COVID-19

Trends and Insights Report

Updated 13 May 2022

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 10.5 per 1000** population for the week ending 08 May. This is a slight decrease of 0.9% from 10.6 per 1000 in the previous week.
- EpiNow modelling based on **data to 09 May predicts nationally, case numbers may continue to increase in the coming week (median R_{eff}= 1.1)**, but the estimates continue to have high levels of uncertainty. **For Tairāwhiti, the R_{eff} is 0.6 and for Northland it is 1.3. Auckland DHB, which has driven Northern Region increases** seen in the past two weeks, **has an estimated R_{eff} at 1.1.**
- Comparing the previous weeks **model median estimate for 09 May 2022 to the actual reported cases of 6,464, shows a 16% underestimate of forecasted cases** but falls within the 50% upper credible interval.
- **For the week ending 08 May**, the estimates suggest that **2.6% (731/28,121) of healthcare workers** and **1.7% (332/19,867) 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 (1.7% [17 per 1000] versus 10.5 per 1000**, respectively).
- Levels of viral RNA in wastewater **have again not changed significantly in any region;** although there is **early 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, seven DHBs experienced an increase in case rates. These were a **13%** increase in Waitemata, **9%** increase in Auckland and Capital and Coast, **14%** increase in Counties Manukau, **1%** increase in Waikato and Hutt Valley and **12**% increase in the Wairarapa.

Demographic Trends in Case Rates

- The **lowest case rates** are in **Pacific peoples (6.9 per 1000)** which have seen a **1.4% decline in the past week. Māori case rates have declined very slightly** by 4%, and are now **8.2 per 1000.**
- In the **Southern region,** case rates have been highest for **Pacific Peoples and Asian but these are now converging**. **Māori** currently still have the **lowest case rates in all regions except Northern.**

- **For 65+ age group, there has been increases across the motu.** Northern region has increased by **8%**, Te Manawa Taki increased by **3%**, Central increased by **14%** and Southern increased by **2%**.

Border Surveillance

- Cases are increasing as travel volumes increase. 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.
- Out of 152,156 arrivals between the weeks ending 03 April 2022 to 08 May 2022, **131,557 (86.4%) had a RAT test only, 2,520 (1.7%) had a PCR test, and 18,119 (11.9%) 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. **Of those who had a RAT test, 35% can be linked to also having a PCR test.**

Morbidity and Mortality

- In the Auckland Metro DHBs, Māori and Pacific peoples continue to be substantially disproportionately affected in terms of both the risk of cases being hospitalised and the population rate, especially for those in the 60-69 and 70+ age groups. For all ethnicities the likelihood of hospitalisation rises with age.
- **The average age of those currently hospitalised in the Northern region has remained stable at 59** on 01 May April to 08 May.
- As of 12 May 2022, **911 people have died** with or after COVID-19 infection. Of these, **863 have died within 28 days** of being reported as a case.

Domestic epidemic outlook

Infection outlook

- Since the March peak, case rates were declining leading up to the week of the 17th of April, after which a plateau has been observed in national level infection trends.
- The overall national picture is a continued plateau; however, a 10% increase in cases has occurred in Northern region since the previous week.
- The current increase is unlikely to be related to testing behaviours as a similar increase as been occurring in border workers who undergo routine testing.
- 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 a substantial decrease in case rates.
- Fatigue from following public health orders 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 a consistent increase in cases observed 65+ year olds since 17th April.
- New Omicron sub-variants are likely to start circulating in the community after multiple border detections in the previous few weeks.

Tertiary Care outlook

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

Contents

Figures

Tables

Infections Trends

Summary of evidence for infection and case ascertainment trends

Currently, **the national border workforce case rates in the past week (1.7% [17 per 1000]) are higher than the general population (10.5 per 1000) case rates**; these rates were very similar when comparing the rates in 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, **rates have again remained similar to the week previous**; Northern region was the only region with a slight 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. However, Northern region inpatients have continued to see a slow decrease.

Levels of viral RNA in wastewater have again not changed significantly in any region. Contradictory to other evidence, **this could indicate there was no substantial decrease in any region in the underlying level of new infections over the past six weeks.**

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. **Projections based on the estimated effective reproduction rate up to 09 May are predicting an increase in the coming week**. The projections for the previous four weeks of slight decreases did not materialise.

Approximation of underlying infection incidence

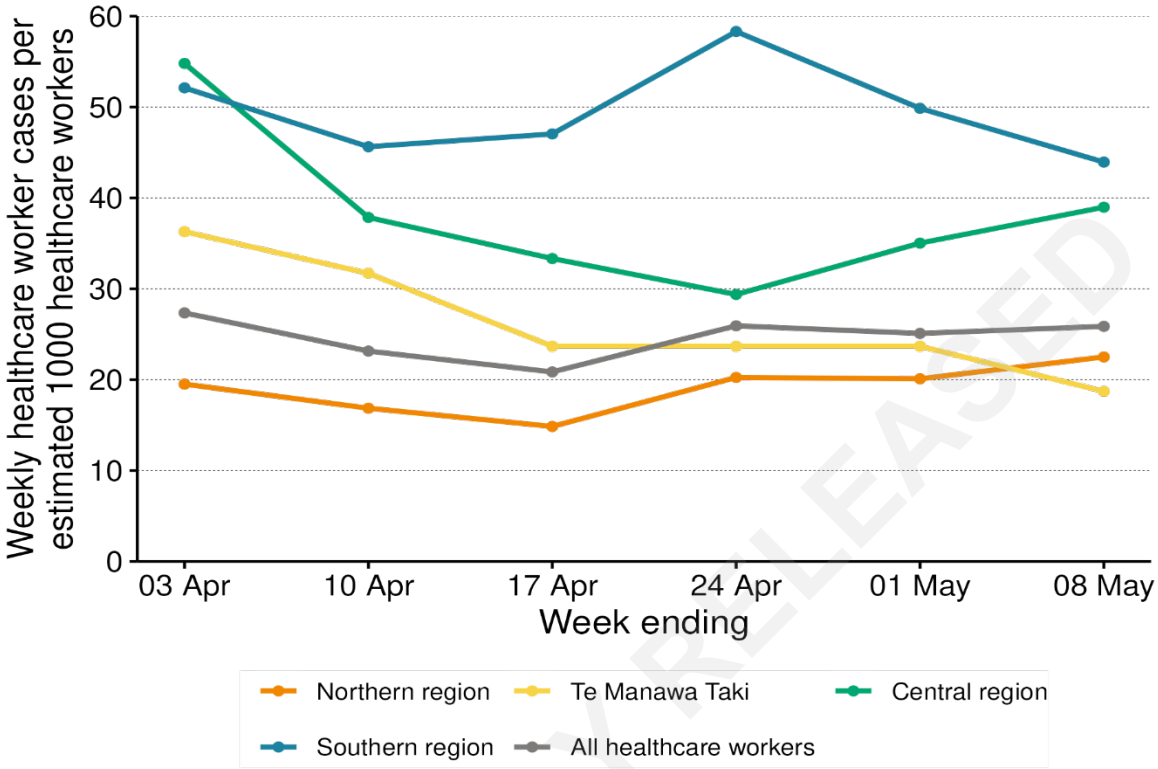
Underlying infection incidence has been gauged using case rates for routinely tested healthcare workers and border workers, where there was evidence of regular testing.[1] While these workforces are not a representative sample of New Zealanders, **the border workers are now likely to have a similar risk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

For the week ending 08 May, estimates suggest that 2.6% (731/28,121) of healthcare workers (**Figure 1**) and 1.7% (332/19,867) 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 1.8%.

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

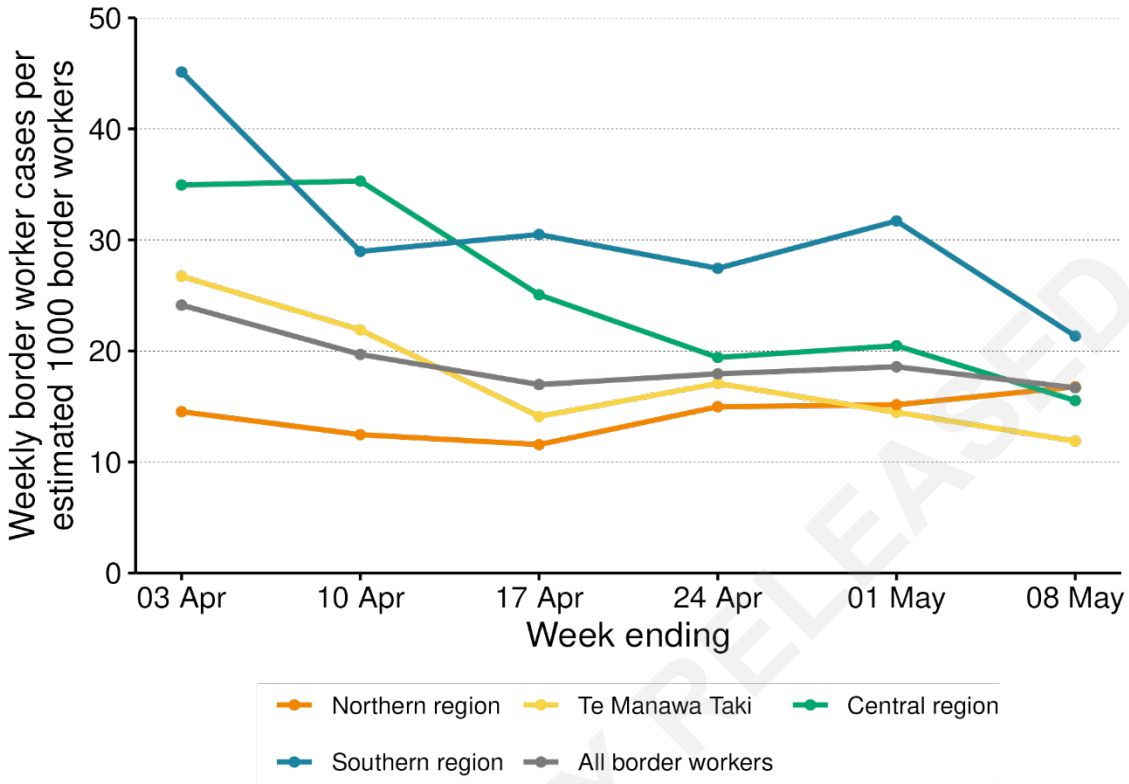
[2] This rate may be underestimated as not all border workers are rostered on and therefore not required to undertake testing.

Figure 1: ***Regional weekly case rate of COVID-19 for health care workers (per 1000 estimated healthcare workers population) for the weeks ending 03 April to 08 May 2022***



Source: Éclair/Episurv, 2359hrs 08 May 2022

Figure 2: ***Regional weekly case rate of COVID-19 for border workers (per 1000 estimated border workers population) , for the weeks ending 03 April to 08 May 2022***

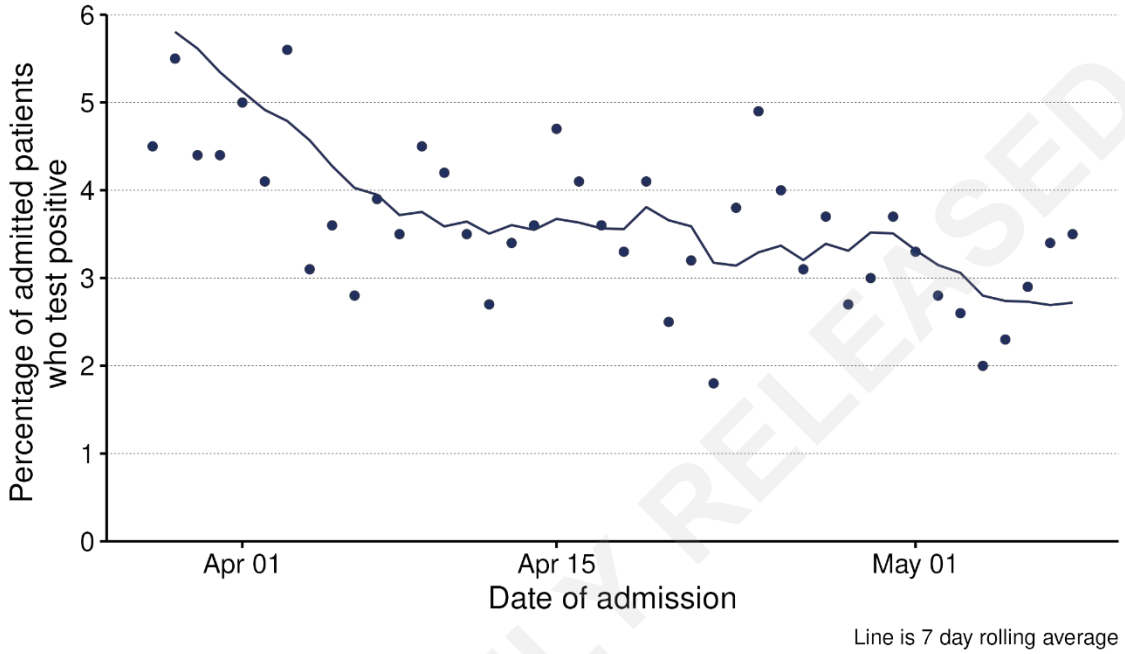


Source: Éclair/Episurv, 2359hrs 08 May 2022

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 has continued to decrease slowly,** from 3.3% (230/6,907) in the week ending 01 May to **2.6% (193/7,371)** in the week ending 08 May.

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



Source: Northern Region hospitalisation data, NCTS & EpiSurv as at 2359hrs 08 May 2022

Wastewater quantification

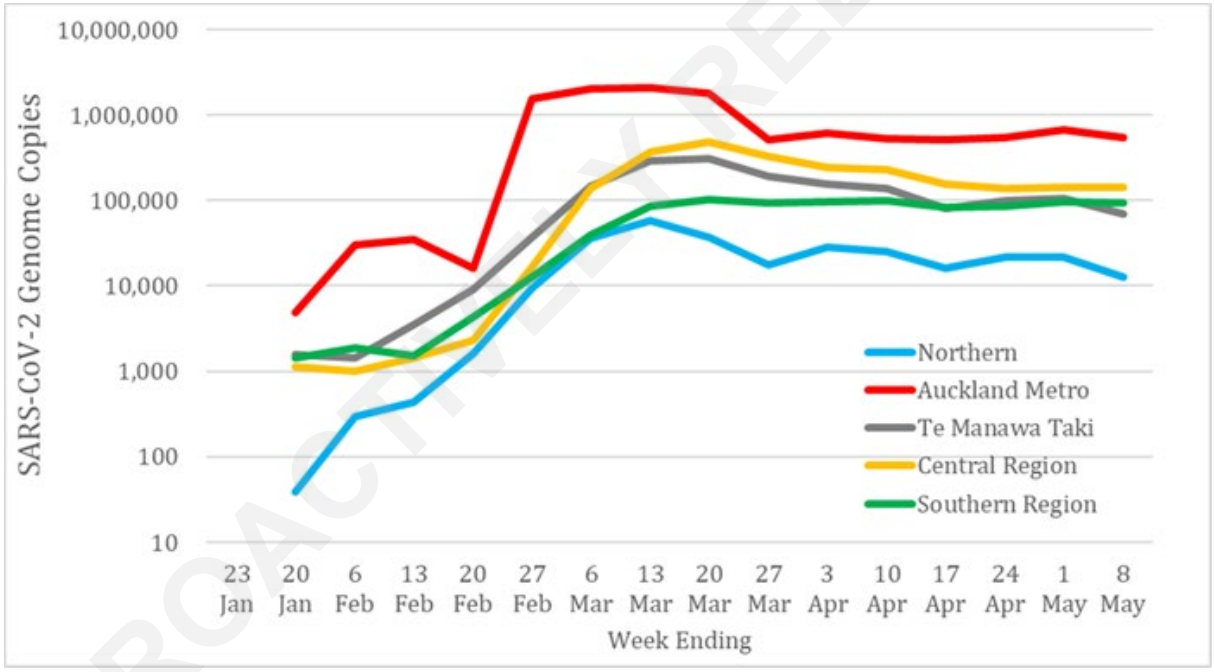
Figure 4 provides an overview of wastewater results by region. Please note that it is not appropriate to compare SARS-CoV-2 absolute levels by region; this figure can only be used to assess the trends *within* each region.

The SARS-CoV-2 RNA levels in wastewater **in Northern region** (excluding Auckland Metro) **has had small variations for the past four weeks but is trending downwards.** Similarly, **Auckland Metro rates have been relatively stable for the past six weeks with no significant change since late March.**

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

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: ***Trends in SARS-CoV-2 genome quantification from wastewater by region, 06 February – 08 May 2022***



Source: ESR SARS-CoV-2 in Wastewater update for week ending 08 May 2022

Trends in diagnosed cases

Overall, **the weekly case rate was 10.5 per 1000** population for the week ending 08 May. This was **no significant change from the previous week,** which was 10.6 per 1000.

Figure 5 shows that case rates have varied across regions in the past week. **Te Manawa Taki (7.5 per 1000) decreased by 9% and Southern (14.9 per 1000) decreased by 10%, while Northern region (9.4 per 1000) increased by 10%. Central region (10.5 per 1000) remains steady compared to the past week.**

In the past week, seven DHBs experienced an increase in case rates. These was a 13% increase in Waitematā, 9% increase in Auckland and Capital and Coast, 14% increase in Counties Manukau, 1% increase in Waikato and Hutt Valley and 12% increase in Wairarapa.

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

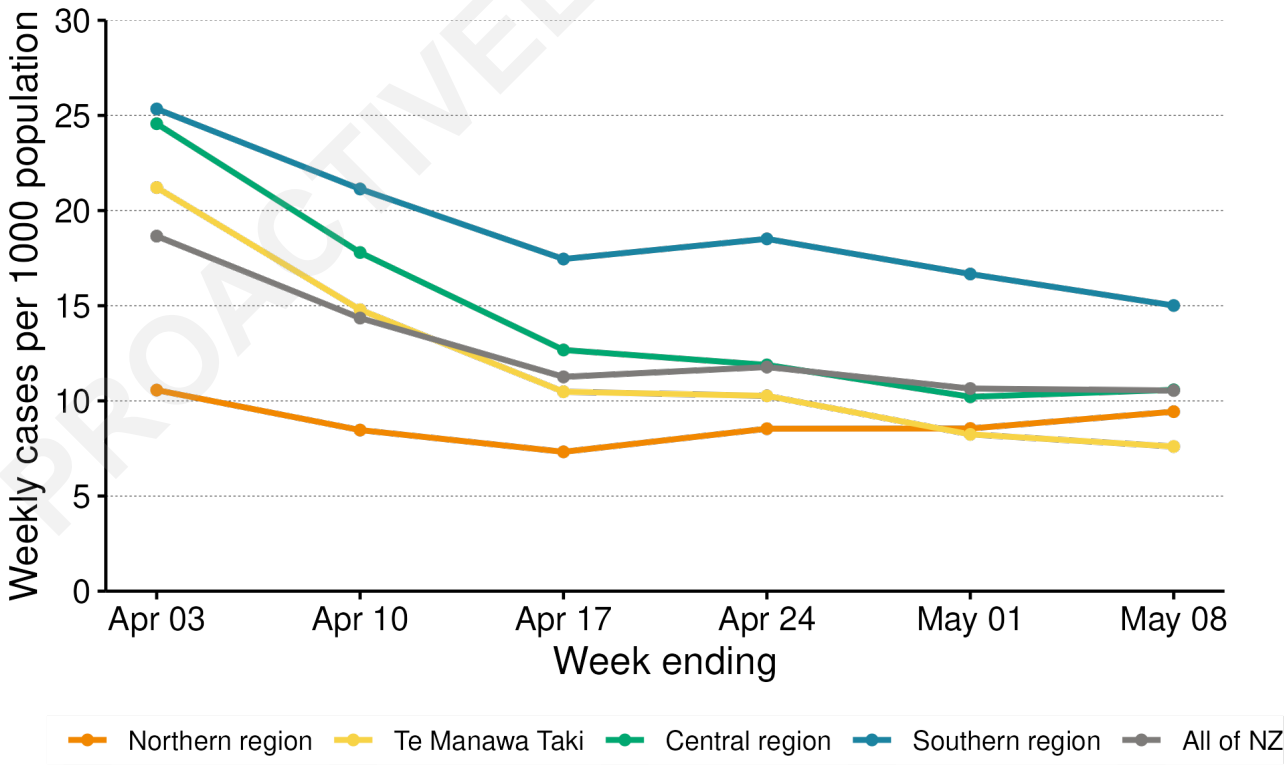
In the Northern region, the weekly case rate was highest **for Auckland DHB (11.0 per 1000),** which was 1.4 times higher than that of the lowest, Counties Manukau DHB (7.6 per 1000). **Auckland DHB has driven Northern Region increases** seen in the past two weeks.

In Te Manawa Taki, weekly case rates were highest in **Tarāwhiti (8.3 per 1000)**.

The highest weekly case rates in the Central region were in **Wairarapa (13.1 per 1000)**.

In the Southern region, the highest case rates were in **Southern (15.9 per 1000)** followed by Canterbury DHB (15.5 per 1000) and West Coast DHB (14.4 per 1000).

Figure 5*: Regional weekly COVID-19 case rates (per 1000), for the weeks ending 03 April to 08 May 2022*



Source: NCTS/EpiSurv as at 2359hrs 08 May 2022

Modelled and actual cases

The COVID-19 Modelling Aotearoa (CMA) have updated their modelling with three new, longer-term scenarios, with different levels of transmission after the national peak in cases. These represent varying levels of behavioural relaxation and easing of public health interventions:

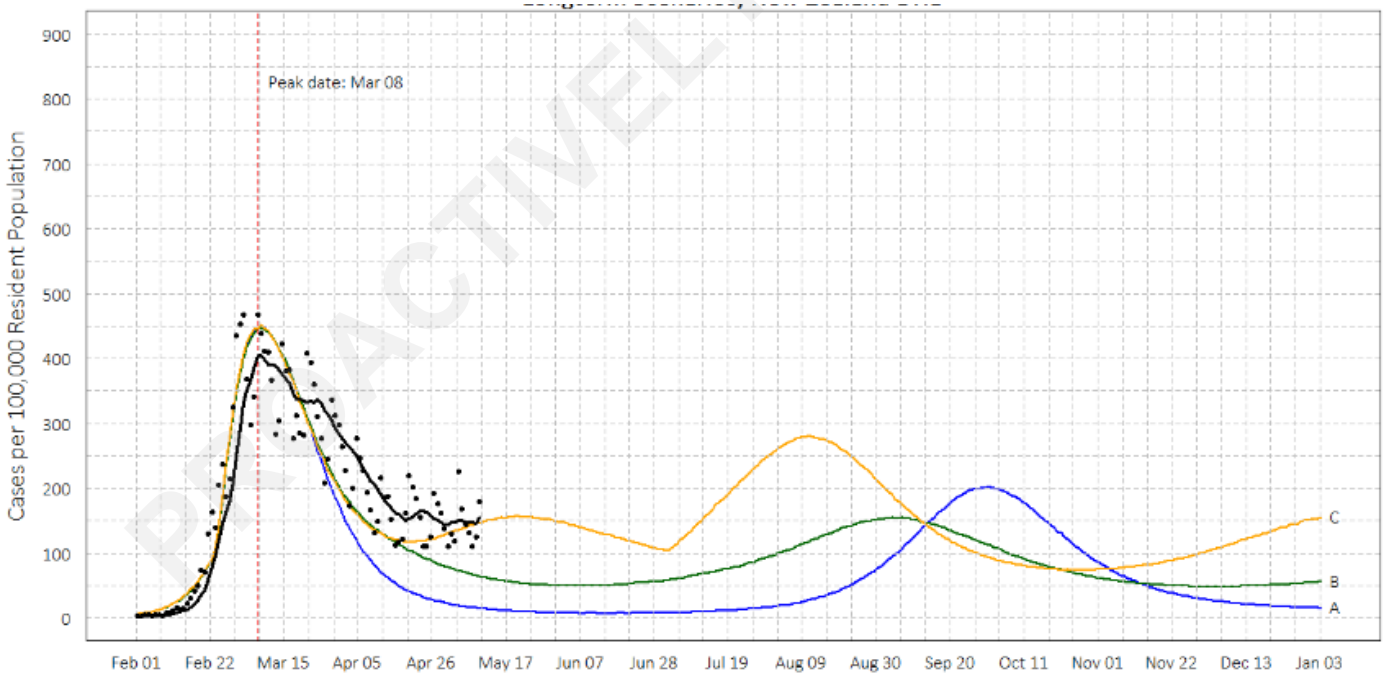
A. Small increase in mixing after the national peak in cases
B. Medium increase in mixing after the national peak in cases
C. Large increase in mixing after the national peak in cases and a (hypothetical) shift in the distribution of cases towards older groups at the beginning of July – this shift has 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 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-virials. 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 BA2 variant. Any significant changes in the virus could cause significantly different case numbers.

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 10 May 2022

Effective reproduction rate, and forecasts of cases and infections

These estimates used the *EpiNow2* package on 11 May using data to 09 May.[3] Regional estimates for R_{eff} are shown in the accompanying **appendix document**. The median estimate of **effective R (R_{eff}) nationally is 1.1** (90% Credible Interval [CI]: 0.7-1.6) for cases to 09 May, after adjusting for data lags; this is an increase from 0.8 the week prior, signalling cases will be rising. The relatively wide confidence intervals indicate there is high uncertainty for this estimate.

Figure 7 (A) Comparing the previous week's model median estimate for 09 May 2022 (5,579 cases per day, 50% credible interval: 4,223–7,350) to the actual reported cases of 6,464, shows a 16% underestimate of forecasted cases but falls within the 50% upper credible interval.

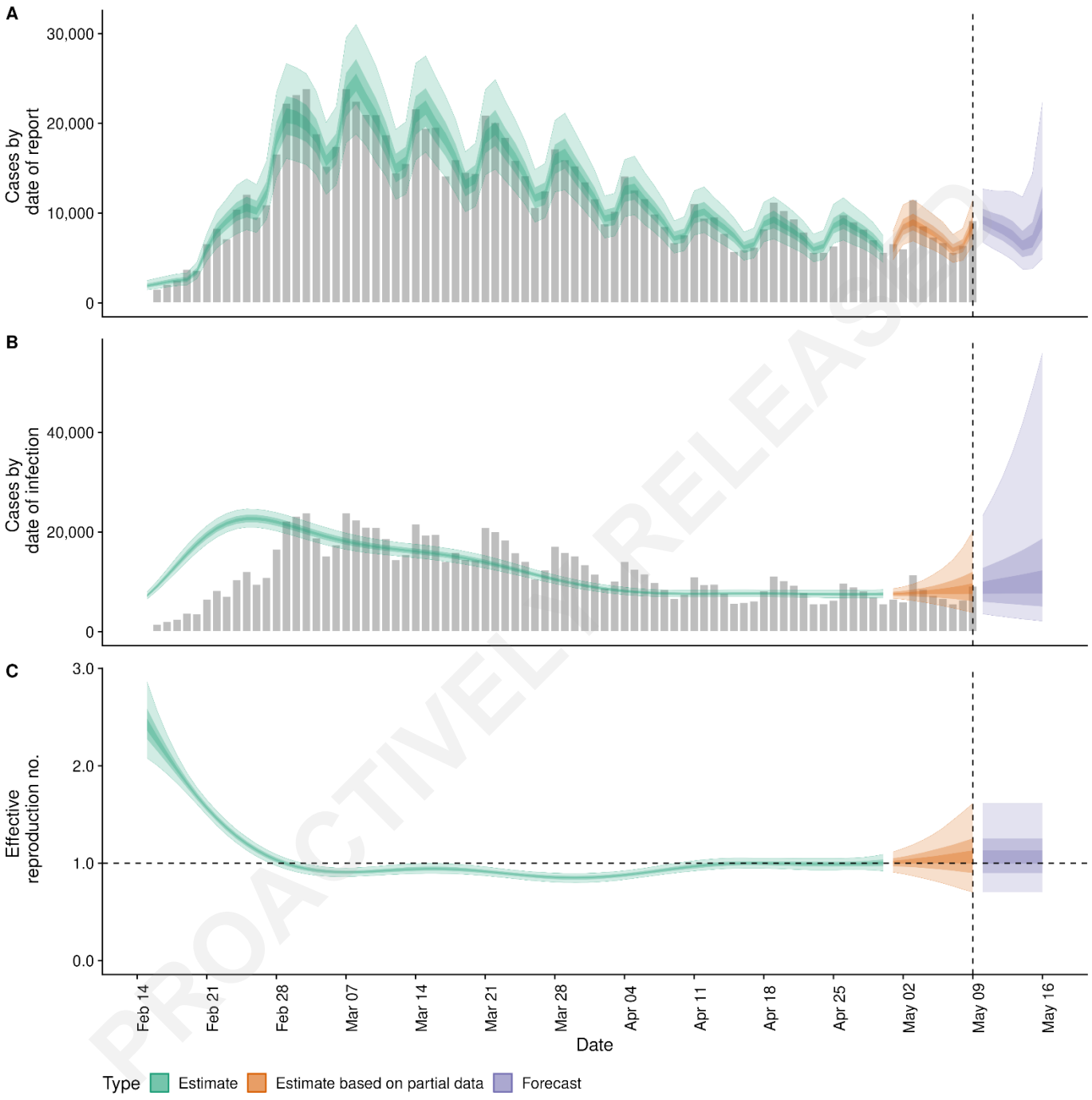
Figure 7 (C) shows the national R_{eff} has been very close to 1.0 since mid-April, which is consistent with the 'plateau' in cases seen in many regions.

For all Public Health Units (PHU) except Southern, Tairāwhiti and West Coast, the model is estimating a **median R_{eff} of 1.0 and above. Northland PHU has the highest estimated R_{eff} at 1.3, while Tairāwhiti PHU has the lowest estimated R_{eff} at 0.6. Auckland DHB, which has driven Northern Region increases** seen in the past two weeks, **has an estimated R_{eff} at 1.1.**

The model's median estimate is that national reported cases could be 9,513 cases per day by 16 May (50% credible interval: 7,054–12,970). However, the credible intervals for the projected cases would be even wider if the possibility of continuing trend changes in effective R were included.

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

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



The lightest shading to darkest shading of the trend line, represents the following in order: 90% Credible Interval, 50% Credible Interval, Median.

Source: EpiNow 09 May 2022

Demographic trends in case rates

Ethnicity trends over time and by region

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

In the past week nationally, rates in all ethnicities have been quite stable. European or Other continue to have the highest weekly case rate at 11.6 per 1000 population. **The lowest case rates are in Pacific Peoples (6.9 per 1000**) which is very similar to their case rate of 6.8 per 1000 last week. Māori case rates have declined very slightly by 4%, and are now 8.2 per 1000.

Case rates in the Northern region for European or Other are 10.8 per 1000, comparable to Asian at 9.8 per 1000. Māori have the second lowest case rate at 7.4 per 1000. Pacific Peoples (5.5 per 1000) continue to have the lowest case rates in this region.

Case rates for Te Manawa Taki are highest for European or Other (8.4 per 1000) which is 1.3 times higher than that of the lowest, Māori (6.4 per 1000). Asian (7.8 per 1000) and Pacific Peoples (7.6 per 1000) have similar case rates.

Central region rates for all ethnic groups have converged over time. Māori (8.7 per 1000), Pacific Peoples (9.3 per 1000), Asian (9.0 per 1000) and European or Other (11.4 per 1000) are all comparable.

In the Southern region, case rates have been highest for Asian (16.0 per 1000) and Pacific Peoples (15.8 per 1000). Māori (14.0 per 1000) currently have the lowest case rate with the next lowest being European or Other (15.0 per 1000).

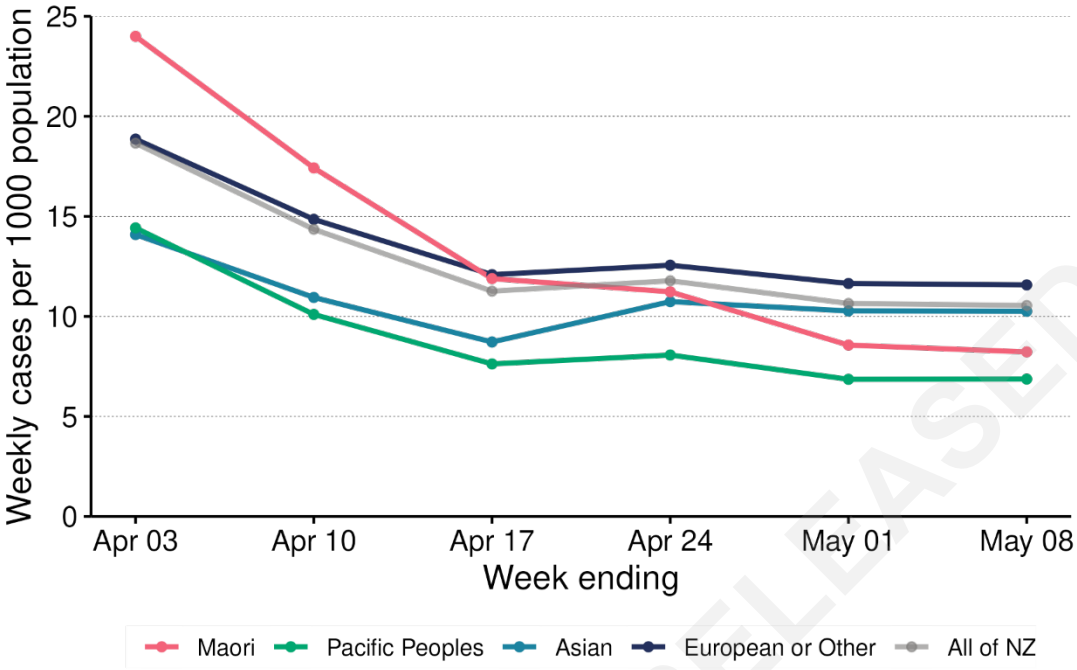
Figure 9 shows national case rates by ethnicity and further breakdown by age group. The highest case rates out of any cohort are within those aged 15-24 of European or Other ethnicity (17.0 per 1000) whilst the lowest case rates were in those aged 0-4 of Pacific Peoples ethnicity (3.7 per 1000).

In the week ending 08 May, case rates have decreased slightly in Asians aged 65+ from 5.3 per 1000 in the week ending 01 May, to 5.0 per 1000. Over a similar time frame, case rates in European or Other rose slightly in the 65+ age group, from 7.2 per 1000 for the week ending 01 May, to 7.5 per 1000 in the past week (+32%).

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 (11.4 per 1000) and Māori for 65+ (7.8 per 1000).

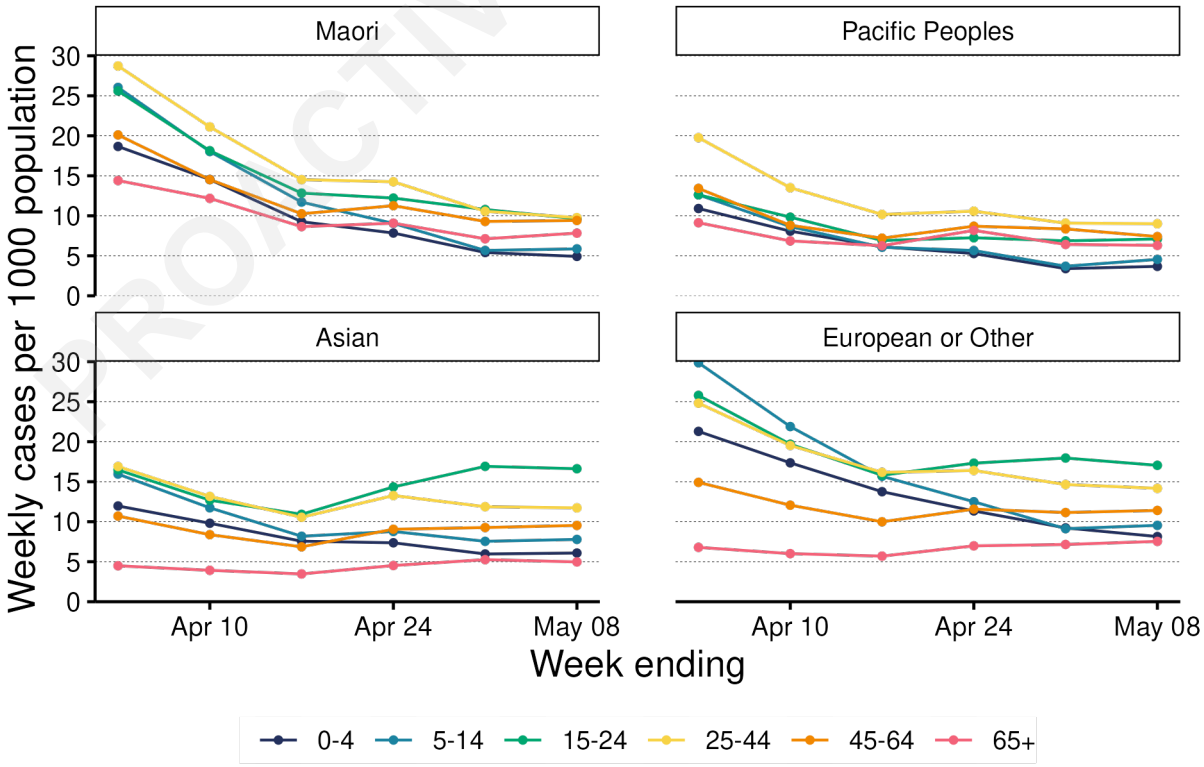
It is important to note that the general age distribution of both Māori and Pacific Peoples populations are younger than other ethnicities in Aotearoa but also have lower life expectancies. This could mean an increased risk for COVID-19 complications at a lower age than other ethnicities.

Figure 8: ***Ethnicity specific weekly COVID-19 case rates (per 1000) for New Zealand, for the weeks ending 03 April to 08 May 2022***



Source: NCTS/EpiSurv as at 2359hrs 08 May 2022

Figure 9: ***Ethnicity specific weekly COVID-19 case rates (per 1000) for New Zealand by age group, for the weeks ending 03 April to 08 May 2022***



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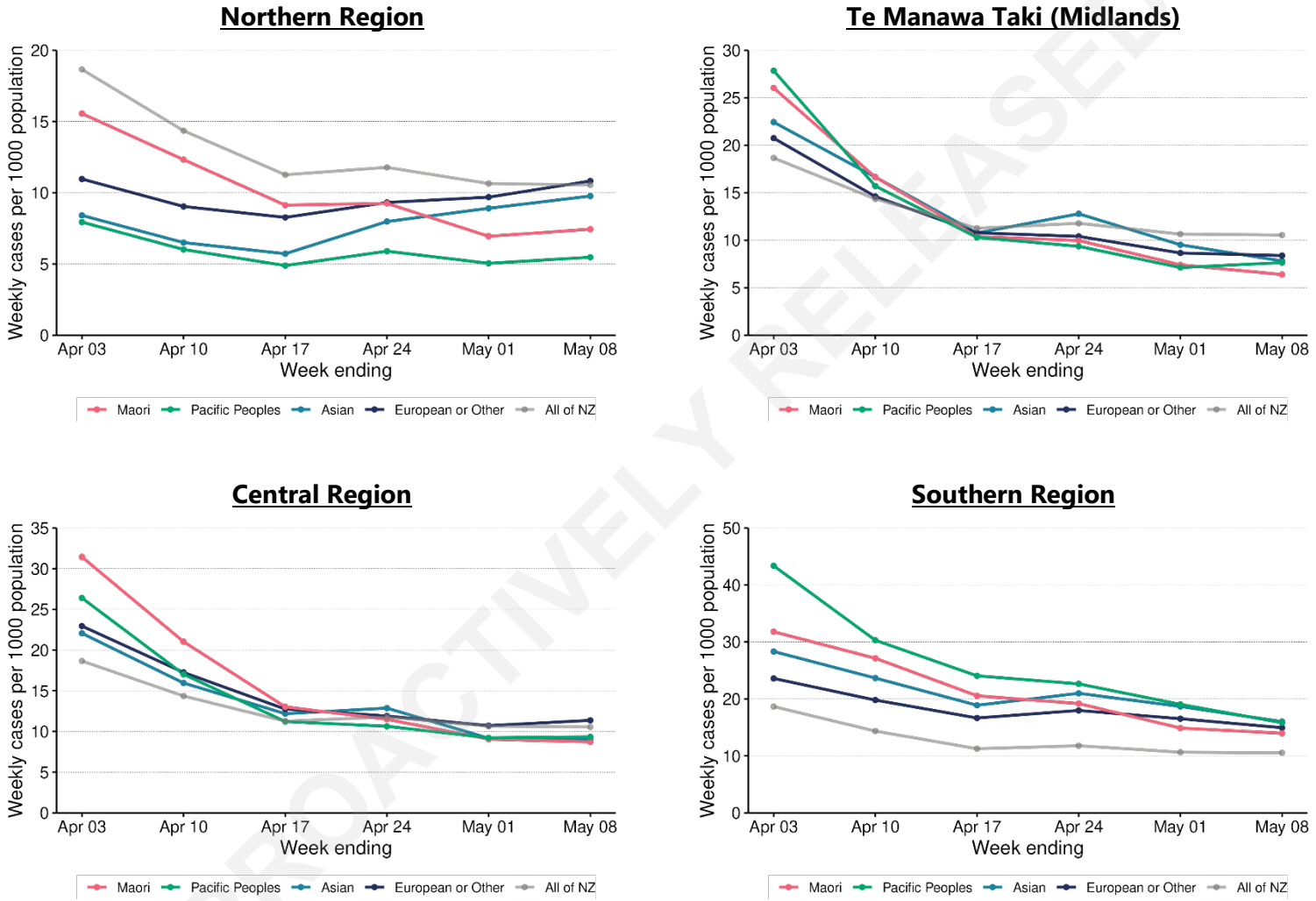
Source: NCTS/EpiSurv as at 2359hrs 08 May 2022

Figure 10: ***Ethnicity specific weekly COVID-19 case rates (per 1000) by region, for the weeks ending 03 April to 08 May 2022***



Source: NCTS/EpiSurv as at 2359hrs 08 May 2022

Age trends over time and by region

Figure 11 shows community cases by age nationally. Case rates in the 0-4, 15-24 and 25-44 age groups are still declining but are slowing, whilst case rates for all other age groups increased slightly.

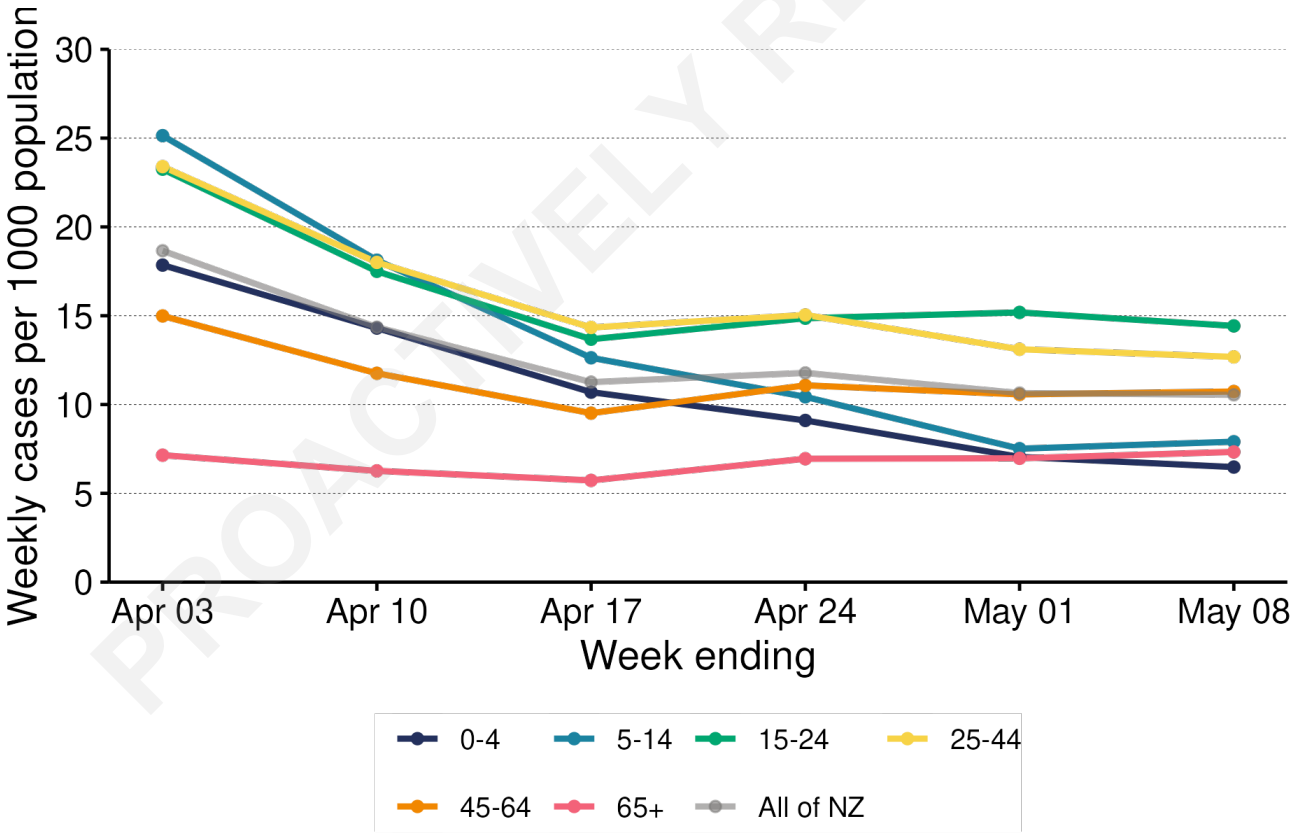
Nationally, **case rates are similar for 0-4, 5-14 and 65+ age groups (6.5, 7.9, 7.3 per 1000 respectively) and relatively similar for 15-24, 25-44 and 45-64 age groups (14.4, 12.7 and 10.7 per 1000 respectively)** in the past week. Those aged 0-4 now have the lowest weekly case rates at 6.5 per 1000, followed by the 65+age group (7.3 per 1000).

Patterns of age group infection were similar for most regions and similar to the pattern observed nationally with most groups now converging at similar levels. However, case rates are beginning to increase across all age bands in the Northern region with the largest increases in the 5-14 (+24%) and 45-64 (+11%) age groups compared to the previous week.

For 45-64 age groups, case rates have decreased by 5% in Te Manawa Taki and 4% in the Southern region while in Central, they have increased by 4%.

For 65+ age group, there has been increases across the motu. Northern region has increased by 8%, Te Manawa Taki increased by 3%, Central increased by 14% and Southern increased by 2%.

Figure 11: ***Age specific weekly COVID-19 case rates (per 1000) for New Zealand, for the weeks ending 03 April to 08 May 2022***



Source: NCTS/EpiSurv as at 2359hrs 08 May 2022

Housing Deprivation trends over time, by ethnicity and by region

Figure 12 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 (12.2 per 1000 population),** followed by areas of mid-range deprivation (11.1 per 1000) and areas most deprived (8.4 per 1000).

However, access to RATs and access to an internet connection to report RAT results are likely associated with lower levels of deprivation. This may result in greater testing and reporting of COVID-19 in areas of lower deprivation. Thus, it is unlikely that as large a difference in case rates exists between those of low and high deprivation and that a higher level of case under-ascertainment exists in areas of higher deprivation.

Comparison of national case rates of deprivation by ethnicity in the past week for areas most deprived shows that case rates were highest in the European or Other ethnicity (10.3 per 1000) followed by those of Asian ethnicity (9.9 per 1000). Cases in Pacific Peoples were the lowest in areas most deprived (5.3 per 1000) but highest in areas least deprived (11.4 per 1000).

For **the most deprived areas, cases in Māori made up 22% 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 15% and for European and Other was 52%. Following this, 79% of cases **in areas of least deprivation** were European and Other compared with 11% being Asian, **7% Māori** and 2% Pacific Peoples.

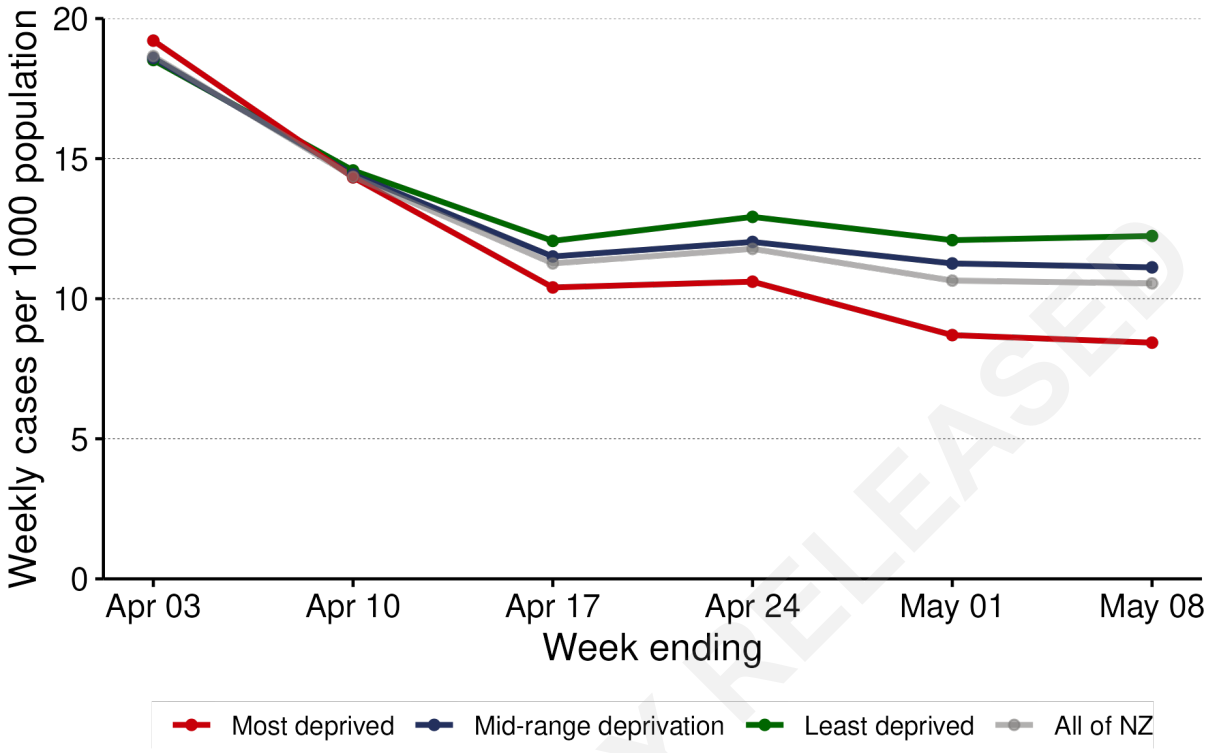
In the Northern region, case rates were highest in the least deprived areas (11.1 per 1000 population) followed by areas of mid-range deprivation (10.4 per 1000) and areas most deprived (6.8 per 1000) (see **Appendix**).

In Te Manawa Taki region, case rates were highest in the least deprived areas (8.9 per 1000) followed by areas of mid-range deprivation (8.2 per 1000) and areas most deprived (6.9 per 1000).

In the Central region, case rates were highest in the least deprived areas (11.7 per 1000) followed by areas of mid-range deprivation (11.0 per 1000) and areas most deprived (9.0 per 1000).

In the Southern region, case rates were highest in the least deprived areas (16.0 per 1000) followed by areas of mid-range deprivation (14.8 per 1000) and areas most deprived (14.2 per 1000).

Figure 12: ***Deprivation specific weekly COVID-19 case rates (per 1000) for New Zealand, for the weeks ending 03 April to 08 May 2022***



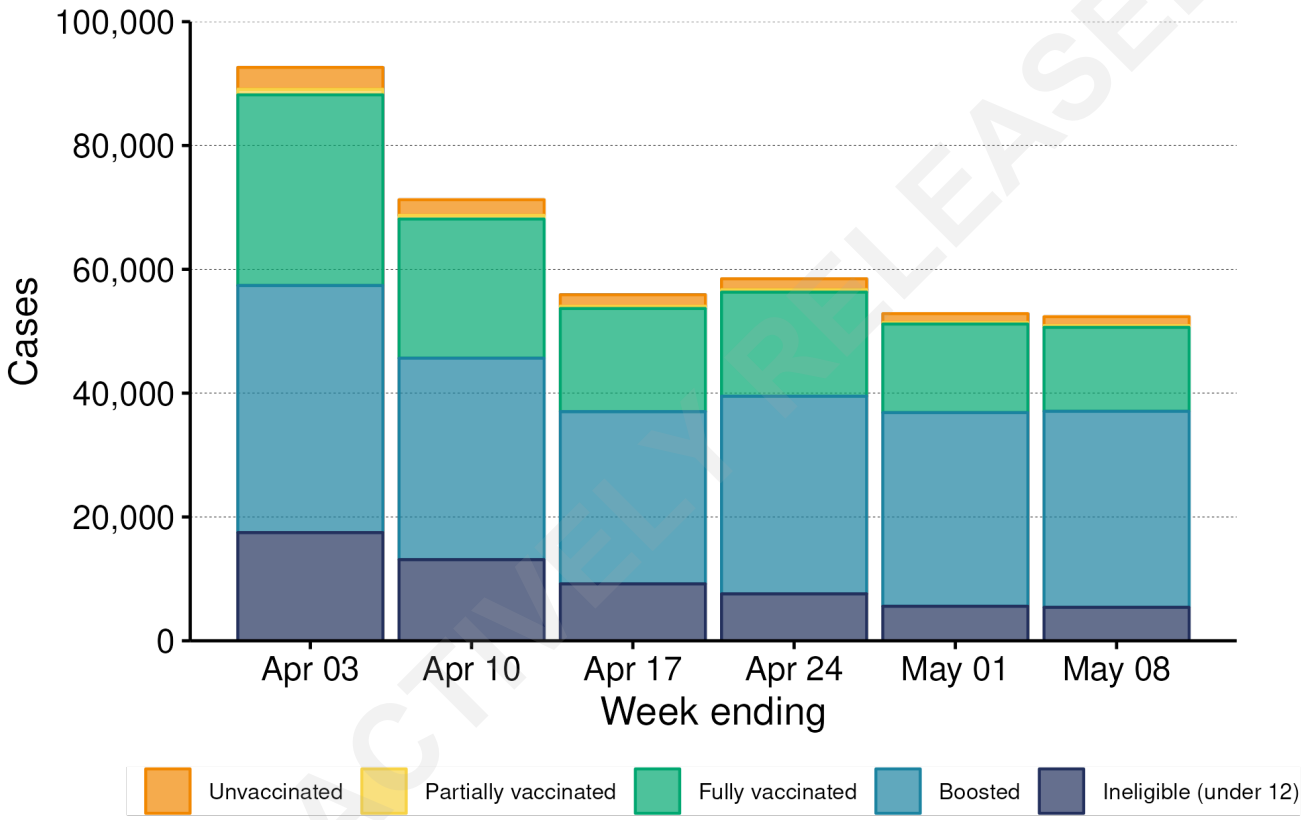
Source: NCTS/EpiSurv as at 2359hrs 08 May 2022

Vaccination trends over time

Figure 13 shows community case numbers by vaccination status nationally. The proportion of boosted cases increased slightly from 59.2% the week prior to 60.4% of all cases in the week ending 08 May. The proportion reported as fully vaccinated are similar to the week prior as 25.9% 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[4] is 10.3%. The proportion of cases reported as partially vaccinated remains relatively constant at 0.6% while cases reported in those unvaccinated remains at 2.7%.

Figure 13: ***Vaccination specific weekly COVID-19 case numbers for New Zealand, for the weeks ending 03 April to 08 May 2022***



Source: NCTS/EpiSurv as at 2359hrs 08 May 2022

[4] 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 14 shows that Omicron is the dominant variant in New Zealand, having outcompeted Delta which made up ~70% of all sequenced cases in the start of January 2022 but fell to less than 10% of sequenced cases by the end of January 2022.

Among Omicron cases, BA.1 was the dominant subvariant (~ 60% at the start of February 2022) but has since been outcompeted by BA.2, which made up 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.

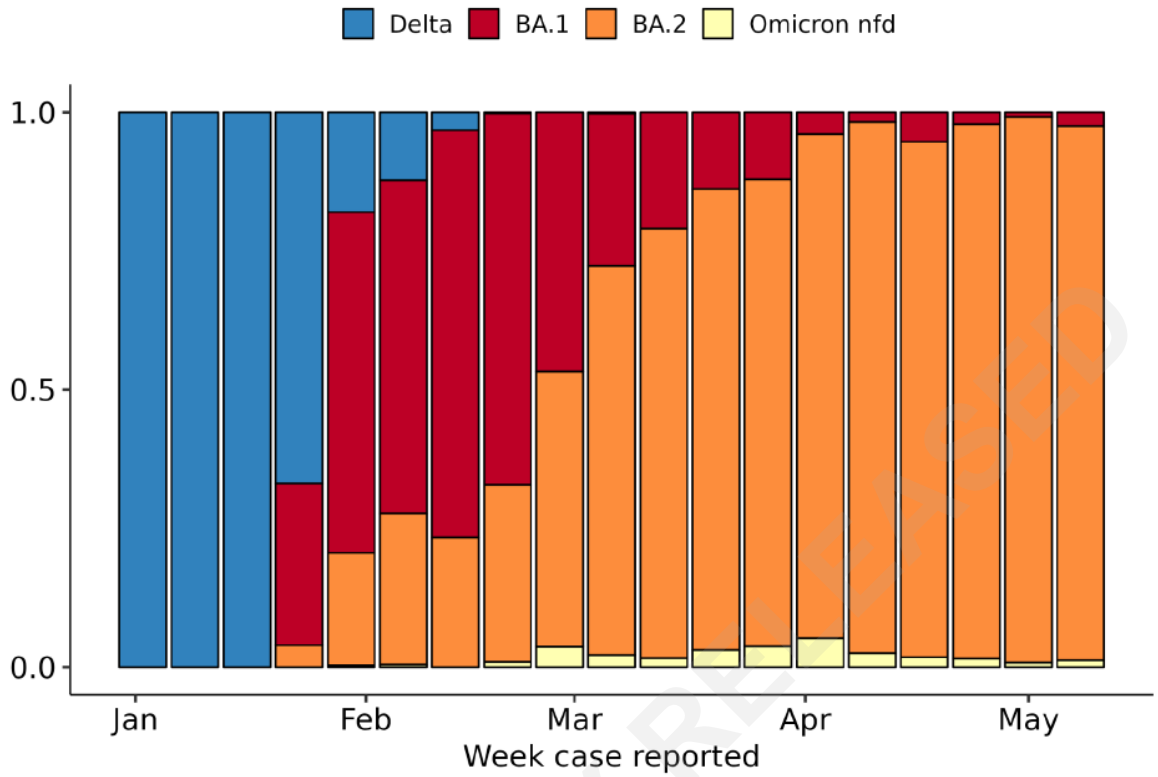
This week's wastewater data did not make ESR's CGI report deadline and will be presented next week. Additional wastewater assays are being run this week that can differentiate (BA.4/5, BA.2.12.1, BA.2 and BA.1).

Based on WGS data generated over the course of the Omicron wave, ESR estimate that 81% of all community cases (~977,000 cases) reported since 20 January 2022 have been the BA.2 variant (**Figure 15**).

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

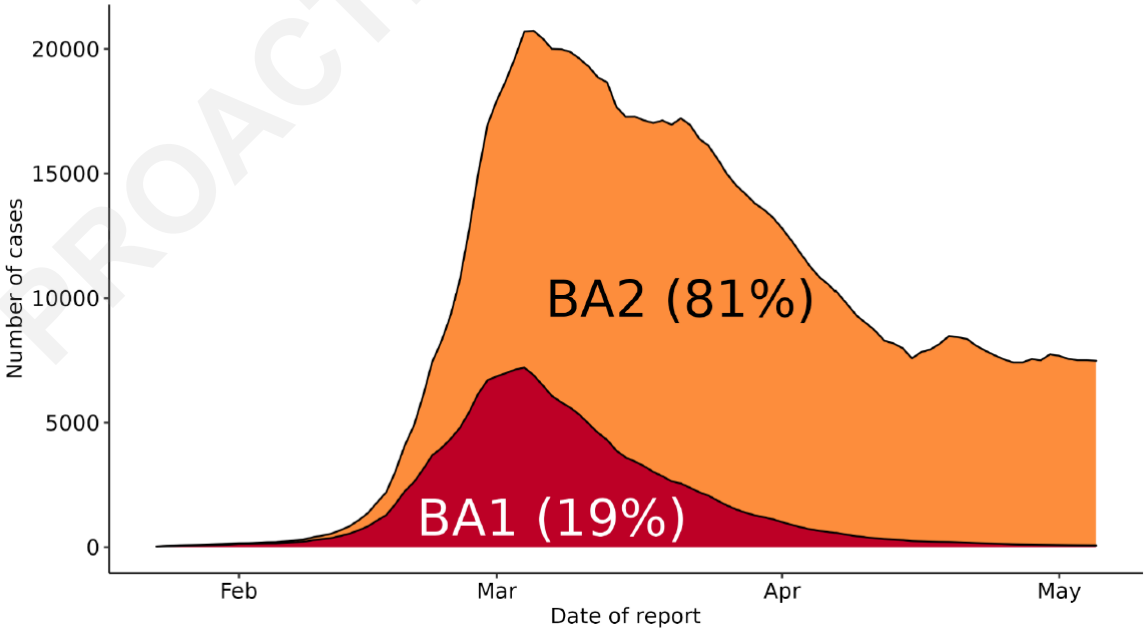
Please see the caveats in the notes section of the **Appendix.**

Figure 14: ***Frequency of Variant of Concerns in community cases in New Zealand***



Source: ESR COVID-19 Genomics Insights Report #6, EpiSurv/Microreact 0900hrs 11 May 2022

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



Source: ESR COVID-19 Genomics Insights Report #6, 0900hrs 11 May 2022

Border Surveillance

Cases detected at the Air Border

Cases are increasing as travel volumes increase.

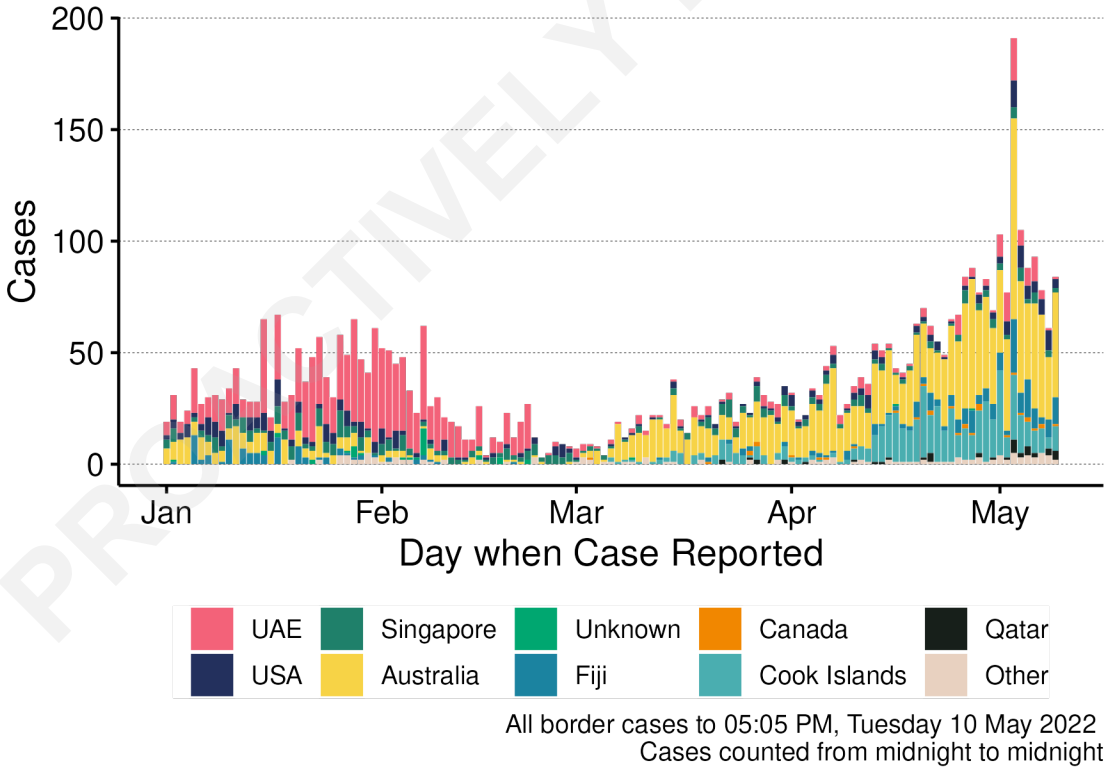
About 2% of recent arrivals were reported as cases (**Table 1**). This is above the rates seen in arrivals from Australia during quarantine-free travel in 2021, and above the 1% estimate used for planning Reconnecting New Zealand.

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

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 16: ***Active cases by country that flight arrived from***



Source: NCTS/EpiSurv as at 2359hrs 10 May 2022

Testing of Border arrivals

Table 1 shows the breakdown of travellers that arrived at the air border and were scheduled to report a RAT test and the subsequent outcomes of border arrival RAT tests.

The below metrics are obtained through a different means than the reporting of 'RATs only border cases' (which are reported via the My COVID record). Reconciliation of the two reporting methods will be undertaken within the next week.

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.

Table 1: Testing metrics of Border Arrivals

Testing metrics of Border Arrivals	
Number of people who arrived in past 7 days	37,836
Number of individual RATs scheduled to be reported	74,297
Number of individual RAT results uploaded	38,477
Number of people who uploaded a RAT result	29,730 (78.6%)
Number of positive RAT results	629 (1.6%)

Source: National Border Solution, 11 May 2022

Whole Genomic Sequencing of Border cases

Out of 1,133 border cases in the past two weeks, 319 cases (28%) have been sequenced.

In the week ending 08 May, sequenced cases associated with the border included one further detection of the BA.4 subvariant and three detections of the BA.5 subvariant. The first BA.5 case was detected on 06 May while the other two were detected on 08 May. The BA.5 cases travelled from South Africa and Singapore and the BA.4 case travelled from the United Arab Emirates.

Figure 17 shows the number and proportion of cases sequenced since the beginning of March. For the week ending 08 May, a total of 619 border cases were reported. Of these 619 cases, 434 (70%) were reported RATs and 185 (30%) were PCR.

Of the 434 reported RATs, 115 (26%) were confirmed by PCR. A total of 300 of 619 cases (48%) were tested with PCR, of which 152 (51%) were sequenced. The overall proportion of border cases for the past week that were sequenced is 25%.

Figure 18 shows the number of border cases receiving WGS by testing type. Out of those who had a RAT test, 35% can be linked to also having a PCR test.

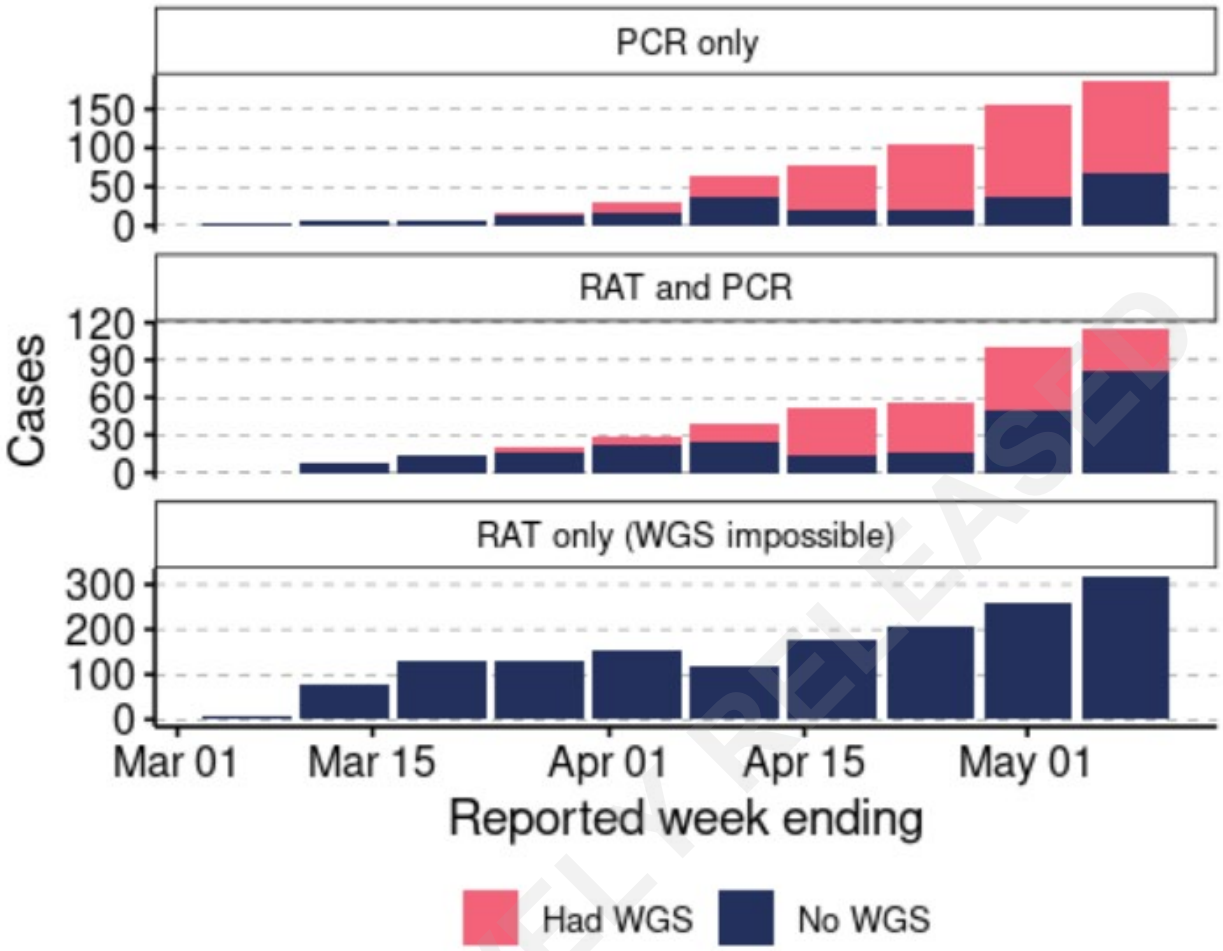
Figure 19 shows the number of border arrivals by testing type. Out of 152,156 arrivals, 131,557 (86.4%) had a RAT test only, 2,520 (1.7%) had a PCR test, and 18,119 (11.9%) had no test recorded. For those with no test recorded, some of these may have done a RAT test but not uploaded or reported their result.

Please note that WGS can be incomplete for recent cases.

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.

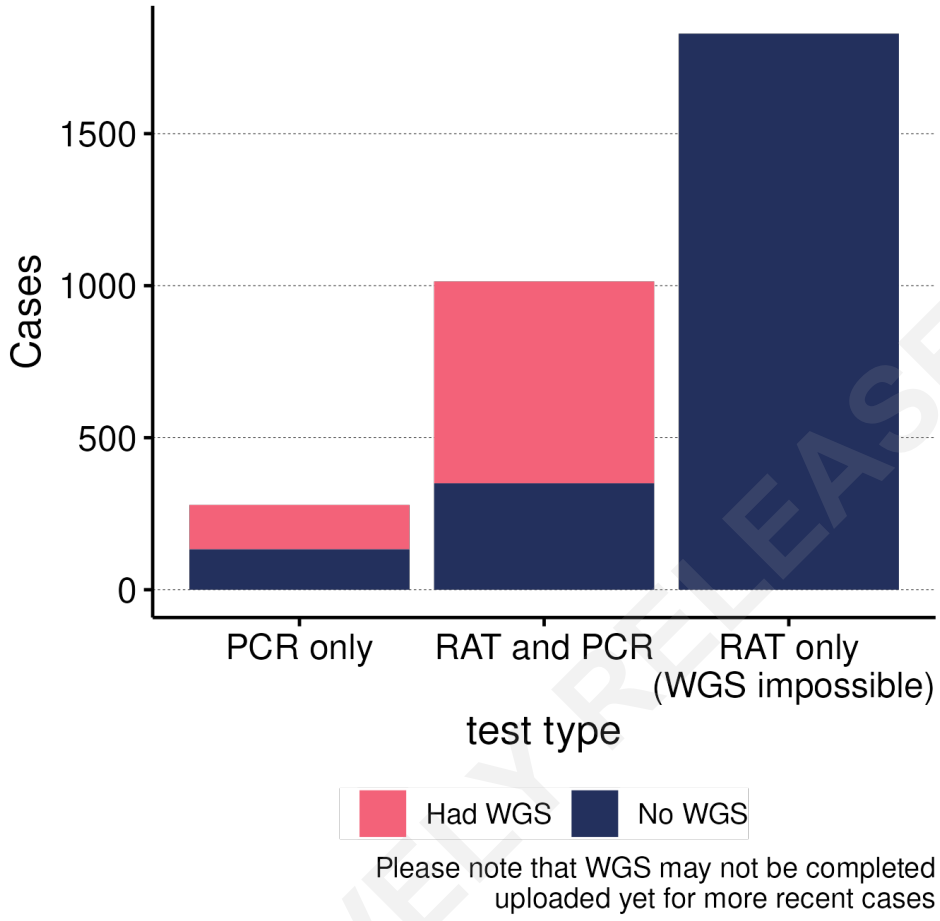
Labs are notified of all positive RAT results that are known to be from recent arrivals. However, up to 10% of arrivals have not completed a New Zealand Traveller Declaration that enables data linkage, and others may not be reporting RAT results.

Figure 17: ***Border cases receiving WGS by testing type by reported week ending***



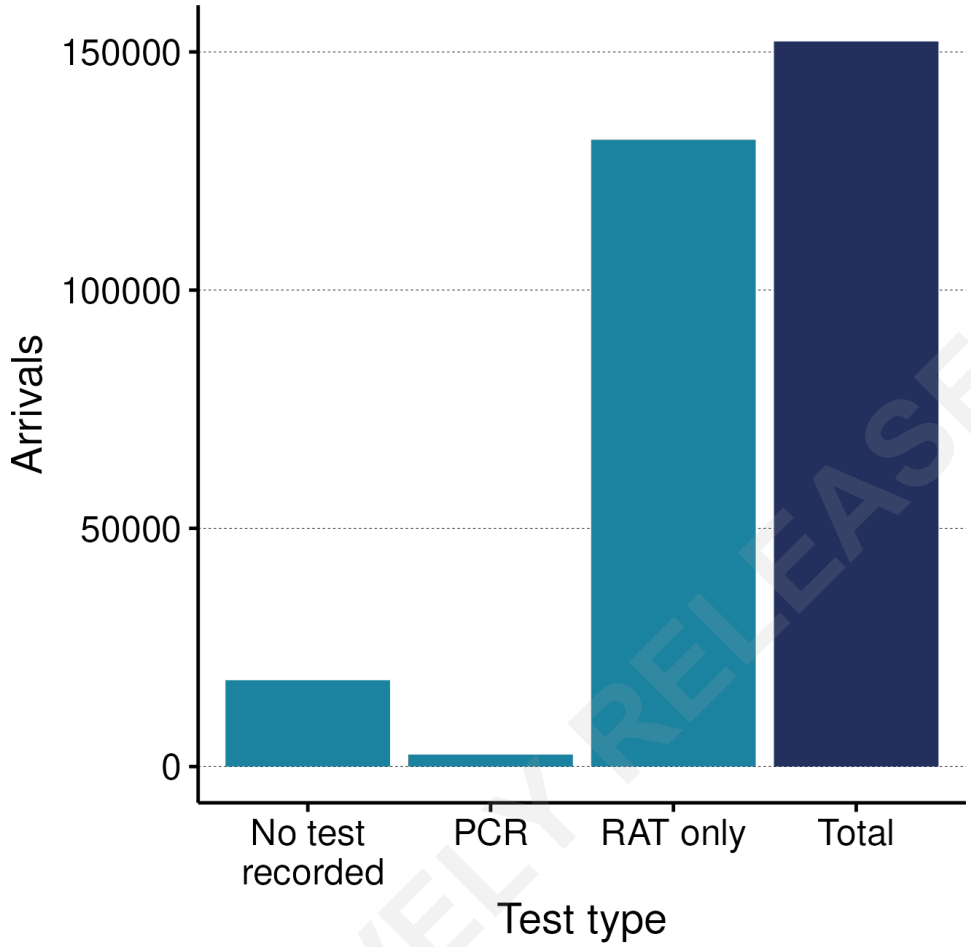
Sources: NCTS/EpiSurv as at 2359hrs 08 May 2022, ESR WGS 08 May 2022

Figure 18: ***Border cases receiving WGS by testing type for weeks ending 03 April 2022 to 08 May 2022***



Sources: NCTS/EpiSurv/MyCOVIDApp as at 2359hrs 08 May 2022, ESR WGS 08 May 2022

Figure 19: ***Border arrivals by testing type for weeks ending 03 April 2022 to 08 May 2022***



Sources: NCTS/EpiSurv/MyCOVIDApp as at 2359hrs 08 May 2022, ESR WGS 08 May 2022

Morbidity and Mortality

Hospitalisation Rates

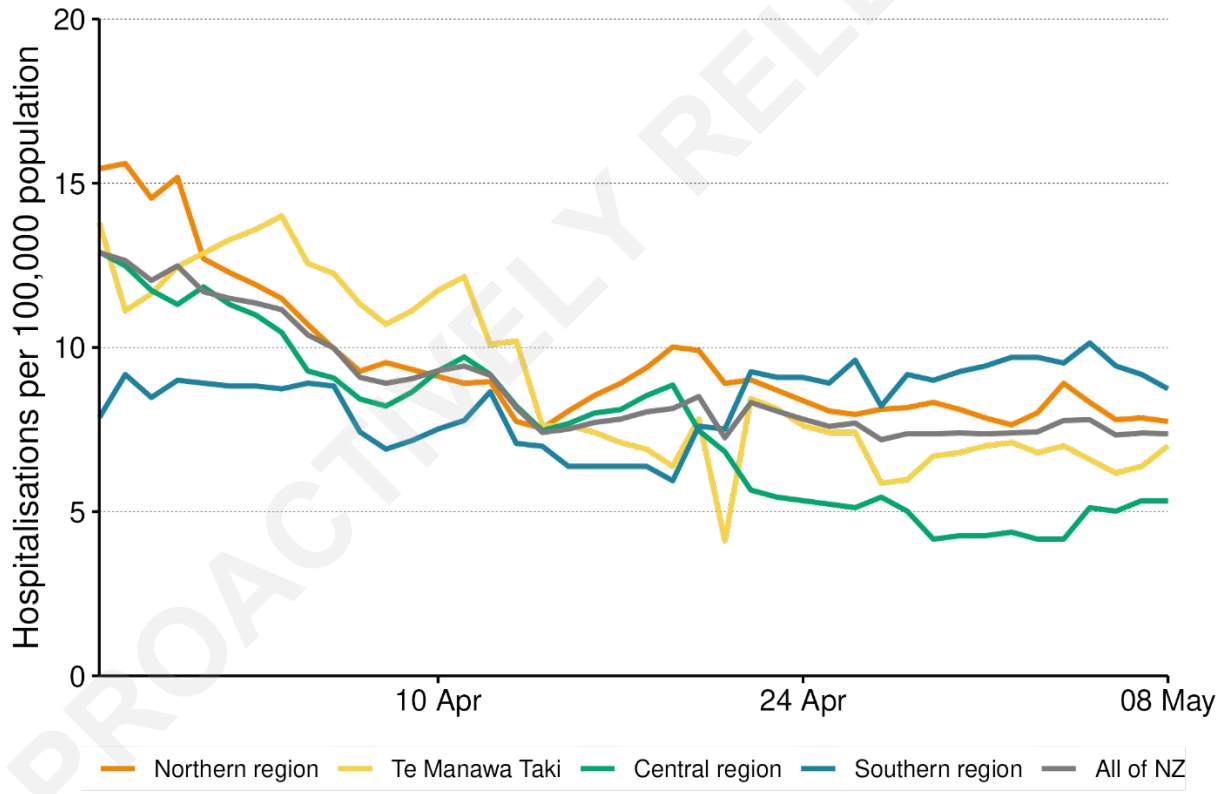
Due to varying definitions of an active case, there may be regional differences in the coding of COVID-19 infection status for hospitalisations.

Hospital Occupancy

Hospital occupancy rates have remained similar for the past three weeks (**Figure 20**). As of 08 May, the **national 7-day rolling average was 7.5 per 100,000 population**.

As of 08 May, **Southern region had the highest 7-day rolling average (9.5 per 100,000),** followed by Northern (8.0 per 100,000) and Te Manawa Taki (6.7 per 100,000). **Central had the lowest hospital occupancy rate (5.3 per 100,000)**.

Figure 20: ***Daily hospital occupancy rate per 100,000 population by region, 03 April 2022 to 08 May 2022***



Source: Daily hospital questionnaire as of 08 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

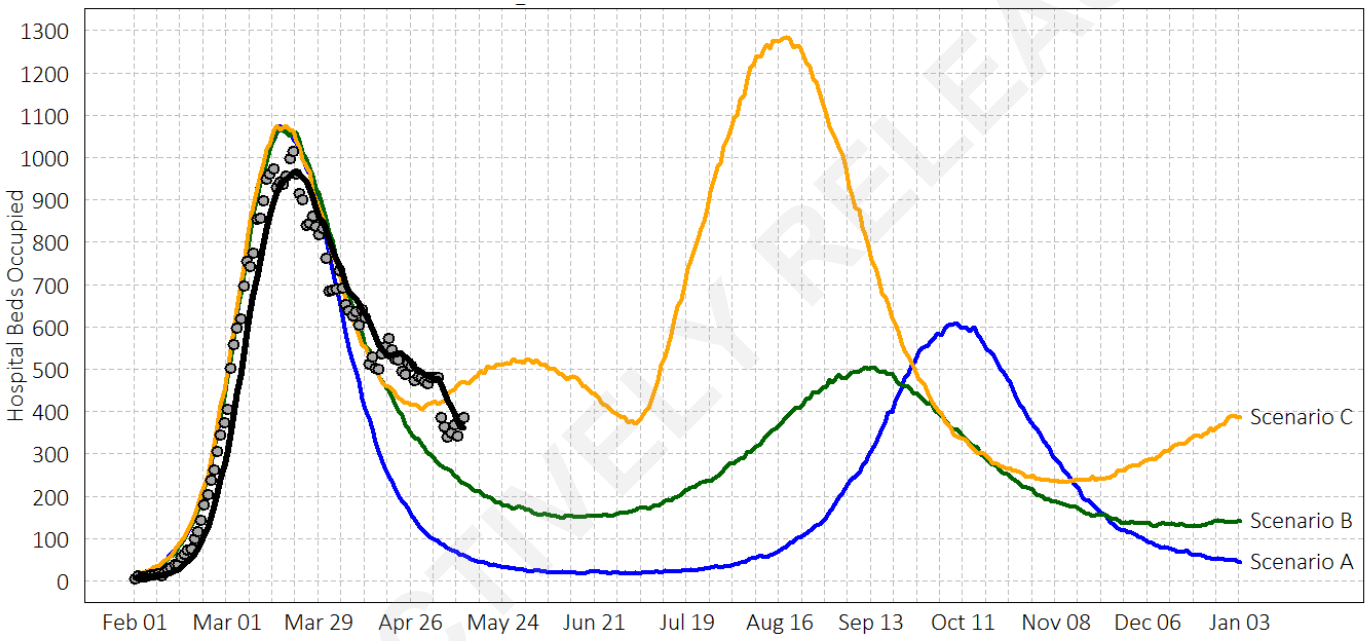
ESR continues to receive samples from hospitalised cases but the flow of metadata to assign cases as 'hospitalised cases' was disrupted this week. ESR is continuing to work with the COVID-19 Science, Surveillance and Insights Group to enable the identification of cases who are in hospital. However, even within the 'hospital' designation there is likely a wide spectrum of COVID-19 clinical severity.

Hospitalisations predicted and actual

CMA has provided new modelling scenarios to inform DHB planning from 13 May (**Figure 21)**.

In the last weeks, the number of hospital beds occupied by people with confirmed COVID infections has fallen from about 500 to below 400. This count includes people hospitalised for any reason, and is between the modelled Scenarios B and C.

Figure 21: ***Modelled hospital occupancy compared to actual nationally***



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 10 May 2022.

Mortality

As of 12 May 2022, 911 people have died with or after COVID-19 infection. Of these, 863 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.

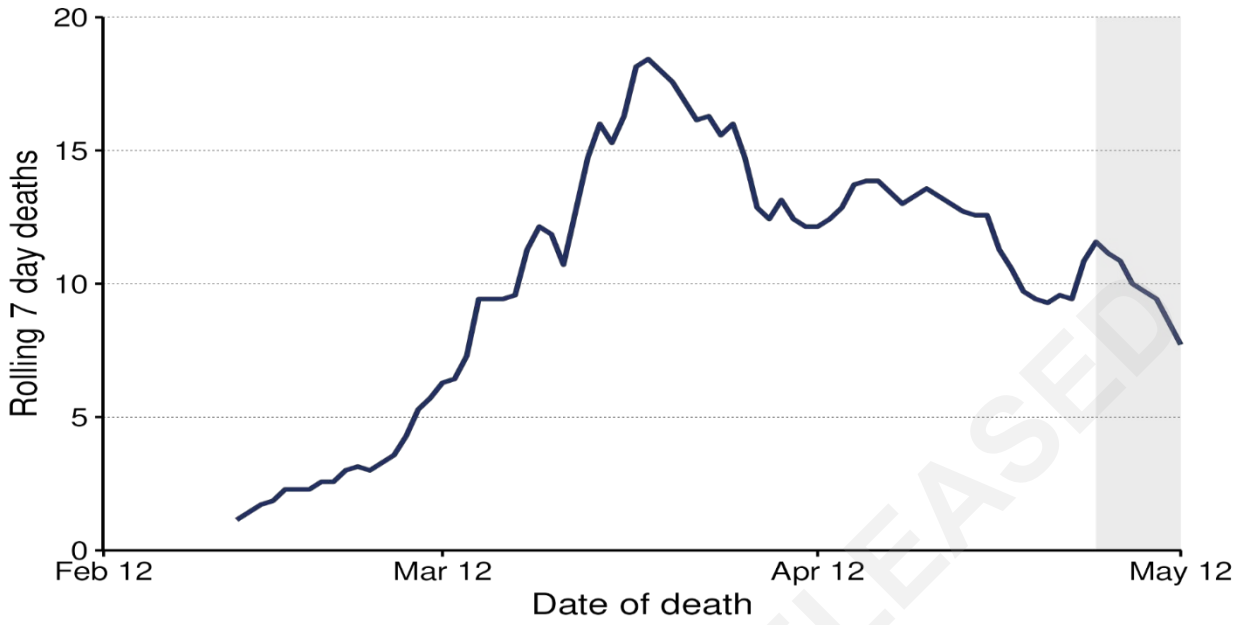
The New Zealand 7-day rolling average of deaths per million (2.76) was ranked third highest globally this week, surpassed only by Finland (5.43) and Greece (2.99). The global 7-day rolling average of deaths per million was 0.27.[5]

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.

In many instances, further investigation will provide more information about the contribution of COVID-19 to their death. This contribution can range from death not related (for instance someone with COVID-19 who dies in a car accident) to COVID-19 being a contributing cause (for example when someone dies with an existing health condition combined with COVID-19) and to COVID-19 being recorded as the cause of death.

[5] Due to differing interprations of what constitutes a COVID-19 death globally, countries may code their deaths differently.

Figure 22: ***7-day rolling average of COVID-19 deaths by date of death***



Source: NCTS/EpiSurv as of 12 May 2022[6]

[6] 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.

Excess Mortality

This is an experimental analysis on excess mortality **(Please note: These have not been formally peer-reviewed and are not Official Statistics).**

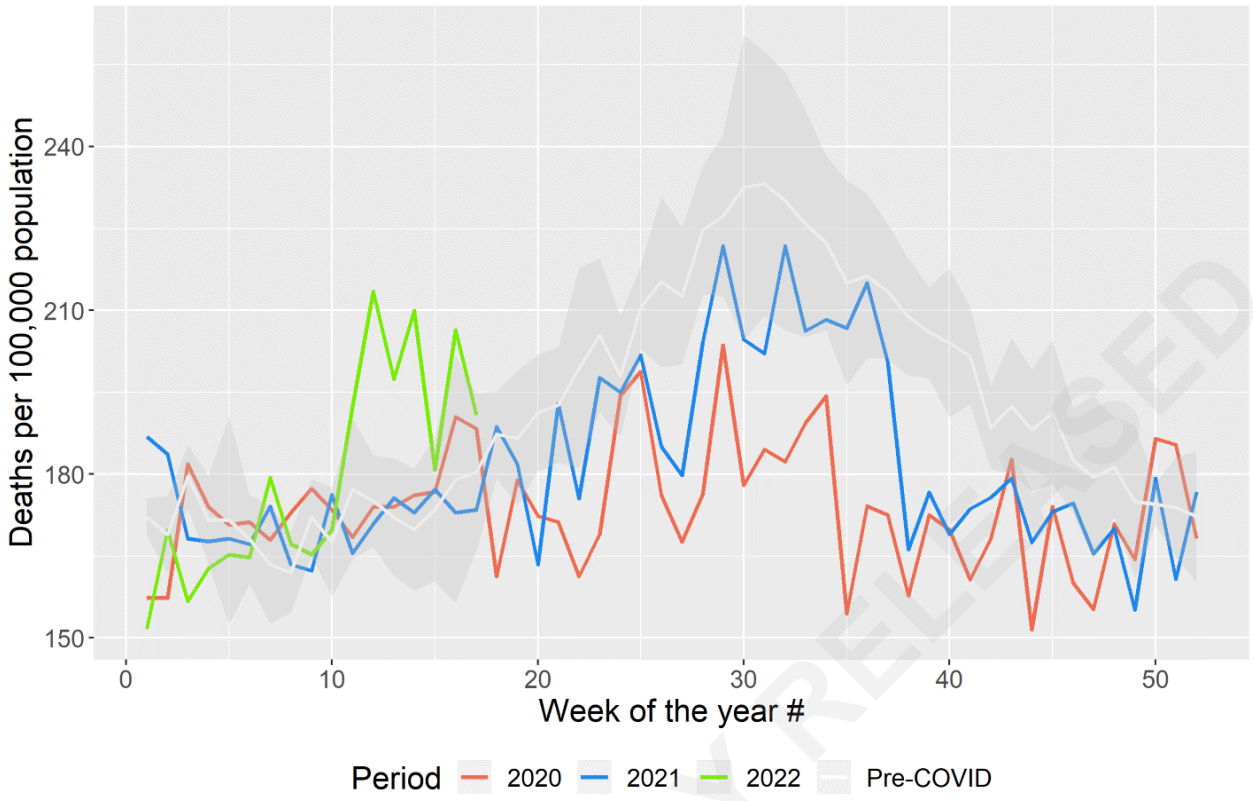
These data compare observed death rates in New Zealand throughout the epidemic (2020 – present) to pre-epidemic averages in death rates taken between 2012-2019, averaged across each week in the period (e.g., the mean of all week 10s across 2012 – 2019 is taken, and the range is specified as 1 standard 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 24 April 2022. The date of death is used by DIA to assign deaths to a given week.

All cause death rates have been outside the observed pre-pandemic range for those 80 years and older for the four weeks ending 24 April. (We define this as 1 standard deviation from the mean rates). In the week ending 24 April, weekly all cause death rates are 193 per 100,000, slightly above pre-pandemic margins. **However, the latest death numbers are likely to revise upward as more death registrations come in through the DIA system.**

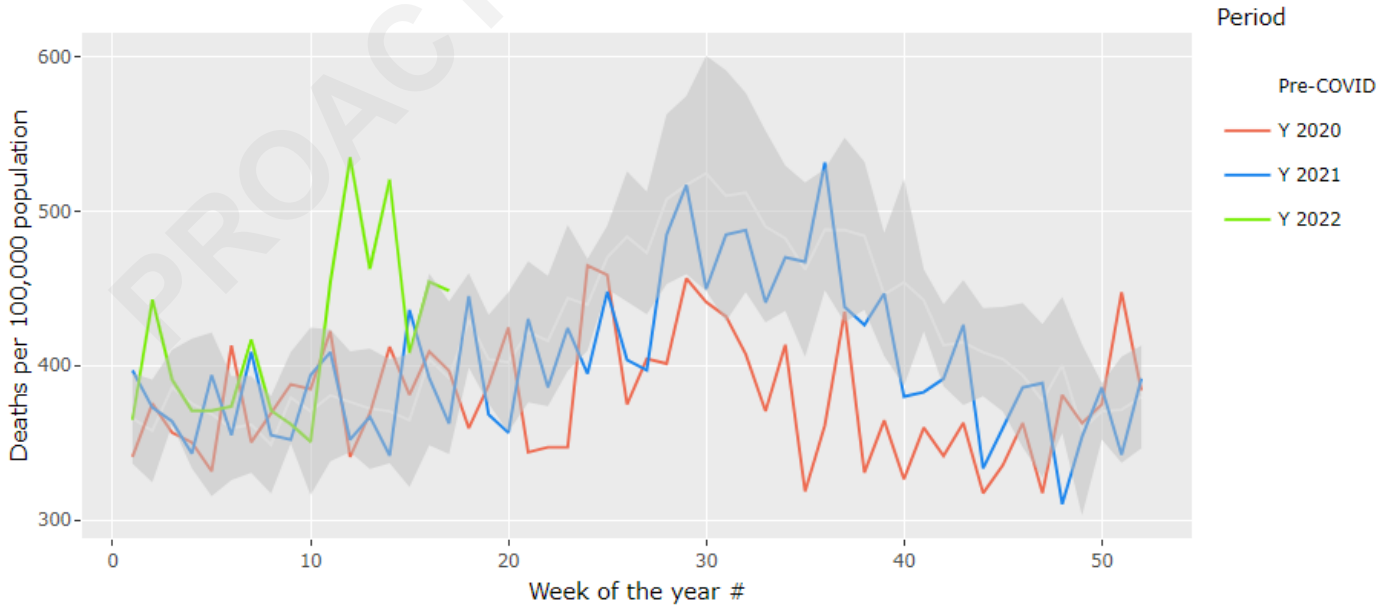
When looking at weekly all cause death rates for those 90 years and older in **Figure 24** we see that deaths in the 90+ age group contribute significantly to the overall death rates of those 80 years and older. As seen in **Figure 24**, weekly all cause death rates for those 90+ years of age peaked quite high above and then dropped back into the observed pre-pandemic range in the four weeks ending 24 April. In the week ending 17 April, weekly all cause death rates were 449 per 100,000 for 90+ year olds. This is barely within the normal range observed prior to the pandemic. 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 80+ year-olds compared to pre-COVID-19 average (2012-2019)***



Source: COVID-19 Modelling Steering Group, StatsNZ, 11 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, 11 May 2022

Public Health Response and Health System Capacity

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

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.

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 last week, cases have again begun to rise, with three new Omicron subvariants detected:** BA.4, BA.5 and BA. 2.12.1. All three have been detected in New South Wales, the BA.4 and BA.5 subvariants have been detected in South Australia, and BA. 2.12.1 has been detected in Victoria. However, the BA.2 subvariant remains dominant, making up around 95% of cases reported in the fortnight to 2 May 2022.

Gathering limits have been eased both indoors and outdoors in all Australian states and social distancing measures apply in all public areas. All non-essential businesses are open without gathering limits. COVID Pass is required for some domestic activities: In all states, vaccine passes only apply at high-risk settings such as hospitals, aged care and other healthcare facilities, and large events.

South Africa

Following the large outbreak in late 2021, driven by BA.1, South Africa is seeing a large increase in cases, with roughly double than a fortnight earlier, albeit from relatively low levels. COVID-19 hospitalisations have not yet increased. **South Africa is entering its fifth wave, with the resurgence dominated by Omicron sub-variants BA.4 & BA.5.** In the 2 weeks to 2 May, the proportion of BA.4 and BA.5 cases have been increasing, approximately 50% of sequenced cases were BA.4, 32% were BA.5 and 18% were BA.2.

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). 98% of sequences in the fortnight to 2 May were BA.2.

In England, comparing the 2 Omicron waves between Dec/Jan and March: **Infection survey results show infection rates were slightly higher at the end of March (1 in 13 of people in England) than the start of Jan (1 in 15 people),** despite reported cases being around double in January. Cases in hospital in England were about the same for each wave (just slightly higher for March). This suggests that the rate of severe disease was similar between waves.

In England, the legal requirement to self-isolate after positive COVID-19 test and contact tracing are no longer in effect. People are, however, advised to stay at home if they have COVID-19, or if they believe they do. From 1 April, free lateral flow testing ended, except for elderly people, NHS patients and in-care homes. In Wales, all restrictions were eased. In Northern Ireland, nightclubs have reopened. Indoor gatherings of over 15 people and outdoor gatherings of over 30 people require a risk assessment. In Scotland, the requirement to show a COVID pass is no longer in place.

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 increased by almost 50% in the fortnight to 7 May 2022**, hospitalisations are also slowly increasing. BA.2.12.2 is increasing in prevalence in the US, in the 2 weeks to 2 May, 67% of sequenced cases were BA.2 and 28% were BA.2.12.2, compared to 74% and 18%, respectively, a fortnight earlier.

Vaccinations

Booster programmes in multiple countries have now begun stalling, particularly in North America and Europe. Added protection against COVID-19 is **now no longer likely to come for third shots, 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.

In the USA and UK, immunity is waning and there are currently no announced plans for mass rollout of fourth doses. Accordingly, these countries are at risk of entering winter with low levels of protection. With the cold weather expected to bring another wave of infections, it is likely that these countries will require further booster doses to bolster immunity before that period.

Most countries are not rolling out a fourth dose/second booster currently, though there are some exceptions. The Philippines began rolling out second booster doses to immunocompromised adults at the end of April to increase protection. In Israel, Chile and Sweden, fourth doses have been made available and uptake in those over 80 is now >50%.

Omicron Dashboard

The Omicron dashboard (**Figure 25**) 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 05 May 2022.

Figure 25: *Omicron Health Sector Clinical Indicators Dashboard summary, week ending 05 May 2022*

Sector	Summary of data
General Practice	Sector leaders have not raised any concerns over the past week. Overall GP Encounter rates have returned to pre-Omicron levels in some parts of the country and for some age ranges. There continues to be a reduction in under 1 year olds and 1-4 year olds GP encounter rates –which has been apparent since the first 2020 lockdown. GP Encounter rates for Māori and Pacific people peaked in March and have reduced to pre-Omicron levels.
Aged Residential Care	21% of the 656 Aged Residential Care (ARC) facilities have at least one active COVID-19 case (135 of 656 facilities). Three DHB regions account for over half the case numbers – Canterbury, Southern and MidCentral.
Māori Health Providers	No update this week.
Pacific Health	Pacific health providers reported successful vaccination events last week where they were able to administer flu vaccinationsalongside COVID-19 vaccinations. Plans are underway for an integrated vaccination approach which will also include MMR vaccinations. Pacific health providers are reportingincreased mental health concerns among Pacific communities. In response, various mental health programmes and supports have been launched, with a particular focus on Pacific youth.
Emergency Ambulance Service	111 calls and EAS incidents continue to track at expected levels for this time of year. The average response time for ambulance services remains at a higher level than 2019, approximately 36% greater. Ambulance Communications Centres have seen an improvement in the time to answer 111 calls in the lastfour weeks.
Mental Health	Therehasbeena COVID-19 outbreakinone of the MentalHealth & Addictioninpatientunitsthisweek, howeveritisbeingmanaged. The effectof staffingillnesswasmanagedwithinthe DHBsmeasuresand re-deploymentplans. Rates of calls to MHA Healthline declined for all ethnicity groups in April, compared to February call volumes.
Disability providers	The focus now is preparing for the winter season, including the onset of influenza, with a emphasis on promoting the flu vaccinefor support workers and priority populations. Other vaccinations due or delayed as a result of COVID-19 such as MMR; Tetanus/Diptheria/Pertussis are being encouraged.
Hospital	Hospitals are seeing increased inpatient occupancy across the motu. Nationally occupancy of over 90% increased from 38% to 43%. Highest since August last year. Biggest increase came from Capital and Coast (now 93%), since Kenepuru reported 19 censes of over 90% occupancy.
ED	Overall ED volumes decreased 1.3% last week, half of DHBs reported a decrease in ED attendances from previous week, most notablyHawke's Bay (down 18%). SSED for Admitted patients was 57% (decreased 1.5% from previous week).
Planned Care (Hospital)	Planned care continues to be affected by delaying of operations due to COVID-19 patients. A full planned care update will be provided next week. There are significant waiting lists for Ultrasound in most areas, and MRI in others.
Pharmacy	No hot spots or issues reported this week. 1165 courses of COVID-19 medicines (nirmatrelvirwith ritonavir (Paxlovid))have been dispensed to date.
Home and Community Support Services	Continue to see a reduction in total numbers of employees compared with Oct-Dec last year (10% decline). Continue to see a decline in total services delivered compared with Oct-Dec last year (5% decline).
COVID care in the community	Online form completion continues to be the most utilised way of COVID-19 positive patients completing the assessment post infection. Rates for online form completion increased across all ethnicities last week. 81% of initial clinical assessments with an acuity over 4 were competed within 48 hours in the week ending 29 April.
Health Workforce	Current planning & initiativesare focussed on winter planning (which is combination of next wave of COVID-19 plus winter illnesses) / next steps both regionally and nationally.
Rural Health	Over the past week Rural hospitals have been reporting an increase in pressure due to staffing and occupancy levels.

Sources: Omicron Health Sector Clinical Indicators Dashboard, 05 May 2022

COVID-19

Trends and Insights Report

Updated 13 May 2022

Appendix Document

Contents

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 02 May to 08 May 2022	Rate per 1,000
Northland	1379	7.1
Waitemata	6602	10.5
Auckland	5409	11.0
Counties Manukau	4500	7.6
Bay of Plenty	1495	5.8
Waikato	3220	7.7
Tairawhiti	427	8.3
Lakes	842	7.4
Taranaki	1393	11.3
Hawke's Bay	1571	9.0
Whanganui	614	9.0
MidCentral	1958	10.8
Hutt Valley	1444	9.3
Capital and Coast	3668	11.6
Wairarapa	635	13.1
Nelson Marlborough	1839	11.7
West Coast	466	14.4
Canterbury	8777	15.5
South Canterbury	751	12.3
Southern	5334	15.9
Unknown	29	
Total	**52353**	**10.5**

Regions	Community cases reported since 02 May to 08 May 2022	Rate per 1,000
Northern	17890	9.4
Te Manawa Taki	7377	7.5
Central	9890	10.5
Southern	17167	14.9
Unknown	29	-
Total	**52353**	**10.5**

Ethnicity	Community cases reported since 02 May to 08 May 2022	Rate per 1,000
Māori	6260	8.2
Pacific Peoples	2513	6.8
Asian	7512	10.2
European or Other	35671	11.5
Unknown	397	-
Total	**52353**	**10.5**

Sex	Community cases reported since 02 May to 08 May 2022	Rate per 1,000
Female	28230	11.1
Male	24074	9.8
Unknown	49	-
Total	**52353**	**10.5**

Age	Community cases reported since 02 May to 08 May 2022	Rate per 1,000
0-9	4300	6.6
10-19	6742	10.5
20-29	10116	15.0
30-39	8671	12.6
40-49	7221	11.5
50-59	6989	10.9
60-69	4627	8.7
70+	3687	6.8
Total	**52353**	**10.5**

Rate per 1,000

National	Māori	Pacific Peoples	Asian	European or Other	Total
Total	8.2	6.8	10.2	11.5	10.5

Northern	Māori	Pacific Peoples	Asian	European or Other	Total
Northland	7.0	8.0	9.6	7.0	7.1
Waitemata	9.5	7.4	10.2	11.1	10.5
Auckland	8.8	5.7	1.1	12.6	11.0
Counties Manukau	5.8	4.7	8.5	9.9	7.6
Total	**7.4**	**5.5**	**9.7**	**10.7**	**9.4**

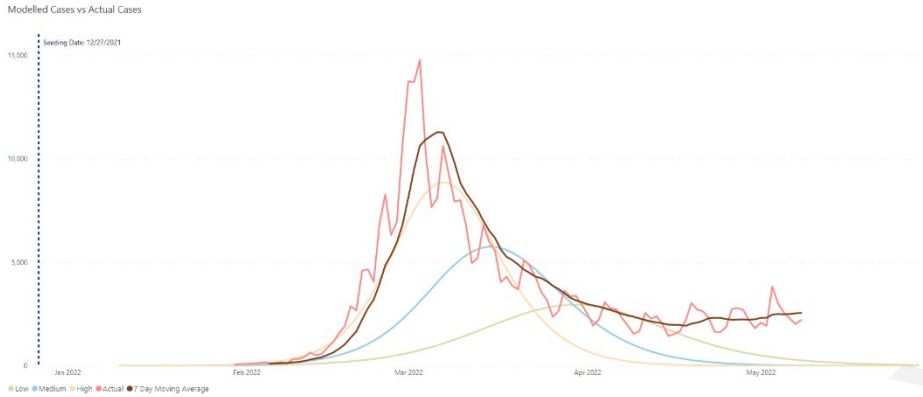
Te Manawa Taki	Māori	Pacific Peoples	Asian	European or Other	Total
Bay of Plenty	5.0	6.2	6.6	5.9	5.8
Waikato	6.3	5.2	7.3	8.0	7.5
Tairawhiti	7.8	1.7	7.9	9.2	8.3
Lakes	5.6	8.2	7.0	8.3	7.4
Taranaki	8.8	10.6	14.3	11.7	11.3
Total	**6.3**	**6.0**	**7.6**	**8.1**	**7.5**

Central	Māori	Pacific Peoples	Asian	European or Other	Total
Hawkes Bay	6.8	13.3	9.2	9.6	9.0
Whanganui	8.1	10.7	2.9	9.5	9.0
MidCentral	9.1	9.8	8.8	11.4	10.8
Hutt Valley	8.4	7.5	8.8	9.9	9.3
Capital and Coast	10.0	8.6	9.1	12.7	11.6
Wairarapa	12.9	14.1	15.0	13.0	13.1
Total	**8.6**	**9.3**	**8.9**	**11.2**	**10.5**

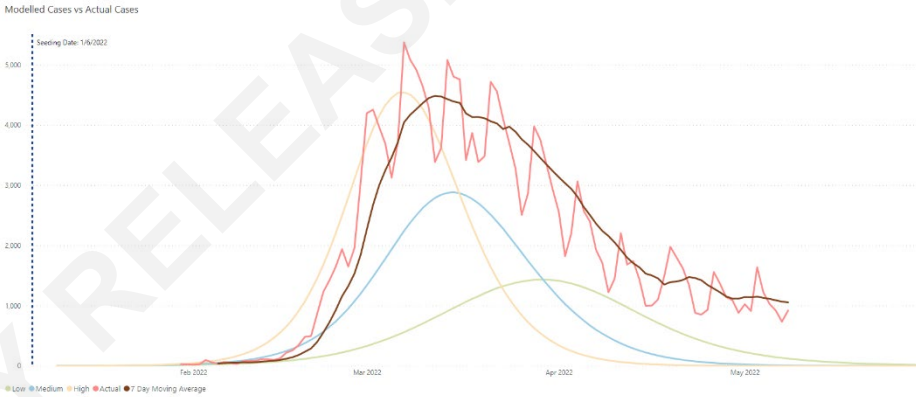
Southern	Māori	Pacific Peoples	Asian	European or Other	Total
Nelson Marlborough	9.9	12.7	13.0	11.7	11.7
West Coast	15.0	21.7	18.1	14.1	14.4
Canterbury	14.0	15.7	15.8	15.6	15.5
South Canterbury	11.7	16.7	14.1	12.1	12.3
Southern	15.8	16.5	17.5	15.7	15.9
Total	**13.9**	**15.7**	**15.9**	**14.8**	**14.9**

COVID Modelling Aotearoa

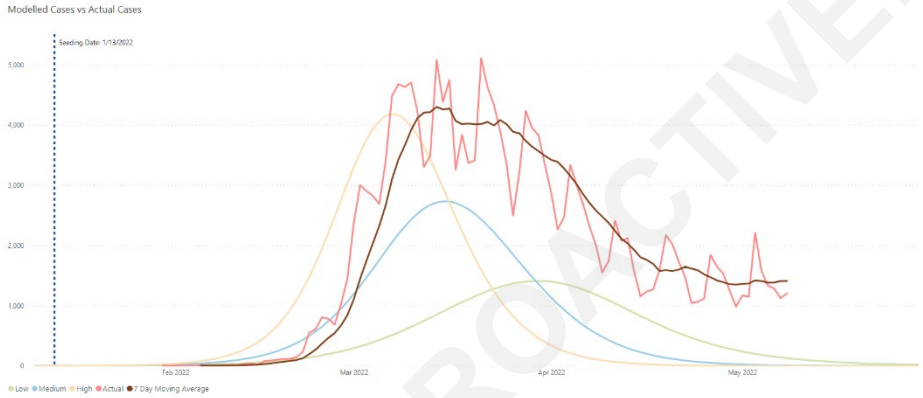
Northern Region



Te Manawa Taki (Midlands)



Central Region



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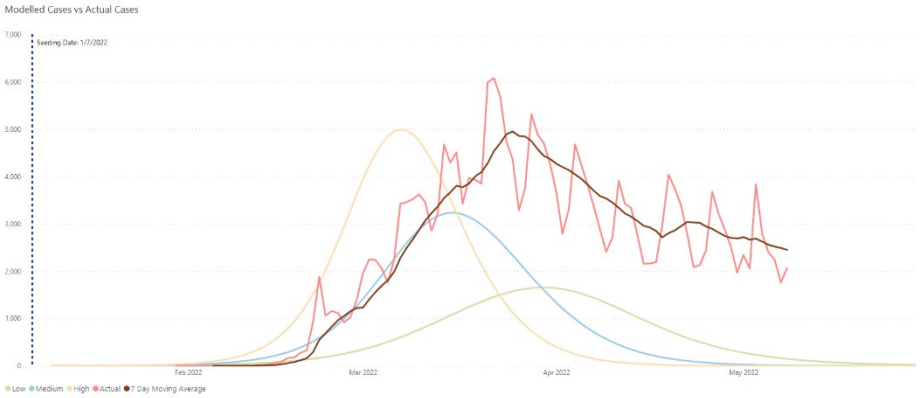


Sources: TAS, based on COVID-19 Modelling Aotearoa Branching Process Model 27 February 2022, and Ministry of Health reported case data 08 May 2022

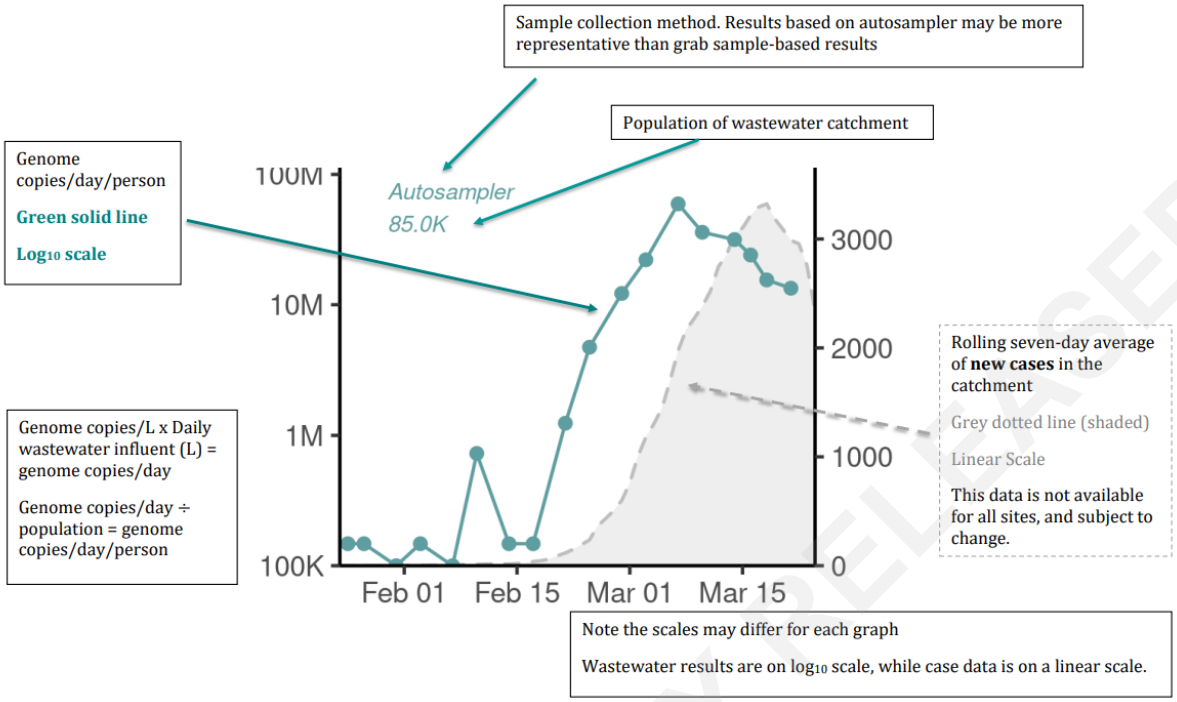
EpiNow

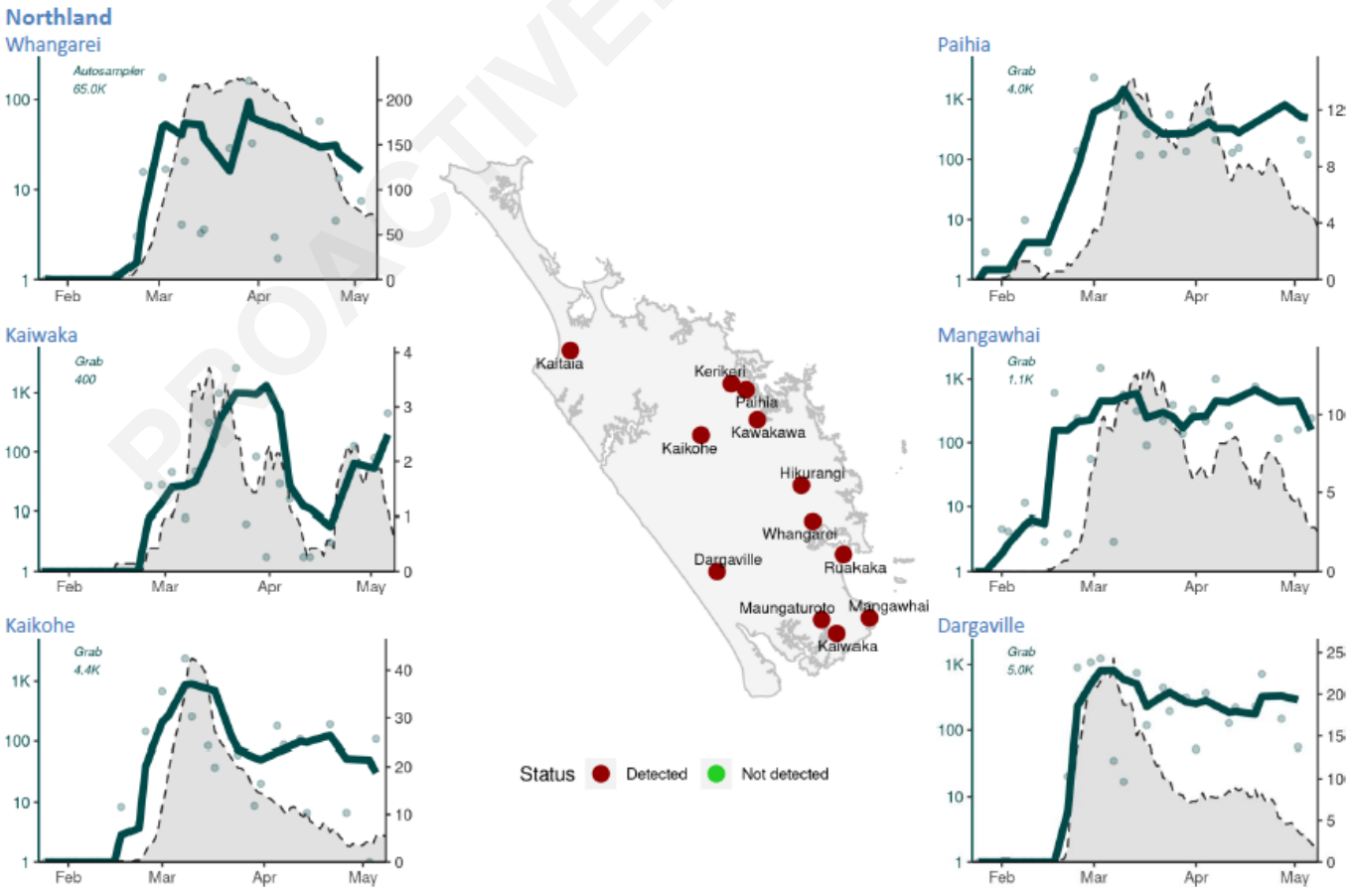
Table 1: ***Estimated median effective R (R_{eff}) by Public Health Unit region, for cases to 09 May*** **2022**

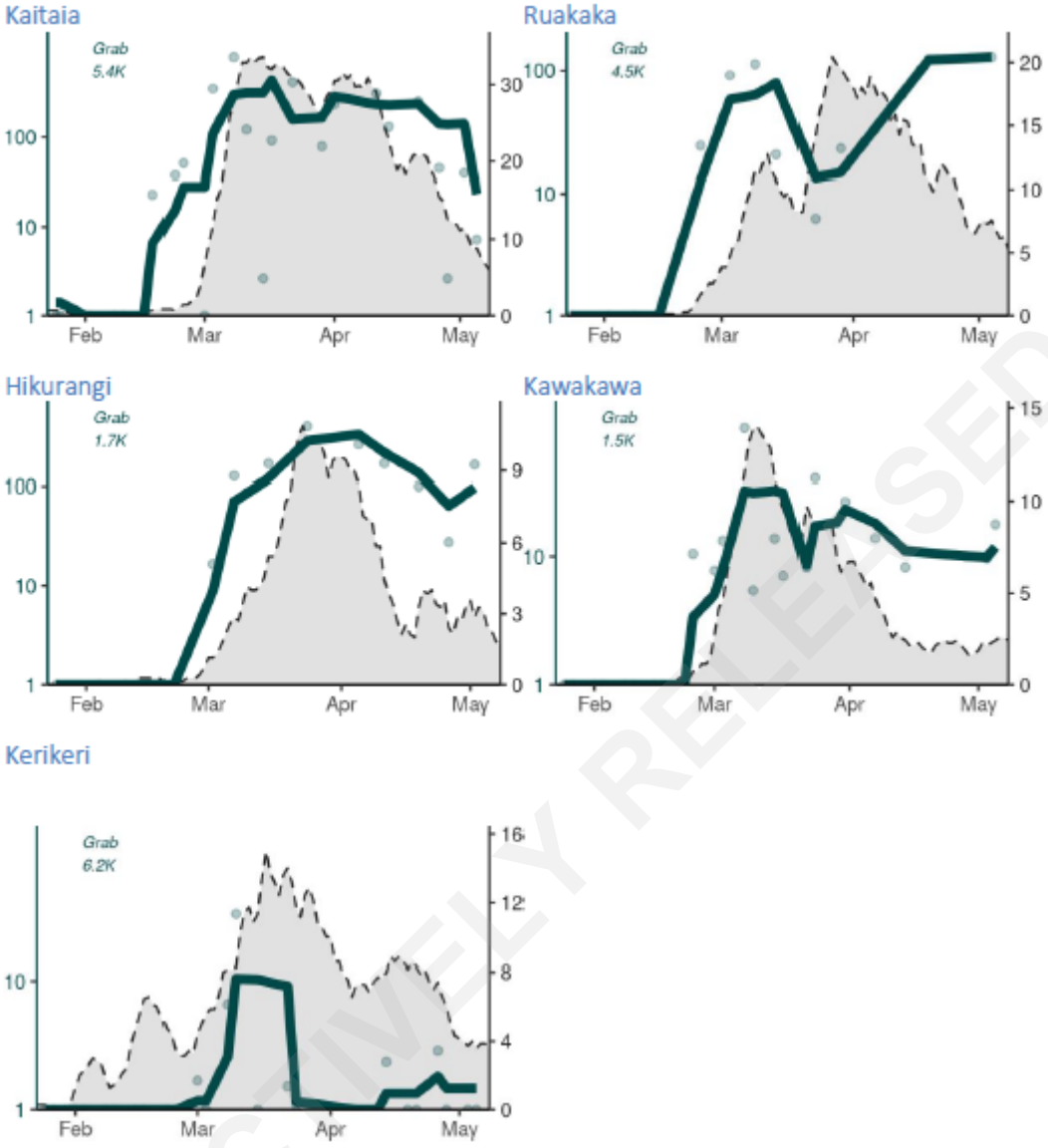
Public Health Unit region	**R_{eff} (90% Credible Interval [CI])**
Northland	1.3 (0.9-1.9)
Auckland	1.1 (0.6-1.8)
Taranaki	1.0 (0.6-1.6)
Waikato	1.2 (0.8-1.8)
Toi Te Ora	1.2 (0.7-2.1)
Tairawhiti	0.6 (0.3-1.1)
Regional Public Health (Wellington Region)	1.2 (0.8-1.7)
Mid Central	1.0 (0.7-1.4)
Hawkes Bay	1.0 (0.8-1.5)
Canterbury/ South Canterbury	1.1 (0.5-2.3)
Southern	0.9 (0.3-2.6)
Nelson Marlborough	1.0 (0.7-1.4)
West Coast	0.9 (0.7-1.2)
National	**1.1 (0.7-1.6)**

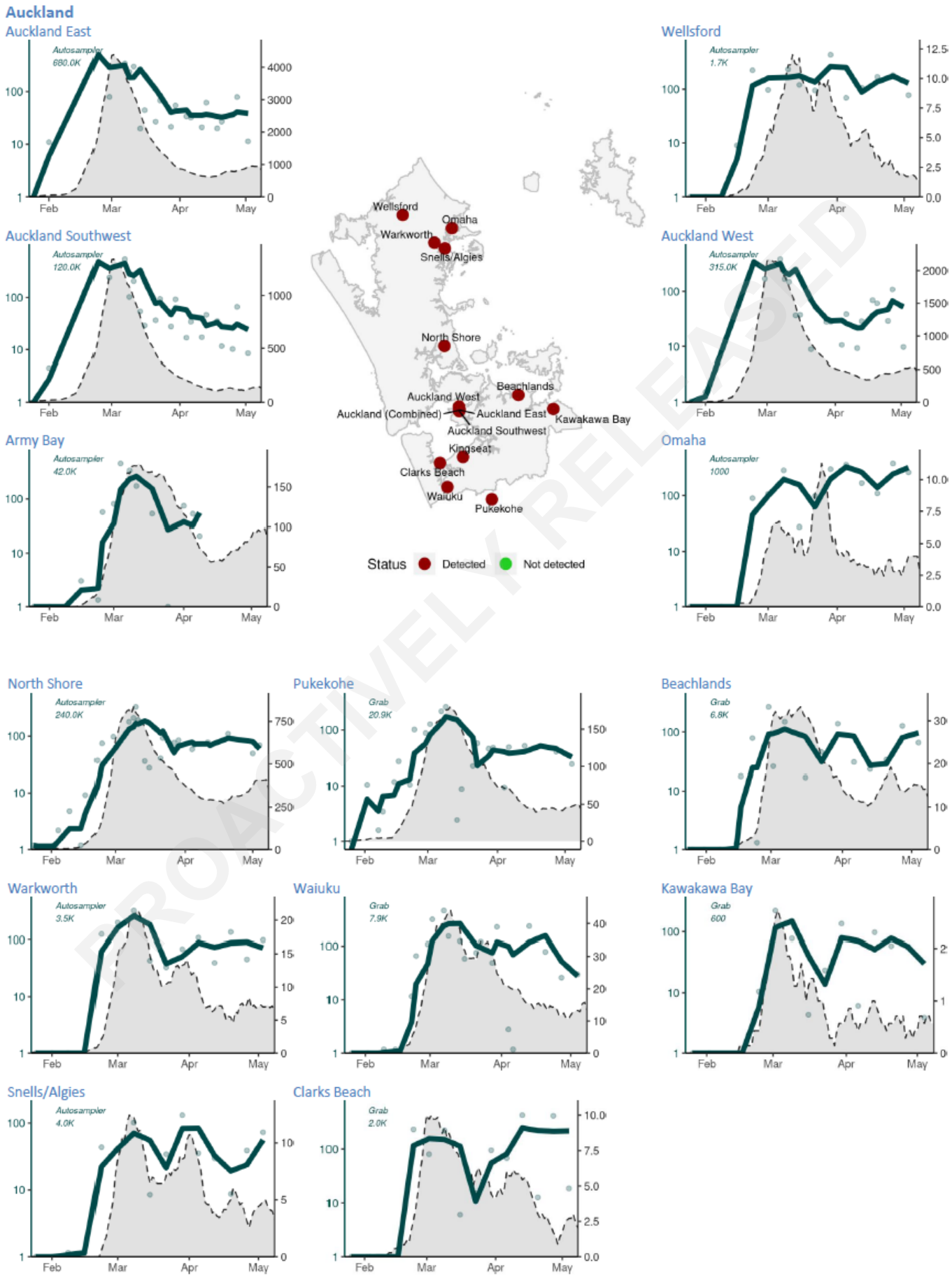
ESR Wastewater

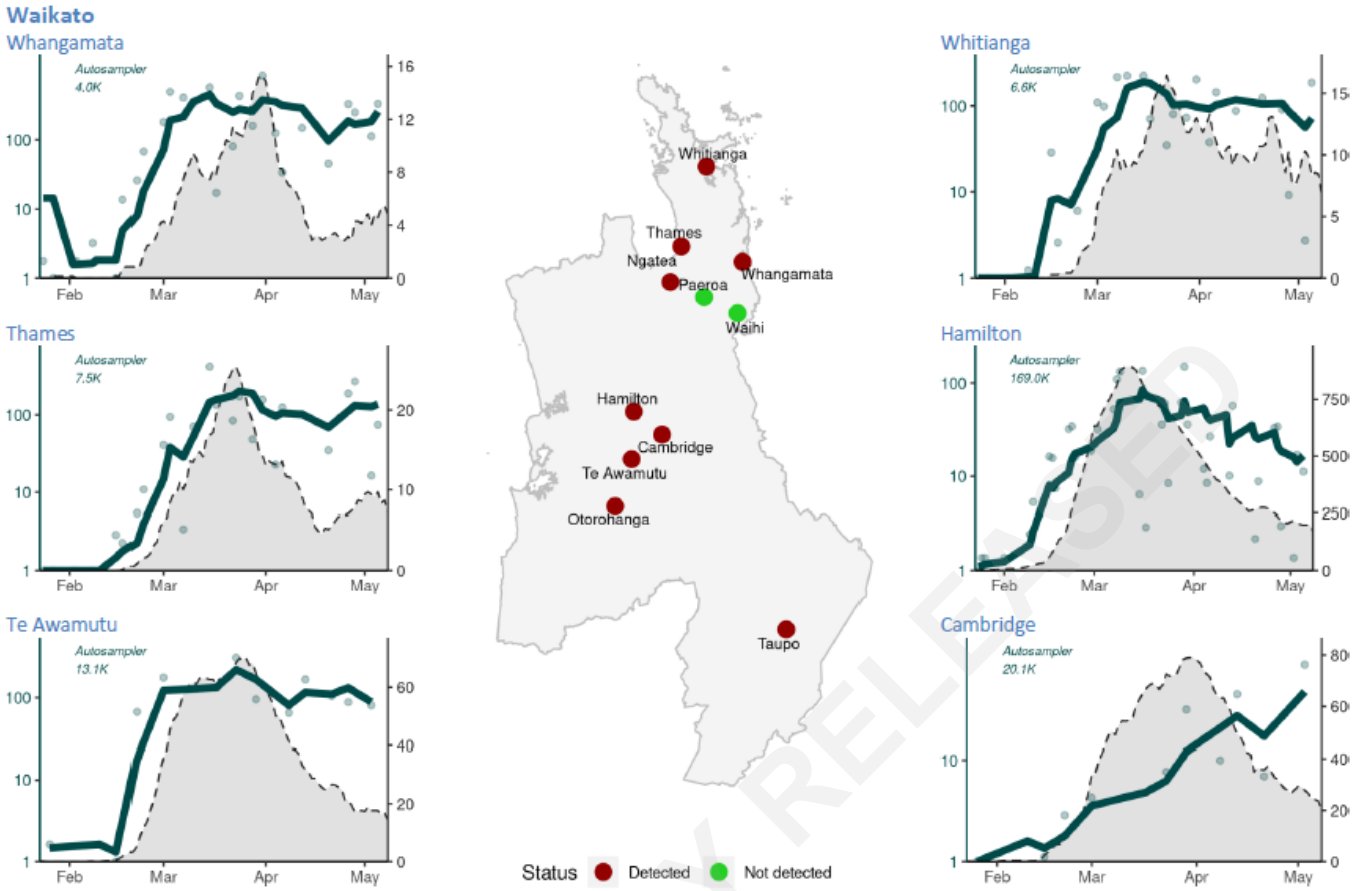
Interpreting site graphs











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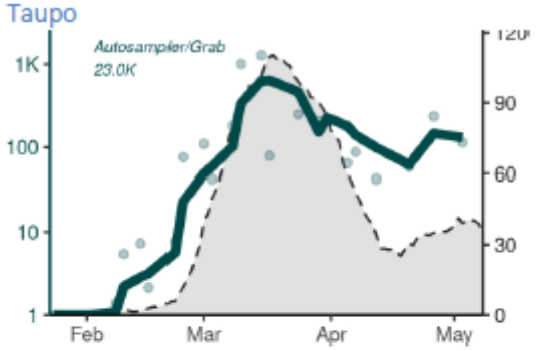

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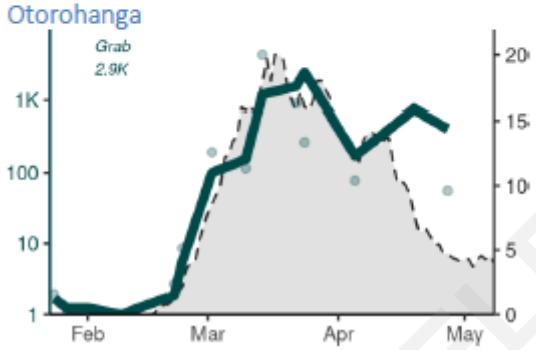
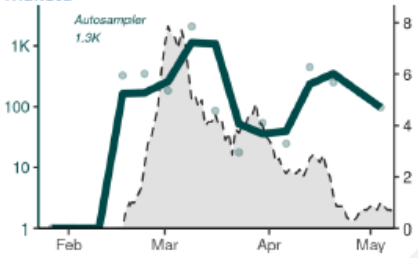
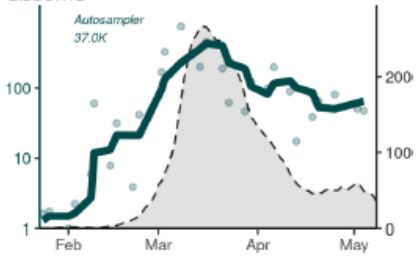


Bay of Plenty and Gisborne

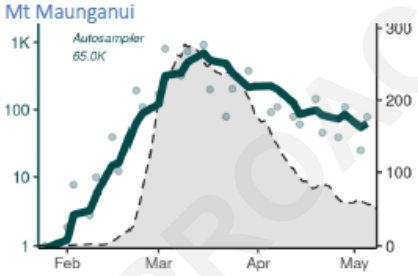
Maketu

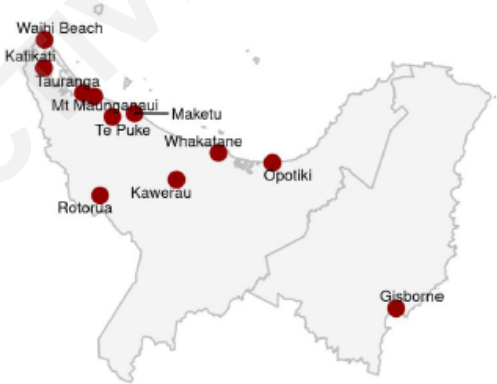


Gisborne

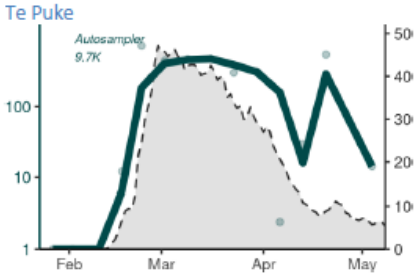


Mt Maunganui





Te Puke



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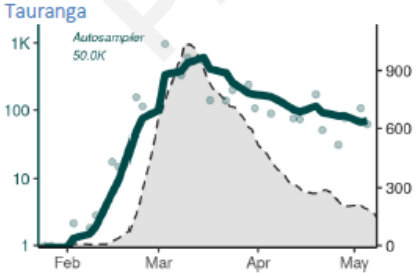

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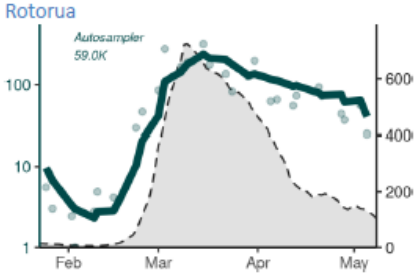

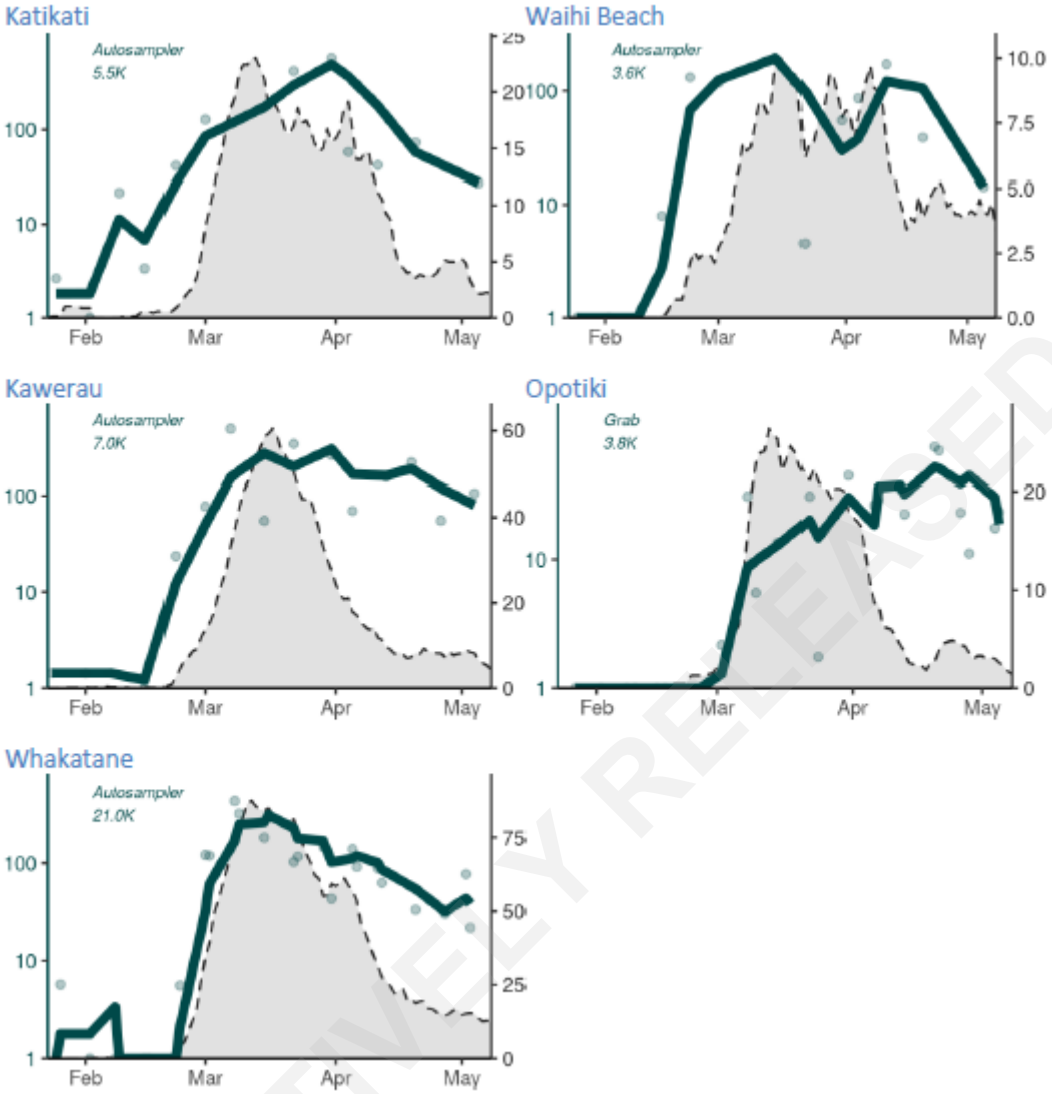

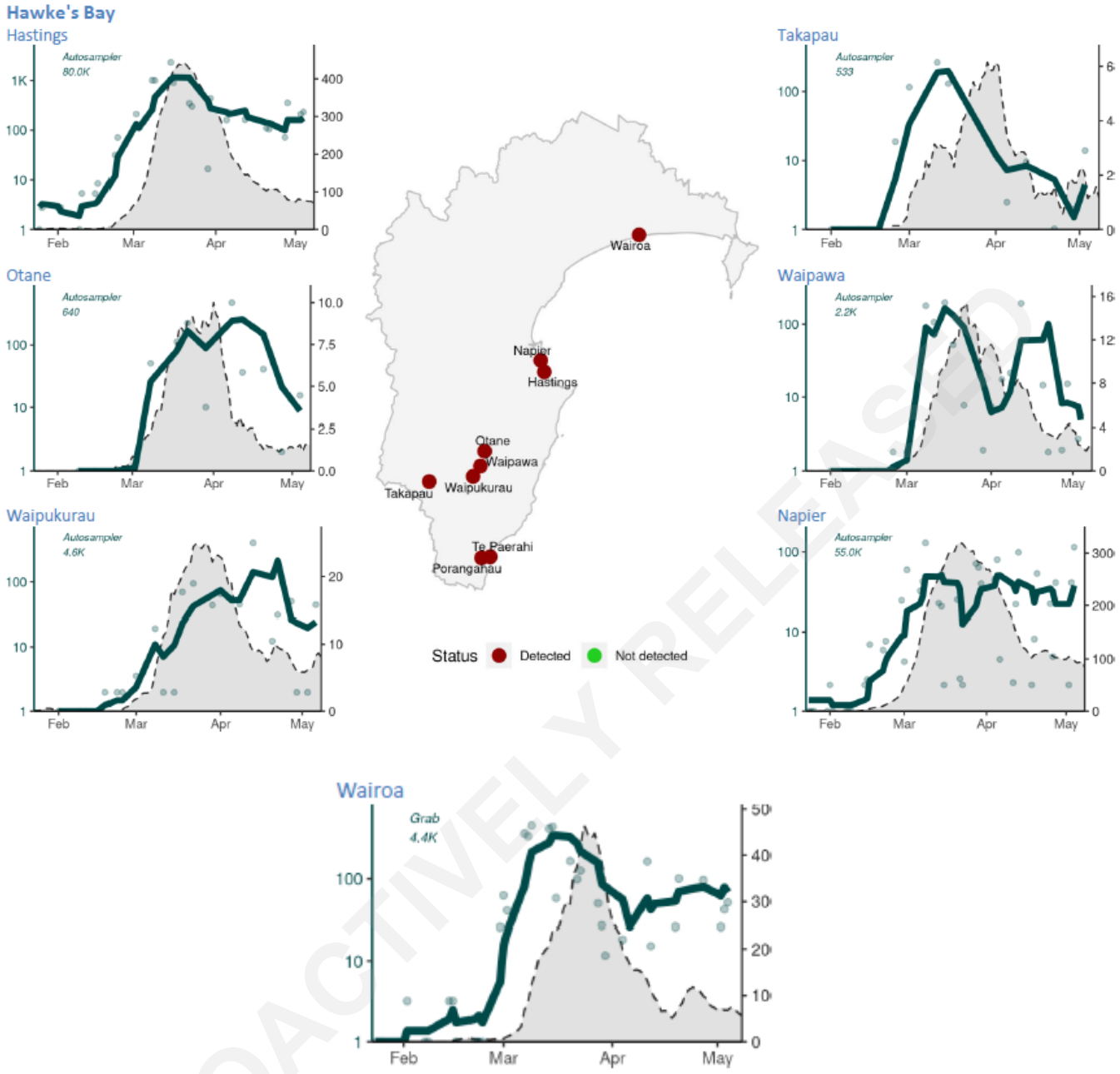

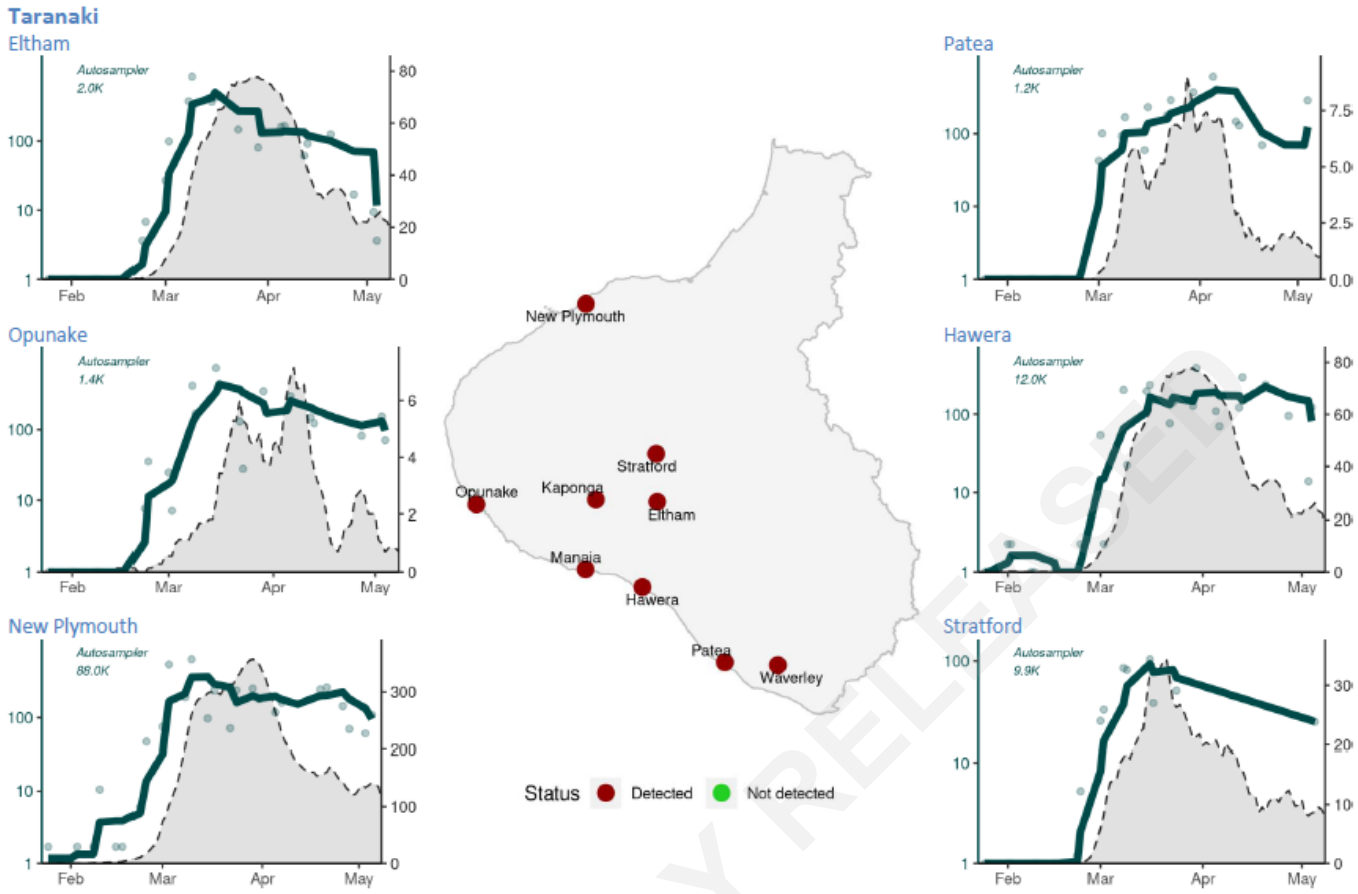

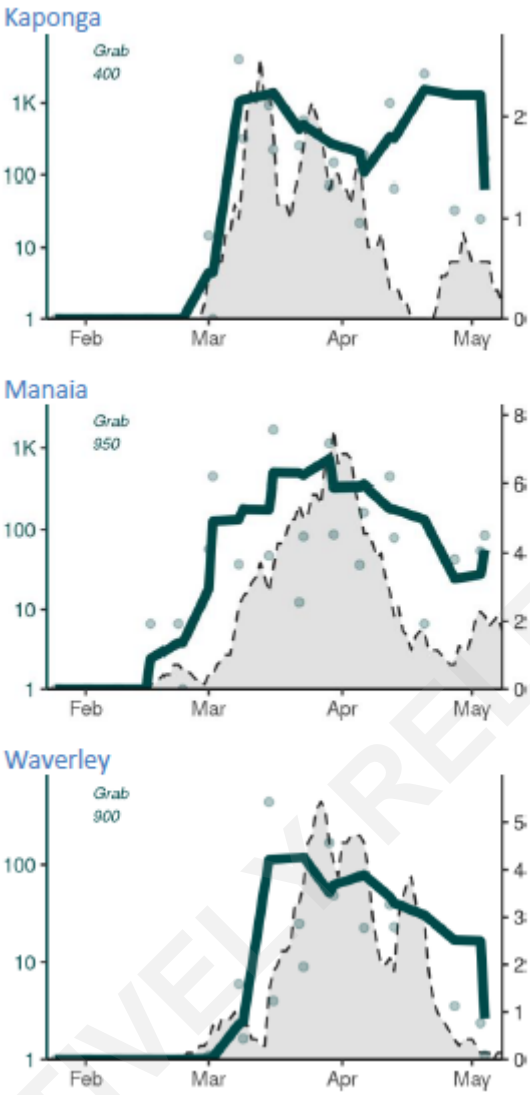

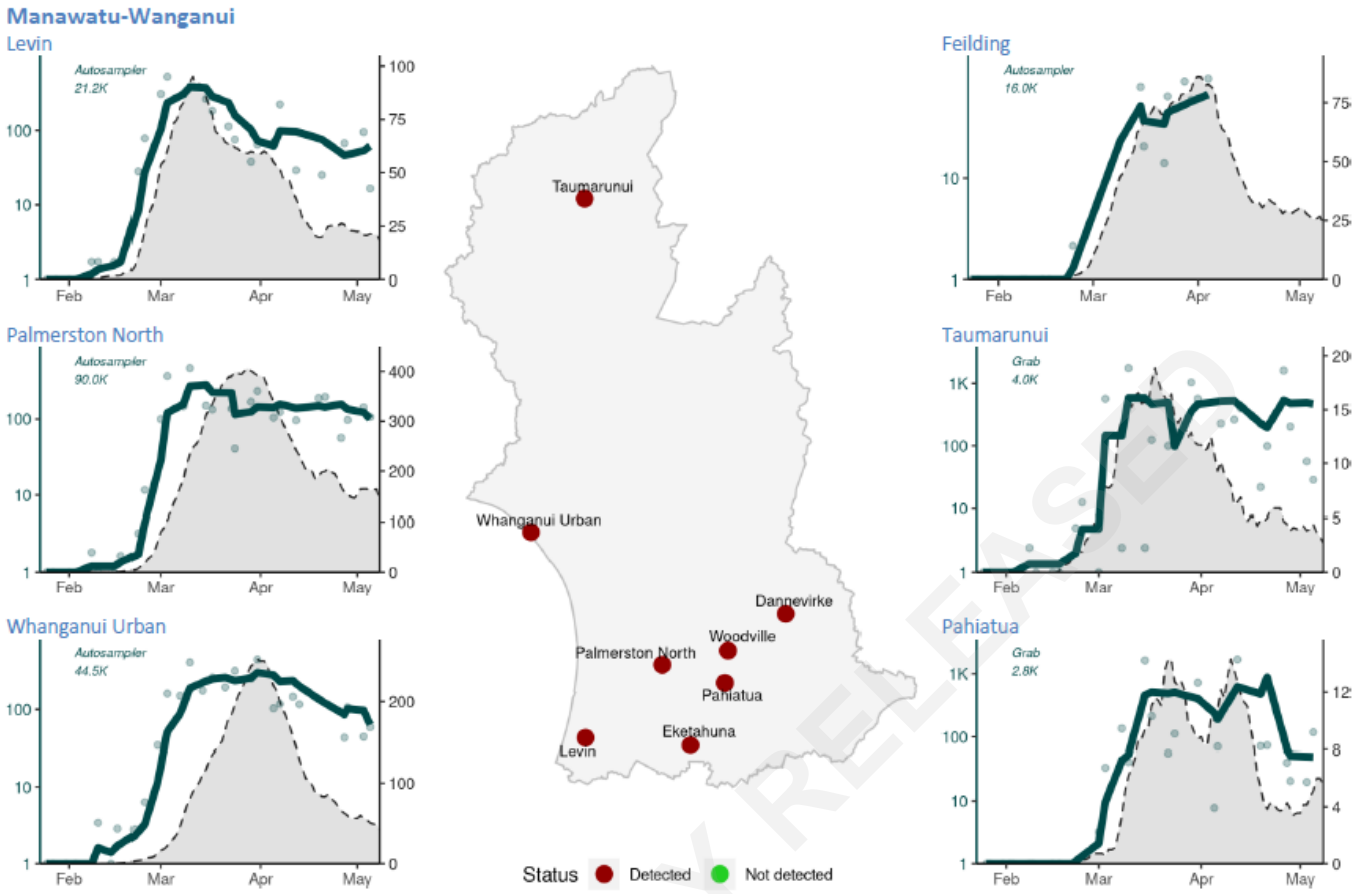

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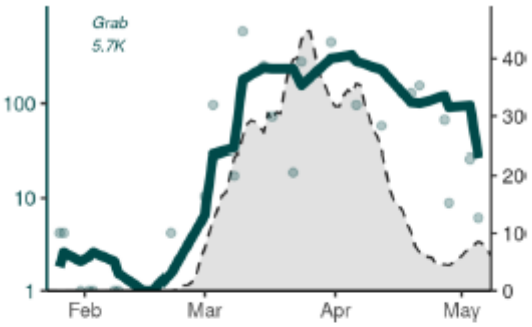

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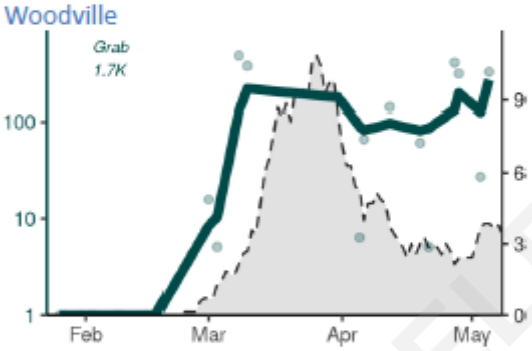

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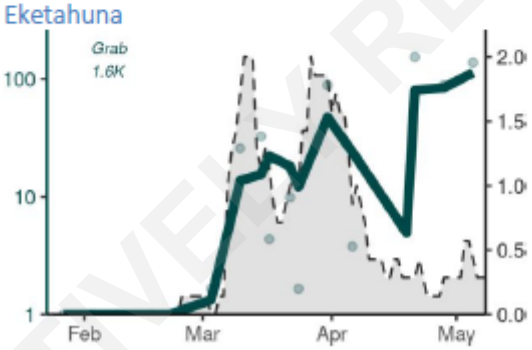
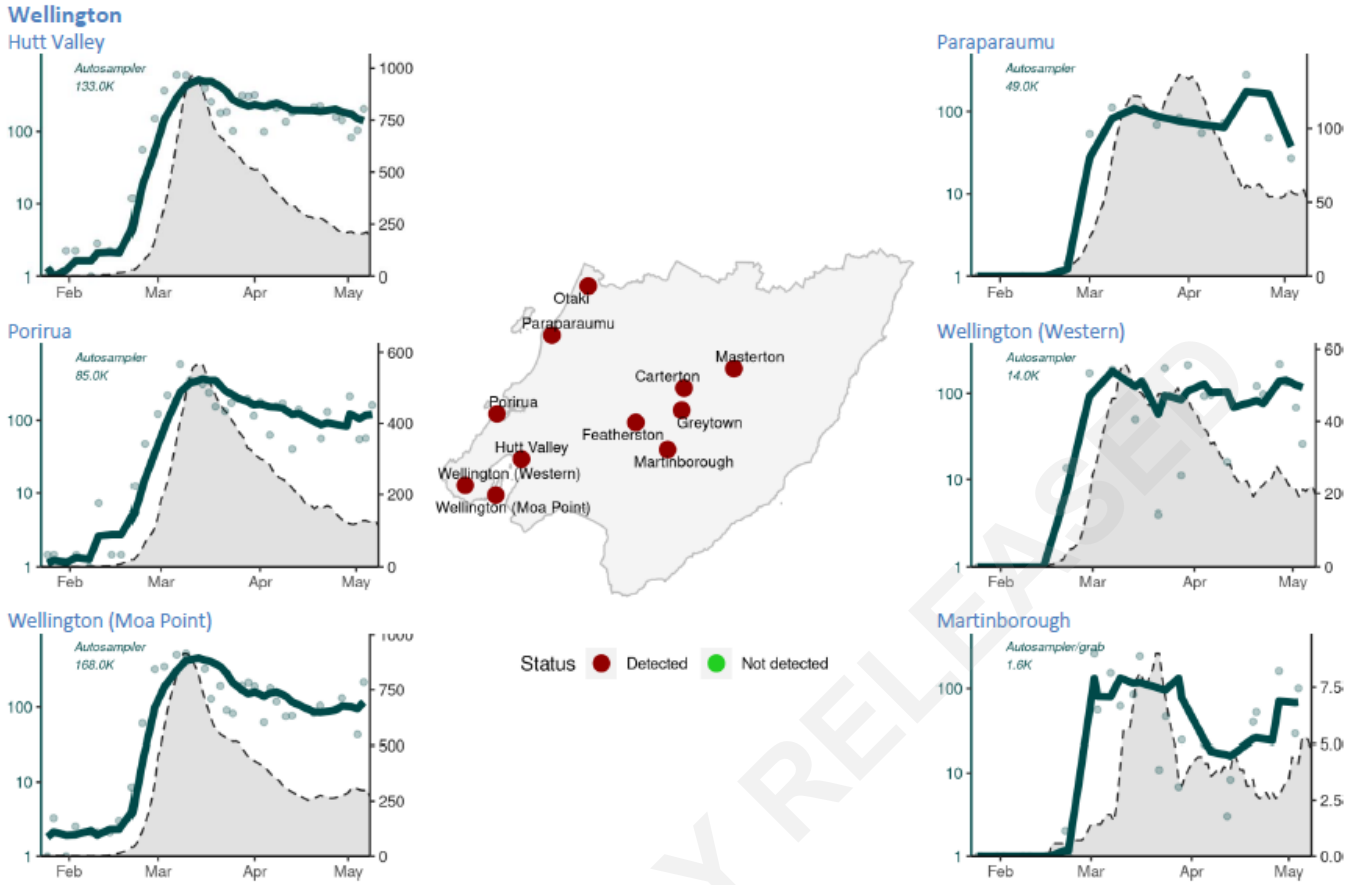
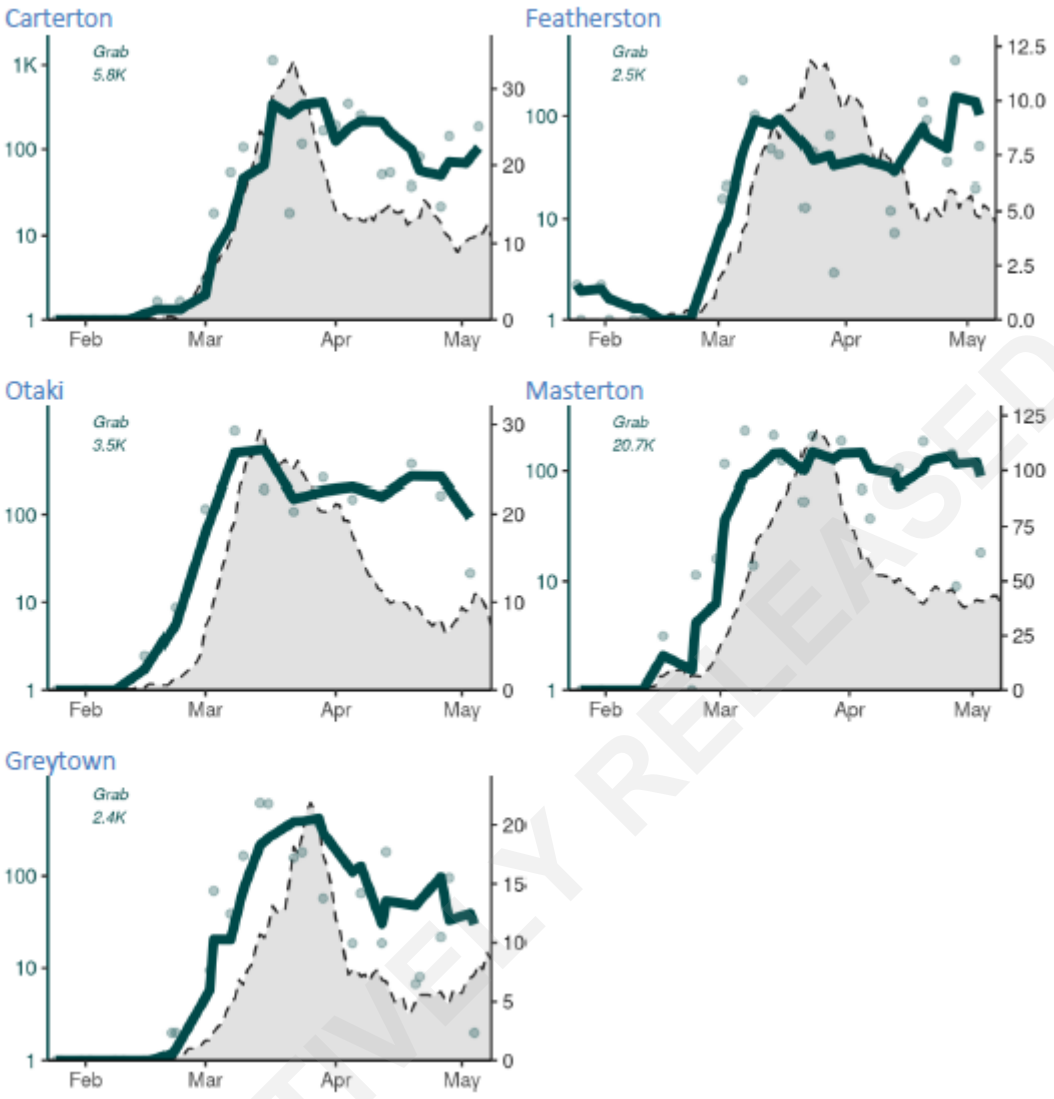
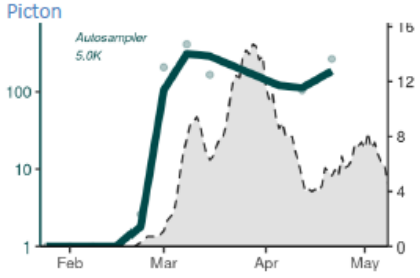




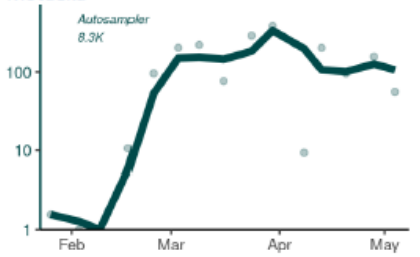


Tasman, Nelson, and Marlborough

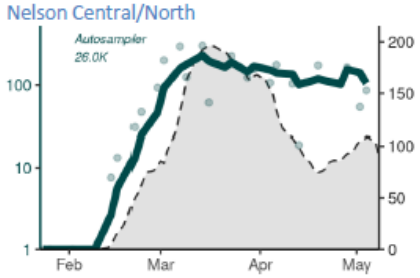
Picton



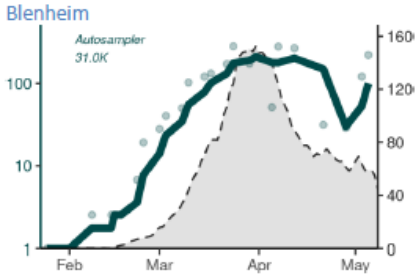
Motueka



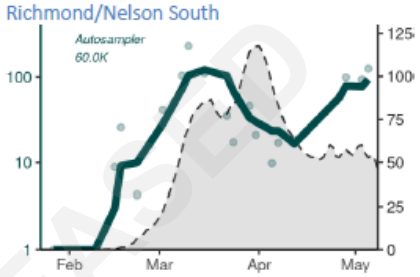
Nelson Central/North



Blenheim



Richmond/Nelson South



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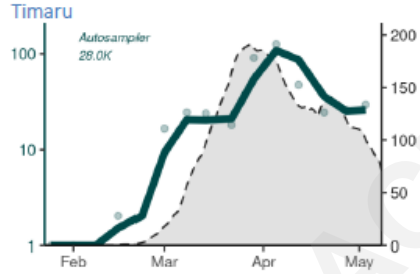
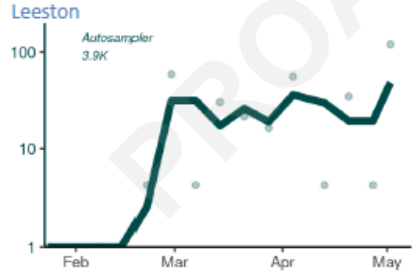
West Coast and Canterbury

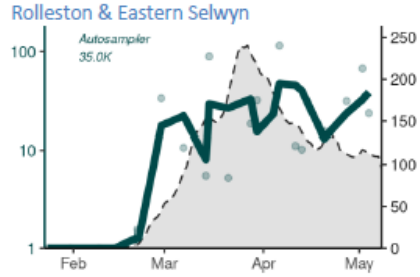
Timaru

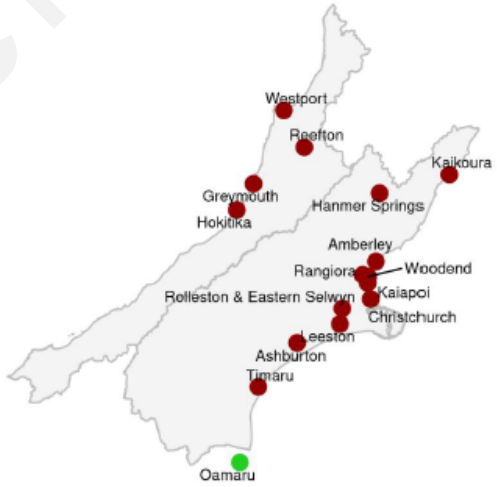


Leeston



Rolleston & Eastern Selwyn





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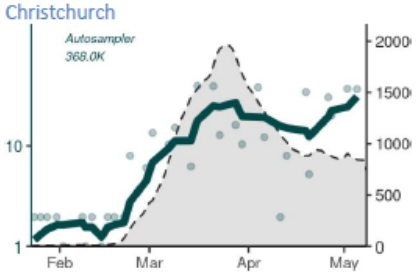
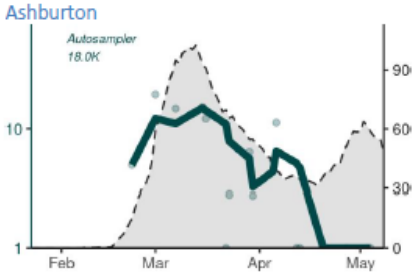
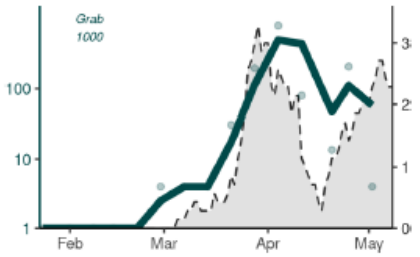
Christchurch



Ashburton



Reefton



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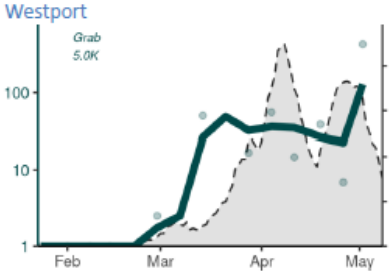
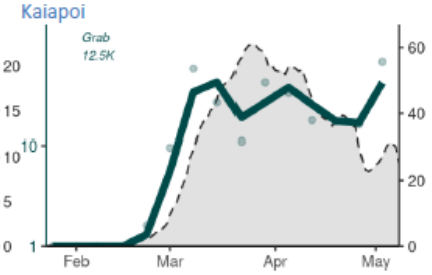


Kaiapoi



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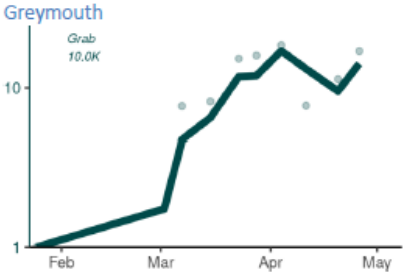

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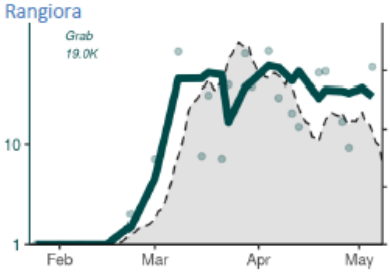

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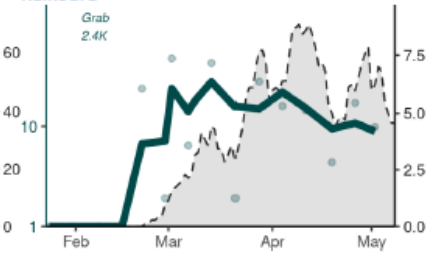

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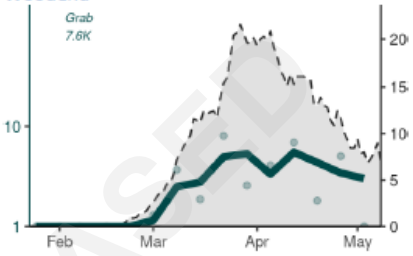

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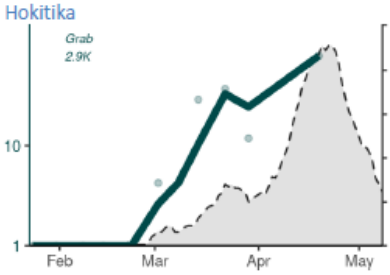

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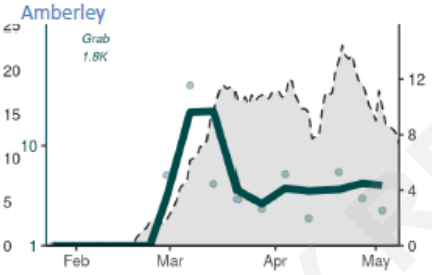

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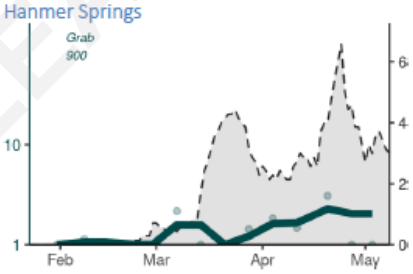
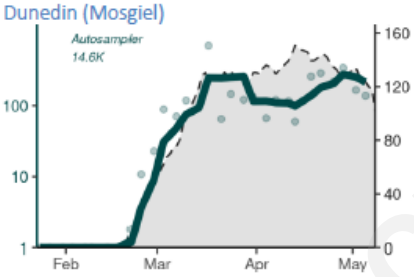
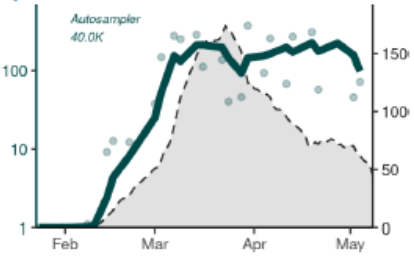


Otago and Southland

Dunedin (Mosgiel)



Queenstown



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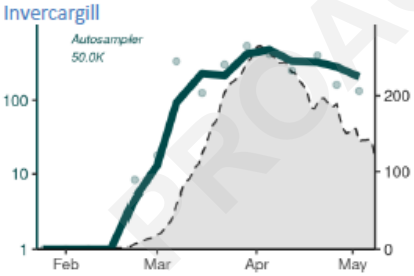
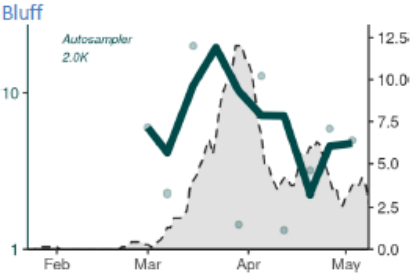
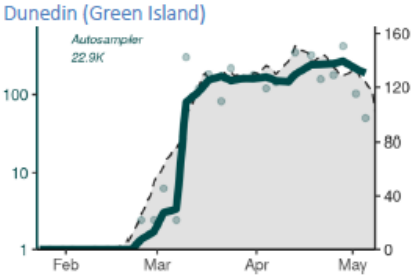


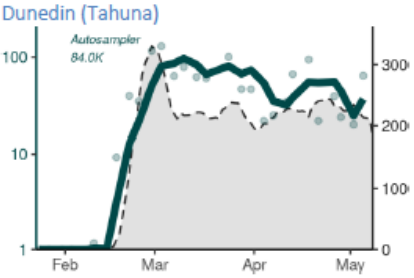
Bluff

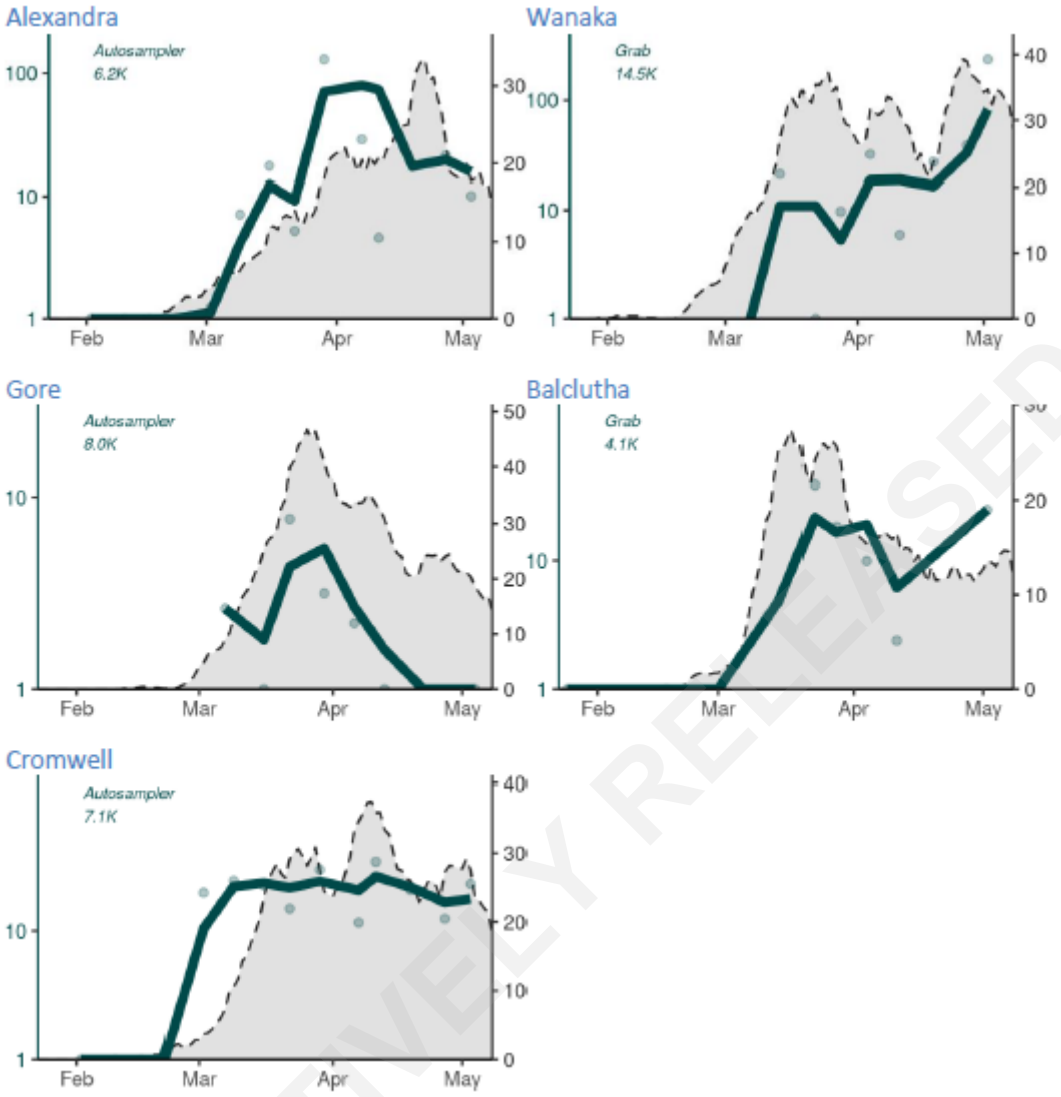


Dunedin (Green Island)



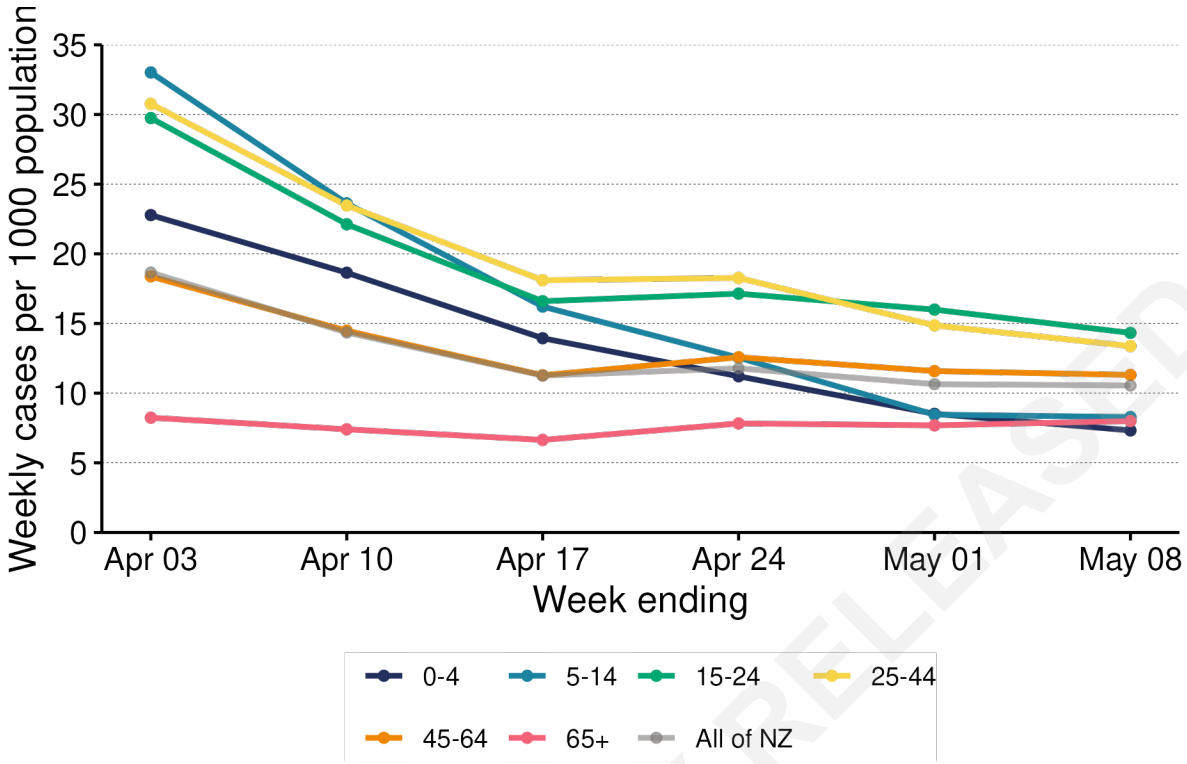
Dunedin (Tahuna)



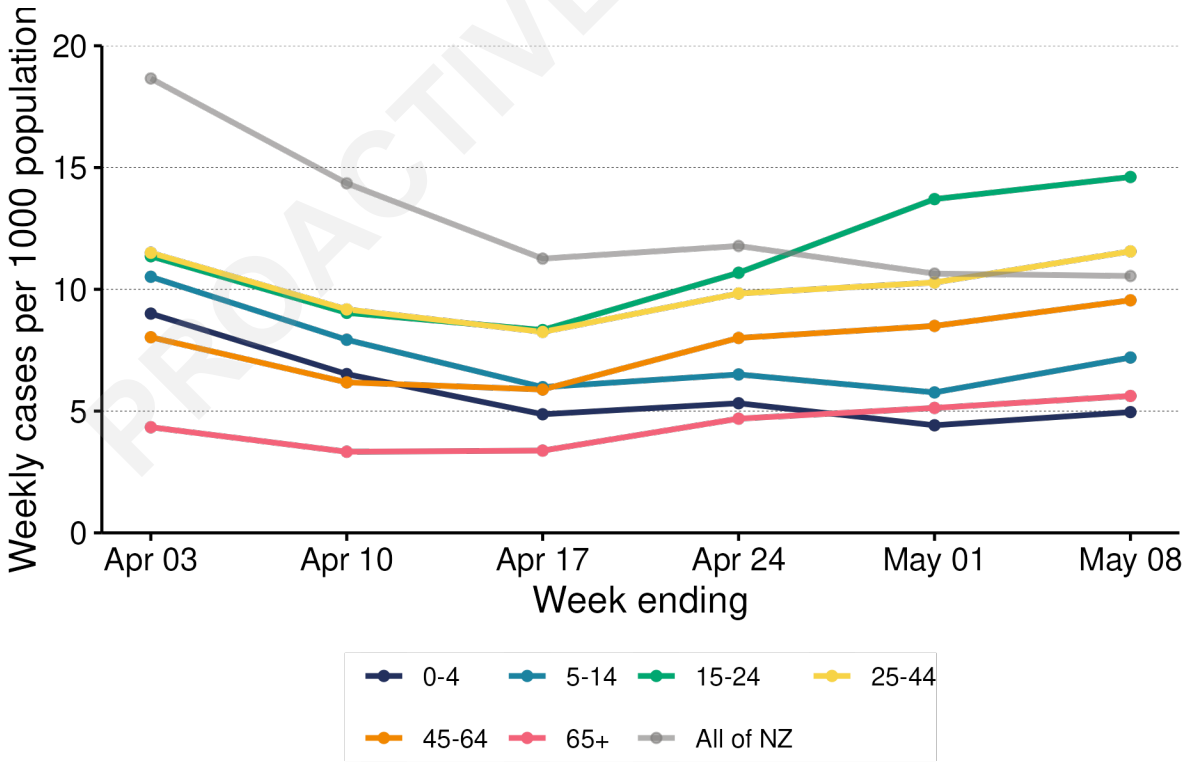


Age Graphs

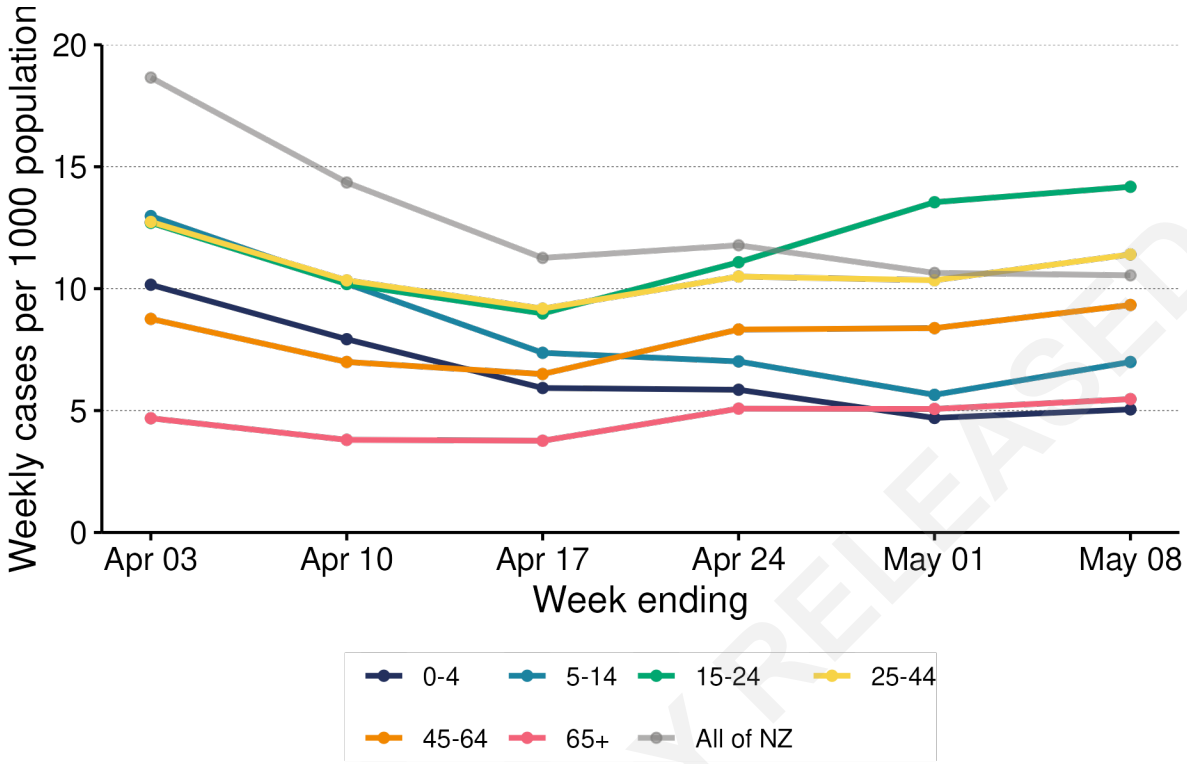
NZ Excluding Auckland Region



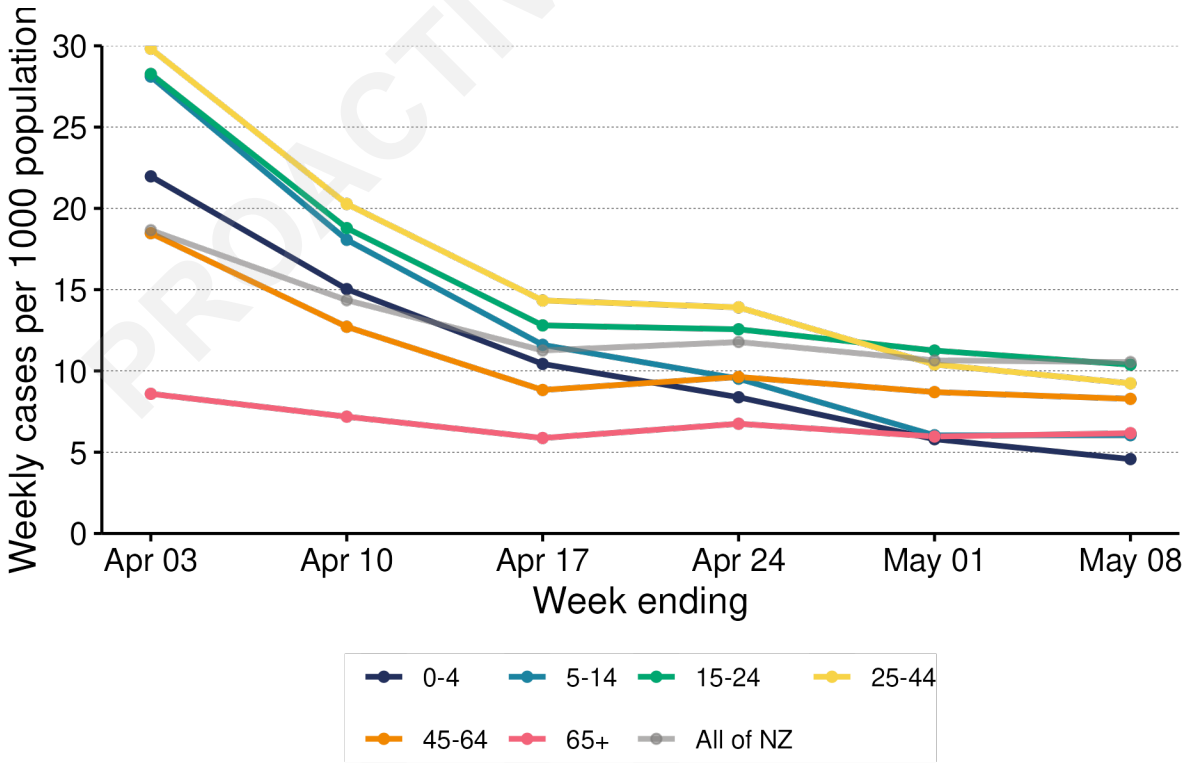
Auckland Region



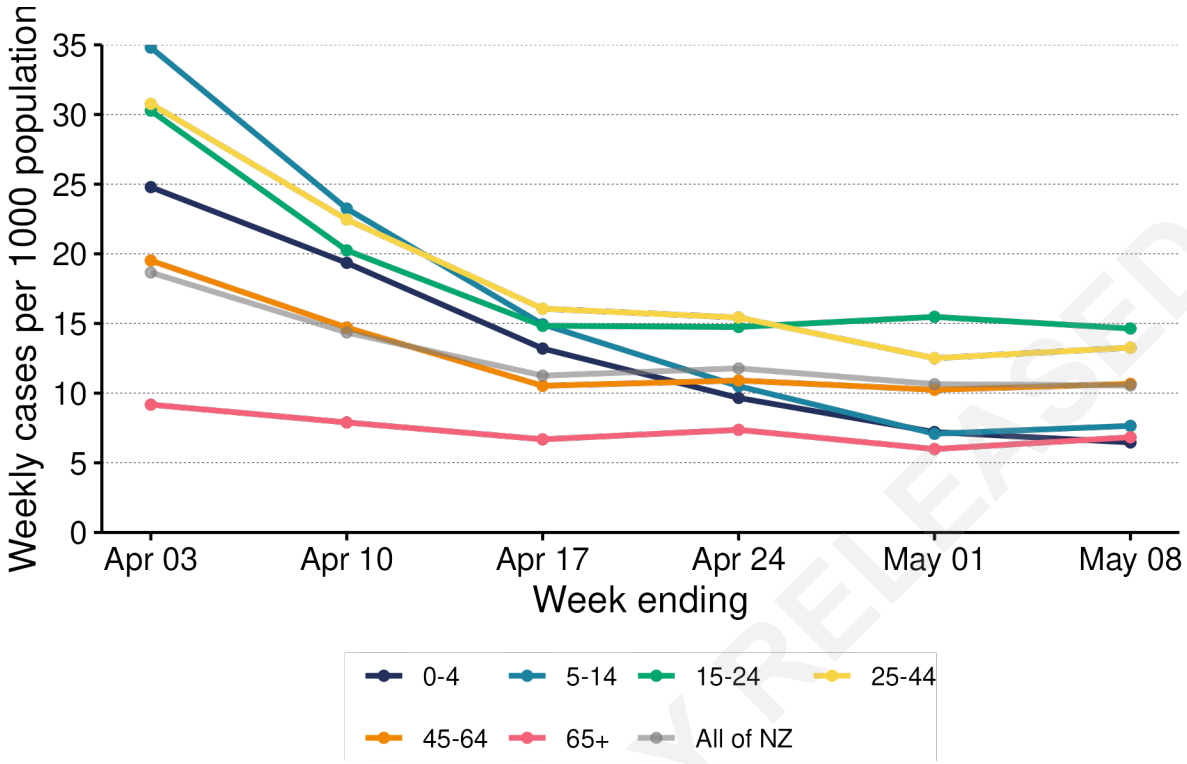
Northern Region



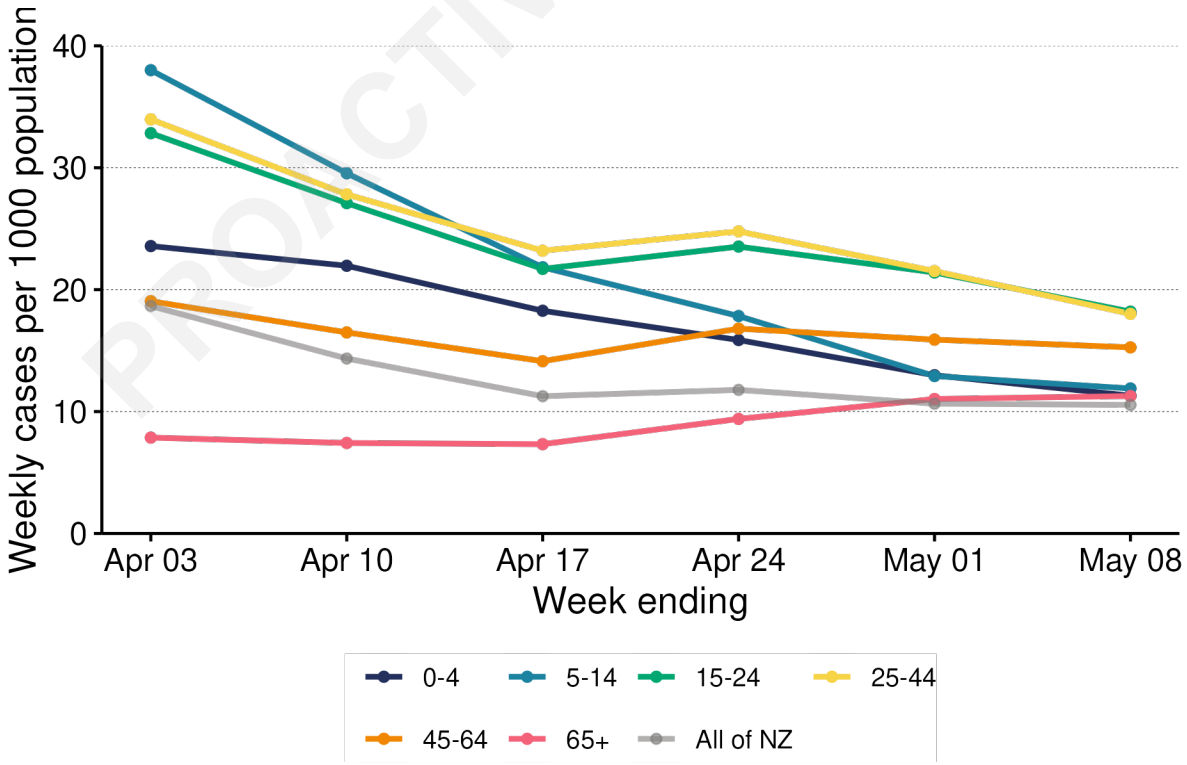
Te Manawa Taki



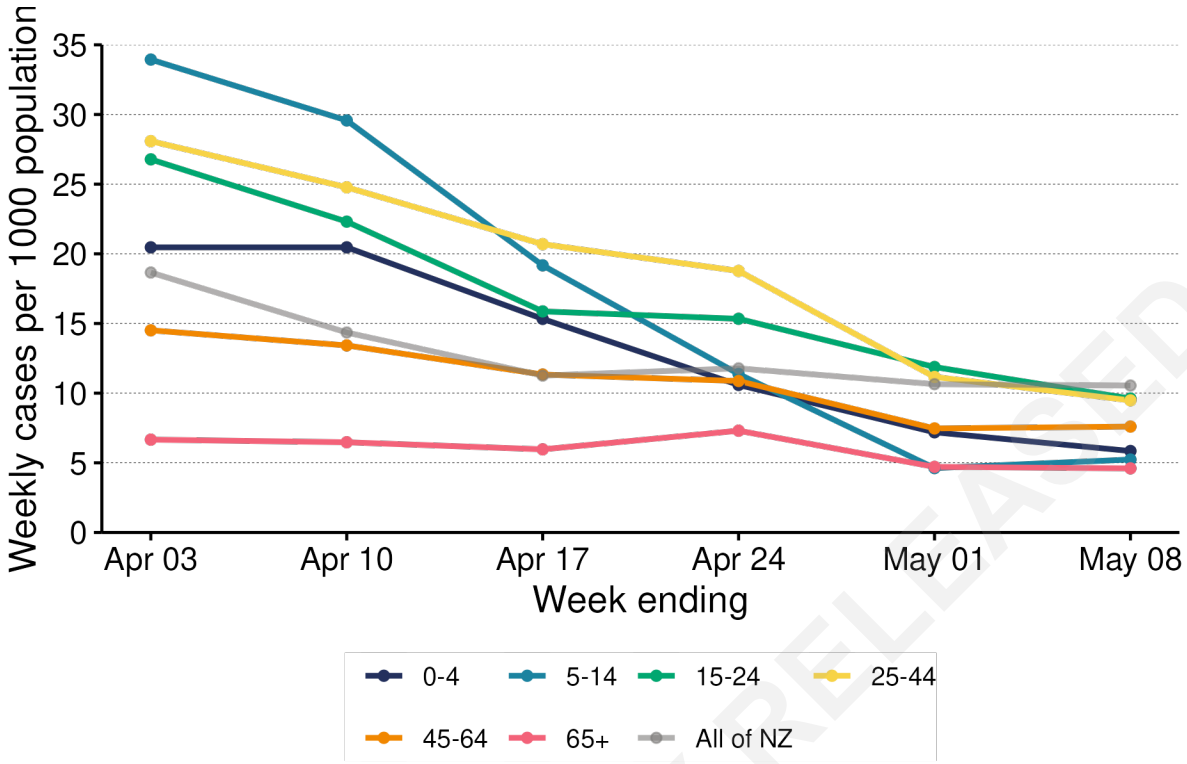
Central Region



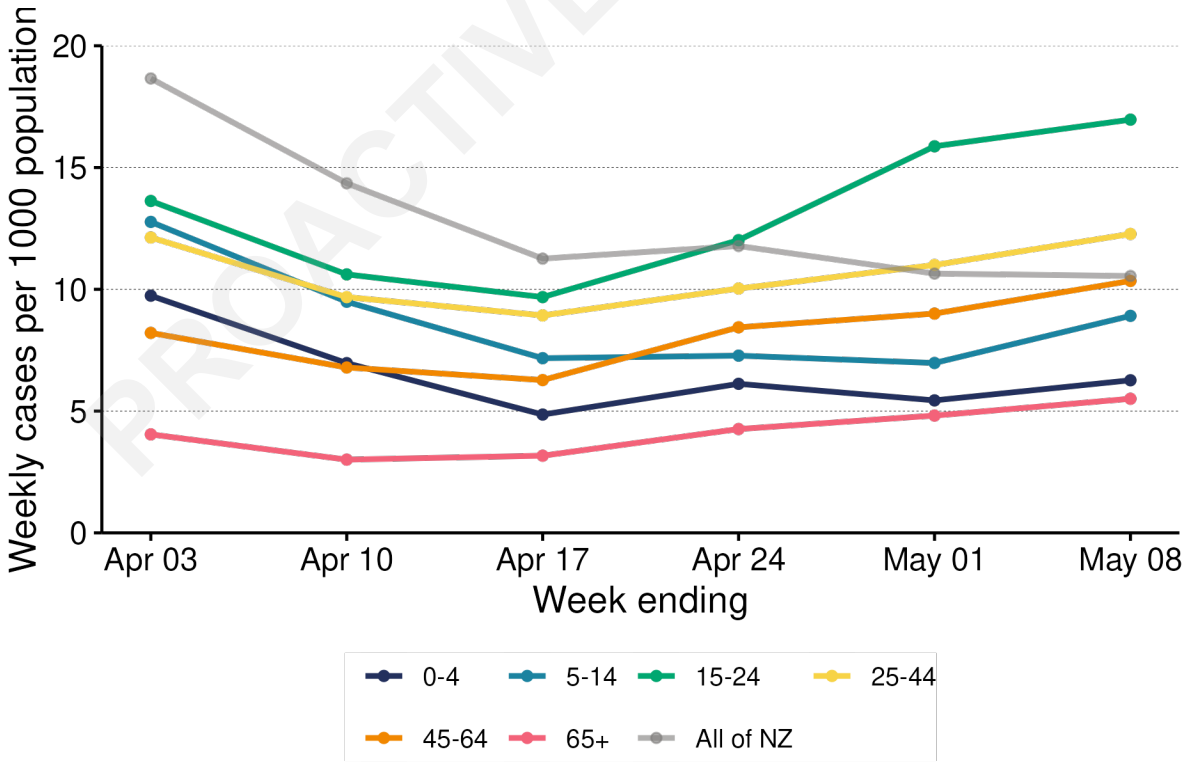
Southern Region



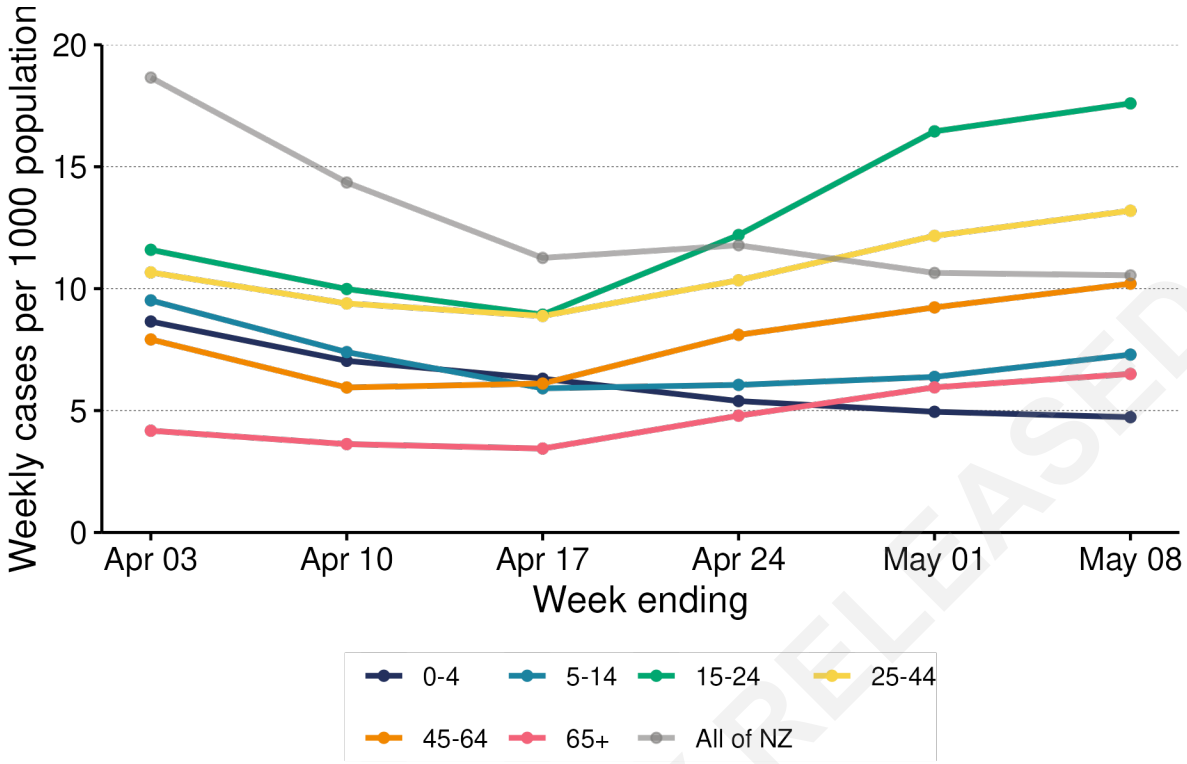
Northland DHB



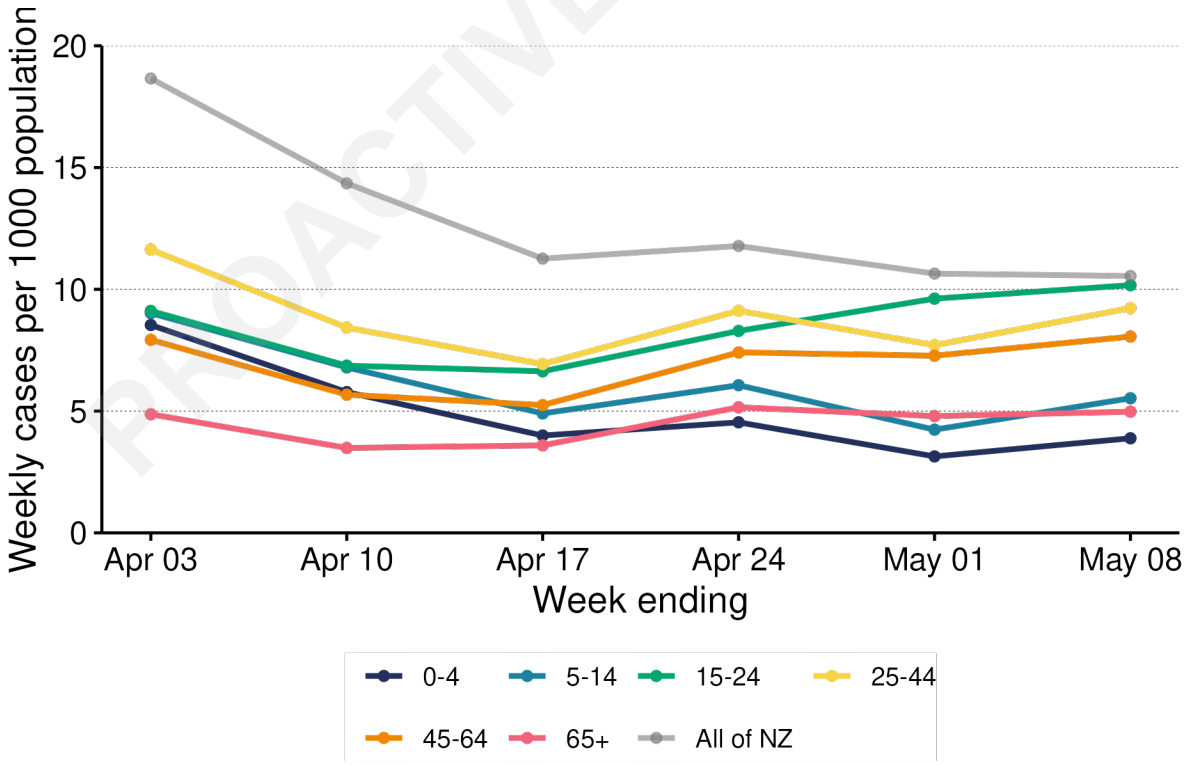
Waitemata DHB



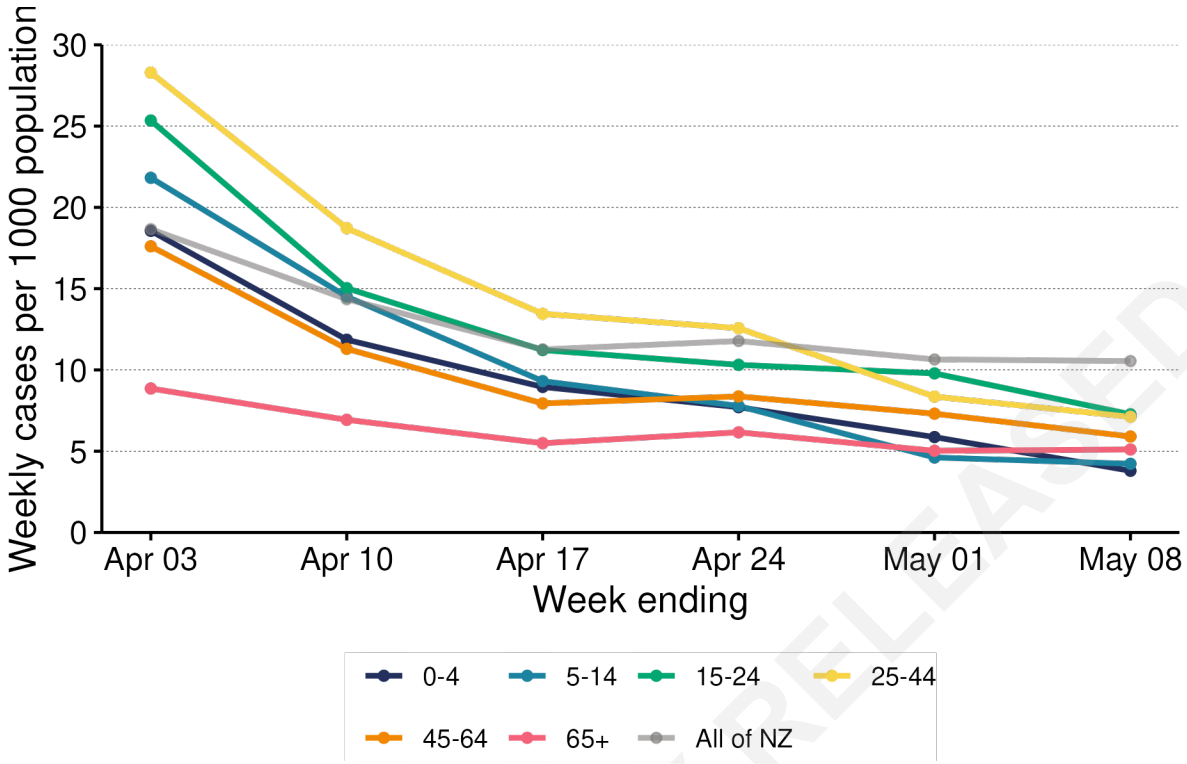
Auckland DHB



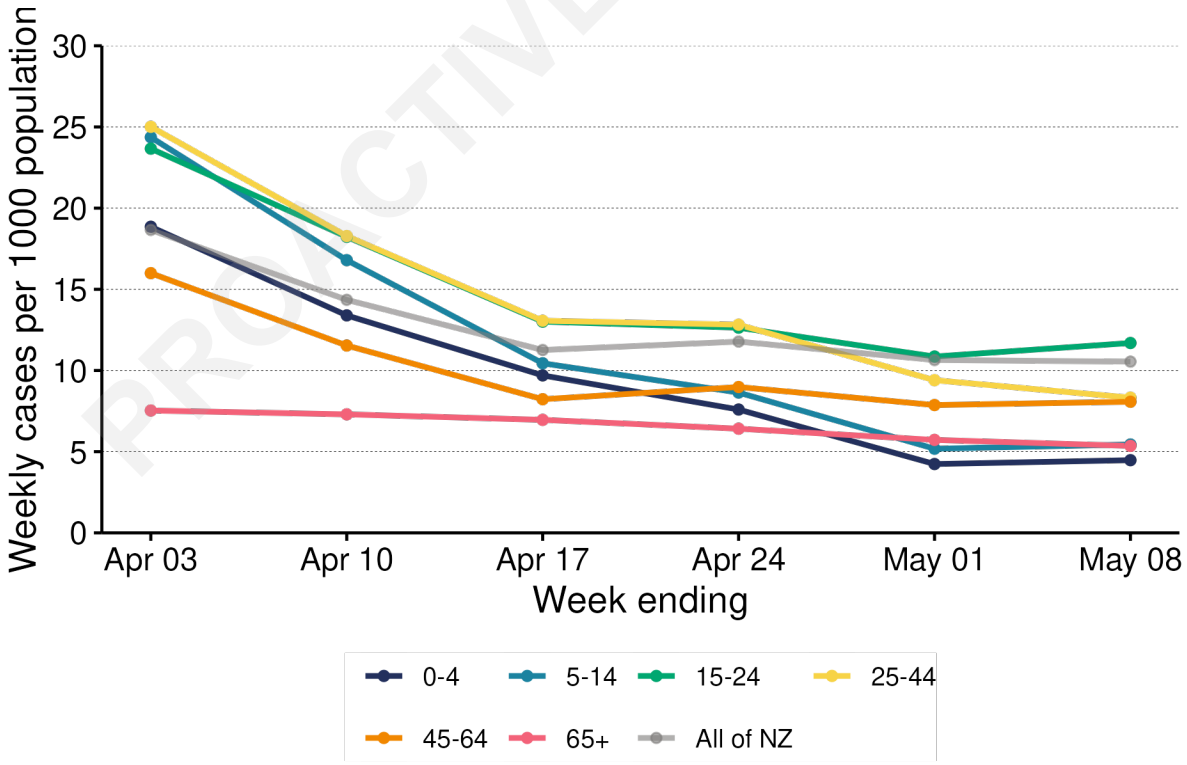
Counties Manukau DHB



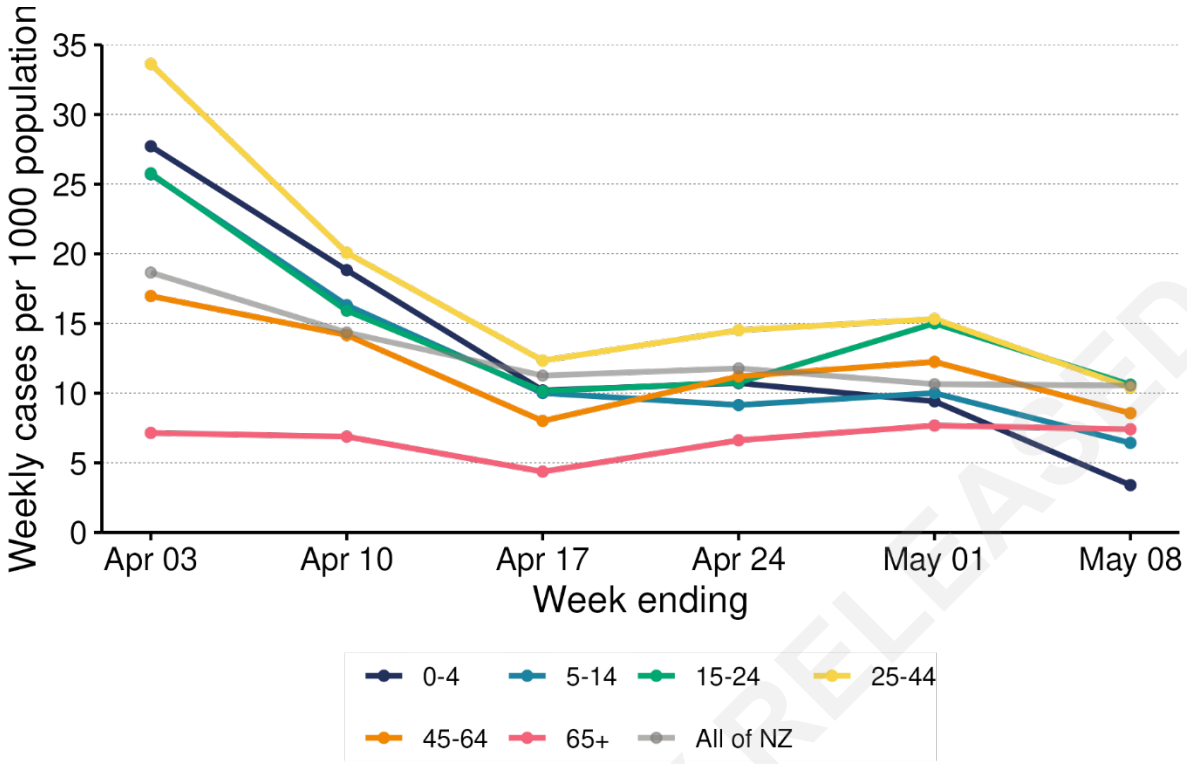
Bay of Plenty DHB



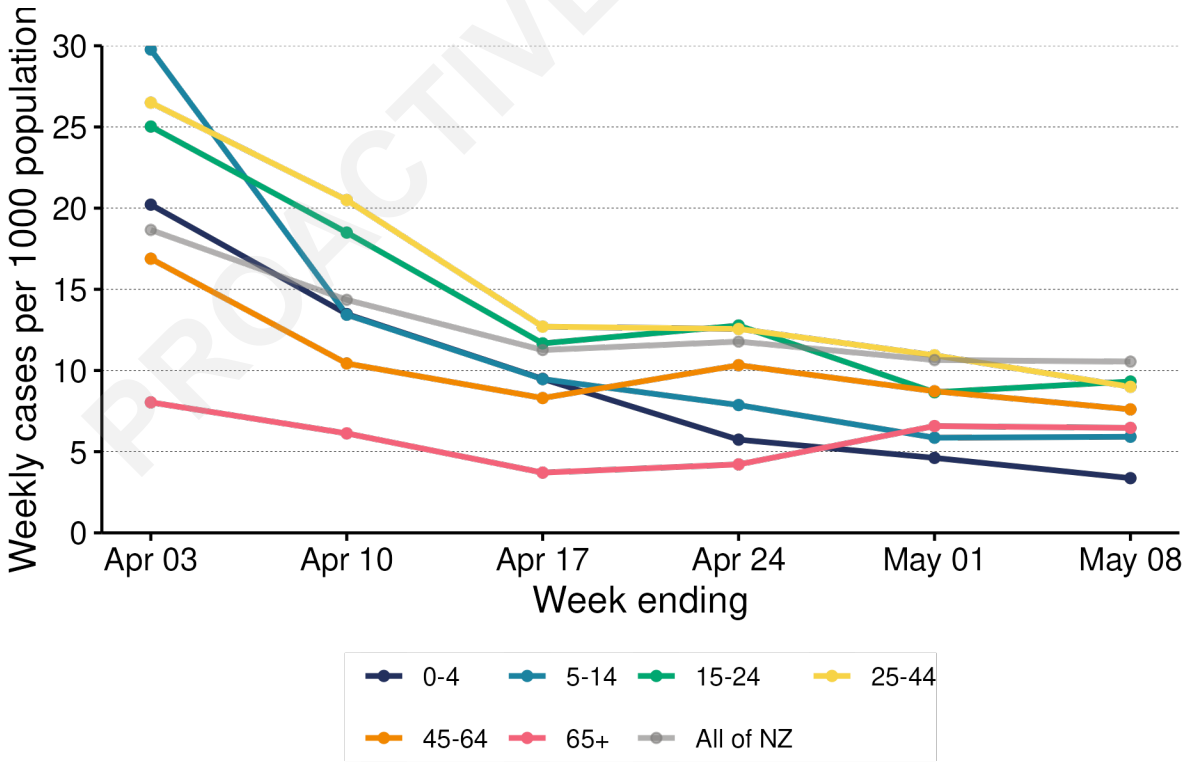
Waikato DHB



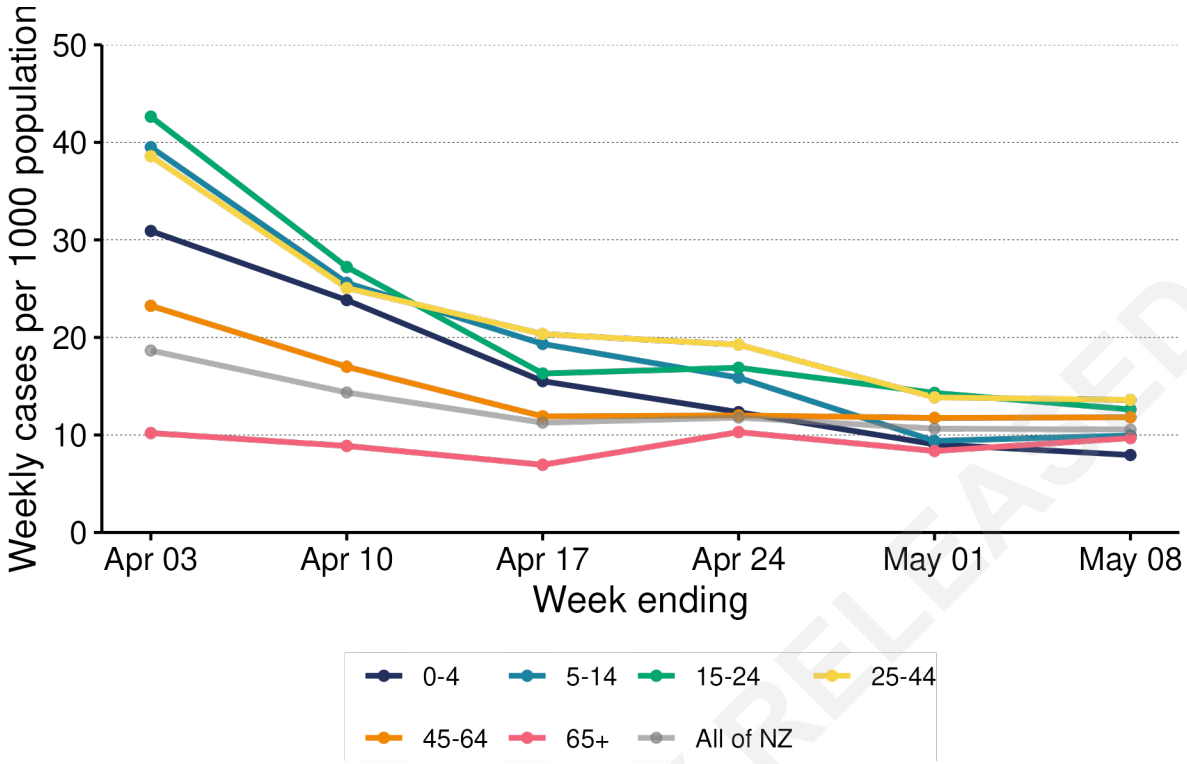
Tairawhiti DHB



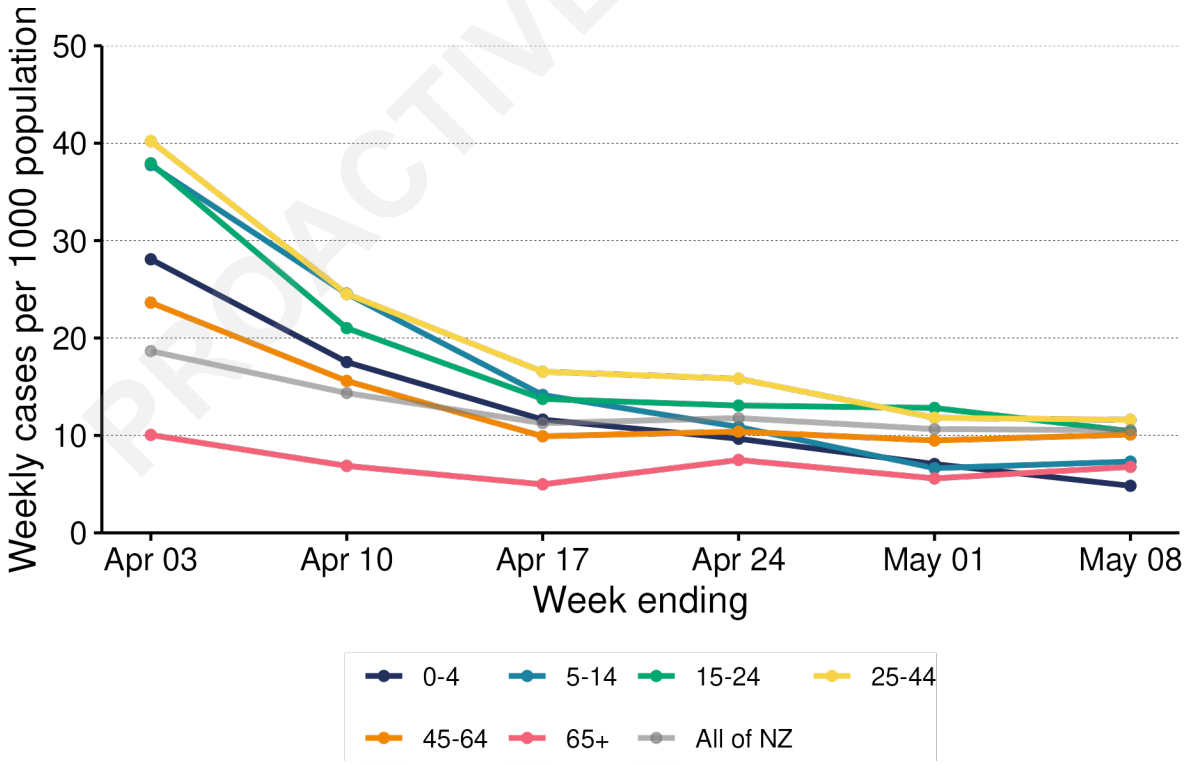
Lakes DHB



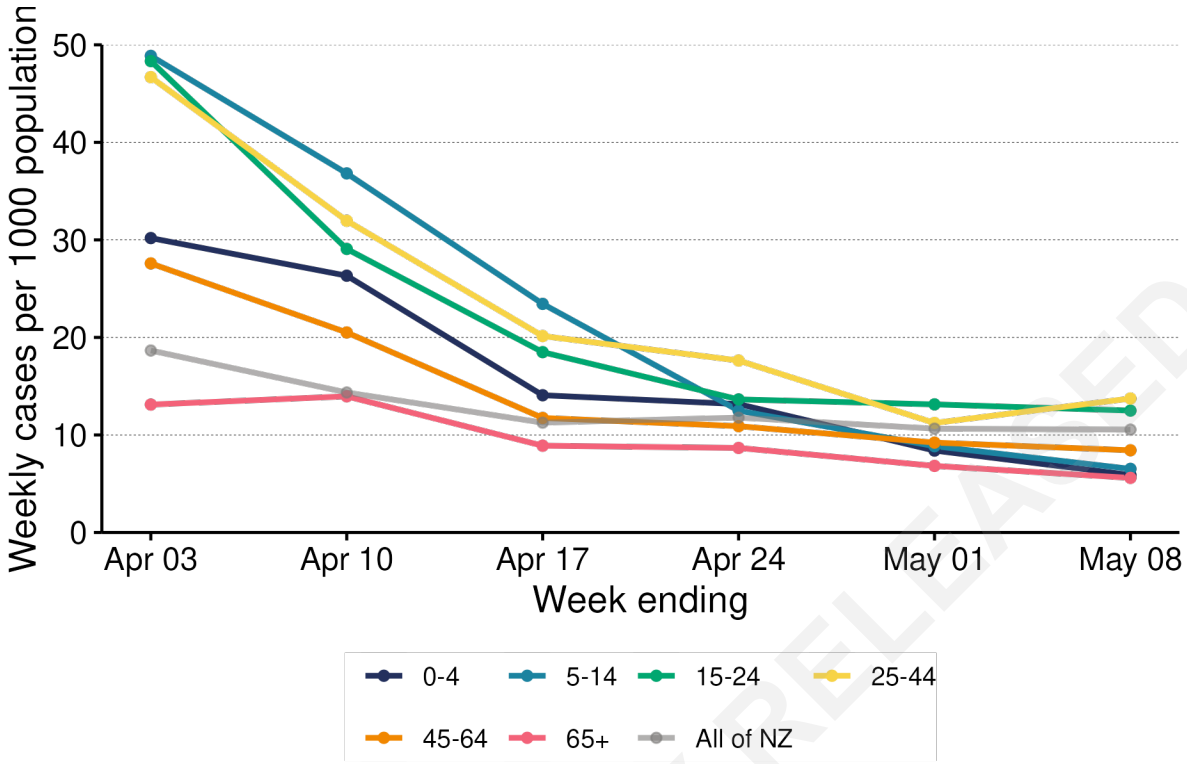
Taranaki DHB



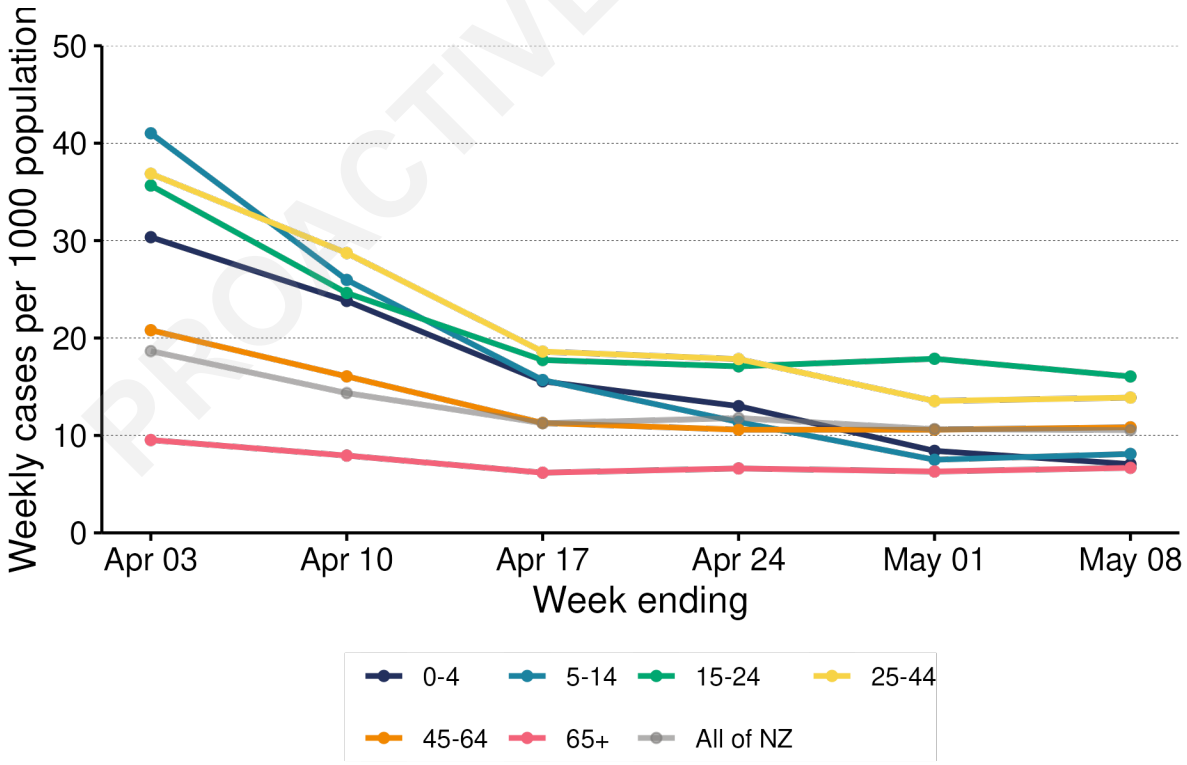
Hawke's Bay DHB



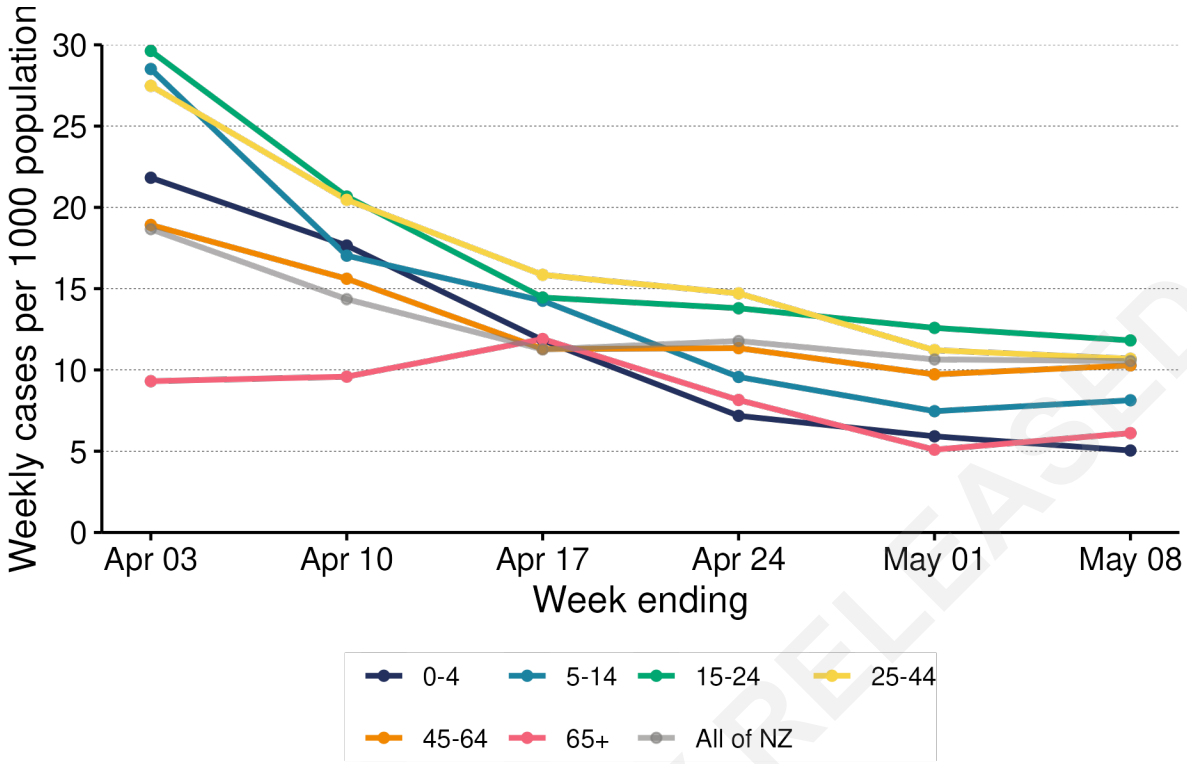
Whanganui DHB



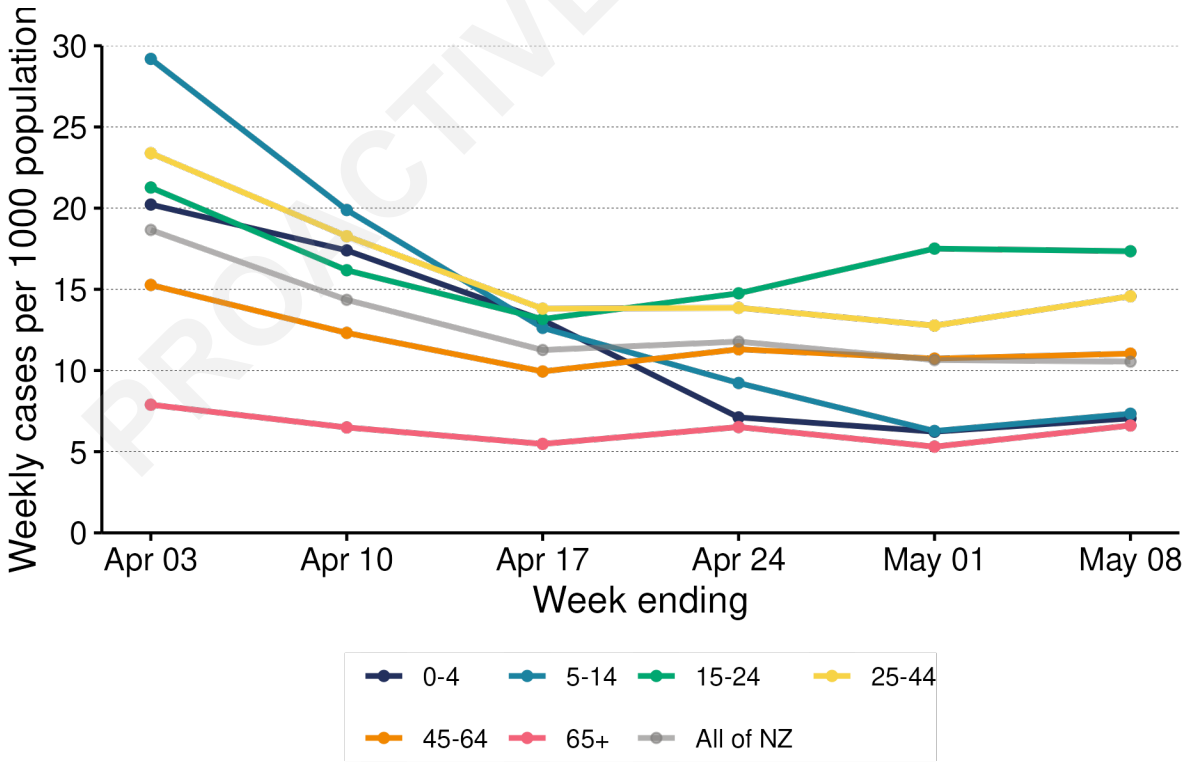
MidCentral DHB



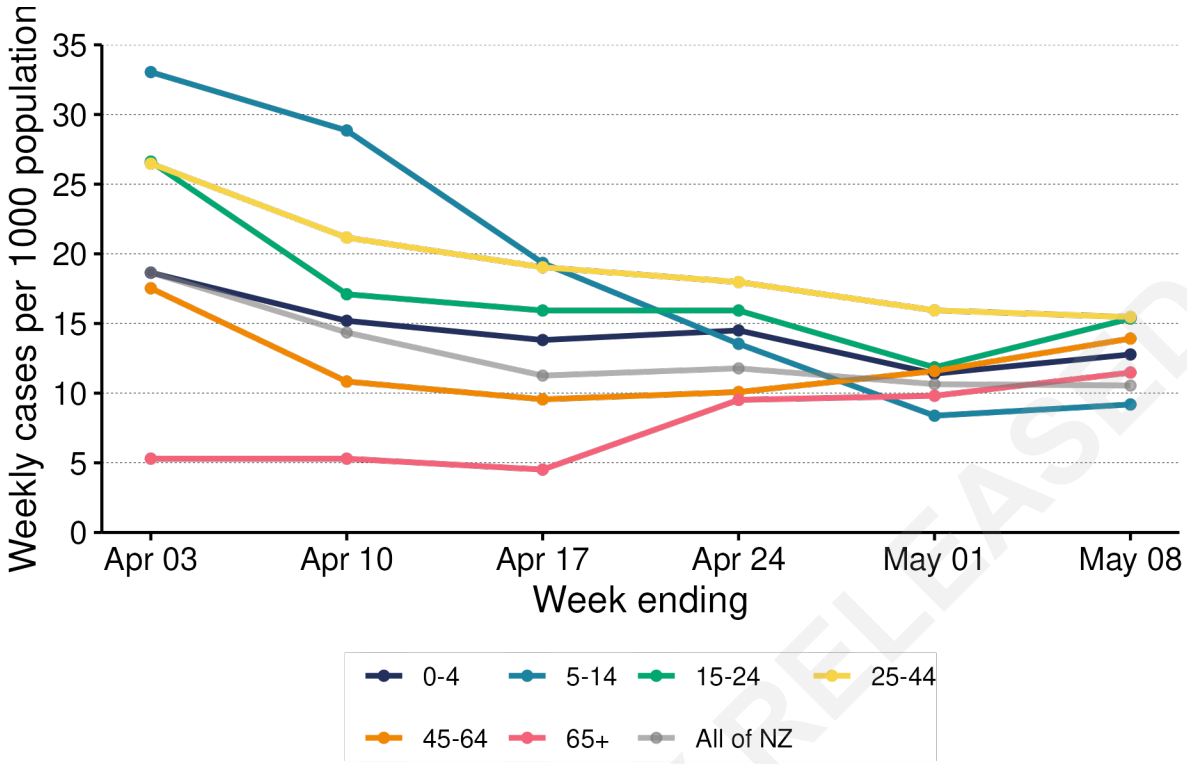
Hutt Valley DHB



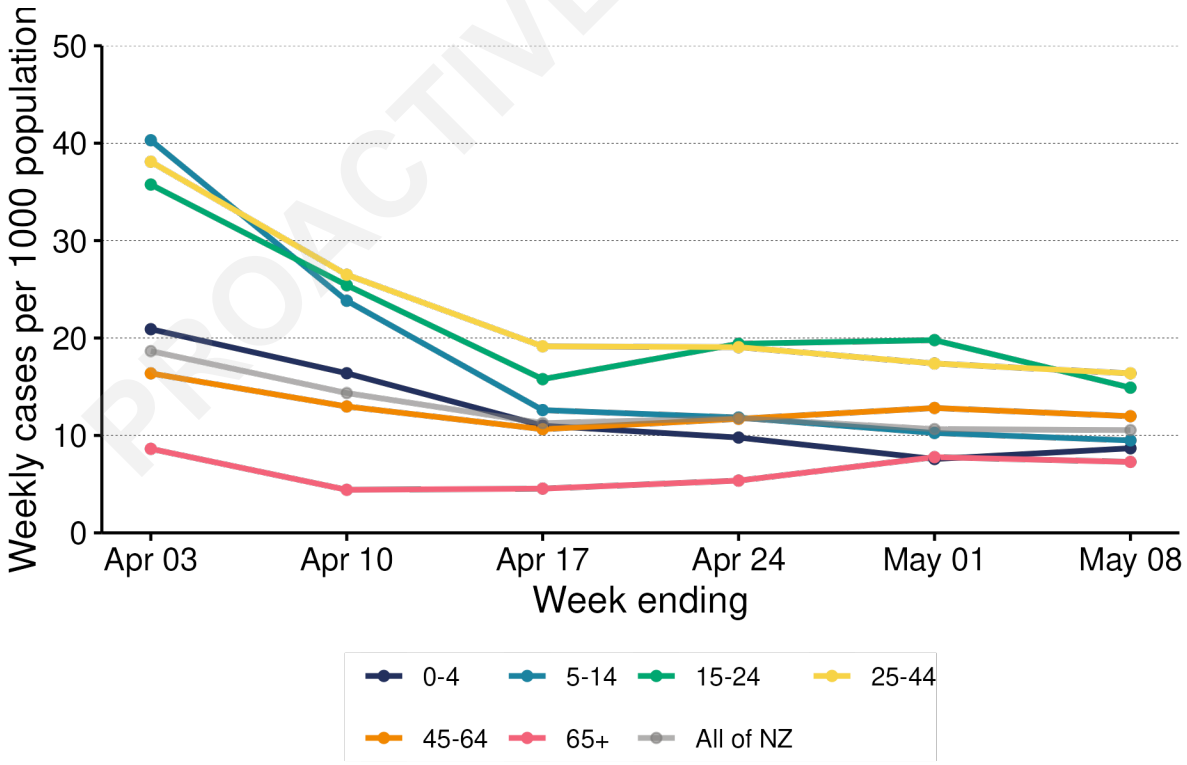
Capital and Coast DHB



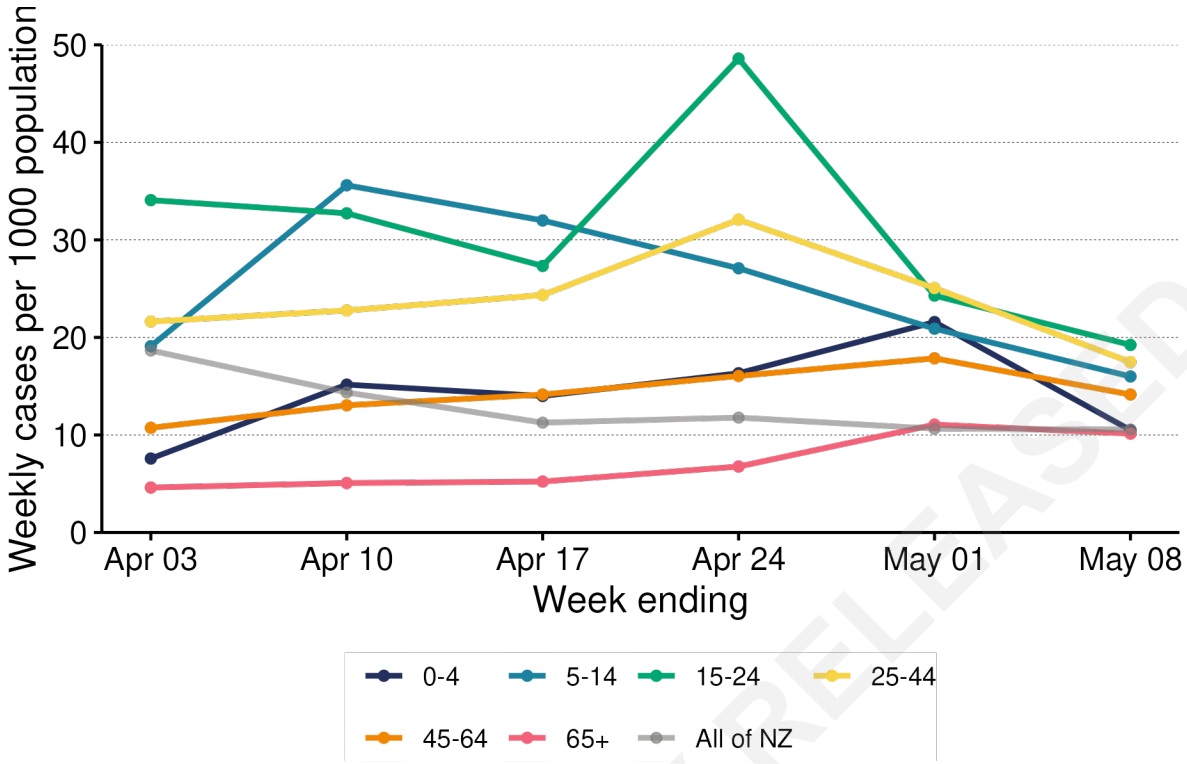
Wairarapa DHB



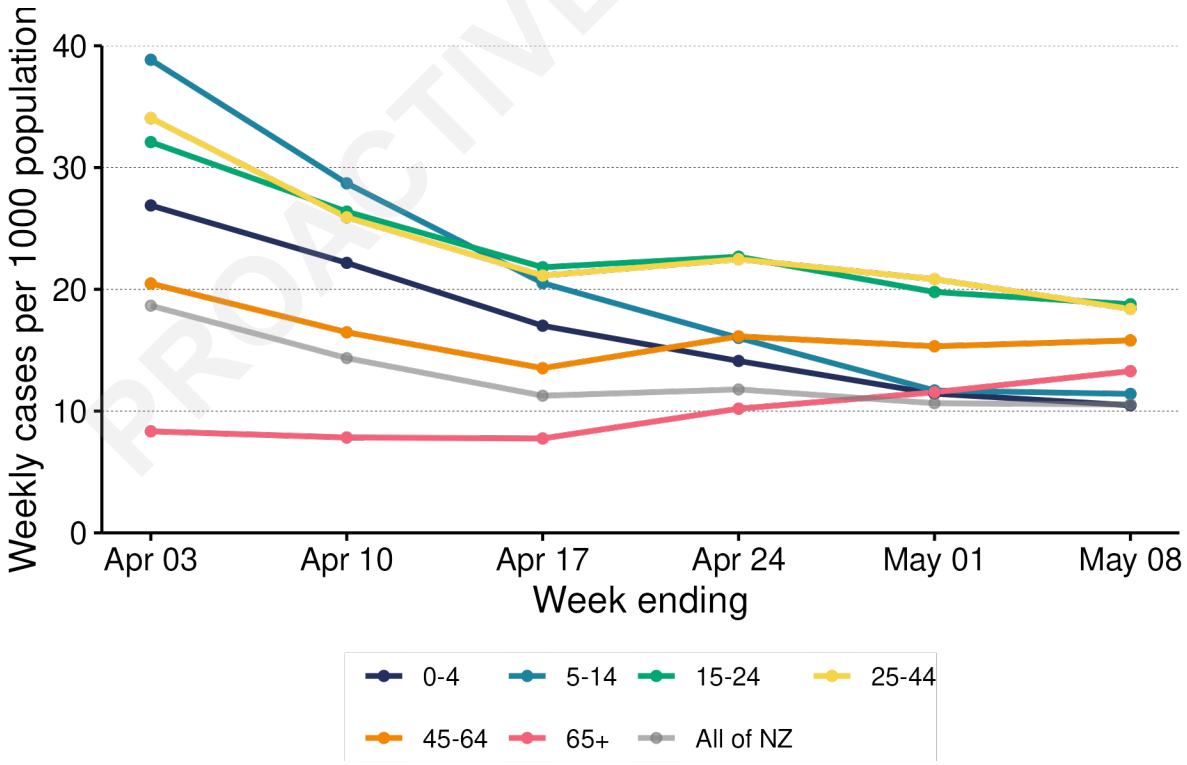
Nelson Marlborough DHB



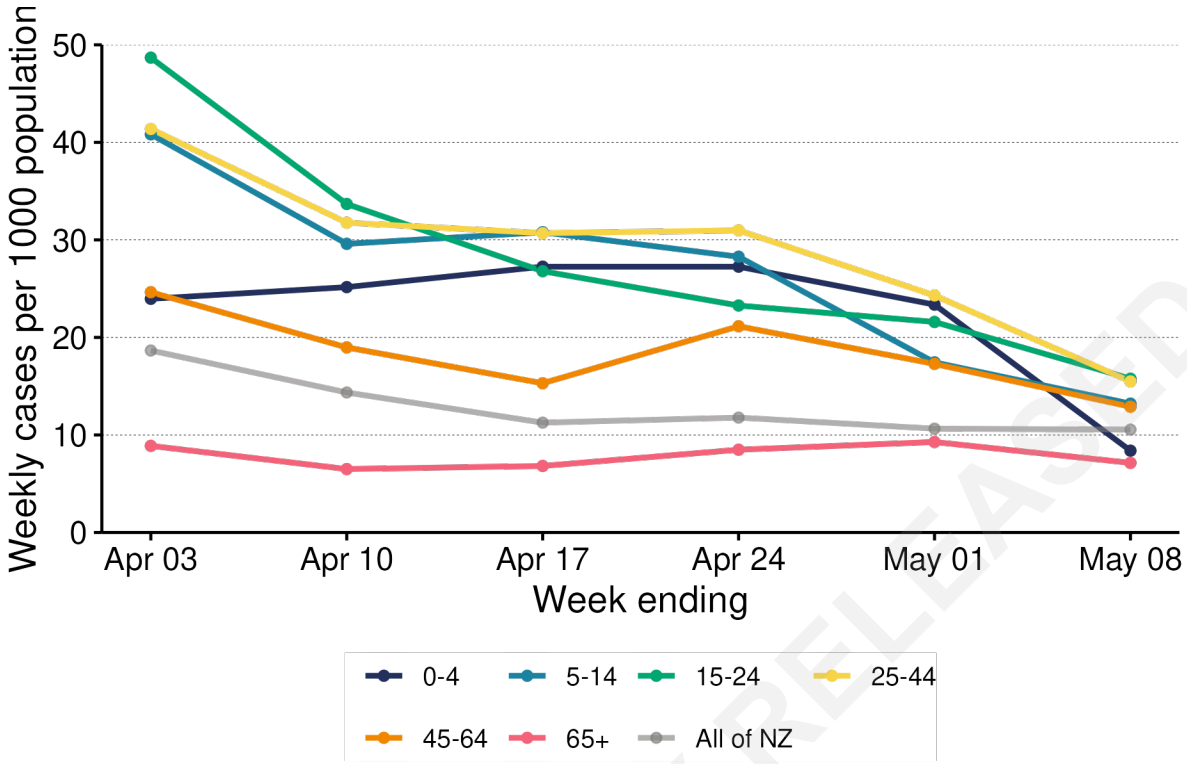
West Coast DHB



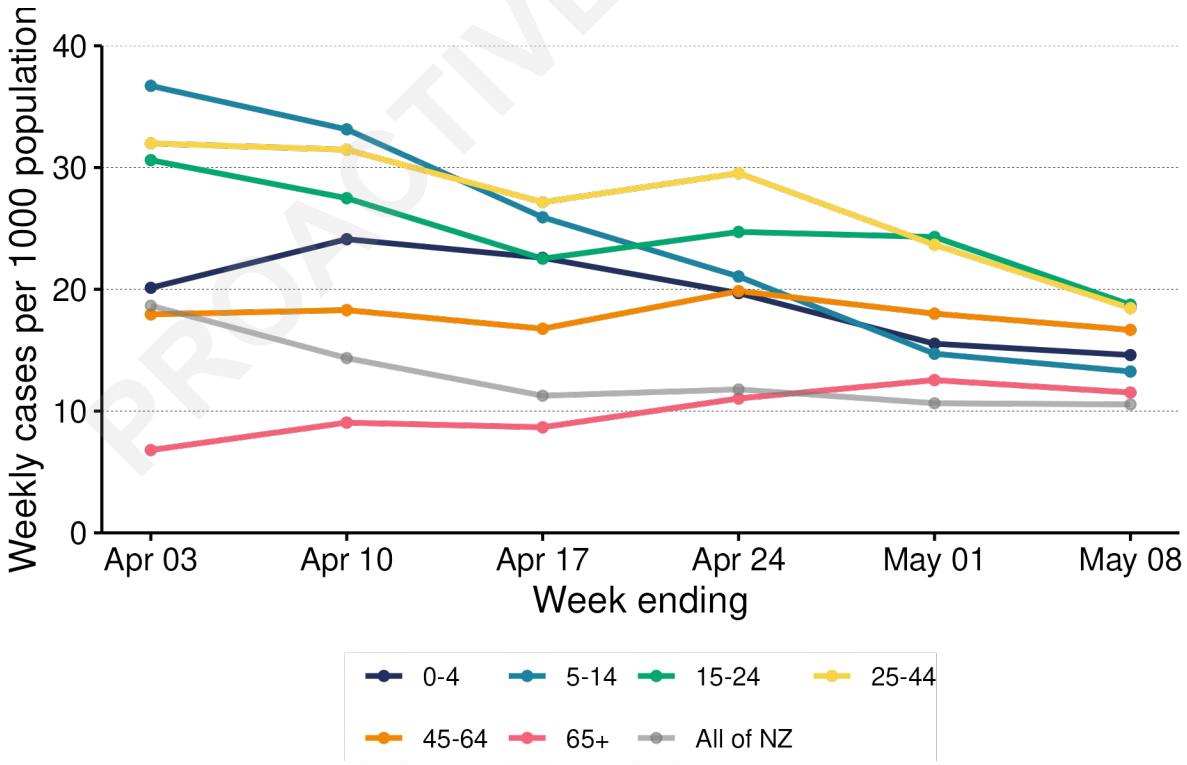
Canterbury DHB



South Canterbury DHB



Southern DHB



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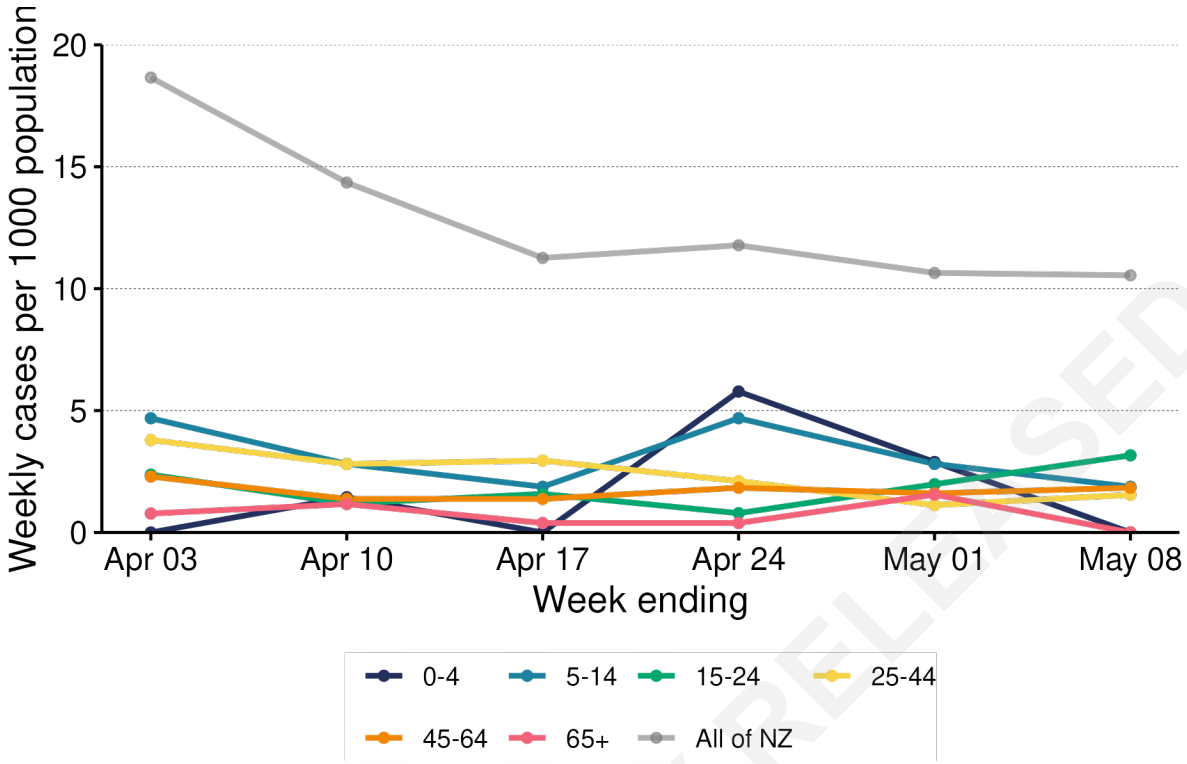
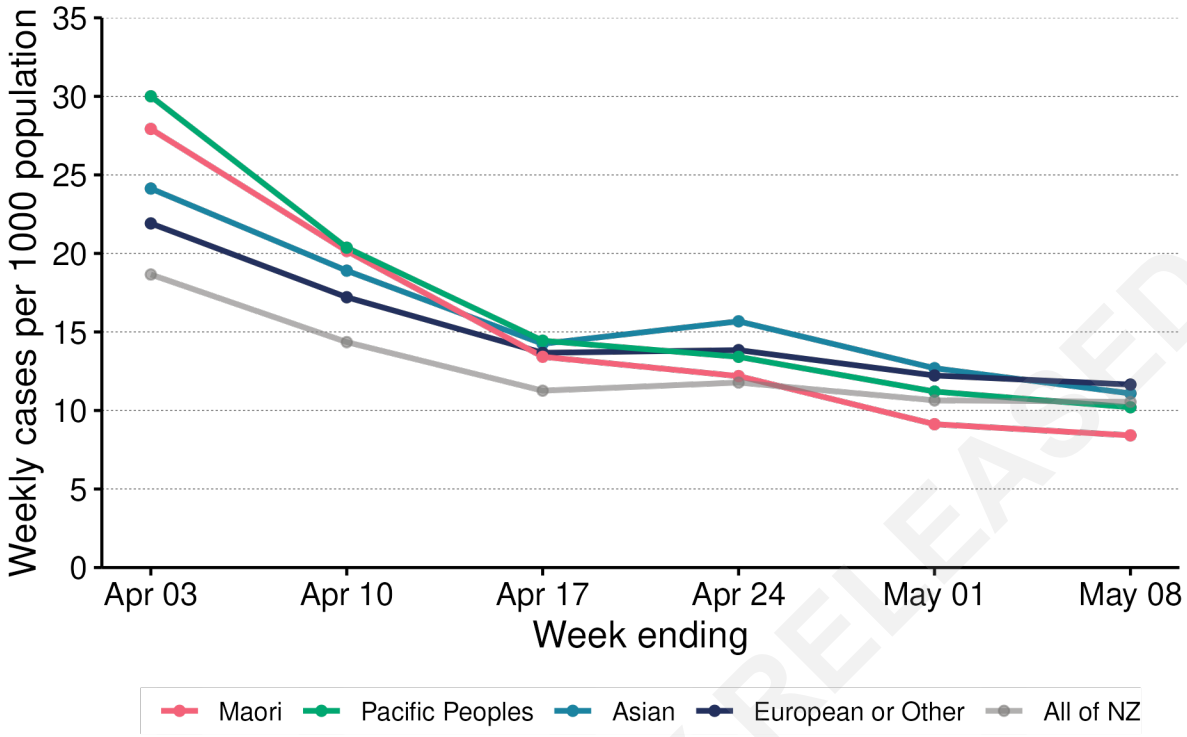
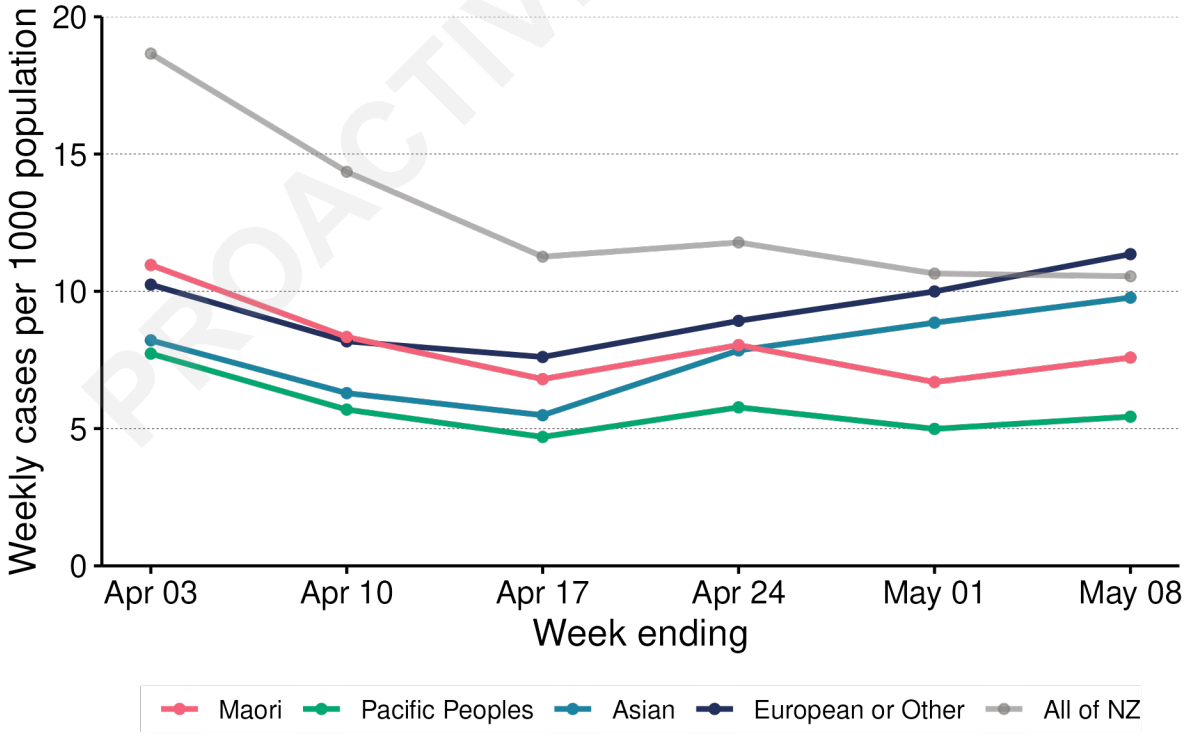


Ethnicity Graphs

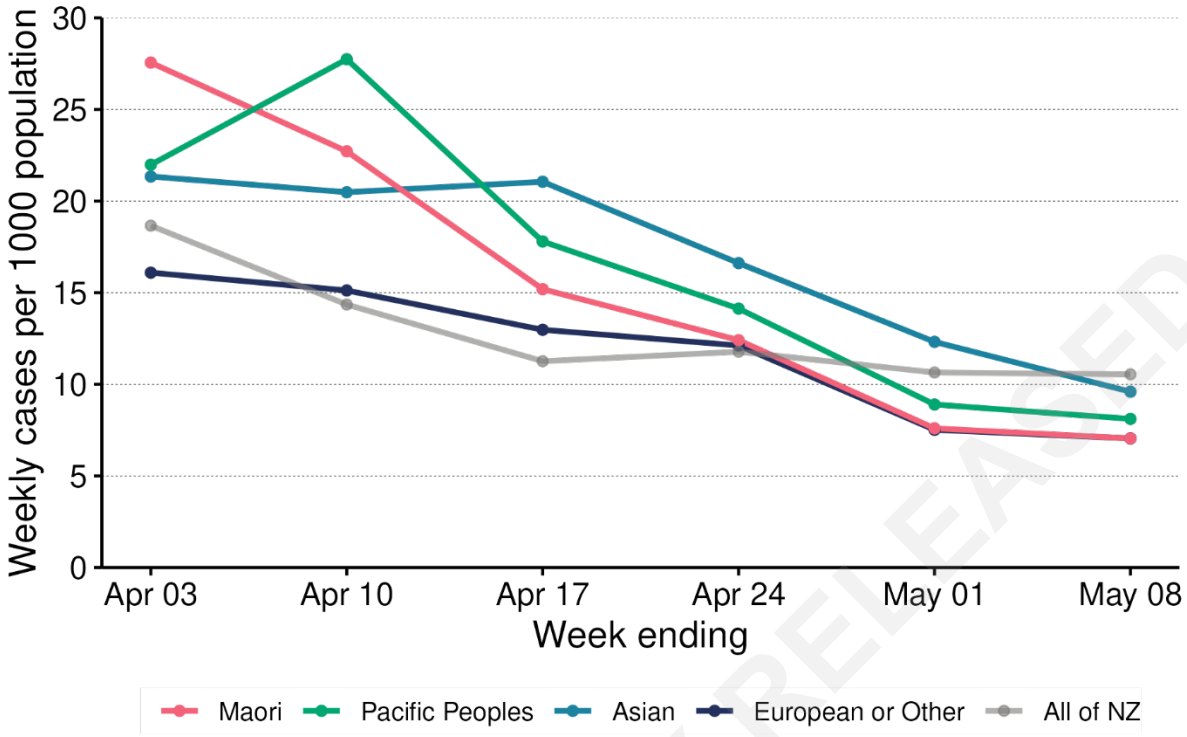
NZ Excluding Auckland Region



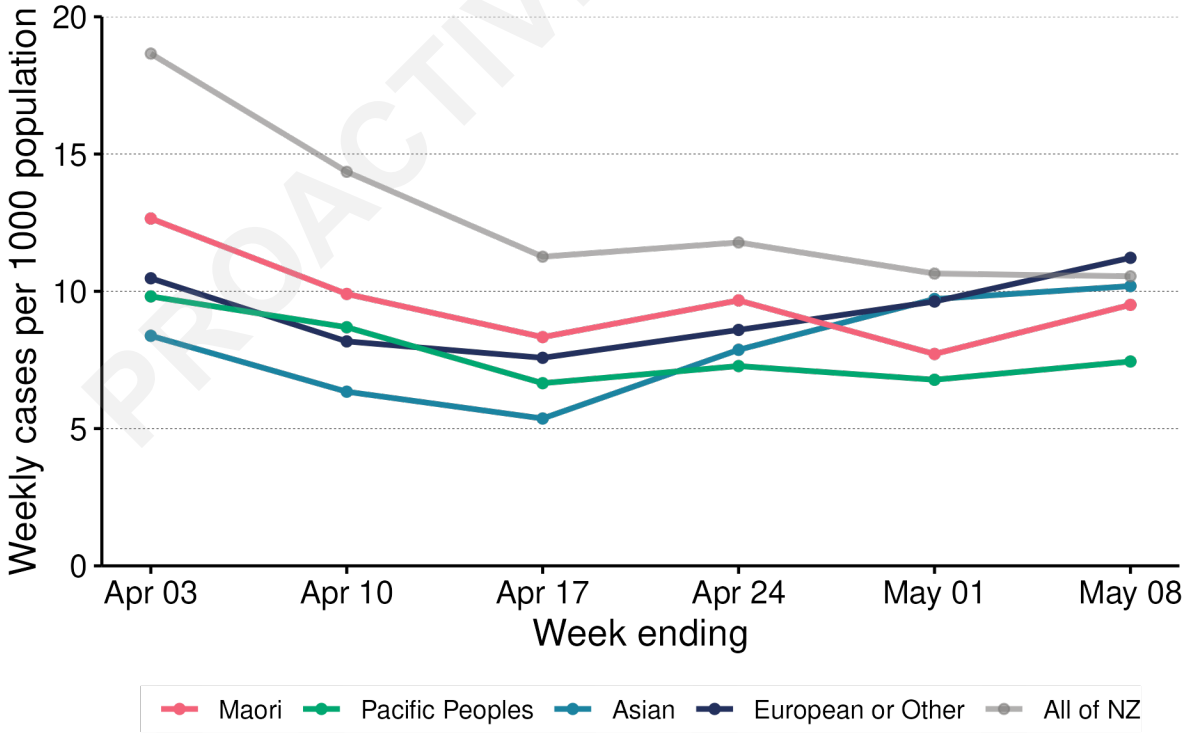
Auckland Region



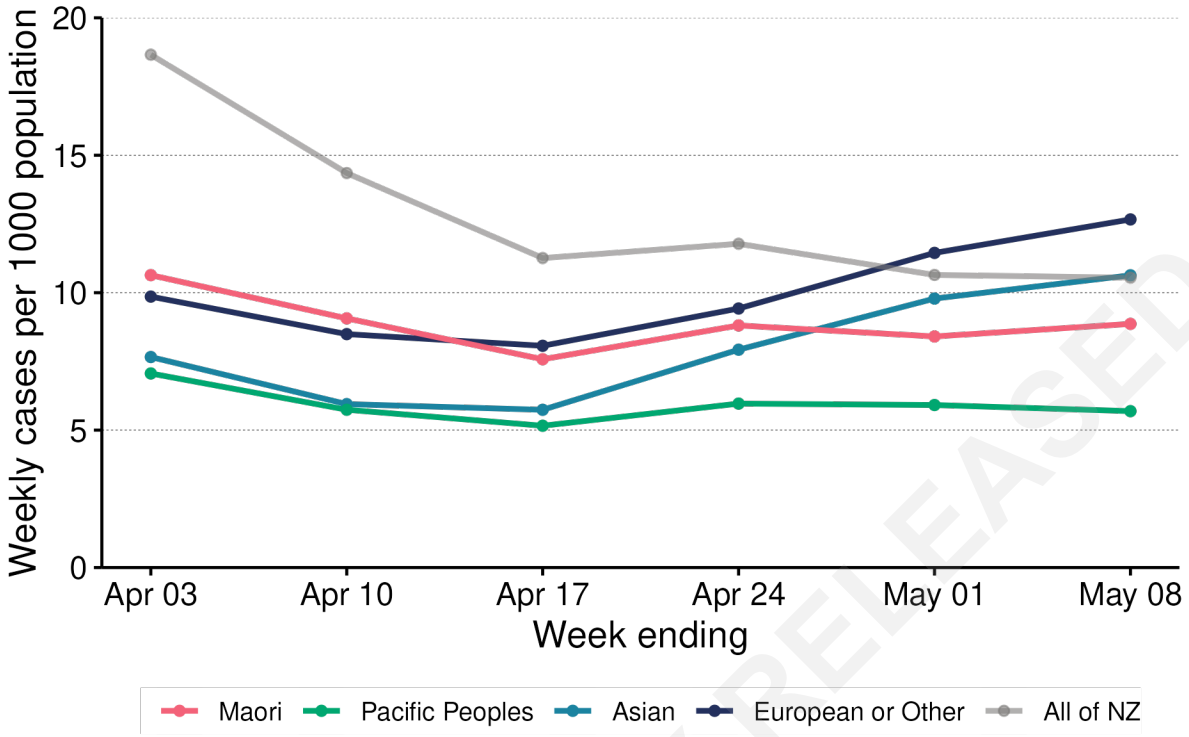
Northland DHB



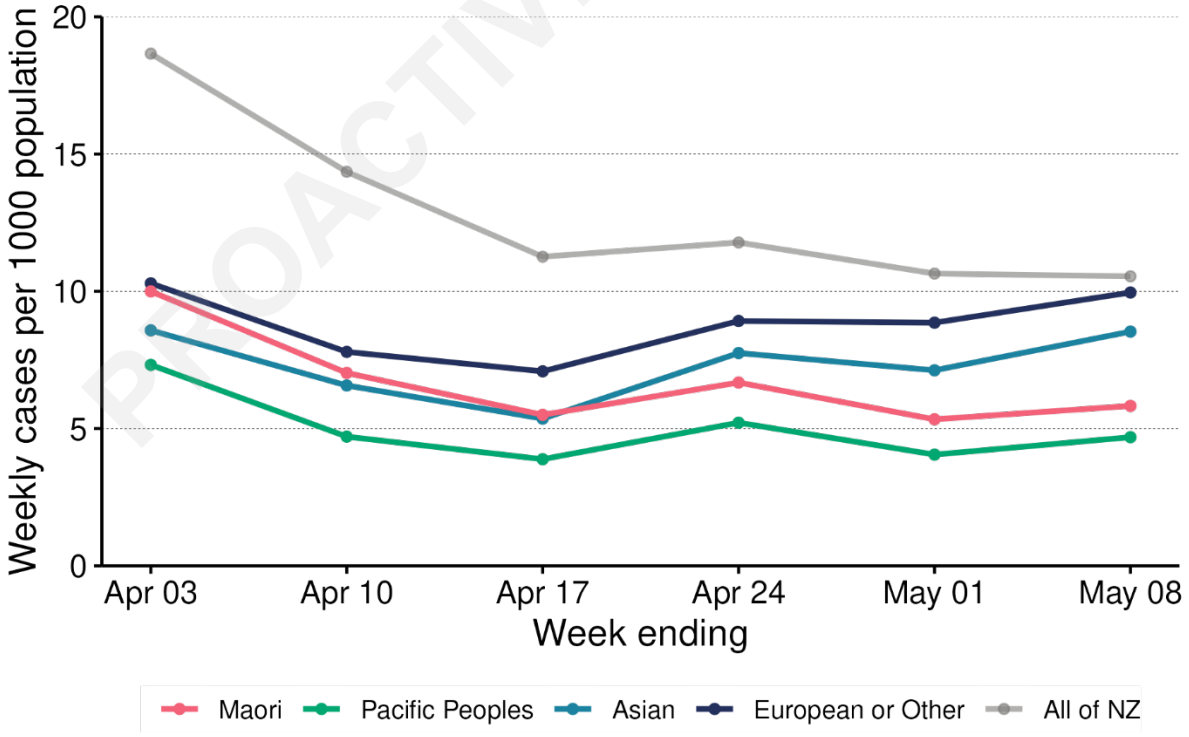
Waitemata DHB



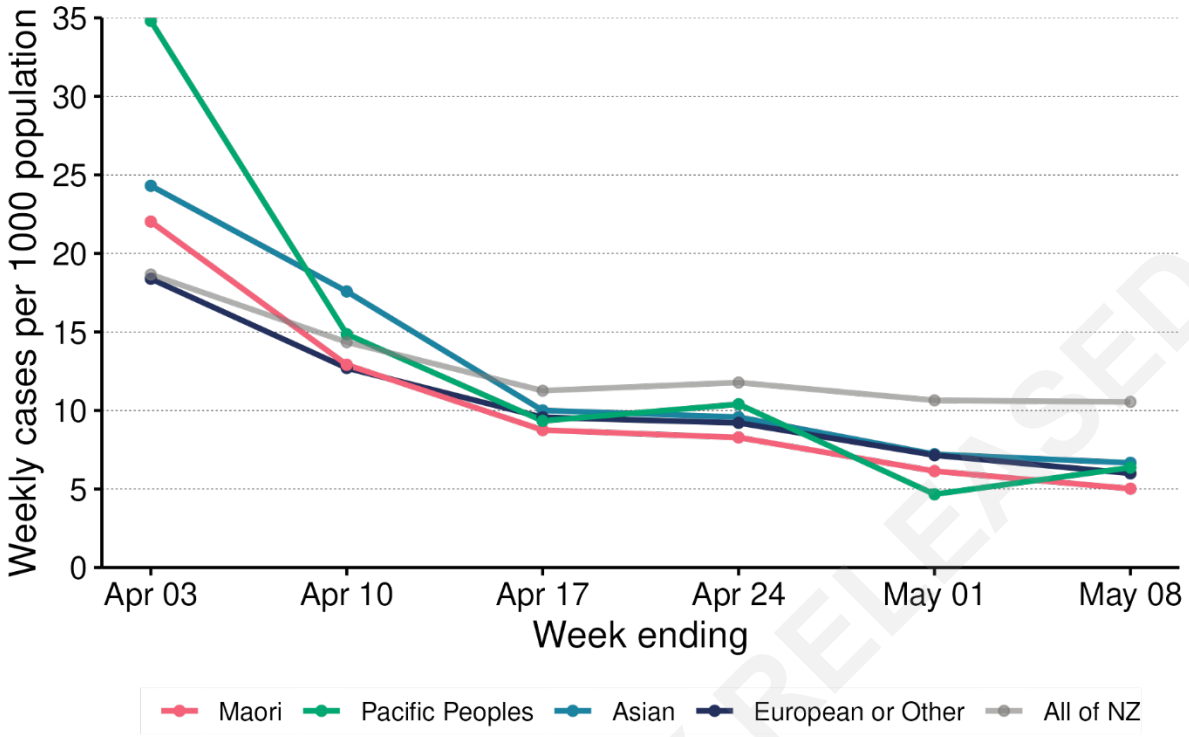
Auckland DHB



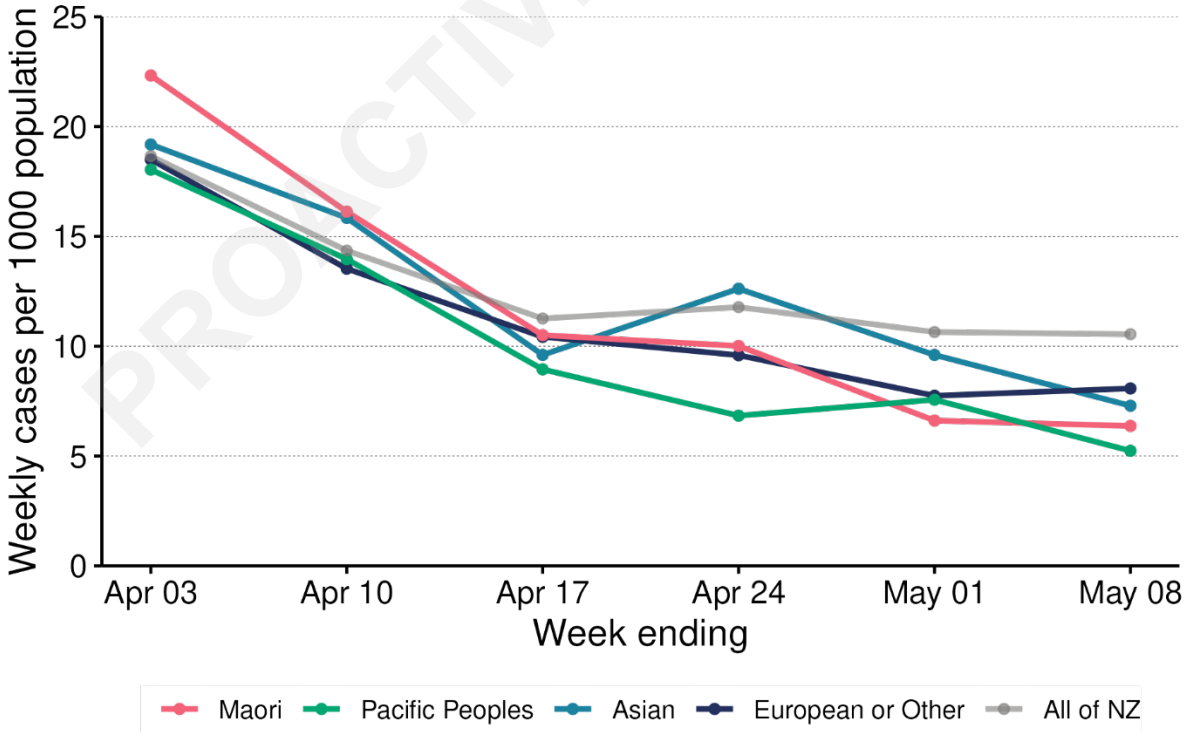
Counties Manukau DHB



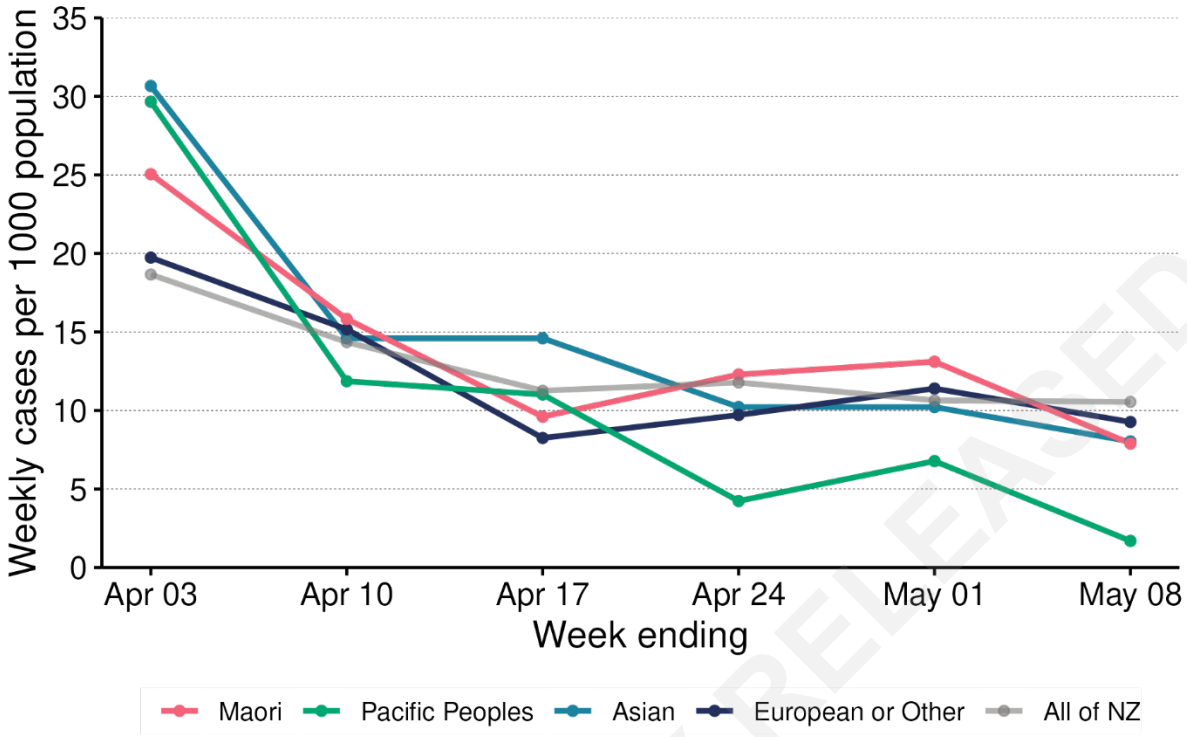
Bay of Plenty DHB



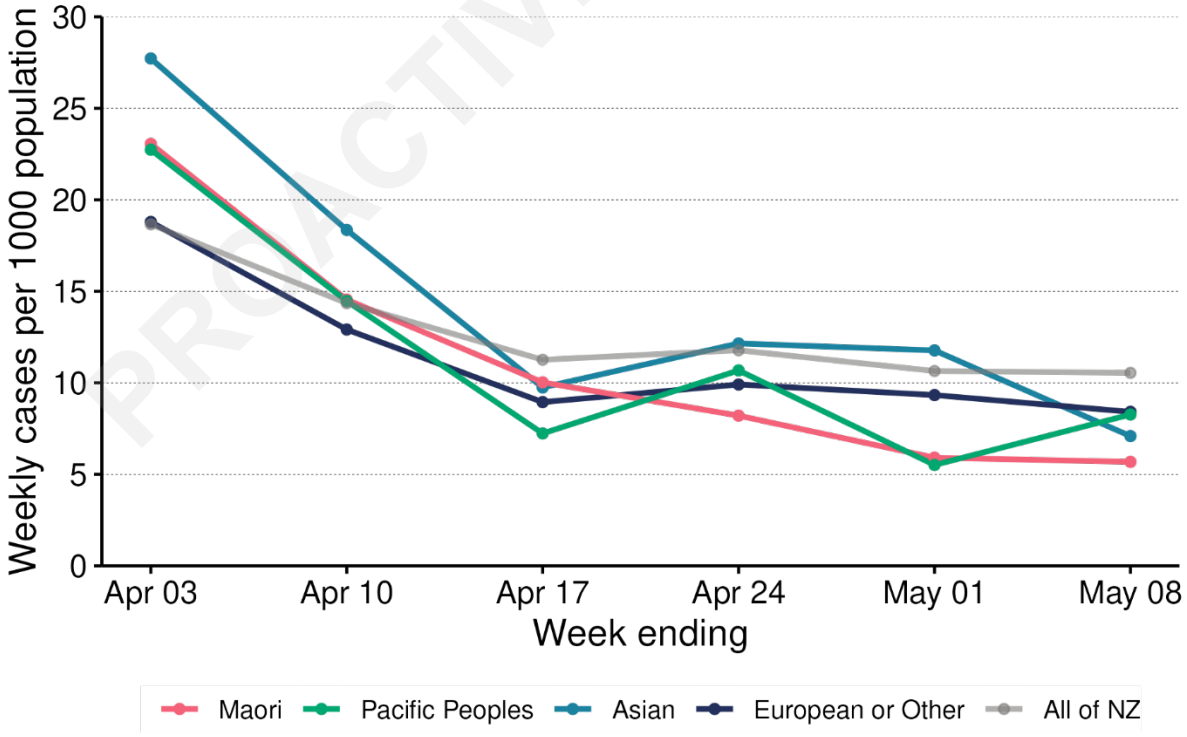
Waikato DHB



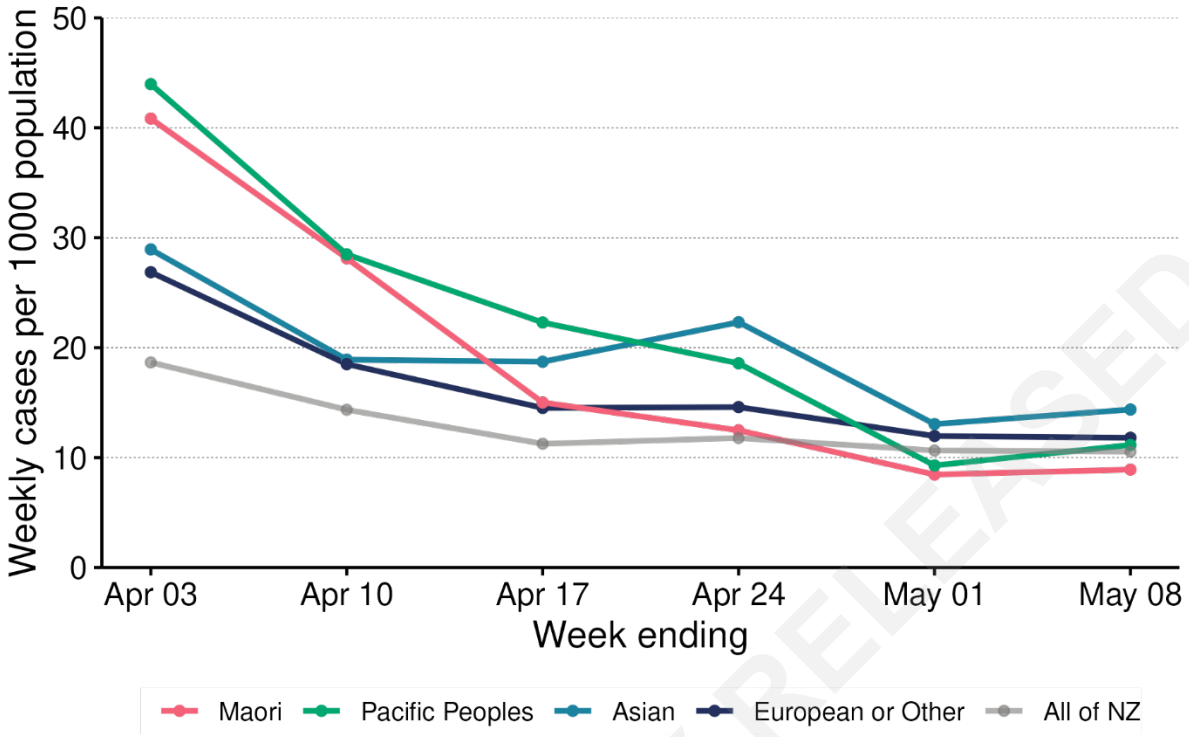
Tairawhiti DHB



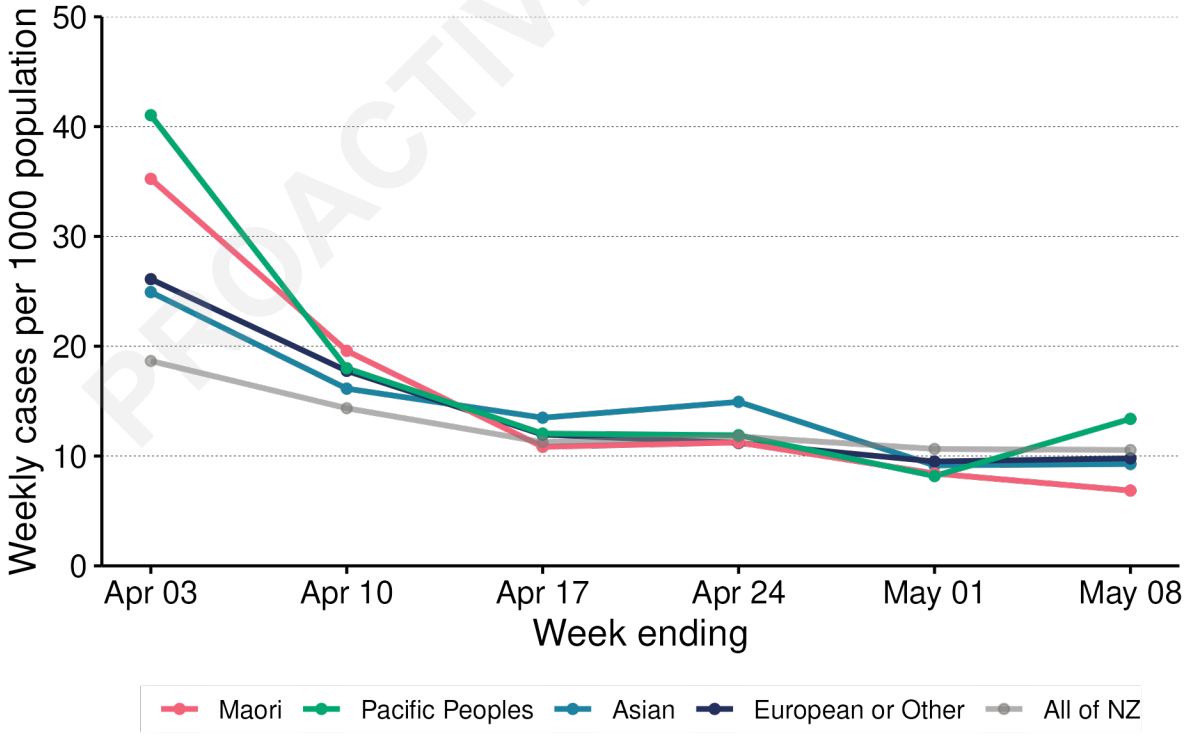
Lakes DHB



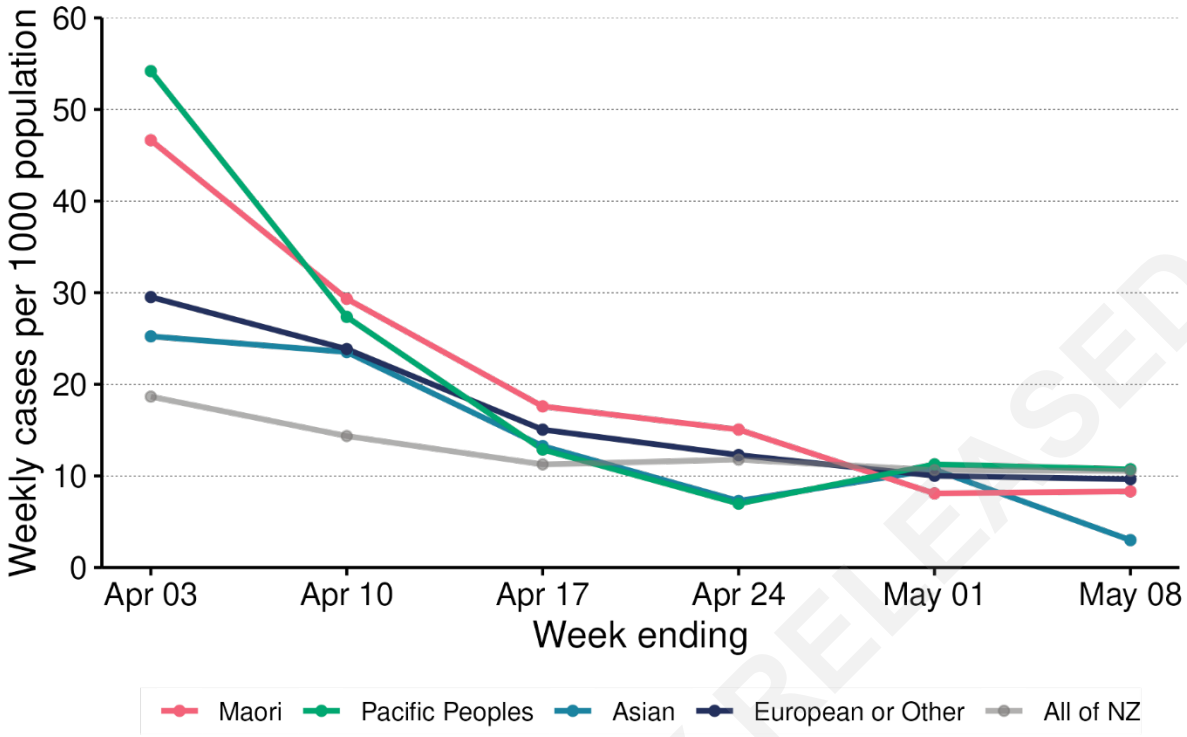
Taranaki DHB



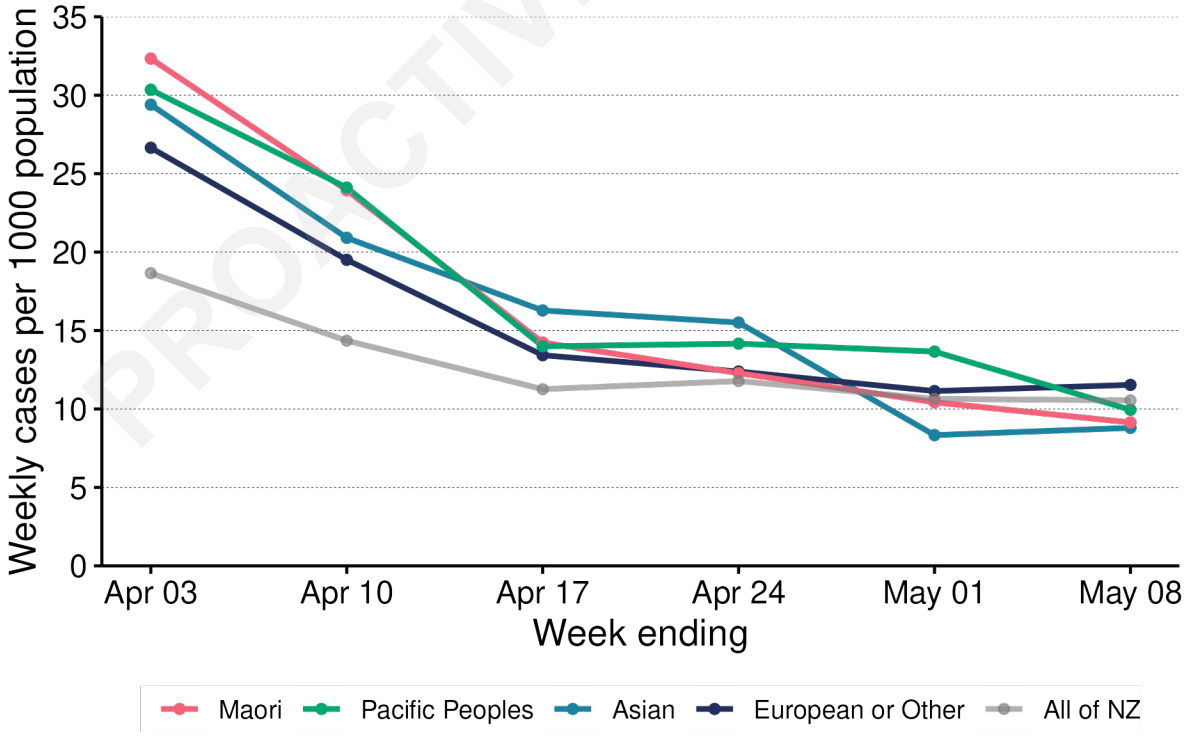
Hawke's Bay DHB



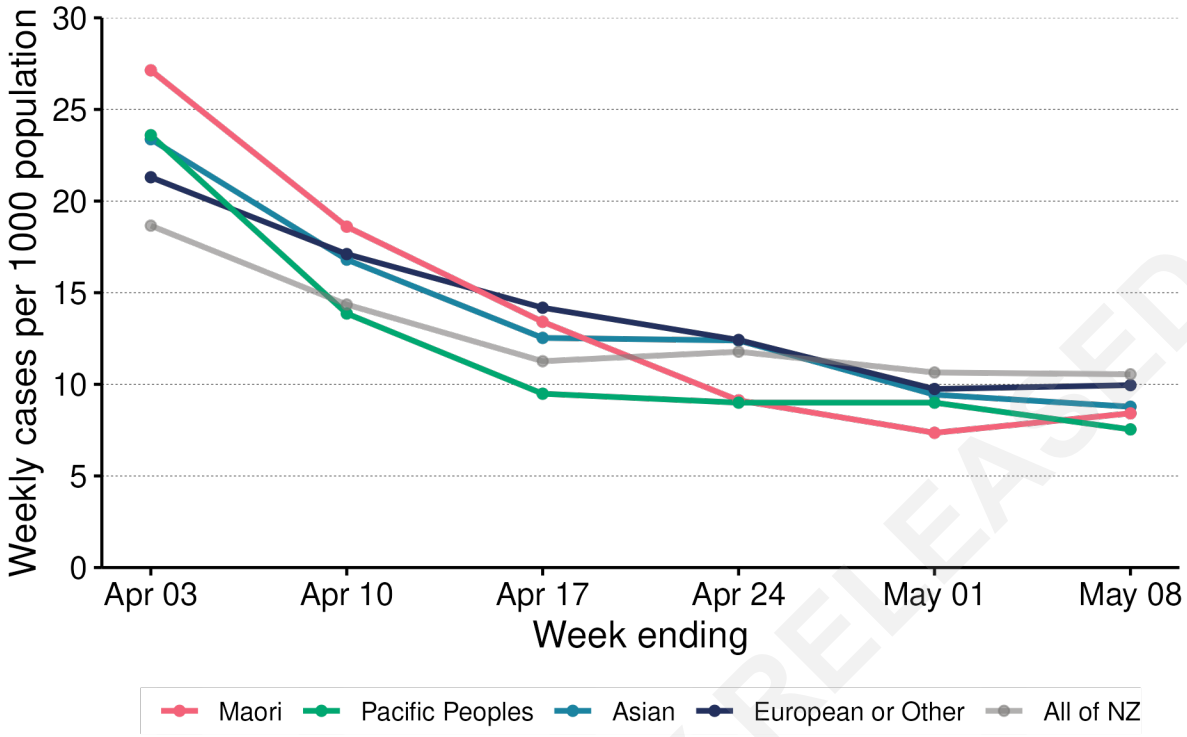
Whanganui DHB



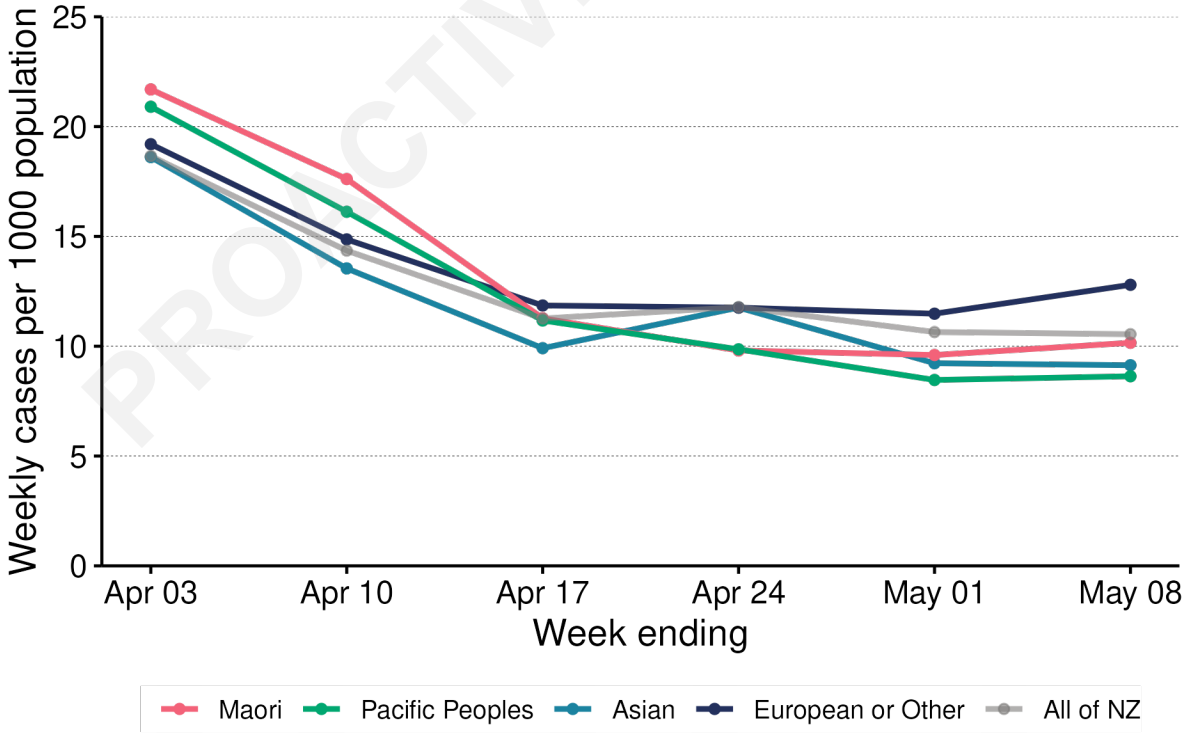
MidCentral DHB



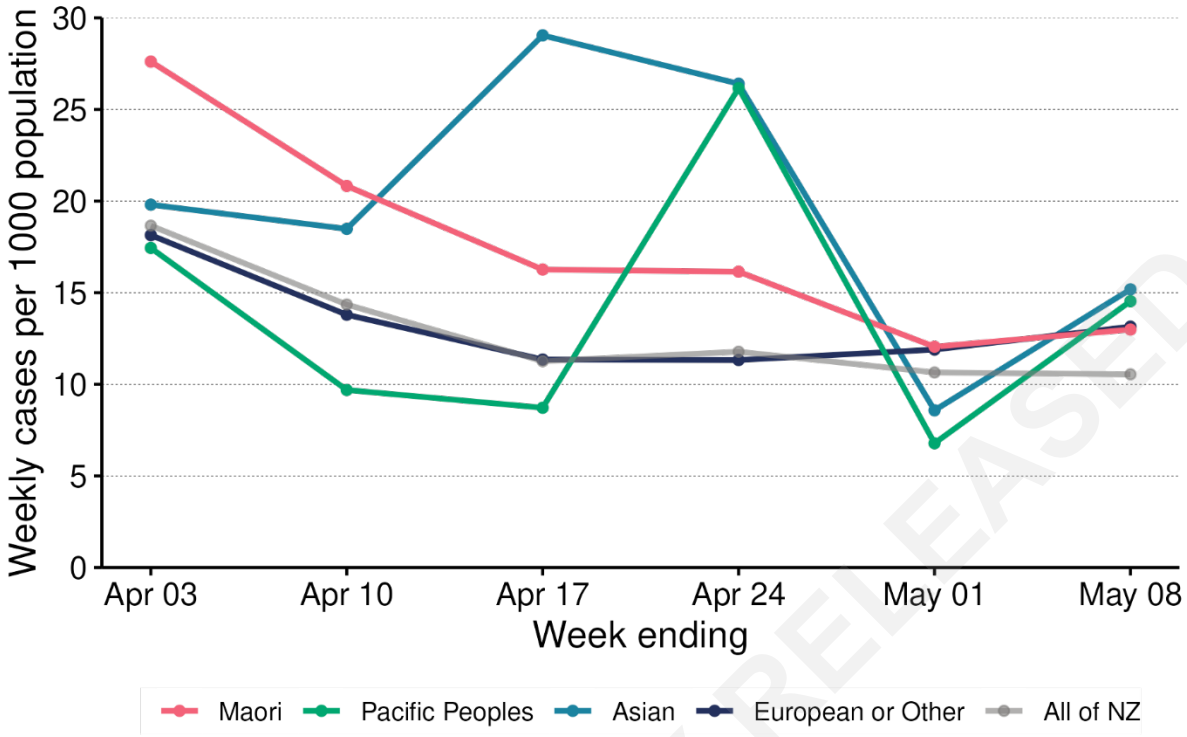
Hutt Valley DHB



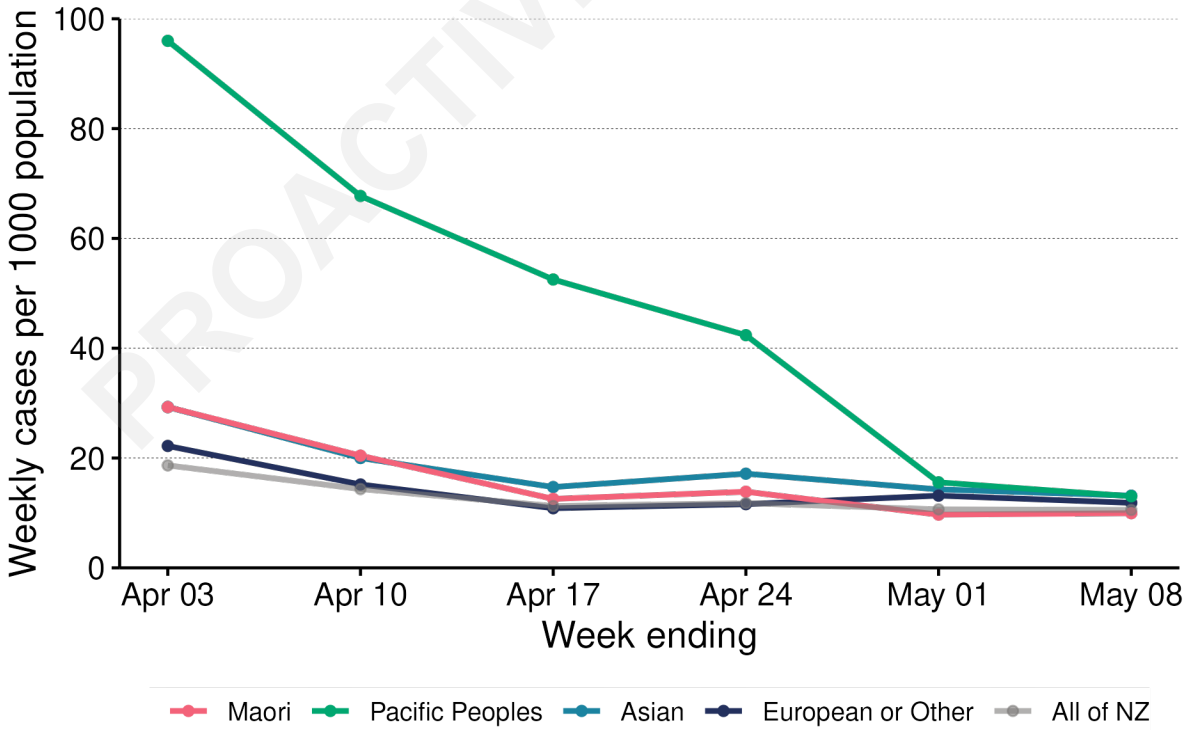
Capital and Coast DHB



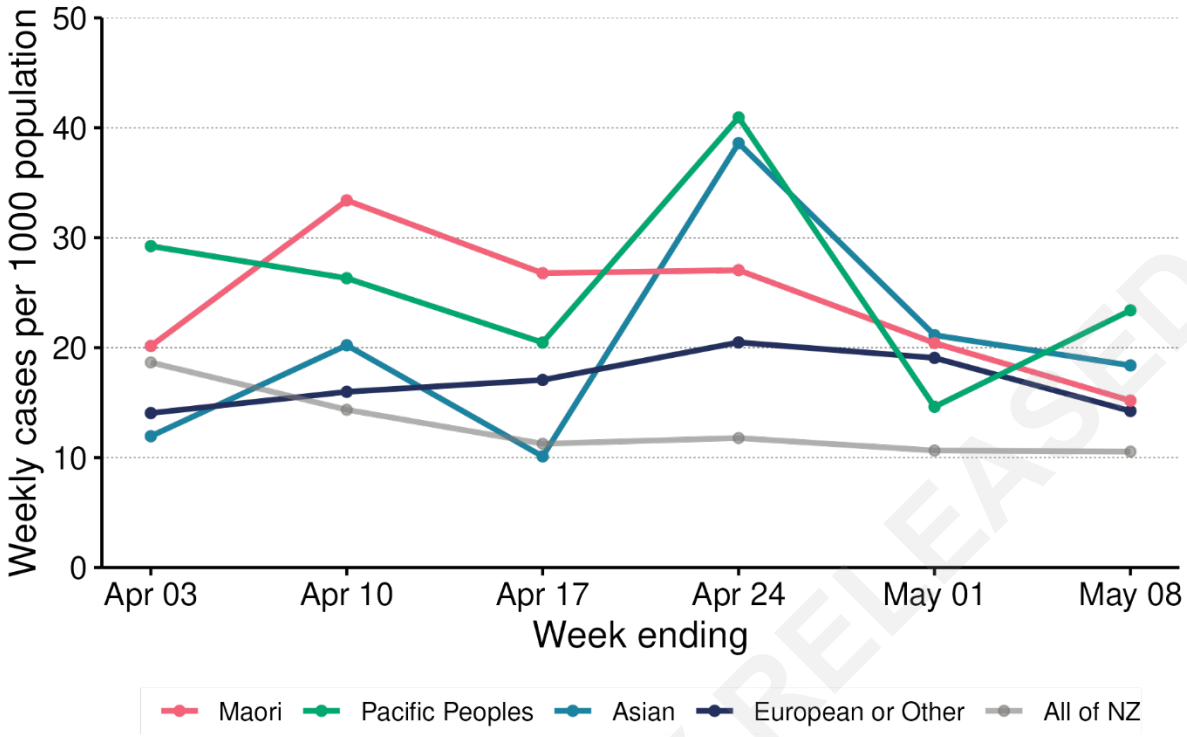
Wairarapa DHB



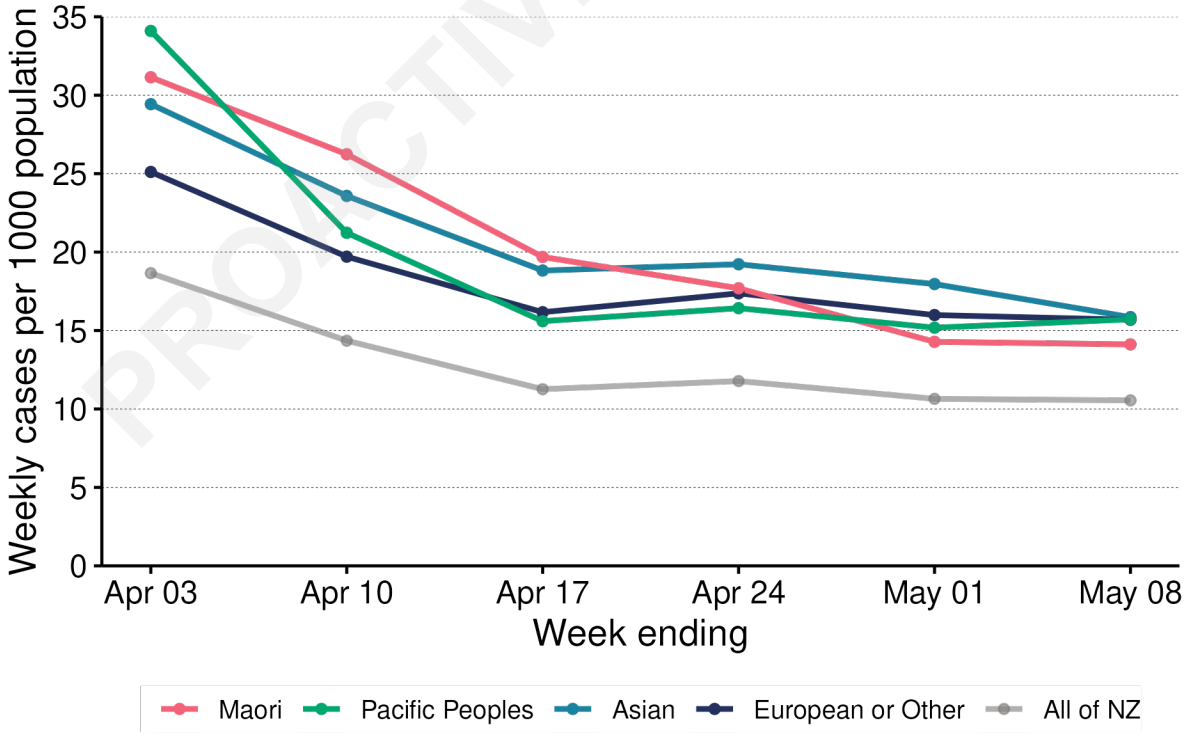
Nelson Marlborough DHB



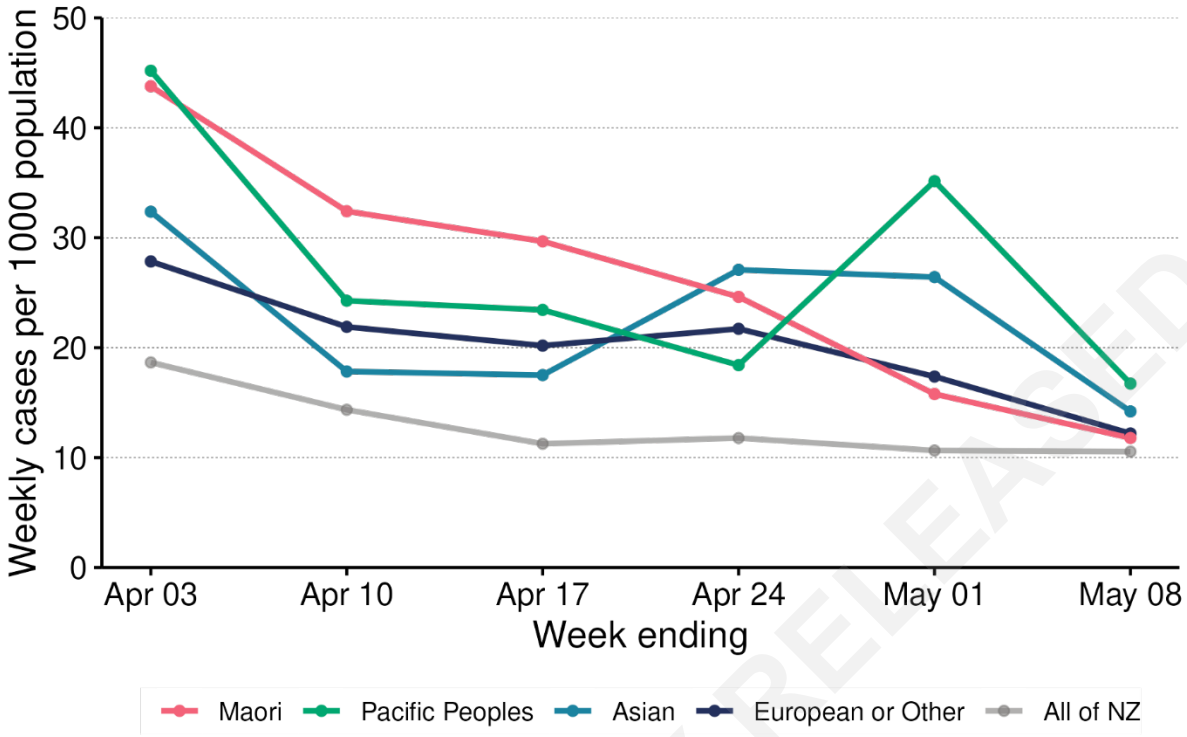
West Coast DHB



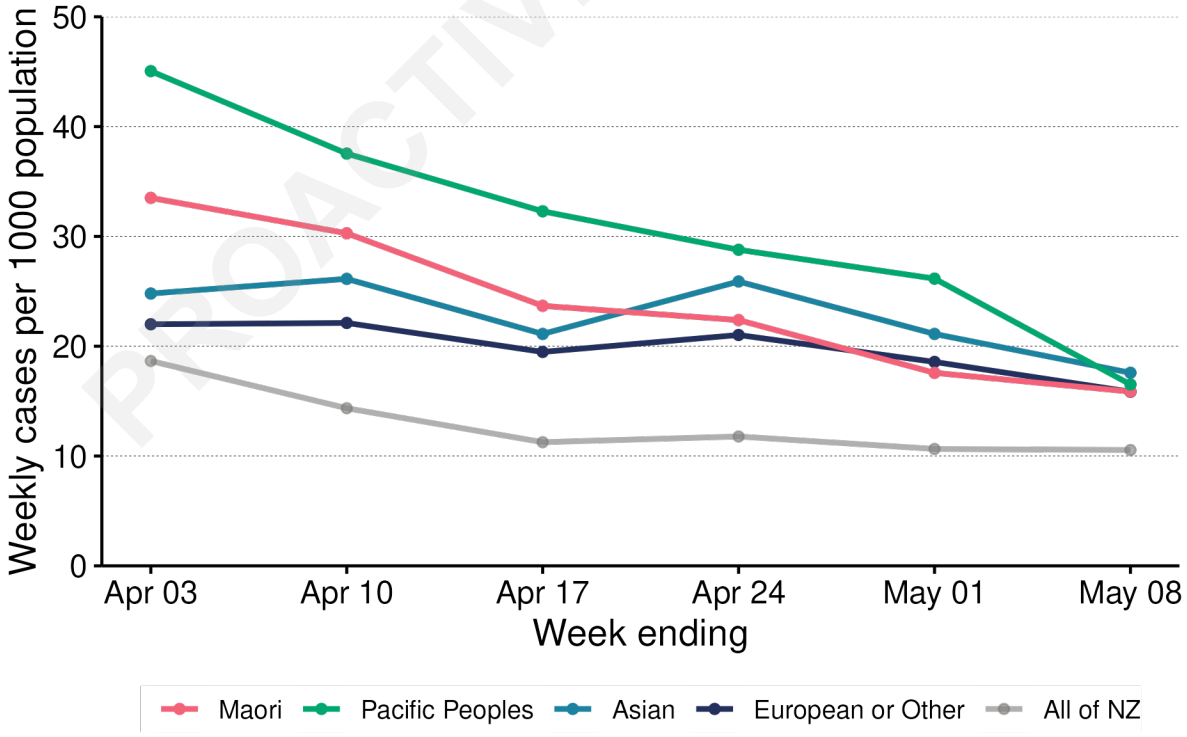
Canterbury DHB



South Canterbury DHB



Southern DHB



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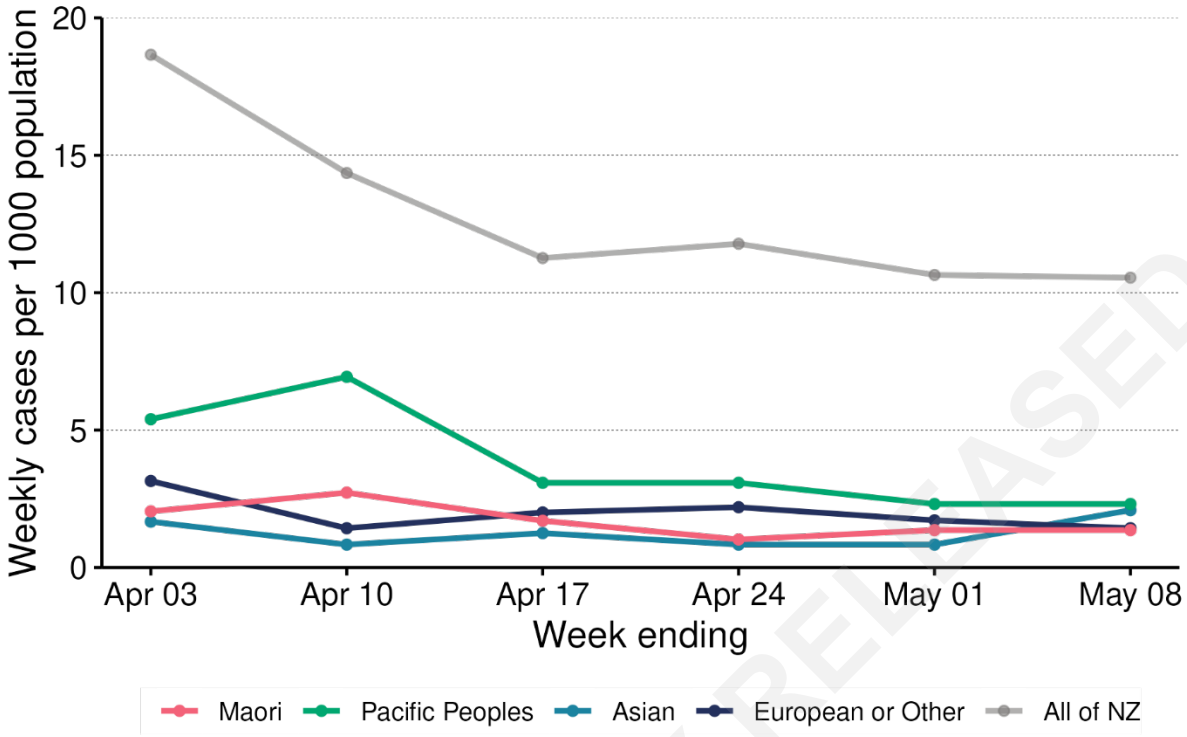
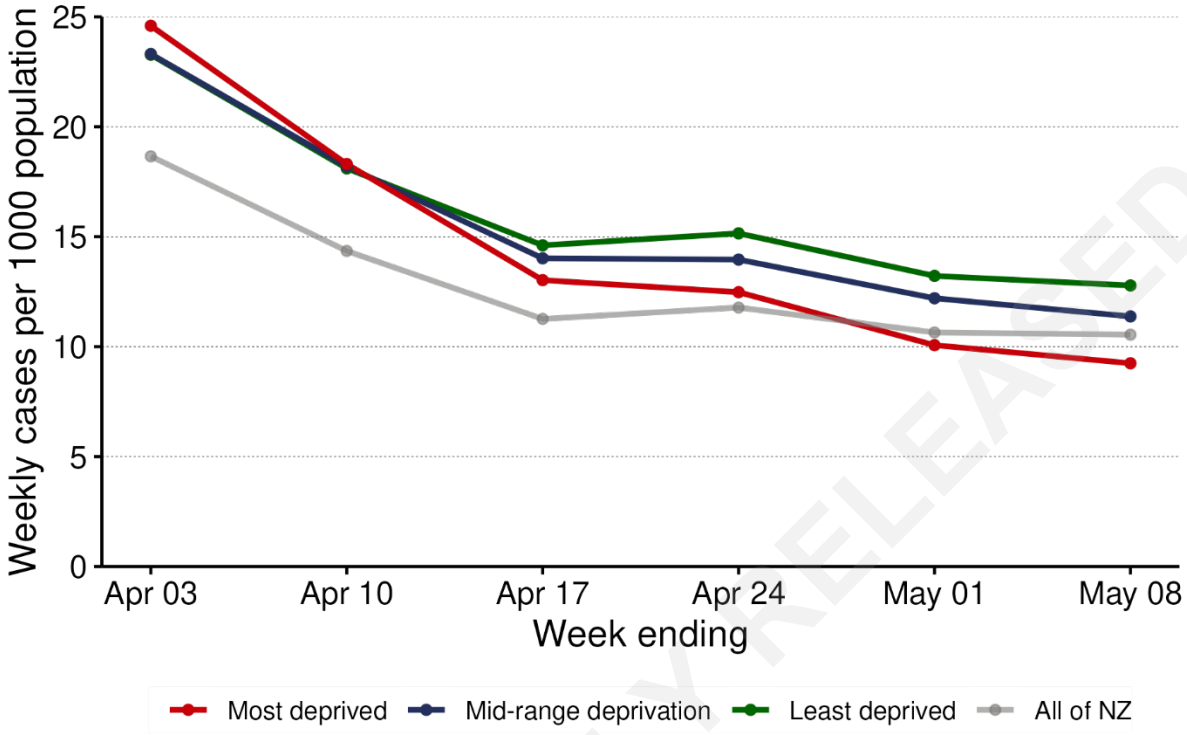
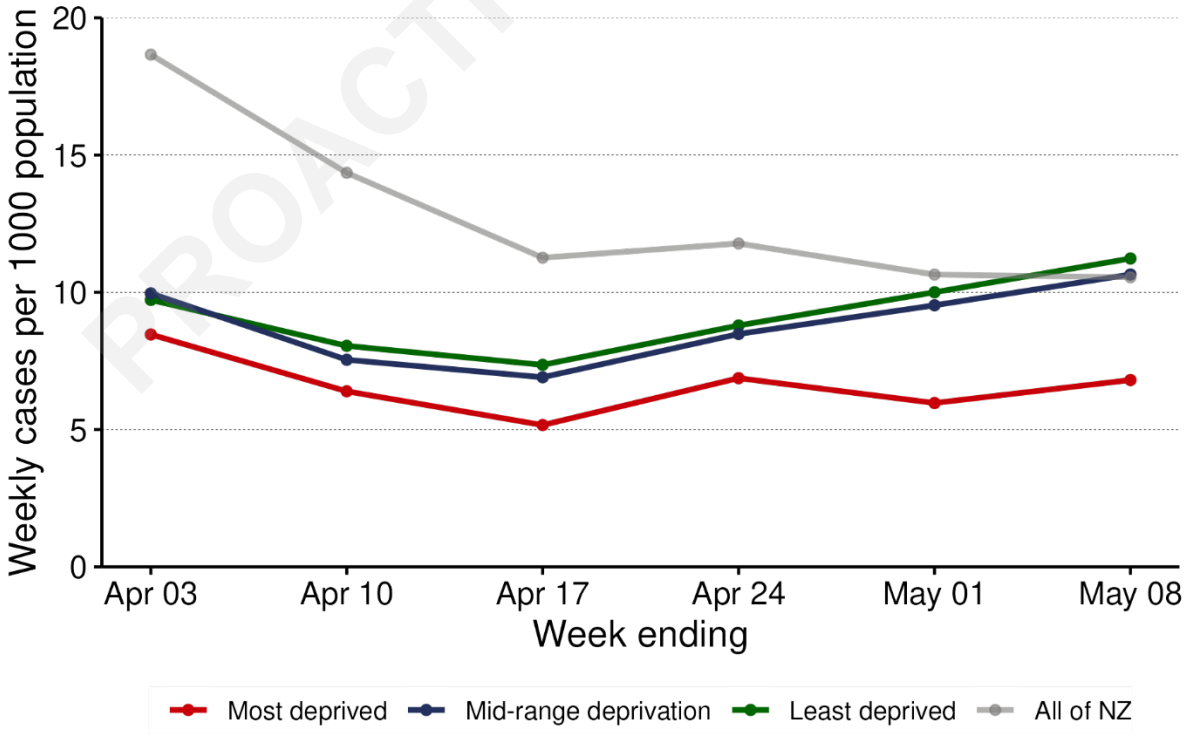


Deprivation Graphs

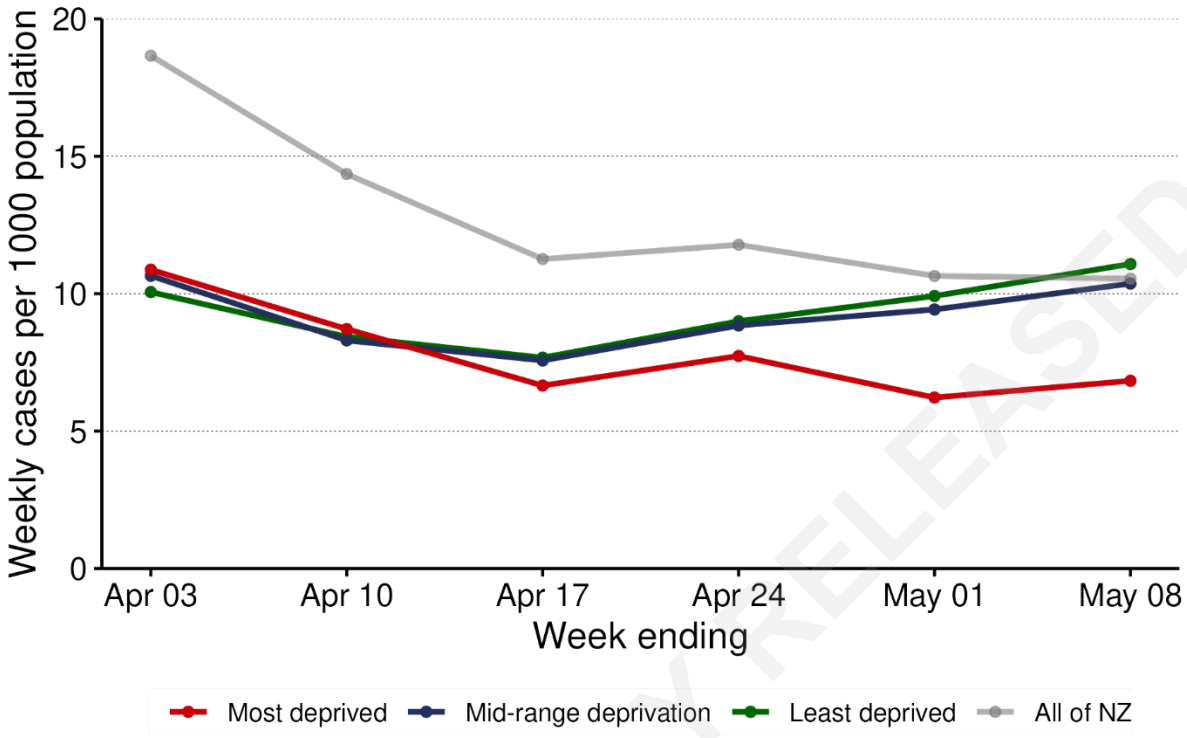
NZ Excluding Auckland Region



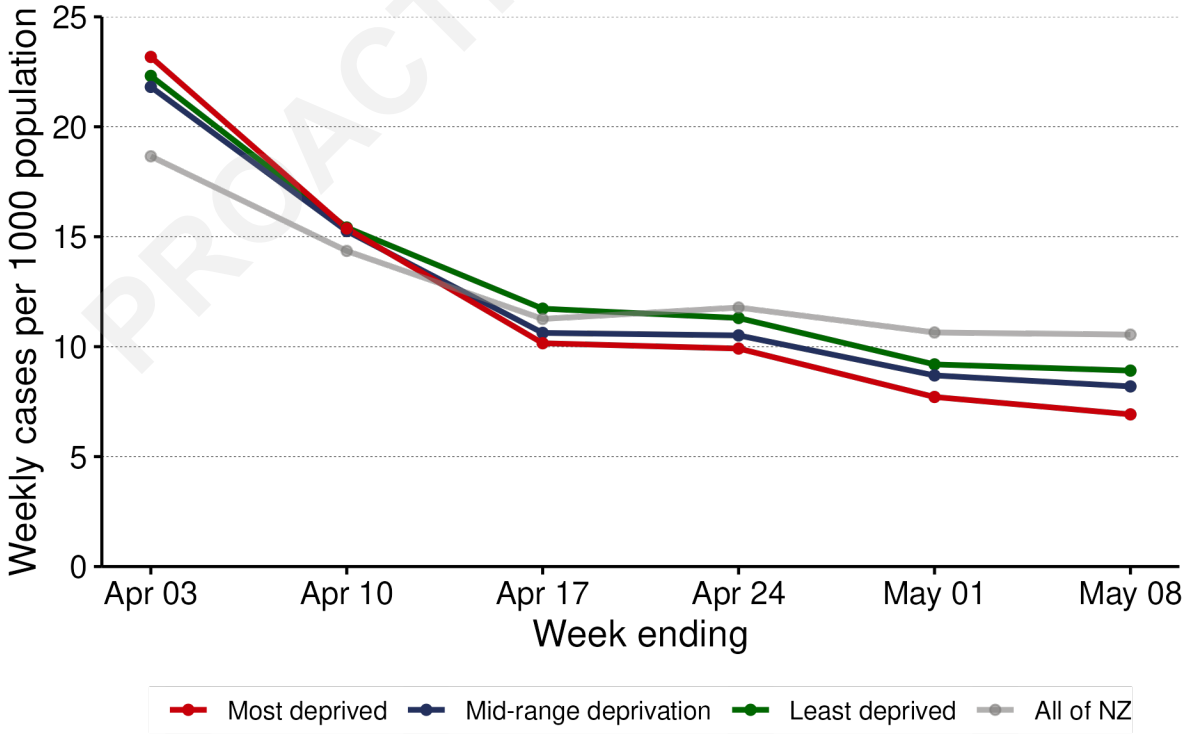
Auckland Region



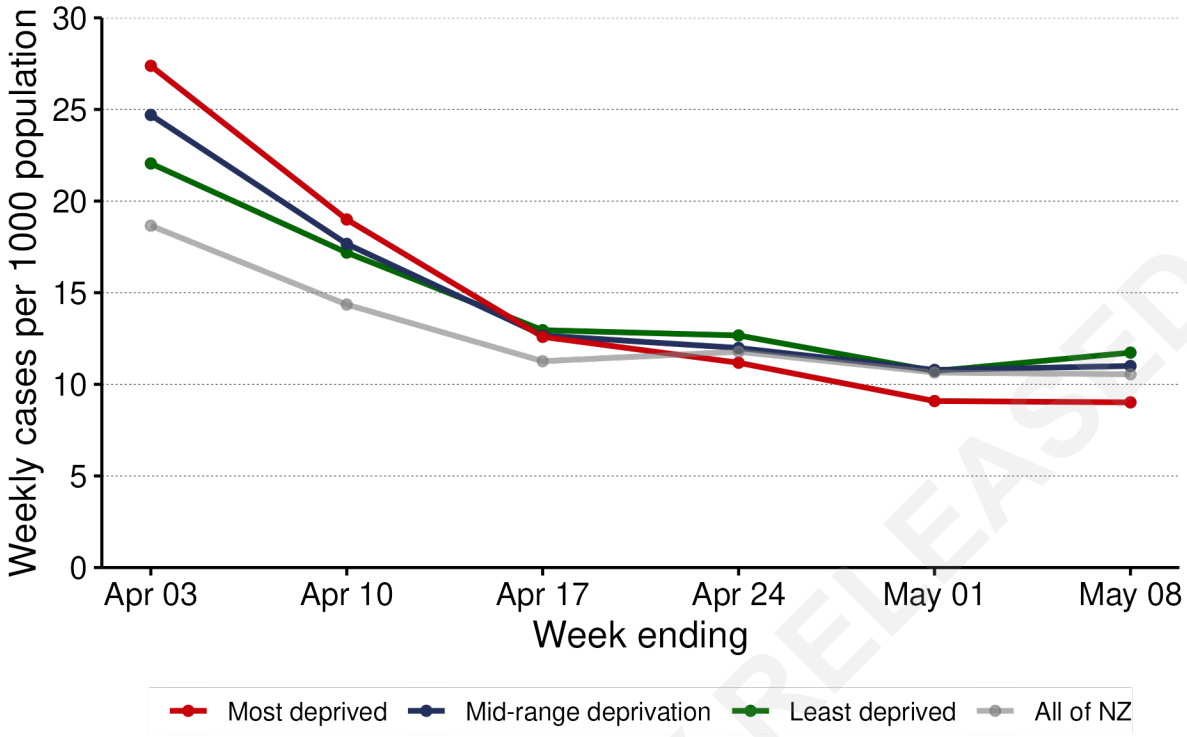
Northern Region



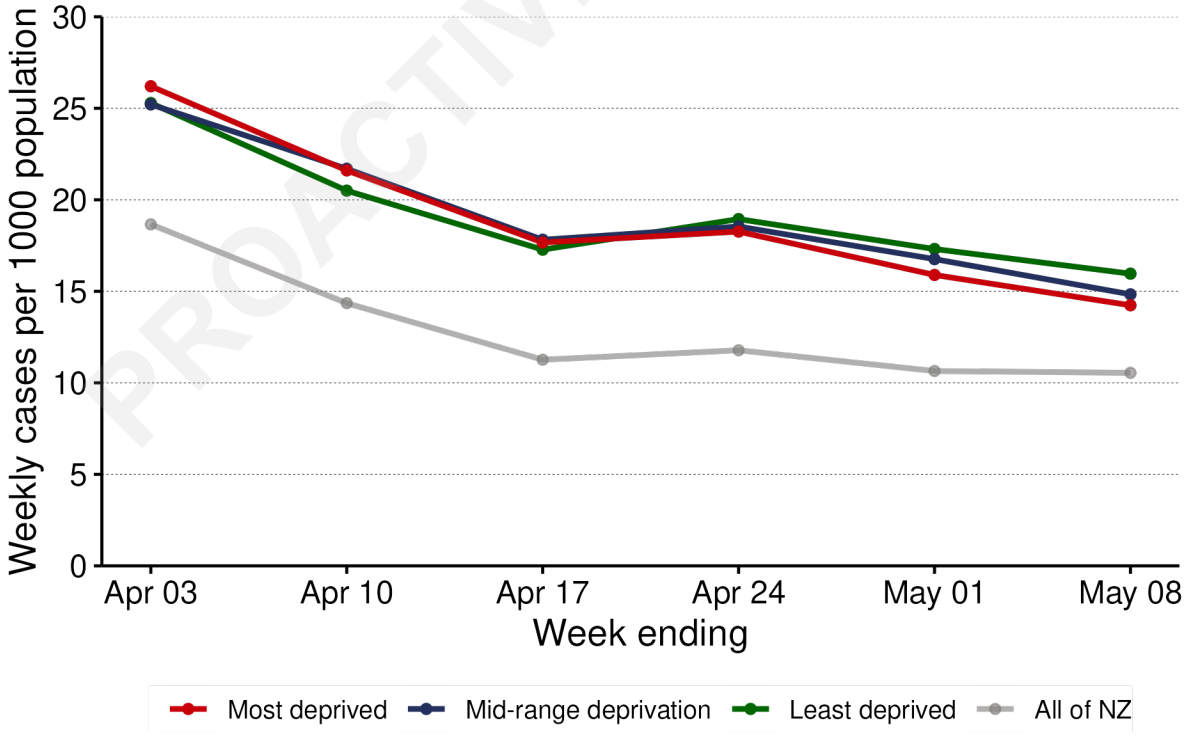
Te Manawa Taki



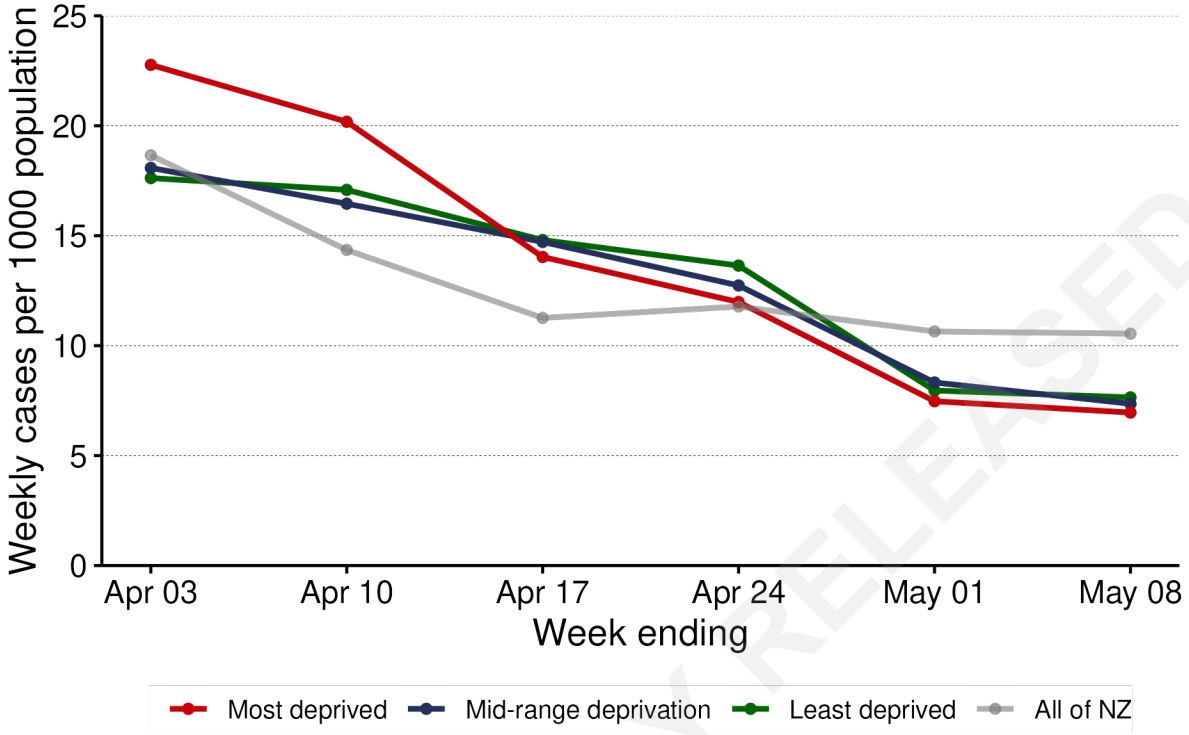
Central Region



Southern Region



Northland DHB



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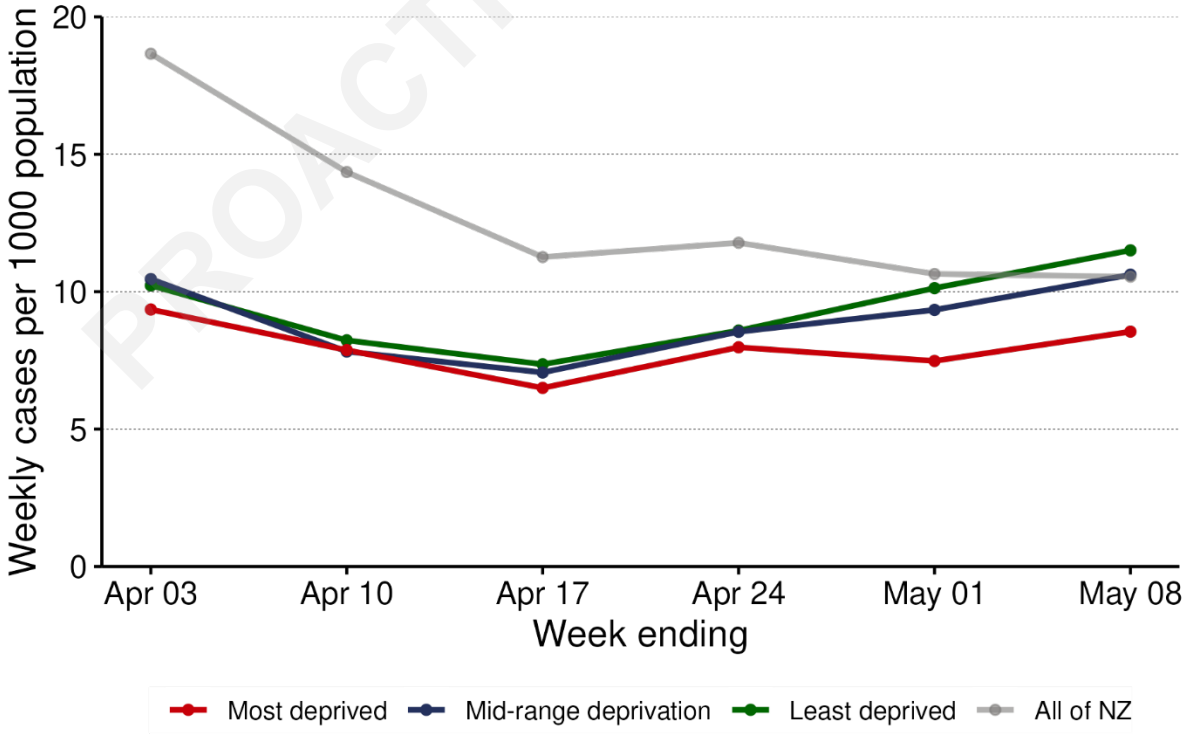
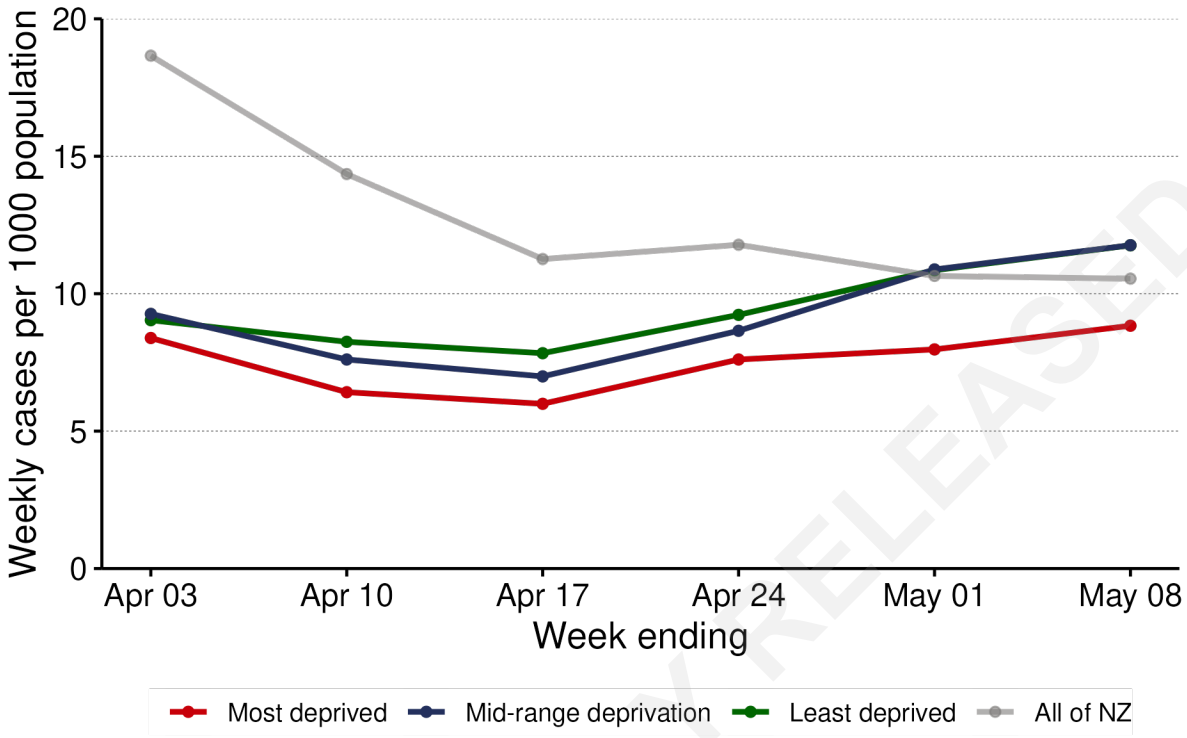
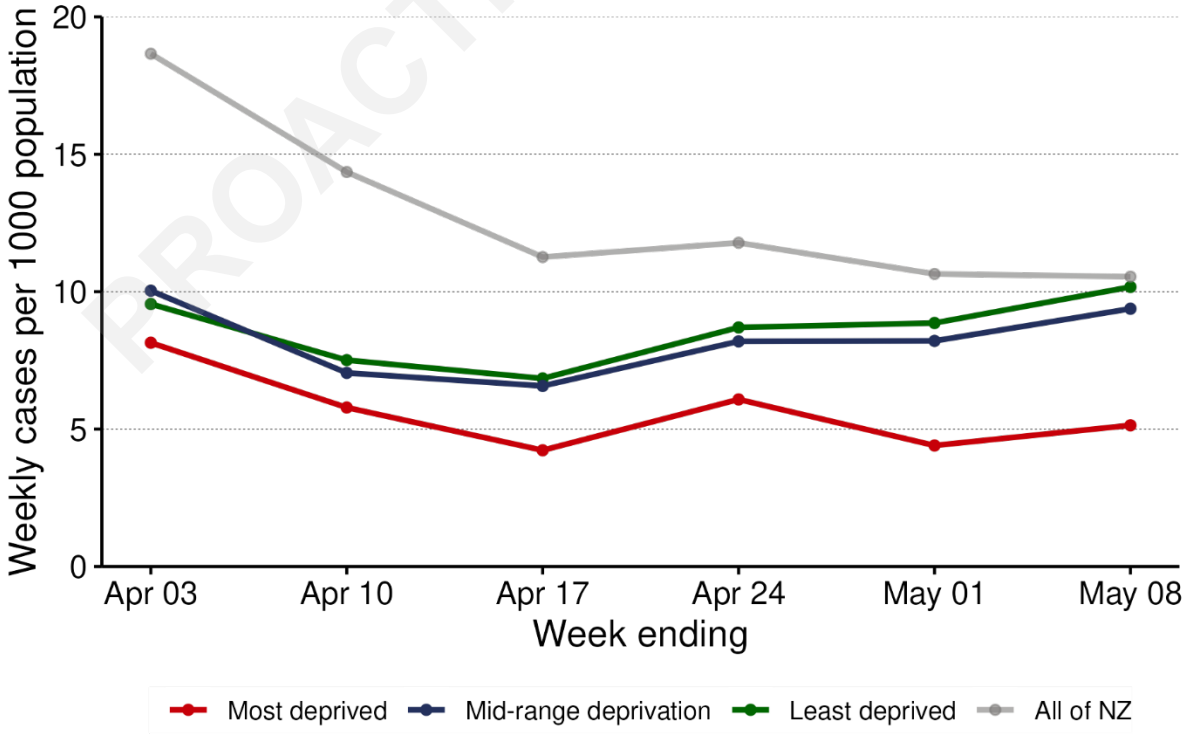


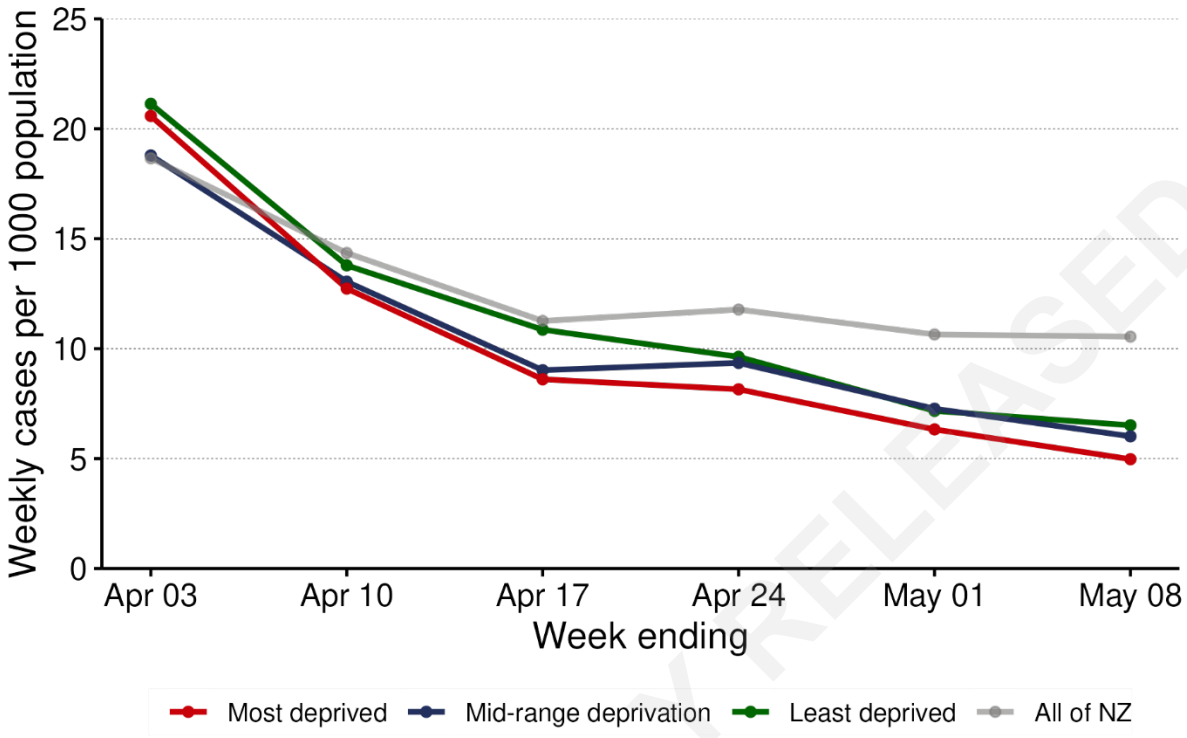
Auckland DHB



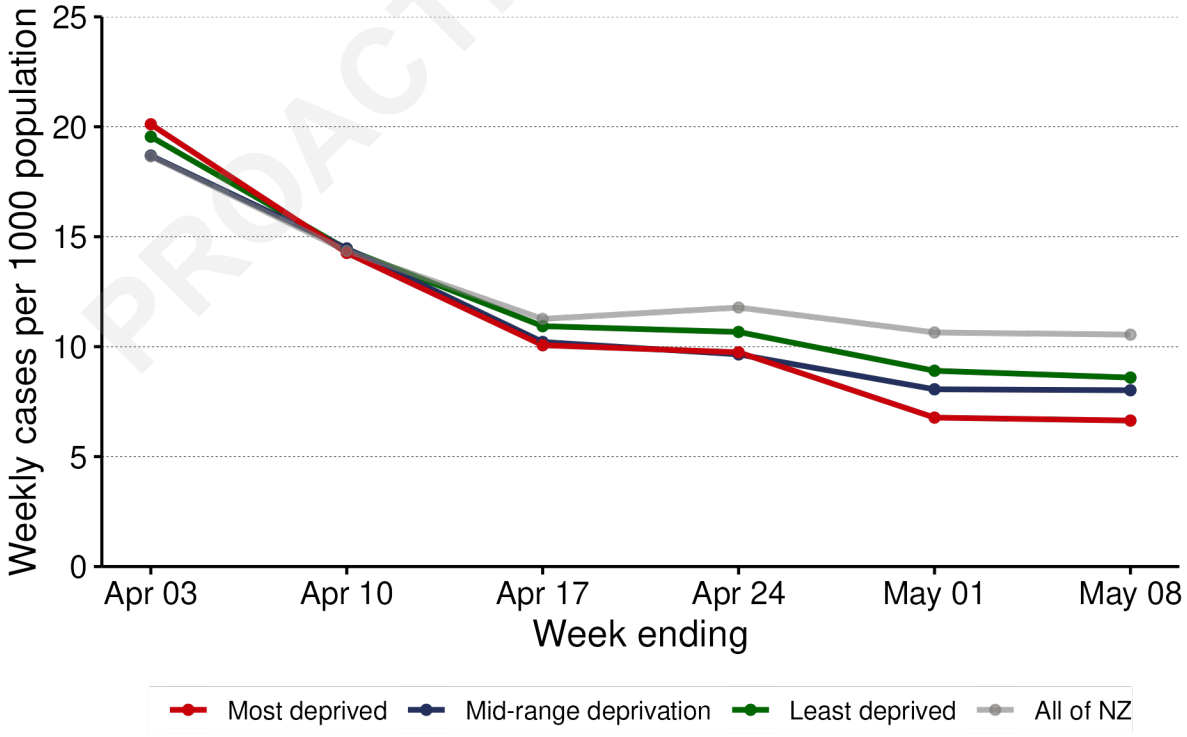
Counties Manukau DHB



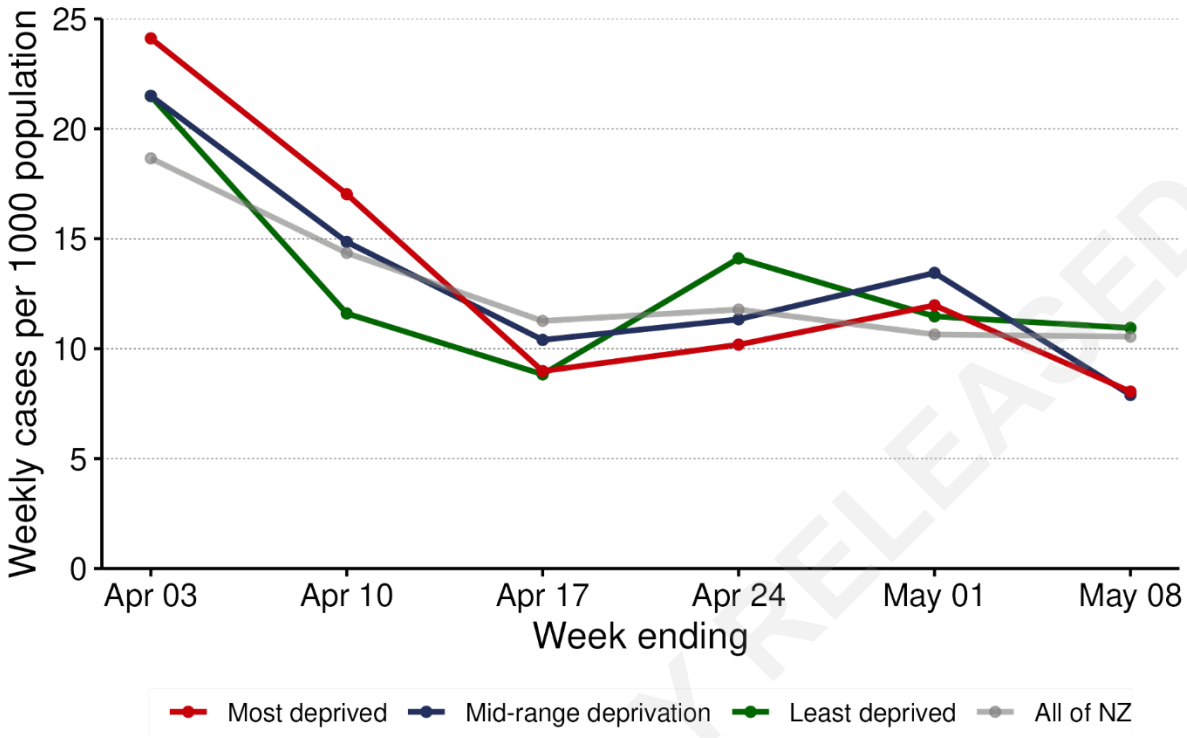
Bay of Plenty DHB



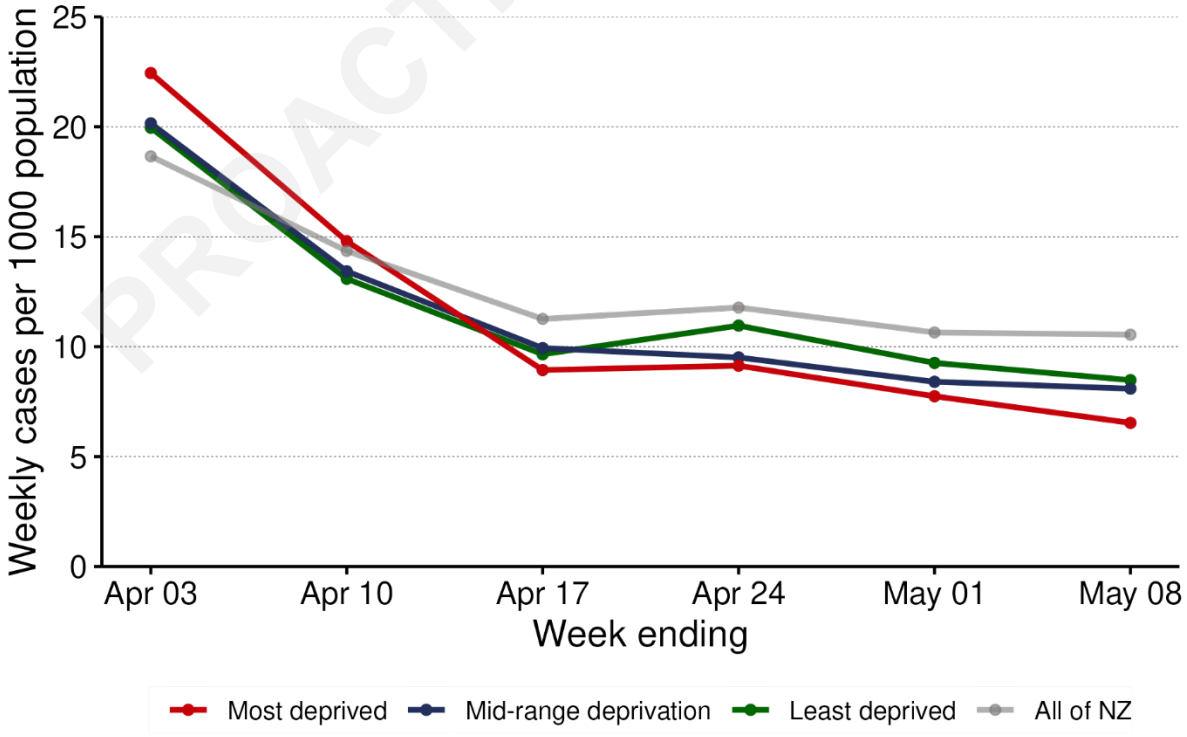
Waikato DHB



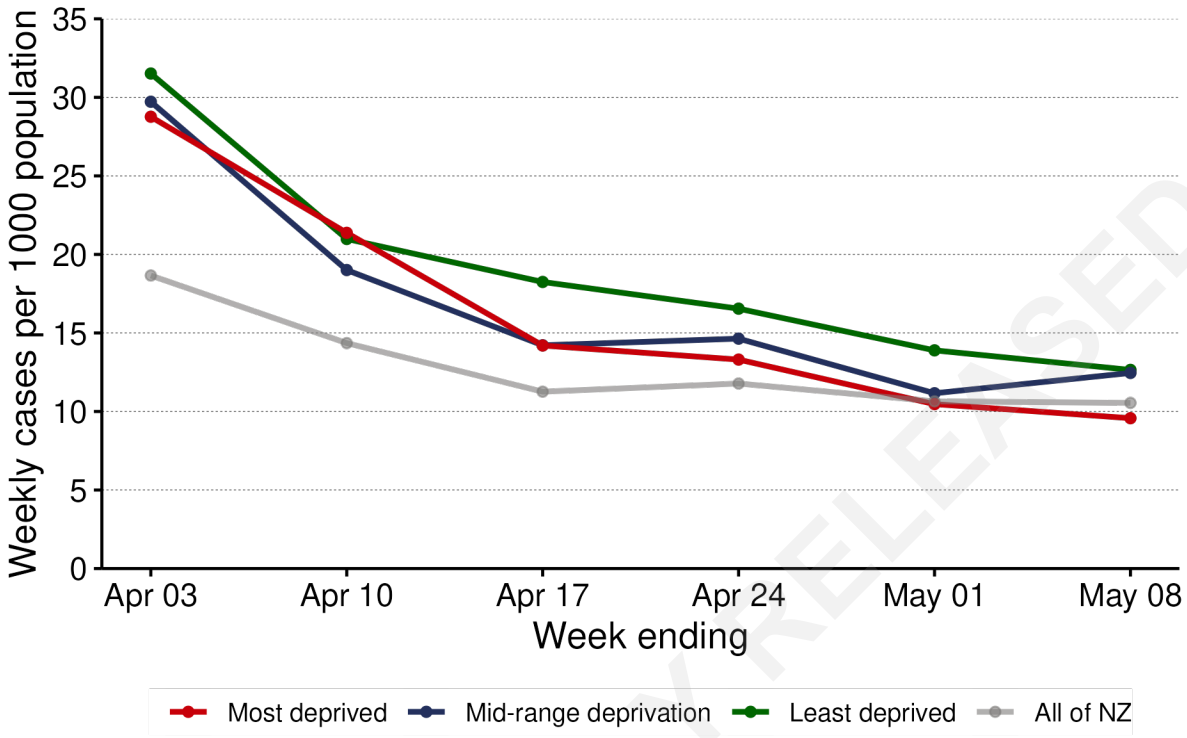
Tarawhiti DHB



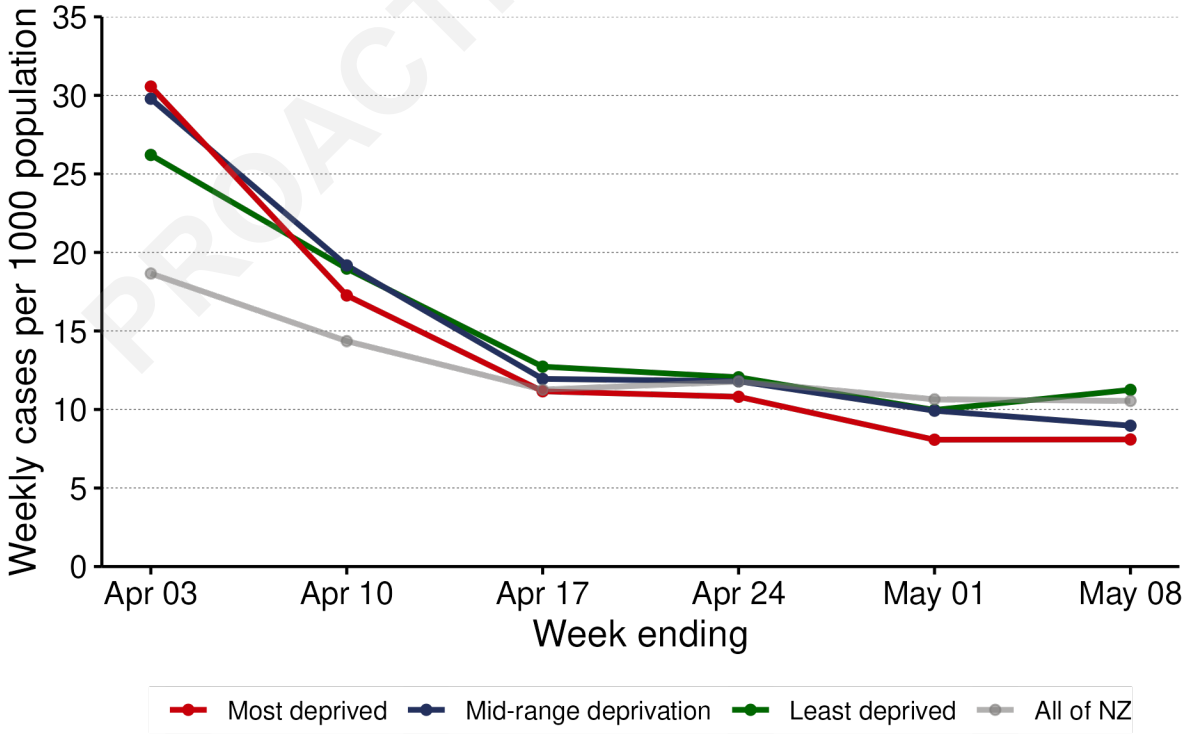
Lakes DHB



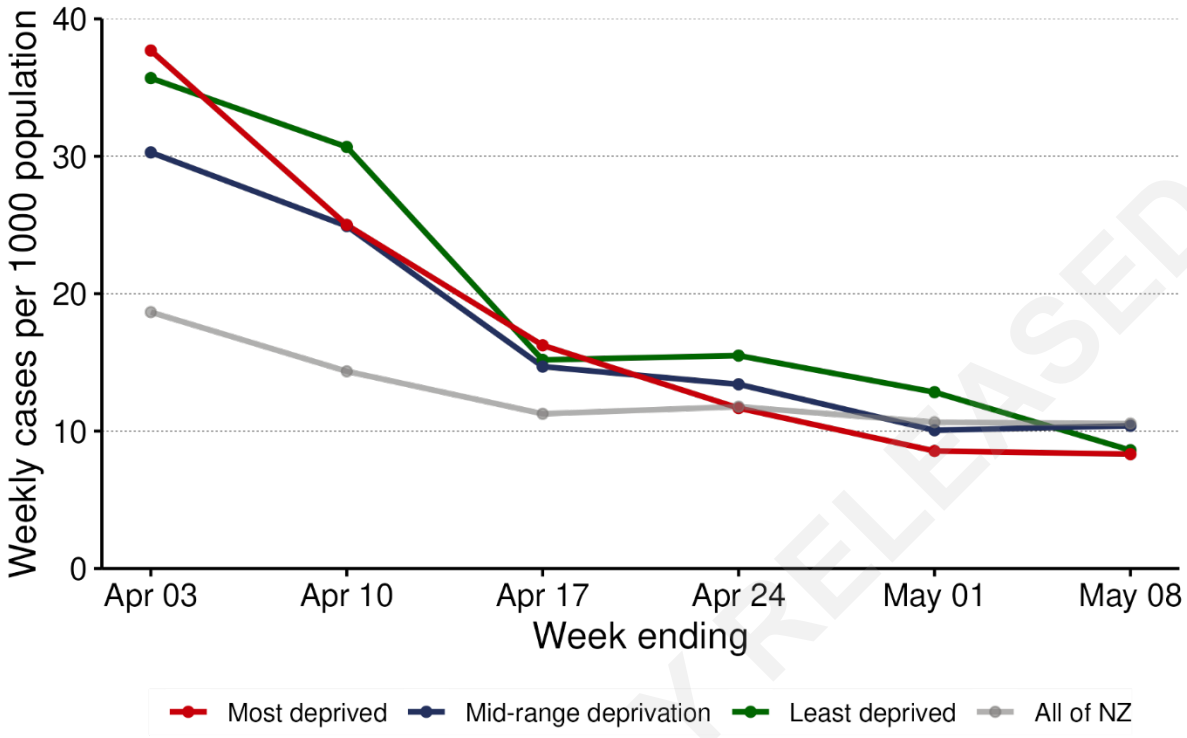
Taranaki DHB



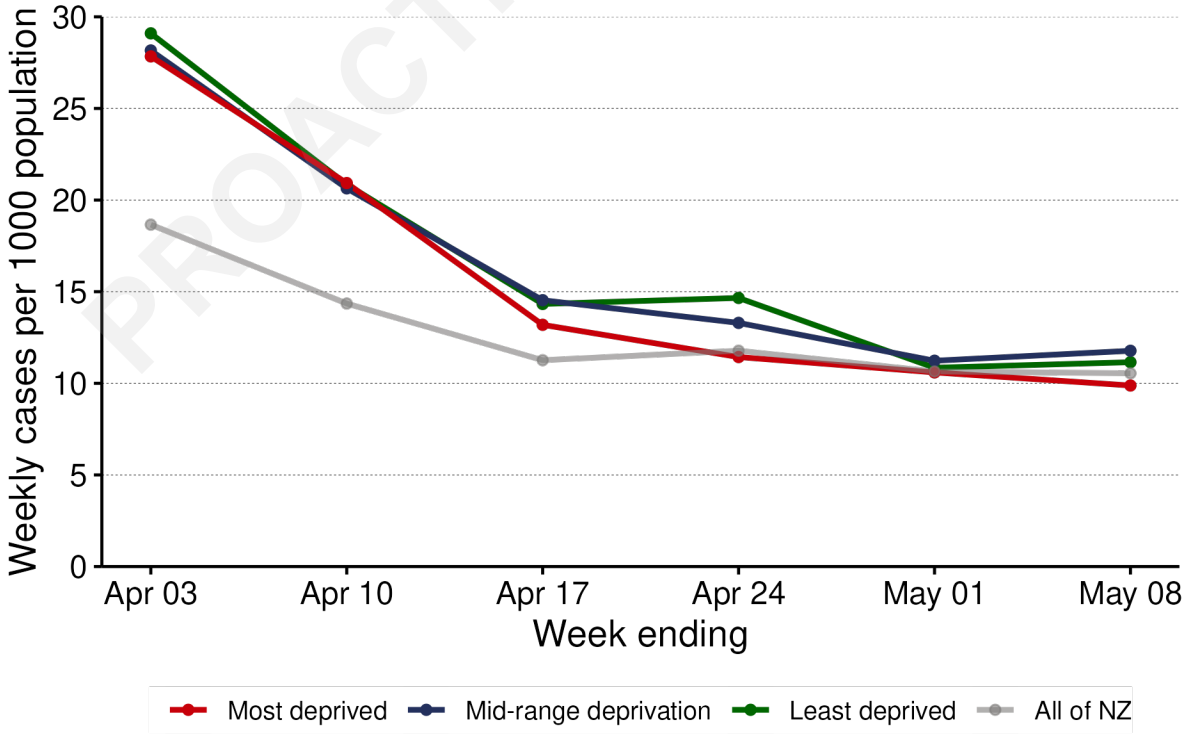
Hawke's Bay DHB



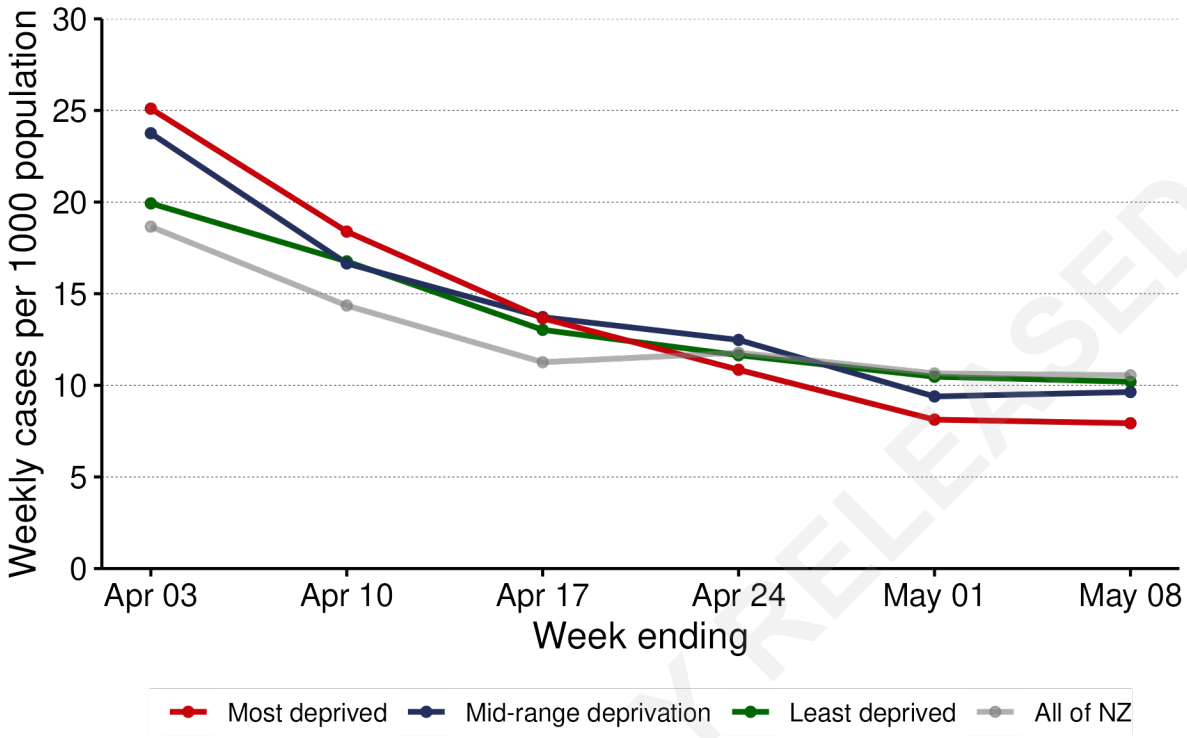
Whanganui DHB



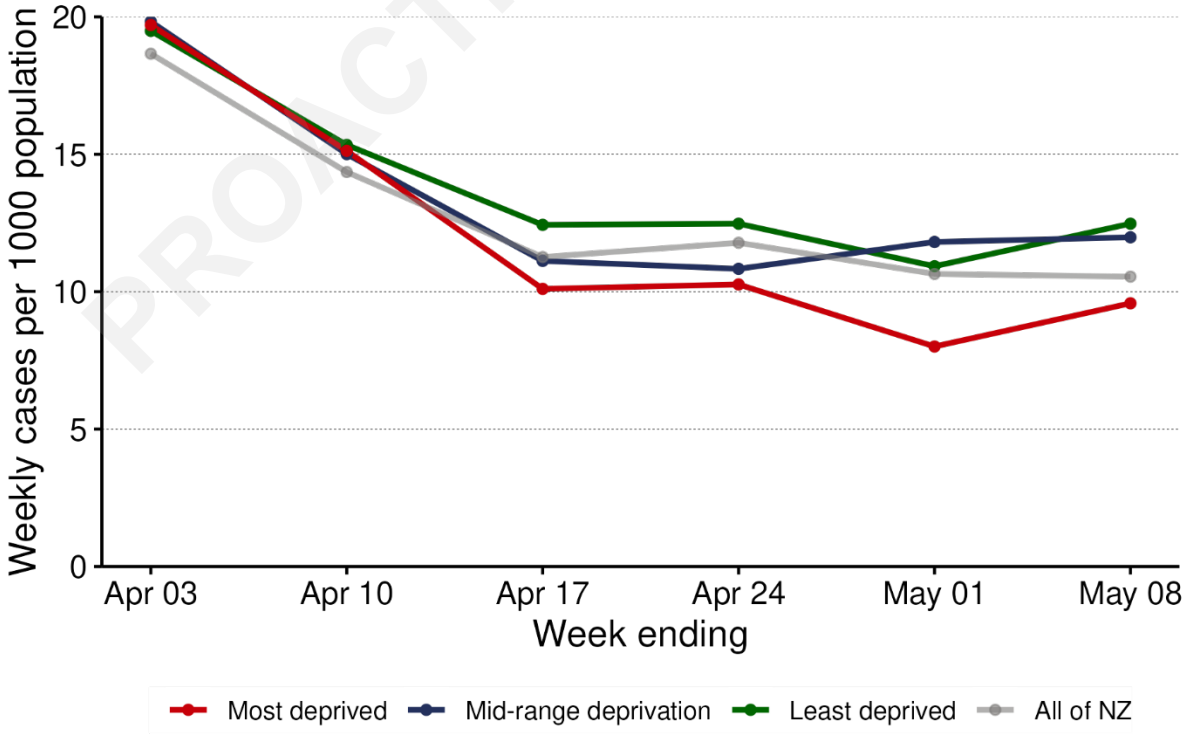
MidCentral DHB



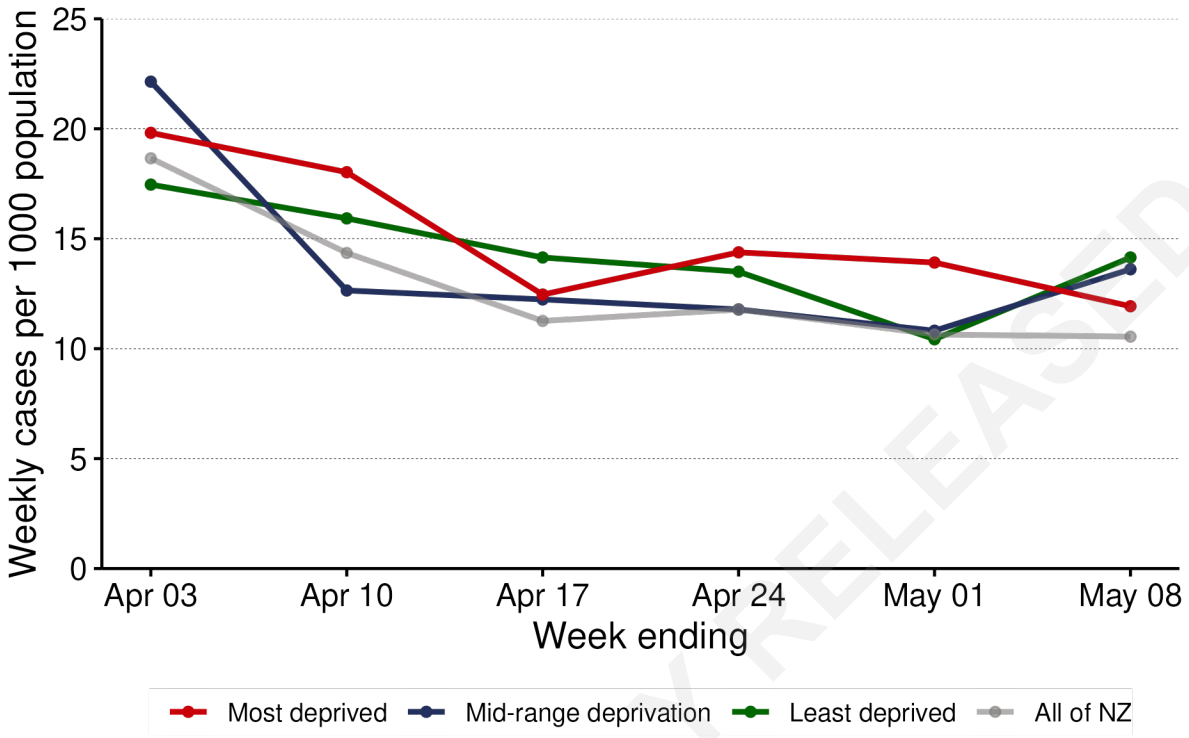
Hutt Valley DHB



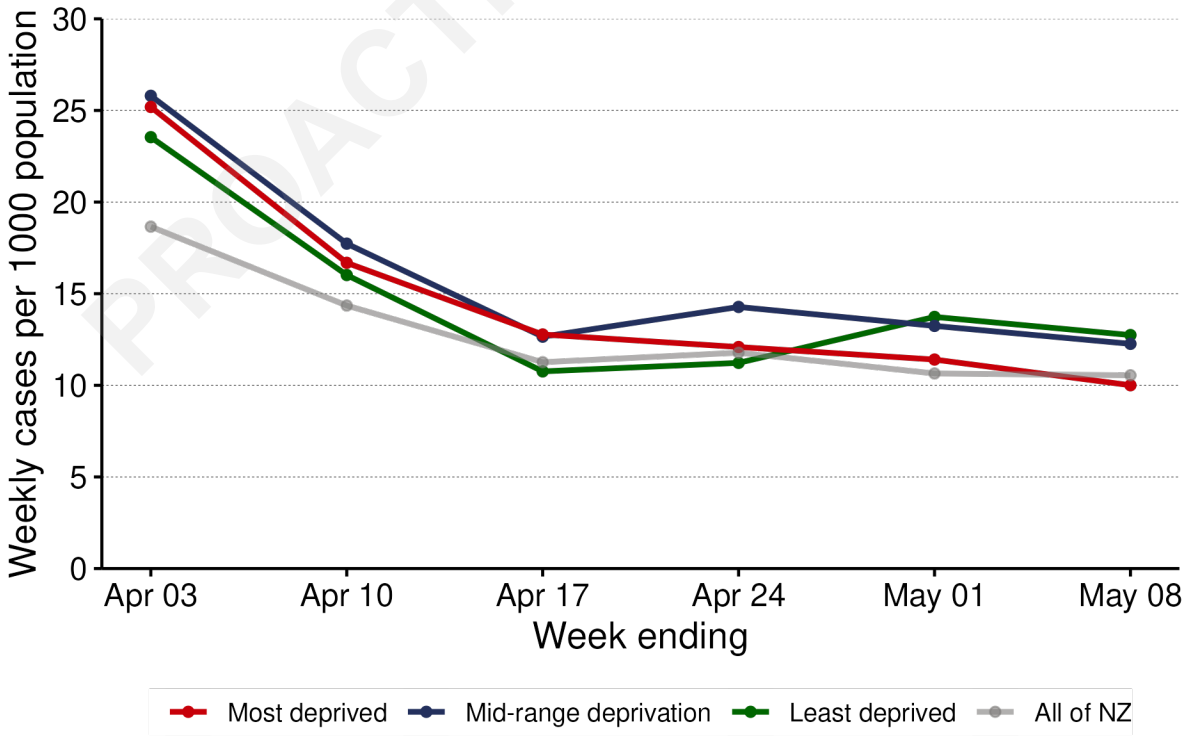
Capital and Coast DHB



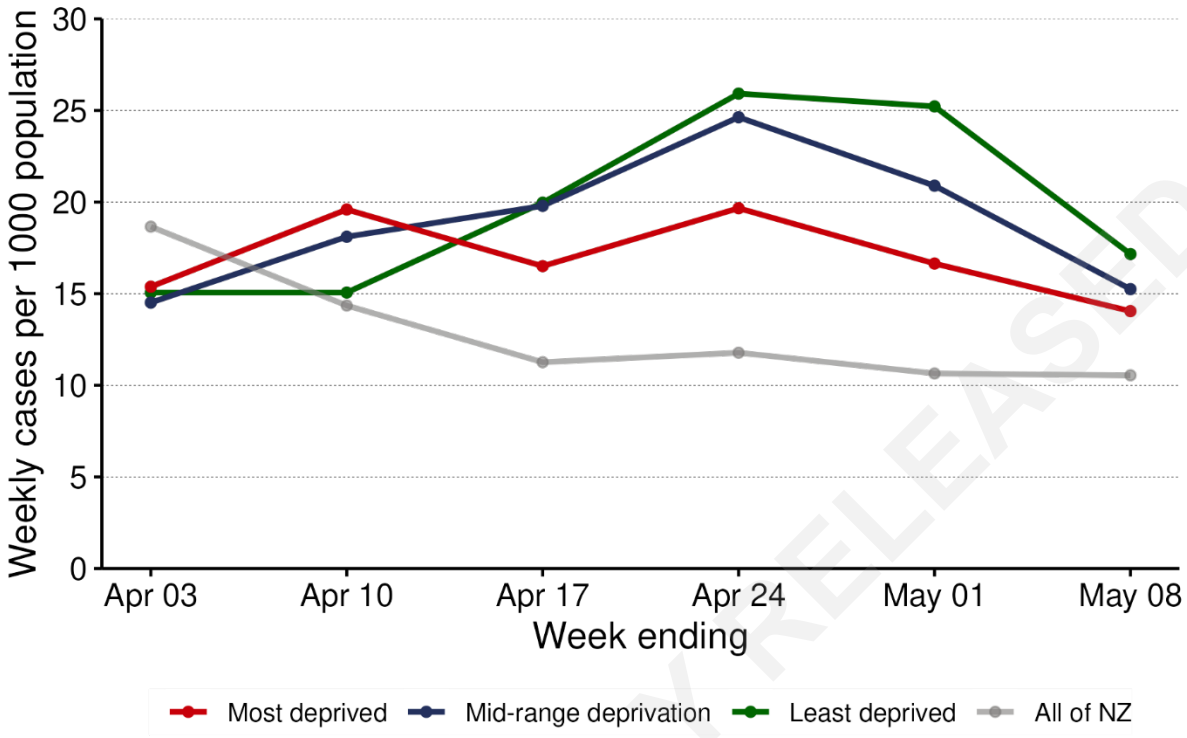
Wairarapa DHB



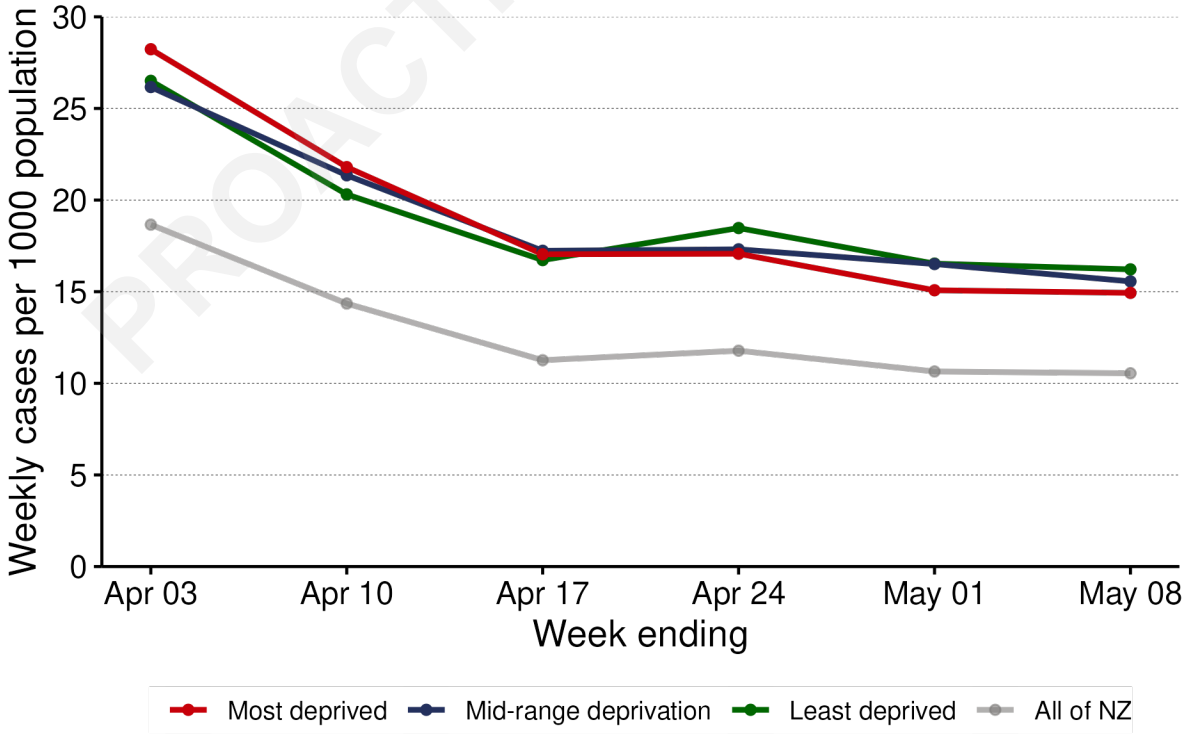
Nelson Marlborough DHB



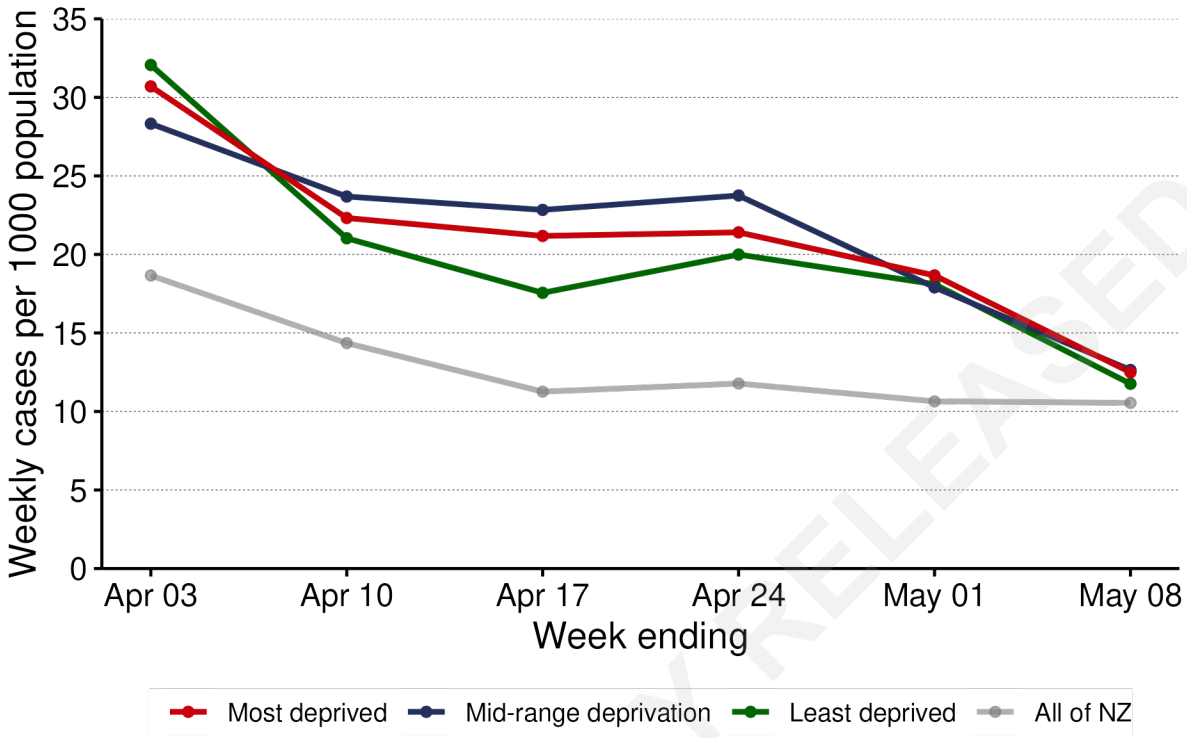
West Coast DHB



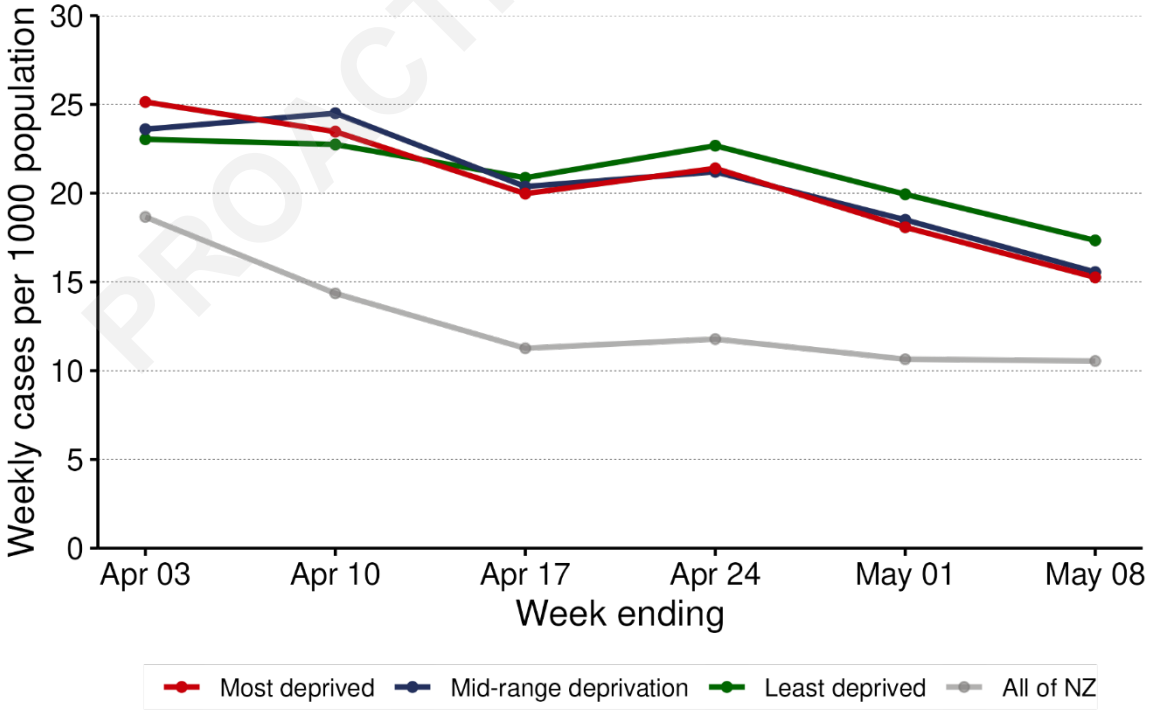
Canterbury DHB



South Canterbury DHB

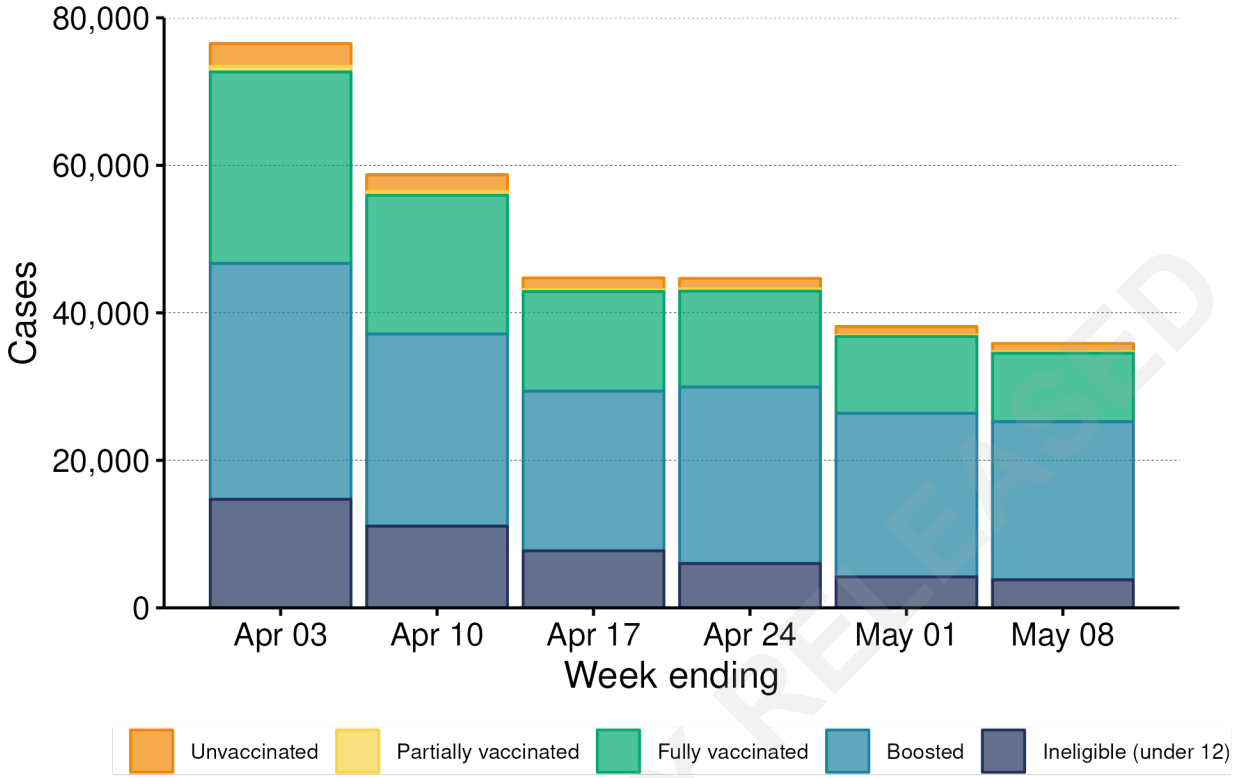


Southern DHB

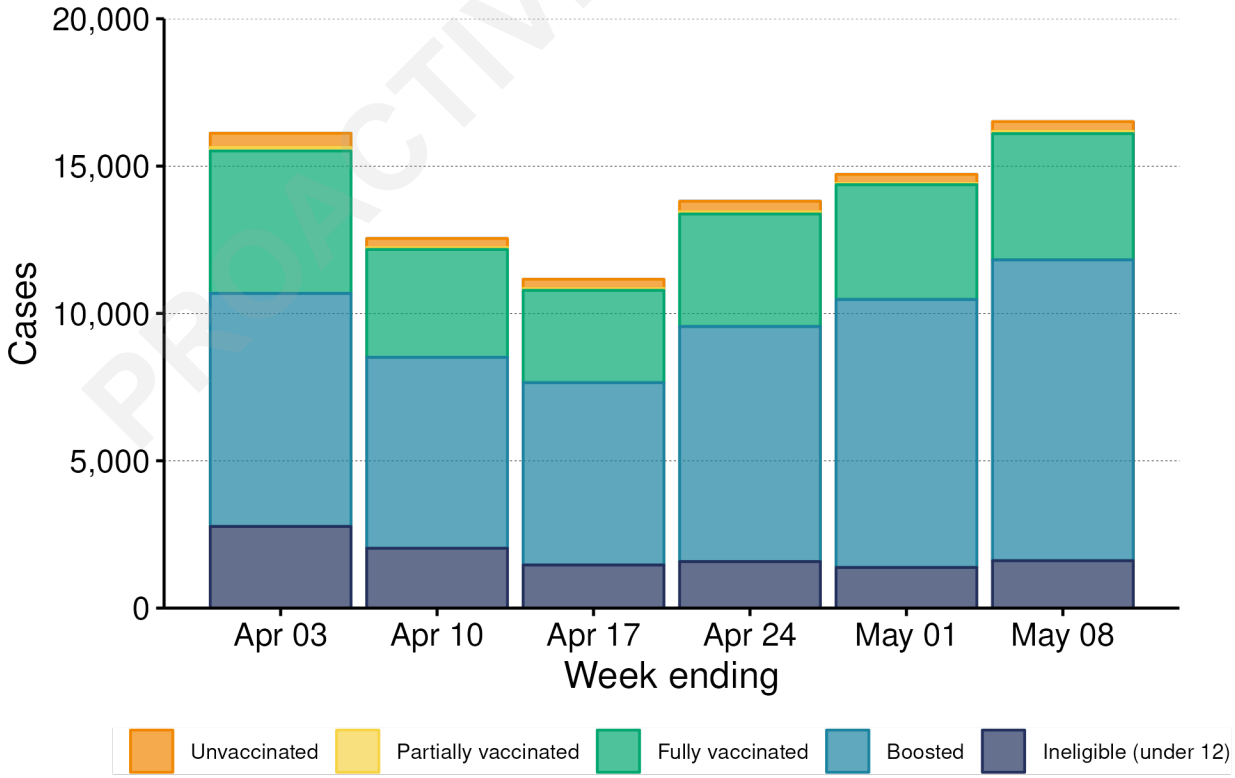


Vaccination Graphs

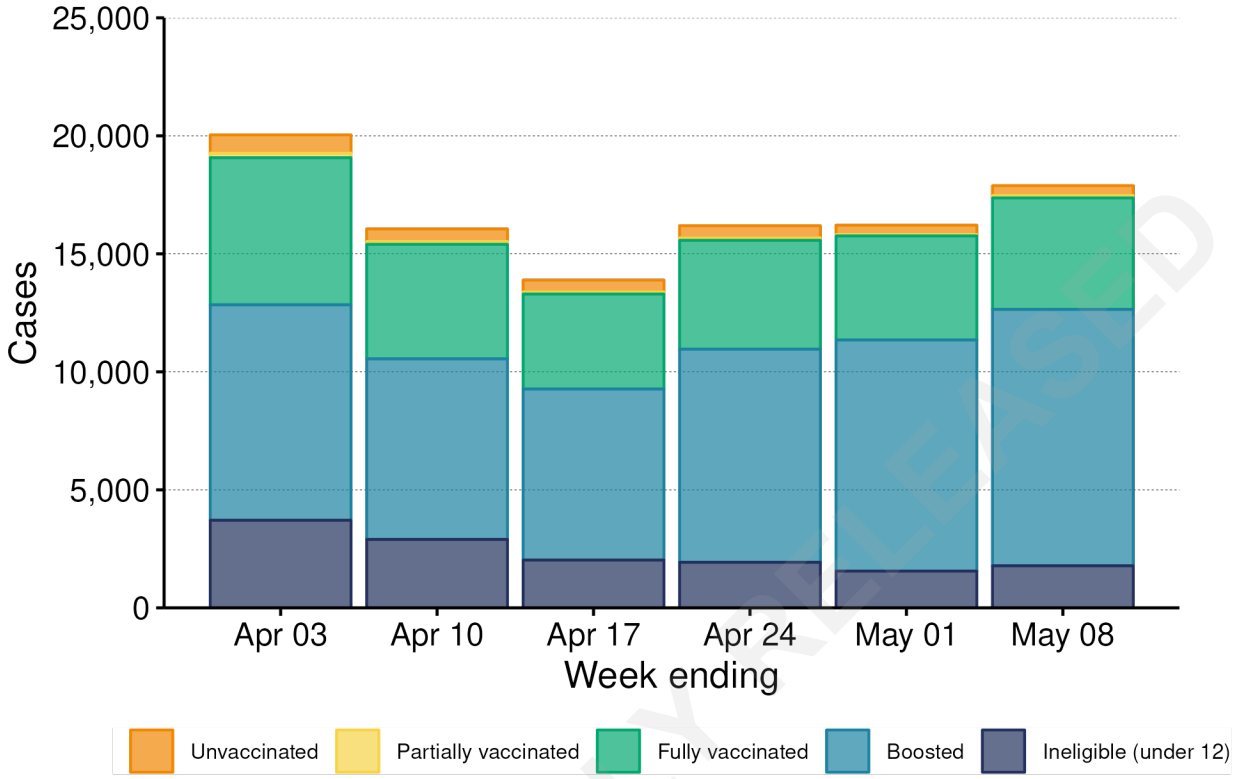
NZ Excluding Auckland Region



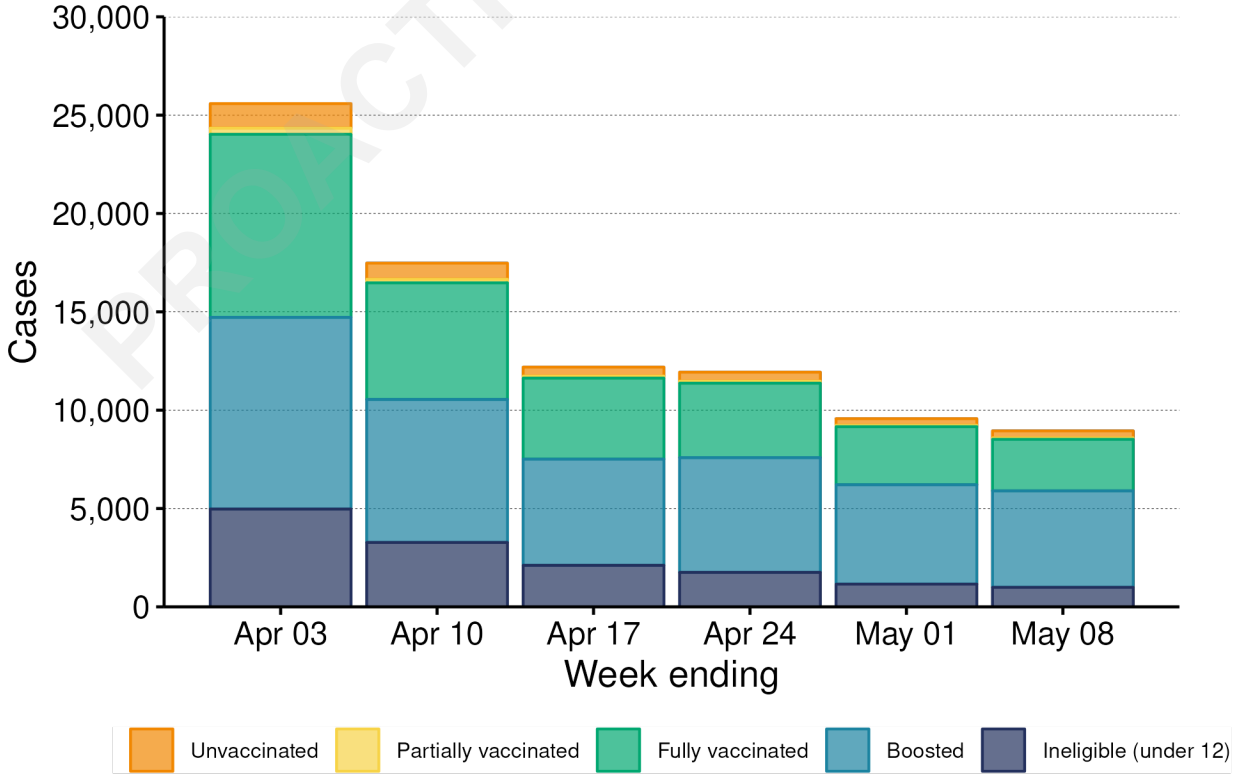
Auckland Region



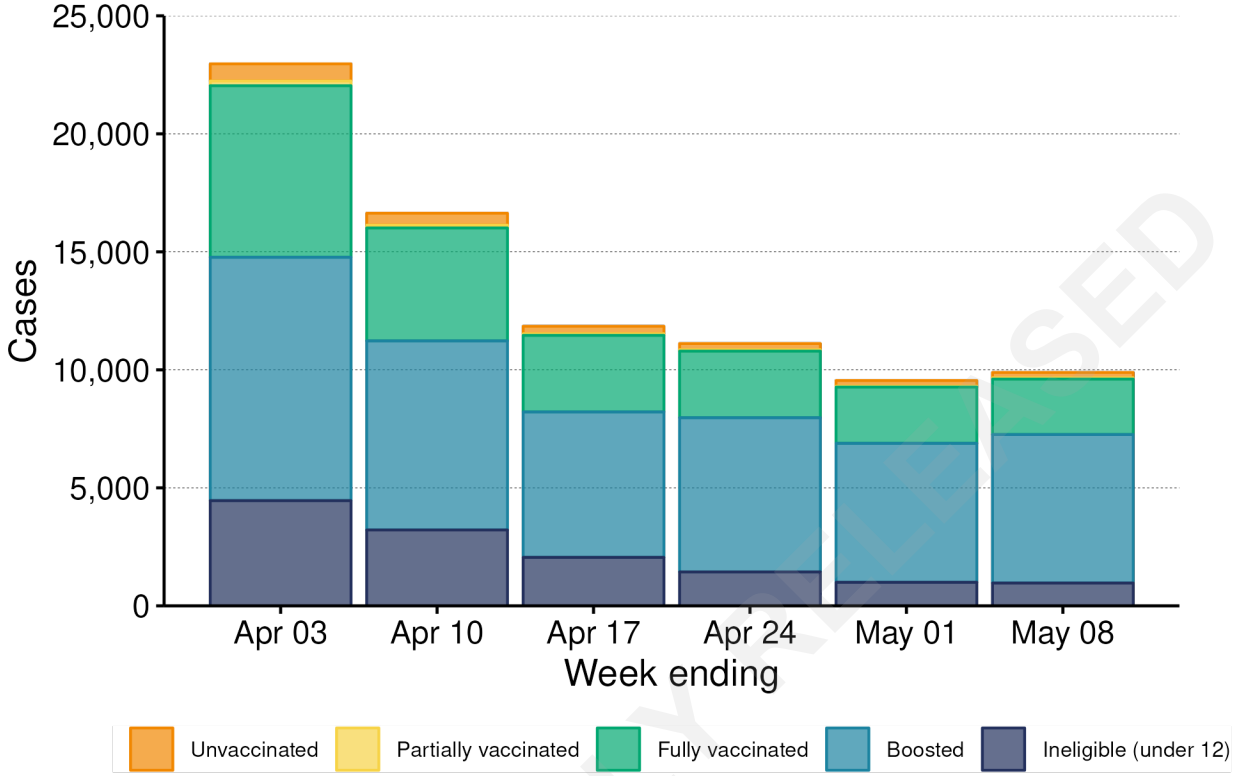
Northern Region



Te Manawa Taki



Central Region



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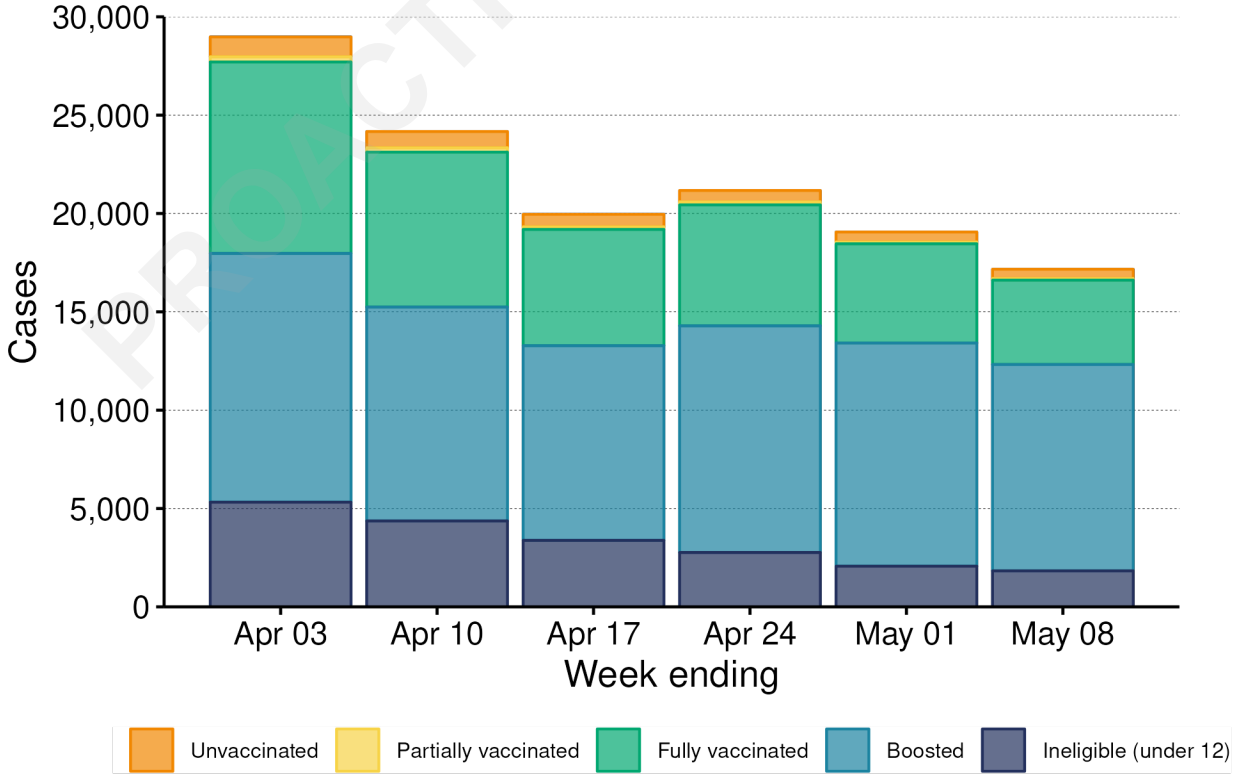
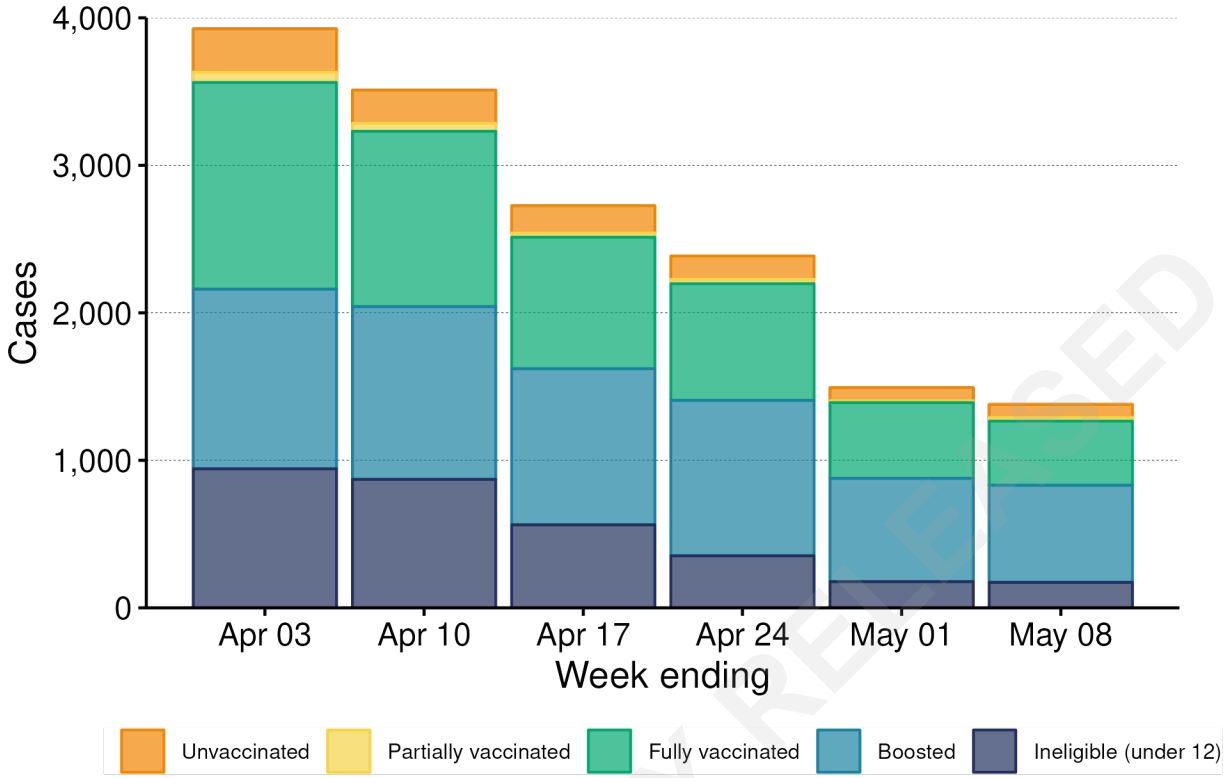
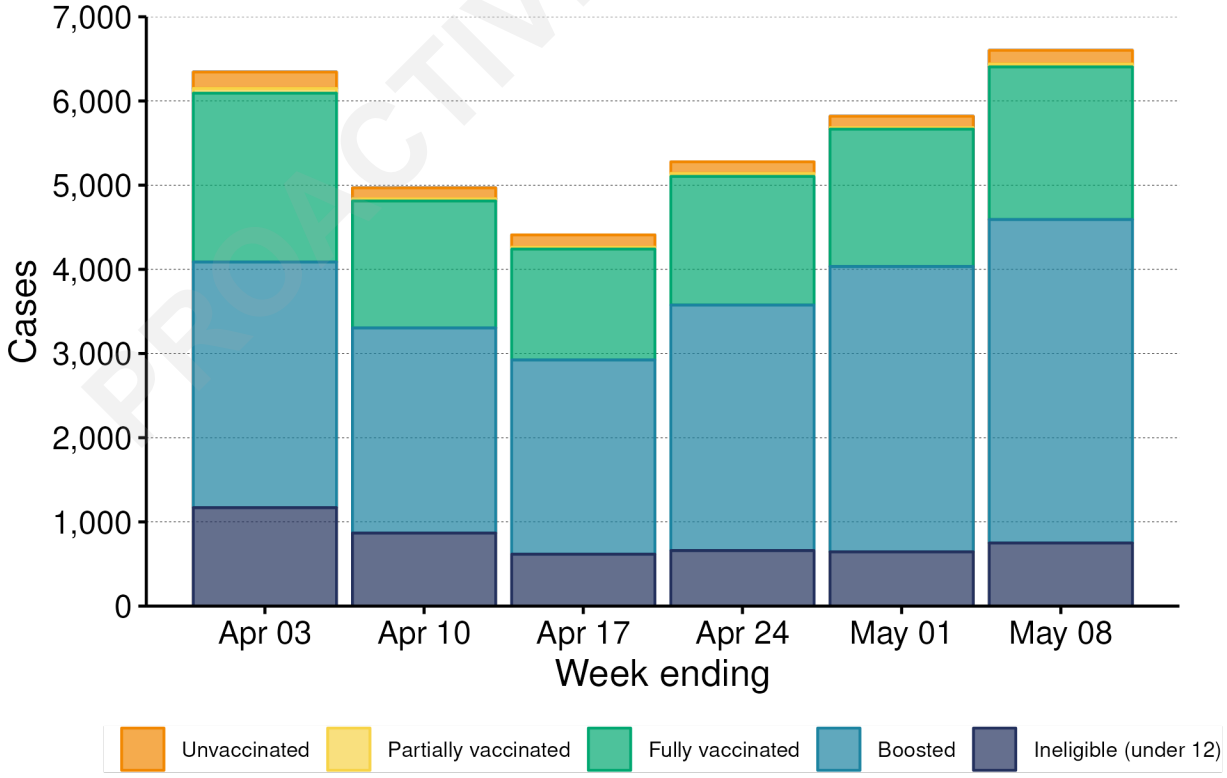


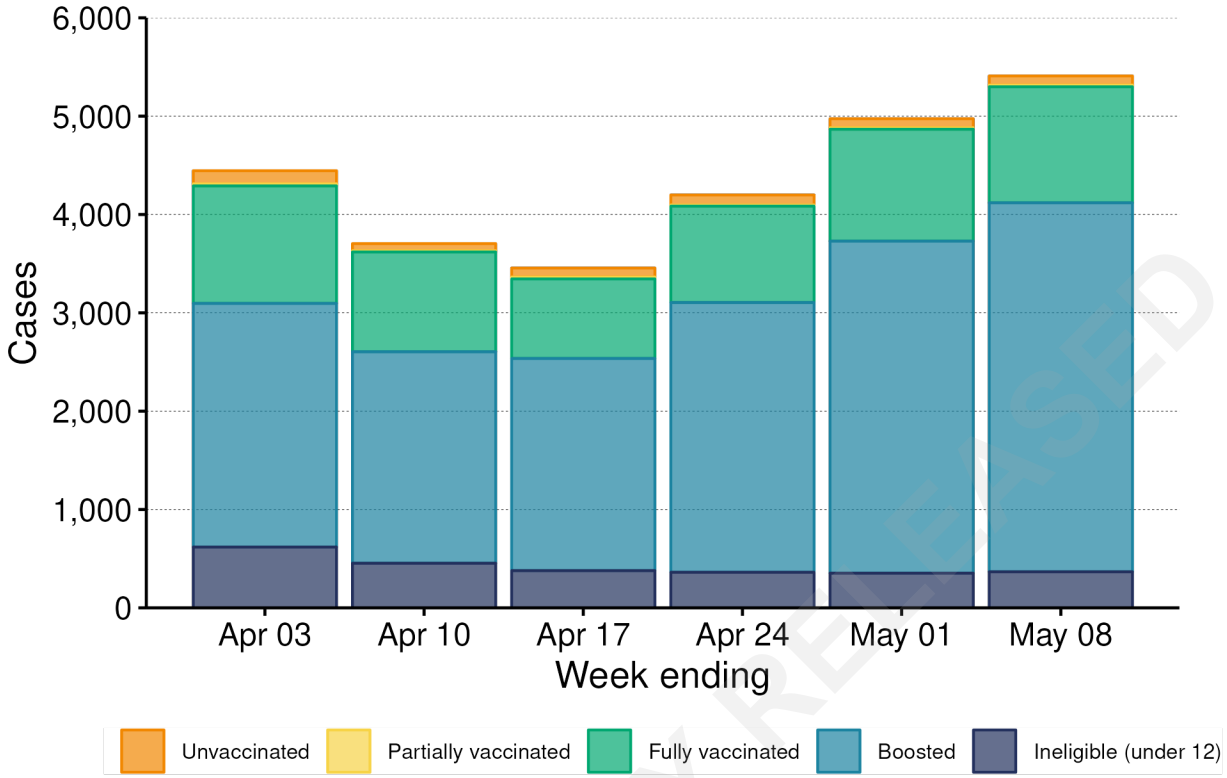
Northland DHB



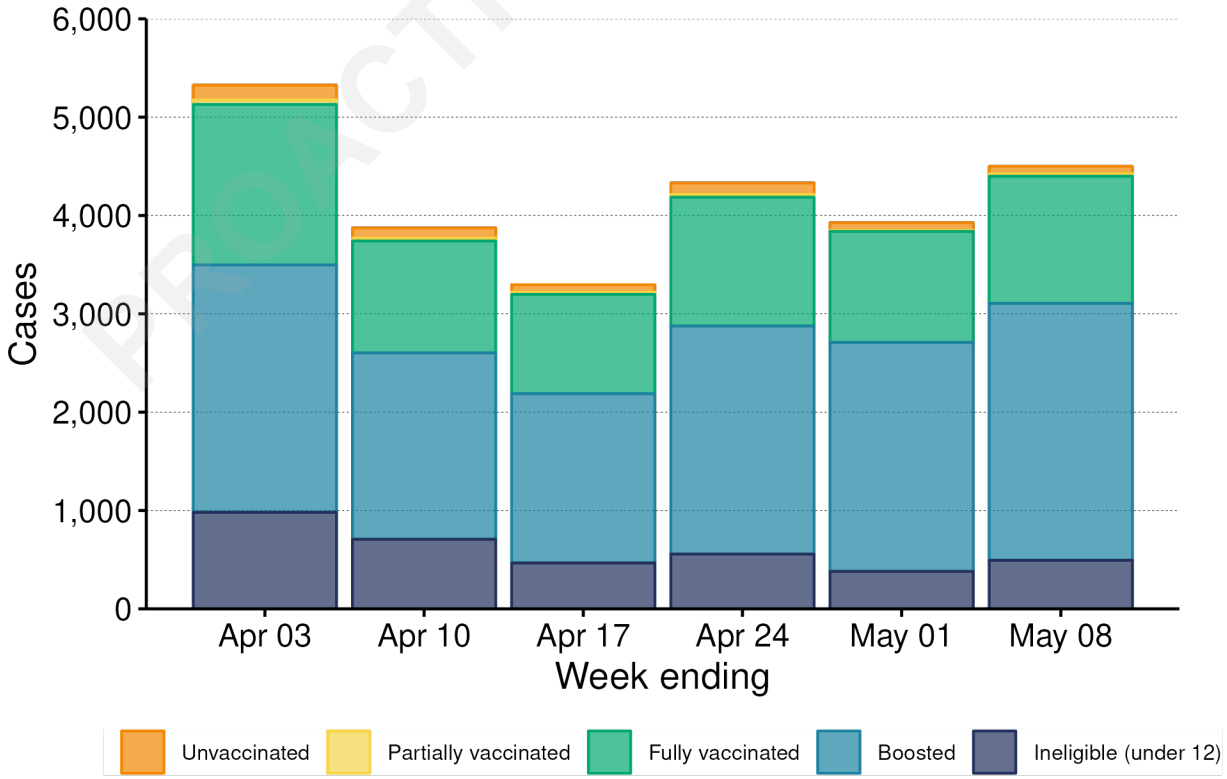
Waitemata DHB



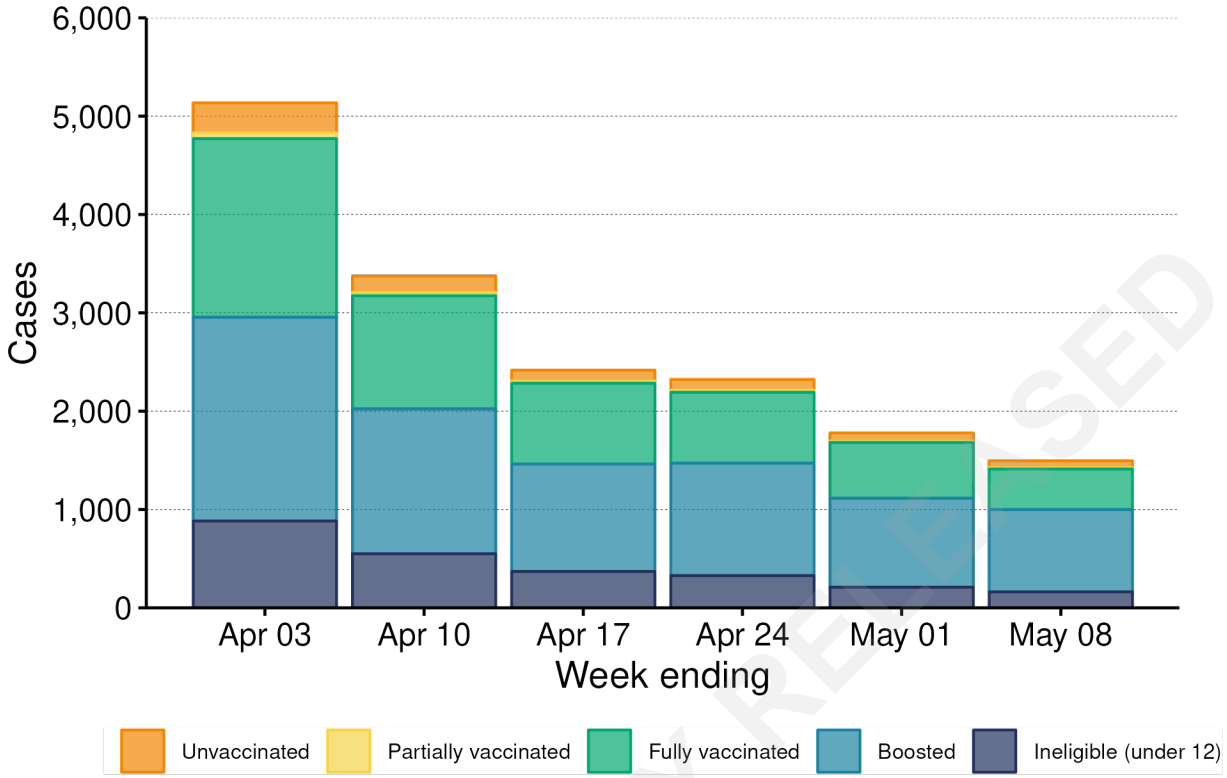
Auckland DHB



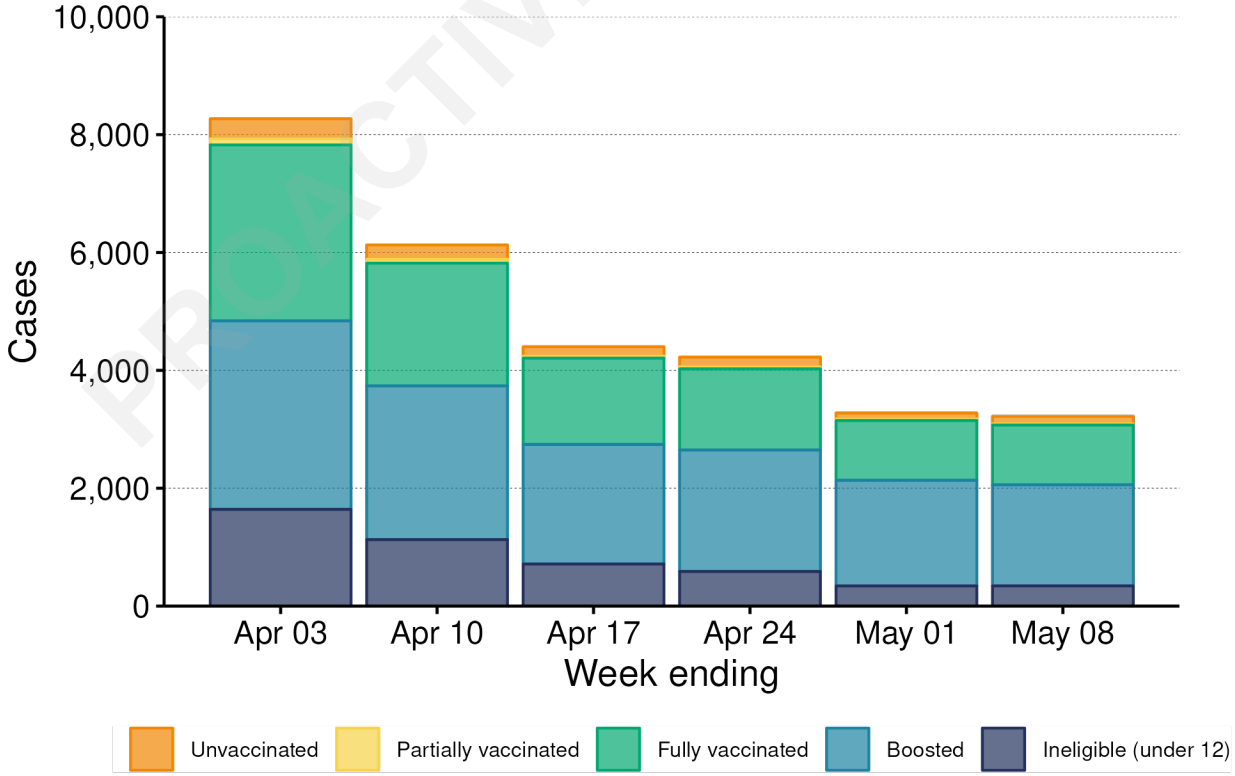
Counties Manukau DHB



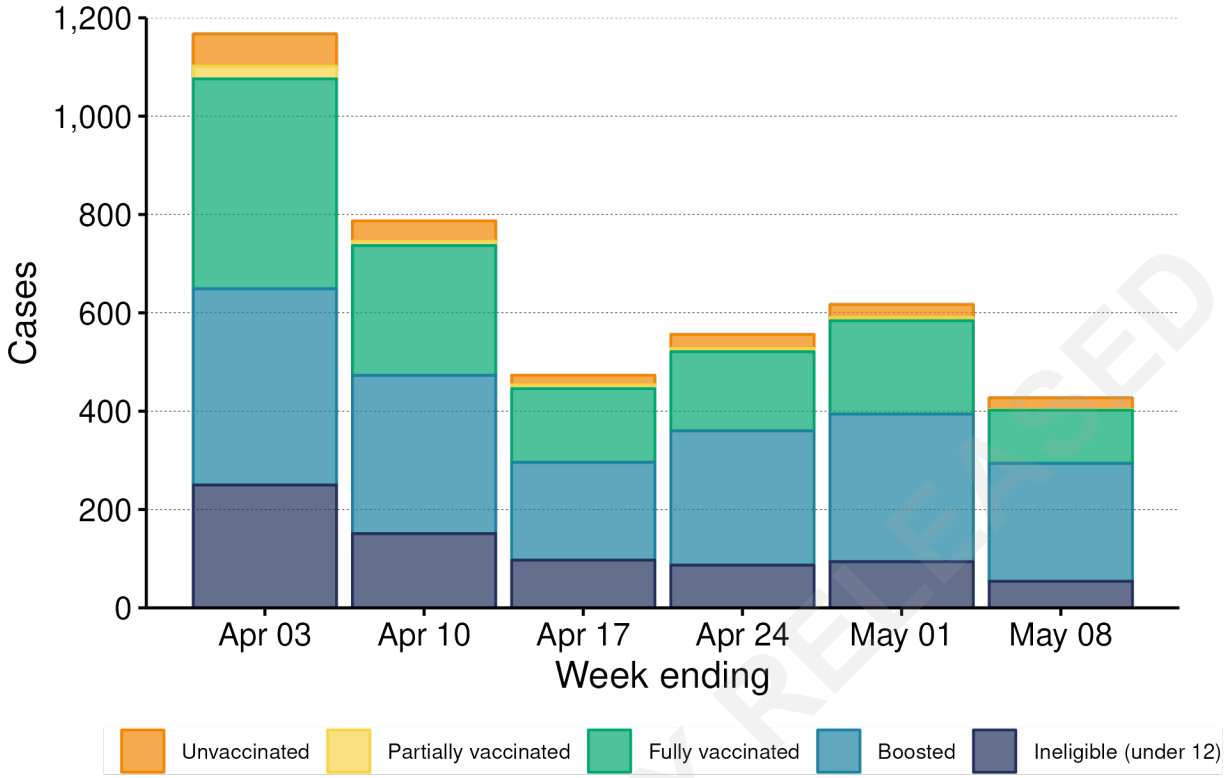
Bay of Plenty DHB



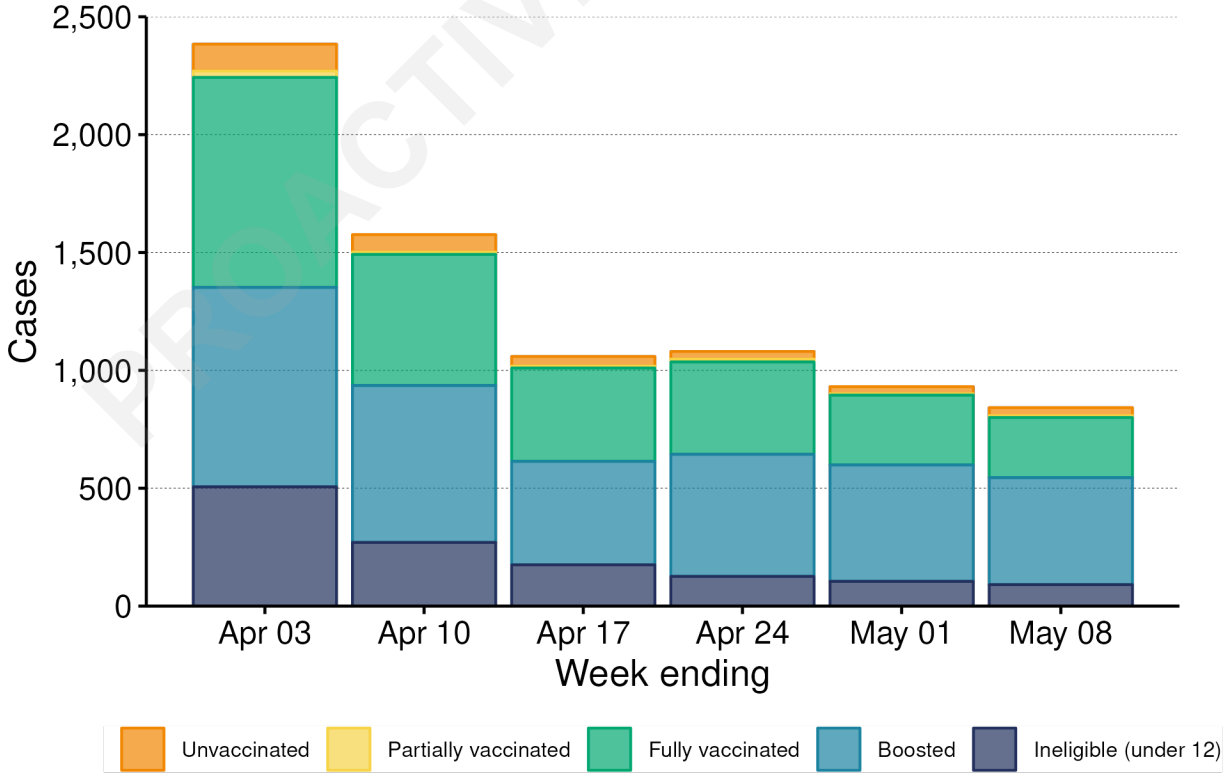
Waikato DHB



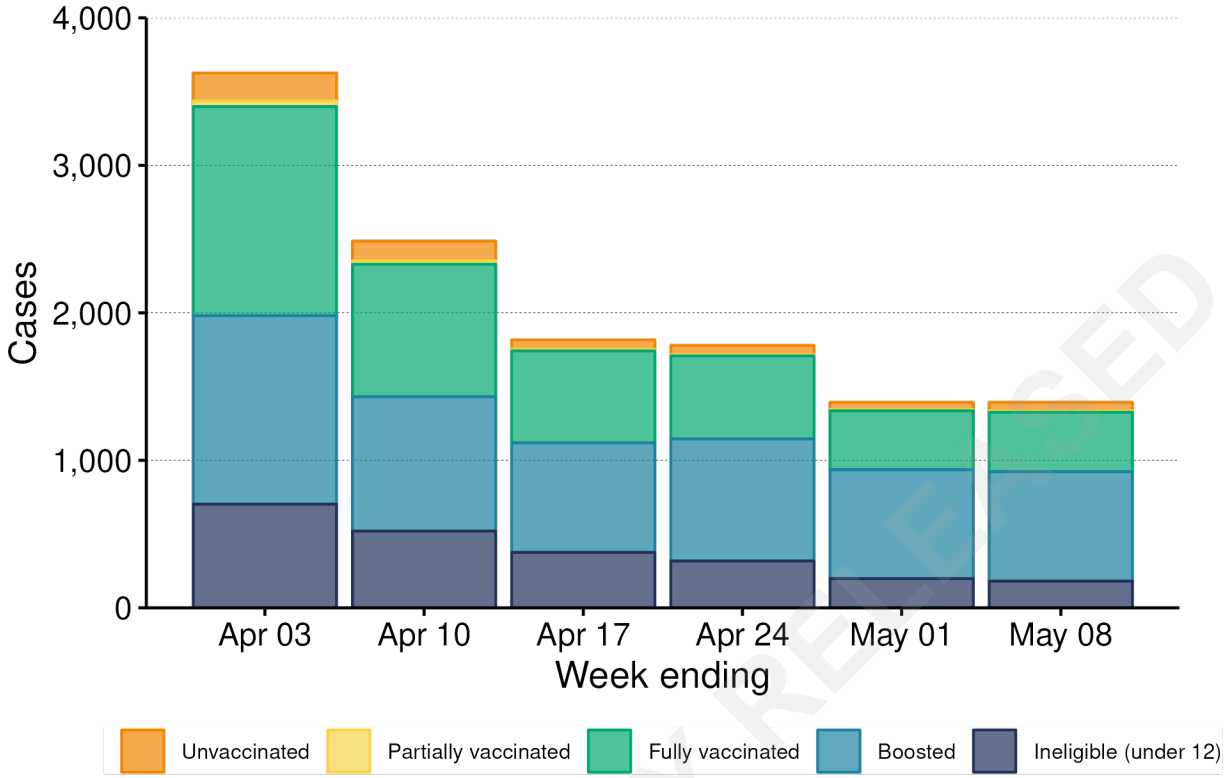
Tairawhiti DHB



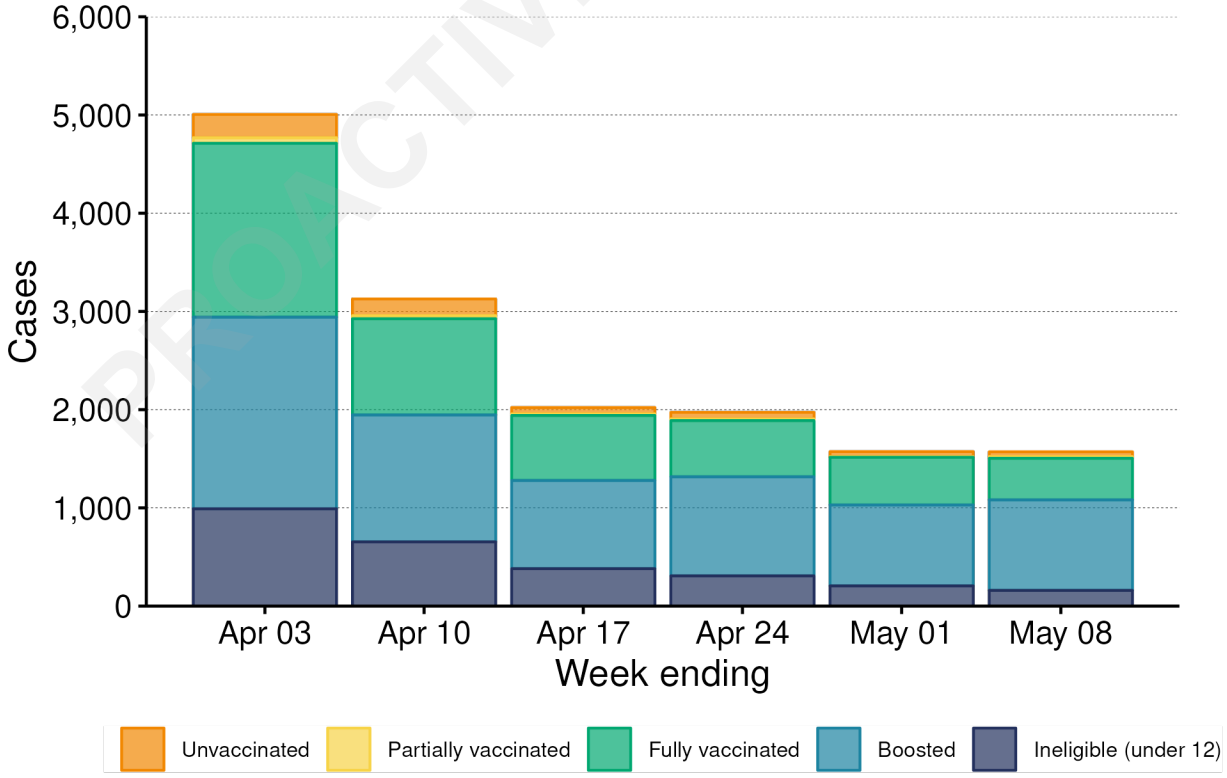
Lakes DHB



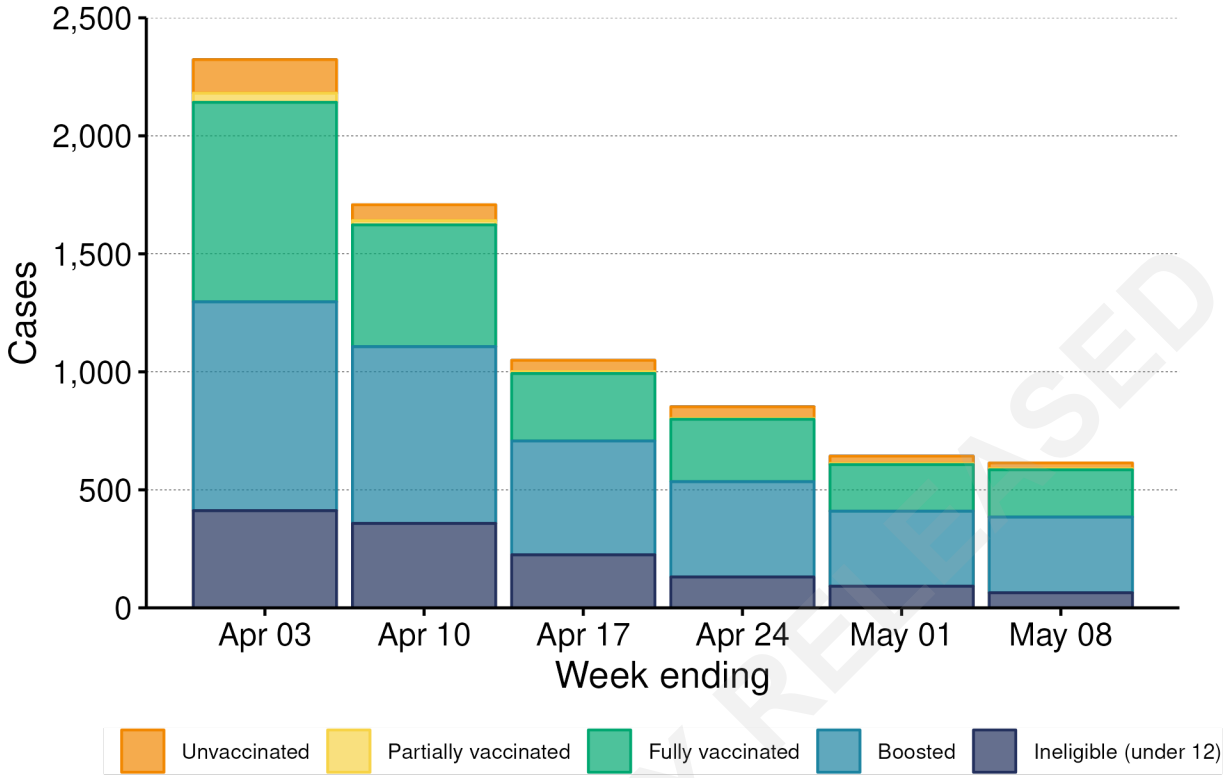
Taranaki DHB



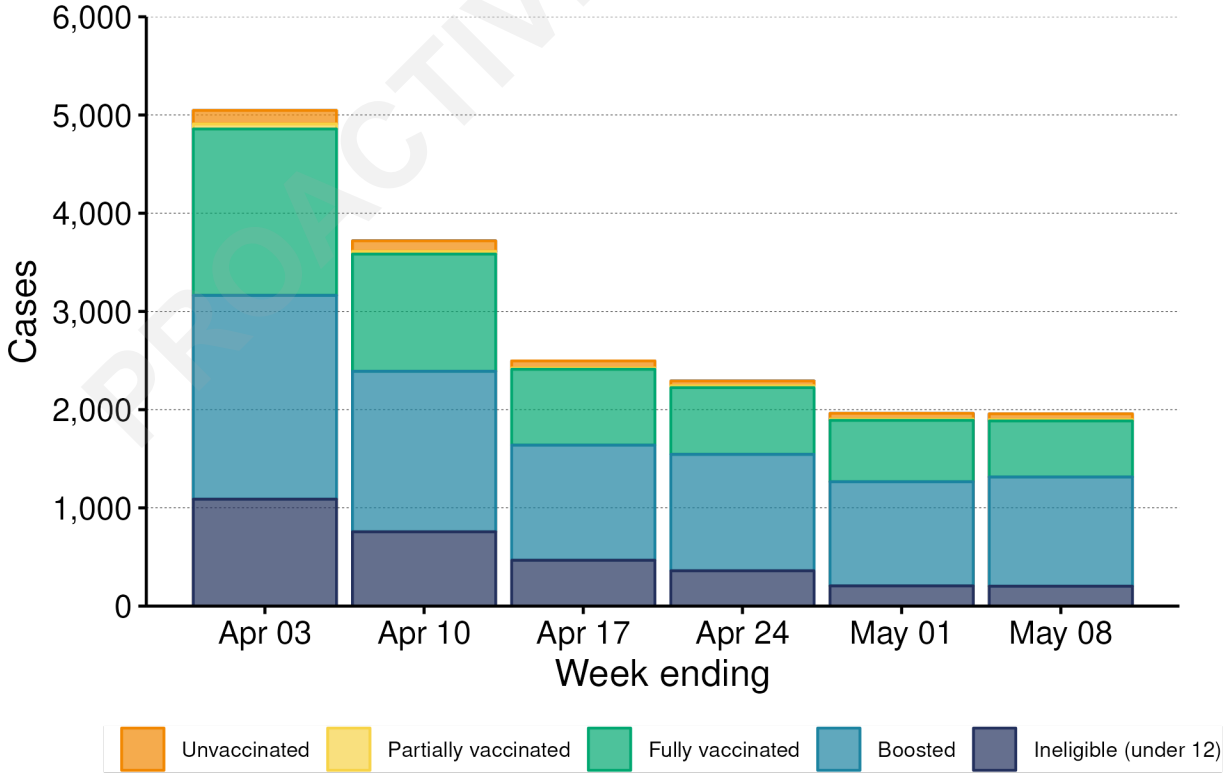
Hawke's Bay DHB



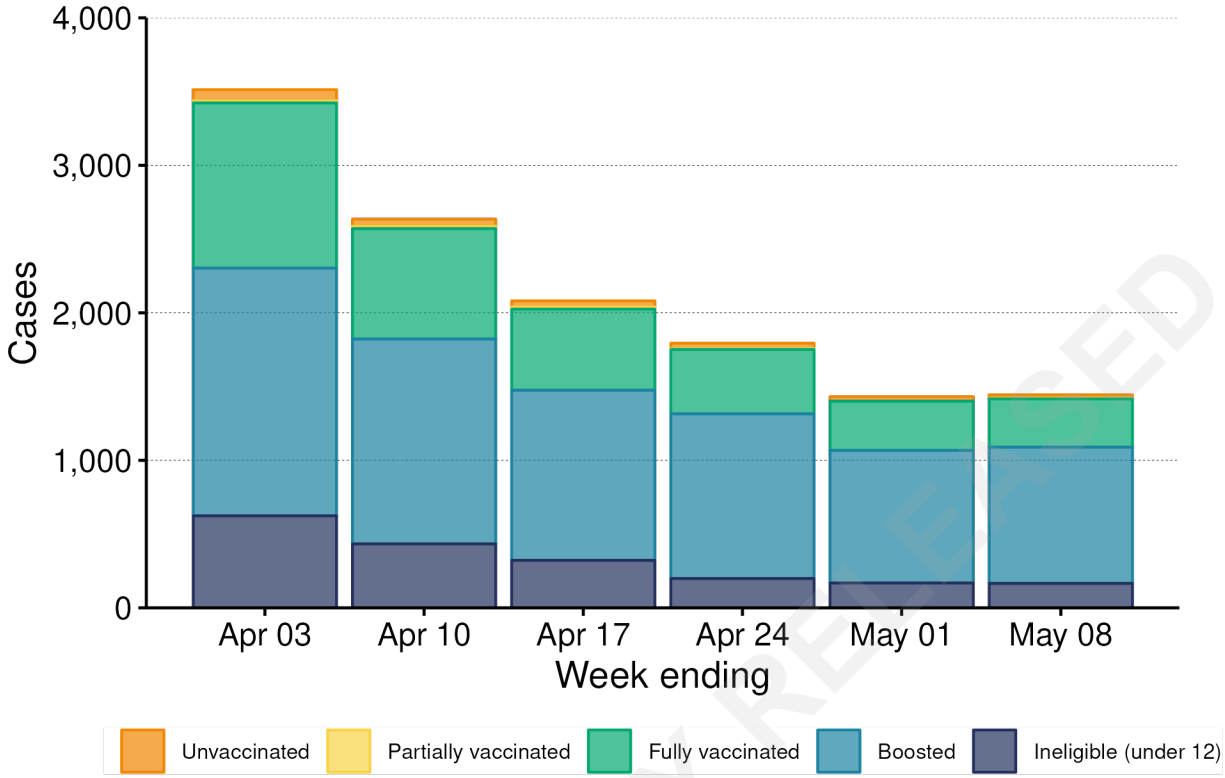
Whanganui DHB



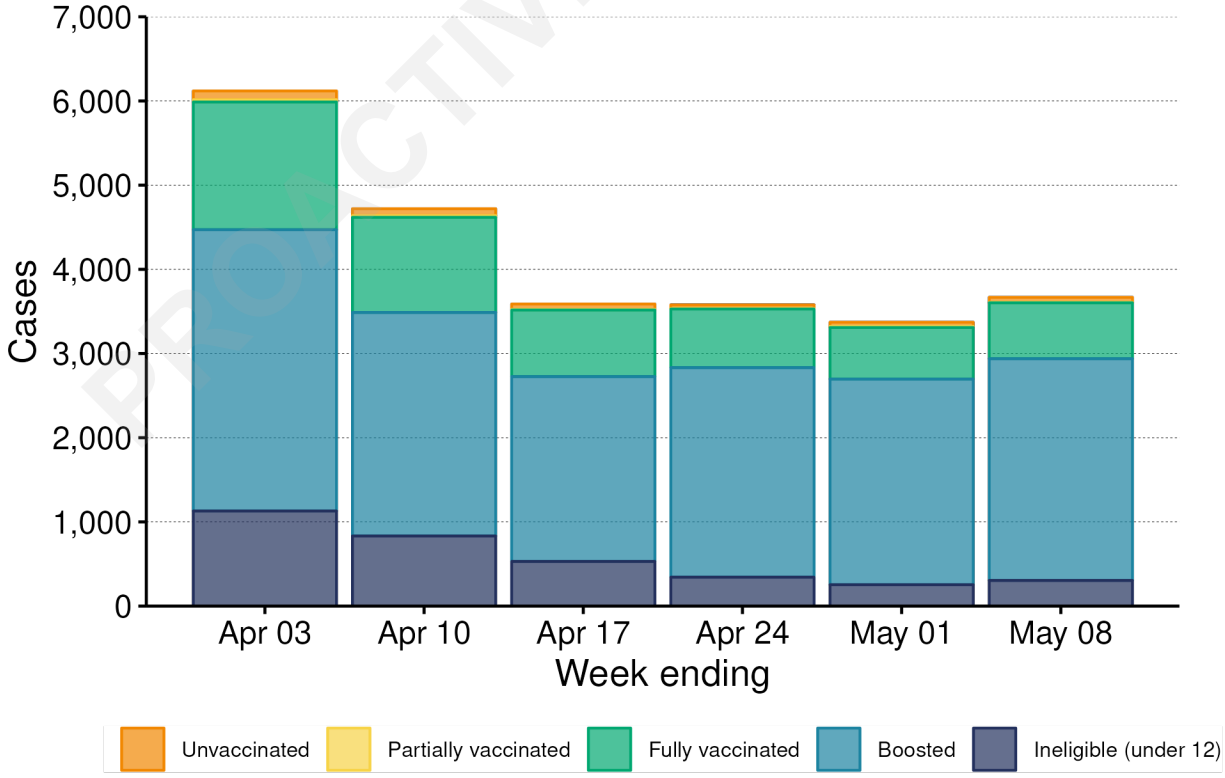
MidCentral DHB



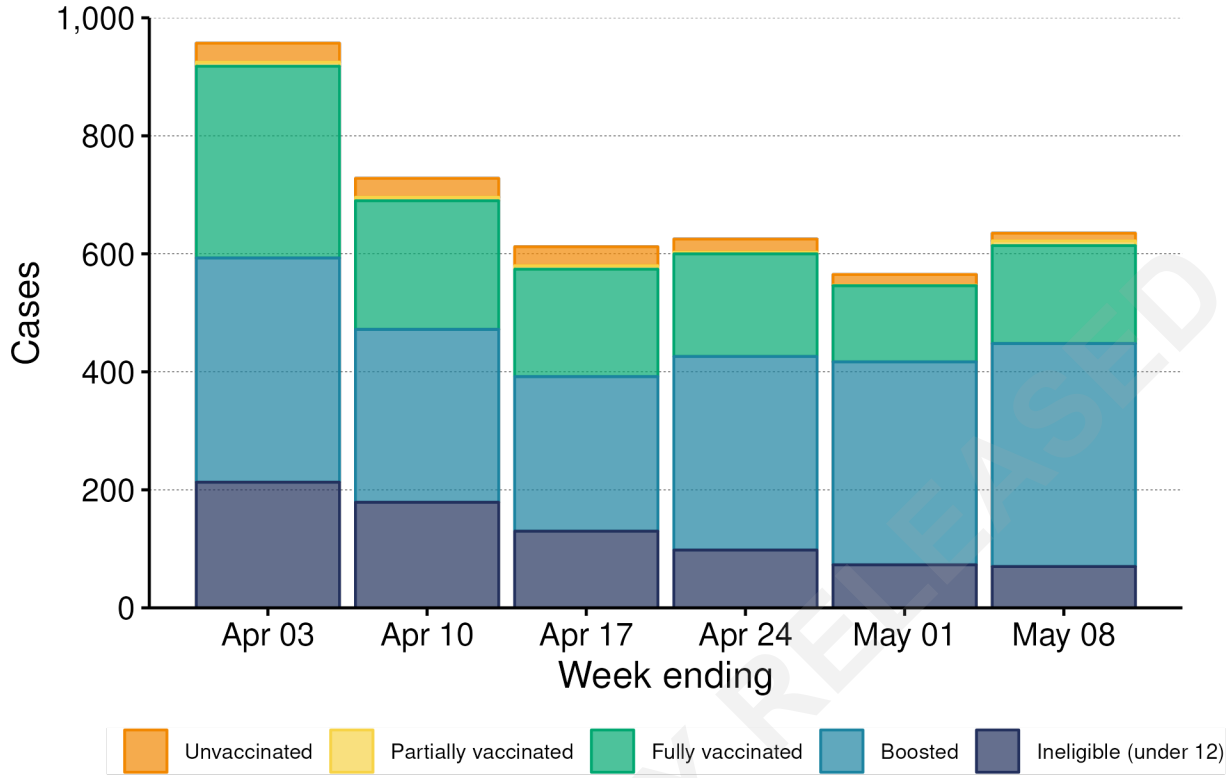
Hutt Valley DHB



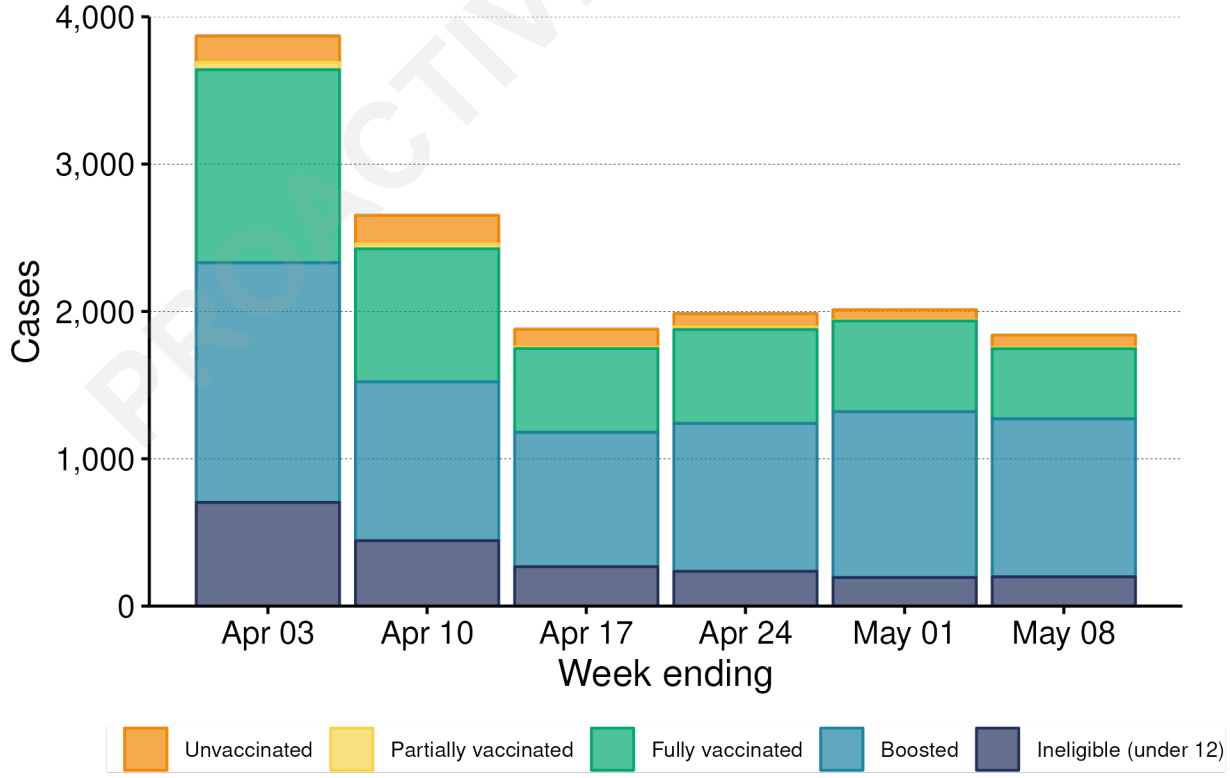
Capital and Coast DHB



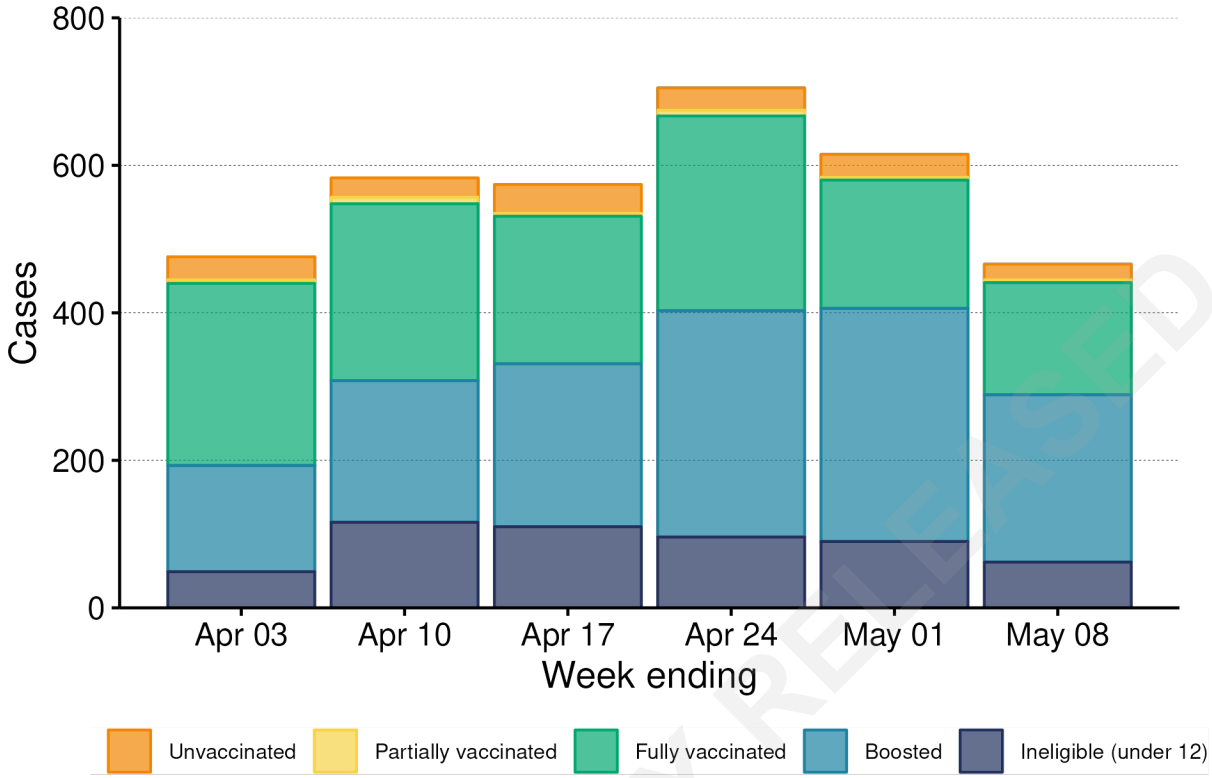
Wairarapa DHB



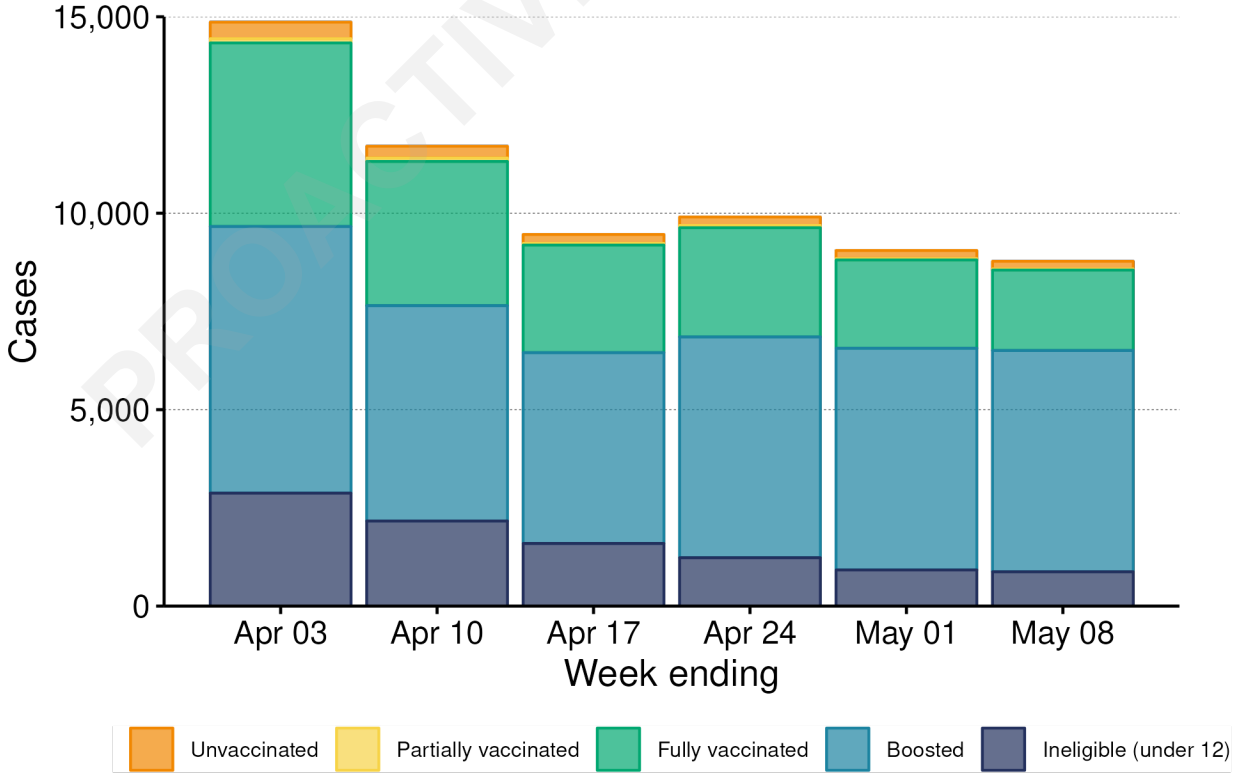
Nelson Marlborough DHB



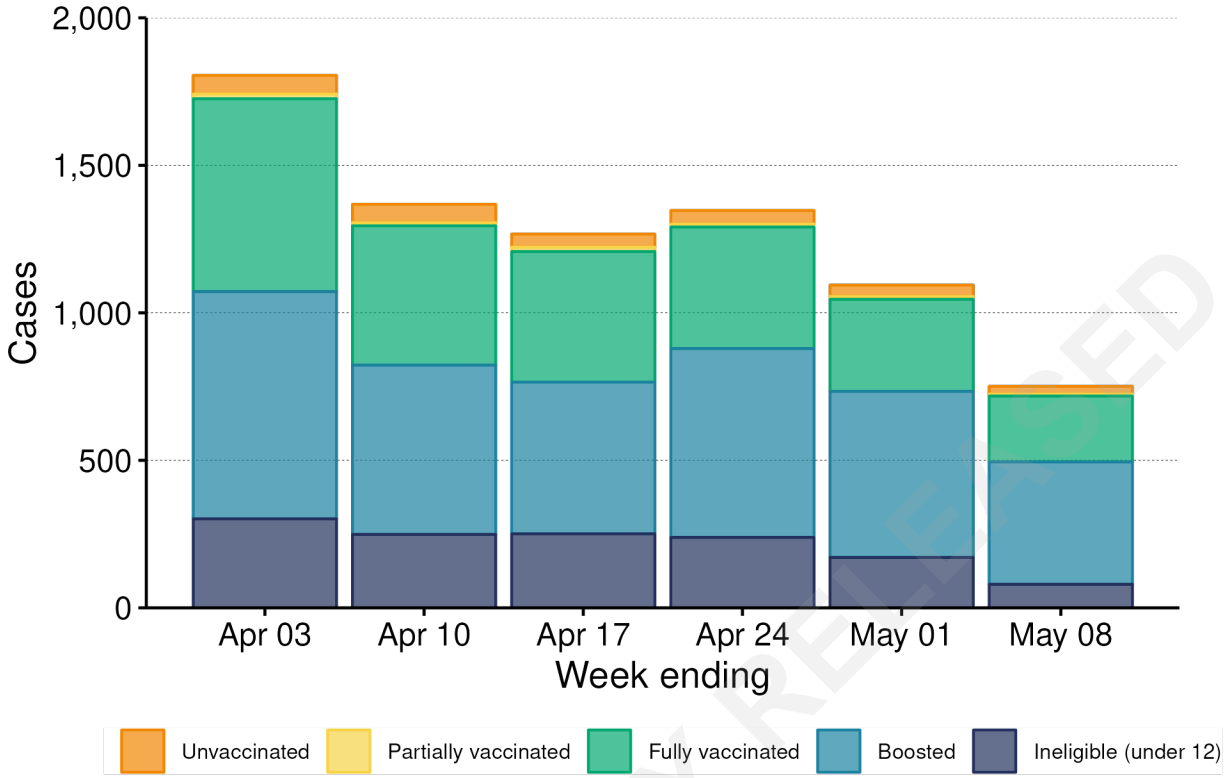
West Coast DHB



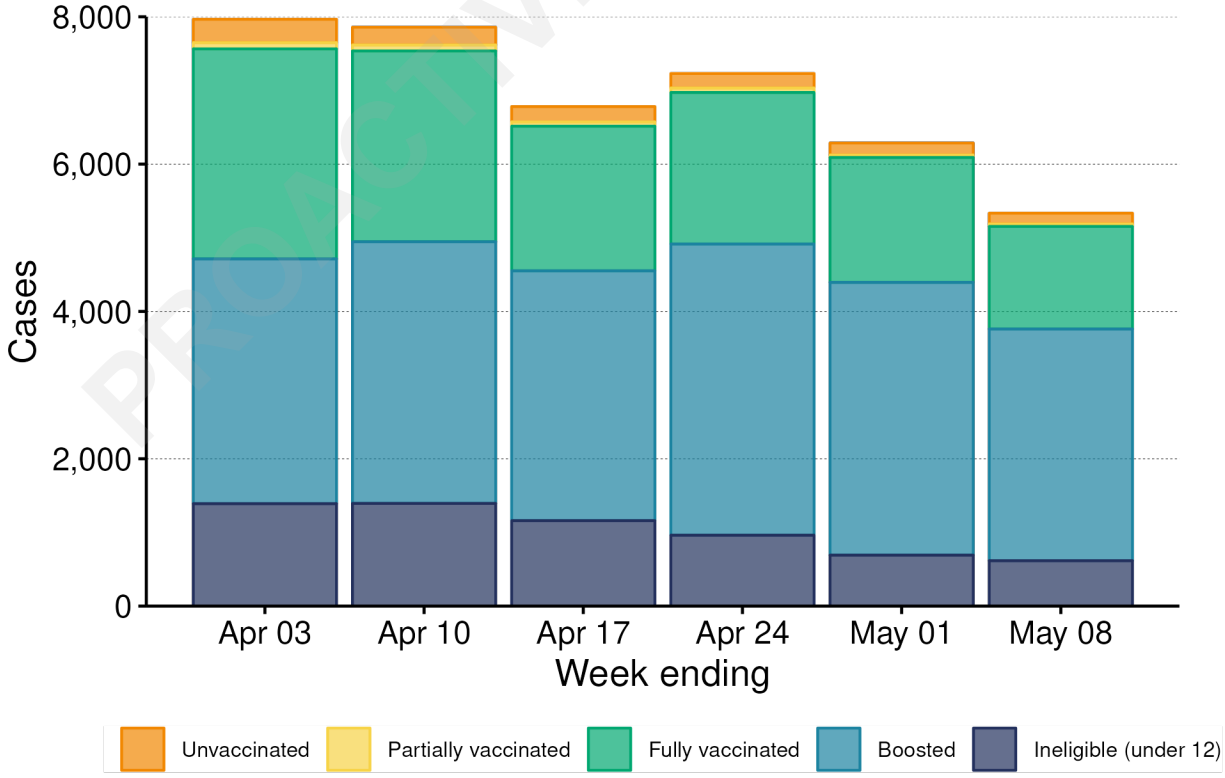
Canterbury DHB



South Canterbury DHB



Southern DHB



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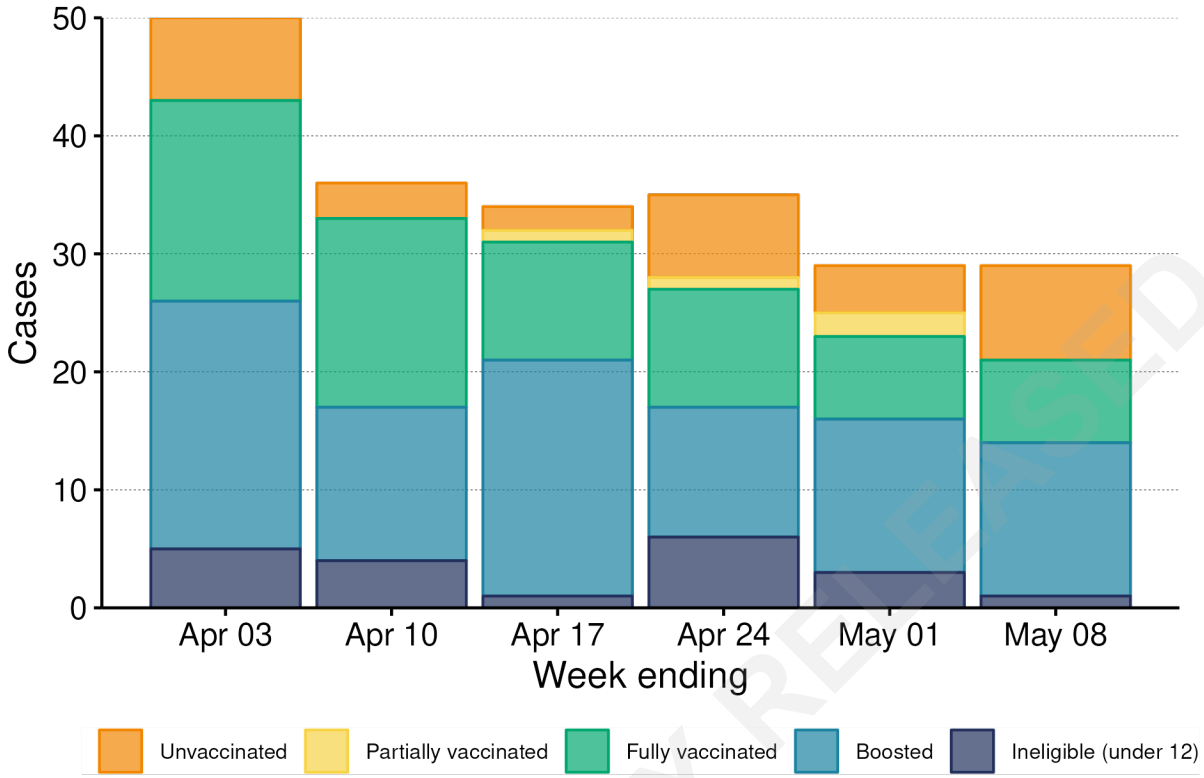

PCR Testing Rates