COVID-19

Trends and Insights Report

Updated 20 May 2022

Please note that this report should be distributed 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 epidemic 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; if unfamiliar with these data, it is strongly advised to review the sources, methods and limitations in the accompanying **Appendix** document.

Key insights from past 7 days

Infection Trends

- **Nationally, the weekly case rate was 10.8 per 1000** population for the week ending 15 May. This is a slight increase of 3% from 10.5 per 1000 in the previous week.
- **For the week ending 15 May**, the estimates suggest that **2.7% (864/32,028) of healthcare workers** and **1.8% (390/21,530) 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 (1.8% [18 per 1000] versus 10.8 per 1000**, respectively).
- Levels of viral RNA in wastewater **have again not changed significantly in any region;** although there is **evidence of an increasing level in Auckland Metro.** Contradictory to other evidence, **this may suggest there was no substantial decrease in any region in level of new infections over the past five weeks.** This suggests that there is an ongoing level of infections sustaining current trends and that they may even be increasing in some areas.
- In the past week, **twelve DHBs experienced an increase in case rates.** These were a 12% increase in Northland; 10% increase in Waitematā; 6% increase in Auckland; 16% increase in Counties Manukau; 7% increase in Bay of Plenty; 22% increase in Waikato; 9% increase in Tairāwhiti; 8% increase in Lakes; 4% increase in Taranaki; 5% increase in Hawkes Bay; 6% increase in West Coast; and 22% increase in South Canterbury.

Demographic Trends in Case Rates

- The **lowest case rates** are in **Pacific peoples (7.0 per 1000)** which have seen a **2.5% increase in the past week. Māori case rates have declined slightly** by 3%, and are now **7.9 per 1000.**
- In the **Southern region,** case rates have been highest for **European and Asian but these are now converging**.
- **For 5-14 age group, there have been increases across the motu.** In the past week, Northern region increased by 37%, Te Manawa Taki increased by 36%, Central increased by 26% and Southern increased by 29%.

- Case rates for those at higher risk of complications or severe illness from COVID-19 aged 45-64 and 65+ age groups **were highest in European or Other for 45-64 (11.7 per 1000) and Māori for 65+ (8.0 per 1000).**

Border Surveillance

- Imported cases initially increased as travel volumes increase, but are reducing since early May. About 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.
- For the week ending 15 May, a total of 503 imported cases were reported. Of these 503 cases, 232 (46%) had a follow up PCR test. **Of the 232 PCR tests for the week ending 15 May, 88 (38%) have been sequenced.**
- Out of **184,391 border arrivals between 04 April to 15 May 2022, 160,828 (87.2%) had a RAT test only, 2,938 (1.6%) had a PCR test, and 20,625 (11.2%) had no test recorded.** Of those who reported a RAT test, 36.3% can also be linked to having a PCR test.

Hospitalisation and Mortality

- For the week ending 16 May, the **national hospital occupancy rate was 7.8 per 100,000 population, an increase of 5.4% in the past week. Central region (6.1 per 1000) increased by 24% and Northern region (9.3 per 1000) increased by 16%**, while Te Manawa Taki (6.9 per 1000) increased slightly by 2.9%. Southern region hospital occupancy rate (7.6 per 1000) decreased by 15.5% in the past week.
- As of 19 May 2022, **1,022 people have died** with or after COVID-19 infection. Of these, **973 have died within 28 days** of being reported as a case.

International Insights and Health System Capacity

- Globally, after the continued decline observed since the end of March 2022, new weekly COVID-19 cases have stabilized during the reporting period (9 May to 15 May 2022), with **over 3.6 million cases reported, a 1% increase as compared to the previous week.**
- The number of new weekly deaths continues to decline, with over 9,000 fatalities reported during the same period, representing a 21% decrease as compared to the previous week.
- Western Australia recently experienced their largest surge in COVID-19 cases so far in the pandemic, **The current 7-day average of just over 14,000 cases**, though growth in cases is now slowing, the surge is markedly higher than the previous peak of just over 8,000 in early-April.

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 level case trends.
- The overall national picture is a continued plateau; however, an increase in cases has occurred in Te Manawa Taki and Northern regions. For the Northern region, cases have increased for the past three weeks.
- The increase in the Northern region is unlikely to be related to testing behaviours as a similar increase as been occurring in border workers who undergo routine testing. Additionally, there has been an increase in the levels of wastewater RNA in the Auckland Metro area.
- Infection levels are likely to be higher than the self-reported cases indicate as wastewater RNA has not decreased since early April in the Northern region 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.
    - Relaxation of risk reduction measures may already be playing out: There has been increases in cases observed 65+ year olds since 17 April.
- 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 31.7% increase in cases rates among 5–14 year-olds.
- New Omicron sub-variants are likely to start circulating in the community after multiple detections in recent arrivals in the previous few weeks.

Tertiary Care outlook

- There remains a substantial increase in risk for the elderly as infection in the older age groups had 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 and 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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Infections Trends

Summary of evidence for infection and case ascertainment trends

Currently, **the national border workforce case rates in the past week (18.1 per 1000) are higher than the general population (10.8 per 1000) case rates**; these rates were very different when comparing border workforce rates in the Northern region among 25-44 year-olds at 1.7% (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 remained similar to the week previous**.

Northern region was again the only region with an increase in case rates, border worker rates also increased suggesting that it is **not an artifact of testing behaviours**, but likely an increase in infection incidence. **Increases in Nothern region have been driven by increasing case rates in the Auckland DHBs**, with the **increase in the levels of viral RNA in Auckland Metro waste water** providing further evidence that **this reflects an increase in the underlying infection rate.**

Levels of viral RNA in wastewater have again not changed significantly in all regions outside of Auckland Metro. Contradictory to other evidence, **this could indicate there was no substantial decrease in any region in the underlying level of new infections in almost 2 months.**

Updated modelling based on three scenarios is now available; case rates are currently tracking between the two worse scenarios which assumes an increase in transmission as people return towards pre-COVID levels of social and work mixing after the initial Omicron peak. EpiNow forecasting is not available this week.

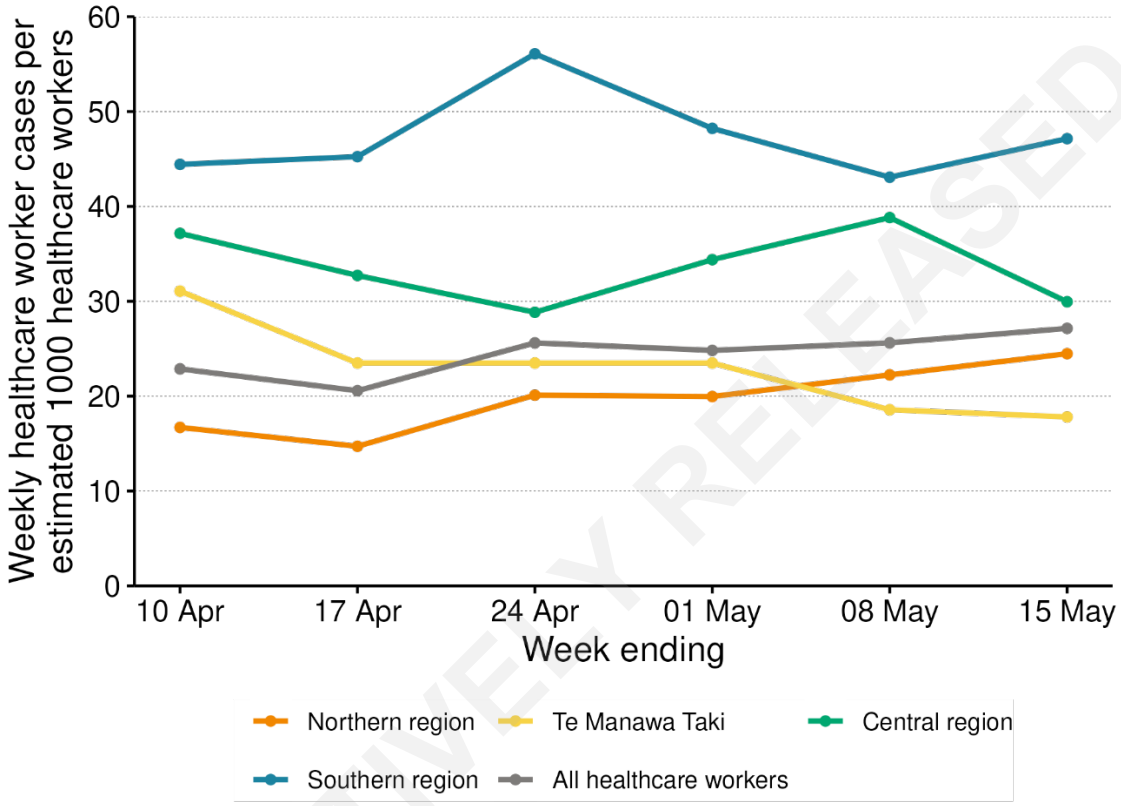
Approximation of underlying infection incidence

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.

[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.

For the week ending 15 May, estimates suggest that 2.7% (864/32,028) of healthcare workers (**Figure 1**) and 1.8% (390/21,530) 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 1.7%.

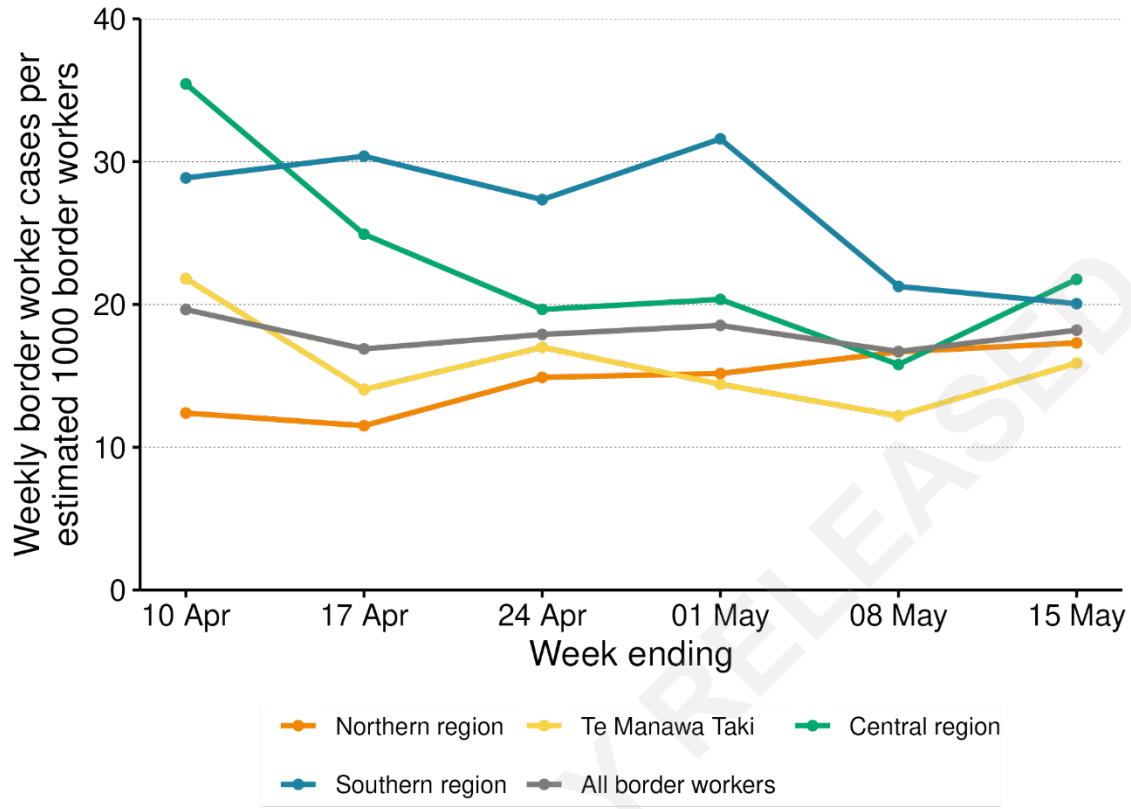
Figure 1: ***Regional weekly case rates of health care workers for weeks 10 April – 15 May 2022***



Source: Éclair/Episurv, 2359hrs 15 May 2022

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

Figure 2: ***Regional weekly case rates of border workers for weeks 10 April – 15 May 2022***

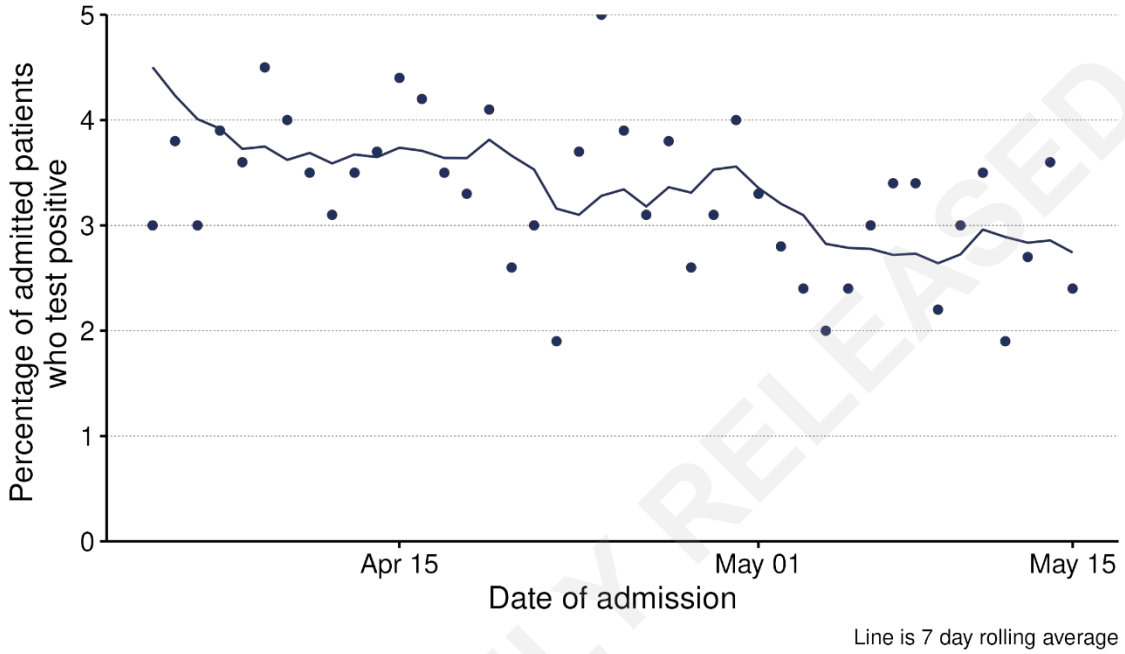


Source: Éclair/Episurv, 2359hrs 15 May 2022

Test positivity trends in Northern region hospital admissions

The Northern region inpatient positivity rates are shown in **Figure 3**. Since **peaking at ~15% in early March**, the Northern region hospital admissions **positivity have been relatively stable,** being 2.7% (205/7505) in the week ending 08 May and **2.7%** (212/7730) again in the week ending 15 May.

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



Source: Northern Region hospitalisation data, NCTS & EpiSurv as at 2359hrs 15 May 2022

Wastewater quantification

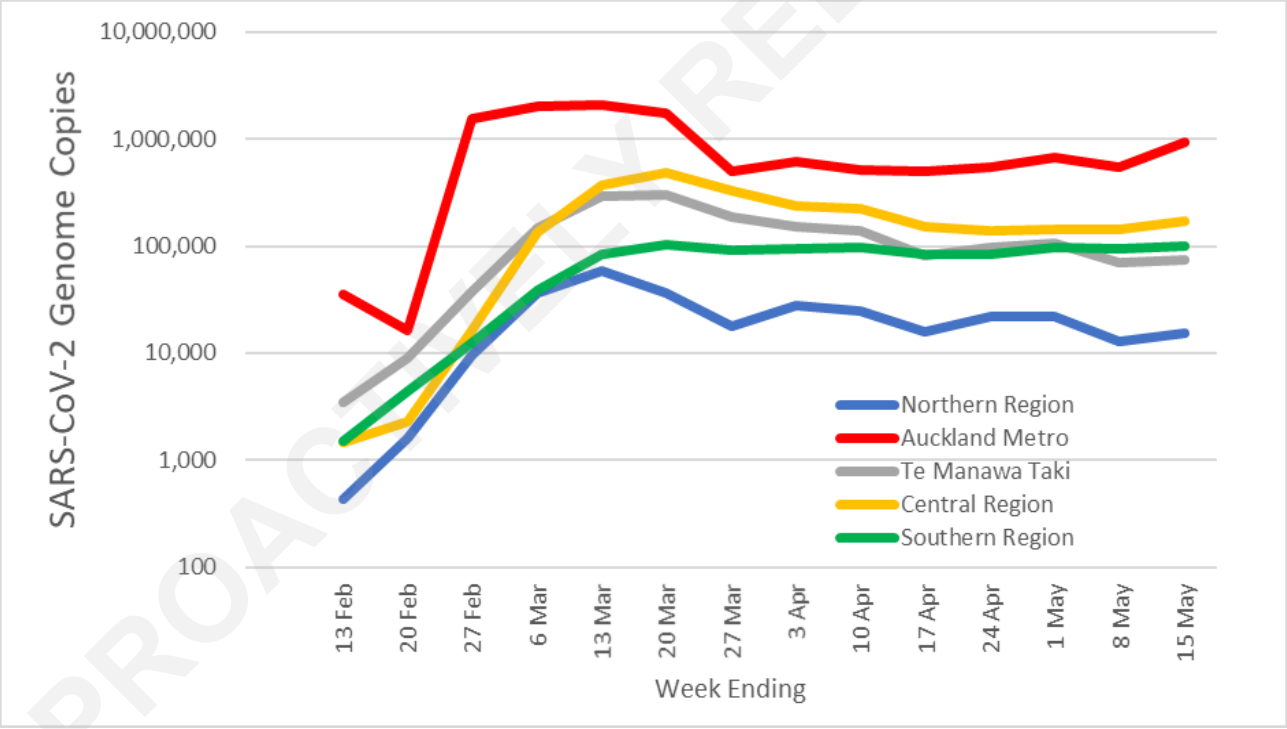
Figure 4 provides an overview of wastewater results by region. Please note that it is not appropriate to compare SARS-CoV-2 absolute levels by region; this figure can only be used to assess the trends *within* each region.

The SARS-CoV-2 RNA levels in wastewater **in Northern region** (excluding Auckland Metro) **have had small variations for the past four weeks but overall are trending downwards. Auckland Metro rates** have been relatively stable since the end of March, however, there has been a **substantial increase in the week ending May 15.**

Te Manawa Taki and Central regions had been slowly declining; **however, there is evidence that this decline has plateaued in the past three weeks for Central.** Southern region wastewater trends have been stable for the past two months.

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

Figure 4: ***Regional wastewater trends in SARS-CoV-2 genome quantification for weeks 13 February – 15 May 2022***



Source: ESR SARS-CoV-2 in Wastewater update for week ending 15 May 2022

Trends in diagnosed cases

Overall, **the weekly case rate was 10.8 per 1000** population for the week ending 15 May. This was **a 3% increase from the previous week,** which was 10.5 per 1000.

Figure 5 shows that case rates have varied across regions in the past week. **Central region (10.2 per 1000) decreased by 3% and Southern (14.0 per 1000) decreased by 6%, while Te Manawa Taki (8.5 per 1000) increased by 13% and Northern region (10.4 per 1000) increased by 11%.**

In the past week, **twelve DHBs experienced an increase in case rates.** These were a 12% increase in Northland; 10% increase in Waitematā; 6% increase in Auckland**; 16% increase in Counties Manukau;** 7% increase in Bay of Plenty; **22% increase in Waikato**; 9% increase in Tairawhiti; 8% increase in Lakes; 4% increase in Taranaki; 5% increase in Hawkes Bay; 6% increase in West Coast; and **22% increase in South Canterbury**.

DHB specific graphs for each region are shown in the **Appendix**.

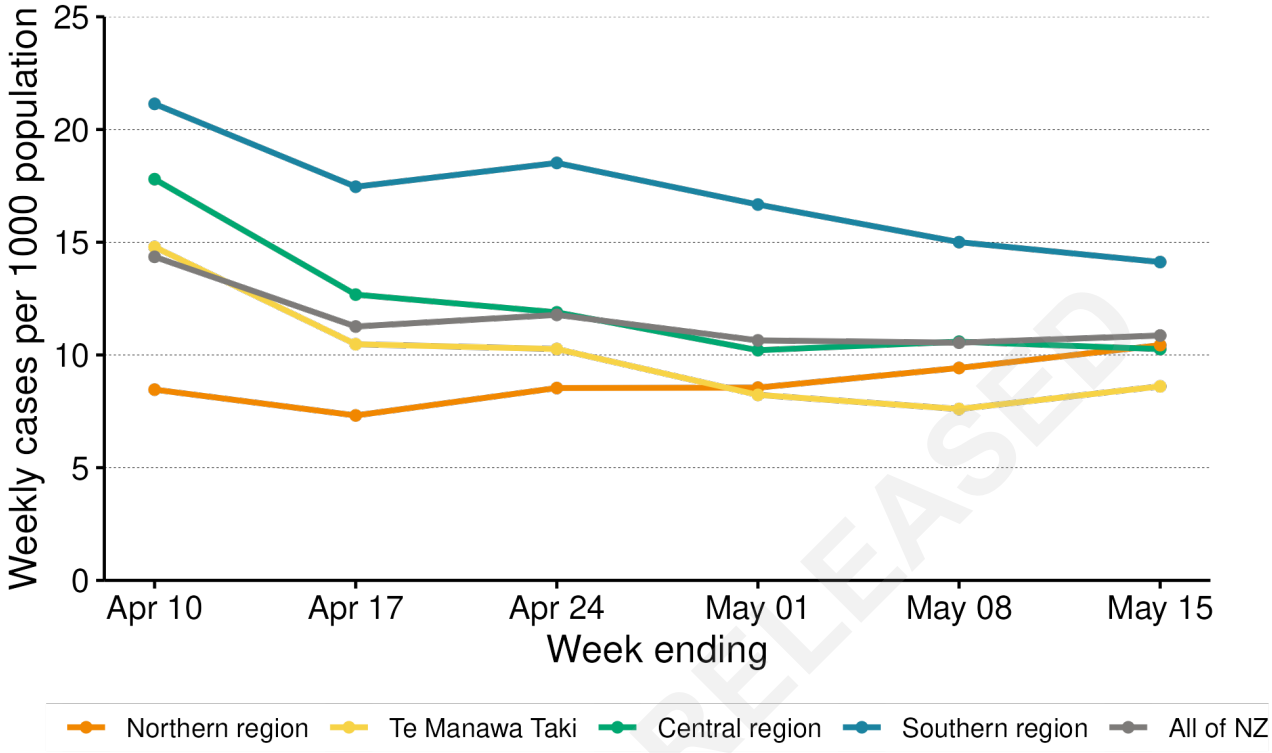
In the Northern region, the weekly case rate was highest **for Auckland DHB (11.7 per 1000)** followed closely by Waitematā DHB (11.6 per 1000). **Counties Manukau DHB (8.8 per 1000) has driven Northern Region increases** seen in the past week.

In Te Manawa Taki, weekly case rates were highest in **Waikato and Tarāwhiti (9.1 per 1000)**.

The highest weekly case rates in the Central region were in **Wairarapa (12.2 per 1000)**.

In the Southern region, the highest case rates were in **West Coast (15.2 per 1000)** followed by South Canterbury DHB (14.9 per 1000) and Southern DHB (14.8 per 1000).

Figure 5: ***Regional weekly case rates for weeks 10 April – 15 May 2022***



Source: NCTS/EpiSurv as at 2359hrs 15 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:

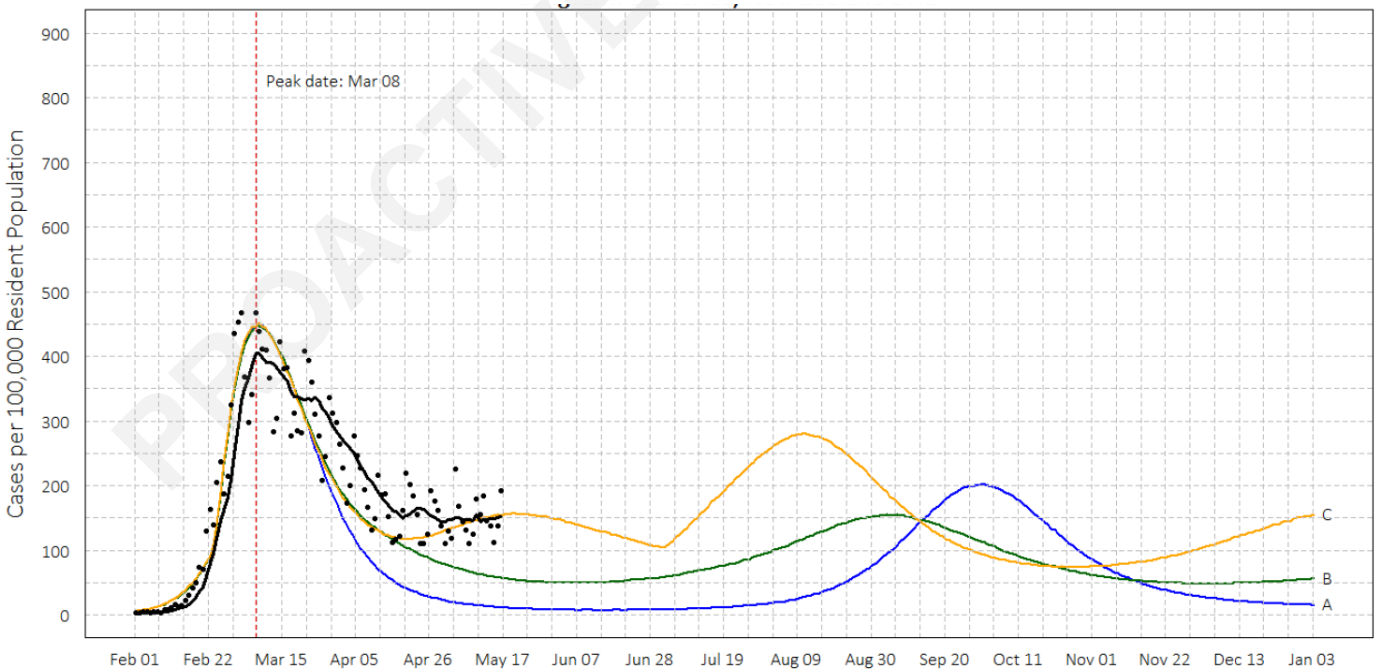
A. Small increase in mixing after the national peak in cases
B. Medium increase in mixing after the national peak in cases
C. Large increase in mixing after the national peak in cases and a shift in the distribution of cases towards older groups at the beginning of July, which has significant flow-on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

Compared to the scenarios released in February, the new 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.

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 17 May 2022

Effective reproduction rate, and forecasts of cases and infections

Due to technical issues with EpiNow forecasting, we have removed the following section from this week's edition of the Trends and Insights report.

Demographic trends in case rates

Ethnicity trends over time and by region

Figure 7 shows national case rates by ethnicity. **Figure 9** shows regional case rates by ethnicity.

In the past two weeks, rates in all ethnicities have remained quite stable across the motu. European or Other continue to have the highest weekly case rate at 11.9 per 1000 population. **The lowest case rates were in Pacific Peoples (7.0 per 1000**), a 2.5% increase from their case rate of 6.9 per 1000 the week prior. Māori case rates have declined slightly by 3% to 7.9 per 1000.

Case rates in the Northern region for European or Other were 12.1 per 1000 and rates for Asian were 10.5 per 1000. Māori had the second lowest case rate at 7.5 per 1000. Pacific Peoples (6.4 per 1000) continued to have the lowest case rates in this region.

Case rates for Te Manawa Taki were highest for European or Other (9.4 per 1000), comparable to Asian (9.2 per 1000) which had increased in the past week. Pacific Peoples (6.9 per 1000) and Māori (6.3 per 1000) have similar case rates.

Central region rates for Asian (9.4 per 1000) and European or Other (11.2 per 1000) have remained stable, while rates for Māori (7.6 per 1000) and Pacific Peoples (6.7 per 1000) have begun to decline in the past week.

In the Southern region, case rates were highest for Asian (14.6 per 1000) and European or Other (14.0 per 1000). Pacific Peoples (12.8 per 1000) had the lowest case rate with the next lowest being Māori (13.1 per 1000).

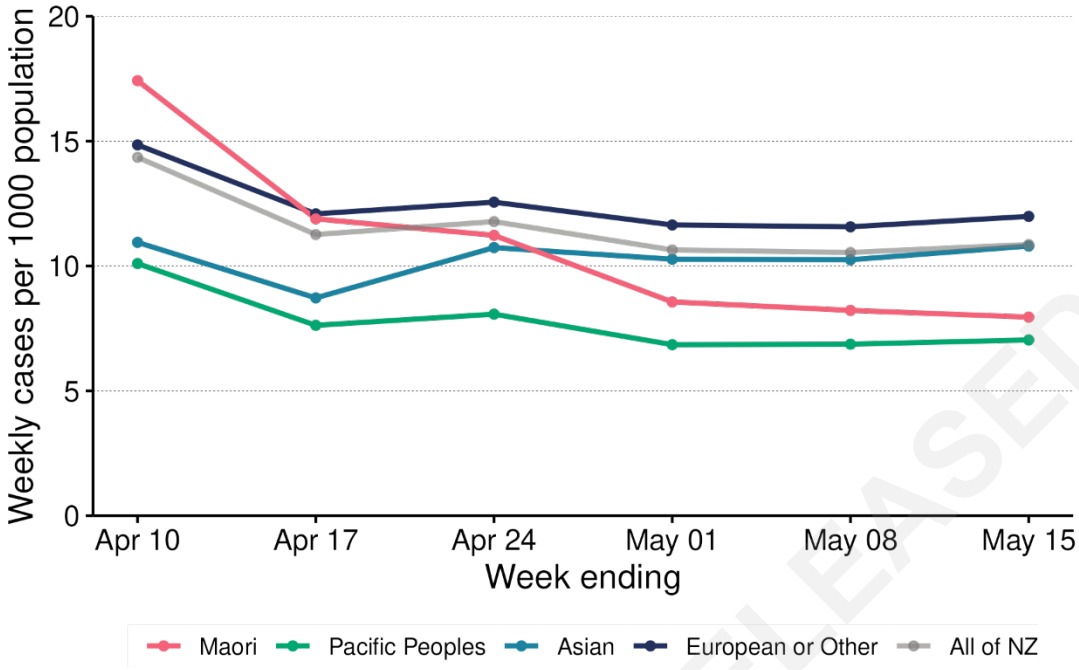
Figure 8 shows national case rates by ethnicity and further breakdown by age group. The **highest case rates** out of any cohort were **within those aged 15-24 of Asian ethnicity (16.2 per 1000)** whilst the lowest case rates were in those aged 0-4 of Pacific Peoples ethnicity (3.5 per 1000).

In the week ending 15 May, case rates have increased slightly in Asians aged 65+ from 5.0 per 1000 in the week ending 08 May, to 5.1 per 1000. Over a similar time frame, case rates in Pacific Peoples rose slightly in the 65+ age group, from 6.3 per 1000 for the week ending 08 May, to 7.1 per 1000 in the past week (+13%).

Case rates for those at higher risk of complications or severe illness from COVID-19, those aged 45-64 and 65+, were highest in European or Other for 45-64 (11.7 per 1000) and **Māori for 65+ (8.0 per 1000); the rate in Māori aged 65+ has been increasing in the past 2 weeks.**

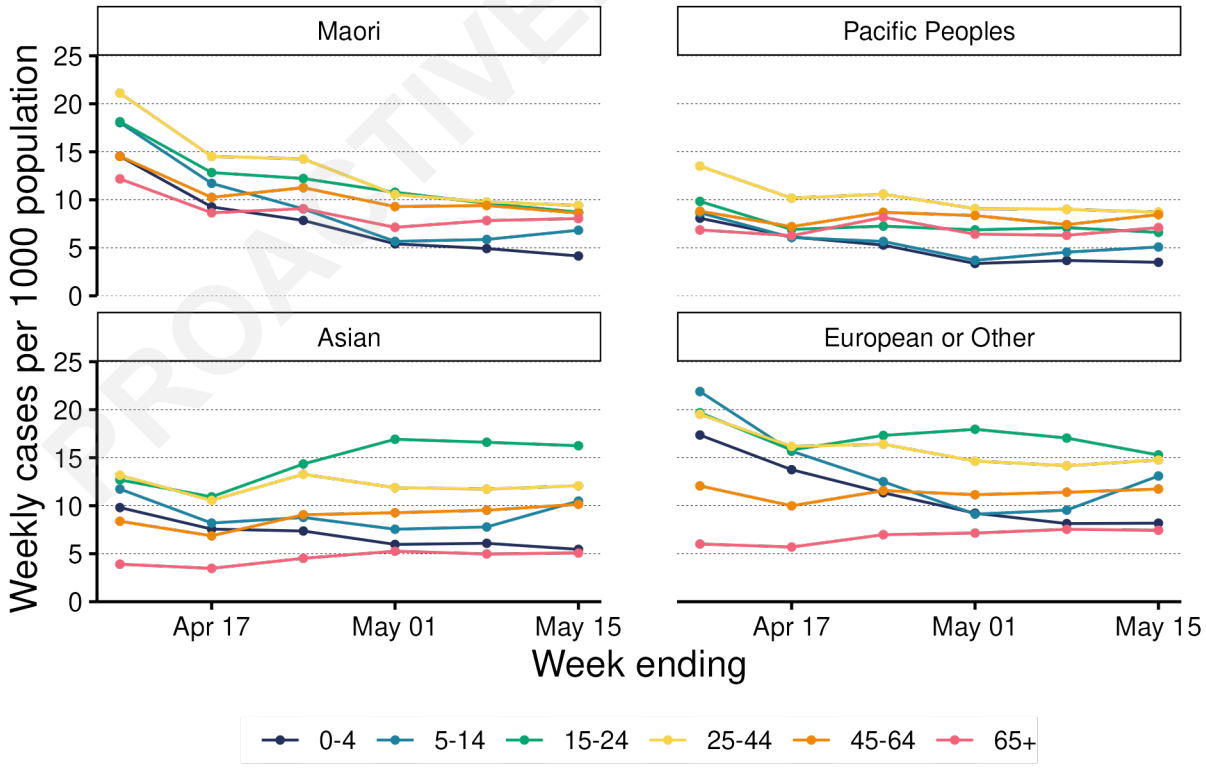
It is important to note that Māori and Pacific Peoples populations have lower life expectancies than other ethnicities in Aotearoa New Zealand. This could mean an increased risk for COVID-19 complications at a lower age than other ethnicities.

Figure 7: ***National weekly case rates by ethnicity for weeks 10 April – 15 May 2022***



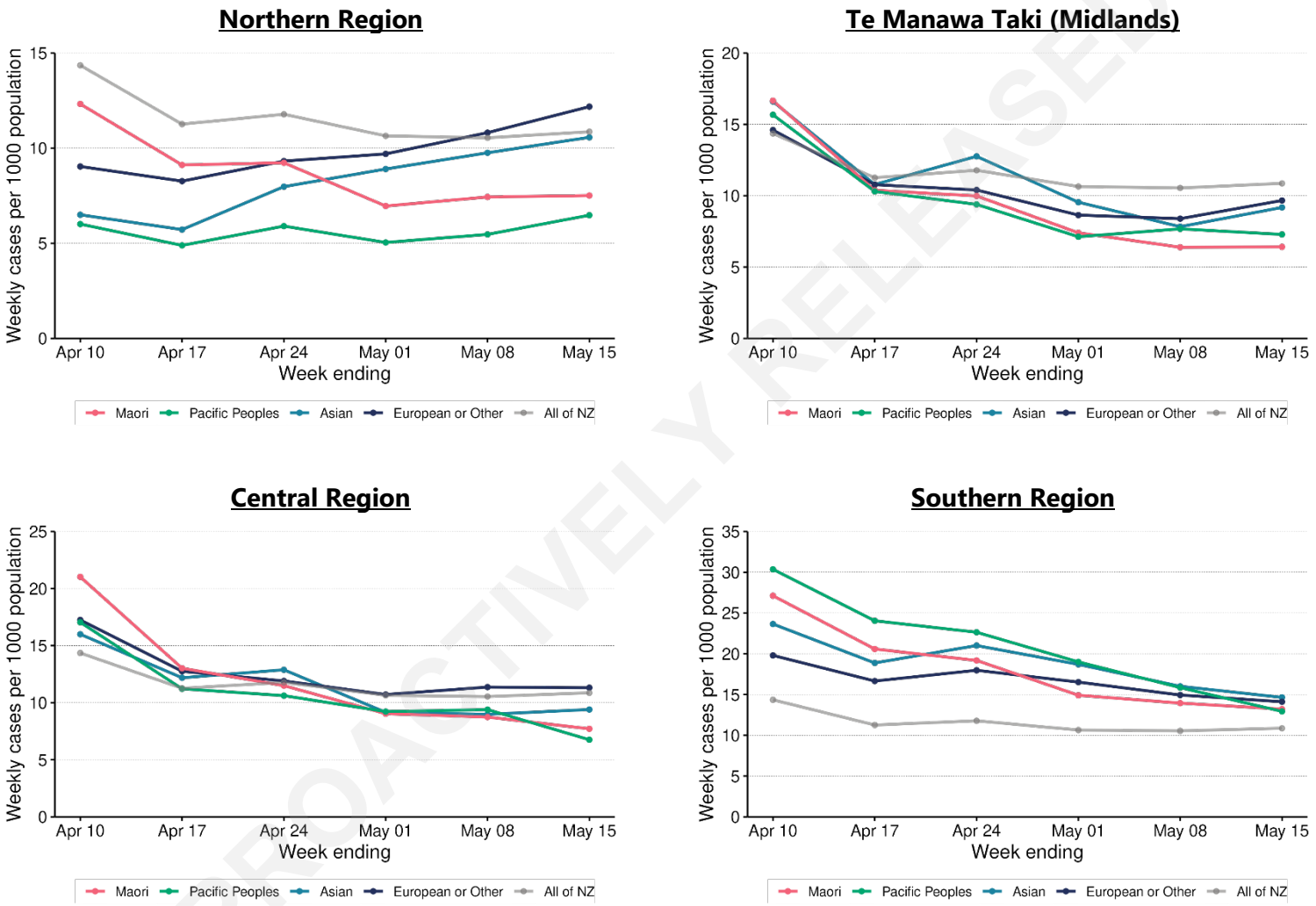
Source: NCTS/EpiSurv as at 2359hrs 15 May 2022

Figure 8: ***National ethnicity-specific weekly case rates by age group for weeks 10 April – 15 May 2022***



Source: NCTS/EpiSurv as at 2359hrs 15 May 2022

Figure 9: ***Regional weekly case rates by ethnicity for weeks 10 April – 15 May 2022***



Source: NCTS/EpiSurv as at 2359hrs 15 May 2022

Age trends over time and by region

Figure 10 shows community cases by age nationally. Case rates in the 15-24 age group are decreasing; case rates in the 0-4 age group are still declining but are slowing; case rates among people aged 65+ are stable; while case rates for 25-44 and 45-64 age groups increased slightly. **Case rates for the 5-14 age group increased by 31.7% in the past week**.

Nationally, **case rates were similar for 0-4 and 65+ age groups (6.2 and 7.3 per 1000 respectively) and relatively similar for 15-24, 25-44 and 45-64 age groups (10.4, 13.1, 13.0 and 11.0 per 1000 respectively)** in the past week. Those aged 0-4 continued to have the lowest weekly case rate at 6.2 per 1000, followed by the 65+age group at 7.3 per 1000.

Regional patterns of age group infection were similar to the pattern observed nationally, with case rates for most groups trending between 5 per 1000 and 15 per 1000 since late April. Southern region case rates have been trending slightly higher than the rest of the country for all age groups; **see Appendix.**

For the 0-4 age group, case rates in the Northern region remained the same, Te Manawa Taki decreased by 6%, Central decreased by 7% and Southern decreased by 7% in the past week.

For the 5-14 age group, case rates increased across the motu. The Northern region increased by 37%, Te Manawa Taki increased by 34%, Central increased by 26% and Southern increased by 29% in the past week.

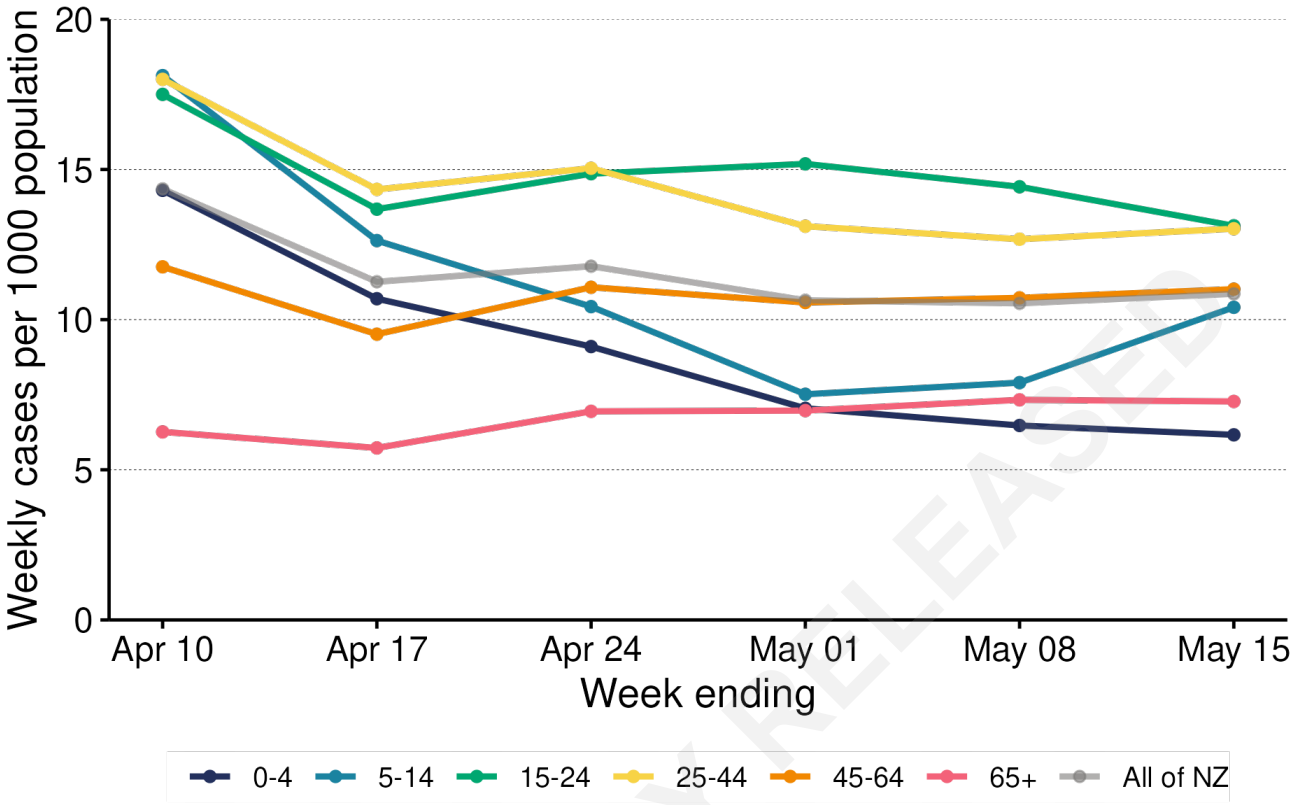
For the 15-24 age group, case rates in the Northern region decreased by 8%, Te Manawa Taki increased by 13%, Central decreased by 18% and Southern decreased by 15% in the past week.

For the 25-44 age group, case rates in the Northern region increased by 9%, Te Manawa Taki increased by 12%, Central decreased by 6% and Southern decreased by 4% in the past week.

For the 45-64 age group, case rates in the Northern region increased by 15% and Te Manawa Taki increased by 8%, while Central decreased by 1% and Southern decreased by 10% in the past week.

For the 65+ age group, case rates in the Northern region increased by 22%, Te Manawa Taki increased by 4%, Central decreased by 2% and Southern decreased by 20% in the past week.

Figure 10: ***National weekly case rates by age for weeks 10 April – 15 May 2022***



Source: NCTS/EpiSurv as at 2359hrs 15 May 2022

Housing Deprivation trends over time, by ethnicity and by region

Figure 11 shows case rates based on the Index of Multiple Deprivation 2018 housing deprivation scores. Housing is a key determinant of COVID-19 both in terms of risk and protection. Areas of high deprivation are ones where there is a higher number of renters, overcrowding and lack of amenities. 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 (13.2 per 1000 population),** followed by areas of mid-range deprivation (11.3 per 1000) and areas most deprived (8.3 per 1000).

Access to RATs and to an internet connection to report RAT results are 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 Asian ethnicity (10.4 per 1000) followed by those of European or Other ethnicity (10.2 per 1000). Cases in Pacific Peoples were the lowest in areas most deprived (5.2 per 1000) but second highest in areas least deprived (13.1 per 1000), following European or Other (13.5 per 1000).

For the most deprived areas, cases in Māori made up 21% of cases despite only making up 15% of the total population. The proportion of cases in the most deprived areas for Pacific Peoples was 10%, for Asian 16% and for European and Other was 53%. Following this, 79% of cases in areas of least deprivation were European and Other compared with 12% being Asian, 6% Māori and 2% Pacific Peoples.

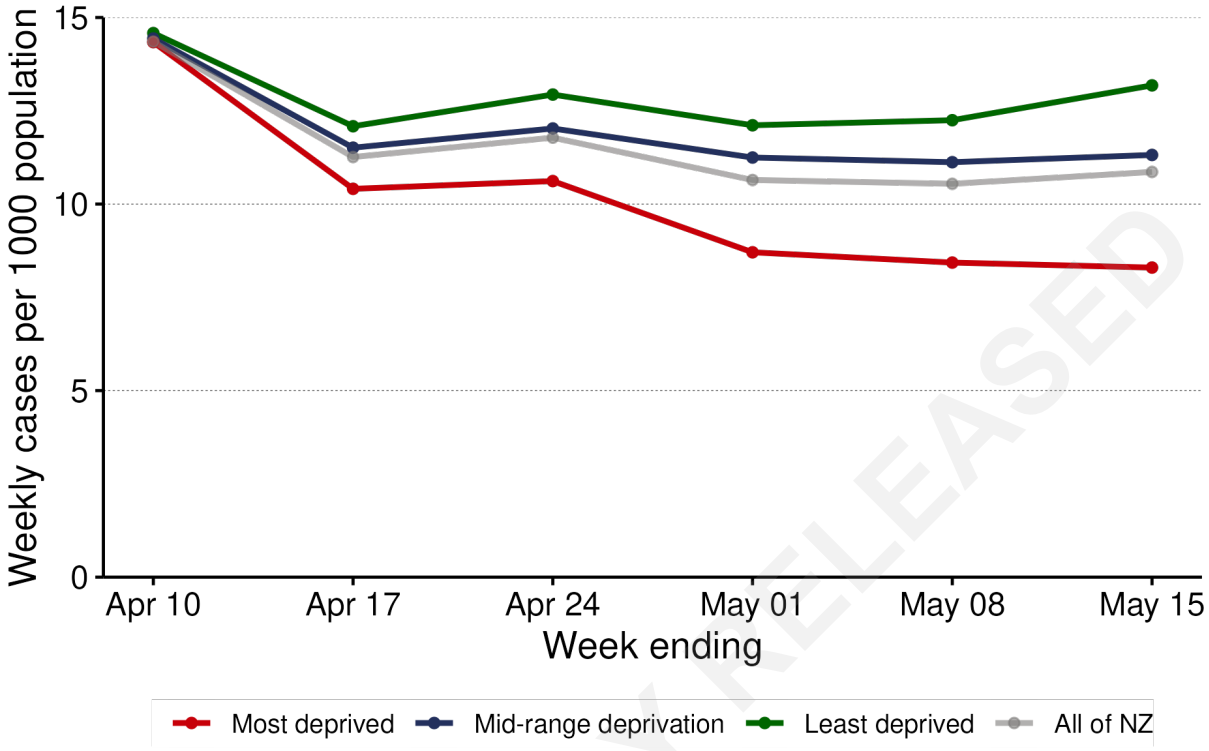
In the Northern region, case rates were highest in the least deprived areas (12.9 per 1000 population) followed by areas of mid-range deprivation (11.2 per 1000) and areas most deprived (7.4 per 1000) (see **Appendix**). Since the week ending 01 May, the Northern region has seen case rates increase across all areas of deprivation, **particularly in areas most deprived where case rates have increased by 18.3% in the past two weeks.**

In Te Manawa Taki region, case rates were highest in the least deprived areas (10.6 per 1000) followed by areas of mid-range deprivation (9.1 per 1000) and areas most deprived (7.5 per 1000).

In the Central region, case rates were highest in the least deprived areas (12.1 per 1000) followed by areas of mid-range deprivation (10.7 per 1000) and areas most deprived (8.0 per 1000).

In the Southern region, case rates were highest in the least deprived areas (15.7 per 1000) followed by areas of mid-range deprivation (13.9 per 1000) and areas most deprived (12.2 per 1000).

Figure 11: ***National weekly COVID-19 case rates by deprivation status for weeks 10 April – 15 May 2022***



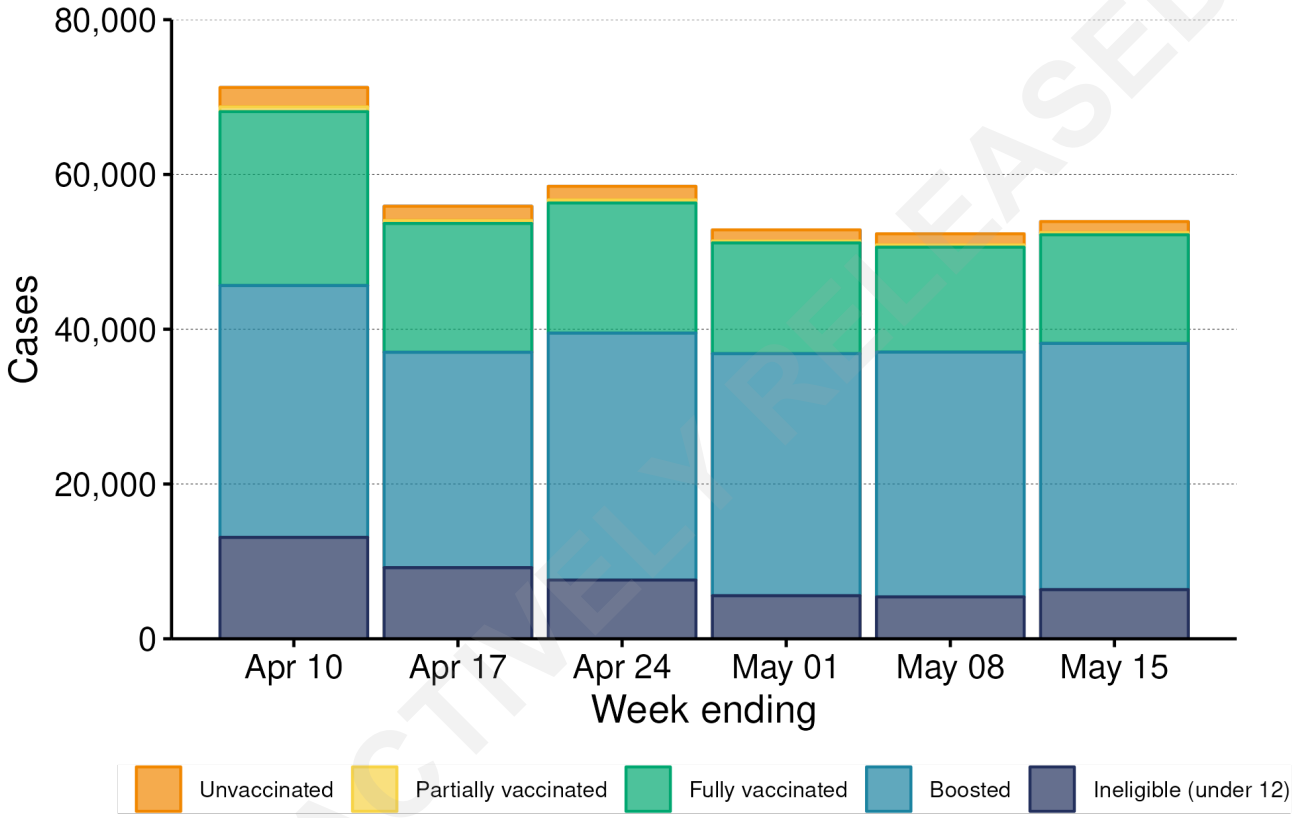
Source: NCTS/EpiSurv as at 2359hrs 15 May 2022

Vaccination trends over time

Figure 12 shows community case numbers by vaccination status nationally. The proportion of boosted cases are similar to the week prior at 59% of all cases in the week ending 15 May. The proportion reported as fully vaccinated are also similar to the week prior at 26% 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[3] is 11.8%. The proportion of cases reported as partially vaccinated remains relatively constant at 0.5% while cases reported in those unvaccinated remains similar to the week prior at 2.6%.

Figure 12: ***National weekly case numbers by vaccination status for weeks 10 April – 15 May 2022***



Source: NCTS/EpiSurv as at 2359hrs 15 May 2022

[3] 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. Testing rates and test positivity are shown for PCR testing only in the **Appendix**. 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 representative of the current testing state of New Zealand.

Whole Genomic Sequencing of Community cases

Figure 13 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 over 97% 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. The proportion of BA.1 cases sequenced continues to decline.

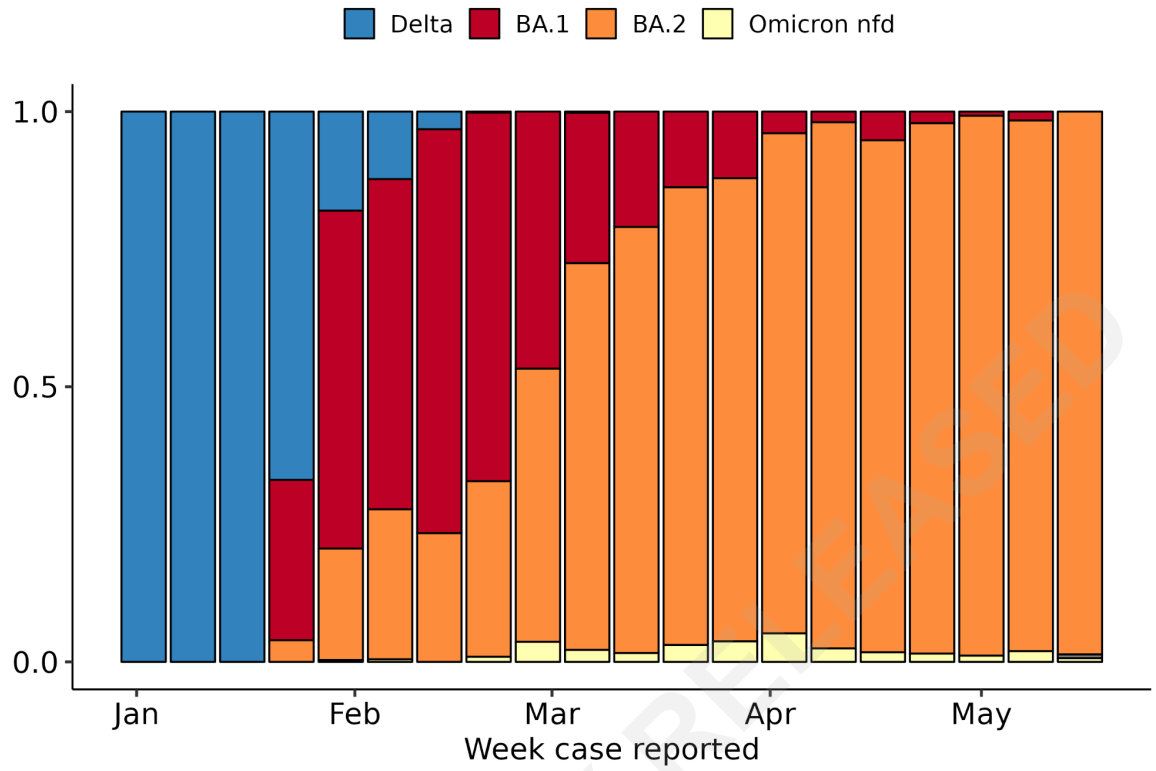
ESR's latest wastewater report indicates that between 01 May and 07 May, BA.2 was the dominant Omicron subvariant across the motu. Delta was not detected, and for the first time, none of the sentinel sites yielded BA.1 genomes – in this sampling window, 100% of wastewater detections were BA.2.

Based on WGS data generated over the course of the Omicron wave, ESR estimate that 82% of all community cases (~1.03 million cases) reported since 20 January 2022 have been the BA.2 variant (**Figure 14**).

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.

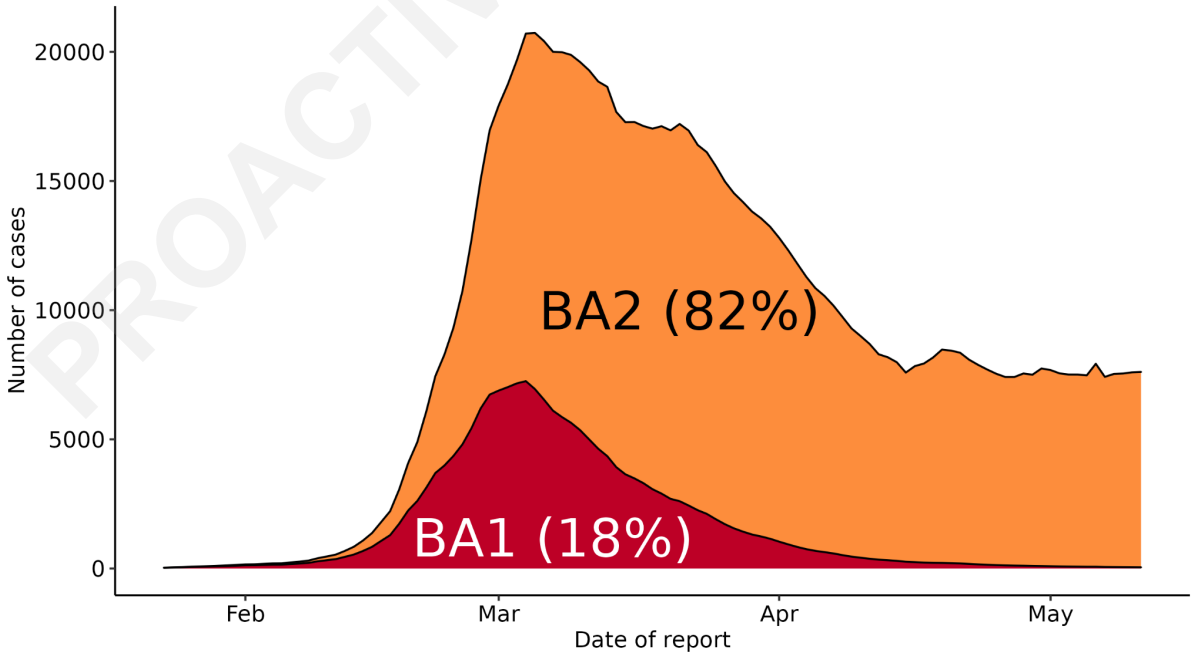
Please see the caveats in the notes section of the **Appendix.**

Figure 13: ***Frequency of Variants of Concern in community cases in New Zealand***



Source: ESR COVID-19 Genomics Insights Report #6, EpiSurv/Microreact 0900hrs 18 May 2022

Figure 14: ***Estimated contribution of BA.1 and BA.2 community cases in New Zealand since 20 January 2022***



Source: ESR COVID-19 Genomics Insights Report #6, 0900hrs 18 May 2022

Border Surveillance

Cases detected at the Air Border

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

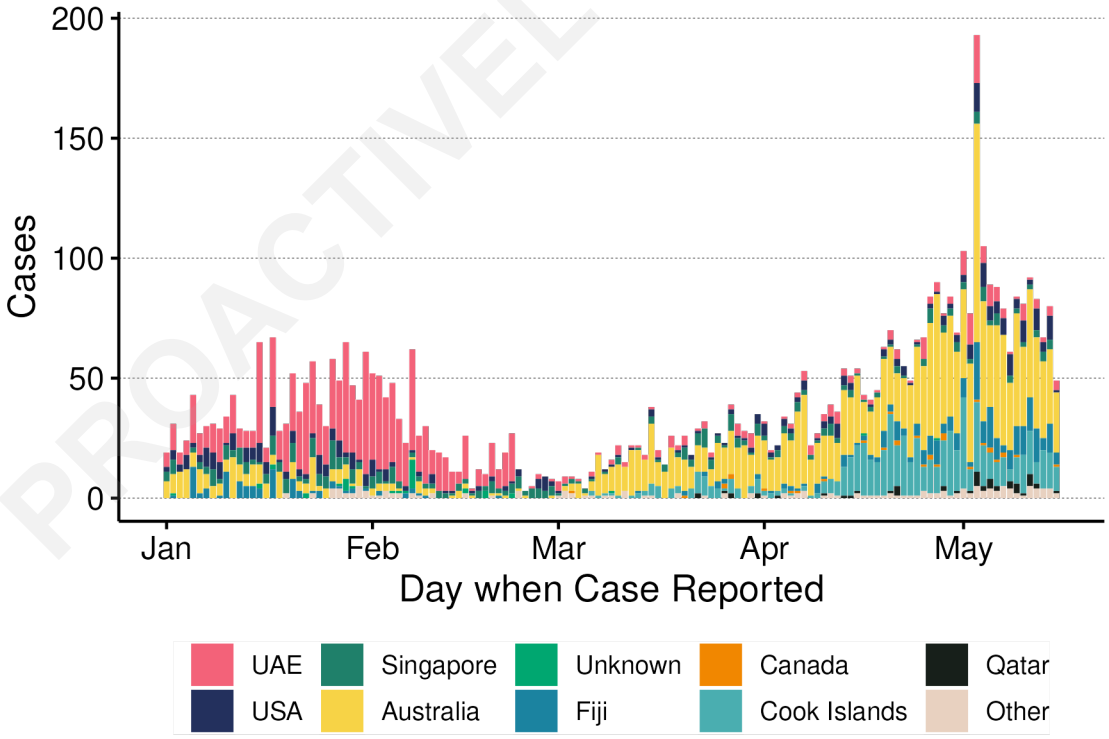
About 2% of recent arrivals were reported as cases. This is above the rates seen in arrivals from Australia during quarantine-free travel in 2021, and above the 1% estimate used for planning Reconnecting New Zealand.

Figure 15 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.

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 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 15: ***Cases reported in post-arrival testing by country of flight origin, 01 January – 15 May 2022***



All border cases to 11:10 AM, Monday 16 May 2022
Cases counted from midnight to midnight

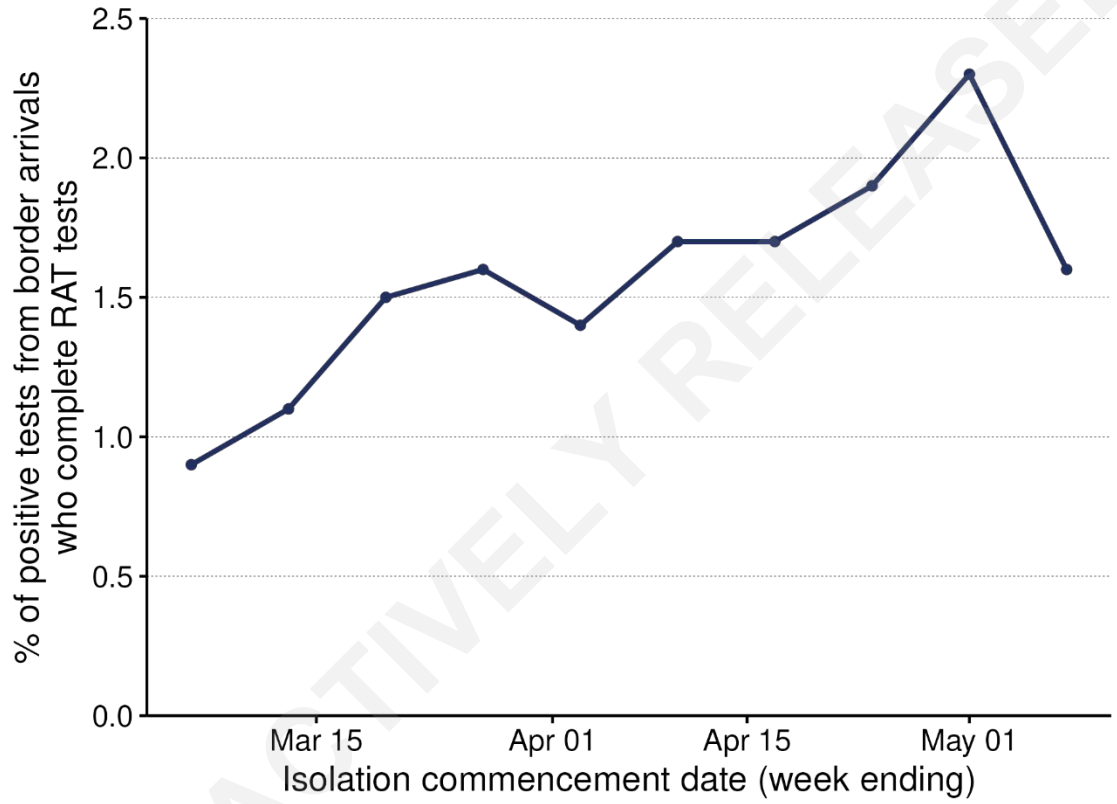
Source: NCTS/EpiSurv as at 2359hrs 15 May 2022

Testing of Border arrivals

Figure 16 shows that the percentage of positive tests among border arrivals (who reported a test) was between 1 and 2% for the period 01 March – 15 May 2022.

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.

Figure 16: ***Perecentage of positive tests from border arrivals who complete RAT tests, 01 March - 15 May 2022***



Whole Genomic Sequencing of Imported cases

Out of 1,156 imported cases in the two weeks ending 15 May, 337 cases (29%) have been sequenced.

Figure 17 shows the number and proportion of cases sequenced since the beginning of March. For the week ending 15 May, a total of 503 imported cases were **reported**. Of these 503 cases, 232 (46%) had a follow up PCR test.

Of the 232 PCR tests for the week ending 15 May, 88 (38%) have been sequenced.

Please note that WGS can be incomplete for recent cases.

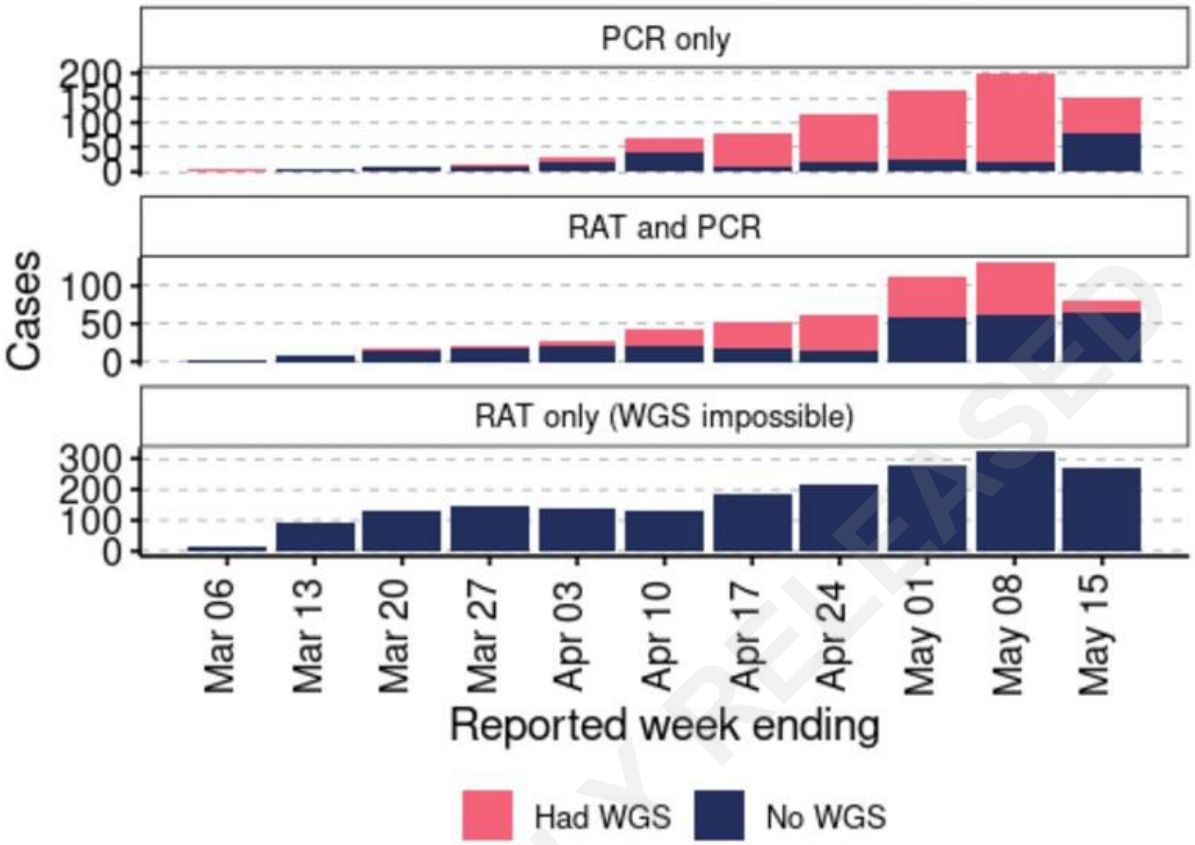
Figure 18 shows the number of border arrivals by testing type between 04 April – 15 May 2022. Out of 184,391 arrivals, 160,828 (87.2%) had a RAT test only, 2,938 (1.6%) had a PCR test, and 20,625 (11.2%) had no test recorded. For those with no test recorded, some of these may have done a RAT test but not uploaded or reported their result.

Figure 19 shows the number of imported cases receiving WGS by testing type between 04 April – 15 May 2022. Out of those who reported a RAT test, 36.3% can also be linked to having a PCR test.

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.

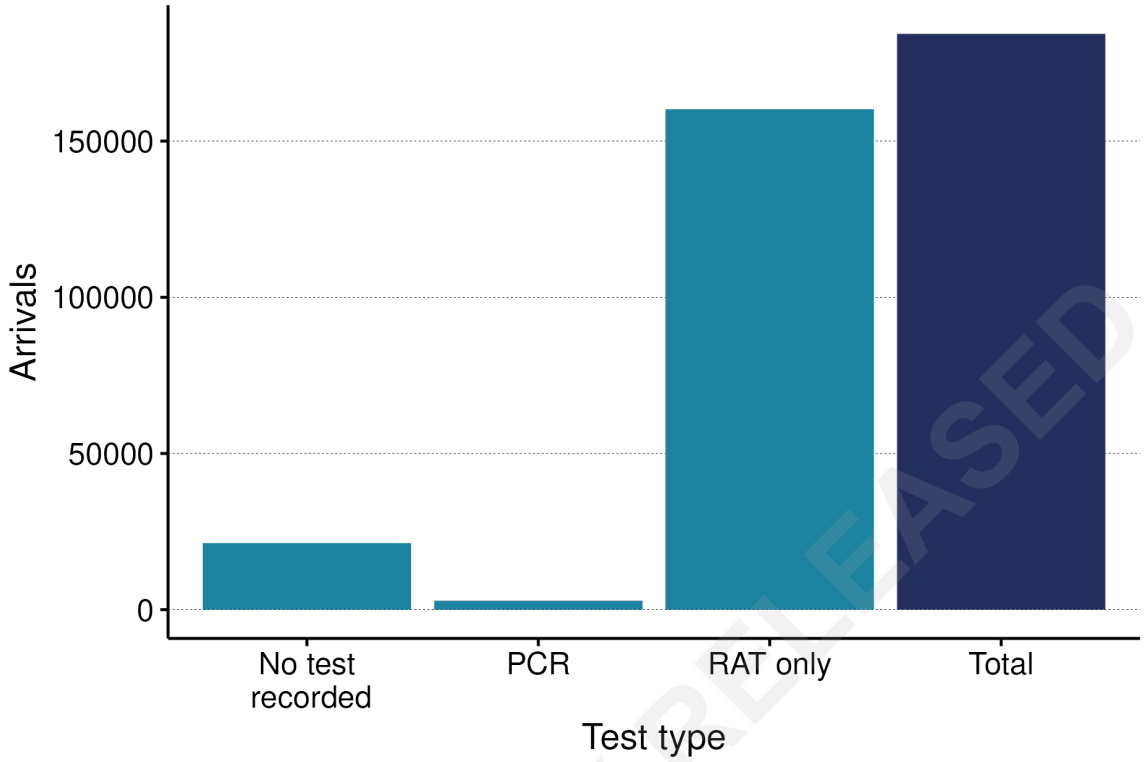
Figure 17: ***Imported cases receiving WGS by testing type and by reported week ending 15 May***



Sources: NCTS/EpiSurv as at 2359hrs 15 May 2022, ESR WGS 13 May 2022[4]

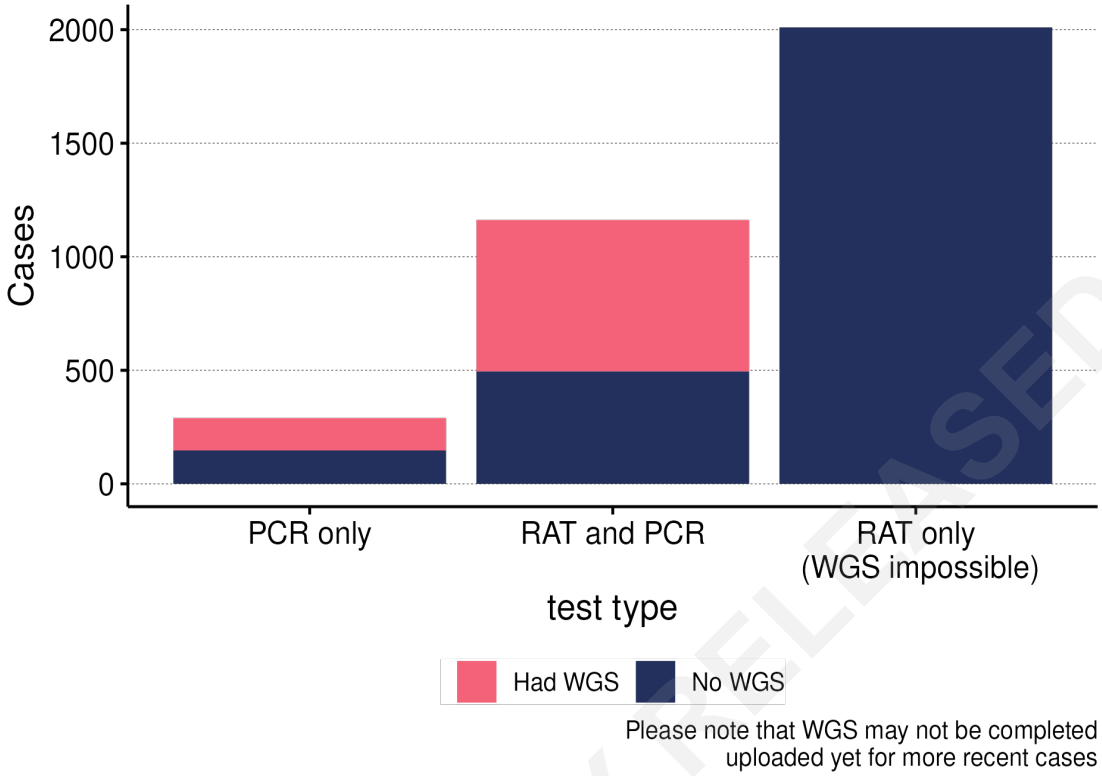
[4] Please note that WGS may not be completed/uploaded yet for more recent cases

Figure 18: ***Border arrivals by testing type, 04 April – 15 May 2022***



Sources: NCTS/EpiSurv/MyCOVIDApp as at 2359hrs 15 May 2022

Figure 19: ***Imported cases receiving WGS by testing type, 04 April – 15 May 2022***



Sources: NCTS/EpiSurv/MyCOVIDApp as at 2359hrs 15 May 2022, ESR WGS 13 May 2022

Hospitalisation and Mortality

Hospitalisation Rates

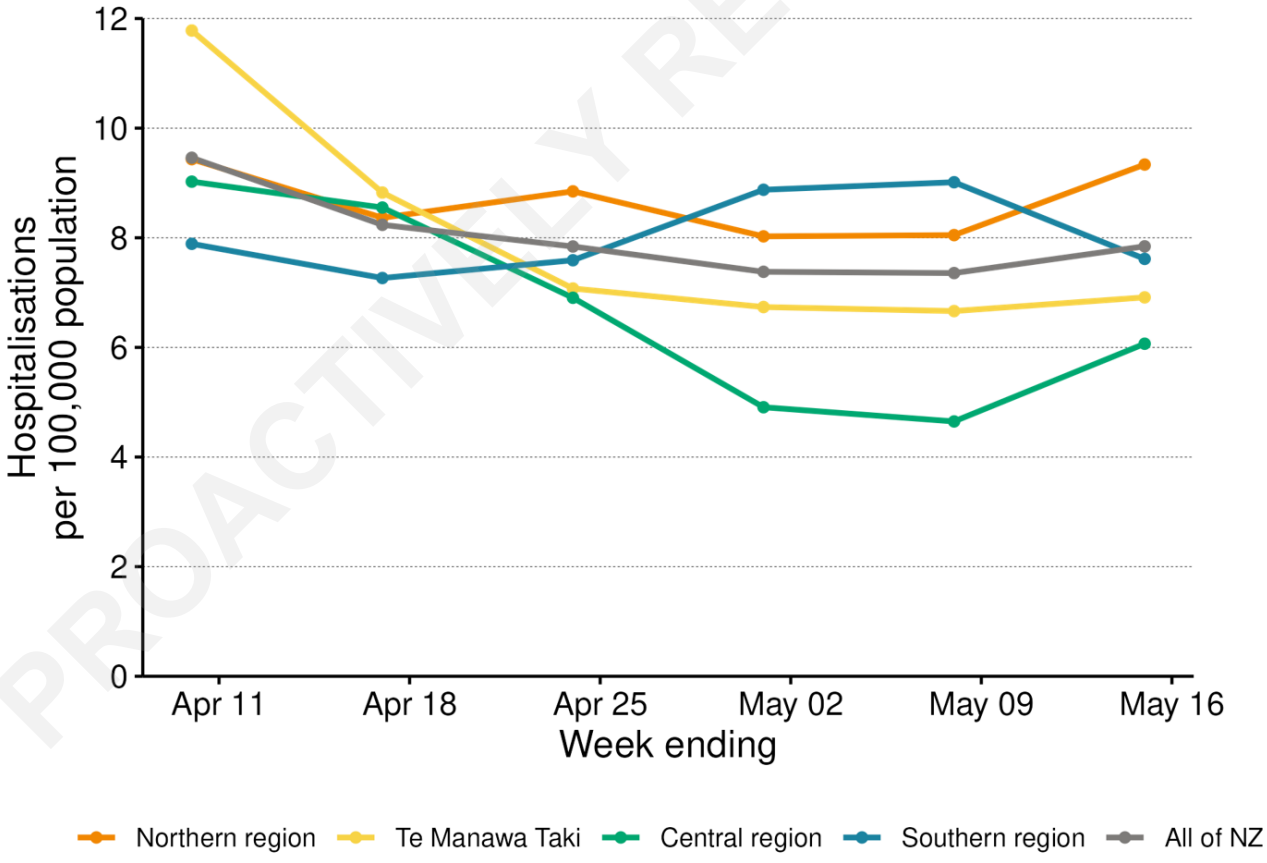
Due to varying definitions of an active case, there may be regional differences in the coding of COVID-19 infection status for hospitalisations.

Hospital Occupancy

For the week ending 16 May, the **national hospital occupany rate was 7.8 per 100,000 population, an increase of 5.4% in the past week** (**Figure 20**: *Regional weekly*).

Figure 20: *Regional weekly* shows that hospital occupancy rates have varied across regions in the past week. **Central region (6.1 per 1000) increased by 24% and Northern region (9.3 per 1000) increased by 16%**, while Te Manawa Taki (6.9 per 1000) increased slightly by 2.9%. **Southern region hospital occupancy rate (7.6 per 1000) decreased by 15.5% in the past week.**

Figure 20: ***Regional weekly hospital occupancy rate per 100,000 population by region, 11 April – 16 May 2022***



Source: Daily hospital questionnaire as of 16 May 2022

Hospitalisation rates by age and ethnicity in the Auckland Metro DHBs

Due to ongoing data issues with the demographic breakdown of hospitalisations we have removed the following section from this week's edition of the Trends and Insights report.

Whole Genomic Sequencing of hospitalised cases

As of 15 May, ESR had received samples from 30 of the 102 PCR positive cases who were hospitalised in the week to 13 May 2022. Of these, 25 (83%) had a BA.2 genome, 4 (13%) failed and 1 (3%) had not been sequenced.

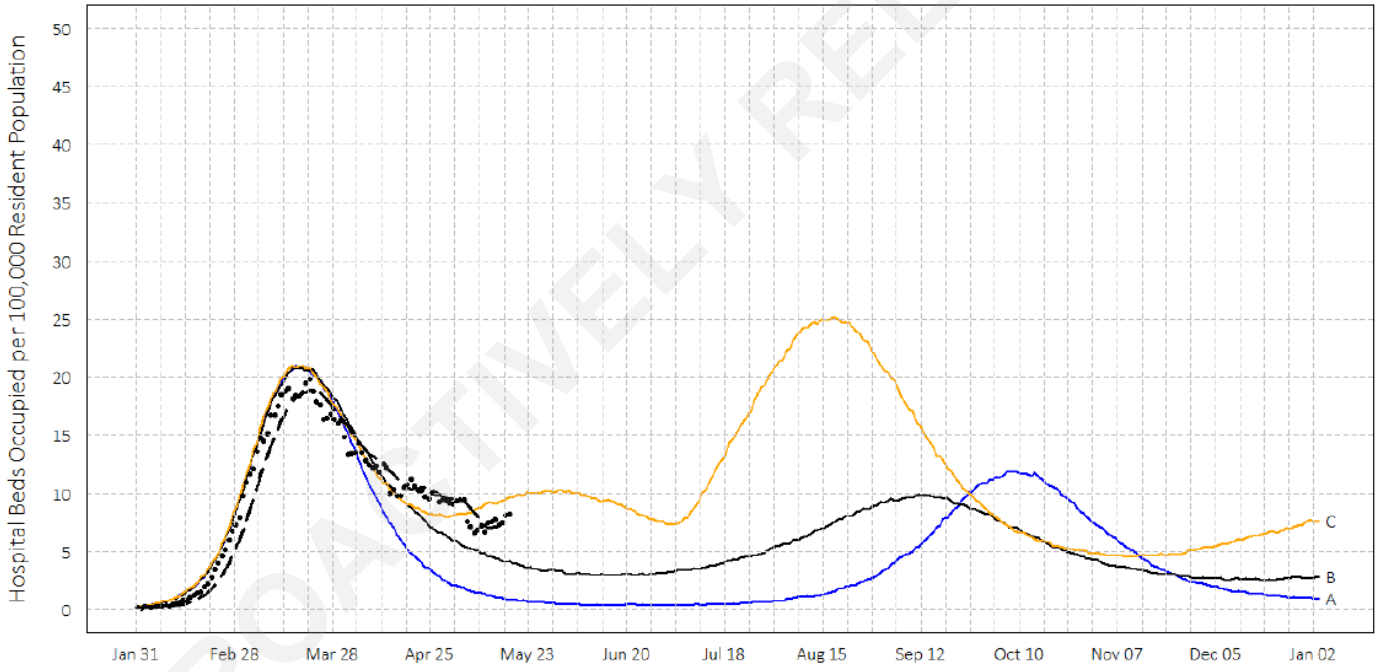
ESR now receives a daily list of active COVID-19 cases who tested positive in the past 14 days and were hospitalised in the past 7 days. ESR is working with the Ministry of Health to receive information on which cases have been admitted to ICU/HDU.

COVID-19 hospitalisations predicted and actual

COVID19 Modelling Aotearoa's modelling scenarios include hospitalisations of people with COVID infections (**Figure 21**).

In the last weeks, the number of hospital beds occupied by people with confirmed COVID infections has fallen below 10 per 100,000 population. This count includes people hospitalised for any reason, and is between the modelled Scenarios B and C.

Figure 21: ***Modelled and actual hospital occupancy, all DHBs, Jan 2022 – Jan 2023***



Sources: COVID-19 Modelling Aotearoa Branching Process Model April 2022, and DHB reports to Ministry of Health of daily hospital occupancy (all COVID-19 positive people admitted as inpatients) as of 17 May 2022.

Mortality

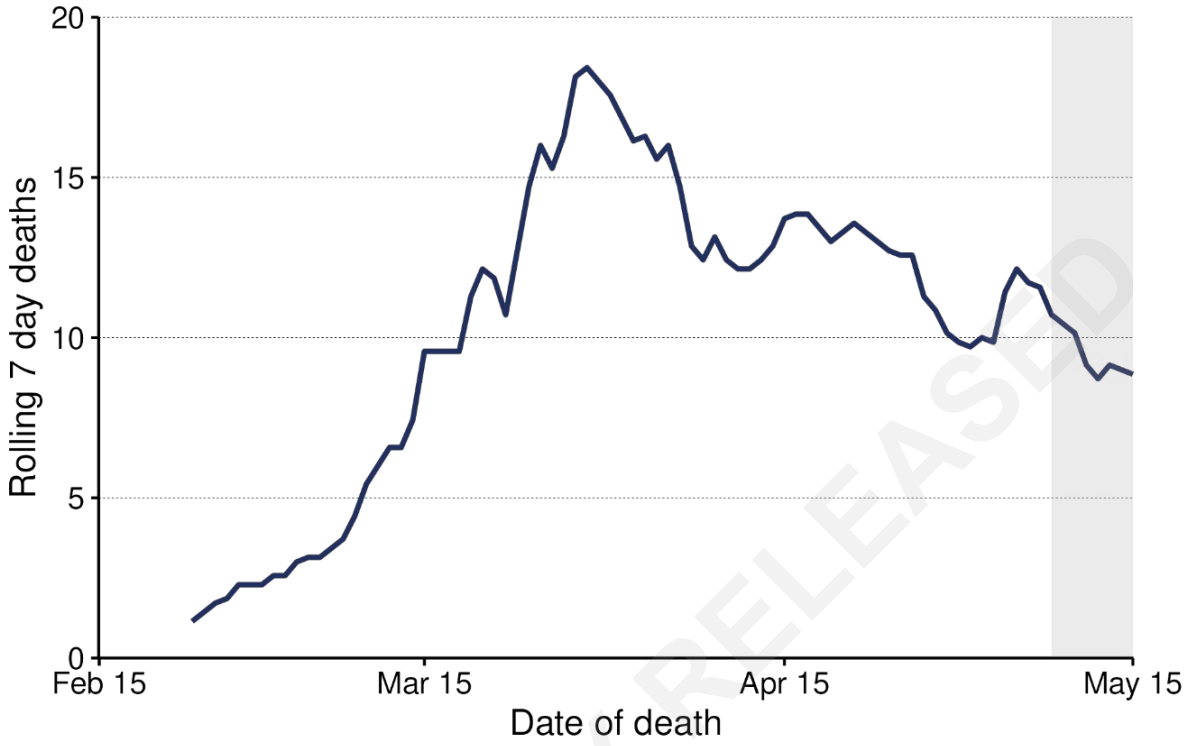
As of 19 May 2022, 1,022 people have died with or after COVID-19 infection. Of these, 973 have died within 28 days of being reported as a case. **Figure 22** shows the 7-day rolling average of deaths by date of death.

Deaths are tracking slightly above the highest CMA scenario C. This is due to higher deaths recorded in people over 80 years of age.

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 postive test report are now 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 22: ***7-day rolling average of COVID-19 deaths by date of death, 15 February – 15 May 2022***



Source: NCTS/EpiSurv as of 15 May 2022[5]

[5] 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.

All cause death rates

The following figures provide a measure of the overall rate of deaths in New Zealand during the pandemic compared to pre-pandemic years. It's not a measure of people known to have died from COVID-19 and reflects all causes of deaths during this time. This is an experimental analysis on excess mortality (Please note: These have not been formally peer-reviewed and are not Official Statistics).

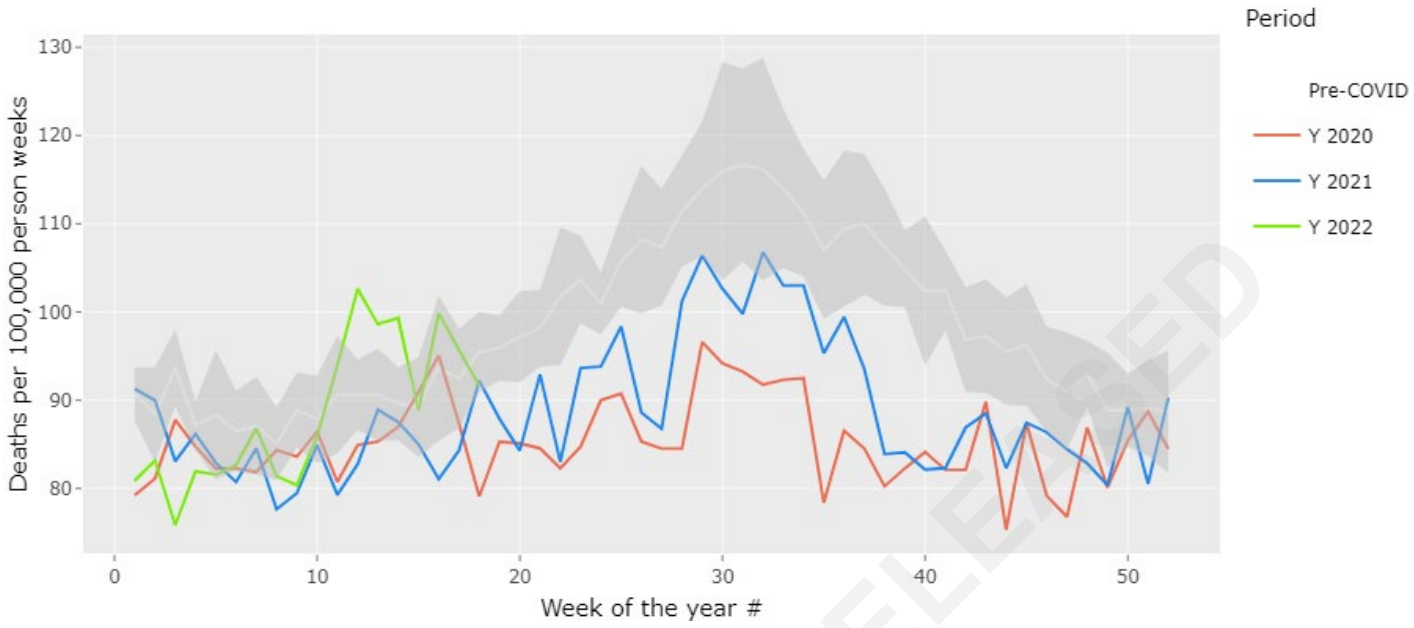
These data compare observed death rates in New Zealand throughout the epidemic (2020 – present) to pre-epidemic averages in death rates taken between 2012 – 2019, averaged across each week in the period (e.g., the mean of all week 10s across 2012 – 2019 is taken, and the range is specified as 1 standard deviation from this mean).

Mortality data comes from the Department of Internal Affairs (DIA) after a two-week reporting lag. Information shown here indicates deaths up to 01 May 2022. The date of death is used by DIA to assign deaths to a given week.

All cause death rates have been within pre-pandemic range for those 70 years and older for the three weeks ending 01 May. (We define this as 1 standard deviation from the mean rates). In the week ending 01 May, weekly all cause death rates were 92 per 100,000. However, the latest death numbers are likely to revise upward as more death registrations come in through the DIA system.

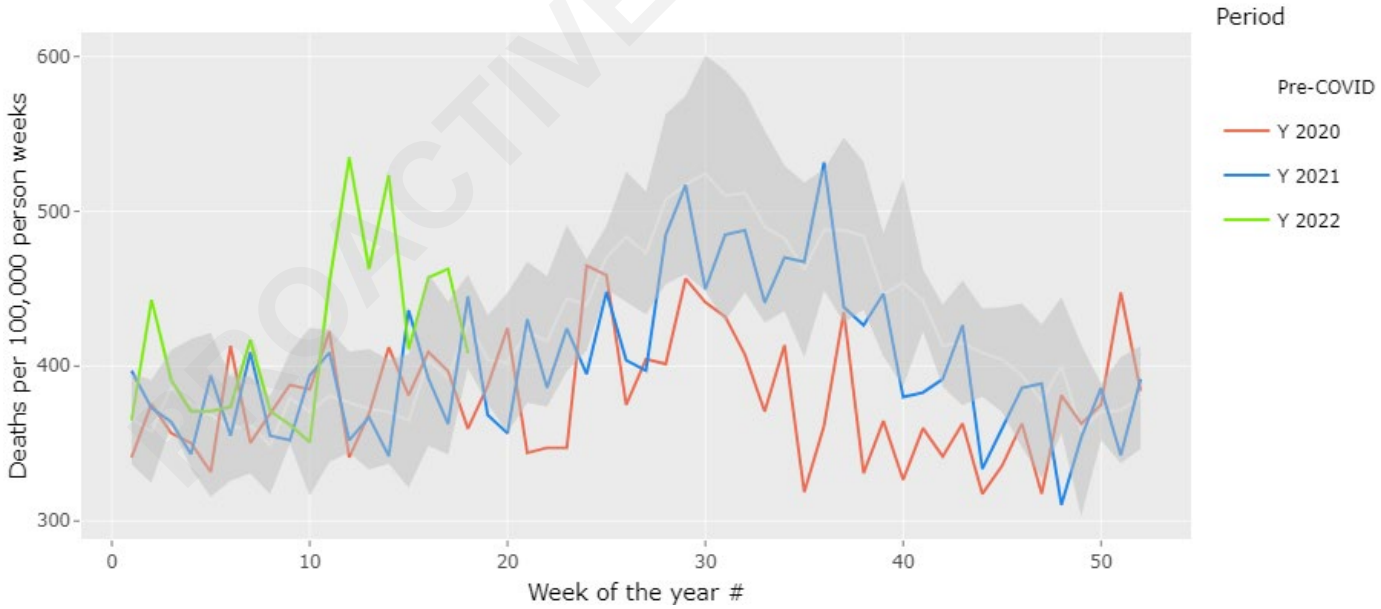
When looking at weekly all cause death rates for those 90 years and older in **Figure 23** we see that deaths in the 90+ age group contribute significantly to the overall death rates of those 70 years and older. As seen in **Figure 24**, weekly all cause death rates for those >90 years of age have dropped back into the observed pre-pandemic range in the week ending 01 May. In the week ending 01 May, weekly all cause death rates were 408 per 100,000 for >90 years old. Note, as above, the latest death numbers are likely to revise upward as more death registrations come in through the DIA system.

Figure 23: ***Weekly all-cause death rates for 70+ year-olds during 2020, 2012 and 2022, compared to pre-COVID-19 average (2012-2019)***



Source: COVID-19 Modelling Steering Group, StatsNZ, 18 May 2022

Figure 24: ***Weekly all-cause death rates for 90 year-olds and over compared to pre-COVID-19 average (2012-2019)***



Source: COVID-19 Modelling Steering Group, StatsNZ, 18 May 2022

International Insights and Health System Capacity

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, after the continued decline observed since the end of March 2022, new weekly COVID-19 cases have stabilized during the reporting period (9 May to 15 May 2022), with over 3.6 million cases reported, a 1% increase as compared to the previous week. The number of new weekly deaths continues to decline, with over 9,000 fatalities reported during the same period, representing a 21% decrease as compared to the previous week.

At the regional level, the number of new weekly cases increased in the Eastern Mediterranean Region (+63%), in the Region of the Americas (+26%), in the Western Pacific Region (+14%) and in the African Region (+6%) and decreased in the remaining two regions. The number of new weekly deaths decreased in all the regions except the African Region, where a 48% increase in new weekly deaths was reported.

BA.2 remains the dominant subvariant globally, though BA.4, BA.5 and BA.2.12.2 and dominant in some jurisdictions.

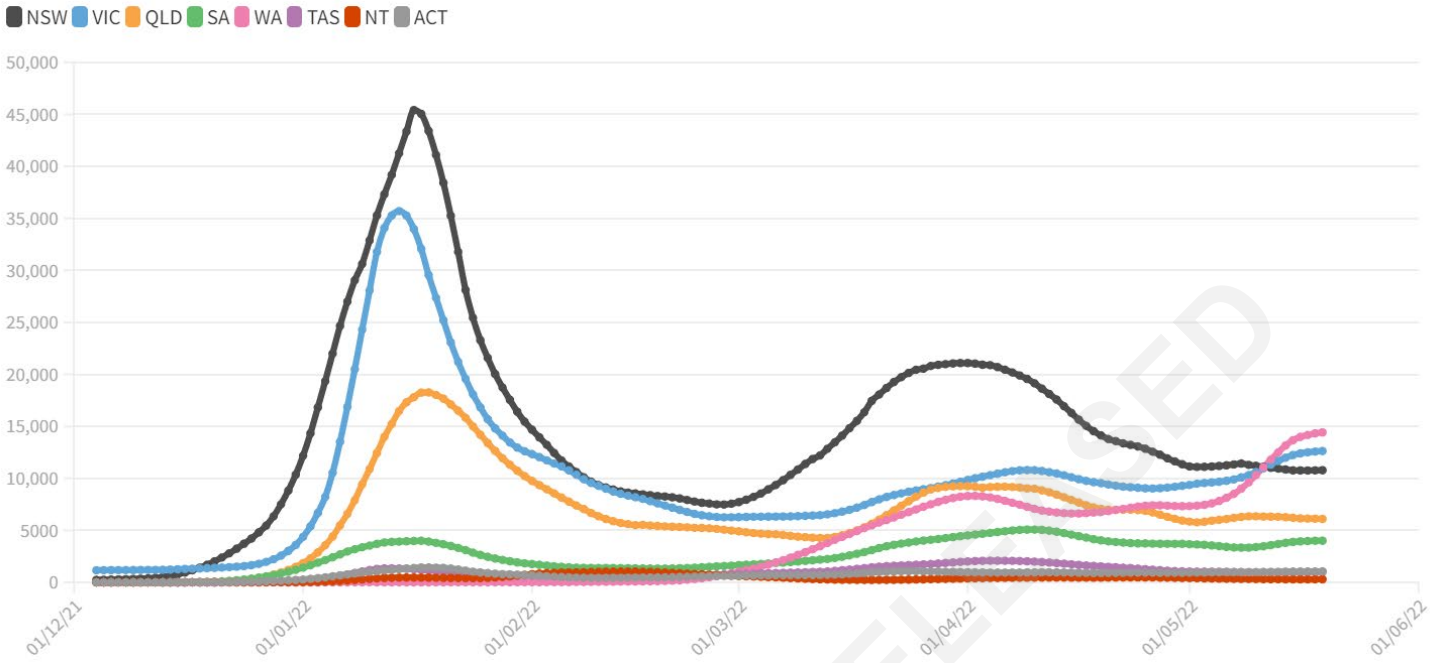
Many countries have experienced successive COVID-19 waves of multiple Omicron variants. These waves are likely driven by complex interactions between waning immunity, emerging variants, vaccination levels, changing public health measures, seasonal and behavioural effects.

Western Australia

Western Australia has recently experienced their largest surge in COVID-19 cases so far in the pandemic, after maintaining control over the outbreak throughout the pandemic to date. The current 7-day average of just over 14,000 cases, though growth in cases is now slowing, the surge is markedly higher than the previous peak of just over 8,000 in early-April (**Figure 25**). The surge is leading to significant stress in the health system in the state, with 327 people with COVID-19 in hospital with the virus, this has led to medical groups calling for reinstation of public health measures.

As at Friday 29 April 2022, WA dropped most remaining COVID-19 restrictions. This includes removal of mask requirements (still required for +12 years old on public transport), close contact isolation, capacity limits at all venues, proof of vaccination requirements at most venues and triple vaccination requirements for interstate arrivals. Very closely following the relaxation of these restrictions in early May, cases began surging, following a long period of relatively stable case numbers since late-March. Loosening of restrictions may have contributed to the surge.

Figure 25: ***Seven day average of new daily cases in Australia by state since 01 December 2021***



Source: Covid19data.com.au

Shows new daily cases as announced (PCR + RAT). Does not include retrospective revisions. 7-day average.

Rest of Australia

In Australia, there have been two distinct Omicron waves with the first BA.1 case detected in mid-November last year and BA.2 appearing late November. **In the week ending 17 May, cases continue to rise, increasing by 15% over the week to a 7-day average of 52,000 cases.** BA.4, BA.5 and BA.2.12.2 subvariants had been detected in Australia, BA.2 remains dominant; however, the prevalence of the other Omicron variants appears to be increasing. In the fortnight to 17 May, 93% of sequences were BA.2, 3% were BA.4 and BA.1, BA.5 and BA.2.12.2 make up 1% each. The number of sequences reported remain low and the variant trends will become clearer in coming weeks.

South Africa

Following the large outbreak in late 2021, driven by BA.1, South Africa is seeing a large increase in cases. **South Africa is entering its fifth wave, with the resurgence dominated by Omicron sub-variants BA.4 & BA.5.** In the 2 weeks to 16 May, approximately 92% of sequenced cases were BA.4 and 8% were BA.5, with no BA.2 detected, albeit with a low number of sequences submitted during this period.

United Kingdom

In the UK, cases continue to decline from the latest Omicron outbreak that was largely driven by the BA.2 variant. Despite continuing reduction in testing rates, both reported cases and infection survey data shows a decline. 96% of sequences in the fortnight to 16 May were BA.2, with the remaining sequences made up of BA.4, BA.5 and BA.2.12.2.

USA

Reported cases in the US recently dropped to the lowest levels since June 2021 following the large wave driven by BA.1 and BA.2. However**, cases have now been increasing since early April, with an increase of 20% in the week to 17 May 2022**, hospitalisations are also steadily increasing. Cases are concentrated once again in the Northeast of the country, with New York City raising its alert level to 'high' amid increasing pressure on the healthcare system. BA.2.12.2 is continuing to increase in prevalence in the US, in the 2 weeks to 16 May, 63% of sequenced cases were BA.2 and 35% were BA.2.12.2.

Vaccinations

Booster vaccination coverage in multiple countries has plateaued in many jurisdictions, particularly in North America and Europe. Increases in population levels protection against COVID-19 are unlikely to come from increases in third dose coverage, **meaning immunity will likely wane over the coming months** and would require fourth doses to further bolster protection, should hospitalisations and deaths begin to increase.

As of 13 May, **36 jurisdictions have rolled out fourth doses.** Of those 36, only Chile, El Salvador, Hungary, Israel, Laos and Mongolia have rolled out fourth doses to all adults. In Germany, fourth doses are recommended for specified priority groups such as people over 70, priority populations and health care workers.

In other jurisdictions, including Australia, Canada, France, Hong Kong, Singapore, South Korea, Spain, United Kingdom and United States, fourth doses are recommended for priority populations only, such as older age groups or immunocompromised people. Australia also recommends a fourth dose for Aboriginal and Torres Strait Islanders aged 50 years and older.

Omicron Dashboard

The Omicron dashboard (**Figure 26**) 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 12 May 2022.

Figure 26: *Omicron Health Sector Clinical Indicators Dashboard summary, week ending 12 May 2022*

Sector	Summary of data
General Practice & Urgent Care	There are no significant changes to report from last week for General Practice. Sector leaders have not raised any new items of concern over the past week. Patients under 4 continue to have rates that are less than 2019 rates. Survey data from 9 urgent care clinics indicates that red stream consultations had increased from 1,900 last week to 2,530 this week.
Childhood Immunisations	Quarter 3 data is currently in the process of being finalised. Initial analysis indicates rates vary across key vaccination milestones, but are largely unchanged from Quarter 2. National immunisation coverage at the key 24-month milestone age was 84.7% overall, from 83.9% for Quarter 2. Rates for tamariki Māori are particularly low at 70.3%.
Aged Residential Care	22% of the 656 Aged Residential Care facilities have at least one active COVID-19 case (145 of 656 facilities), although total numbers are reducing to early March 2022 levels. There has been an upward trend of the monthly number of registered nurse shortage s31 notifications to Healthcert since July 2021.
Māori Health Providers	May feedback from the Māori Health providers survey has shown that there has been an decrease in concern related to COVID-19 compared to previous surveys. Similar to the last survey results, providers are mostly concerned about general whānau support and staff wellbeing and sustainability.
Pacific Health	Engagement continues with Pacific Health providers to improve vaccination numbers and address concerns from providers.
Emergency Ambulance Service	111 calls and EAS incidents continue to track at an expected volume for this time of year. The overall cycle time (total time to complete each incident) remains high which is a result of on-scene and travel times remaining elevated.
Mental Health	Despite reports of outbreaks in 3 seperate Mental Health units, the outbreaks were well managed and all risks proactively mitigated.
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** from 43% to 44%. There has been an increase in patients with a length of stay of 7 days or above across the motu. This is compounded by COVID-19 hospitalised cases remaining around the 400 mark across the motu. Existing workforce shortages continue to impact delivery of services.
ED	Overall ED attendances increased 4% last week, excluding South Canterbury from the total due to data quality issues. 15/19 DHBs reported an increase in ED presentations from previous week, Upward trends in Auckland, Canterbury, Capital Coast, Southern and Waitematā continues
Planned Care (Hospital)	DHBs used an incremental approach to Planned Care delivery, reducing services as necessary rather than cease all Planned Care interventions with the exception of urgent and time sensitive treatments as had occurred in the past. Waiting list numbers have continued to increase again after some recovery in 2021 and the planned care taskforce has been established to address planned care delivery focussing on Equity, National Consistency and Vulnerable services.
Pharmacy	The shortage of pharmacists (locum staff and new employees) continues to impact on pharmacies. As of May 10, 1765 does of COVID-19 medicines had been dispensed.
Home and Community Support	Continue to see a consistent trend of reduced workforce and reduced services delivered compared with data from the end of last year.
COVID care in the community	The % of cases contacted has remained consistently at 98% or over for the past week. There was an increase in the % of Māori and Pacific people completing the online self – assessment form.
Health Workforce	Workforce continues to be constrained across all parts of the sector due to exisiting vacancies (not omicron related). The Health workforce team is working with the sector to address issues where possible.
Rural Health	Rural hospitals continue to report constraints due to long standing workforce vacancies

Sources: Omicron Health Sector Clinical Indicators Dashboard, 12 May 2022

COVID-19

Trends and Insights Report

Updated 20 May 2022

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Data & Notes

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 (Health care, border and emergency workers, and hospital inpatients) are not a representative sample of New Zealanders, overall, they are higher risk 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 be 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 trend 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, while this 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 hr 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.

Acknowledgements

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

Case Demographic Tables

DHB	Community cases reported since 09 May to 15 May 2022	Rate per 1,000
Northland	1547	8.0
Waitemata	7278	11.6
Auckland	5756	11.7
Counties Manukau	5209	8.8
Bay of Plenty	1597	6.2
Waikato	3935	9.1
Tairawhiti	467	9.1
Lakes	910	8.0
Taranaki	1442	11.7
Hawke's Bay	1644	9.4
Whanganui	543	8.0
MidCentral	1788	9.8
Hutt Valley	1428	9.2
Capital and Coast	3595	11.4
Wairarapa	593	12.2
Nelson Marlborough	1763	11.2
West Coast	493	15.2
Canterbury	8014	14.2
South Canterbury	913	14.9
Southern	4965	14.8
Unknown	32	
Total	**53912**	**10.8**

Regions	Community cases reported since 09 May to 15 May 2022	Rate per 1,000
Northern	19790	10.4
Te Manawa Taki	8351	8.5
Central	9591	10.2
Southern	16148	14.0
Unknown	32	-
Total	**53912**	**10.8**

Ethnicity	Community cases reported since 09 May to 15 May 2022	Rate per 1,000
Māori	6054	7.9
Pacific Peoples	2576	7.0
Asian	7911	10.8
European or Other	36948	11.9
Unknown	423	-
Total	**53912**	**10.8**

Sex	Community cases reported since 09 May to 15 May 2022	Rate per 1,000
Female	29131	11.4
Male	24734	10.1
Unknown	47	-
Total	**53912**	**10.8**

Age	Community cases reported since 09 May to 15 May 2022	Rate per 1,000
0-9	4879	7.5
10-19	7848	12.3
20-29	9002	13.4
30-39	8824	12.8
40-49	8211	13.1
50-59	7038	11.0
60-69	4531	8.5
70+	3579	6.6
Total	**53912**	**10.8**

Rate per 1,000

National	Māori	Pacific Peoples	Asian	European or Other	Total
Total	7.9	7.0	10.8	11.9	10.8

Northern	Māori	Pacific Peoples	Asian	European or Other	Total
Northland	6.7	6.0	12.7	8.5	8.0
Waitemata	9.3	8.5	10.6	12.7	11.6
Auckland	9.5	7.1	1.1	13.4	11.7
Counties Manukau	6.0	5.5	10.1	11.5	8.8
Total	**7.5**	**6.4**	**10.5**	**12.1**	**10.4**

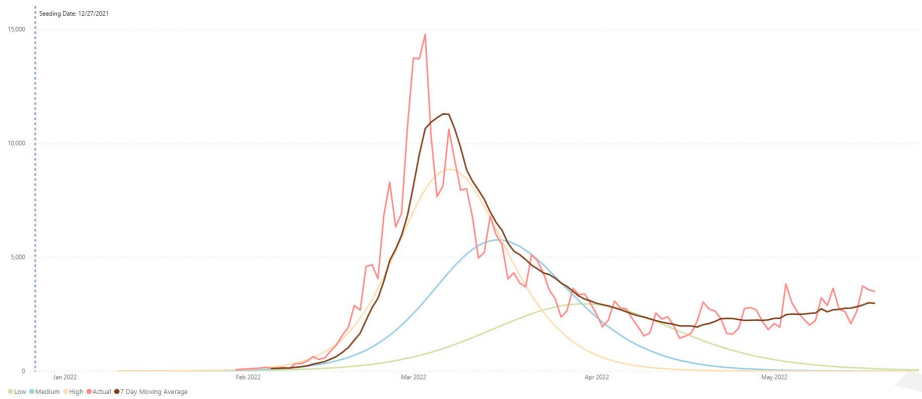
Te Manawa Taki	Māori	Pacific Peoples	Asian	European or Other	Total
Bay of Plenty	4.5	4.0	5.5	6.9	6.2
Waikato	7.0	7.2	9.9	9.9	9.1
Tairawhiti	7.9	5.0	12.2	10.5	9.1
Lakes	5.8	11.2	9.5	9.0	8.0
Taranaki	8.2	5.9	13.6	12.5	11.7
Total	**6.3**	**6.9**	**9.2**	**9.4**	**8.5**

Central	Māori	Pacific Peoples	Asian	European or Other	Total
Hawkes Bay	6.5	8.4	8.5	10.7	9.4
Whanganui	6.5	6.9	5.8	8.7	8.0
MidCentral	7.0	5.2	8.7	10.9	9.8
Hutt Valley	7.2	6.3	9.5	10.0	9.2
Capital and Coast	9.9	6.6	9.6	12.5	11.4
Wairarapa	10.4	11.3	17.0	12.5	12.2
Total	**7.6**	**6.7**	**9.4**	**11.2**	**10.2**

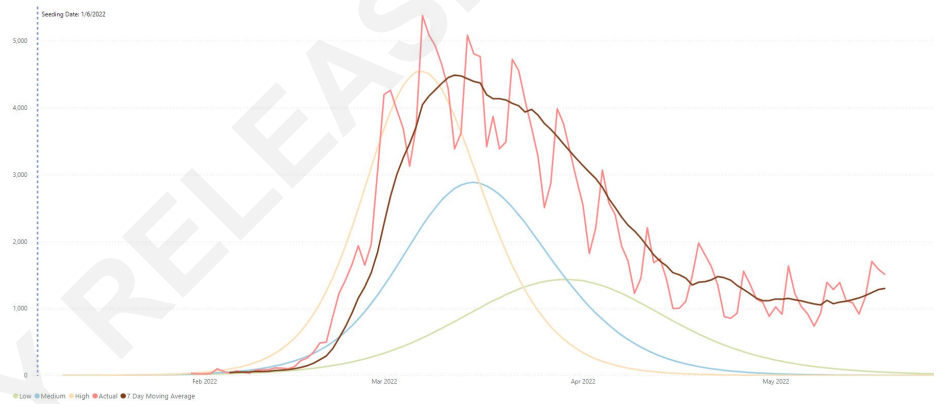
Southern	Māori	Pacific Peoples	Asian	European or Other	Total
Nelson Marlborough	11.3	15.1	9.7	11.0	11.2
West Coast	14.4	46.2	18.1	14.8	15.2
Canterbury	13.2	11.1	13.9	14.3	14.2
South Canterbury	12.1	5.8	17.1	15.2	14.9
Southern	13.8	15.2	17.7	14.6	14.8
Total	**13.1**	**12.8**	**14.6**	**14.0**	**14.0**

COVID Modelling Aotearoa

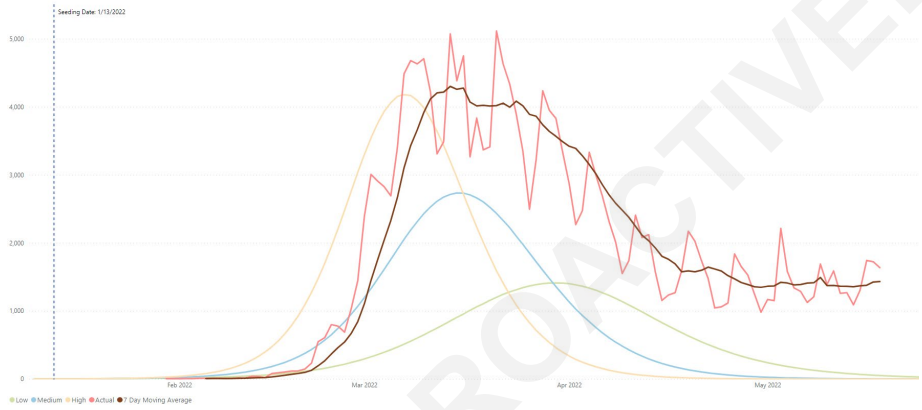
Northern Region



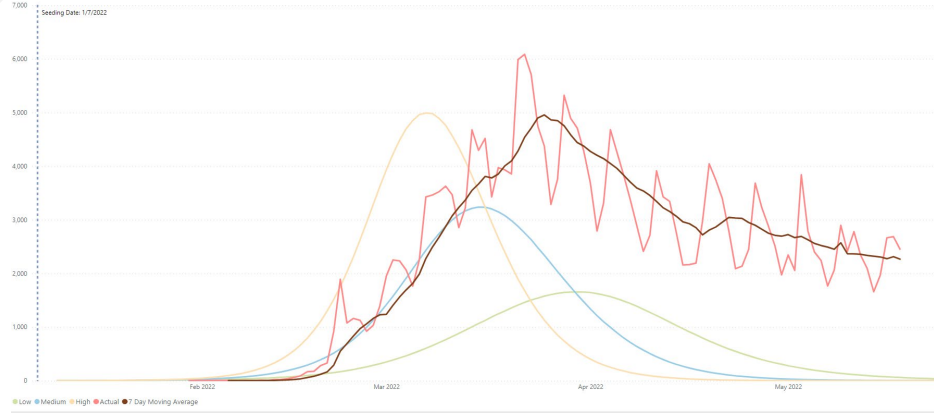
Te Manawa Taki (Midlands)



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 19 May 2022

EpiNow

Due to technical issues with EpiNow forecasting, we have removed the following section from this week's edition of the Trends and Insights report.

ESR Wastewater

Interpreting site graphs

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

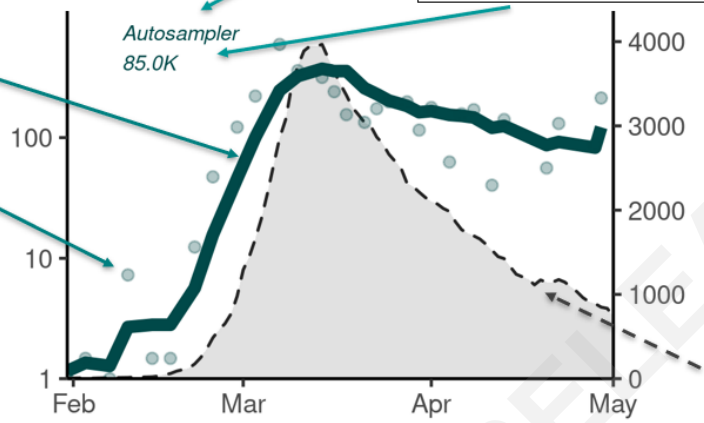
Wastewater Results

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

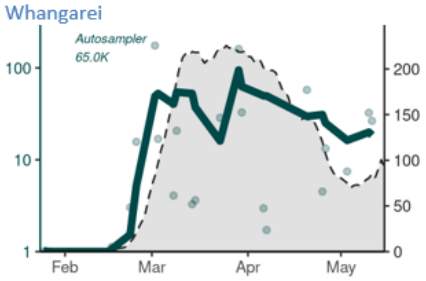
Genome copies/day ÷ population = genome copies x 10^4/day/person

Note the scales may differ for each graph

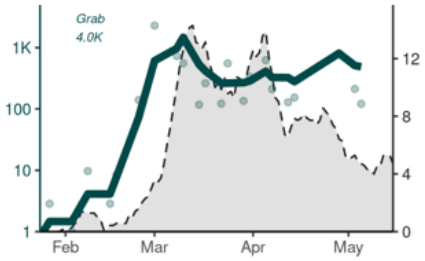
Wastewater results are on log_{10} scale, while case data is on a linear scale.

Northland

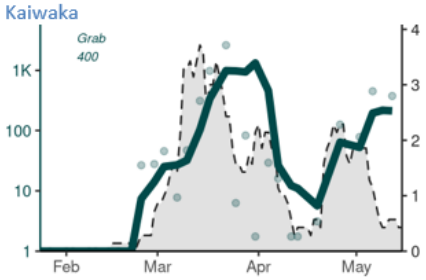
Whangarei



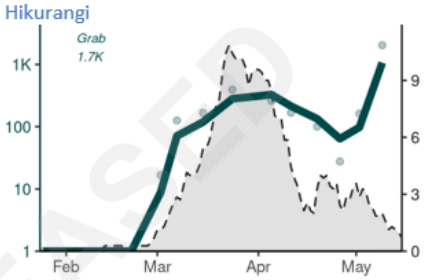
Paihia



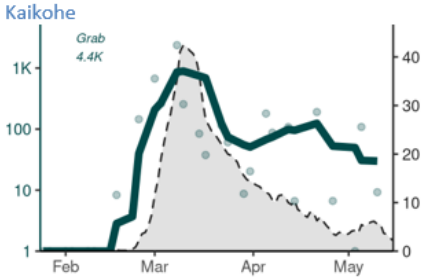
Kaiwaka



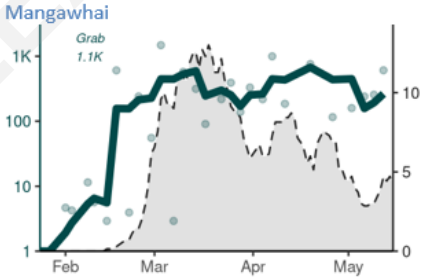
Hikurangi

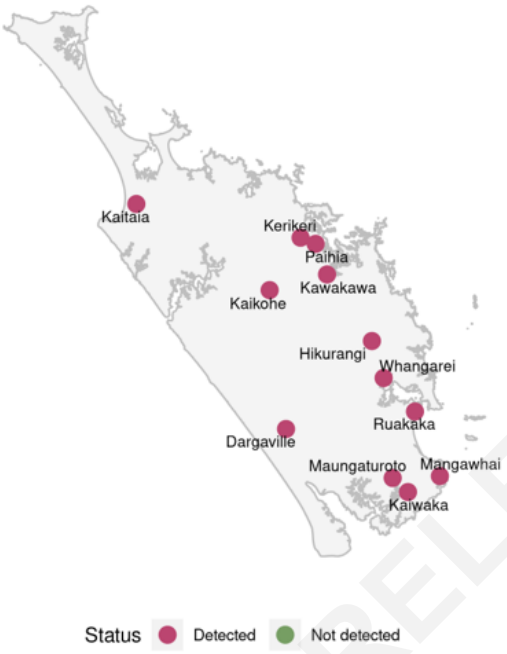


Kaikohe

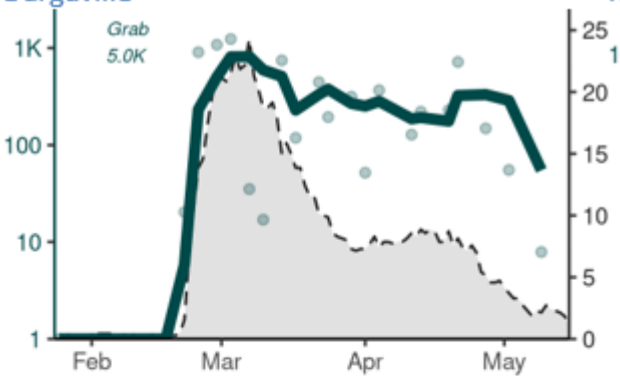


Mangawhai

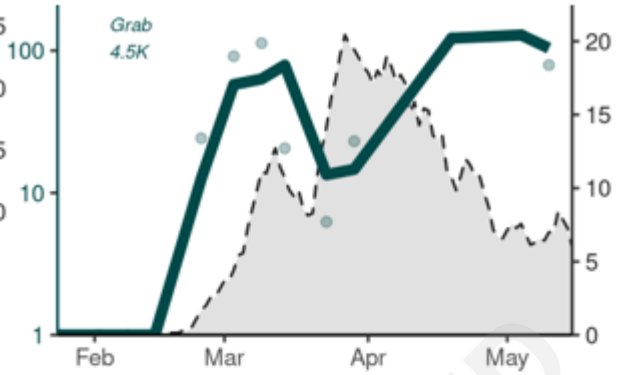




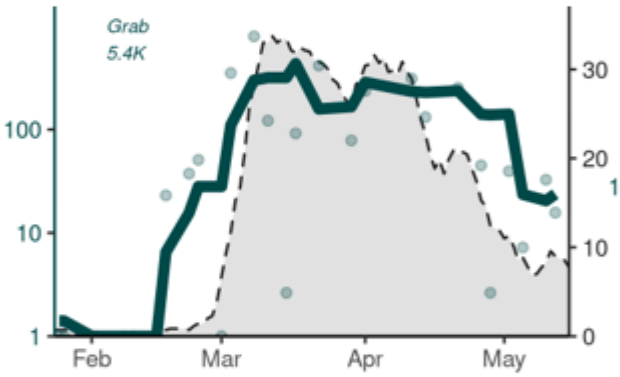
Dargaville



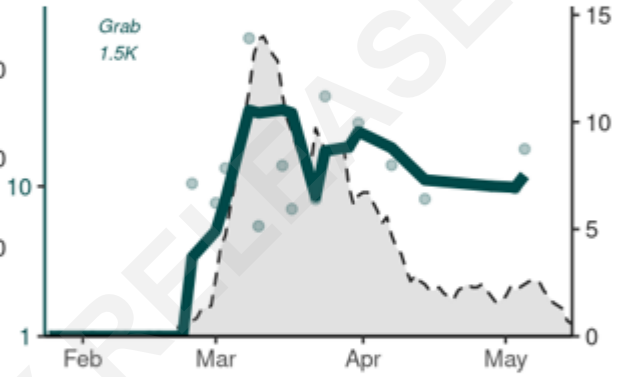
Ruakaka



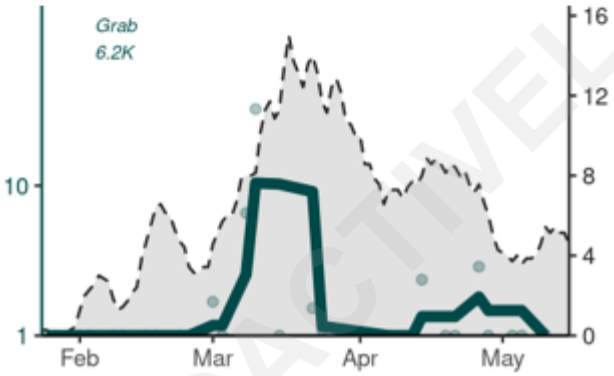
Kaitaia



Kawakawa

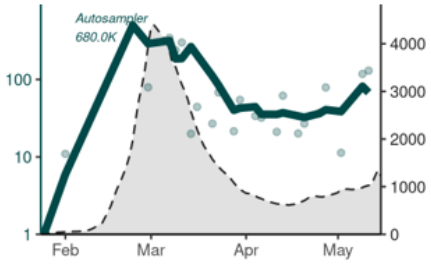


Kerikeri

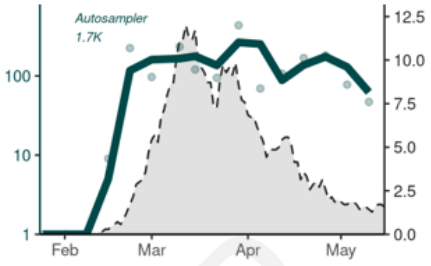


Auckland

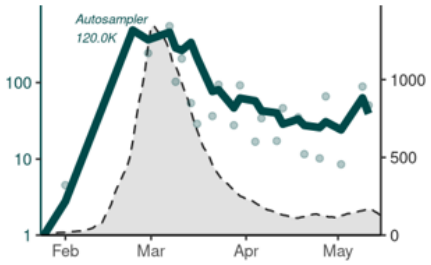
Auckland East



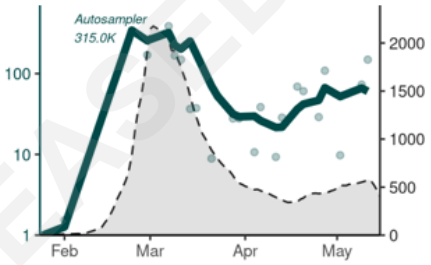
Wellsford

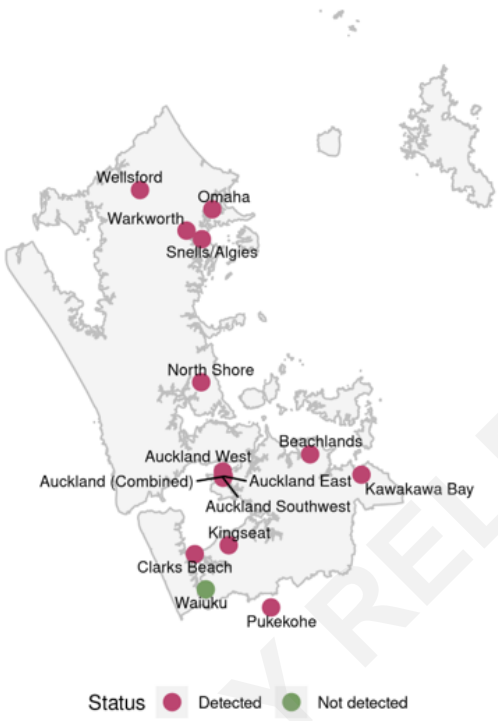


Auckland Southwest

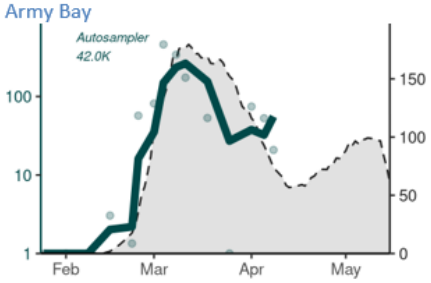


Auckland West

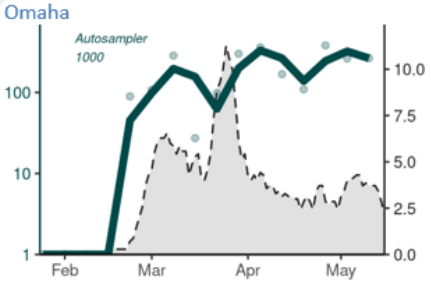




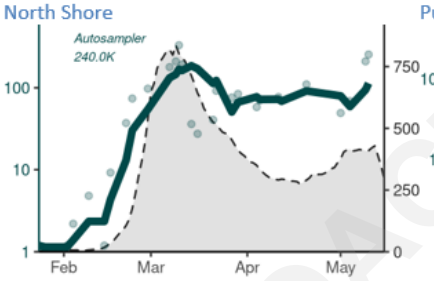
Army Bay



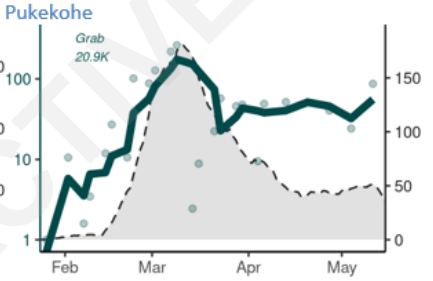
Omaha



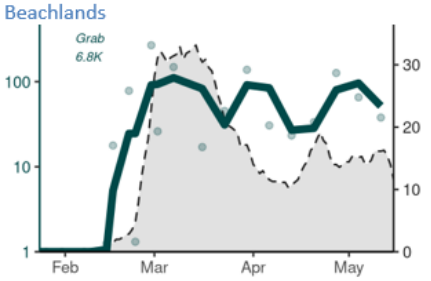
North Shore



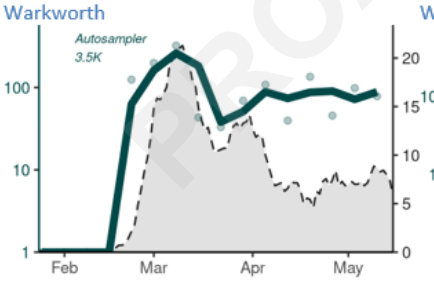
Pukekohe



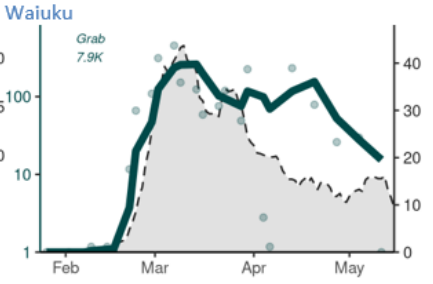
Beachlands



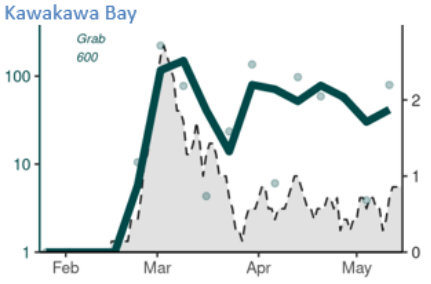
Warkworth



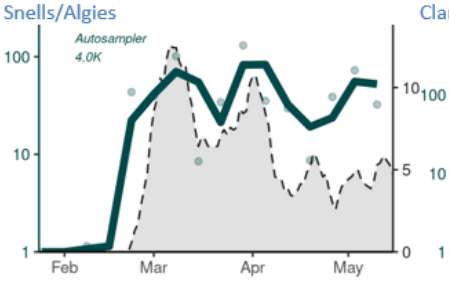
Waiuku



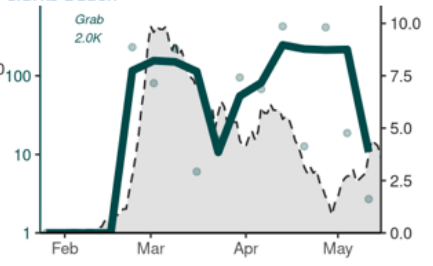
Kawakawa Bay



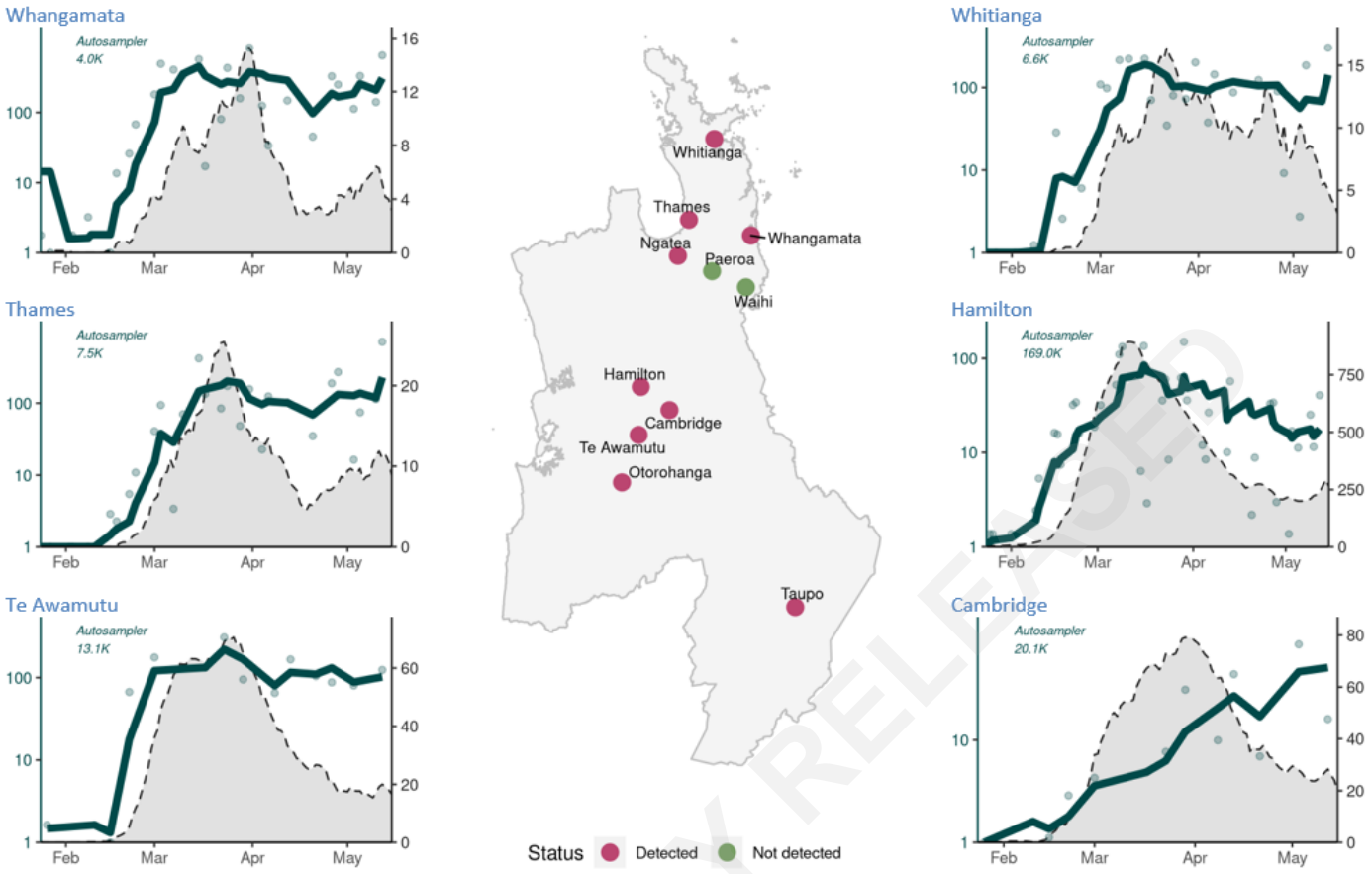
Snells/Algies



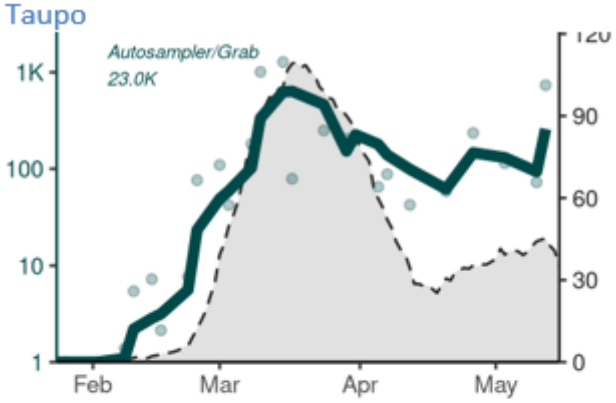
Clarks Beach



Waikato



Taupo



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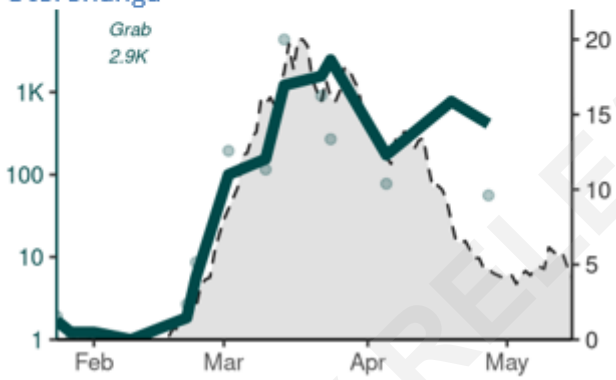
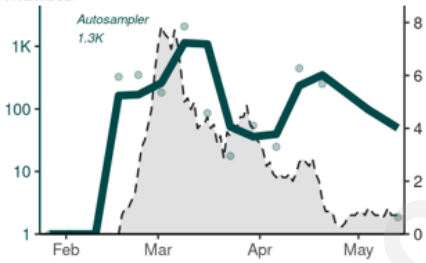
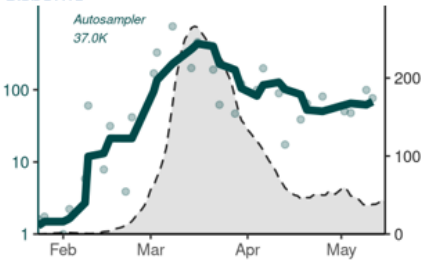


Bay of Plenty and Gisborne

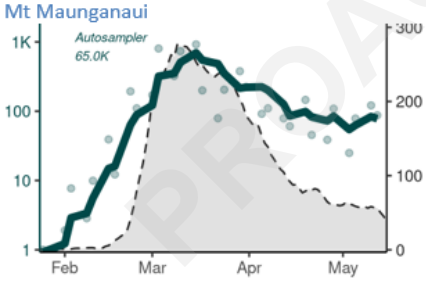
Maketu



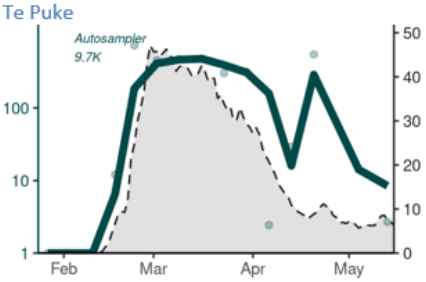
Gisborne



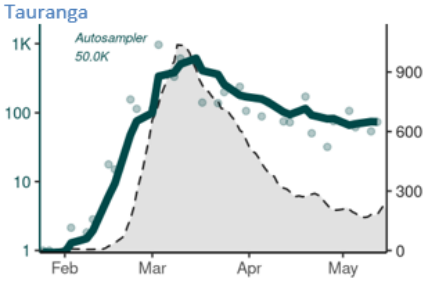
Mt Maunganaui



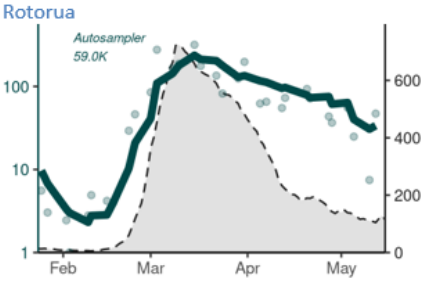
Te Puke



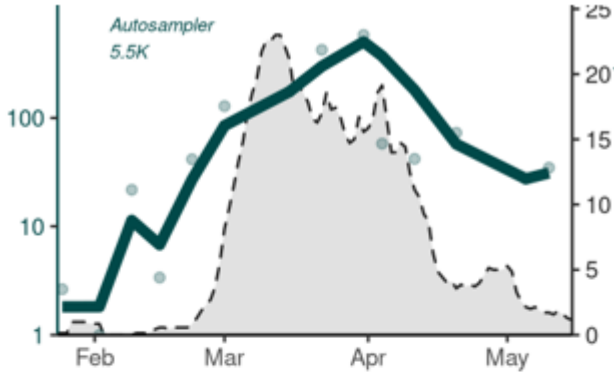
Tauranga



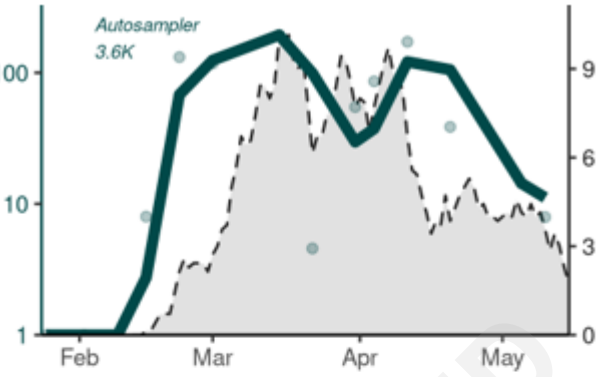
Rotorua



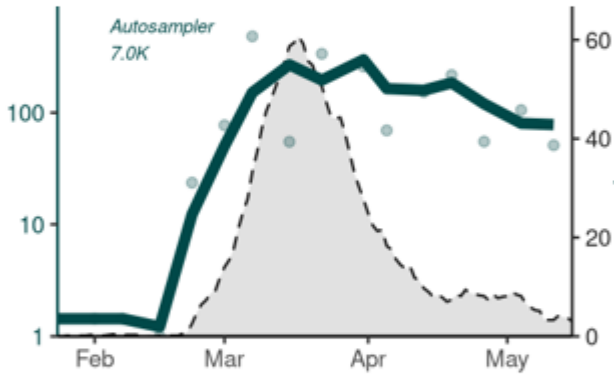
Katikati



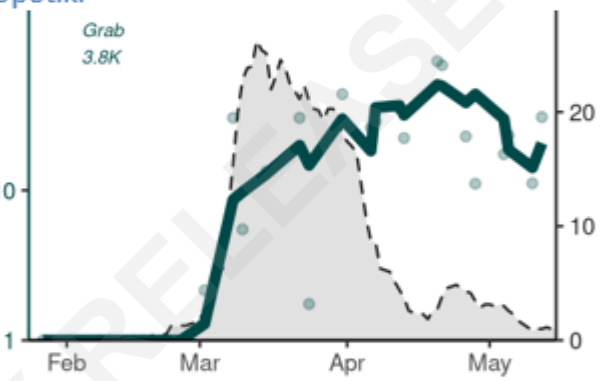
Waihi Beach



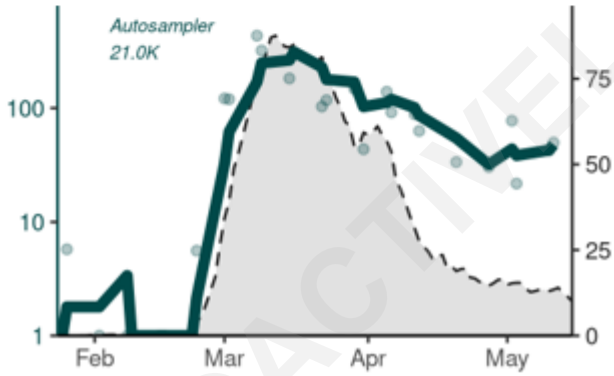
Kawerau



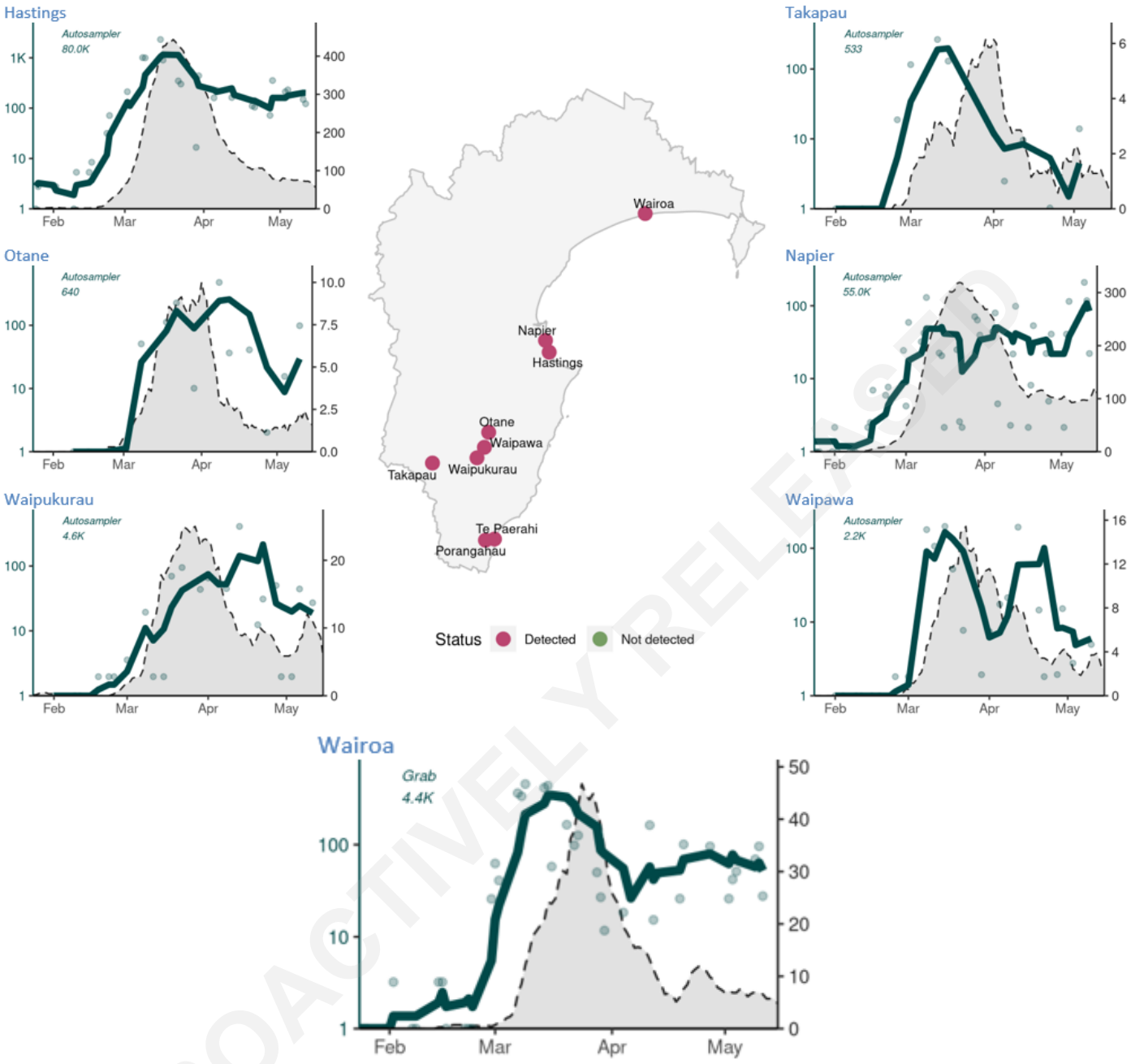
Opotiki



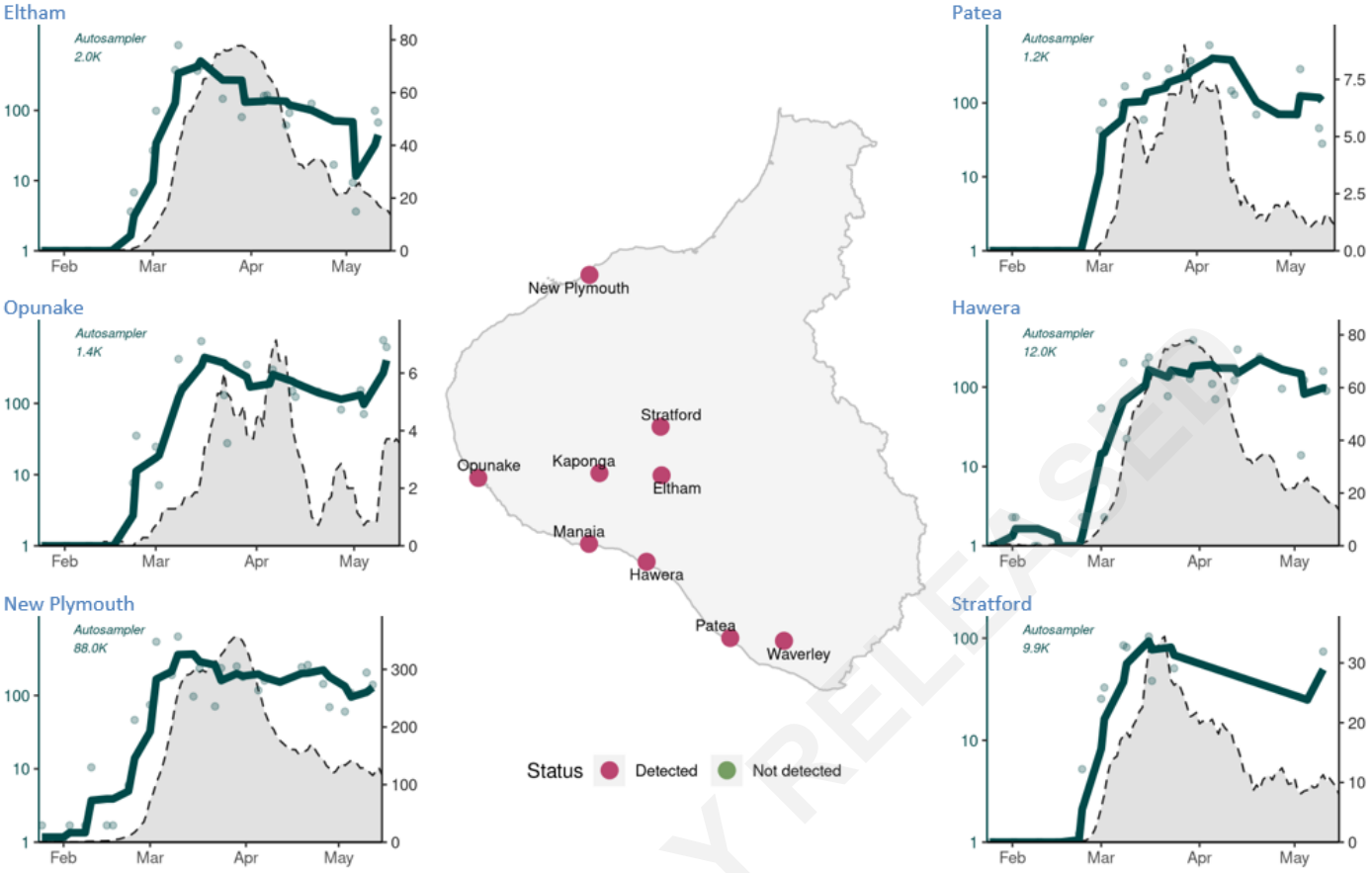
Whakatane

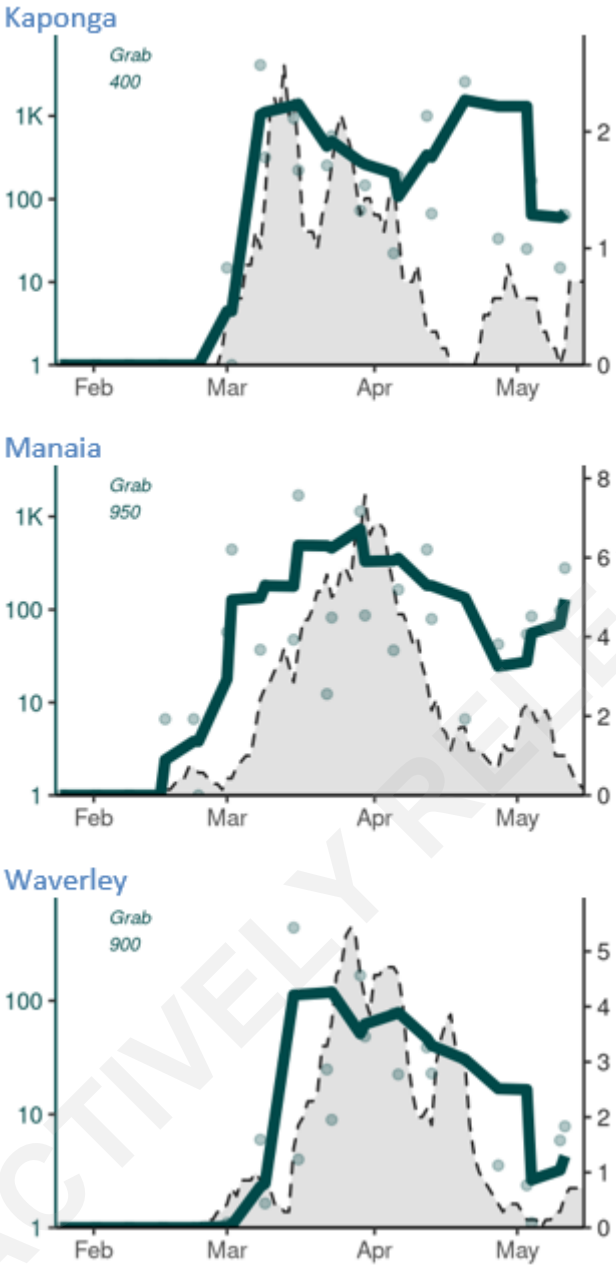


Hawke's Bay

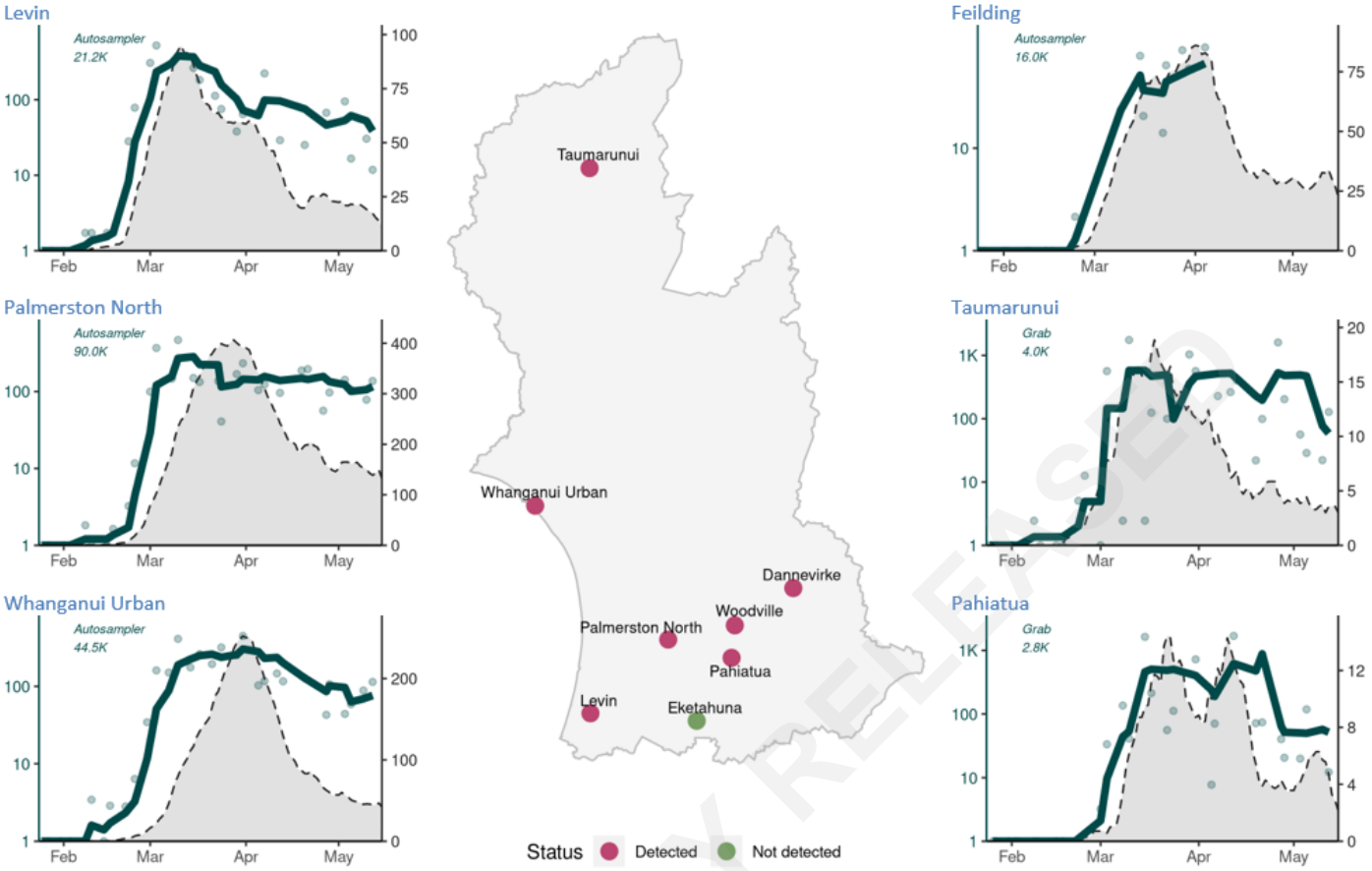


Taranaki

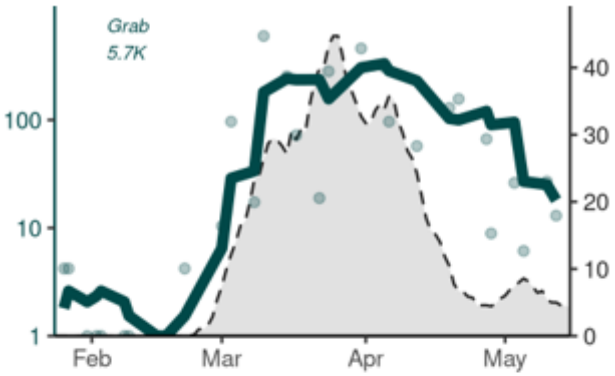




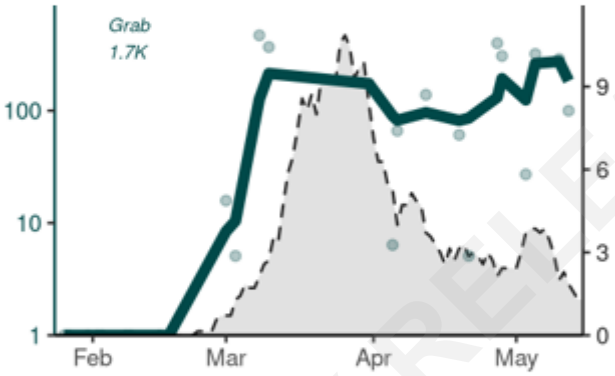
Manawatu-Wanganui



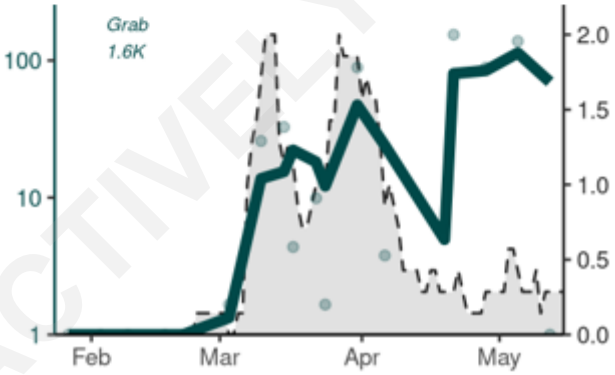
Dannevirke



Woodville

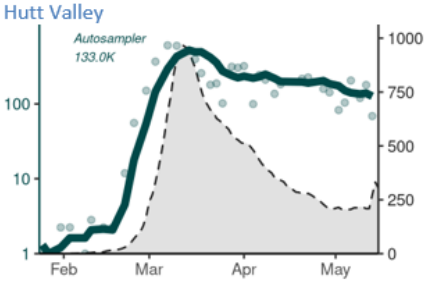


Eketahuna

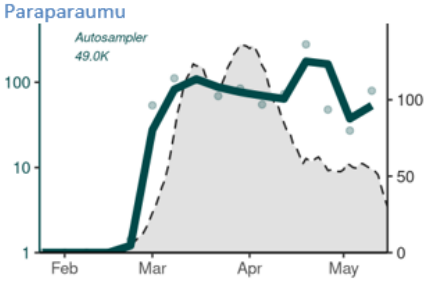


Wellington

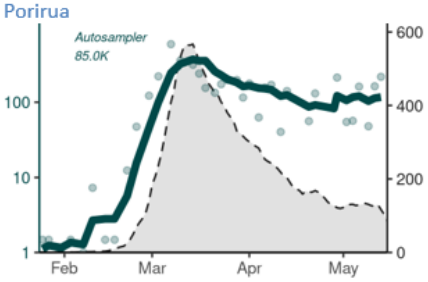
Hutt Valley



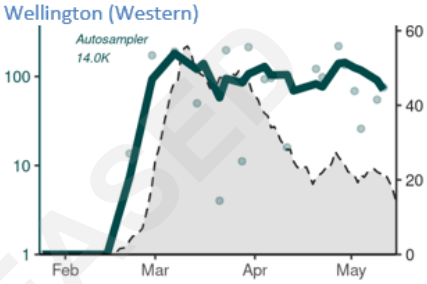
Paraparaumu



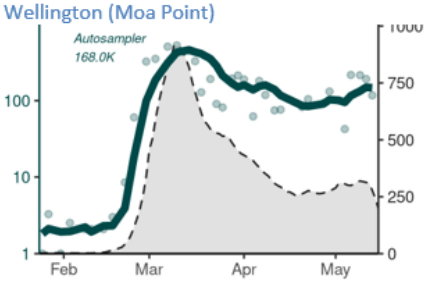
Porirua



Wellington (Western)



Wellington (Moa Point)



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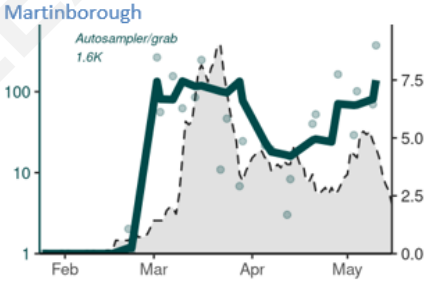
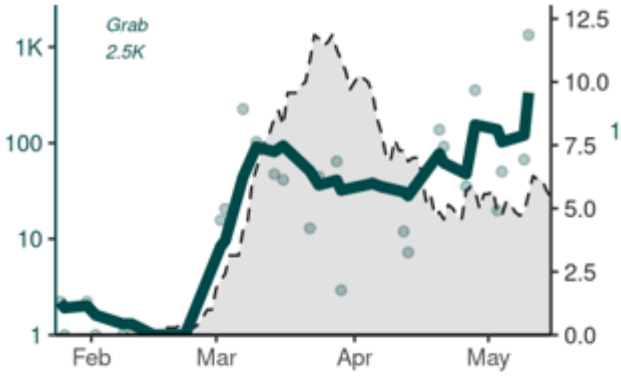
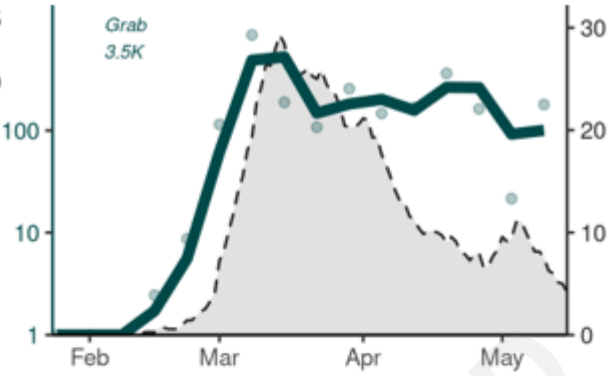
Martinborough



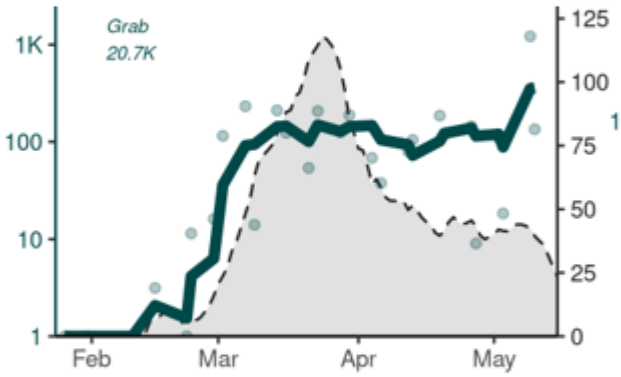
Featherston



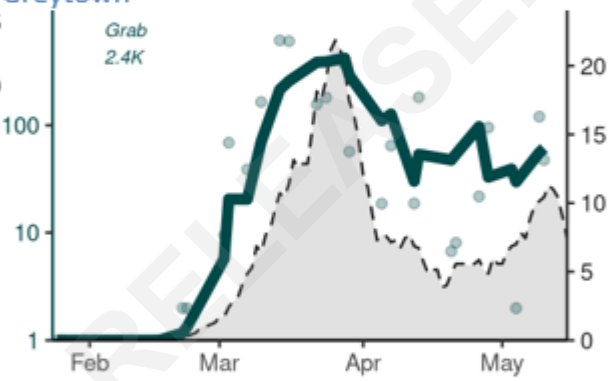
Otaki



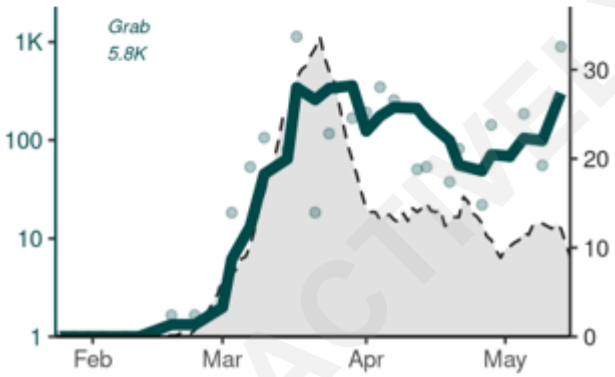
Masterton



Greytown

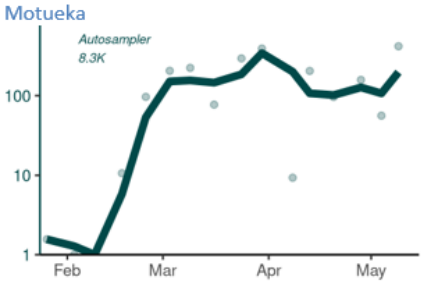


Carterton

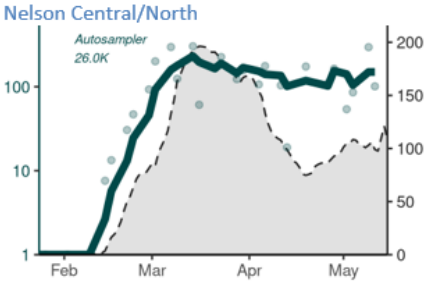


Tasman, Nelson, and Marlborough

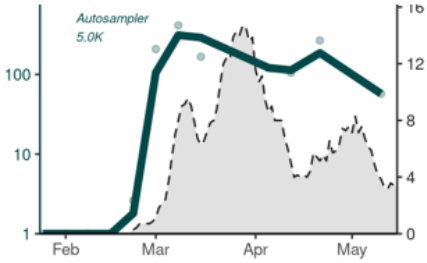
Motueka



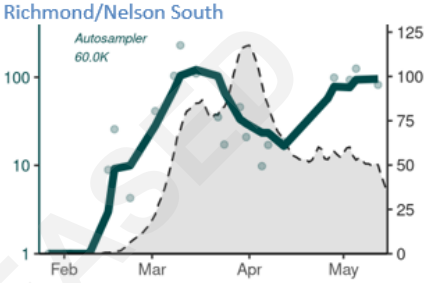
Nelson Central/North



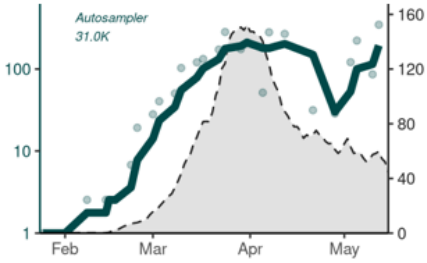
Picton



Richmond/Nelson South



Blenheim



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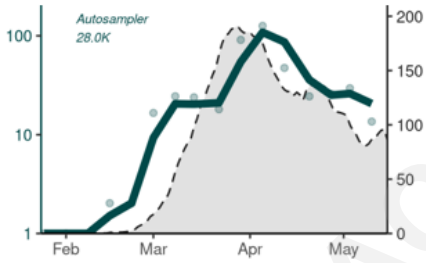
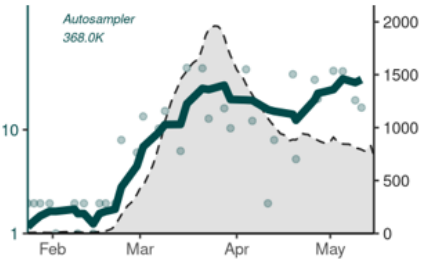
West Coast and Canterbury

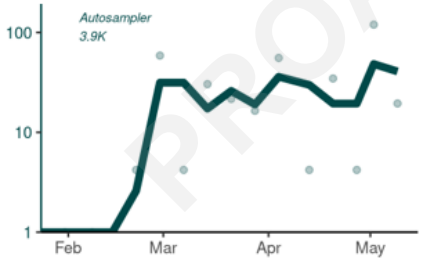
Timaru



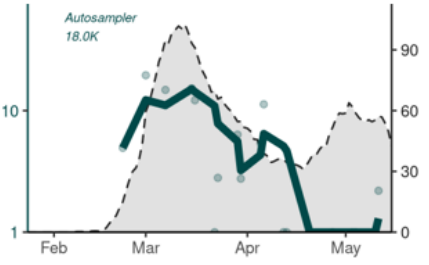
Christchurch



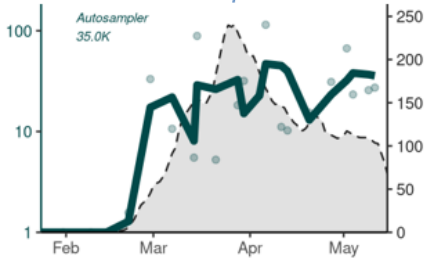
Leeston



Ashburton



Rolleston & Eastern Selwyn



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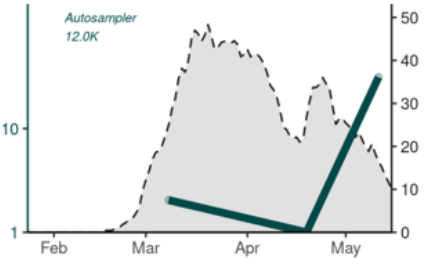
Oamaru



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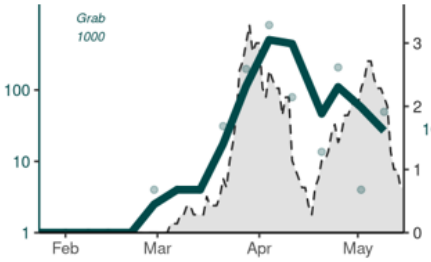
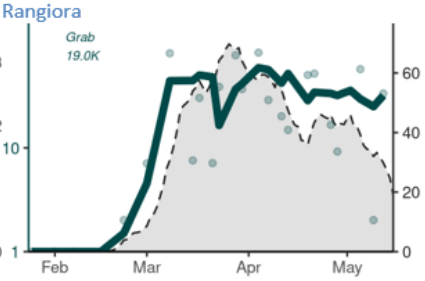
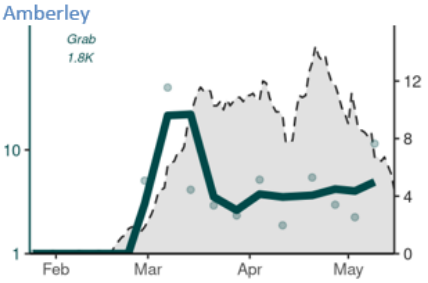


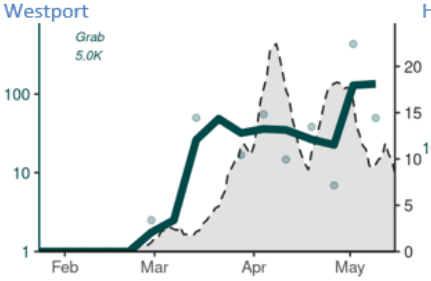
Rangiora



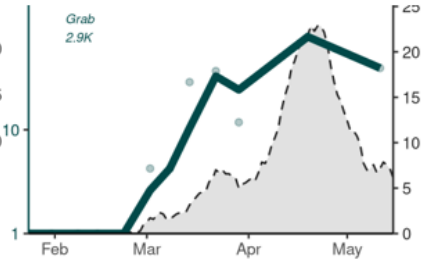
Amberley



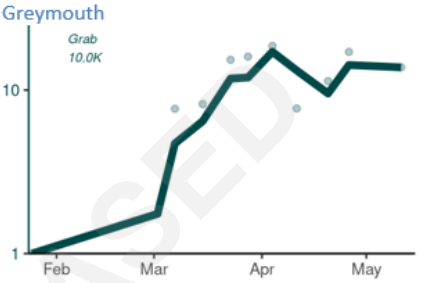
Westport



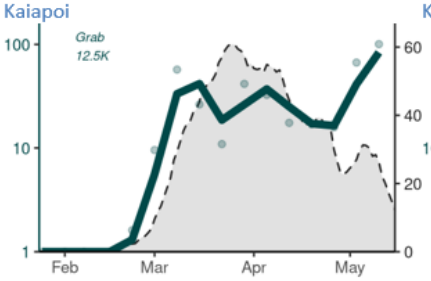
Hokitika



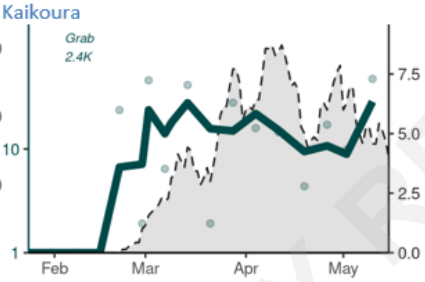
Greymouth



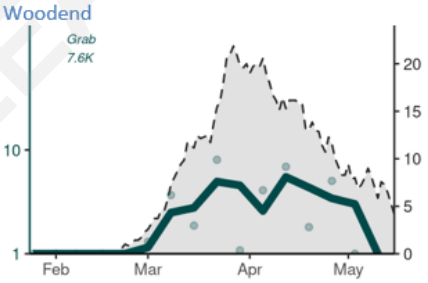
Kaiapoi



Kaikoura

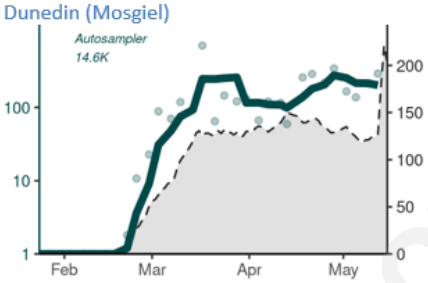


Woodend

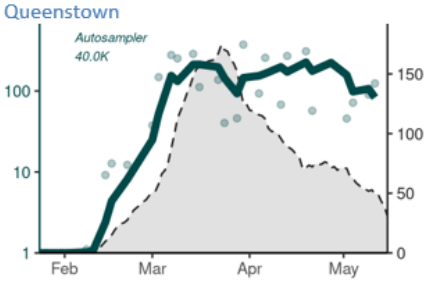


Otago and Southland

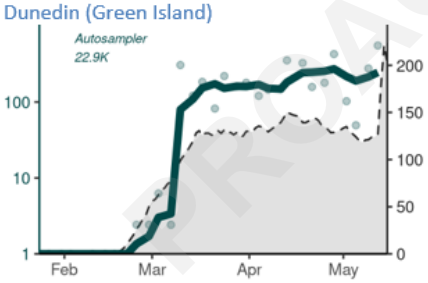
Dunedin (Mosgiel)



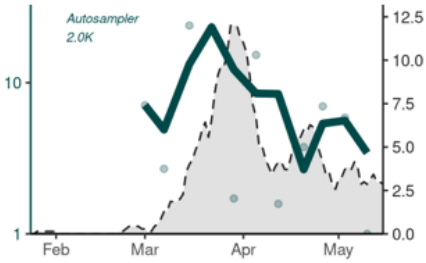
Queenstown



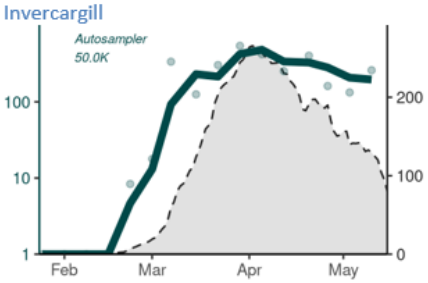
Dunedin (Green Island)



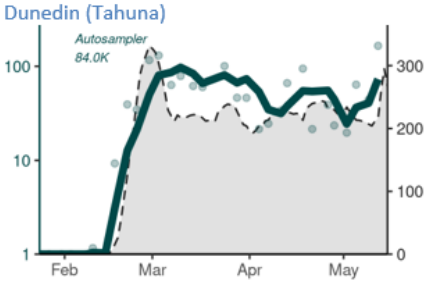
Bluff

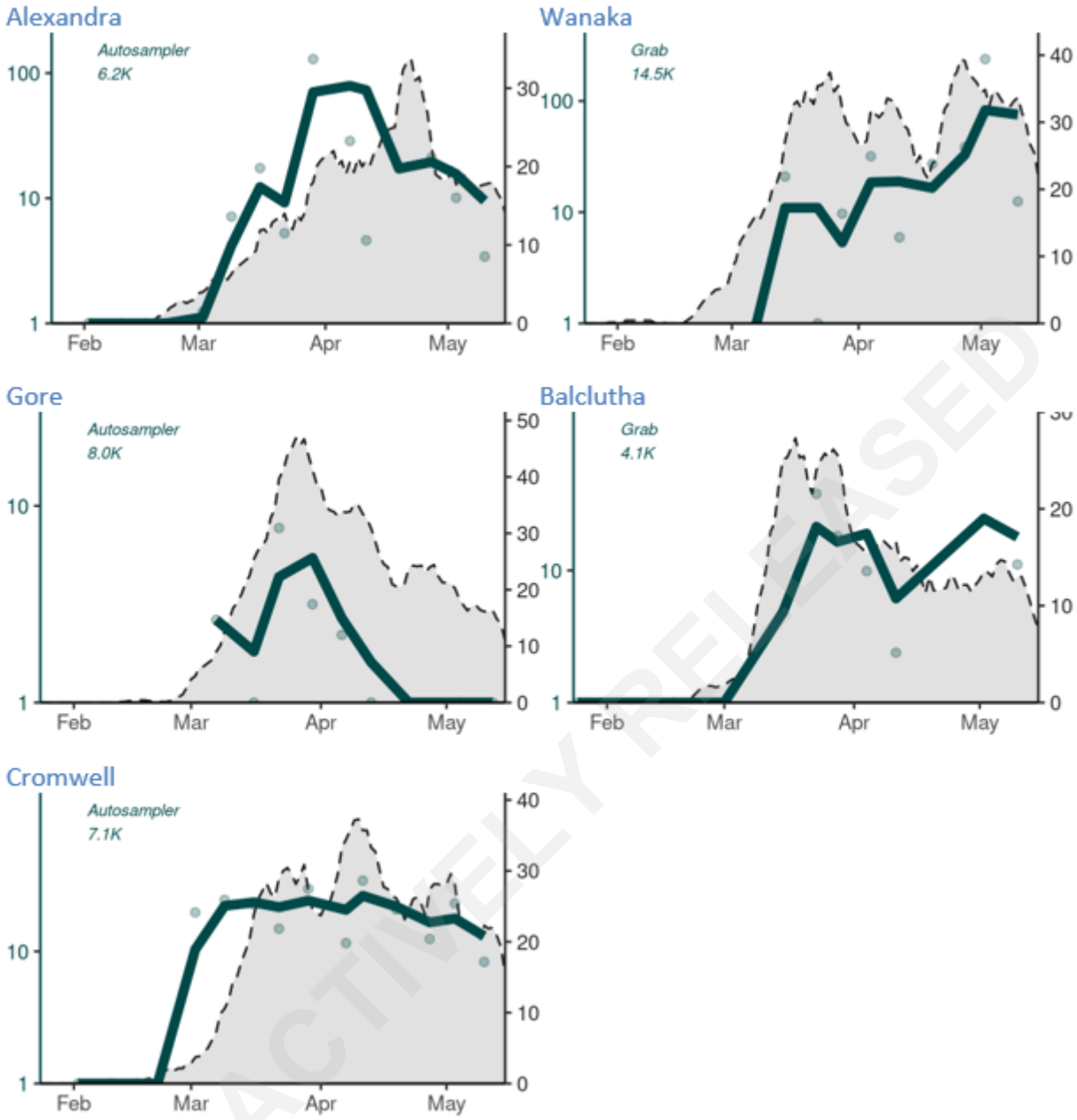


Invercargill



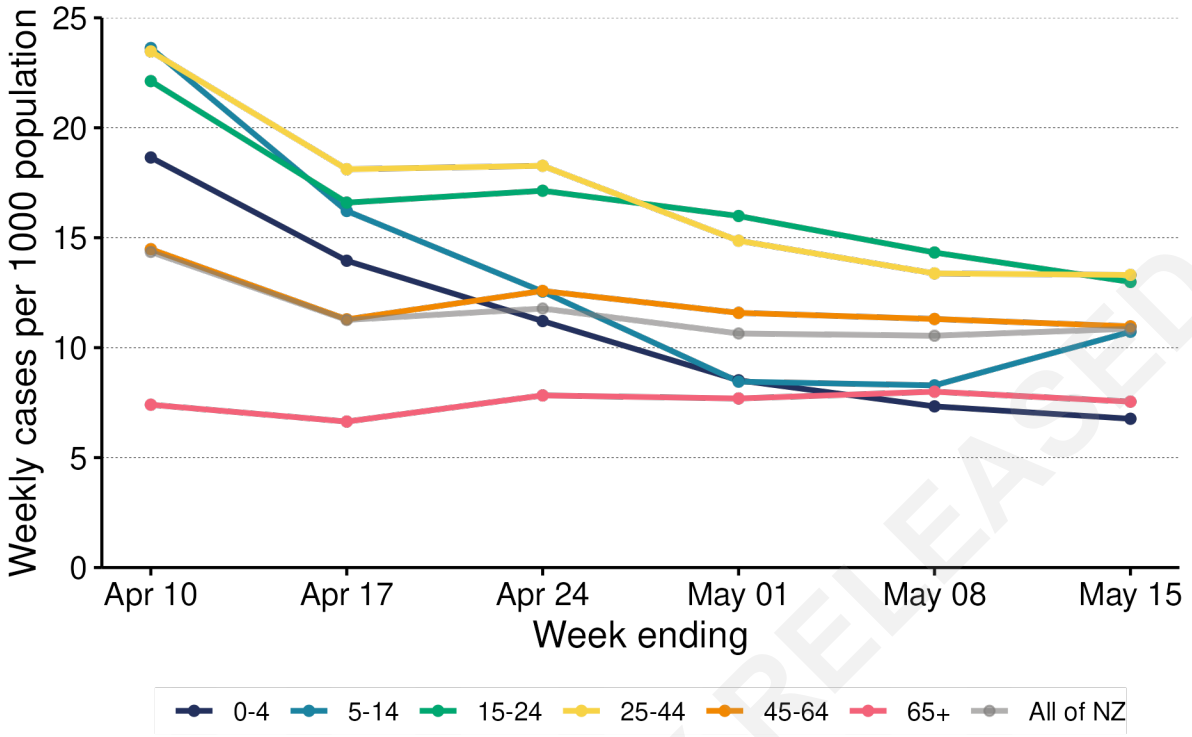
Dunedin (Tahuna)



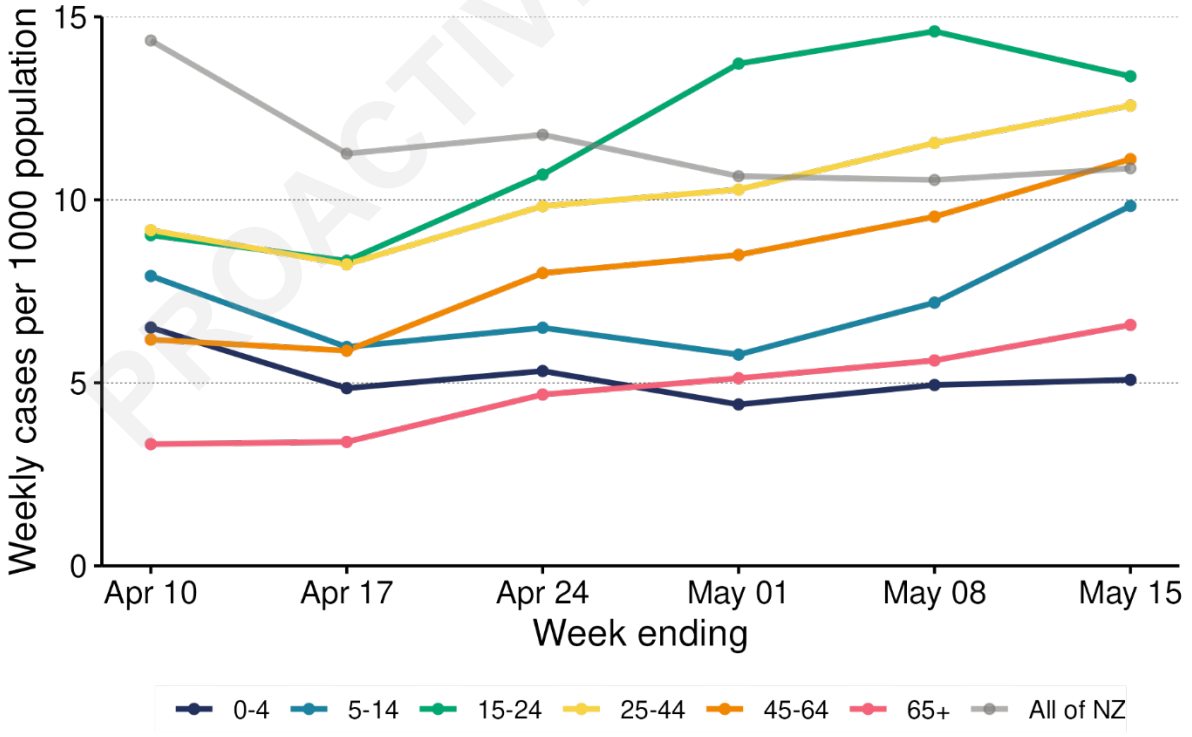


Age Graphs

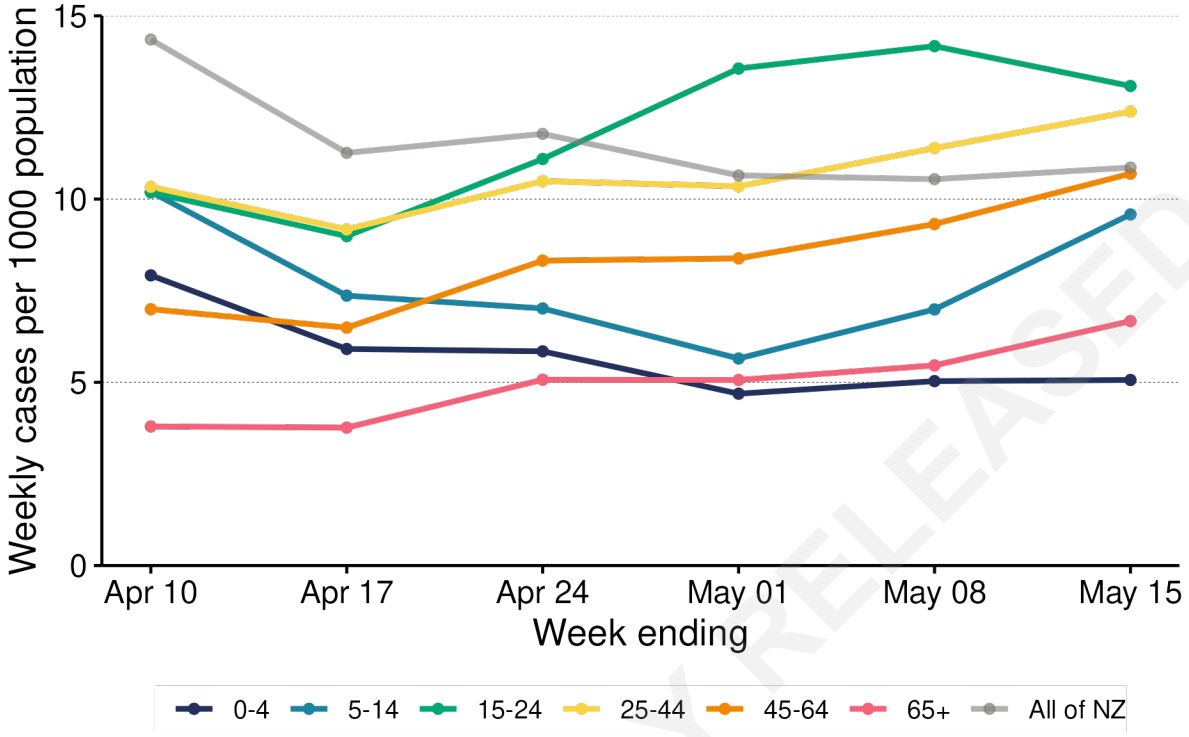
NZ Excluding Auckland Region



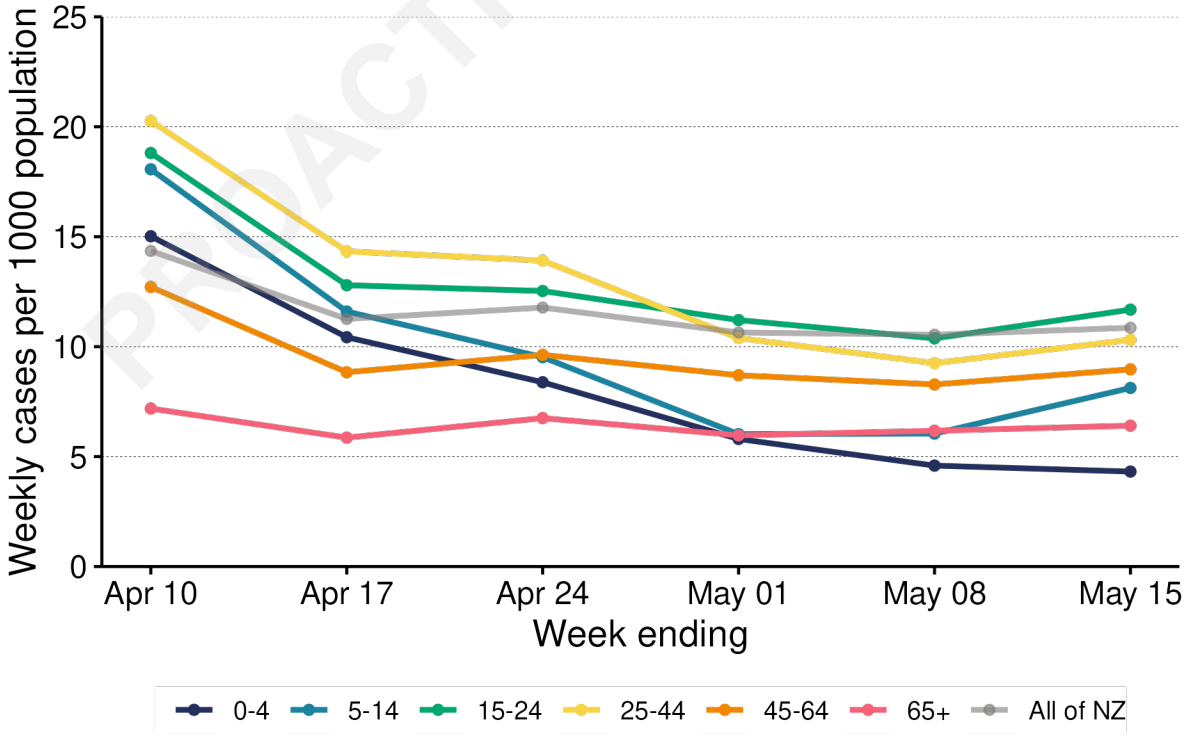
Auckland Region



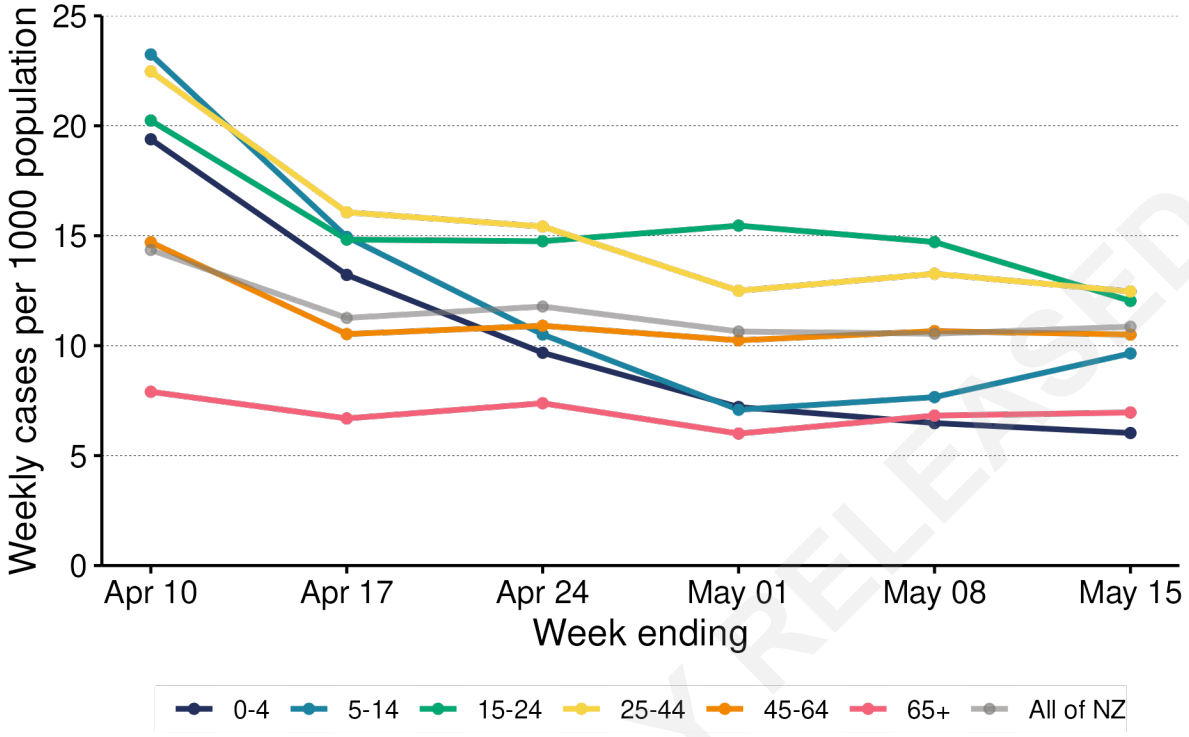
Northern Region



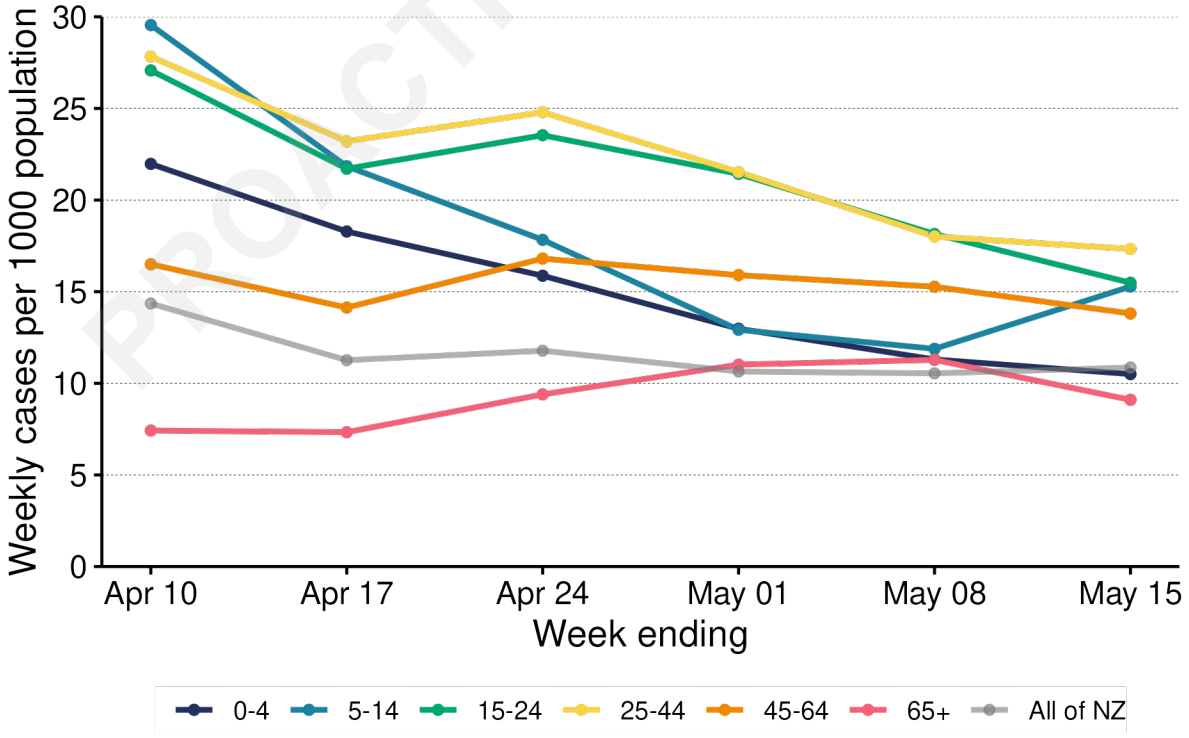
Te Manawa Taki



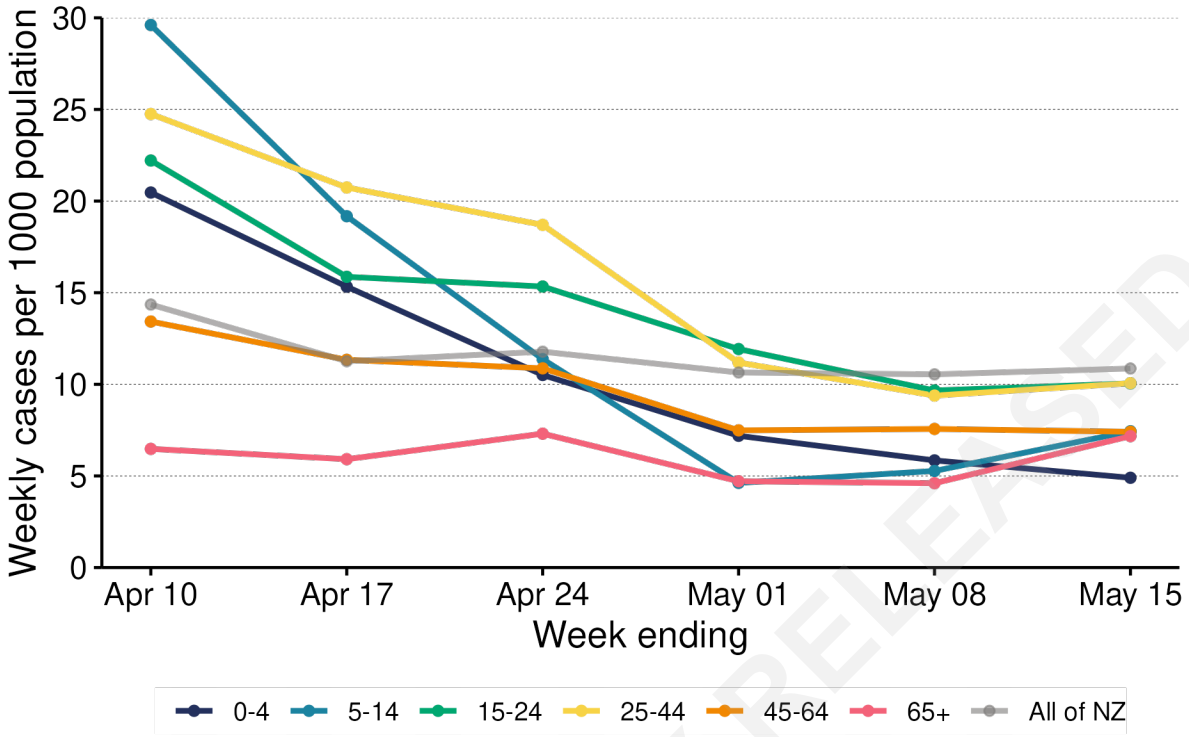
Central Region



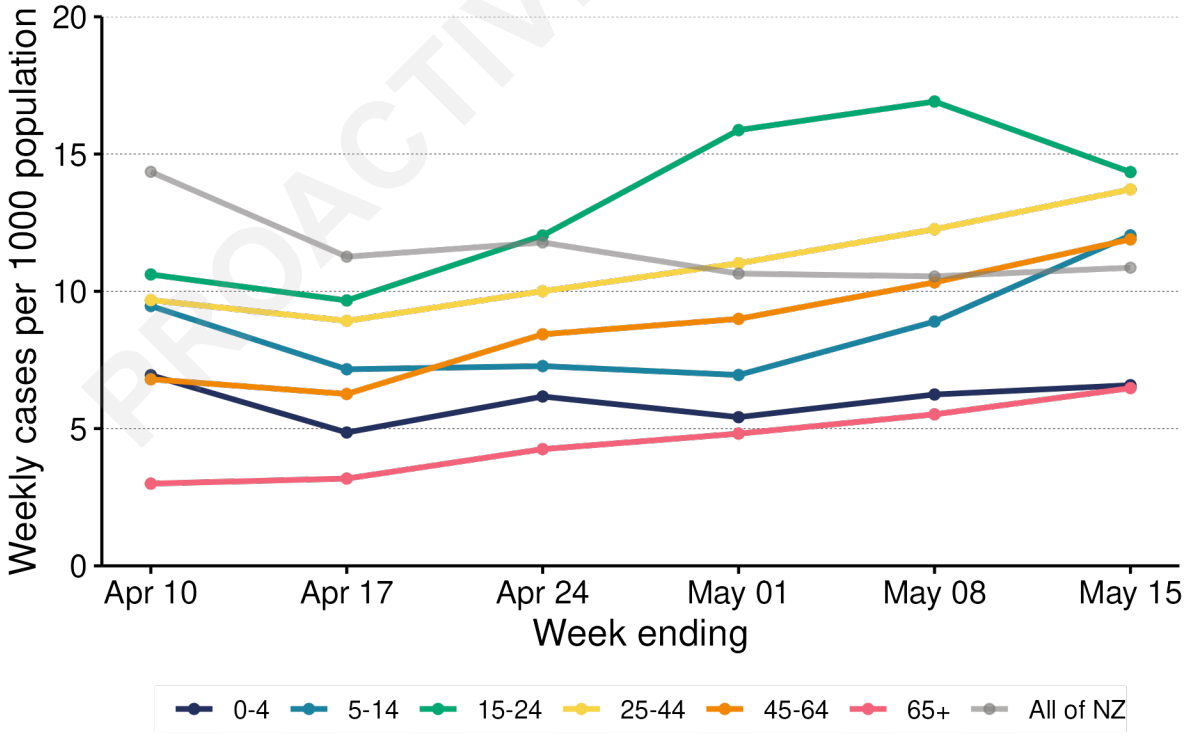
Southern Region



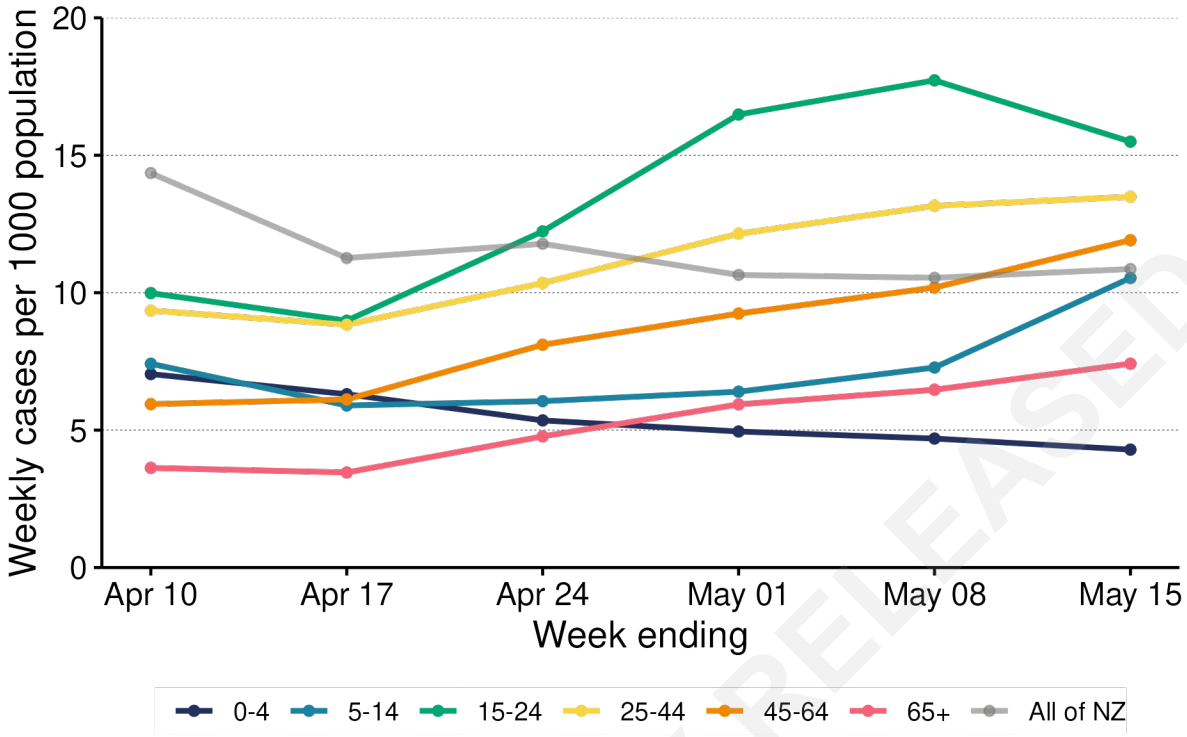
Northland DHB



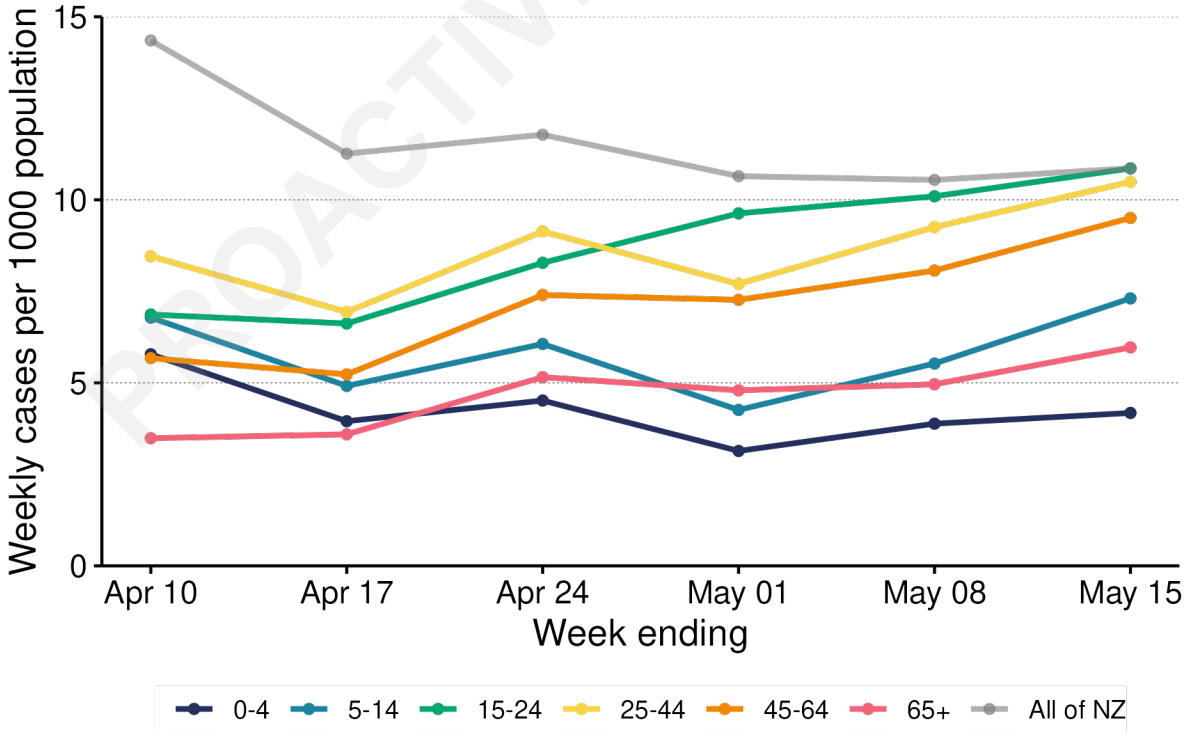
Waitemata DHB



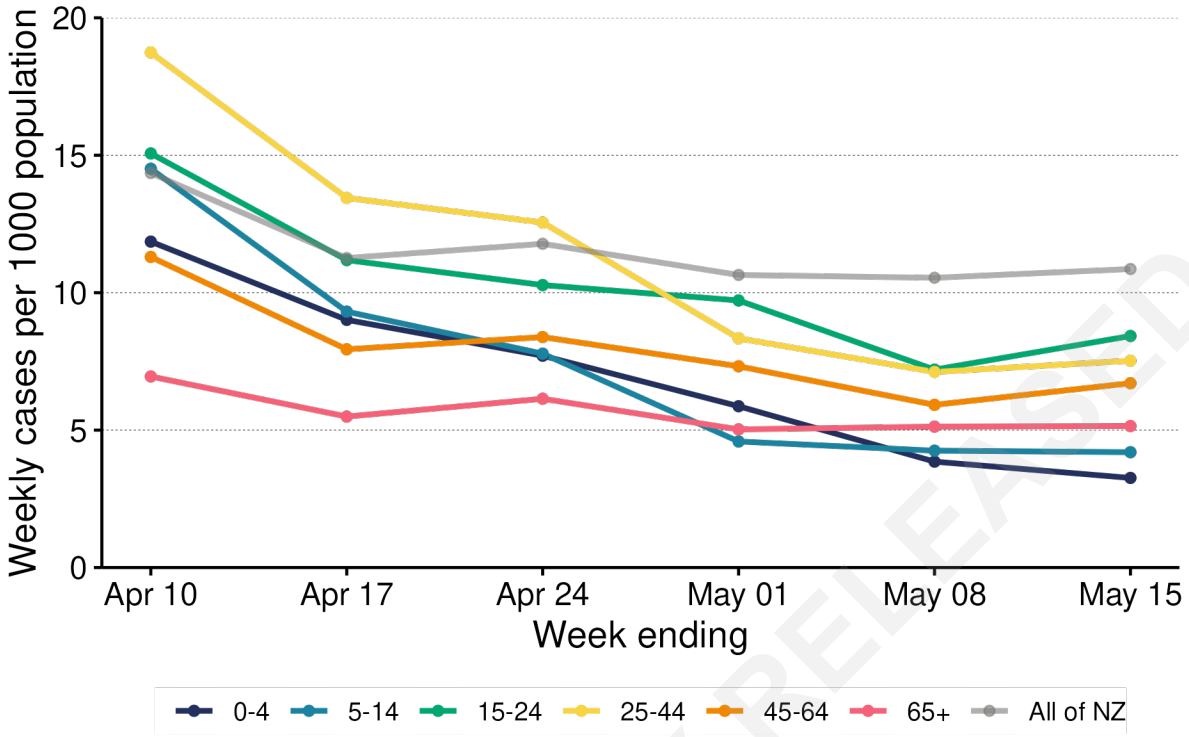
Auckland DHB



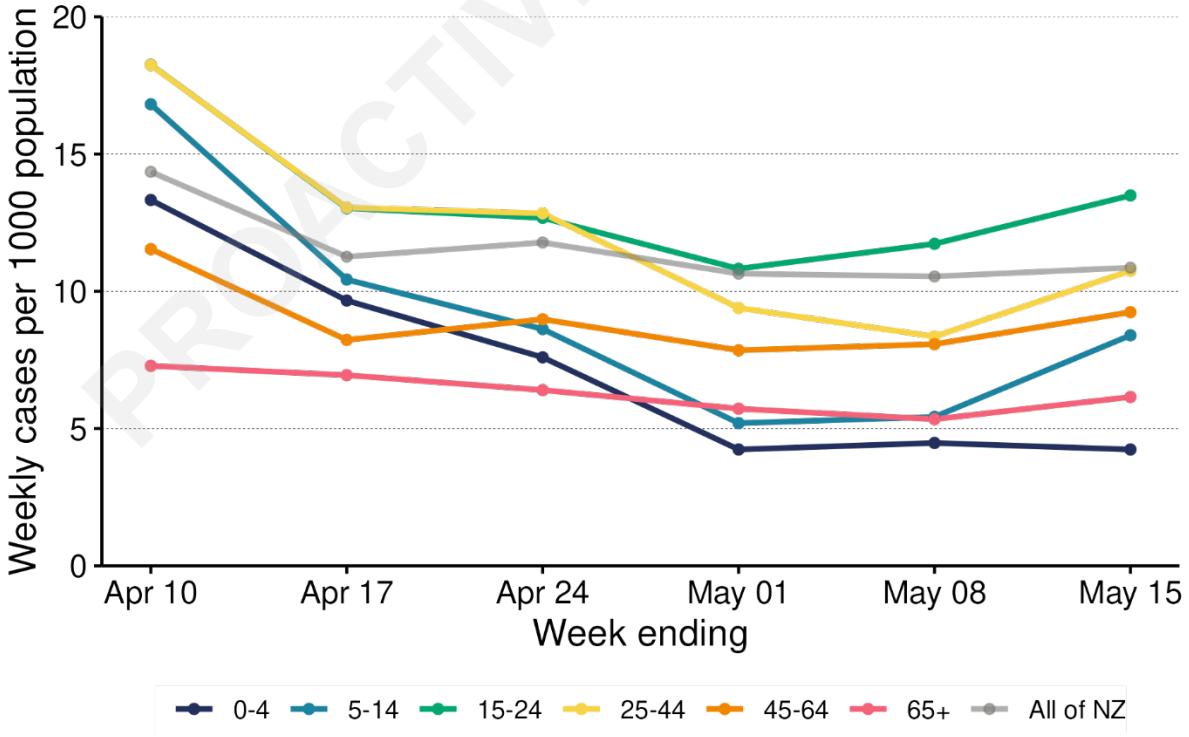
Counties Manukau DHB



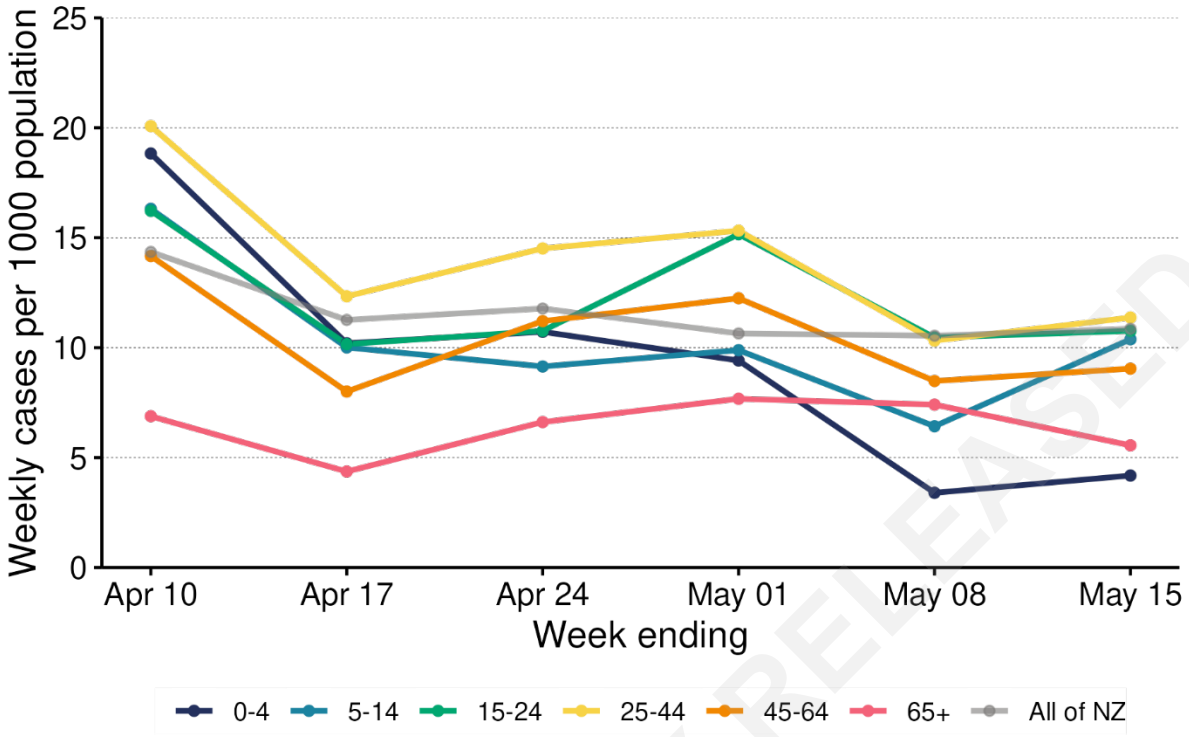
Bay of Plenty DHB



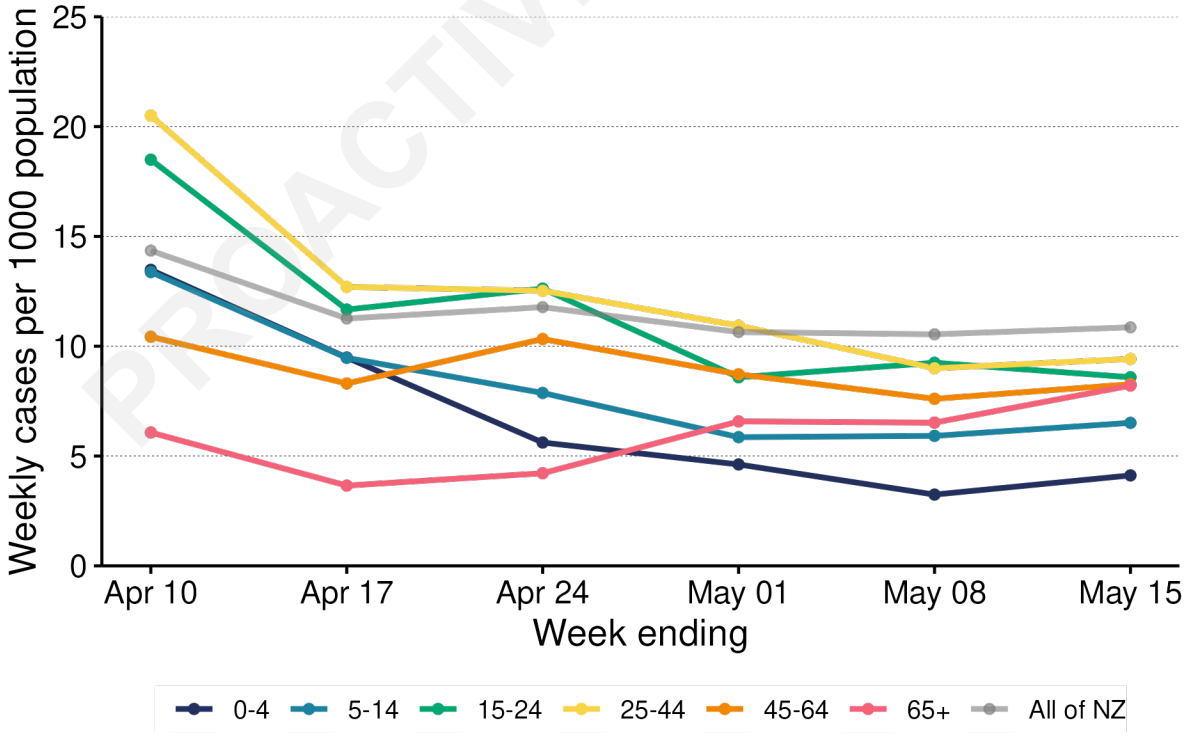
Waikato DHB



Tairawhiti DHB



Lakes DHB



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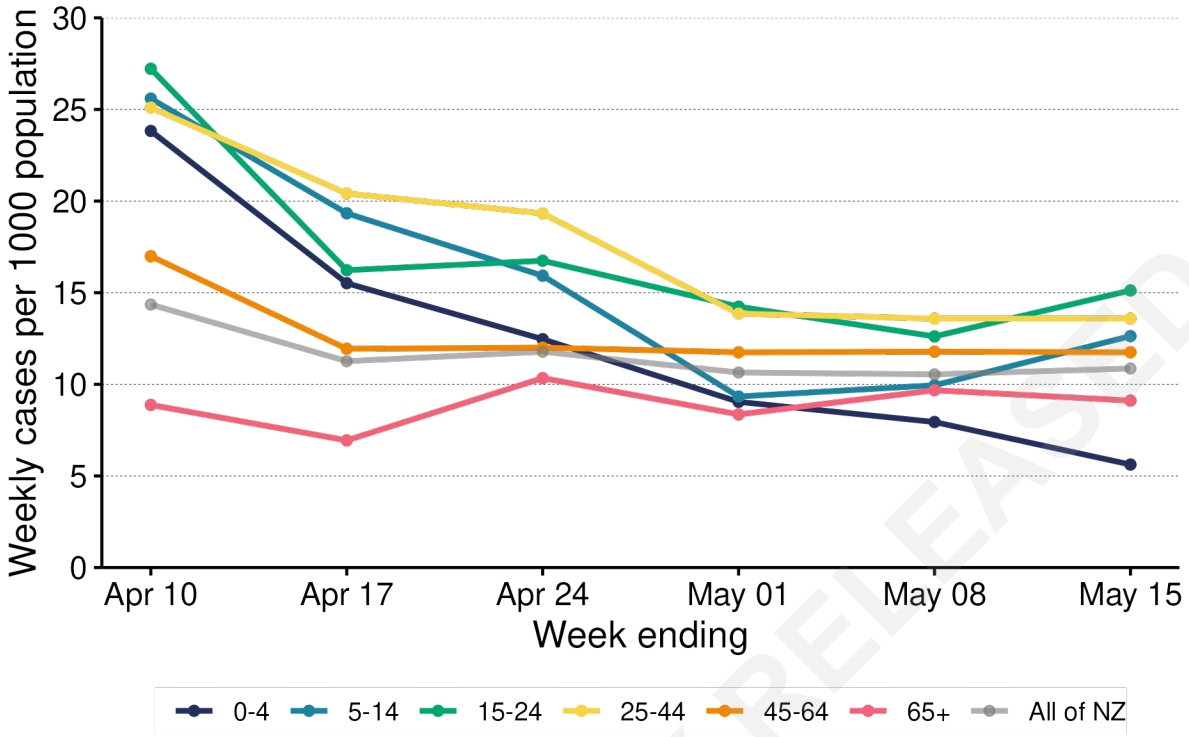
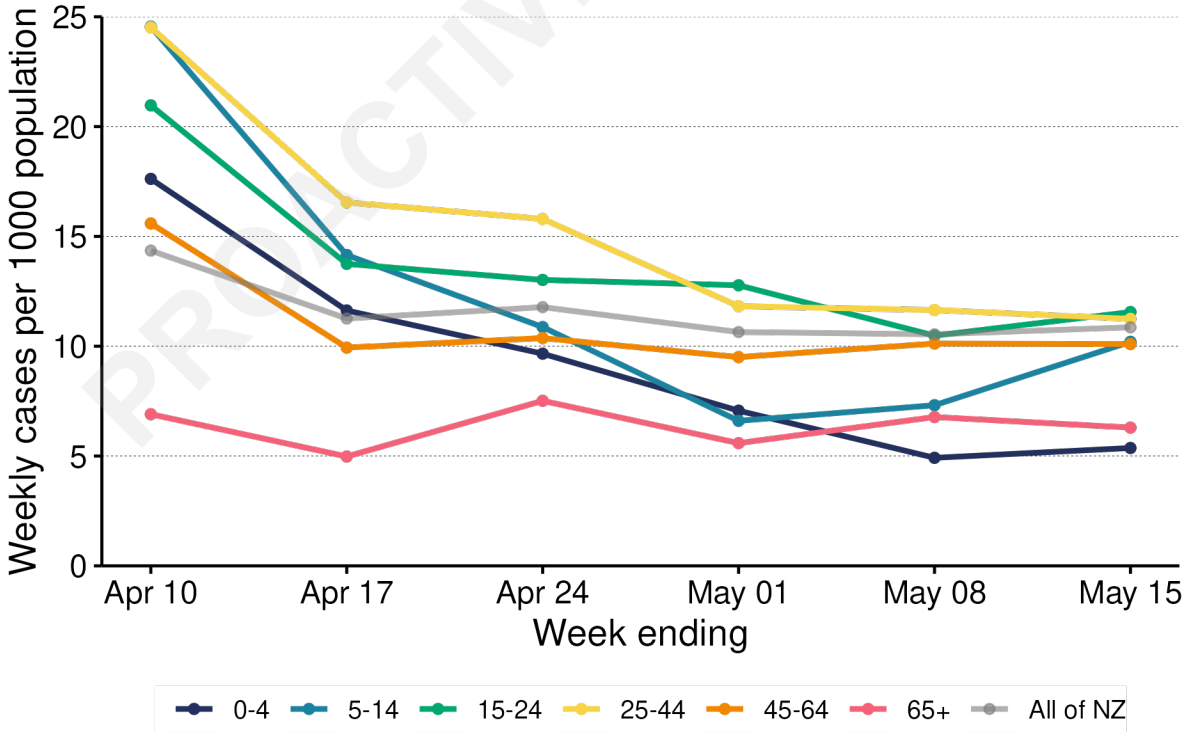
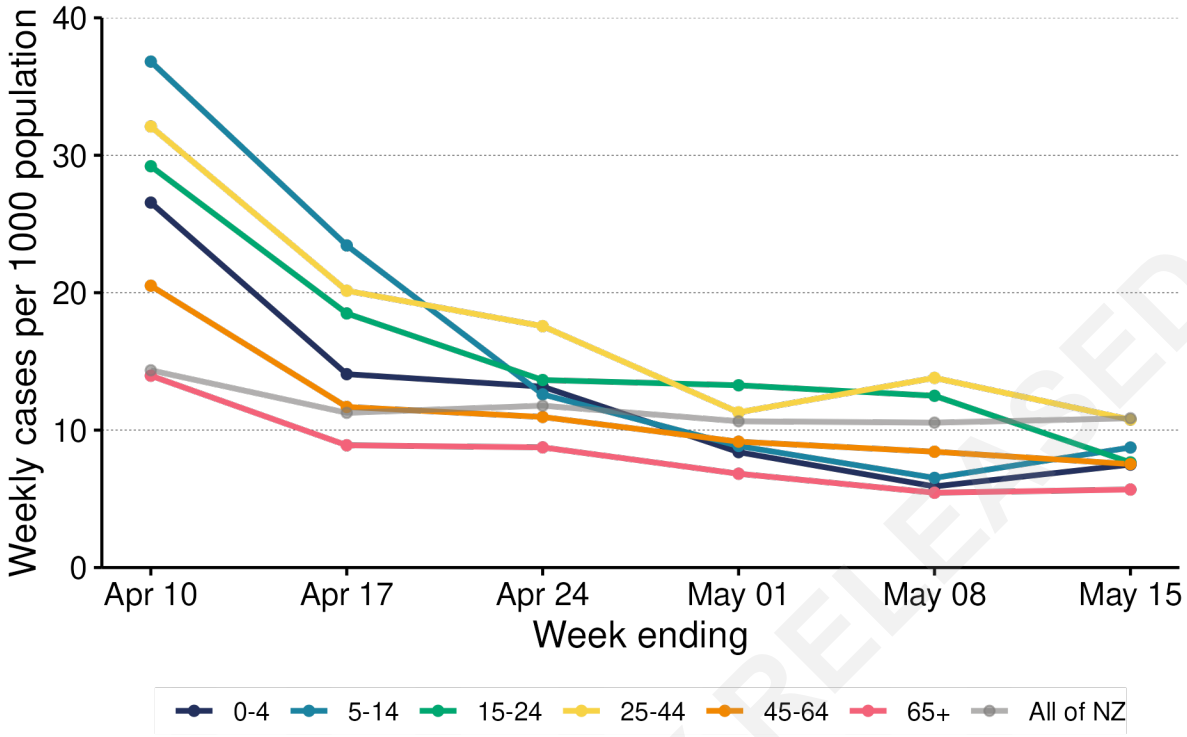


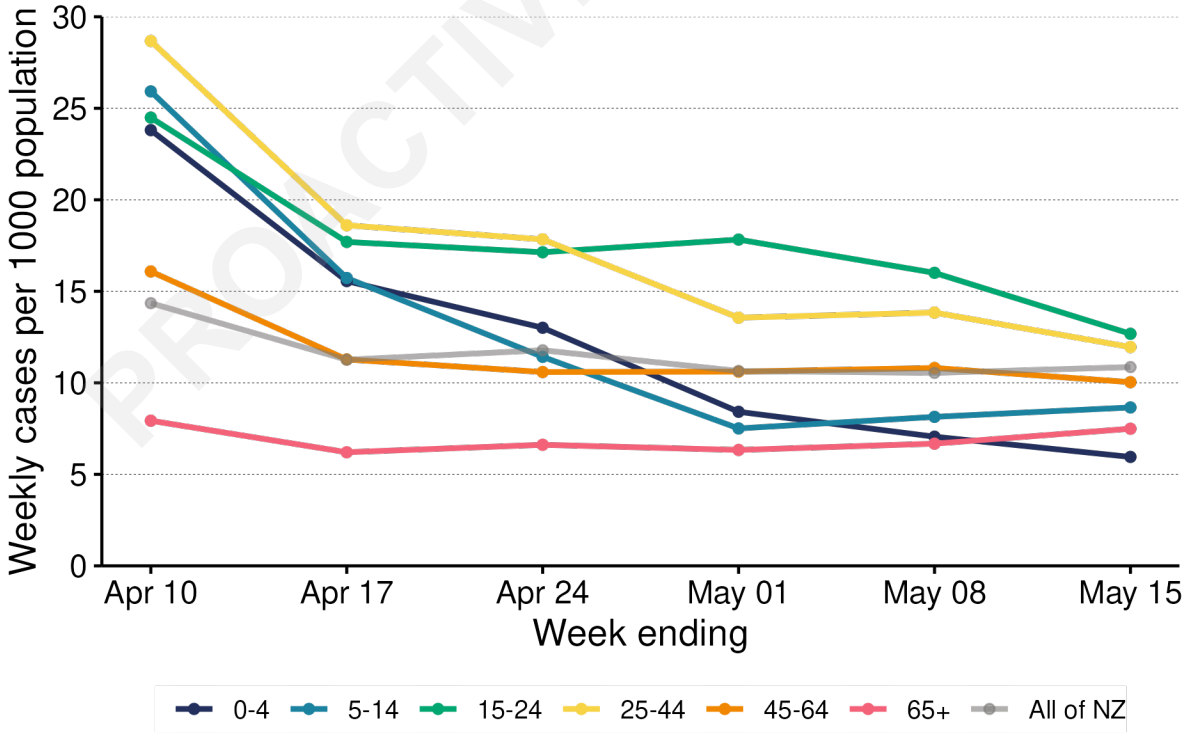
Hawke's Bay DHB



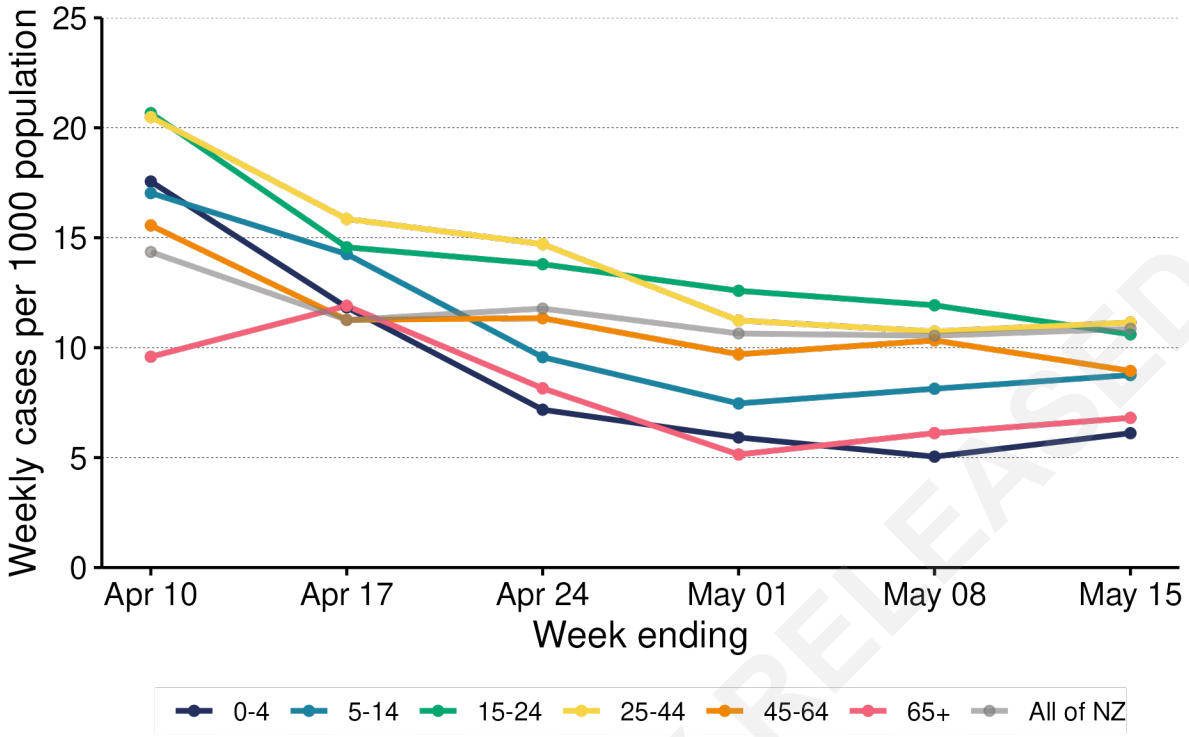
Whanganui DHB



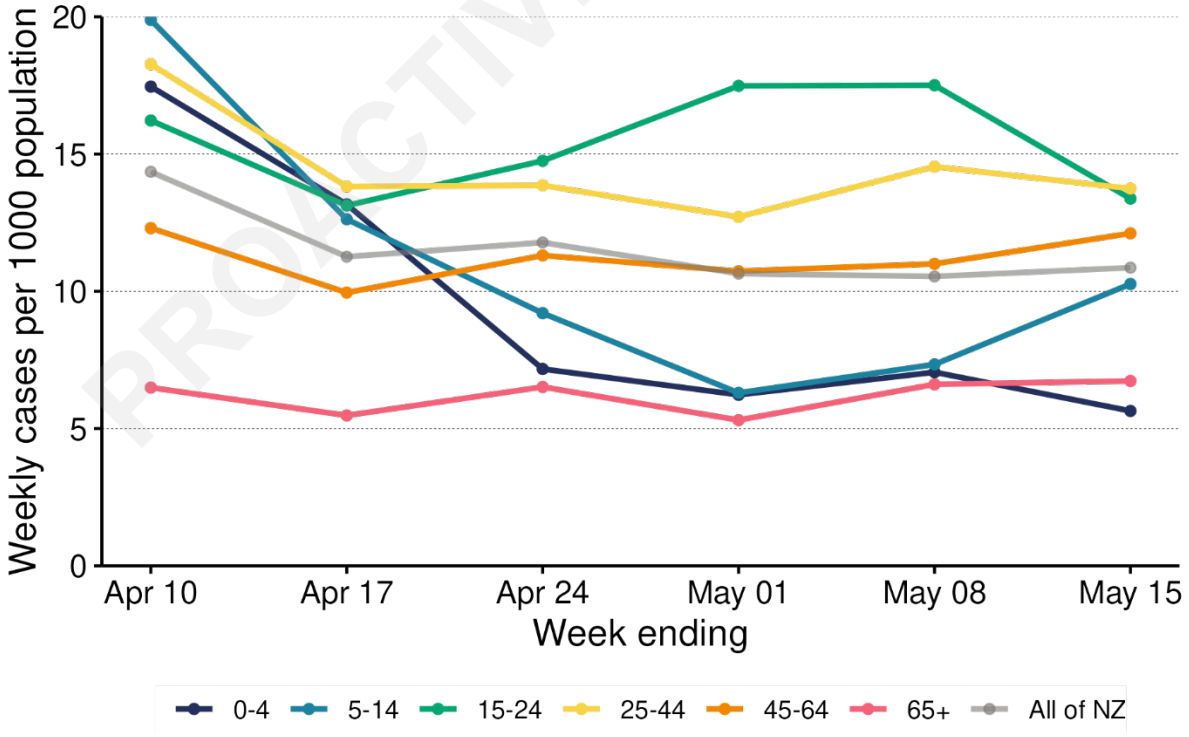
MidCentral DHB



Hutt Valley DHB



Capital and Coast DHB



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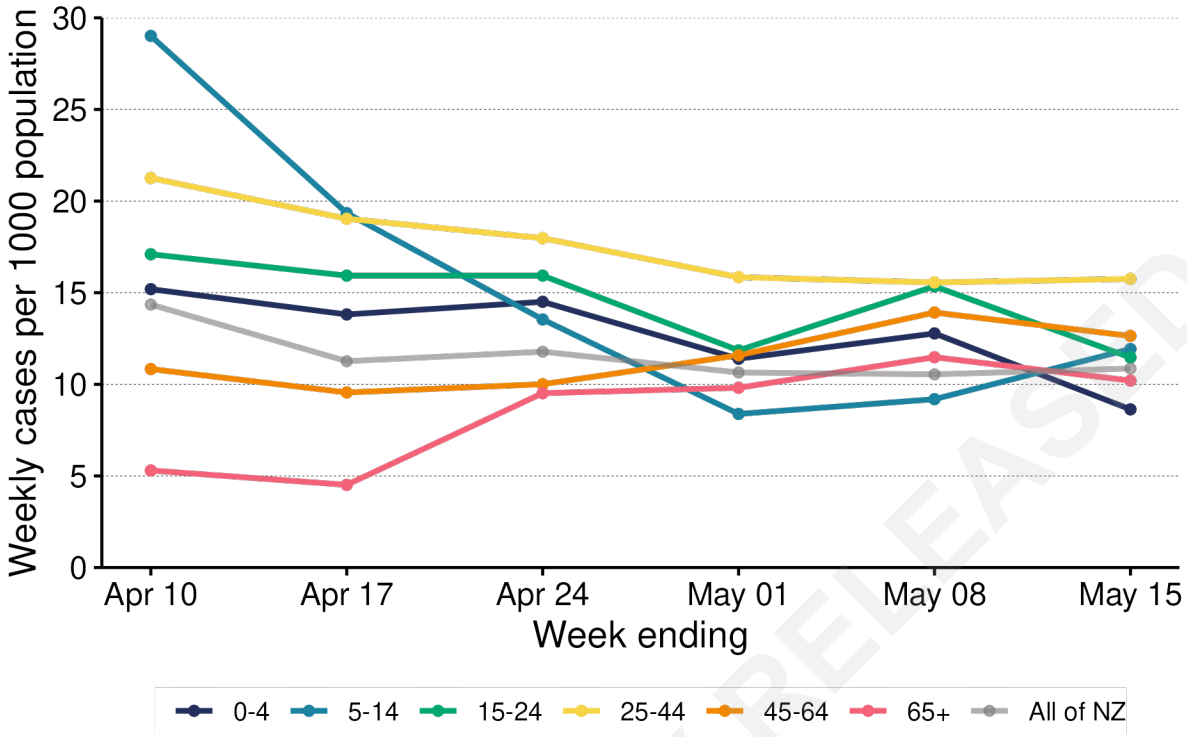
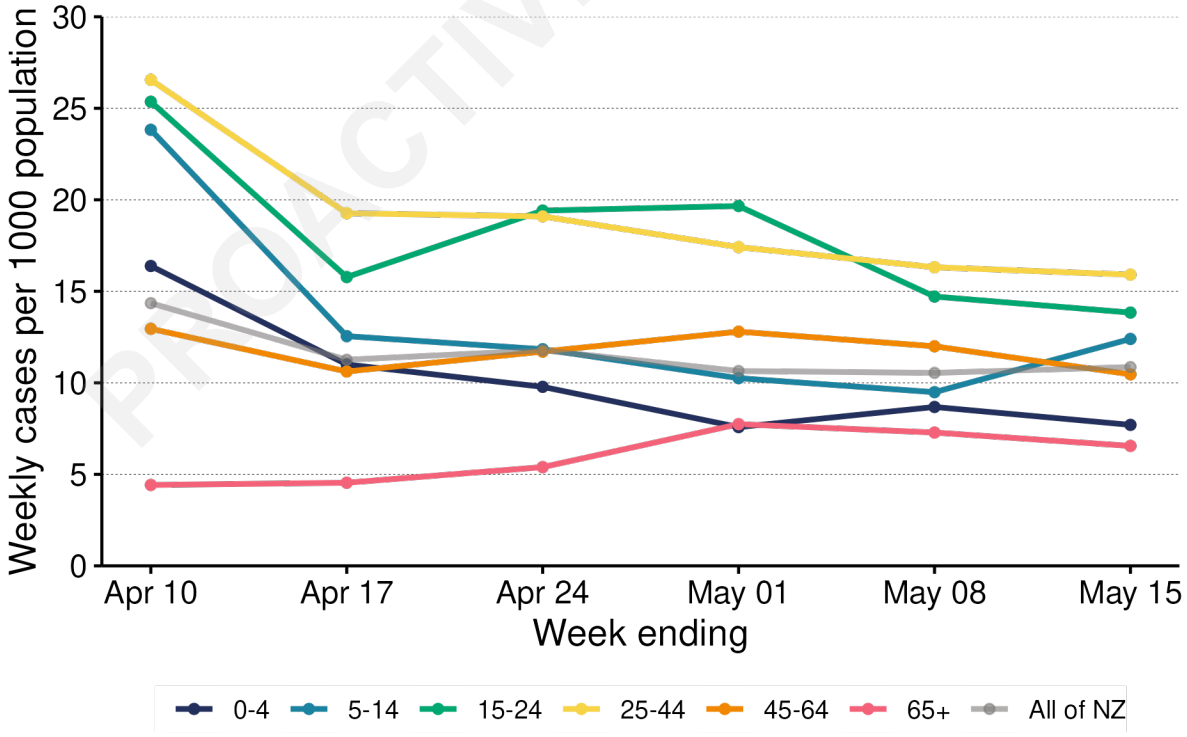
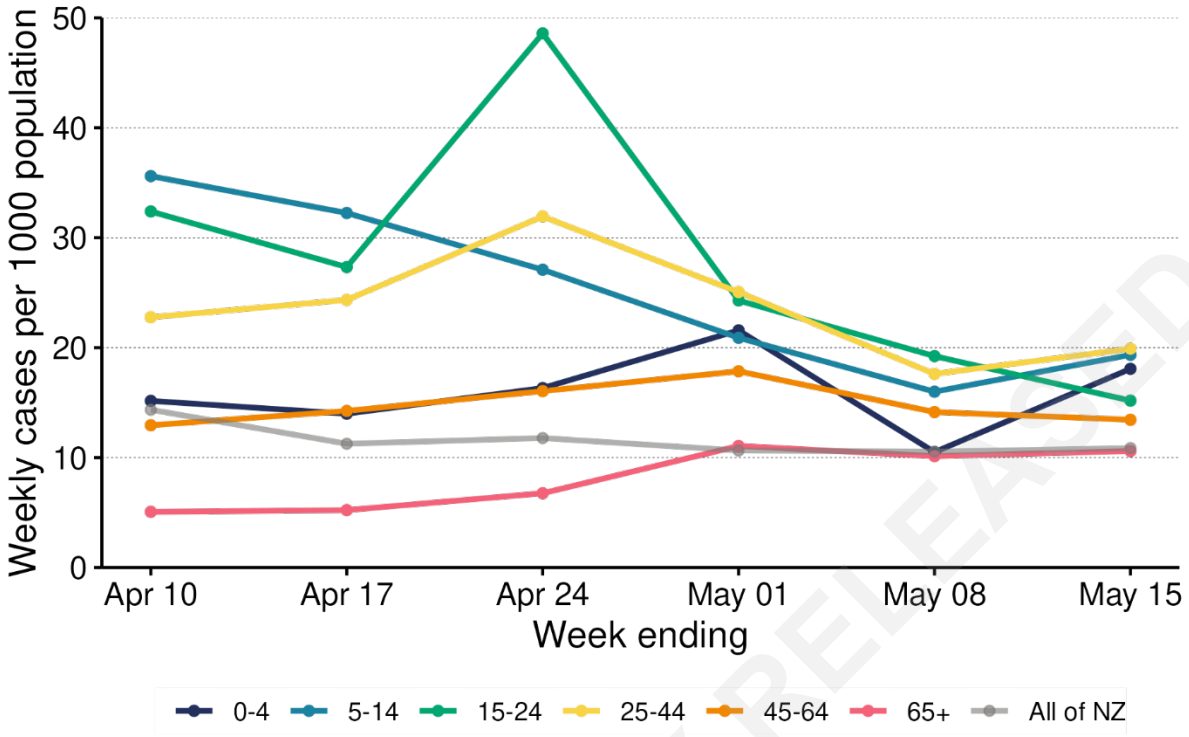


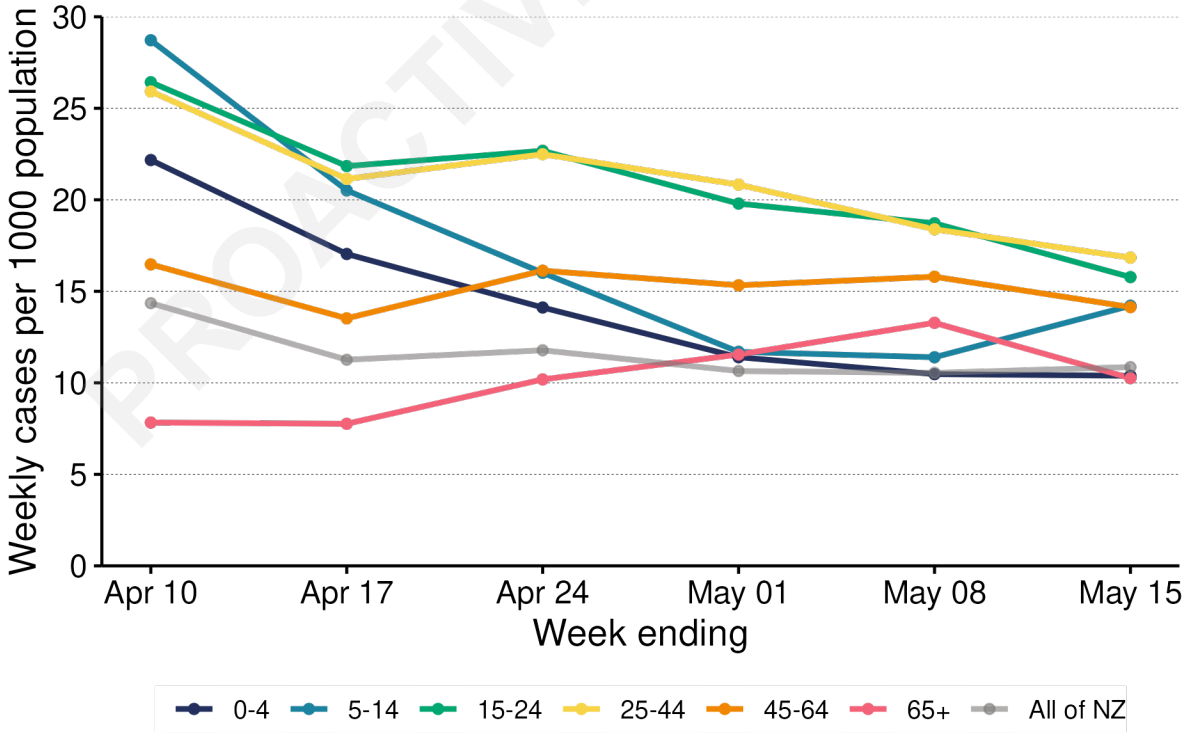
Nelson Marlborough DHB



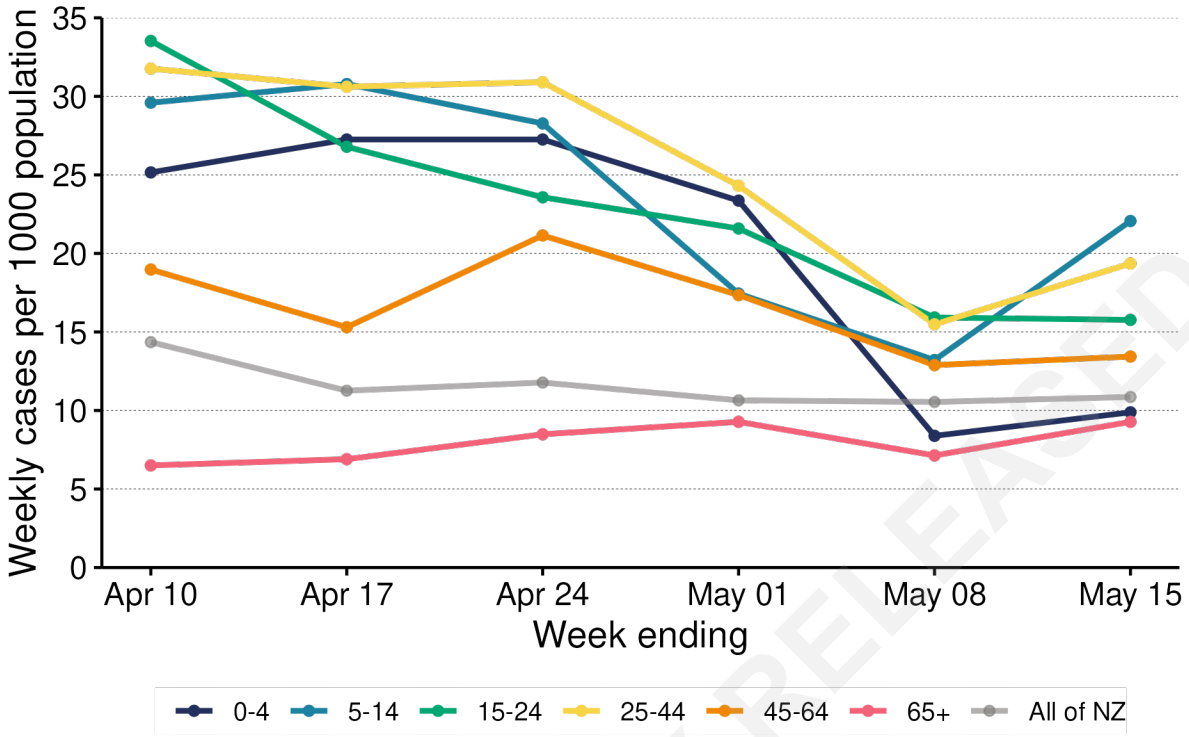
West Coast DHB



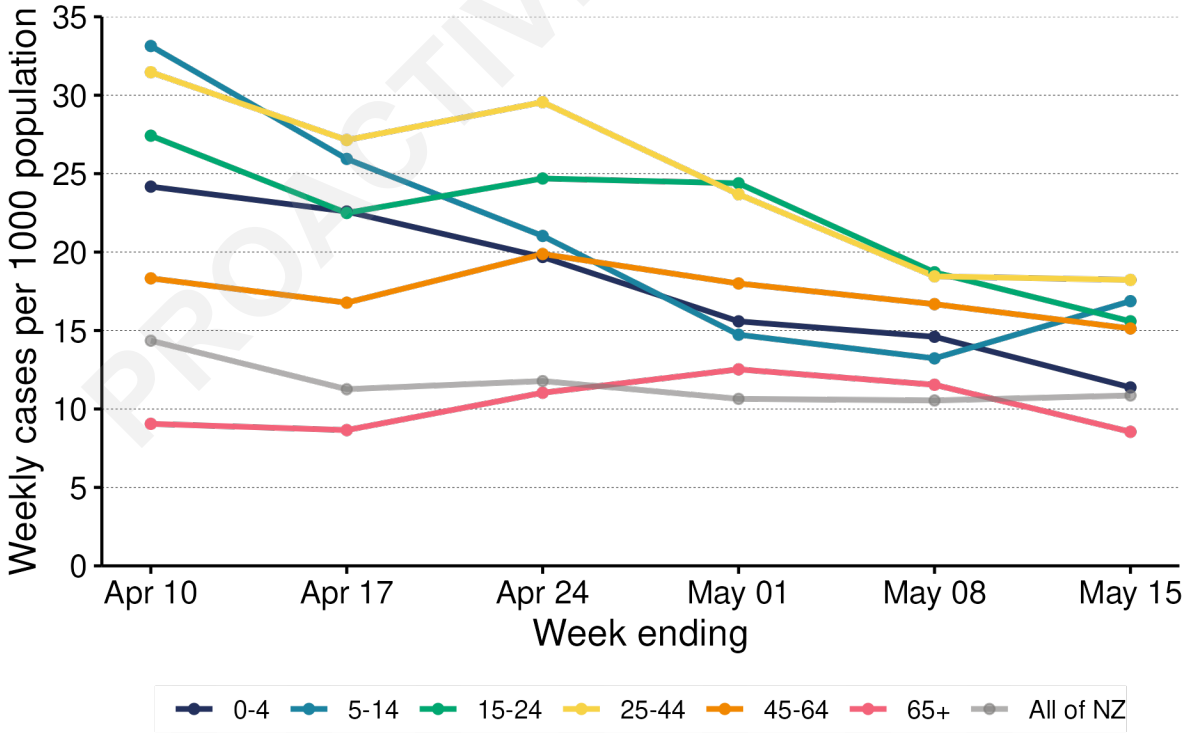
Canterbury DHB



South Canterbury DHB



Southern DHB



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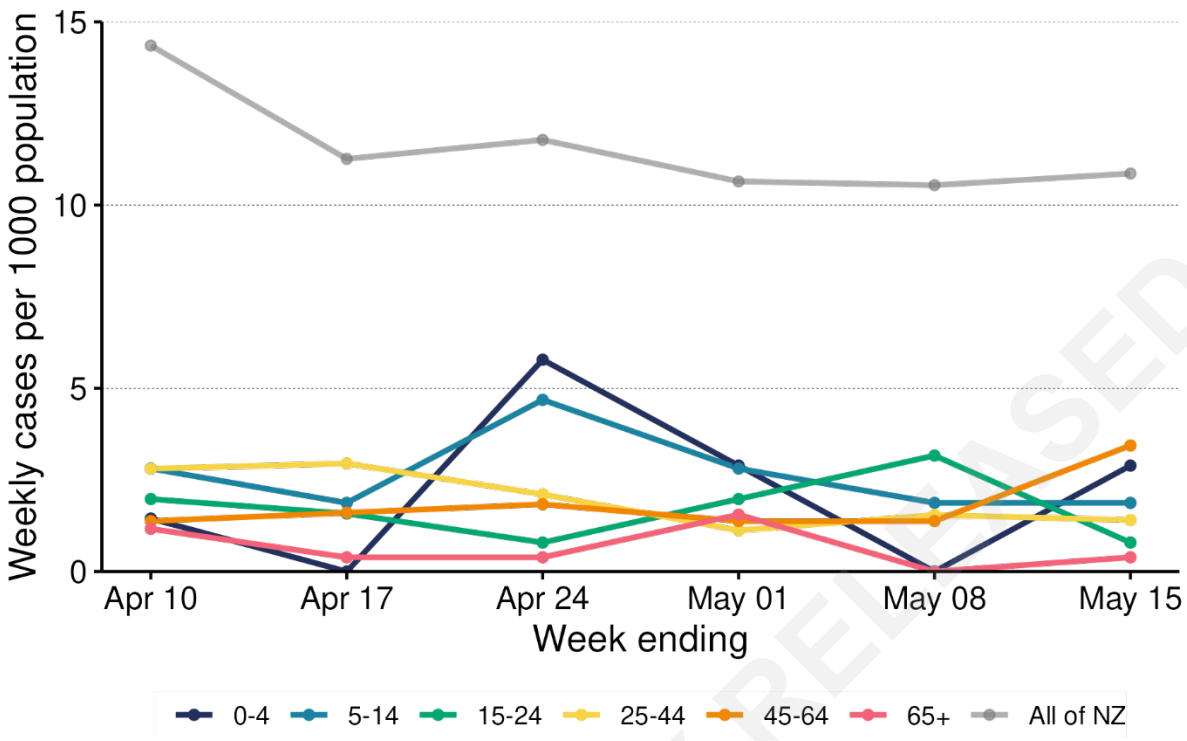
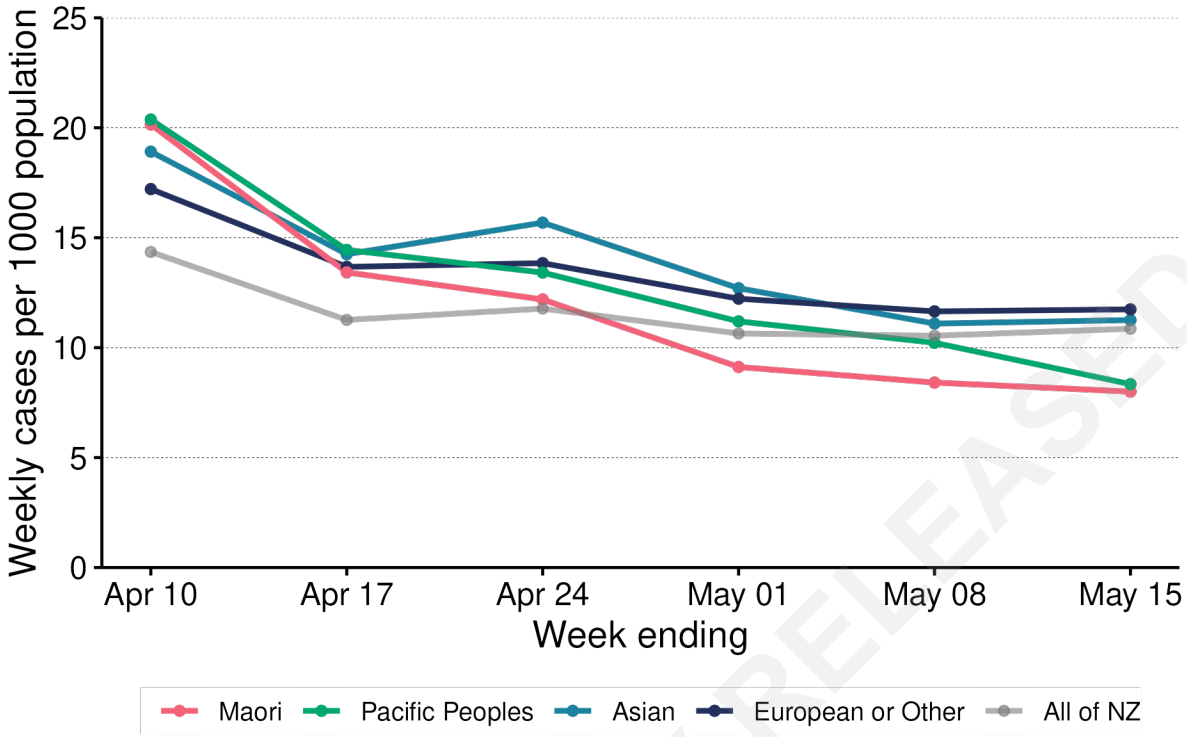
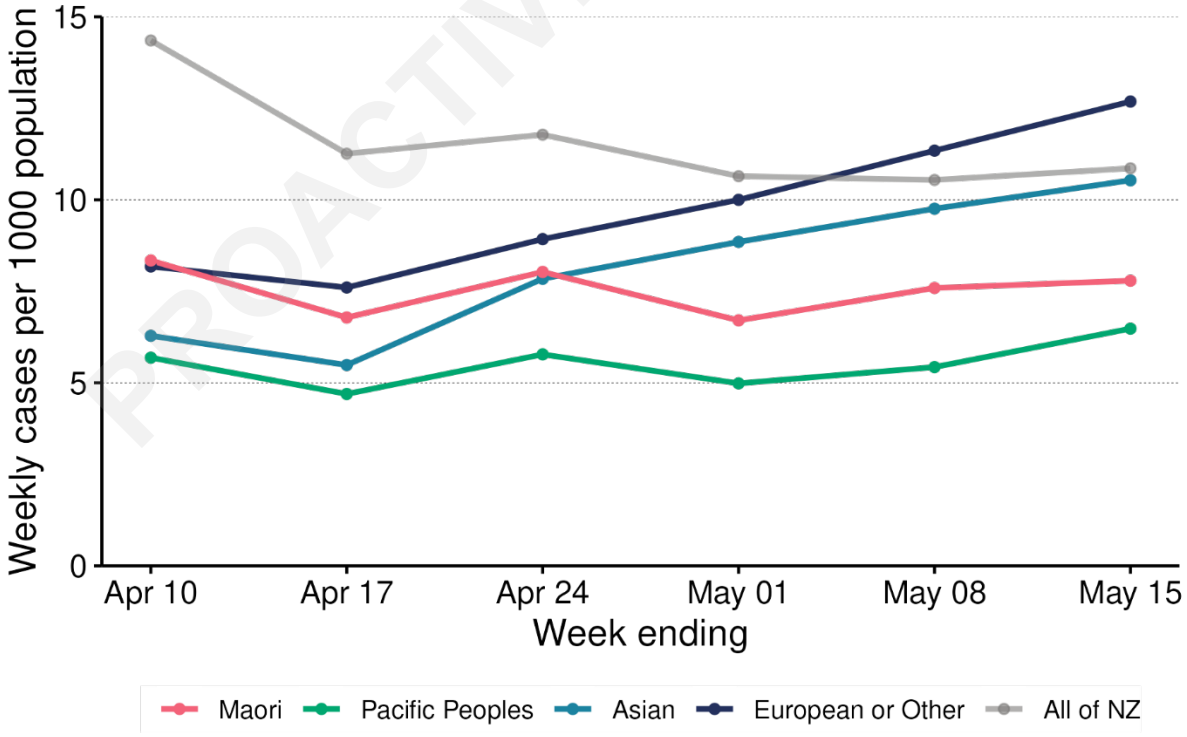


Ethnicity Graphs

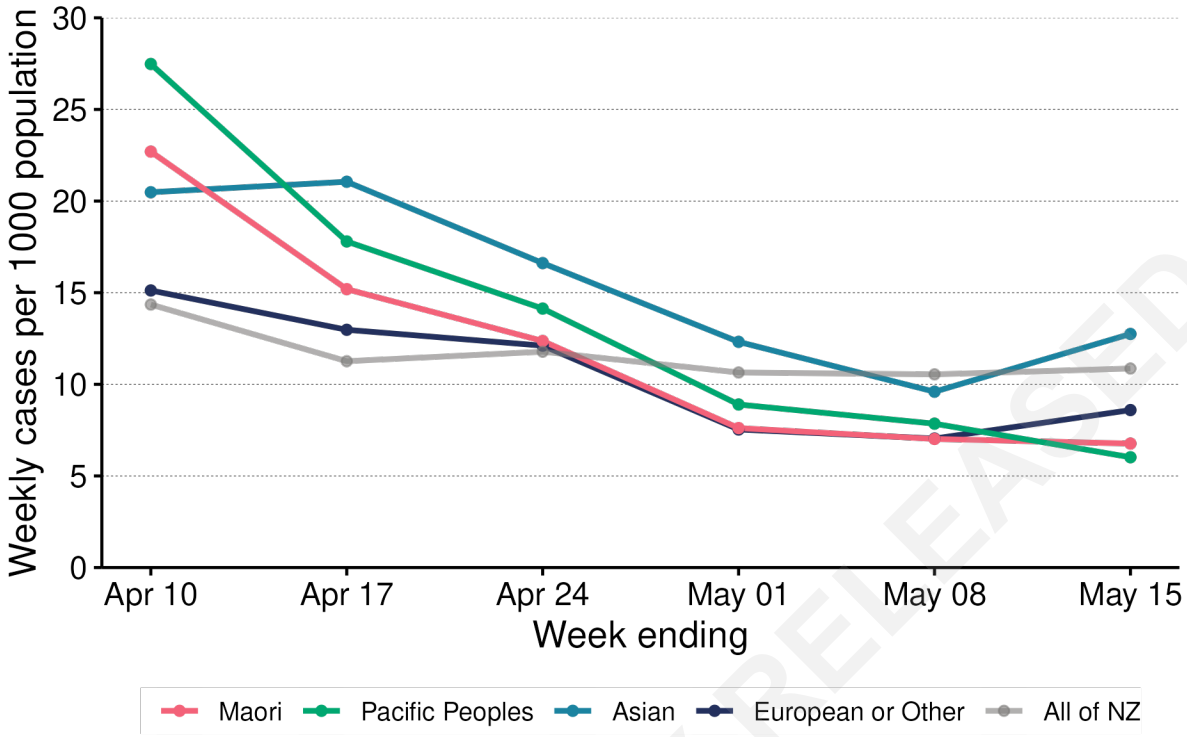
NZ Excluding Auckland Region



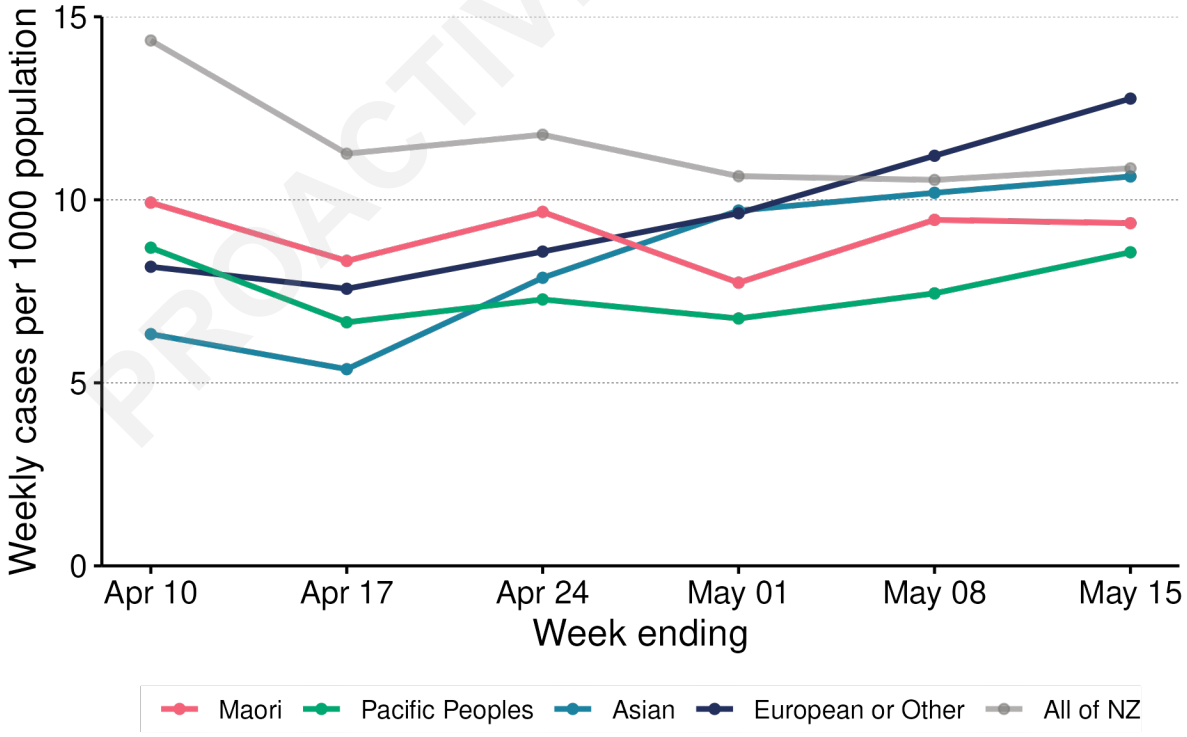
Auckland Region



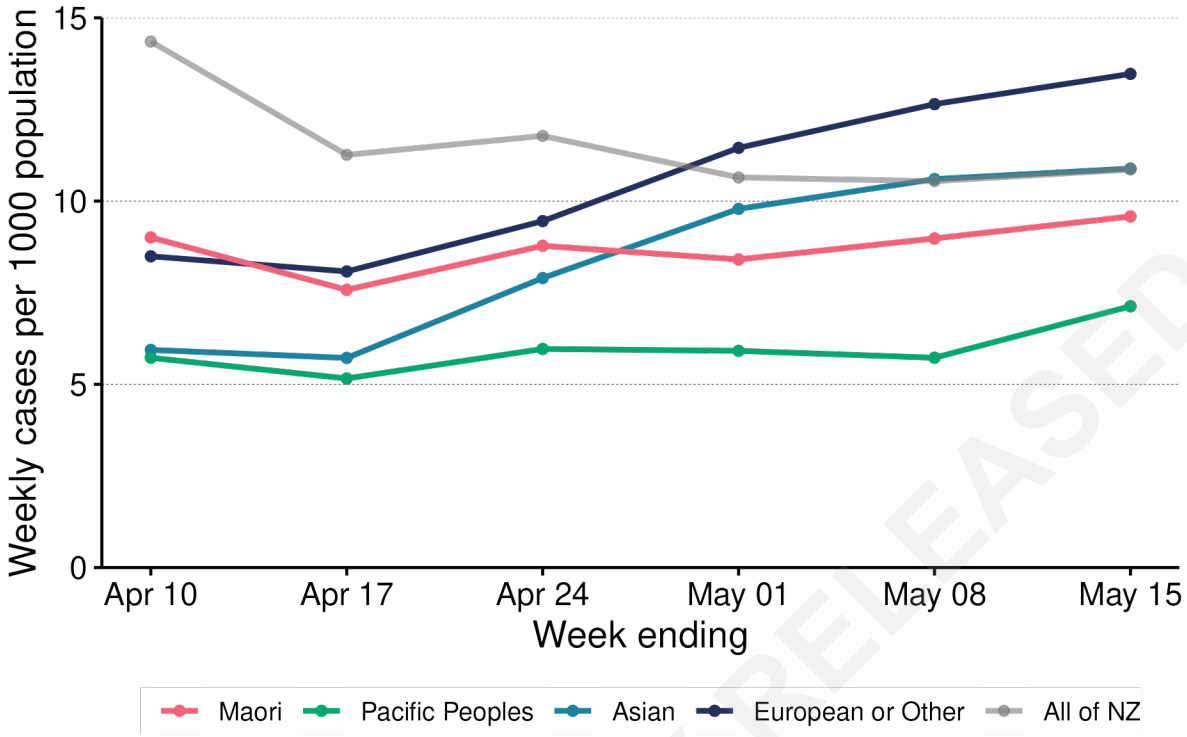
Northland DHB



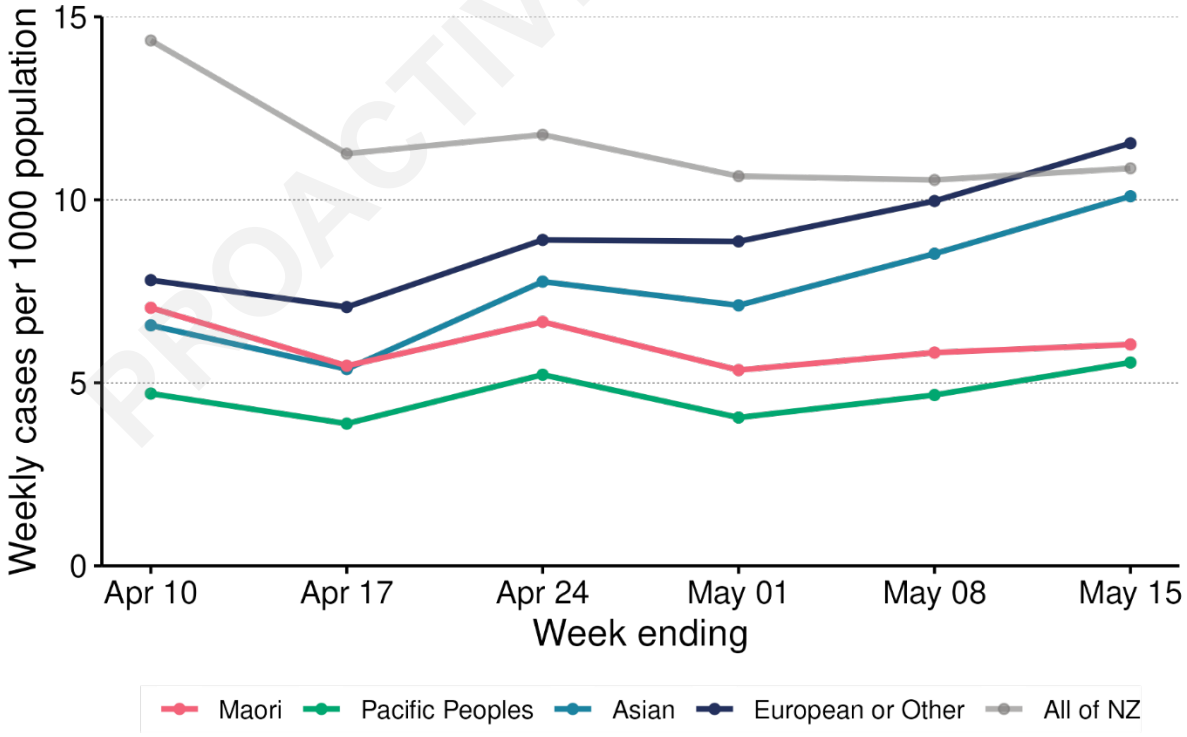
Waitemata DHB



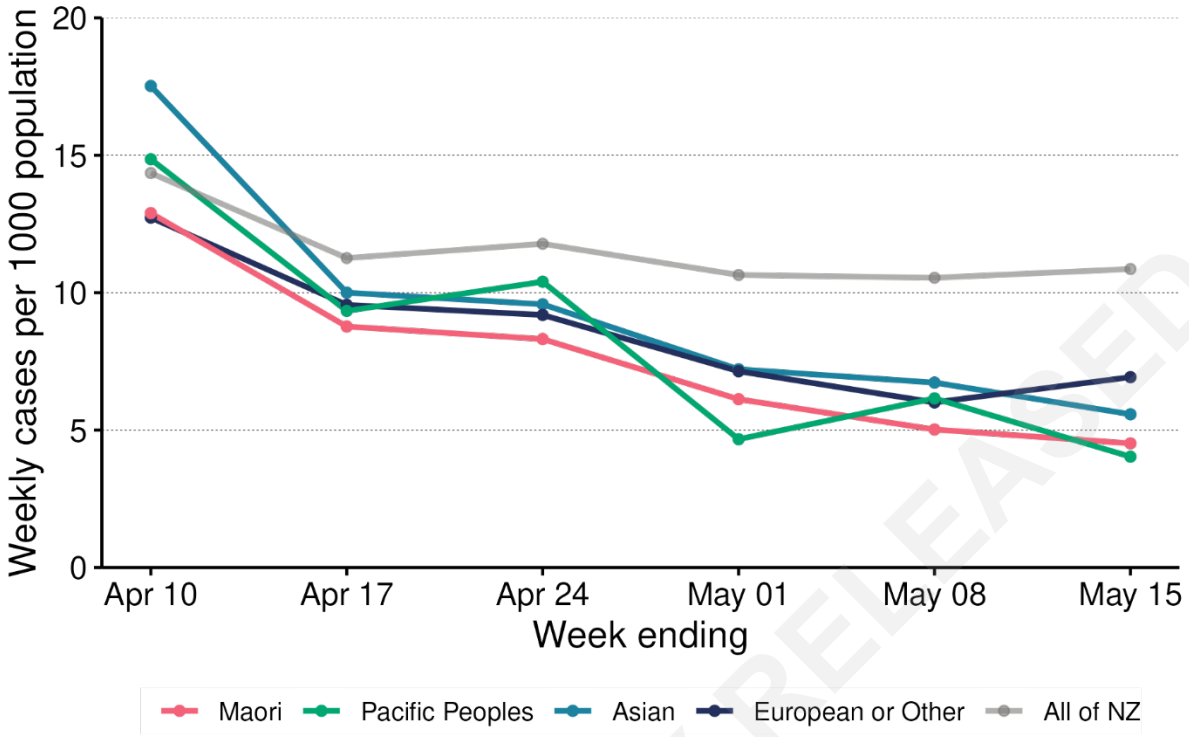
Auckland DHB



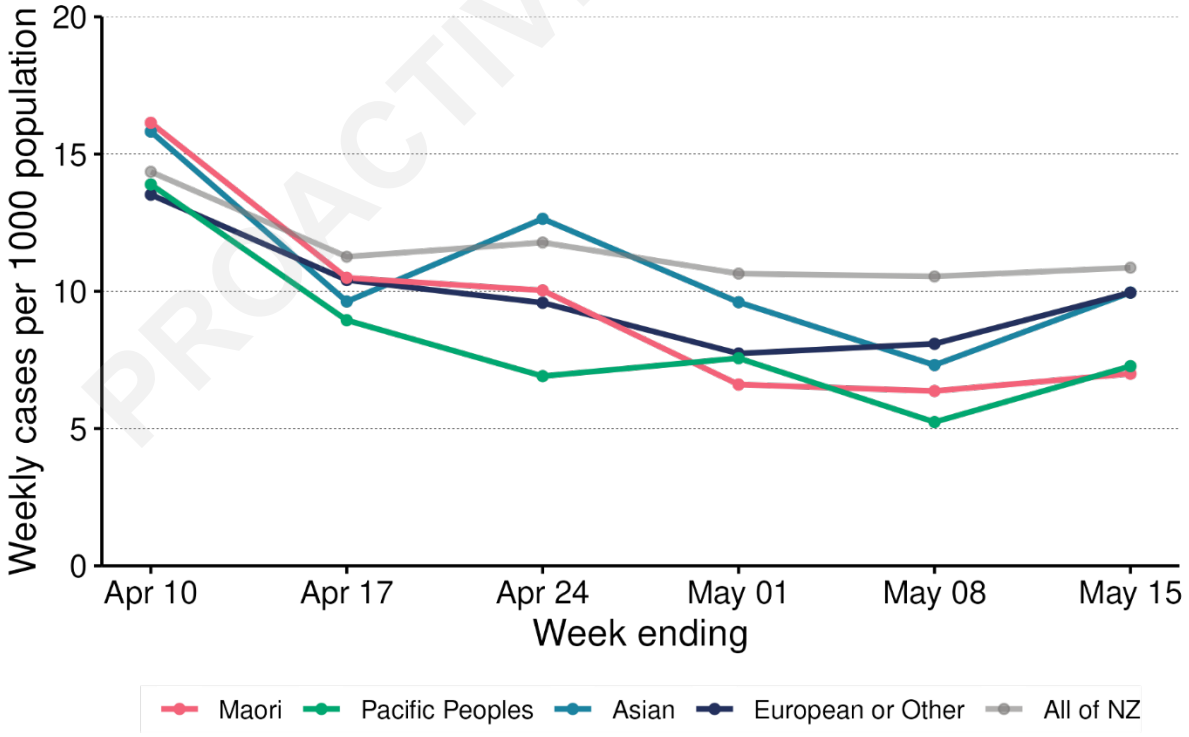
Counties Manukau DHB



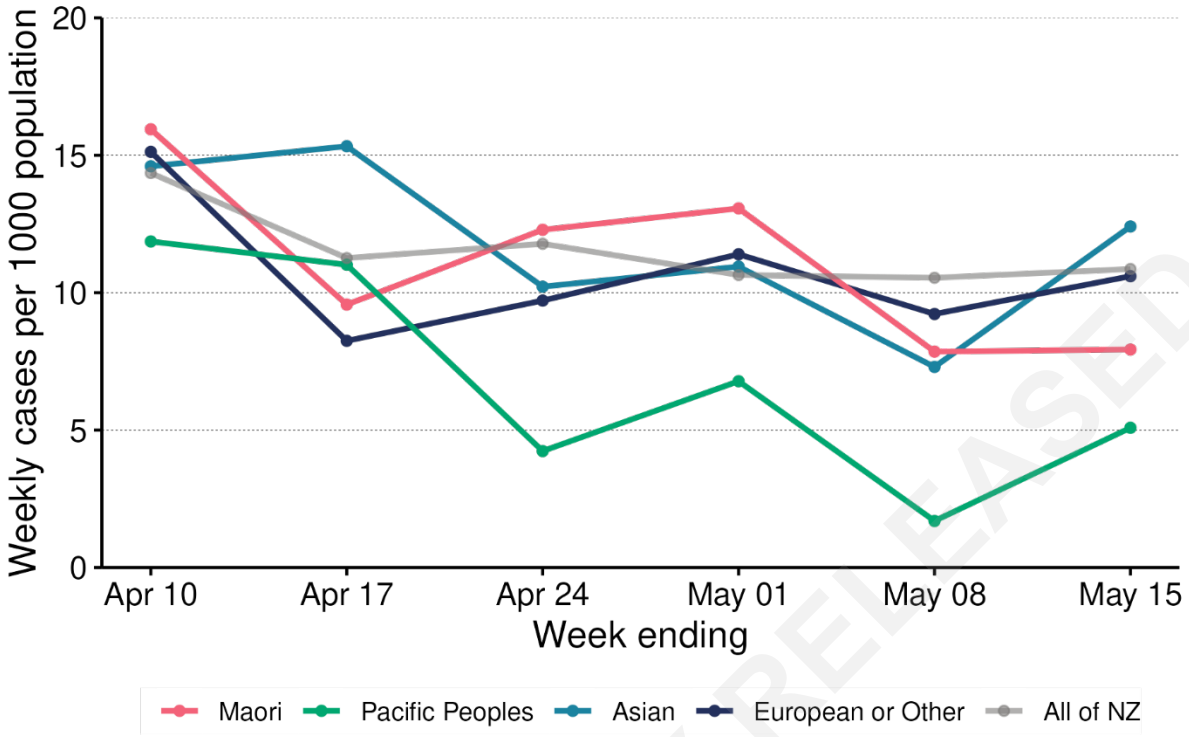
Bay of Plenty DHB



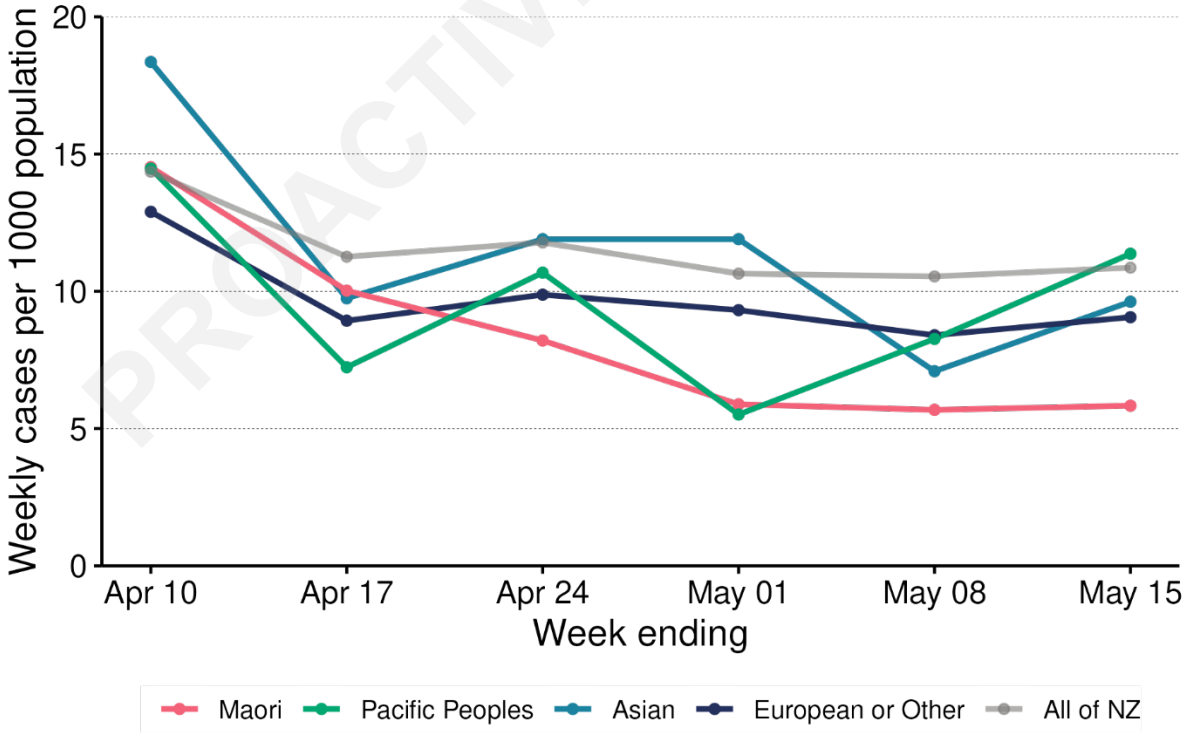
Waikato DHB



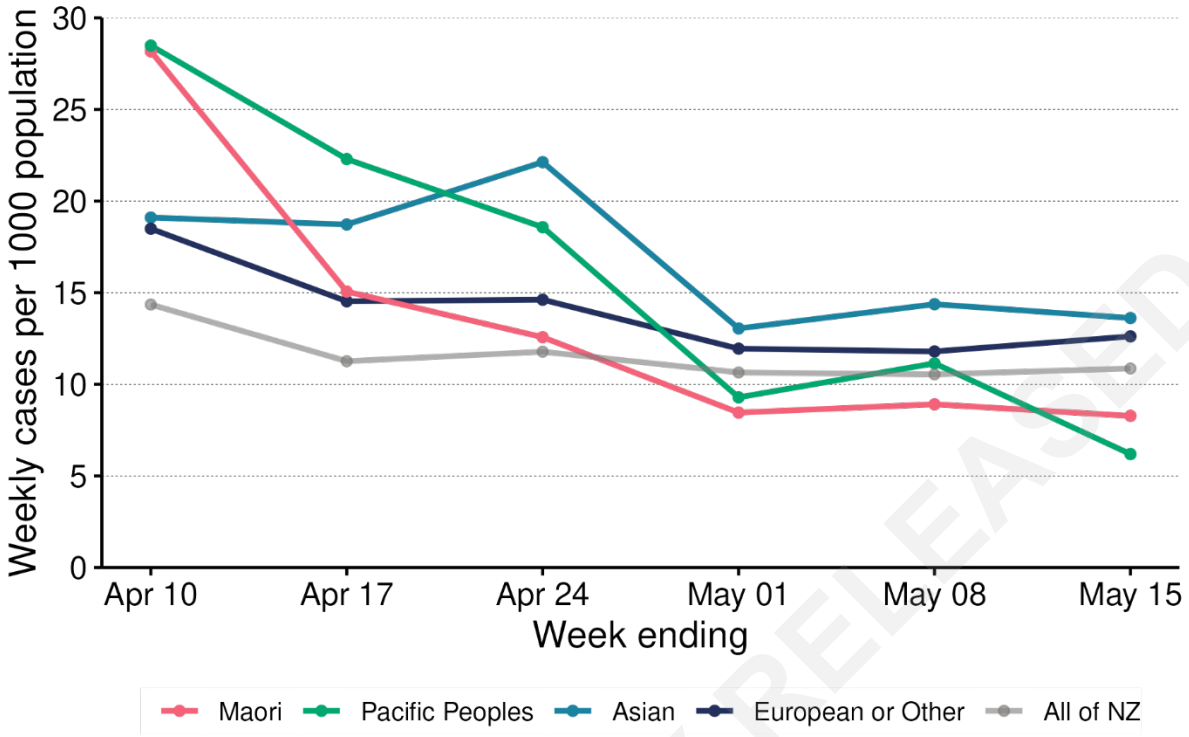
Tairawhiti DHB



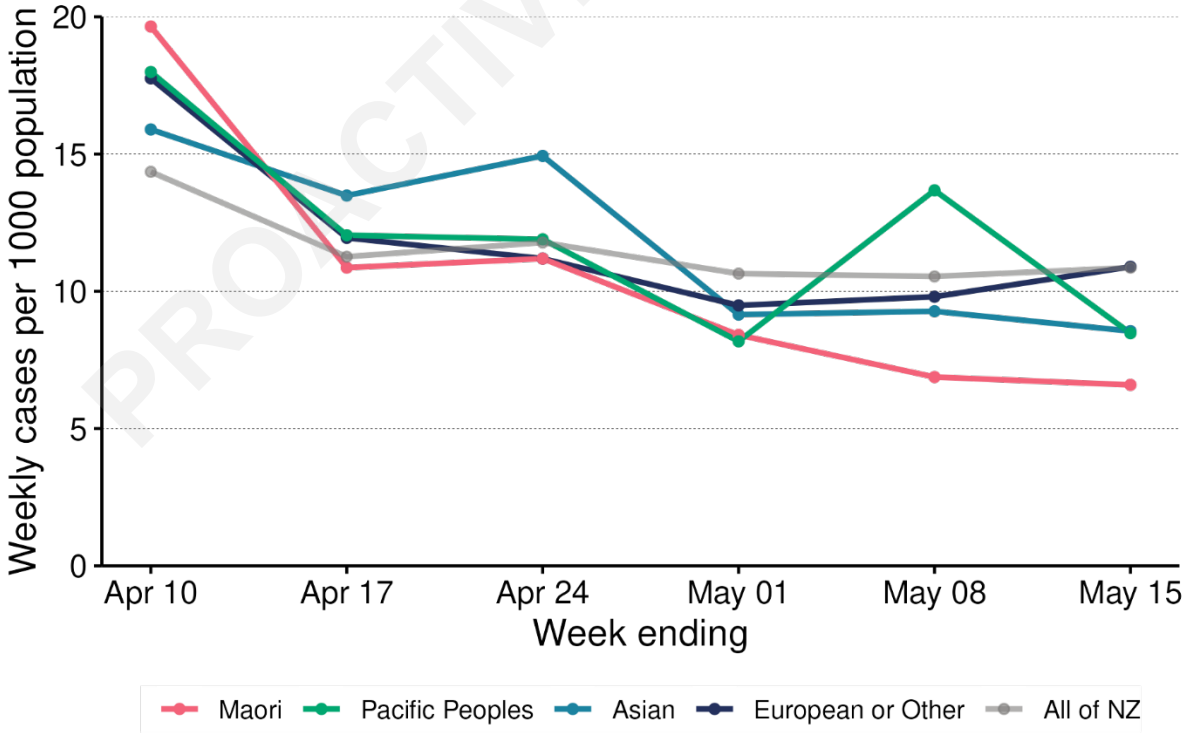
Lakes DHB



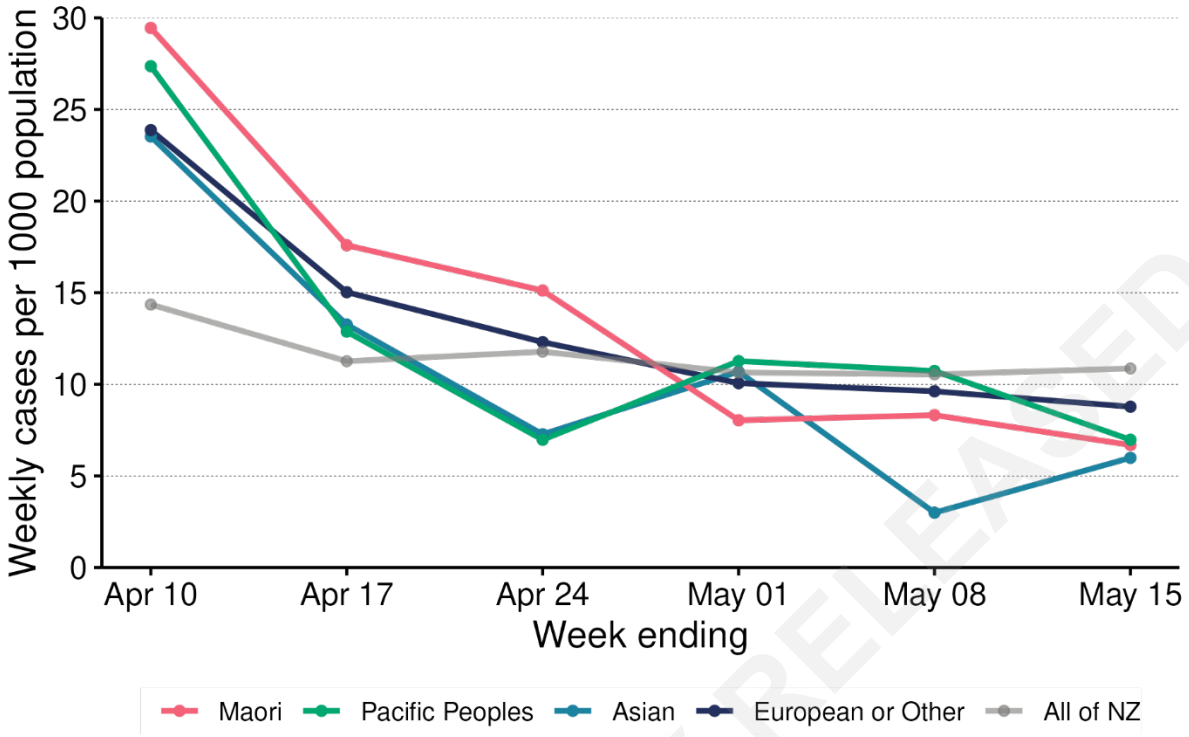
Taranaki DHB



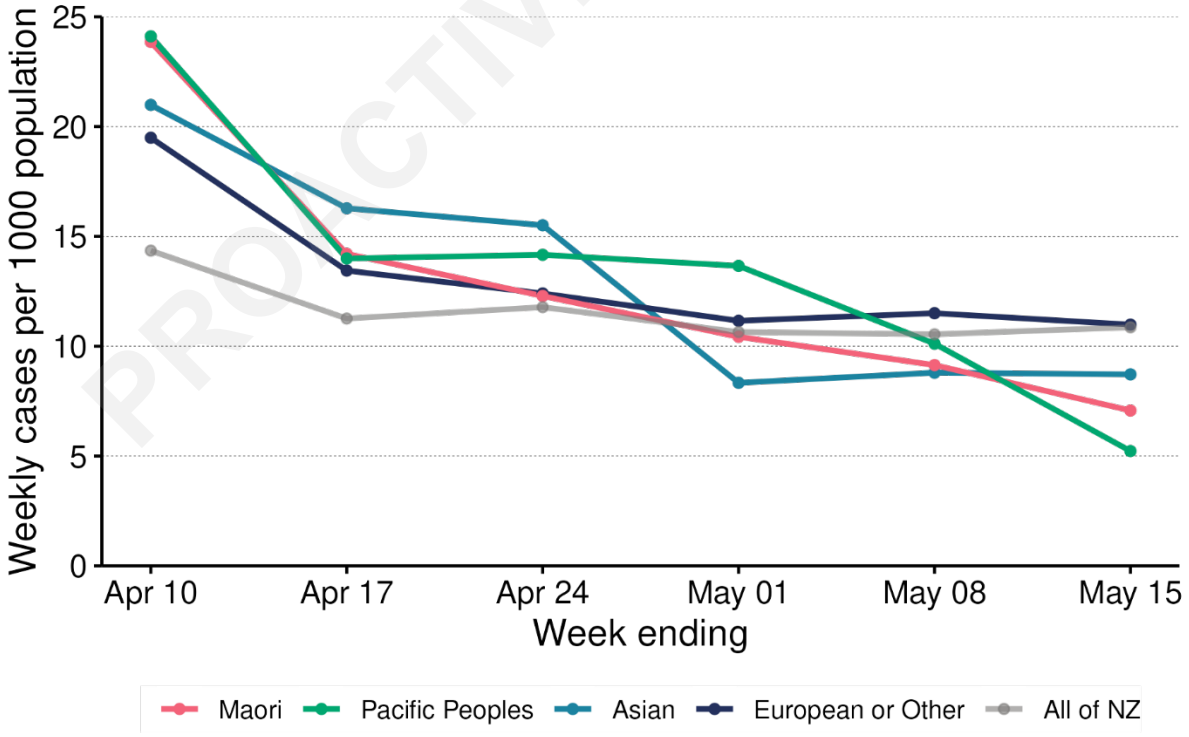
Hawke's Bay DHB



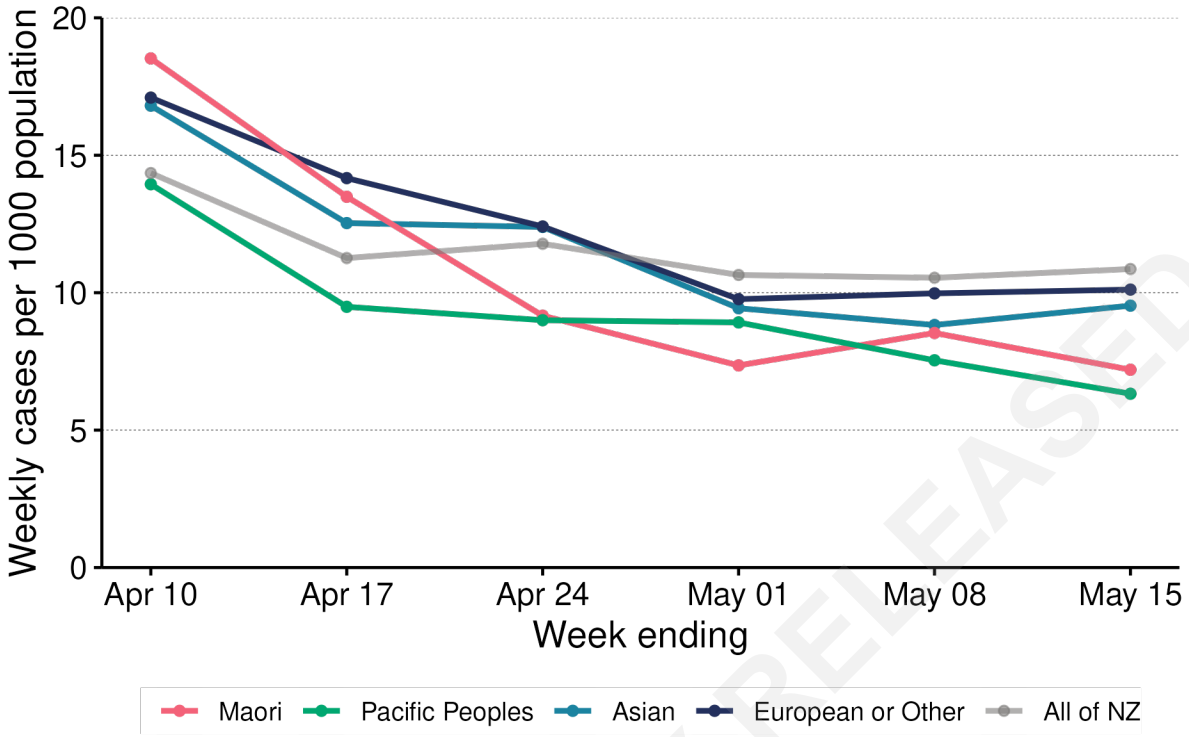
Whanganui DHB



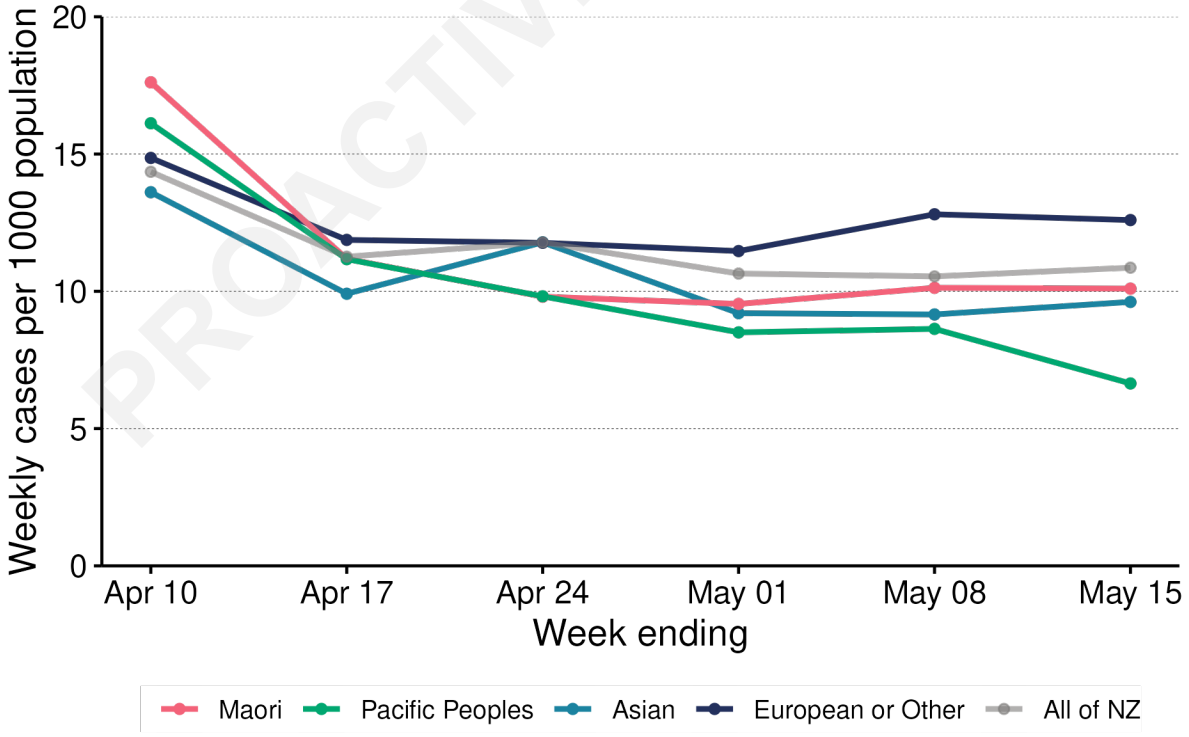
MidCentral DHB



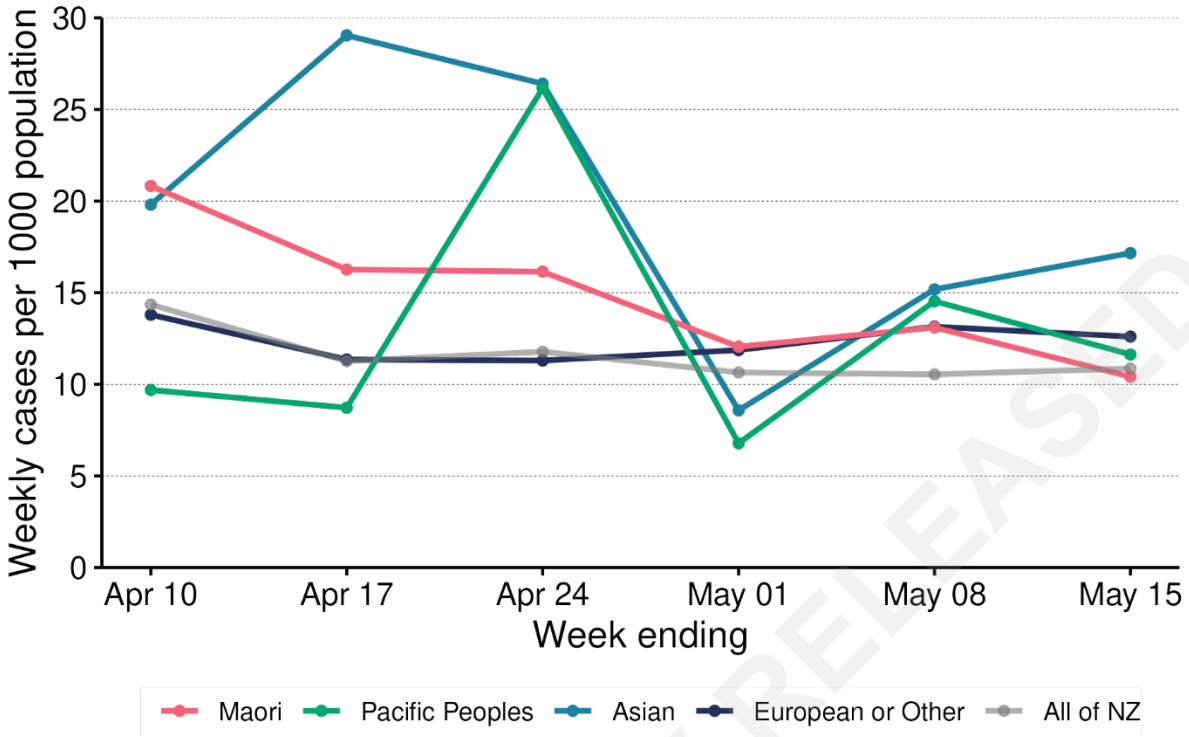
Hutt Valley DHB



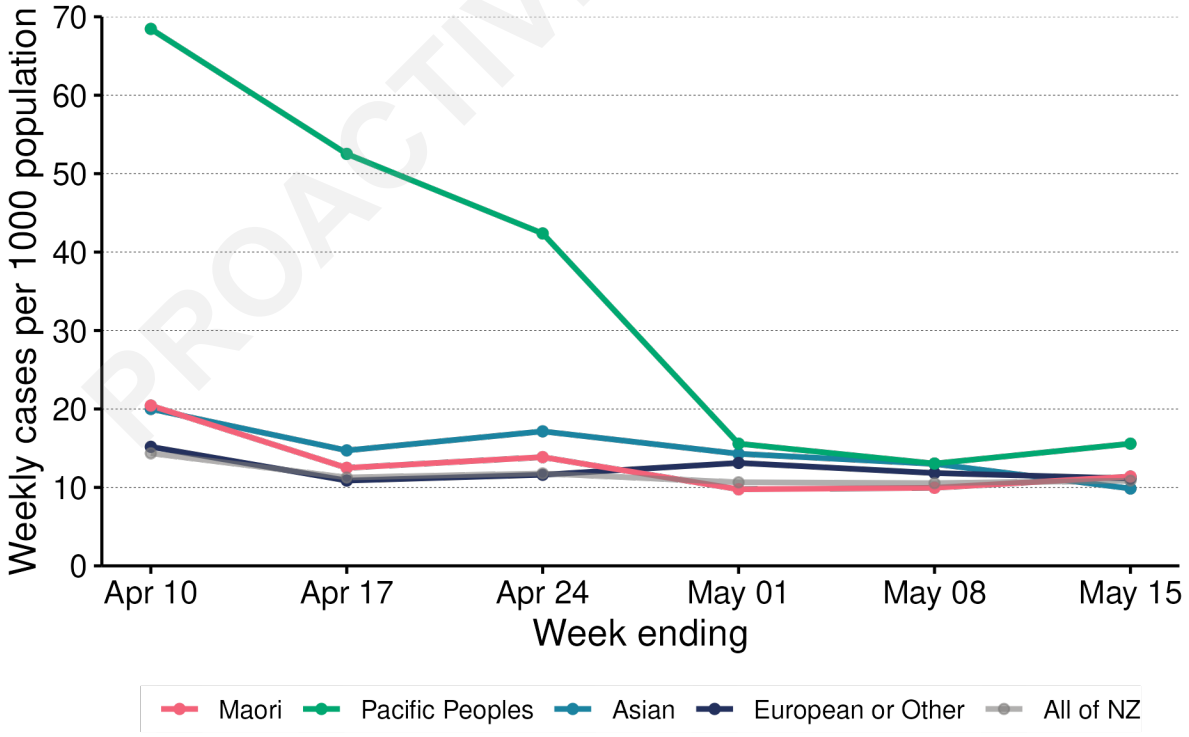
Capital and Coast DHB



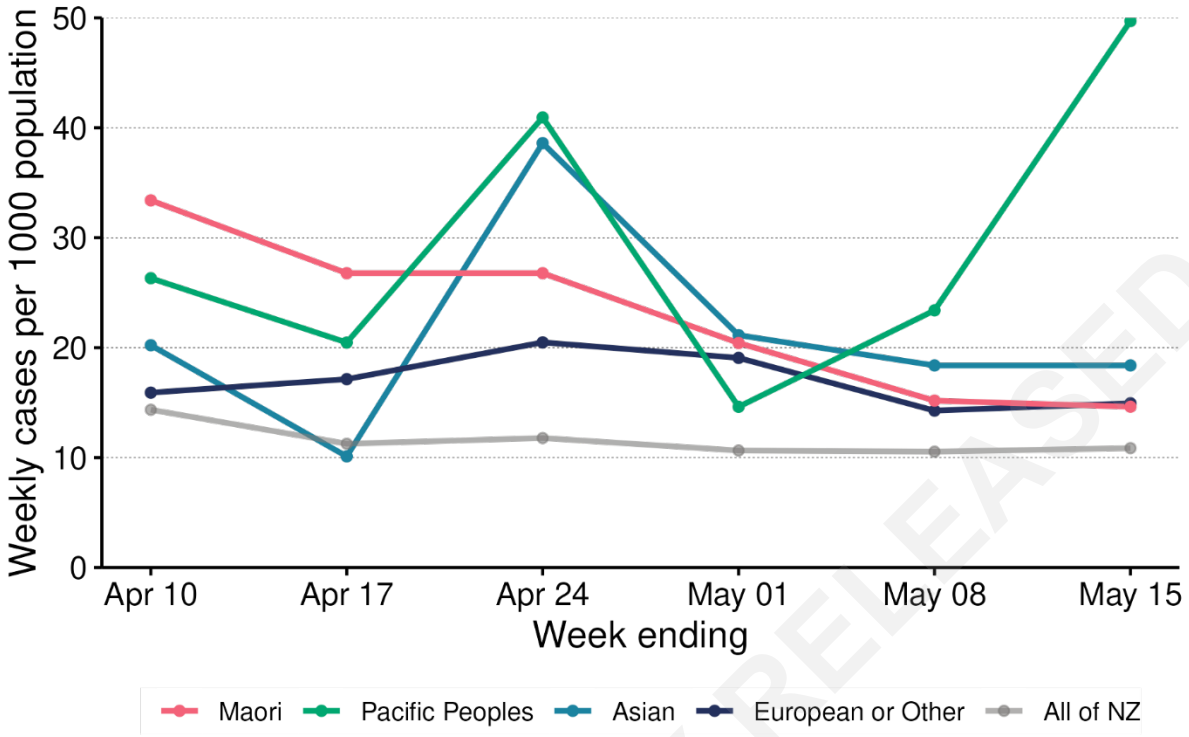
Wairarapa DHB



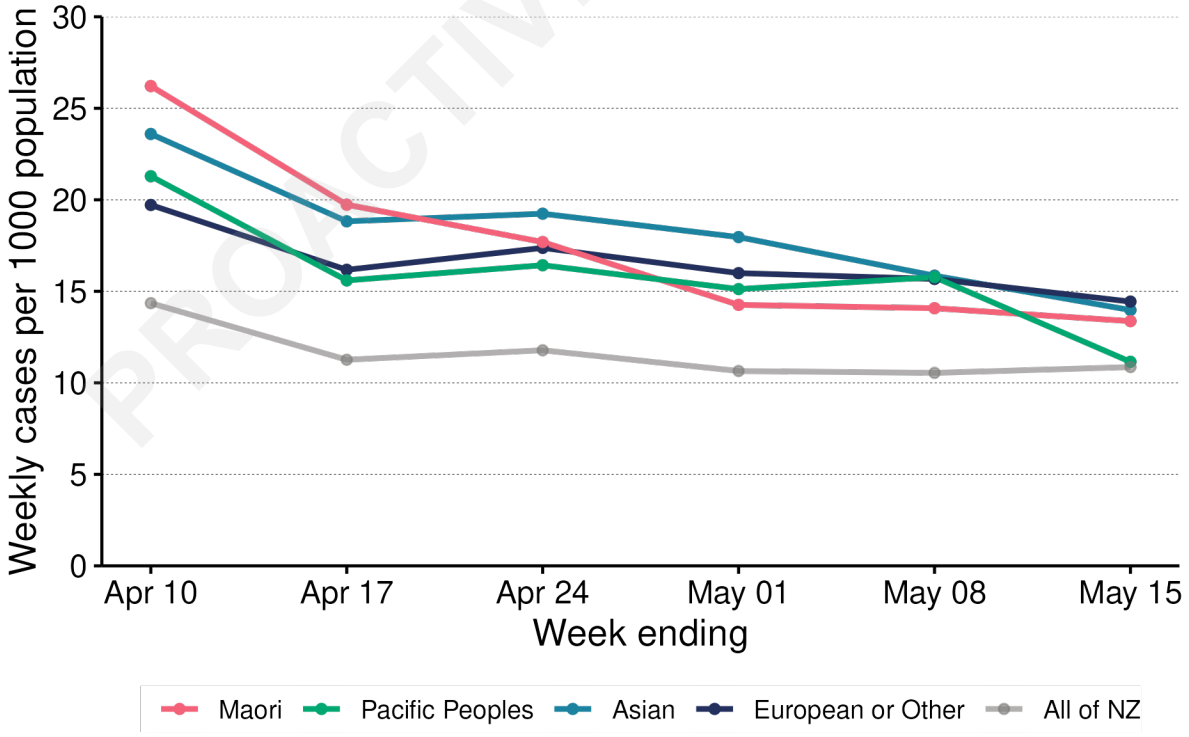
Nelson Marlborough DHB



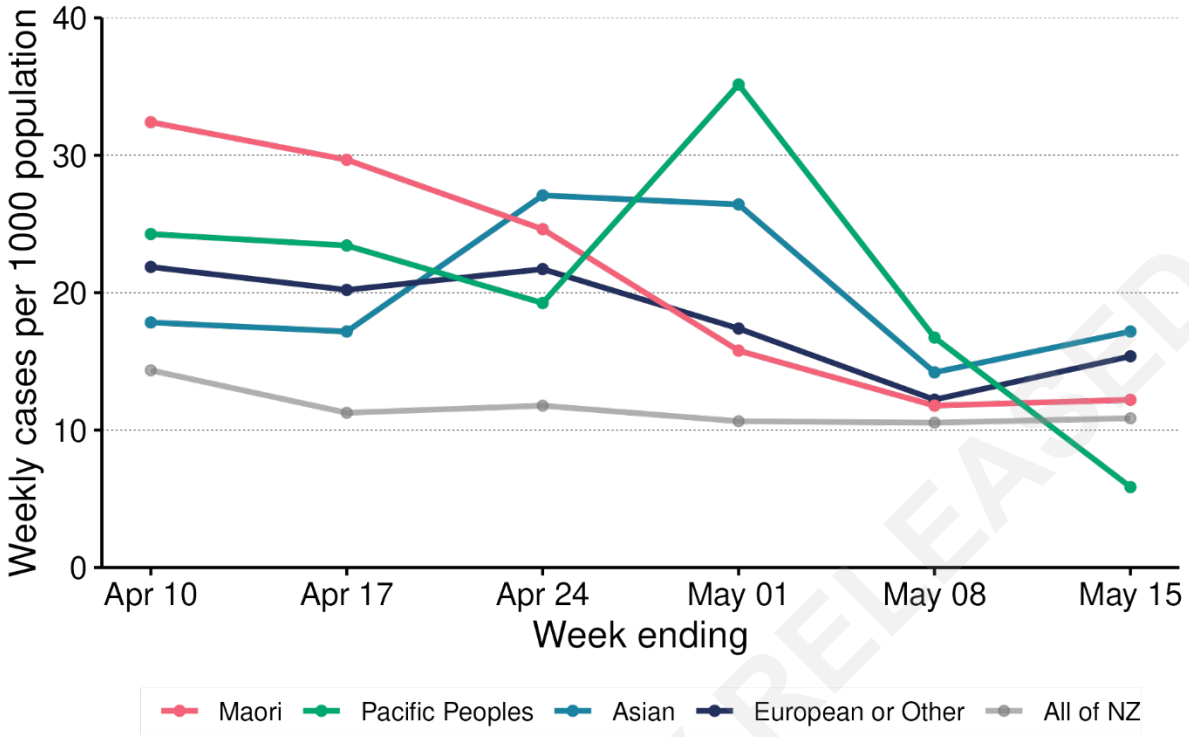
West Coast DHB



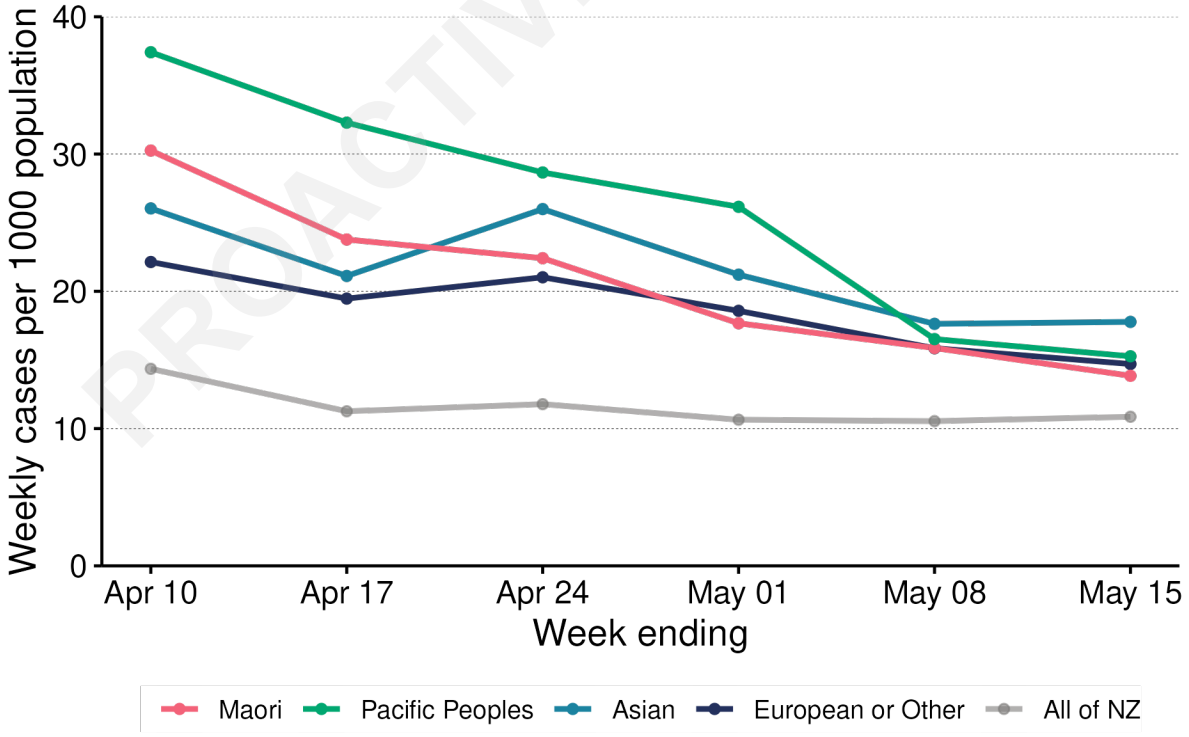
Canterbury DHB



South Canterbury DHB



Southern DHB



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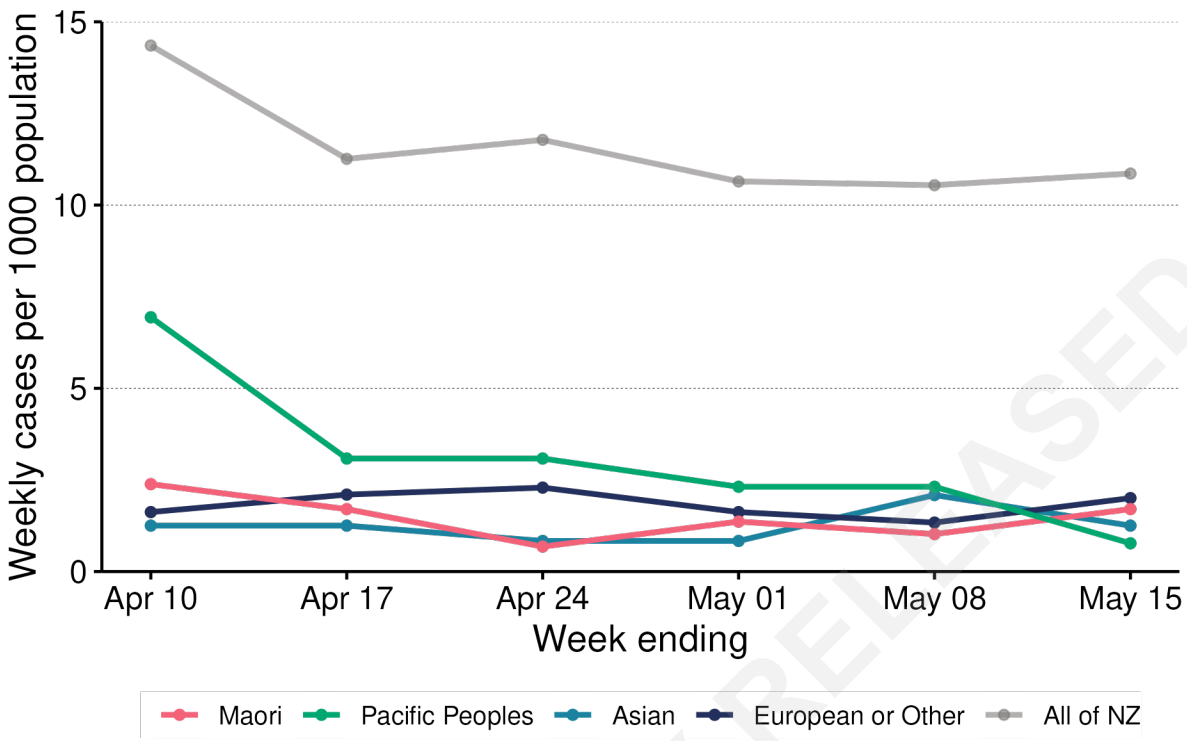
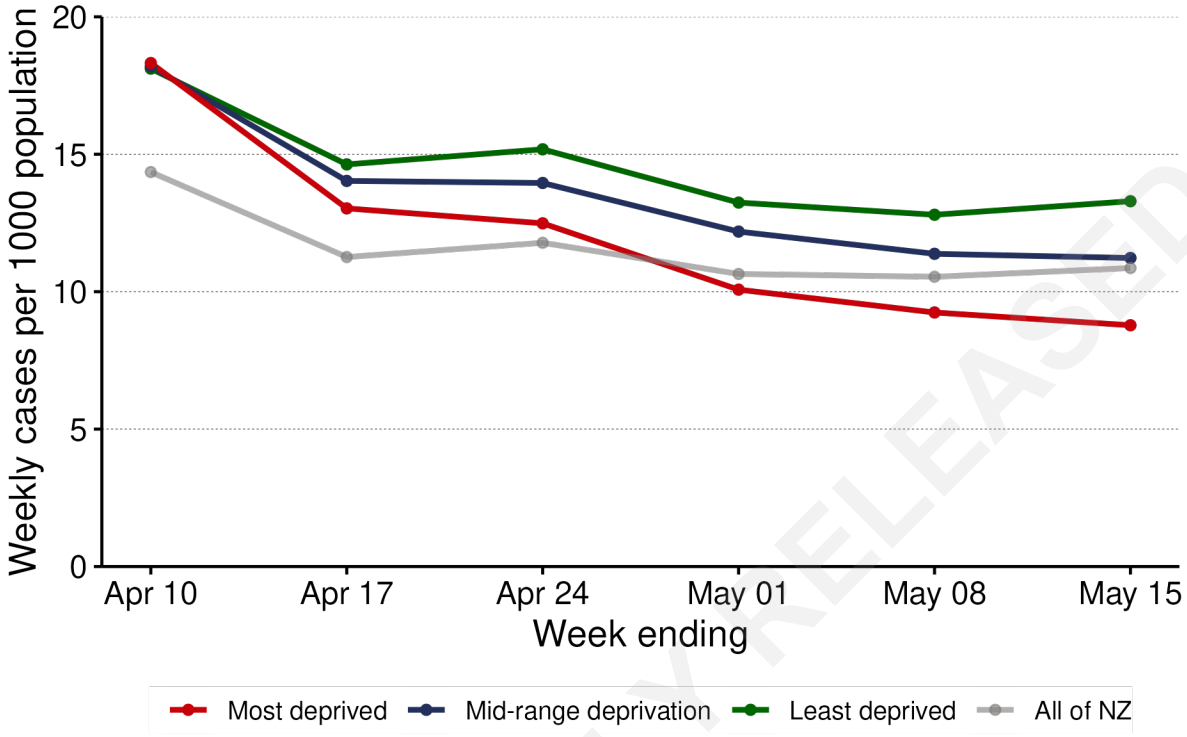
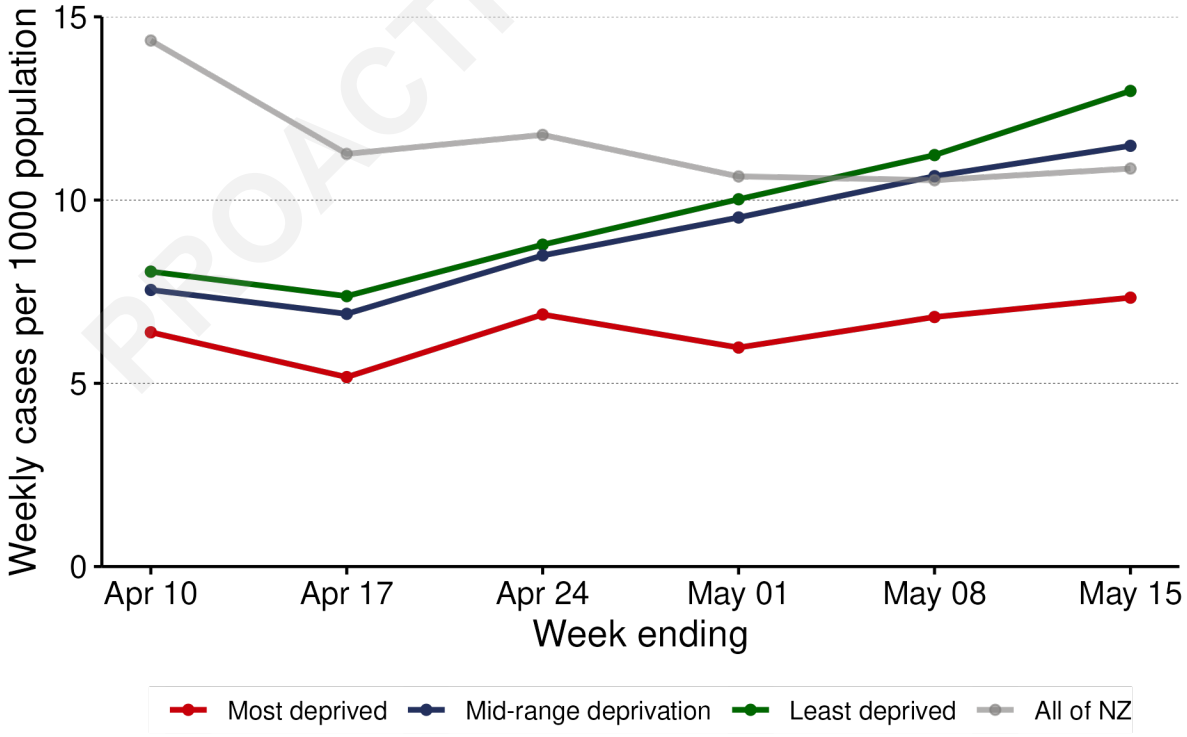


Deprivation Graphs

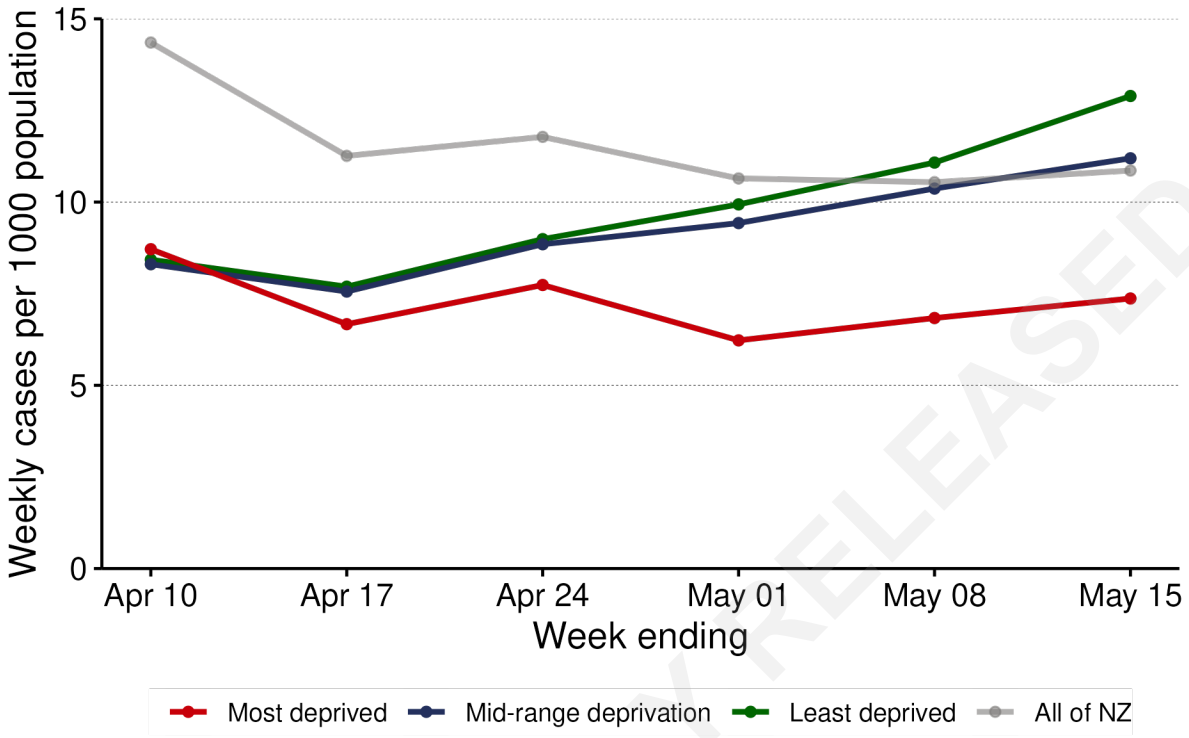
NZ Excluding Auckland Region



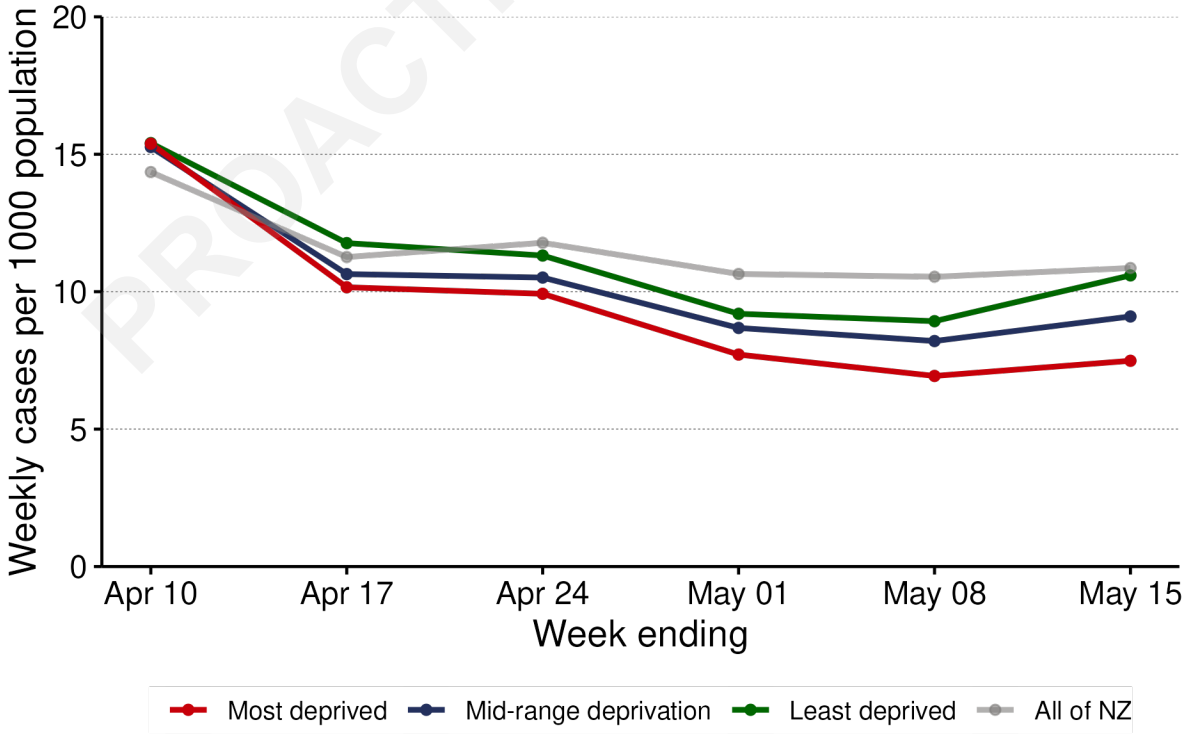
Auckland Region



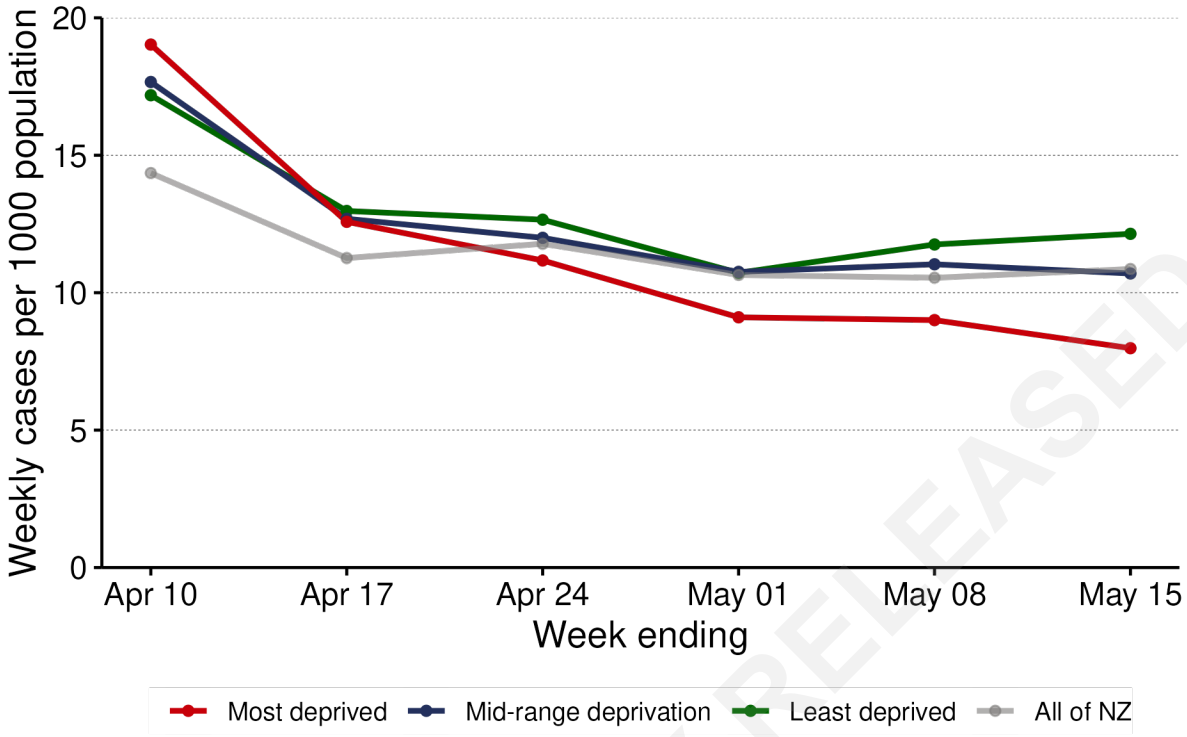
Northern Region



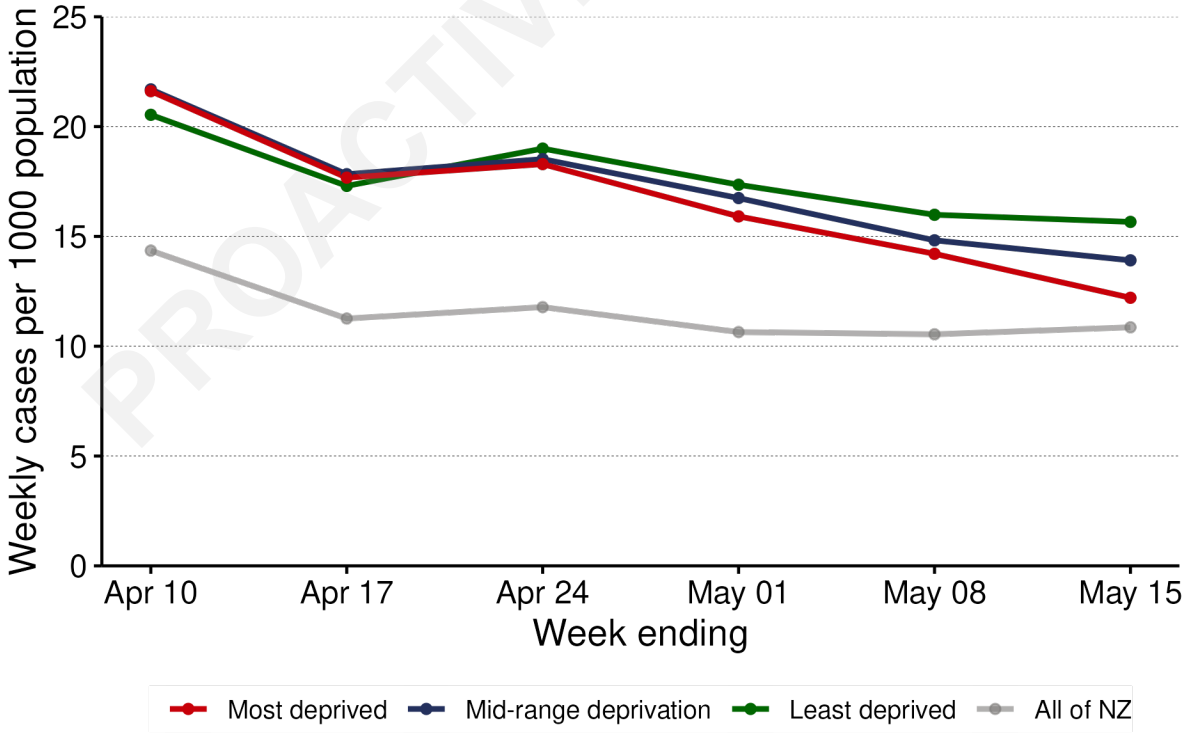
Te Manawa Taki



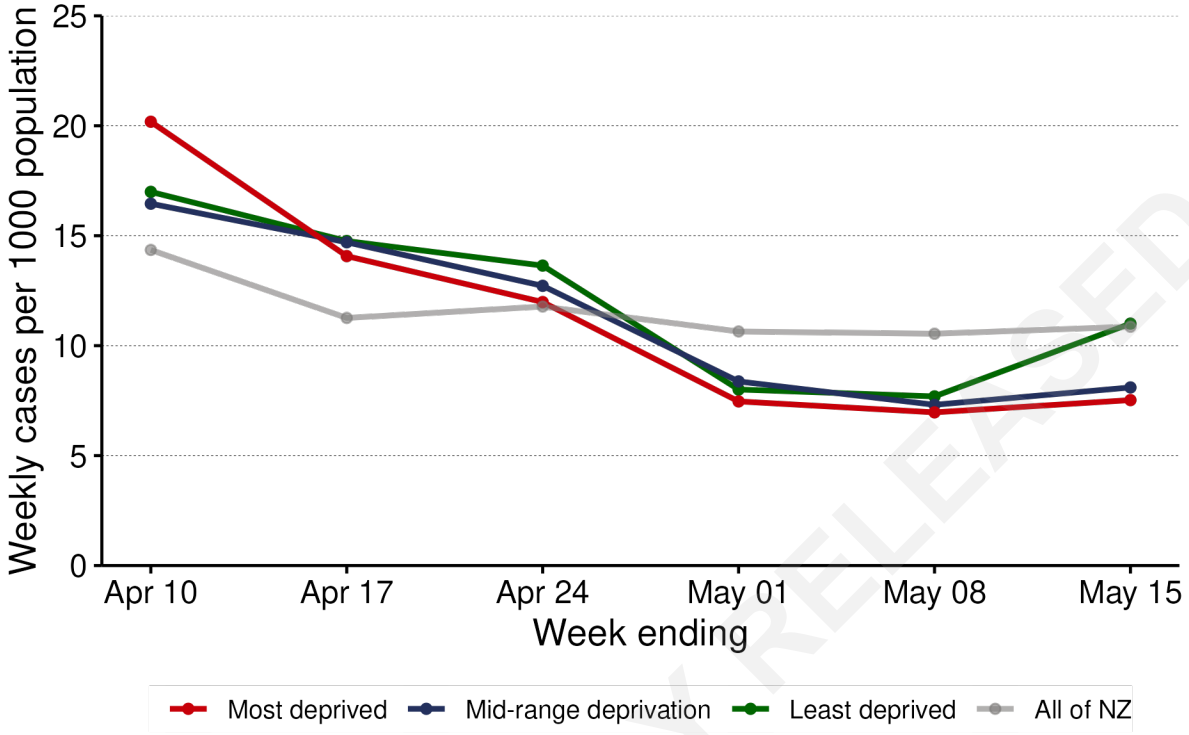
Central Region



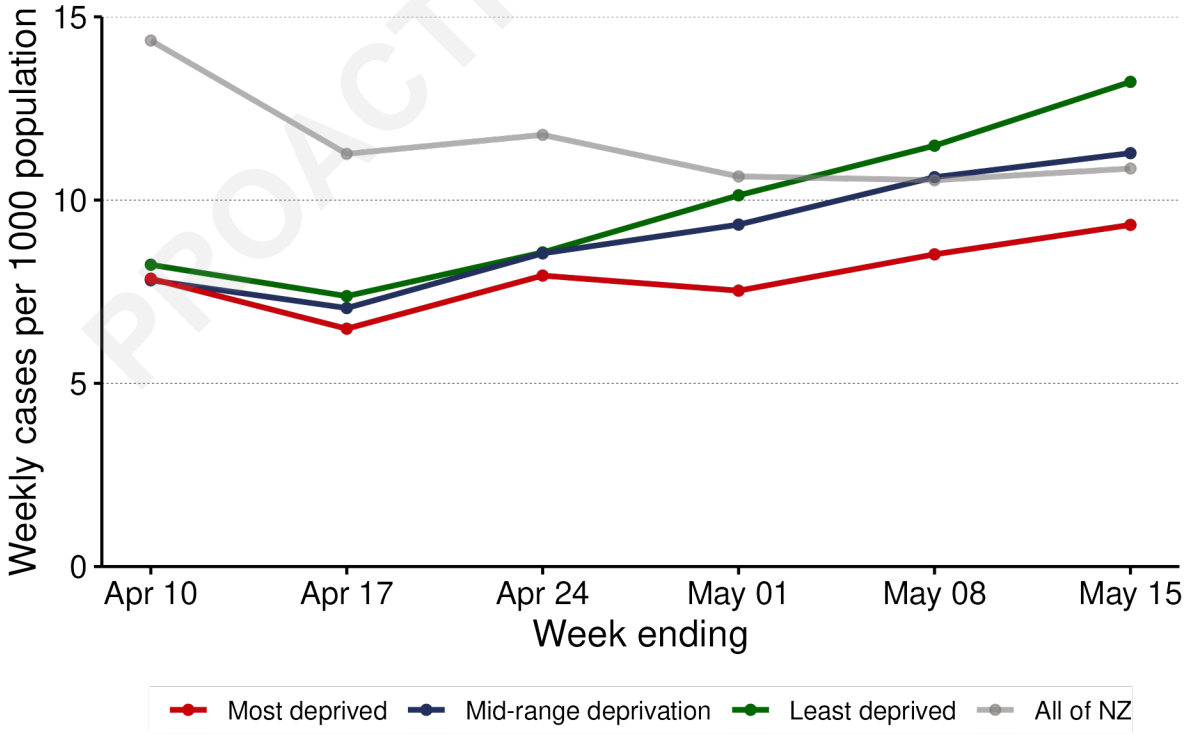
Southern Region



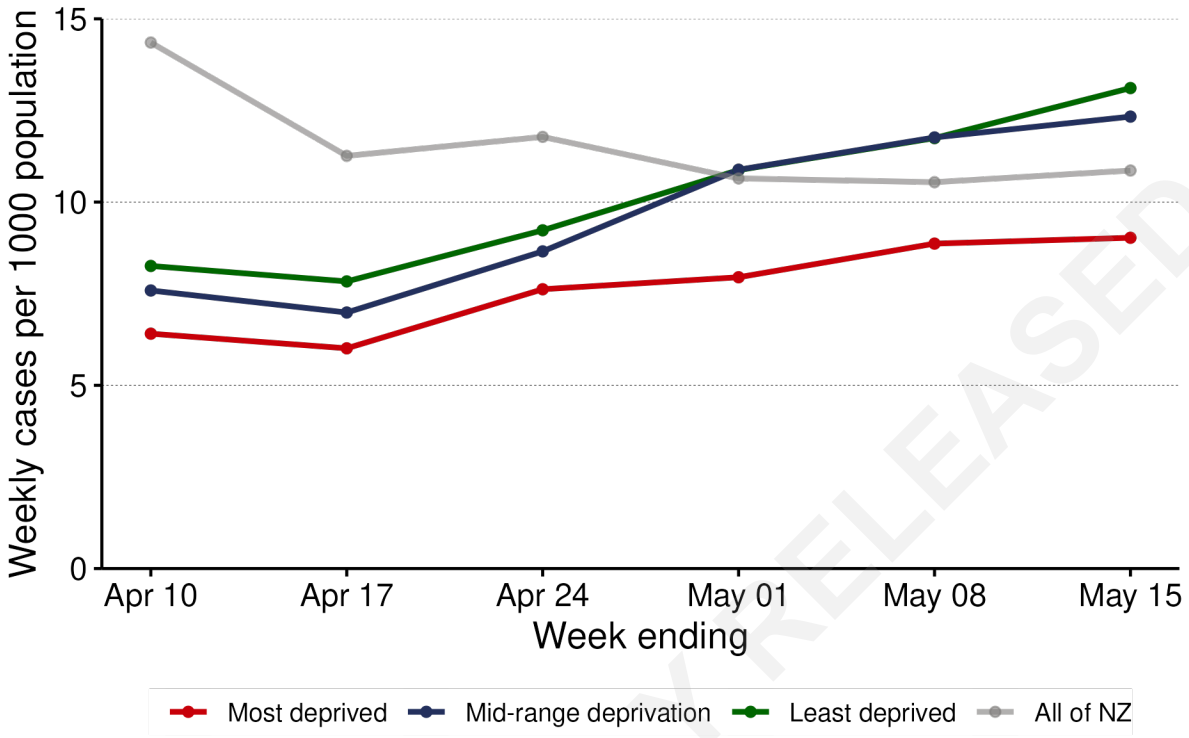
Northland DHB



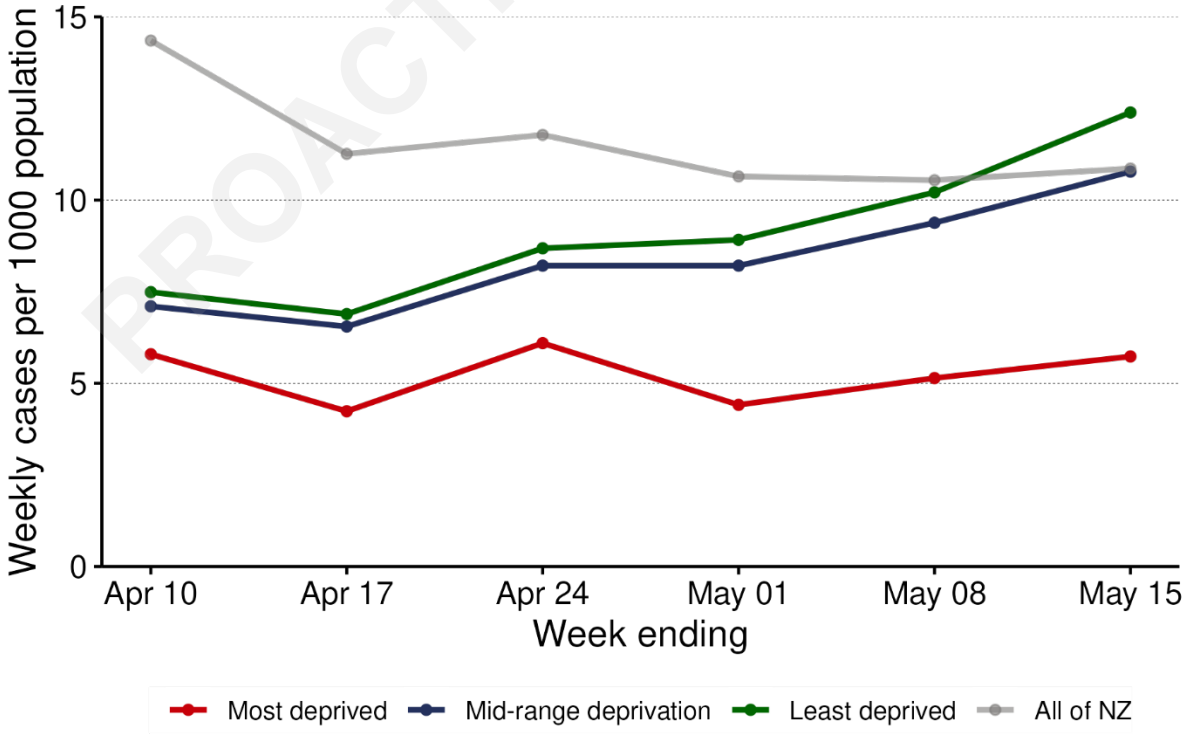
Waitemata DHB



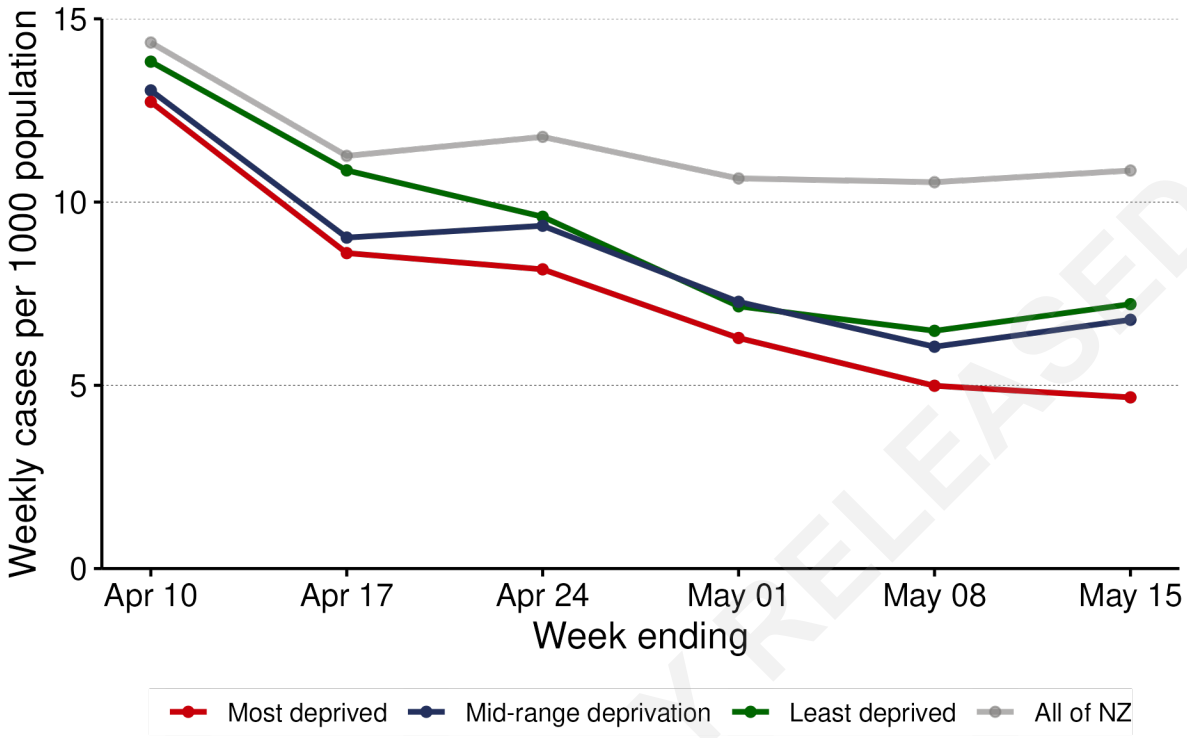
Auckland DHB



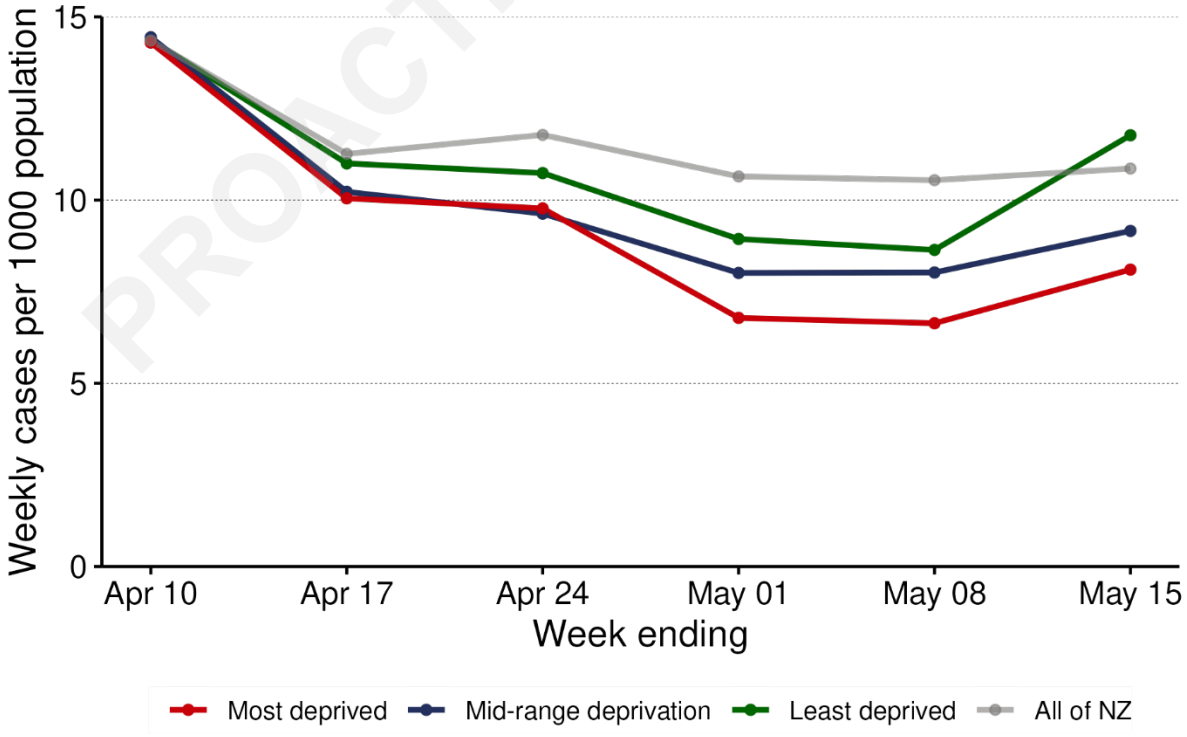
Counties Manukau DHB



Bay of Plenty DHB



Waikato DHB



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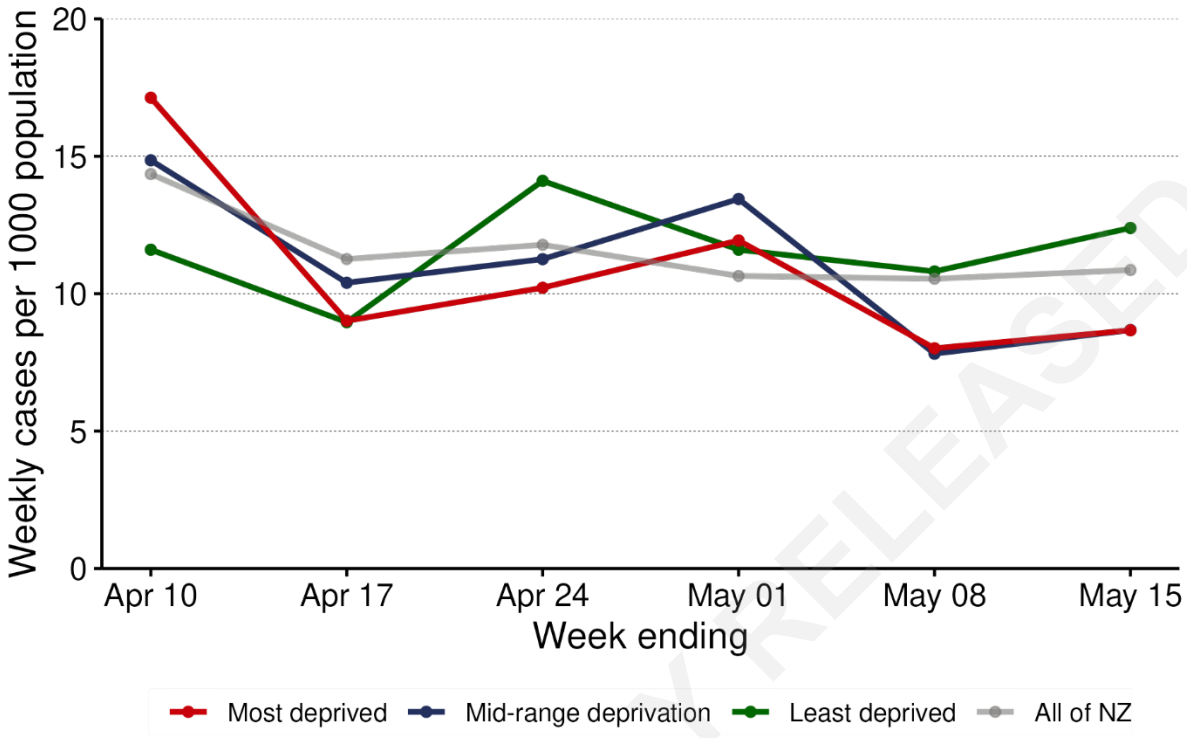
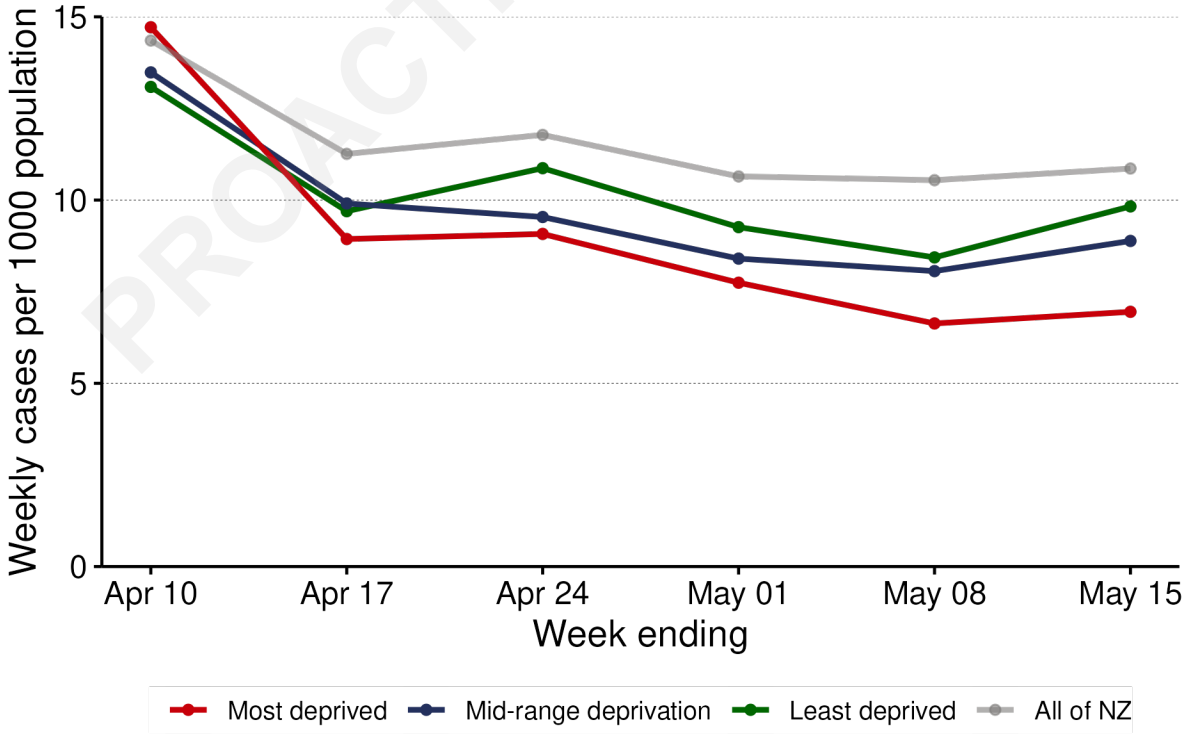
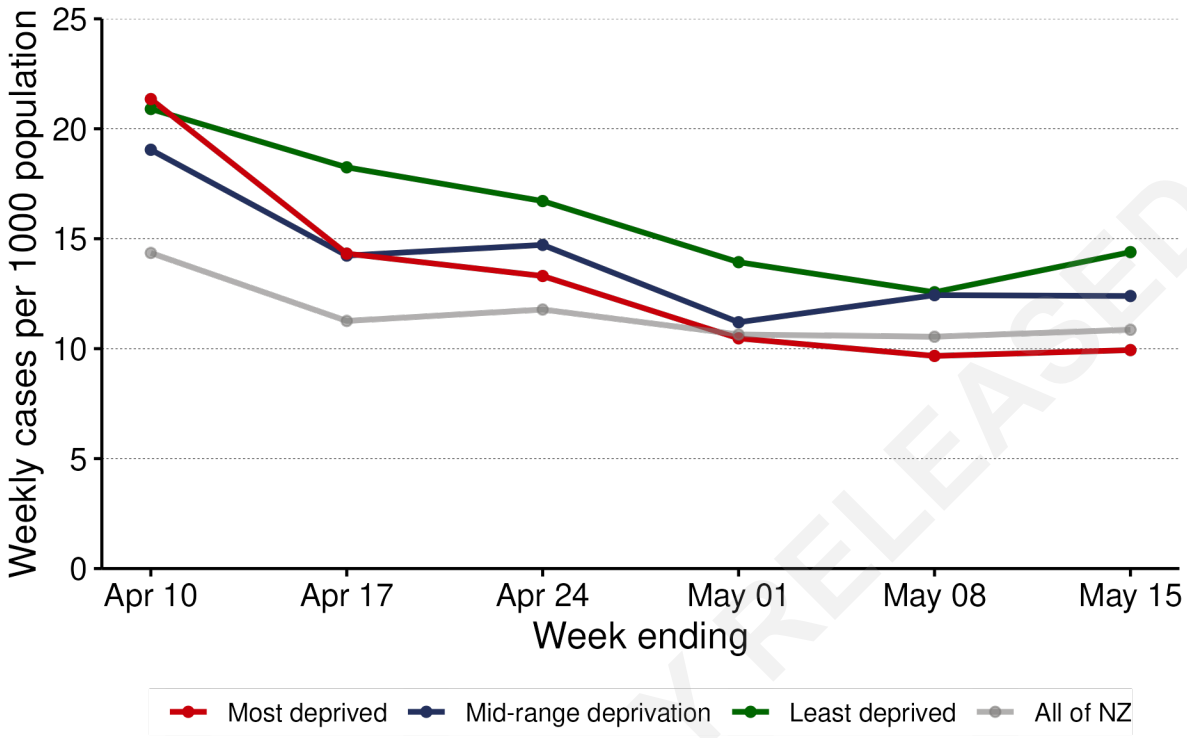


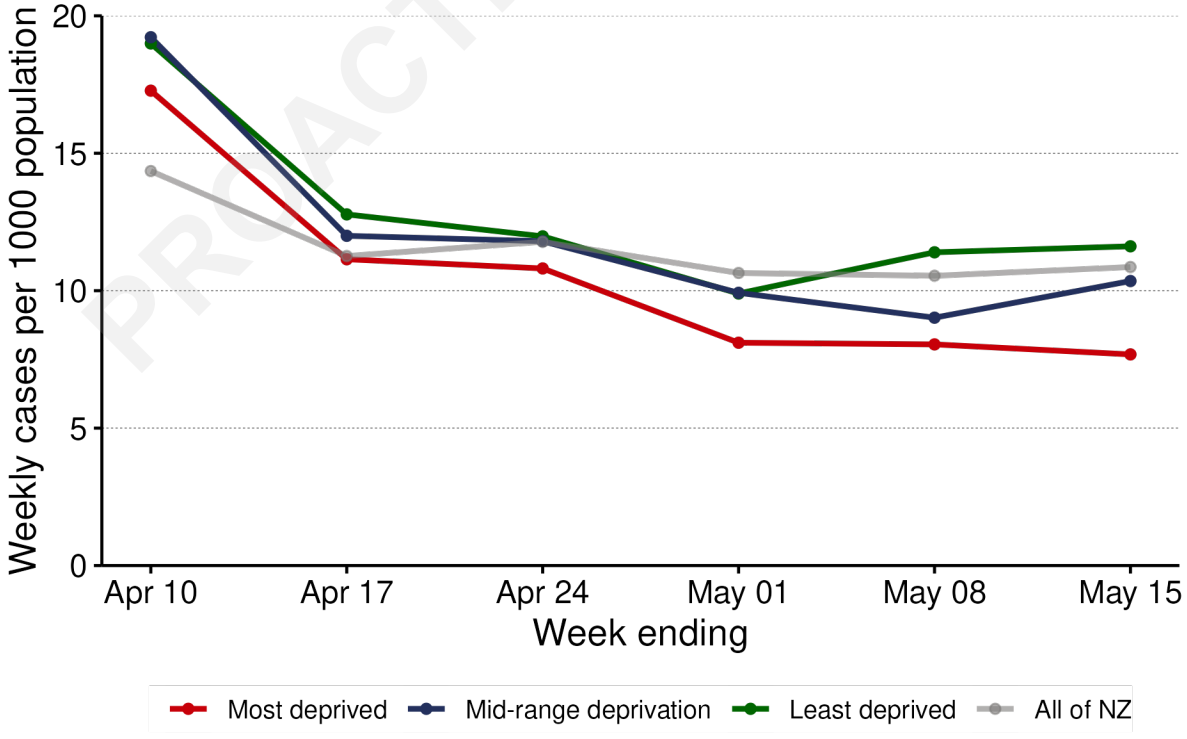
Lakes DHB



Taranaki DHB



Hawke's Bay DHB



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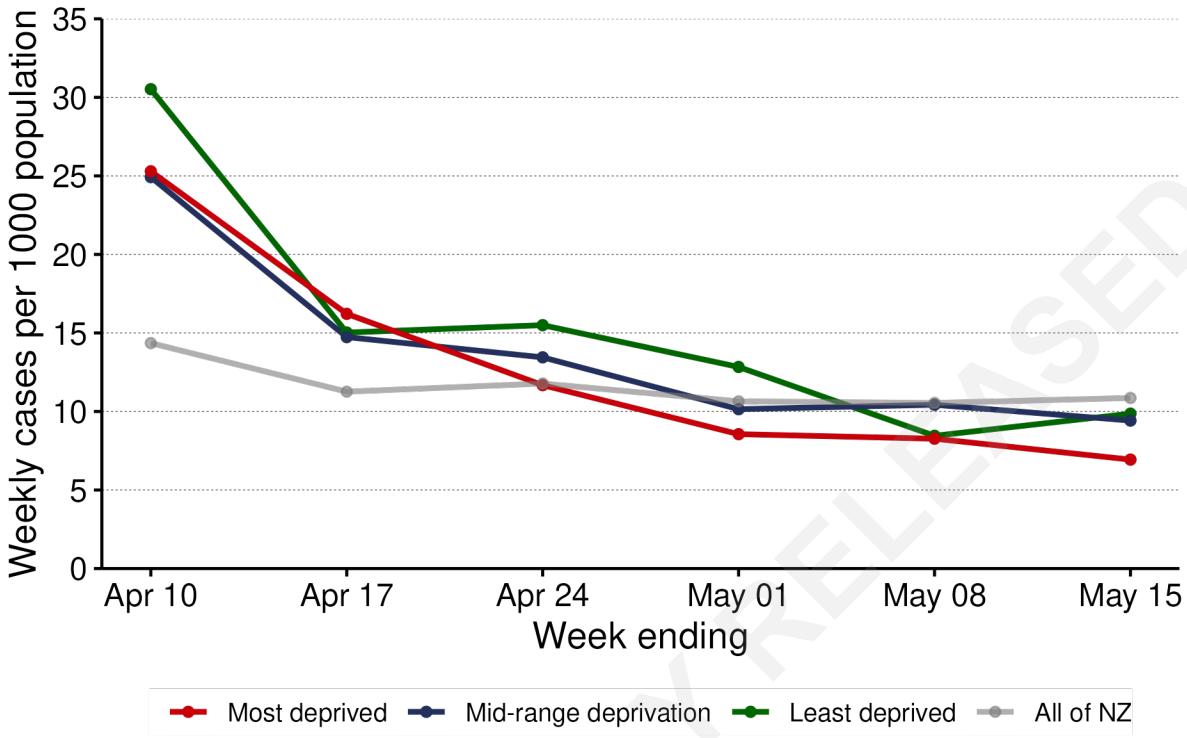
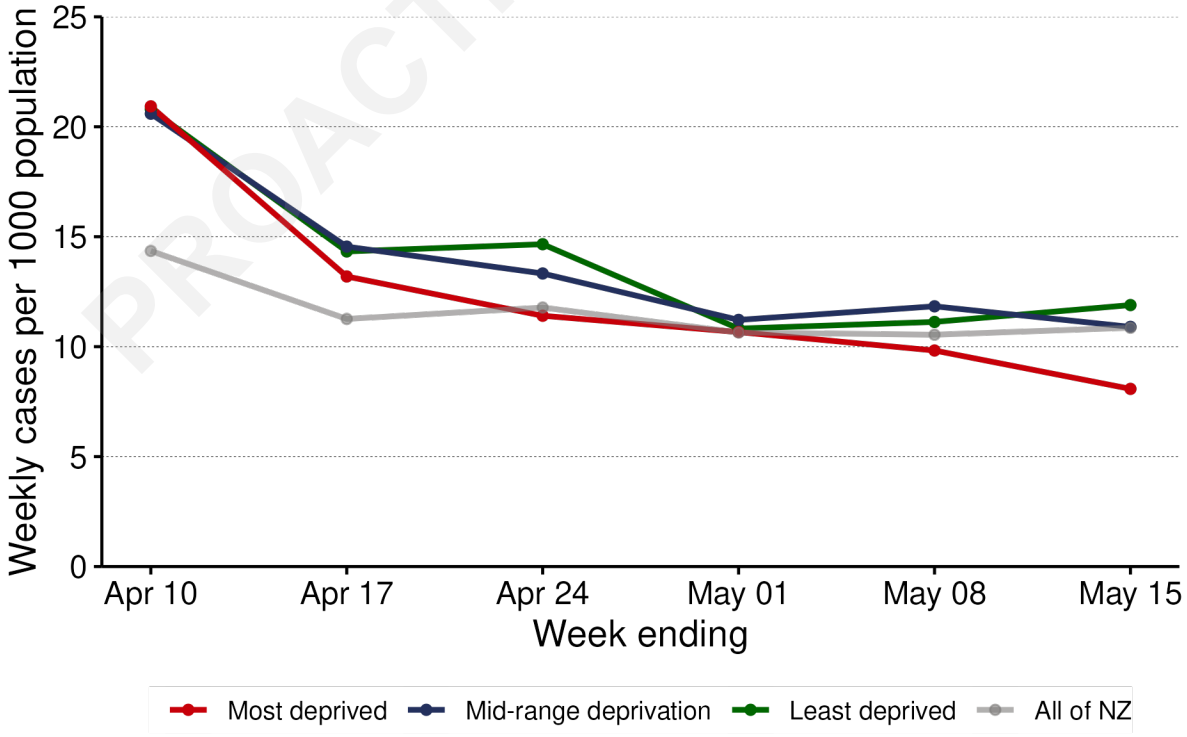
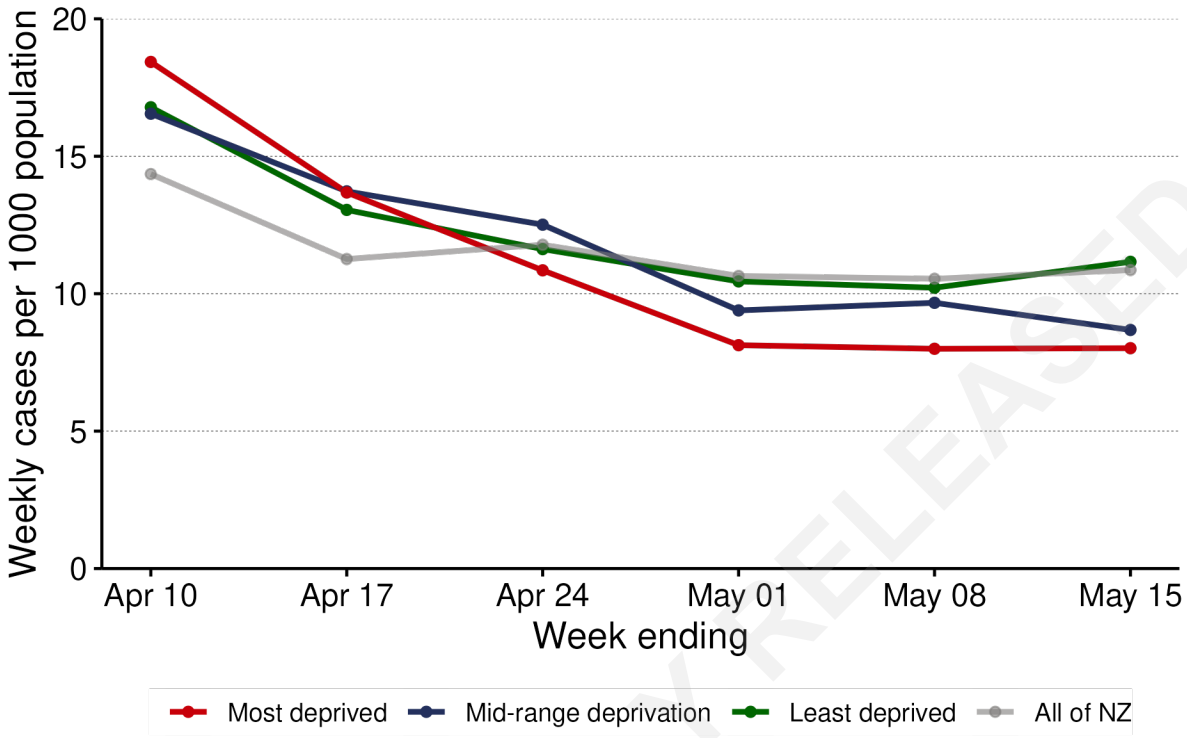


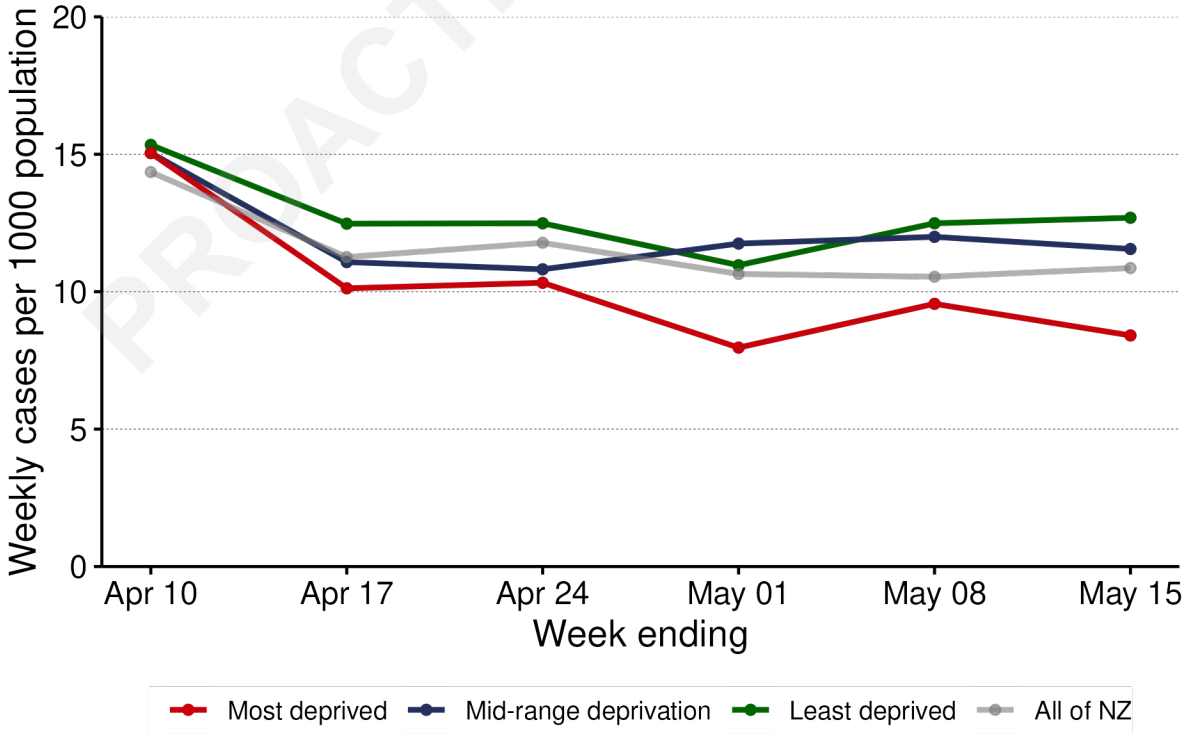
MidCentral DHB



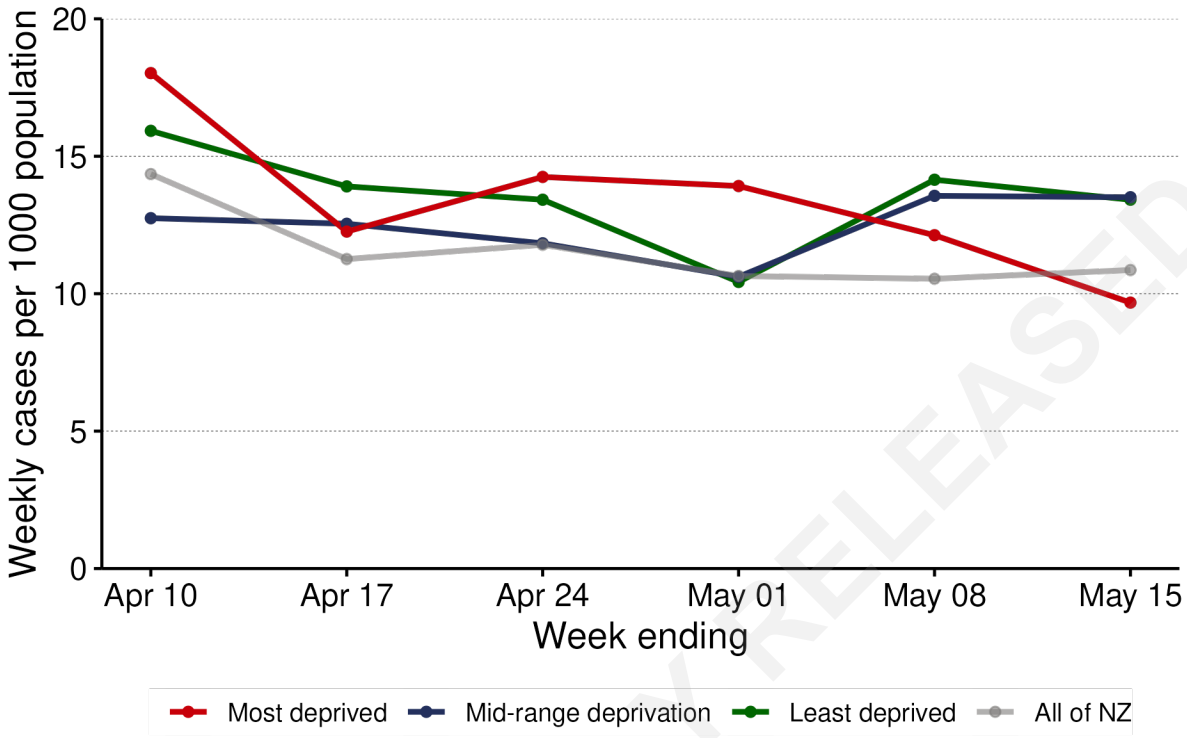
Hutt Valley DHB



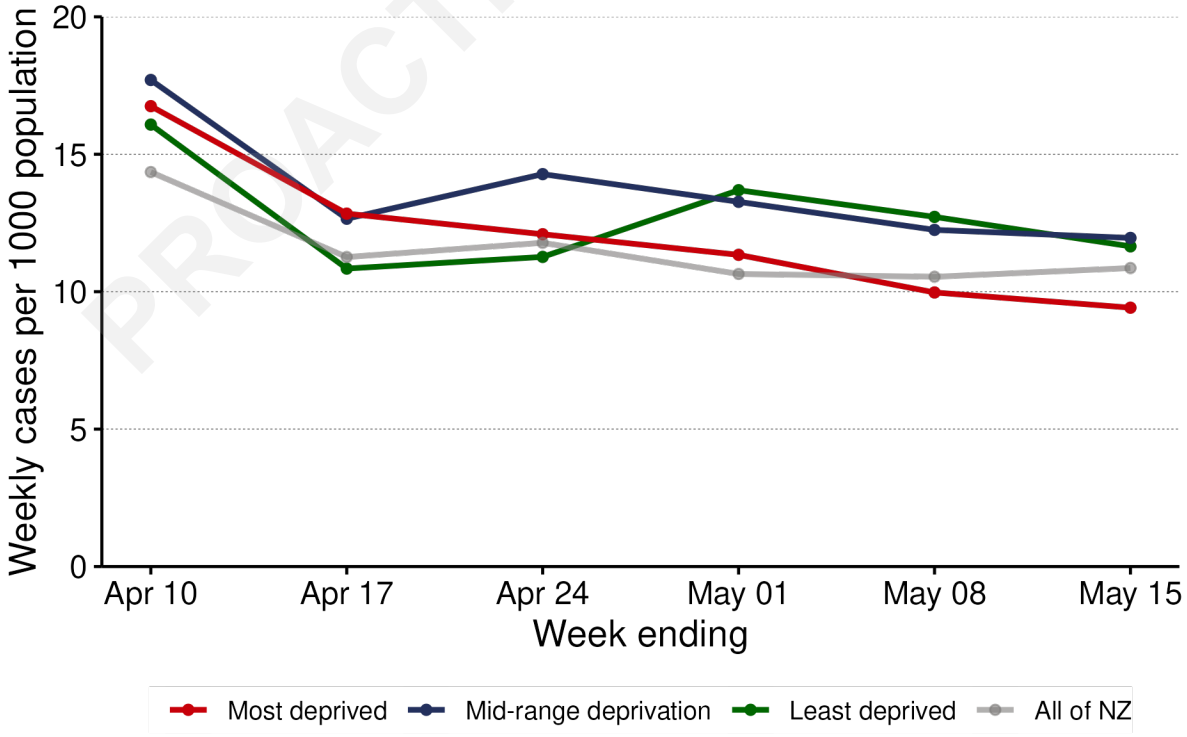
Capital and Coast DHB



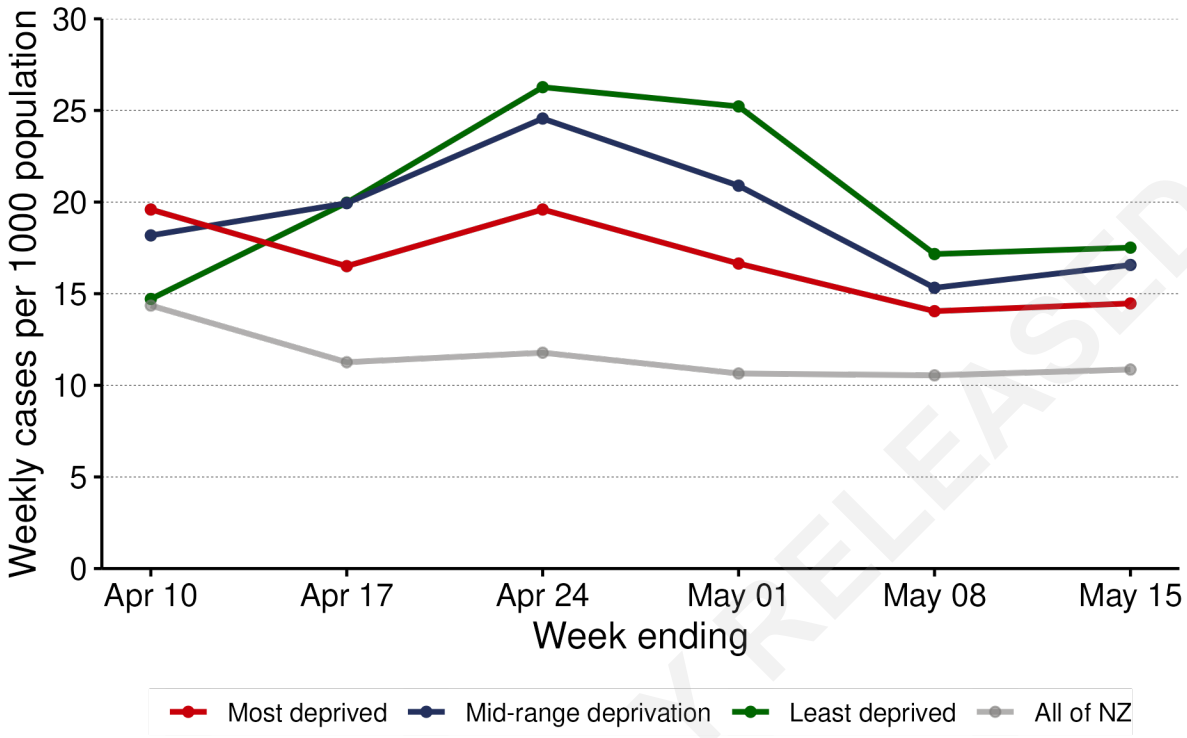
Wairarapa DHB



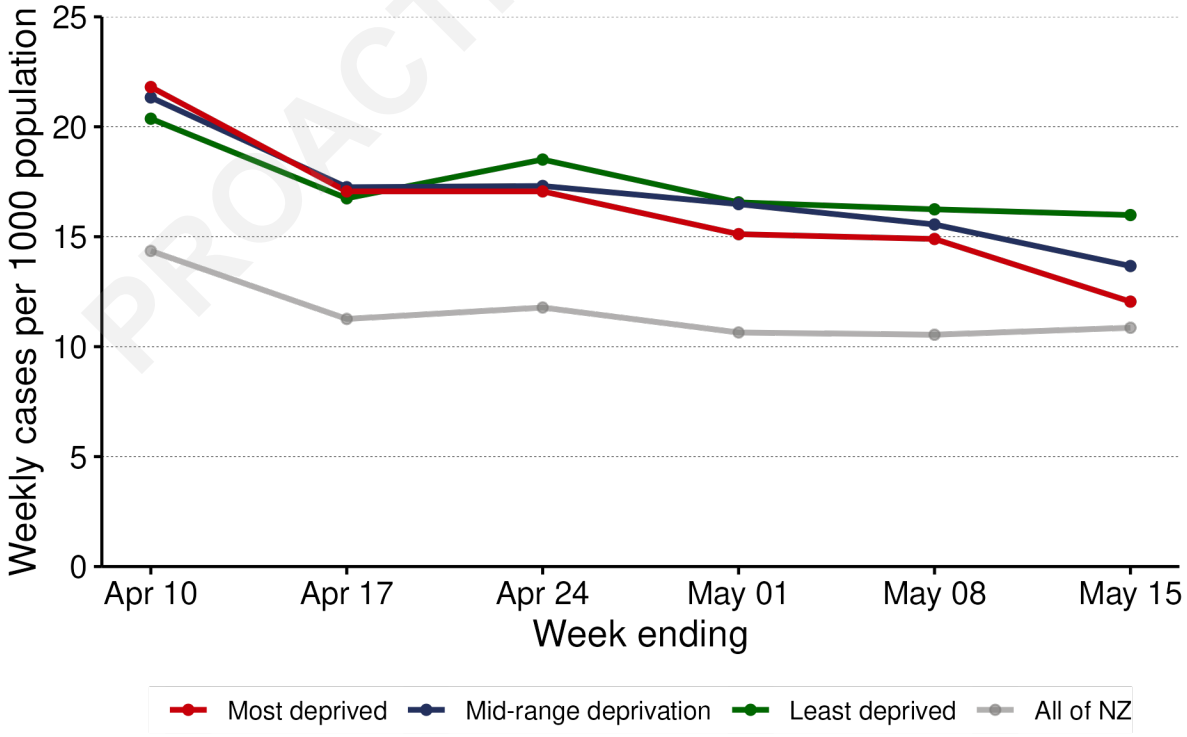
Nelson Marlborough DHB



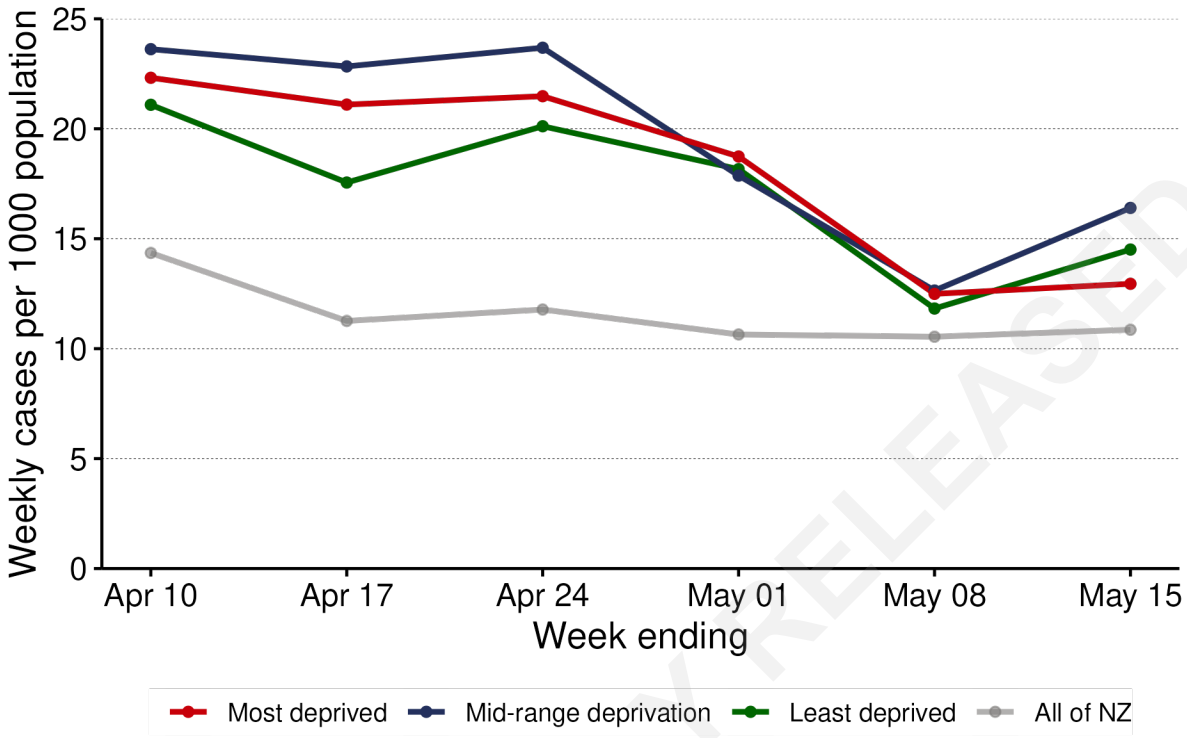
West Coast DHB



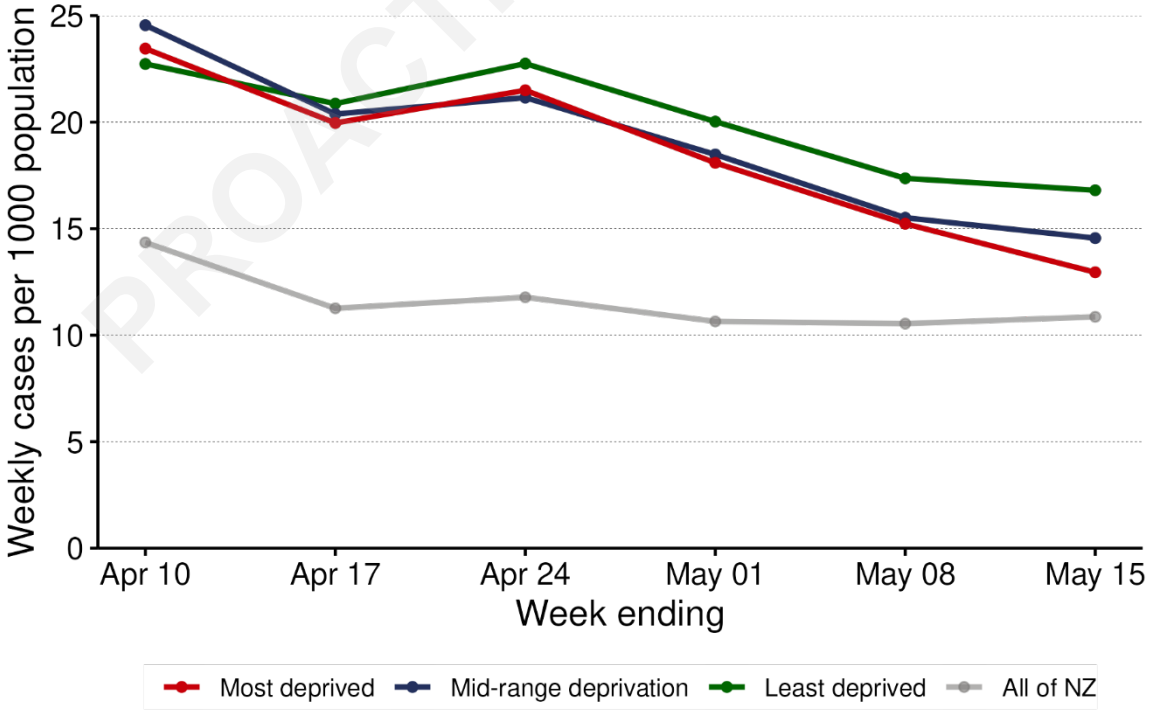
Canterbury DHB



South Canterbury DHB

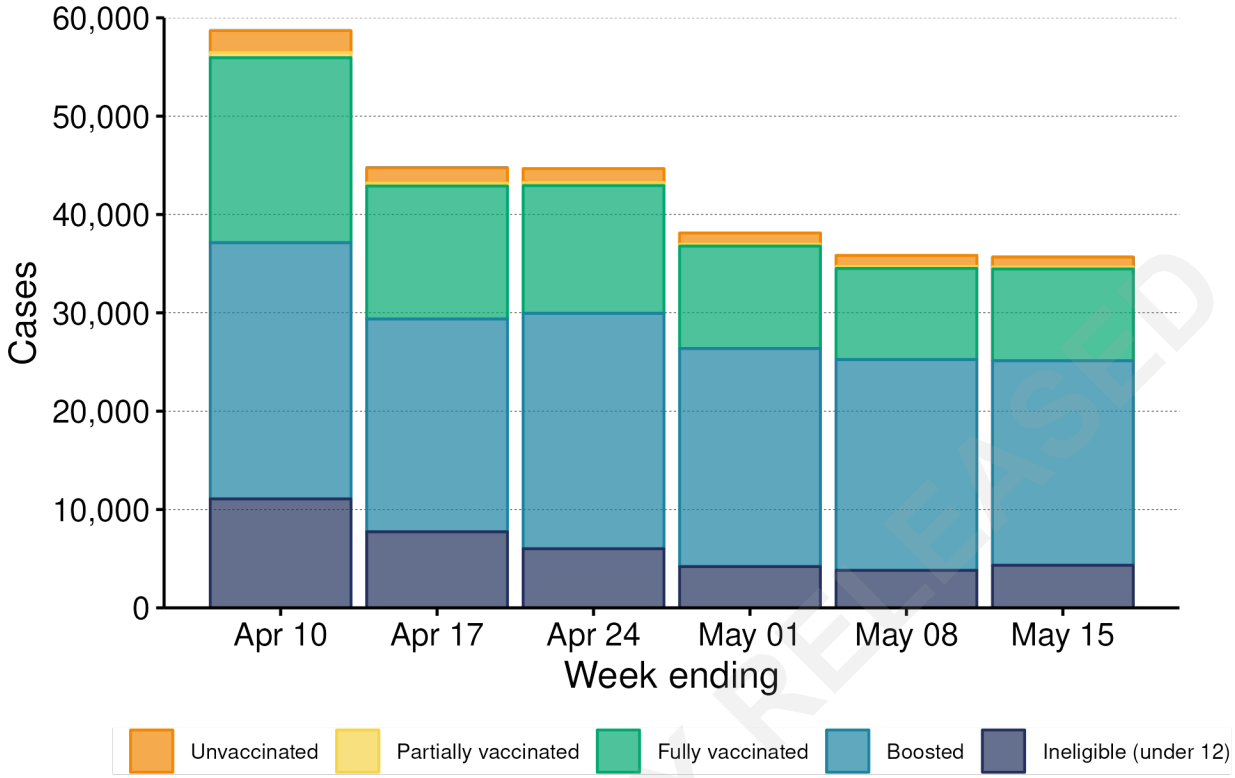


Southern DHB

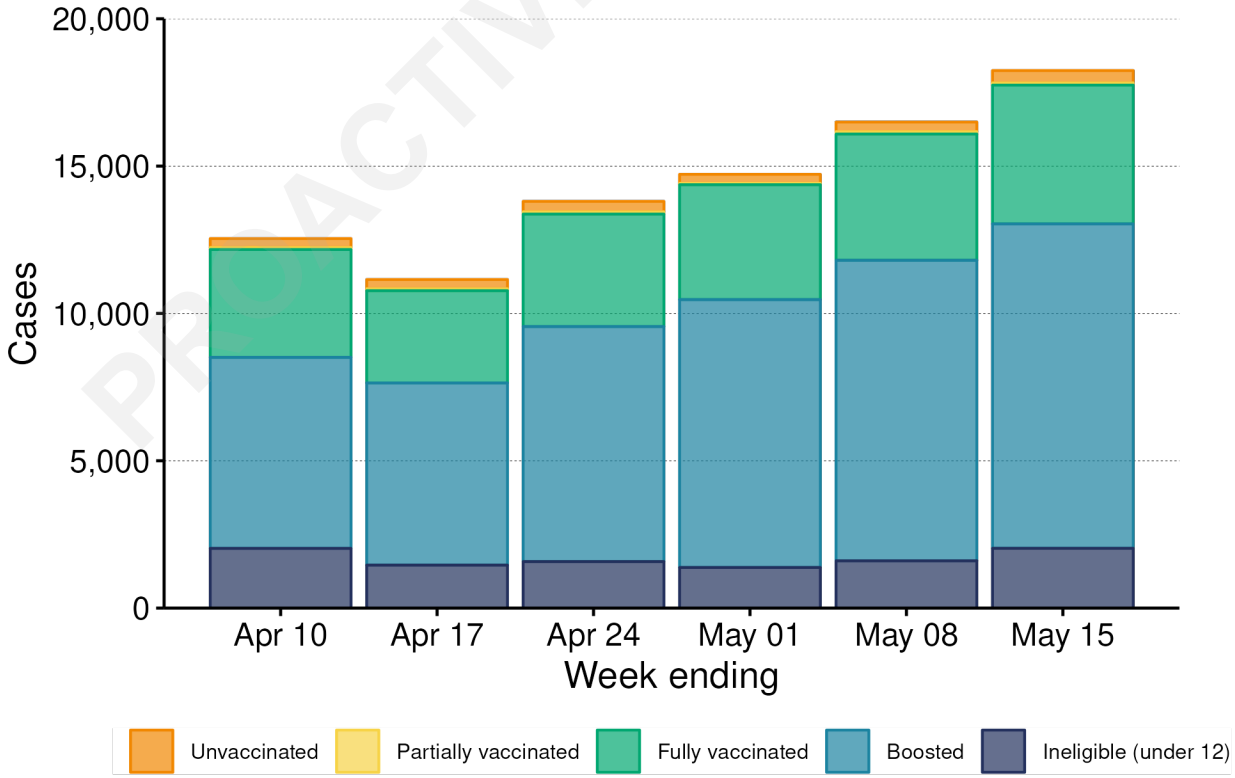


Vaccination Graphs

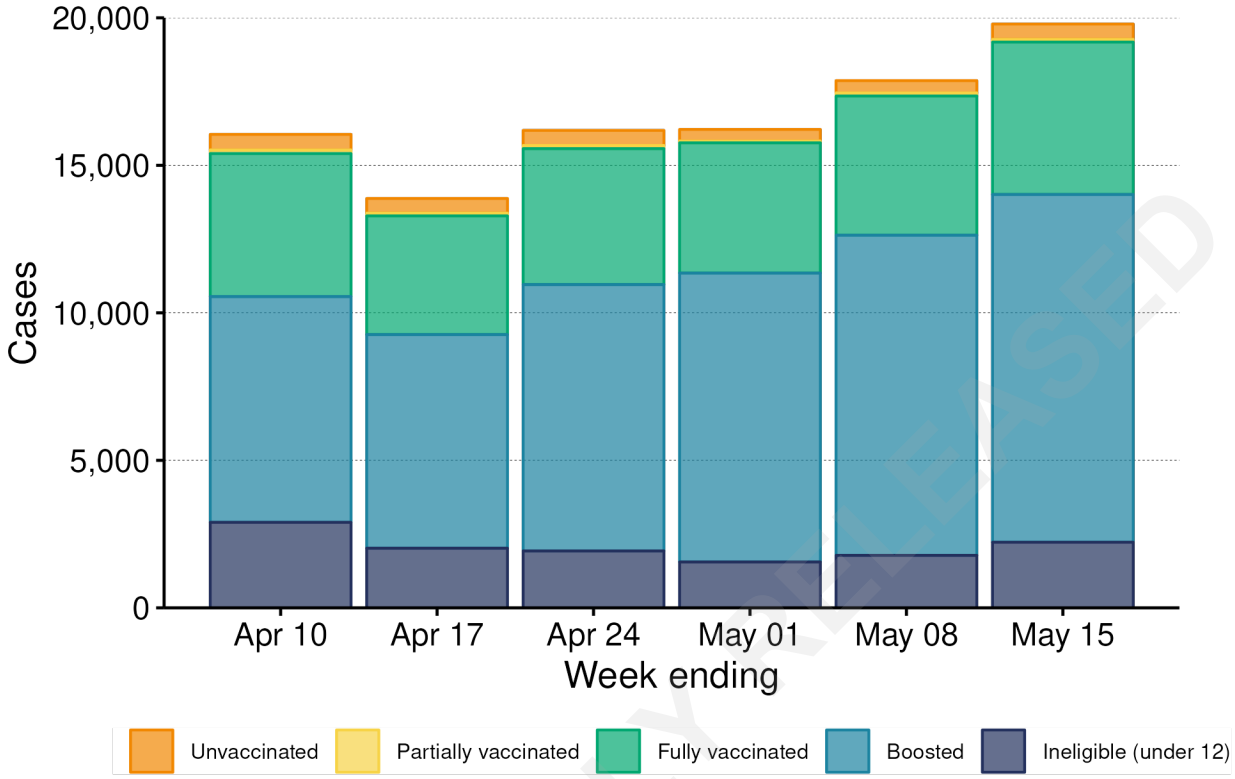
NZ Excluding Auckland Region



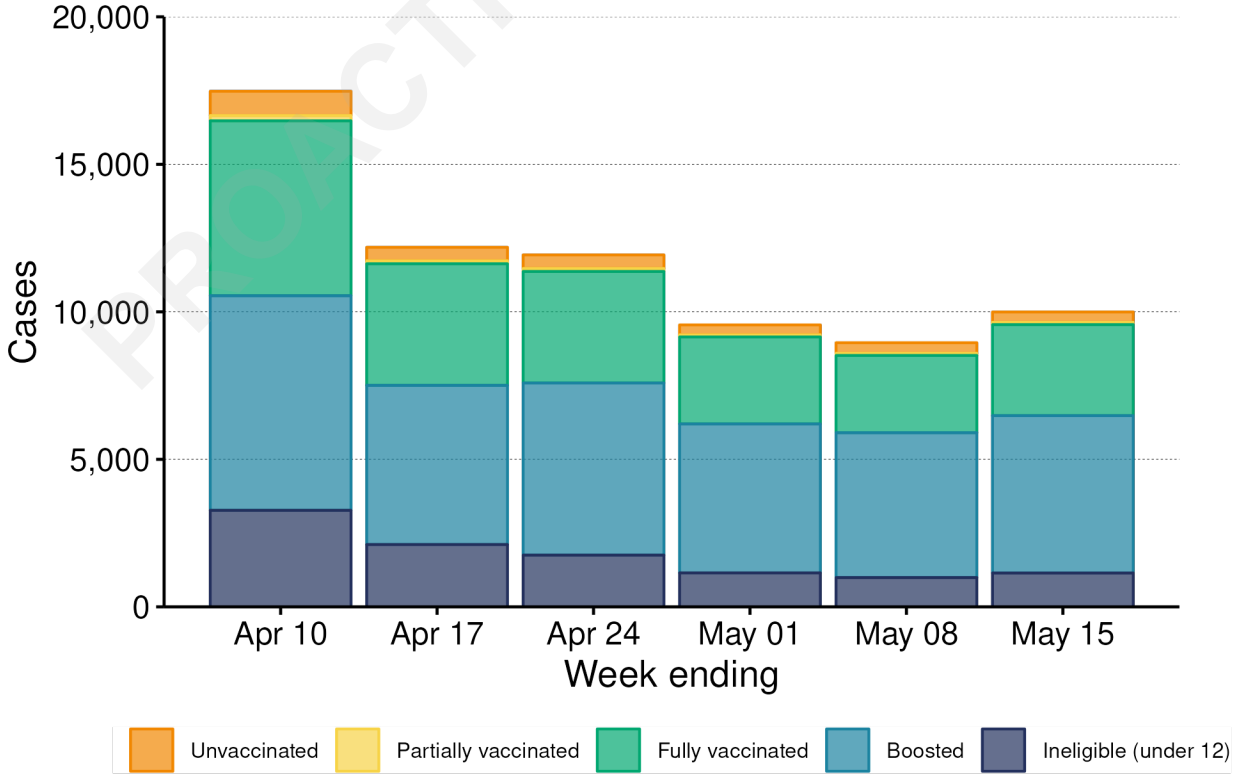
Auckland Region



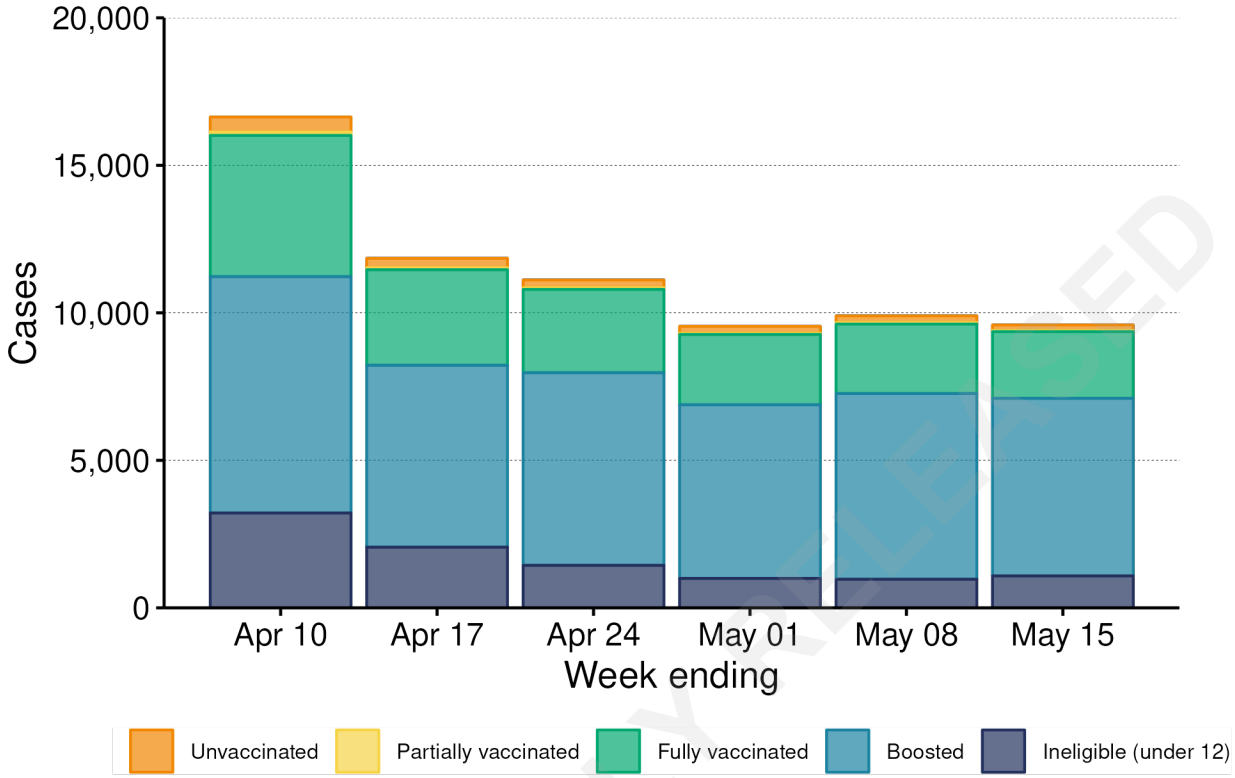
Northern Region



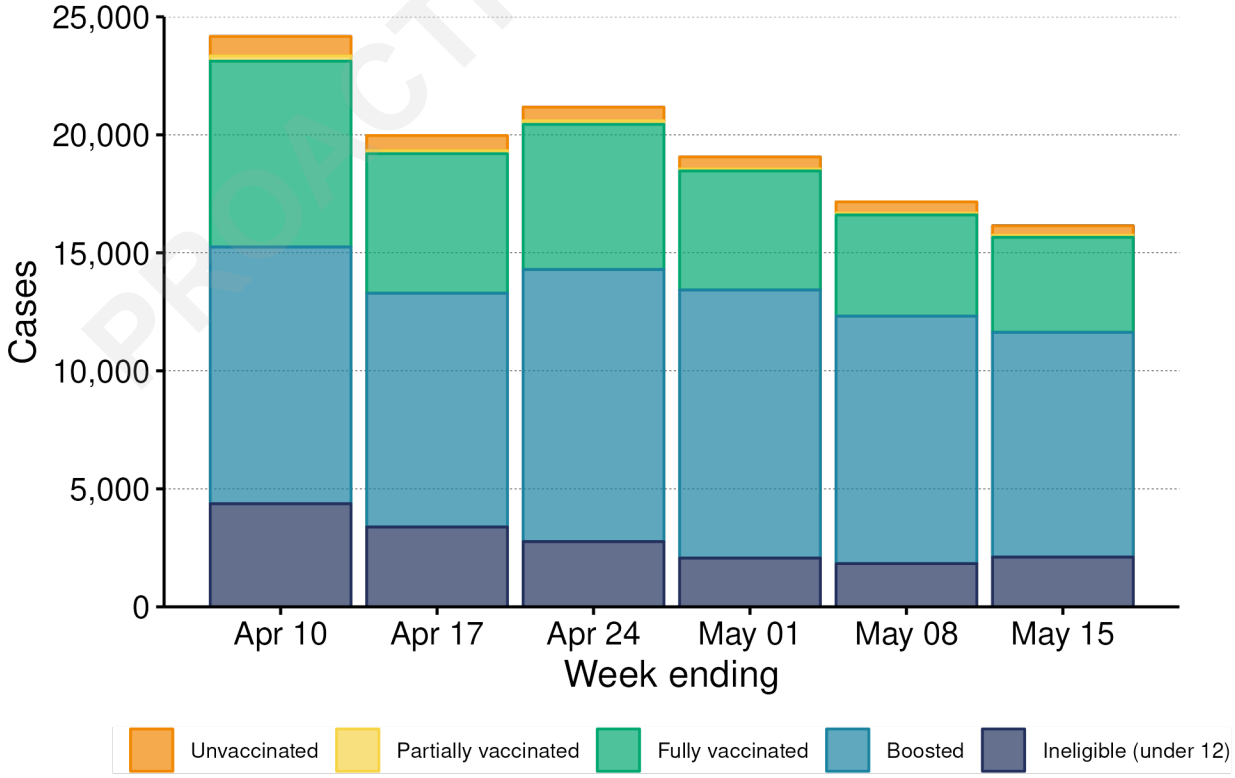
Te Manawa Taki



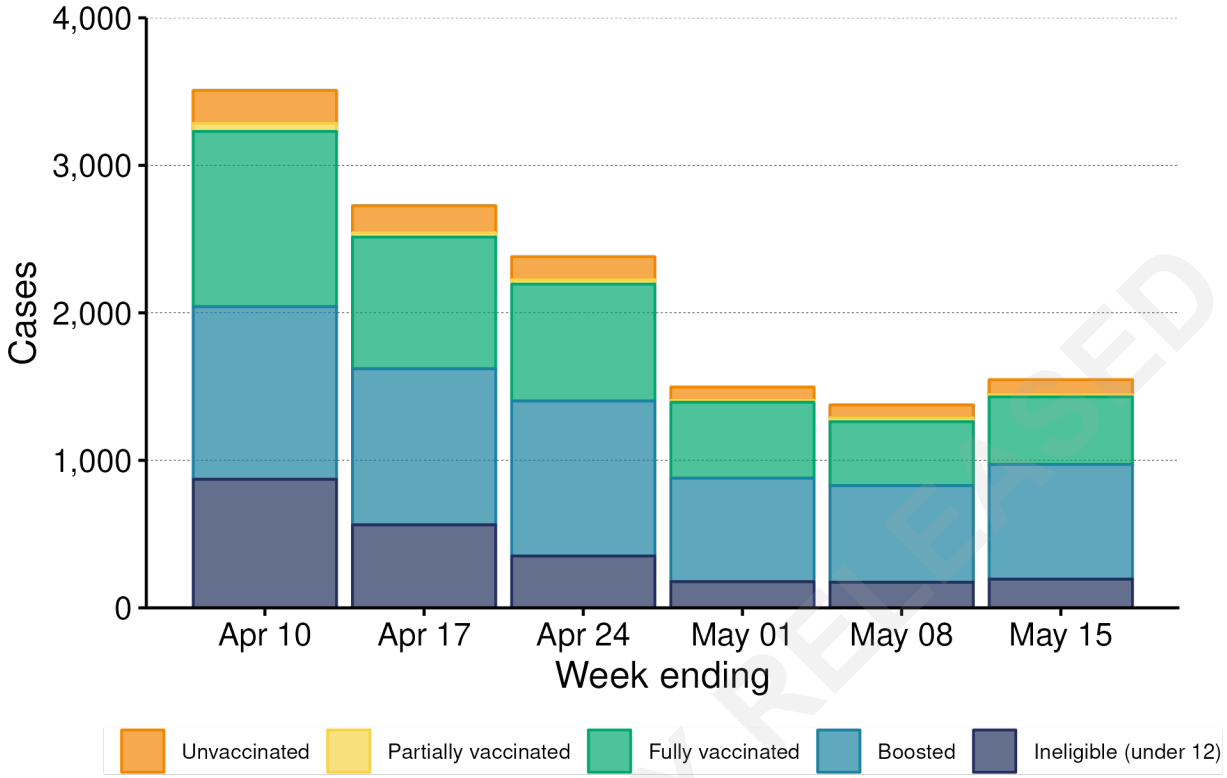
Central Region



Southern Region



Northland DHB



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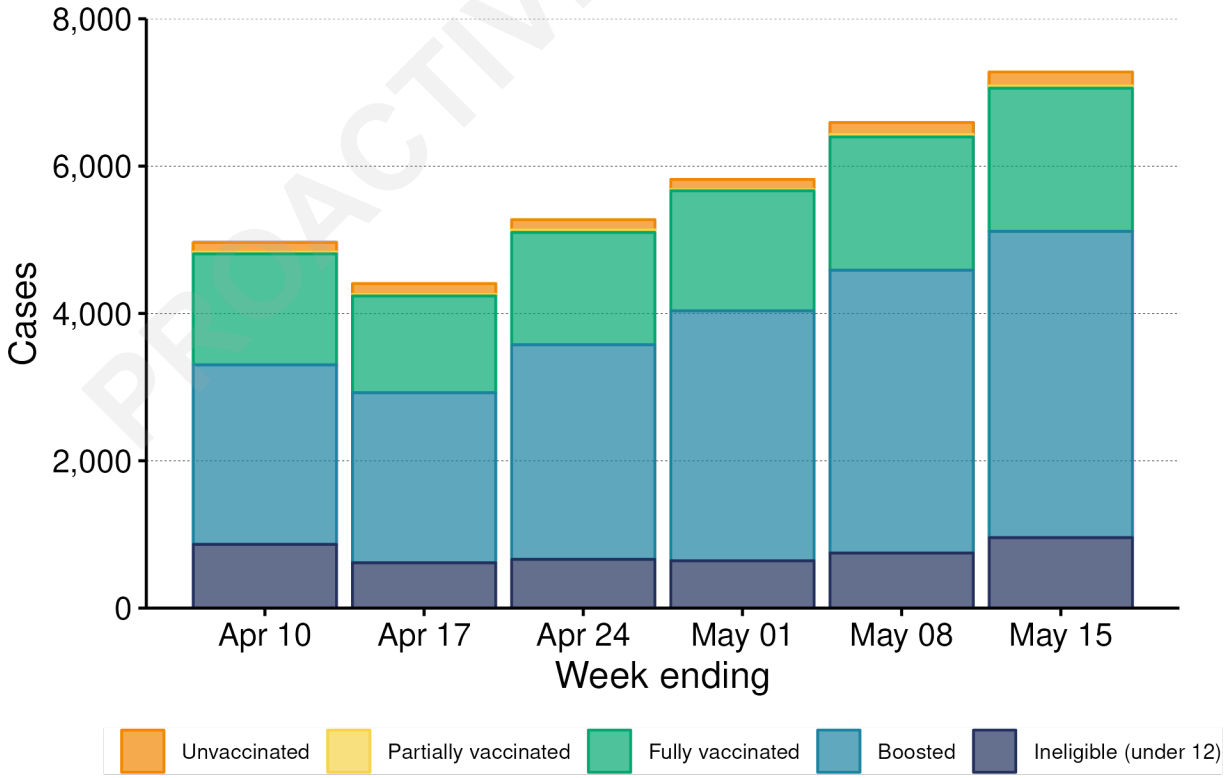
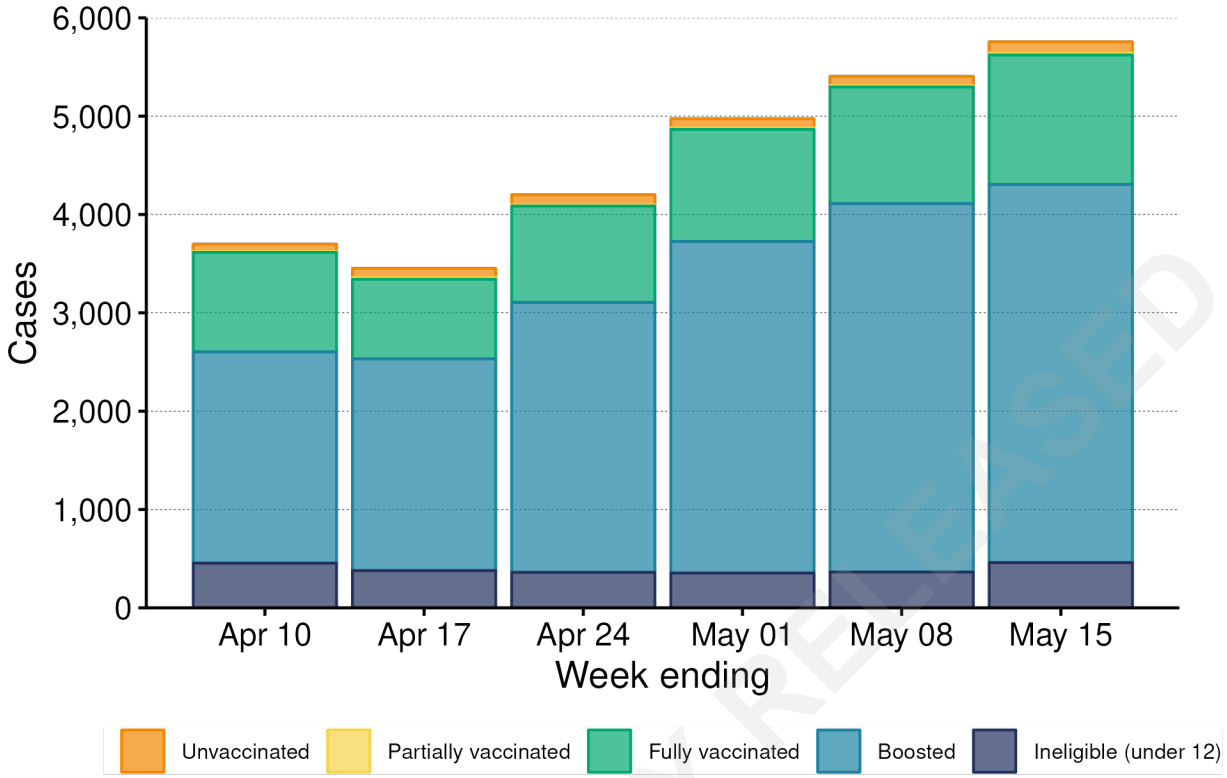
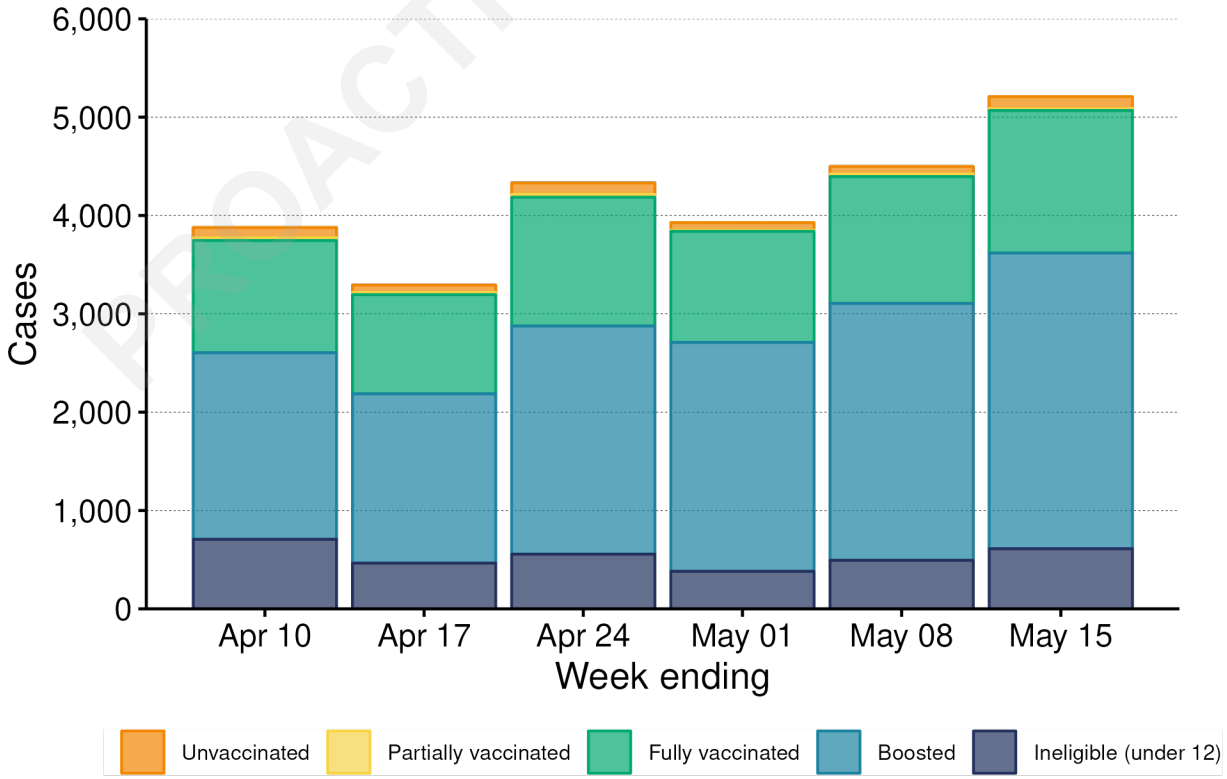


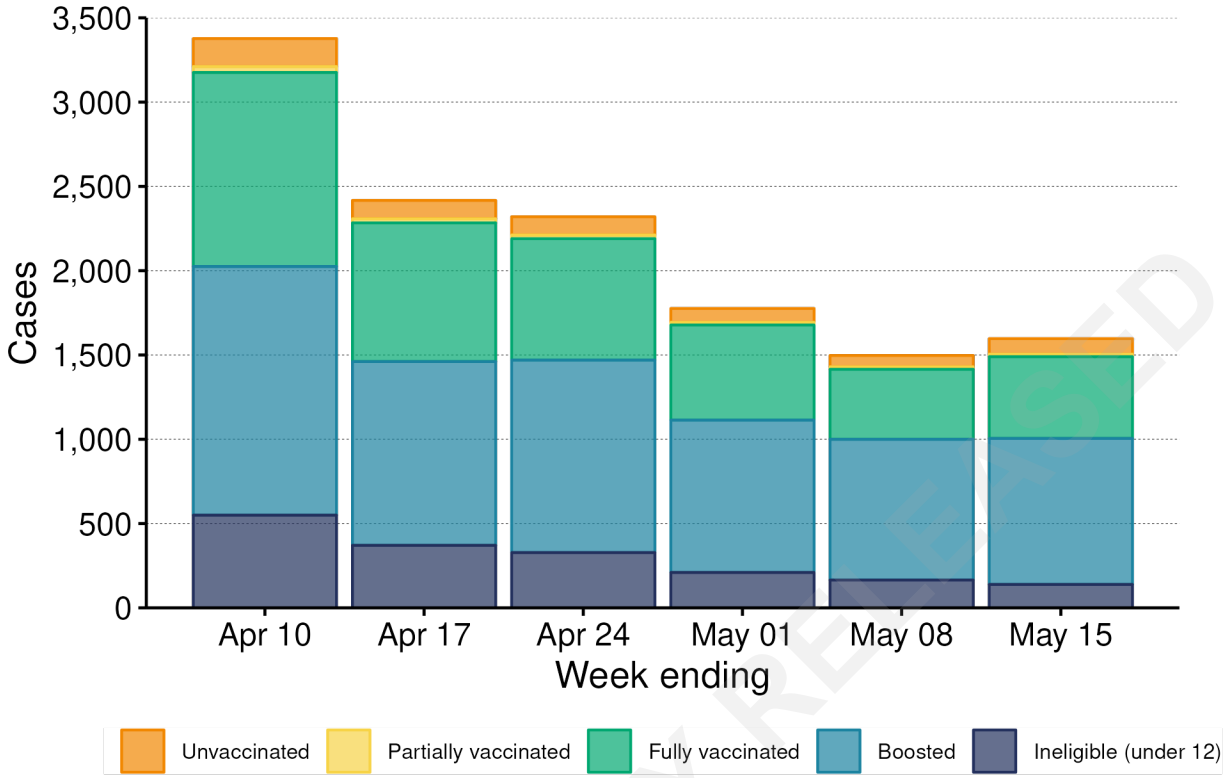
Auckland DHB



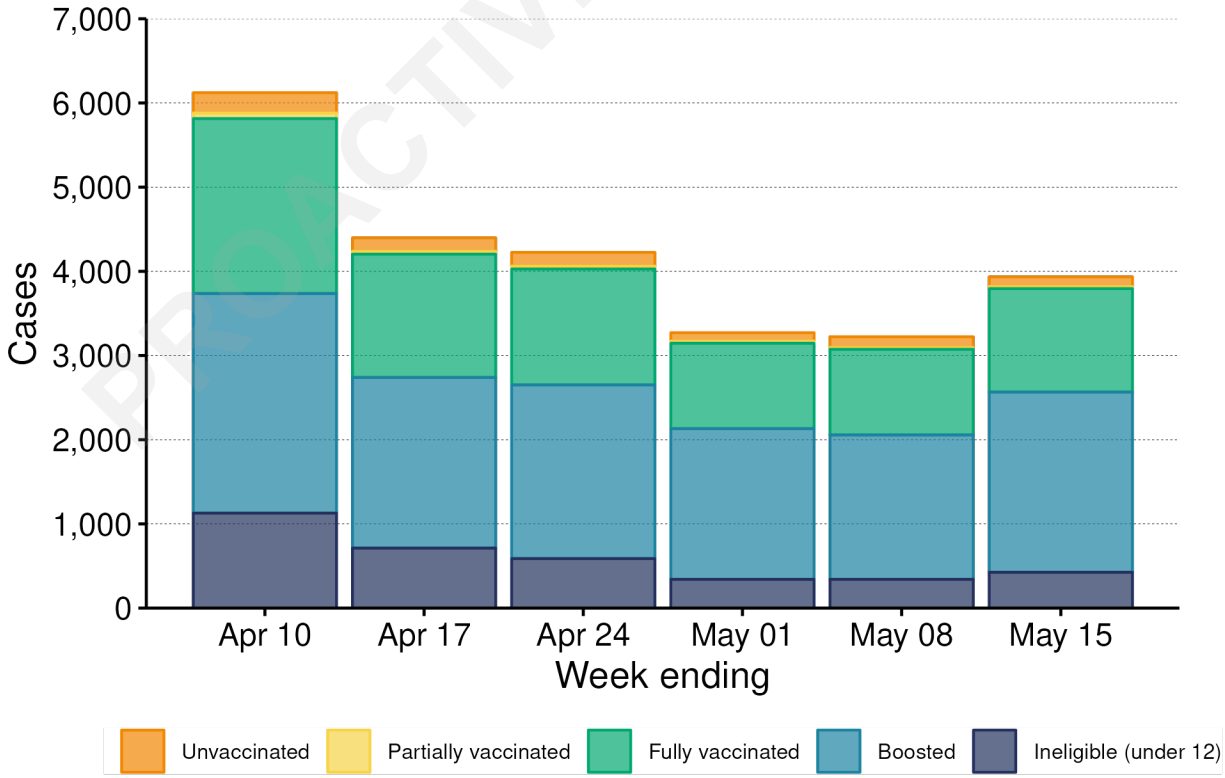
Counties Manukau DHB



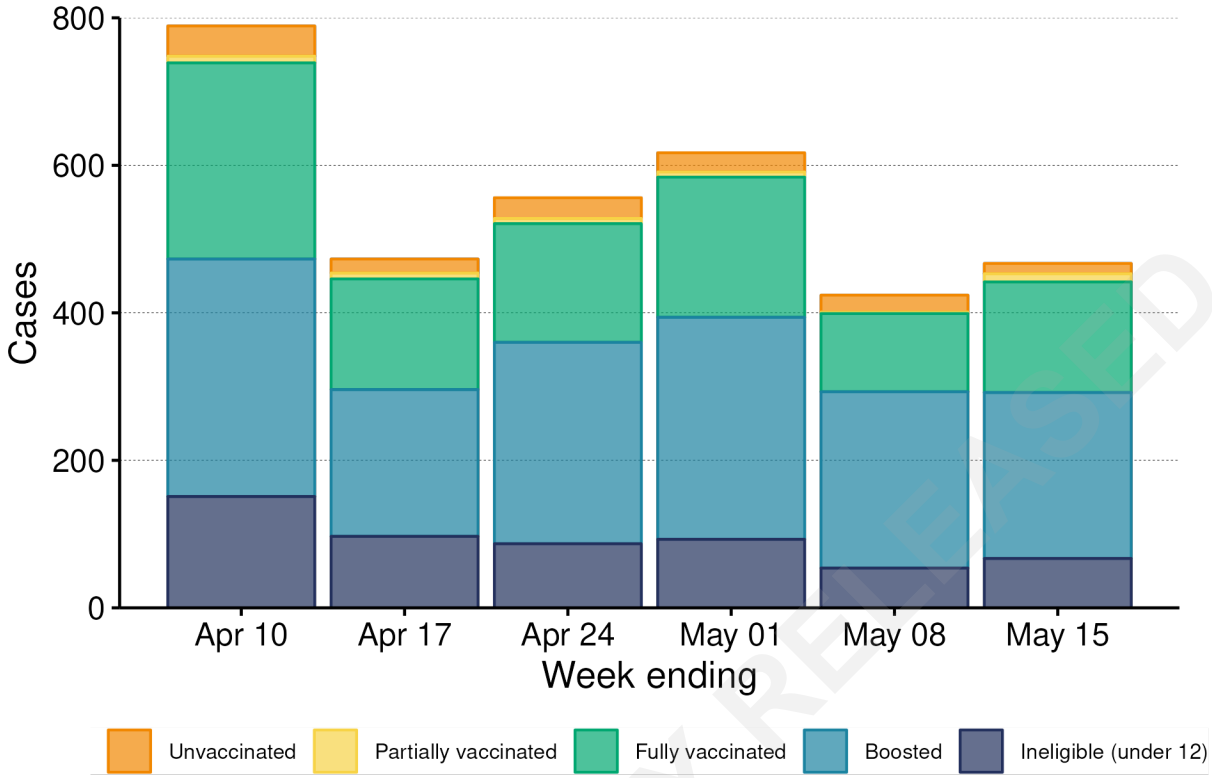
Bay of Plenty DHB



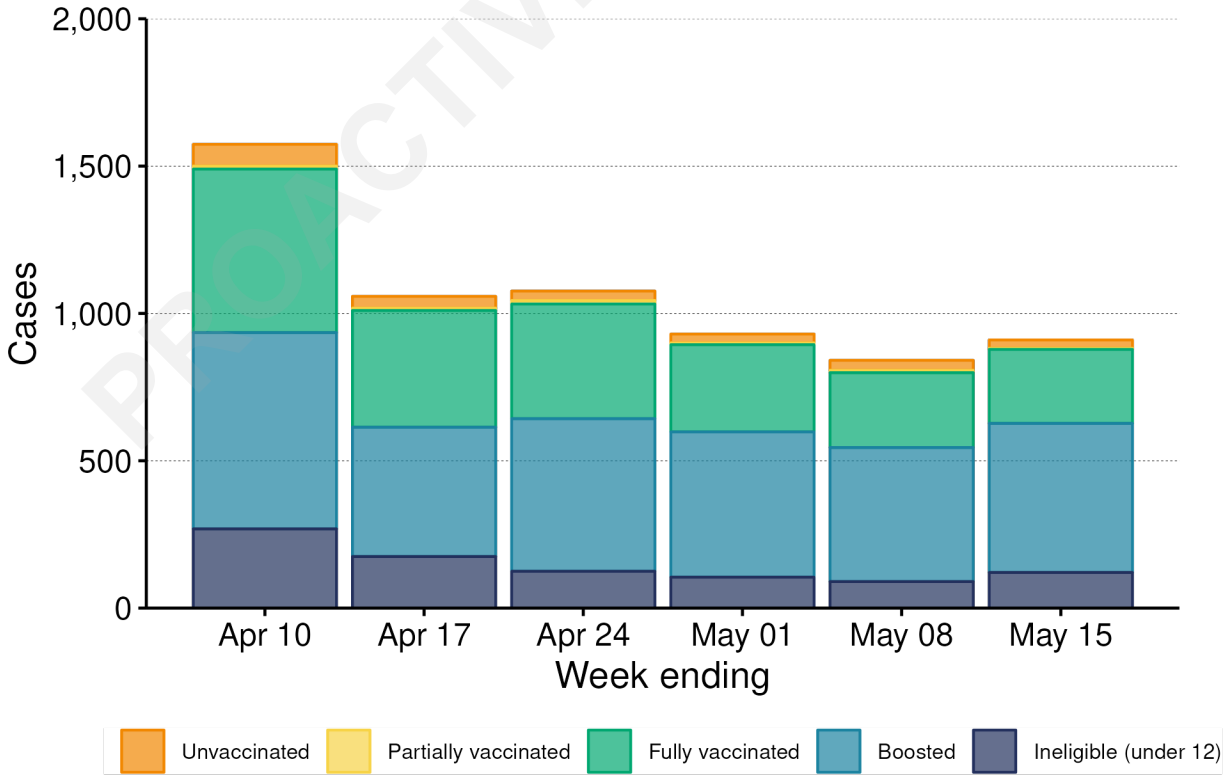
Waikato DHB



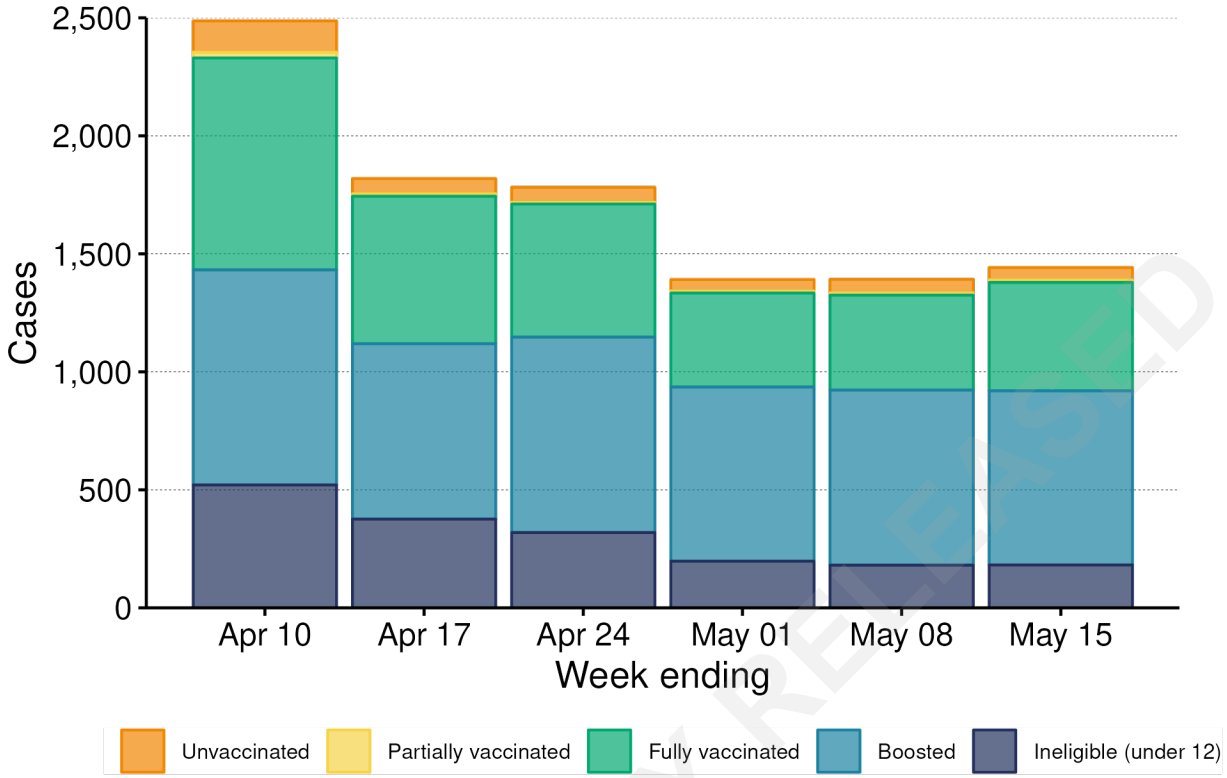
Tairawhiti DHB



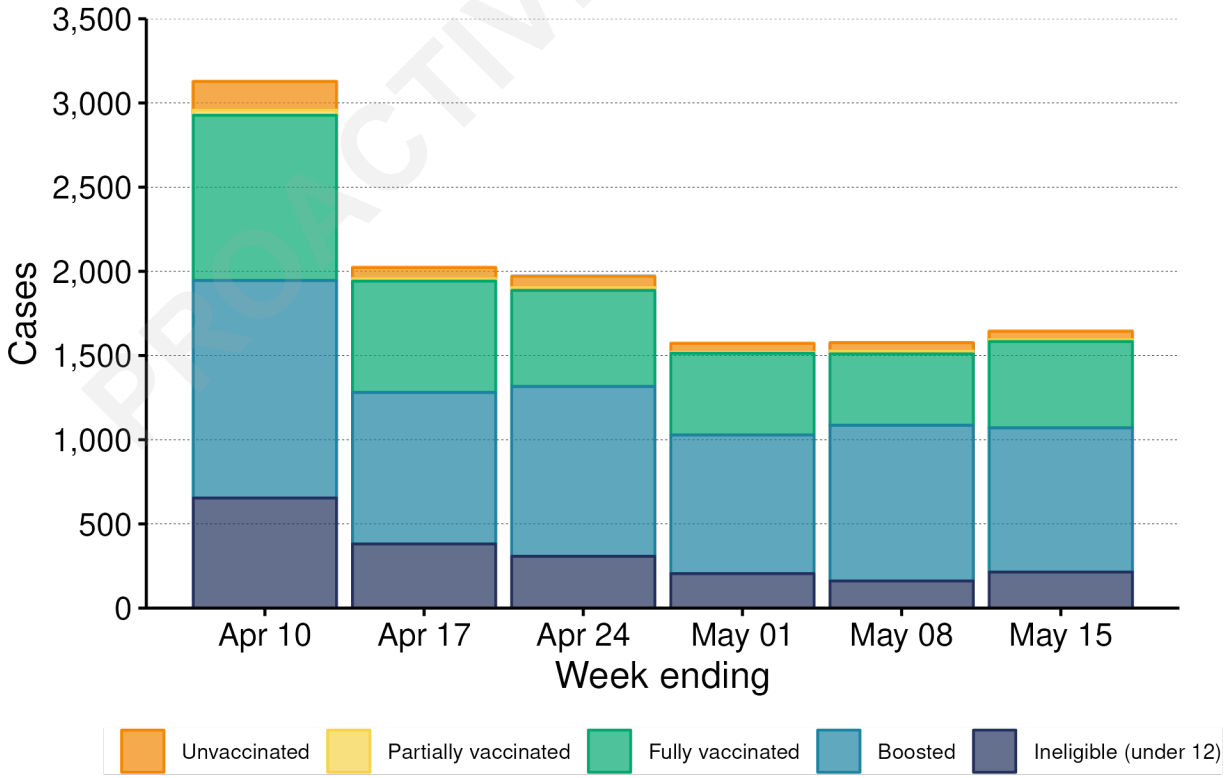
Lakes DHB



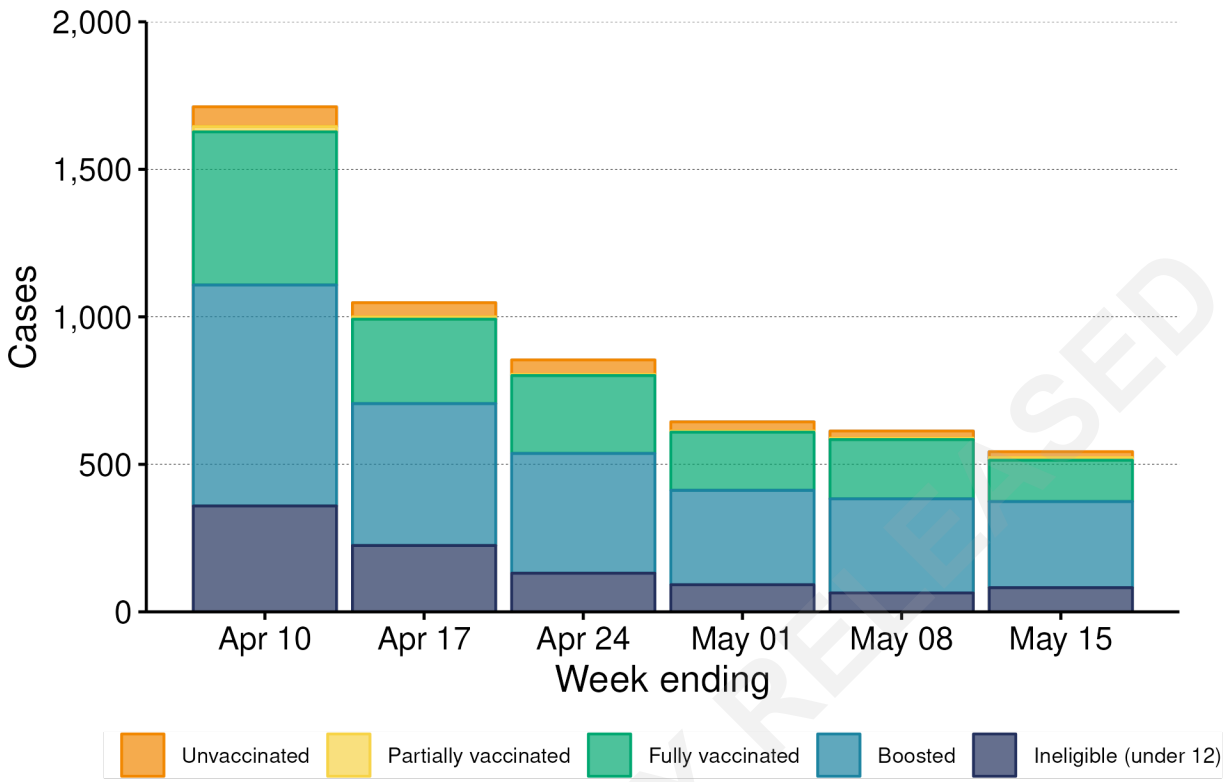
Taranaki DHB



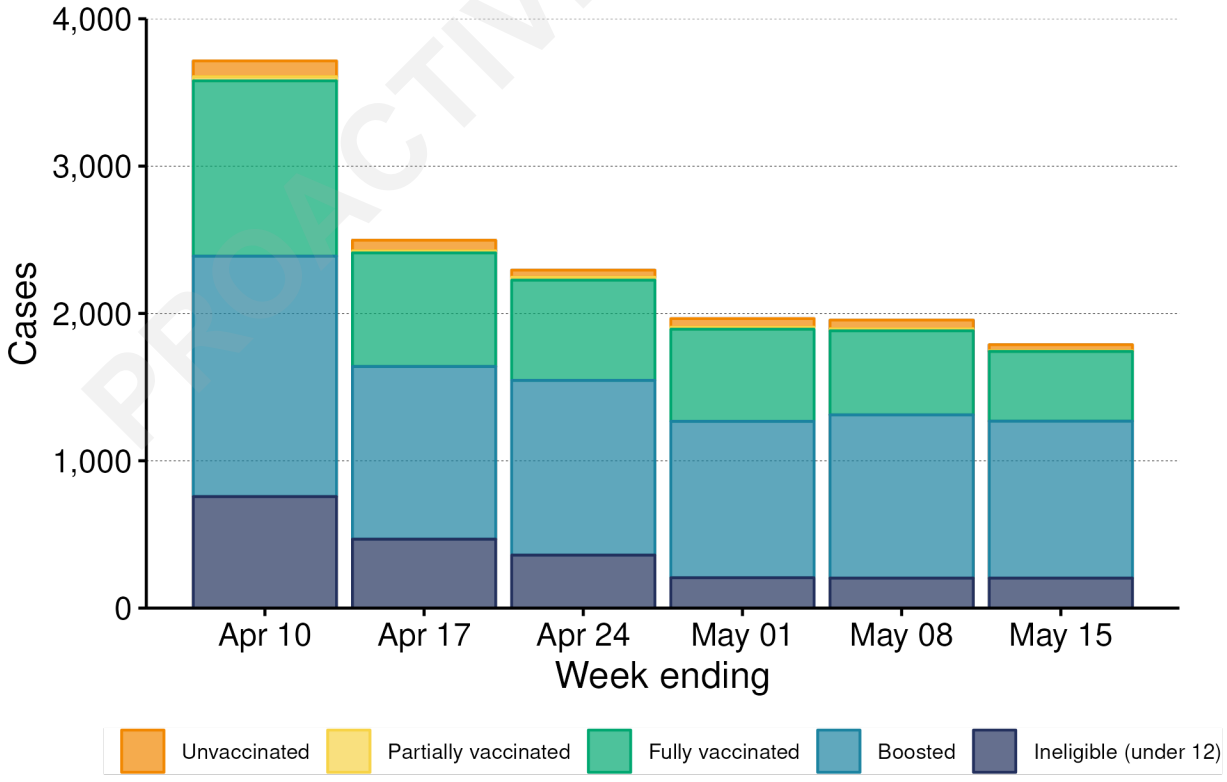
Hawke's Bay DHB



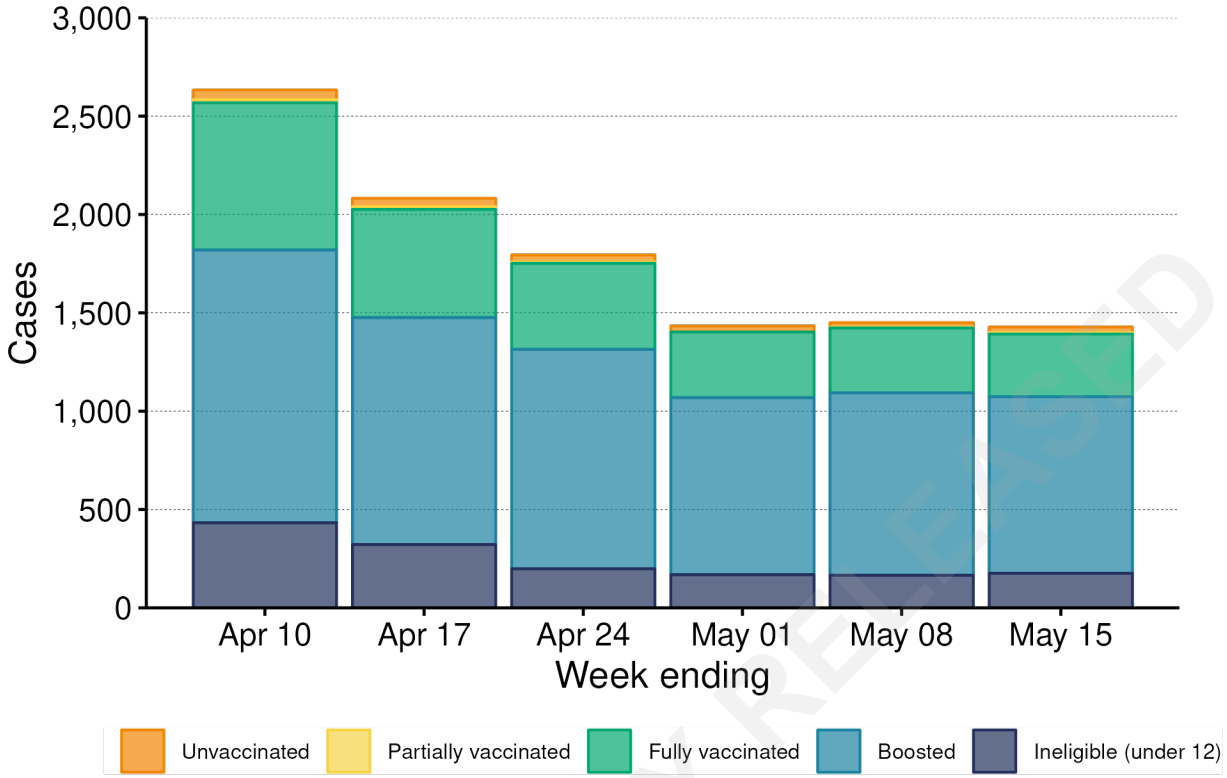
Whanganui DHB



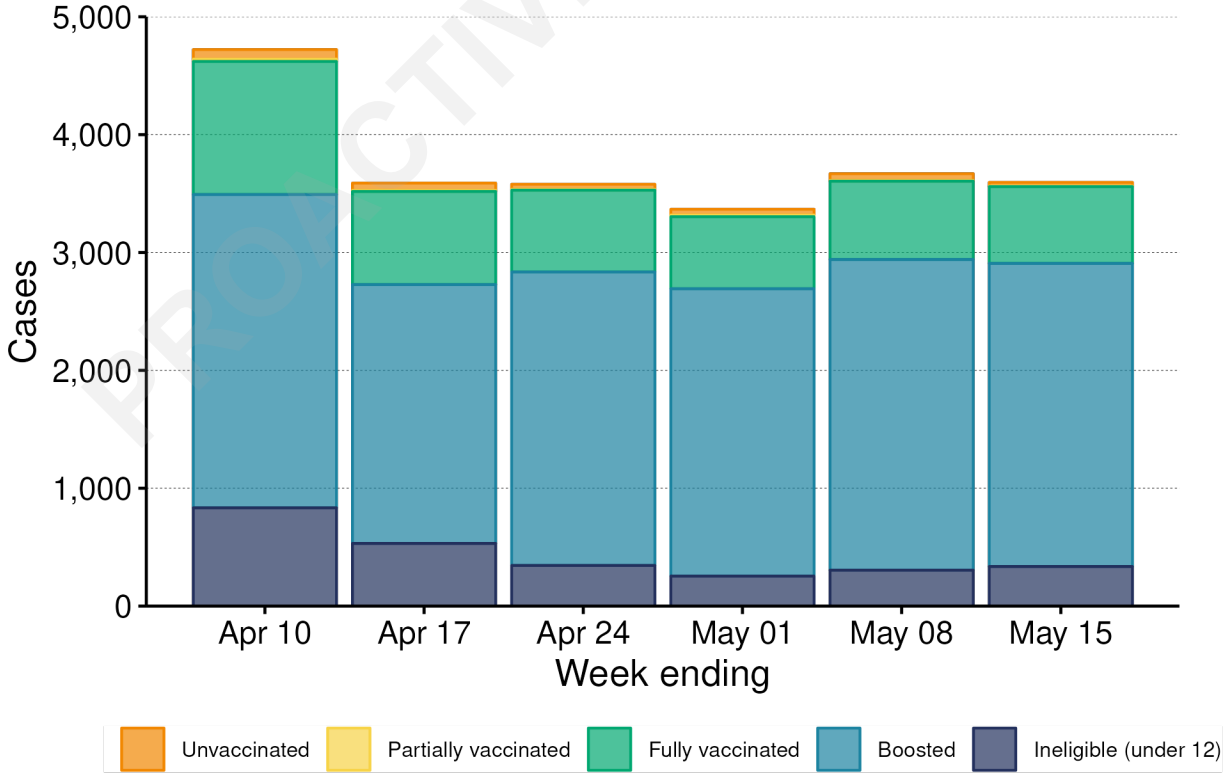
MidCentral DHB



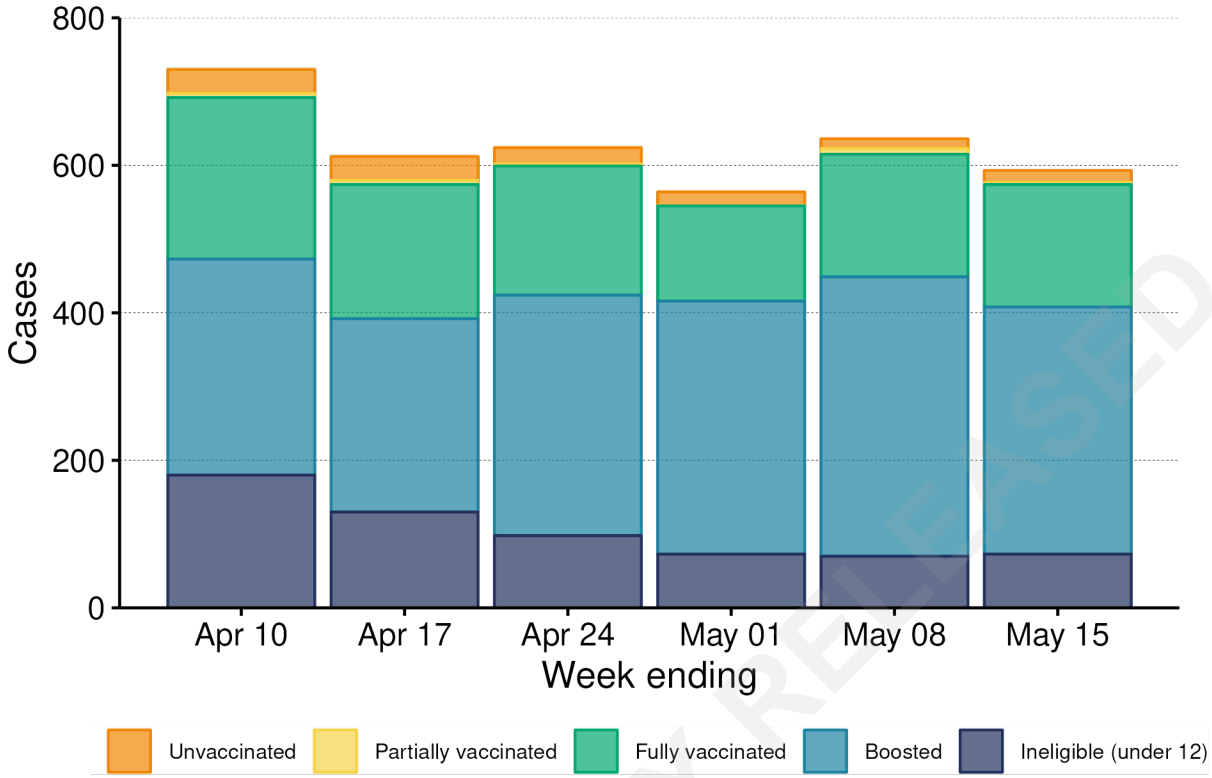
Hutt Valley DHB



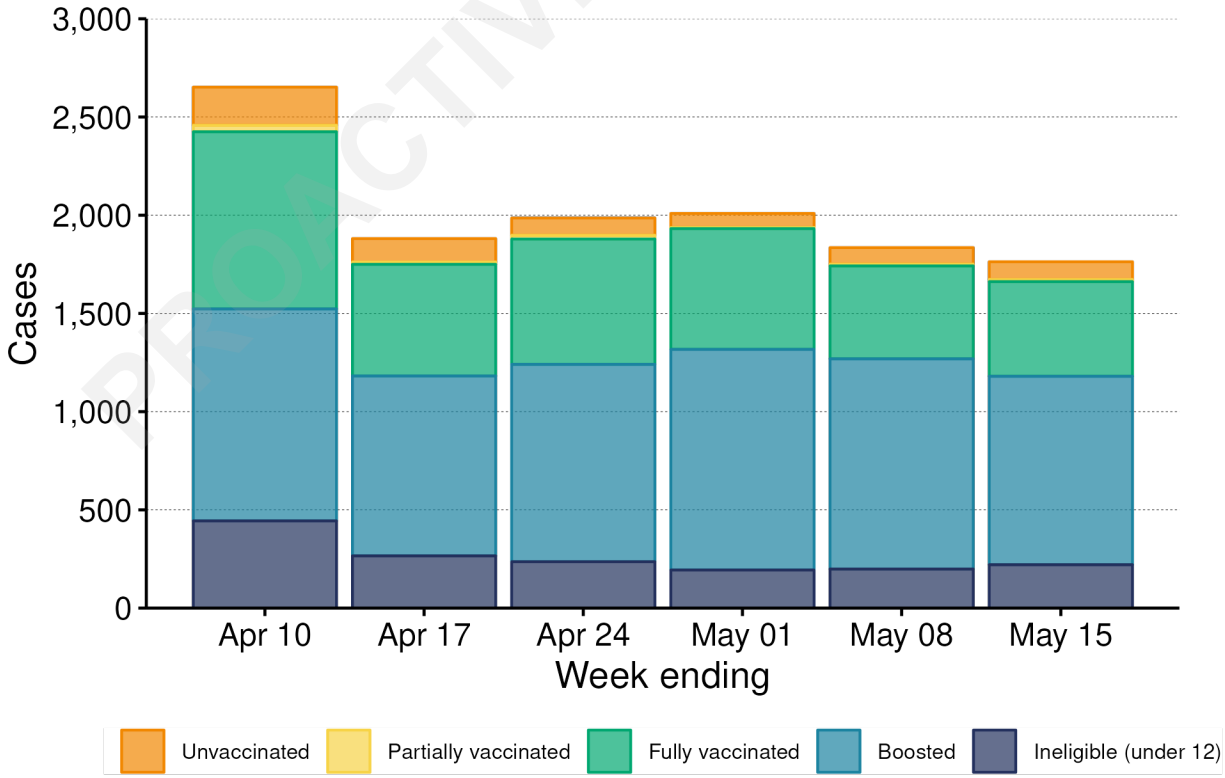
Capital and Coast DHB



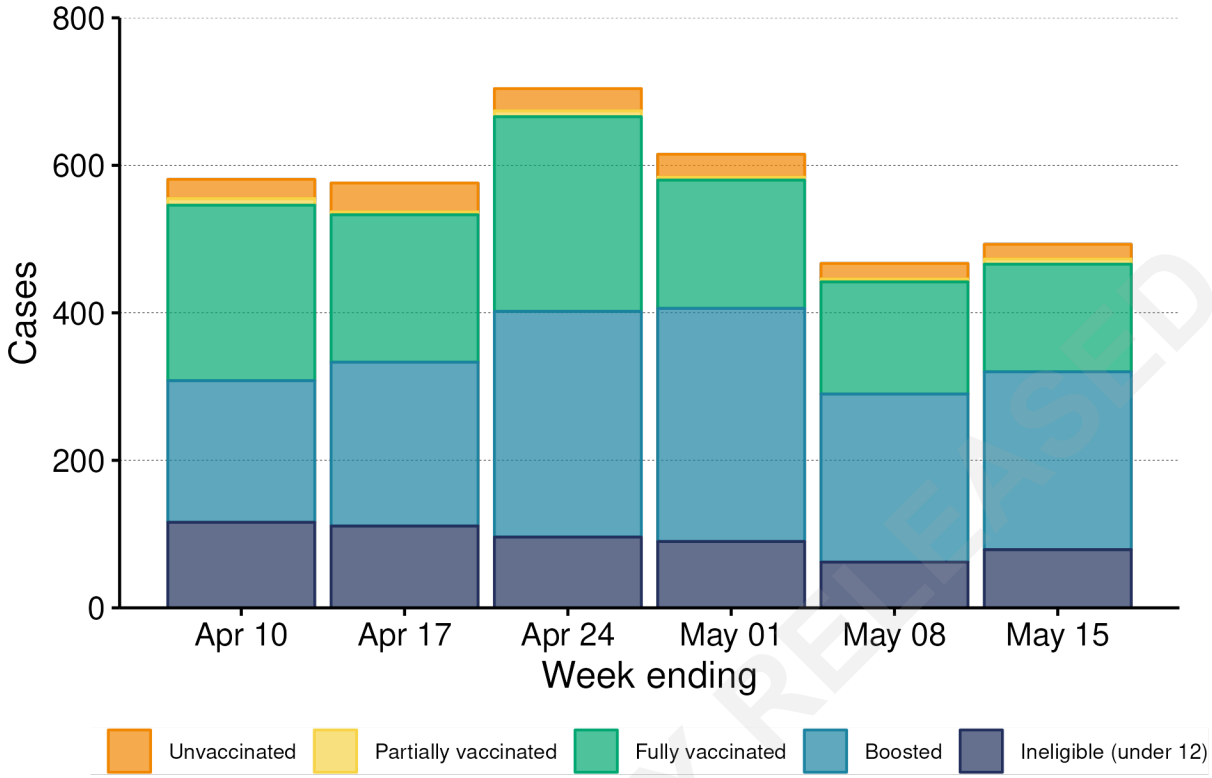
Wairarapa DHB



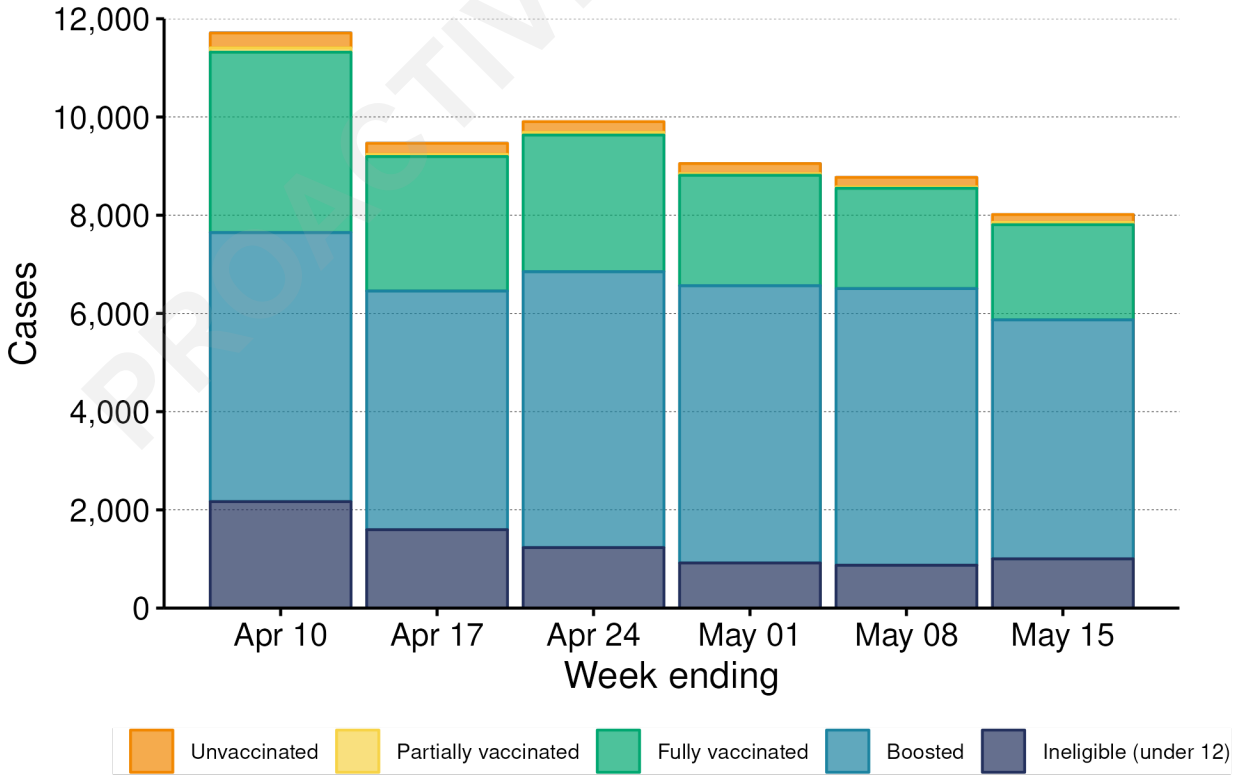
Nelson Marlborough DHB



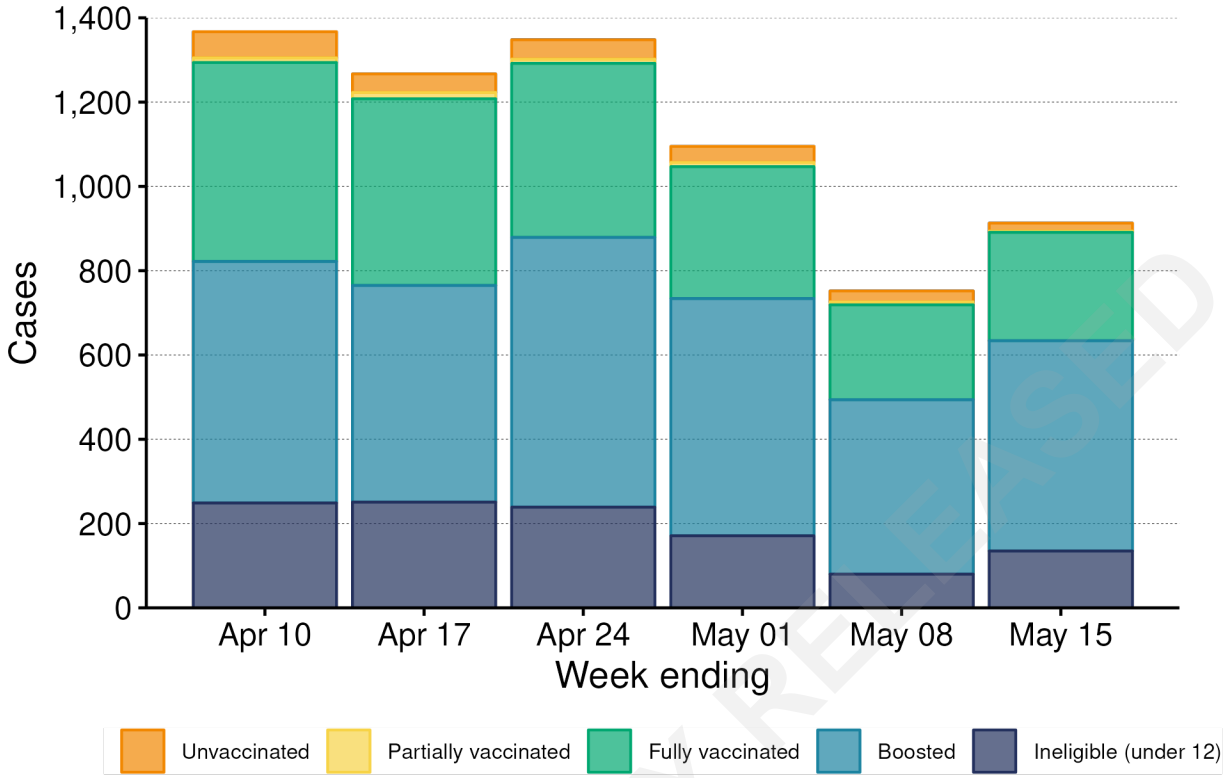
West Coast DHB



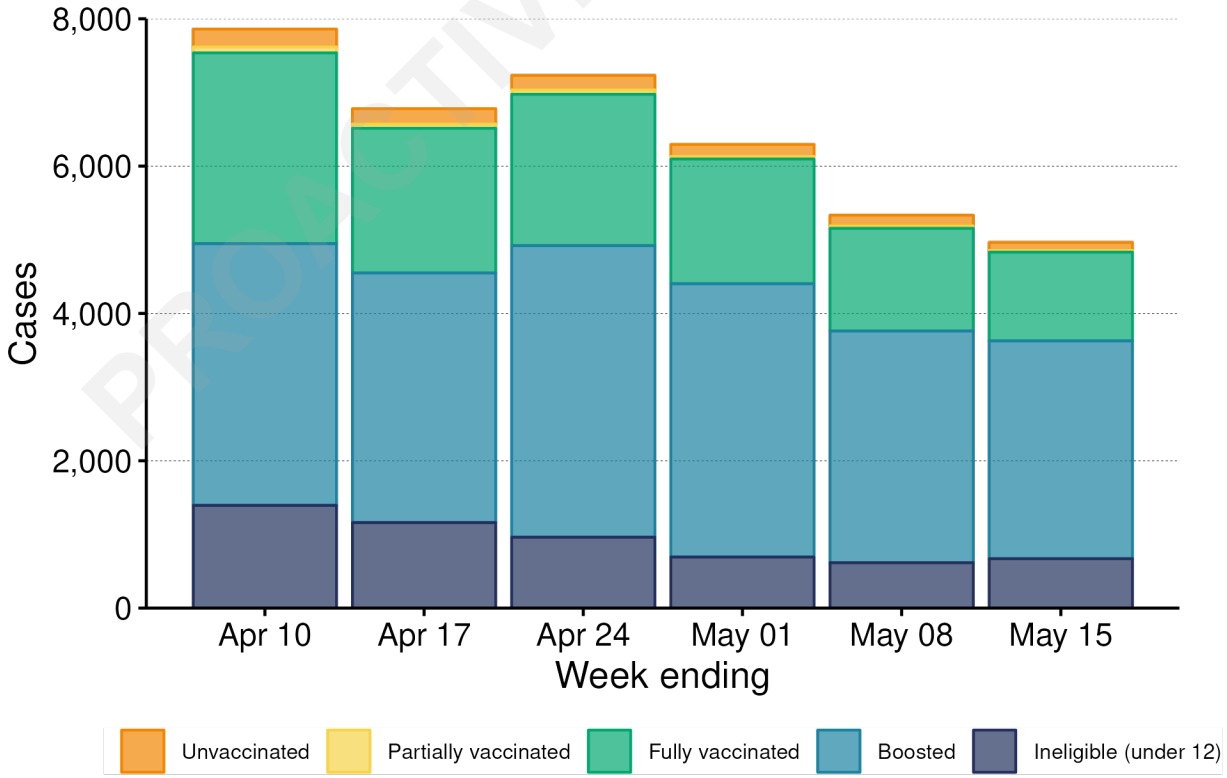
Canterbury DHB



South Canterbury DHB



Southern DHB



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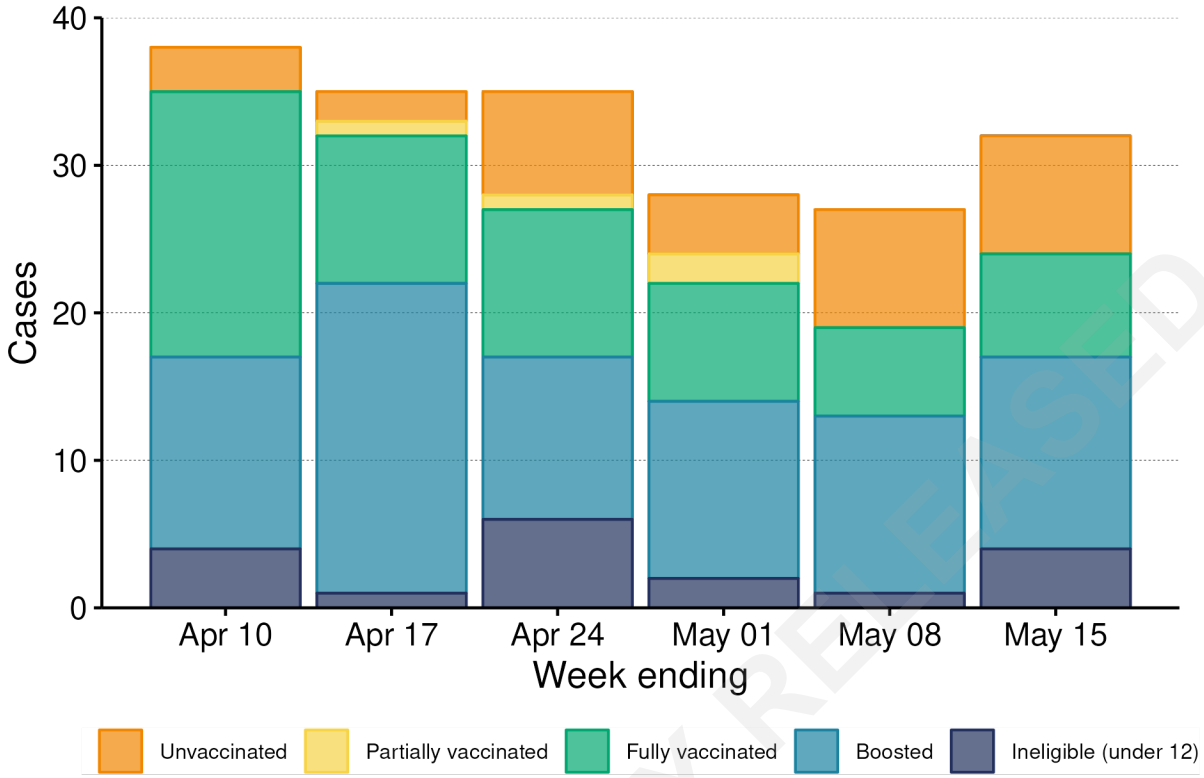

PCR Testing Rates