COVID-19

Trends and Insights Report

Updated 06 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

- **Nationally the weekly case rate was 10.6 per 1000** population for the week ending 01 May. This is a decrease of 10% from 11.7 per 1000 in the previous week.
- EpiNow modelling based on **data to 02 May predicts nationally, case numbers may continue to decrease in the coming week (median R_{eff}= 0.8)**, but the estimates continue to have high levels of uncertainty. **For Tairawhiti and Taranaki PHUs, the R_{eff} is 1.0.**
- Comparing the previous weeks **model median estimate for 03 May 2022 to the actual reported cases of 8,578, shows a 15% underestimate of forecasted cases** but falls within the 50% upper credible interval.
- **For the week ending 01 May**, the estimates suggest that **2.5% (772/30,433) of healthcare workers** and **1.8% (390/21,084) of border workers tested positive.** While these are not representative samples of New Zealanders, **border workers' risk is very similar to the general community risk** (but more reflective of the Auckland population).
- **Border worker comparisons with Auckland** case rates **suggest substantial under ascertainment of cases (1.8% [18 per 1000] versus 10.6 per 1000**, respectively).
- A total of **38.9% of healthcare and 32.4% of border workers have had a COVID-19 diagnosis in 2022 as of 01 May 2022.**
- 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, just **three DHBs experienced an increase in case rates.** These were an **11% increase in Waitemata, 19% increase in Auckland and 2% increase in Nelson Marlborough.**
- The **lowest case rates are in Pacific peoples (6.8 per 1000)** which has seen an **18% decline in the past week. Māori (8.5 per 1000)** have had the **largest decrease in the past week with a 32% decrease in case rates.**
- In the **Southern region case rates have been highest for Pacific Peoples and Asian**. **Māori** currently **have the lowest case rate (1.3 times less than that of Pacific Peoples).**
- **For 65+ age groups, case rates have increased by 17% in Southern region.**

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- 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 decreased from 61 on 24 April to 59 on 01 May**.
- **As of 05 May 2022, 821 people have died with or after COVID-19 infection. Of these, 774 have died within 28 days of being reported as a case. The 7-day rolling average of deaths is 11.**

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Infections Trends

Summary of evidence for infection and case ascertainment trends

Currently, the national border workforce case rates in the past week (1.8% [18 per 1000]) are higher than the general population (10.6 per 1000) case rates; these rates were very similar when comparing the rates in Northern region among 25-44 year-olds (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 remained very similar to the week previous**; Northern region was the only region with a slight increase in case rates. 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, 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.** International evidence suggests that wastewater trends closely follow trend in infection levels as cases shed substantially more viral RNA during the infectious period than the weeks following infection.

The overall and regional case ascertainment has continued to deviate from the modelled 'high' scenario and is not declining as quickly as predicted. **Projections based on the effective reproduction rate are again predicting a decrease in the week up to 09 May**. The projections for the previous two 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 01 May, estimates suggest that 2.5% (772/30,433) of healthcare workers (**Figure 1**) and 1.8% (390/21,084)[2] of border workers (**Figure 2**) have tested positive (for the first time). The border work force is concentrated in the Nothern region (56% of the total workforce) in the 25 to 44 year age group; the rate for Northern border workers in this age group was 1.7%.

A total of 38.9% of healthcare and 32.4% of border workers have had a COVID-19 diagnosis in the year to 01 May 2022.

[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, while this numbers reduced, the incidence estimates remained very similar.

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

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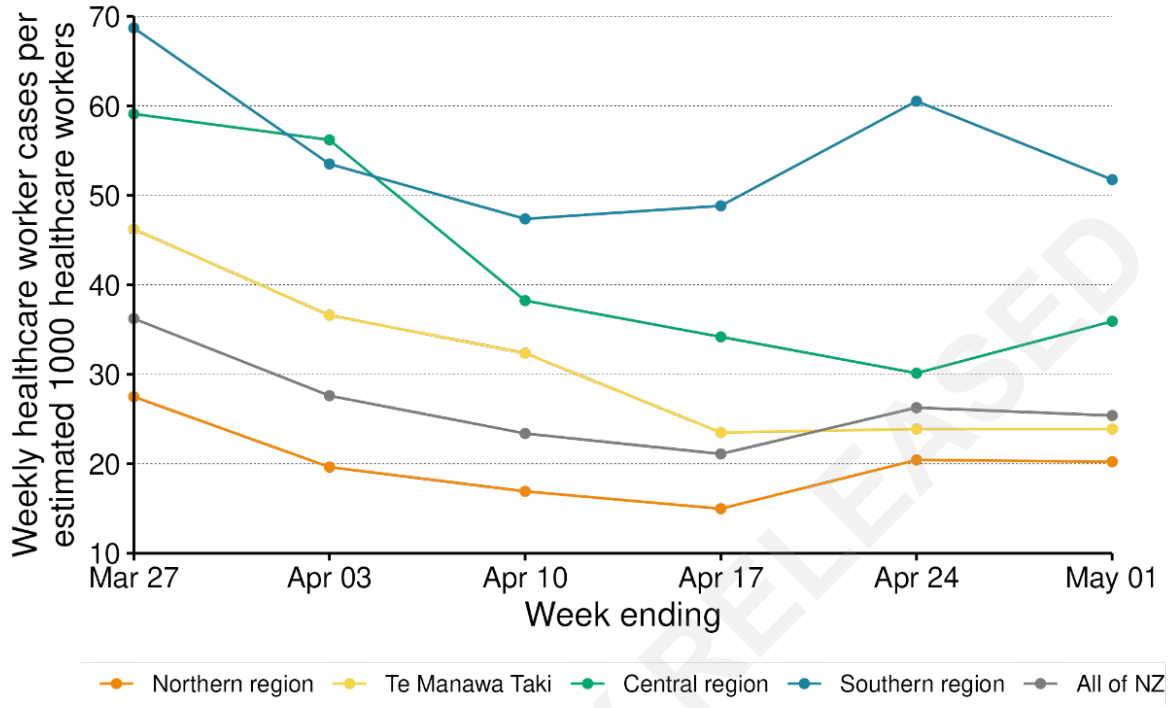
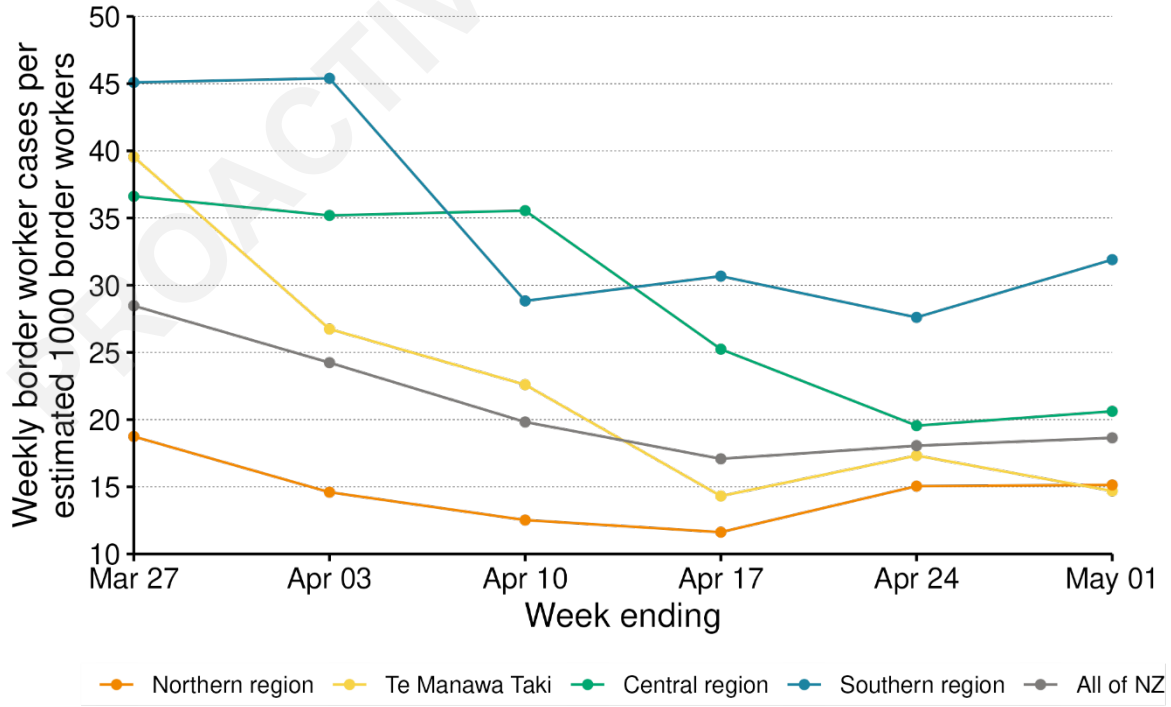
Figure 1: ***Regional weekly case rate of COVID-19 for health care workers (per 1000 estimated healthcare workers population) for the weeks ending 27 March to 01 May 2022***



Source: Éclair/Episurv, 2359hrs 01 May 2022

Figure 2: ***Regional weekly case rate of COVID-19 for border workers (per 1000 estimated border workers population) , for the weeks ending 27 March to 01 May 2022***



Source: Éclair/Episurv, 2359hrs 01 May 2022

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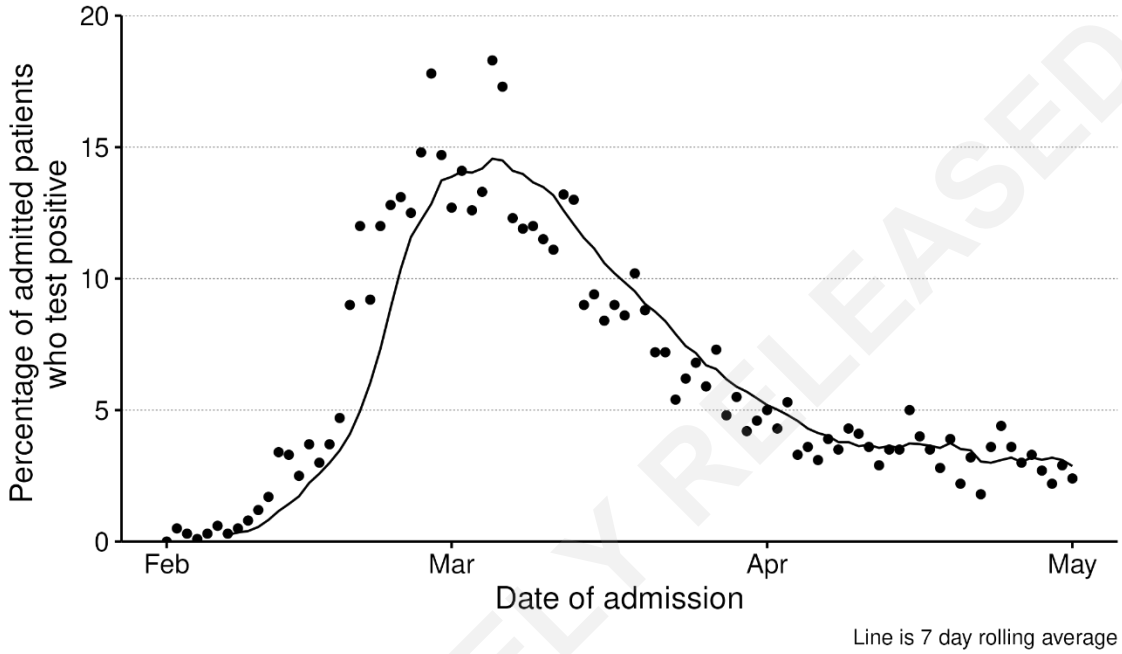
Test positivity trends in Northern region hospital admissions

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 3.1% (218/7029) in the week ending 24 April to **2.9% (194/6754)** in the week ending 01 May.

Figure 3: ***Percent of tests positive among Northern region hospital admissions, 01 February to 01 May***



Source: Northern Region hospitalisation data, NCTS & EpiSurv as at 2359hrs 01 May 2022

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Wastewater quantification

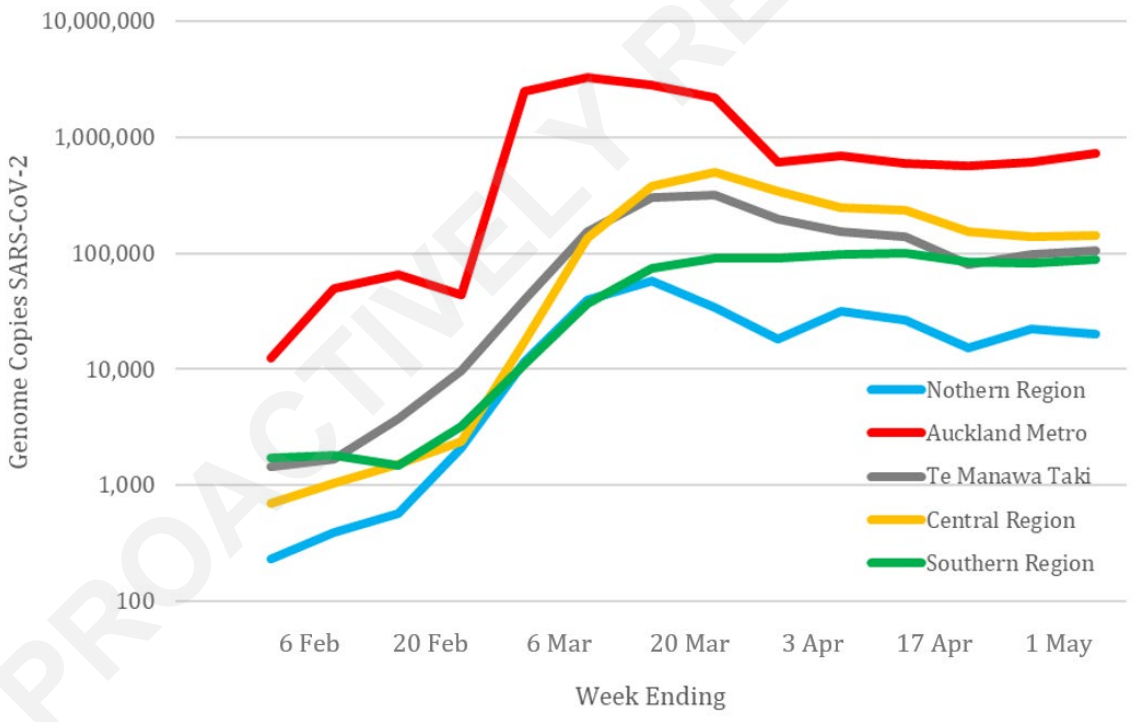
Figure 4 provides an overview of wastewater results by region. It is not appropriate to compare SARS-CoV-2 absolute levels by region, this figure can only be used to assess the trends *within* each region.

The SARS-CoV-2 RNA levels in wastewater **in Northern region** (excluding Auckland Metro) **has had small increases and decreases, but has overall been relatively stable, for the past four weeks.** Similarly, **Auckland Metro rates have been stable for the past five weeks with a slight increase in the previous week.**

Te Manawa Taki and Central regions had been slowly declining; however, there is early evidence that this decline has plateaued in the past week. Southern region wastewater trends have been stable for the past six 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 – 01 May 2022***



Source: ESR SARS-CoV-2 in Wastewater update for week ending 01 May 2022

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Trends in diagnosed cases

Overall, **the weekly case rate was 10.6 per 1000** population for the week ending 01 May. This was a **decrease of 10% from the previous week,** which was 11.7 per 1000.

Figure 5 shows that case rates in all regions except Northern have decreased in the past week. **Te Manawa Taki (8.2 per 1000) decreased by 24%, Central (10.1 per 1000) decreased by 17% and Southern (16.5 per 1000) decreased by 12%. Northern region (8.5 per 1000) remains steady compared to the past week.**

In the past week, just three DHBs experienced an increase in case rates. These were an 11% increase in Waitemata, 19% increase in Auckland and 2% increase in Nelson Marlborough.

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

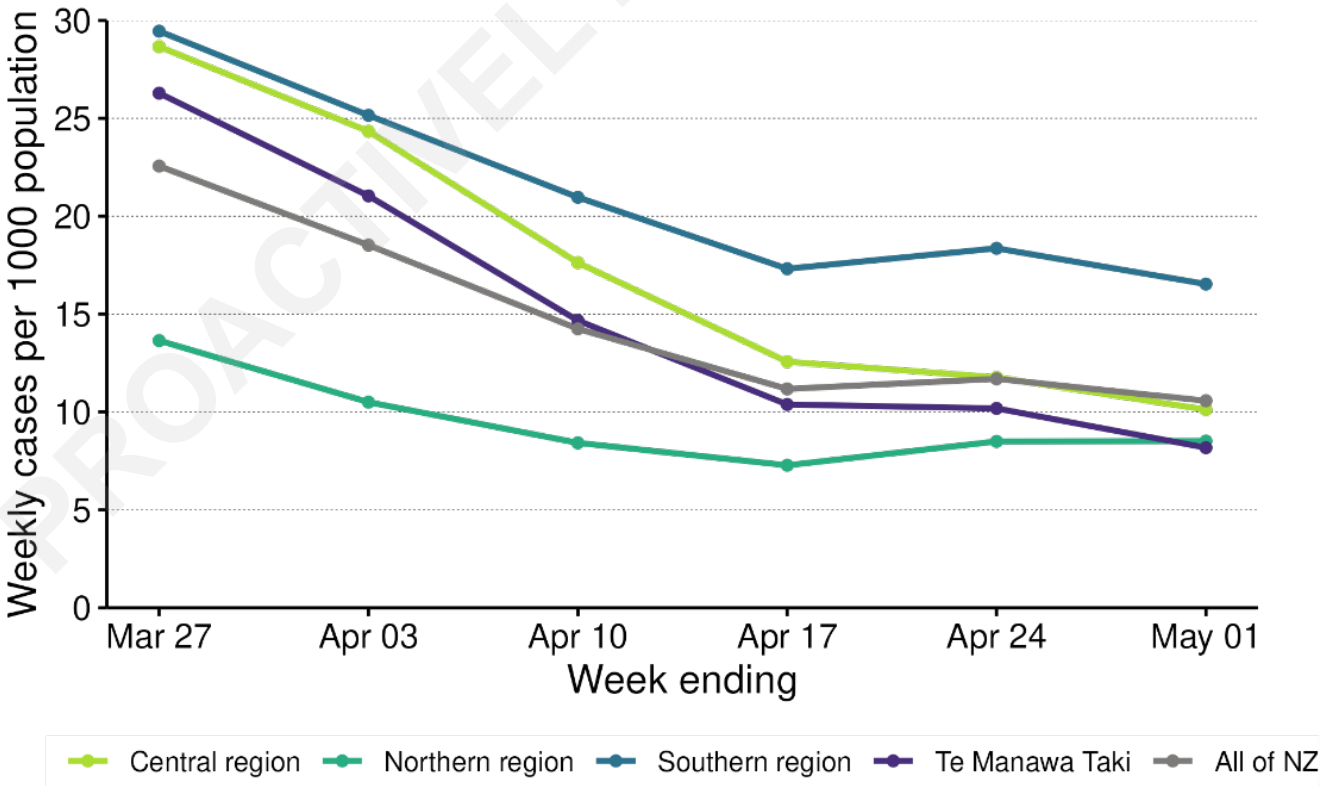
In the Northern region, weekly case rates were highest **for Auckland DHB (10.1 per 1000),** 1.5 times higher than that of the lowest, Counties Manukau DHB (6.6 per 1000).

In Te Manawa Taki, weekly case rates were highest in **Tarawhiti (12.0 per 1000)**.

The highest weekly case rates in the Central region were in **Wairarapa (11.6 per 1000)**.

In the Southern region, the highest case rates were in West Coast (19.1 per 1000) followed by Southern DHB (18.8 per 1000) and South Canterbury DHB (17.9 per 1000). Case rates on the whole are steadily declining in the Southern region.

Figure 5*: Regional weekly COVID-19 case rates (per 1000), for the weeks ending 27 March to 01 May 2022*



Source: NCTS/EpiSurv as at 2359hrs 01 May 2022

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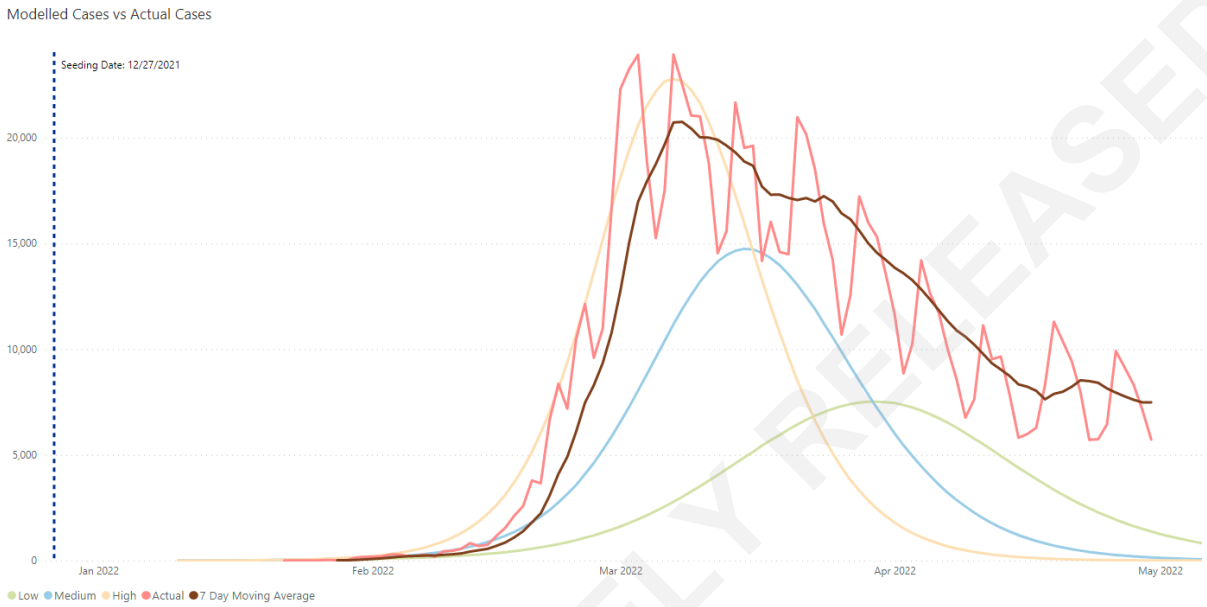
Modelled and actual cases

The number of diagnosed cases is continuing to track above all modelled scenarios nationally, with a wider peak than projected (**Figure 6**). This trend has been noted in all four regions (**Appendix).** All regions are experiencing a slower decline in cases than all modelled scenarios, exhibiting a 'long tail'.

The scenarios for each DHB were last updated on 27 February 2022.

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



Sources: TAS, based on COVID-19 Modelling Aotearoa Branching Process Model 27 February 2022, and Ministry of Health reported case data 02 May 2022

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Effective reproduction rate, and forecasts of cases and infections

These estimates used the *EpiNow2* package on 05 May using data to 02 May.[3] Regional estimates for R_{eff} are shown in the accompanying **appendix document**. The median estimate of **effective R (R_{eff}) nationally is 0.8** (90% Credible Interval [CI]: 0.5-1.2) for cases to 02 May, after adjusting for data lags; this is the lowest R_{eff} during 2022. While the relatively wide confidence intervals indicate there is high uncertainty for this estimate, the effective R is the lowest it been during the Omicron outbreak.

For both Tairawhiti and Taranaki Public Health Units (PHU), the model is **estimating a median R_{eff} of 1.0. Northland, Nelson Marlborough and Southern PHUs have the lowest estimated medians at 0.7.**

The number of new confirmed cases nationally by their date of infection are in **Figure 7**.

Comparing the previous weeks model median estimate for 03 May 2022 (7,473 cases per day, 50% credible interval: 5,479–10,395) to the actual reported cases of 8,578, shows a 15% underestimate of forecasted cases but falls within the 50% upper credible interval.

The model's median estimate is that national reported cases could be 5,579 cases per day by 09 May (50% credible interval: 4,223–7,350). However, the credible intervals for the projected cases would be even wider if the possibility of continuing trend changes in Effective R were included.

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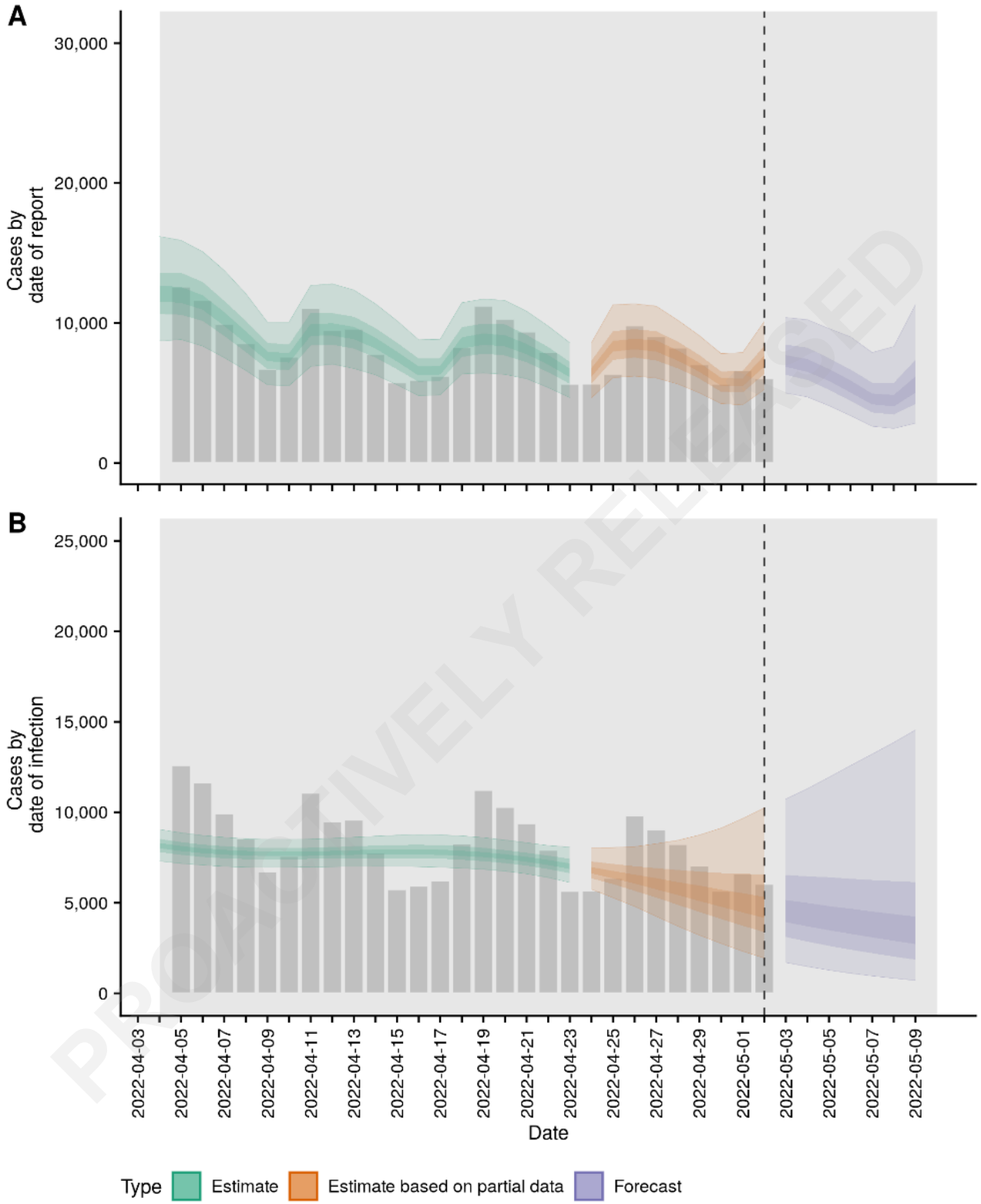
[3] The EpiNow package 'now-casts' and forecasts cases to measure current, past and future transmission nationally by calculating and then extrapolating the effective reproduction number, R_{eff}. The model does not consider several factors that may impact transmission, such as rapid changes in public 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 05 May 2022

Demographic trends in case rates

Ethnicity trends over time and by region

Figure 8 shows national case rates by ethnicity. **Figure 9** shows regional case rates by ethnicity.

In the past week nationally, rates in all ethnicities have declined. European or Other continue to have the highest weekly case rate at 11.6 per 1000 population but have declined by 8% in the past week. Asian case rates have declined by 5% and now are 10.2 per 1000.

The lowest case rates are in Pacific peoples (6.8 per 1000) which has seen an 18% decline in the past week. **Māori (8.5 per 1000) have had the largest decrease in the past week with a 32% decrease in case rates.**

Case rates in the Northern region for European or Other are 9.6 per 1000, comparable to Asian at 8.9 per 1000. Māori have the second lowest case rate at 6.9 per 1000. Pacific Peoples (5.0 per 1000) continue to have the lowest case rates in this region.

Case rates for Te Manawa Taki are highest for Asian (9.5 per 1000), which is 1.4 times higher than that of the lowest, Pacific Peoples (6.8 per 1000). Māori (7.2 per 1000) and European or Other (8.4 per 1000) have similar case rates.

Central region rates for all ethnic groups have converged over time. Māori (9.0 per 1000), Pacific Peoples (9.2 per 1000), Asian (9.1 per 1000) and European or Other (10.6 per 1000) are all comparable.

In the Southern region case rates have been highest for Pacific Peoples (18.9 per 1000) and Asian (18.6 per 1000). Māori (14.8 per 1000) currently have the lowest case rate (1.3 times less than that of Pacific Peoples) with the next lowest being European or Other (16.4 per 1000).

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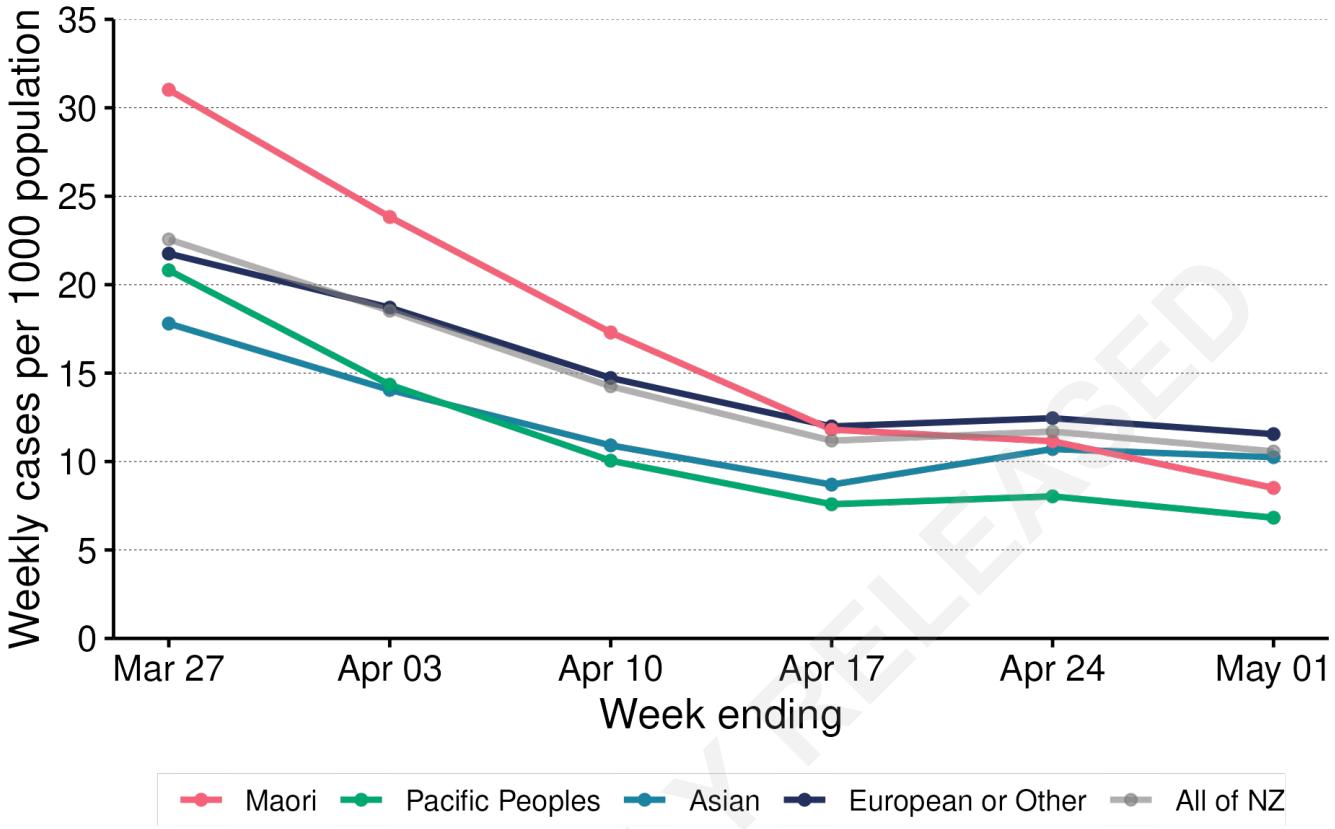
Figure 8: ***Ethnicity specific weekly COVID-19 case rates (per 1000) for New Zealand, for the weeks ending 27 March to 01 May 2022***



Source: NCTS/EpiSurv as at 2359hrs 01 May 2022

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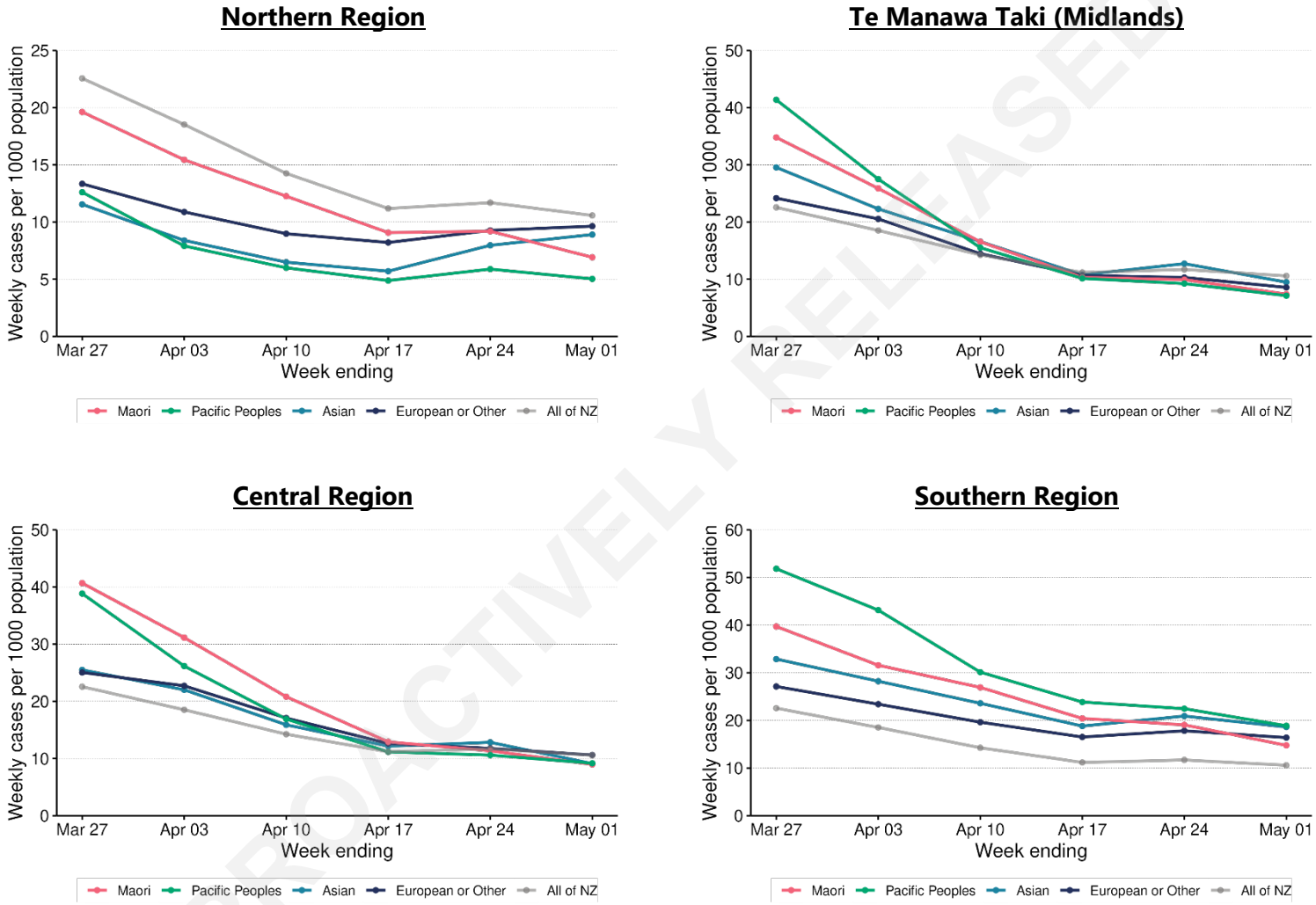
Figure 9: ***Ethnicity specific weekly COVID-19 case rates (per 1000) by region, for the weeks ending 27 March to 01 May 2022***



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Source: NCTS/EpiSurv as at 2359hrs 01 May 2022

Age trends over time and by region

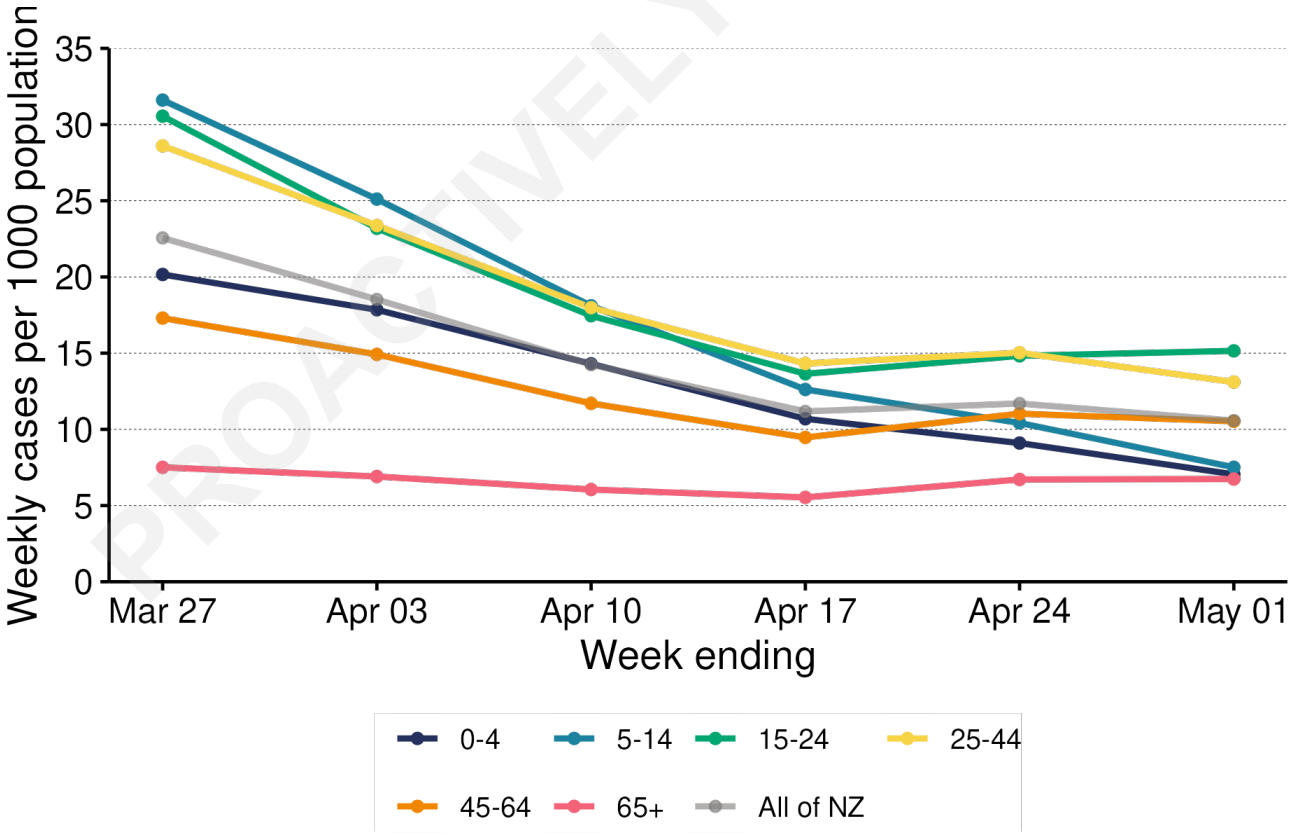
Figure 10 shows community cases by age nationally. Case rates in the 0-4 and 5-14 age groups are still declining, while case rates for all other age groups have been relatively steady since Mid-April. Nationally, **case rates are similar for 0-4, 5-14, and 65+ age groups (7.0, 7.5, 6.7 per 1000 respectively) and relatively similar for 15-24, 25-44 and 45-64 age groups (15.2, 13.1 and 10.5 per 1000 respectively)** in the past week. Those aged 65+ continue to have the lowest weekly case rates at 6.7 per 1000, followed by the 0-4 age group (7.0 per 1000).

Patterns of age group infection were similar for all regions and similar to the pattern observed nationally with most groups now converging at similar levels, especially in Northern, Te Manawa Taki and Central regions.

For 45-64 age groups, case rates have remained steady in Northern, decreased by 10% in Te Manawa Taki, decreased by 6% in Central and decreased by 5% in Southern region. For 65+ age groups, case rates have remained steady in Northern region, decreased by 11% in Te Manawa Taki, decreased by 19% in Central and increased by 17% in Southern region.

Cases are still slightly more spread out by age in the Southern region though appear to be heading towards a similar pattern. For all regions, the 65+ age group has had the lowest case rates throughout the period reported, however, the Northern region's 0-4 aged population has a slightly lower case rate as at May 1st (4.7 versus 4.9 per 1000 respectively).

Figure 10: ***Age specific weekly COVID-19 case rates (per 1000) for New Zealand, for the weeks ending 27 March to 01 May 2022***



Source: NCTS/EpiSurv as at 2359hrs 01 May 2022

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Housing Deprivation trends over time, by ethnicity and by region

Figure 11 shows case rates based on the Index of Multiple Deprivation 2018 housing deprivation scores. Housing is a key determinant of COVID-19 both in terms of risk and protection. Areas of high deprivation are ones where there is a higher number of renters, overcrowding and lack of amenities. These factors impact the ability to sustain self-isolation for cases and their household members.

Overall, in the past week **cases rates were highest in the areas of least deprivation (12.1 per 1000 population),** followed by areas of mid-range deprivation (11.3 per 1000) and areas most deprived (8.7 per 1000).

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 (10.8 per 1000) followed by those of Asian ethnicity (9.5 per 1000). Cases in Pacific Peoples were the lowest in areas most deprived (4.9 per 1000) but highest in areas least deprived (13.5 per 1000).

For **the most deprived areas, cases in Māori made up 23% of cases** despite only making up 15% of the total population. The proportion of cases in the most deprived areas for Pacific Peoples was 9%, for Asian 14% and for European and Other was 53%. Whereas 79% of cases **in areas of least deprivation** were European and Other compared with 12% being Asian, **6% Māori** and 2% Pacific Peoples.

In the Northern region, case rates were highest in the least deprived areas (9.9 per 1000 population) followed by areas of mid-range deprivation (9.4 per 1000) and areas most deprived (6.2 per 1000) (see **Appendix**).

In Te Manawa Taki region, case rates were highest in the least deprived areas (9.2 per 1000) followed by areas of mid-range deprivation (8.7 per 1000) and areas most deprived (7.7 per 1000).

In the Central region, case rates were highest in the least deprived areas (10.7 per 1000) followed by areas of mid-range deprivation (10.8 per 1000) and areas most deprived (9.1 per 1000).

In the Southern region, case rates were highest in the least deprived areas (19.9 per 1000) followed by areas of mid-range deprivation (18.5 per 1000) and areas most deprived (18.0 per 1000).

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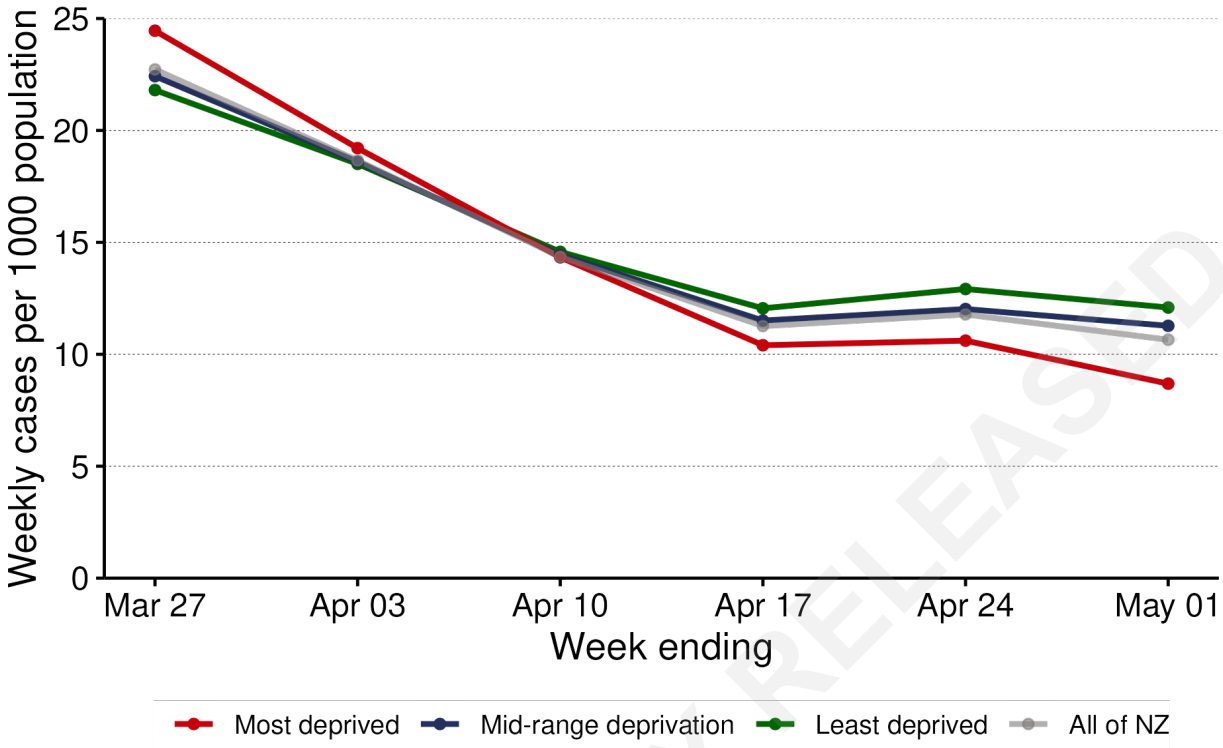
Figure 11: ***Deprivation specific weekly COVID-19 case rates (per 1000) for New Zealand, for the weeks ending 27 March to 01 May 2022***



Source: NCTS/EpiSurv as at 2359hrs 01 May 2022

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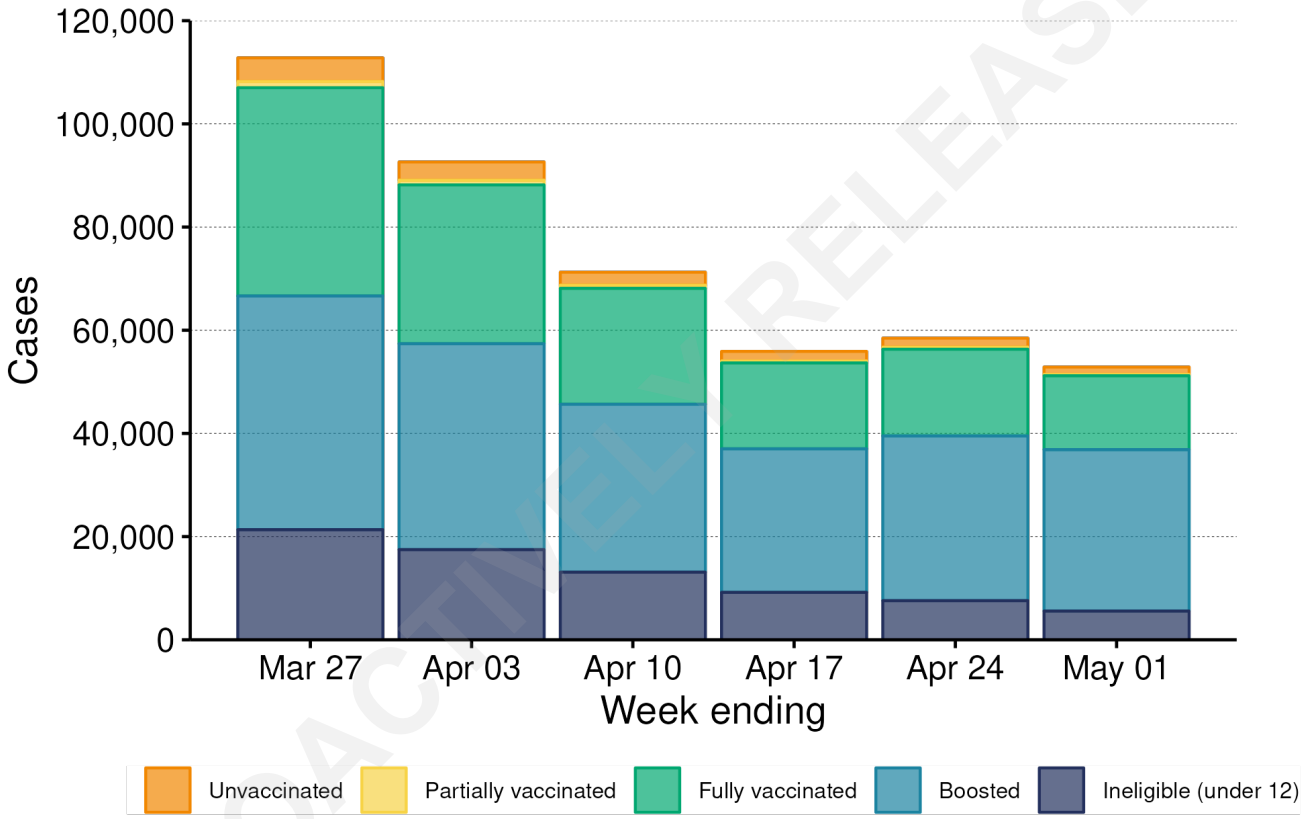
Vaccination trends over time

Figure 12 shows community case numbers by vaccination status nationally. The proportion of boosted cases continues to rise from 54.6% the week prior to 59.2% of all cases in the week ending 01 May. The proportion reported as fully vaccinated are steady at 27.1% 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 10.5%, a decrease from the previous week (13.0%). The proportion of cases reported as partially vaccinated remains relatively constant at 0.5% while cases reported in those unvaccinated has also slightly decreased from 3.0% to 2.7%.

Figure 12: ***Vaccination specific weekly COVID-19 case numbers for New Zealand, for the weeks ending 27 March to 01 May 2022***



Source: NCTS/EpiSurv as at 2359hrs 01 May 2022

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

Among Omicron cases, BA.1 was the dominant subvariant (~ 60% at the start of February 2022) but has since been outcompeted by BA.2, which made up over 97% of sequenced cases in the two weeks to 01 May. 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.

Variant analysis from wastewater across 20 sentinel sites from 17 April to 30 April, were consistent with WGS of clinical cases. Delta was not detected and BA.2 is the dominant Omicron subvariant across the country (detected in all 20 sentinel sites).

BA.1 was detected in 3/20 sentinel catchments at very low proportions. The national average across all catchments was 99% BA.2, <1% BA.1, 0% BA.4/BA.5 and 0% Delta.

Based on WGS data generated over the course of the Omicron wave, ESR estimate that 81% of all cases (~755,000/~933,000 cases) reported since 20 January 2022 have been the BA.2 variant (**Figure 14**).

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

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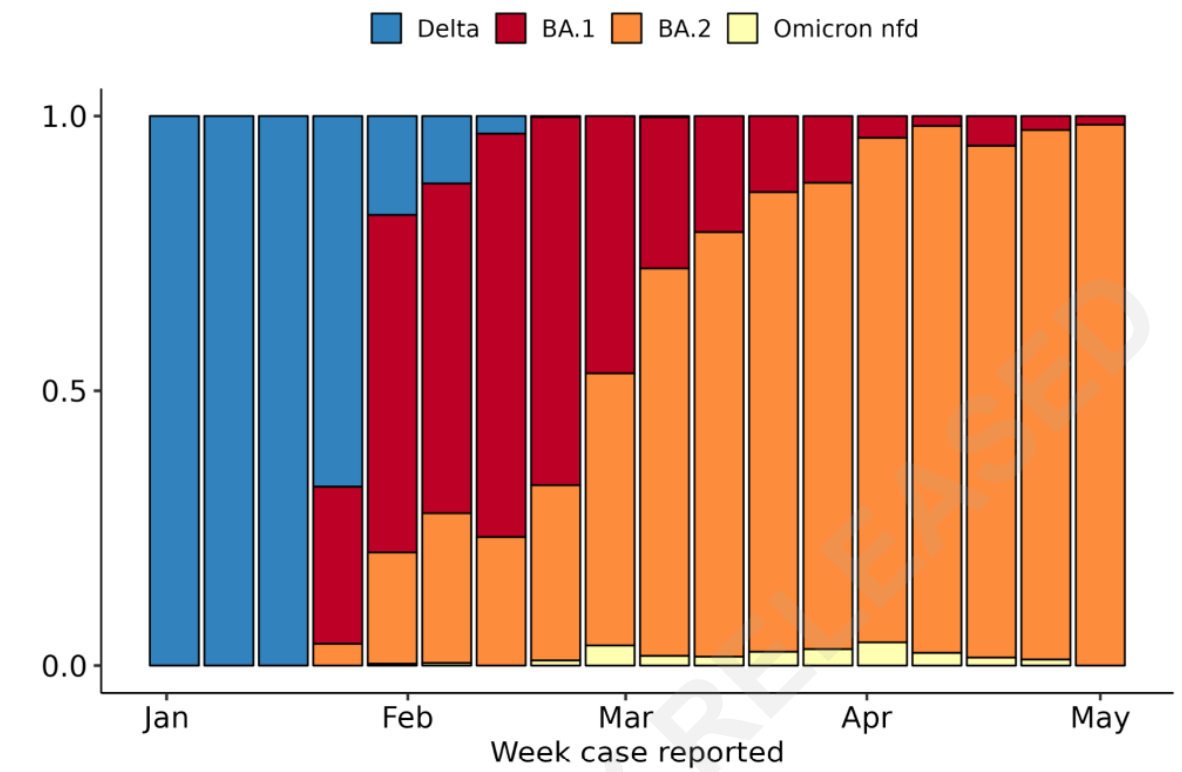
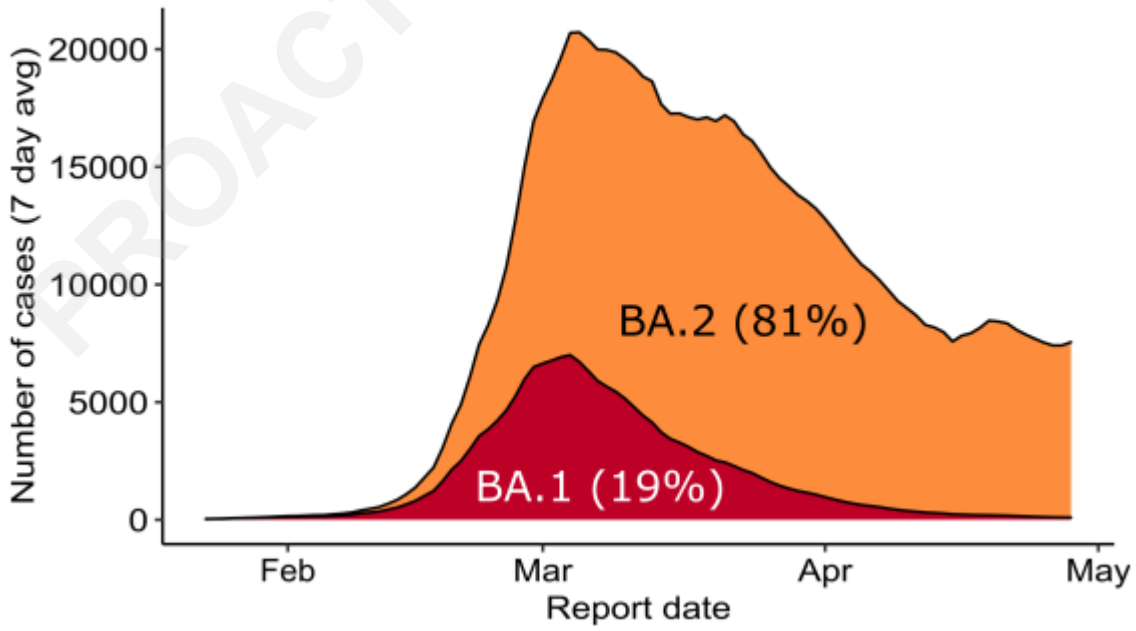
Figure 13: ***Frequency of Variant of Concerns in community cases in New Zealand***



Source: ESR COVID-19 Genomics Insights Report #5, EpiSurv/Microreact 0900hrs 04 May 2022

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



Source: ESR COVID-19 Genomics Insights Report #5

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Testing of Border arrivals

Table 1 shows the breakdown of travellers that arrived at the 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	31,072
Number of individual RATs scheduled to be reported	60,951
Number of individual RAT results uploaded	37,679
Number of people who uploaded a RAT result	27,450 (88%)
Number of positive RAT results	780 (2%)

Source: National Border Solution, 06 May 2022

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Whole Genomic Sequencing of Border cases

Out of 810 border cases in the past two weeks, 192 cases have been sequenced.

Recently sequenced cases associated with the border include the first detection of the Omicron BA.4 subvariant in New Zealand. The case was initially reported on 25 April and had recently travelled to South Africa, where this variant has recently increased in frequency.

Table 2 shows the breakdown of known border cases and the subsequent number that were sequenced. 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 20% of arrivals have not completed a New Zealand Traveller Declaration that enables data linkage, and others may not be reporting RAT results.

Table 2: Testing of border cases in the five weeks from 28 February to 06 May 2022

Cases within 7 days of arriving	Had WGS	No WGS	Total	% with WGS
PCR only	396	238	634	62.5%
RAT and PCR	175	211	386	45.3%
RAT only	0	1622	1622	0%
Unknown	1	13	14	7.1%
Total	572	2084	2656	21.5%

Source: MoH Testing Operations, 06 May 2022

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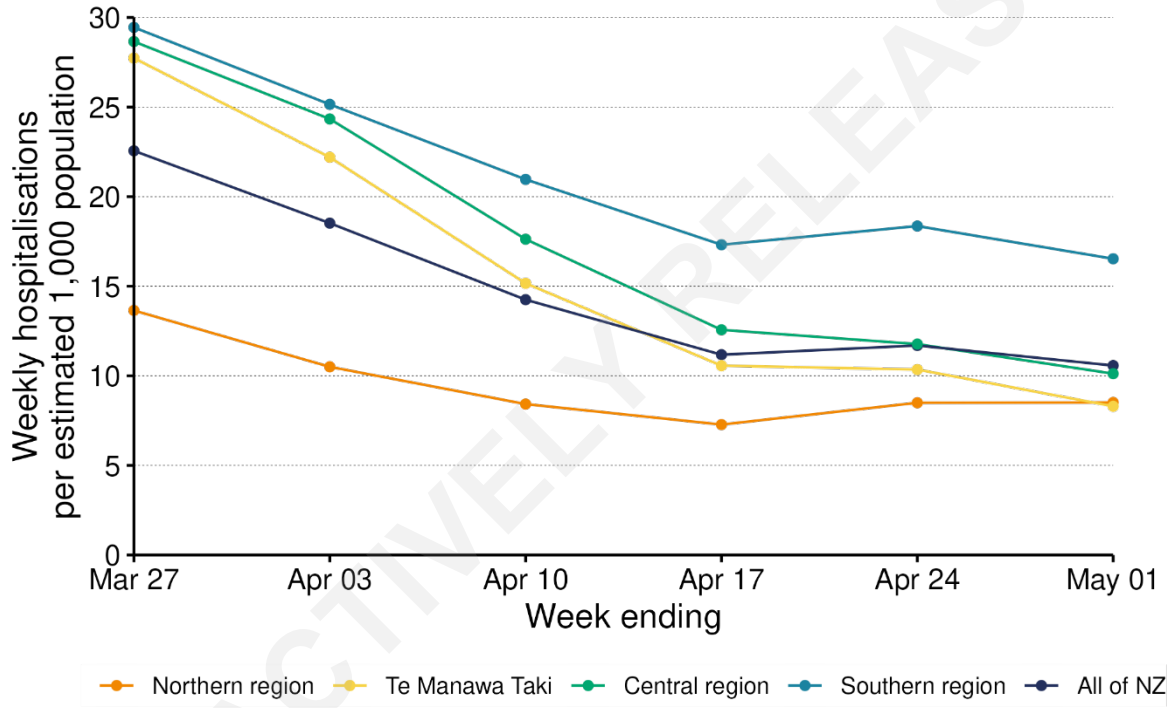
Morbidity and Mortality

Hospitalisations

Hospitalisations in the Northern region rose sharply from the second week of March, but now appear to be decreasing (Figure 15). Hospitalisations in the Te Manawa Taki region have been decreasing since the second week of March and are now at around 7-8 cases hospitalised per 1000 population. Hospitalisation rates in the Central region are decreasing and are now at around 10 cases hospitalised per 1000 population. Southern Region hospitalisation rates are currently the highest and are above 15 cases hospitalised per 1000 population.

Figure 15: ***Proportion of hospitalisation per 1000 estimated population by region***



Source: NCTS/EpiSurv as at 2359hrs 01 May 2022

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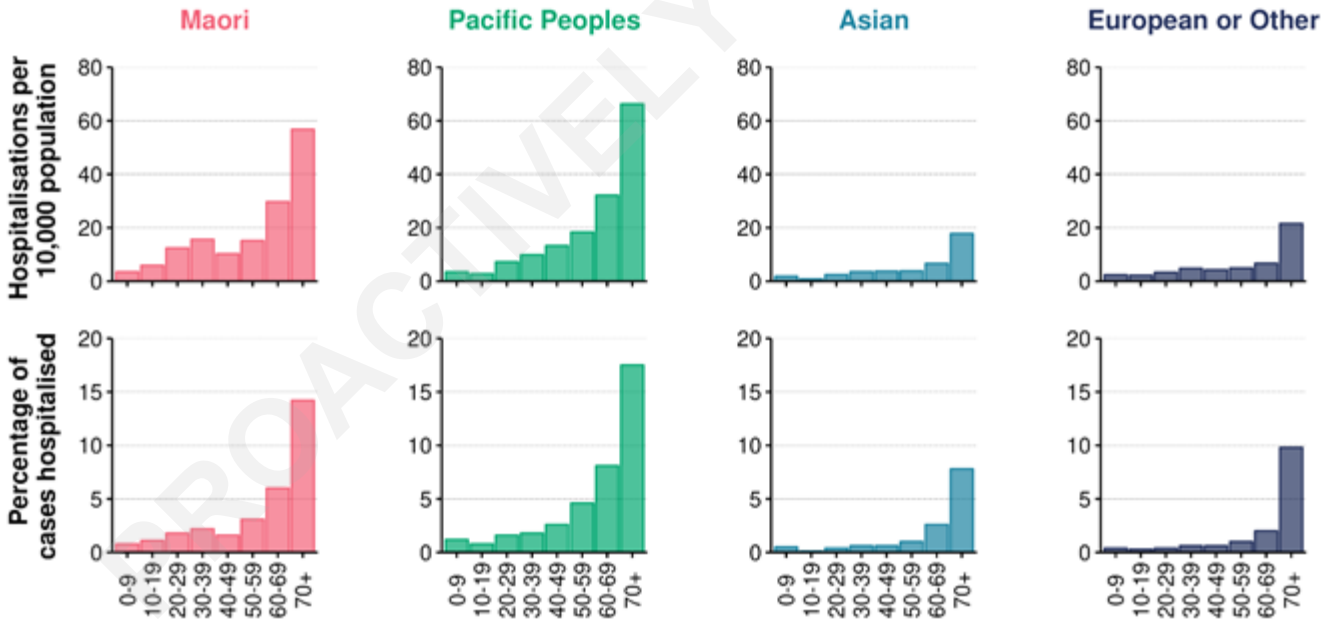
Hospitalisation rates by age and ethnicity in the Auckland Metro DHBs

Figure 16 shows hospitalisation rate and percentage of cases hospitalised, by age and ethnicity in the Auckland Metro region. Increases in the hospitalisation rate per 10,000 population shows the relative risk each cohort has of both infection and subsequent hospitalisation. Small differences between the hospitalisation rate trends and the percentage of cases hospitalised trends may exist due to under-ascertainment of cases – the hospitalisation rate is calculated using a population denominator, whereas the percentage of cases hospitalised is calculated using the number of active, reported cases as the denominator.

In the Auckland Metro region trends show that people aged 70+ of European or Other ethnicity make up the largest number of hospitalised cases; however, relative to their population, they are the second-least likely to be hospitalised. People aged 70+ of Pacific peoples ethnicity were the most likely to be hospitalised as a case, followed by those aged 70+ of Māori ethnicity.

Figure 15 shows that risk of hospitalisation generally increases with age, across all ethnicities. There are two peaks seen in the hospitalisation rates for Māori, with the hospitalisation risk being higher for Māori aged 20-40, and highest for Māori aged 50+. Hospitalisation rates are notably higher for Māori and Pacific Peoples across all age groups, compared to Asian and European or Other people.

Figure 16: ***COVID-19 hospitalisations for Auckland, Counties Manukau and Waitemata DHBs by age and ethnicity: cases hospitalised, cases hospitalised per 10,000 population, and percentage of all cases hospitalised***



Source: Northern Region hospitalisation data, NCTS & EpiSurv as at 2359hrs 01 May 2022

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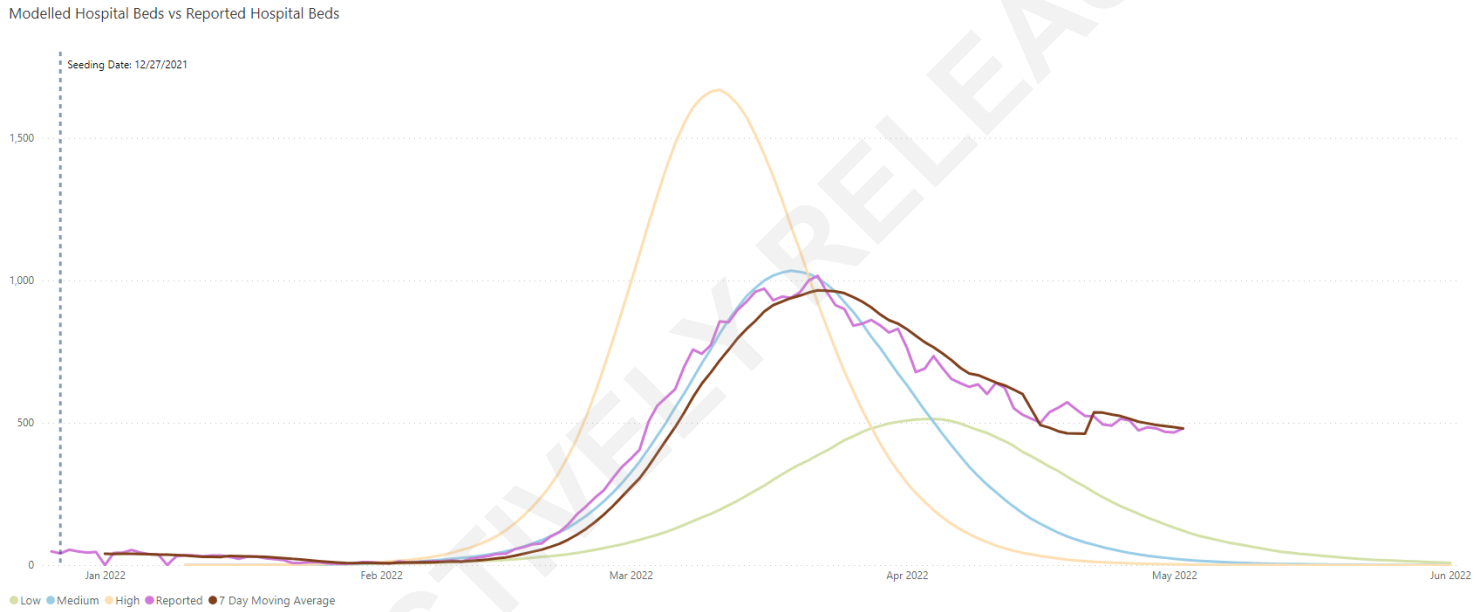
Whole Genomic Sequencing of hospitalised cases

ESR continues to receive samples from hospitalised cases but the flow of metadata to assign cases as 'hospitalised cases' was disrupted this week. It is hoped this will be fixed in time for next week's Trends and Insights Report.

Hospitalisations predicted and actual

Hospitalisations initially tracked closely to the "medium" scenario with a similar peak but are not decreasing at the same rate that is in line with the "medium" scenario published on 27 February 2022 (Figure 17). The decrease in hospitalisations has slowed and is producing a 'long-tail' of hospitalisations. This may in part be due to cases moving from a younger to an older population, and older and more severe cases having a longer length of stay.

Figure 17: ***Modelled hospital occupancy compared to actual nationally***



Sources: TAS, based on COVID-19 Modelling Aotearoa Branching Process Model 27 February 2022, and DHB reports to TAS of daily hospital occupancy (all COVID-19 positive people admitted as inpatients) as of 01 May 2022.

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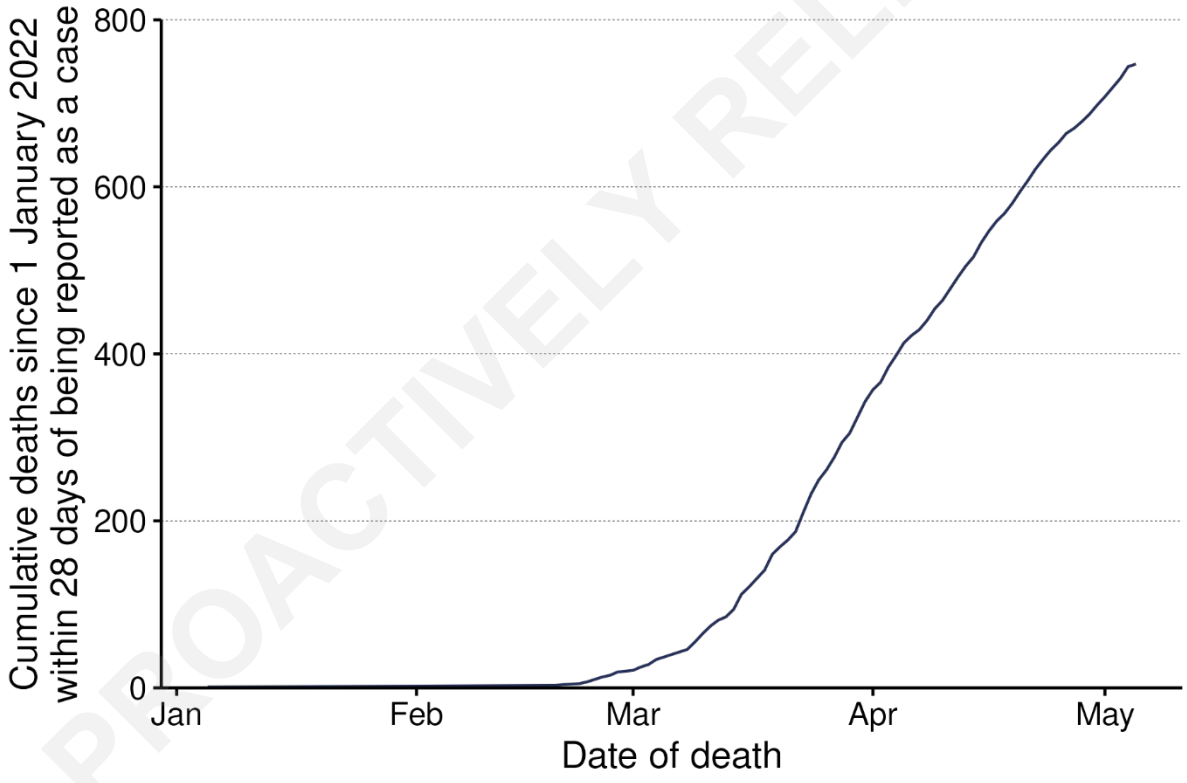
Mortality

As of 05 May 2022, 821 people have died with or after COVID-19 infection. Of these, 773 have died within 28 days of being reported as a case. The 7-day rolling average of deaths is 11 (Figure 18).

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.

Figure 18: *Cumulative deaths of cases with COVID-19 since 01 January 2022 to 05 May 2022*



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Source: NCTS/EpiSurv as at 2359hrs 05 May 2022

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 are deaths up to 17 April 2022. The date of death is used by DIA to assign deaths to a given week.

As seen in **Figure 19**, weekly all cause death rates have been outside the observed pre-pandemic range for those 80 years and older for the four weeks ending 17 April. (We define this as 1 standard deviation from the mean rates). In the week ending 17 April, weekly all cause death rates are 200 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 20, 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 20, 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 17 April. In the week ending 17 April, weekly all cause death rates are 425 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.

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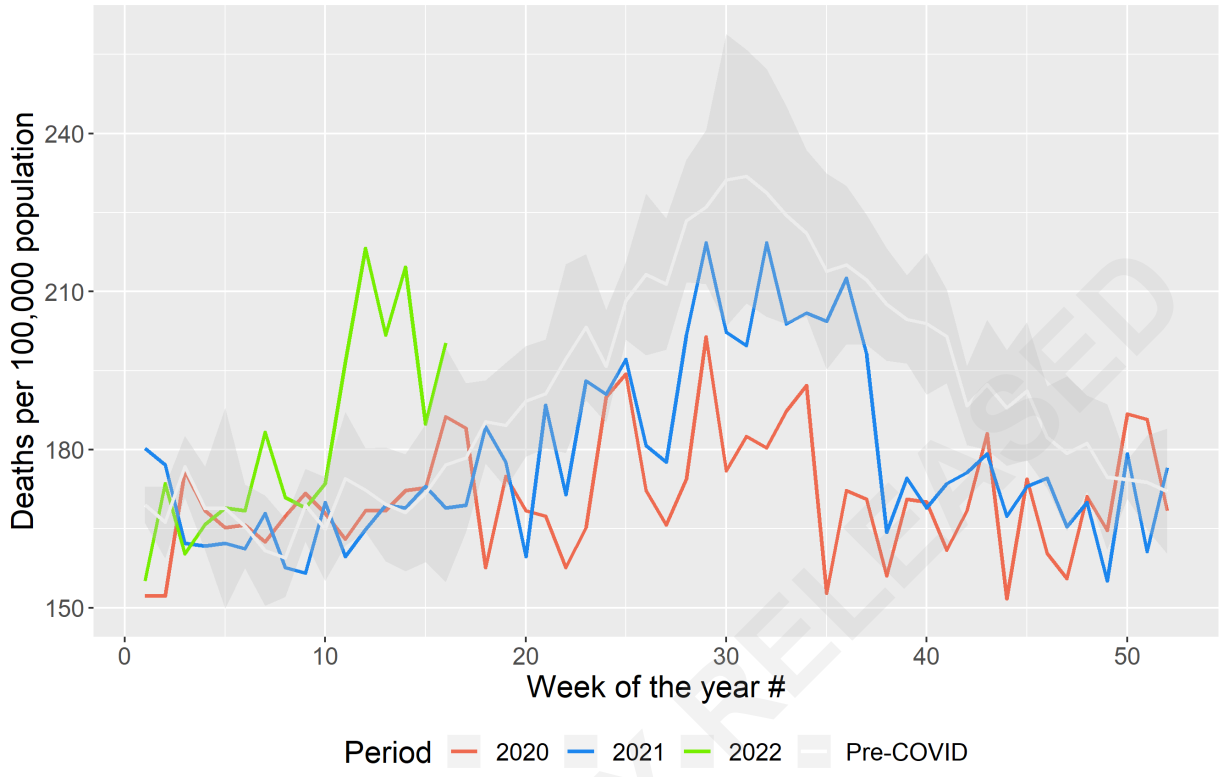
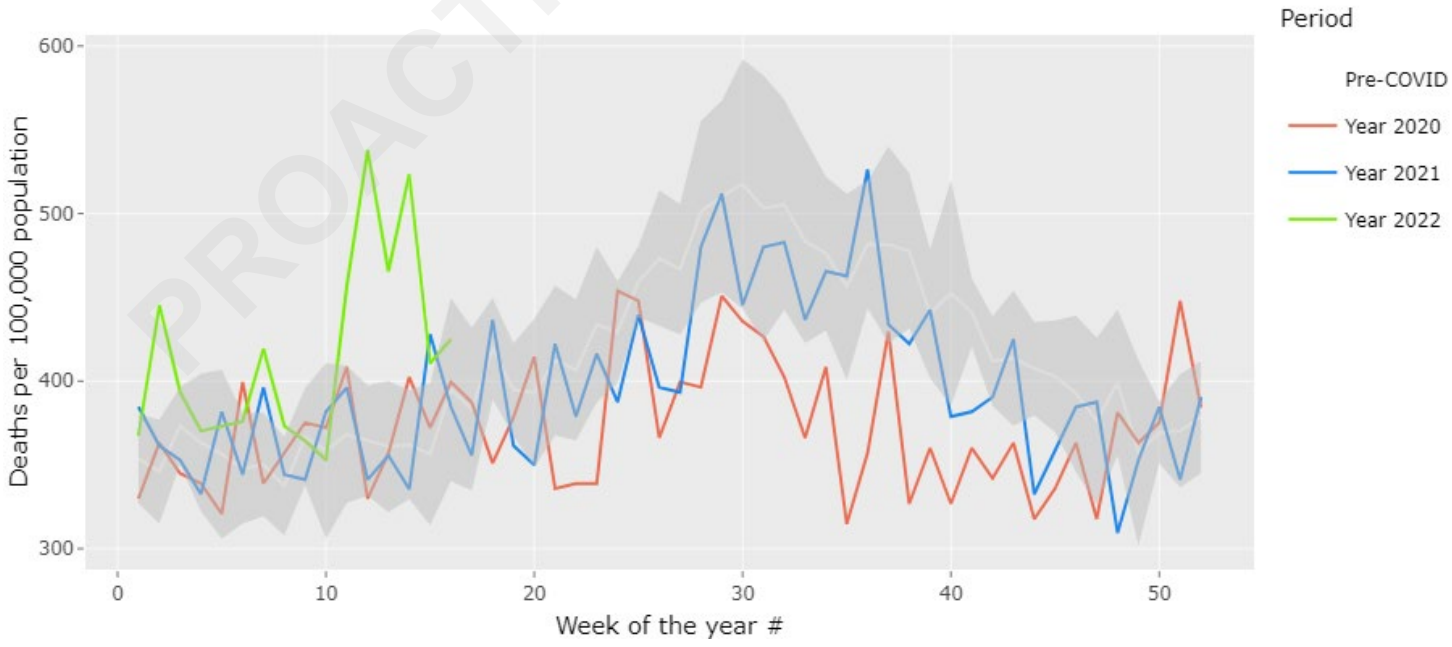
Figure 19: ***Weekly all-cause death rates for 80+ year-olds compared to pre-COVID-19 average (2012-2019)***



Source: COVID-19 Modelling Steering Group, StatsNZ

Figure 20: ***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, 04 May 2022

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Public Health Response and Health System Capacity

Omicron Dashboard

The omicron dashboard (**Figure 21**) 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 28 April 2022.

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Figure 21: *Omicron Health Sector Clinical Indicators Dashboard summary, week ending 28 April 2022*

Sector	Summary of data
General Practice	Encounter rates over Easter were consistent with previous years. A focus on encounter rates for infants highlights a reduction in GP attendances for this age group since the start of the COVID-19 outbreak.
Cervical Screening	COVID-19 has had significant impact on staffing for the National Cervical Screening Programme (NCSP). As at 31 December 2021 approximately 34,000 cervical screens are needed to reach pre pandemic cervical screening levels (10,500 of these are for wāhineMaori). The number of screens is an overall figure based on differences in (three yearly) coverage compared to February 2020. COVID-19 had significant impact on access to cervical screening for wāhineMāori and Pacific peoples.
Aged Residential Care	Average number of ARC cases since 10 March 22 is 457. Over the past week, numbers have increased above this range with a high of 585 on 22 April.
Māori Health Providers	No further updates this week
Pacific Health	Pacific Health providers are working on innovative ways of continuing to promote interest in COVID-19 vaccination events
Emergency AmbulanceService	111 calls and emergency ambulance service (EAS) incident numbers increased during the last week. Average response times remain at a much higher level than 2019. There has been a slight increase (approximately nine percent) in the number of incidents for Māoriand Pasifika people over the last few weeks.
Mental Health	No change to report this week.
Disability providers	The new face mask exemption card process was announced, to allow people who can't wear a mask to get a personalised card to helpthem access businesses and services where wearing a mask is required. Additionally, different types of tests are being trialled for the disability sector to enable a different option to the nasalRAT
Hospital	Rotorua hospital was over 90% occupancy across the whole week. There continues to be high occupancy across the hospital network.
ED	ED occupancy was up over the past week. 16/18 DHBs reported an increase in ED attendances from previous week, most notably Lakes(up 13%) and Tairawhiti (up 12%). ED attendances were up across the Southern region.
Planned Care (Hospital)	As the Omicron variant decreases across the motu, planned care delivery is beginning to be restored, but not to the pre-Omicron levels.
Pharmacy	Isolated areas of restricted Pharmacy opening hours in Hawke's Bay and Southern due to COVID-19 isolation or staffing. All otherregions have returned to normal services.
Home and Community Support Services	MoH recently approved funding to reimburse non-DHB health and disability providers for the cost of vaccinating their patient-and client-facing staff against influenza, which includes care providers. Continue to see a reduction in numbers of support workers and services delivered, compared to Oct-Dec 2021.
COVID care in the community	There has been an increase over the past week of Maori and Pacific completing the self-assessment form online. Nearly 99% of cases have been informed or interviewed this week which is slightly higher than the previous week
Workforce	Critical care nursing campaign continues. Working with TAS to launch phase 2 of the campaign.

Sources: Omicron Health Sector Clinical Indicators Dashboard, 28 April 2022

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COVID-19

Trends and Insights Report

Updated 06 May 2022

Appendix Document

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Data & Notes

Data Sources

Community Cases

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

Whole genome sequencing (WGS)

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

Prevalence Estimates

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

Wastewater quantification

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

Data limitations

Prevalence estimates based on routinely tested populations

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

Wastewater quantification

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

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Acknowledgements

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

Case Demographic Tables

DHB	Community cases reported since 25 April to 01 May 2022	Rate per 1,000
Northland	1497	7.7
Waitemata	5820	9.3
Auckland	4982	10.1
Counties Manukau	3935	6.6
Bay of Plenty	1778	6.9
Waikato	3278	7.6
Tairawhiti	617	12.0
Lakes	931	8.1
Taranaki	1396	11.3
Hawke's Bay	1572	9.0
Whanganui	644	9.4
MidCentral	1964	10.8
Hutt Valley	1431	9.2
Capital and Coast	3374	10.7
Wairarapa	566	11.6
Nelson Marlborough	2011	12.8
West Coast	617	19.1
Canterbury	9044	16.0
South Canterbury	1095	17.9
Southern	6288	18.8
Unknown	29	
Total	**52869**	**10.6**

Regions	Community cases reported since 25 April to 01 May 2022	Rate per 1,000
Northern	16234	8.5
Te Manawa Taki	8000	8.2
Central	9551	10.1
Southern	19055	16.5
Unknown	29	-
Total	**52869**	**10.6**

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Ethnicity	Community cases reported since 25 April to 01 May 2022	Rate per 1,000
Māori	6522	8.5
Pacific Peoples	2510	6.8
Asian	7528	10.2
European or Other	35903	11.6
Unknown	406	-
Total	**52869**	**10.6**

Sex	Community cases reported since 25 April to 01 May 2022	Rate per 1,000
Female	28441	11.2
Male	24375	10.0
Unknown	53	-
Total	**52869**	**10.6**

Age	Community cases reported since 25 April to 01 May 2022	Rate per 1,000
0-9	4527	6.9
10-19	6664	10.4
20-29	10482	15.5
30-39	8894	12.9
40-49	7581	12.1
50-59	6854	10.7
60-69	4330	8.1
70+	3537	6.5
Total	**52869**	**10.6**

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Rate per 1,000

National	Māori	Pacific Peoples	Asian	European or Other	Total
Total	8.5	6.8	10.2	11.6	10.6

Northern	Māori	Pacific Peoples	Asian	European or Other	Total
Northland	7.6	8.8	12.3	7.5	7.7
Waitemata	7.7	6.8	9.7	9.6	9.3
Auckland	8.4	5.9	1.0	11.4	10.1
Counties Manukau	5.3	4.0	7.1	8.8	6.6
Total	**6.9**	**5.0**	**8.9**	**9.6**	**8.5**

Te Manawa Taki	Māori	Pacific Peoples	Asian	European or Other	Total
Bay of Plenty	6.1	4.6	7.1	7.1	6.9
Waikato	6.6	7.7	9.6	7.7	7.6
Tairawhiti	13.0	6.7	10.0	11.3	12.0
Lakes	5.9	5.5	11.6	9.2	8.1
Taranaki	8.4	8.9	13.0	11.9	11.3
Total	**7.2**	**6.8**	**9.5**	**8.4**	**8.2**

Central	Māori	Pacific Peoples	Asian	European or Other	Total
Hawkes Bay	8.4	8.1	9.0	9.3	9.0
Whanganui	7.9	11.2	10.4	9.9	9.4
MidCentral	10.3	13.5	8.3	11.1	10.8
Hutt Valley	7.3	8.9	9.4	9.6	9.2
Capital and Coast	9.4	8.4	9.2	11.4	10.7
Wairarapa	12.1	6.6	8.5	11.8	11.6
Total	**9.0**	**9.2**	**9.1**	**10.6**	**10.1**

Southern	Māori	Pacific Peoples	Asian	European or Other	Total
Nelson Marlborough	9.6	15.1	14.1	13.0	12.8
West Coast	20.2	16.3	20.9	18.9	19.1
Canterbury	14.1	15.1	17.9	15.9	16.0
South Canterbury	15.7	35.0	26.2	17.2	17.9
Southern	17.5	25.9	21.1	18.4	18.8
Total	**14.8**	**18.9**	**18.6**	**16.4**	**16.5**

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COVID Modelling Aotearoa

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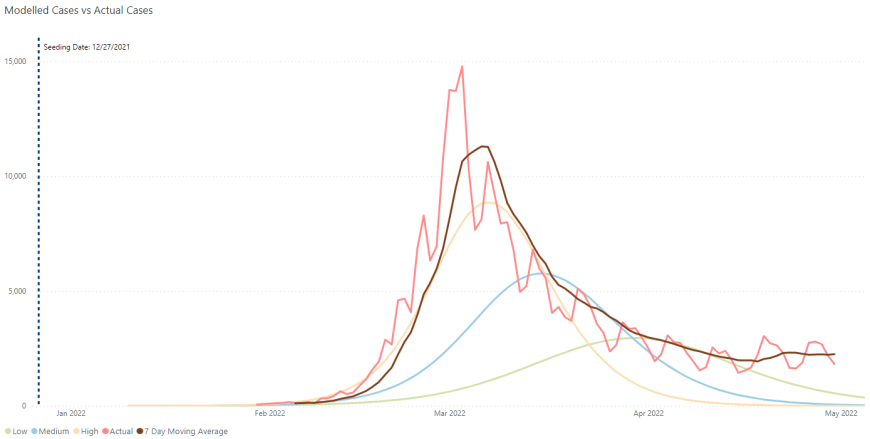
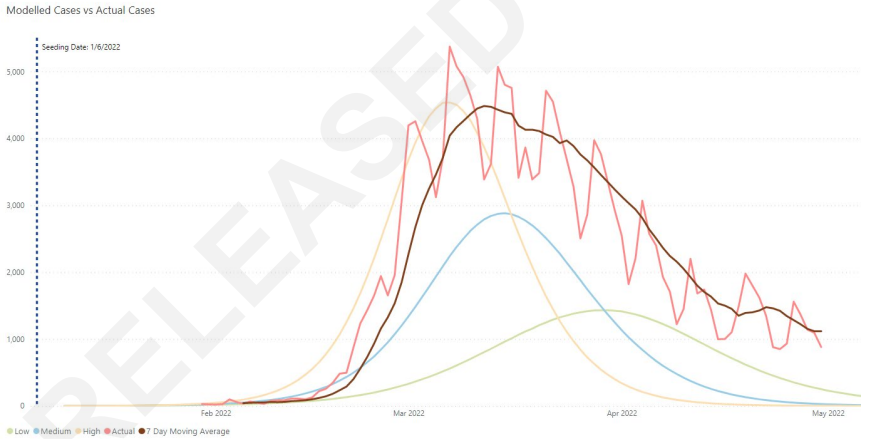
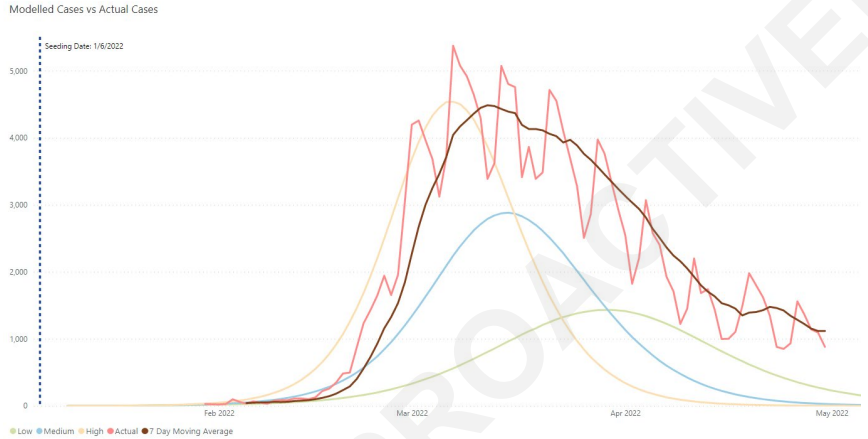
Northern Region



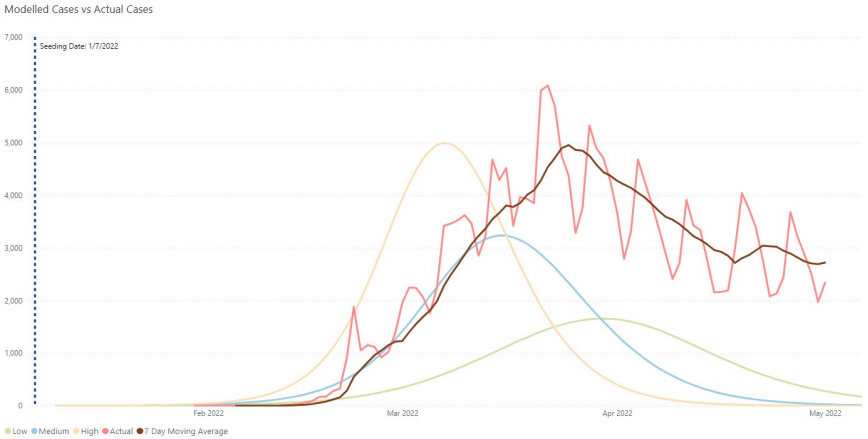
Te Manawa Taki (Midlands)



Central Region



Southern 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 02 May 2022

EpiNow

Table 1: ***Estimated median effective R (R_{eff}) by Public Health Unit region, for cases to 02 May*** **2022**

Public Health Unit region	**R_{eff} (90% Credible Interval [CI])**
Northland	0.7 (0.4-1.2)
Auckland	0.8 (0.5-1.3)
Taranaki	1.0 (0.6-1.6)
Waikato	0.8 (0.6-1.2)
Toi Te Ora	0.8 (0.4-1.5)
Tairawhiti	1.0 (0.5-1.5)
Regional Public Health (Wellington Region)	0.9 (0.5-1.3)
Mid Central	0.9 (0.6-1.3)
Hawkes Bay	0.8 (0.5-1.1)
Canterbury/ South Canterbury	0.8 (0.4-1.4)
Southern	0.7 (0.3-1.4)
Nelson Marlborough	0.7 (0.3-1.6)
West Coast	0.9 (0.6-1.1)
National	0.8 (0.5-1.2)

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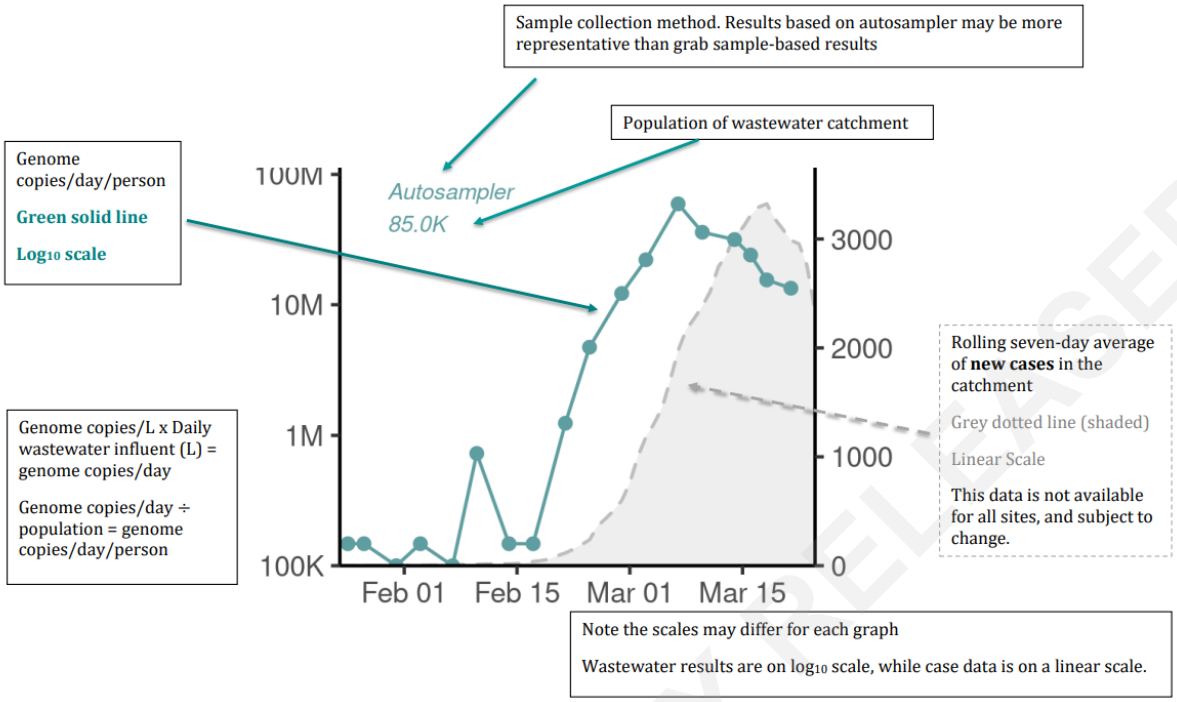
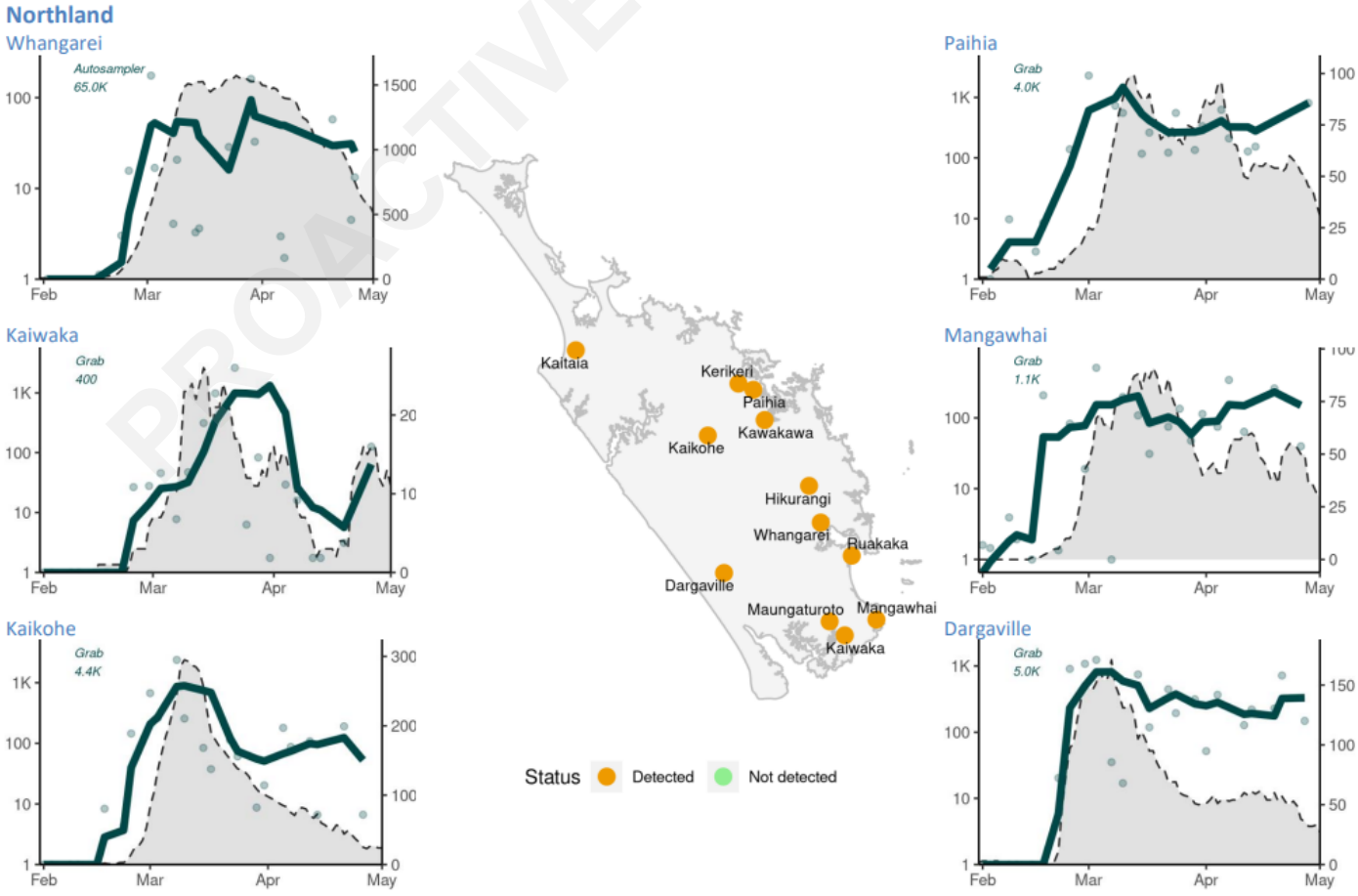
ESR Wastewater

Interpreting site graphs





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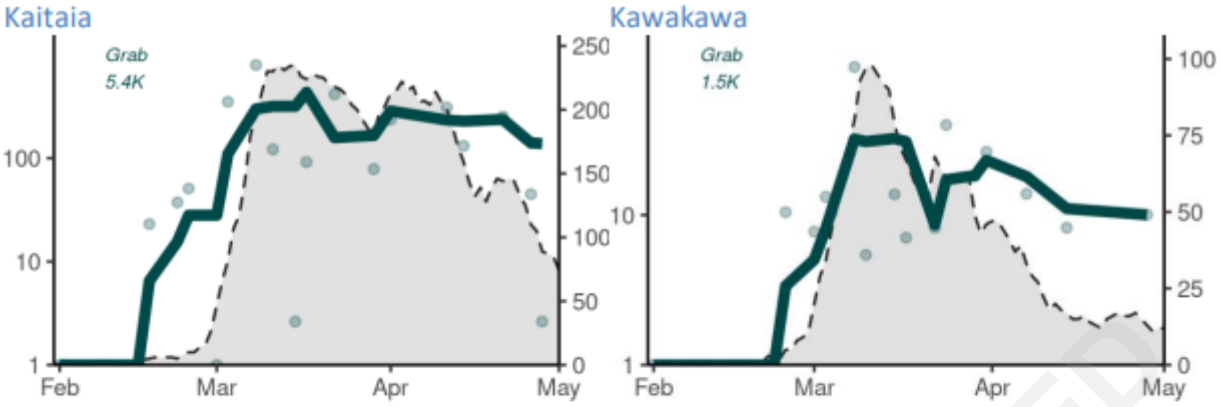

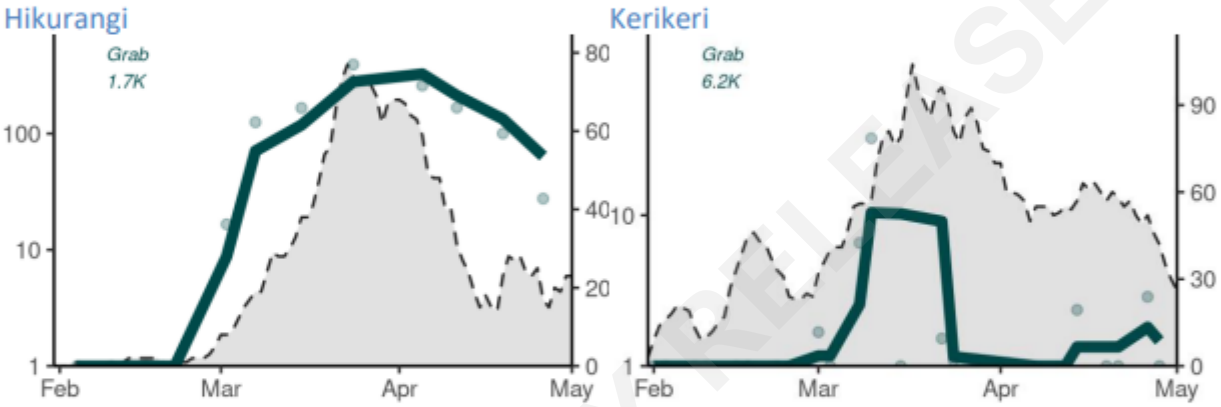

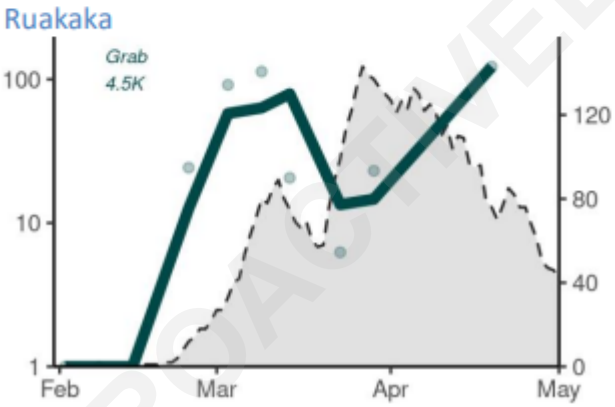

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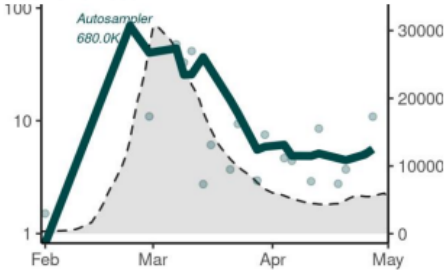
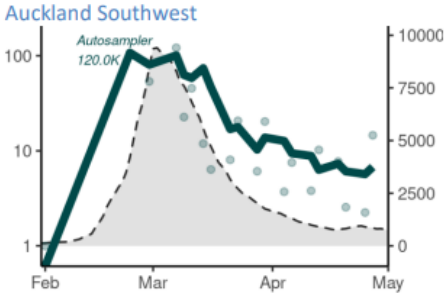
Auckland

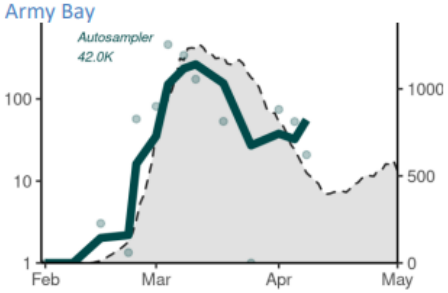
Auckland East



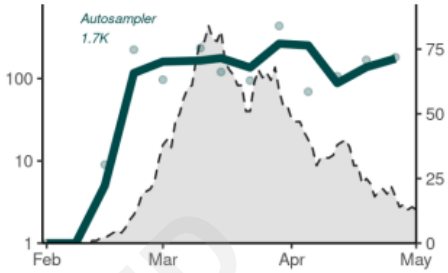
Auckland Southwest



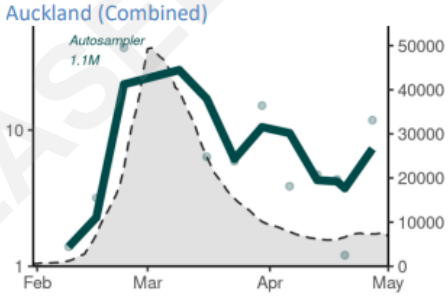
Army Bay



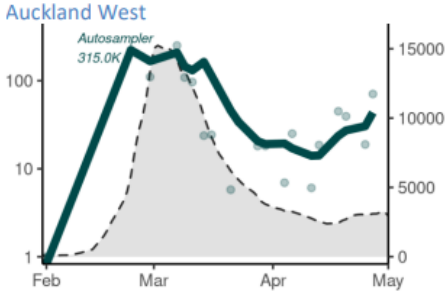
Wellsford



Auckland (Combined)



Auckland West



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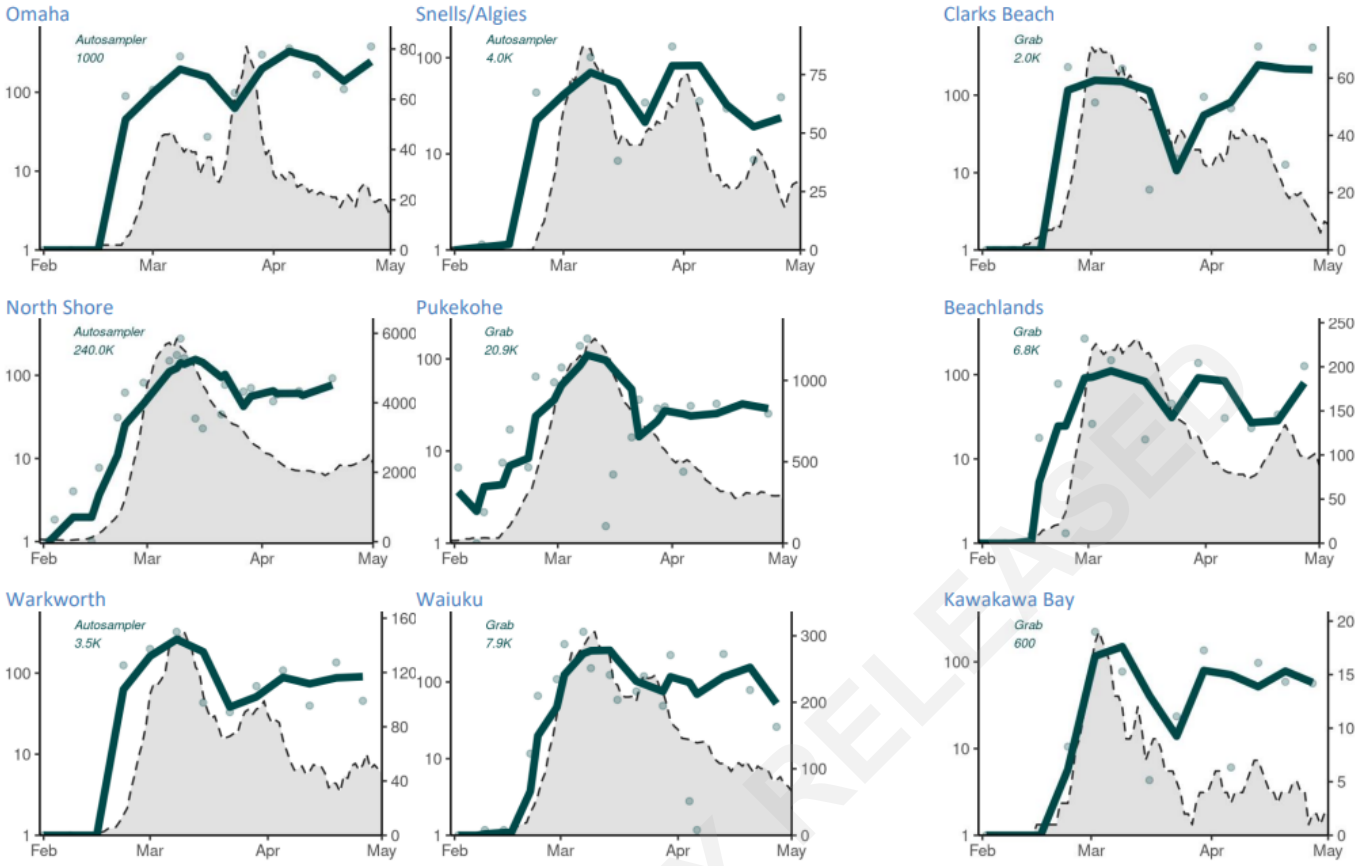

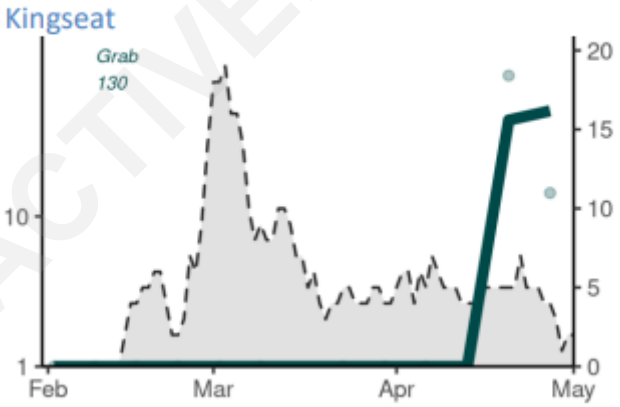

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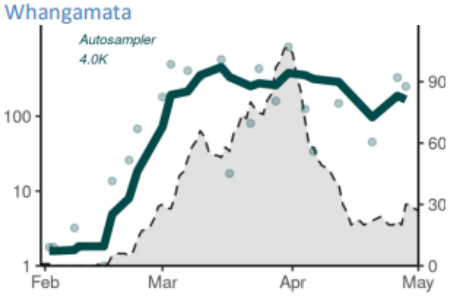
Waikato

Whangamata



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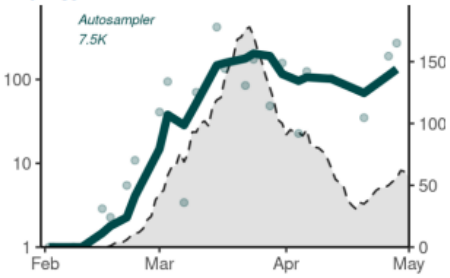

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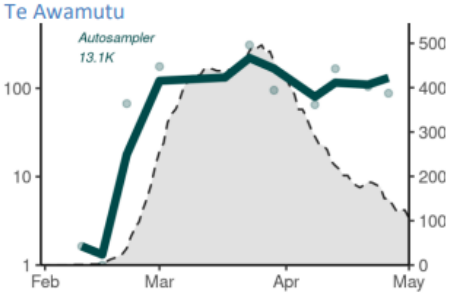

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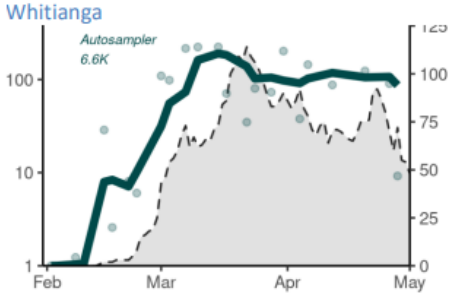
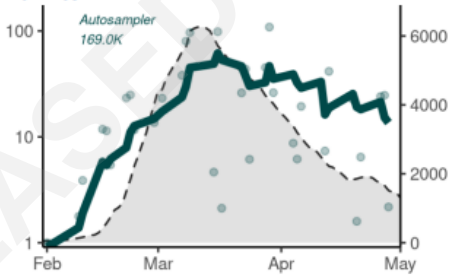


Hamilton



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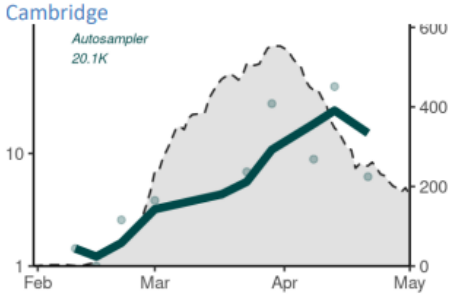

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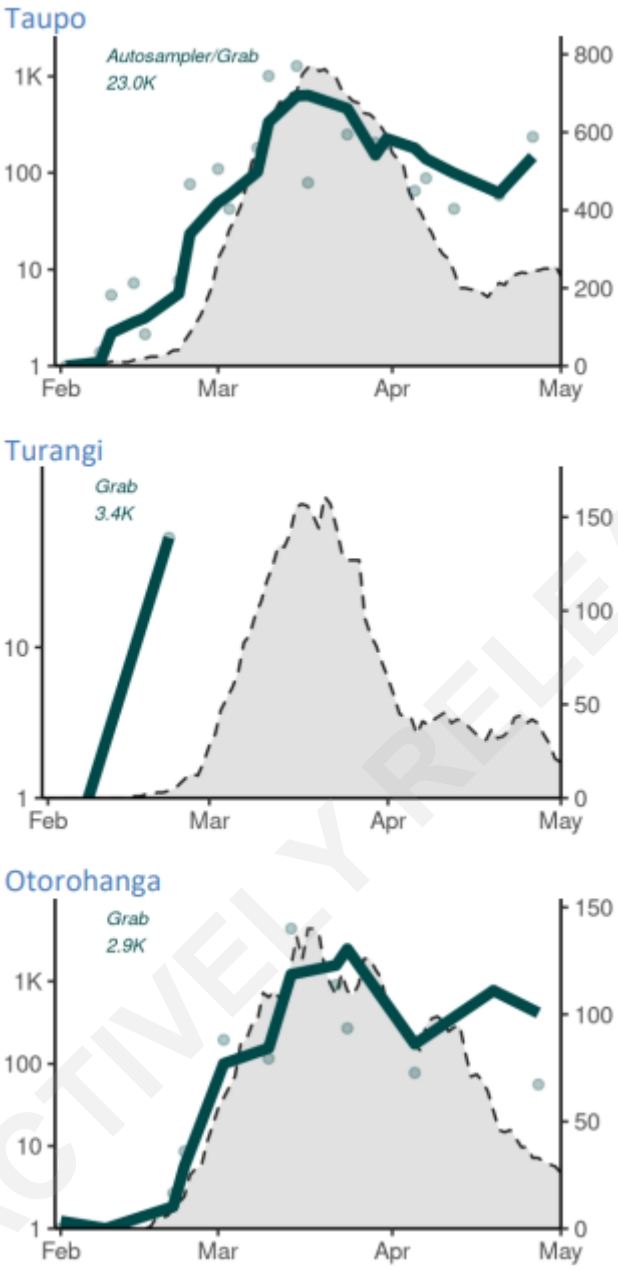

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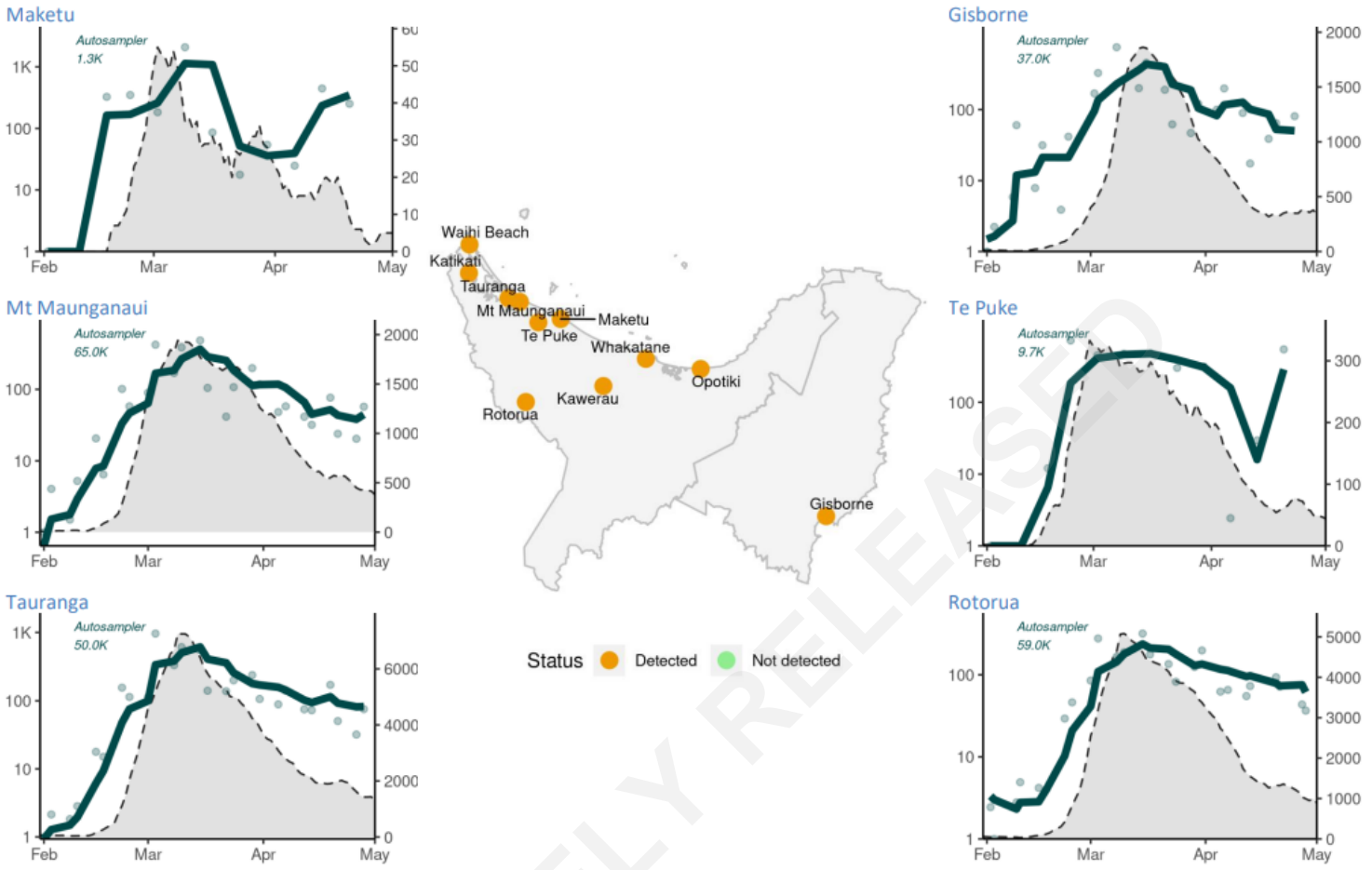
Bay of Plenty and Gisborne



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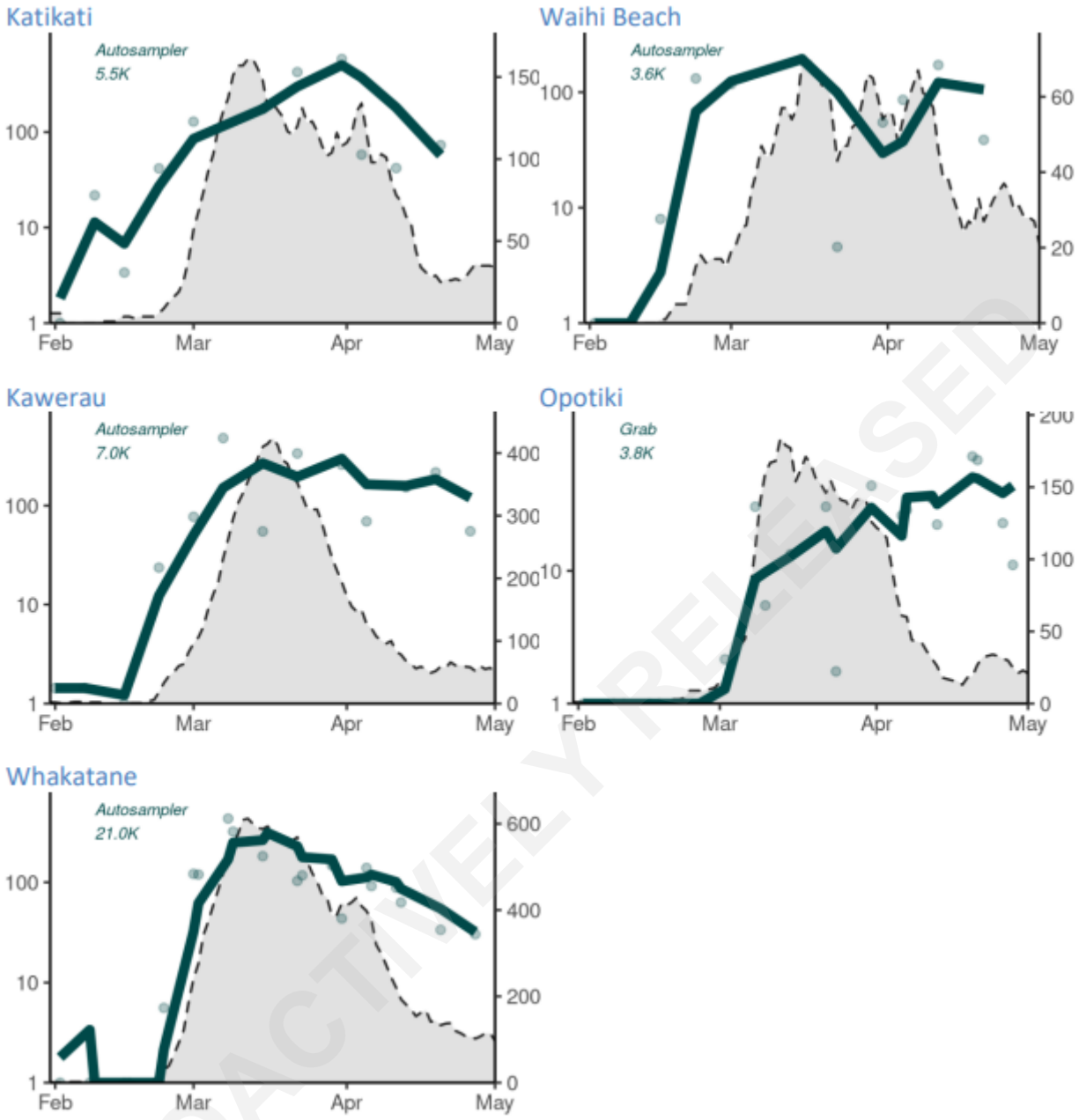

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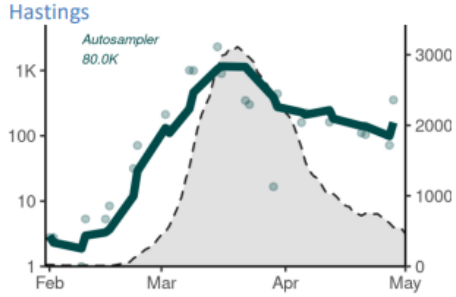
Hawke's Bay

Hastings



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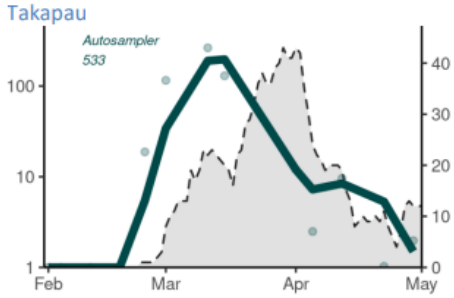

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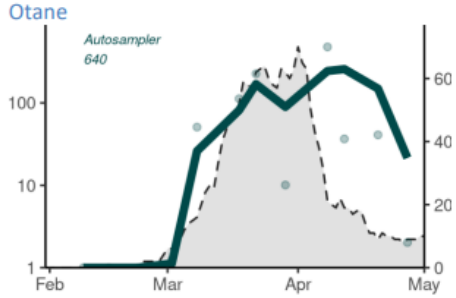

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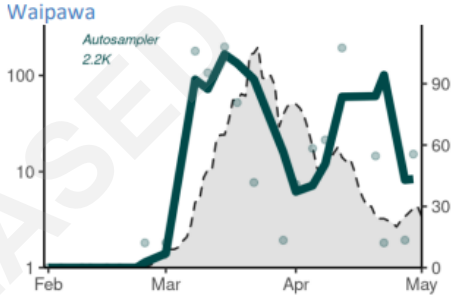

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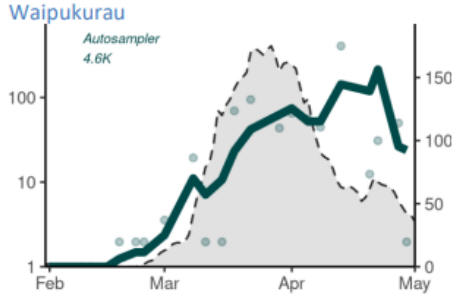

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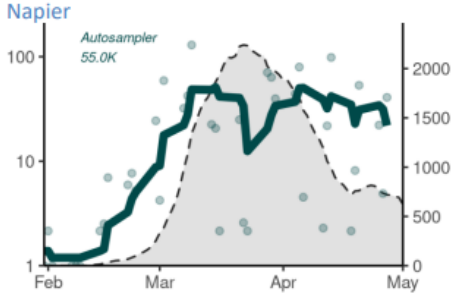

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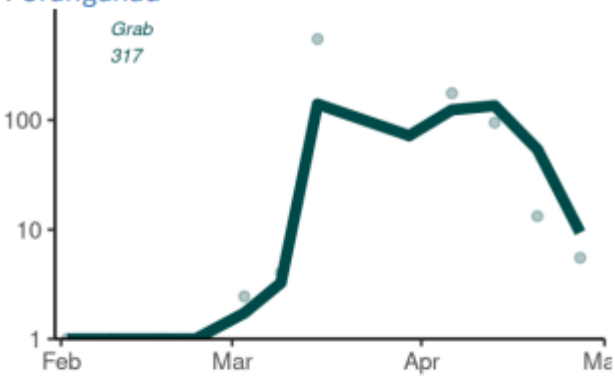
Porangahau



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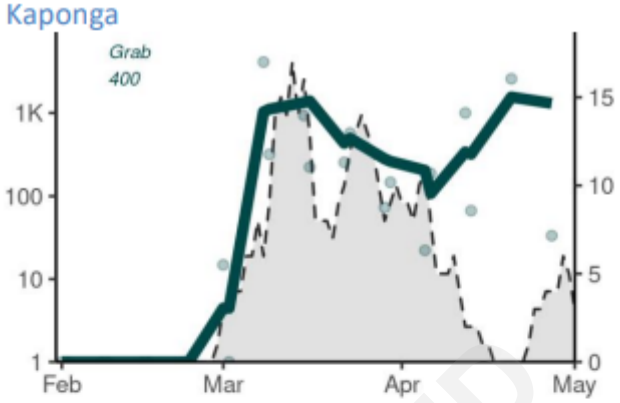

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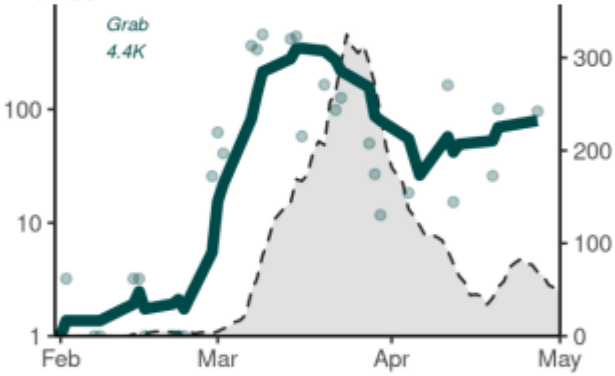

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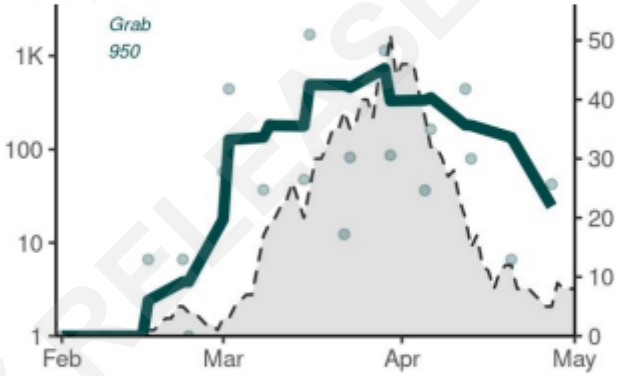

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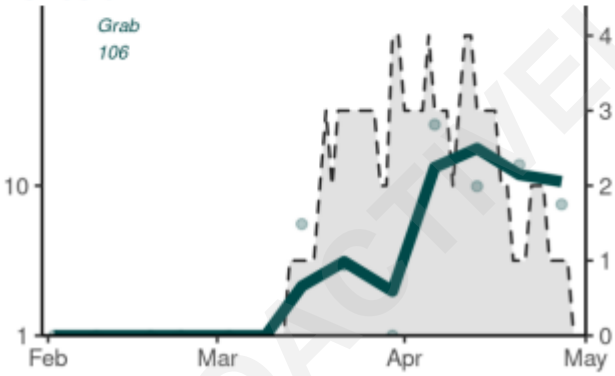

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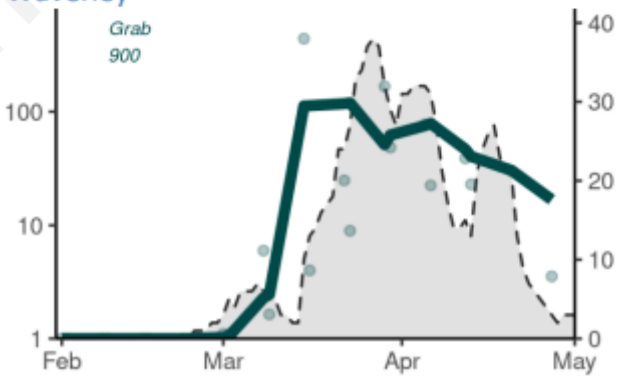

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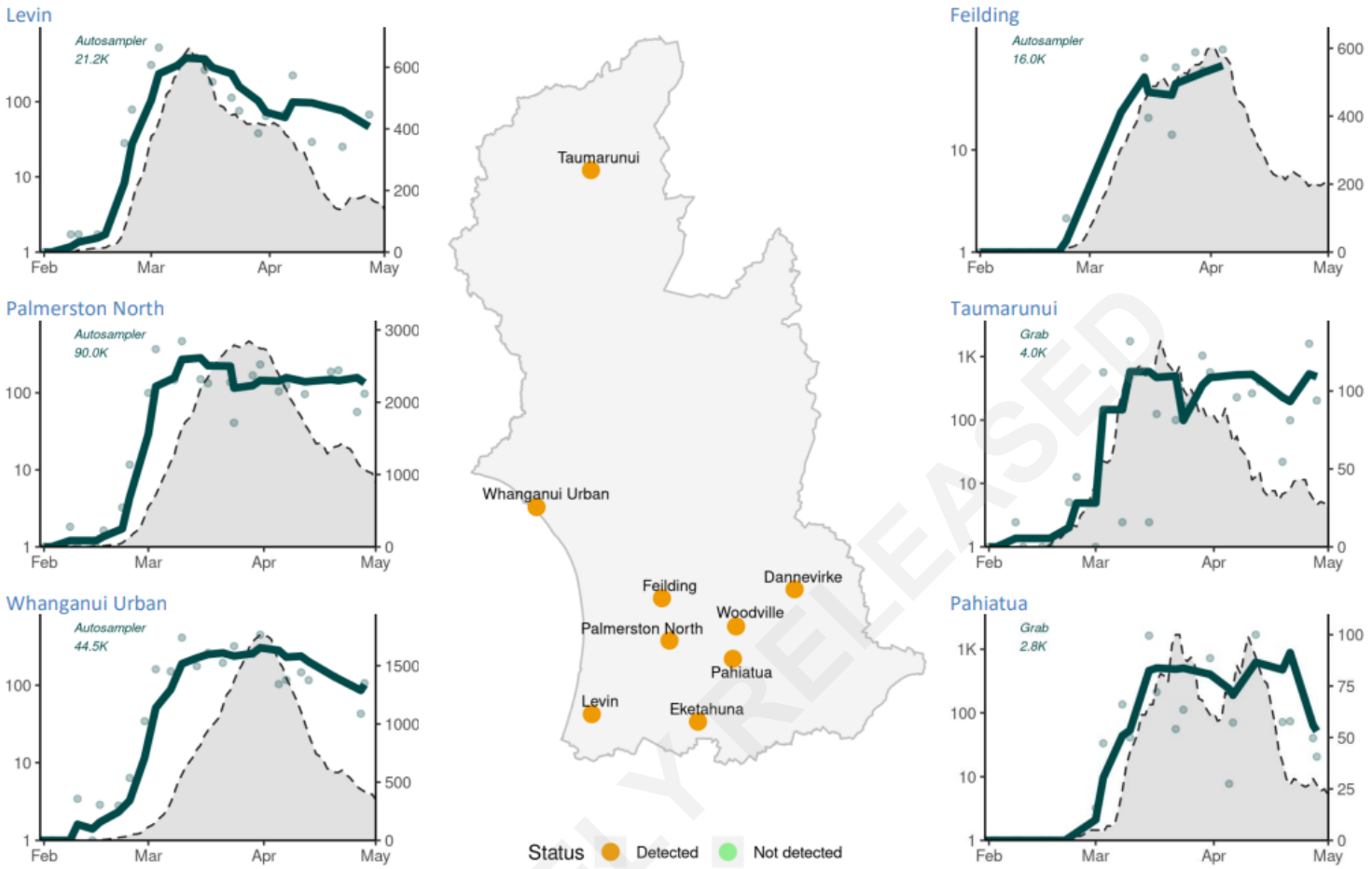
Manawatu-Wanganui



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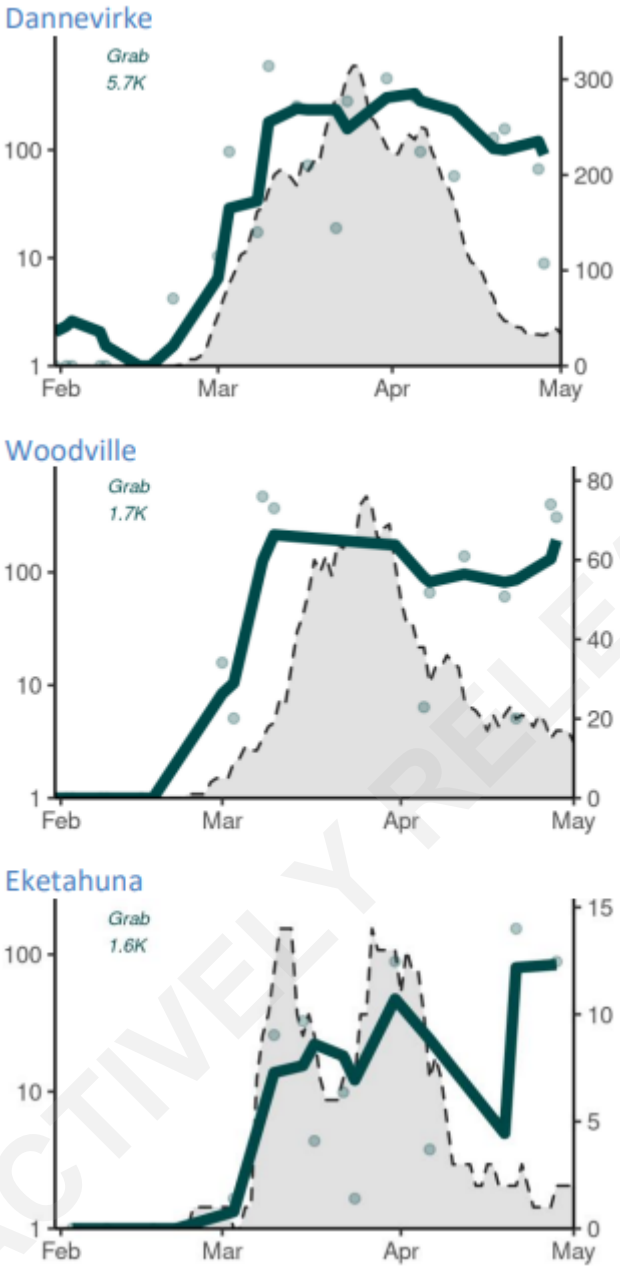

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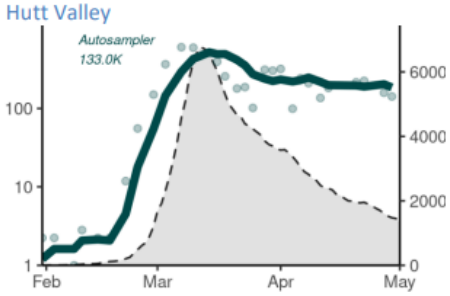
Wellington

Hutt Valley



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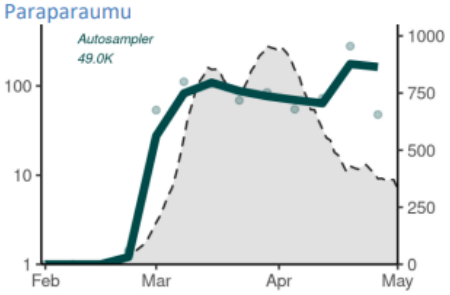

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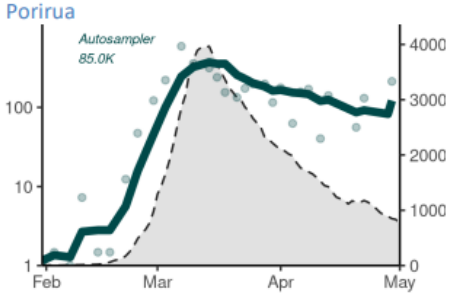
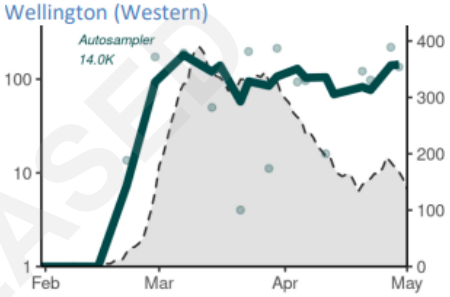
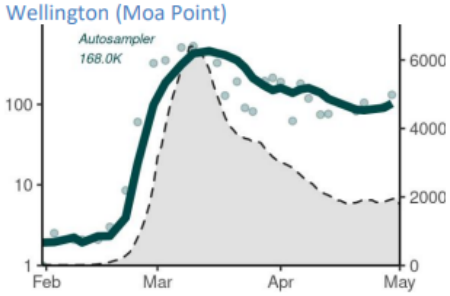


Wellington (Western)



Wellington (Moa Point)



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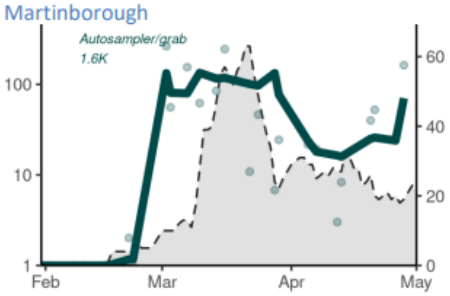
Martinborough



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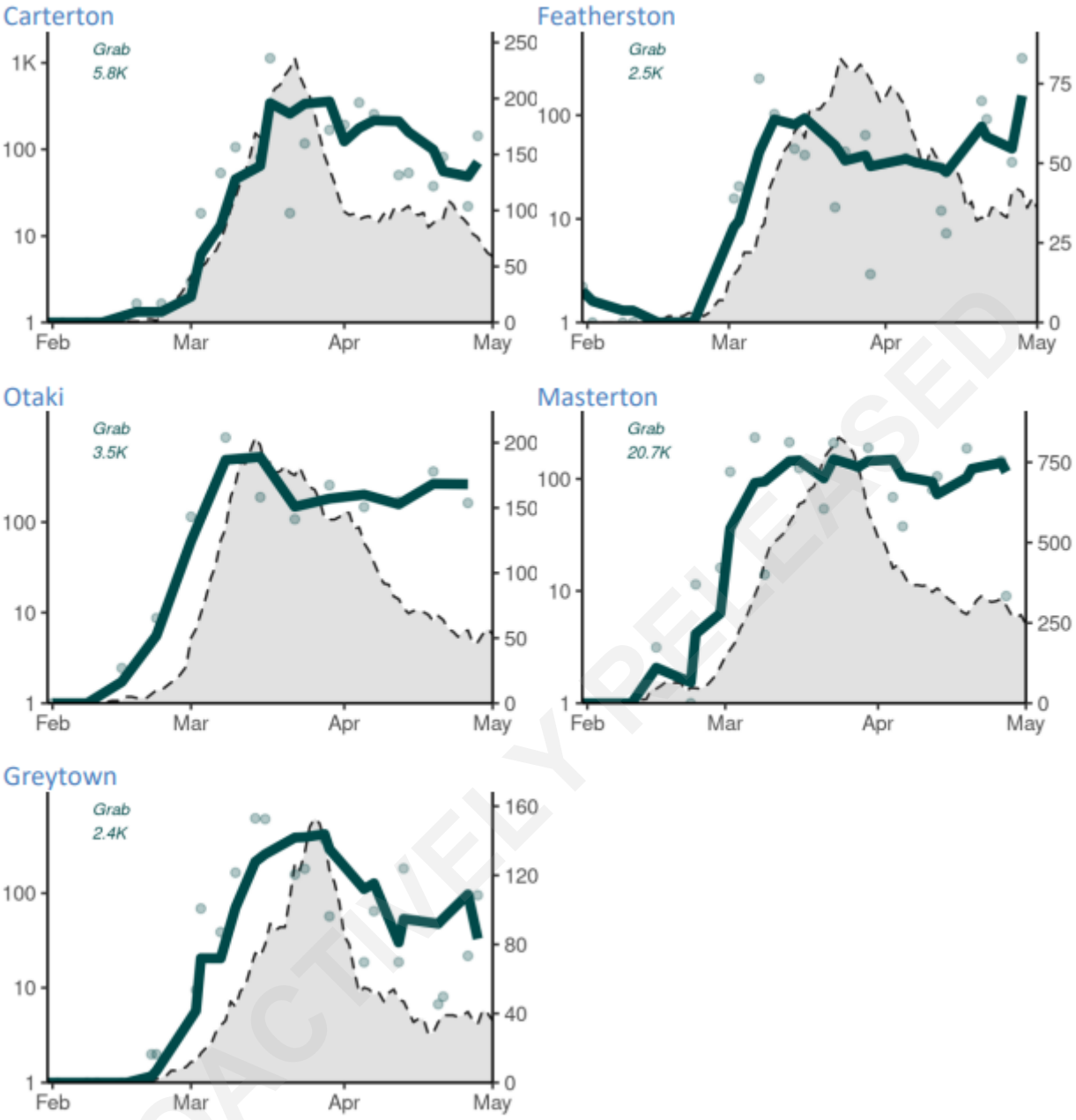
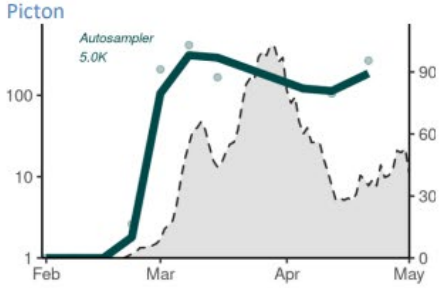


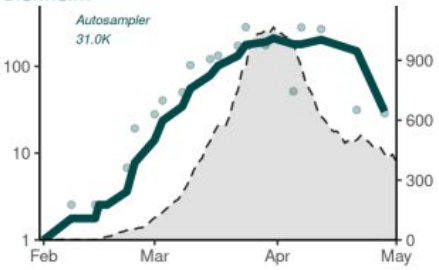
PROACTIVELY RELEASED

Tasman, Nelson, and Marlborough

Picton



Blenheim



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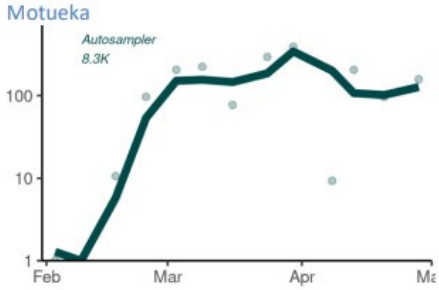
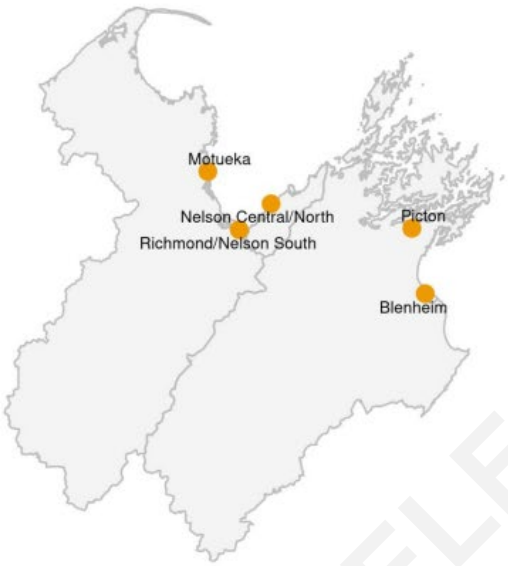
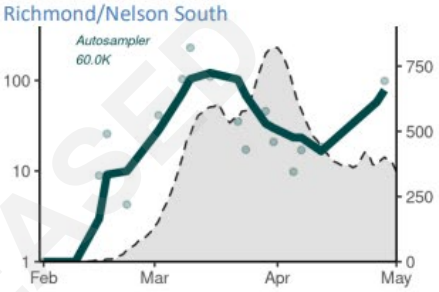
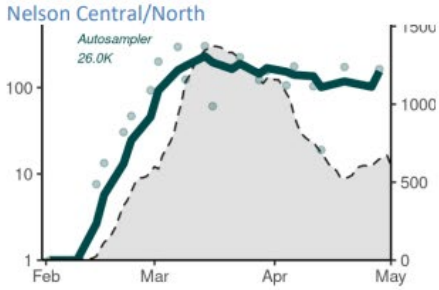


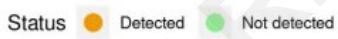


Richmond/Nelson South



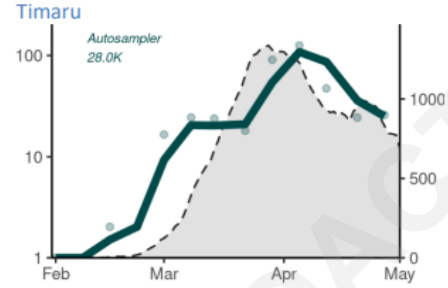
Nelson Central/North



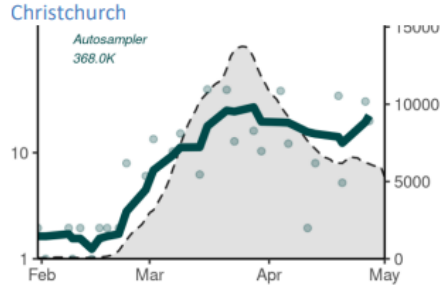


West Coast and Canterbury

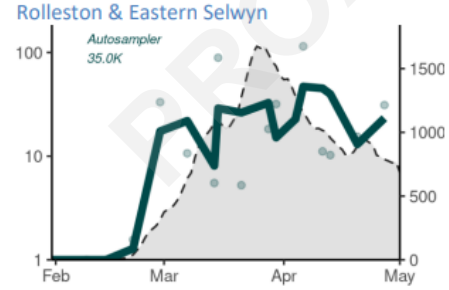
Timaru

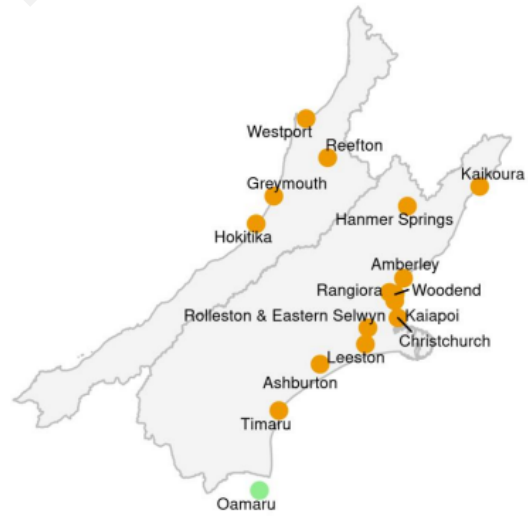


Christchurch

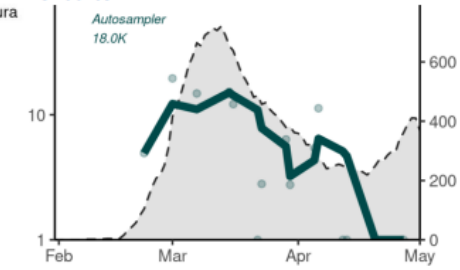


Rolleston & Eastern Selwyn





Ashburton



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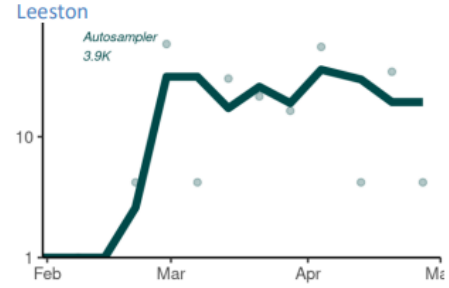

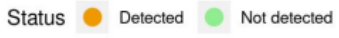

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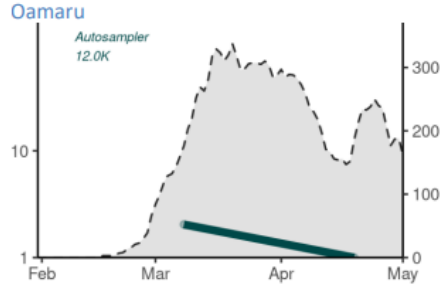

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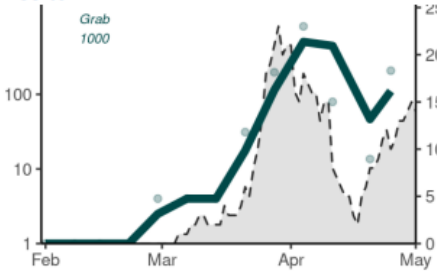

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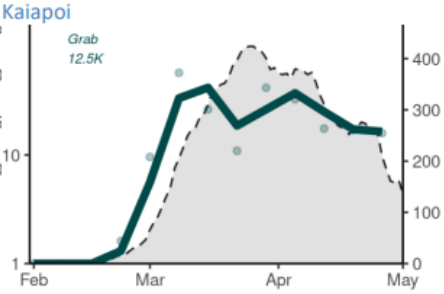

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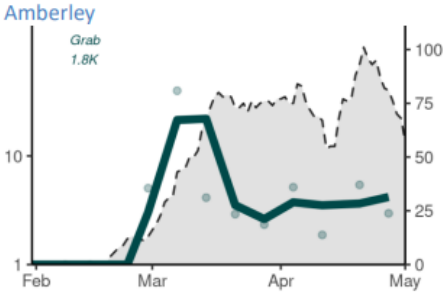

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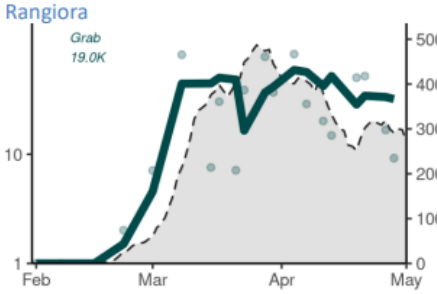

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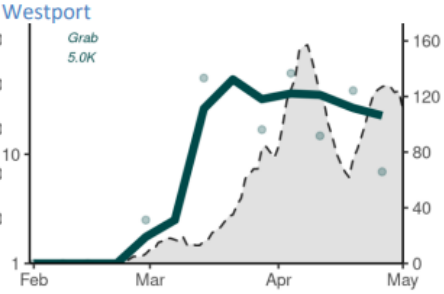

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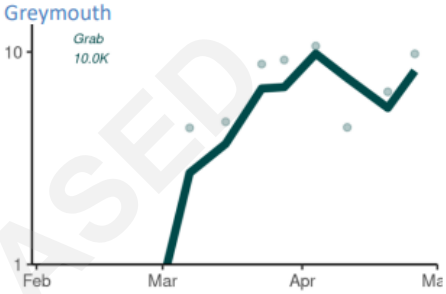

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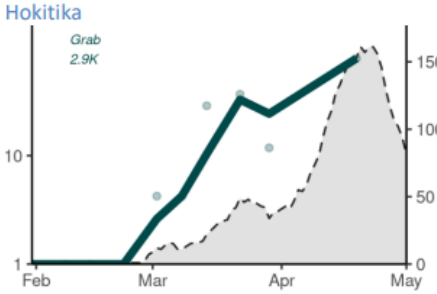

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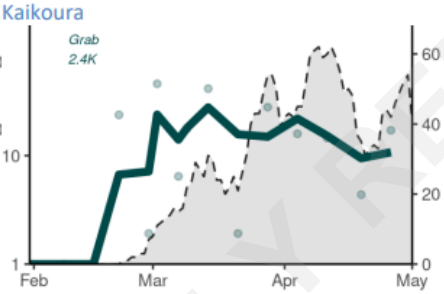

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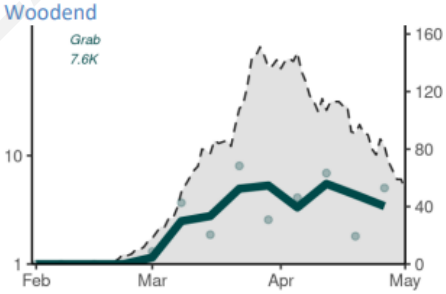
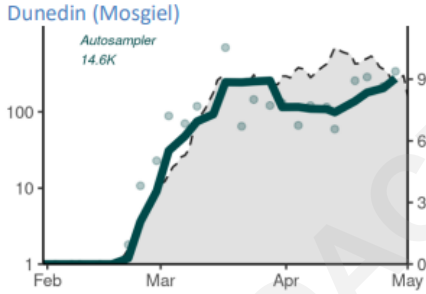
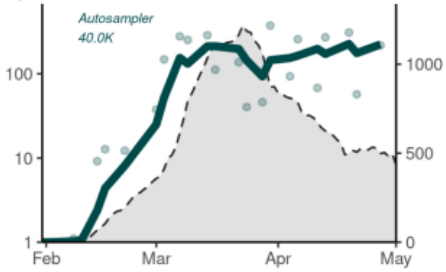


Otago and Southland

Dunedin (Mosgiel)



Queenstown



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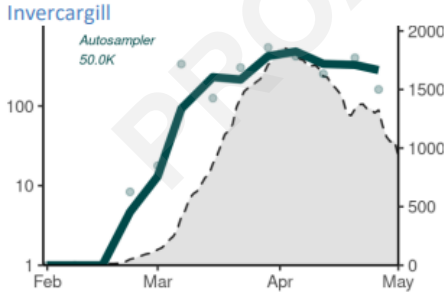

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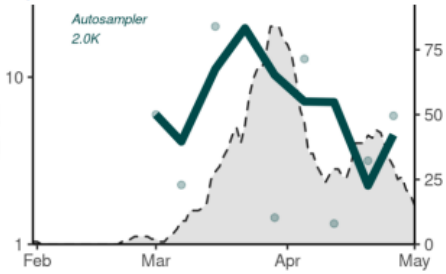
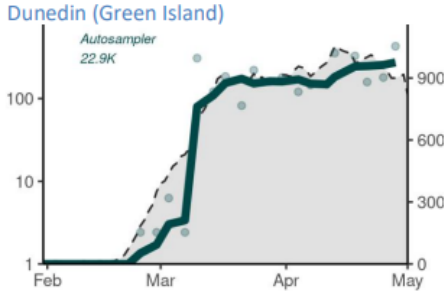


Dunedin (Green Island)



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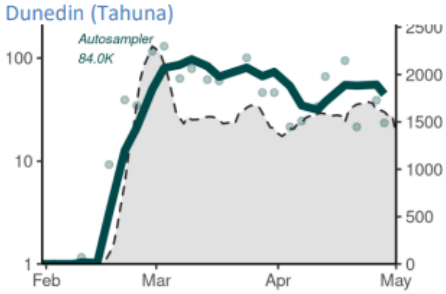

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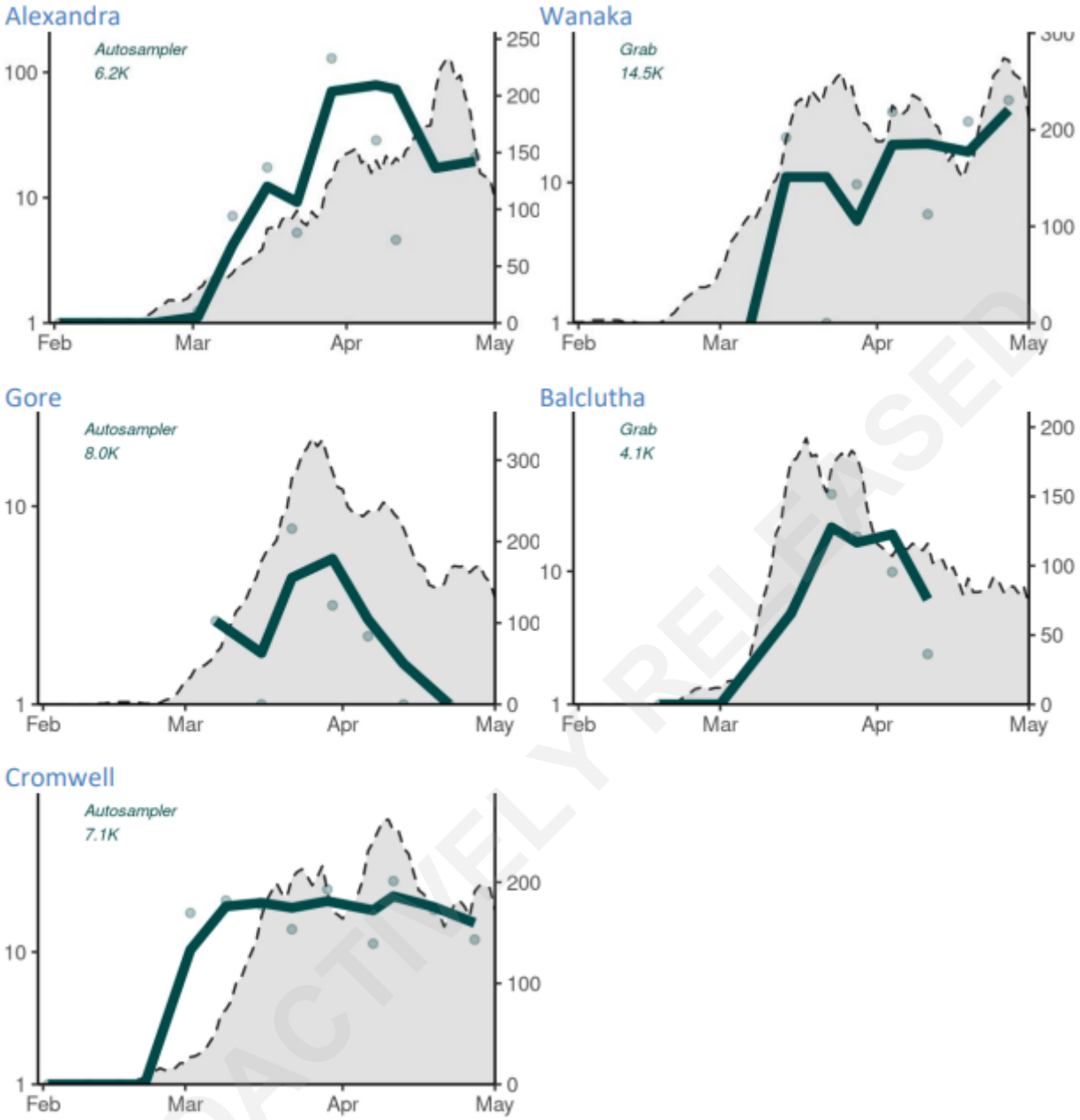

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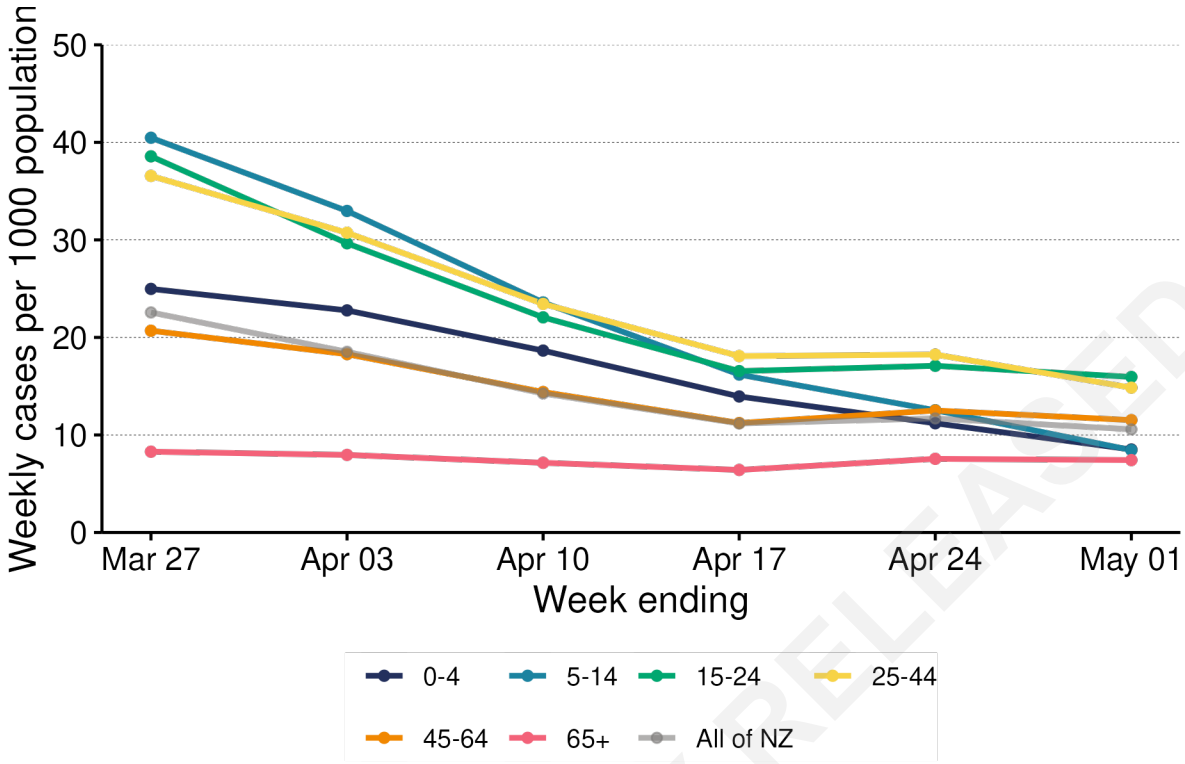
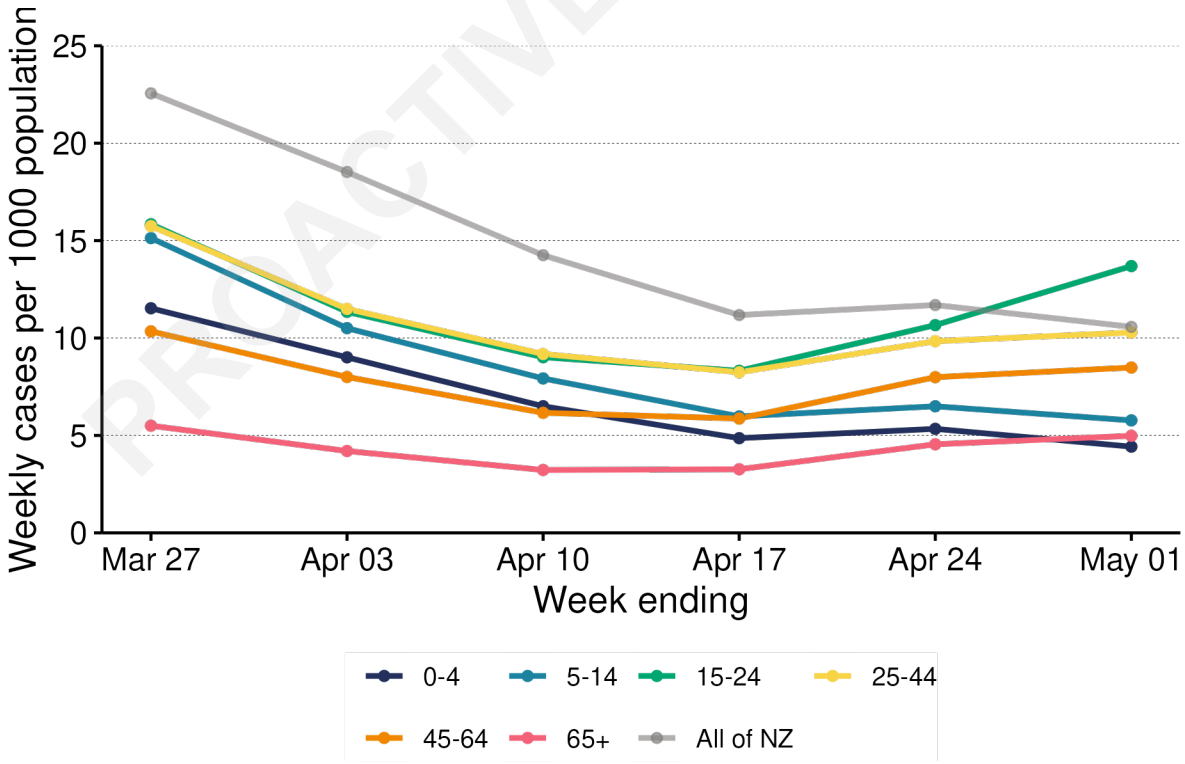
Age Graphs

PROACTIVELY RELEASED

NZ Excluding Auckland Region



Auckland Region



Northern Region

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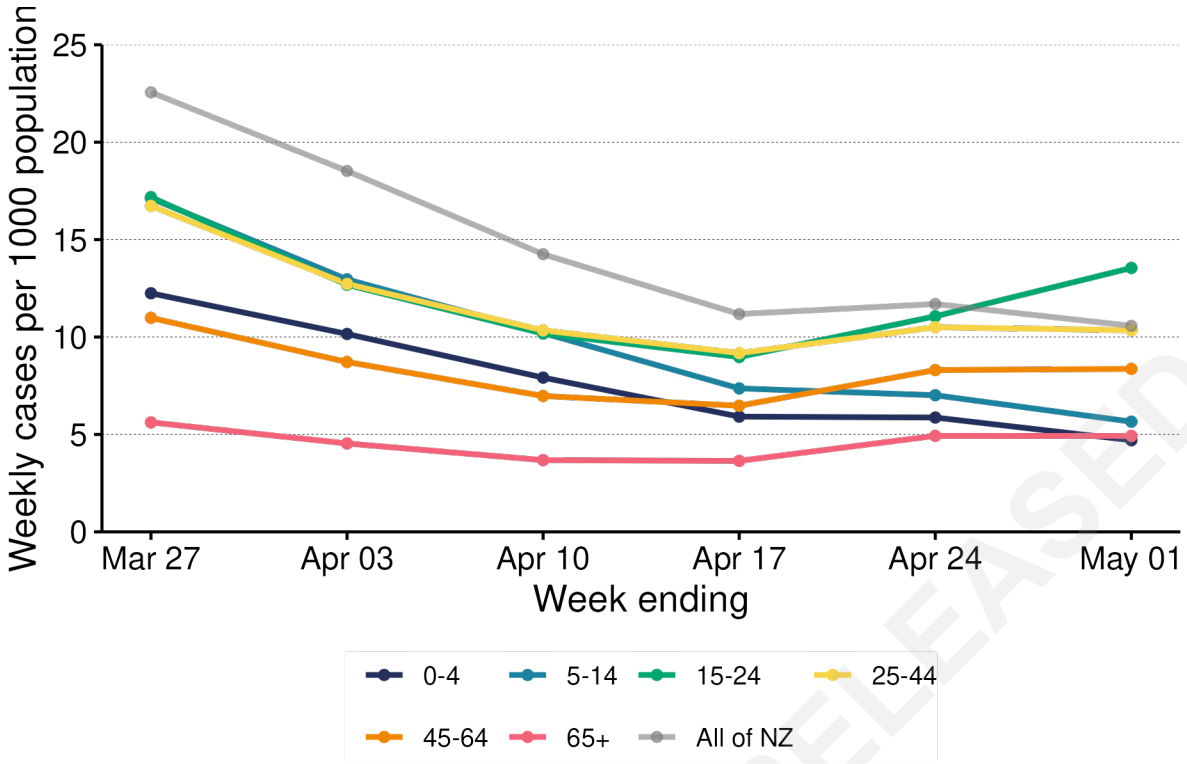
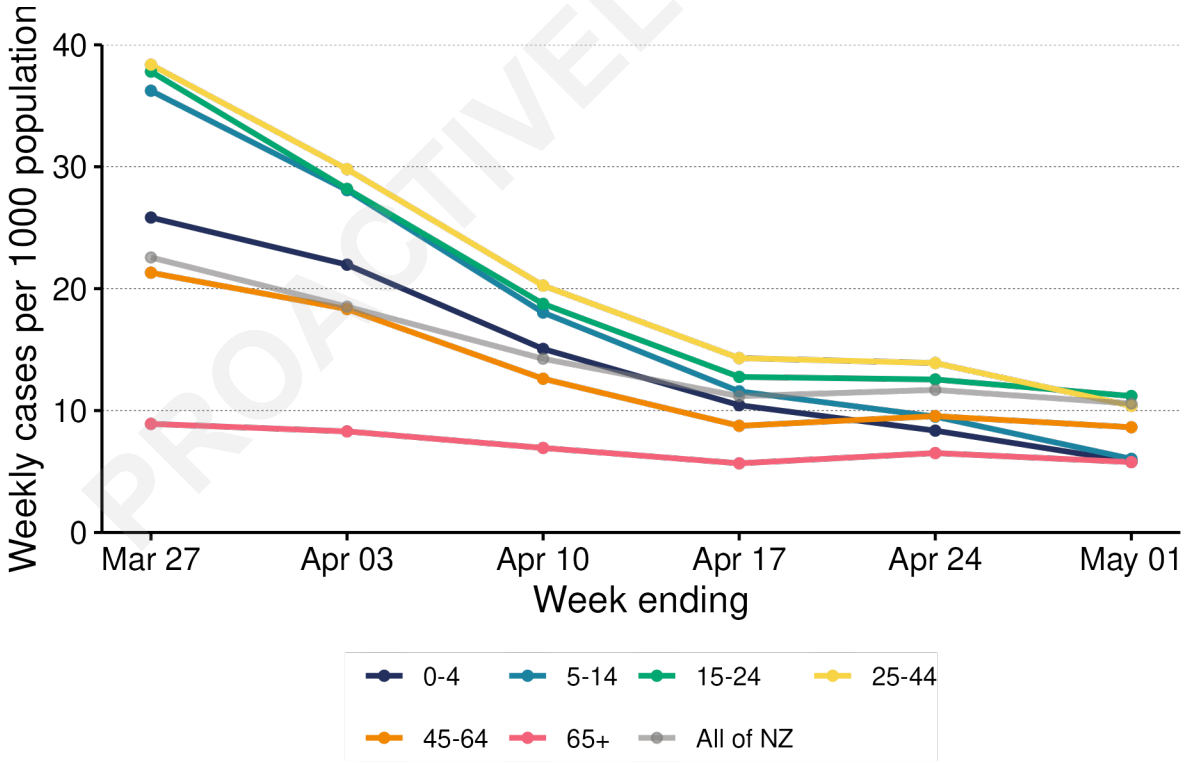


Te Manawa Taki



Central Region

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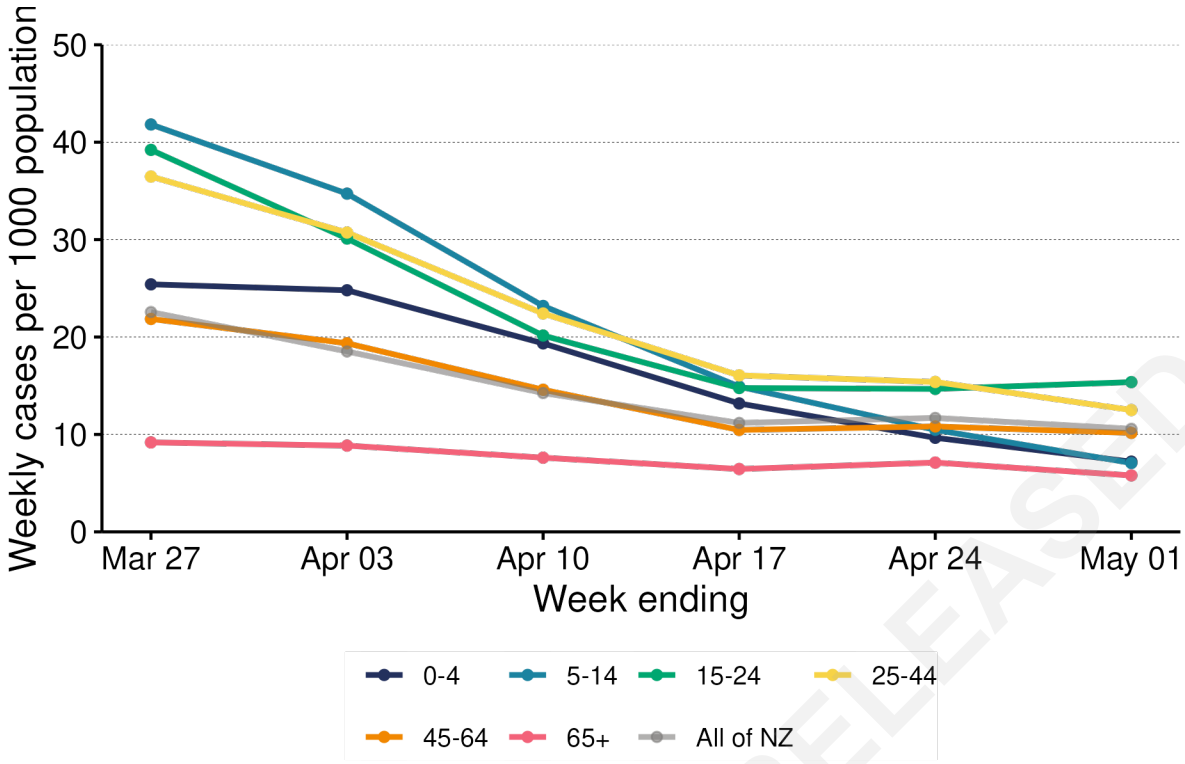
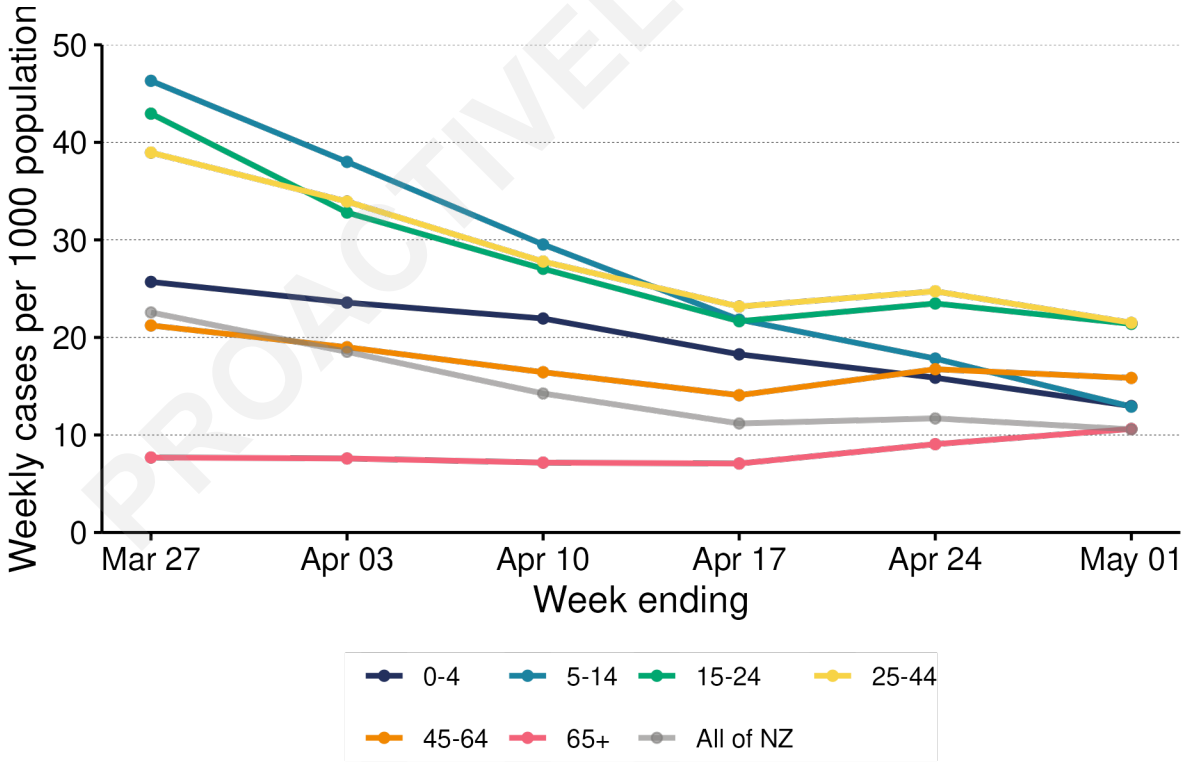


Southern Region



Northland DHB

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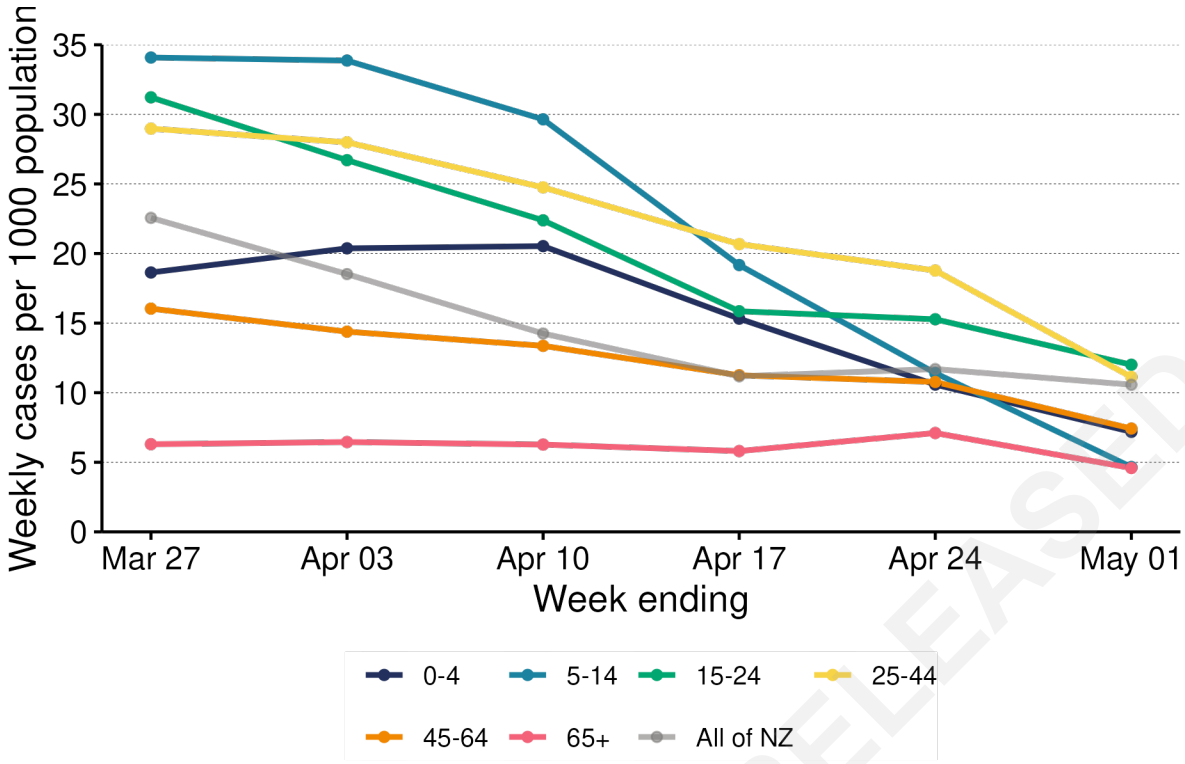
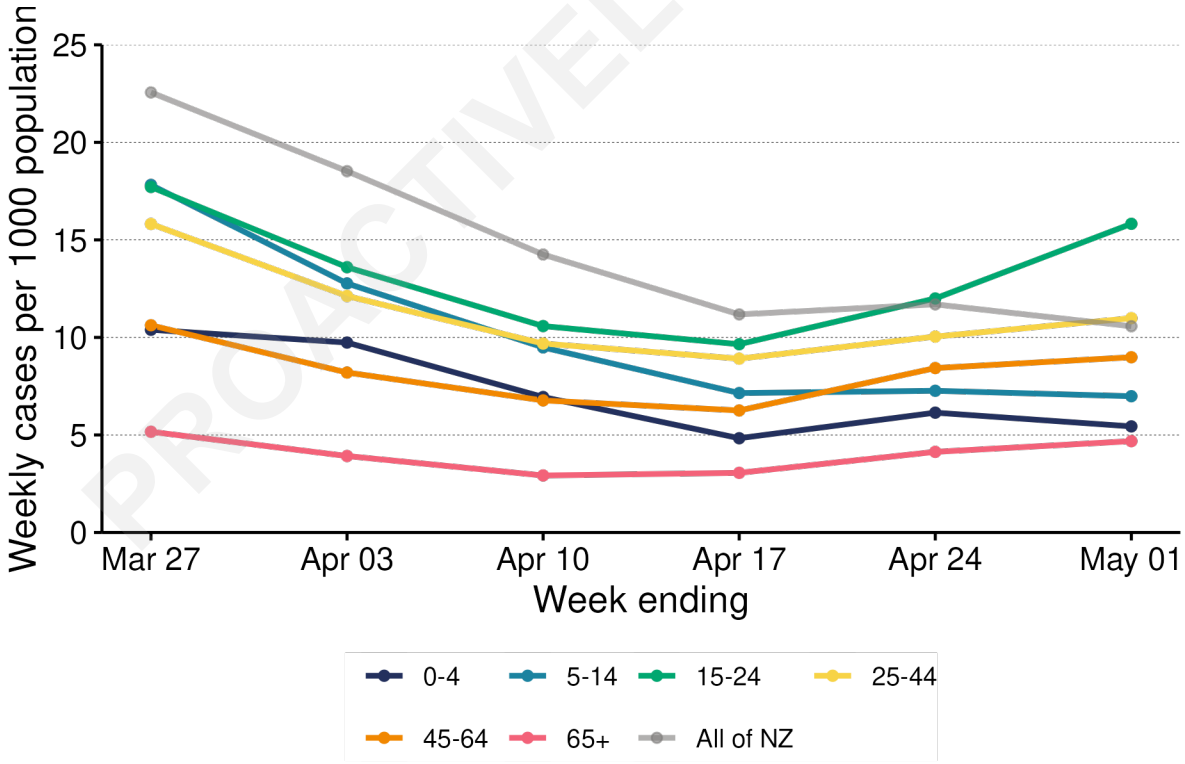


Waitemata DHB



Auckland DHB

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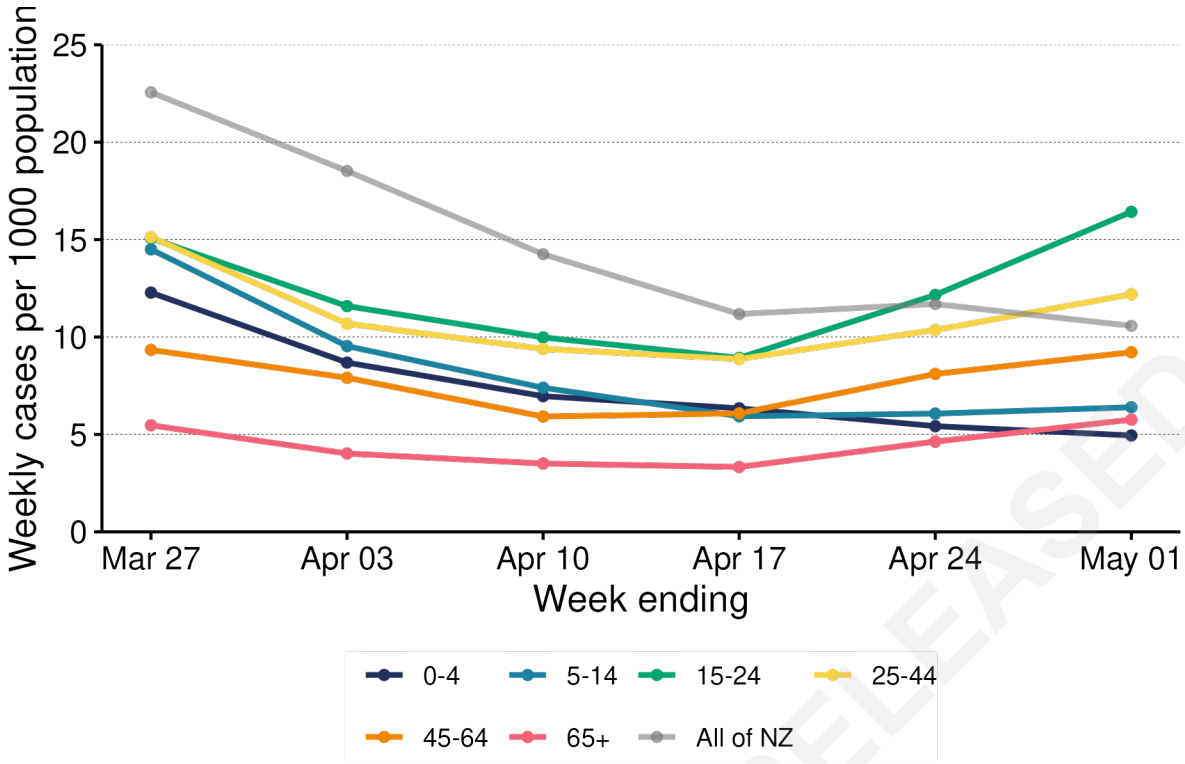
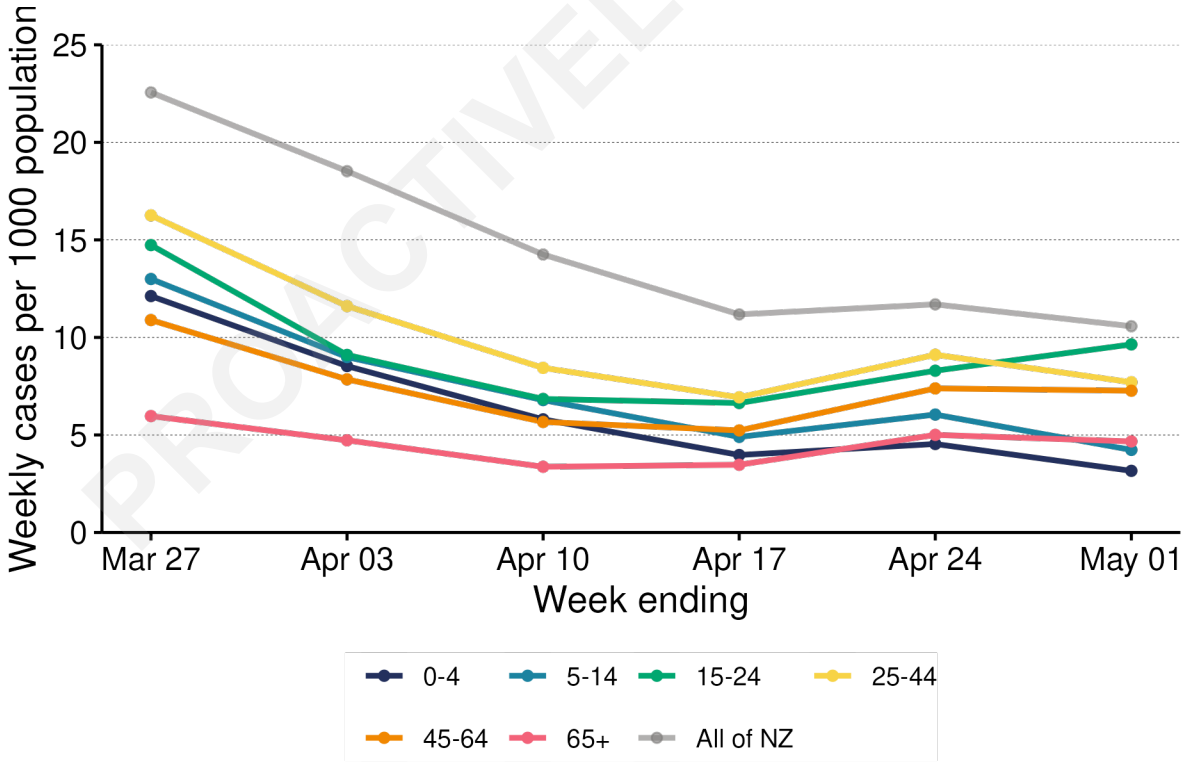


Counties Manukau DHB



Bay of Plenty DHB

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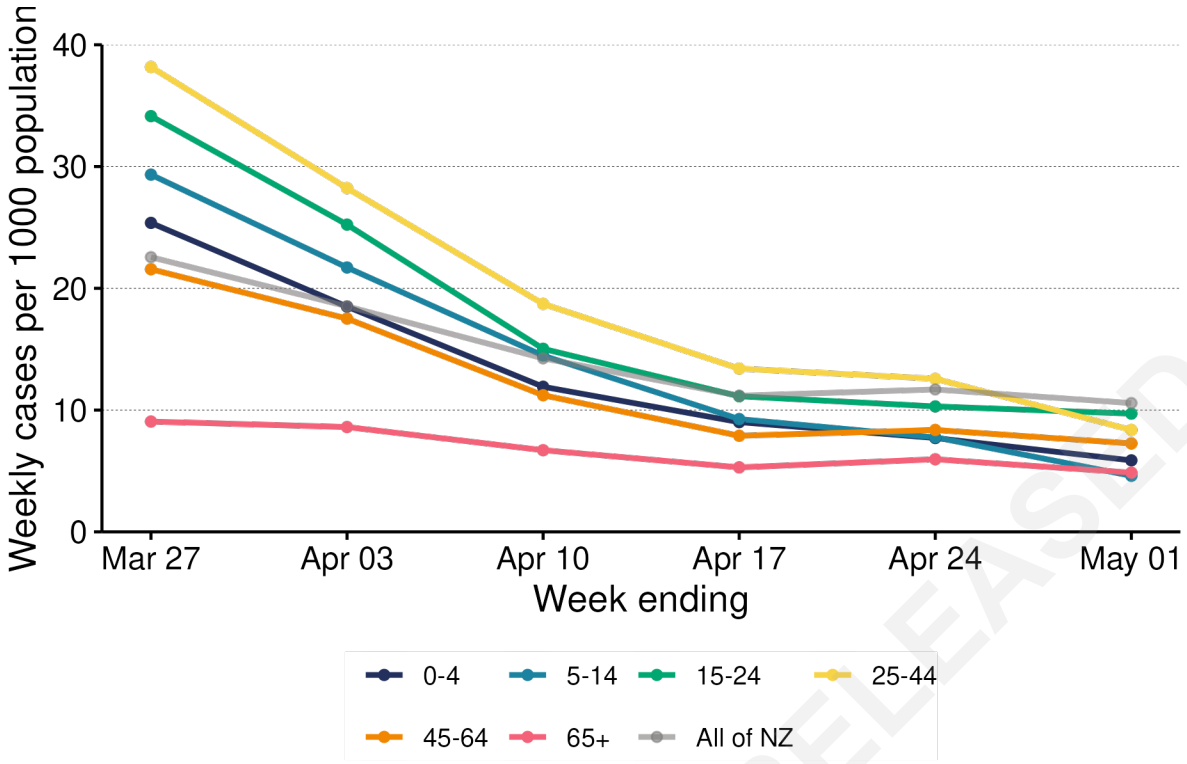
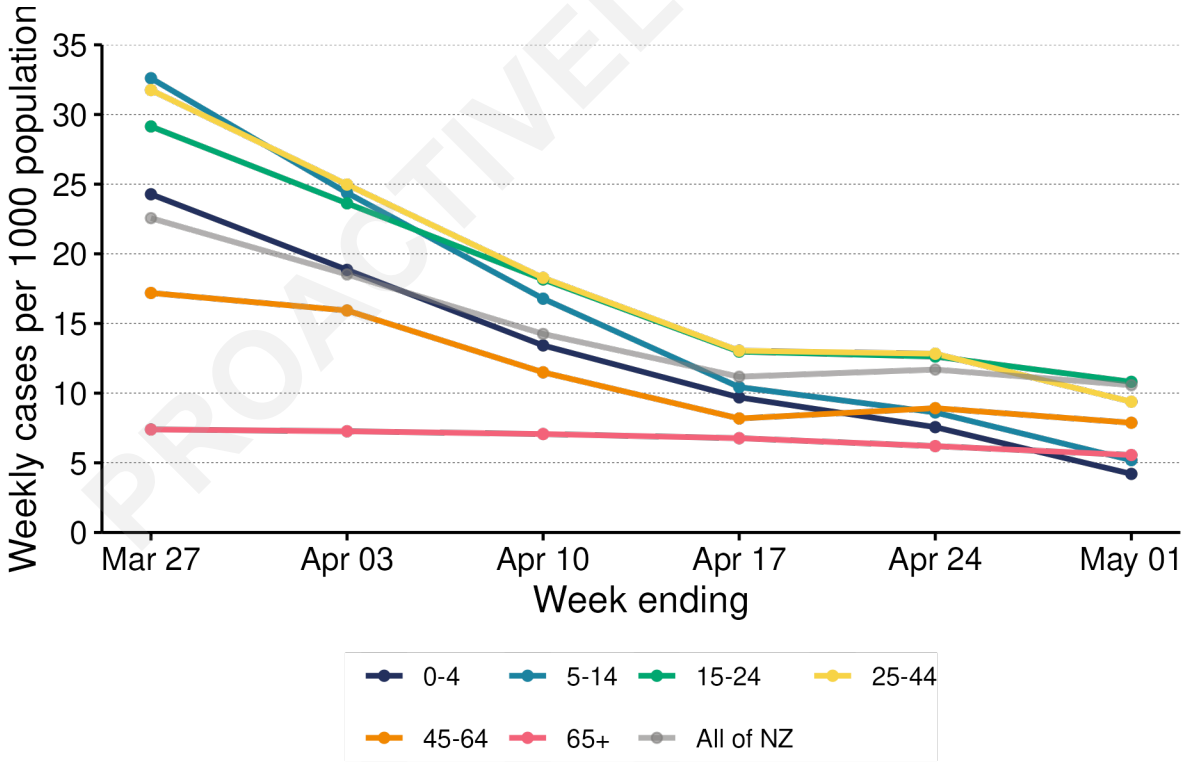


Waikato DHB



Tarawhiti DHB

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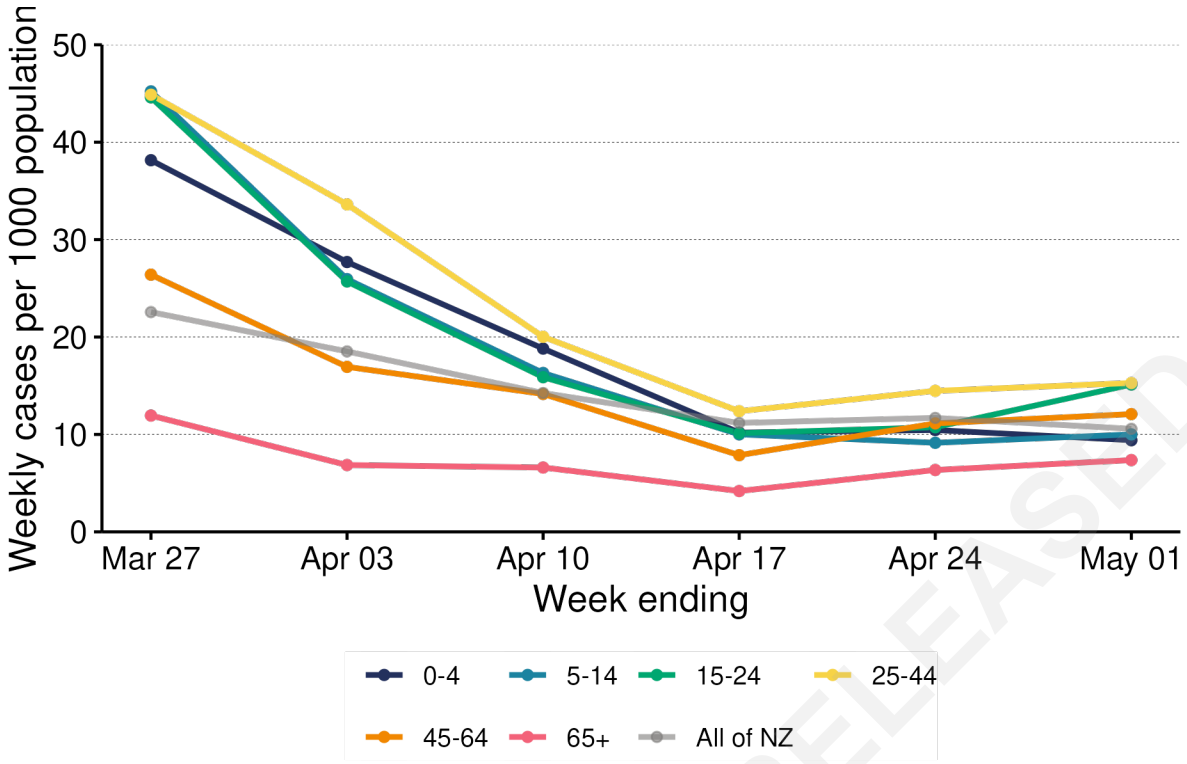
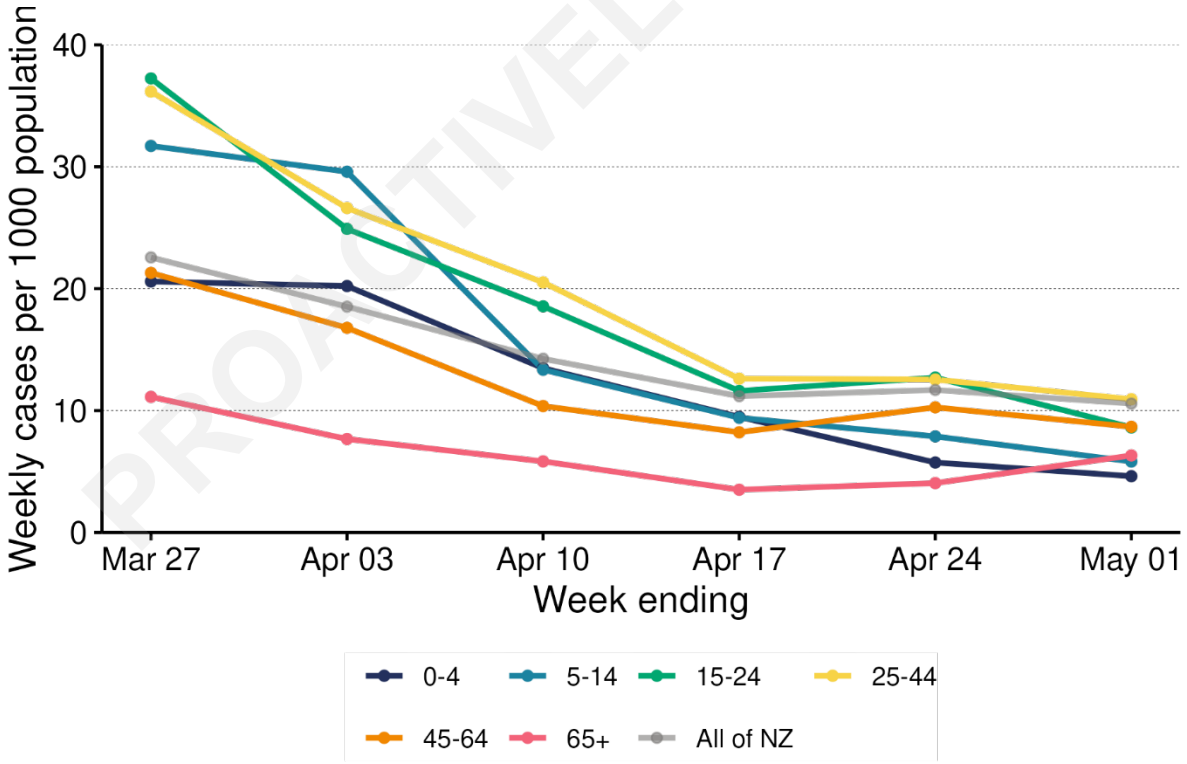


Lakes DHB



Taranaki DHB

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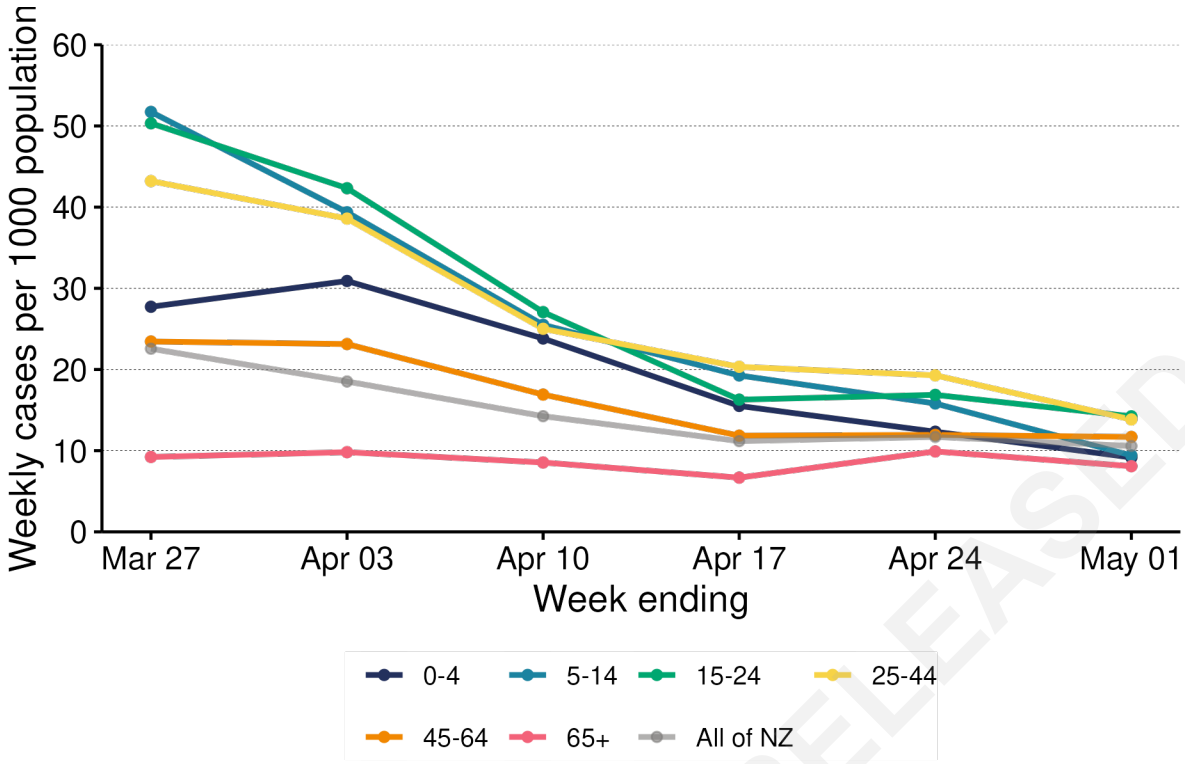
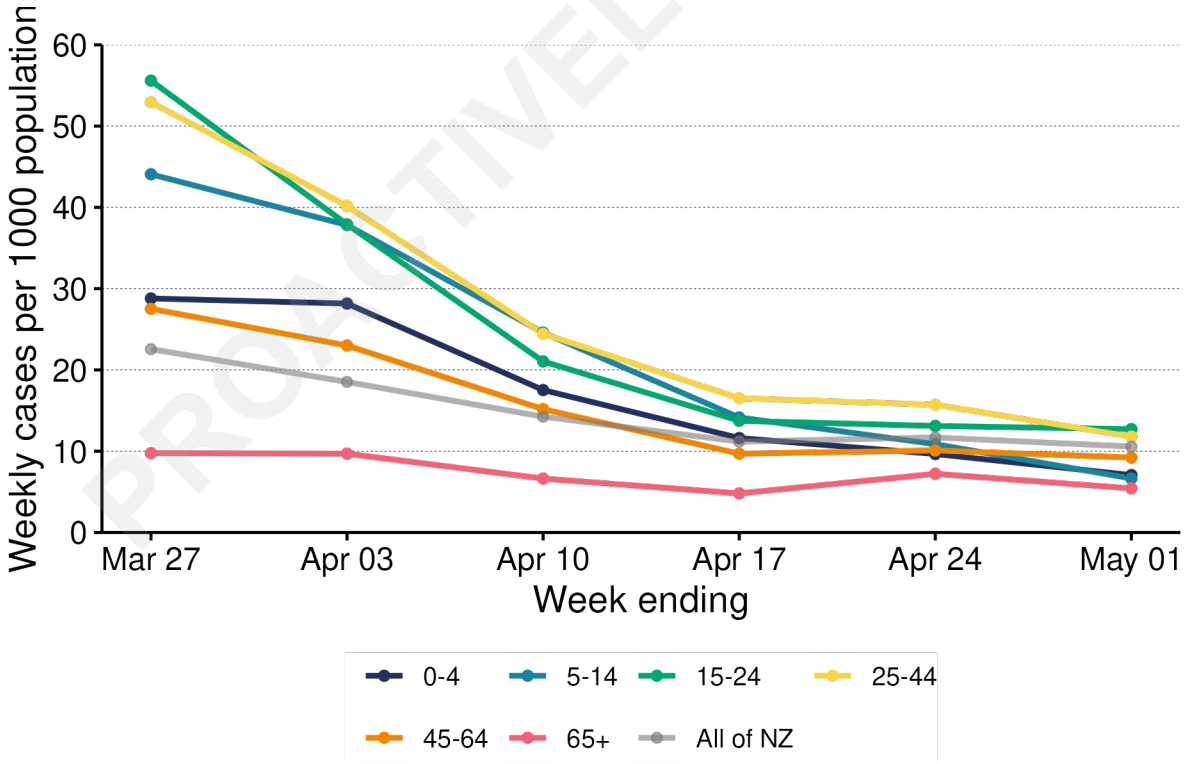


Hawke's Bay DHB



Whanganui DHB

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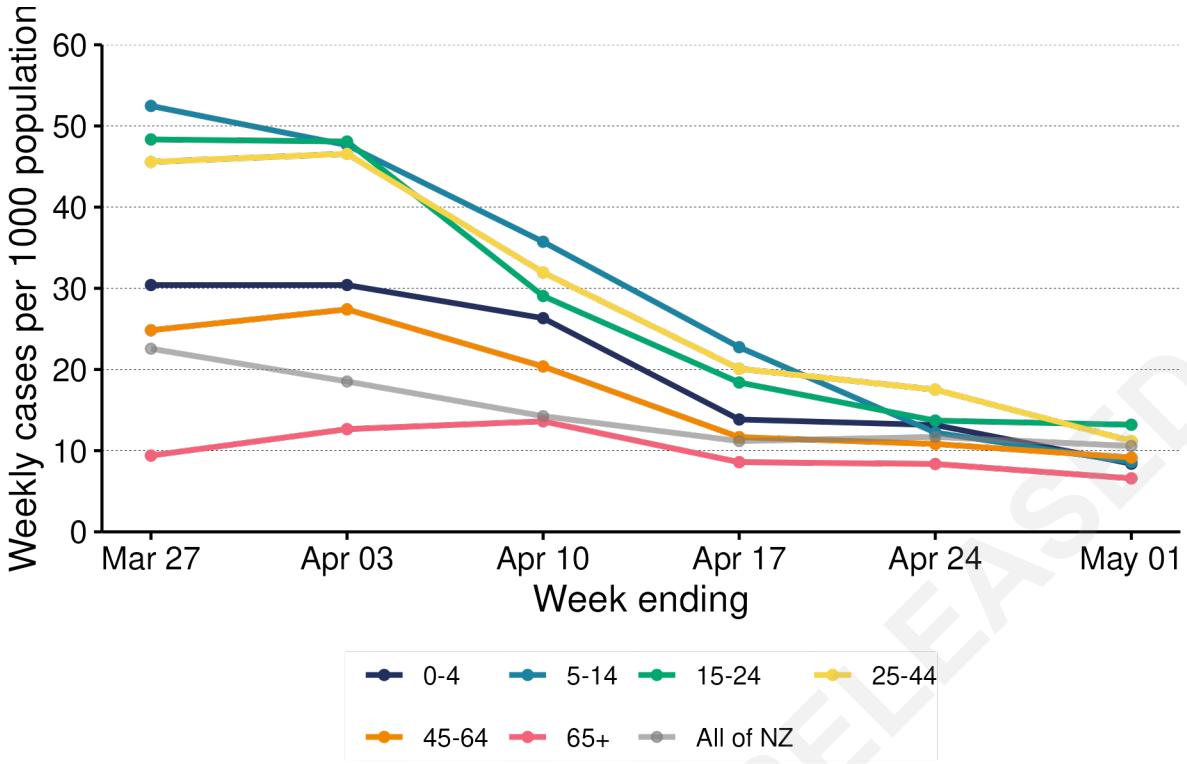
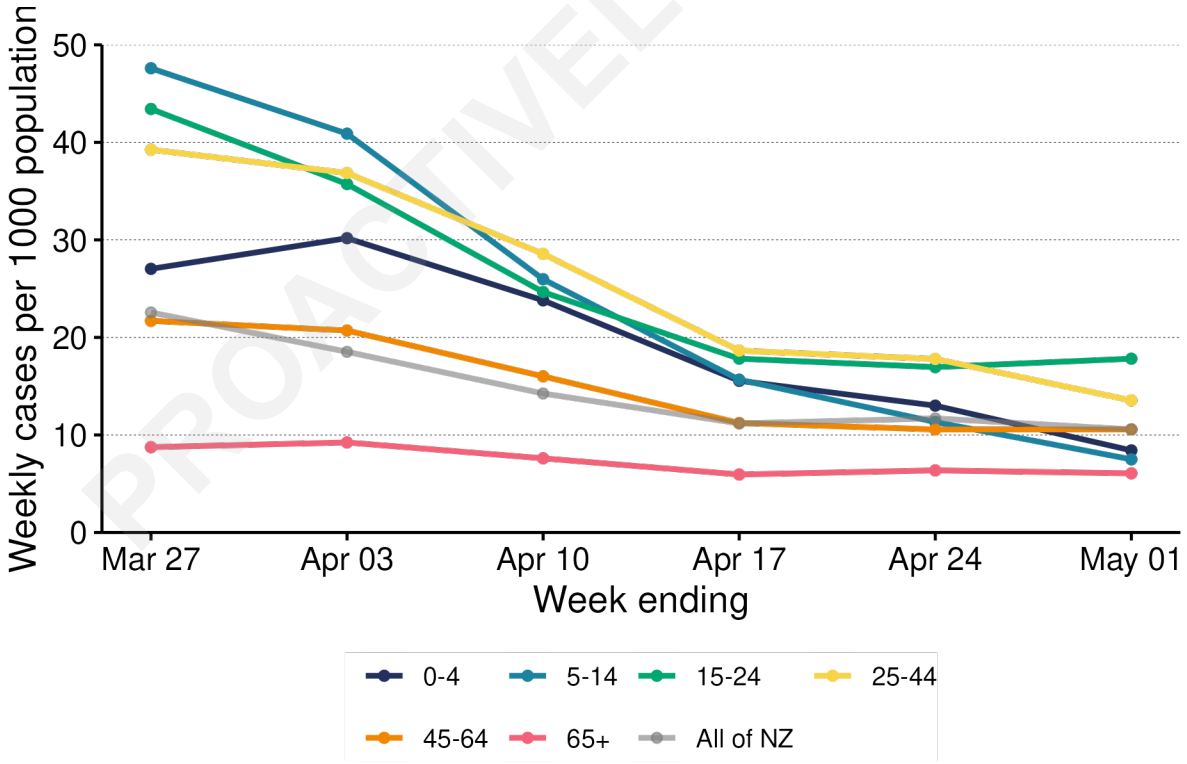


MidCentral DHB



Hutt Valley DHB

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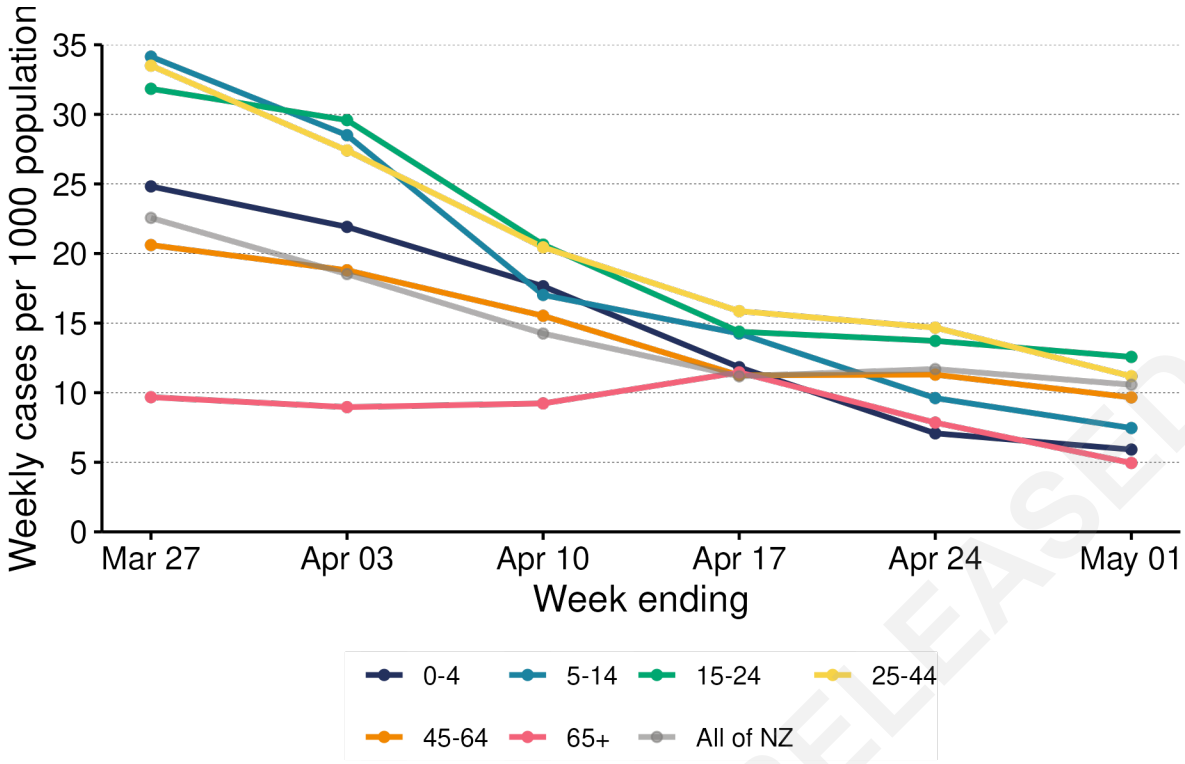
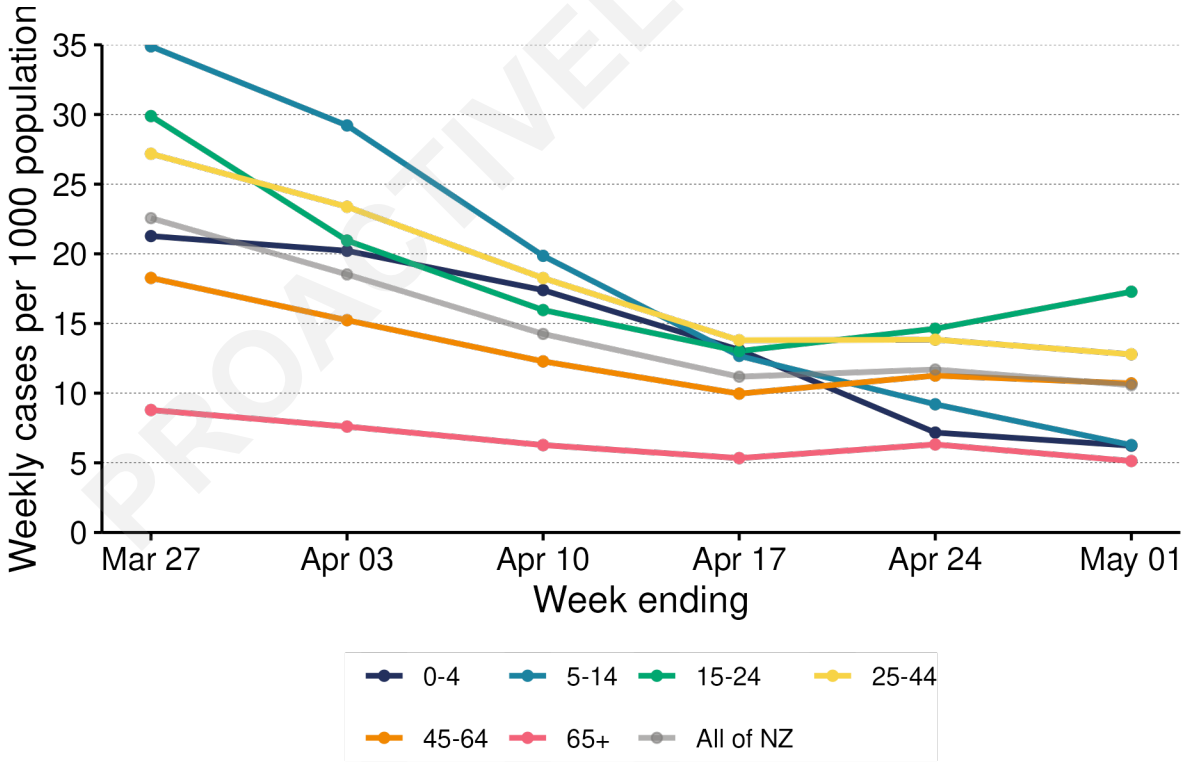


Capital and Coast DHB



Wairarapa DHB

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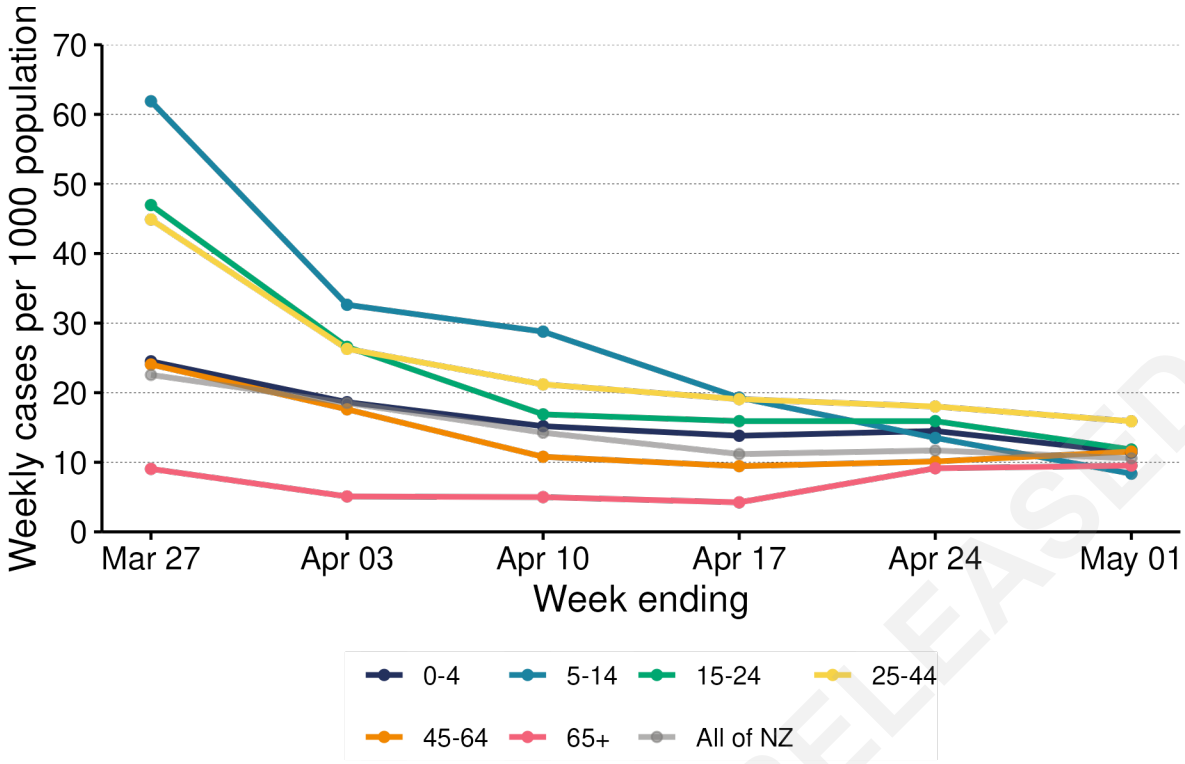
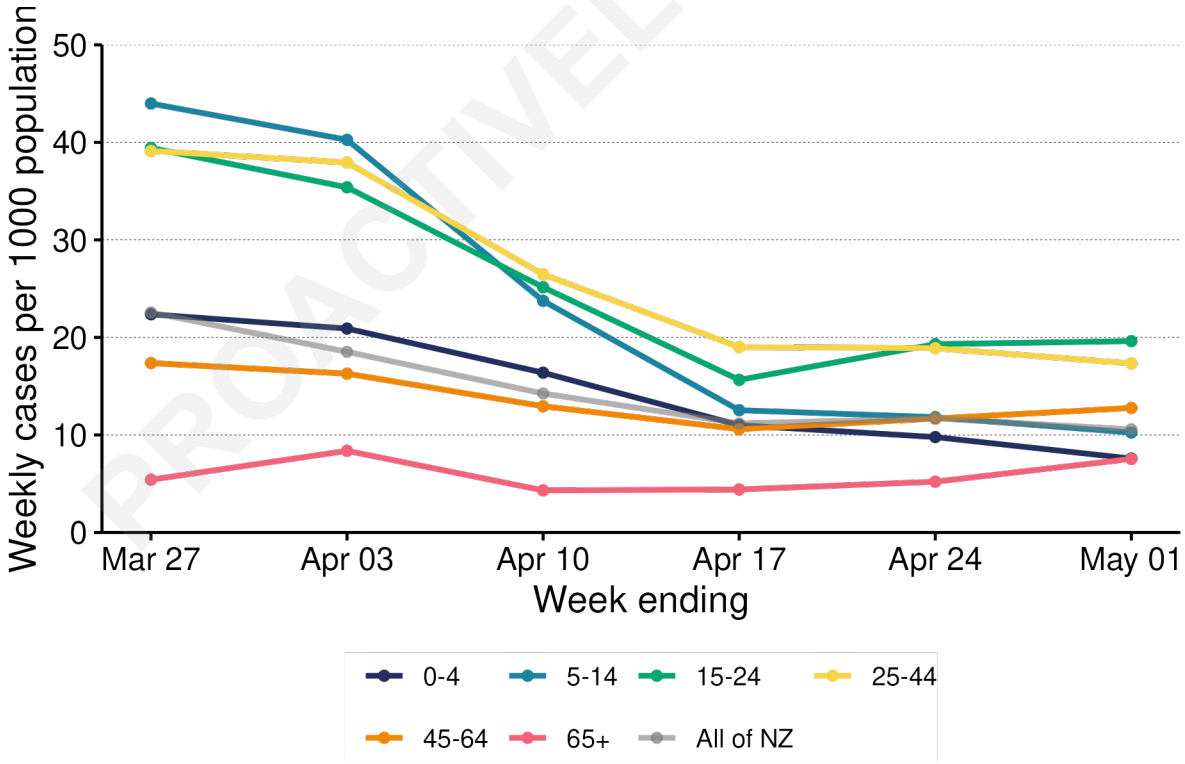


Nelson Marlborough DHB



West Coast DHB

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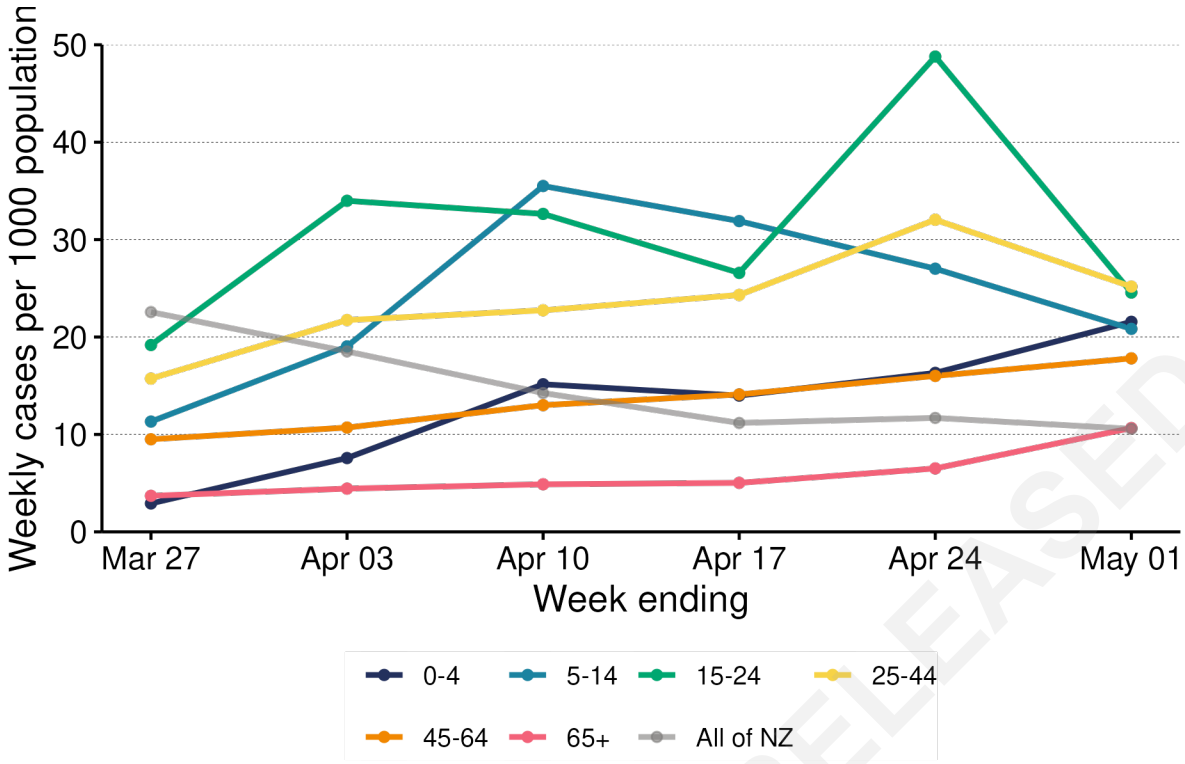
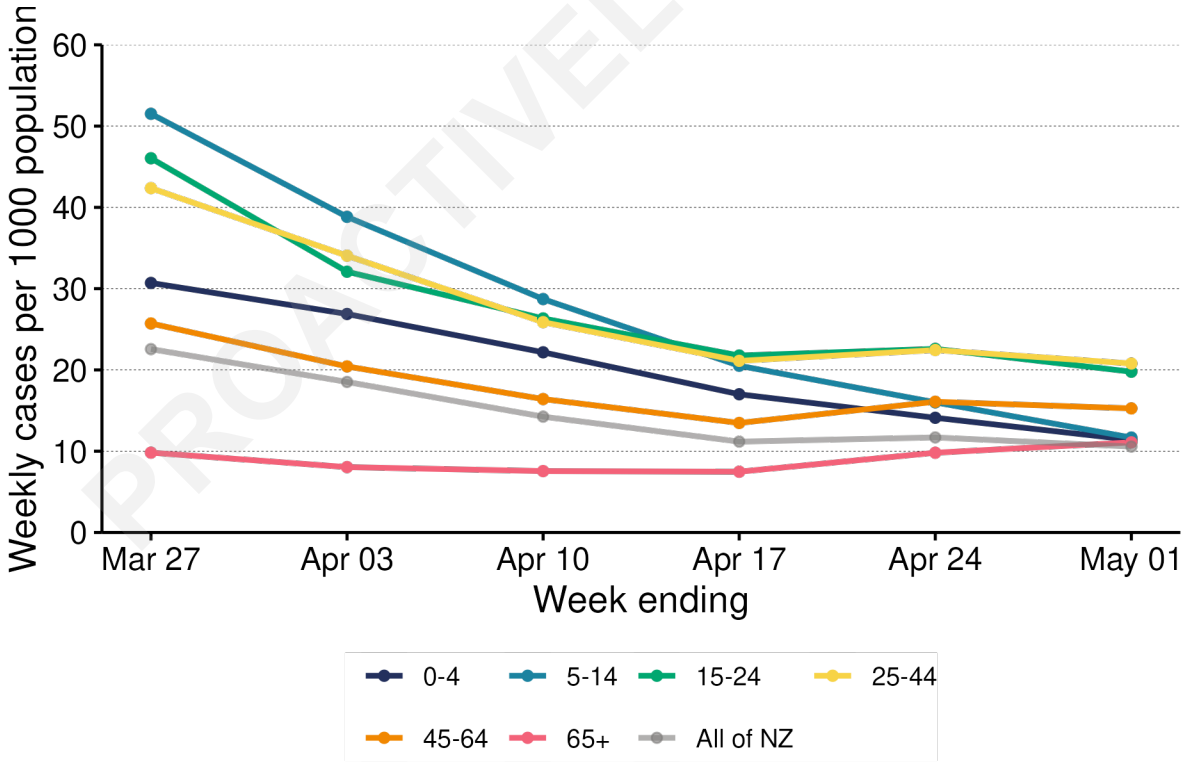


Canterbury DHB



South Canterbury DHB

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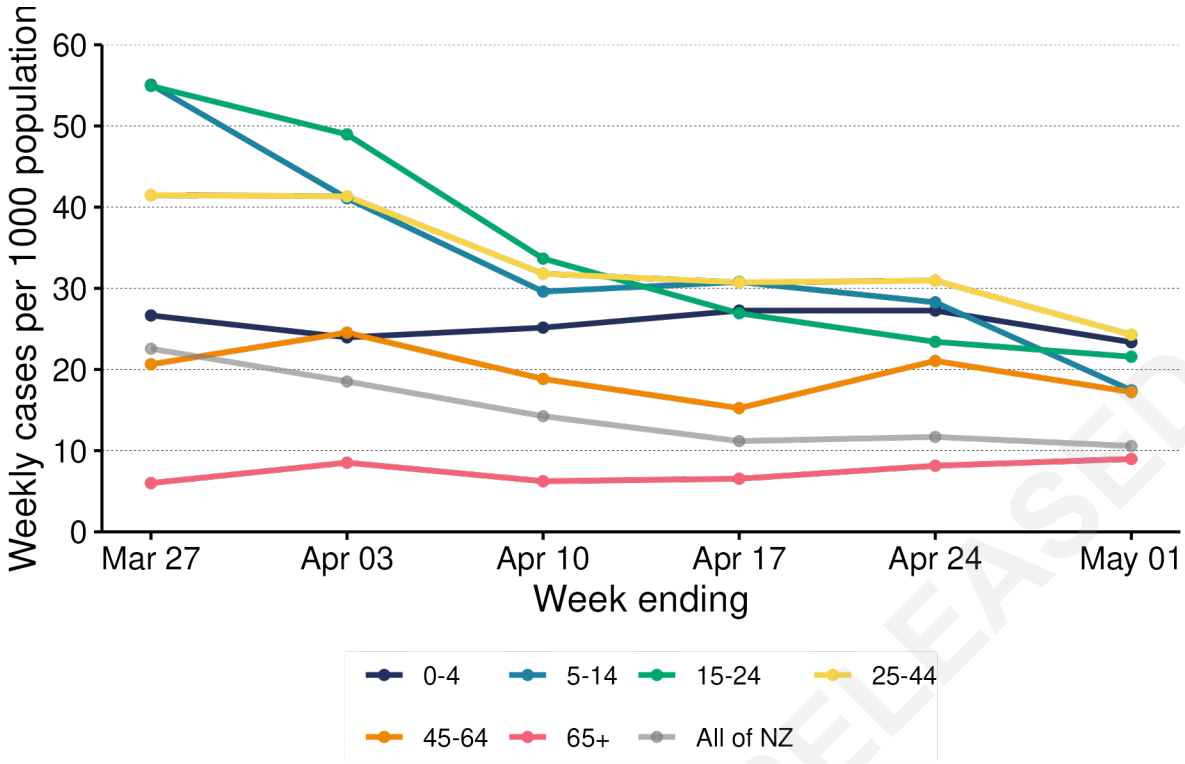
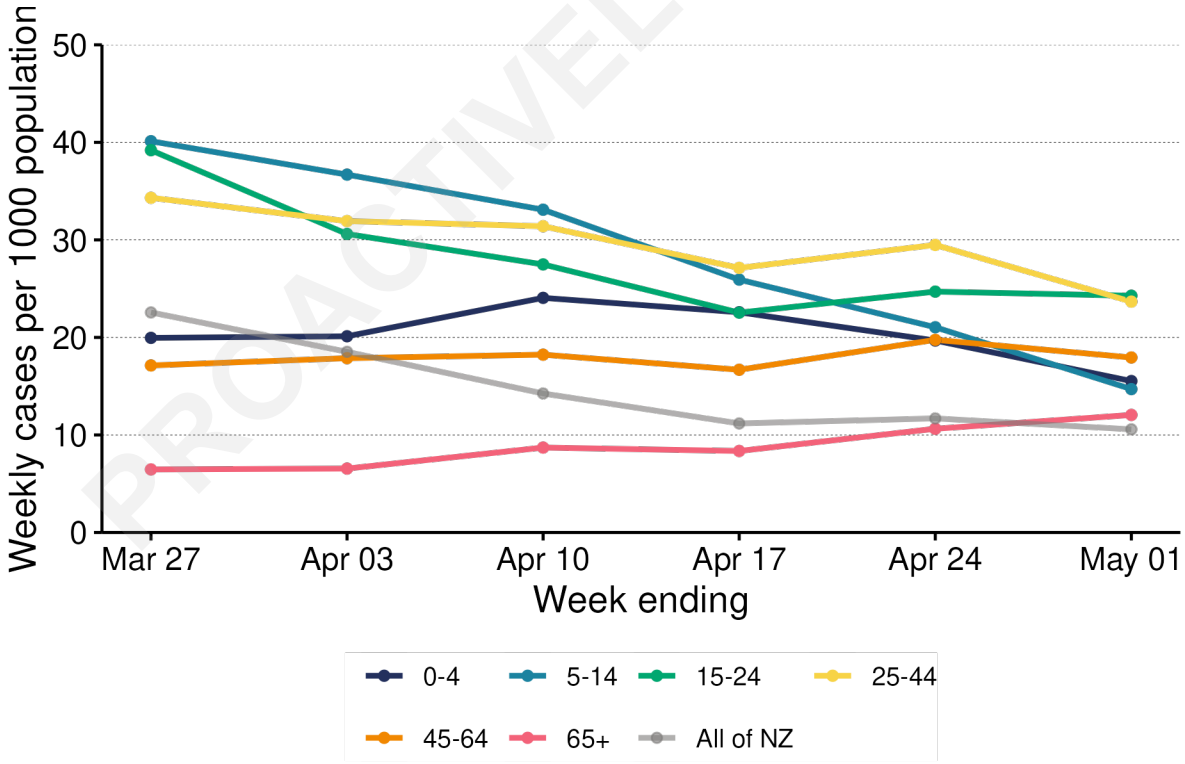


Southern DHB



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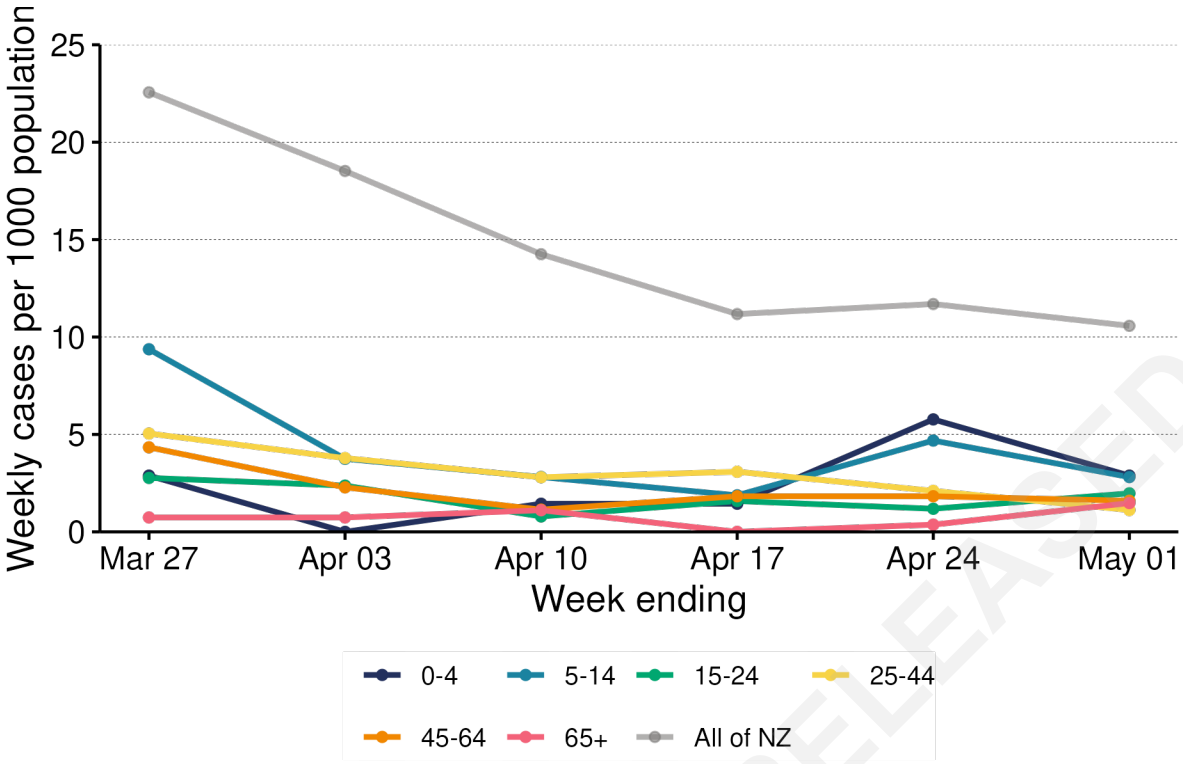
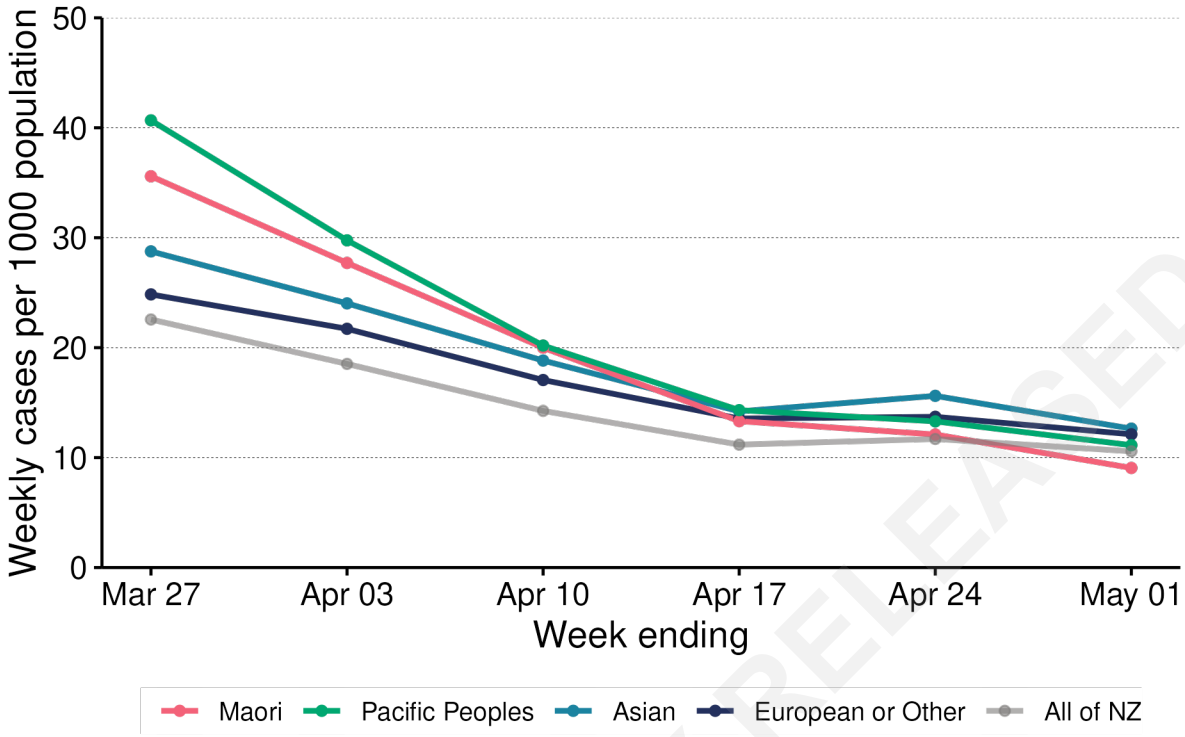


PROACTIVELY RELEASED

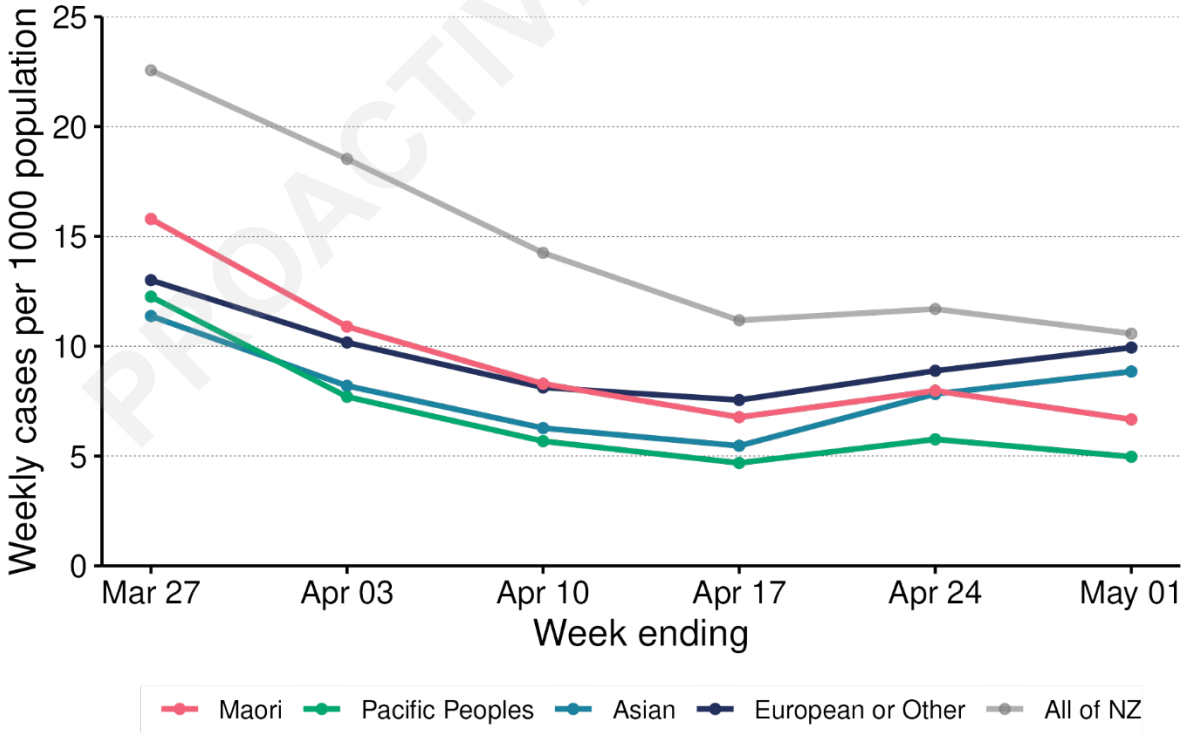
Ethnicity Graphs

PROACTIVELY RELEASED

NZ Excluding Auckland Region



Auckland Region



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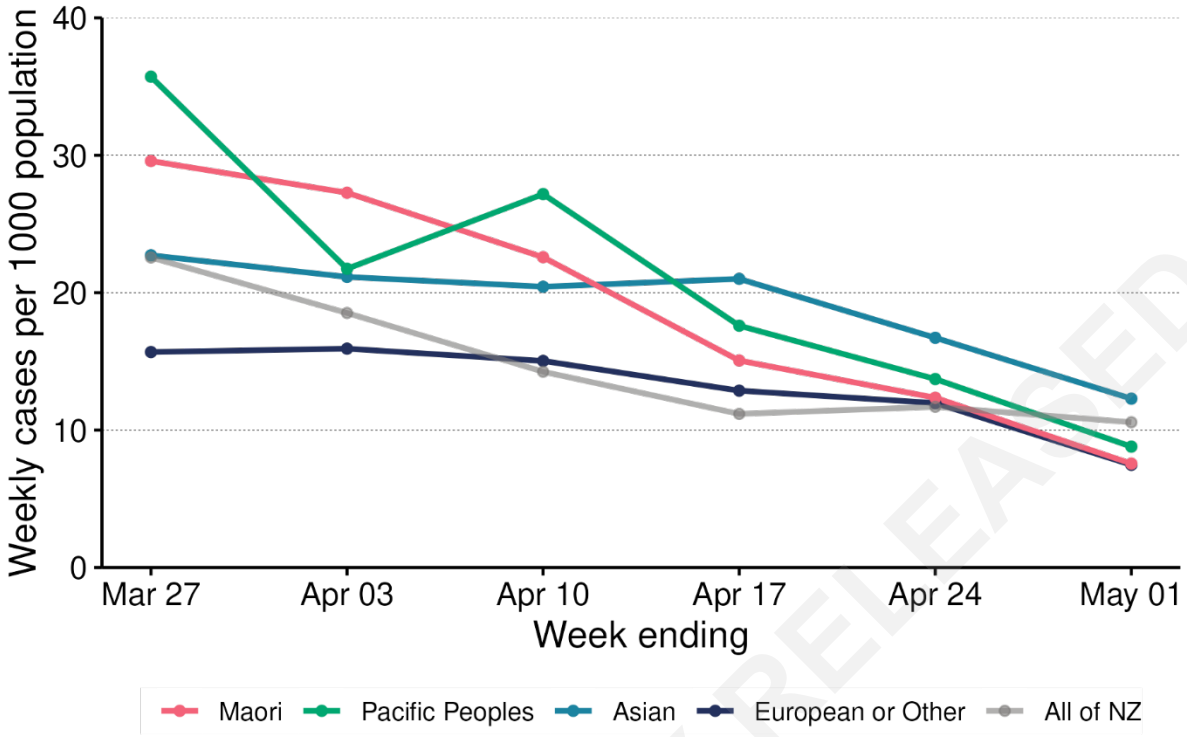
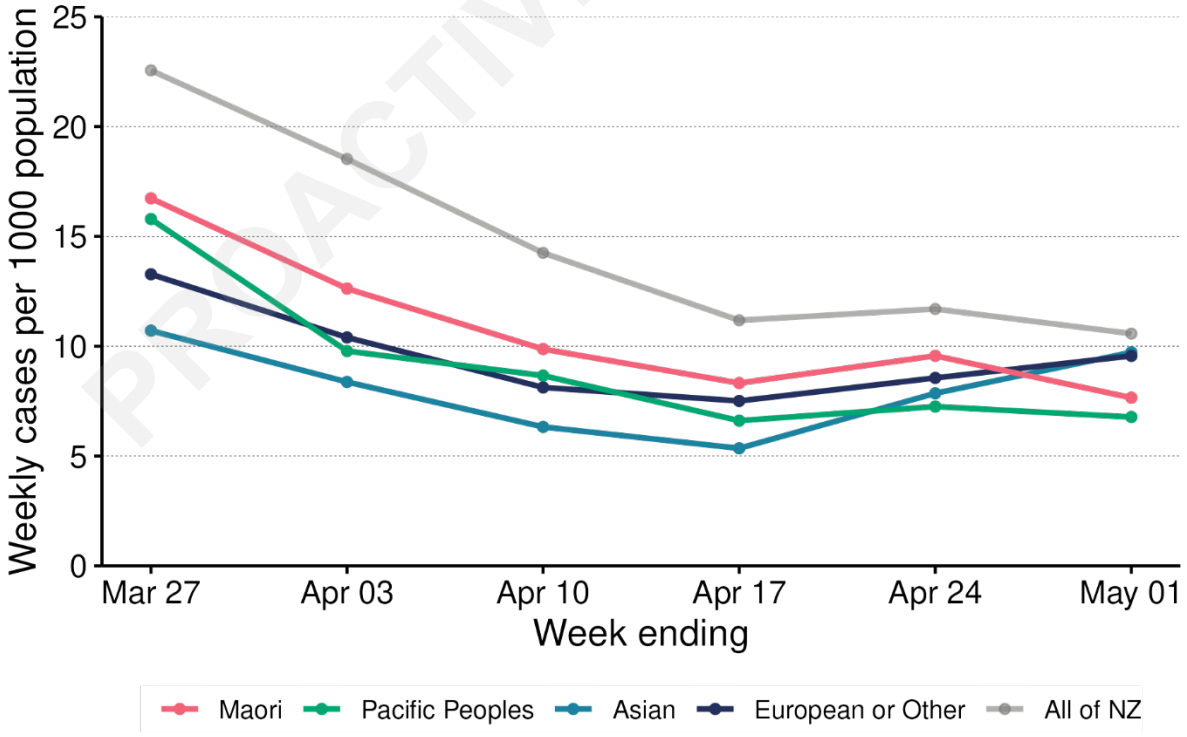
Northland DHB



Waitemata DHB



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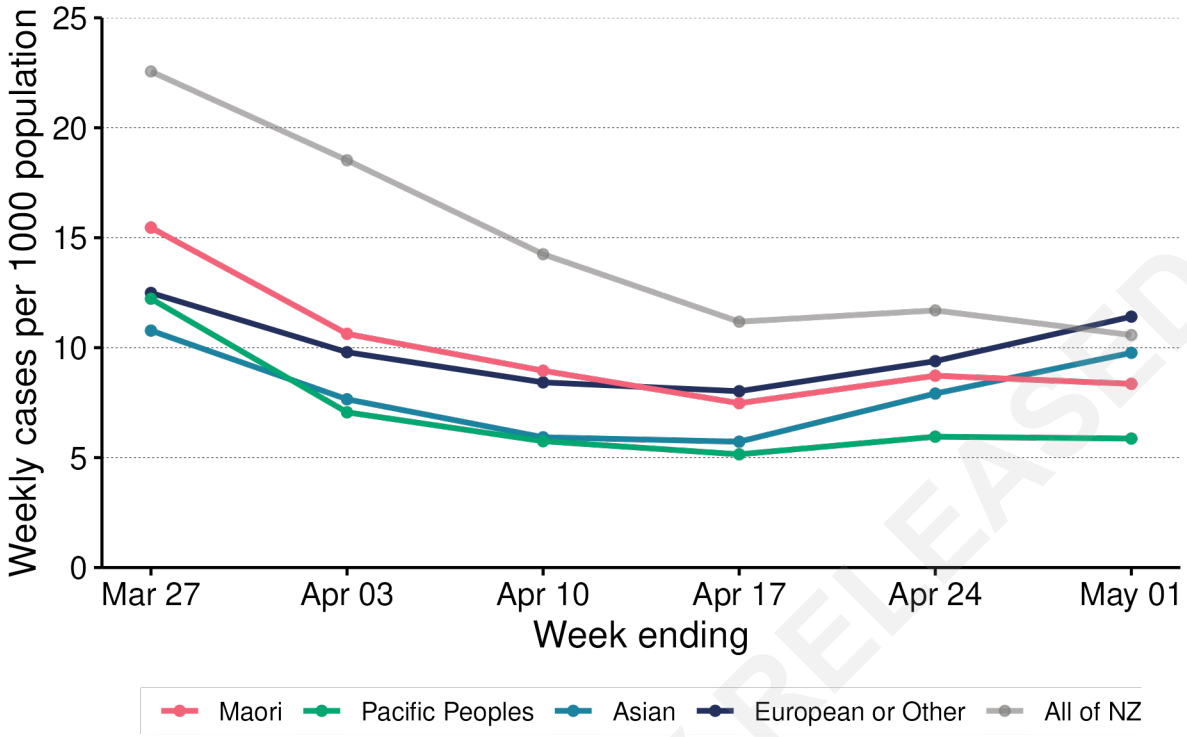
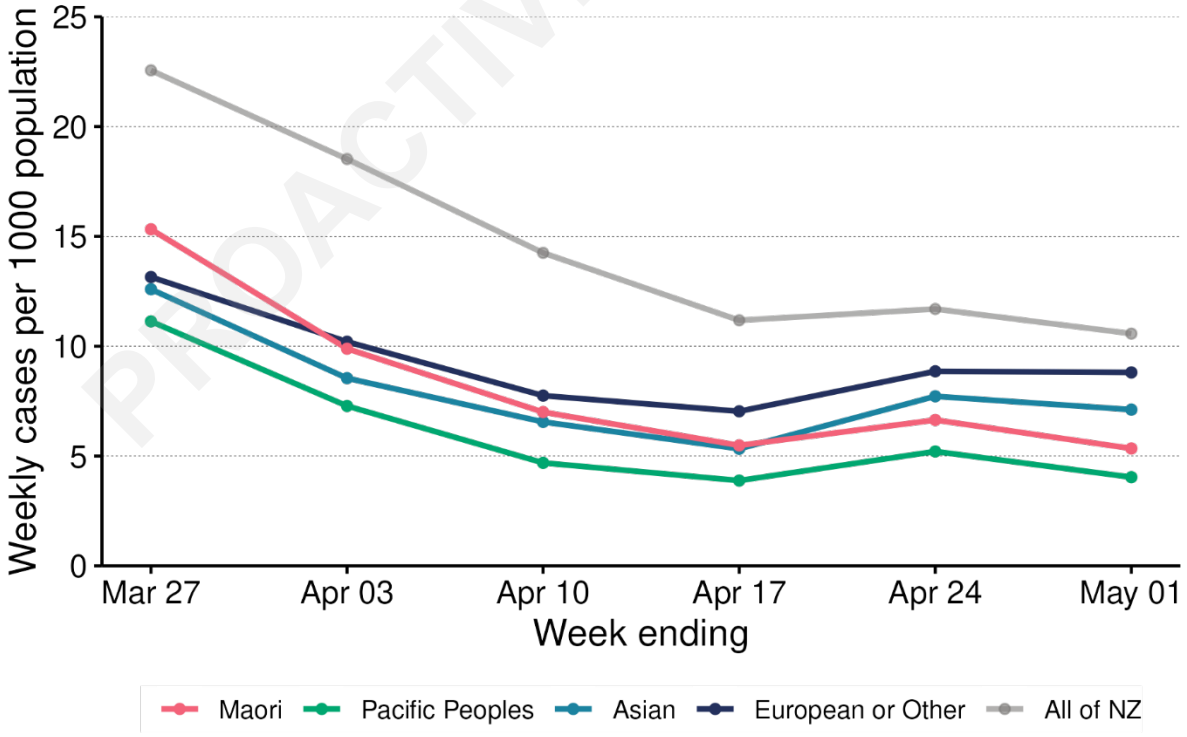
Auckland DHB



Counties Manukau DHB



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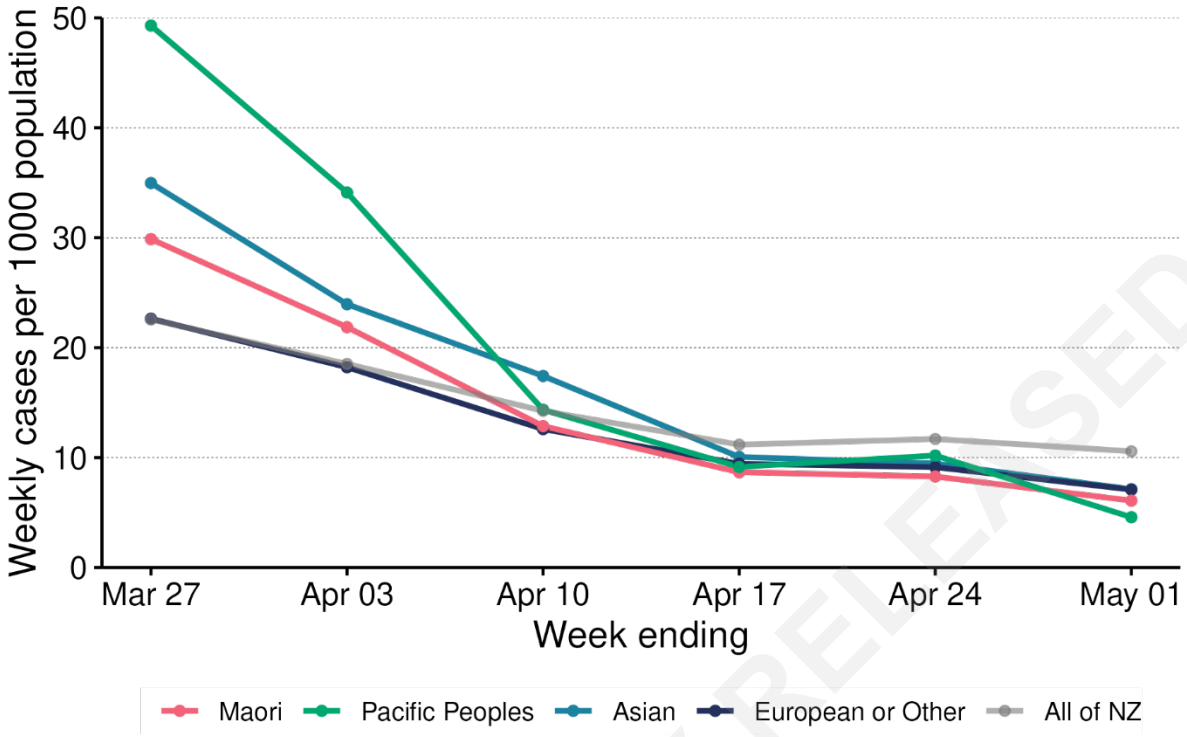
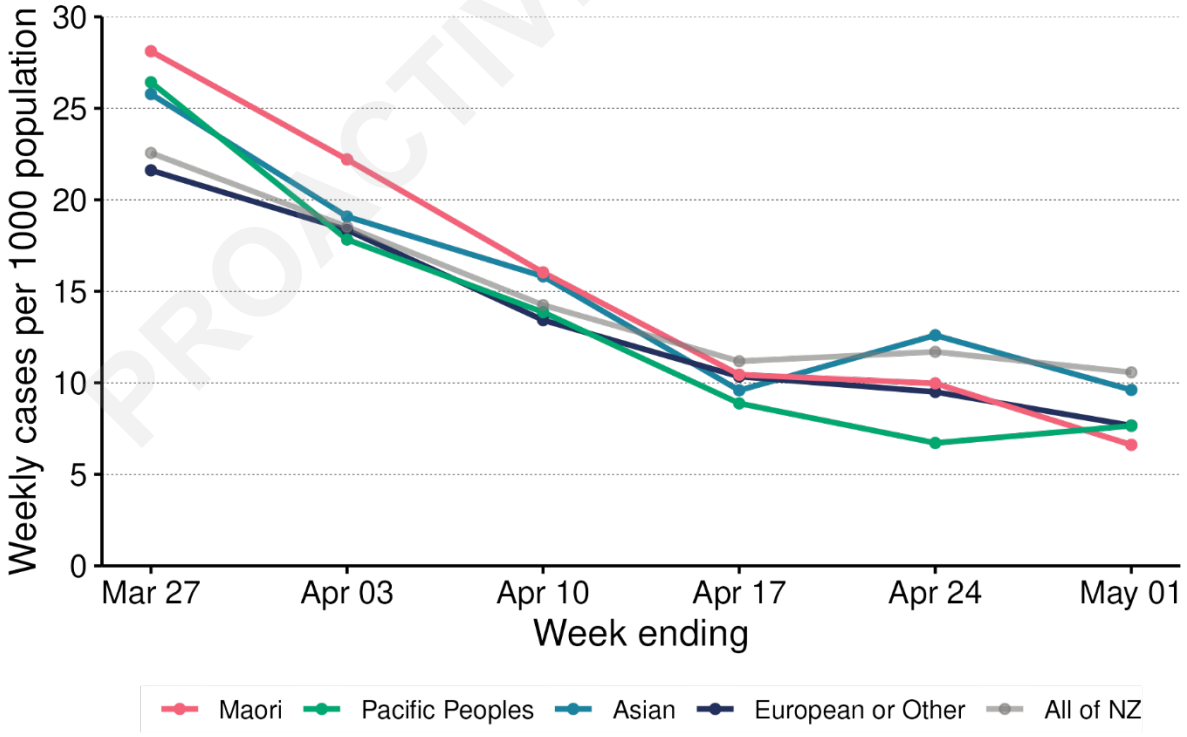
Bay of Plenty DHB

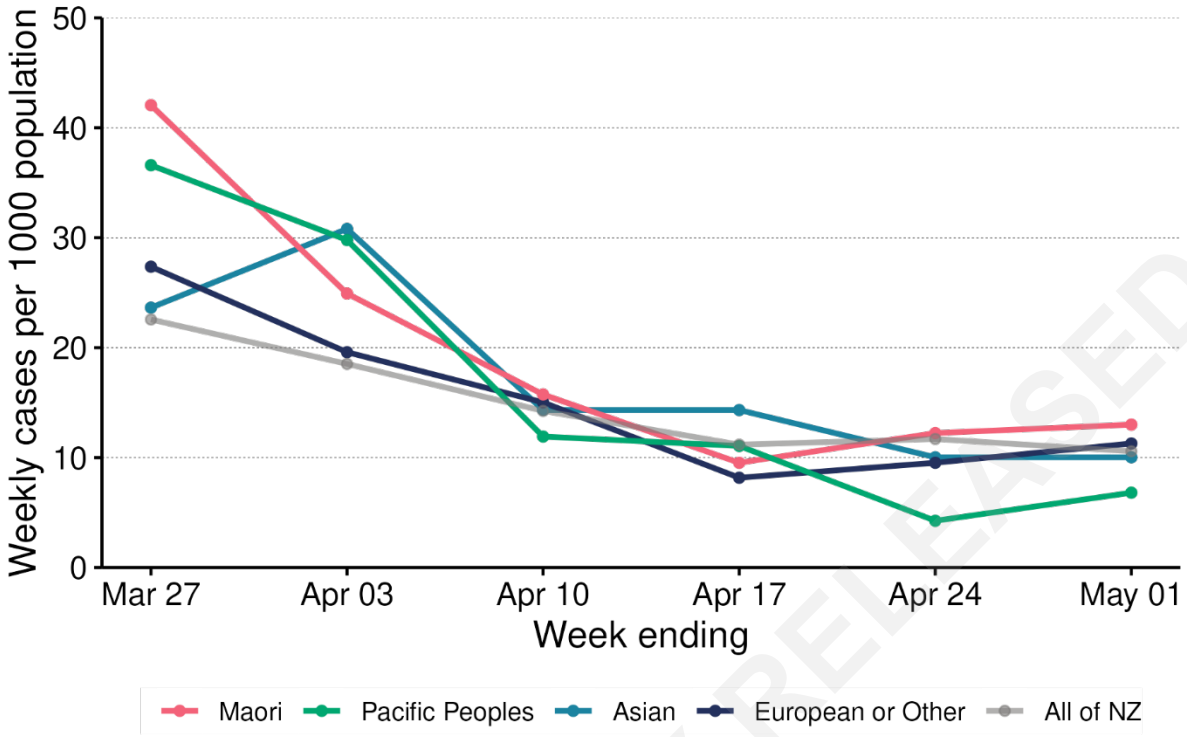


Waikato DHB

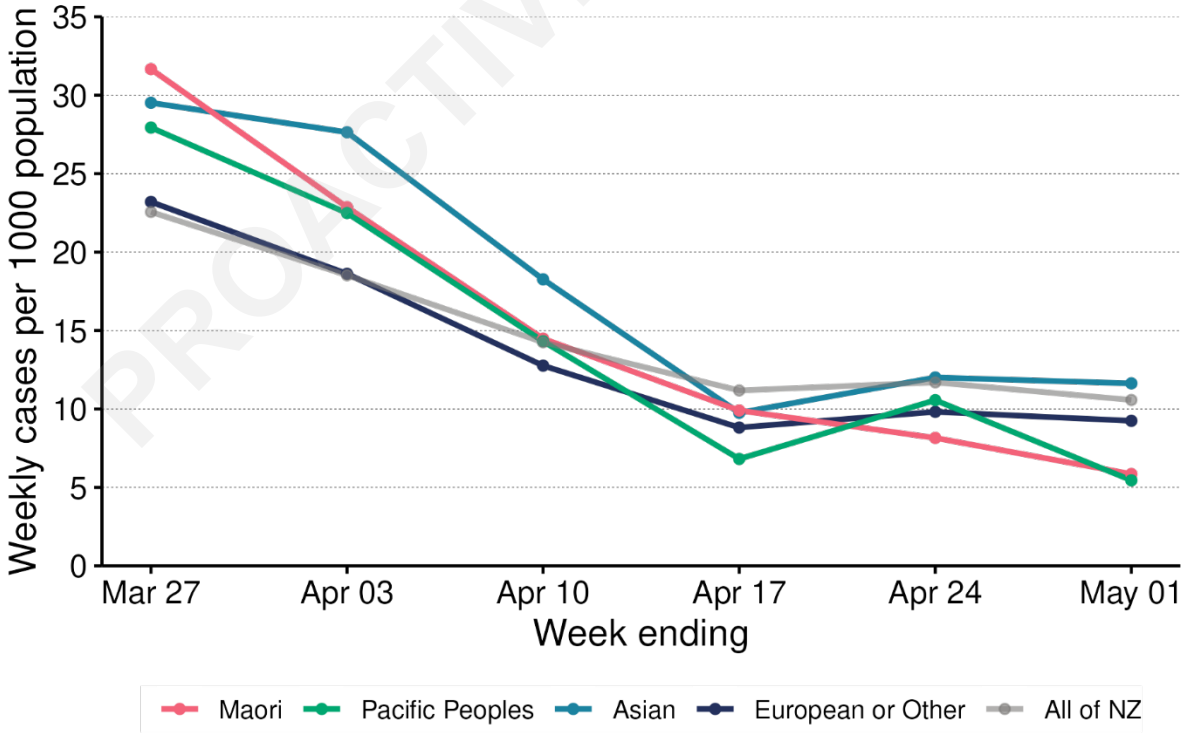


PROACTIVELY RELEASED

Tarawhiti DHB

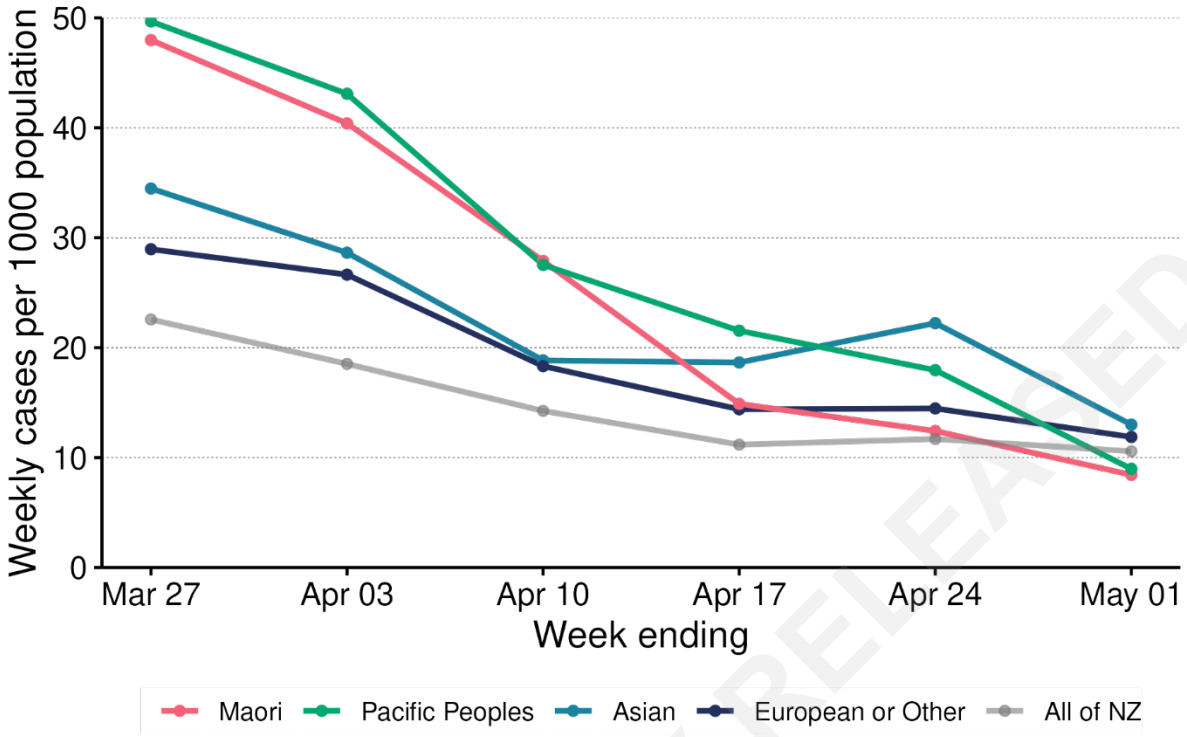


Lakes DHB

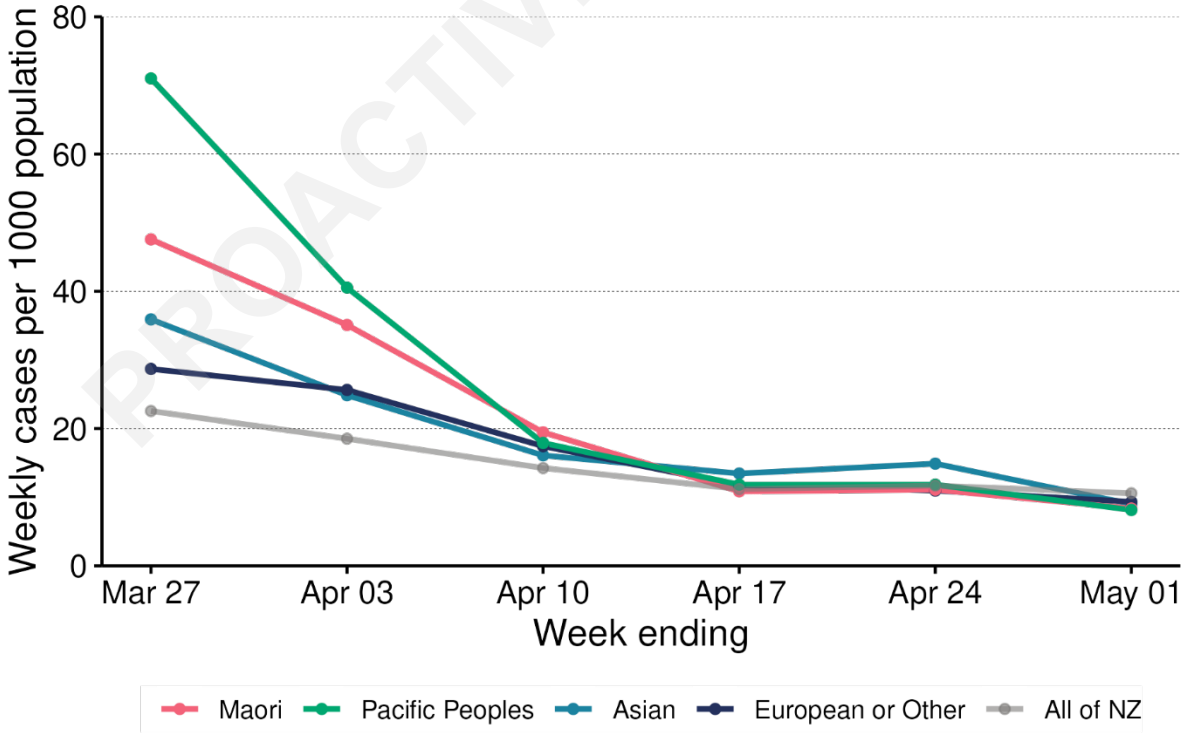


PROACTIVELY RELEASED

Taranaki DHB



Hawke's Bay DHB



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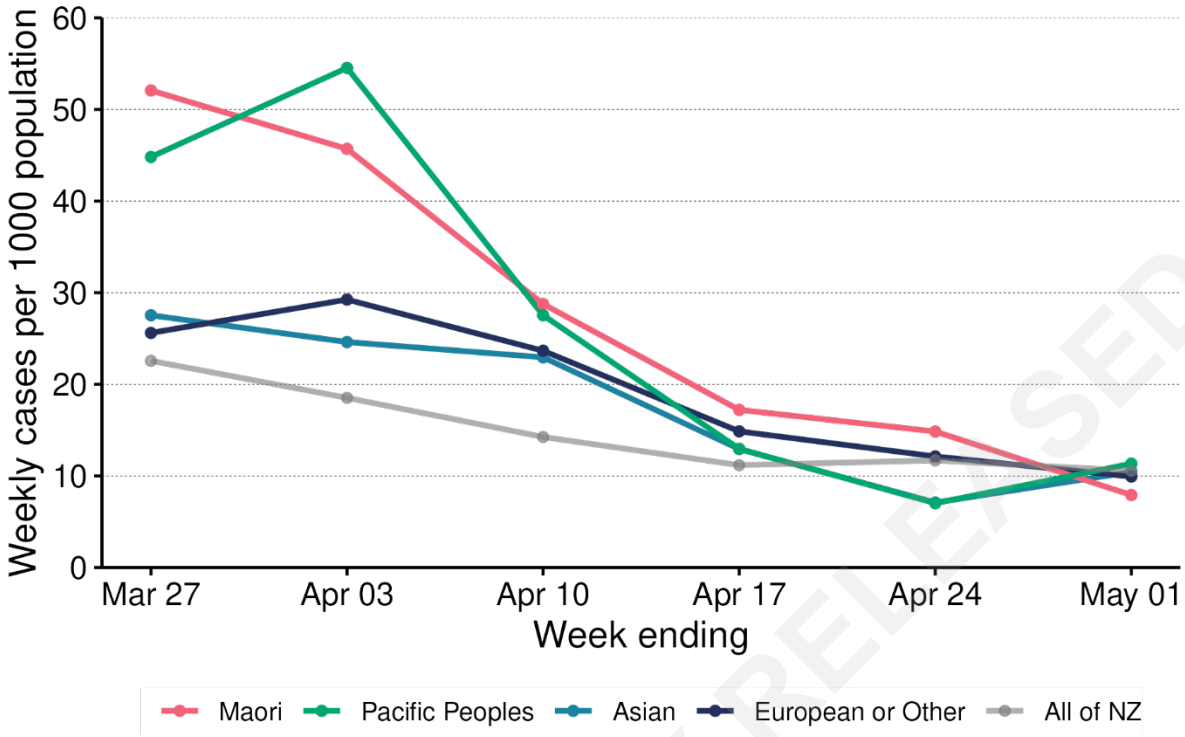
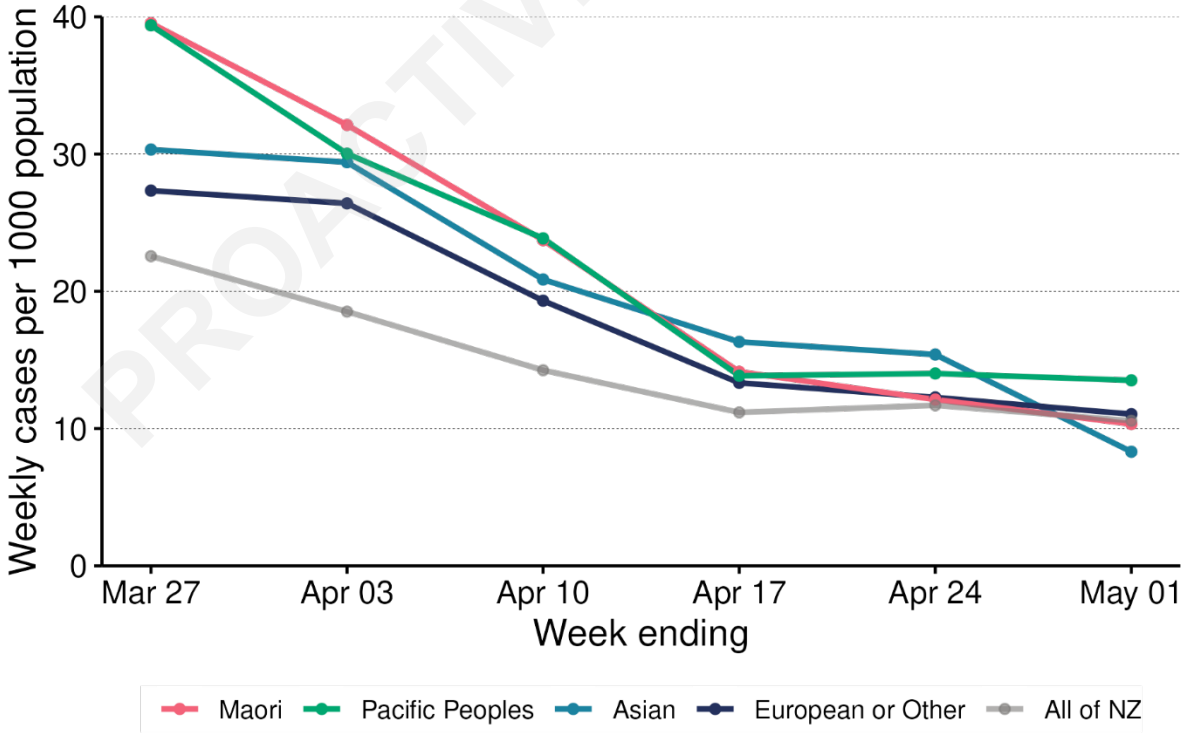
Whanganui DHB



MidCentral DHB



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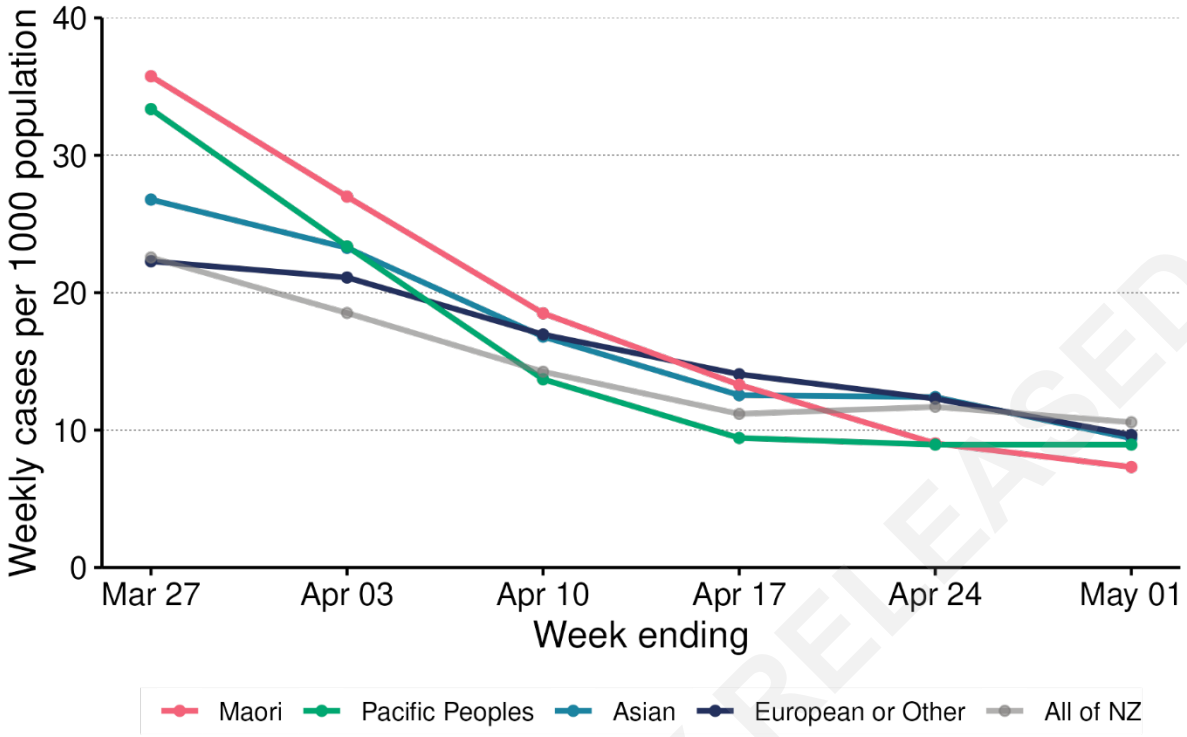
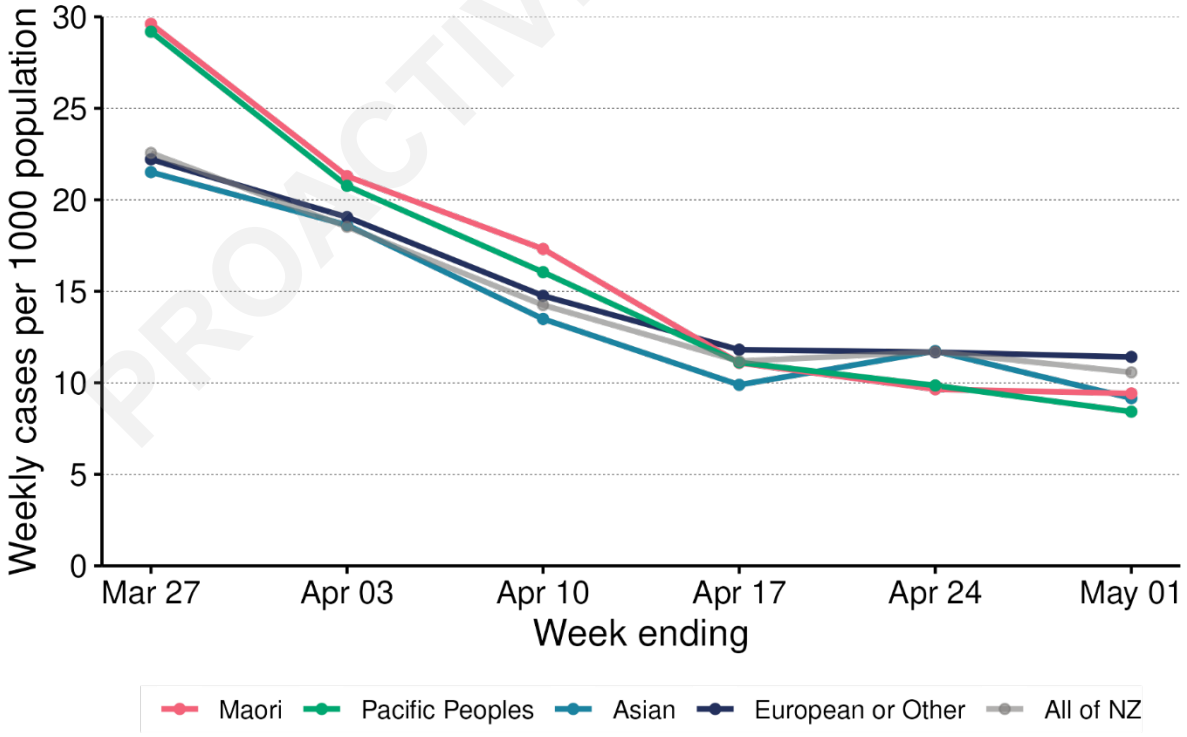
Hutt Valley DHB



Capital and Coast DHB



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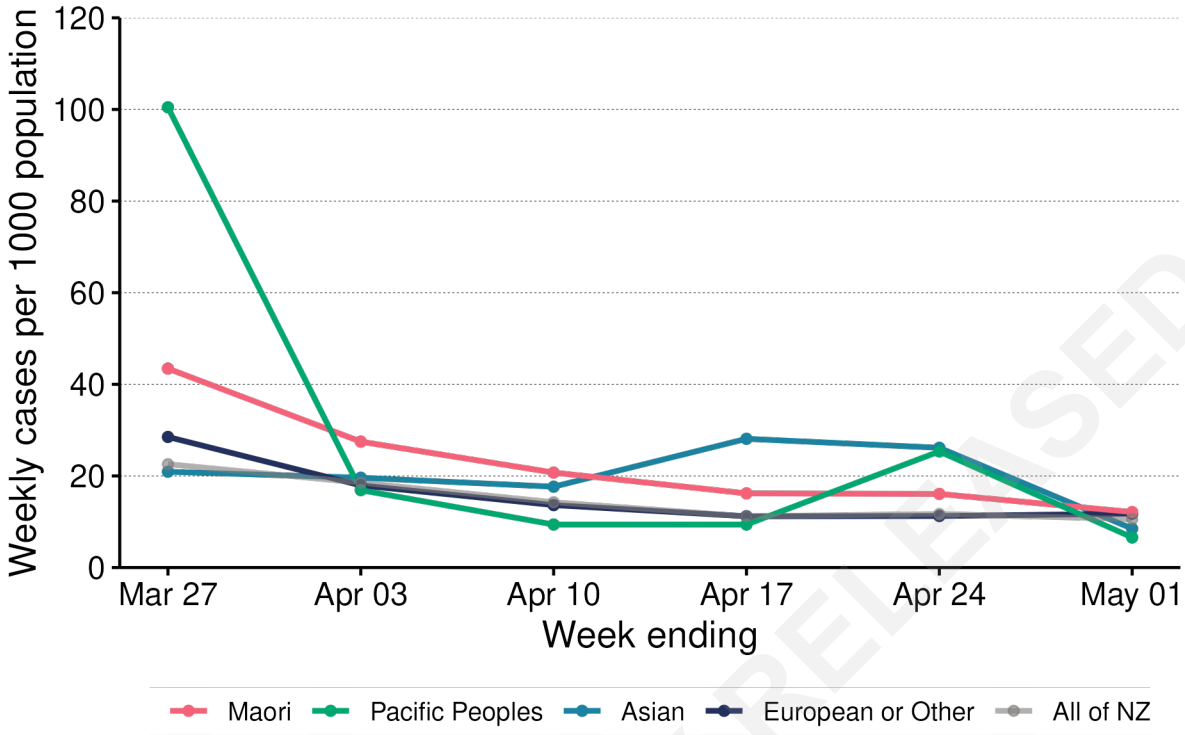
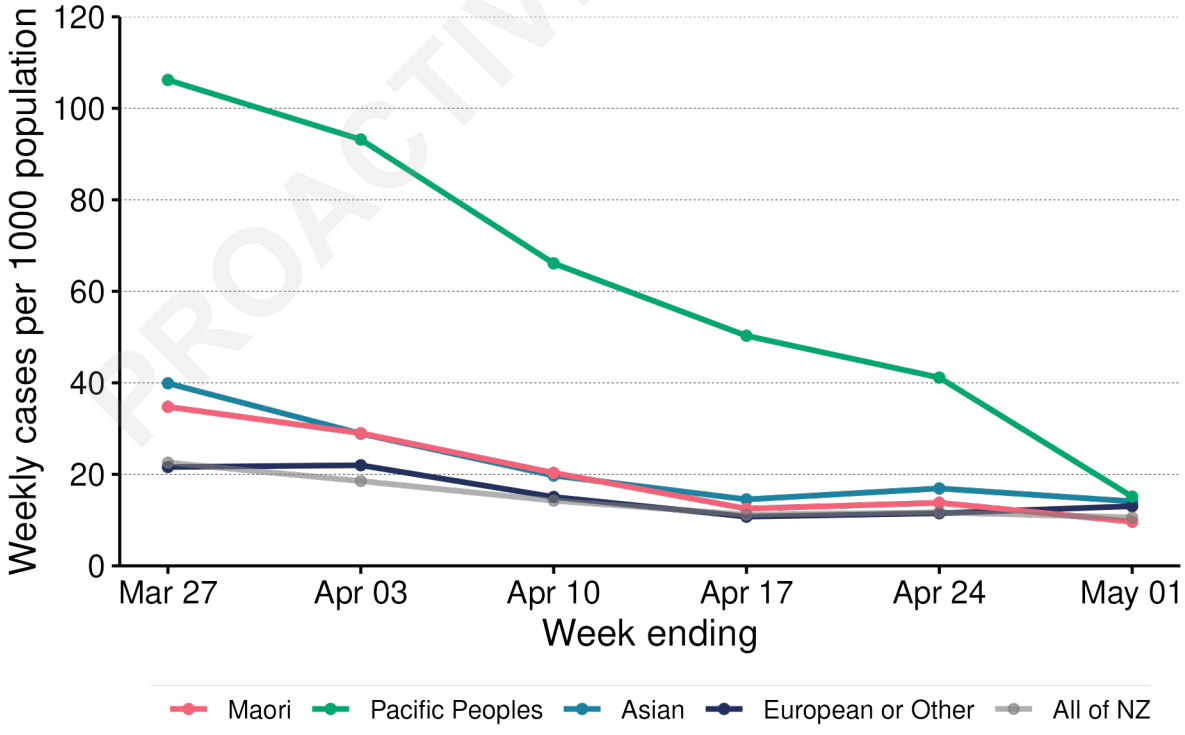
Wairarapa DHB



Nelson Marlborough DHB



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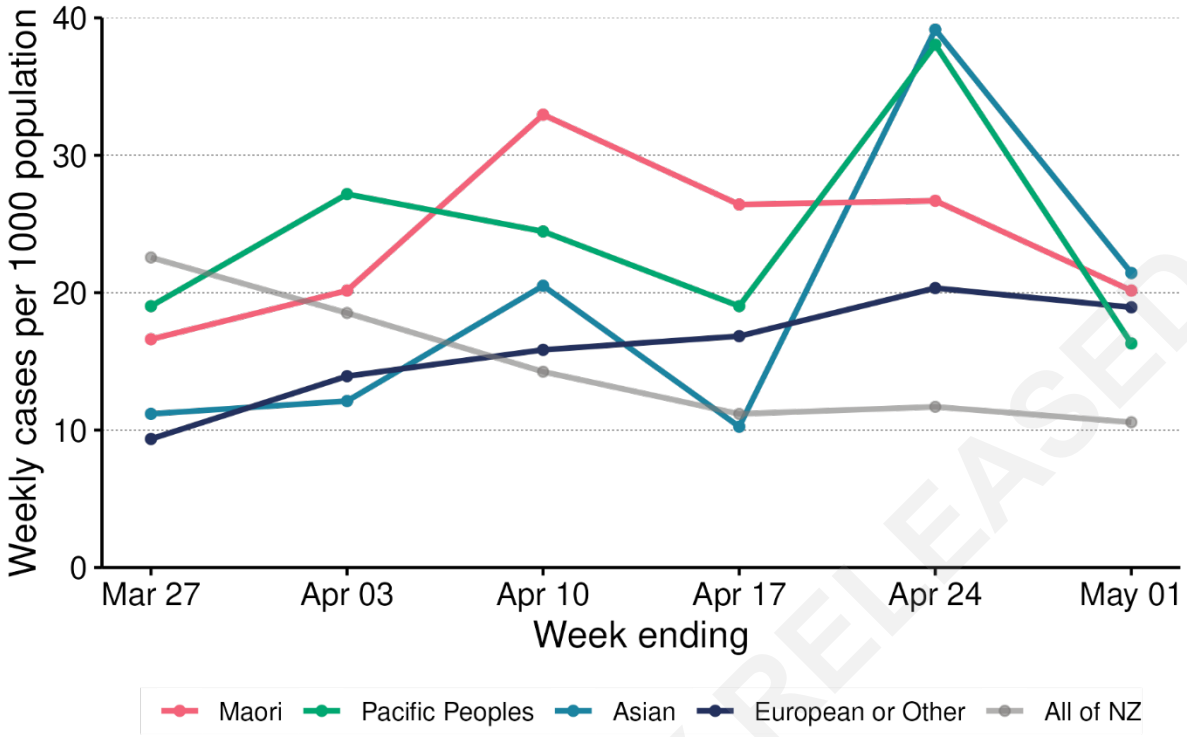
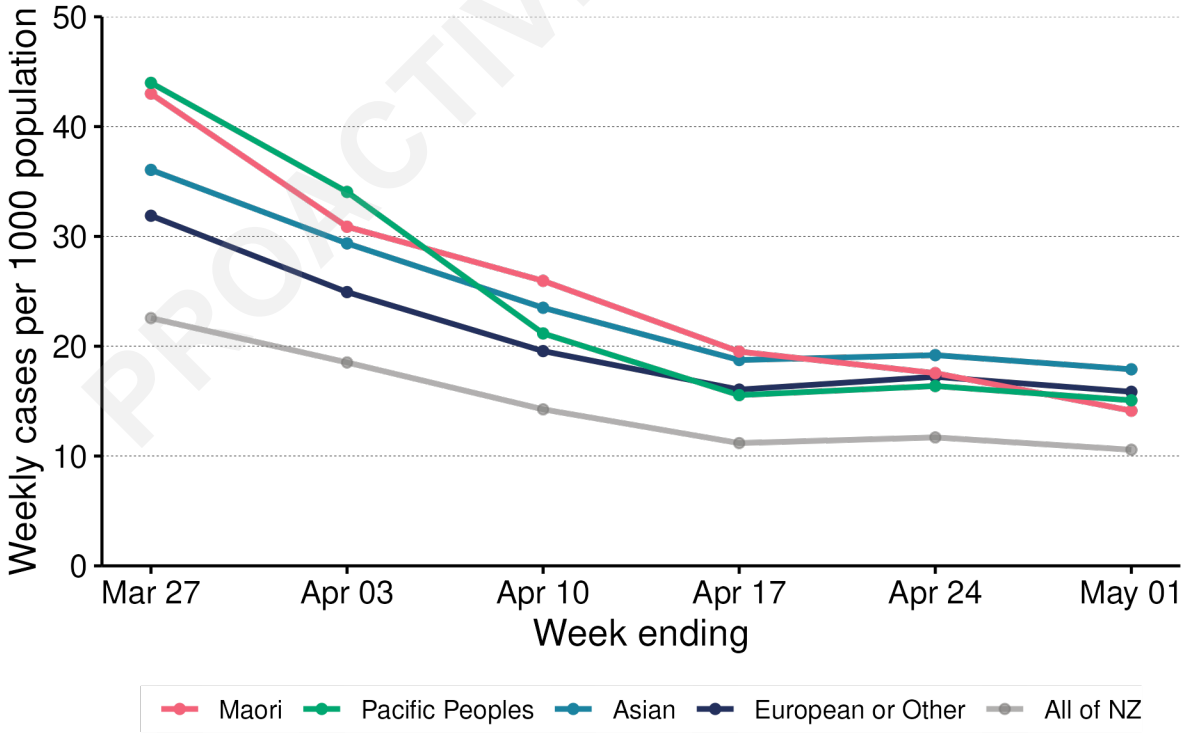
West Coast DHB



Canterbury DHB



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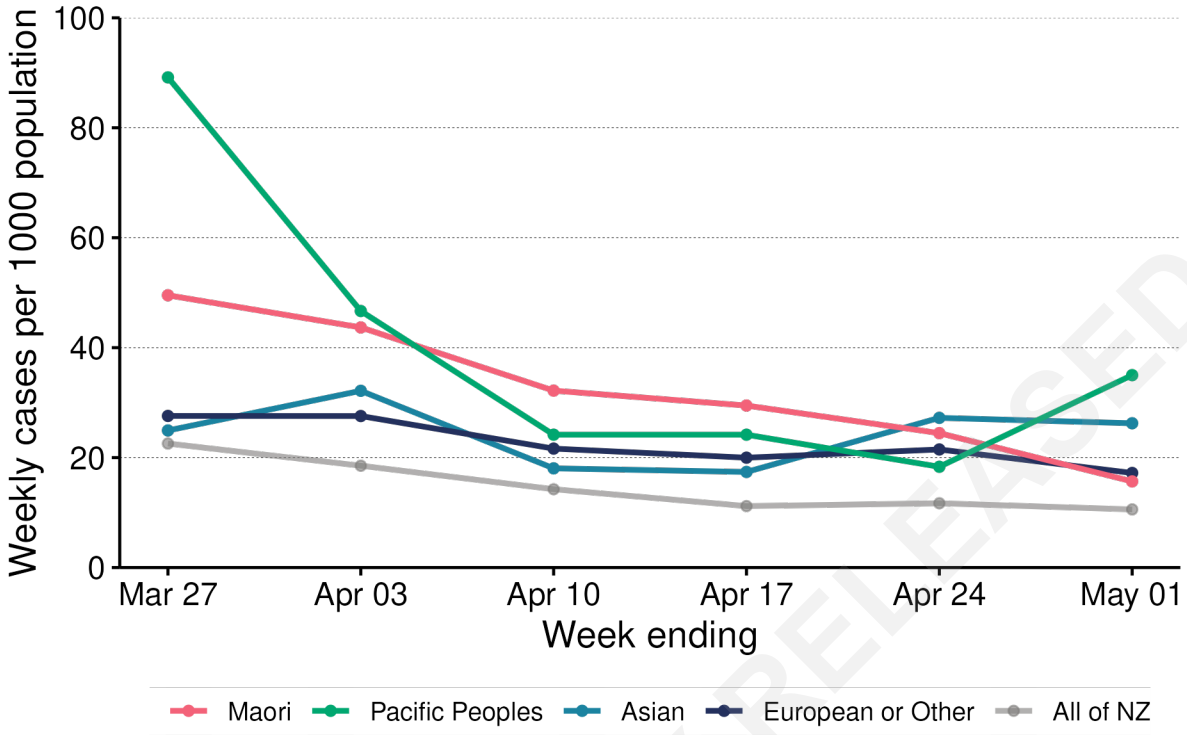
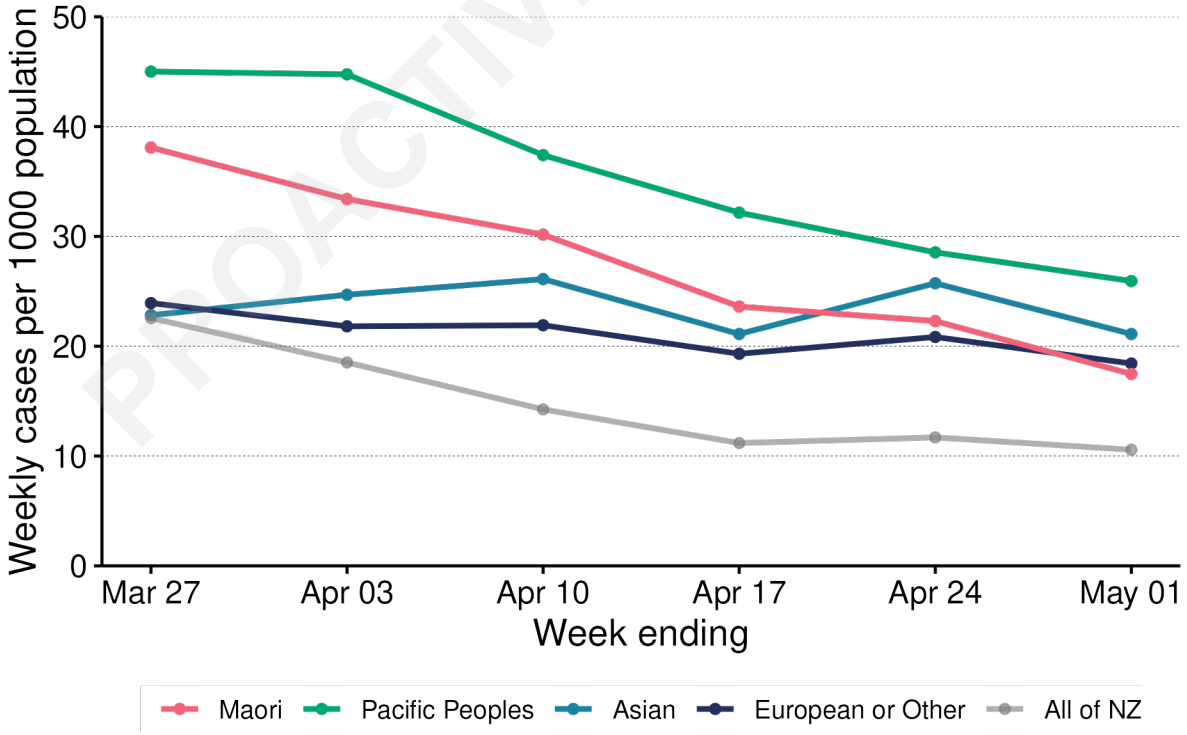
South Canterbury DHB



Southern DHB



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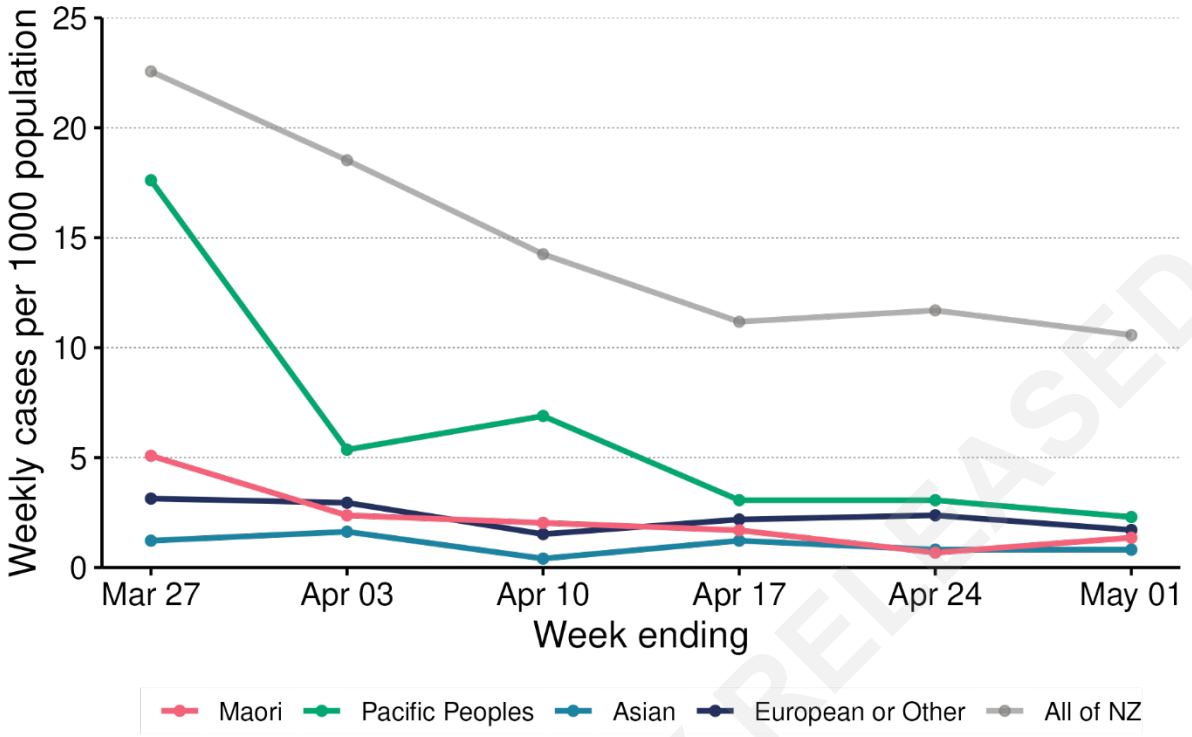
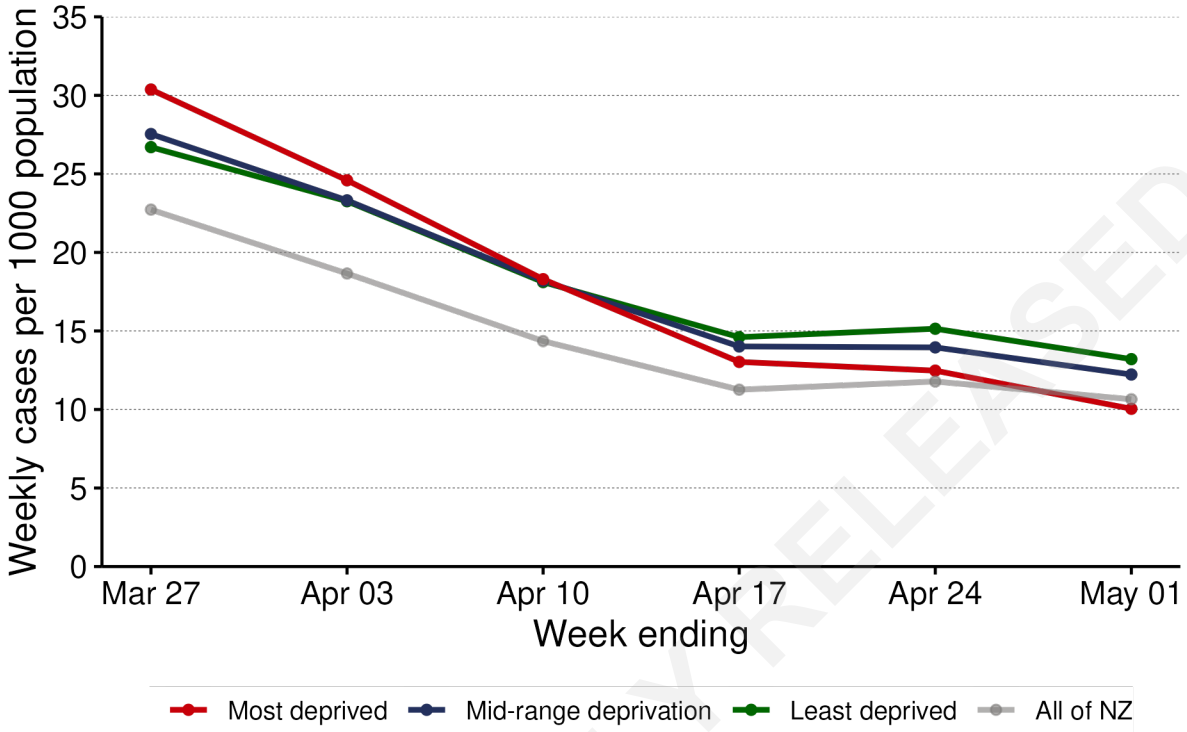


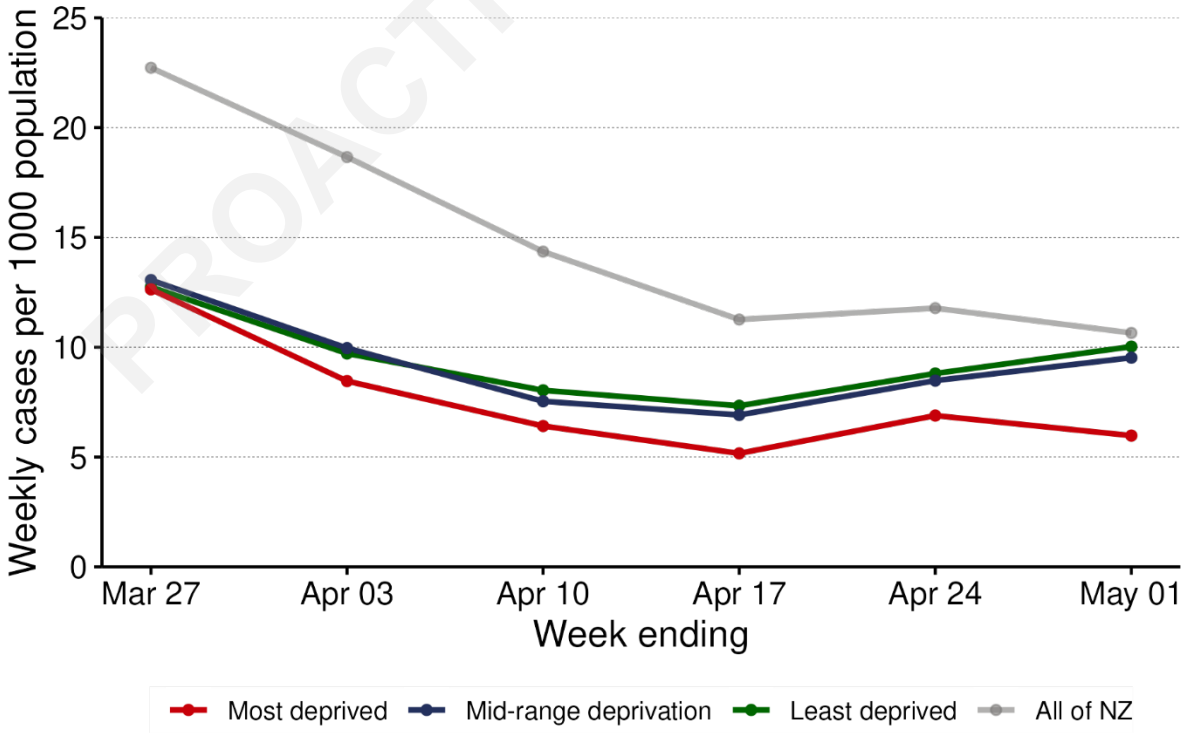
PROACTIVELY RELEASED

Deprivation Graphs

NZ Excluding Auckland Region



Auckland Region



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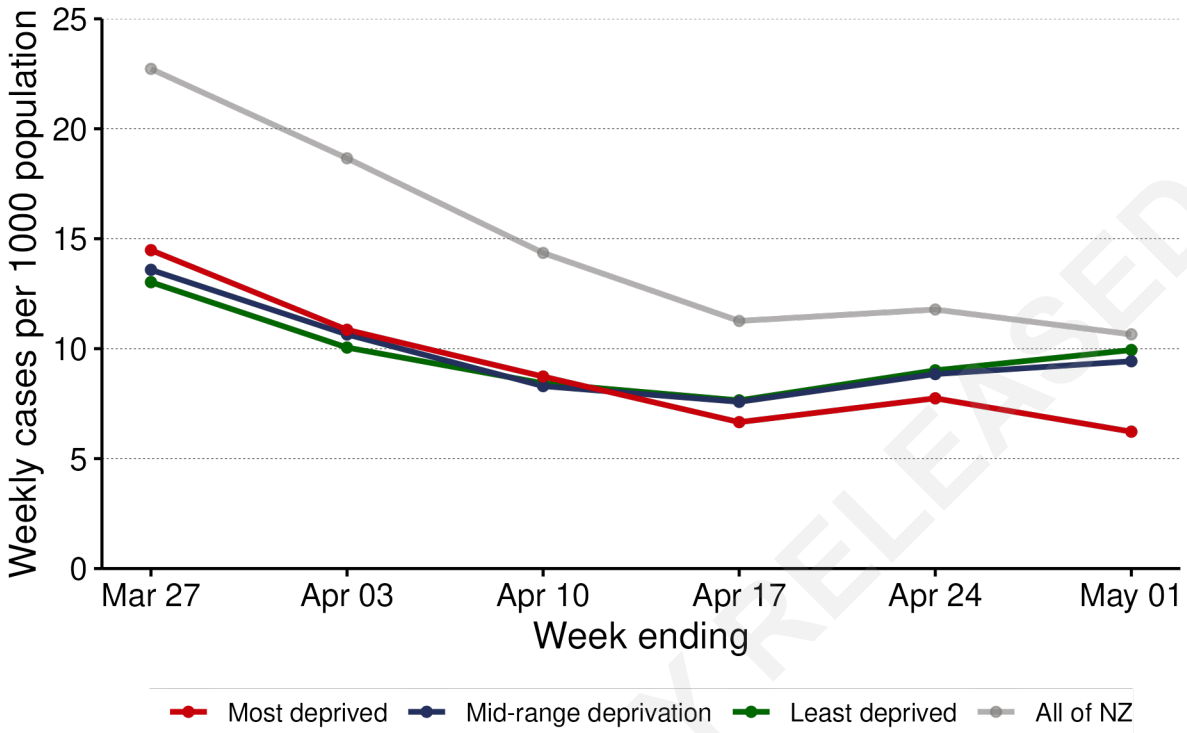
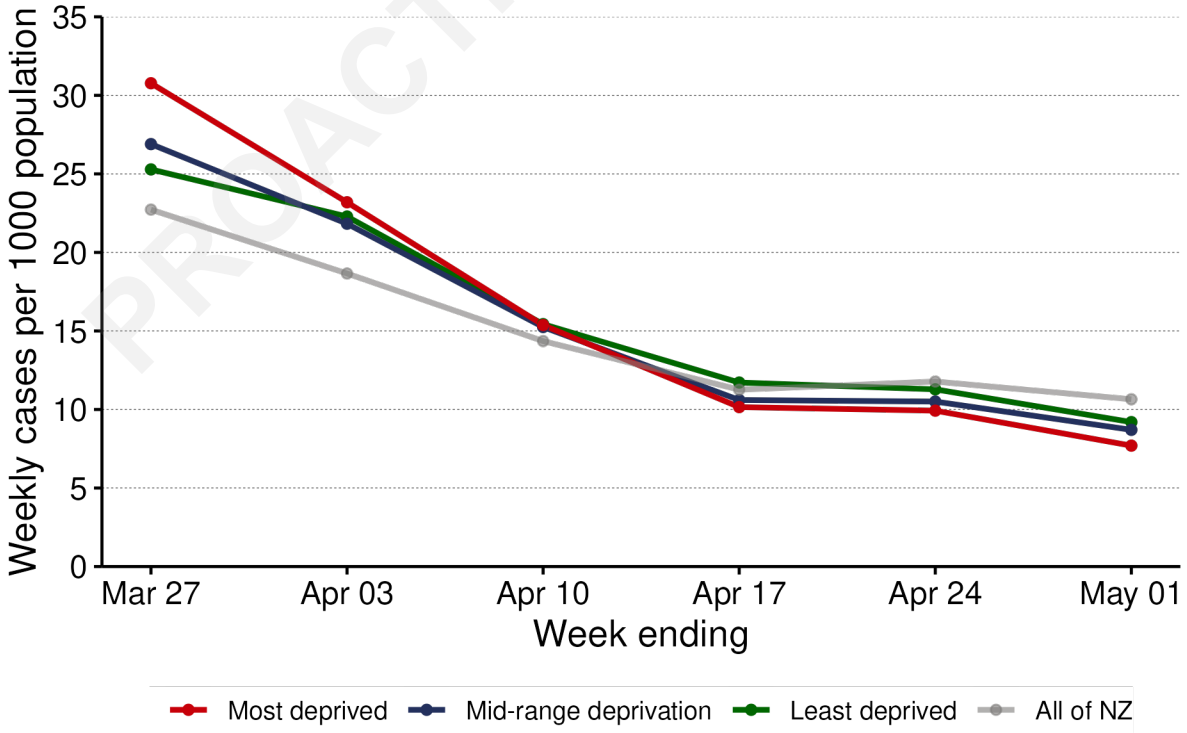


Te Manawa Taki



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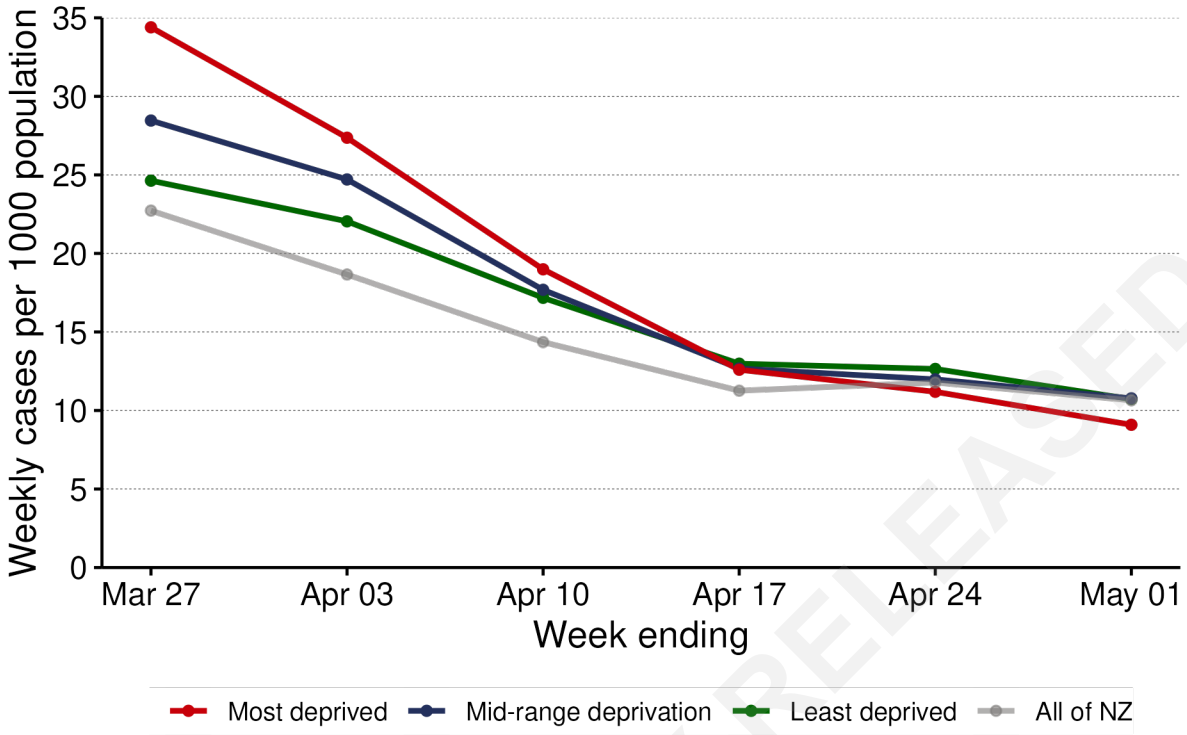
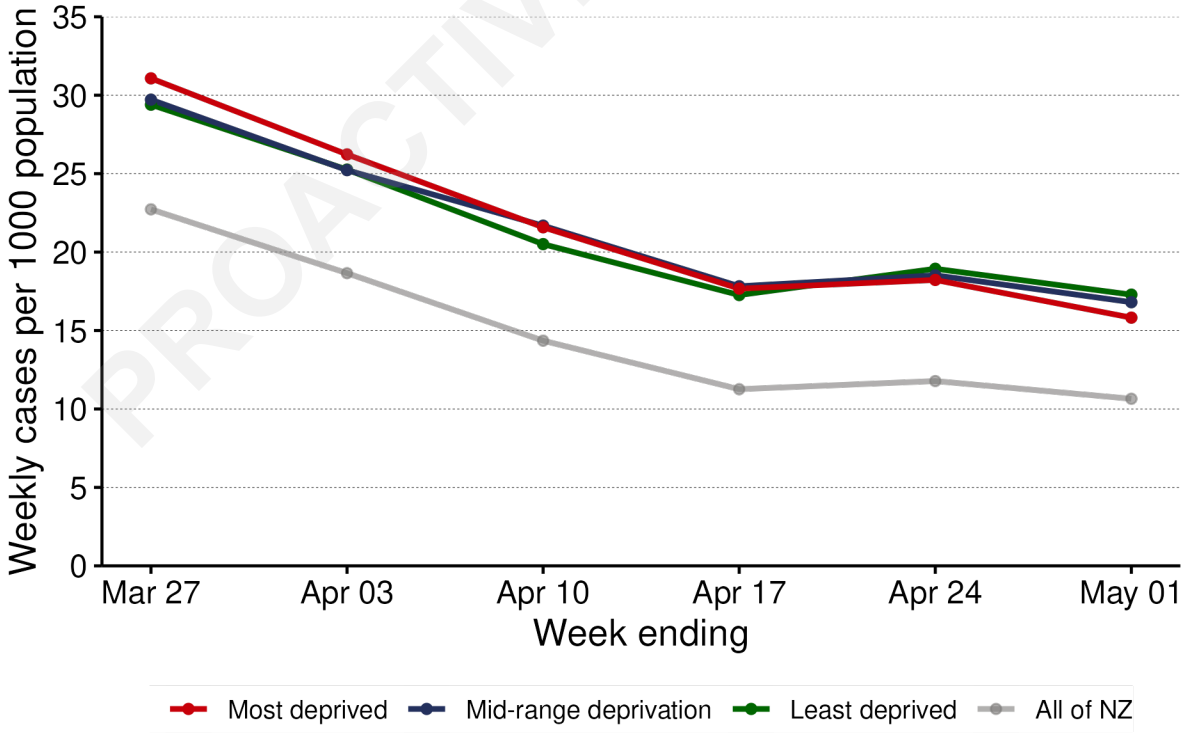
Central Region



Southern Region



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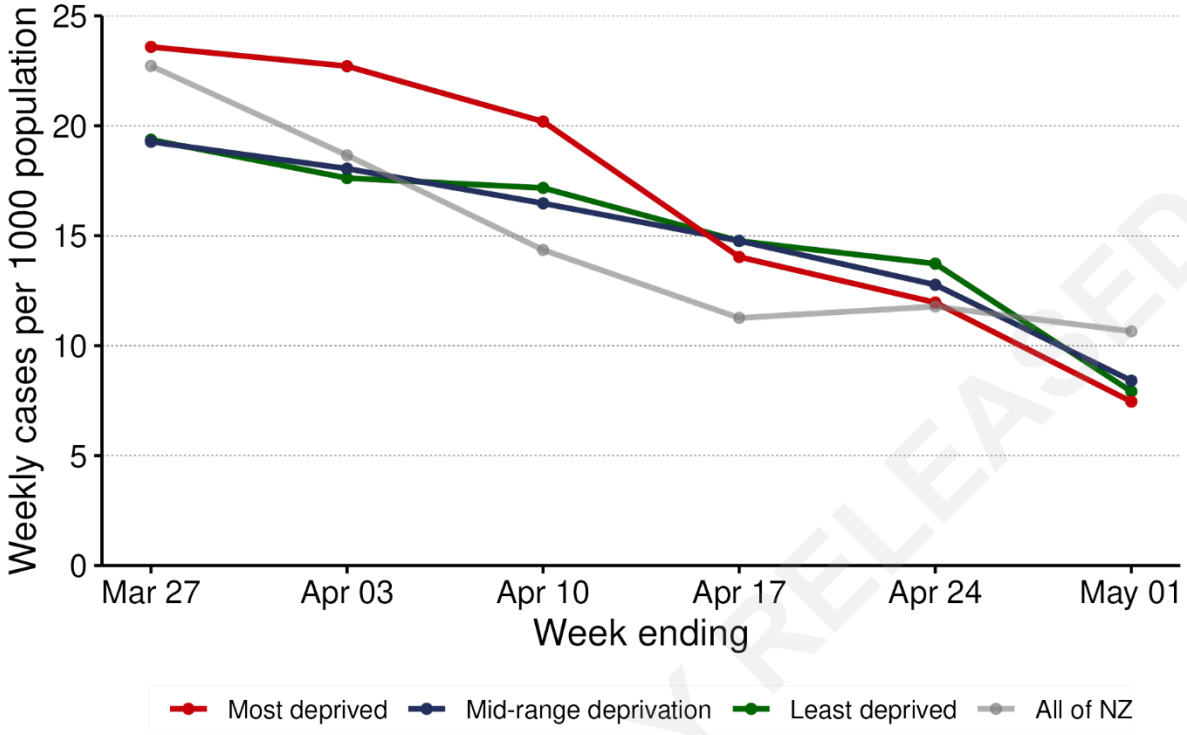
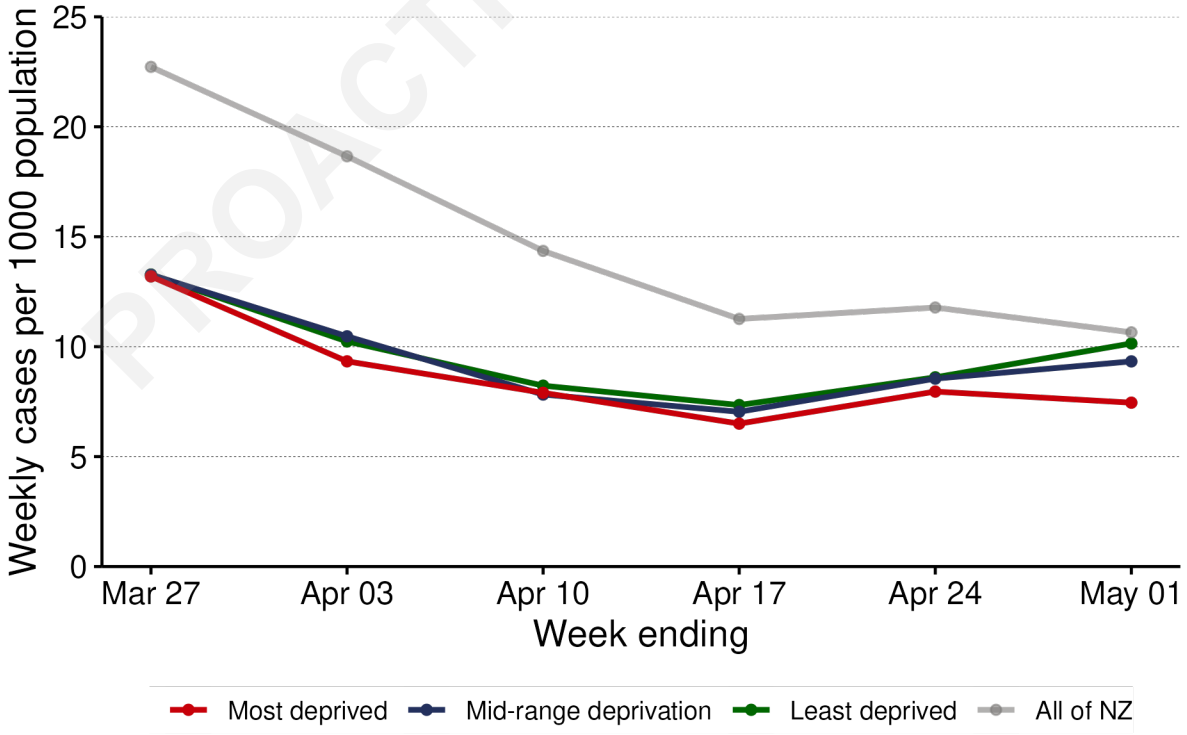
Northland DHB



Waitemata DHB



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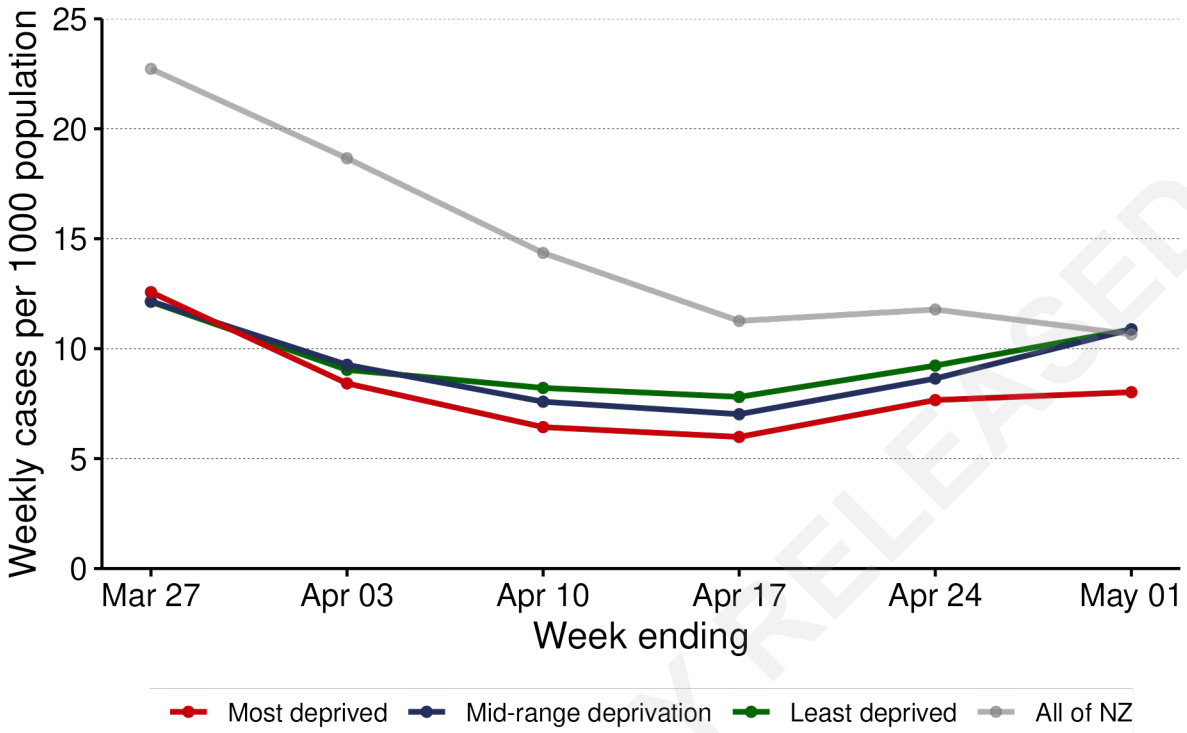
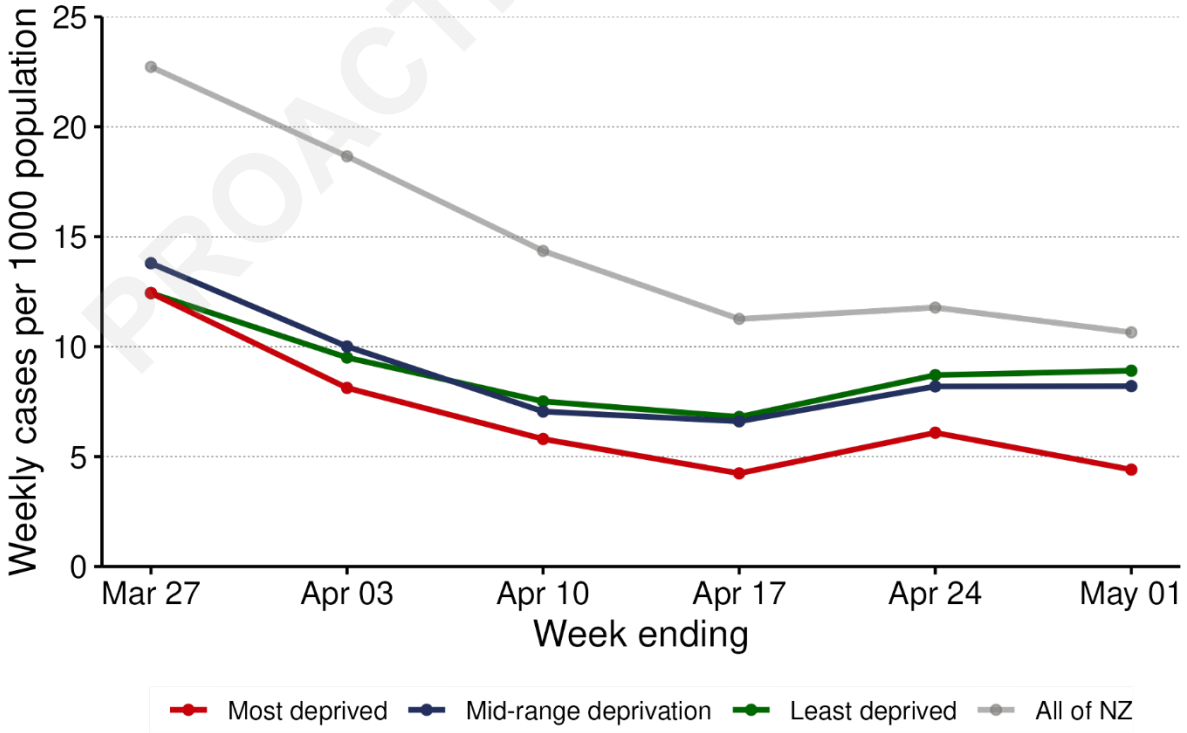
Auckland DHB



Counties Manukau DHB



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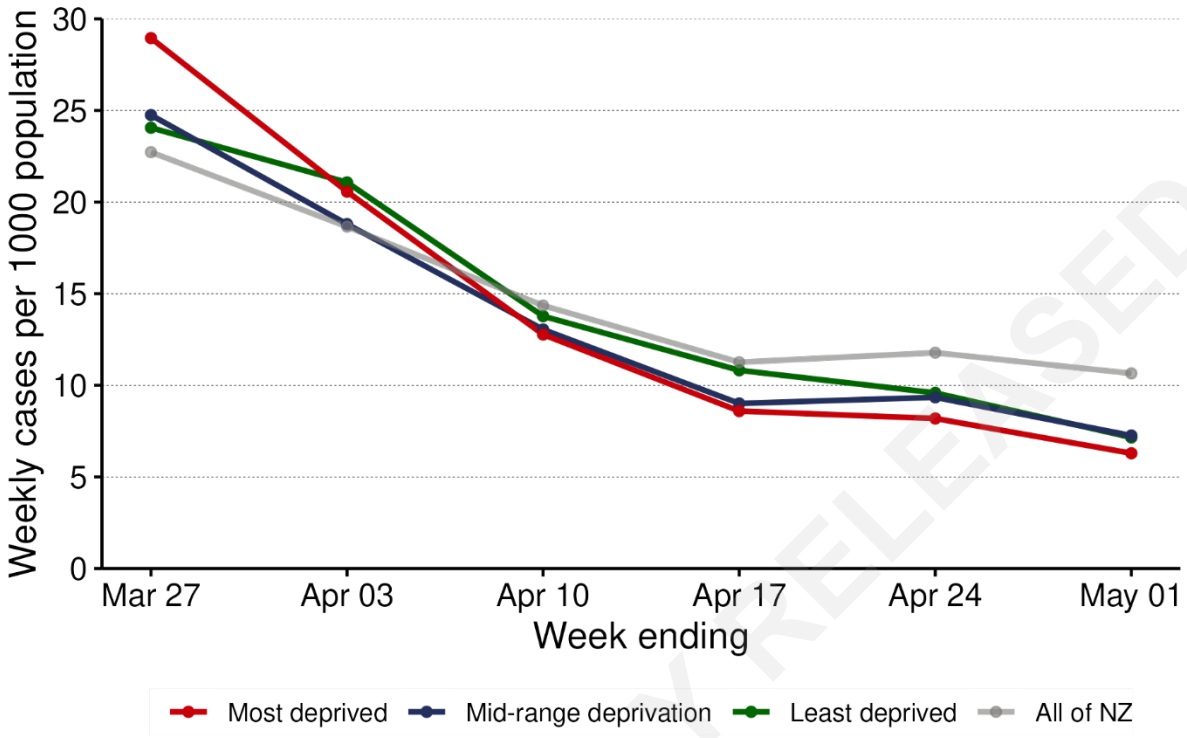
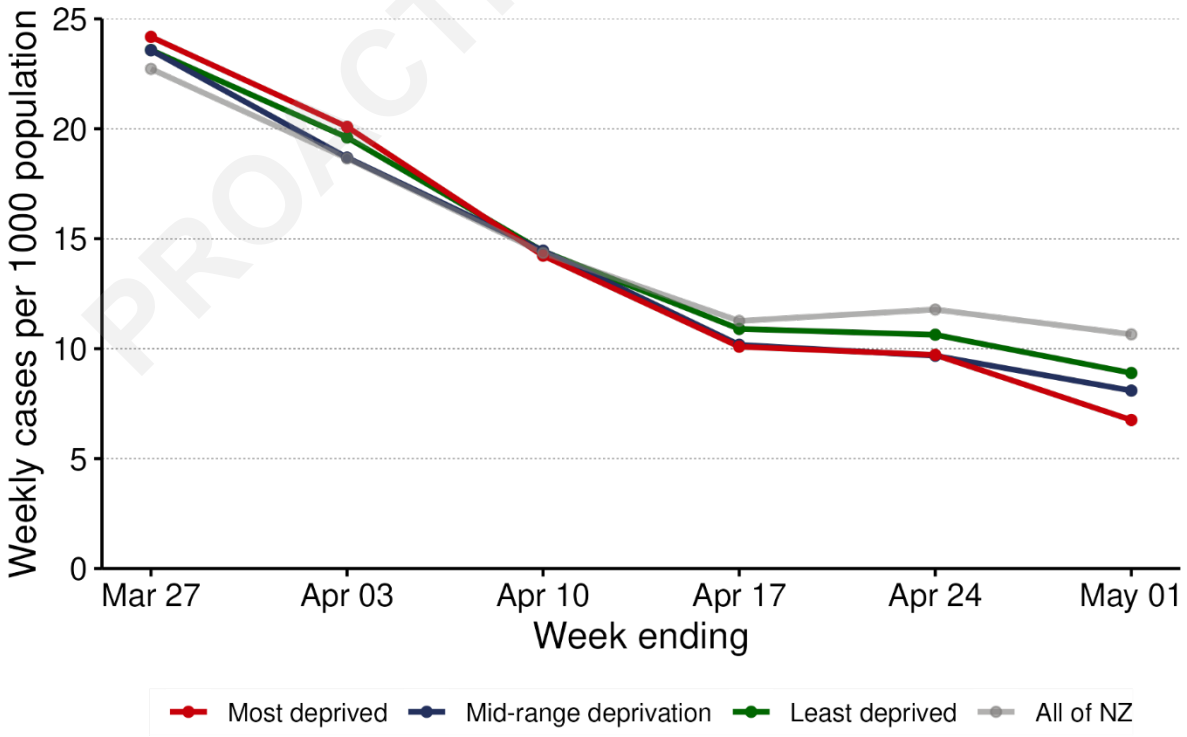
Bay of Plenty DHB



Waikato DHB



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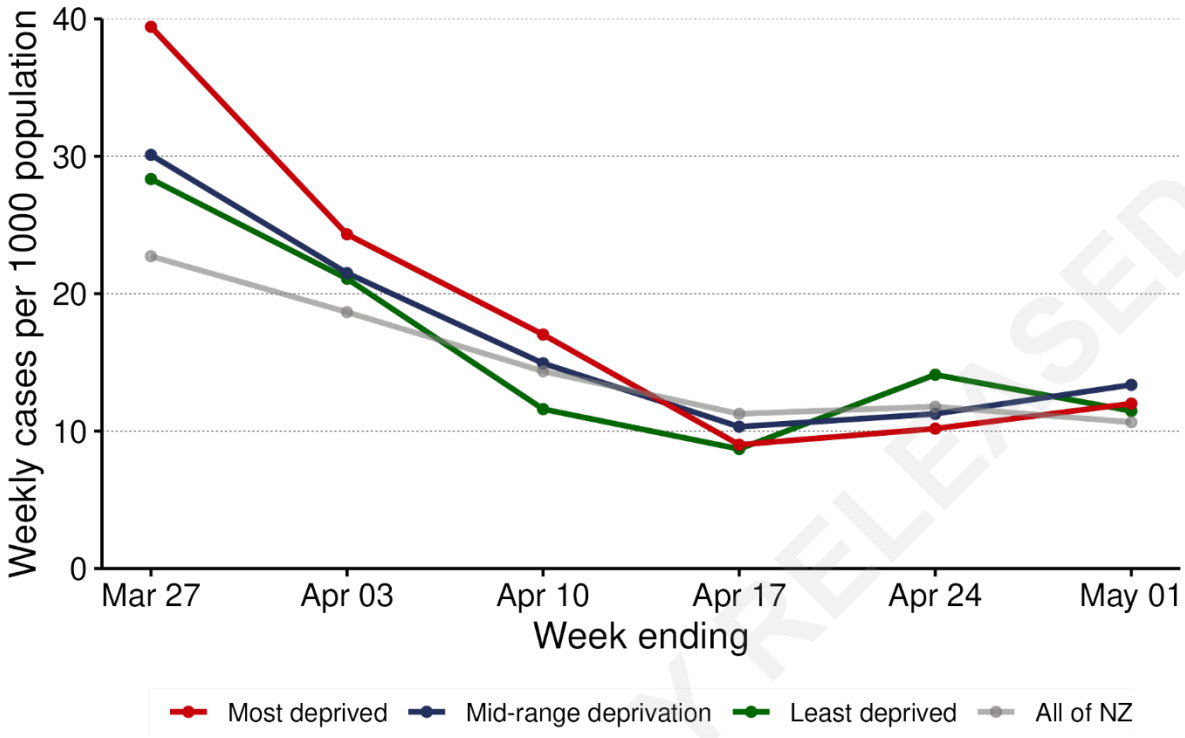
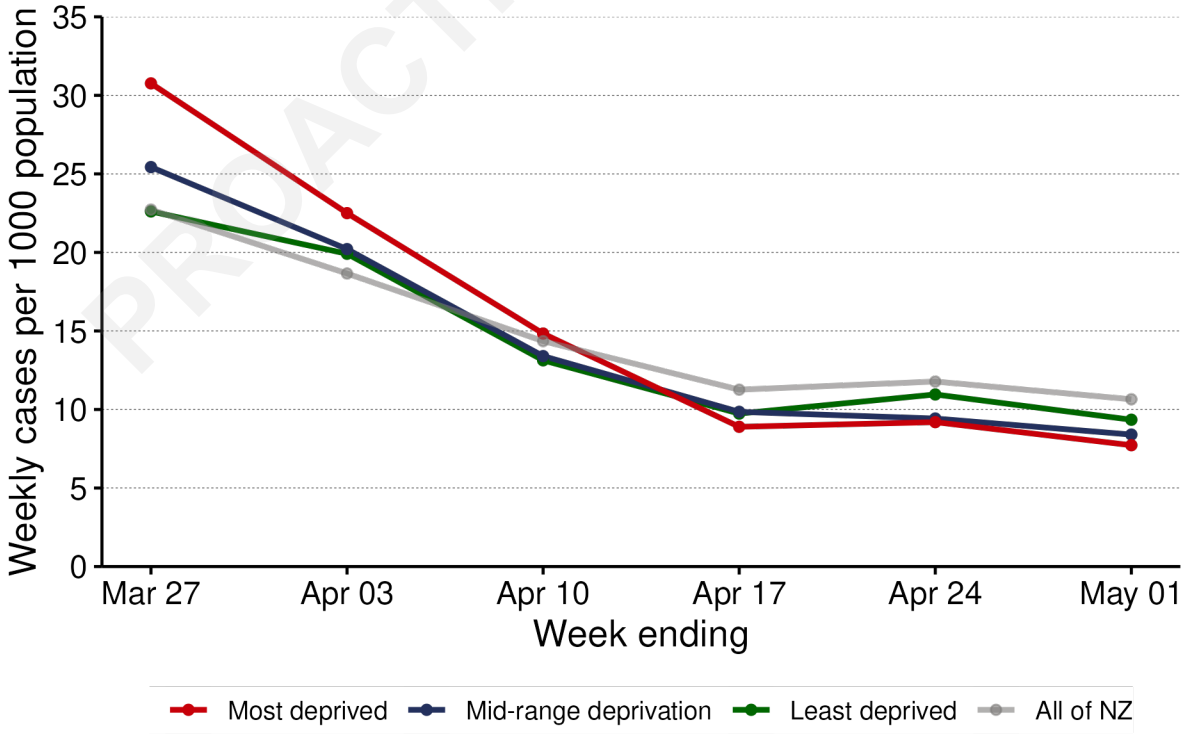
Tarawhiti DHB



Lakes DHB



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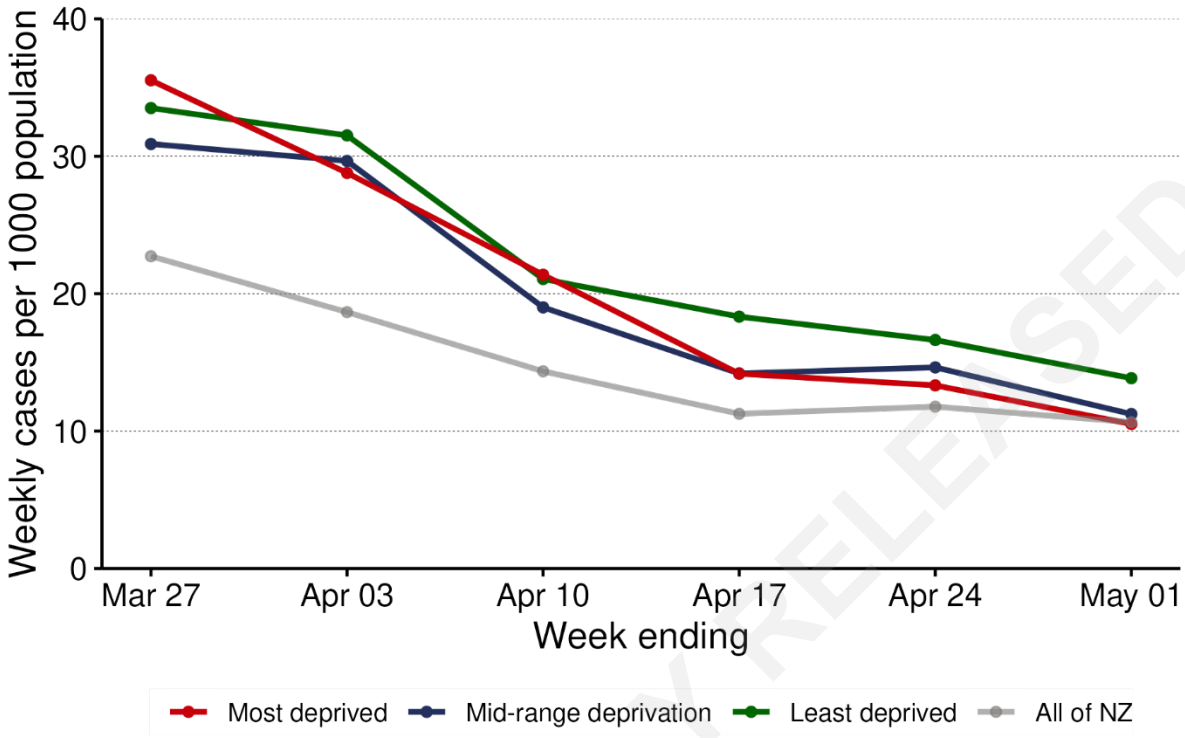
Taranaki DHB



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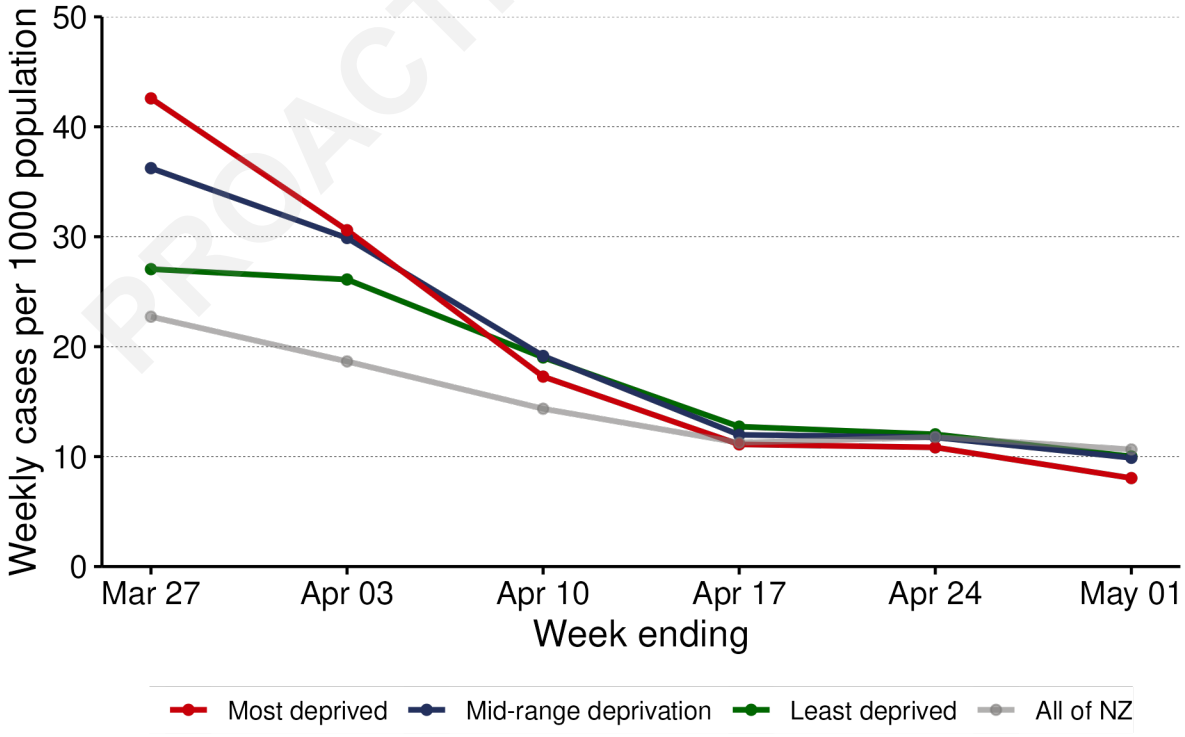

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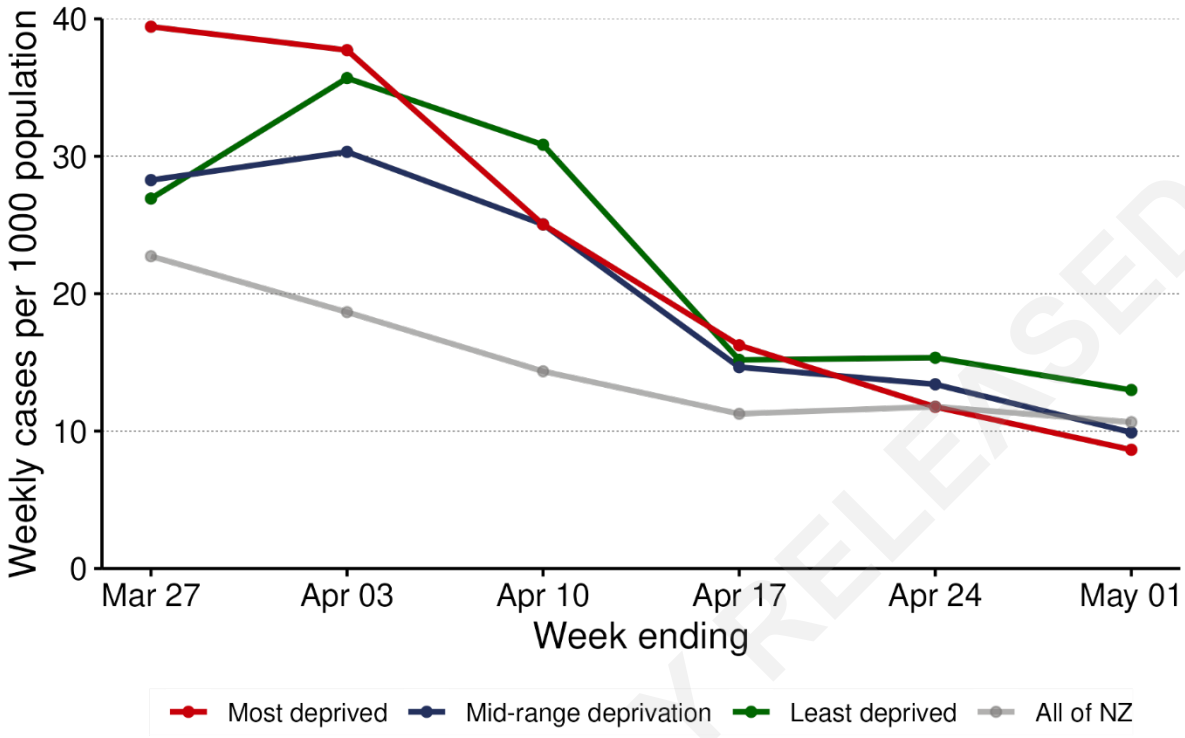
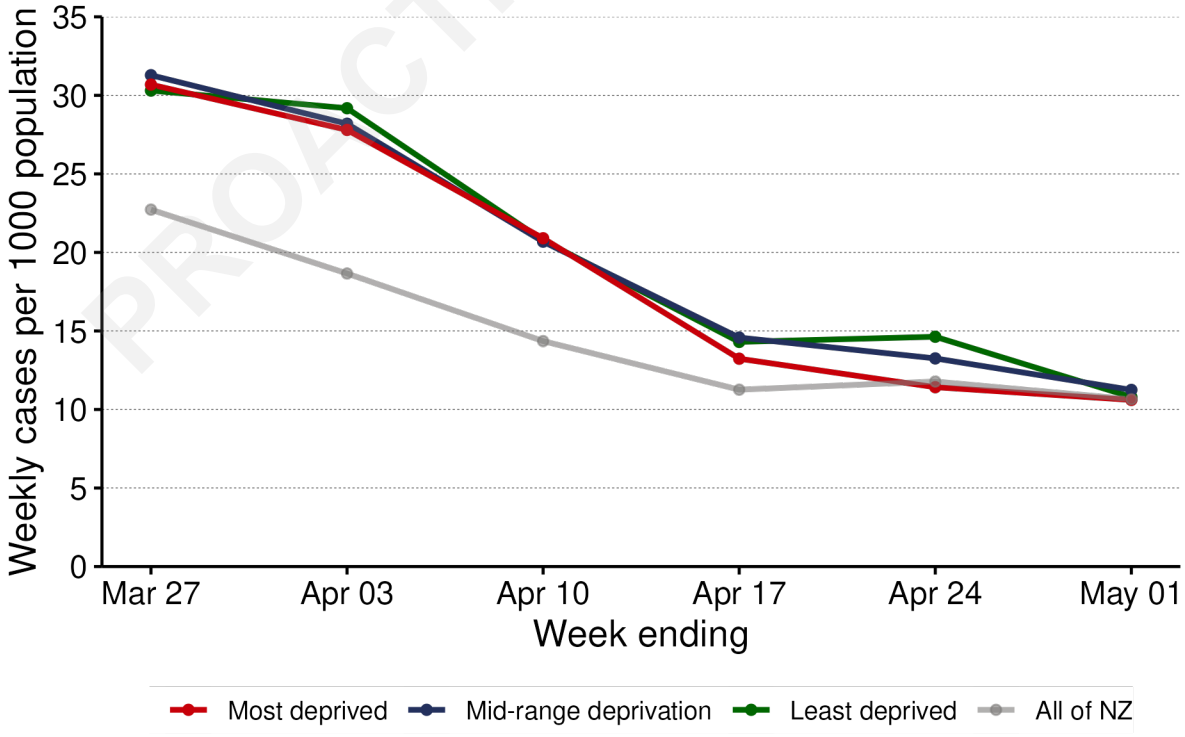
Whanganui DHB



MidCentral DHB



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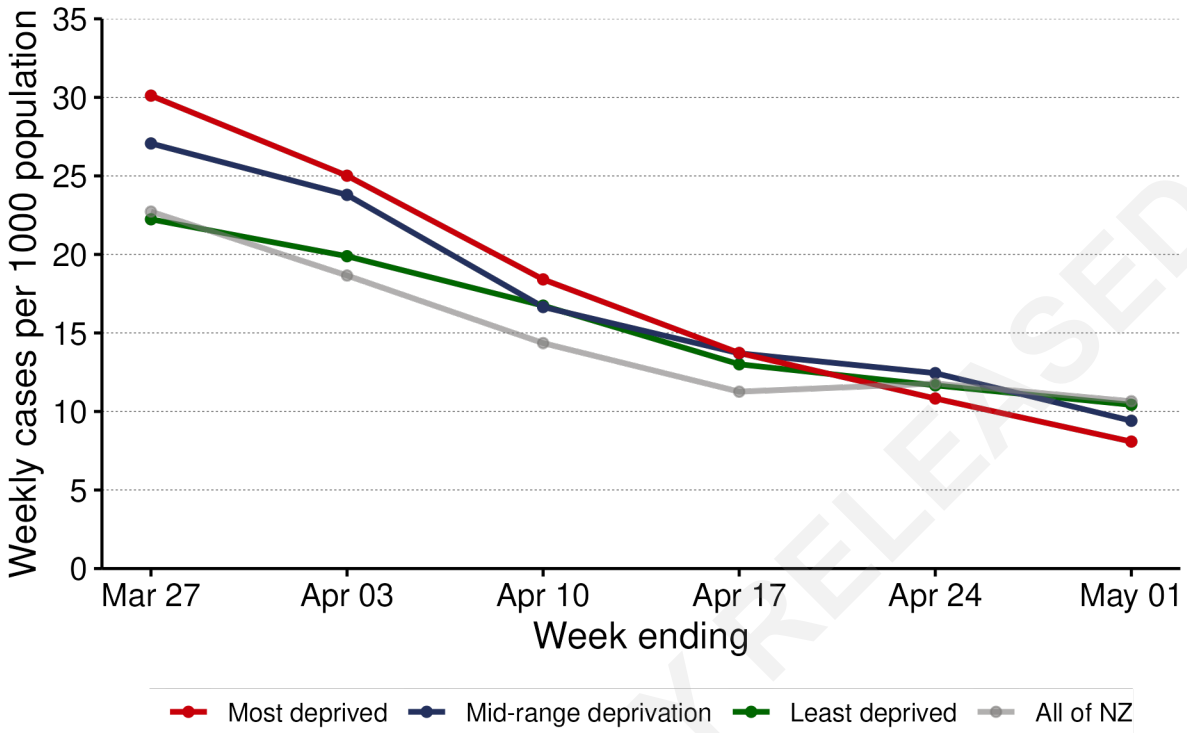
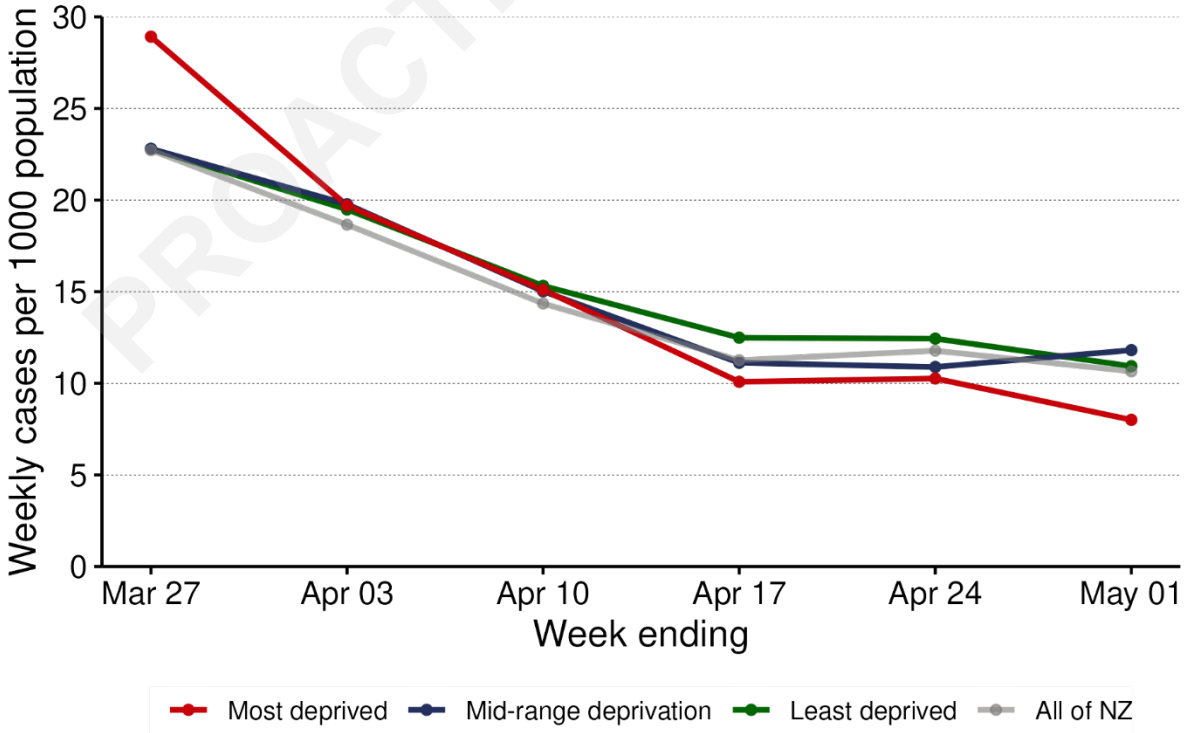
Hutt Valley DHB



Capital and Coast DHB



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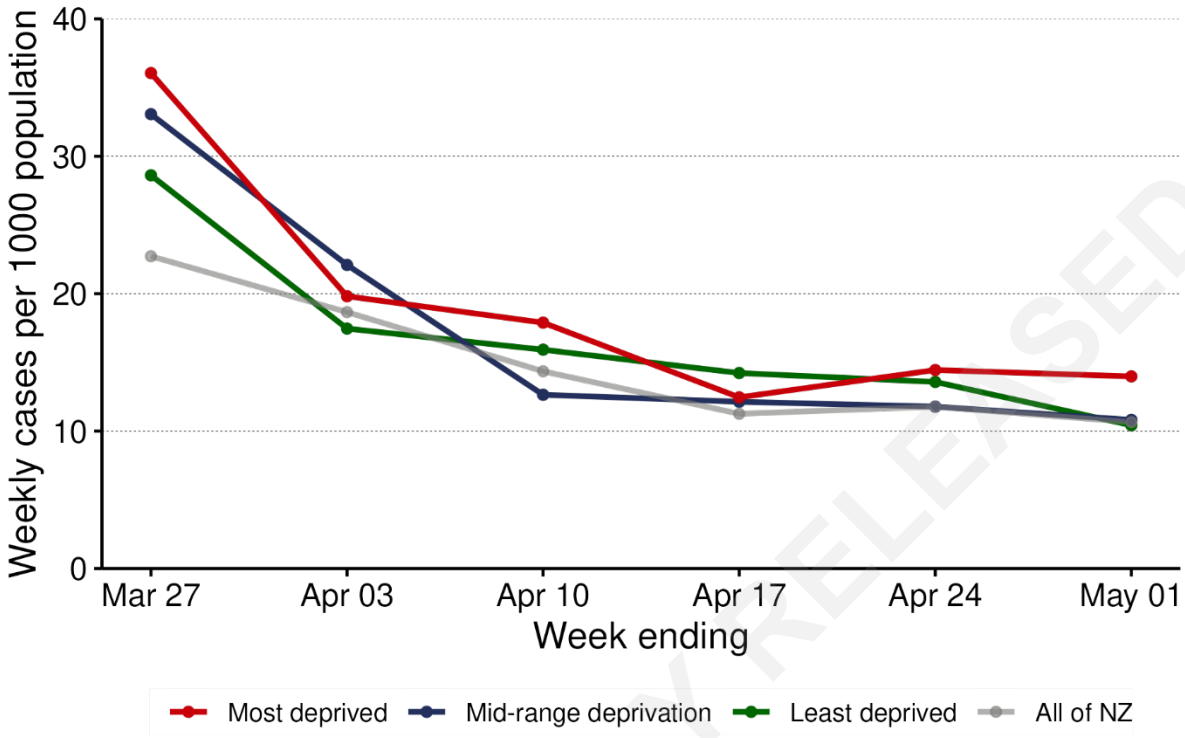
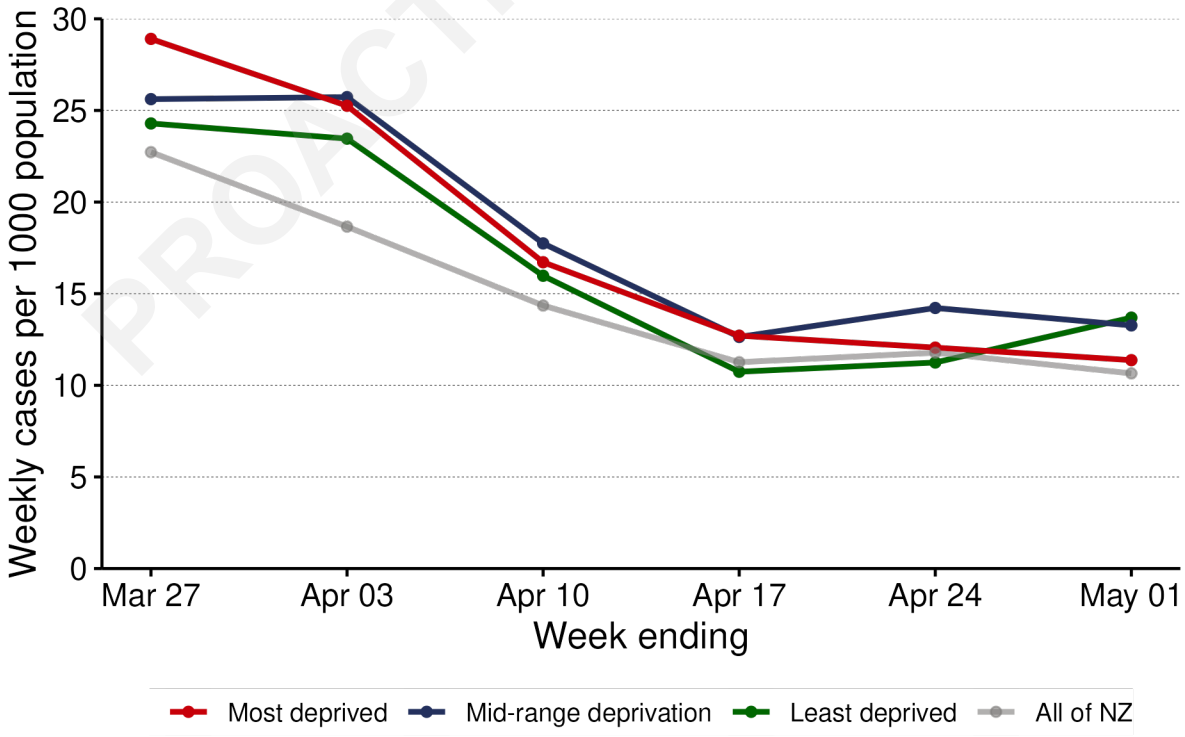


Nelson Marlborough DHB



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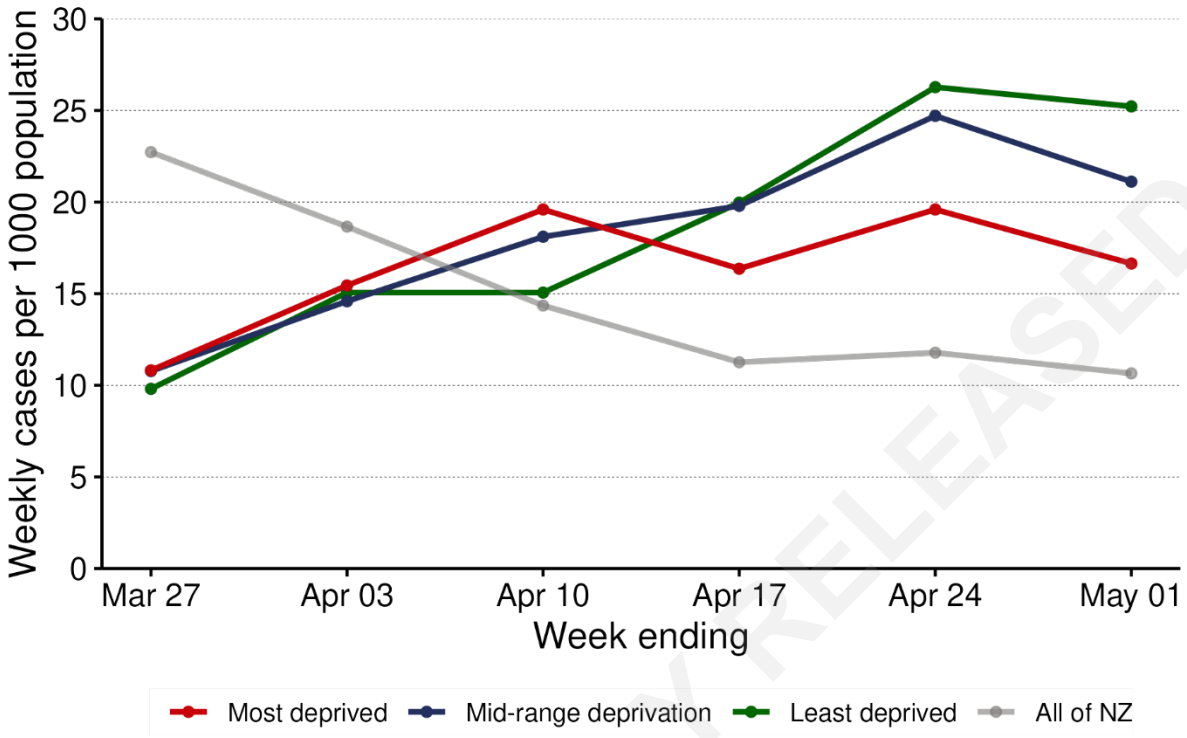
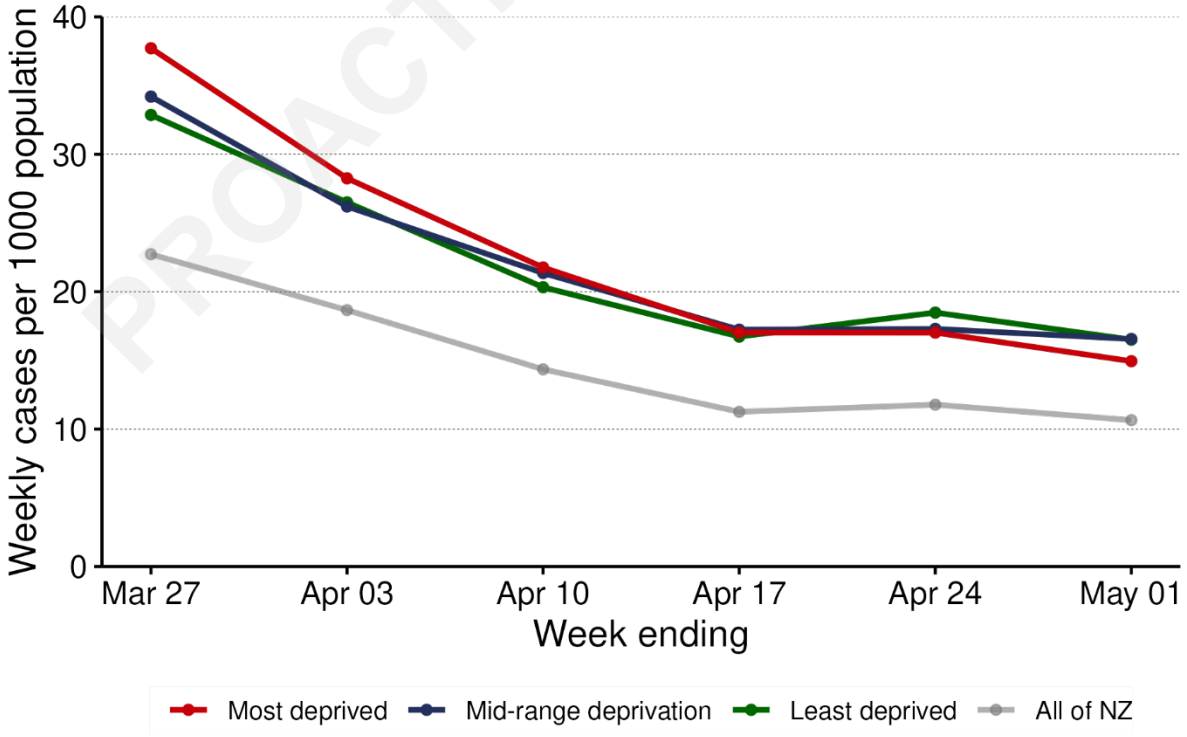


Canterbury DHB



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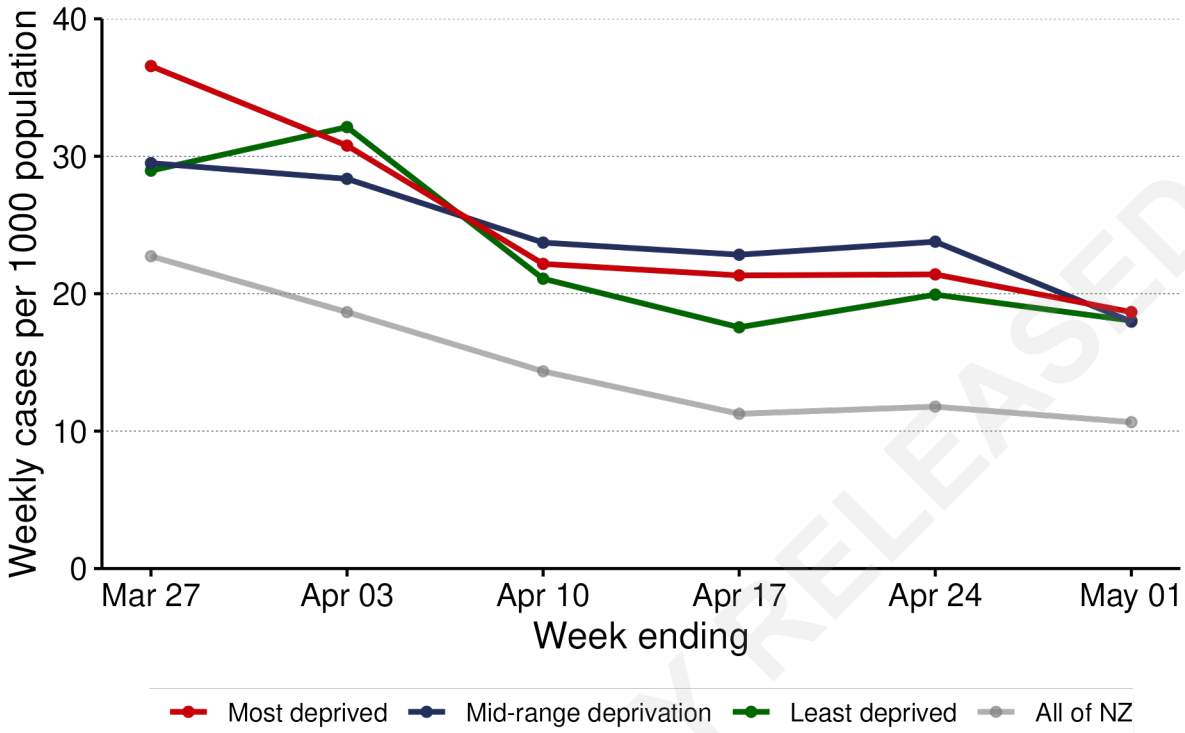
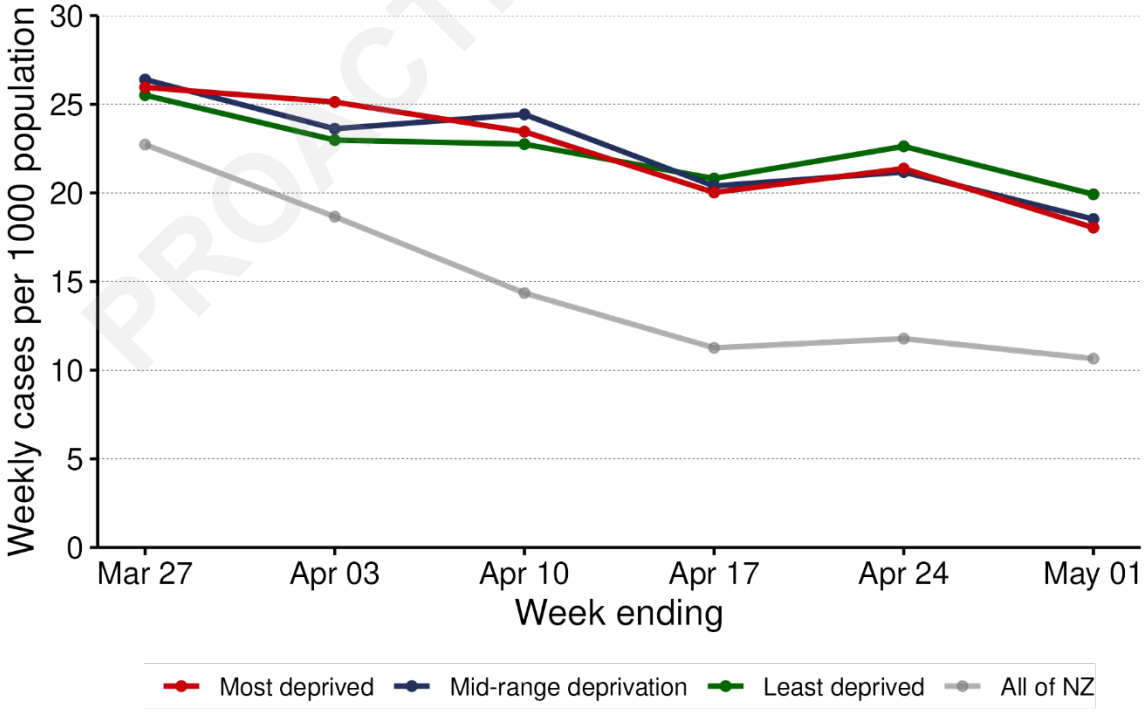


Southern DHB

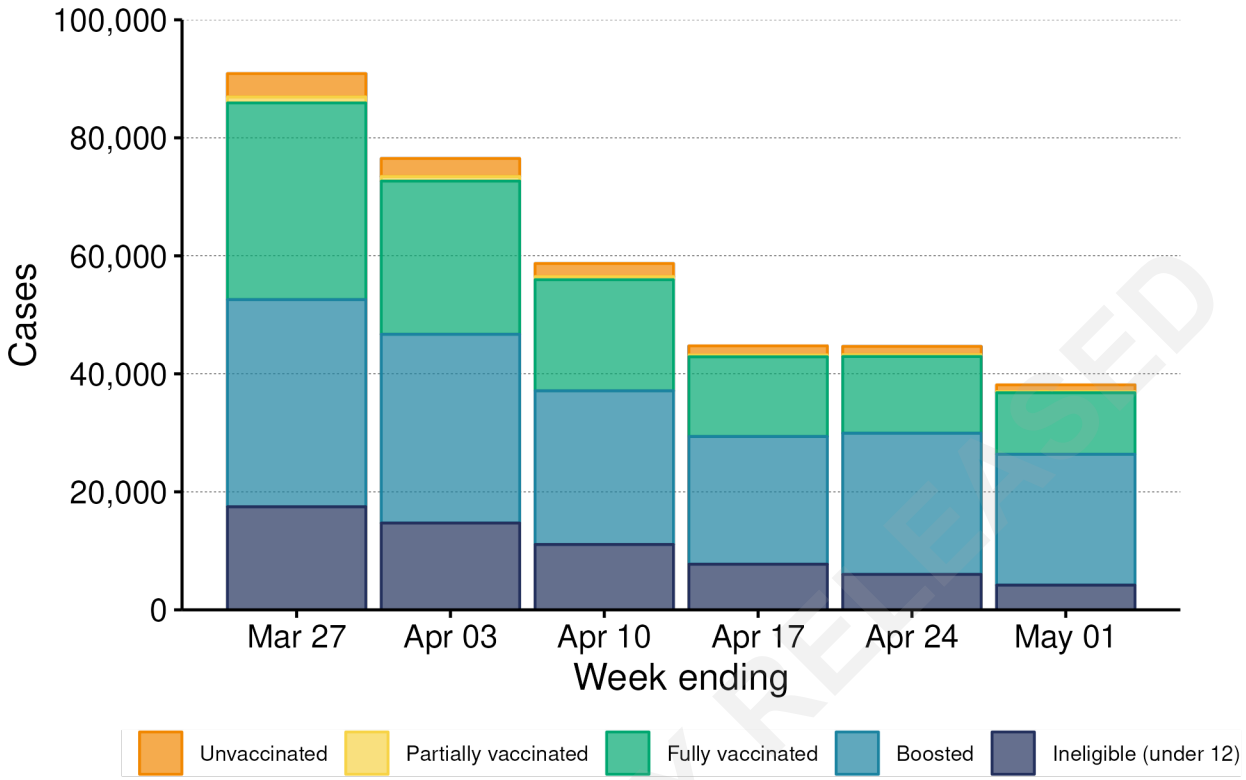


PROACTIVELY RELEASED

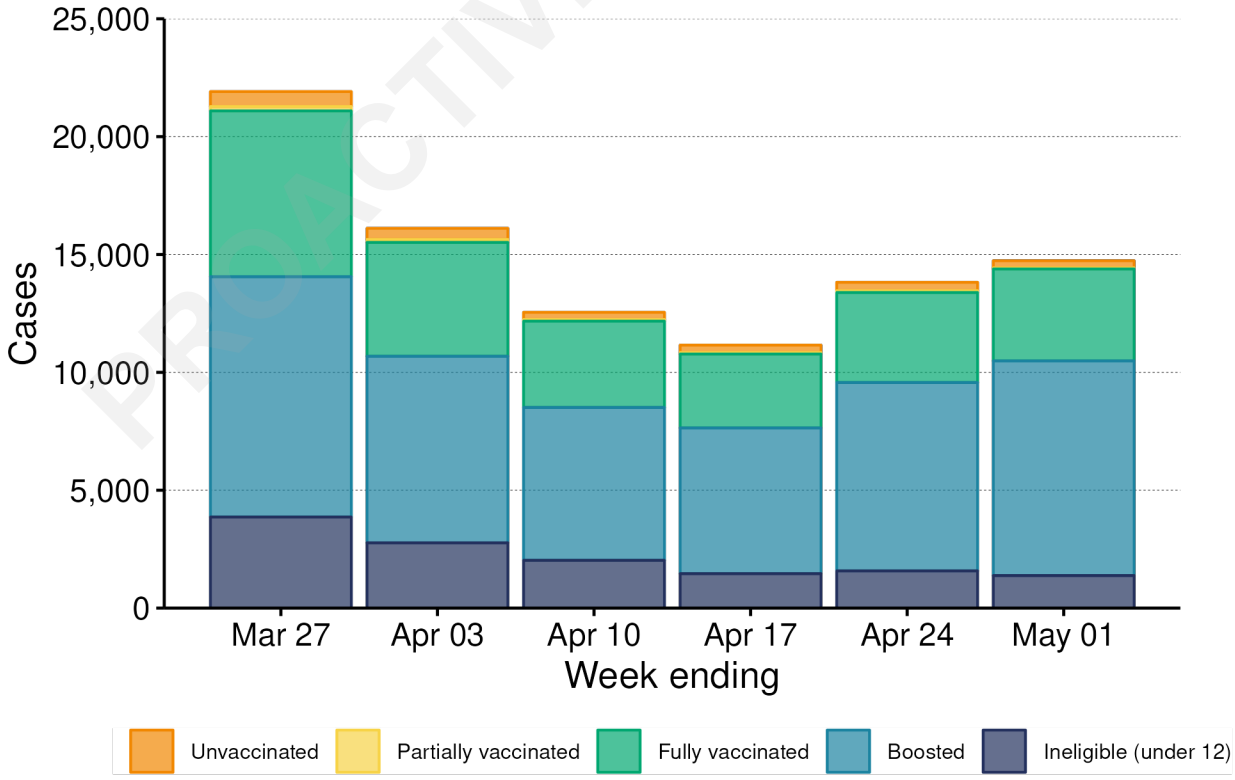
Vaccination Graphs

PROACTIVELY RELEASED

NZ Excluding Auckland Region



Auckland Region



Northern Region

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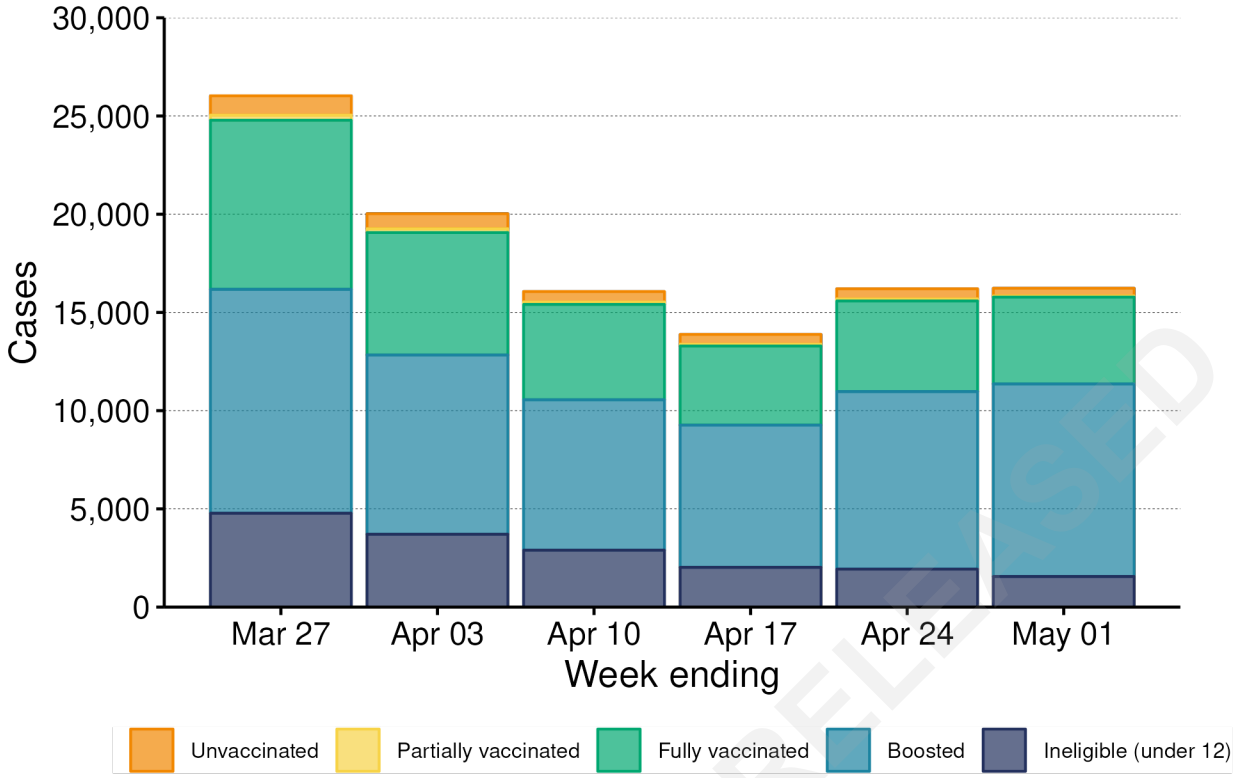
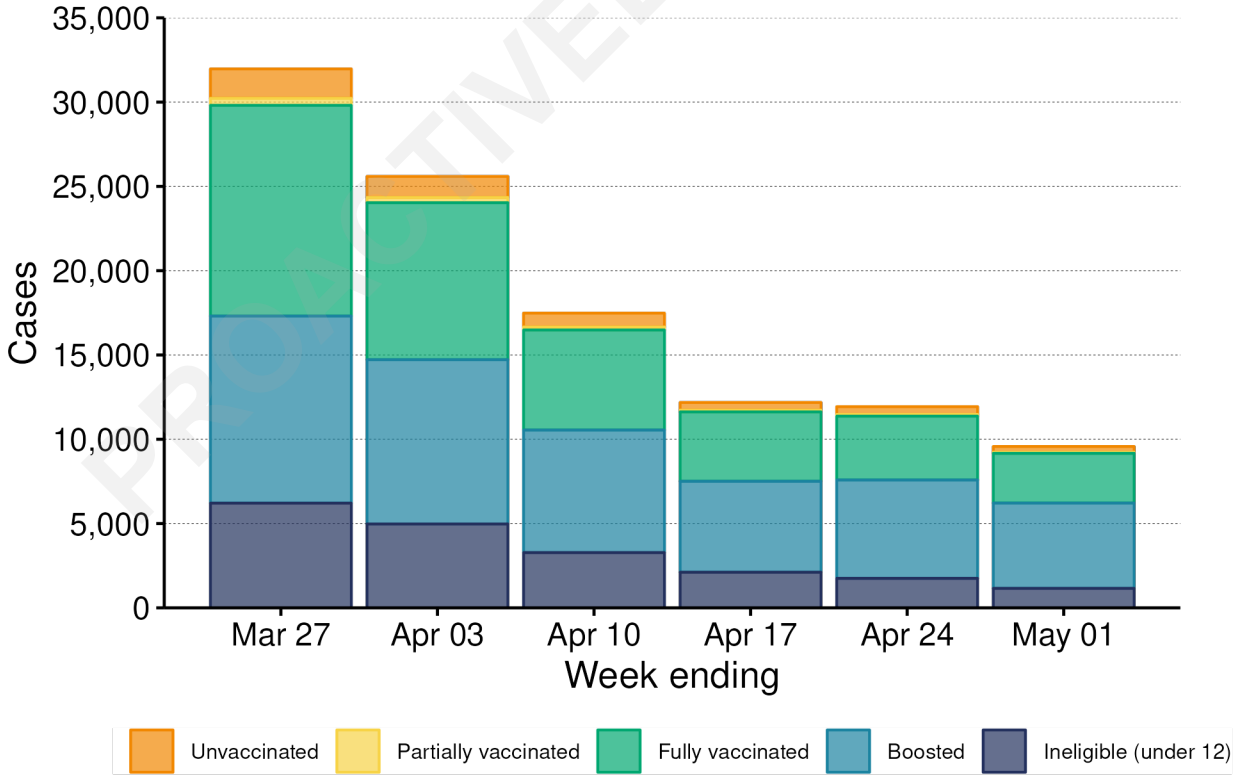


Te Manawa Taki



Central Region

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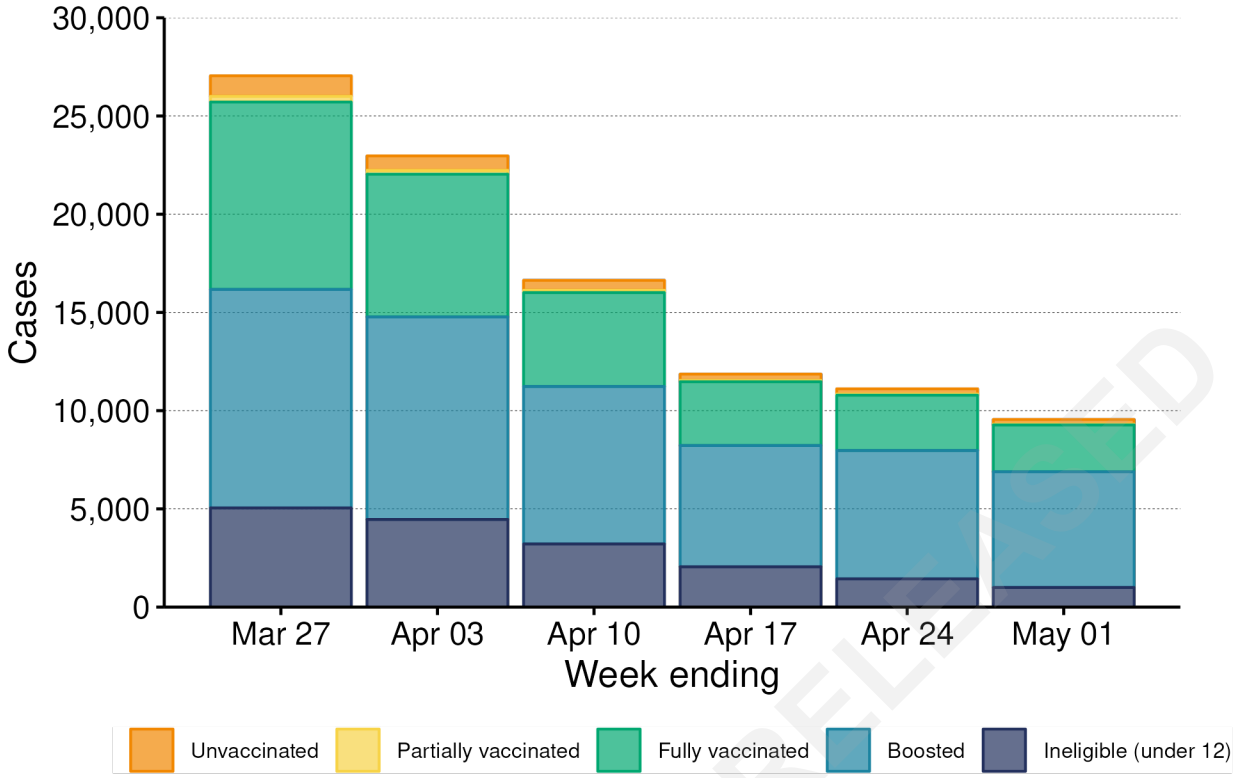
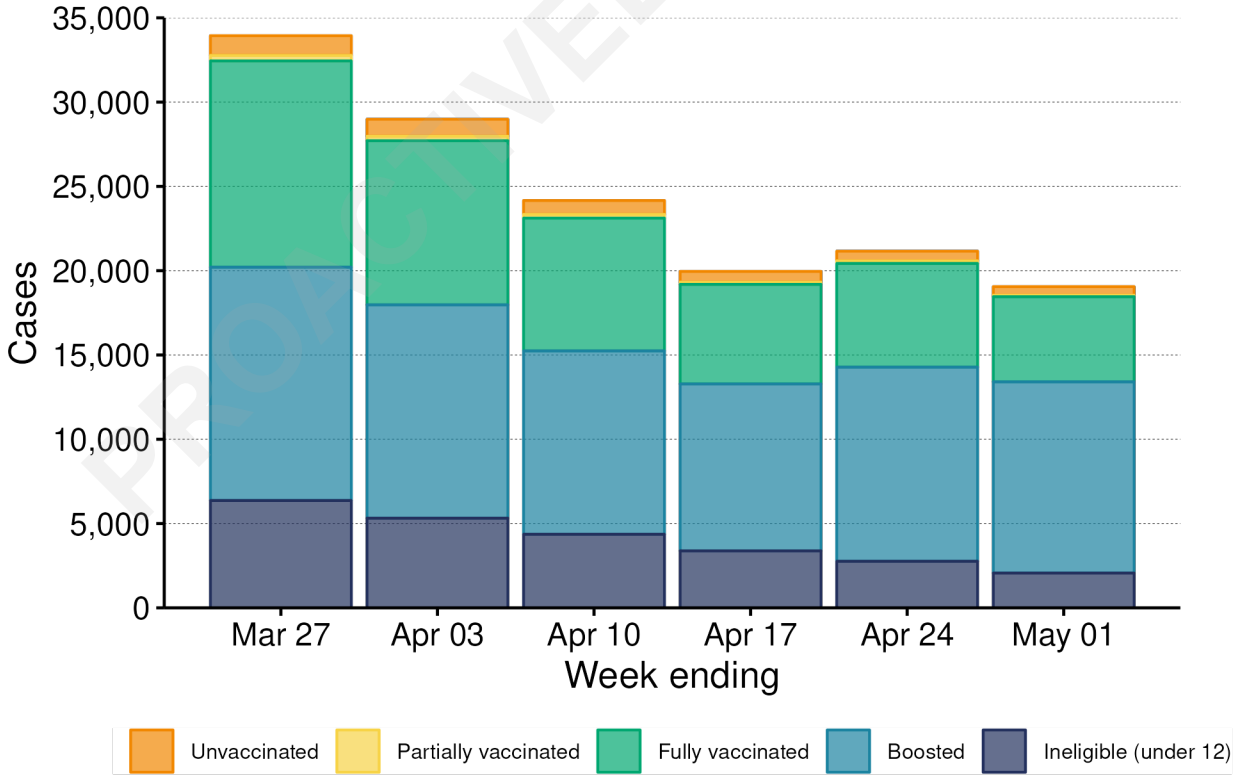


Southern Region



Northland DHB

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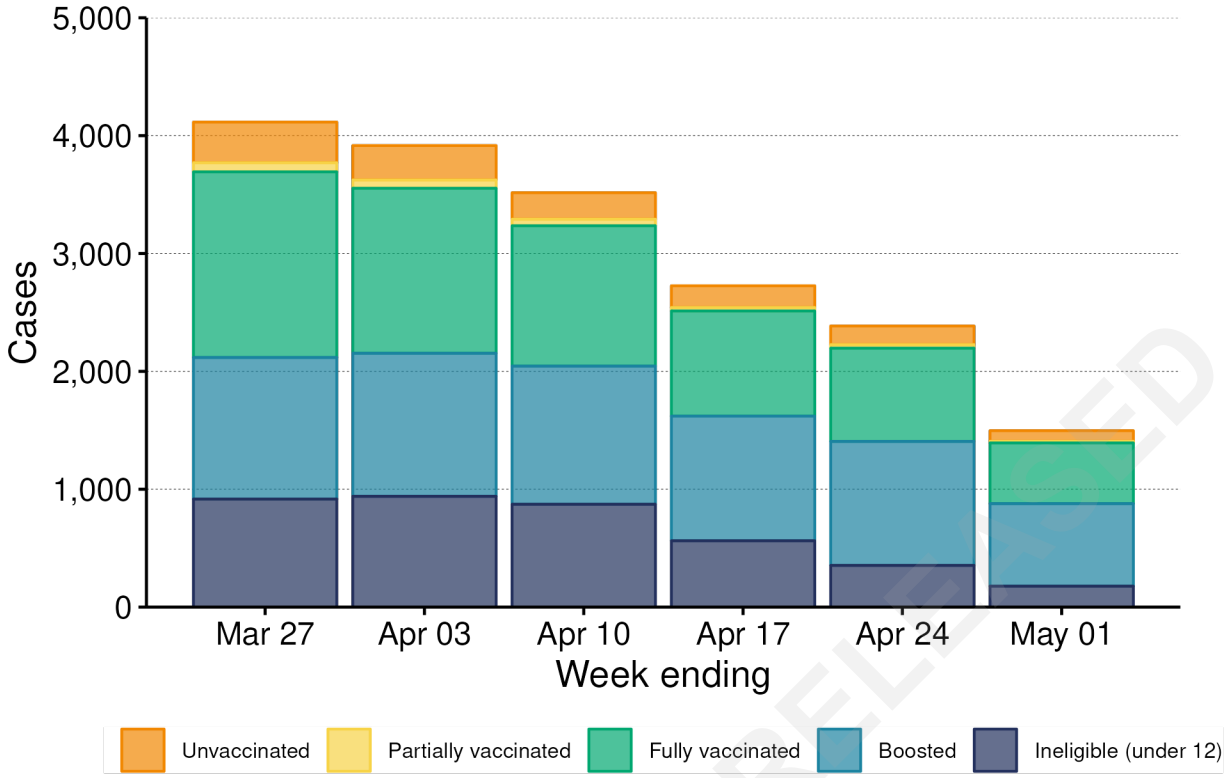
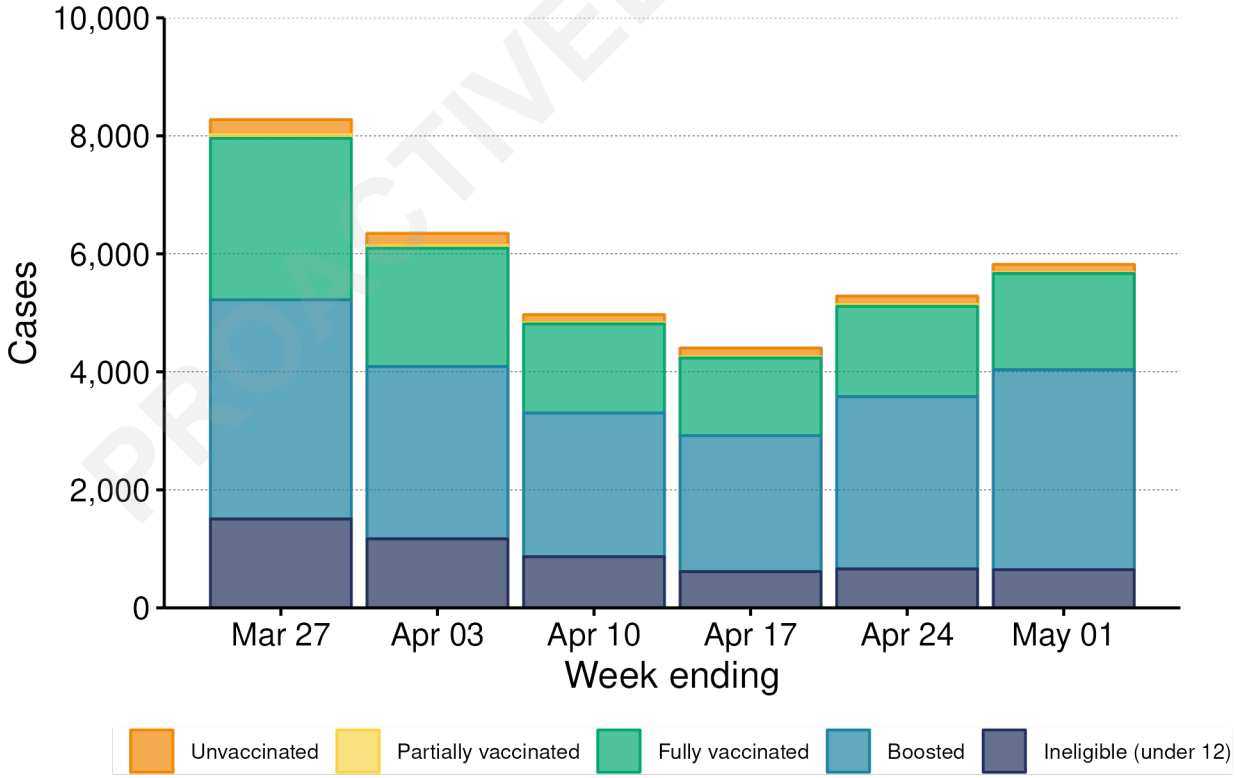


Waitemata DHB



Auckland DHB

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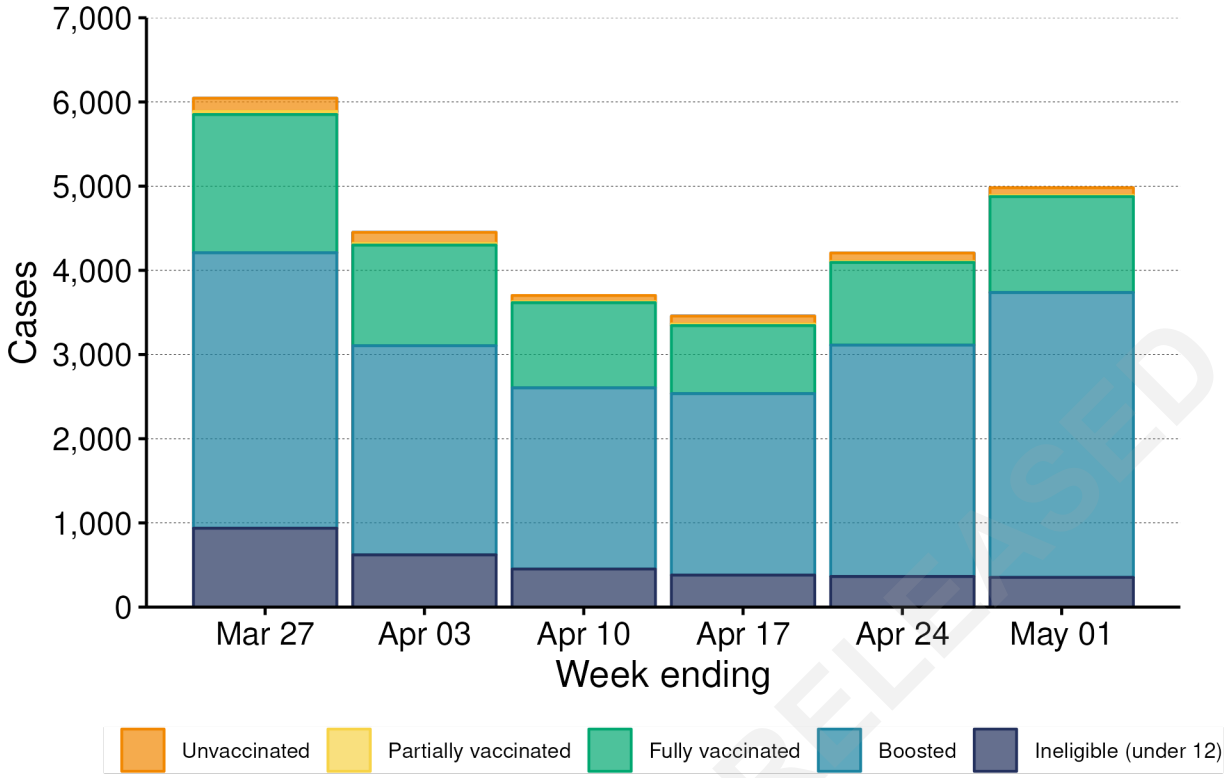
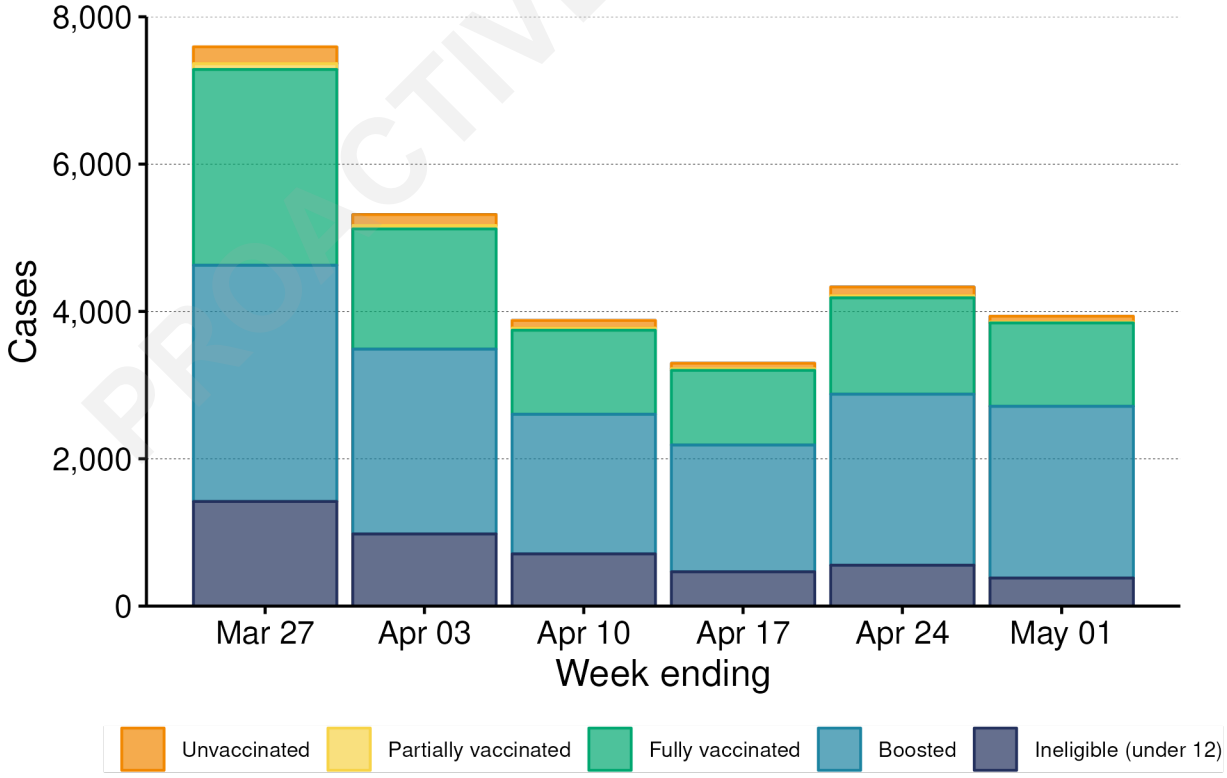


Counties Manukau DHB



Bay of Plenty DHB

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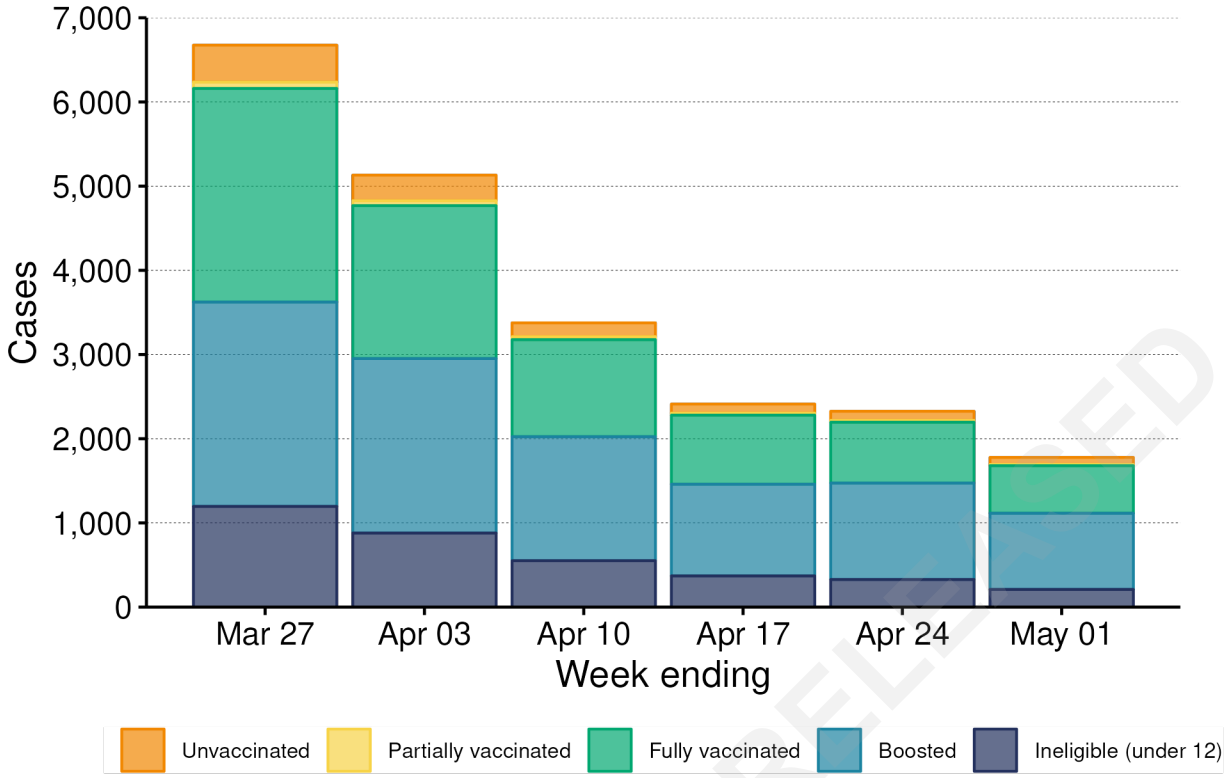
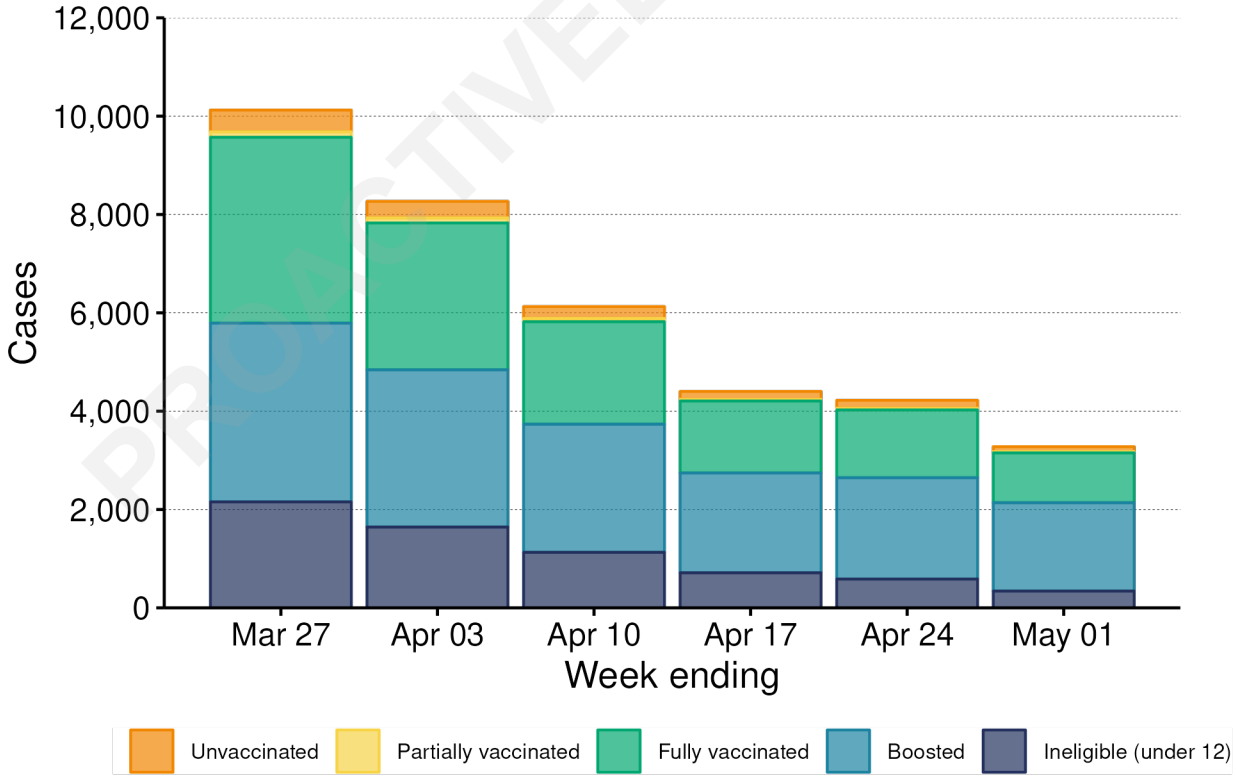
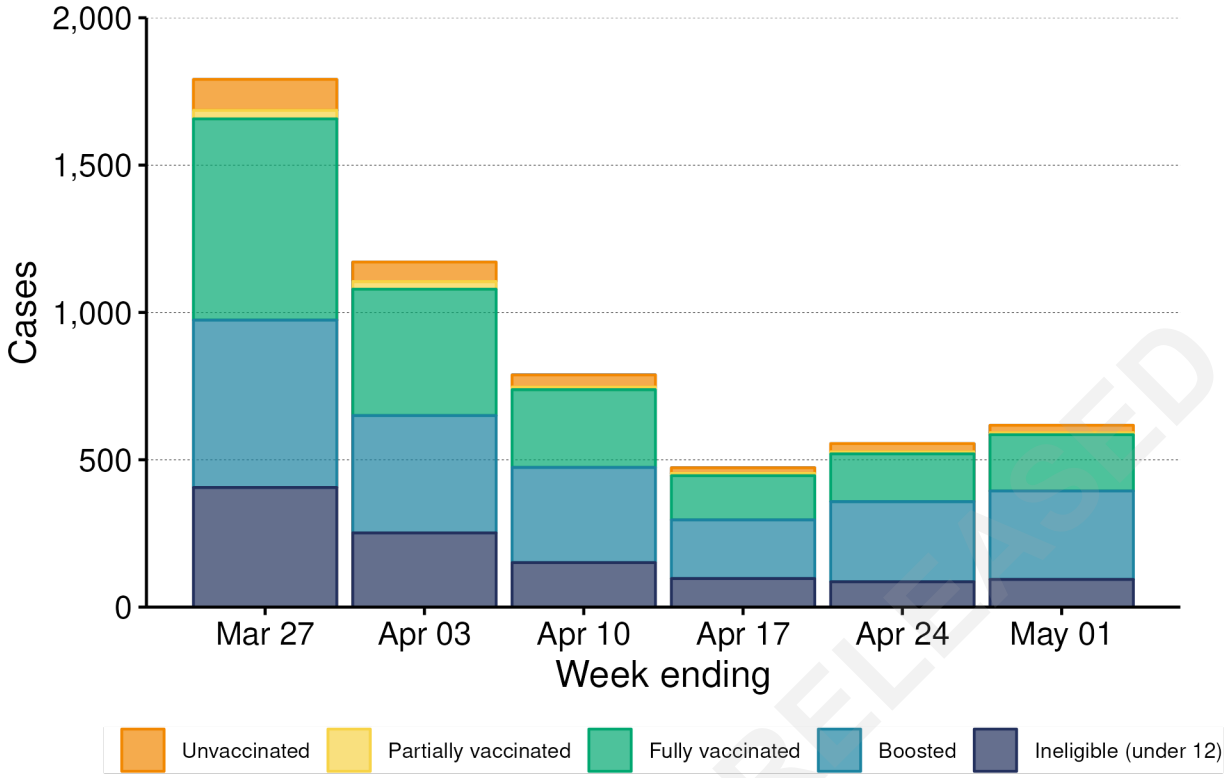


Waikato DHB

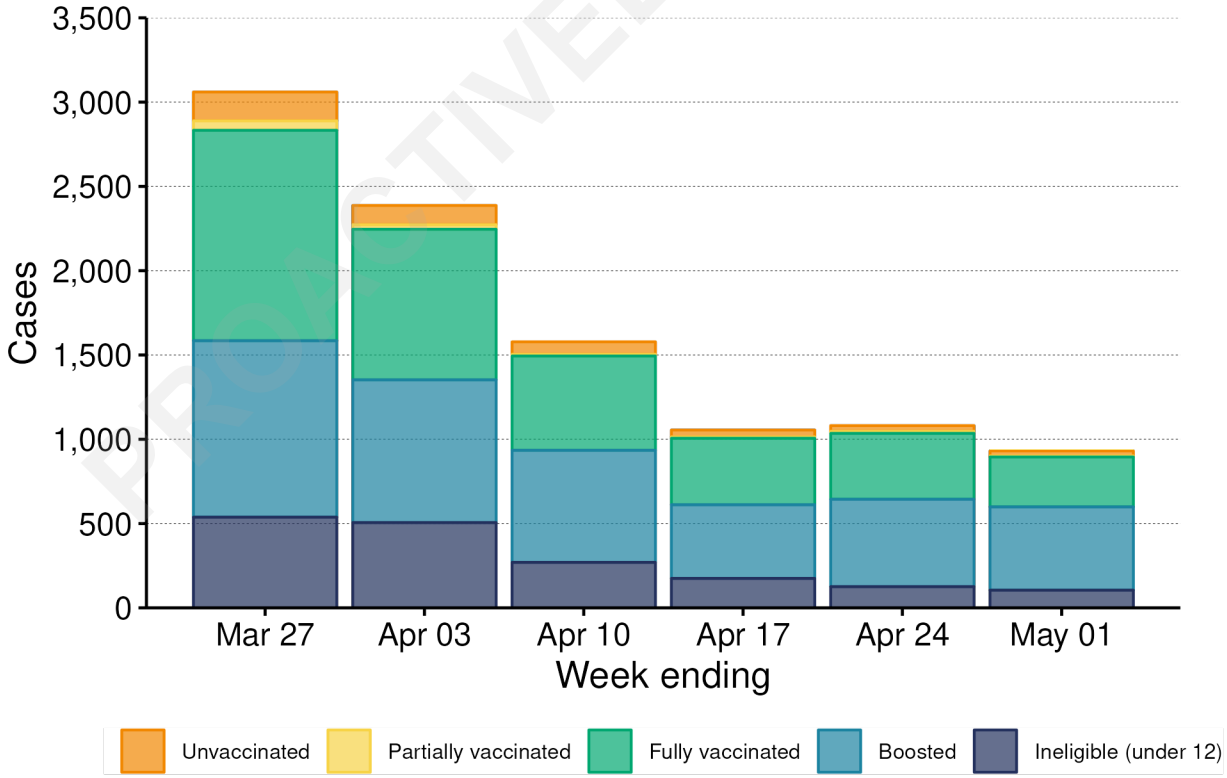


Tairawhiti DHB

PROACTIVELY RELEASED



Lakes DHB



Taranaki DHB

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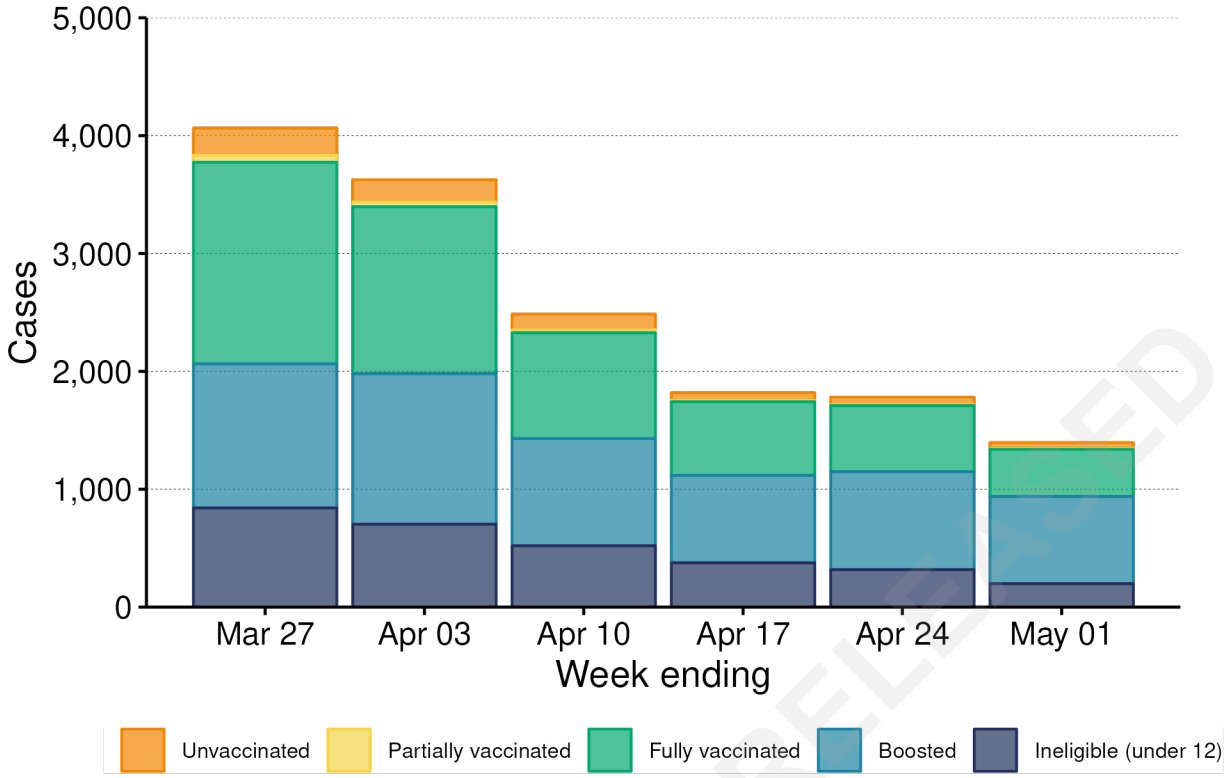
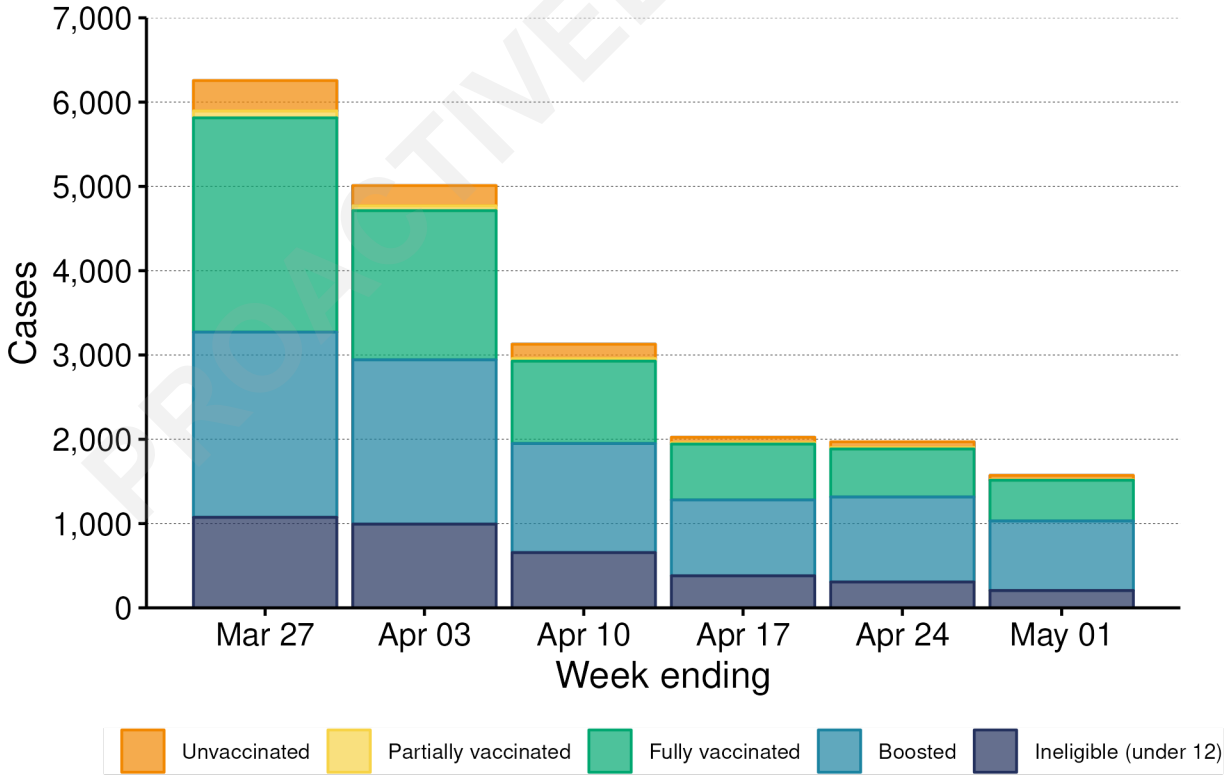


Hawke's Bay DHB



Whanganui DHB

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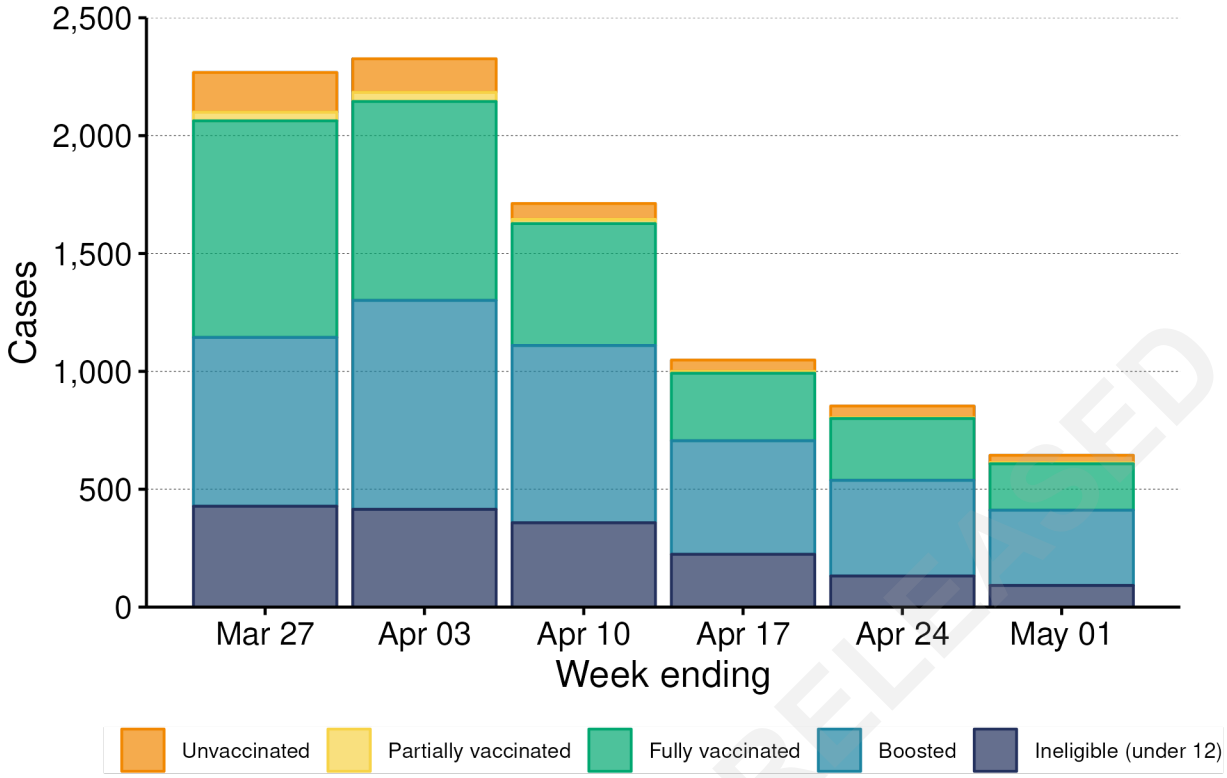
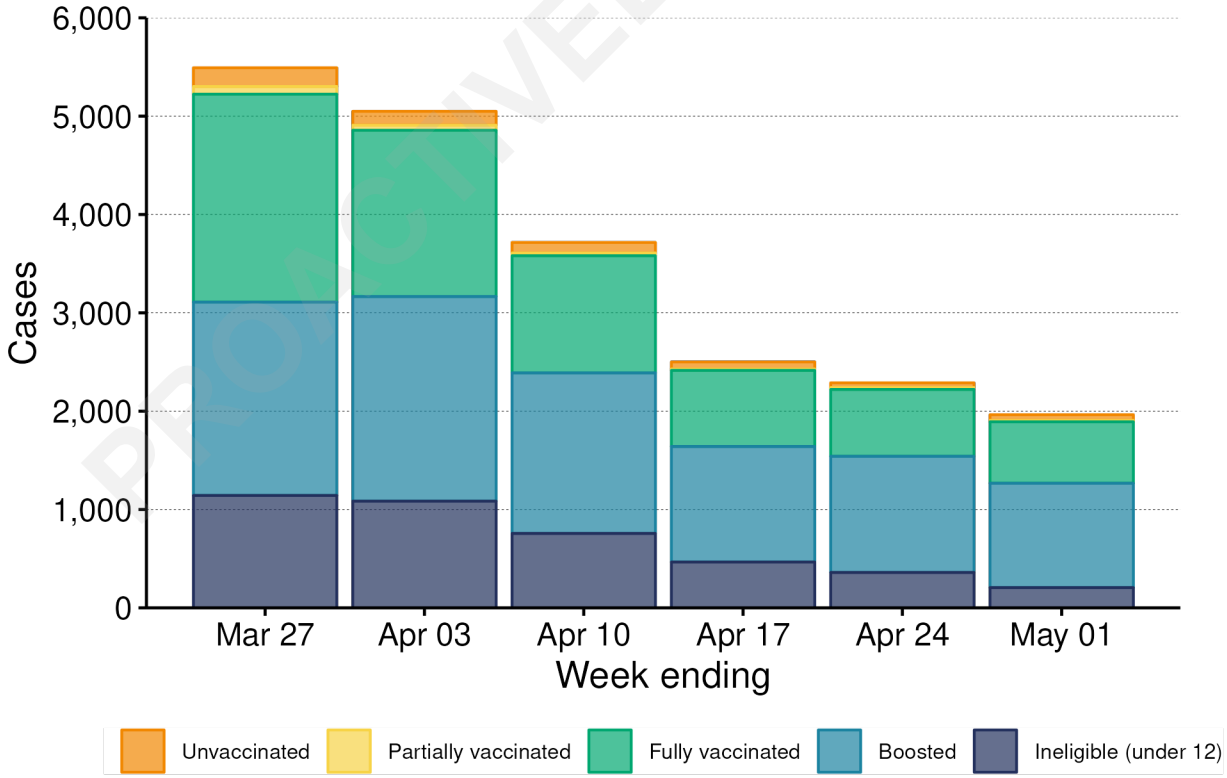


MidCentral DHB



Hutt Valley DHB

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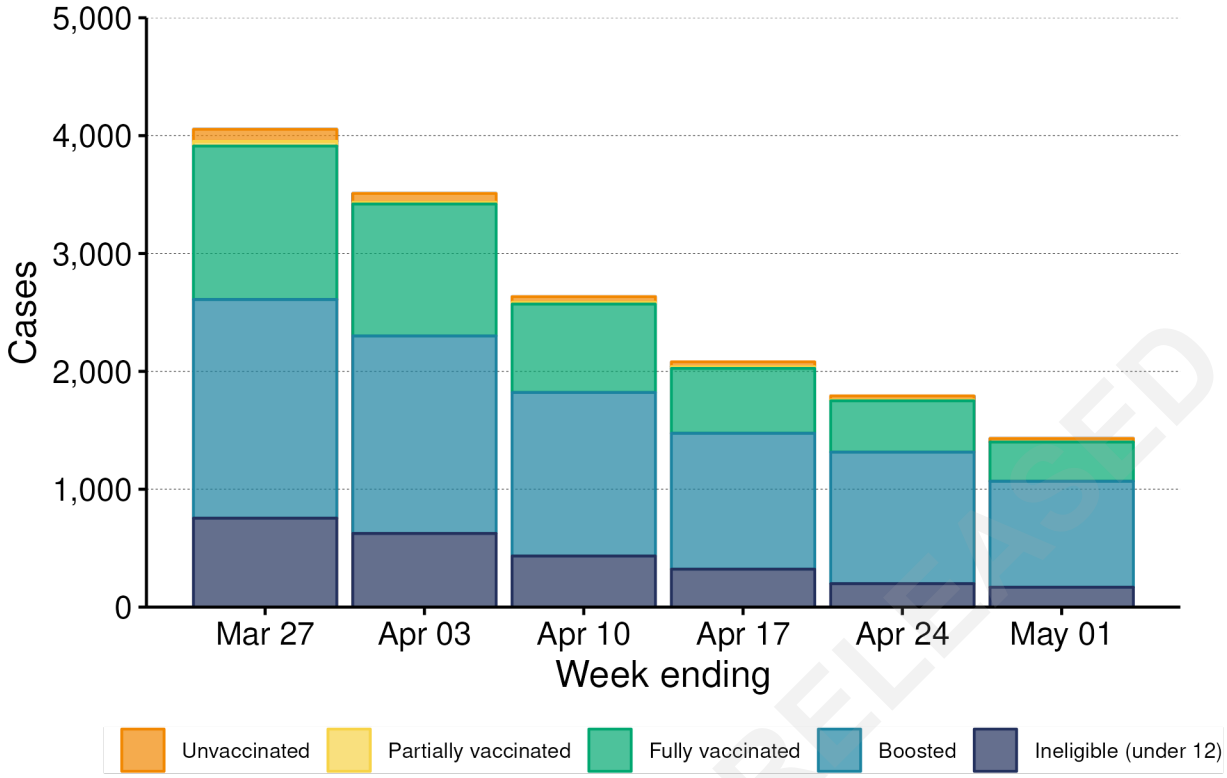
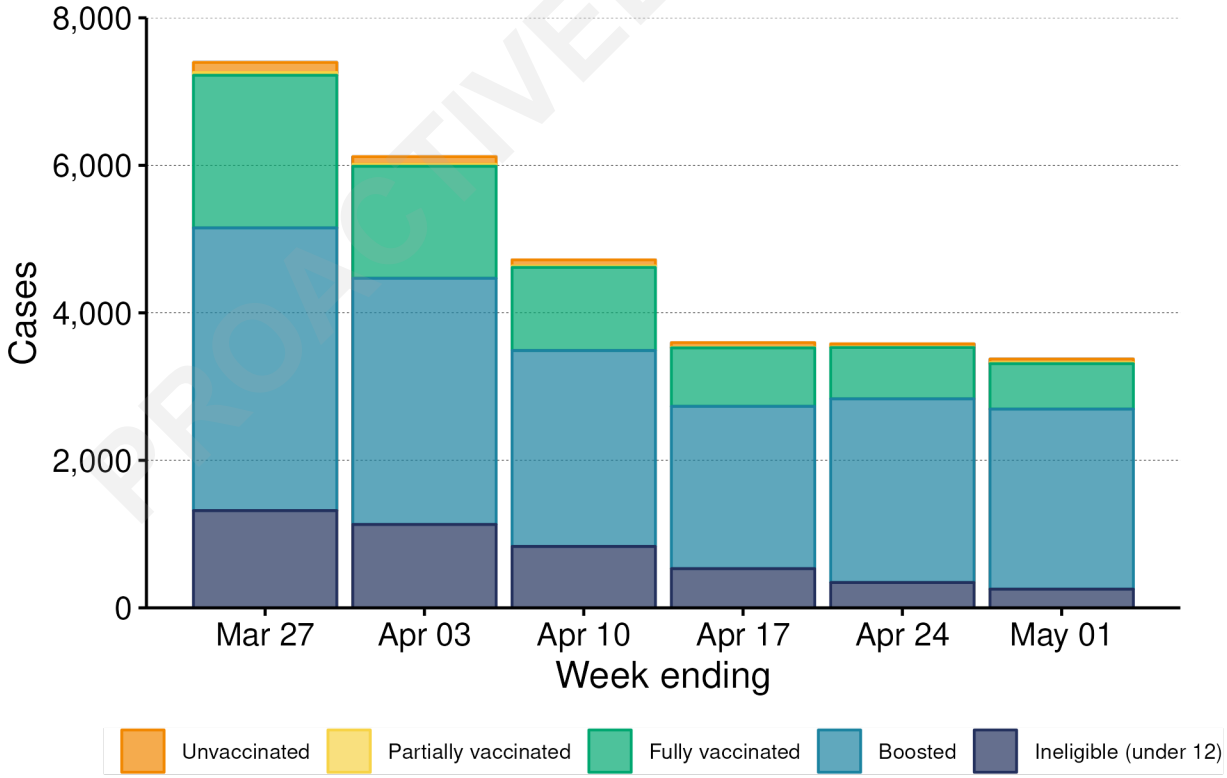


Capital and Coast DHB



Wairarapa DHB

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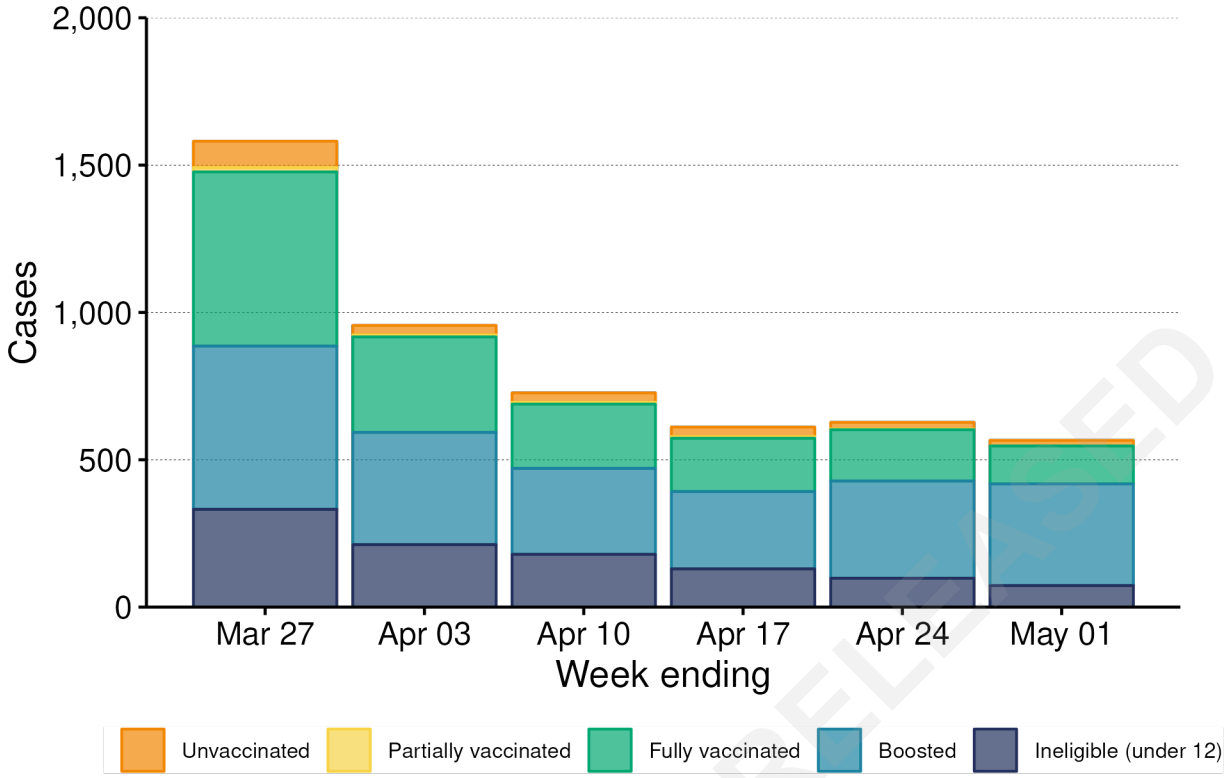
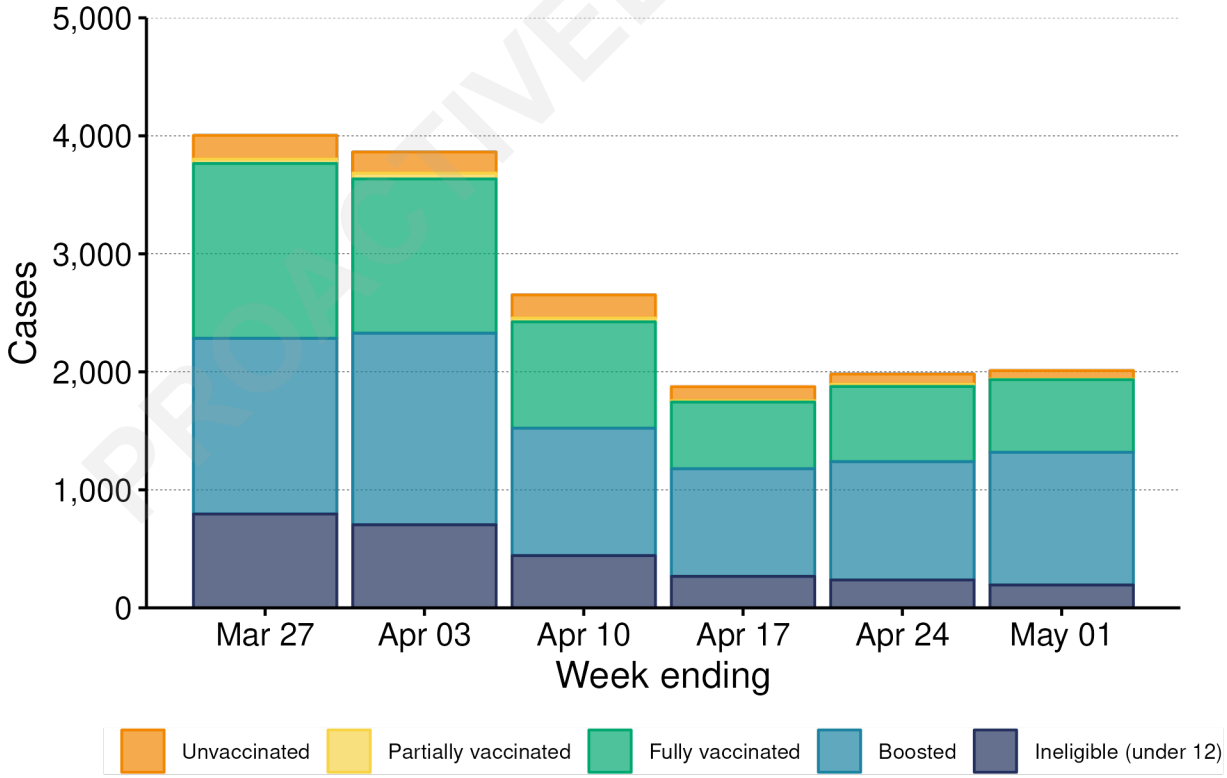


Nelson Marlborough DHB



West Coast DHB

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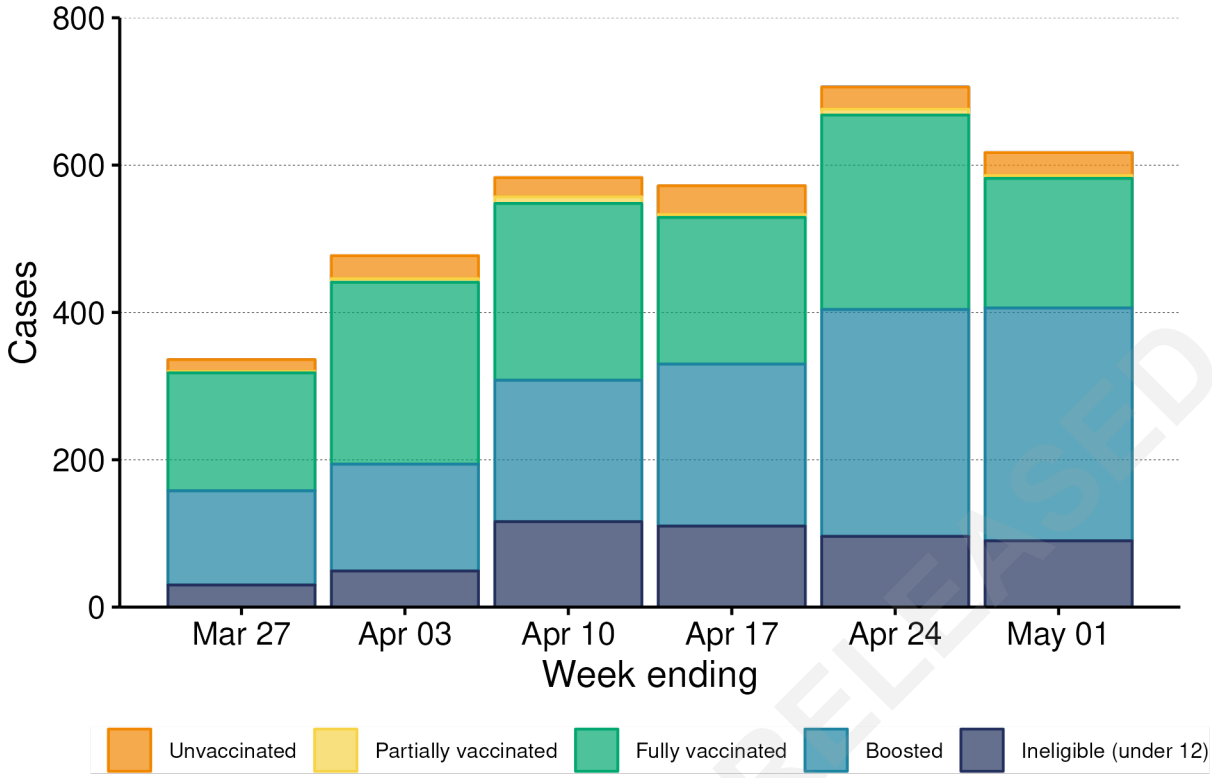
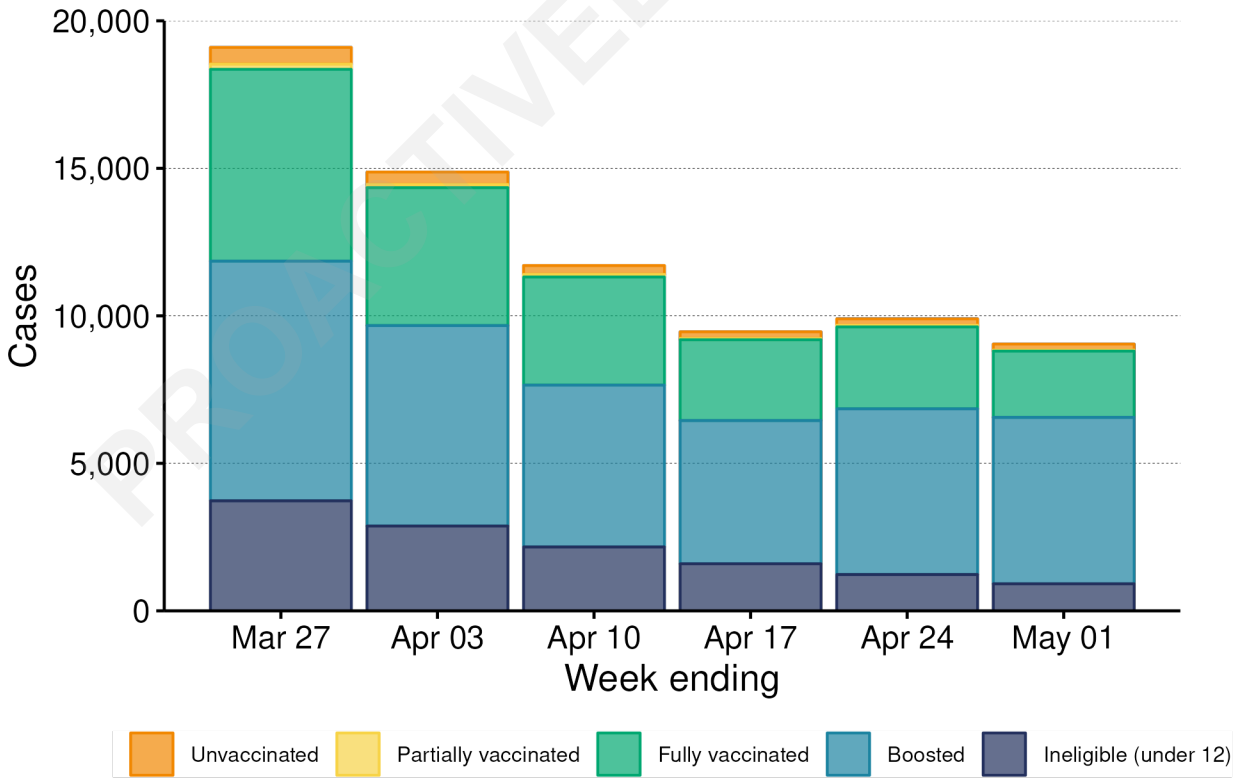


Canterbury DHB



South Canterbury DHB

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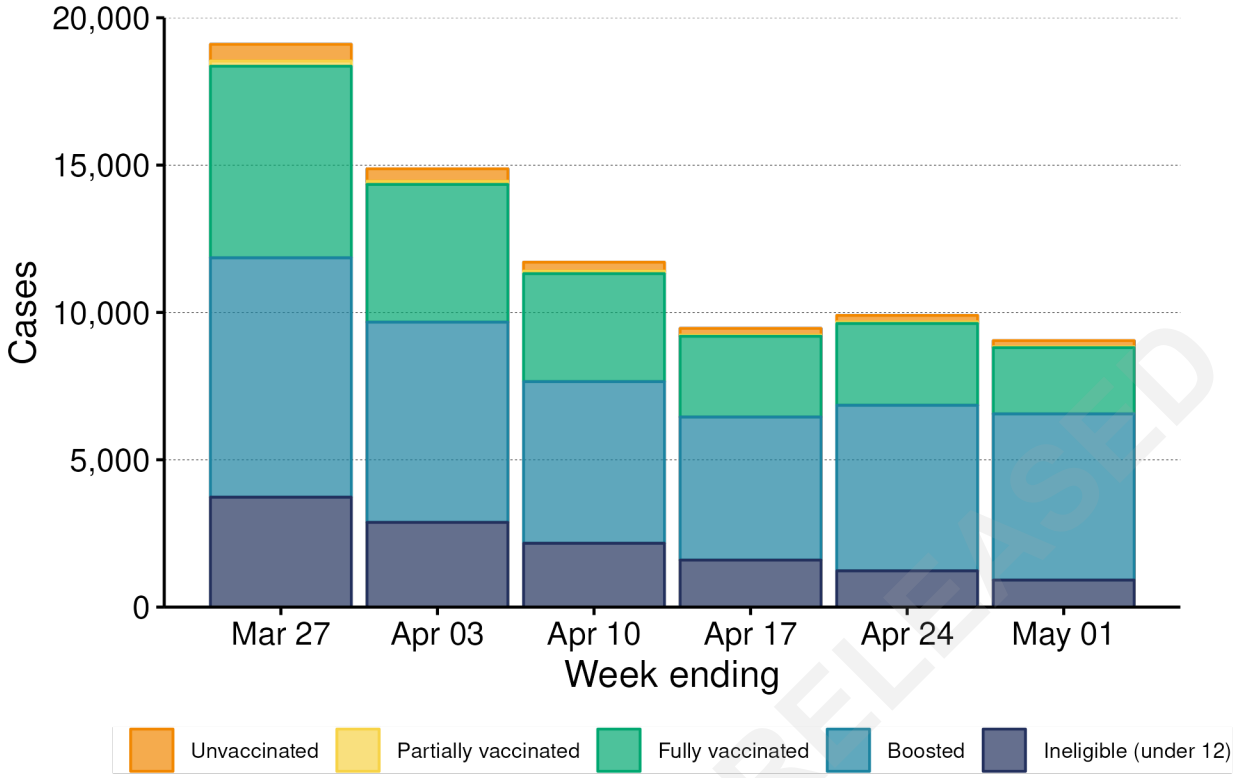
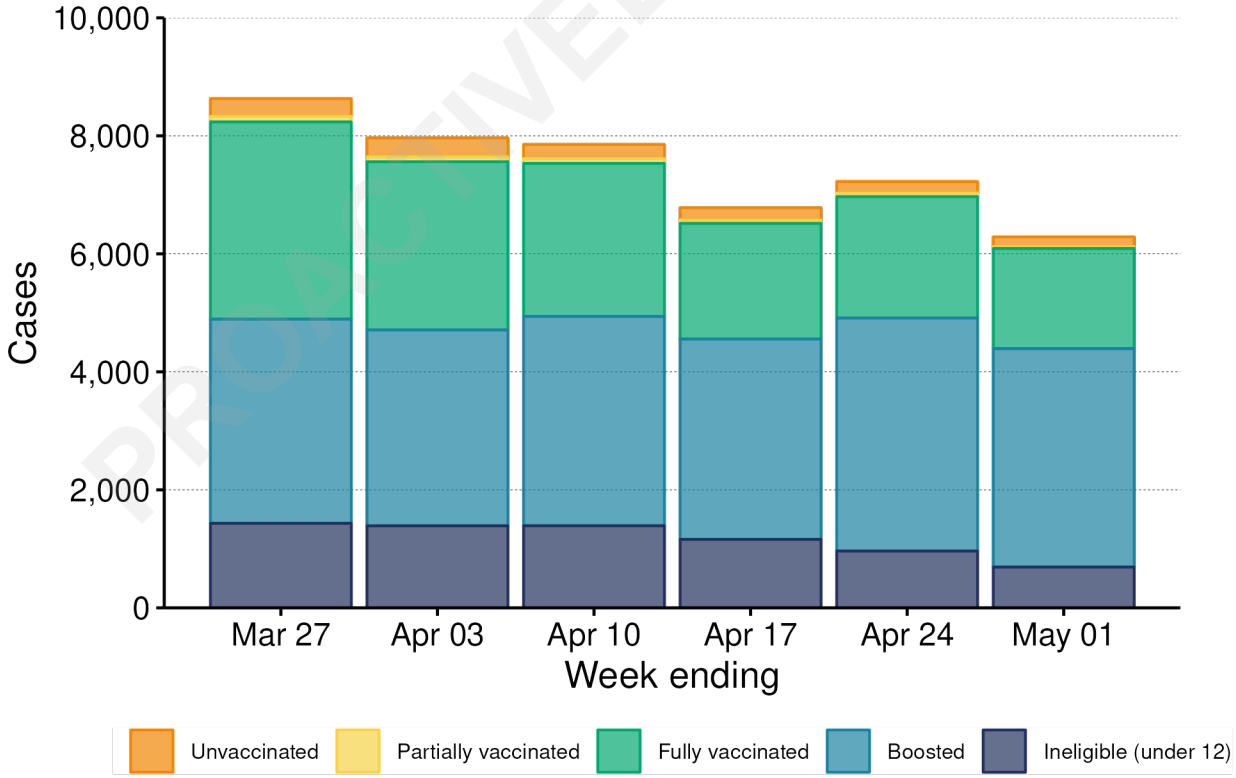


Southern DHB



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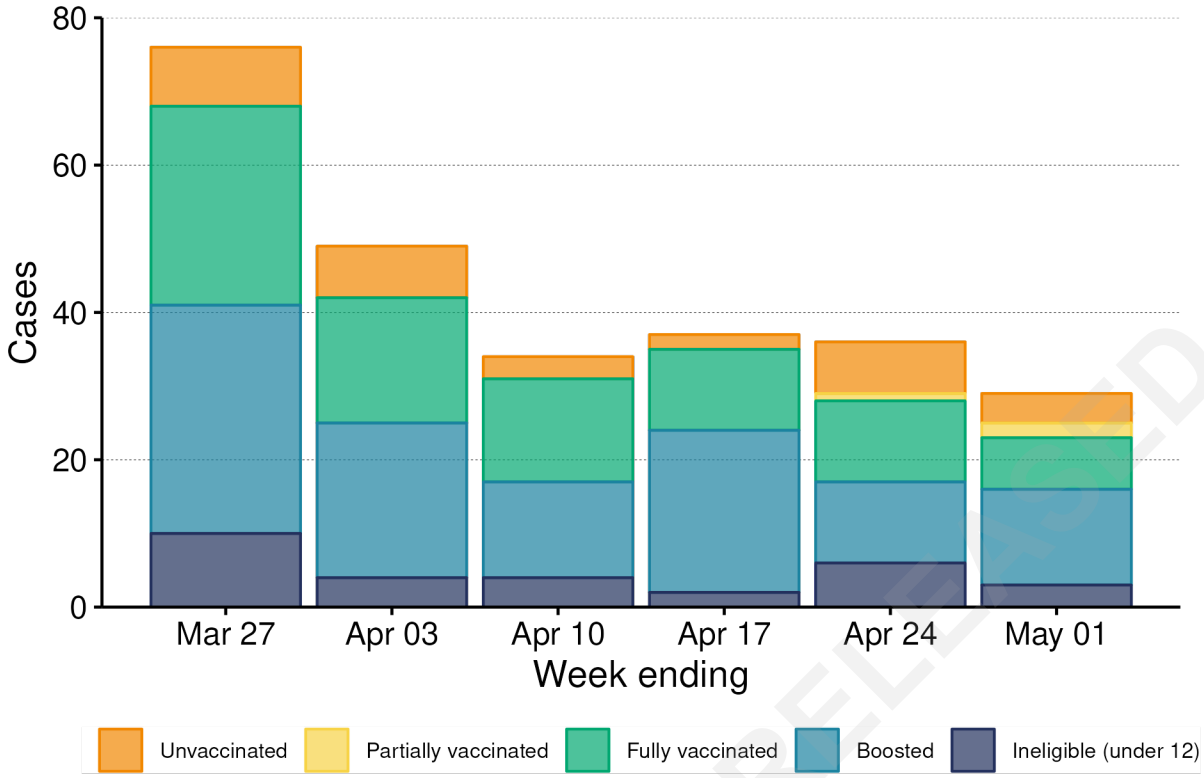

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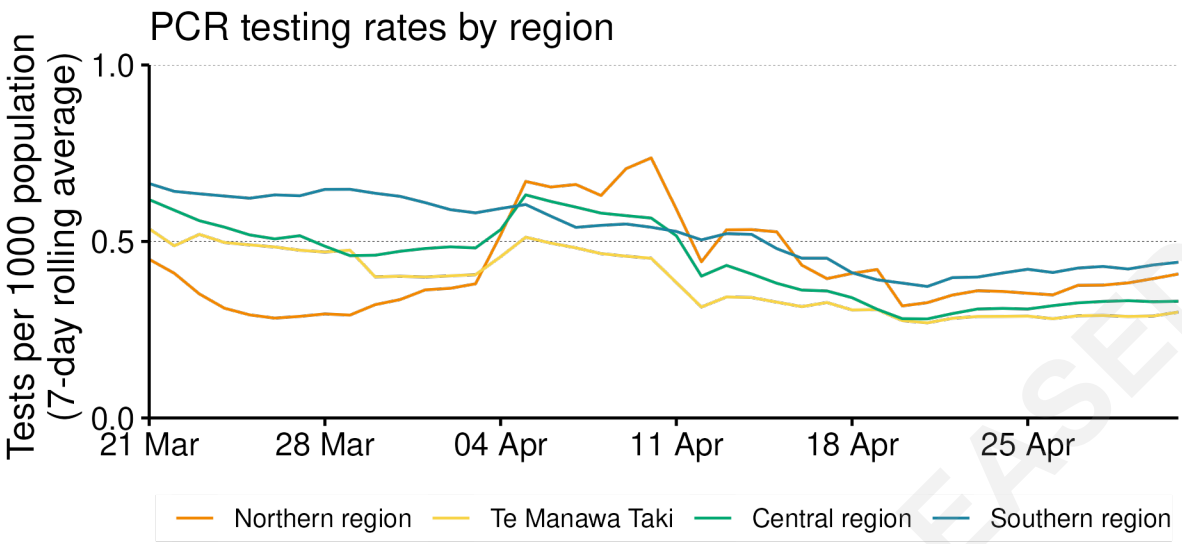
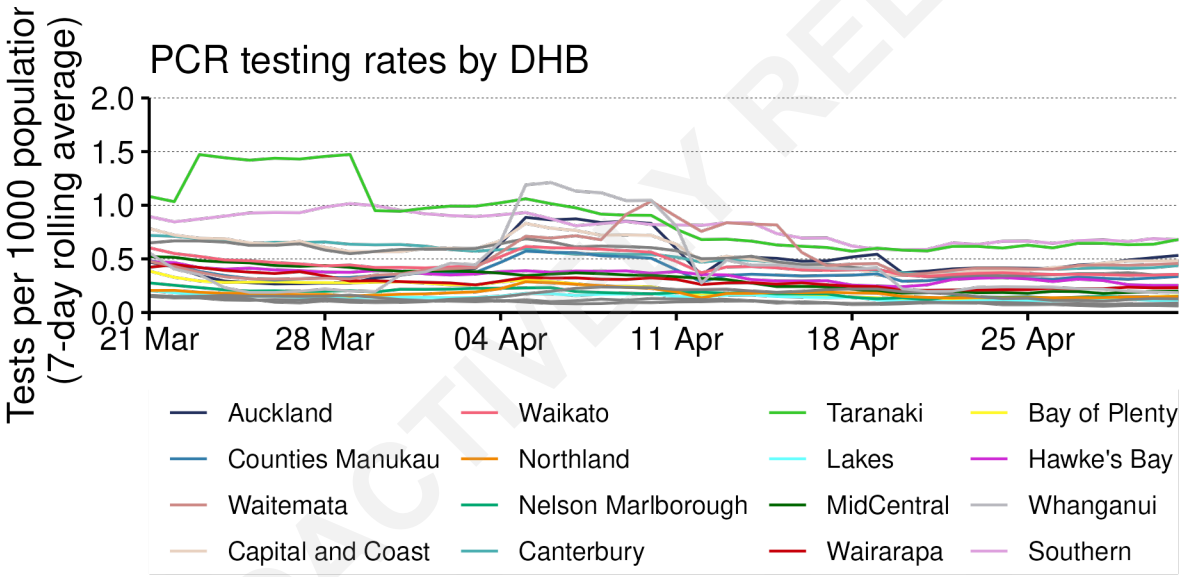
PCR Testing Rates





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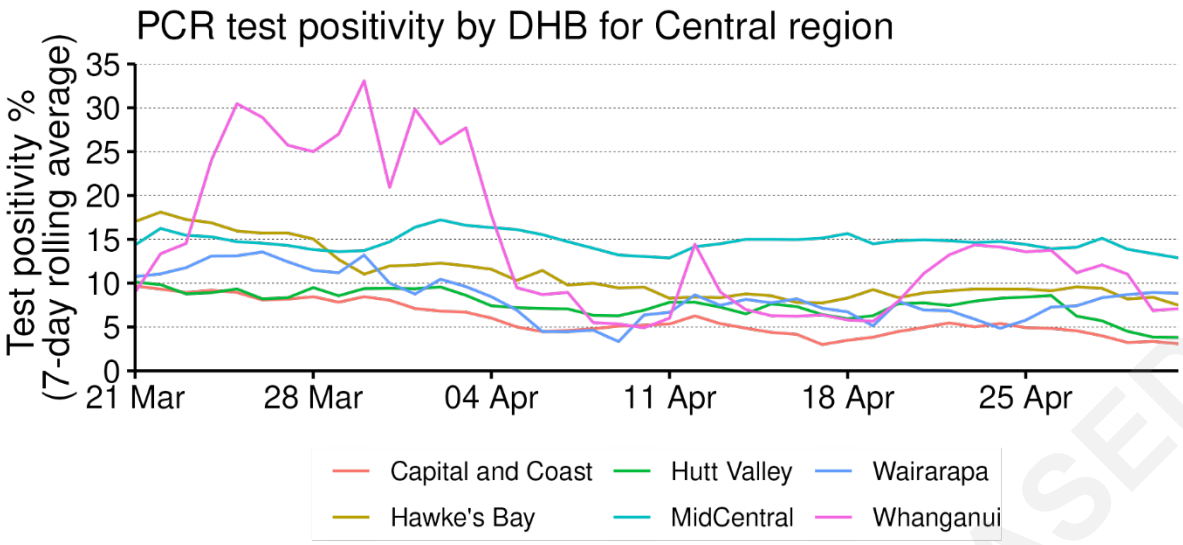

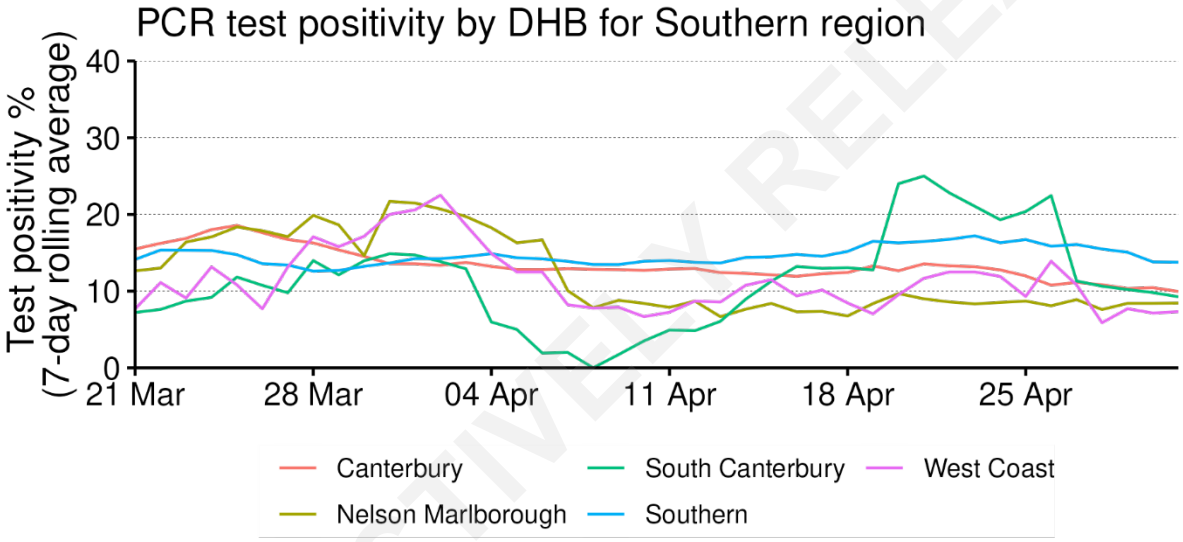

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