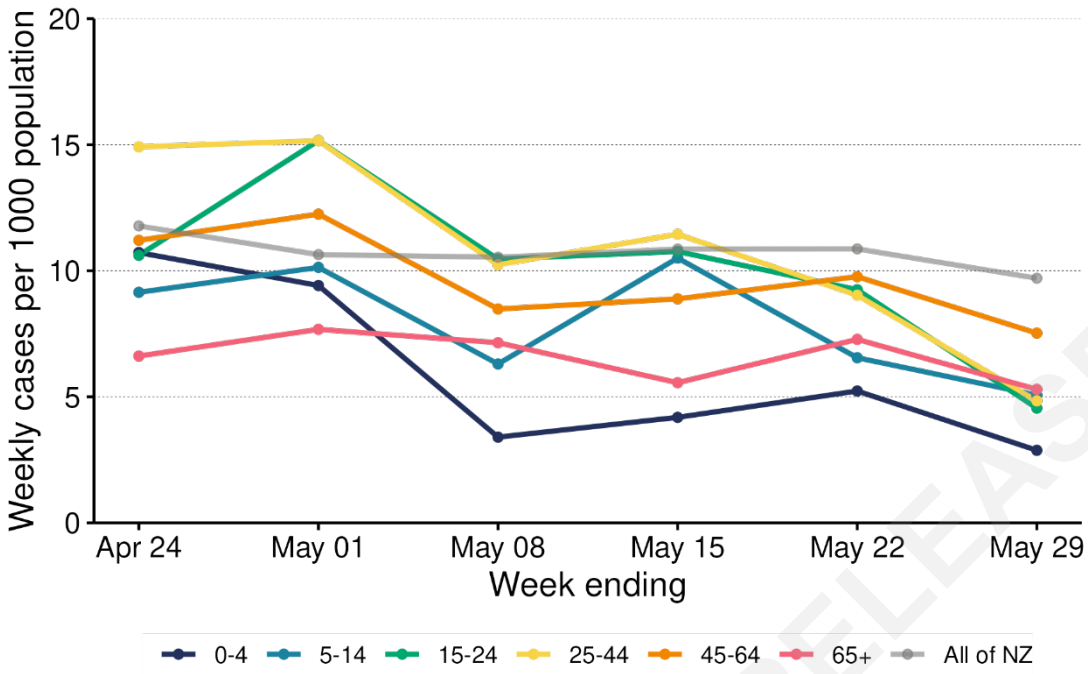
Bay of Plenty DHB



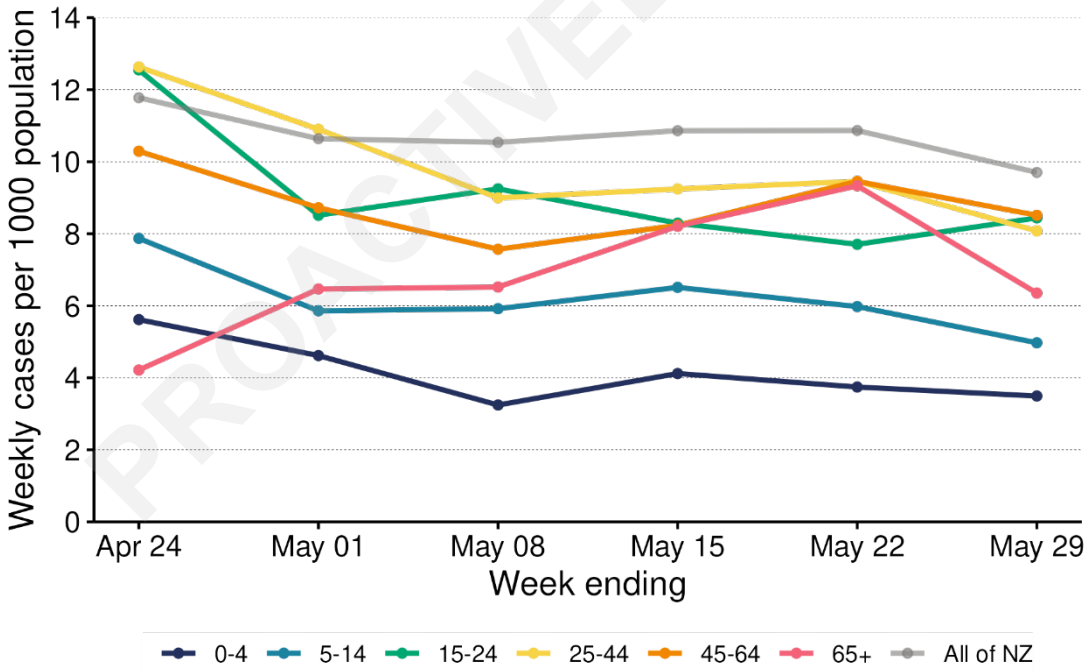
Waikato DHB



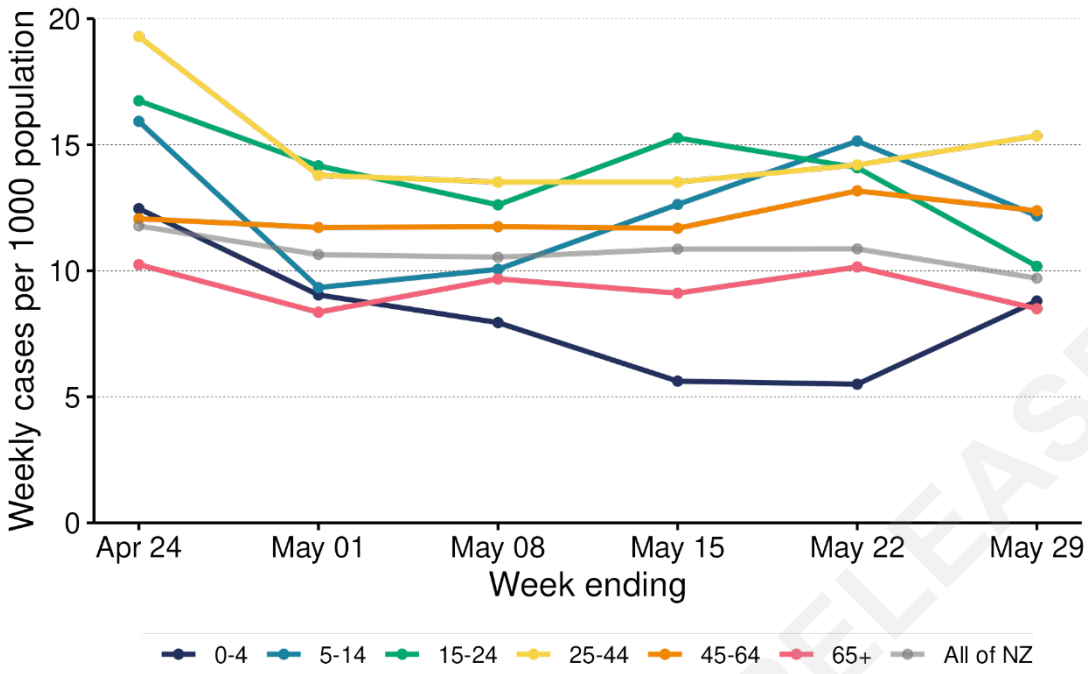
Tairawhiti DHB



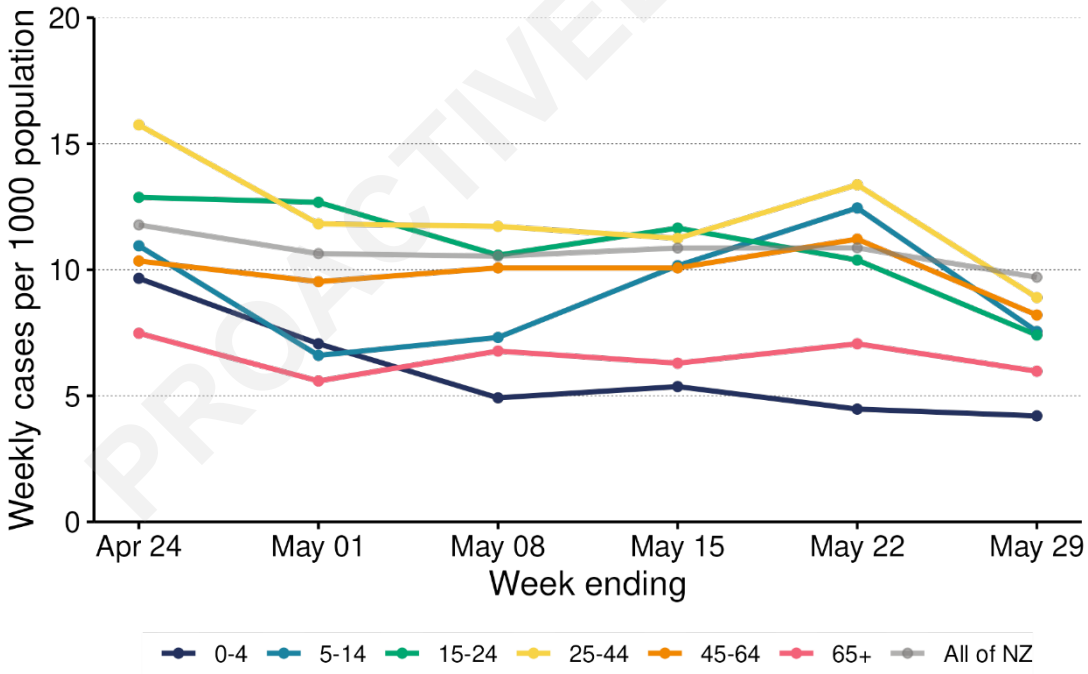
Lakes DHB



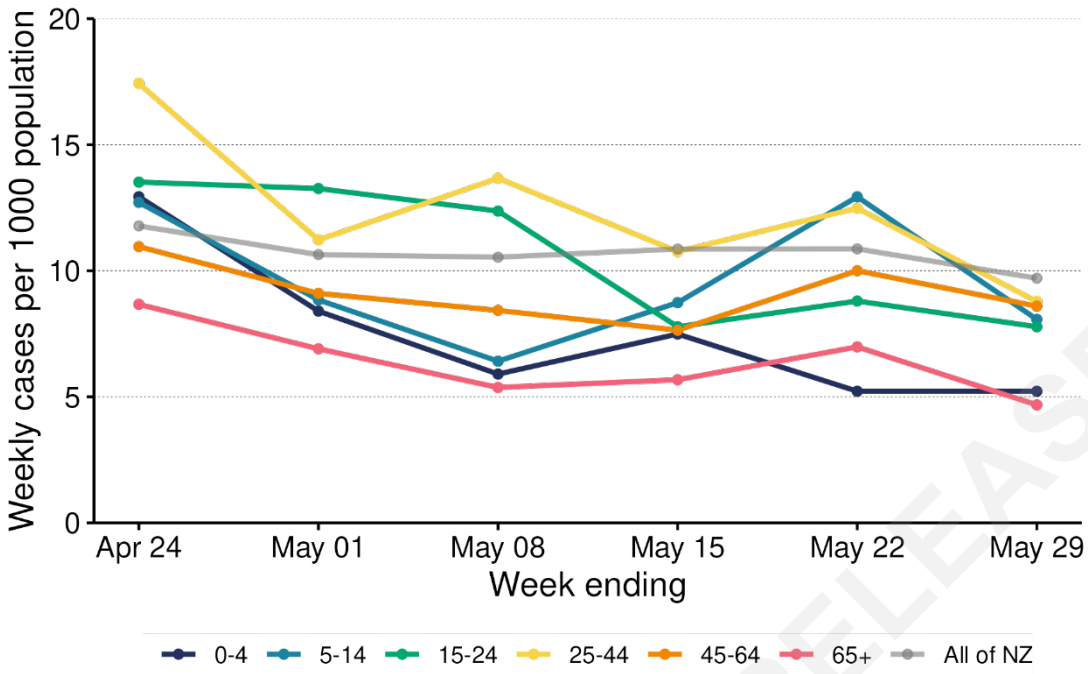
Taranaki DHB



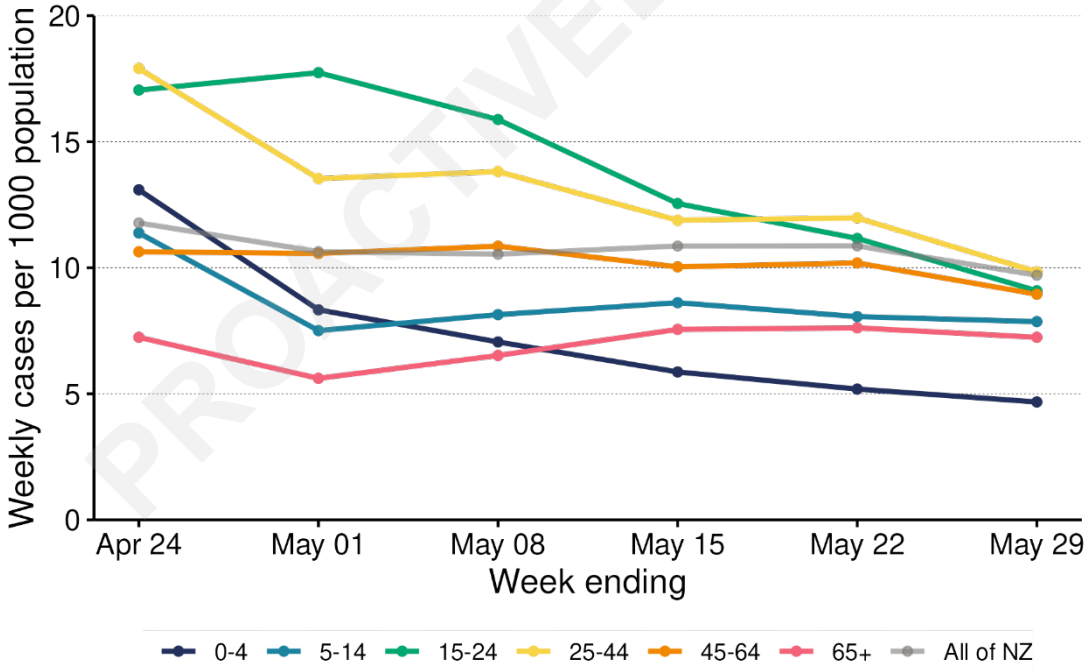
Hawke's Bay DHB



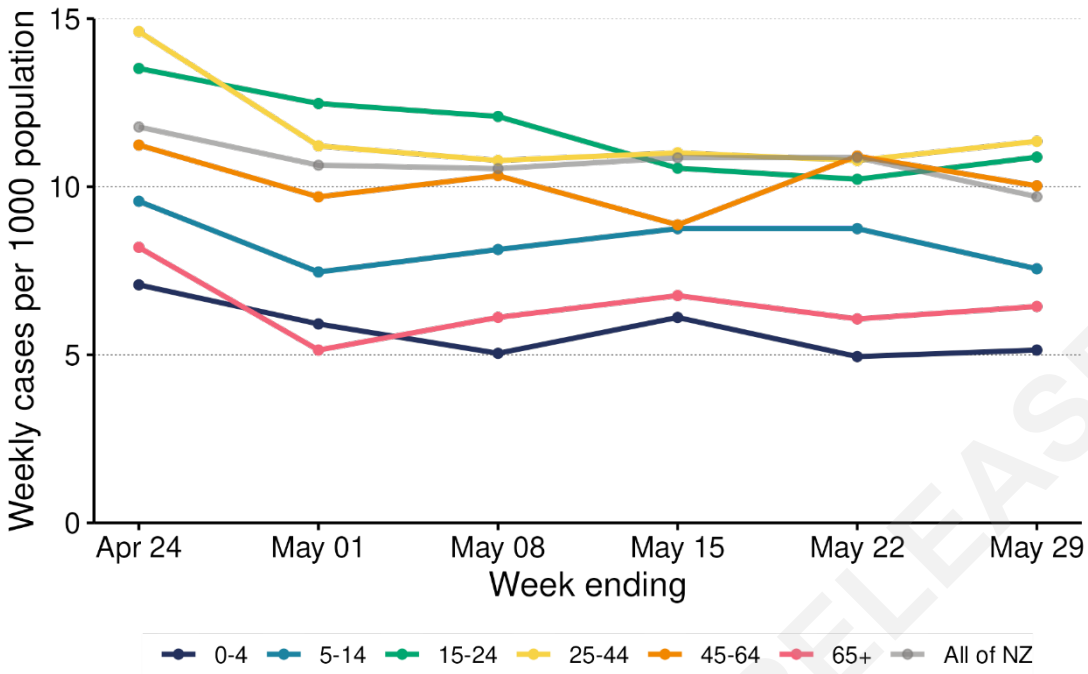
Whanganui DHB



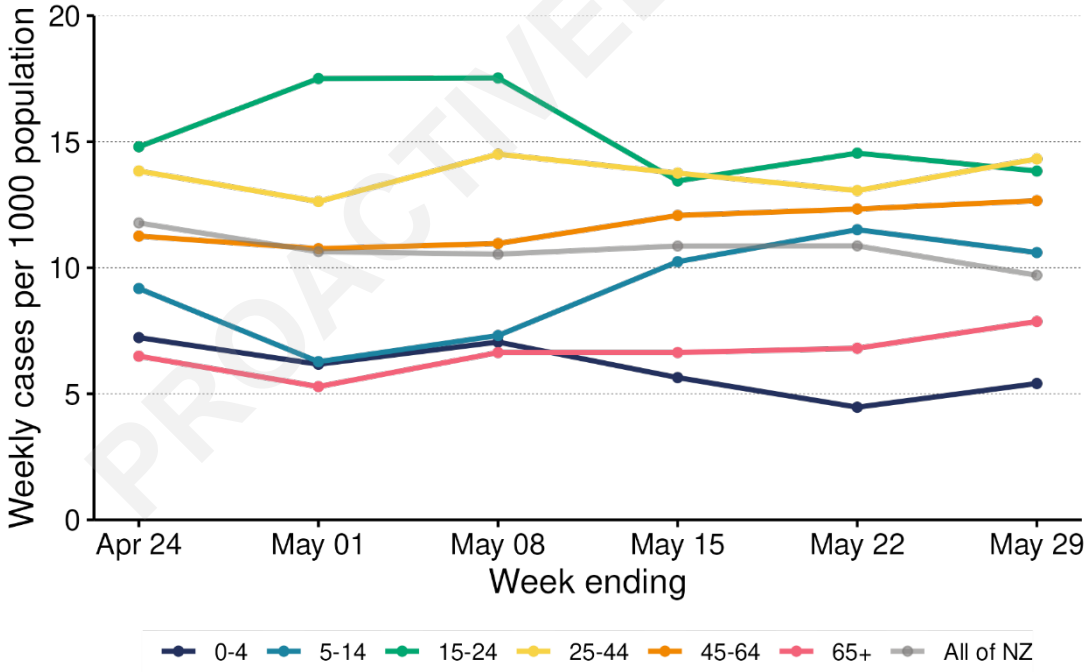
MidCentral DHB



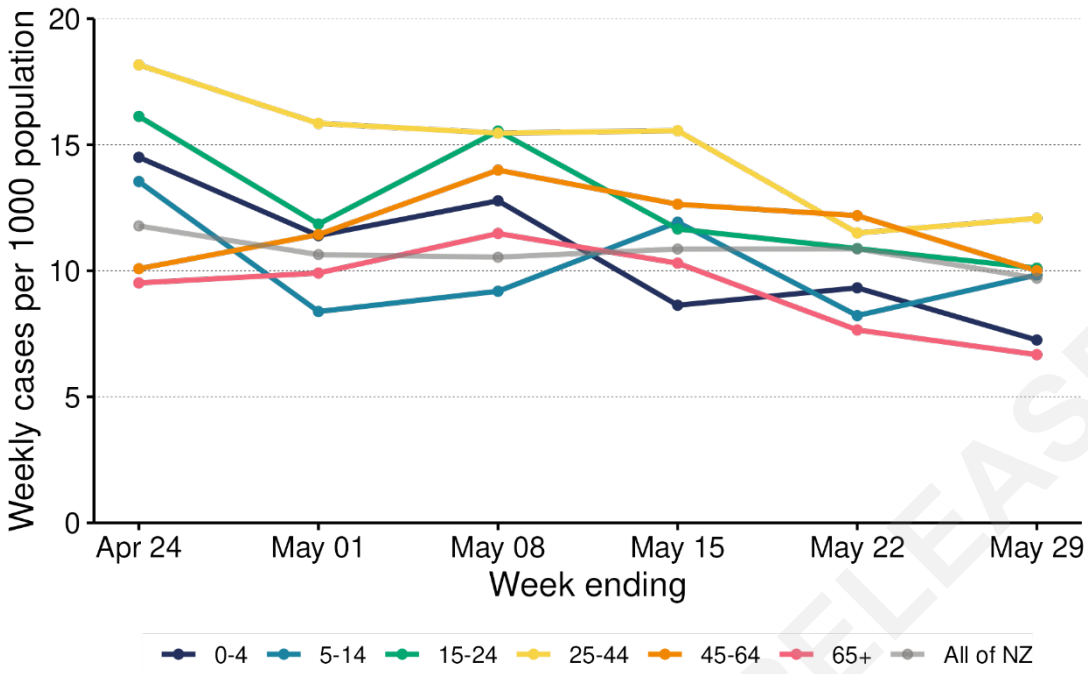
Hutt Valley DHB



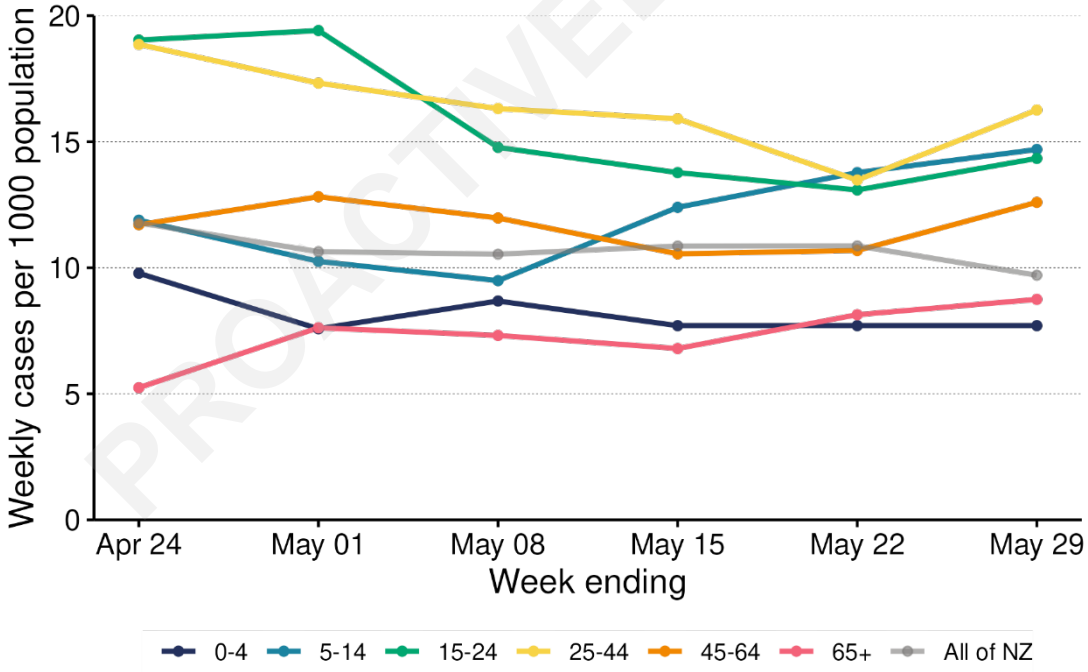
Capital and Coast DHB



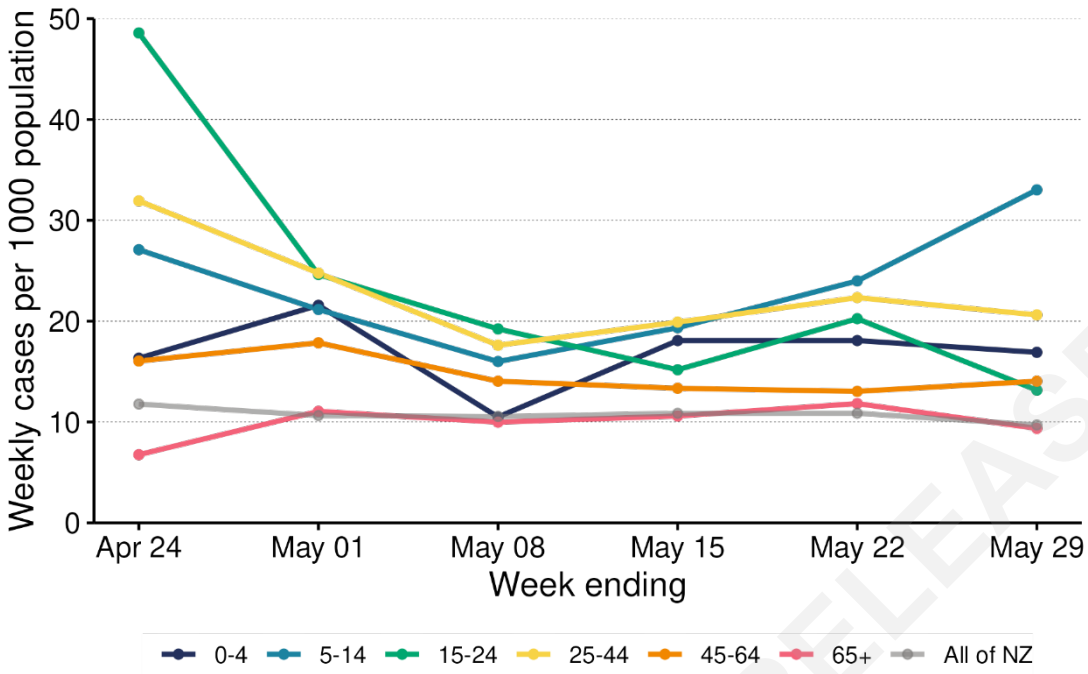
Wairarapa DHB



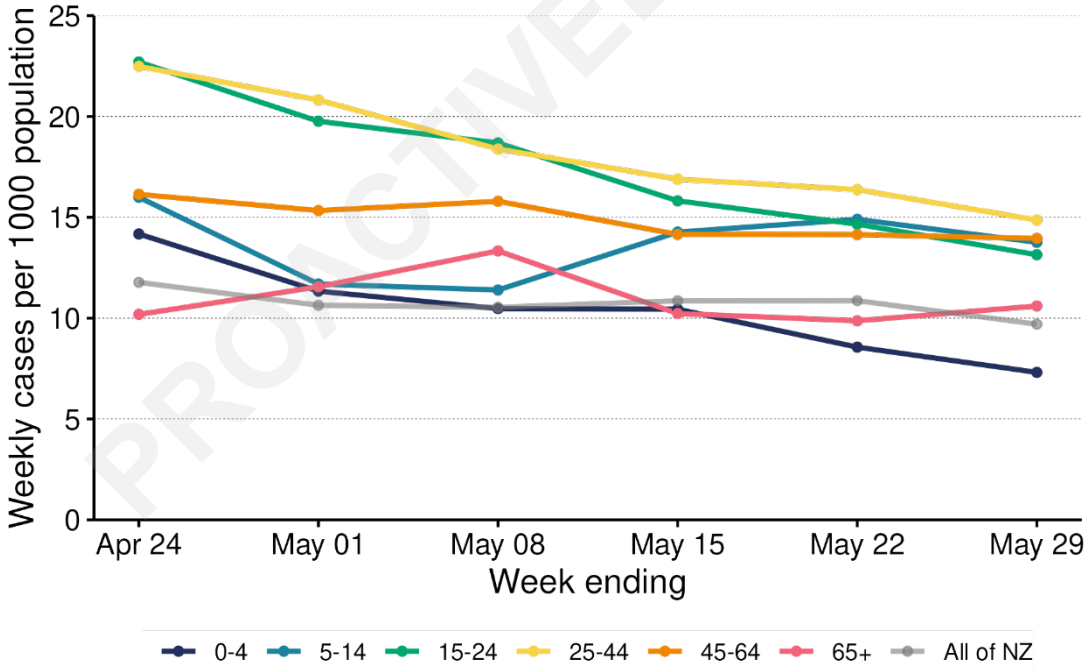
Nelson Marlborough DHB



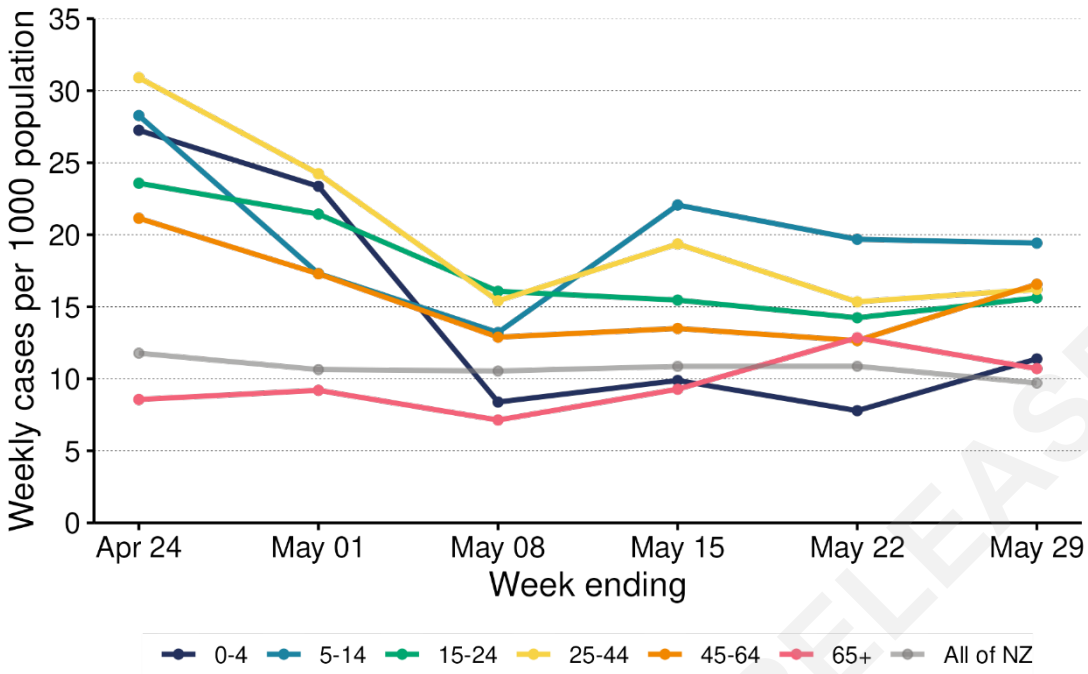
West Coast DHB



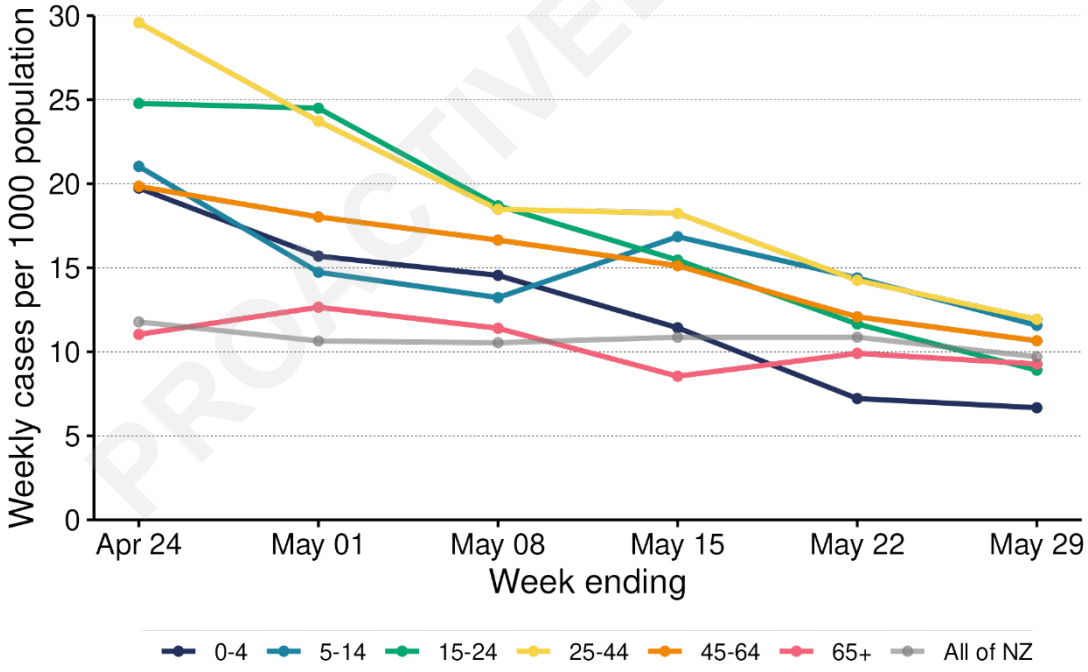
Canterbury DHB



South Canterbury DHB



Southern DHB



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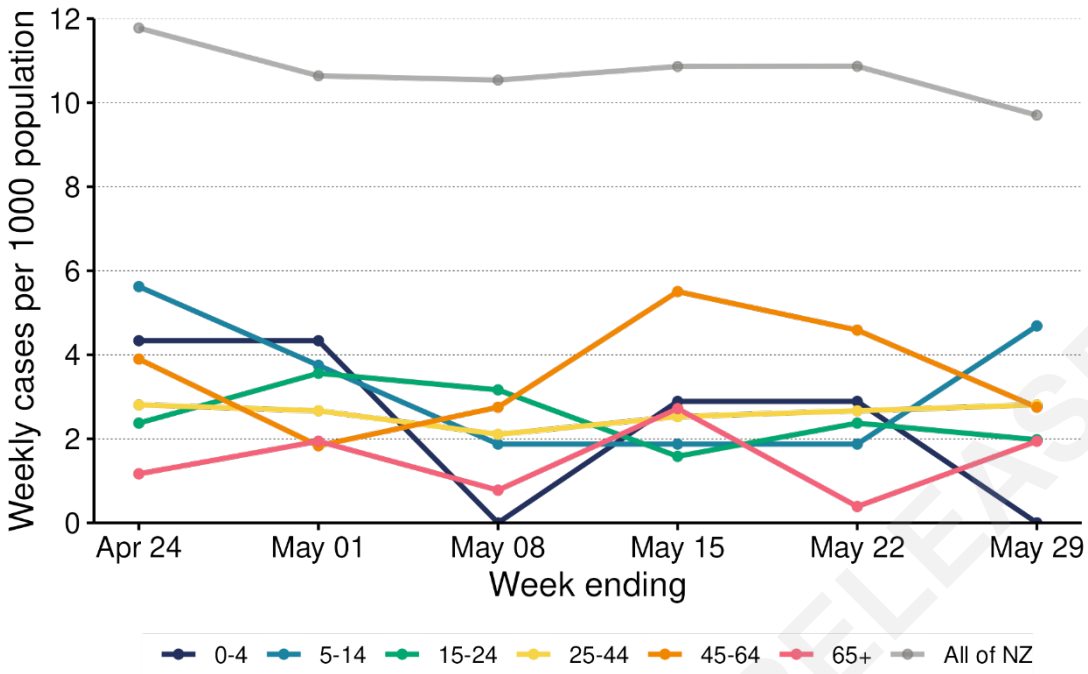
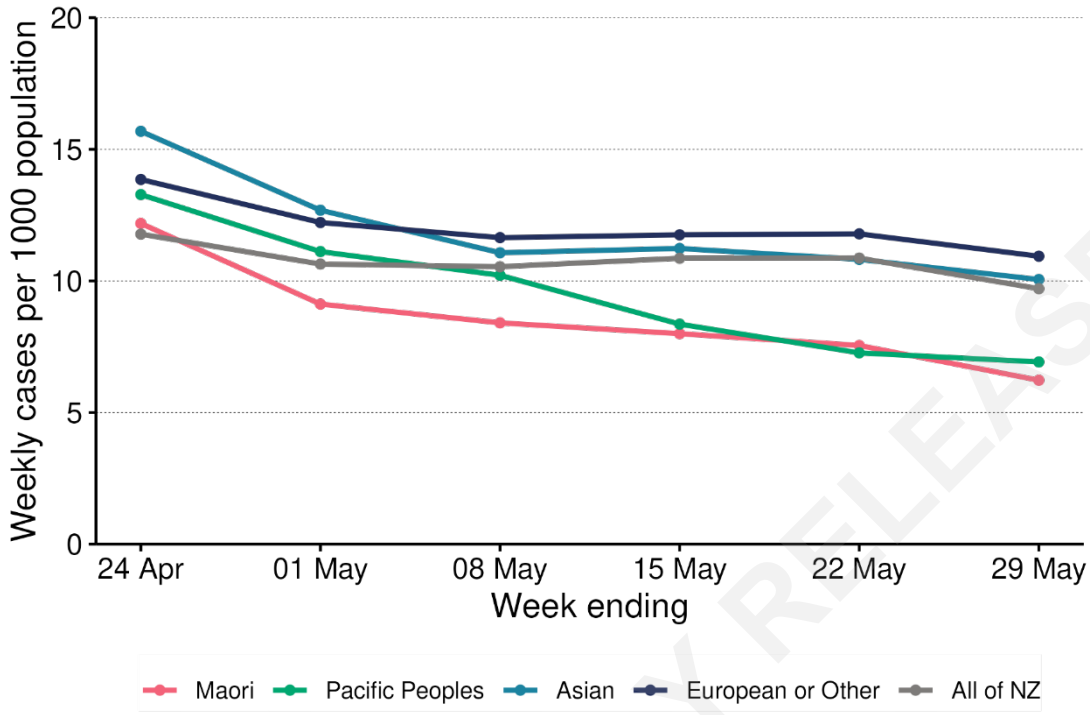
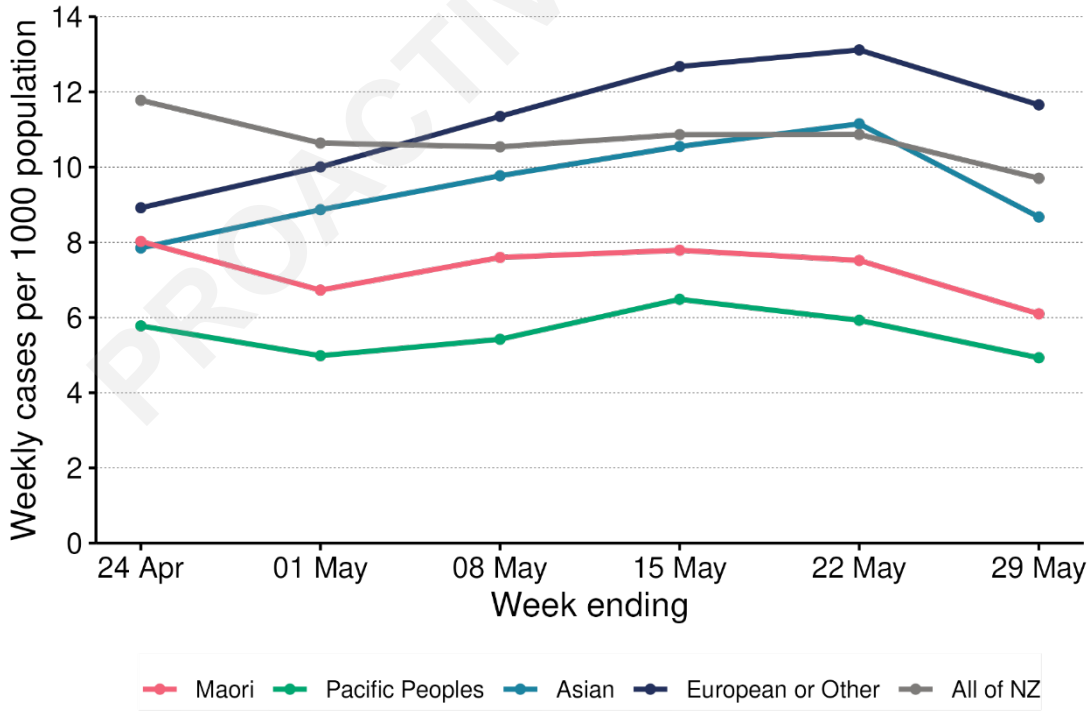


Ethnicity Graphs

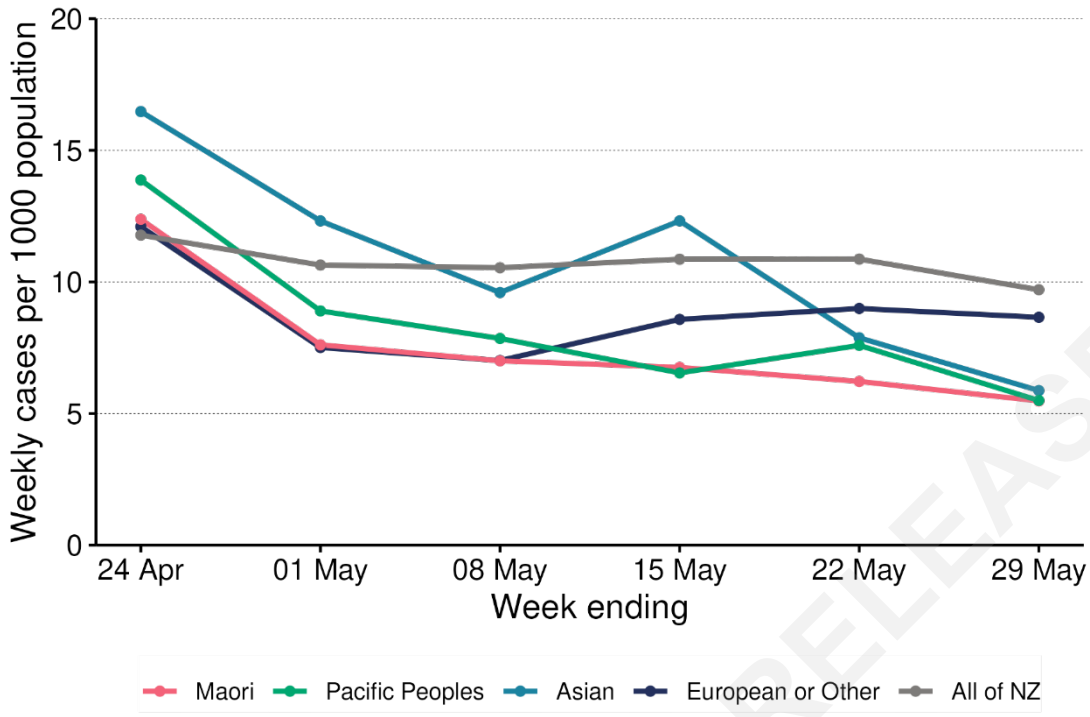
NZ Excluding Auckland Region



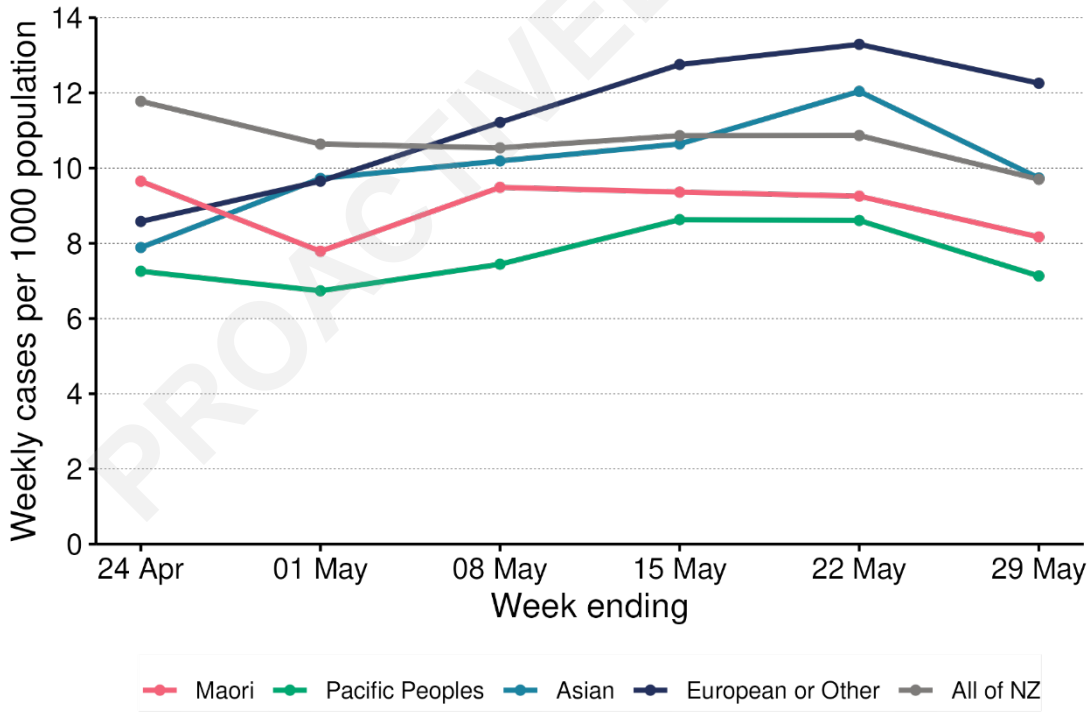
Auckland Region



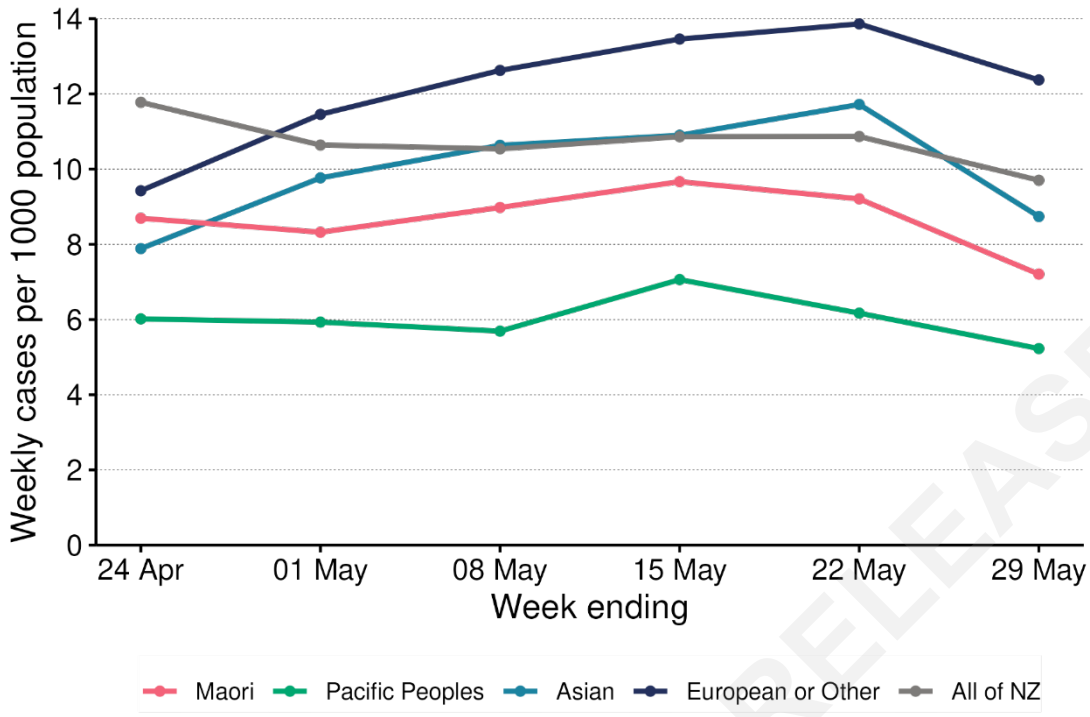
Northland DHB



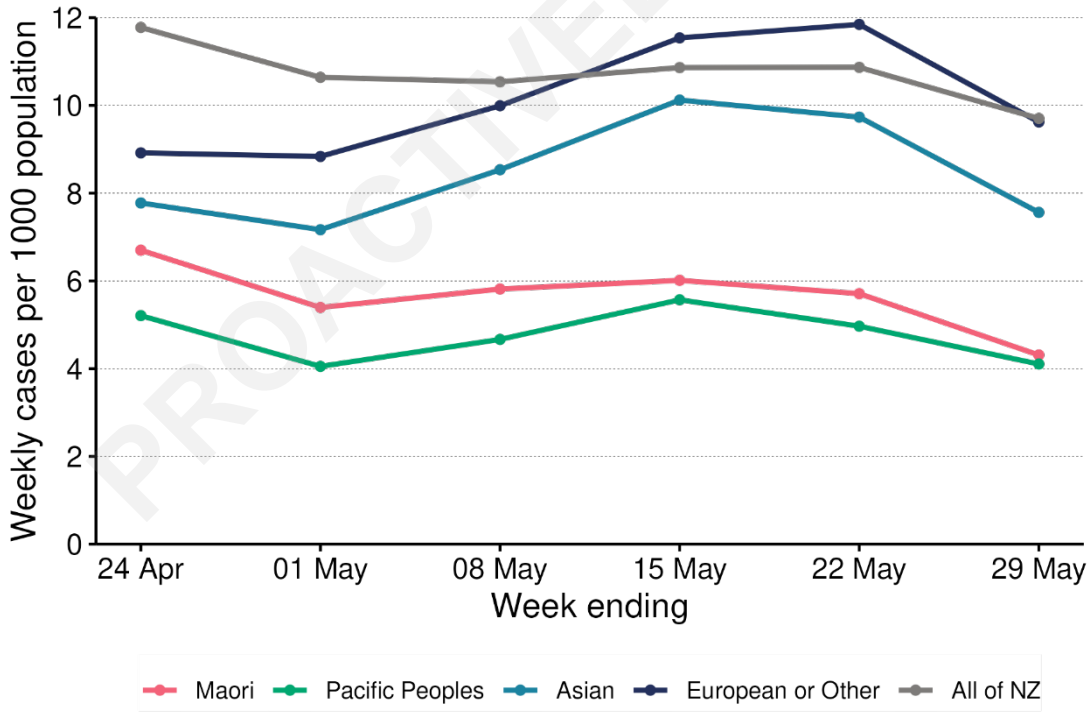
Waitemata DHB



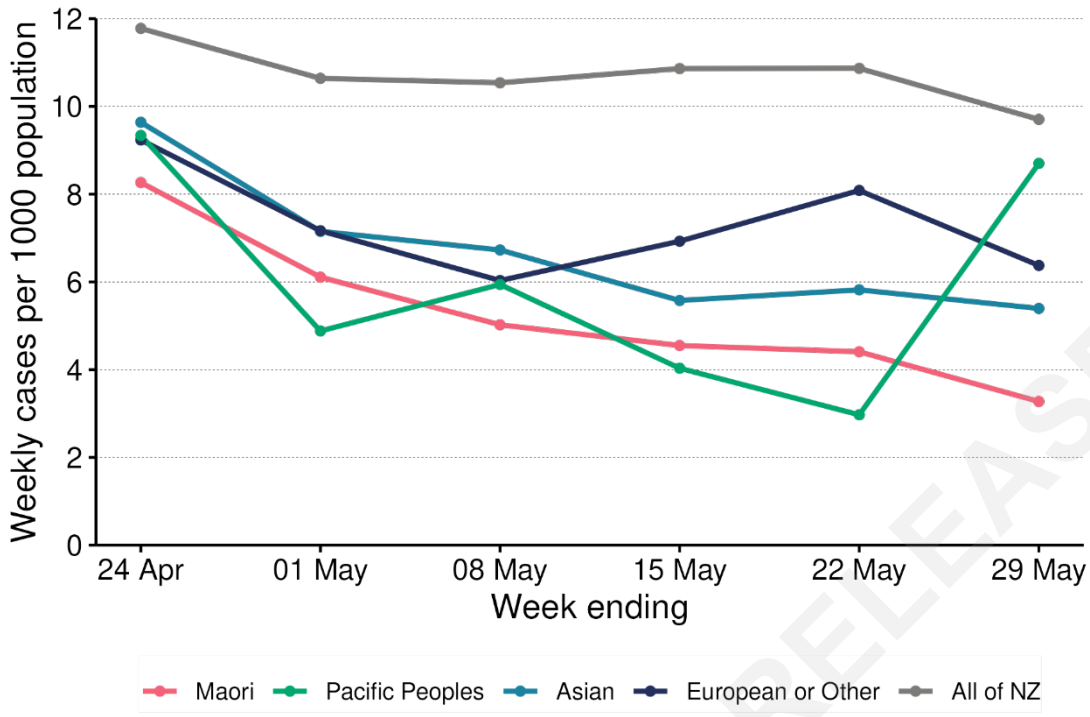
Auckland DHB



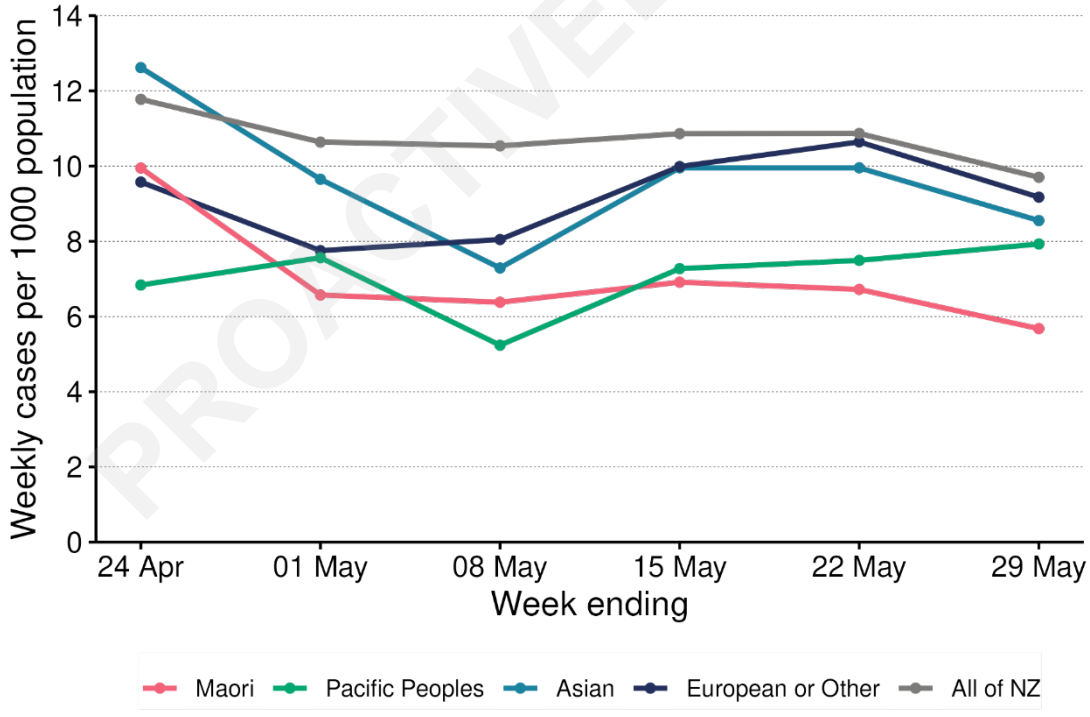
Counties Manukau DHB



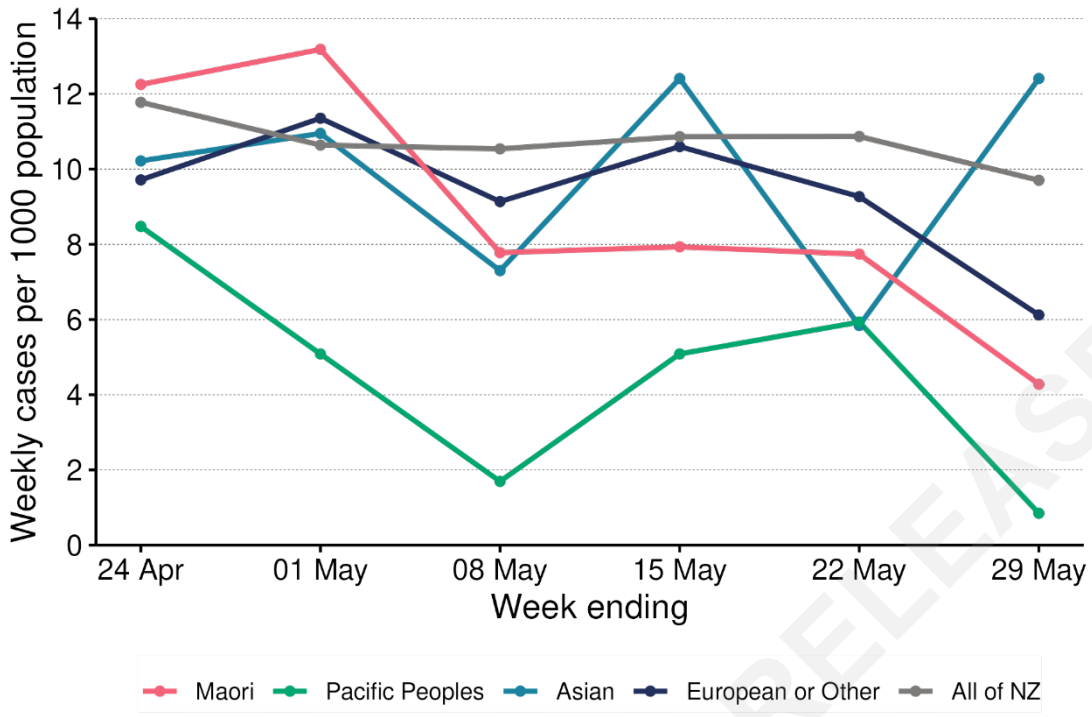
Bay of Plenty DHB



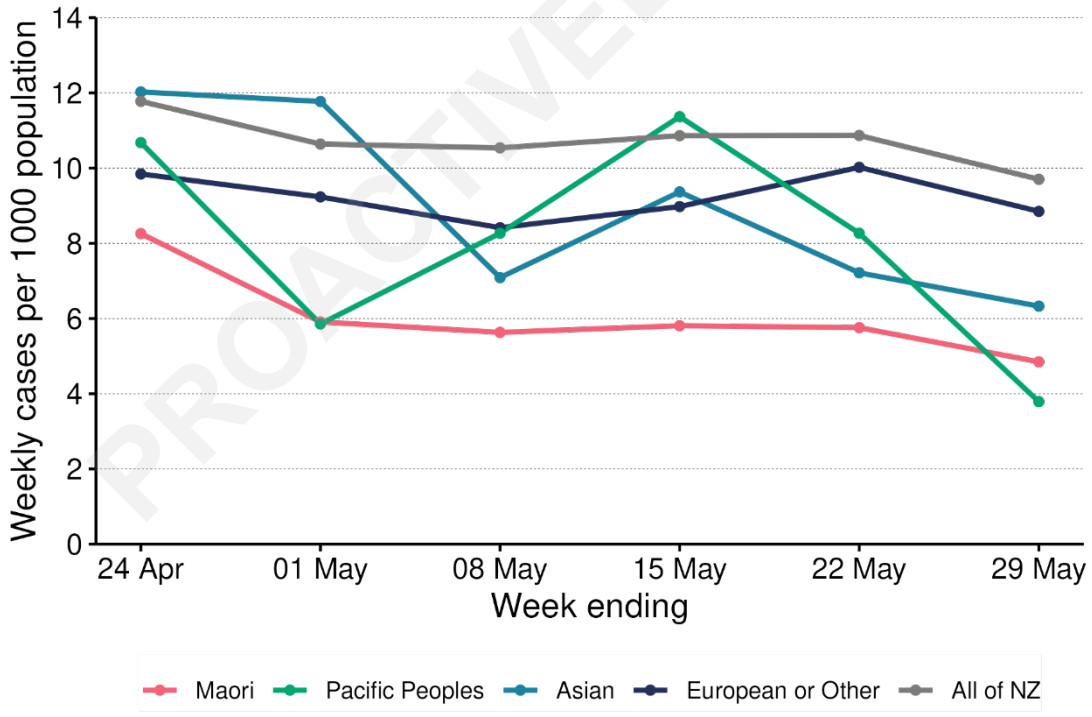
Waikato DHB



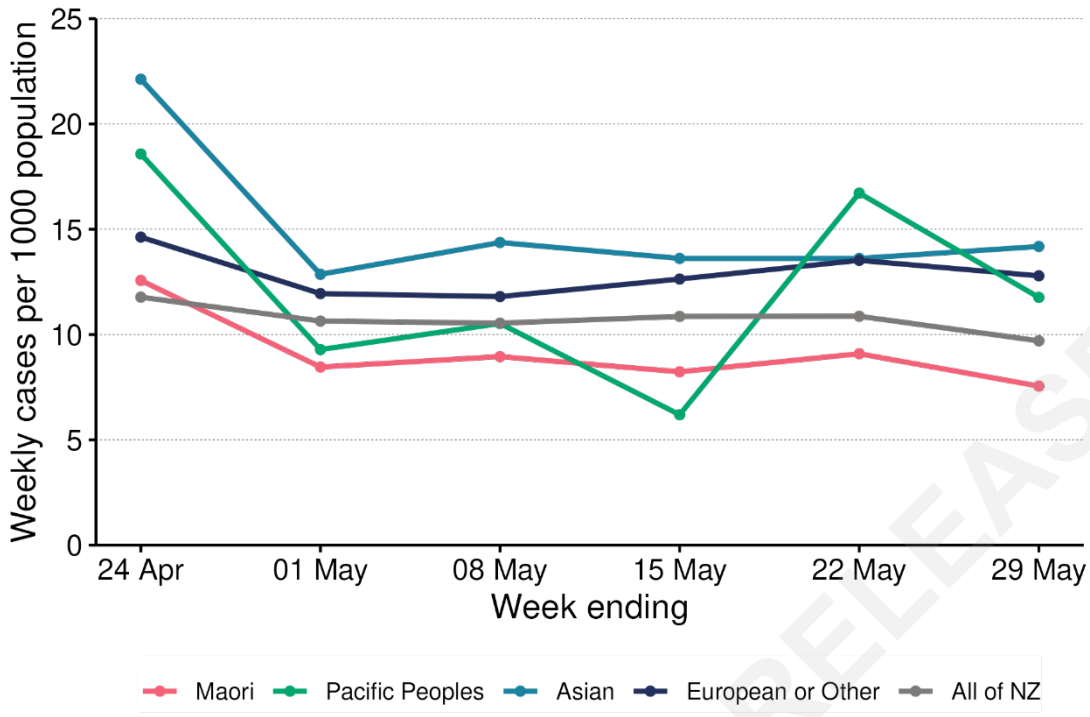
Tairawhiti DHB



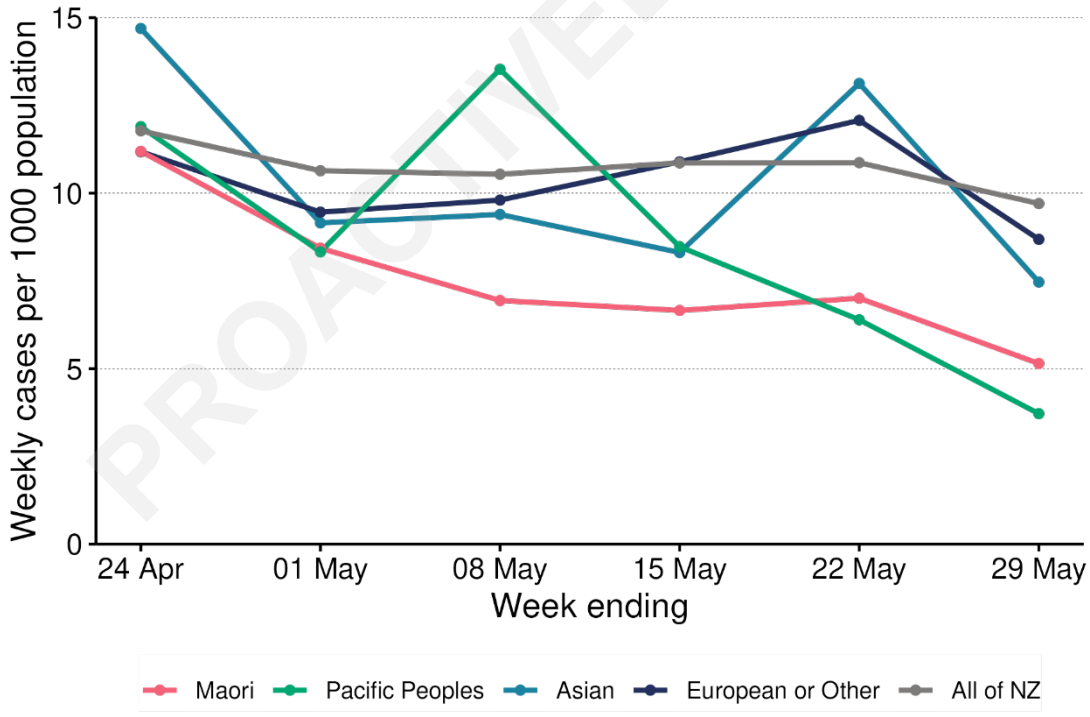
Lakes DHB



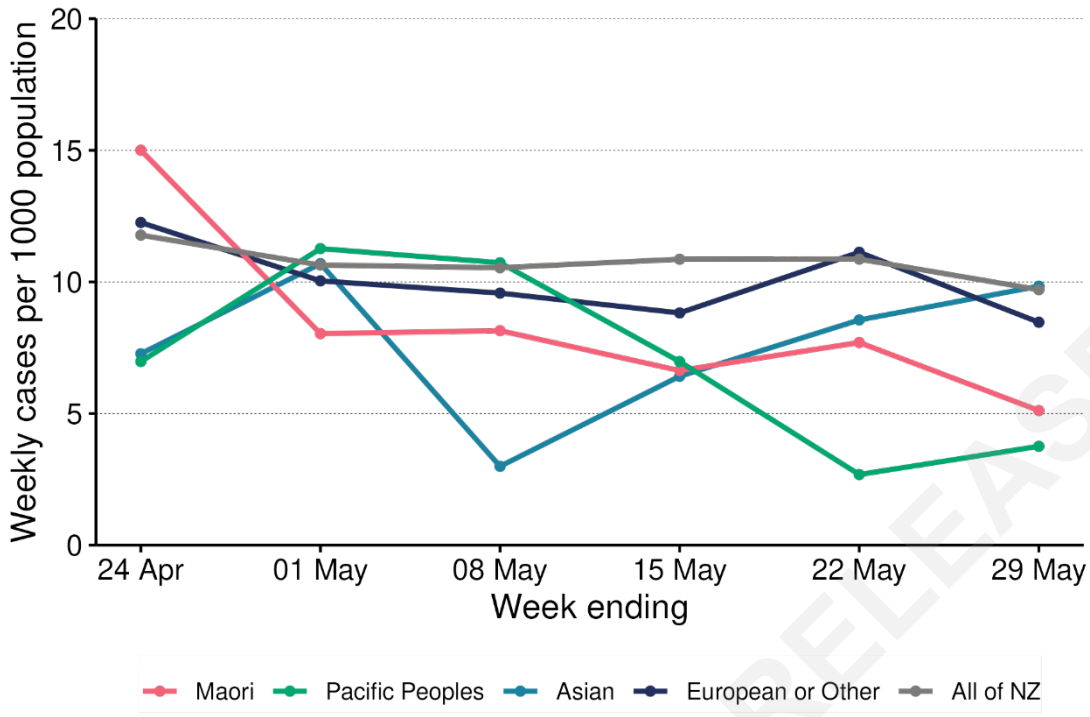
Taranaki DHB



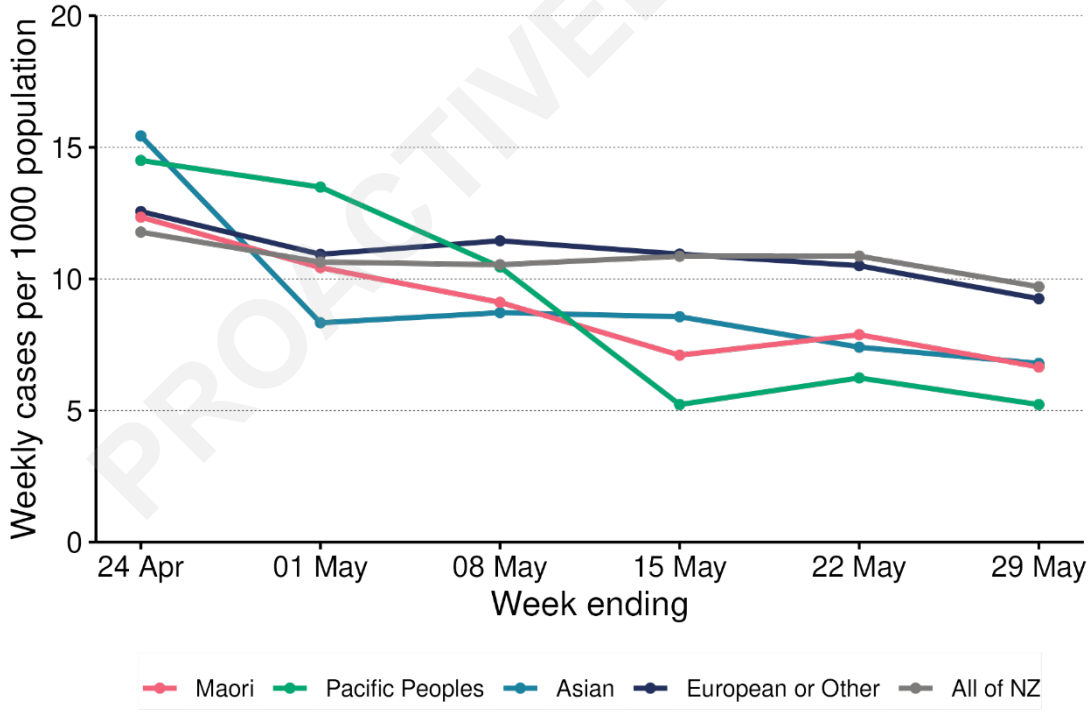
Hawke's Bay DHB



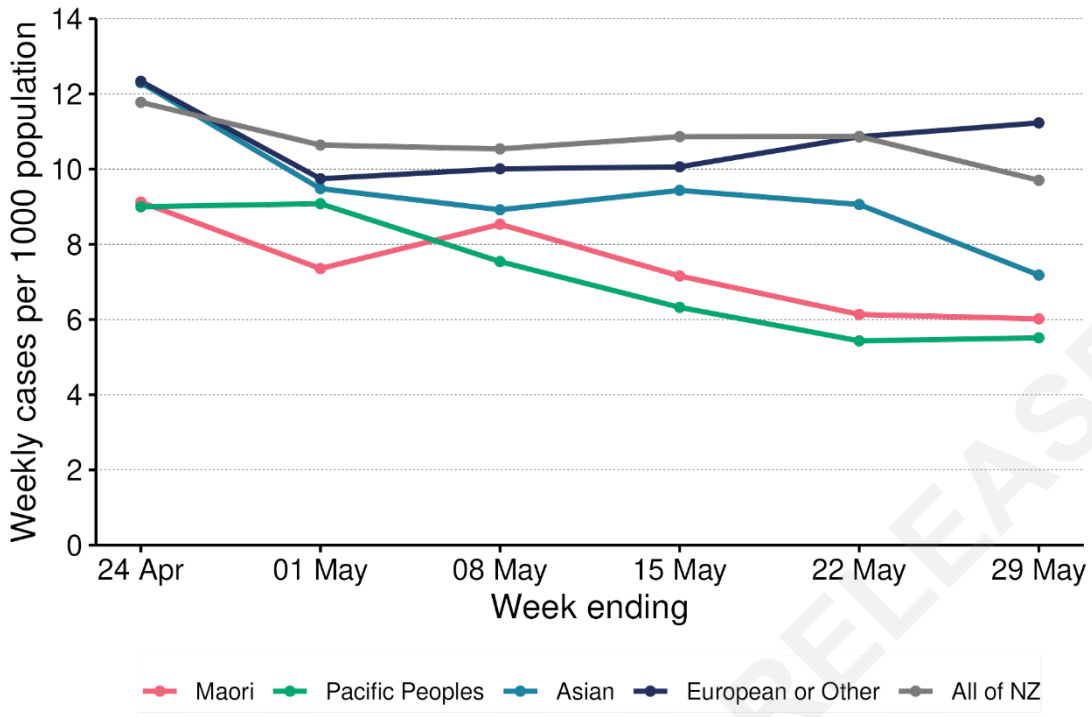
Whanganui DHB



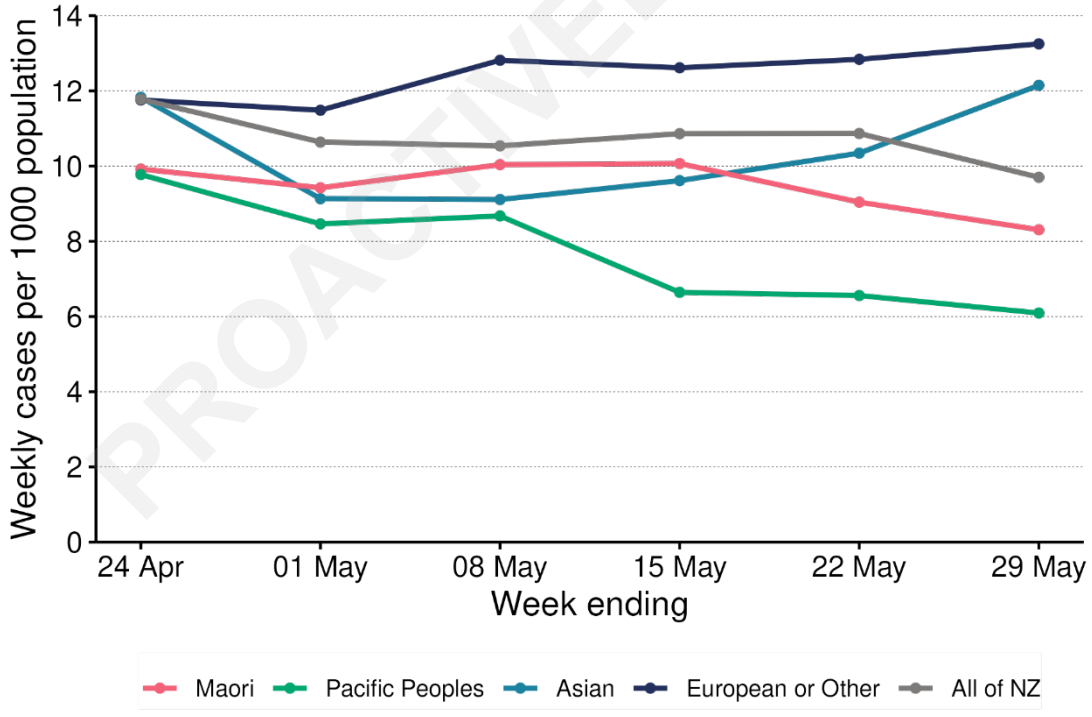
MidCentral DHB



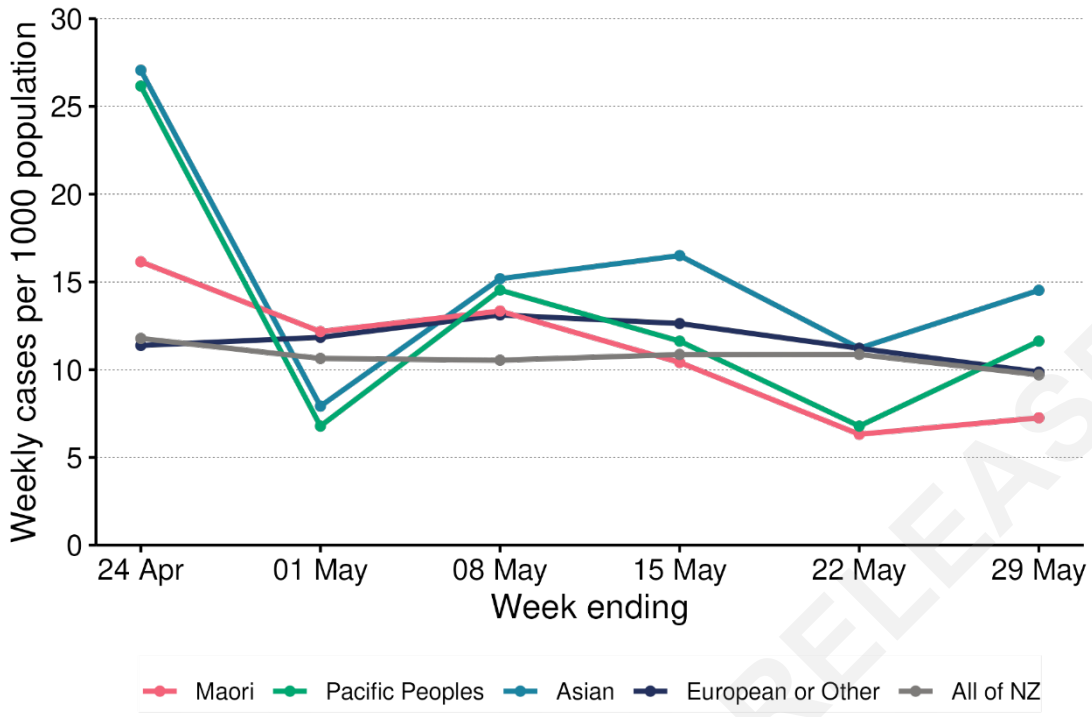
Hutt Valley DHB



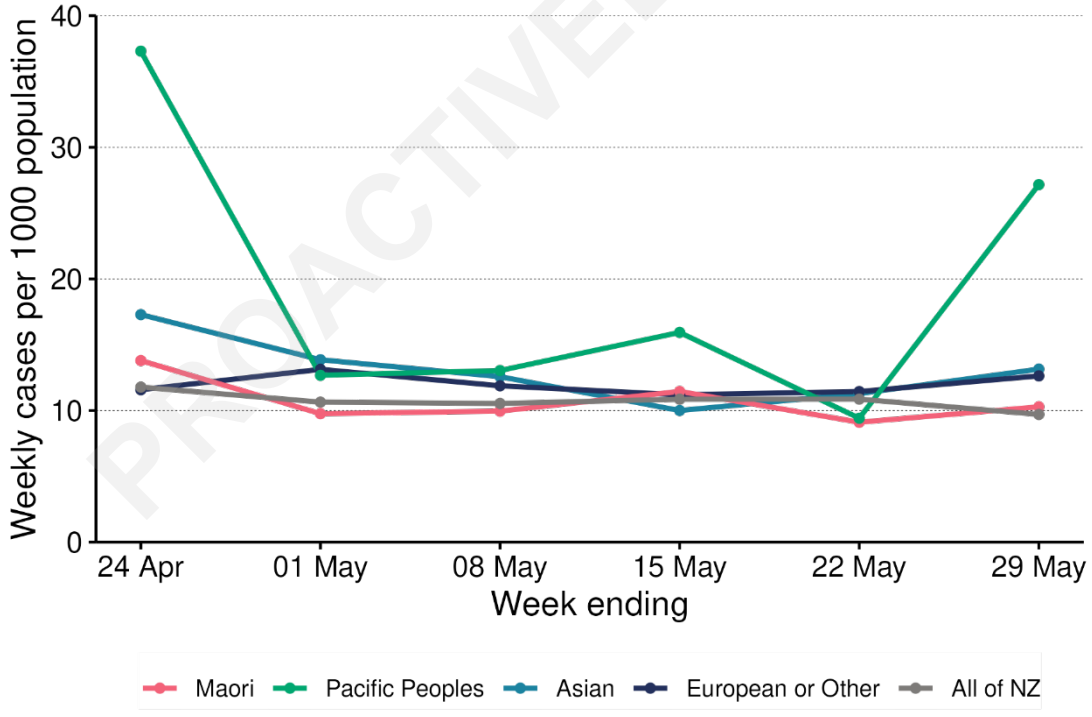
Capital and Coast DHB



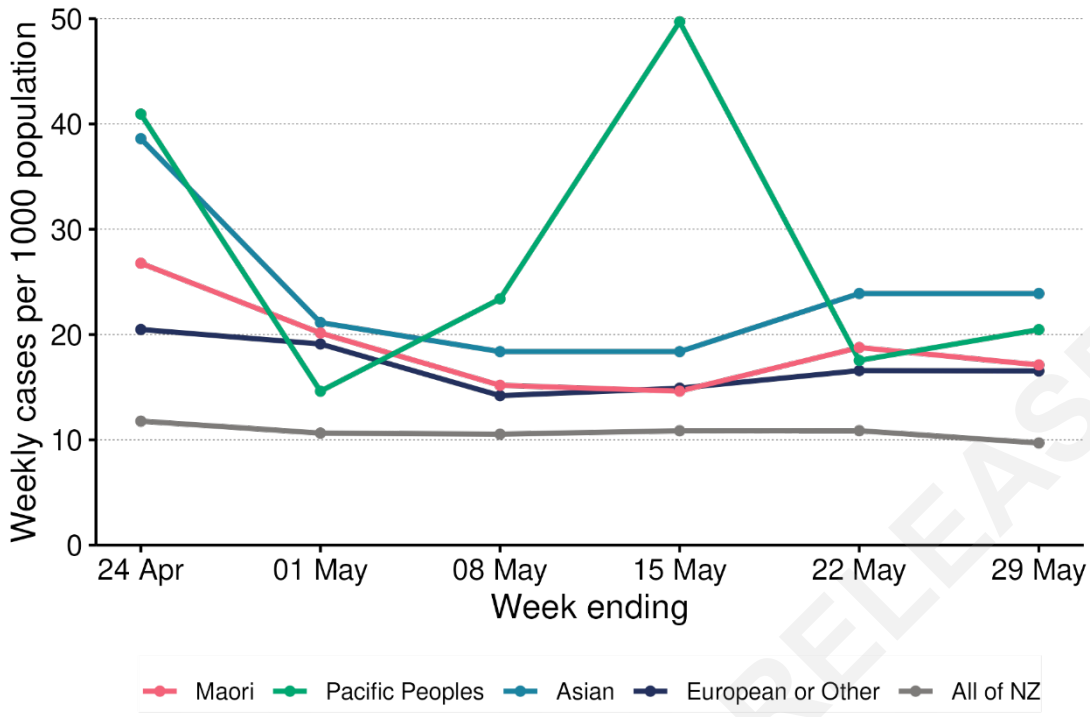
Wairarapa DHB



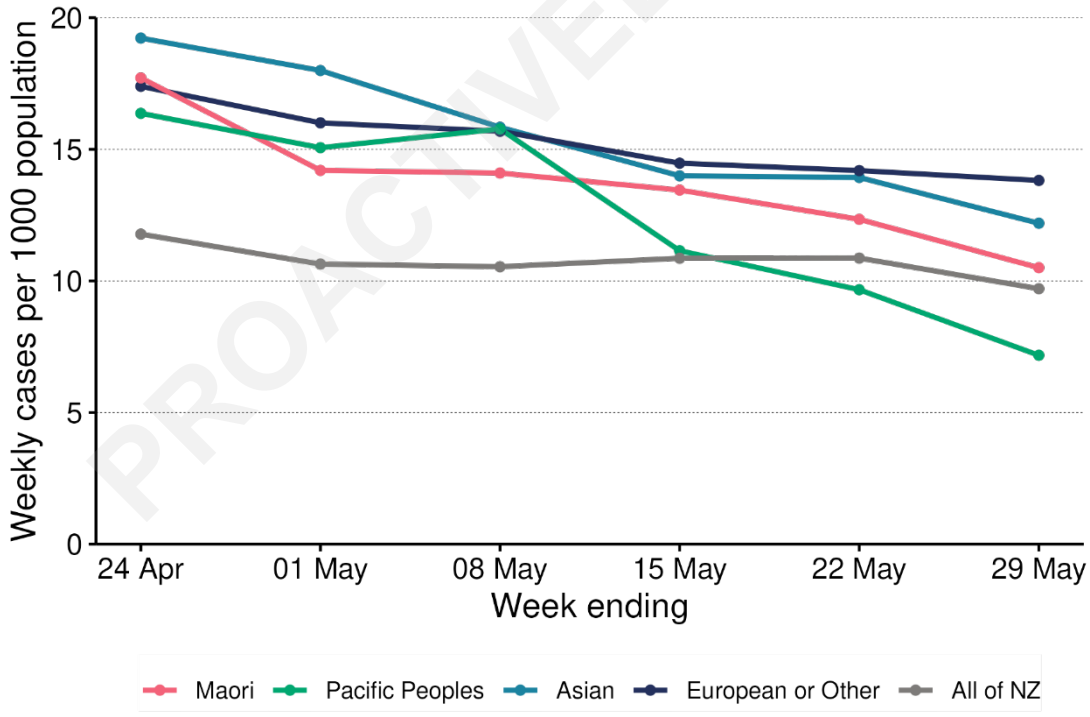
Nelson Marlborough DHB



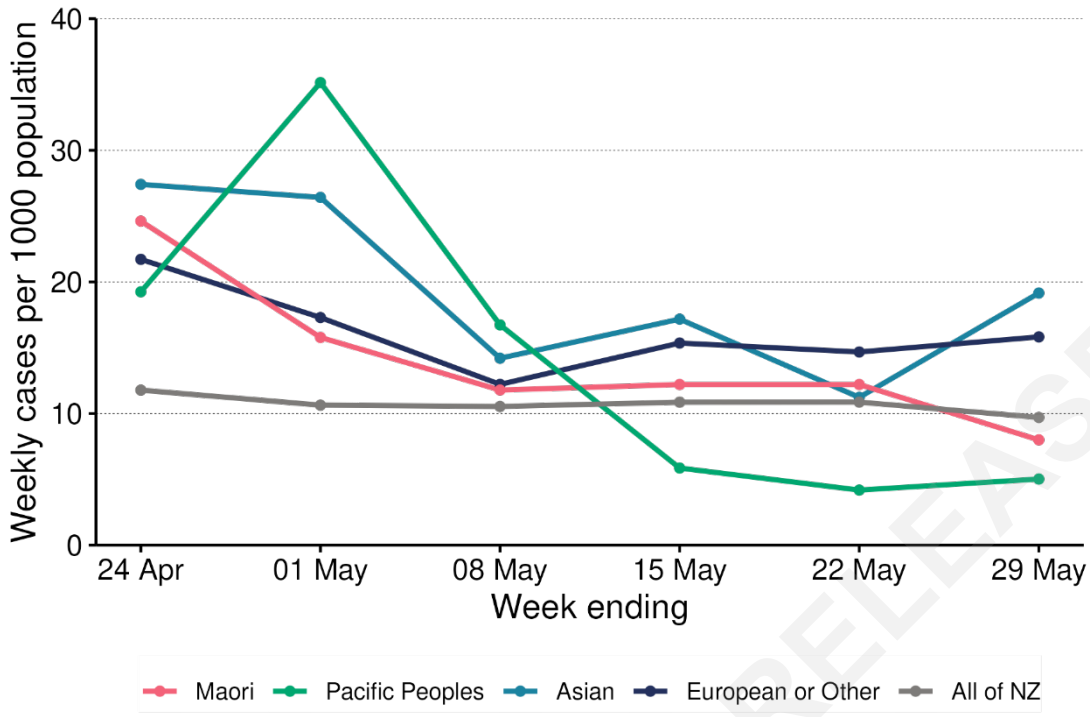
West Coast DHB



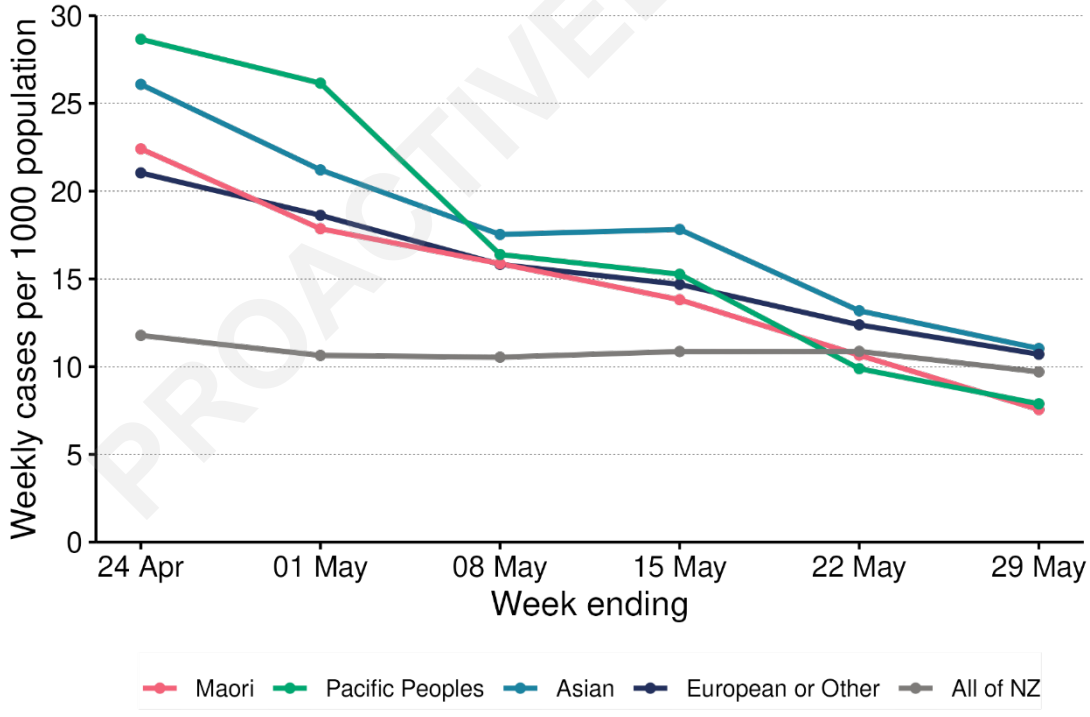
Canterbury DHB



South Canterbury DHB



Southern DHB



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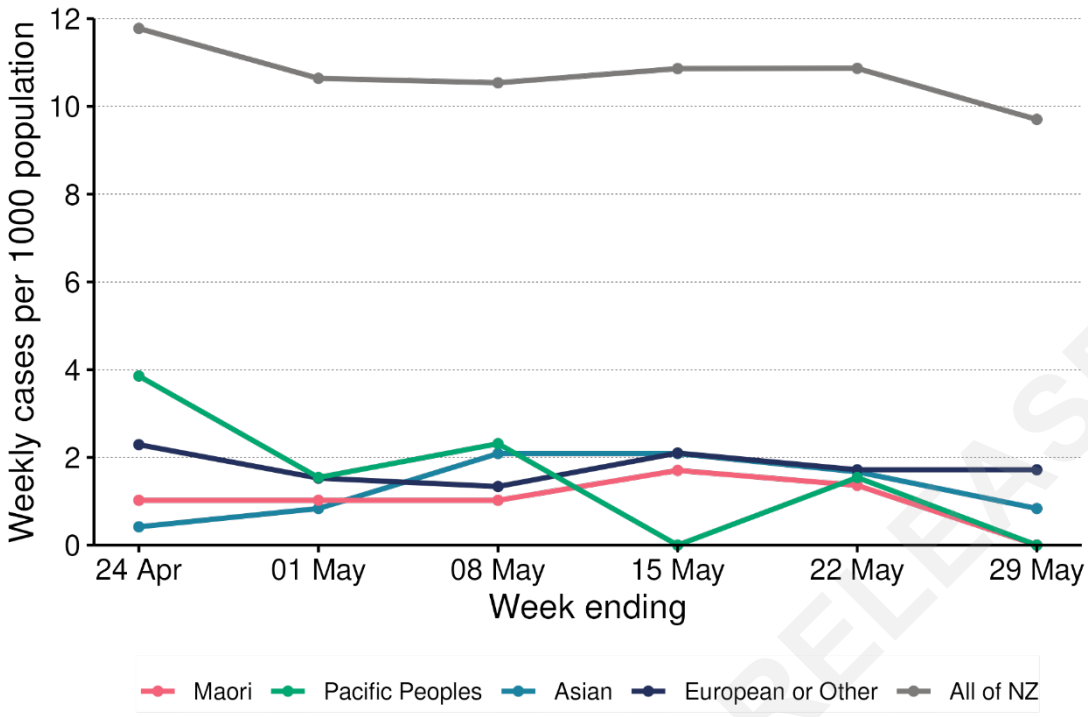
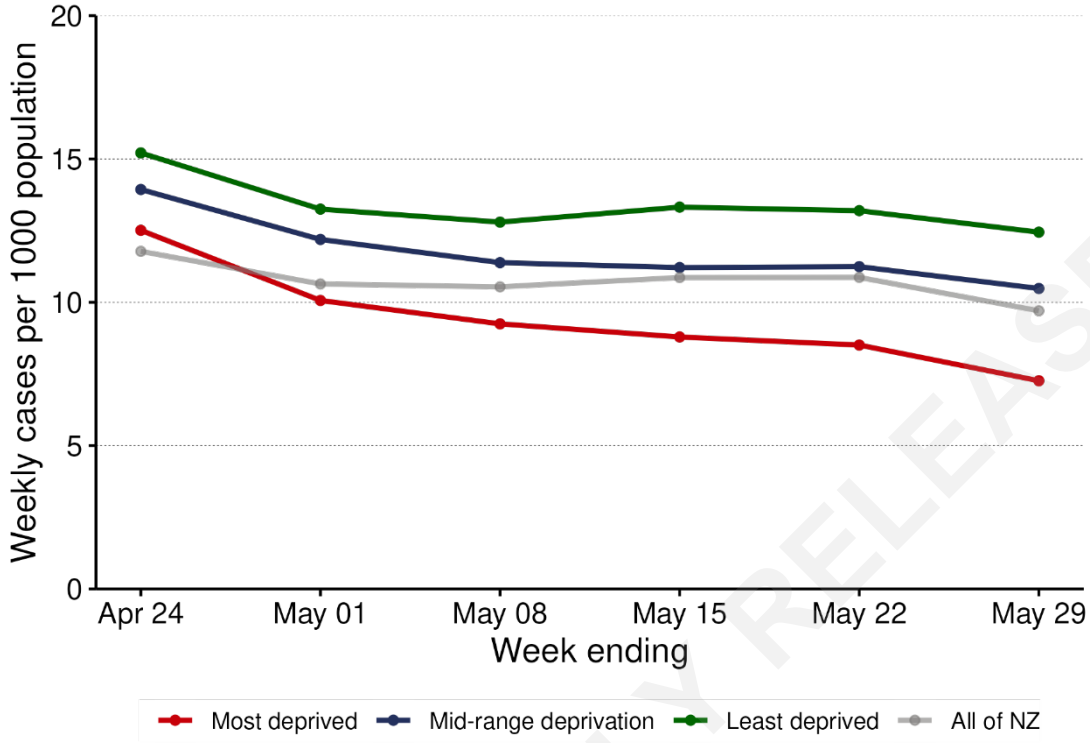
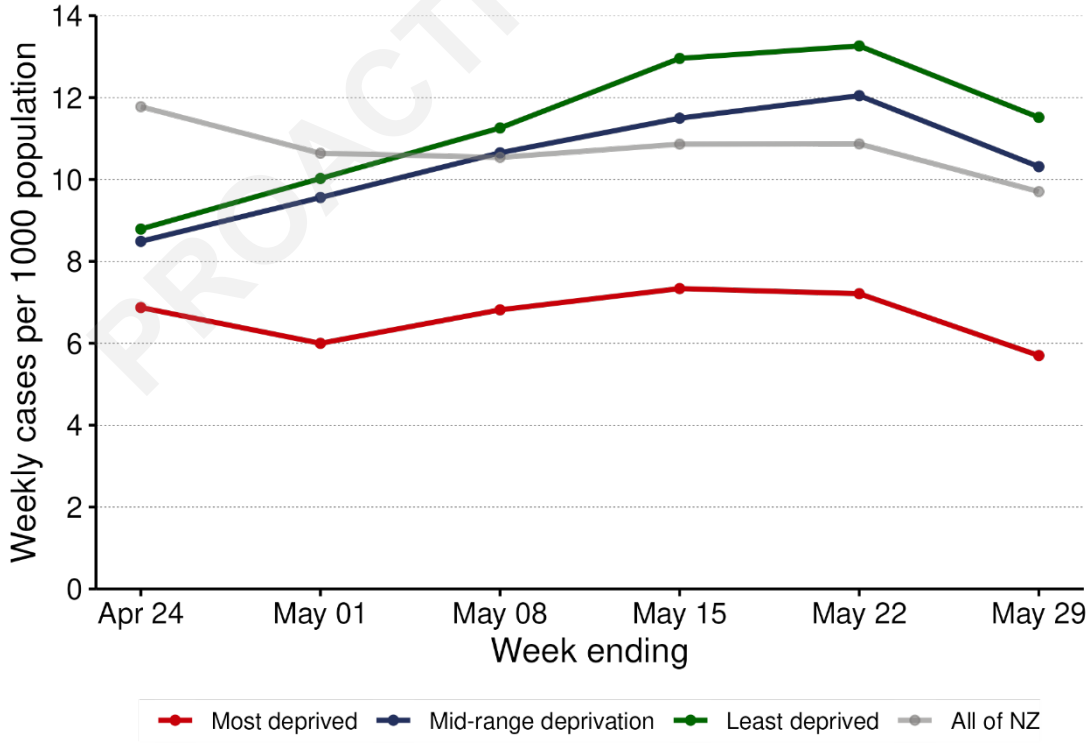


Deprivation Graphs

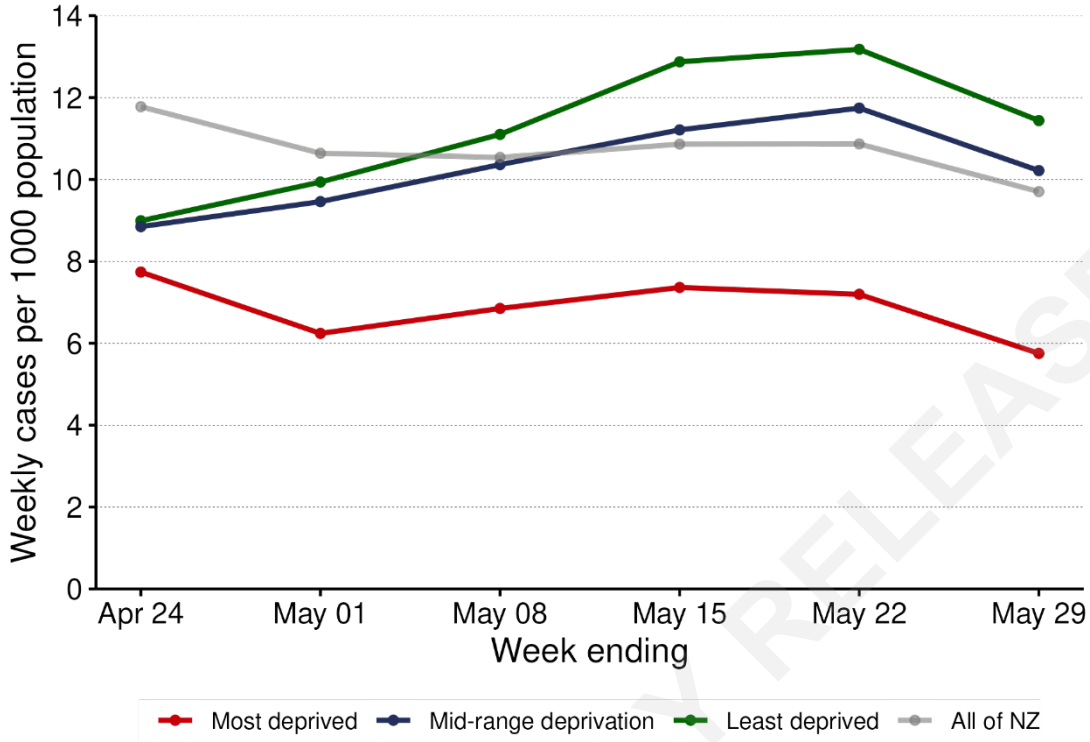
NZ Excluding Auckland Region



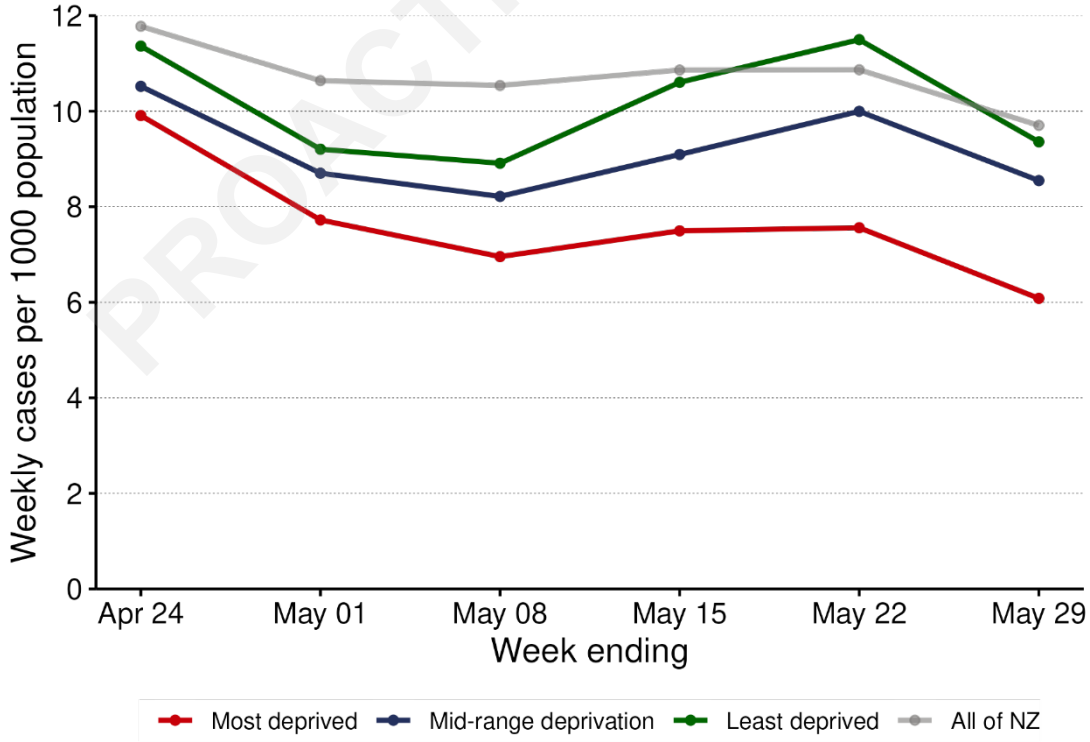
Auckland Region



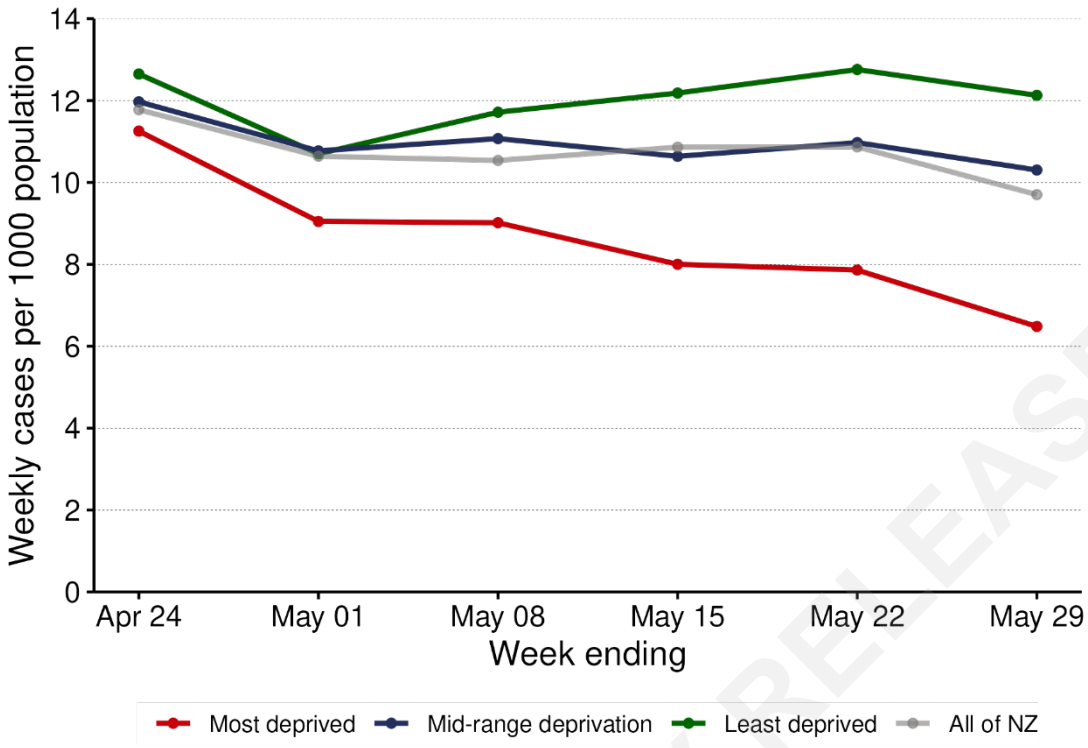
Northern Region



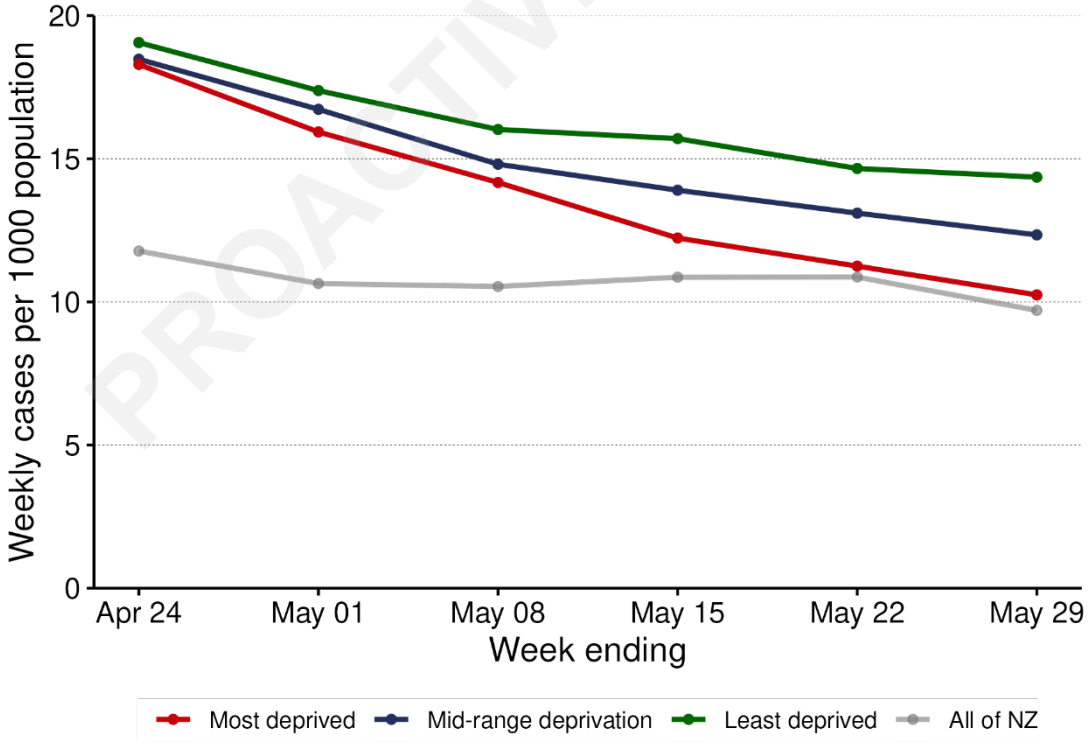
Te Manawa Taki



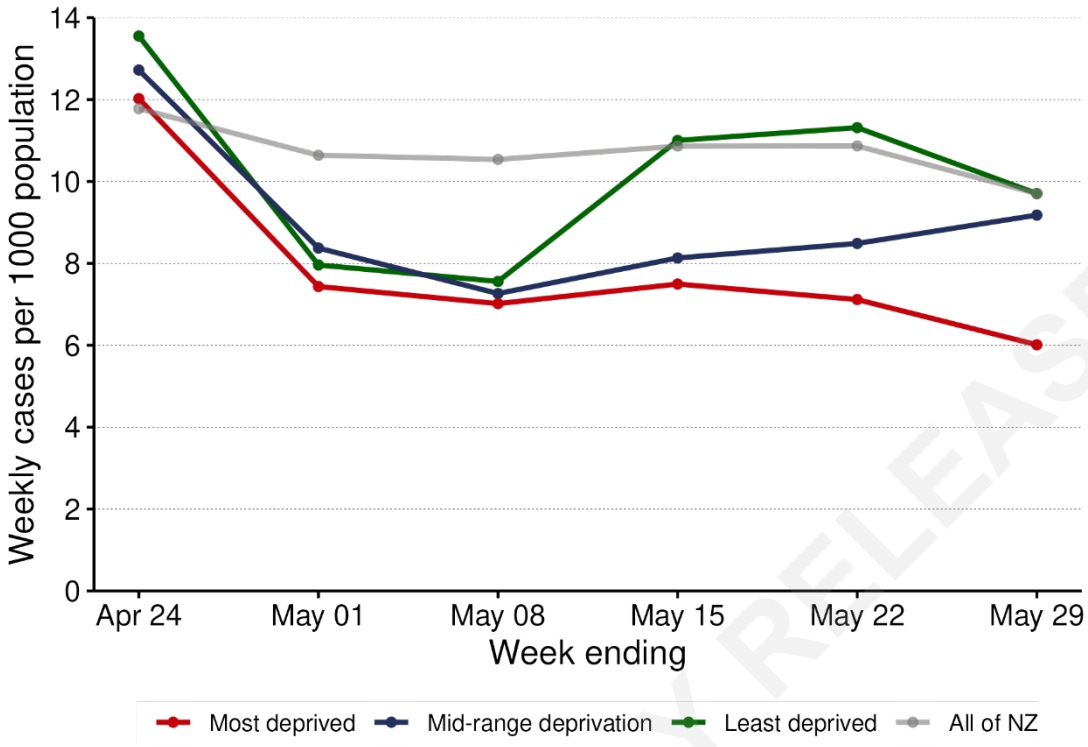
Central Region



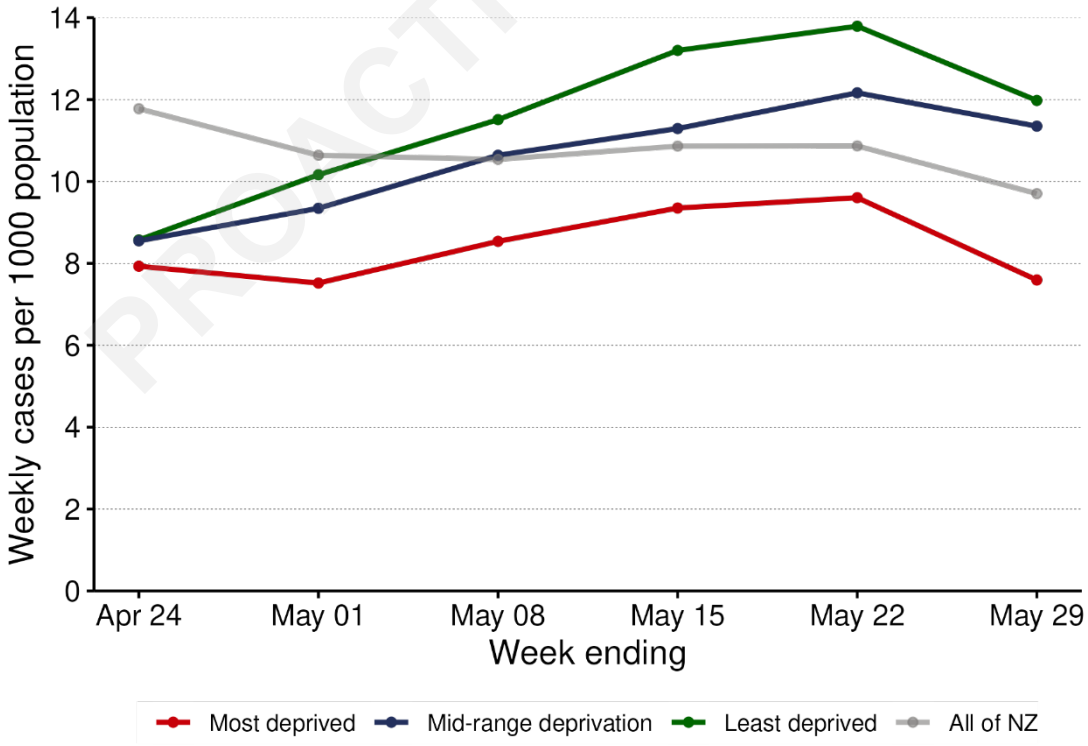
Southern Region



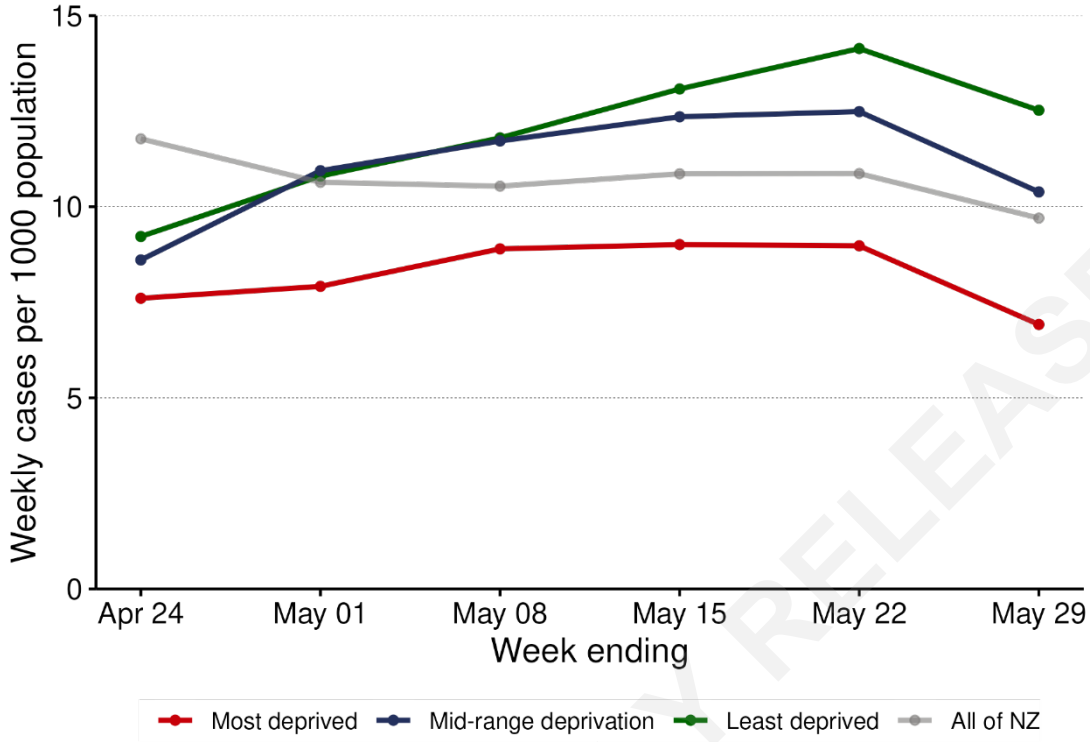
Northland DHB



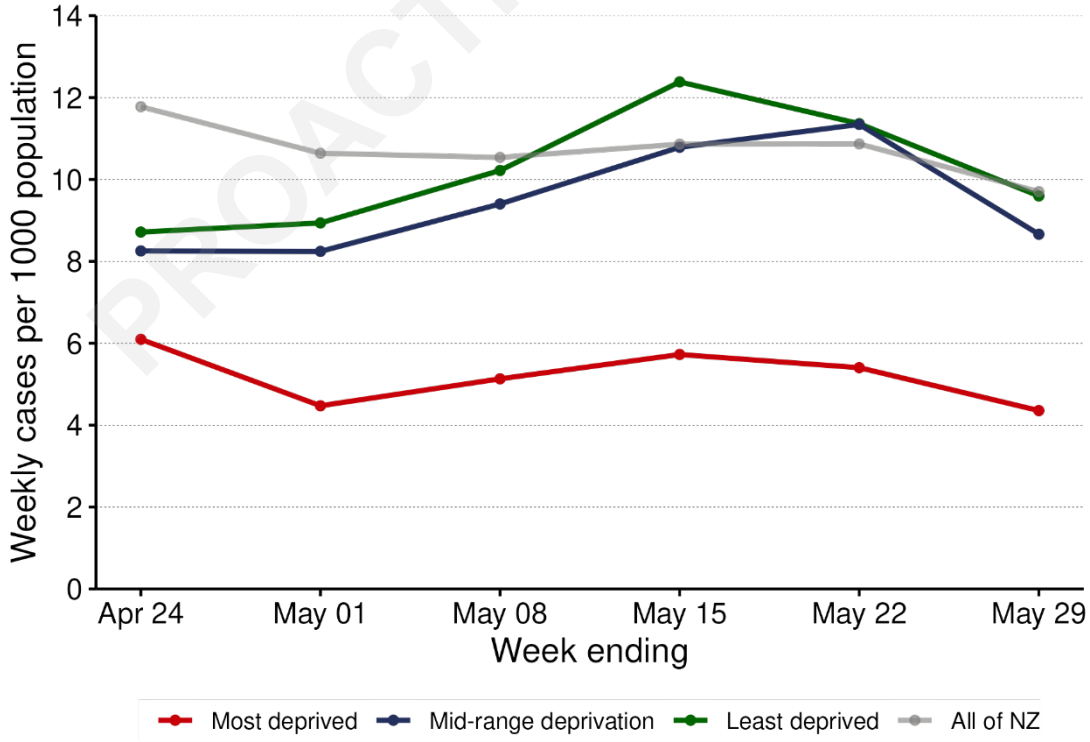
Waitemata DHB



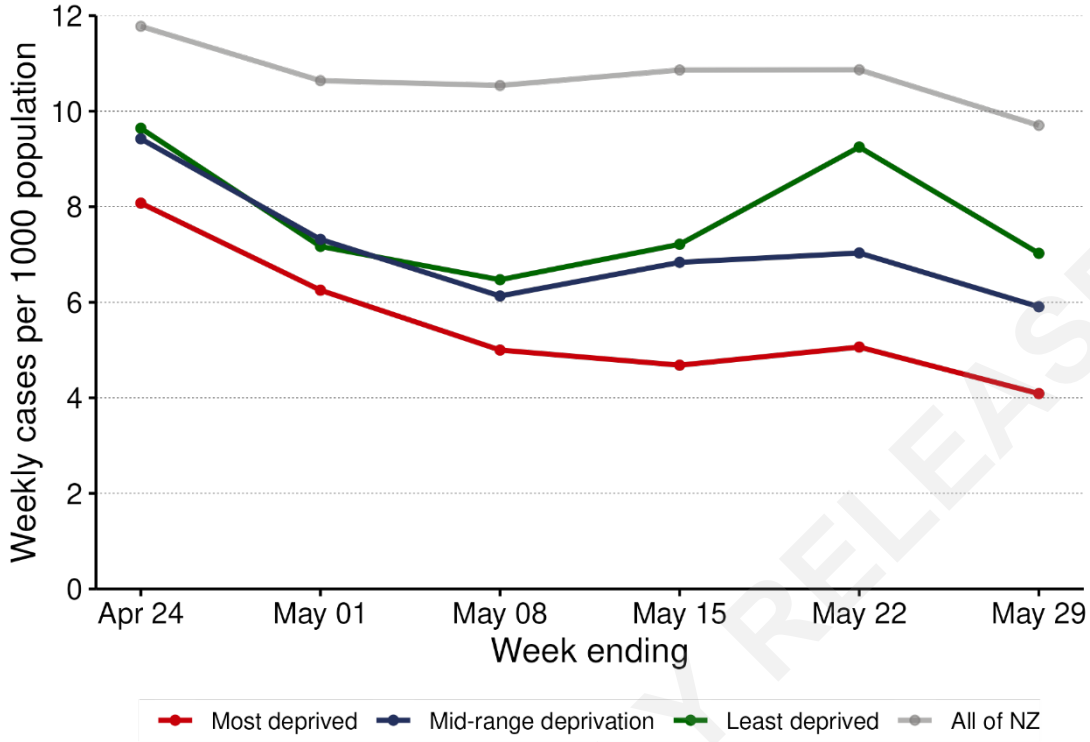
Auckland DHB



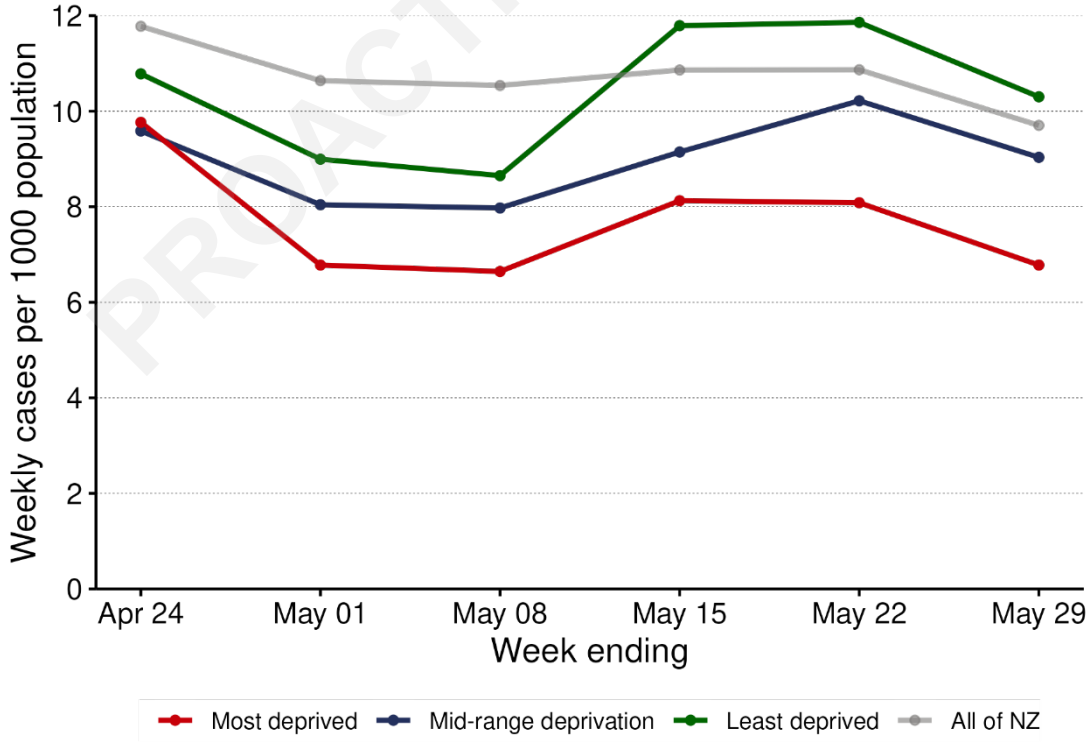
Counties Manukau DHB



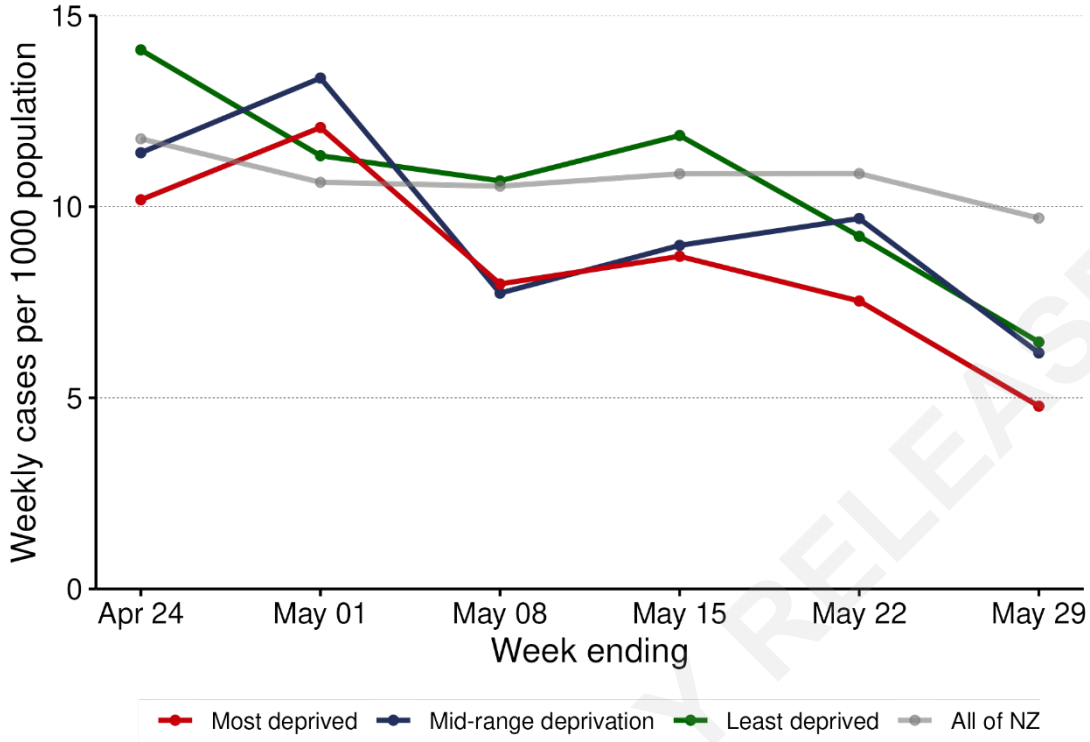
Bay of Plenty DHB



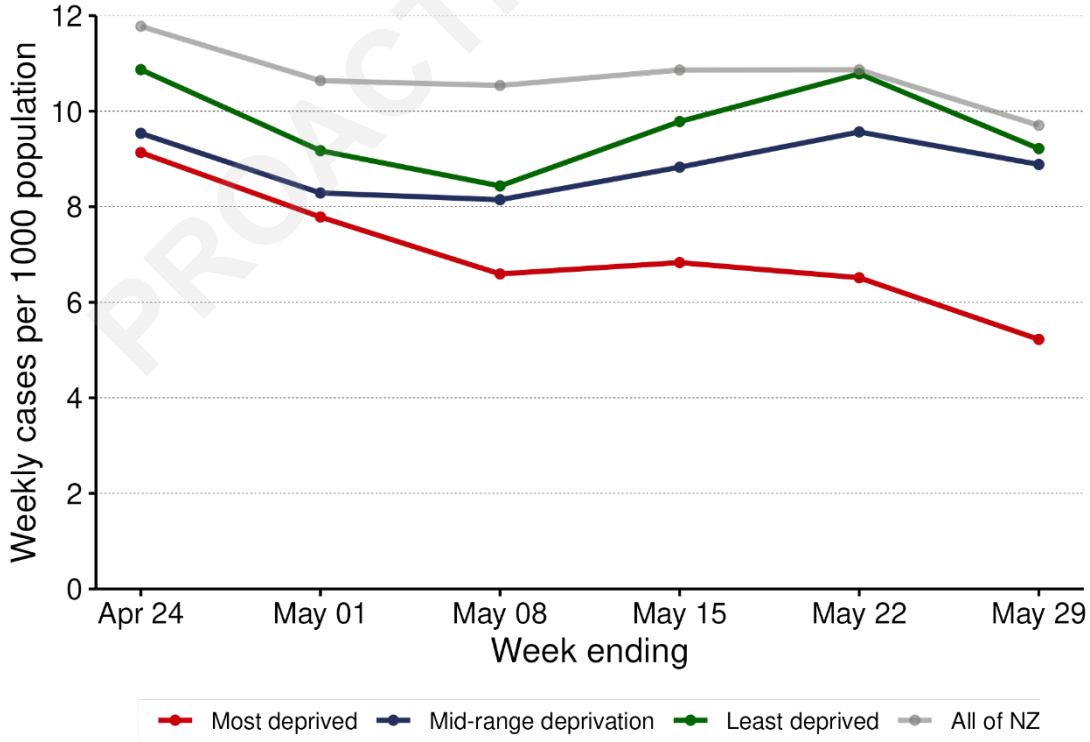
Waikato DHB



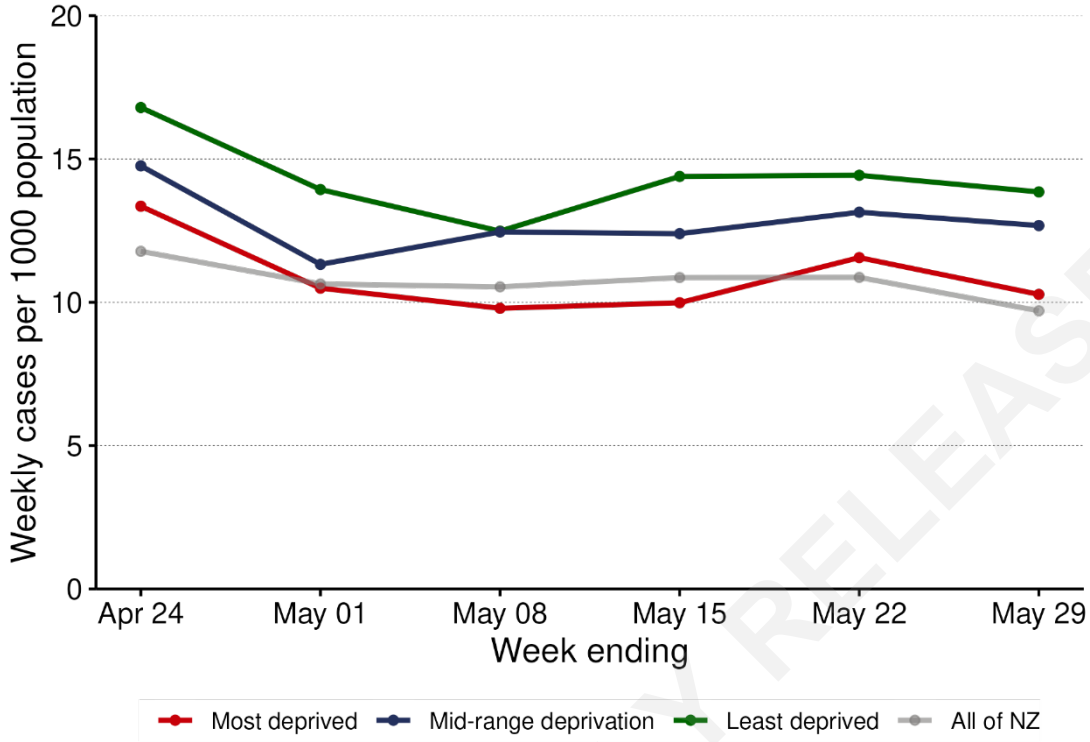
Tairawhiti DHB



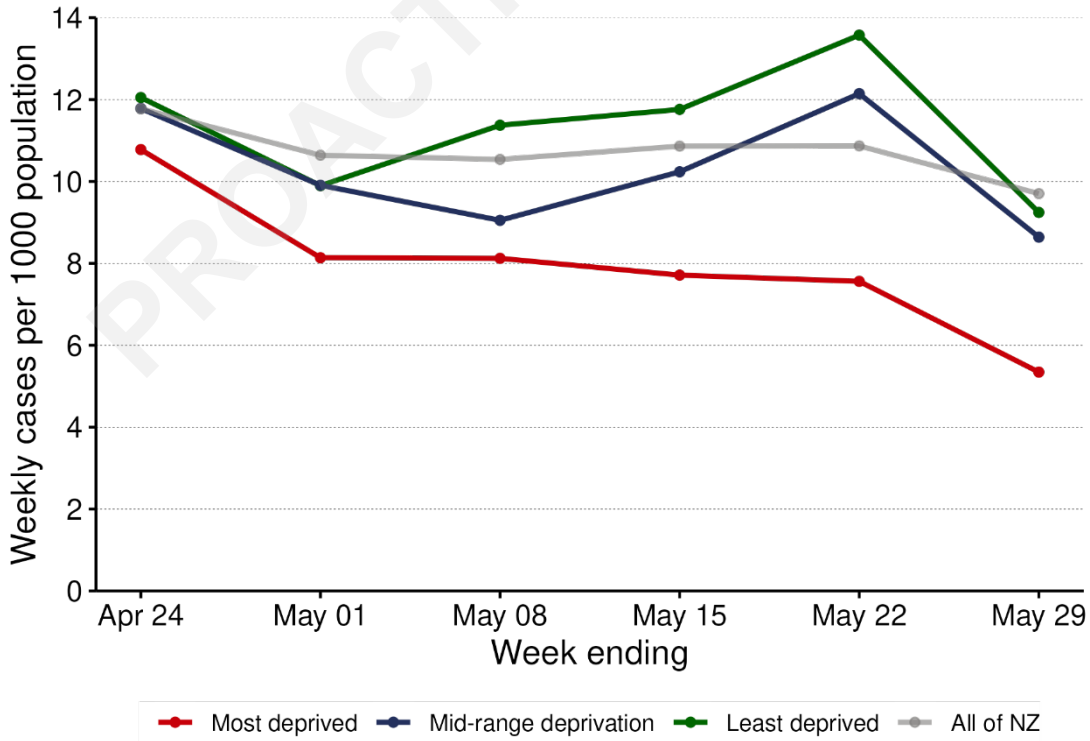
Lakes DHB



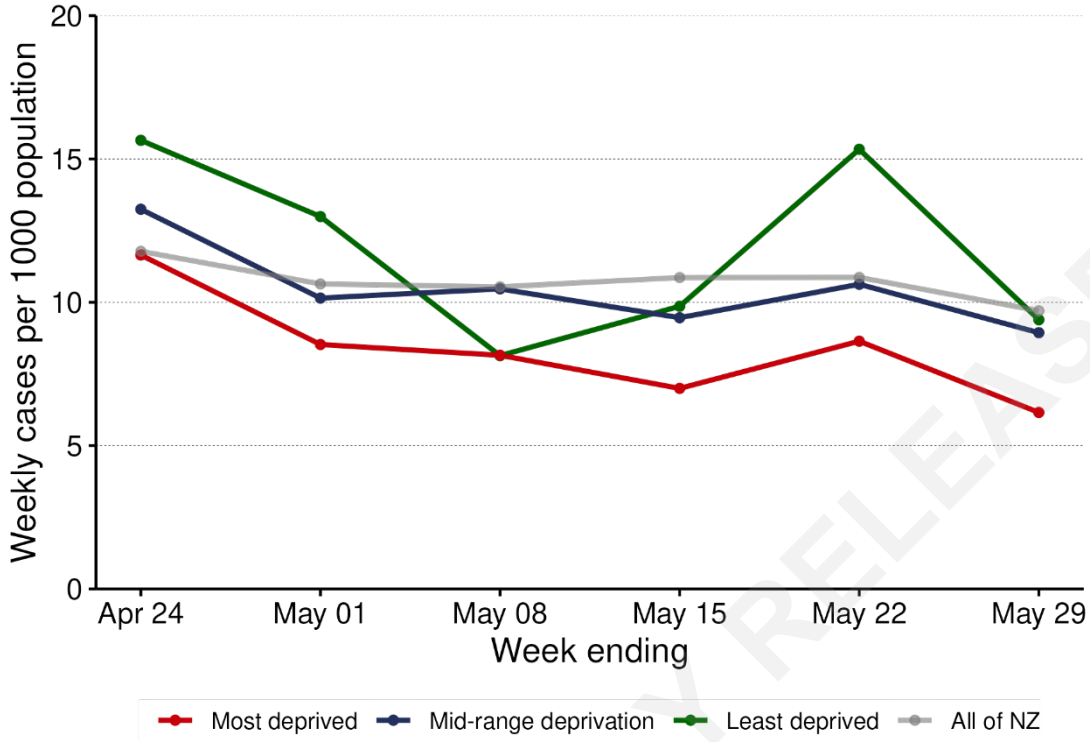
Taranaki DHB



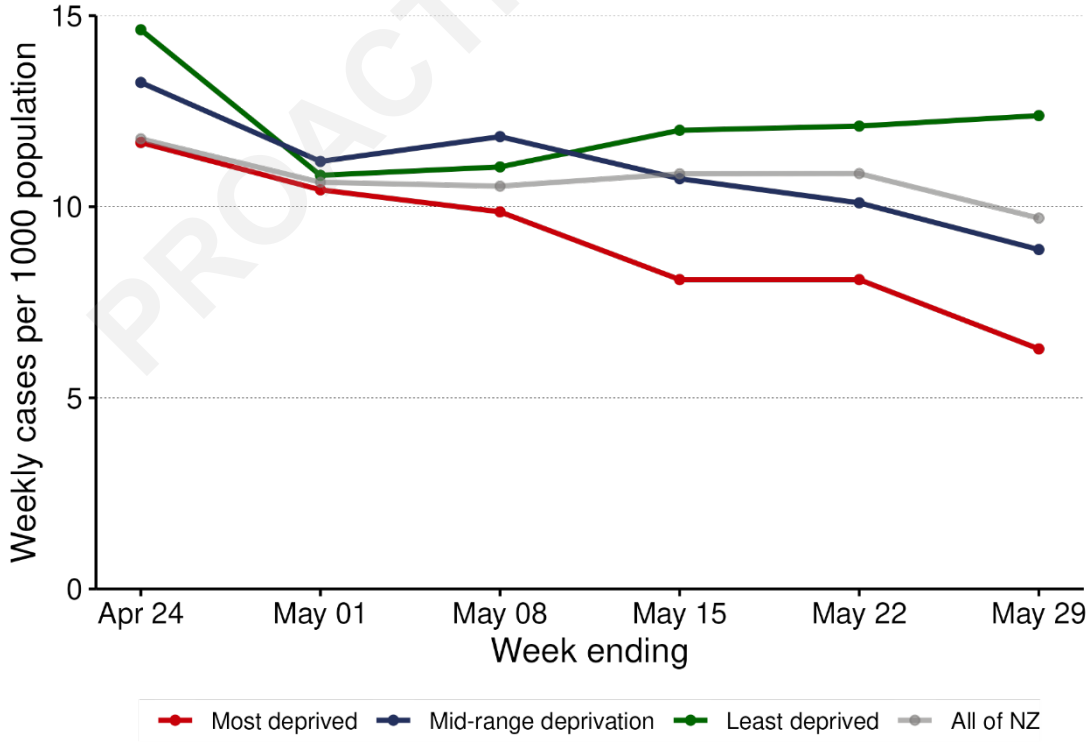
Hawke's Bay DHB



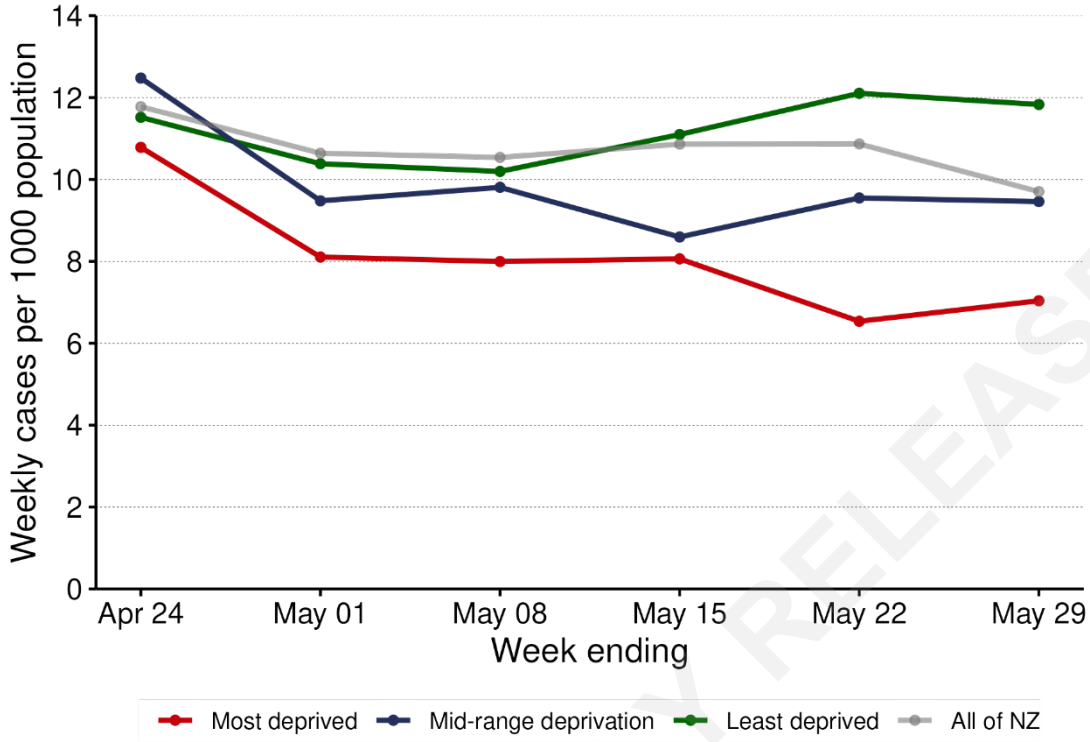
Whanganui DHB



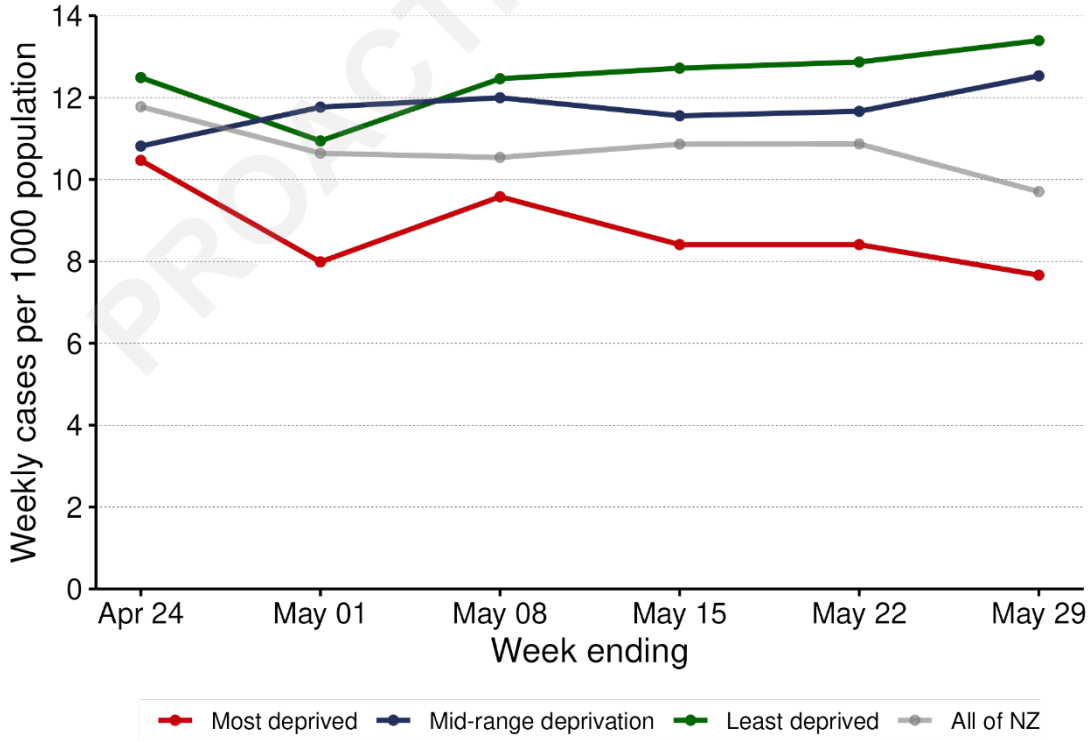
MidCentral DHB



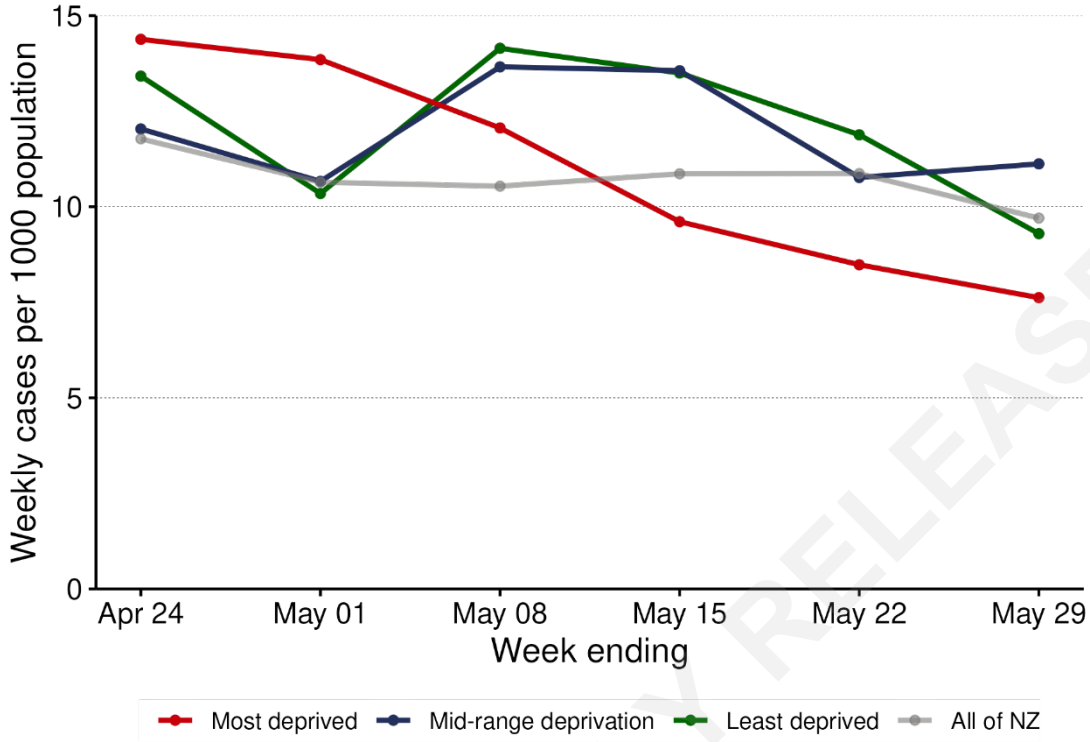
Hutt Valley DHB



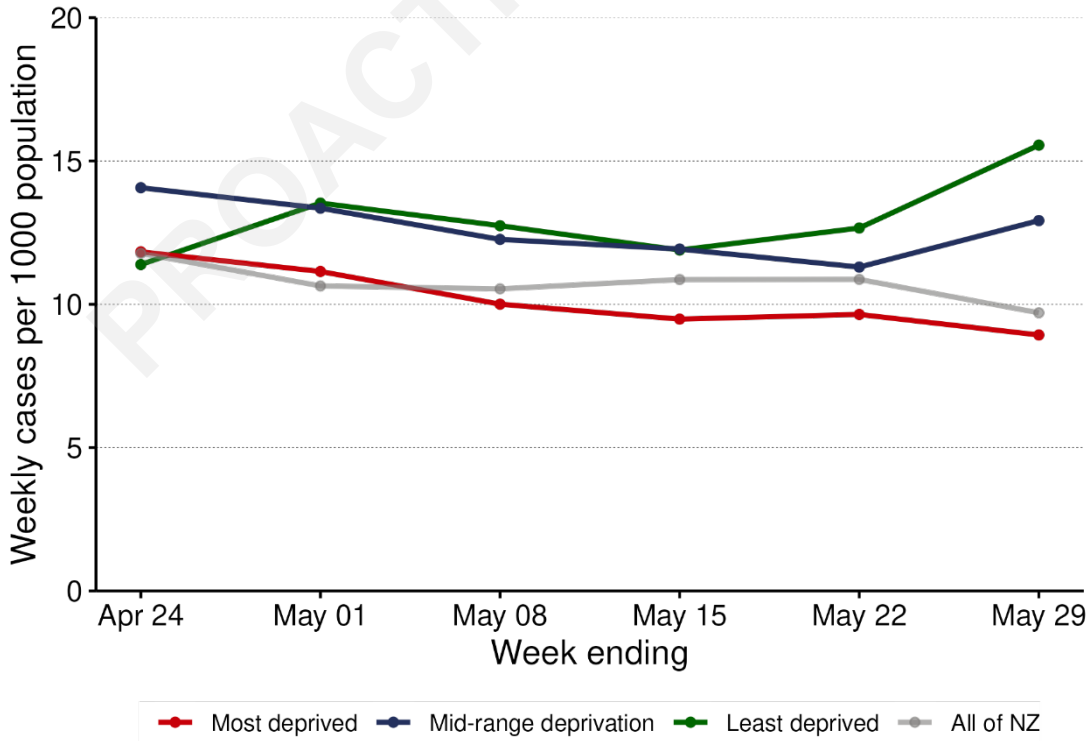
Capital and Coast DHB



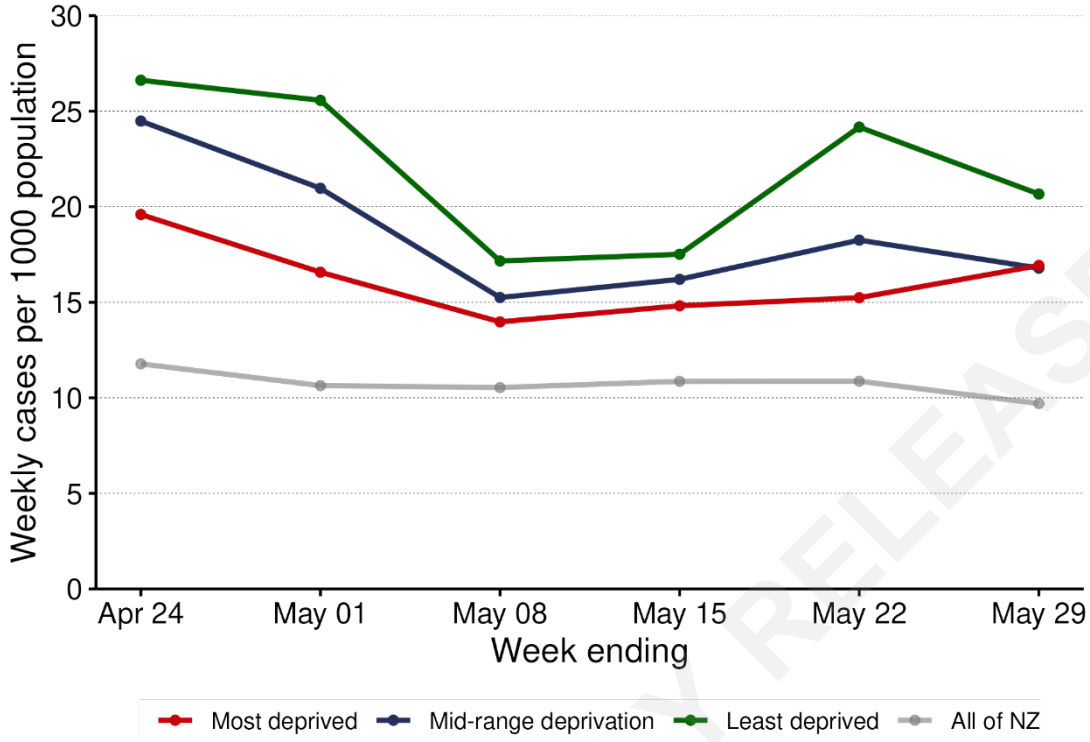
Wairarapa DHB



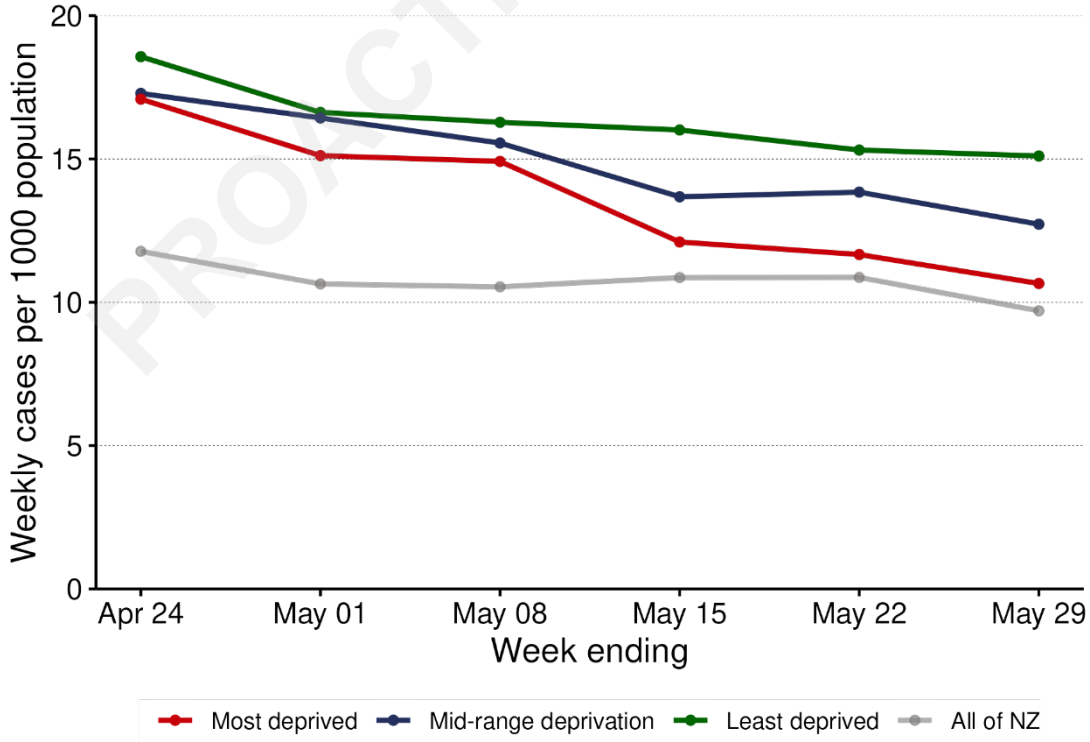
Nelson Marlborough DHB



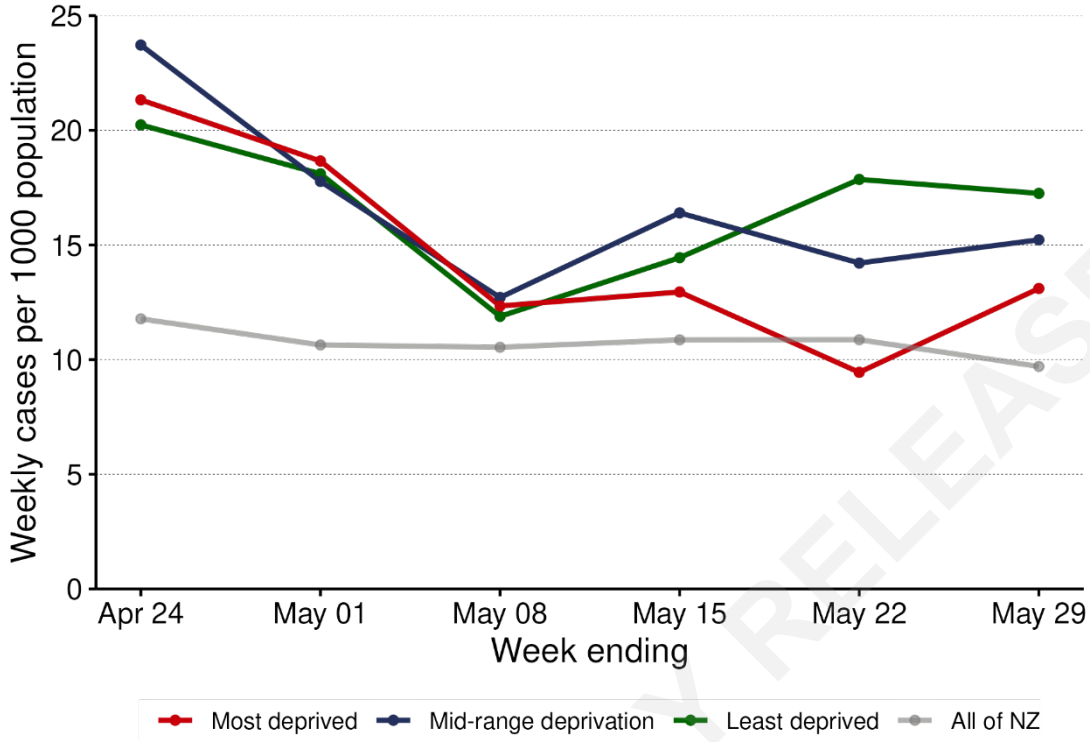
West Coast DHB



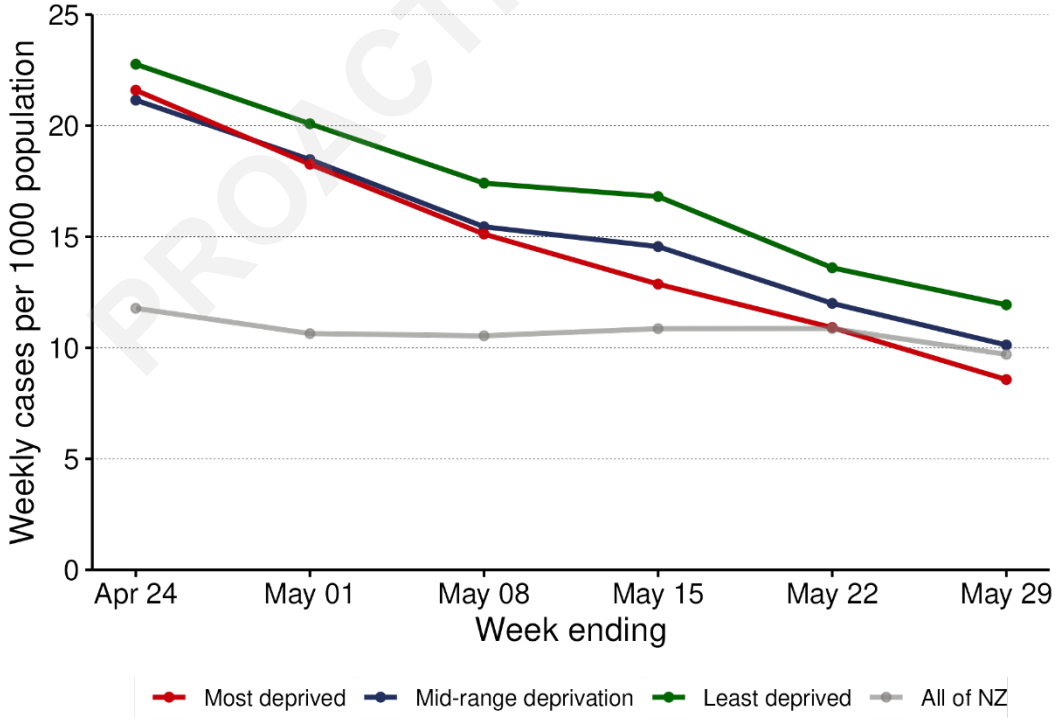
Canterbury DHB



South Canterbury DHB

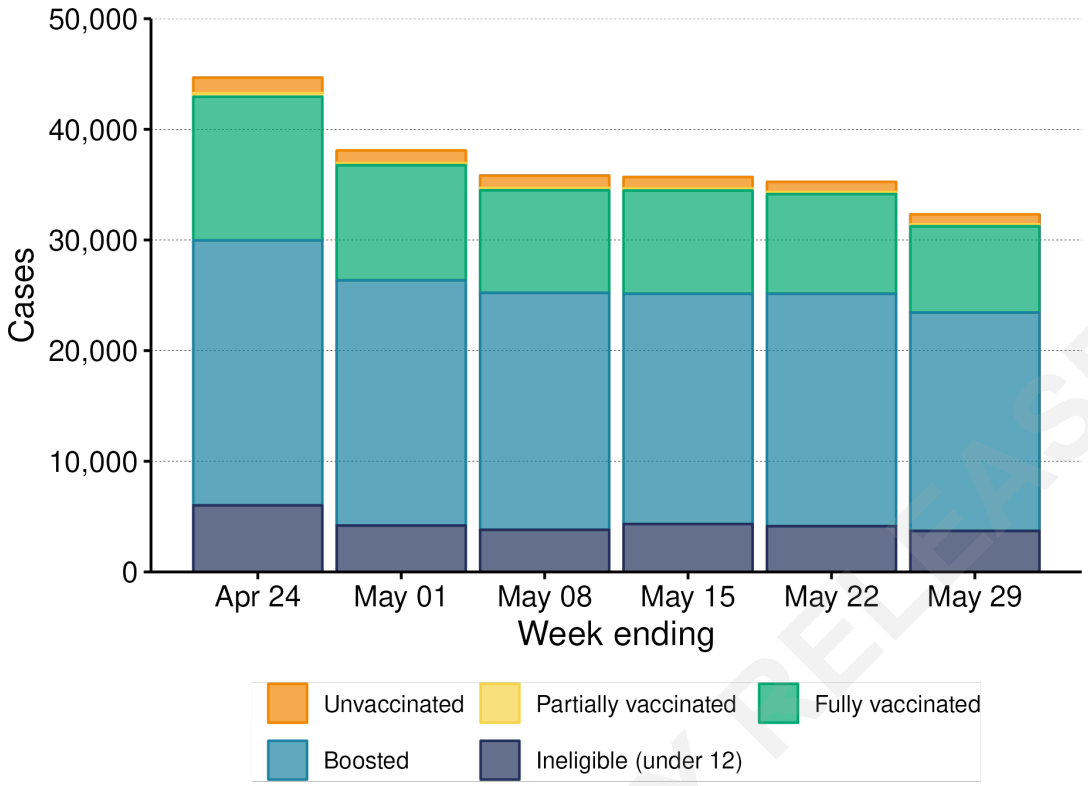


Southern DHB

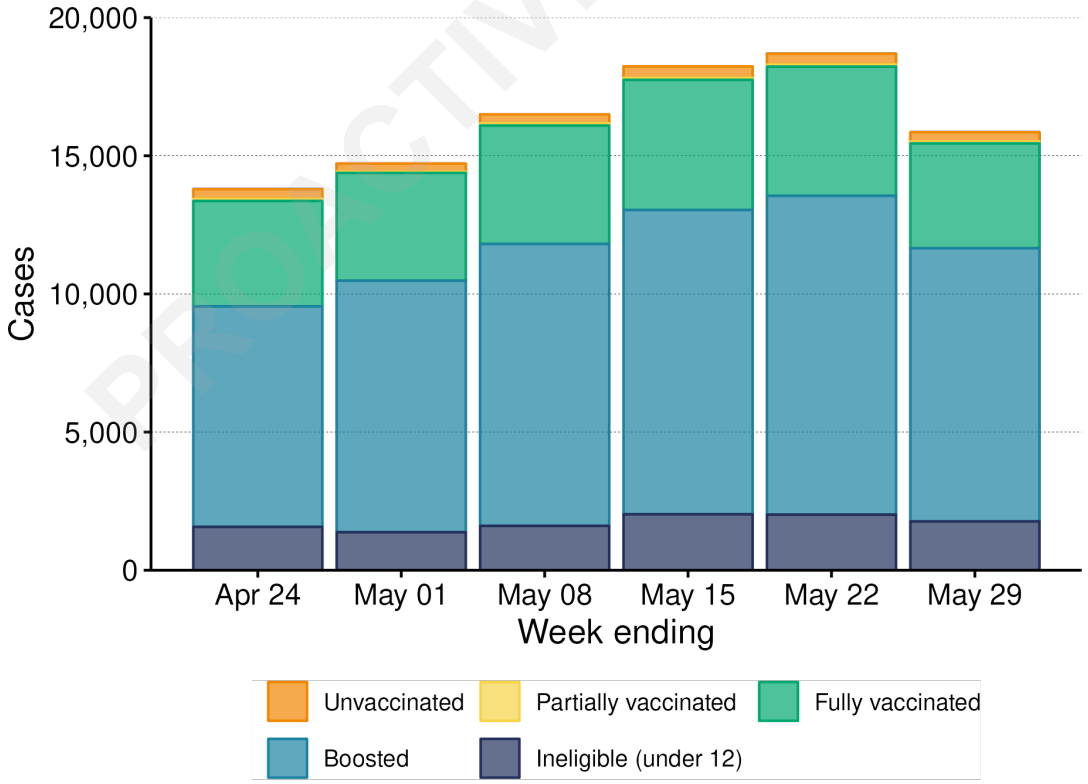


Vaccination Graphs

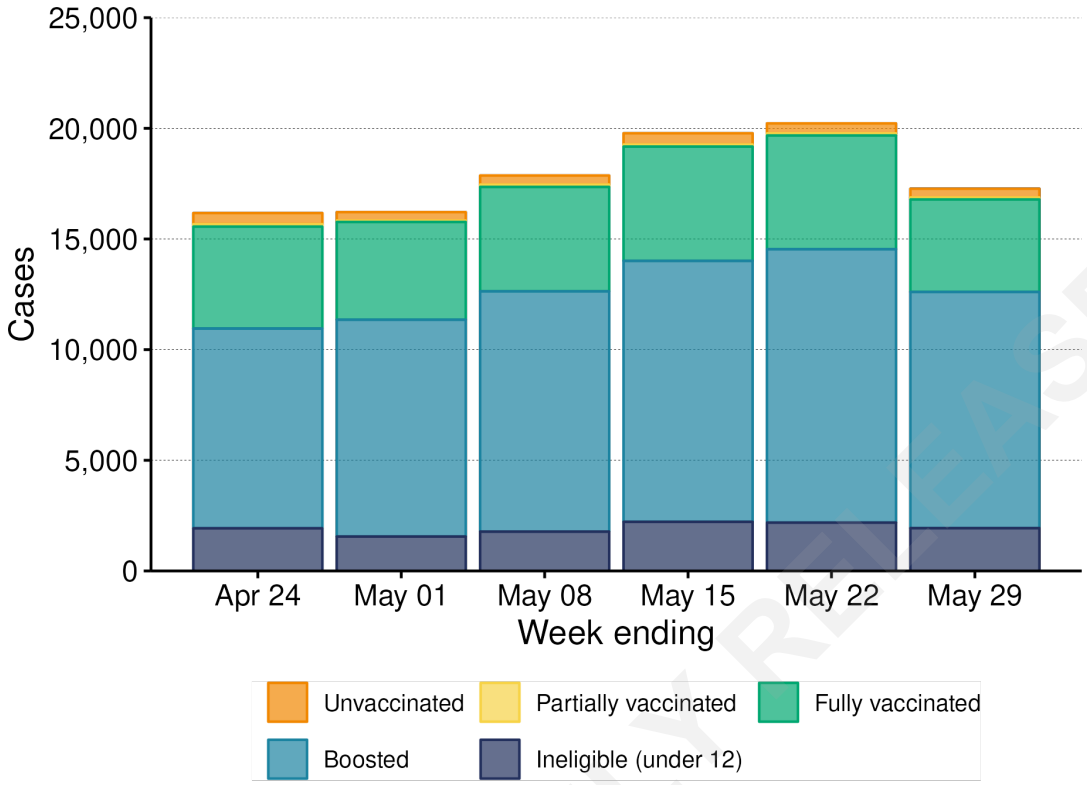
NZ Excluding Auckland Region



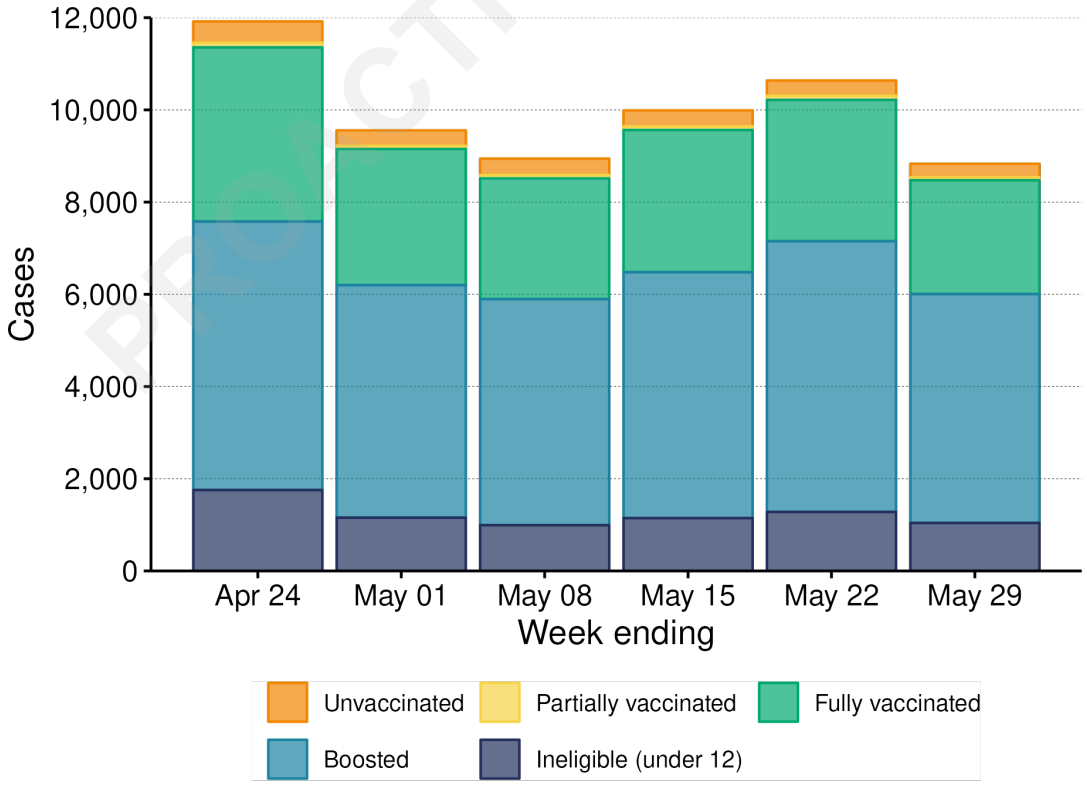
Auckland Region



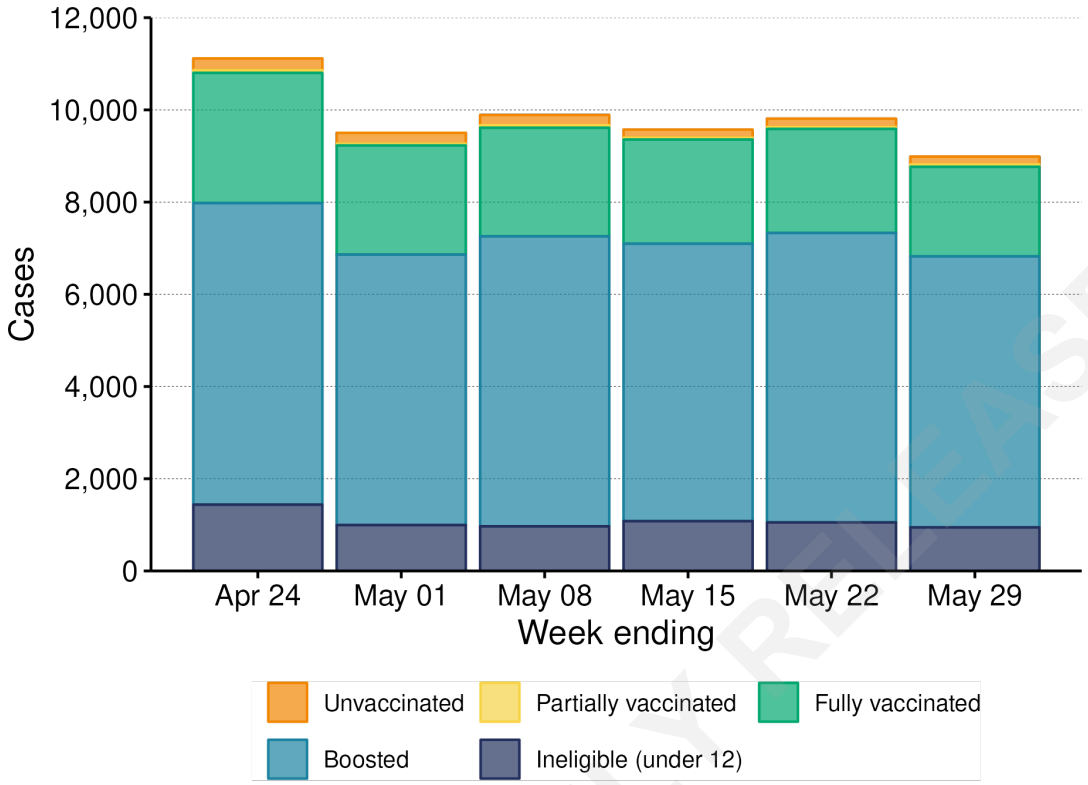
Northern Region



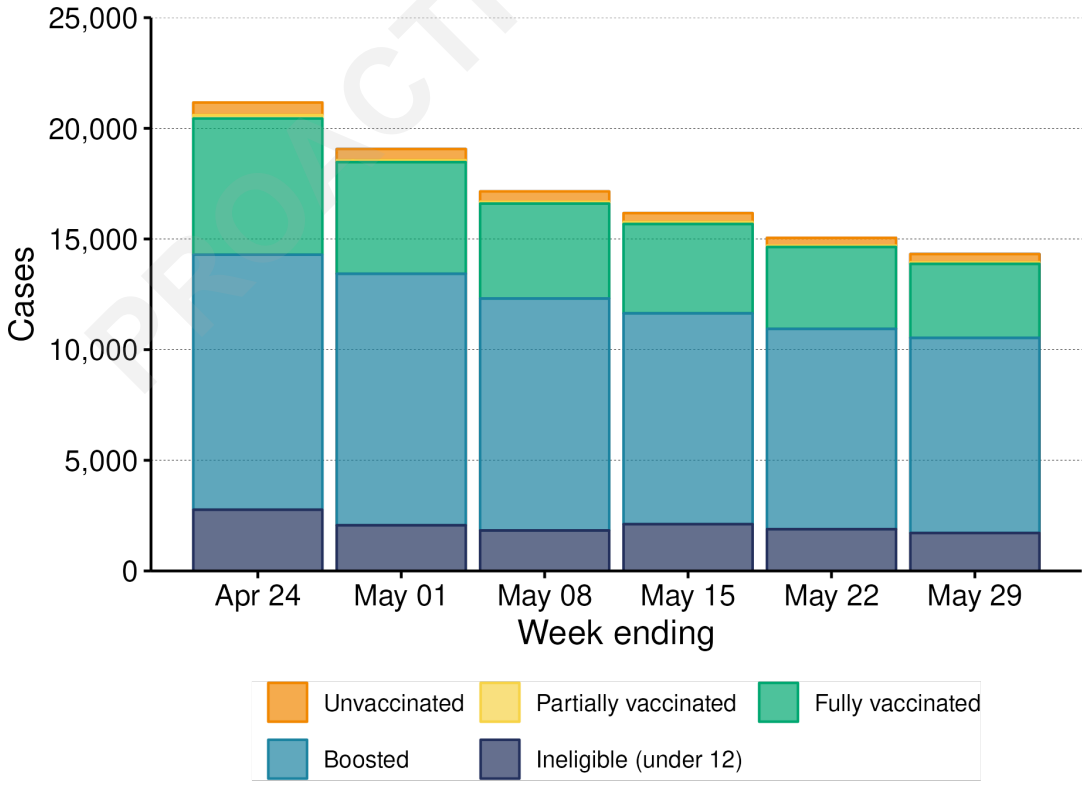
Te Manawa Taki



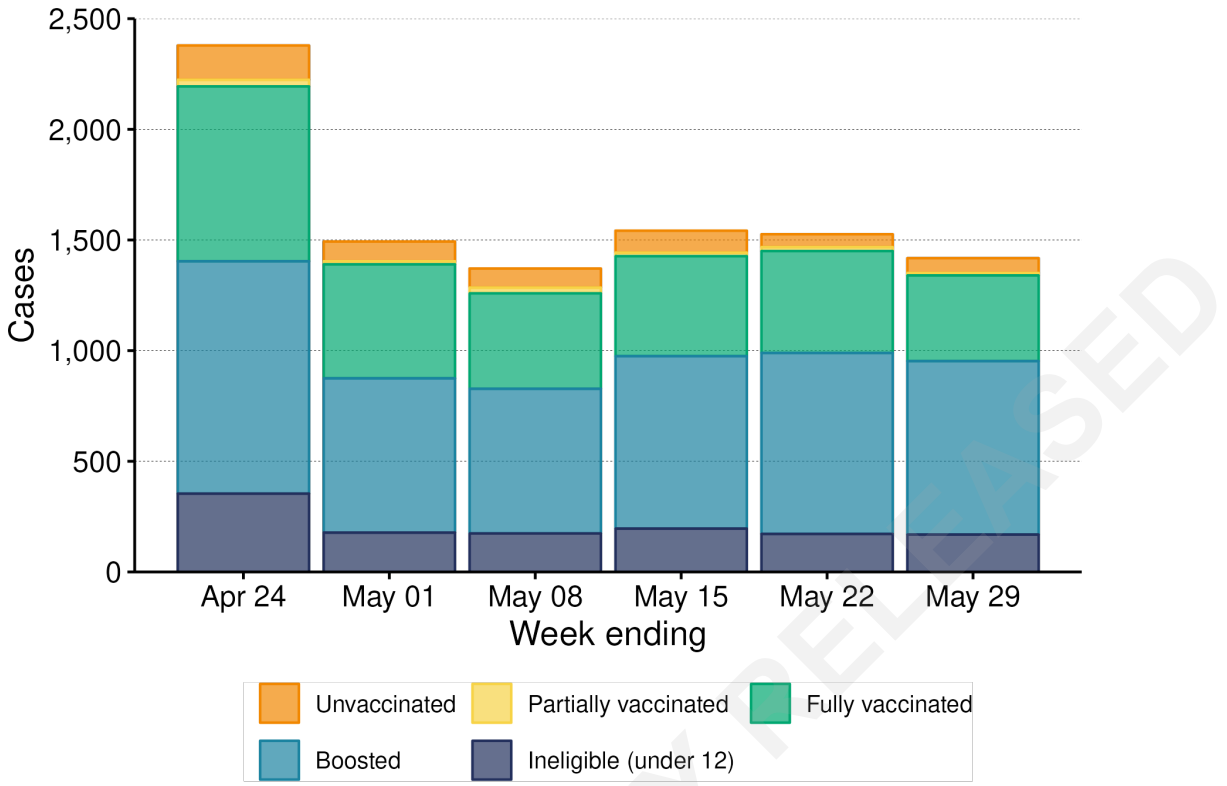
Central Region



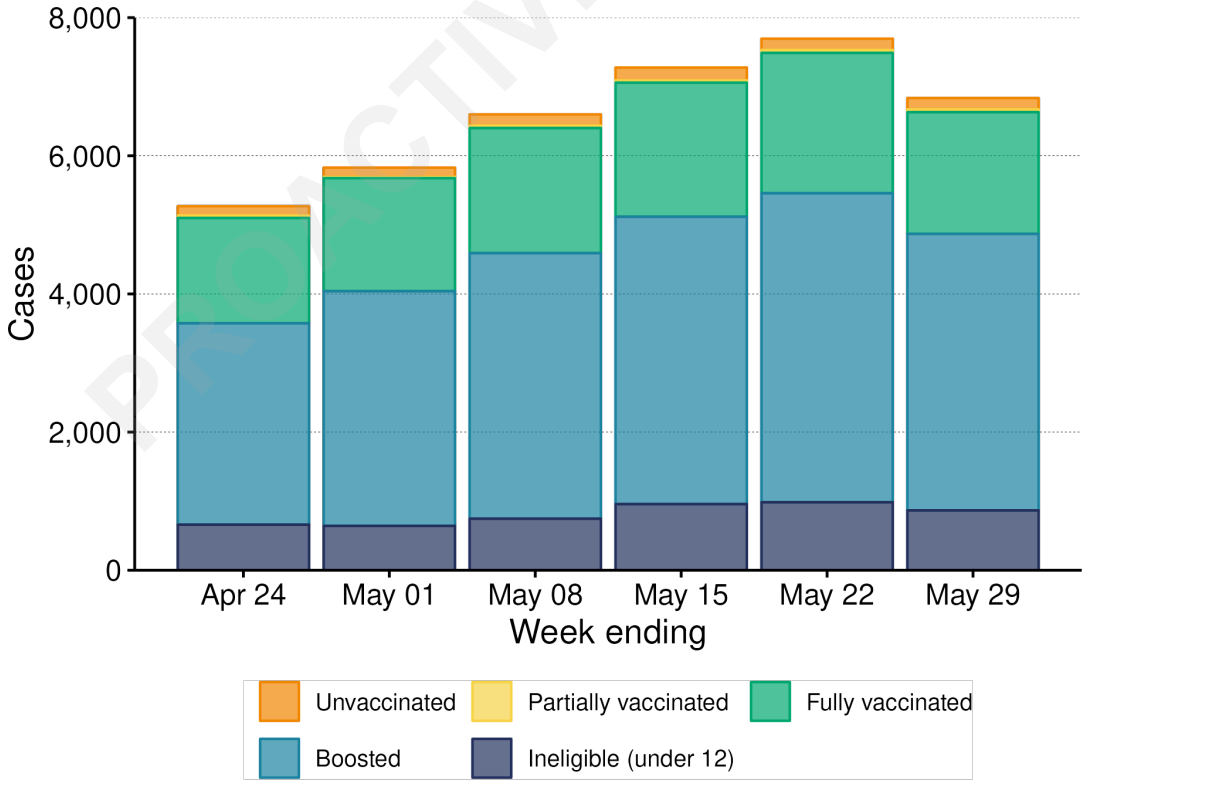
Southern Region



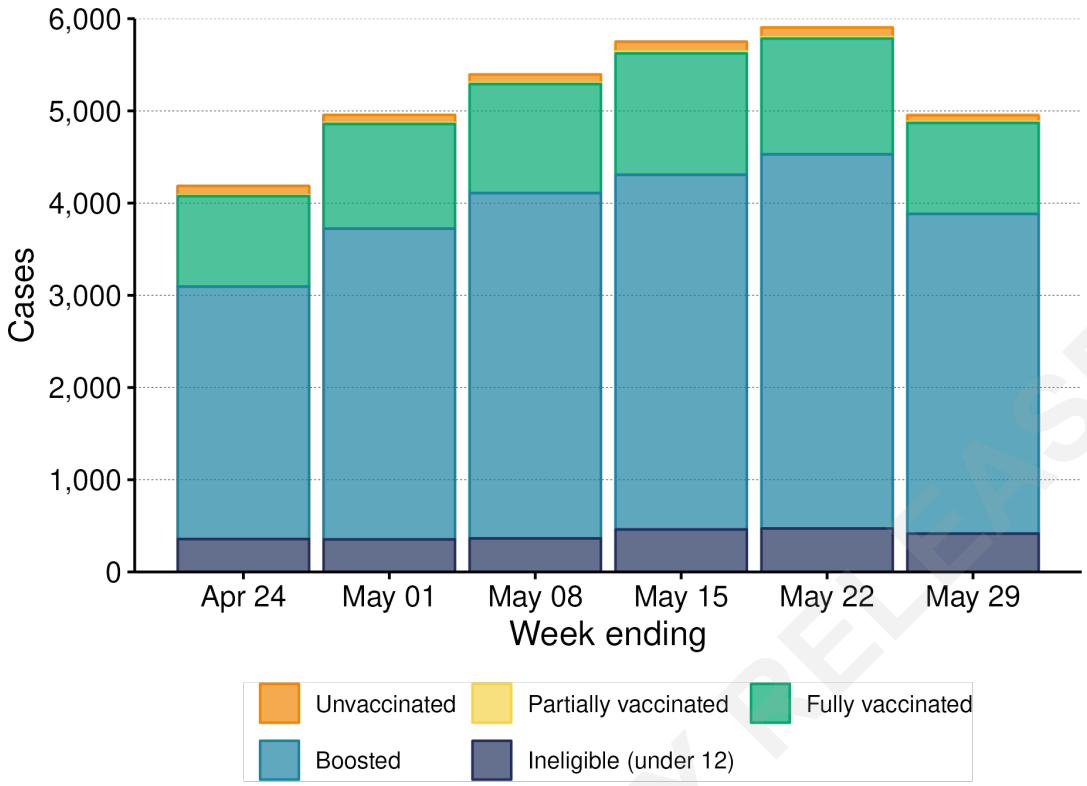
Northland DHB



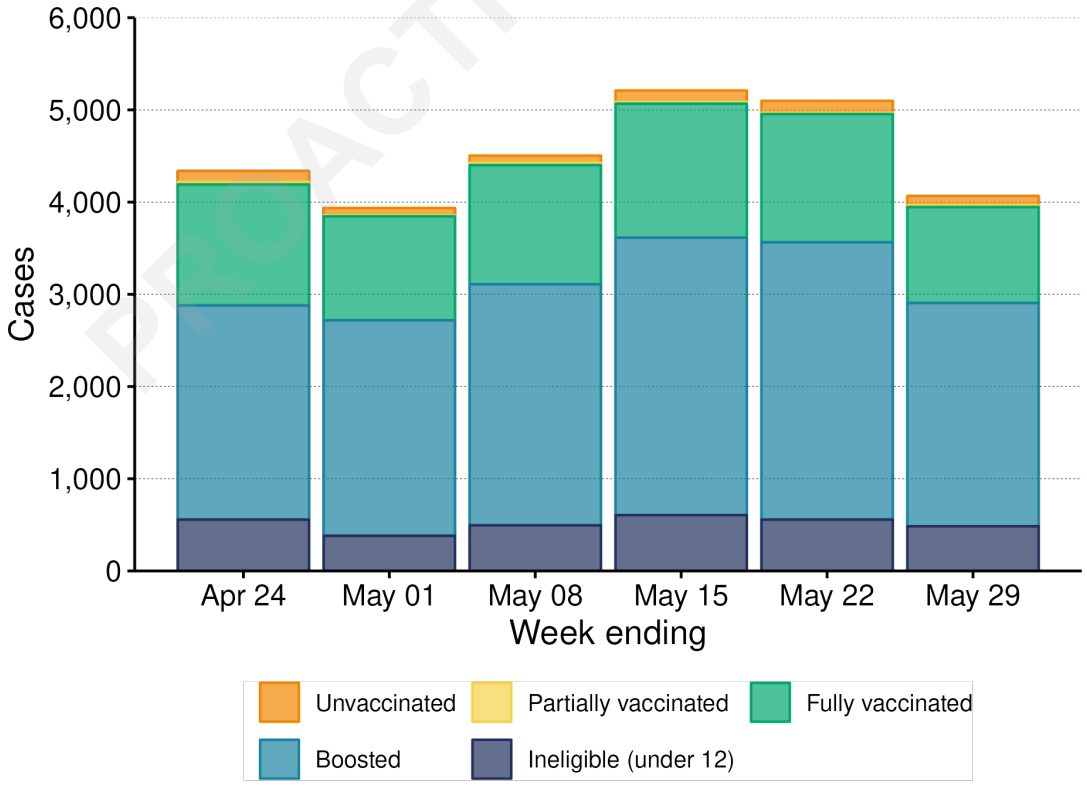
Waitemata DHB



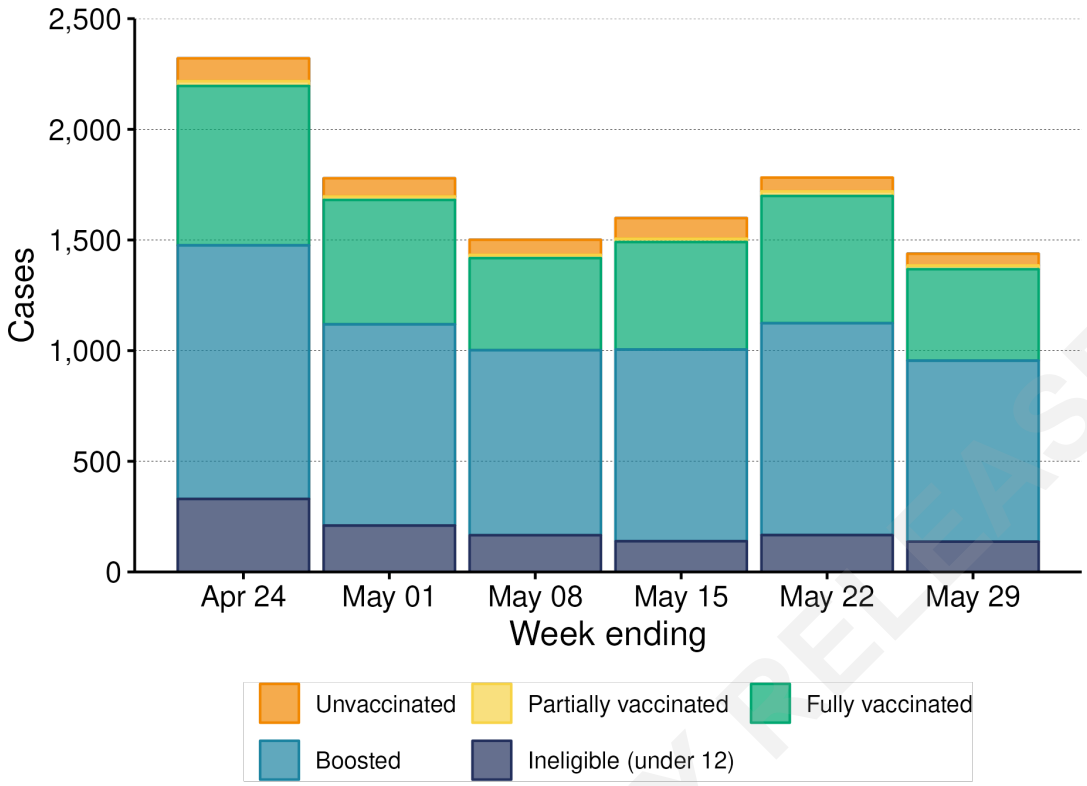
Auckland DHB



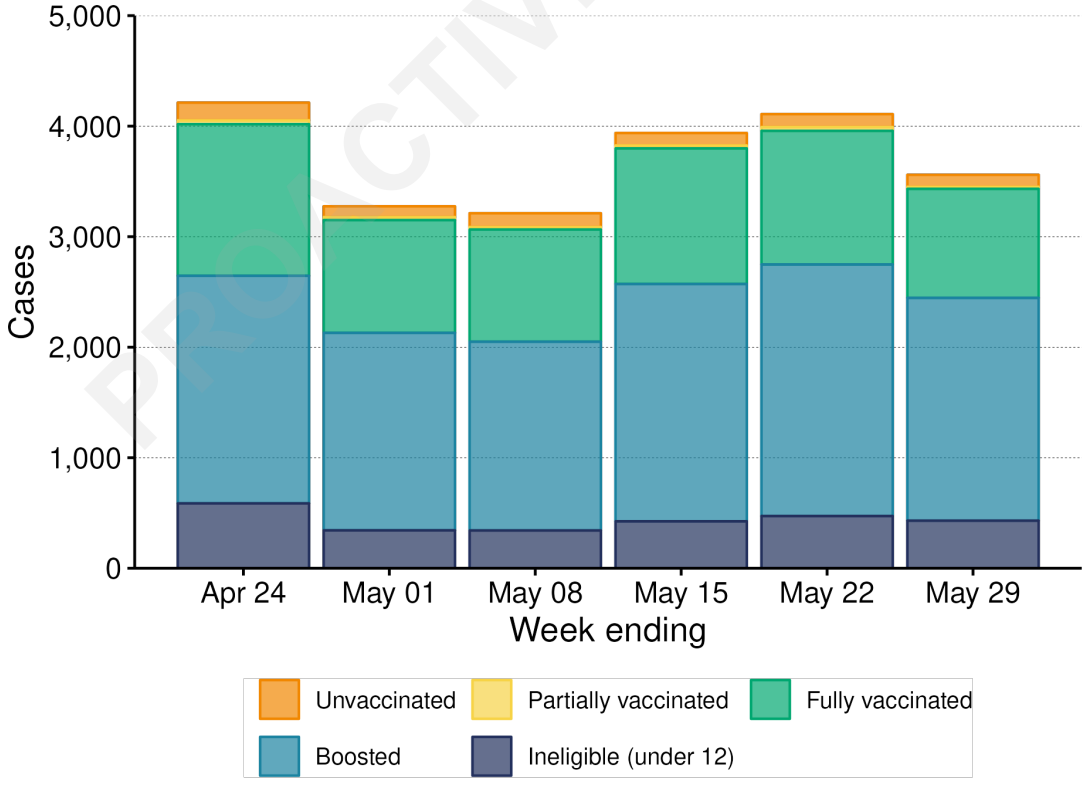
Counties Manukau DHB



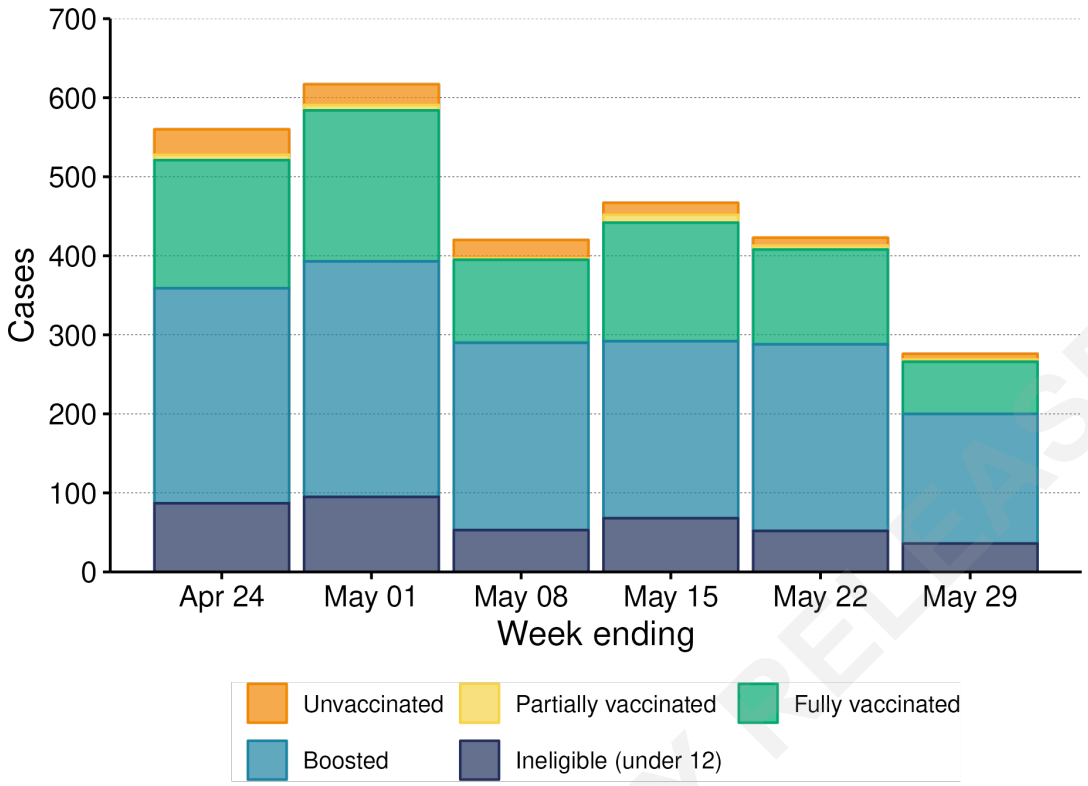
Bay of Plenty DHB



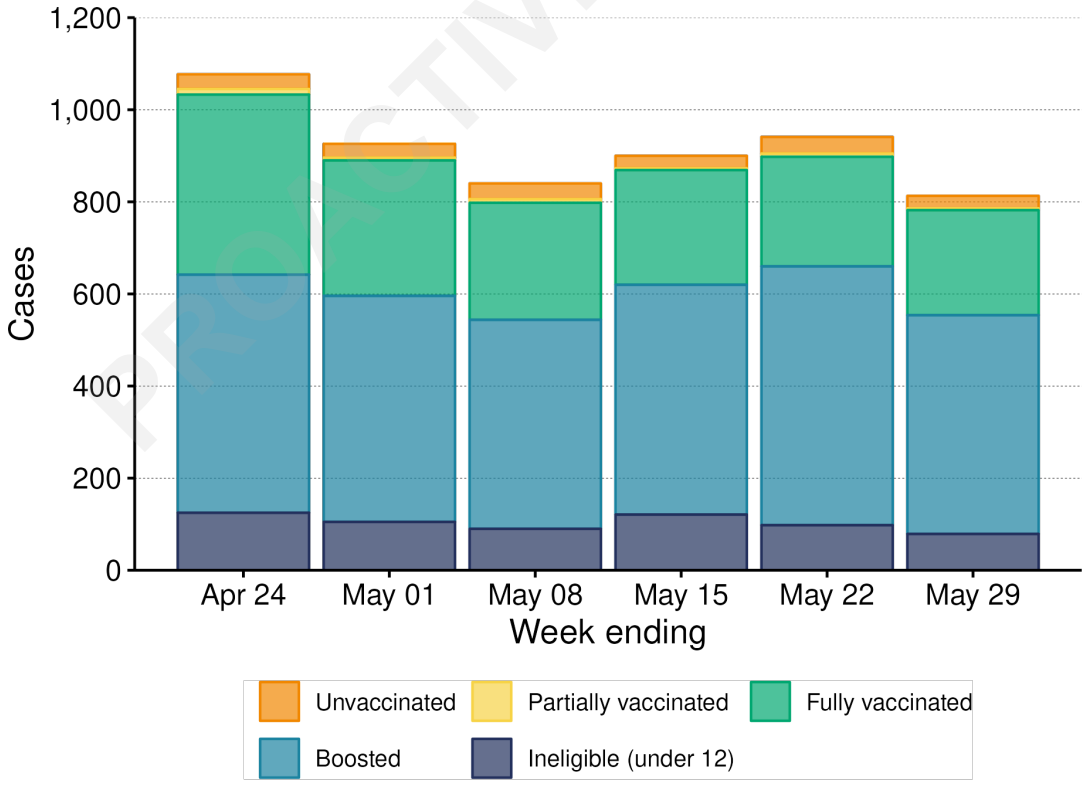
Waikato DHB



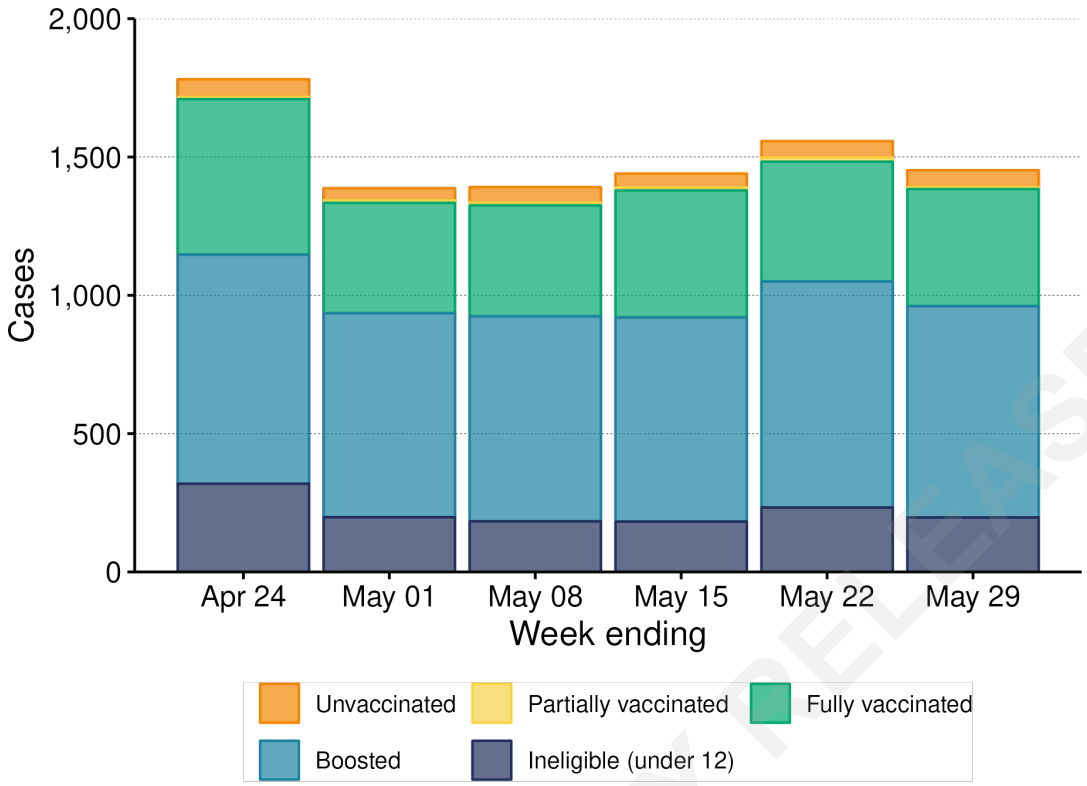
Tairawhiti DHB



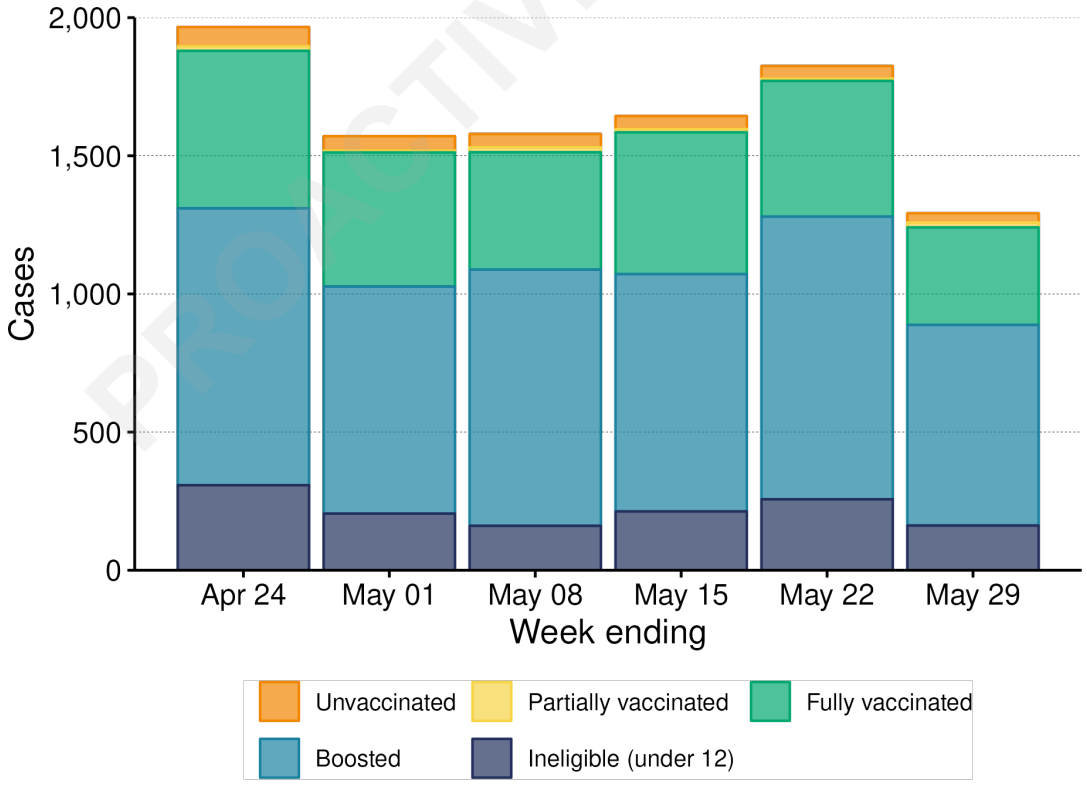
Lakes DHB



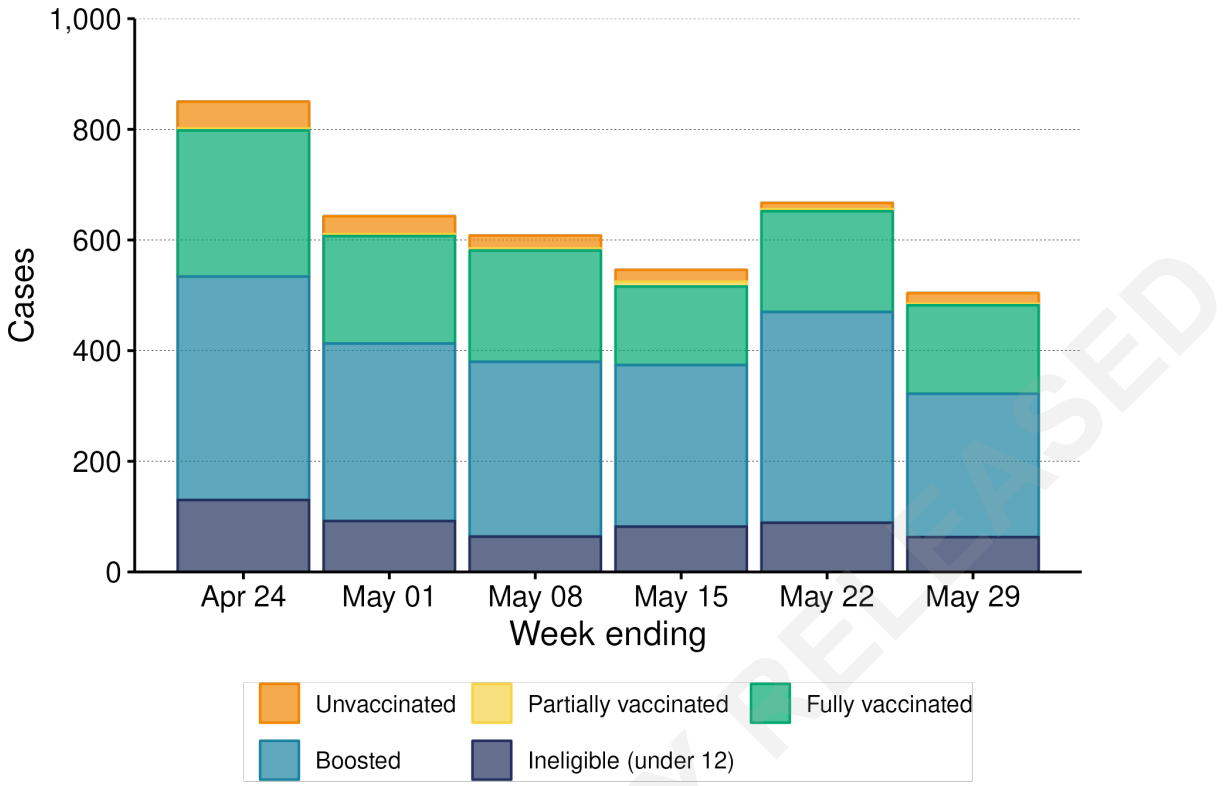
Taranaki DHB



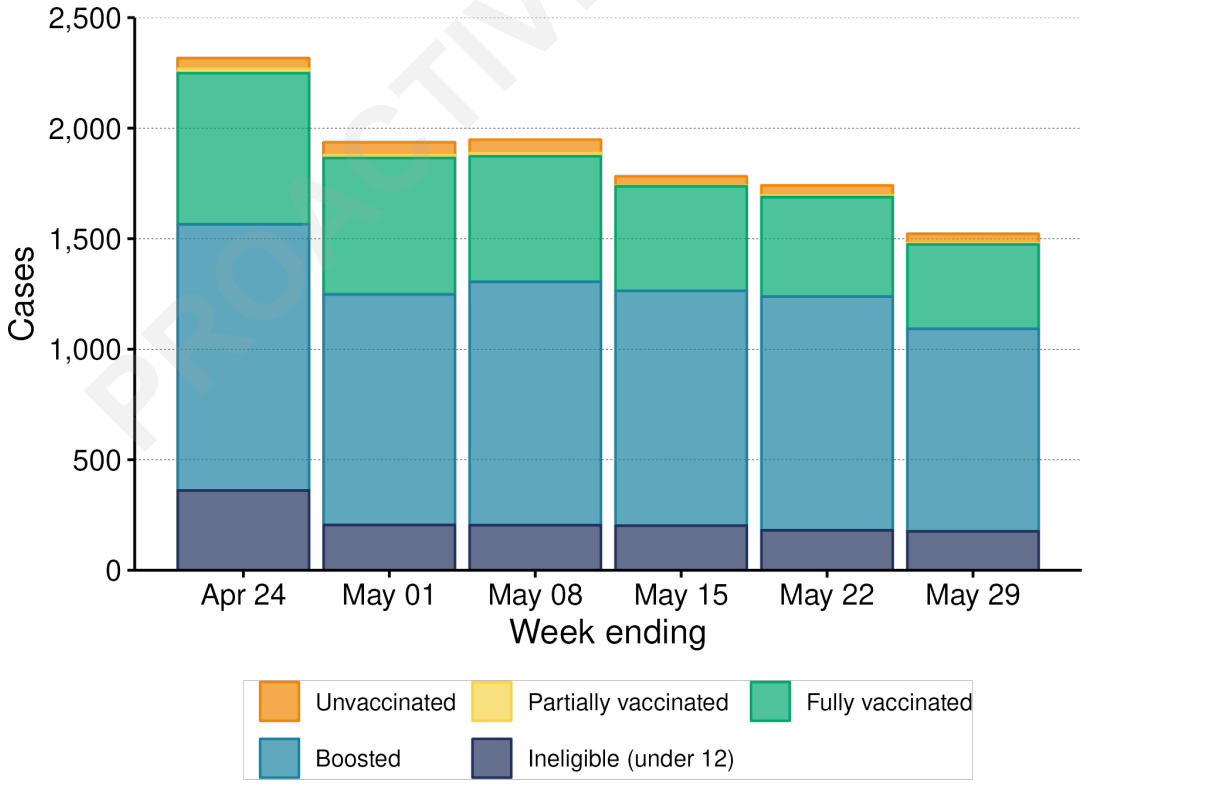
Hawke's Bay DHB



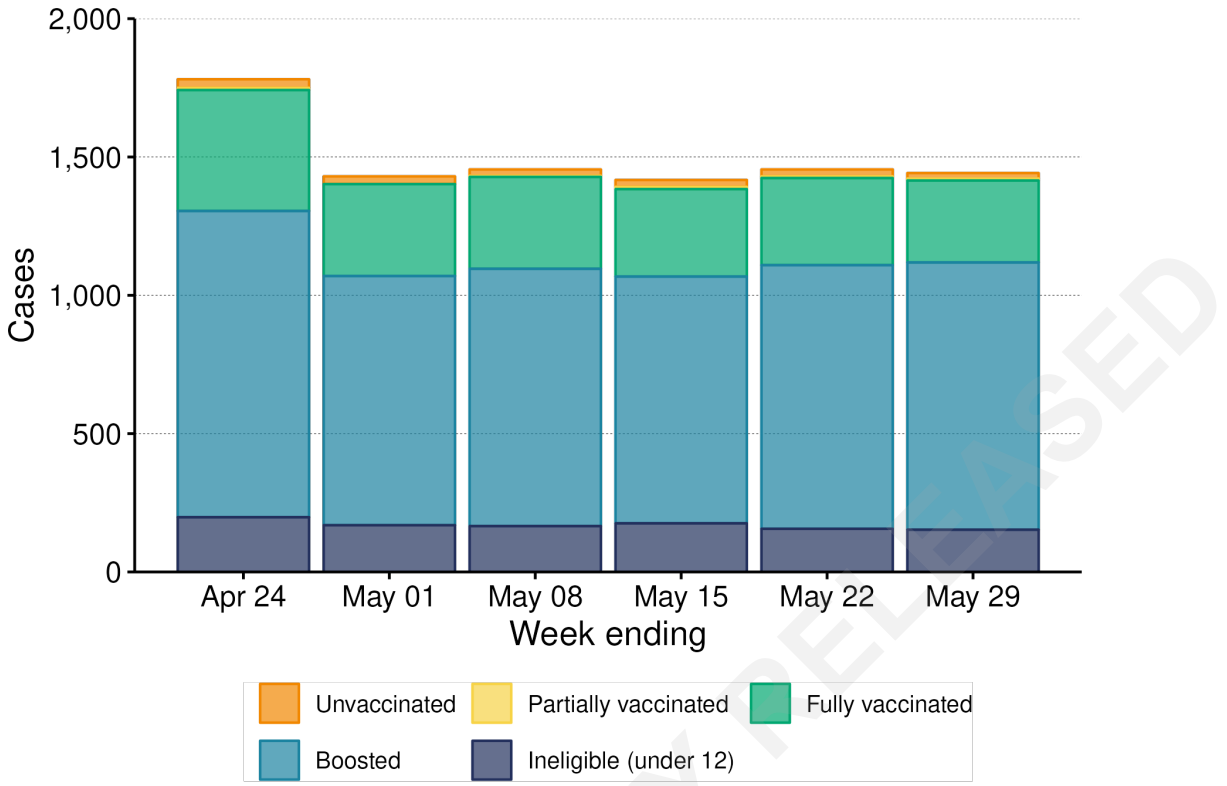
Whanganui DHB



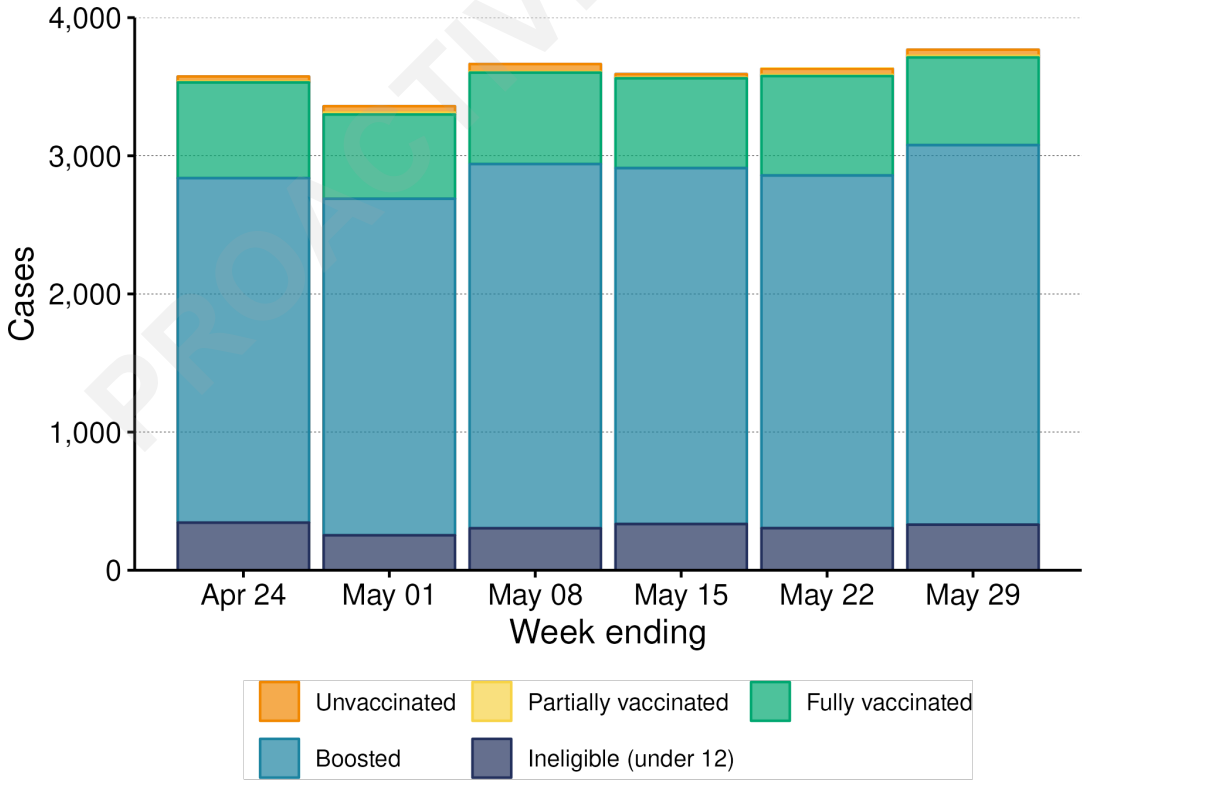
MidCentral DHB



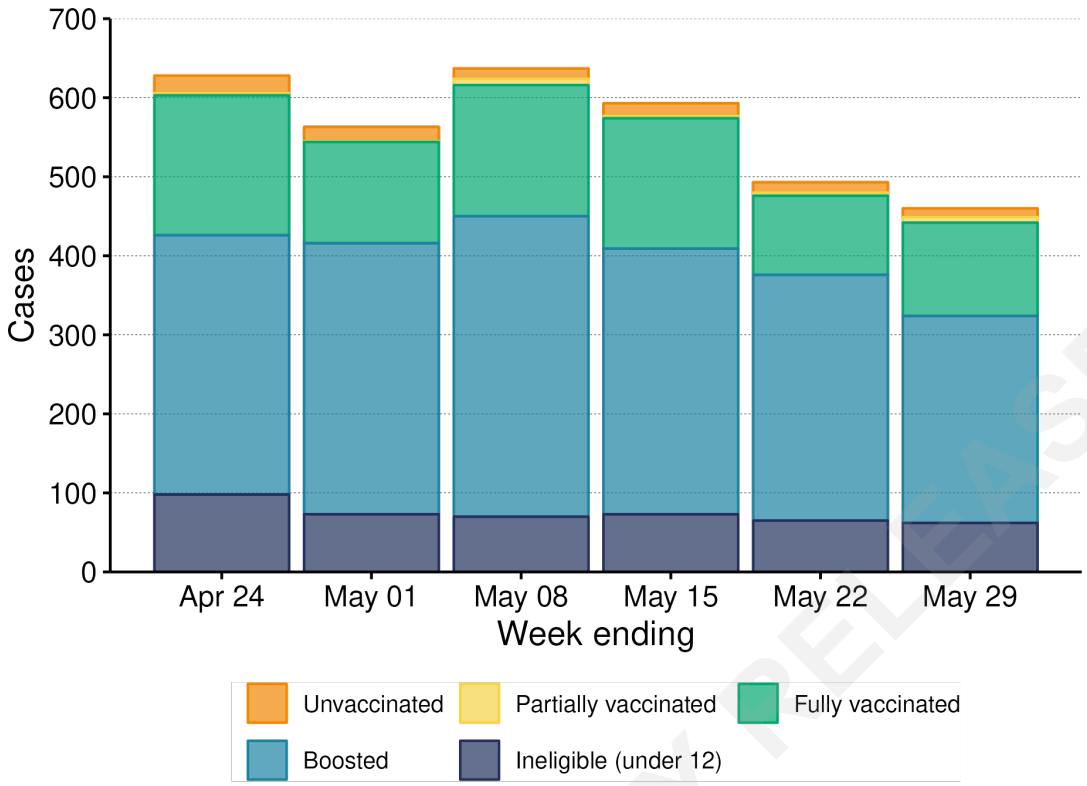
Hutt Valley DHB



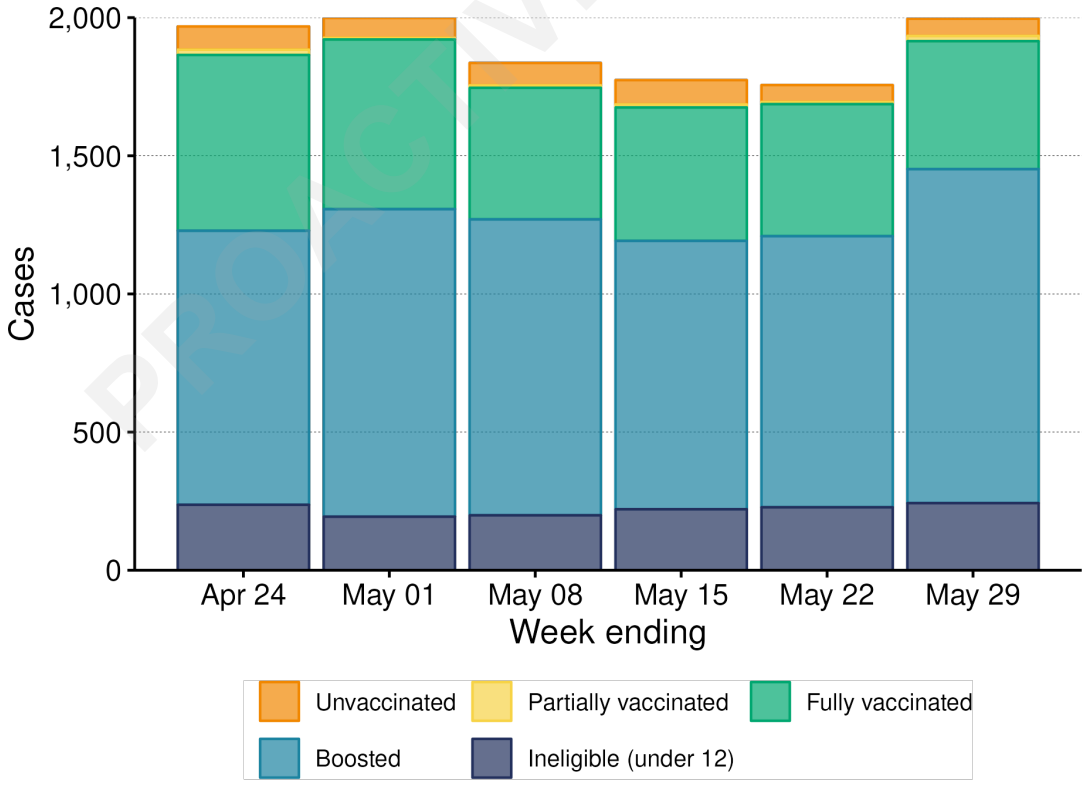
Capital and Coast DHB



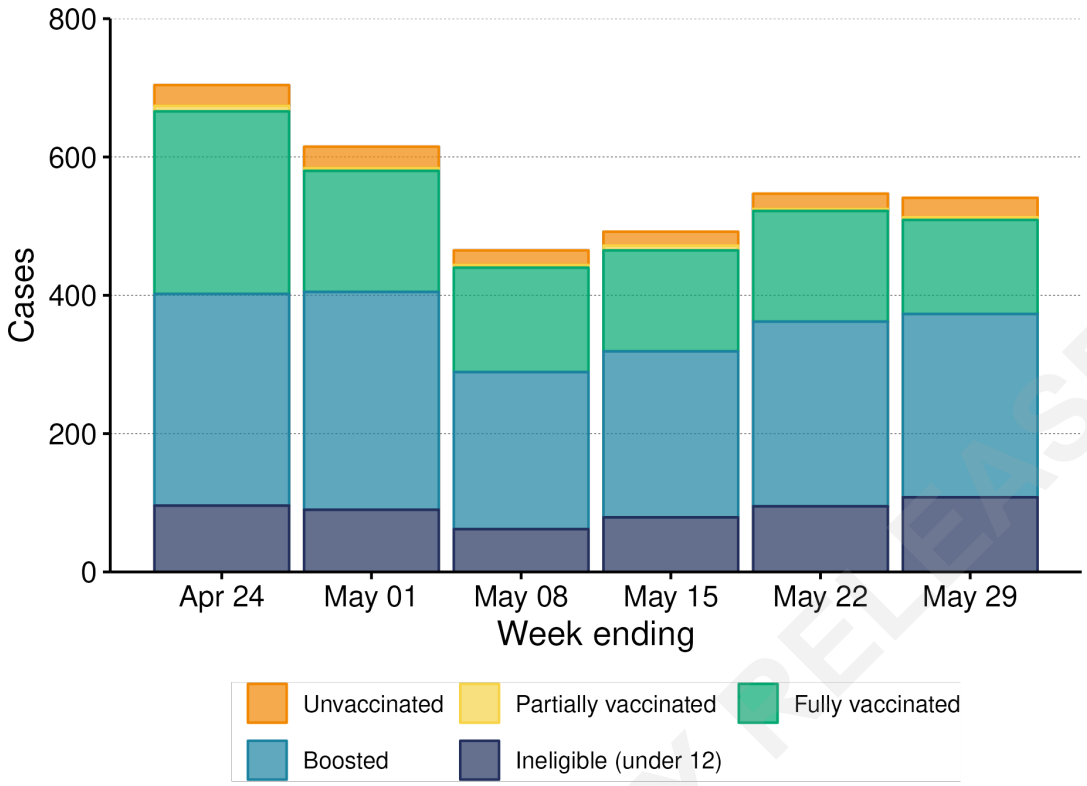
Wairarapa DHB



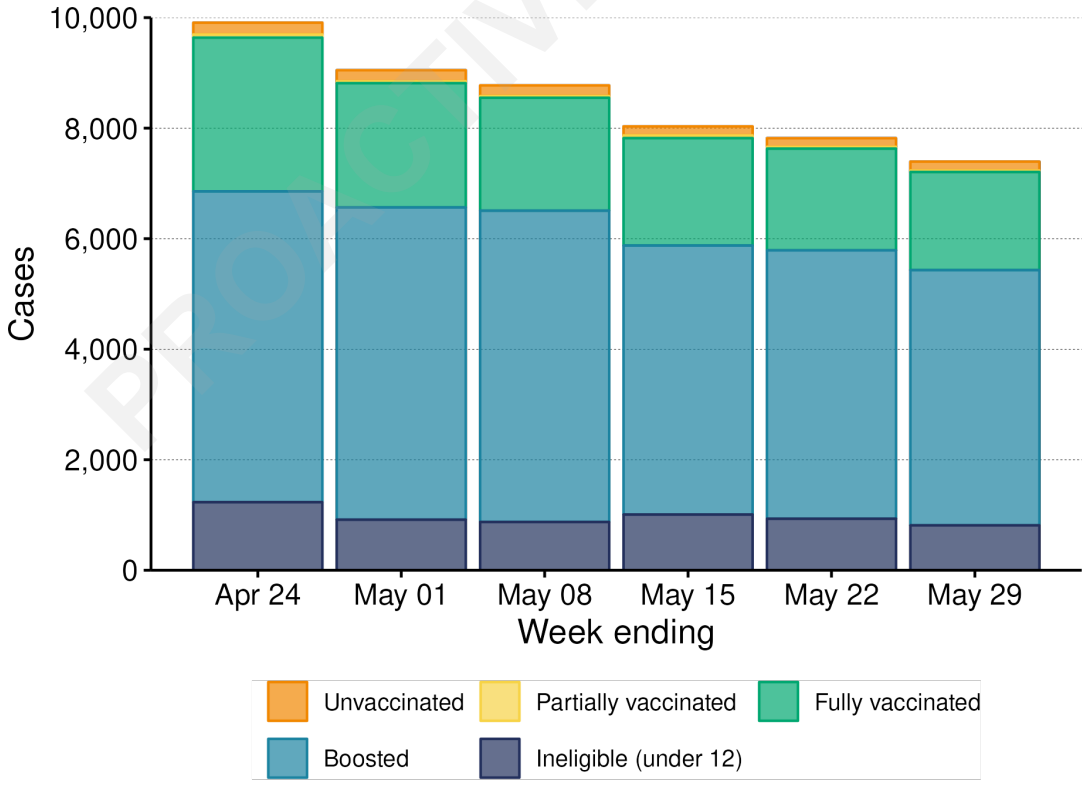
Nelson Marlborough DHB



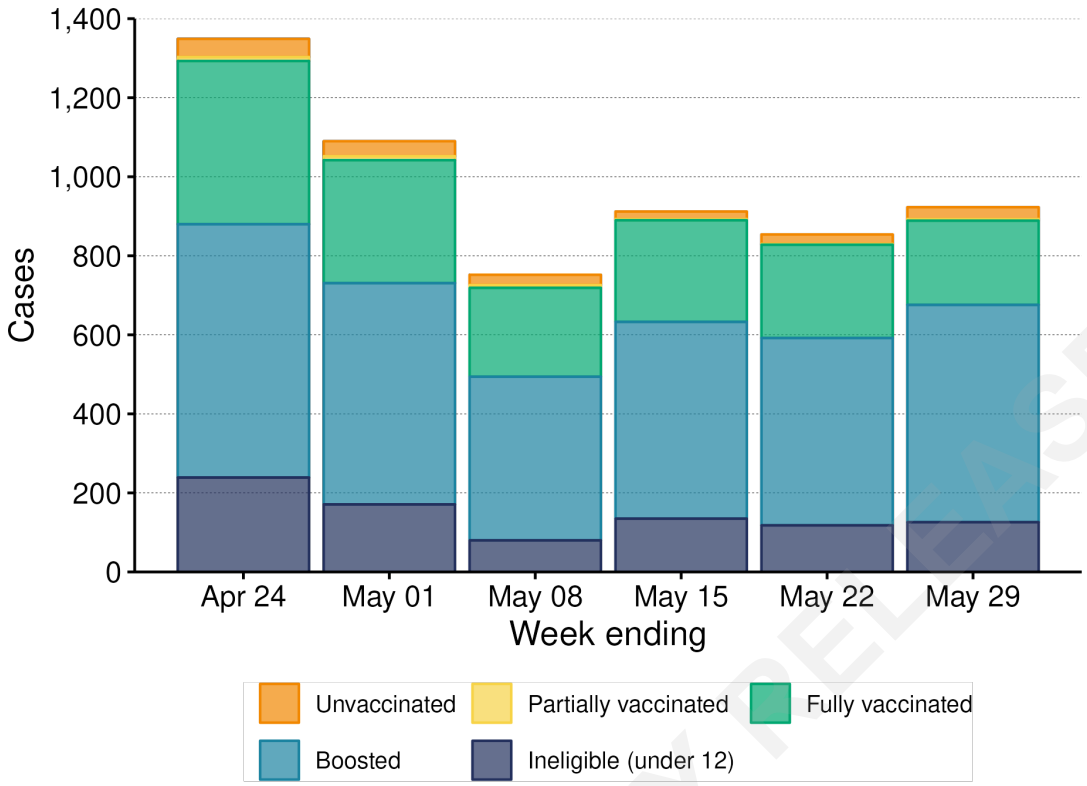
West Coast DHB



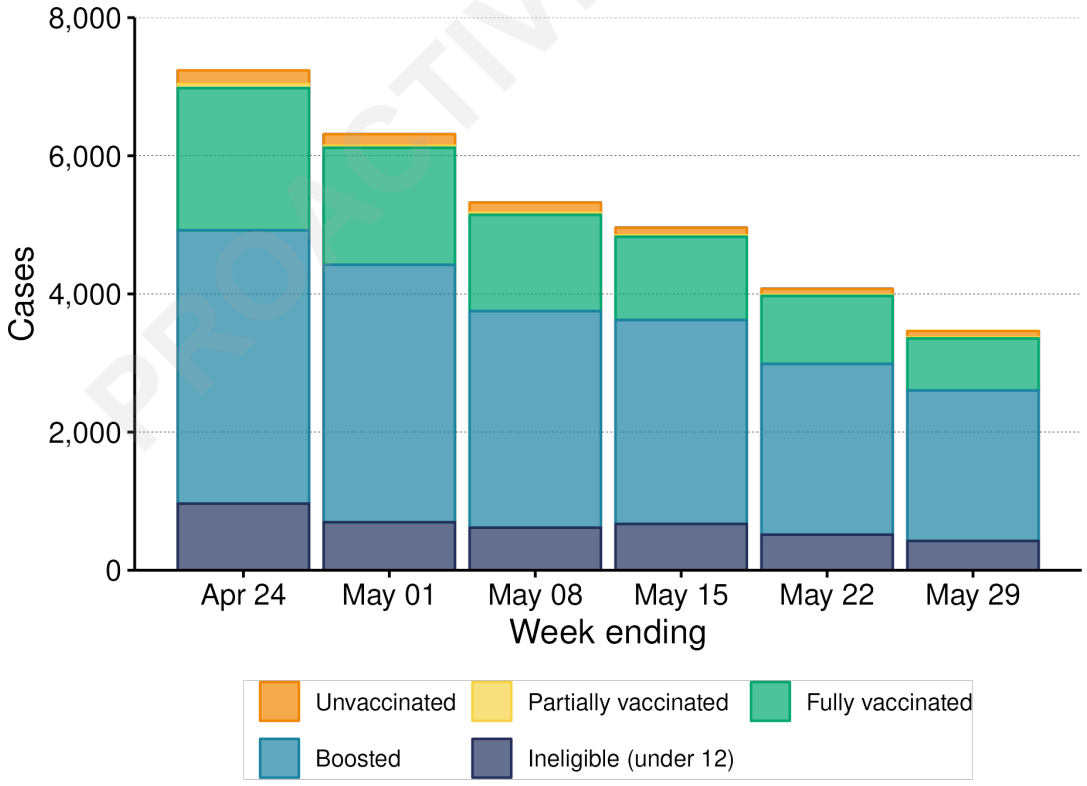
Canterbury DHB



South Canterbury DHB



Southern DHB



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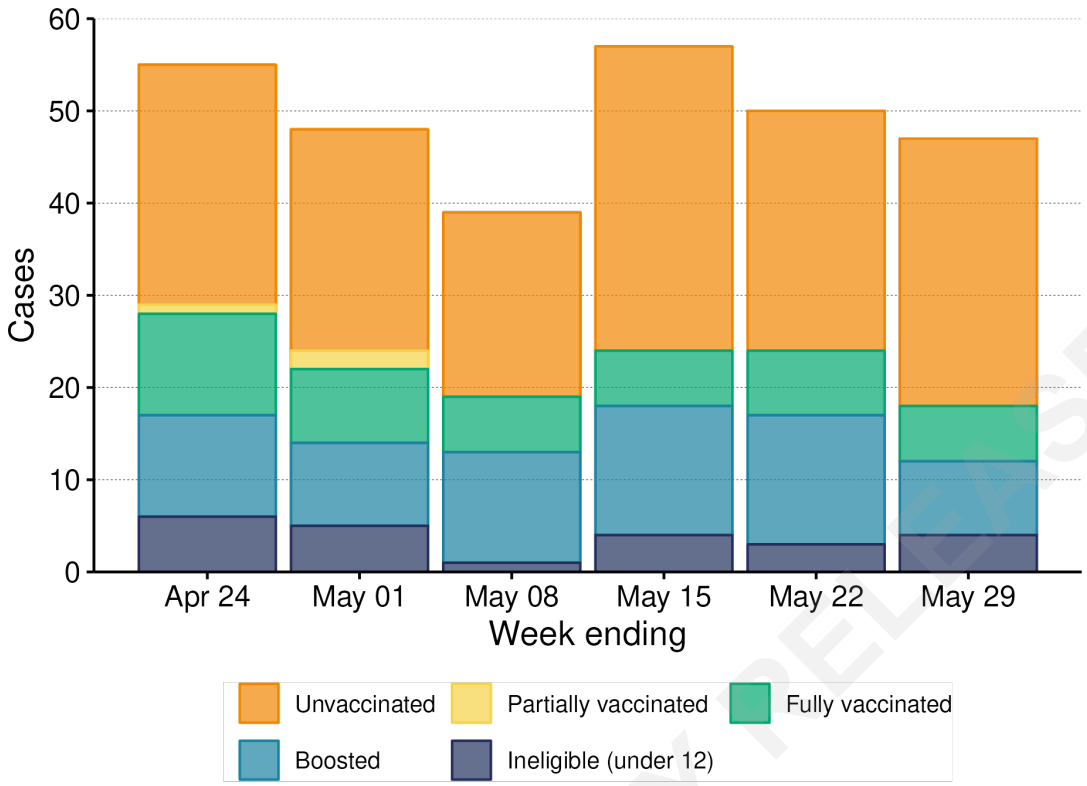

PCR Testing Rates