COVID-19

Trends and Insights Report

Updated 26 April 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 11.7 per 1000** population for the week ending 24 April. This is an increase of 4% from 11.2 per 1000 in the previous week.
- EpiNow modelling based on data to 26 April predicts nationally, case numbers may continue to decrease in the coming week (median R_{eff}= 0.9), but the estimates have high levels of uncertainty. For Auckland, Hawke's Bay, Tairawhiti and West Coast PHUs, the R_{eff} is 1.0 or above.
- **For the week ending 24 April**, the estimates suggest that **2.7% (808/29,787) of healthcare workers** and **1.8% (367/20,855) 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 8.1 per 1000**, respectively).
- A total of **37.1% of healthcare and 30.8% of border workers have had a COVID-19 diagnosis in 2022 as of 24 April 2022.**
- **Levels of viral RNA in wastewater have not changed significantly in the past four weeks.** Furthermore, there is a slight increase observed in Northern region (excluding Auckland Metro) and Te Manawa Taki. **This suggests that there is an ongoing level of infections sustaining current trends and that they may even be increasing in some areas**.
- **Auckland Metro, Tairawhiti, Lakes, Wairarapa, Nelson Marlborough, West Coast, Canterbury, South Canterbury and Southern** DHBs all had increases in case rates compared to the past week.
- **Pacific Peoples continue to have the highest case rate in Southern region (22.5 per 1000) followed by Asian (20.9 per 1000).**
- In **Northern and Southern regions, Asian case rates have risen the most by 40% and 11%** respectively compared to the week prior.
- Rates have begun to **rise in those aged 44-64** and **65+ years in the past week**. The largest increases in case rates amongst these age groups were in the Northern and Southern regions. For 45-64 age groups, case rates have increased by 28% in Northern and 19% in Southern region. For 65+ age group, case rates have increased by 35% in Northern and 28% in Southern region.
- There has been difficulties in the reporting of hospitalised cases of COVID-19, due to lack of consistency between DHBs on what constitutes a COVID-19 case.

- 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 increased from 59 on 19 April to 61 on 26 April.
- As of **26 April 2022, 687 people have died with or after COVID-19 infection**. Of these, **649 have died within 28 days of being reported as a case**. The **7-day rolling average of deaths is 12.**

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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 Auckland metro (8.1 per 1000) and National (11.7 per 1000) case rates in the general population. 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 increased slightly in border and health care workers for the first time since the week ending 06 March**; general population increases were driven by increases in the Northern and Southern regions. However, Northern region inpatients have continued a slow decrease.

Levels of viral RNA in wastewater have again not changed significantly in any region. Contradictory to other evidence, **this may suggest there was no substantial decrease in level of new infections over the past four 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 not available for the coming week. The projection for the previous week of slight decreases did not materialise.

Approximation of underlying infection incidence

Underlying infection incidence has been gauged using a weekly case rate for routinely asymptomatically tested border workers, and for healthcare workers, where there was evidence of regular testing.[1]

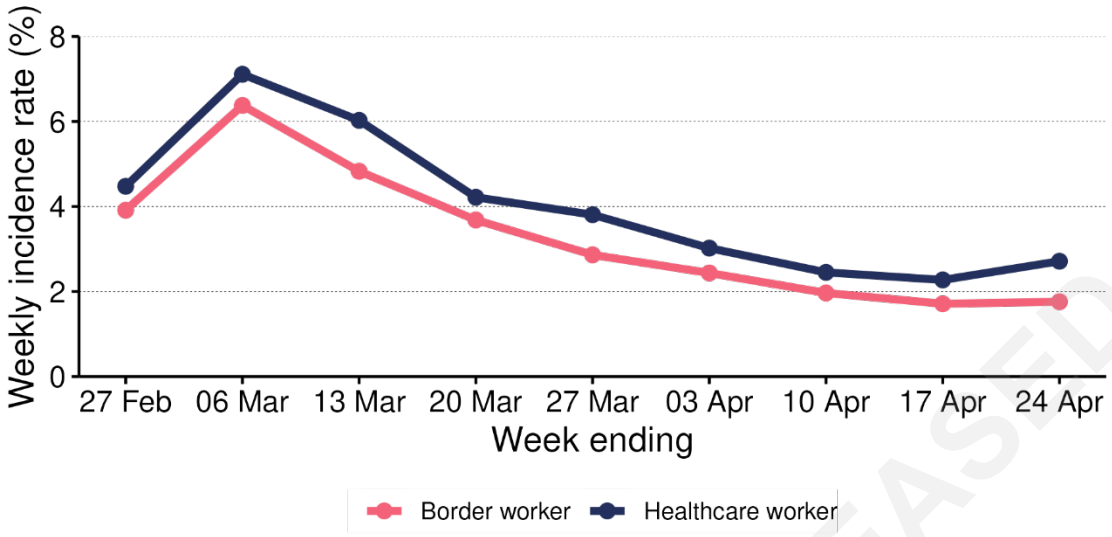
For the week ending 24 April, estimates suggest that **2.7% (808/29,787) of healthcare workers** and **1.8% (367/20,855)[2] of border workers have tested positive** (for the first time) (see Figure 1). These incidence rates were a slight increase on the previous week, and follow 6 weeks of declining rates. A total of 37.1% of healthcare and 30.8% of border workers have had a COVID-19 diagnosis in the year to 24 April 2022.

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. However, as these data are national estimates, this masks differing trends by region.

[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.

Figure 1: ***National weekly infection incidence rate (%) of COVID-19 for health care and border workers, for the weeks ending 27 Feb to 24 April 2022***

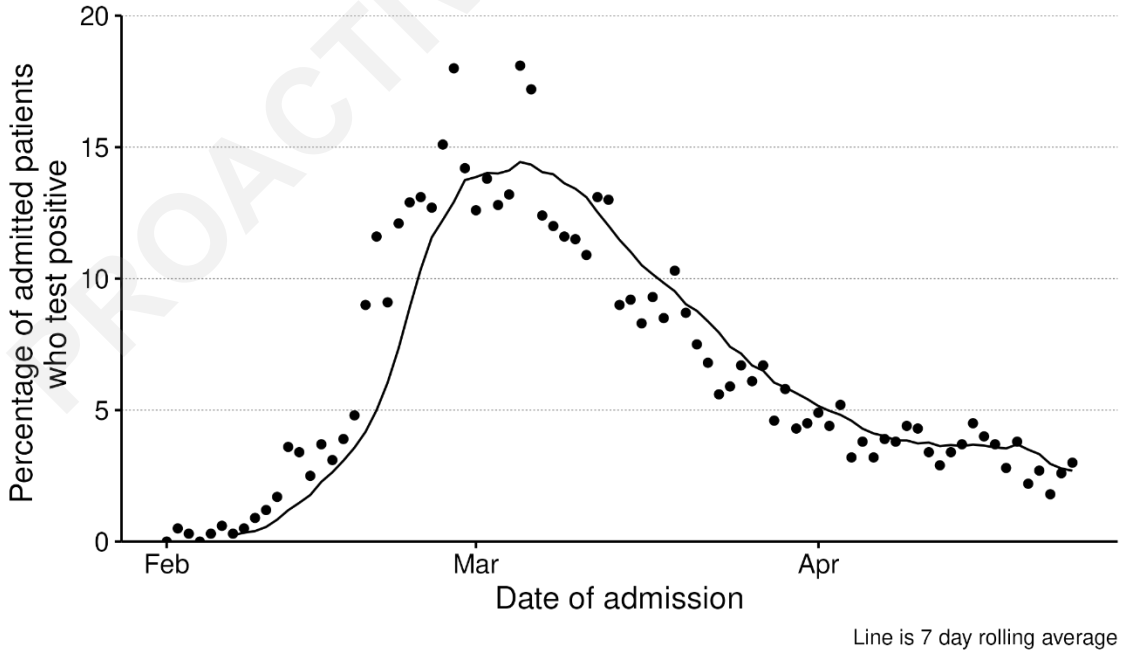


Source: Éclair/Episurv, 2359hrs 24 April 2022

Test positivity trends in Northern region hospital admissions

The Northern region inpatient positivity rates are shown in Figure 2. Since **peaking at ~15% in early March**, the Northern region hospital admissions **positivity has continued to decrease** from 3.6% (254/7088) in the week ending 17 April to **2.7% (186/6900)** in the week ending 24 April.

Figure 2: ***Percent of tests positive among Northern region hospital admissions, 01 February to 24 April***



Source: Northern Region hospitalisation data, NCTS & EpiSurv as at 2359hrs 24 April 2022

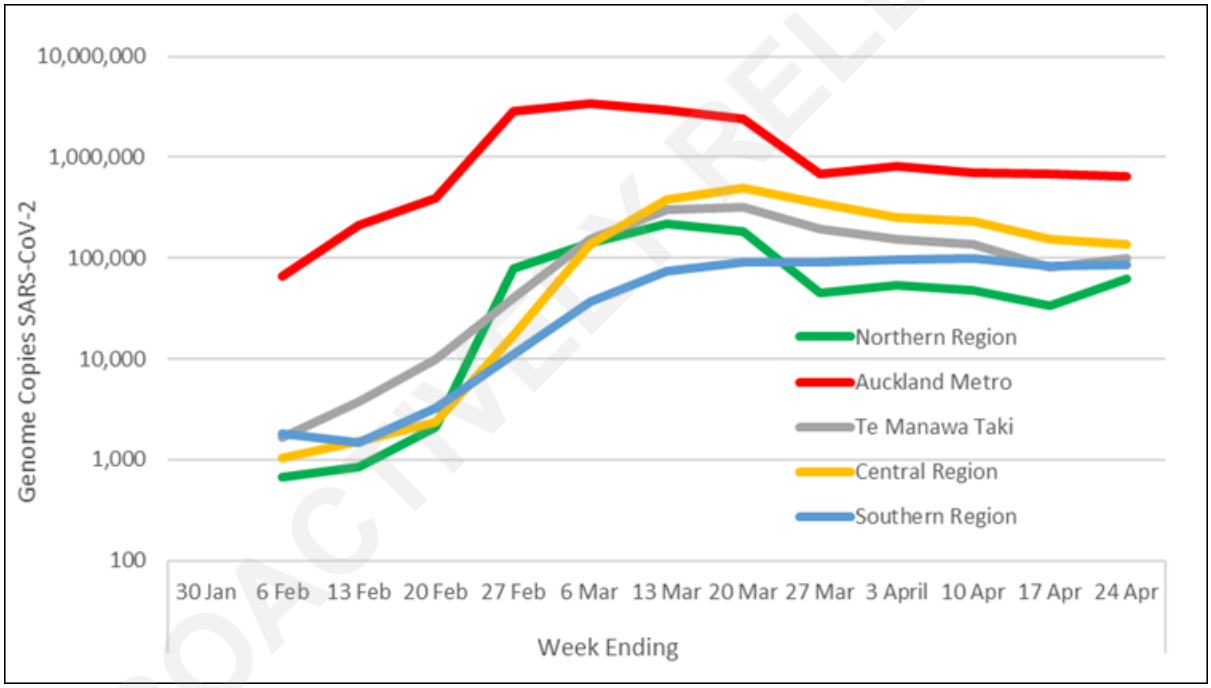
Wastewater quantification

Figure 3 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 increased in the past week after being stable for the past four weeks and** despite an initial drop in levels detected in late February. Similarly, **Auckland Metro rates have been stable for the past five weeks.**

Te Manawa Taki and Central regions have been showing minimal decline, **but it is uncertain if this trend is continuing for Te Manawa Taki. Southern region levels have been relatively 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 3: ***Trends in SARS-CoV-2 genome quantification from wastewater by region, 06 February – 24 April 2022***



Source: ESR SARS-CoV-2 in Wastewater update for week ending 24 April 2022

Trends in diagnosed cases

Overall, **the weekly case rate was 11.7 per 1000** population for the week ending 17 April. This was an **increase of 4% from the previous week,** which was 11.2 per 1000.

Figure 4 shows that **both the Te Manawa Taki (10.2 per 1000) and Central (11.8 per 1000) regions continued to decrease, but the decrease was minimal. Both Northern (8.5 per 1000) and Southern (18.4 per 1000) have increased** in the week ending 24 April after continuous declines for a number of weeks. This is the first increase observed in case rates for the Northern Region since 06 March and the first increase for the Southern Region since 20 March.

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

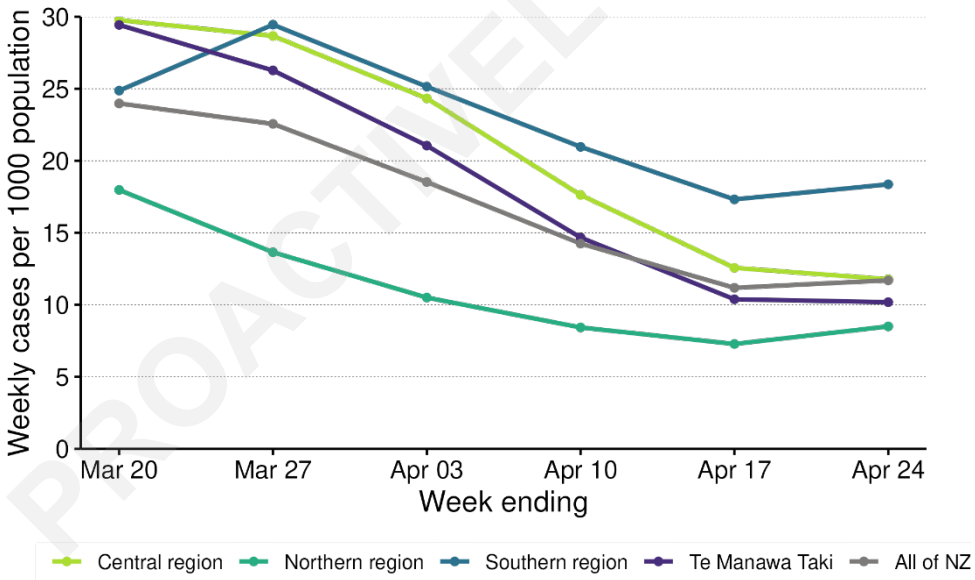
In the Northern region, weekly case rates were highest **for Northland DHB (12.3 per 1000),** around 50% higher than **Auckland Metro DHBs (8.1 per 1000).**

In Te Manawa Taki, weekly case rates were highest in **Taranaki (14.5 per 1000)**.

The highest weekly case rates in the Central region were in **Wairarapa (12.9 per 1000)**.

In the Southern region, the highest case rates were in South Canterbury (22.0 per 1000) **though were closely followed by West Coast DHB (21.9 per 1000) and Southern DHB (21.6 per 1000). The increase in case rates of West Coast DHB are an increase of 157% compared to the week ending 20 March (8.5 per 1000).**

Figure 4: Regional weekly COVID-19 case rates (per 1000), for the weeks ending 20 March to 24 April 2022



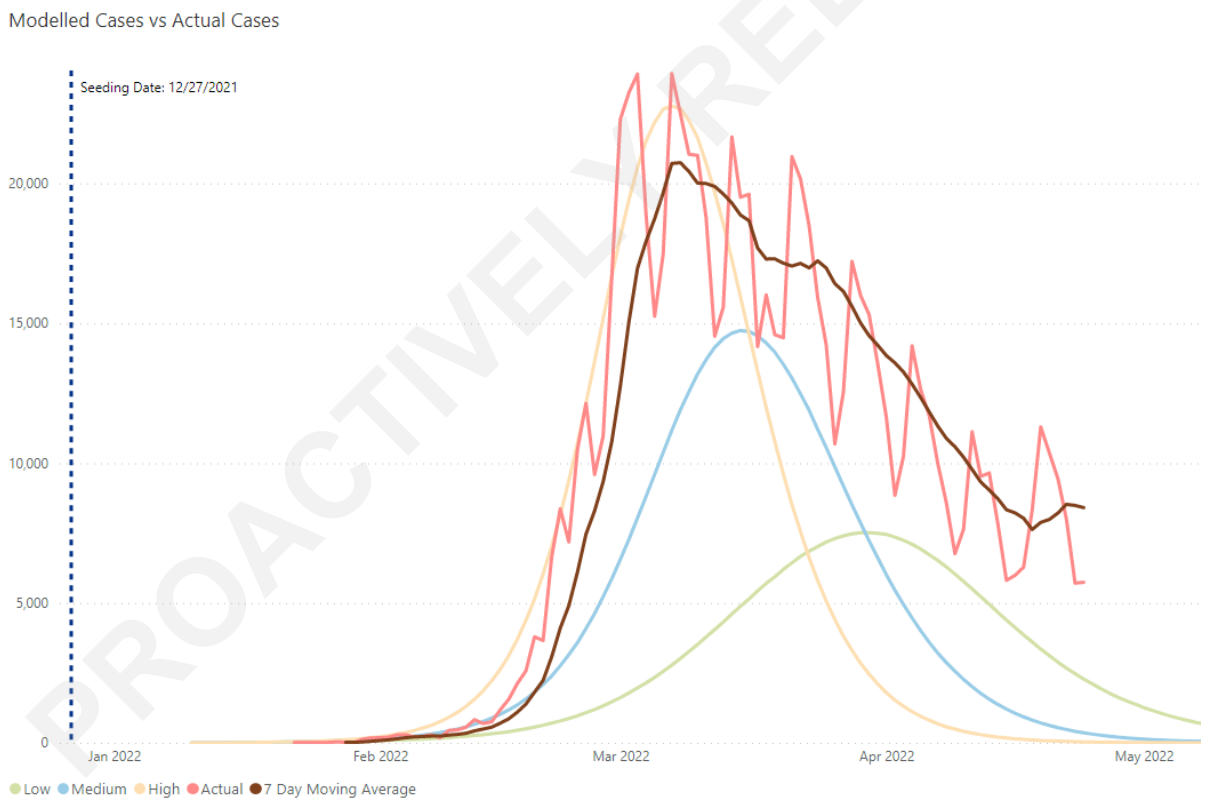
Source: NCTS/EpiSurv as at 2359hrs 24 April 2022

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 5). The number of diagnosed cases in the Northern Region previously tracked slightly above the high scenario, peaking higher, and continues to deviate from the 'High' modelled scenario with a slower decline in cases (Figure 6). While the Te Manawa Taki and Central Regions reported cases reached the 'High' scenario peak levels in early March, timing of the peak was delayed and was closer to the 'Medium' scenario. Since then a slower decrease has been reported than predicted post peak (Figure 6). Cases in the Southern region have roughly tracked to the 'High' scenario, though are also later than predicted in the 'High' scenario, peaking at a similar time to the 'Low' scenario. This indicates that the seeding date of these outbreaks were later. 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.

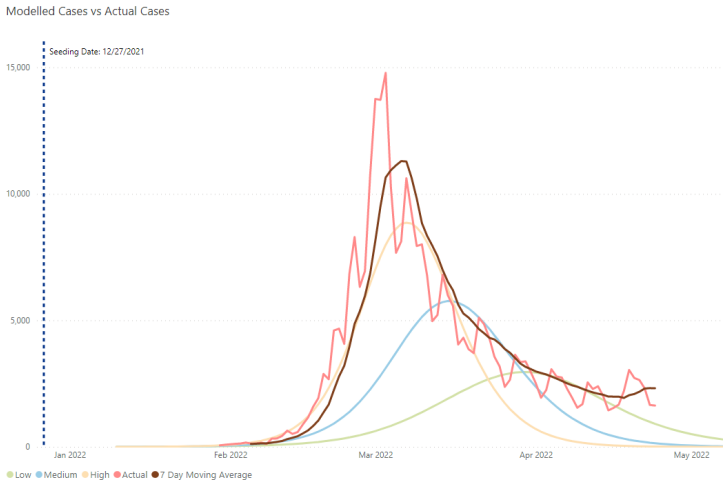
Figure 5: *COVID Modelling Aotearoa scenarios compared with reported cases nationally*



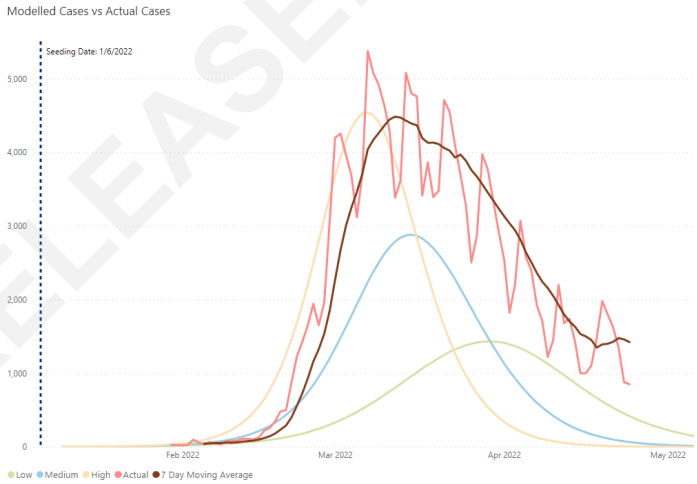
Sources: TAS, based on COVID-19 Modelling Aotearoa Branching Process Model 27 February 2022, and Ministry of Health reported case data 26 April 2022

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

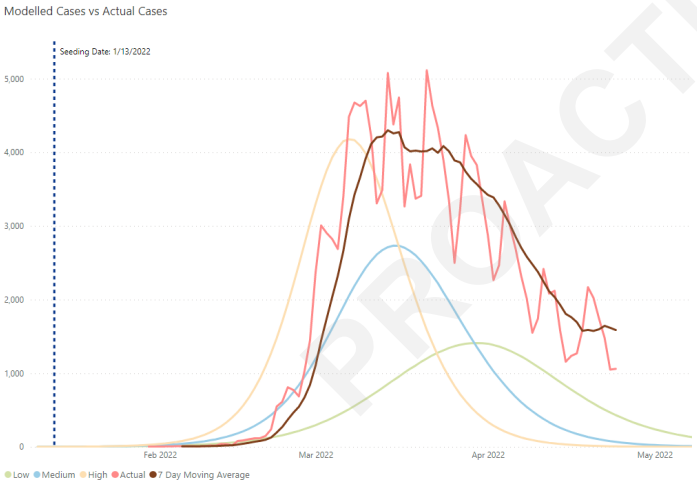
Northern Region



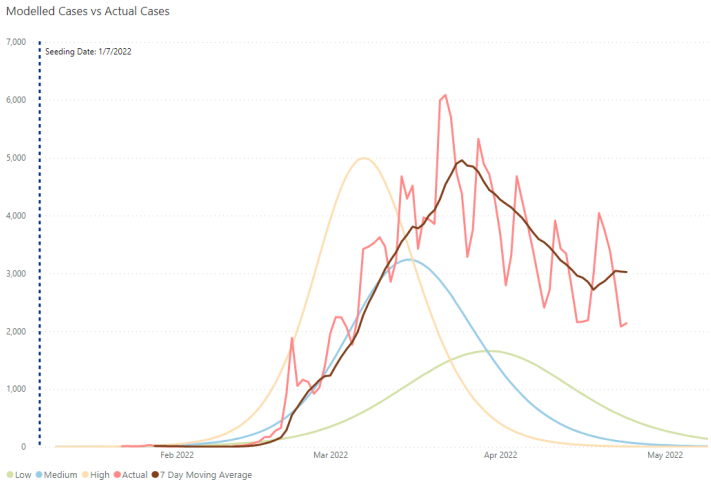
Te Manawa Taki (Midlands)



Central Region



Southern Region



Sources: TAS, based on COVID-19 Modelling Aotearoa Branching Process Model 27 February 2022, and Ministry of Health reported case data 26 April 2022

Effective reproduction rate, and forecasts of cases and infections

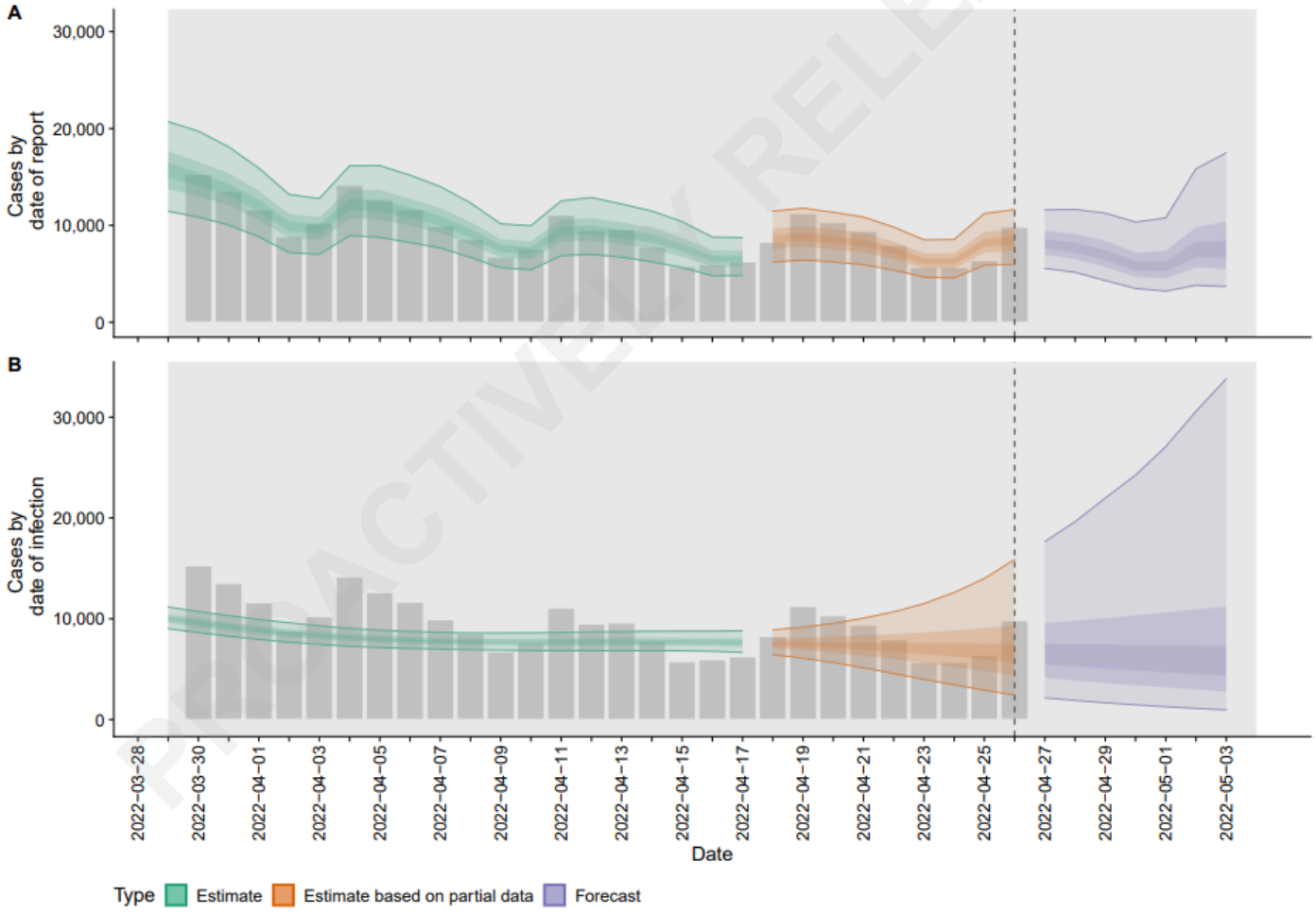
These estimates used the *EpiNow2* package on 29 April using data to 26 April.[3] Regional estimates for R_{eff} are shown in the accompanying **appendix document**. The median estimate of **effective R (R_{eff}) nationally is 0.9** (90% Credible Interval [CI]: 0.5-1.4) for cases to 26 April, after adjusting for data lags. The relatively wide confidence intervals indicate there is high uncertainty for this estimate.

For the Auckland, Hawke's Bay, Tairawhiti and West Coast PHUs, the model is **estimating a median R_{eff} of 1.0 or above.**

Forecasting assumes that the Effective R will be constant over the next week at its most recent value, and that testing lags are constant. Estimates, based on these assumptions, of the number of new confirmed cases nationally by their date of infection are in Figure 7.

The model's median estimate is that national reported cases could be 7,473 cases per day by 03 May (50% credible interval: 5,479–10,395). However, the credible intervals for the projected cases would be even wider if the possibility of continuing trend changes in Effective R were included.

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



Source: EpiNow 29 April 2022

[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.

Demographic trends in case rates

Ethnicity trends over time and by region

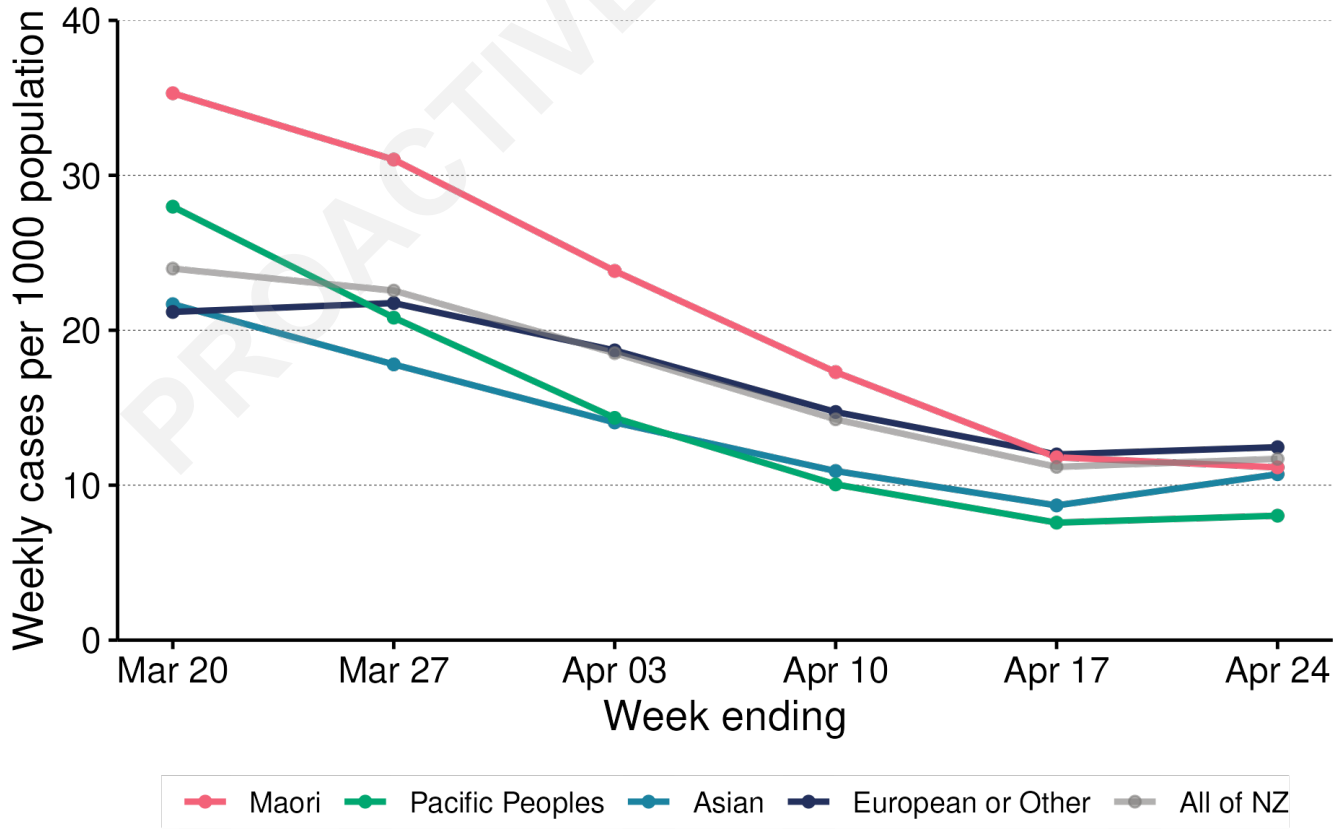
Figure 8 shows national and regional case rates by ethnicity. In the past week nationally, European or Other continue to have the highest weekly case rate at 12.5 per 1000 population, with Māori following at 11.2 per 1000. This is followed by Asian (10.7 per 1000) and Pacific peoples (8.0 per 1000). **Rates in Māori continue to decline, whilst rates in all other ethnicities have risen in the past week.**

Case rates in the Northern region for European or Other are 9.3 per 1000, similar to Māori at 9.2 per 1000. Whereas for Asian's they are 8.0 per 1000, an increase of 40% from the previous week. Pacific Peoples (4.9 per 1000) have the lowest case rates in this region.

Case rates for Te Manawa Taki and Central regions have had all ethnic groups converge over time. In the Te Manawa Taki region, case rates were 44.7 per 1000 (Māori) and 55 per 1000 (Pacific Peoples) for the week ending 06 March and 13 March, to now 9.7 per 1000 (Māori) and 8.5 per 1000 (Pacific Peoples). Similarly in the Central region, case rates were 43.3 per 1000 (Māori) and 72.9 per 1000 (Pacific Peoples) for the week ending 13 March and 20 March, to now 11.4 per 1000 (Māori) and 10.6 per 1000 (Pacific Peoples).

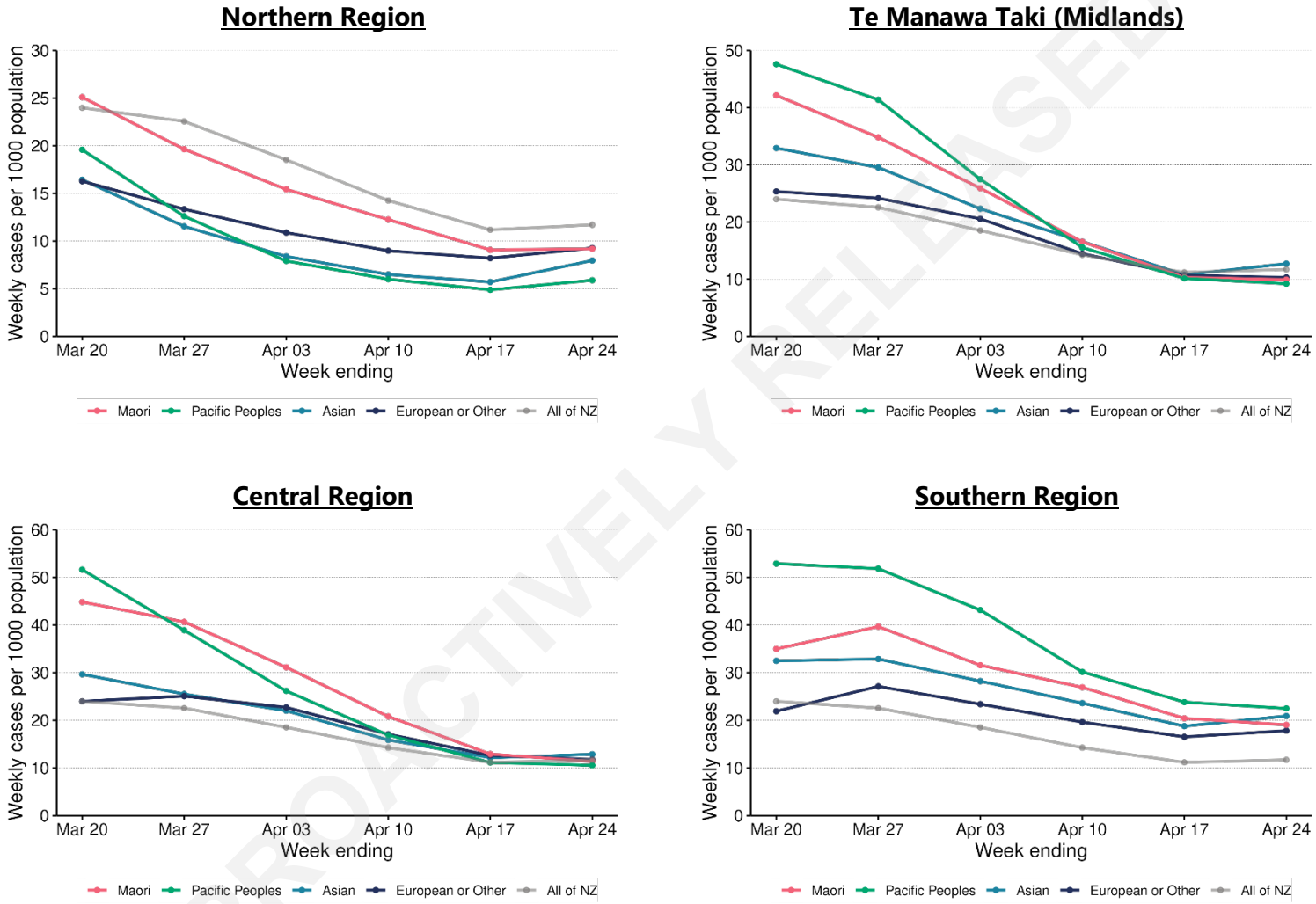
In the Southern region case rates have been highest for Pacific Peoples throughout the weeks ending 13 March (58.8 per 1000) to 03 April (43.1 per 1000). Case rates for Pacific People in the past week (22.5 per 1000) are now comparable to other ethnic groups. Case rates for Asians in this region have increased by 11% in the past week, from 18.8 per 1000 the week prior, to 20.9 per 1000 week ending 24 April.

Figure 8: ***Ethnicity specific weekly COVID-19 case rates (per 1000) for New Zealand, for the weeks ending 20 March to 24 April 2022***



Source: NCTS/EpiSurv as at 2359hrs 24 April 2022

Figure 9: ***Ethnicity specific weekly COVID-19 case rates (per 1000) by region, for the weeks ending 20 March to 24 April 2022***



Source: NCTS/EpiSurv as at 2359hrs 24 April 2022

Age trends over time and by region

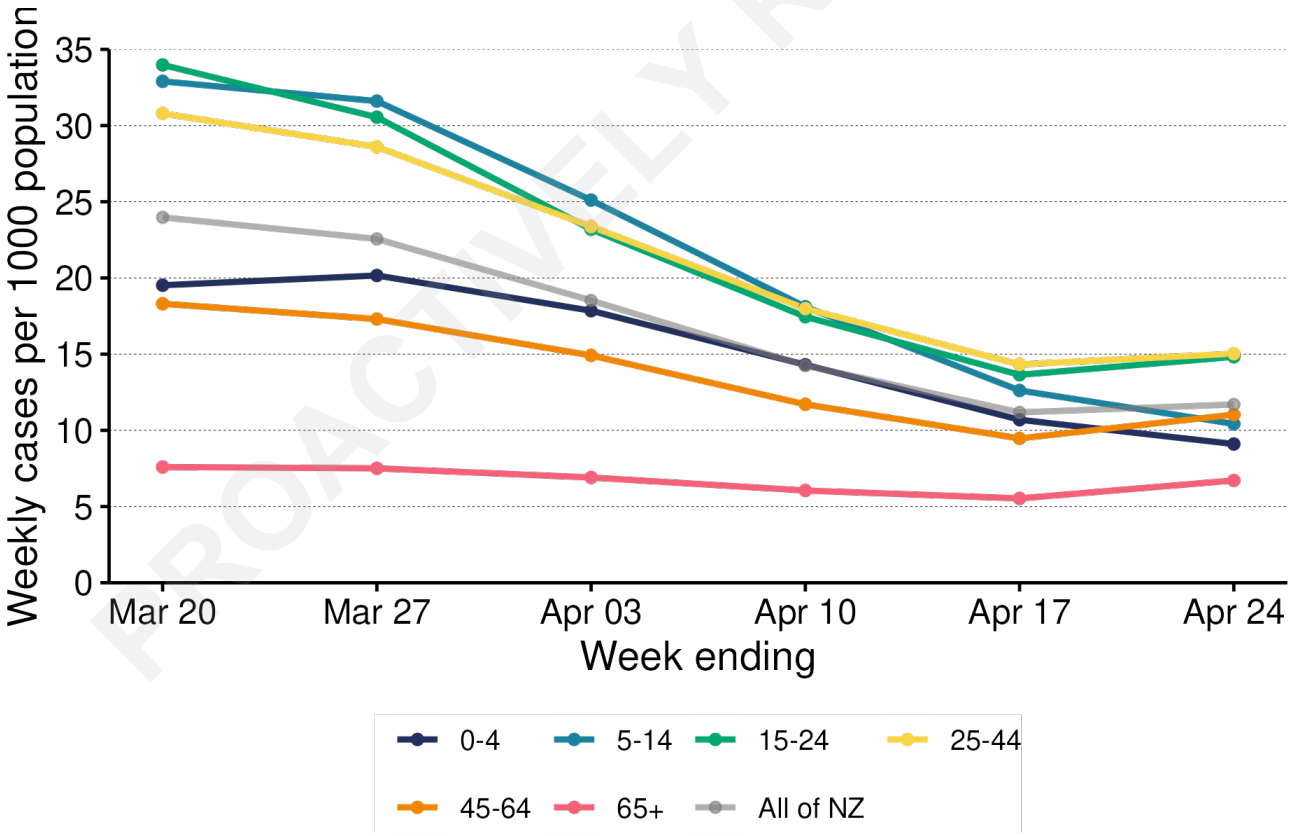
Figure 10 shows community cases by age nationally. Case rates in all age groups are beginning to diverge. Nationally, **case rates are similar for 0-4, 5-14, 15-24, 25-44 and 45-64 age groups (9.1, 10.4, 14.8, 15.0 and 11.0 per 1000 respectively)** in the past week. Those aged 65+ continue to have the lowest weekly case rates at 6.7 per 1000, followed by the 0-4 age group (9.1 per 1000). Case rates amongst all age groups, have remained mostly steady over the past week apart from 45-64 and 65+ age groups which increased by 16% and 21% respectively.

Patterns of age group risk 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.

However, case rates have risen for 45-64 and 65+ age groups in the past week. For 45-64 age groups, case rates have increased by 28% in Northern, 9% in Te Manawa Taki, 3% in Central and 19% in Southern region. For 65+ age groups, case rates have increased by 35% in Northern, 15% in Te Manawa Taki, 10% in Central and 28% 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.

Figure 10: ***Age specific weekly COVID-19 case rates (per 1000) for New Zealand, for the weeks ending 20 March to 24 April 2022***



Source: NCTS/EpiSurv as at 2359hrs 24 April 2022

Housing Deprivation trends over time, by ethnicity and by region

Figure 11 shows case numbers 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 the **proportion of cases continue to be highest in the areas of mid-range deprivation (39%),** followed by areas least deprived (31%) and areas most deprived (27%).

For **the most deprived areas, cases in Māori made up 26%** despite only making up 15% of the total population. The proportion of cases in the most deprived areas for Pacific Peoples was 10%, for Asian 14% and for European and Other was 50%. Whereas 78% of cases **in areas of least deprivation** were European and Other compared with 11% being Asian, **8% Māori** and 2% Pacific Peoples.

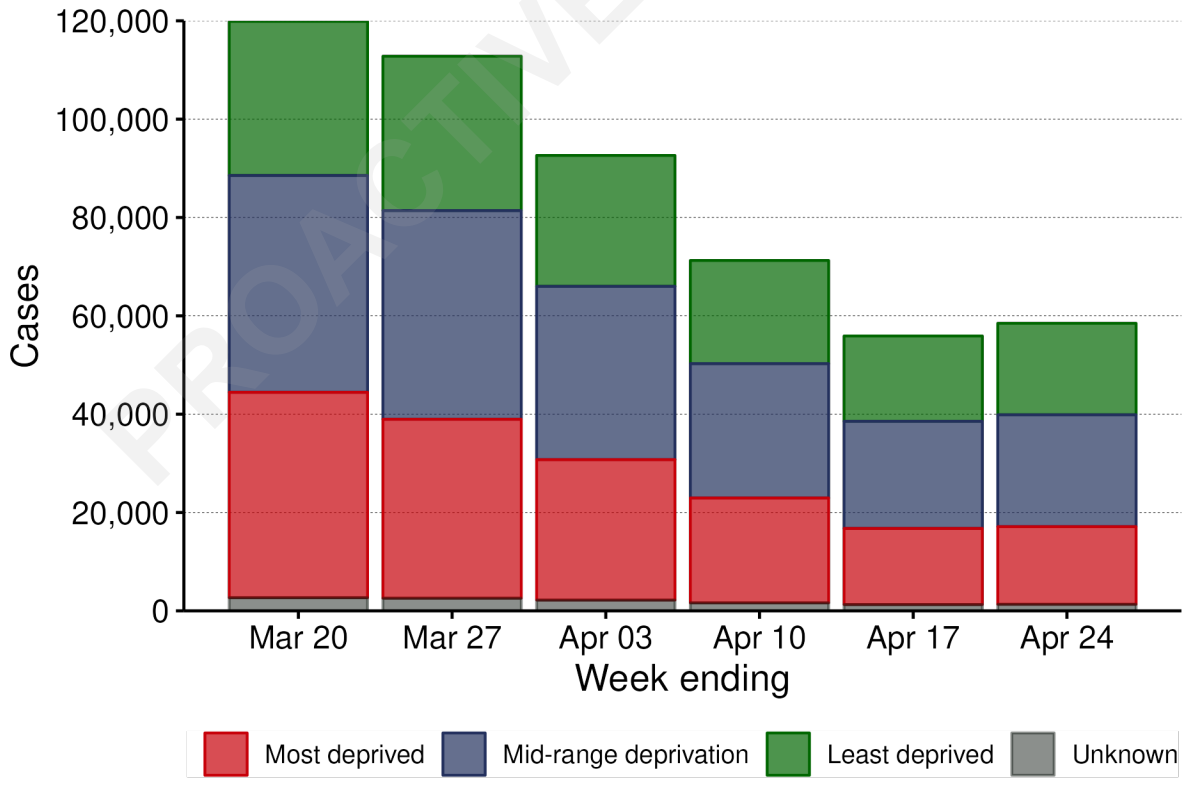
In the Northern region, cases were predominantly in the mid-range deprived areas (40%) while being evenly distributed among the least deprived (29%) and most deprived (29%) areas.

In Te Manawa Taki region, just over a third of cases were in the mid-range deprived (37%) and most deprived (36%) categories, respectively, and around a quarter (24%) in the least deprived (see **Appendix**).

In the Central region, cases are similarly distributed between the least deprived (32%), mid-range deprived (37%) and most deprived (29%).

Conversely, in Southern region, there were more cases in the least deprived (37%) areas than the most deprived (21%) areas, while the majority of cases came from mid-range deprived areas (40%).

Figure 11: ***Deprivation specific weekly COVID-19 case numbers for New Zealand, for the weeks ending 20 March to 24 April 2022***



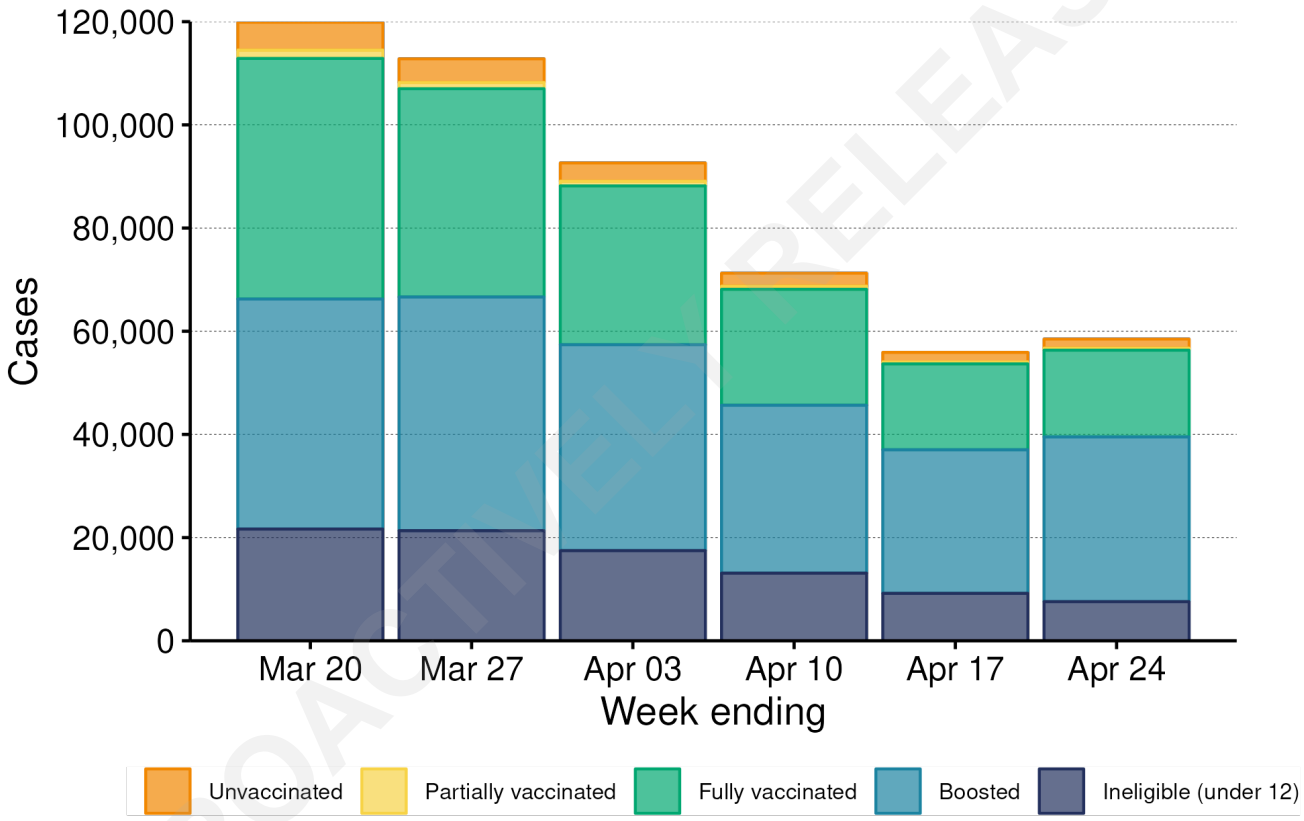
Source: NCTS/EpiSurv as at 2359hrs 24 April 2022

Vaccination trends over time

Figure 12 shows community case numbers by vaccination status nationally. The proportion of boosted cases continues to rise from 48.4% the week prior to 54.6% of all cases in the week ending 24 April. A corresponding decrease in the proportion reported as fully vaccinated also occurred (from 30.2% to 28.7% of all cases).

The proportion of cases amongst those who are categorised as ineligible due to being under 12 years old[4] is 13.0%, a decrease from the previous week (17.3%). The proportion of cases reported as partially vaccinated remains constant at 0.7% while cases reported in those unvaccinated has also decreased from 3.4% to 3.0%.

Figure 12: ***Vaccination specific weekly COVID-19 case numbers for New Zealand, for the weeks ending 20 March to 24 April 2022***



Source: NCTS/EpiSurv as at 2359hrs 24 April 2022

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

PCR and RAT testing trends

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

Whole Genomic Sequencing of Community cases

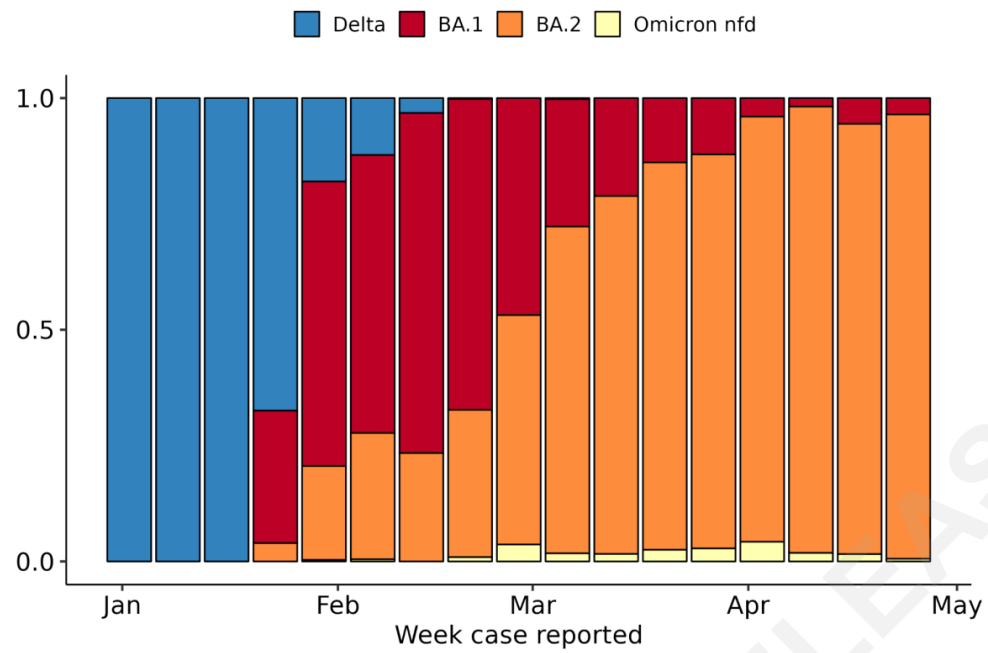
Figure 13 shows that Omicron is the dominant variant in New Zealand, having outcompeting Delta which made up ~70% of all sequenced cases in the start of January 2022 but fell to less than 10% of sequenced cases by the end of January 2022.

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 25 April. This matches international phylodynamic trends as BA.2 has enhanced transmission advantage compared to the BA.1 subvariant. It seems likely that BA.1 will no longer be detected in community cases in the coming weeks.

Variant analysis from wastewater across 20 sentinel sites 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 5/20 sentinel catchments (all below 16%). The national average across all catchments was 97% BA.2, 3% BA.1 and 0% Delta.

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

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



Source: ESR COVID-19 Genomics Insights Report #4, EpiSurv/Microreact 0900hrs 26 April 2022

Whole Genomic Sequencing of Border cases

Out of 719 border cases in the past two weeks, 139 cases have been sequenced.

An XE variant of Omicron was detected on 20 April from a passenger that travelled from London via Singapore.

Two cases of the BA.2.12.1 sublineage were detected in travellers from Poland and the USA, on 11 and 15 April respectively. This lineage has recently grown in frequency in the USA to make up ~25% of recent cases there, and it is likely that more cases of this variant will appear at the border in the coming months.

Table 1 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, and in the last week they and ESR have caught up on a backlog of PCR border samples. 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 1: Testing of border cases in the five weeks from 15 March to 21 April 2022

Tests received	WGS	No WGS	Total	% WGS
PCR only	104	150	254	40.9%
RAT and PCR	48	131	179	26.8%
RAT only	0	858	858	0%
Unknown	0	4	4	0%
Total	**152**	**1143**	**1295**	**11.7%**

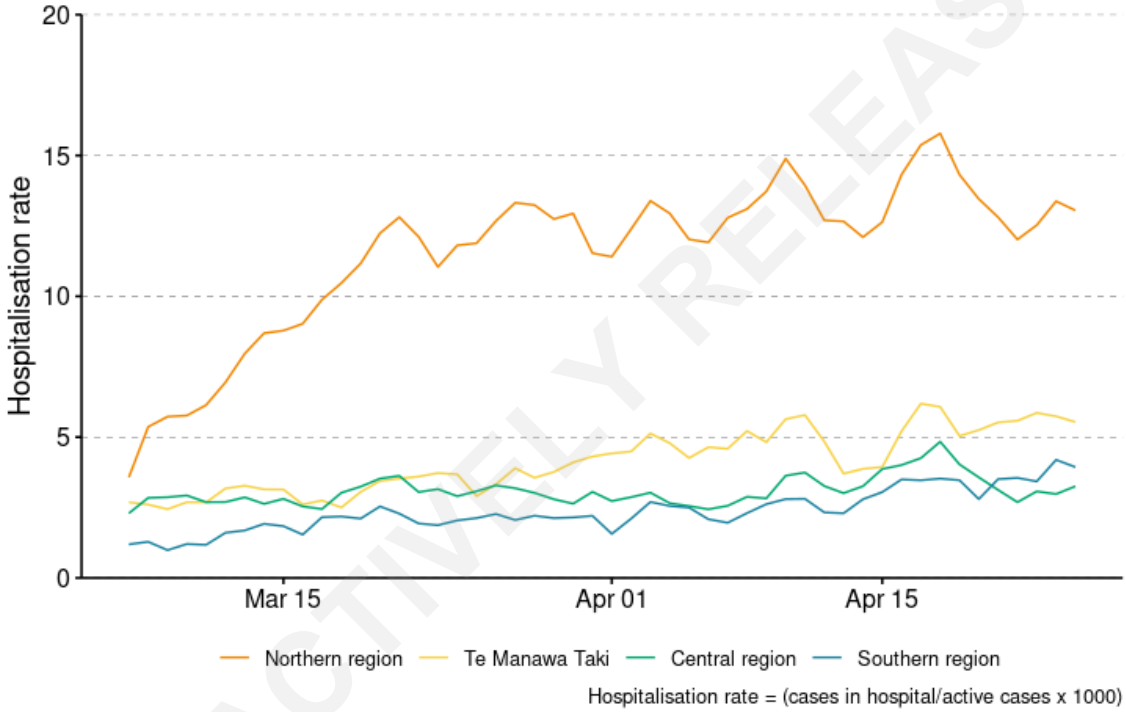
Source: MoH Testing Operations, 21 April 2022

Morbidity and Mortality

Hospitalisations

Hospitalisations in the Northern region rose sharply from the second week of March, initially plateauing from late March to early April but now appear to be slowly increasing having reached a peak of just above 15 cases hospitalised per 1000 active cases (Figure 14). Hospitalisations in the Te Manawa Taki region have been rising slowly since the second week of March and are now at around 6 cases hospitalised per 1000 cases. Hospitalisation rates in the Central and Southern regions are steady at around 3 to 4 cases hospitalised per 1000 cases.

Figure 14: Proportion of hospitalisation per 1000 active cases by region



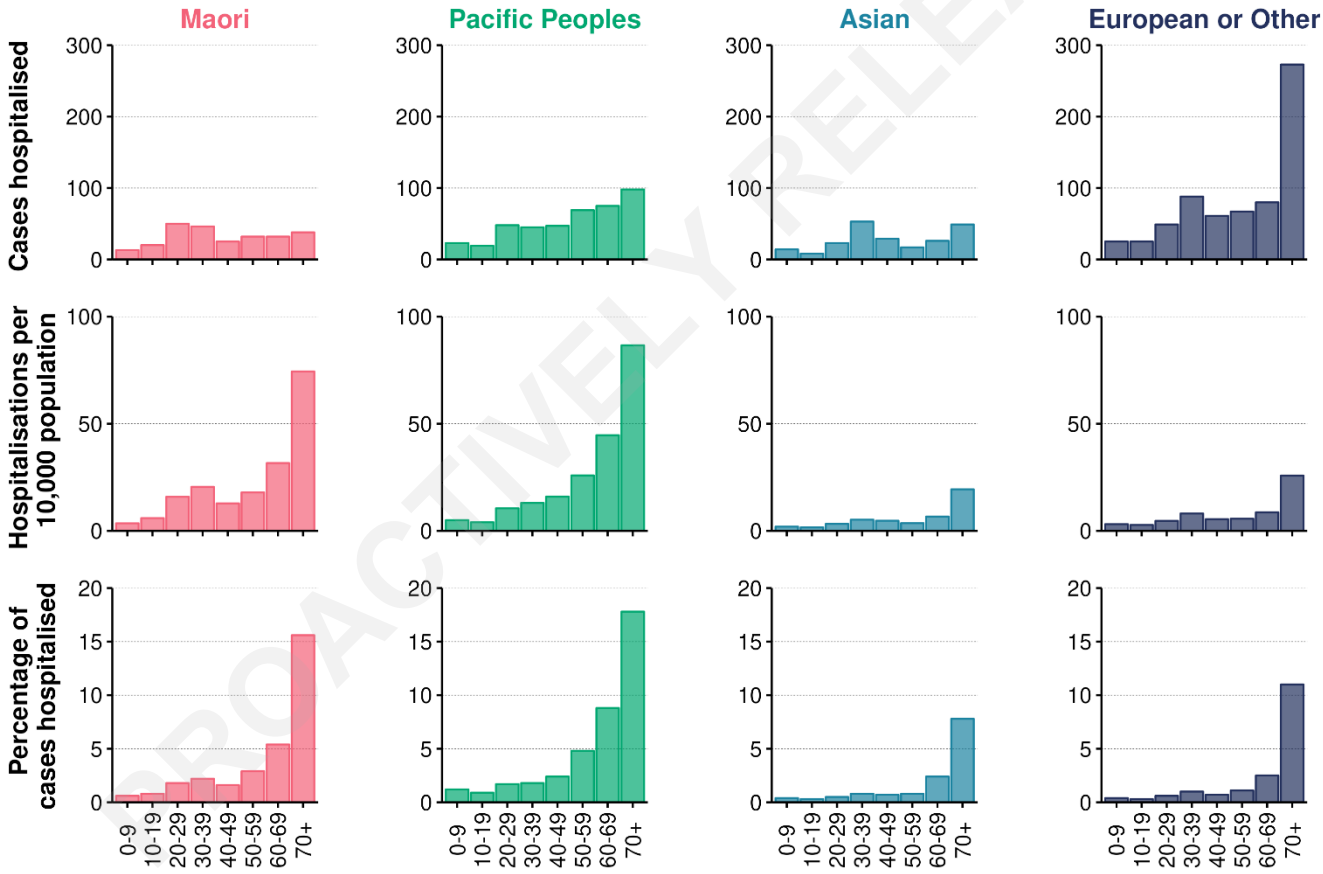
Source: Source: NCTS/EpiSurv as at 2359hrs 25 April 2022

Hospitalisation rates by age and ethnicity in the Auckland Metro DHBs

Figure 15 shows hospitalisations, hospitalisation rate and percentage of cases hospitalised by age and ethnicity. In the Auckland Metro region trends show that people aged 70+ of European or Other ethnicity make up the largest proportion 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.

Despite having a similar number of cases hospitalised for the 50-59 and 60-69 age groups as European or Other, the hospitalisation rate for Pacific Peoples in these demographics, is significantly higher. The same is true for Māori in the 50-59 and 60-69 age groups who are slightly lower than Pacific Peoples but still well above the case rates for European or Other, even with lower overall hospitalisations.

Figure 15: ***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 24 April 2022

Whole Genomic Sequencing of hospitalised cases

The majority of hospitalised COVID-19 cases sequenced since 1 January 2022 have been Omicron cases (99%), with the most recent hospitalised case found to be infected with the Delta variant reported on 02 March 2022 (Figure 16). Of the total 2,344 hospitalised cases sequenced to date, approximately 81% were found to be the BA.2 sub-variant with a further 18% found to be the BA.1 sub-variant of Omicron; the remaining 1% were Delta. This suggests hospitalisations are being driven by Omicron and not Delta currently. This high BA.2 prevalence is not unexpected as it is the dominant sub-variant circulating in the community.

Figure 16: ***WGS of hospitalised cases reported from 01 January 2022 to 25 April 2022***

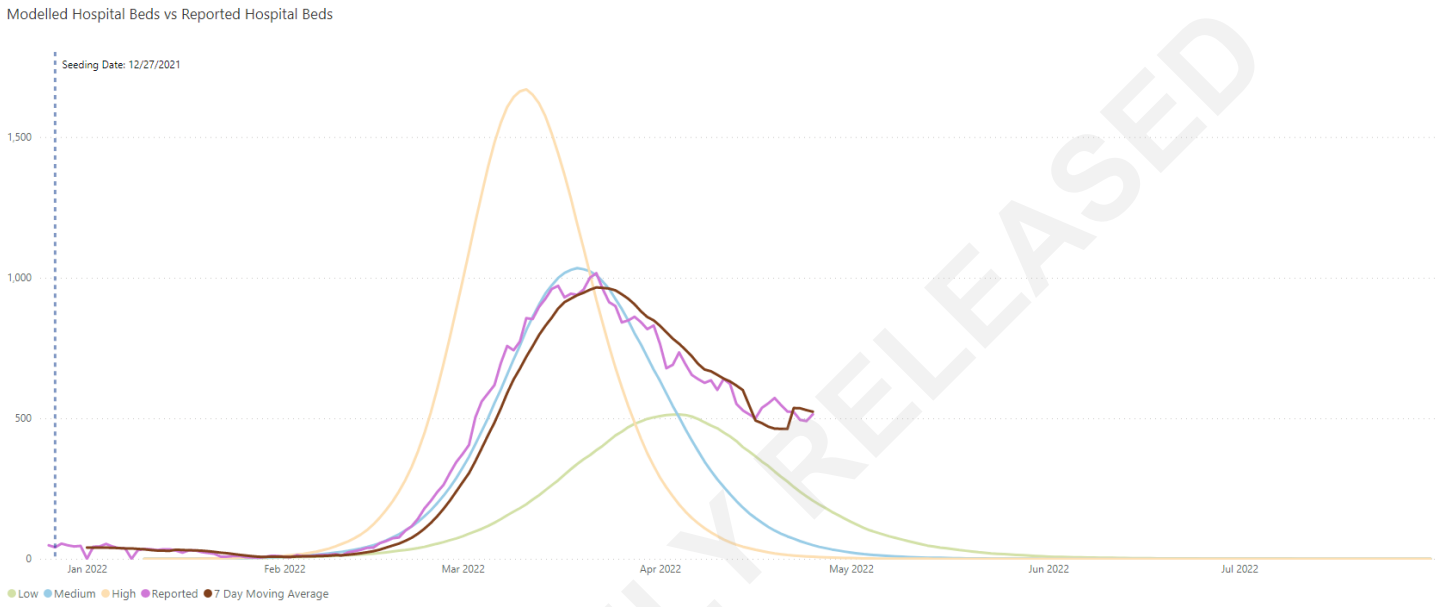
	Hospitalised cases						
DHB	**Delta**	**Omicron (BA.1-like)**	**Omicron (BA.2-like)**	**Omicron (Unassigned)**	**Failed WGS**	**To be received**	**Total**
Northland	3	3	10	0	0	21	**37**
Waitemata	8	80	254	2	19	330	**693**
Auckland	4	54	65	1	8	442	**574**
Counties Manukau	6	151	217	3	33	598	**1008**
Waikato	1	4	21	0	4	520	**550**
Lakes	1	13	33	0	1	35	**83**
Bay of Plenty	3	23	240	1	16	101	**384**
Tairawhiti	0	0	6	0	1	27	**34**
Taranaki	1	5	64	0	3	33	**106**
Hawke's Bay	2	6	6	0	0	122	**136**
Whanganui	0	0	18	0	0	16	**34**
MidCentral	0	4	26	0	1	160	**191**
Wairarapa	0	2	23	0	8	4	**37**
Hutt Valley	0	2	16	0	4	192	**214**
Capital and Coast	1	5	38	0	2	224	**270**
Nelson Marlborough	0	0	0	0	0	6	**6**
West Coast	0	1	9	0	0	5	**15**
Canterbury	1	31	520	1	26	30	**609**
South Canterbury	0	1	3	0	0	1	**5**
Southern	0	27	257	2	49	26	**361**
Unknown	0	0	0	0	0	4	**4**
Total	**31**	**416**	**1887**	**10**	**179**	**2901**	**5424**

Source: ESR COVID-19 Genomics Insights Report #4, EpiSurv/Microreact 0900hrs 26 April 2022

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***



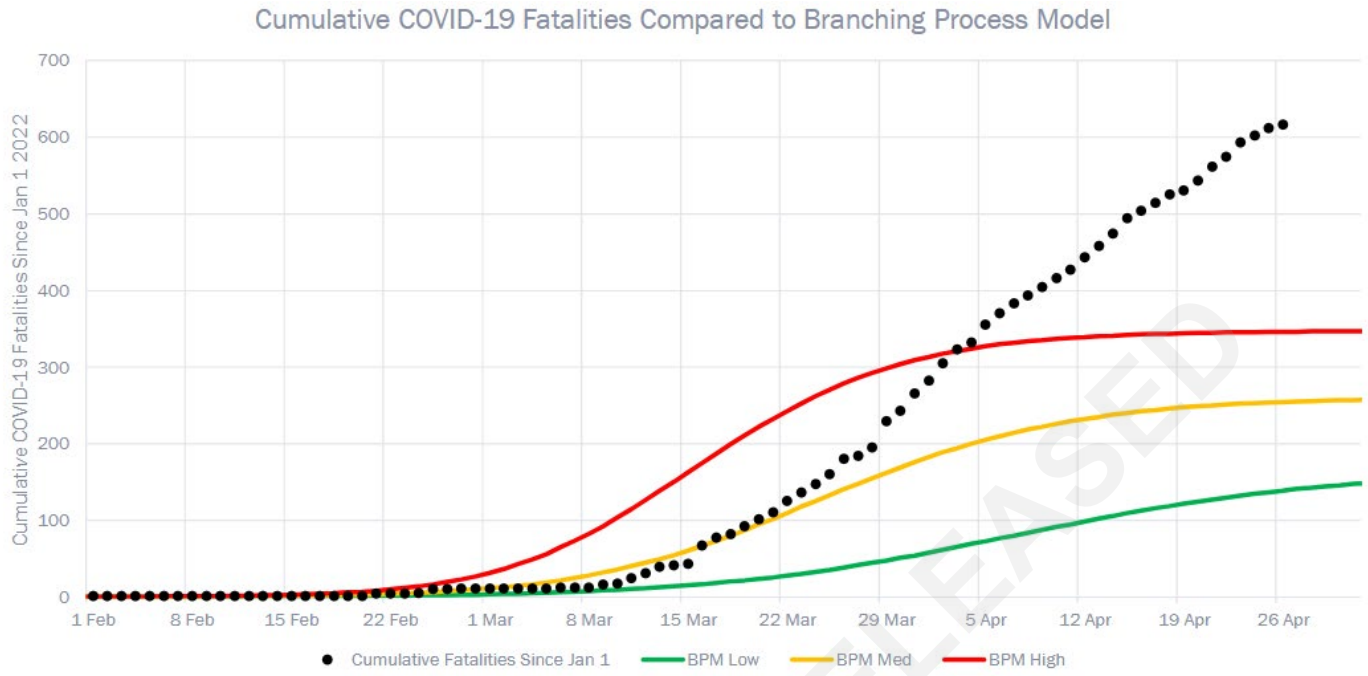
Sources: TAS, based on COVID-19 Modelling Aotearoa Branching Process Model 27 February 2022, and DHB reports to TAS of daily hospital occupancy (all COVID-19 positive people admitted as inpatients) as of 13:51 26 April 2022.

Mortality compared to predictive modelling

As of 25 April 2022, 687 people have died with or after COVID-19 infection. Of these, 649 have died within 28 days of being reported as a case. The 7-day rolling average of deaths is 12.

Cumulative mortality that was following the modelled medium scenario started to rise faster and has exceeded modelled estimates of the cumulative number of deaths in the high scenario by over 250 deaths (Figure 18).

Figure 18: ***Cumulative deaths compared with modelled scenarios***



Sources: COVID-19 Modelling Aotearoa Branching Process Model 26 April 2022, MoH published mortality

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 03 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 10 April. (We define this as 1 standard deviation from the mean rates). In the week ending 10 April, weekly all cause death rates are 175 per 100,000, returning to within 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. In the week ending 10 April, weekly all cause death rates are 393 per 100,000 for 90+ year olds. This is more than 10% higher than the pre-pandemic average, and marginally outside of the normal range observed prior to the pandemic. Note, as above, the latest death numbers are likely to revise upward as more death registrations come in through the DIA system.

Figure 19: Weekly all-cause death rates for 80-year-olds and over compared to pre-covid19 average (2012-2019)

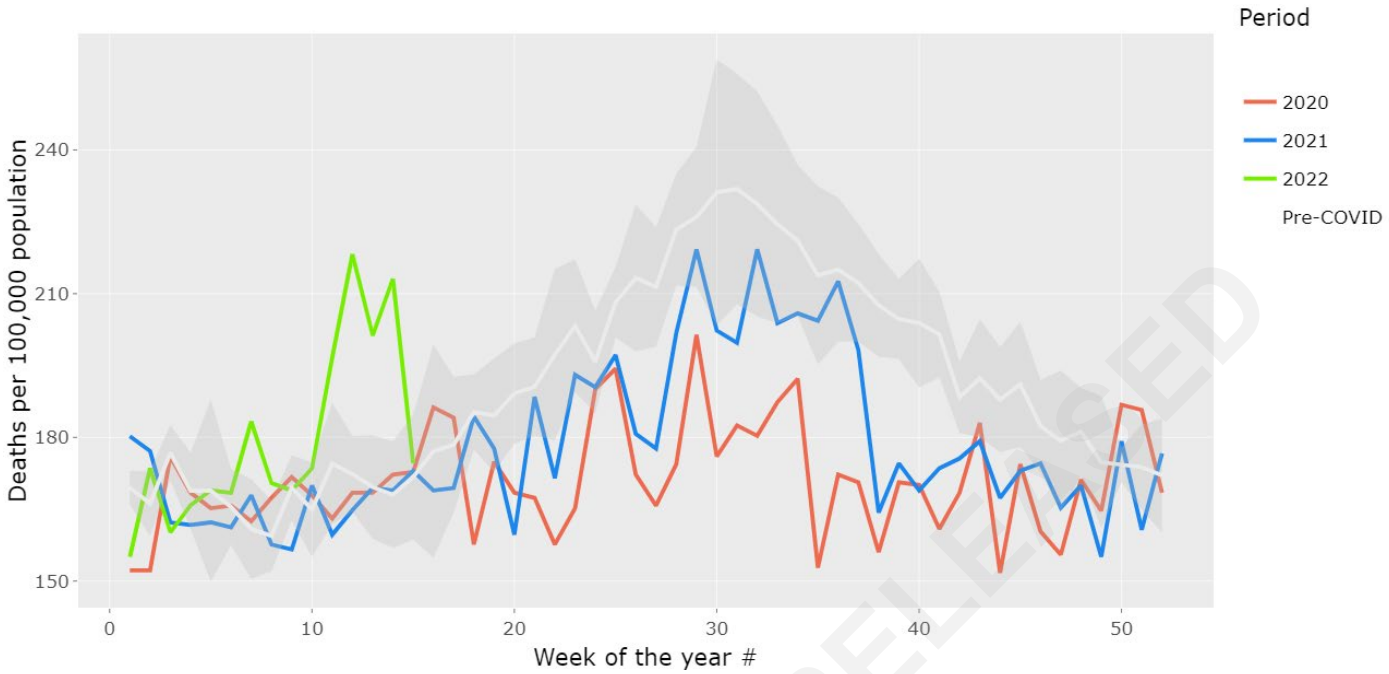
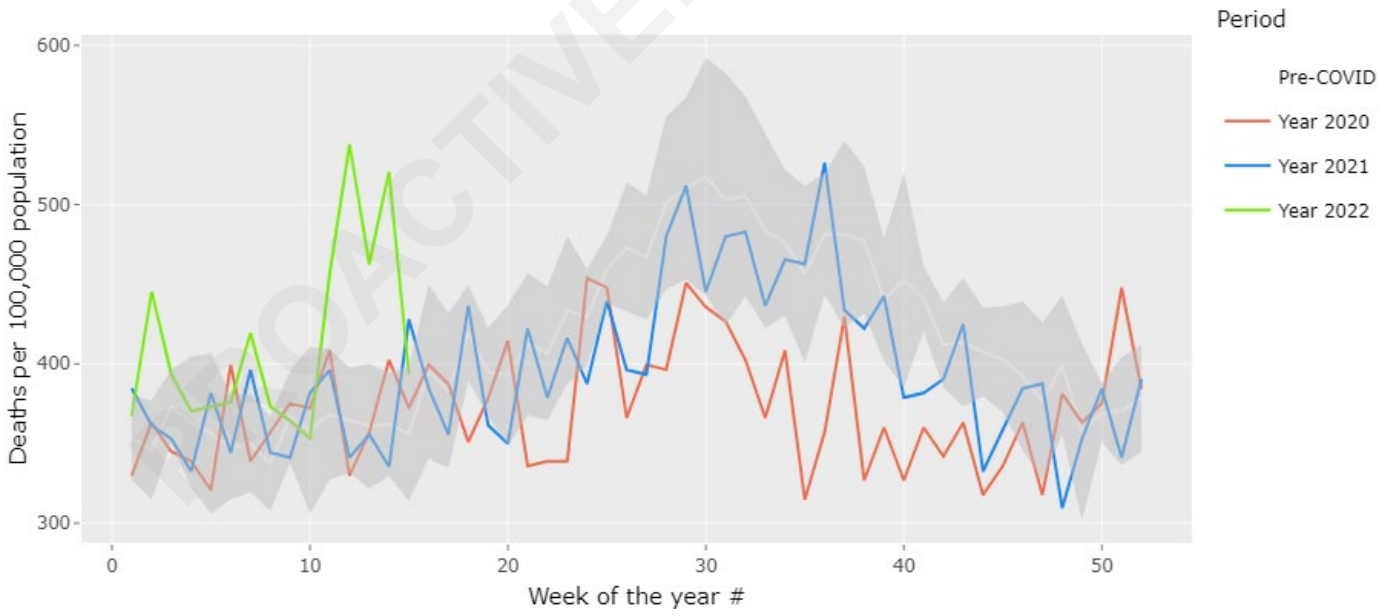


Figure 20: Weekly all-cause death rates for 90-year-olds and over compared to pre-covid19 average (2012-2019)



Public Health Response and Health System Capacity

Omicron Dashboard

The omicron dashboard 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. Below is the summary of indicators for the week ending 21 April 2022.

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

Sector	Summary of data
General Practice & Urgent Care	No significant changes to report from General Practice this week. Due to Easter, there is no GP qualifying encounters data available. The urgent care survey indicates that COVID-19 demand is decreasing across urgent care clinics.
Aged Residential Care	22% of ARC facilities have at least one case of COVID-19. There have been at least 20% of facilities with a COVID-19 case since the start of March. ARC facilities in Canterbury and the Hutt Valley are the most affected by COVID-19 cases currently.
Māori Health Providers	The latest Māori health providers survey indicates that providers are still most concerned about staff wellbeing, safety and availability.
Pacific Health	Ongoing engagement continues with the smaller regions experiencing relatively low Pacific vaccination uptake. This included engagements last week in Marlborough, South Canterbury, and Bay of Plenty regions.
Emergency AmbulanceService	Nationally,111 call volumes and associated ambulance responses returned to normal levels for the first time in two months. However, response times are up 27% and in Auckland the time spent at hospital is 40% higher than 2019.
Mental Health	COVID-19 cases continue in inpatient facilities however DHBs are being proactive in managing the outbreak and workforce challenges.
Disability providers	The Ministry is collaborating with the Office of Disability Issues and other agencies on reviewing a pre-publication draft of the Disability Rights Commissioner's Phase One Omicron Report. The report is for the Inquiry into the support of disabled people during the omicron outbreak launched on 11 March 2022.
Hospital	Around 500 COVID-19 cases in hospitals across the motu continue to affect overall hospital capacity. Workforce absenteeism continues to constrain hospital operations.
ED	ED's continue to be constrained, with only 63% of patient admitted within 6 hours last week. Christchurch and Wellington continue to have high occupancy within ED in the afternoon and overnight.
Planned Care (Hospital)	Planned care numbers are variable across the country as elective operations continue to be deferred due to capacity constraints.
Pharmacy	No update this week.
Home and Community Support Services	Decline in total employees as well as total services delivered continues this week (compared with Oct-Dec 2021 data).

COVID care in the community	The non-contacted population has slightly increased to 1.35% this week compared to 1.28% last week. The discrepancy between ethnicities completing initial clinical assessment within 48 hours has reduced in the past 2 weeks.
Workforce	The Health & Disability mandate regarding COVID-19 vaccinations will remain in place throughout the Winter season. Work in being done to create bridging pathways for vaccinators for the upcoming flu season.
Rural Health	Rural hospitals continue to have staffing issues causing capacity constraints**.** Wairoa has had increased pressure due to weather events in the region.

Sources: Omicron Health Sector Clinical Indicators Dashboard, 21 April 2022

COVID-19

Trends and Insights Report

Updated 26 April 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.

Acknowledgements

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

Case Demographic Tables

DHB	Community cases reported since 18 April	Rate per 1,000
Northland	2387	12.3
Waitemata	5291	8.4
Auckland	4195	8.5
Counties Manukau	4337	7.3
Bay of Plenty	2324	9.0
Waikato	4221	9.8
Tairawhiti	557	10.8
Lakes	1079	9.4
Taranaki	1781	14.5
Hawke's Bay	1967	11.3
Whanganui	852	12.5
MidCentral	2287	12.6
Hutt Valley	1797	11.6
Capital and Coast	3583	11.4
Wairarapa	626	12.9
Nelson Marlborough	1982	12.6
West Coast	708	21.9
Canterbury	9895	17.5
South Canterbury	1348	22.0
Southern	7230	21.6
Unknown	36	-
Total	**58483**	**11.7**

Regions	Community cases reported since 18 April	Case Rate per 1000
Northern	16210	8.5
Te Manawa Taki	9962	10.2
Central	11112	11.8
Southern	21163	18.4
Total	**58447**	**11.7**

Ethnicity	Community cases reported since 18 April	Rate per 1,000
Māori	8549	11.2
Pacific Peoples	2954	8.0
Asian	7866	10.7
European or Other	38705	12.5
Unknown	409	-
Total	**58483**	**11.7**

Sex	Community cases reported since 18 April	Rate per 1,000
Female	31538	12.4
Male	26893	11.0
Unknown	52	-
Total	**58483**	**11.7**

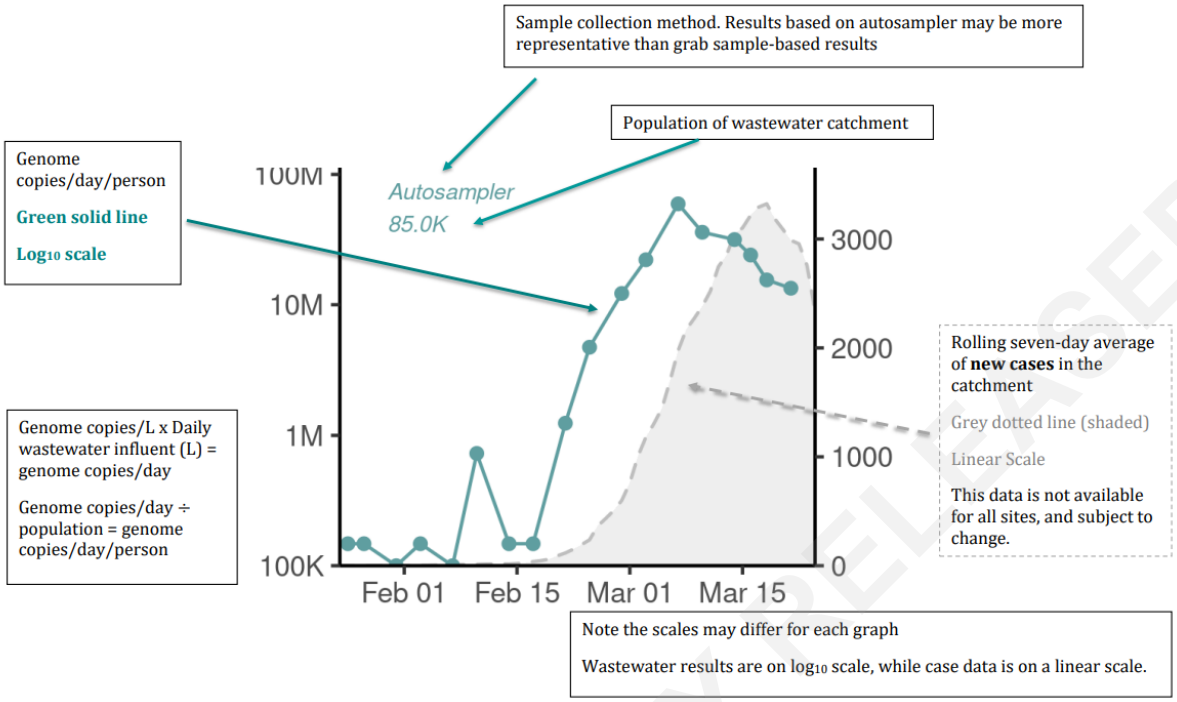
Age	Community cases reported since 18 April	Rate per 1,000
0-9	6178	9.5
10-19	7863	12.3
20-29	10263	15.2
30-39	10490	15.2
40-49	8812	14.0
50-59	6923	10.8
60-69	4568	8.5
70+	3386	6.3
Total	**58483**	11.7

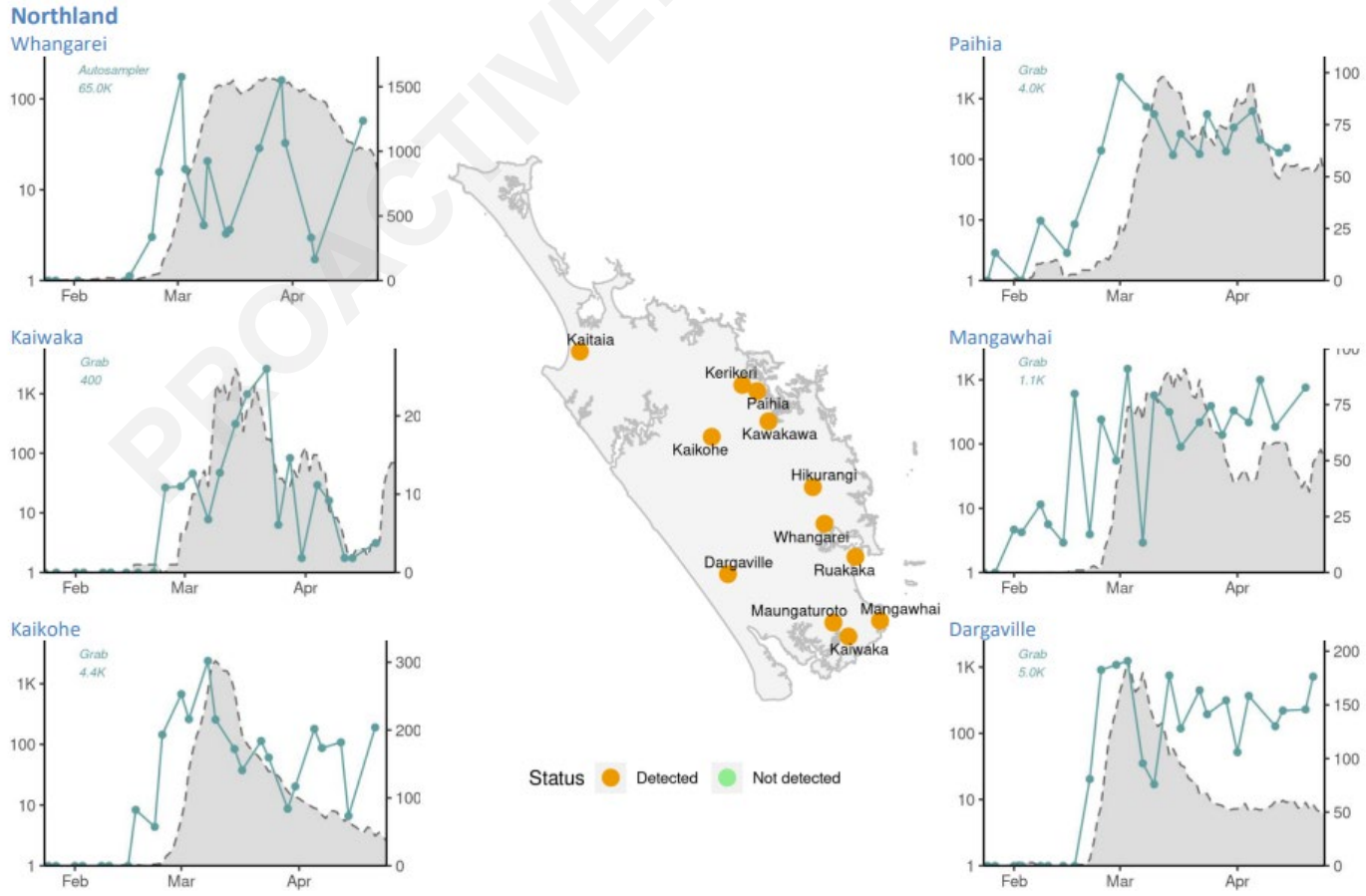
Table 1: ***Estimated median effective R (R_{eff}) by Public Health Unit region, for cases to 26 April*** **2022**

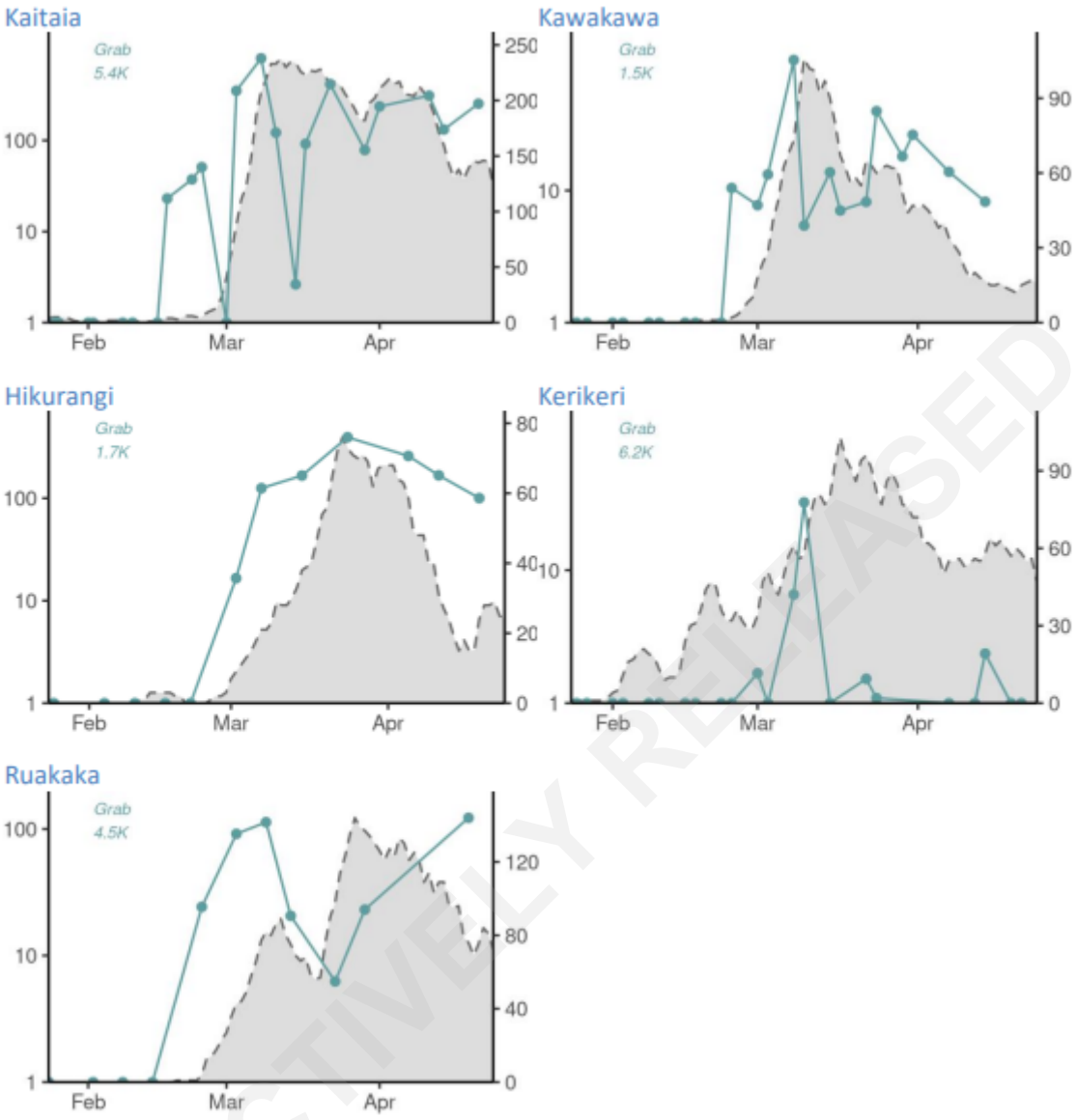
Public Health Unit region	**R_{eff} (90% Credible Interval [CI])**
Northland	0.6 (0.3-1.0)
Auckland	1.0 (0.6-1.5)
Taranaki	0.6 (0.3-1.0)
Waikato	0.8 (0.4-1.4)
Toi Te Ora	0.7 (0.3-1.4)
Tairawhiti	1.1 (0.7-1.6)
Regional Public Health (Wellington Region)	0.9 (0.5-1.3)
Mid Central	0.8 (0.5-1.2)
Hawkes Bay	1.0 (0.6-1.4)
Canterbury/ South Canterbury	0.8 (0.6-1.5)
Southern	0.8 (0.3-1.6)
Nelson Marlborough	0.7 (0.3-1.7)
West Coast	1.0 (0.7-1.2)
National	0.9 (0.5-1.4)

ESR Wastewater

Interpreting site graphs

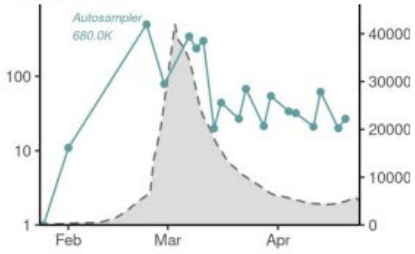




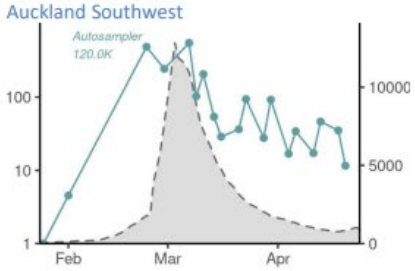


Auckland

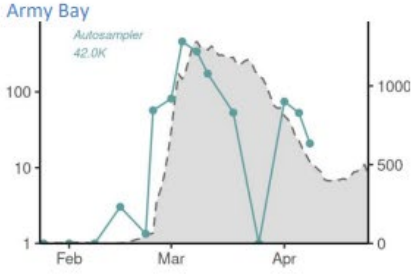
Auckland East



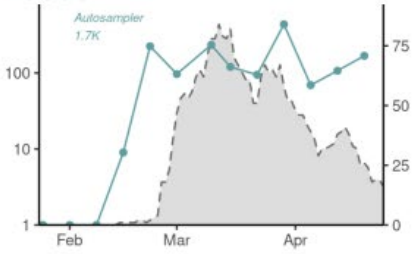
Auckland Southwest



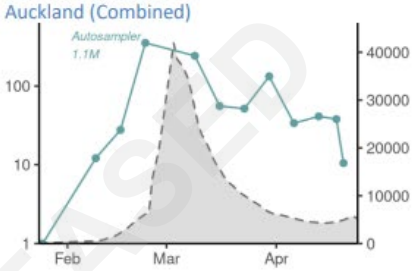
Army Bay



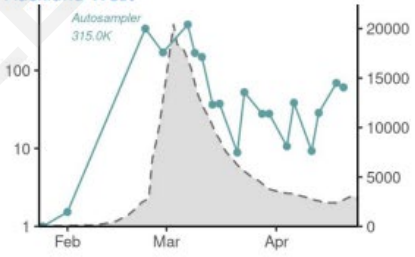
Wellsford



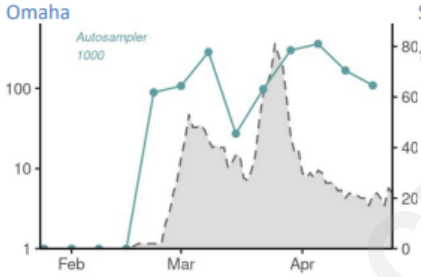
Auckland (Combined)



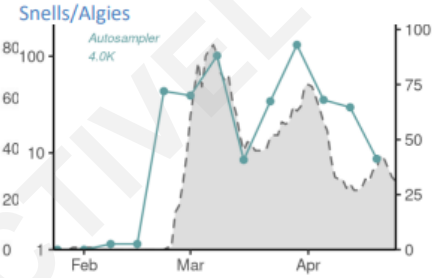
Auckland West



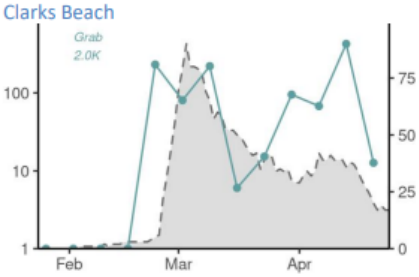
Omaha



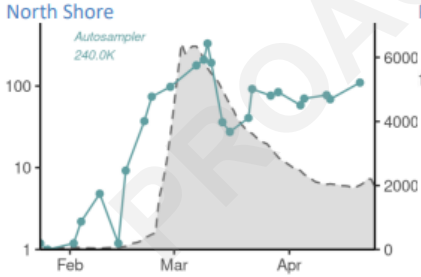
Snells/Algies



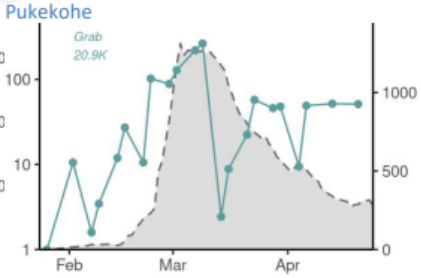
Clarks Beach



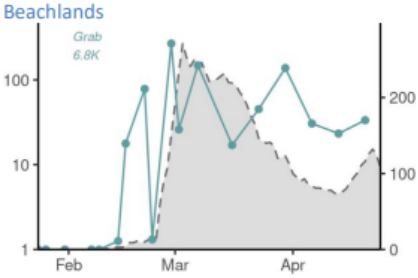
North Shore



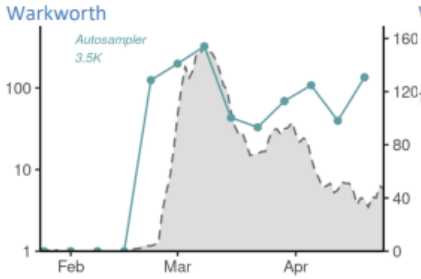
Pukekohe



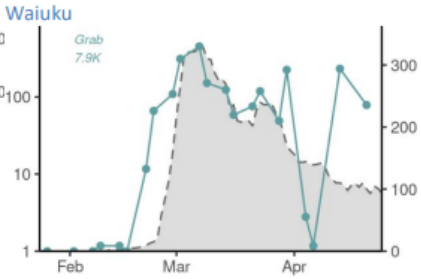
Beachlands



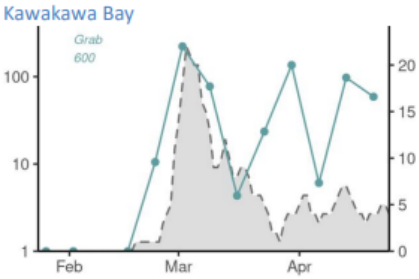
Warkworth

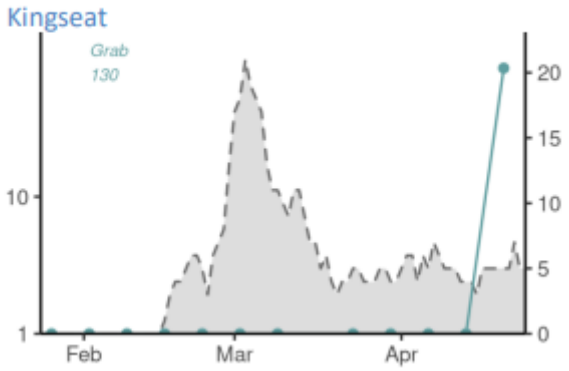


Waiuku



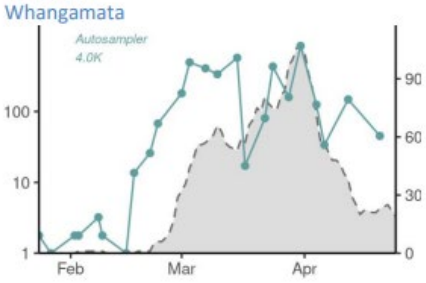
Kawakawa Bay



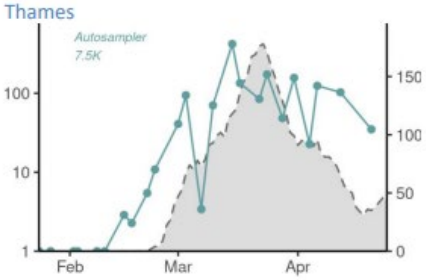


Waikato

Whangamata



Thames



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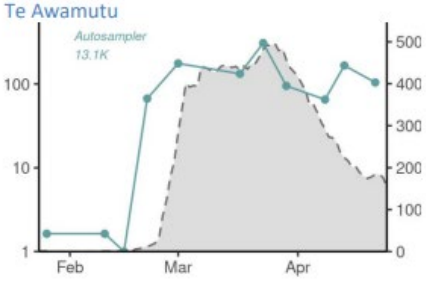

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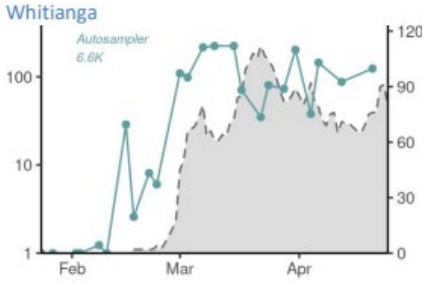

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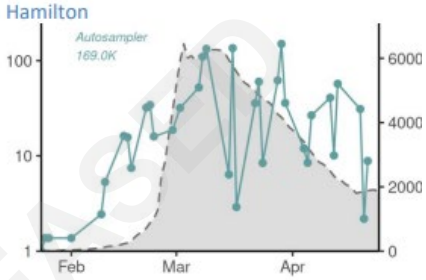
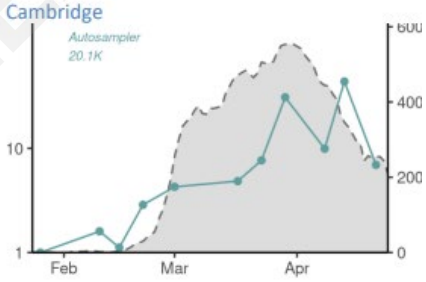
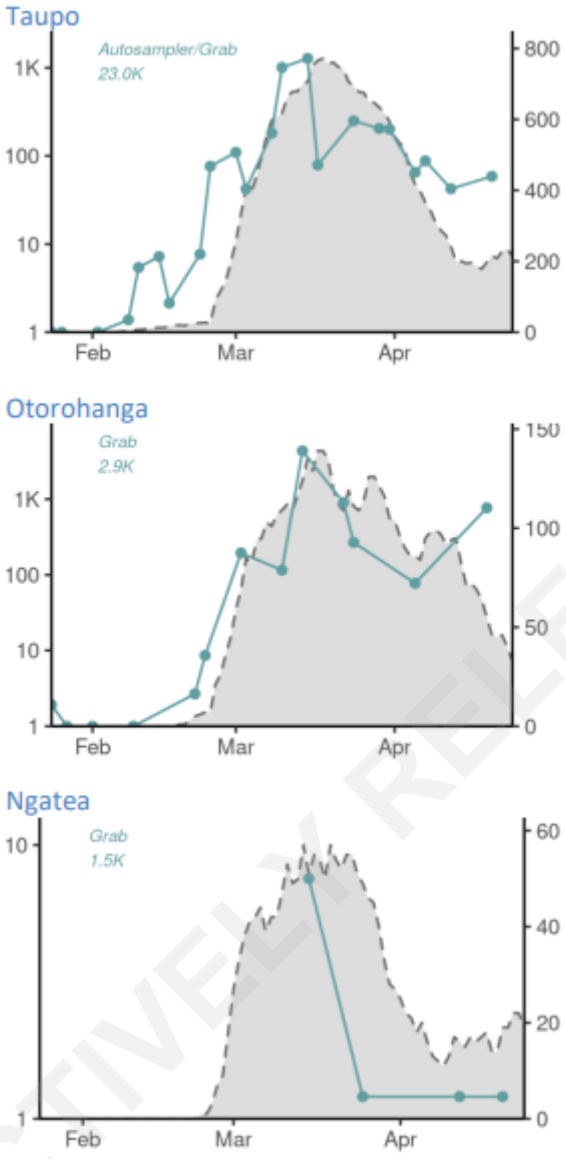


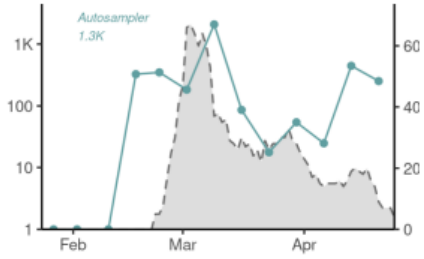
Cambridge



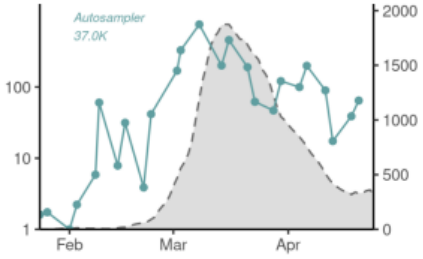


Bay of Plenty and Gisborne

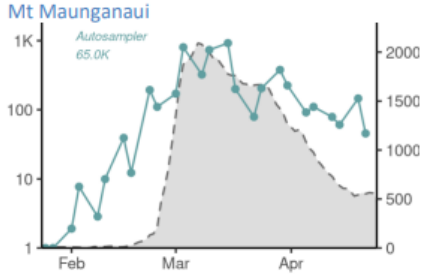
Maketu

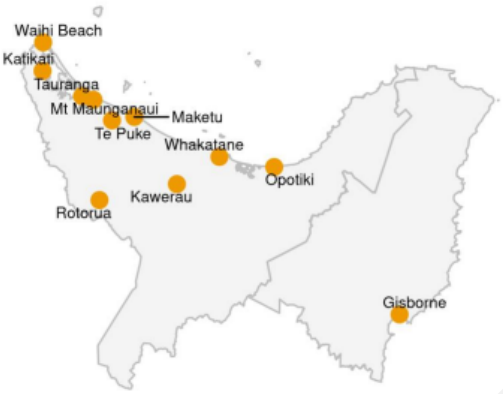


Gisborne

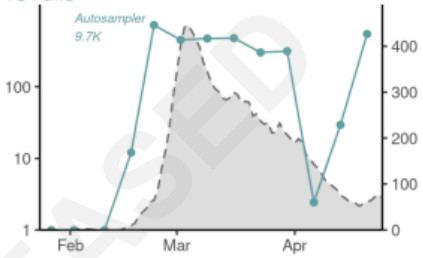


Mt Maunganaui





Te Puke



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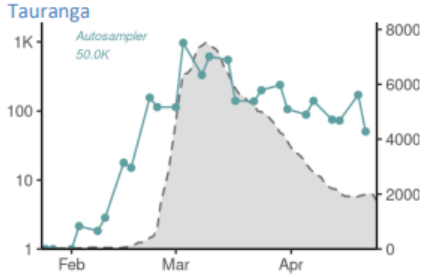
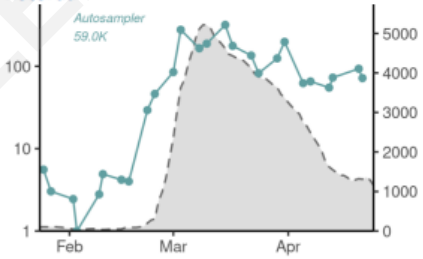
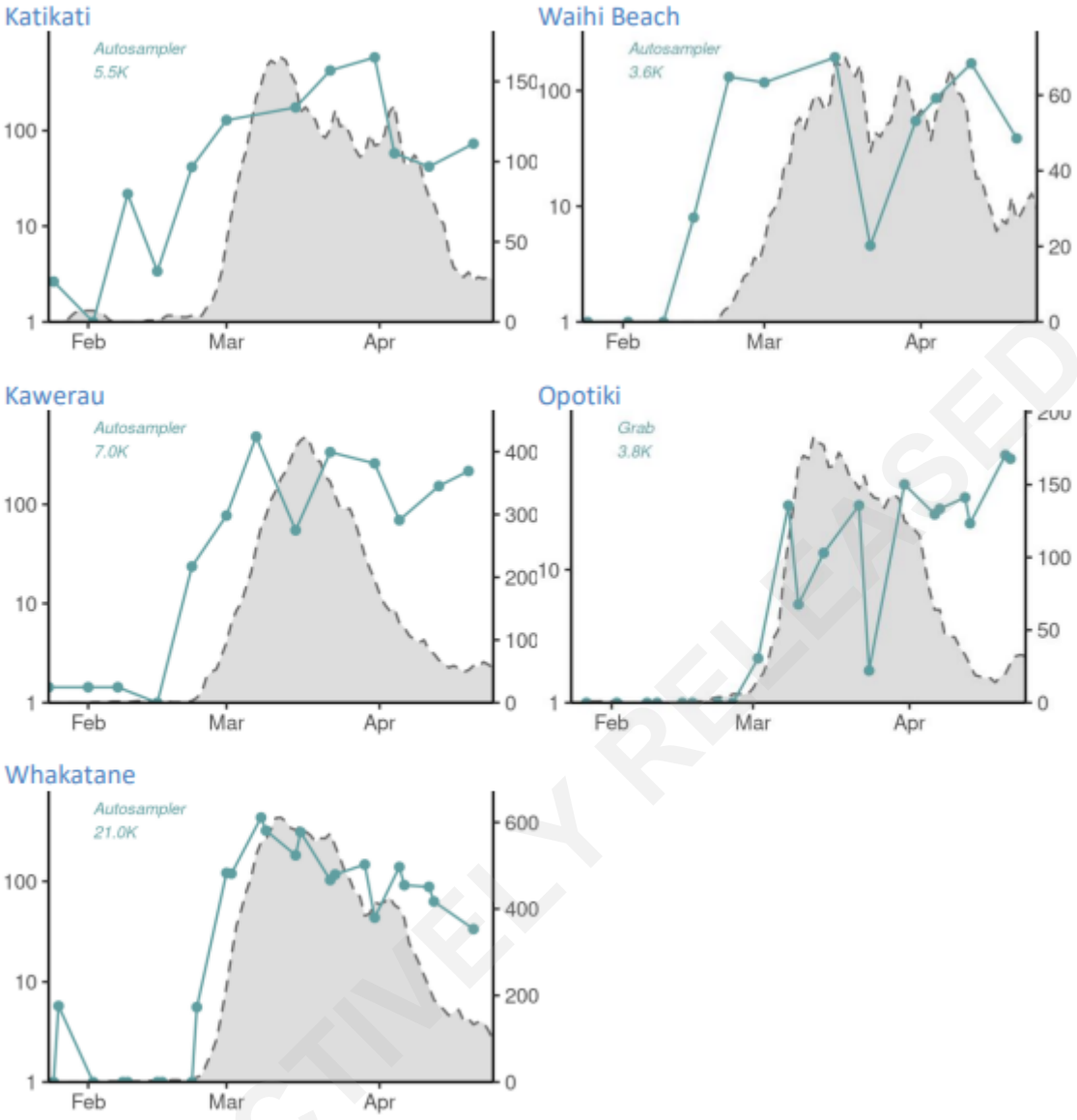
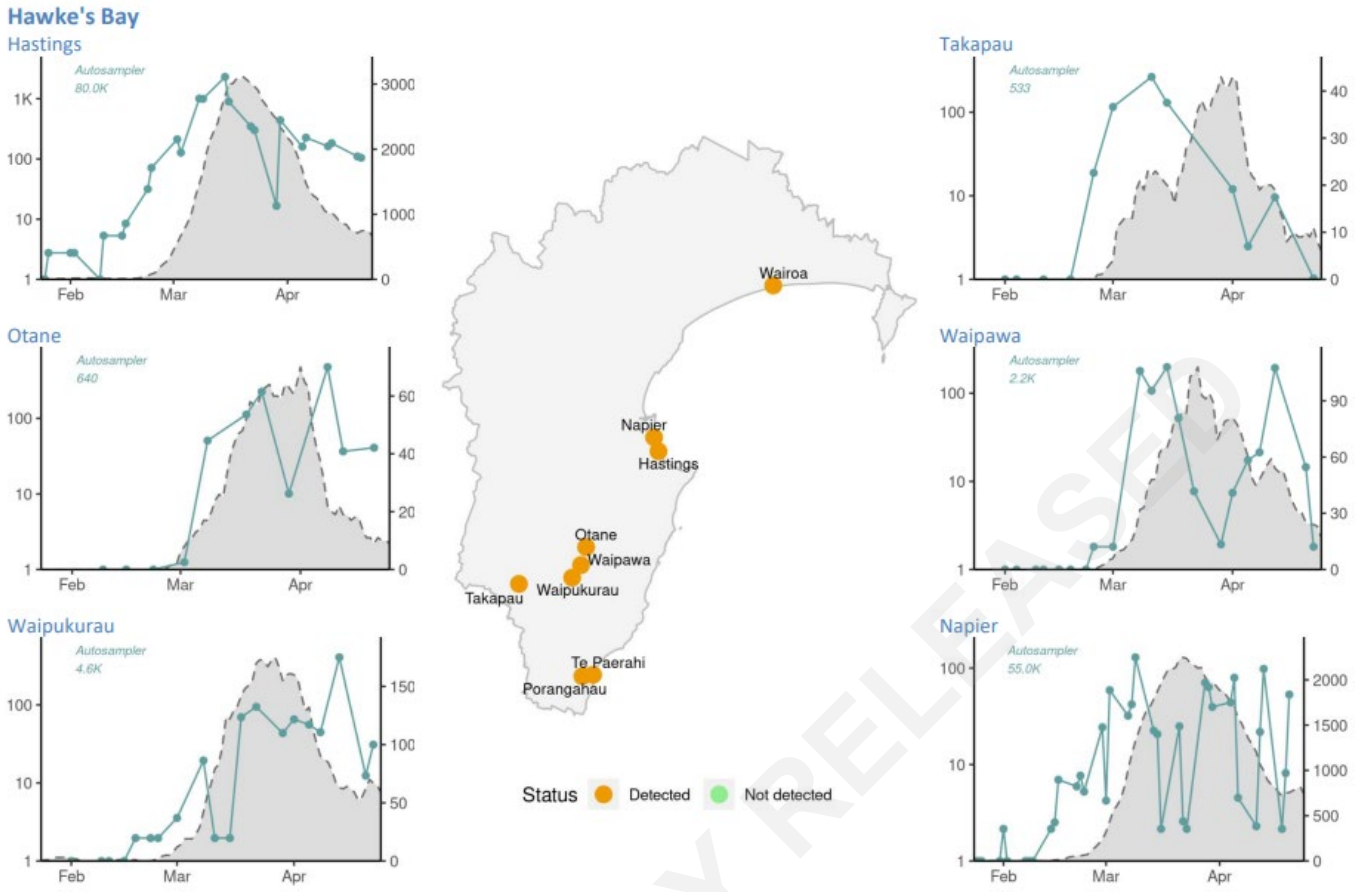
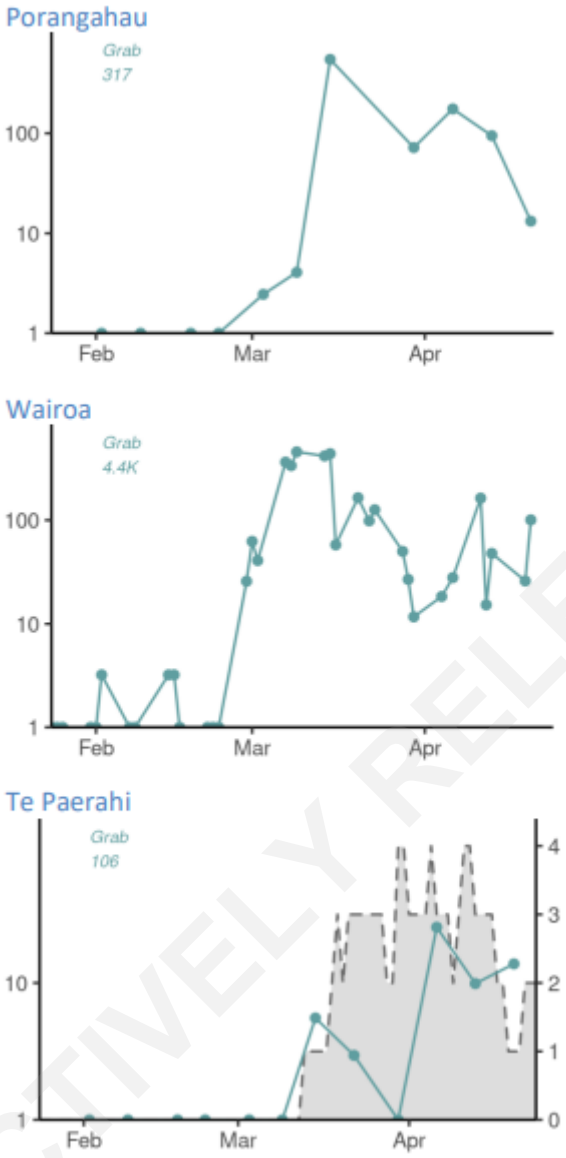


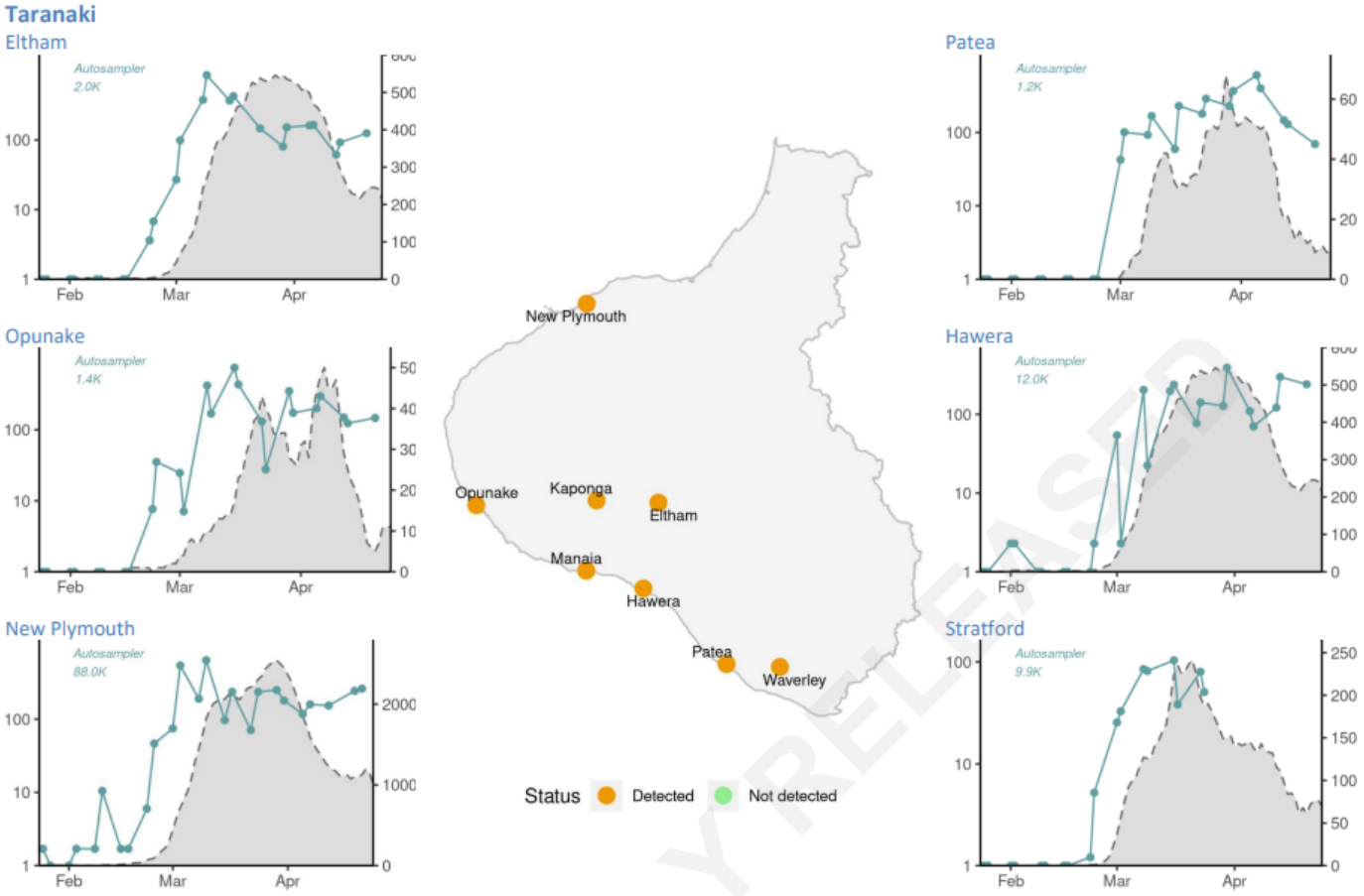
Rotorua

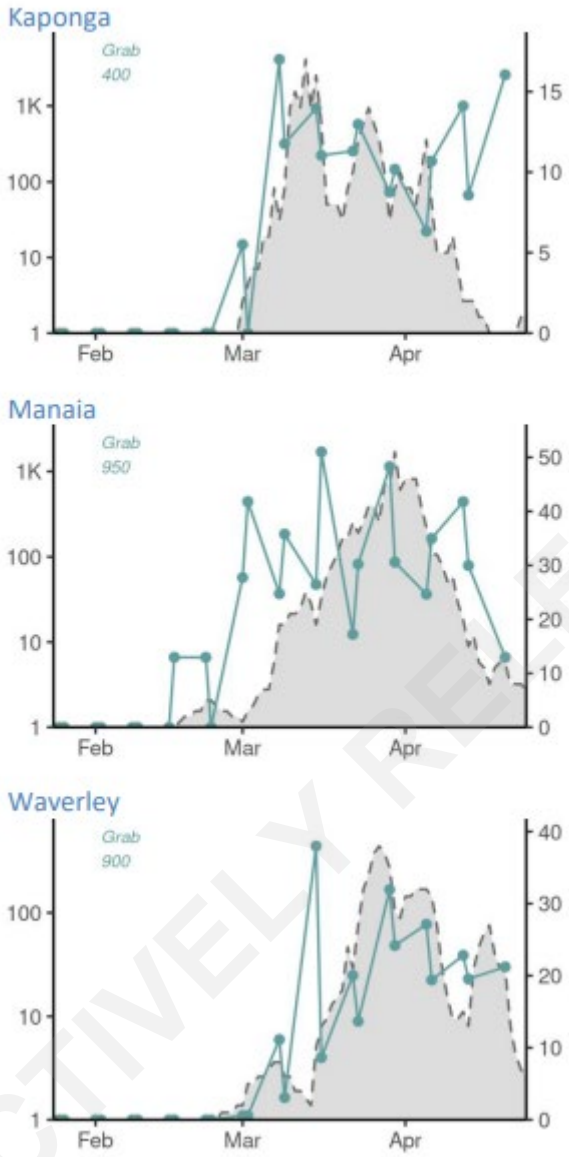




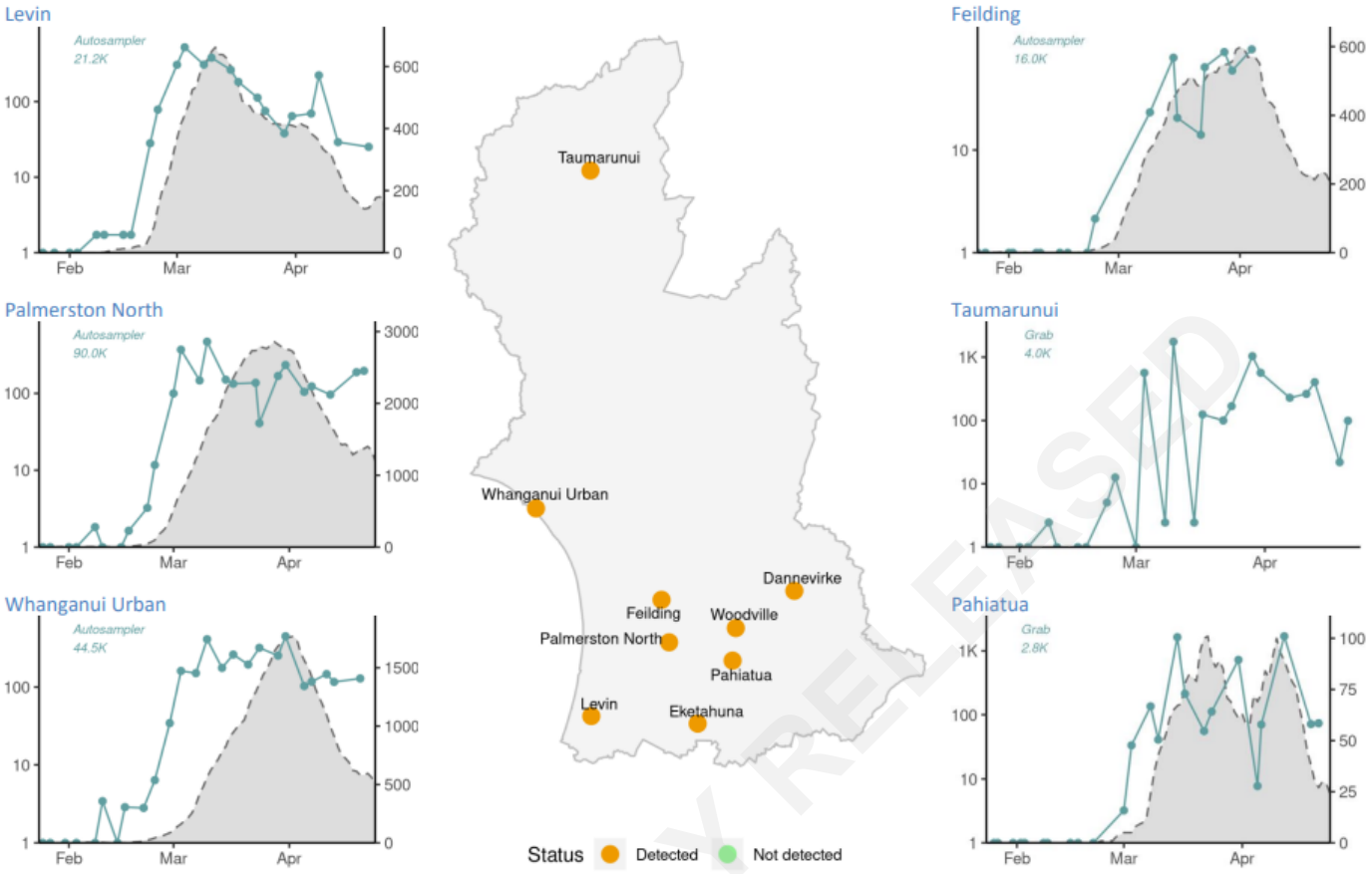


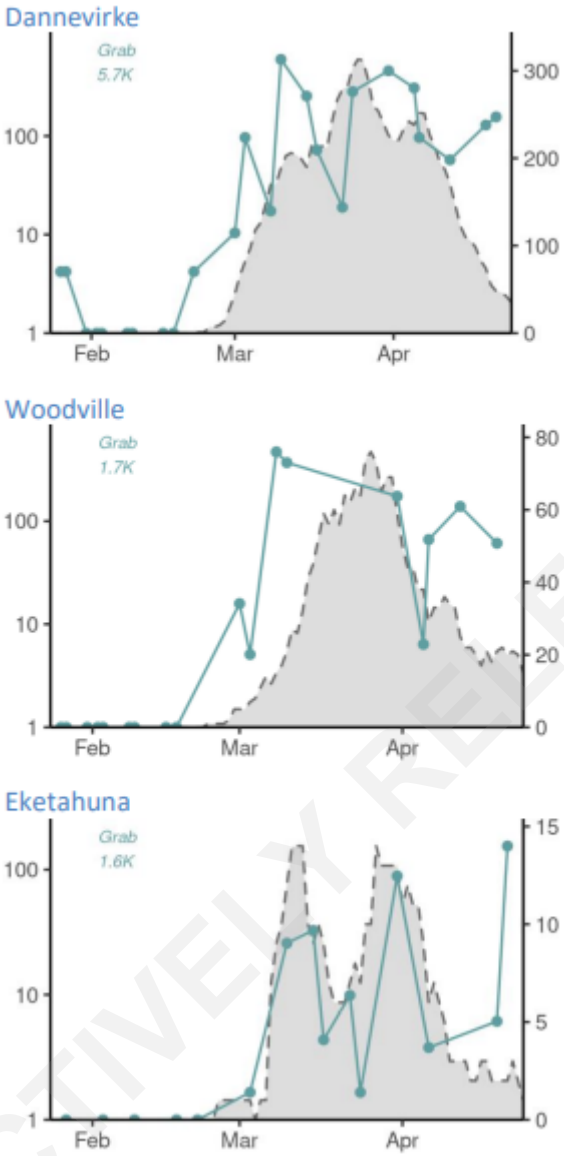


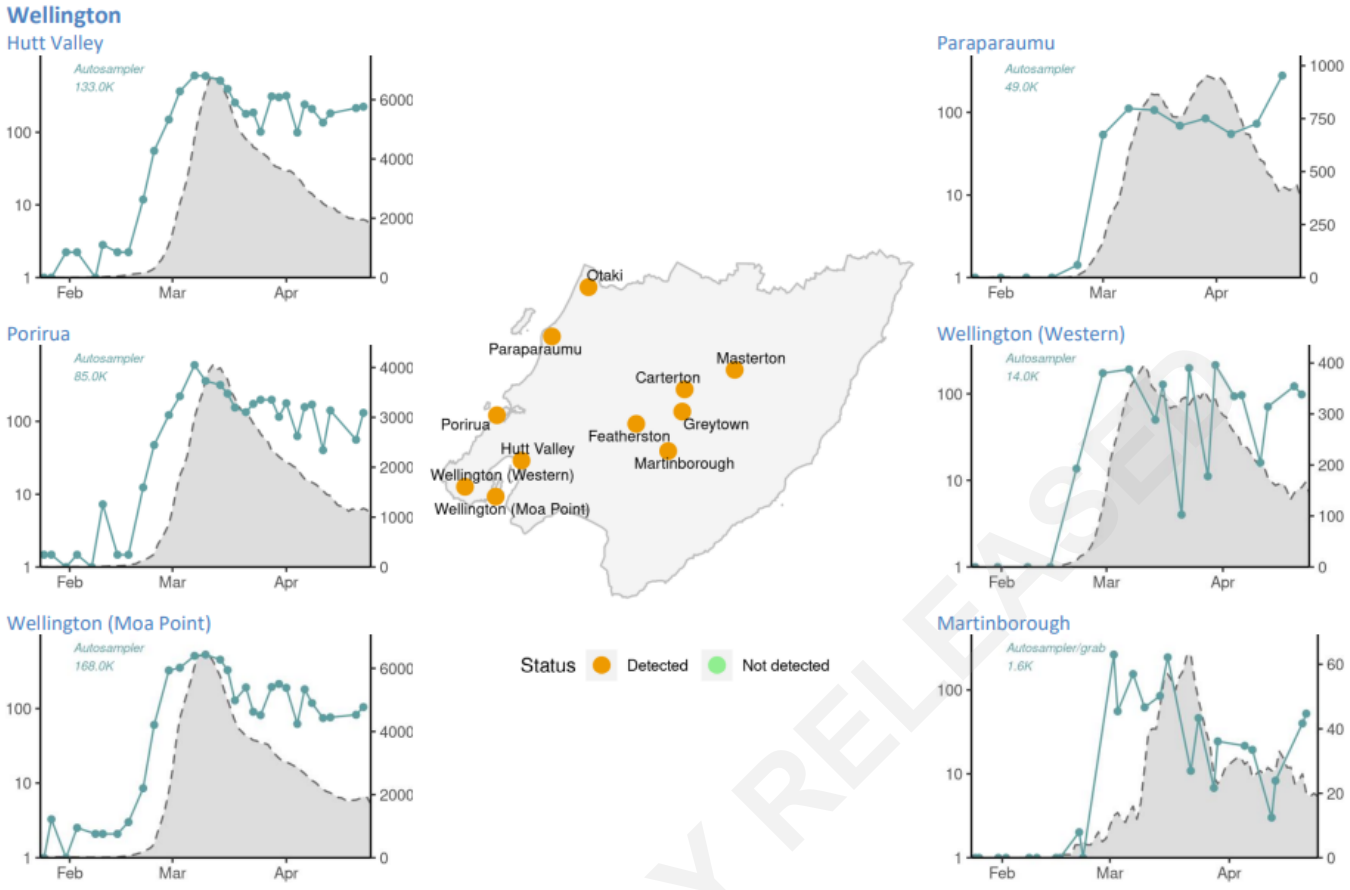


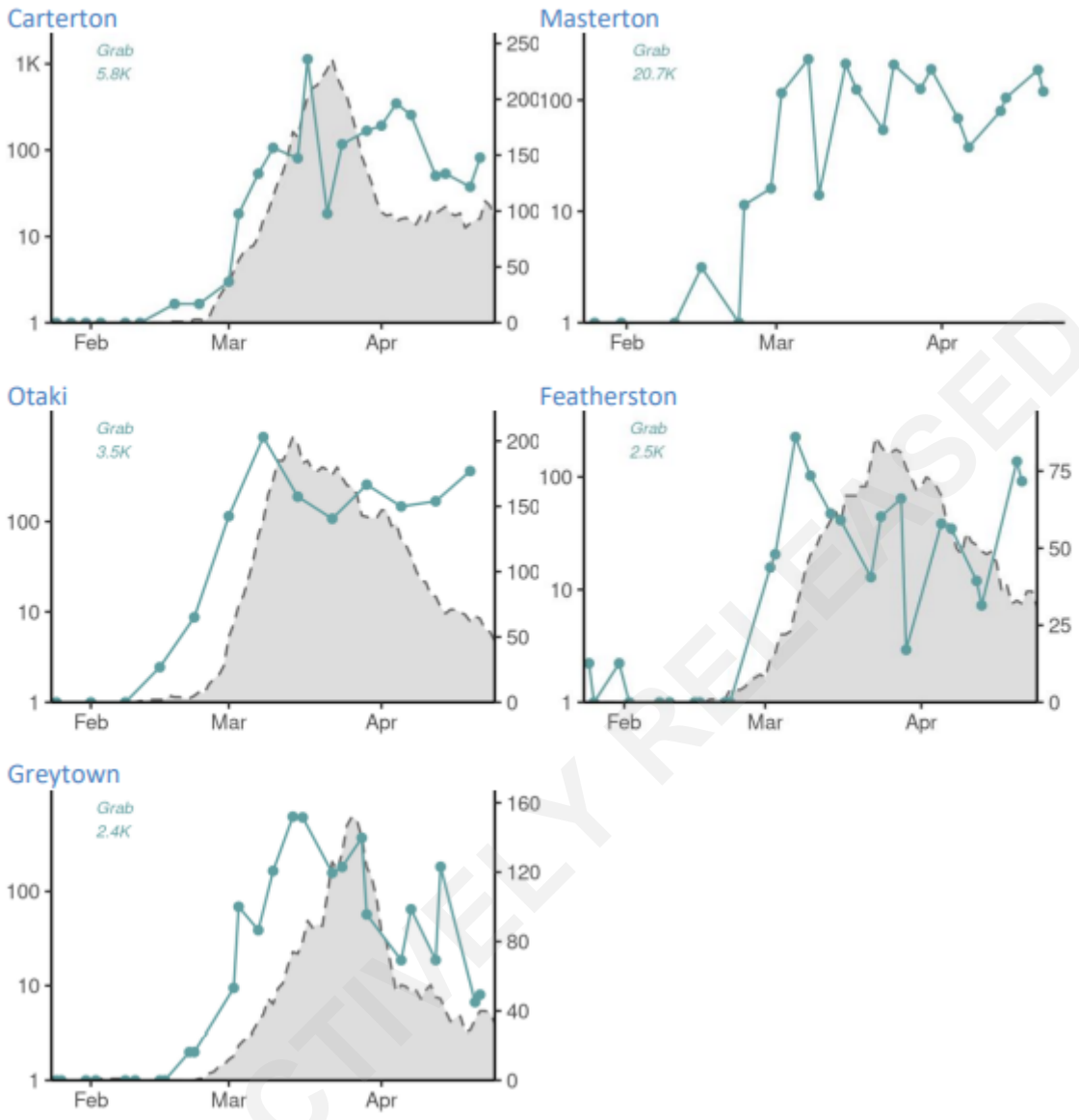


Manawatu-Wanganui

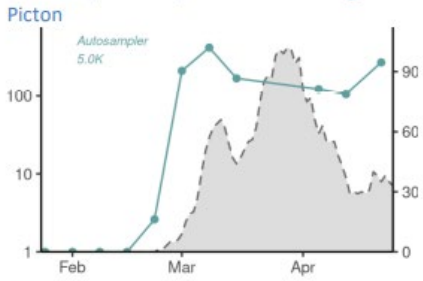


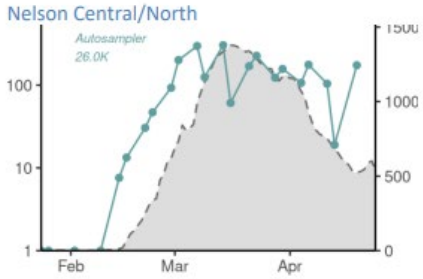


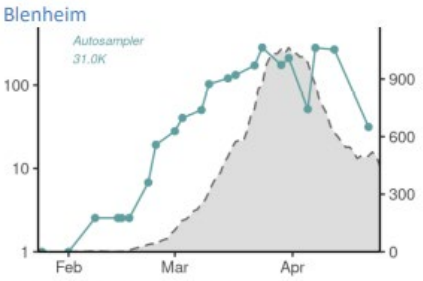


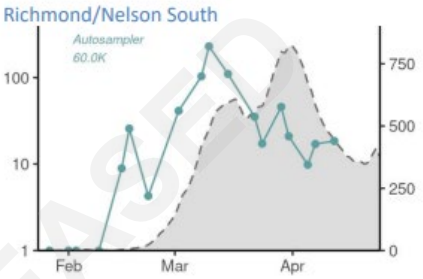


Tasman, Nelson, and Marlborough

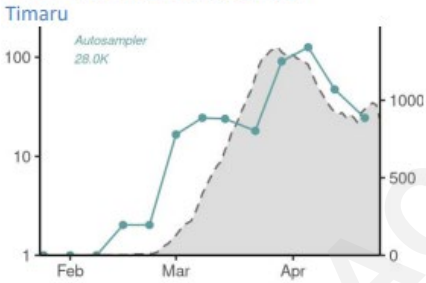


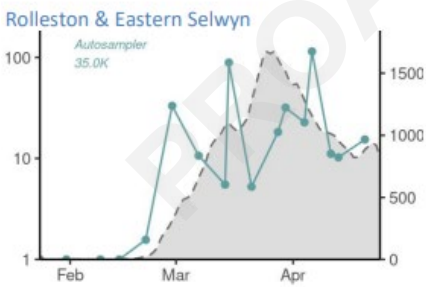


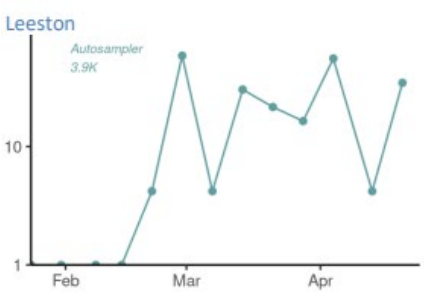


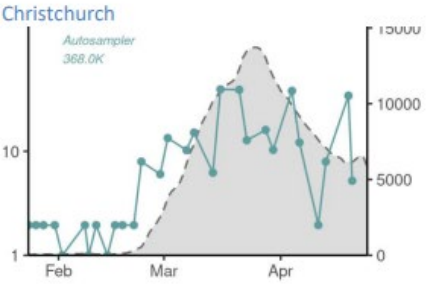


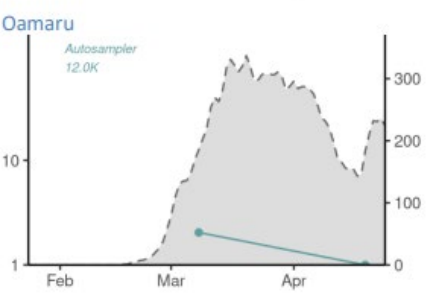
West Coast and Canterbury

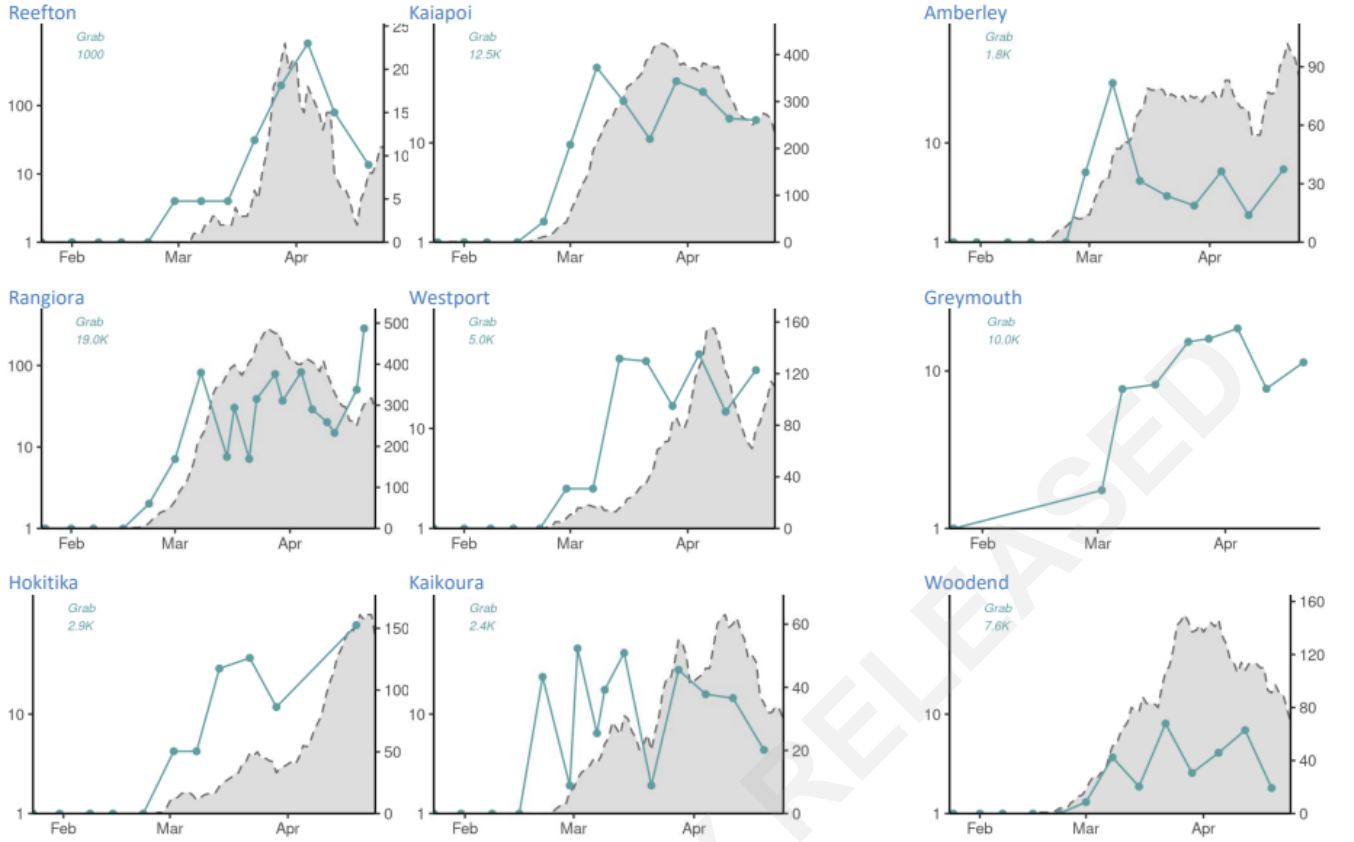




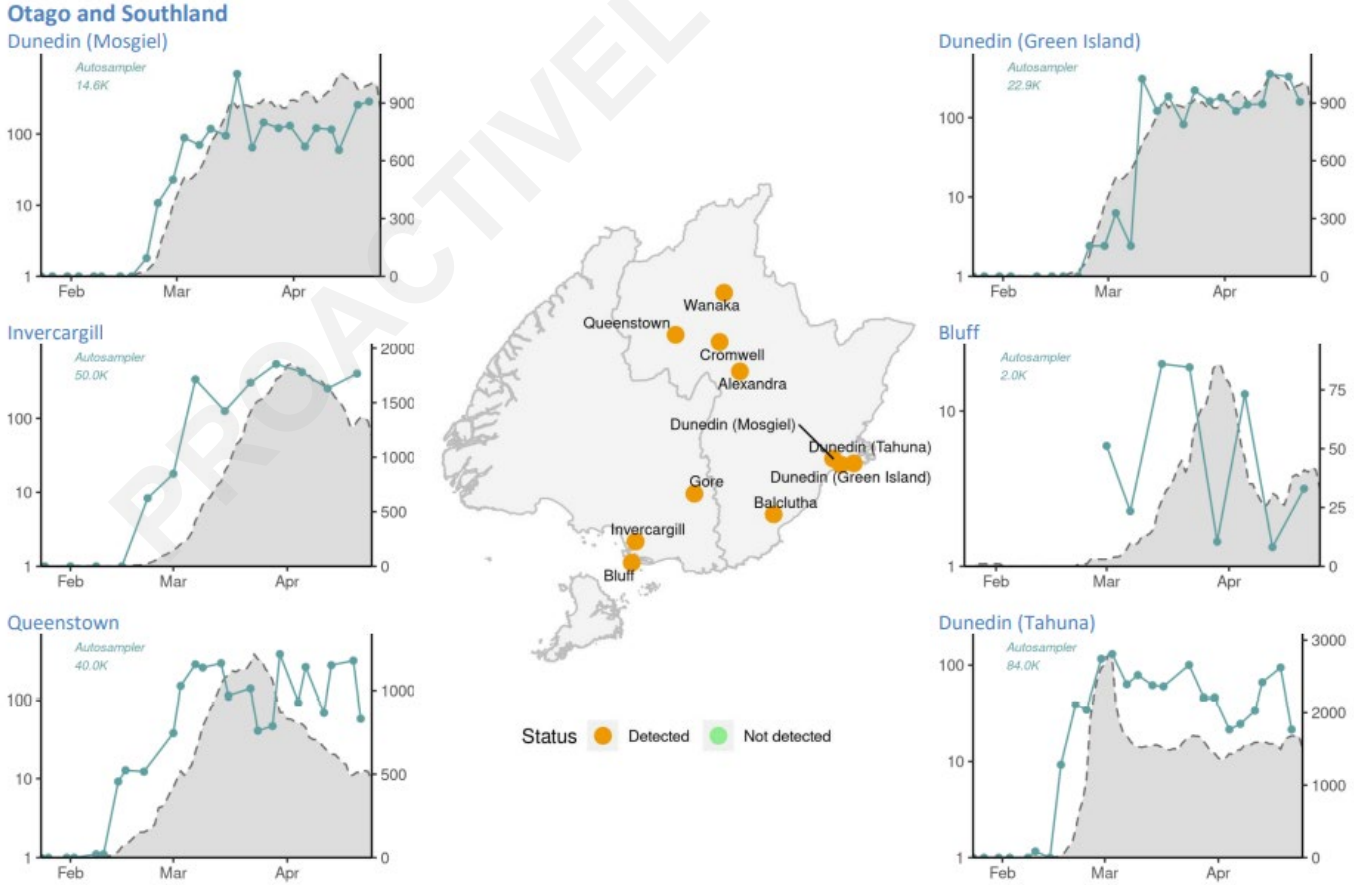


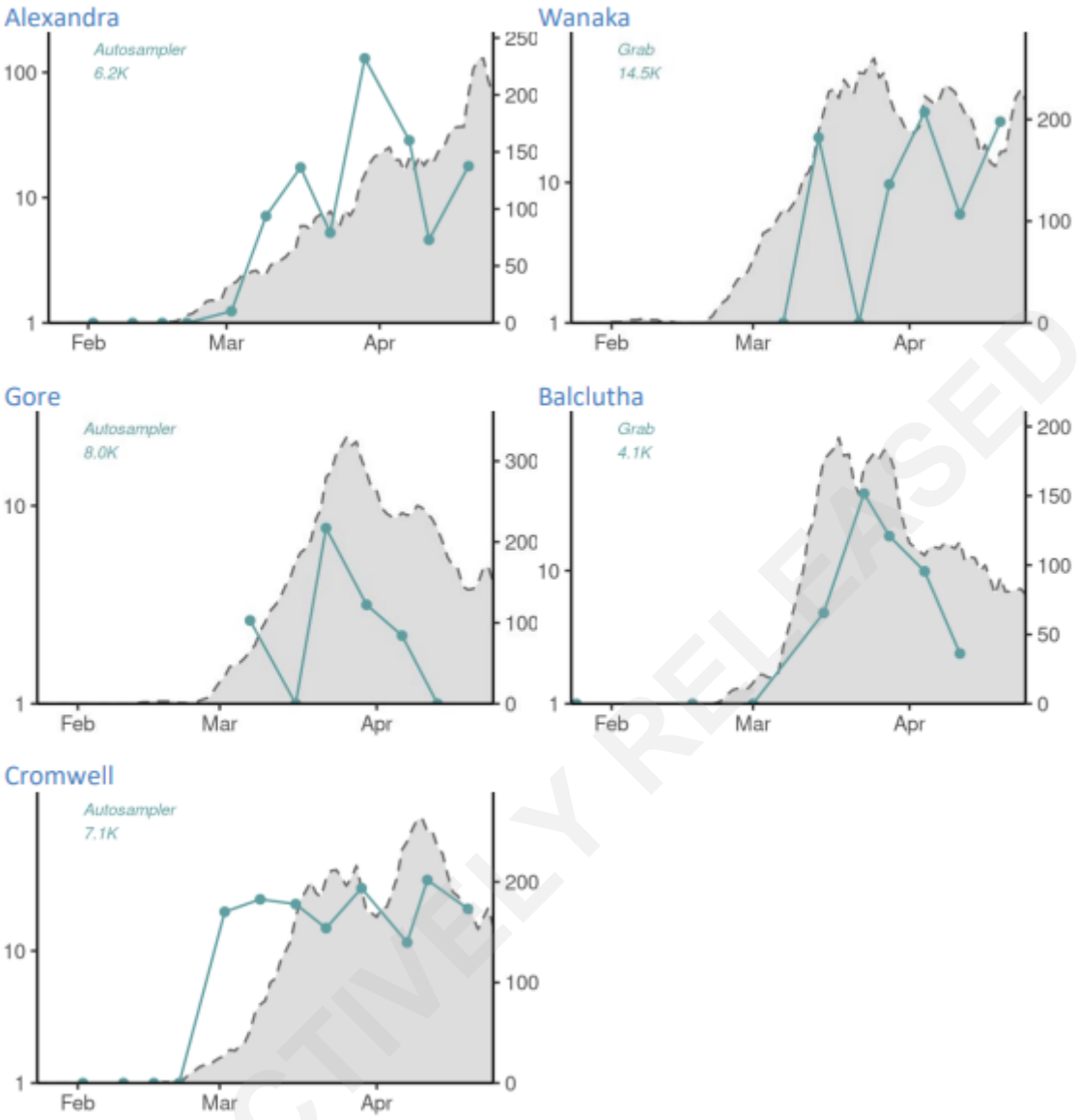






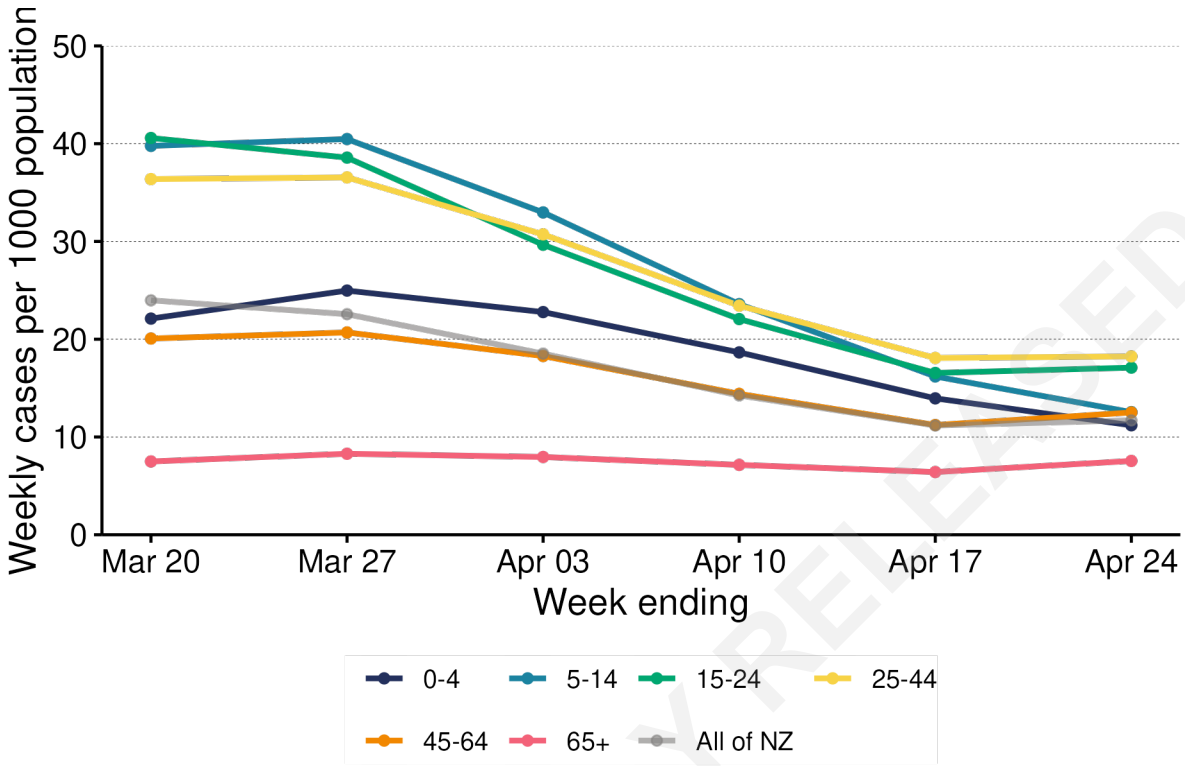
Otago and Southland



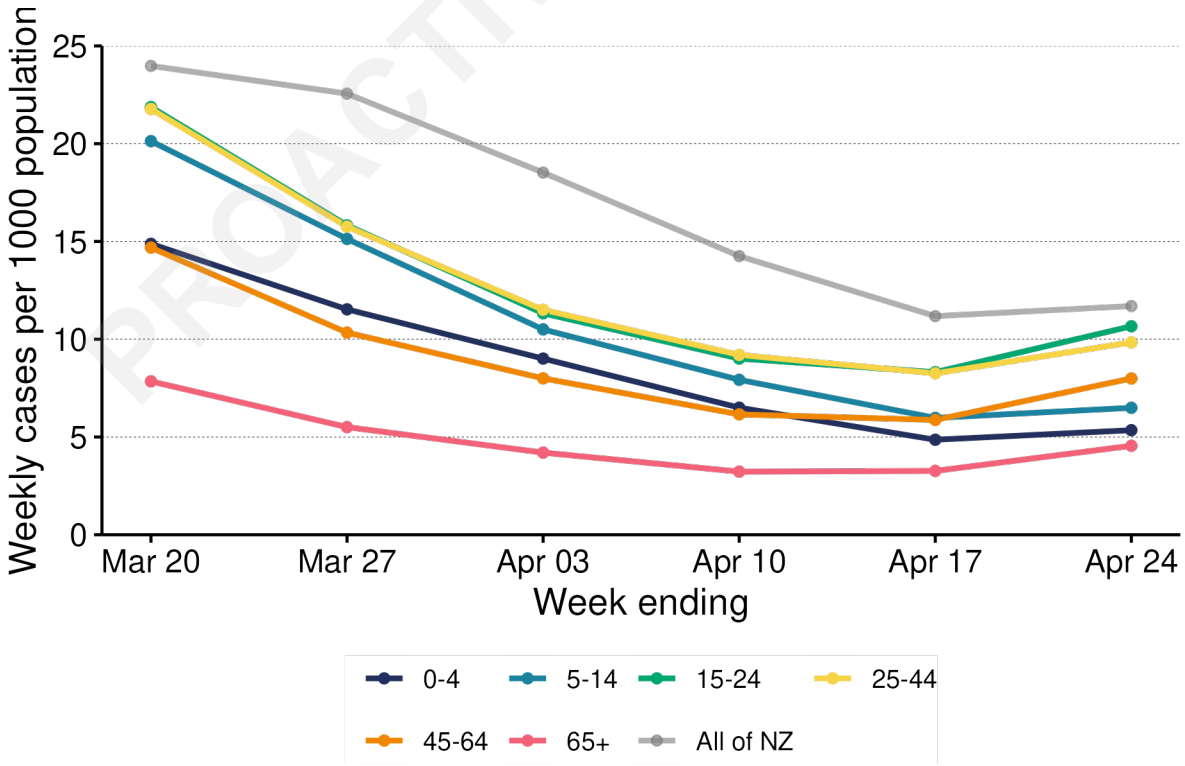


Age Graphs

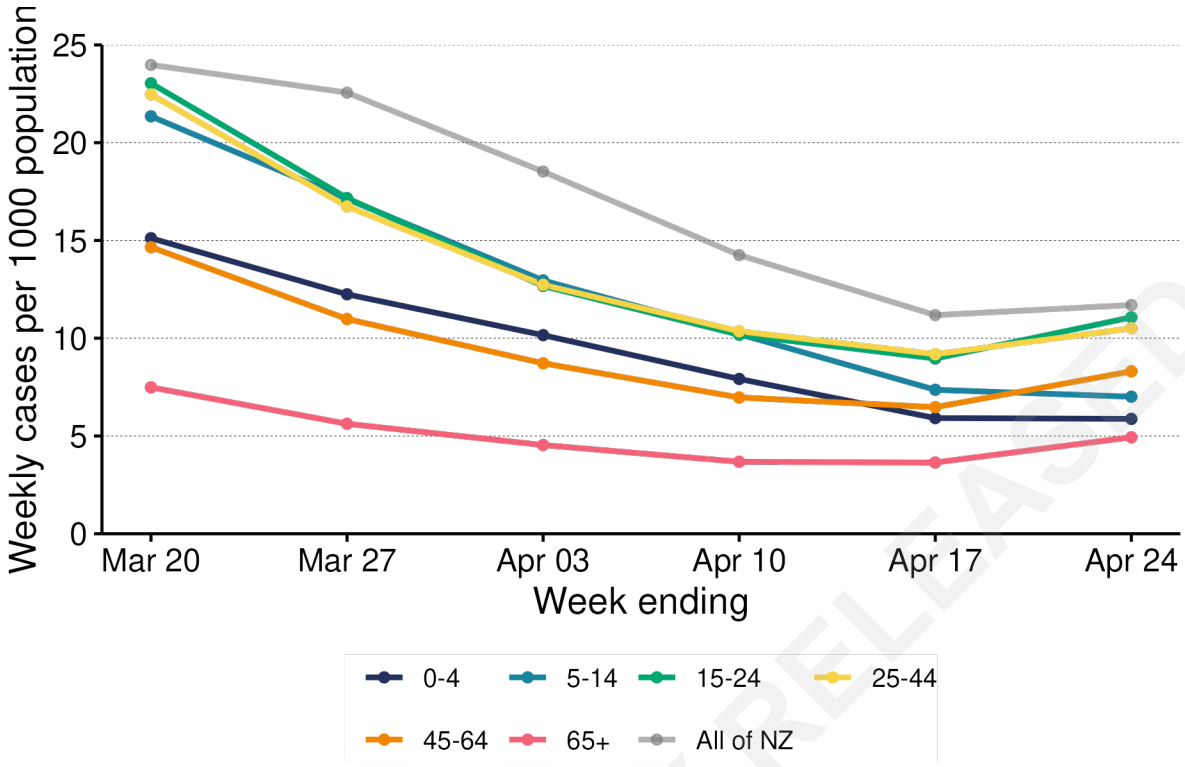
NZ Excluding Auckland Region



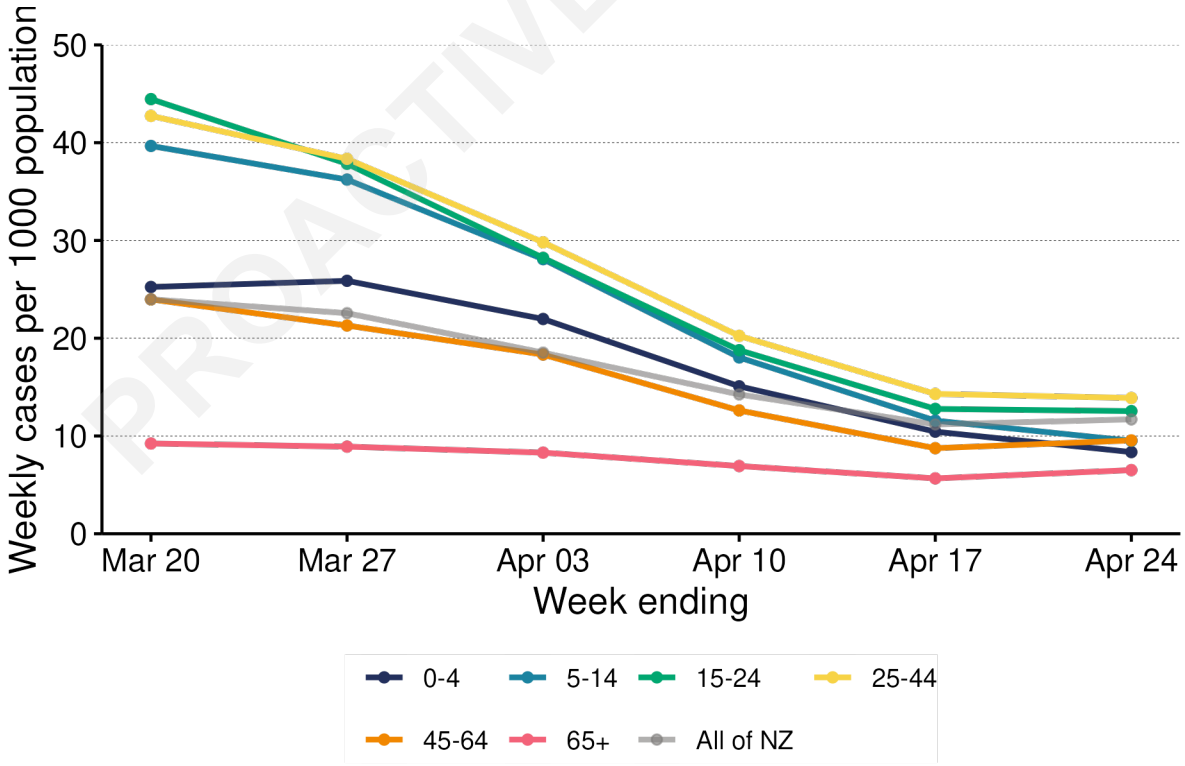
Auckland Region



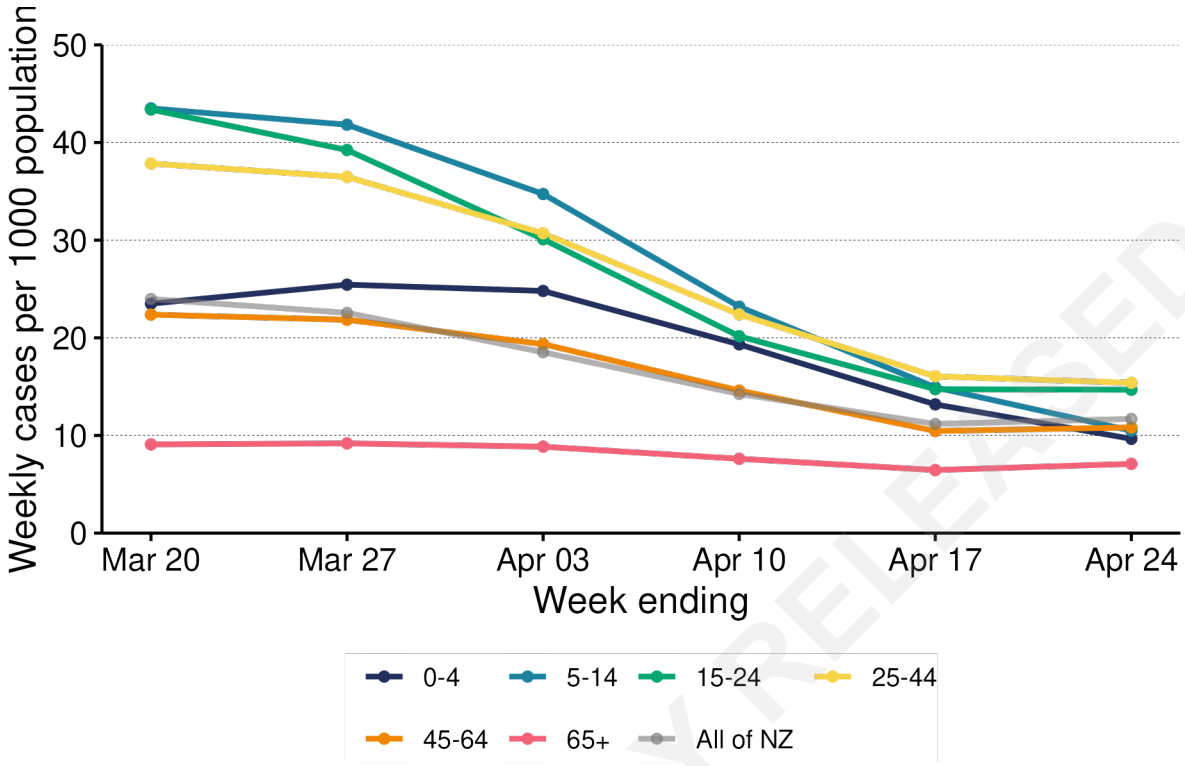
Northern Region



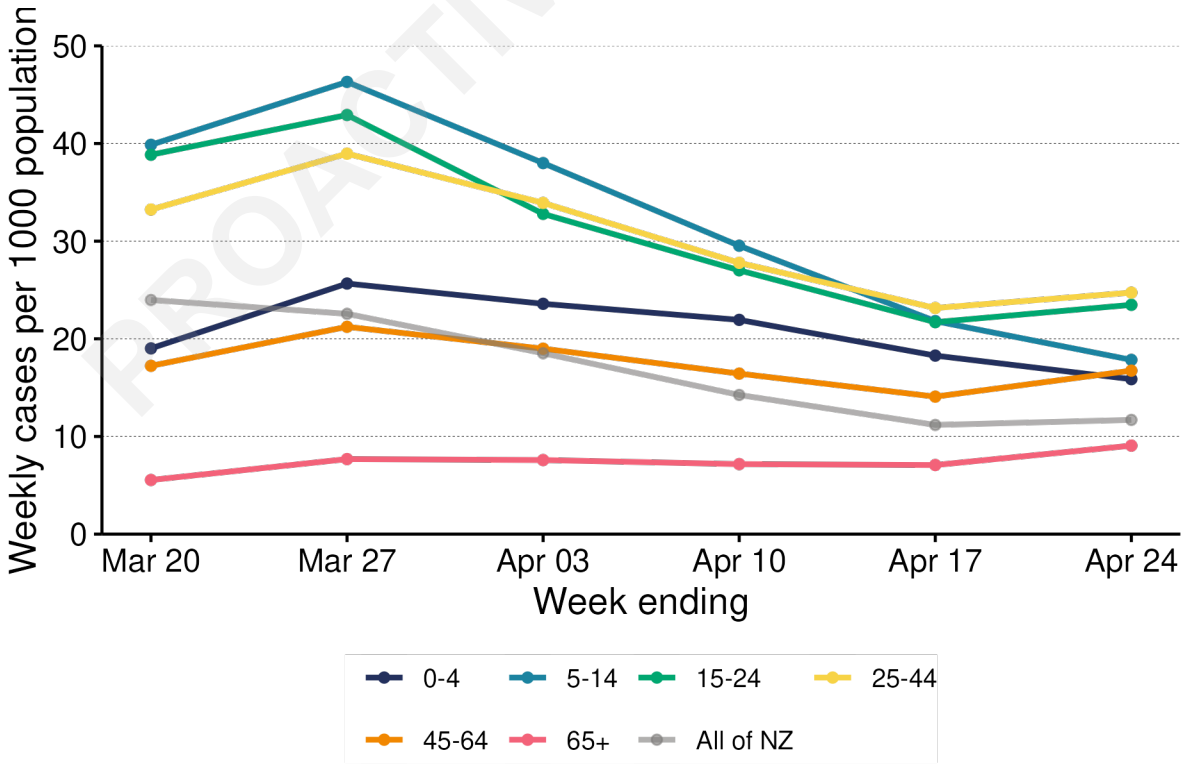
Te Manawa Taki



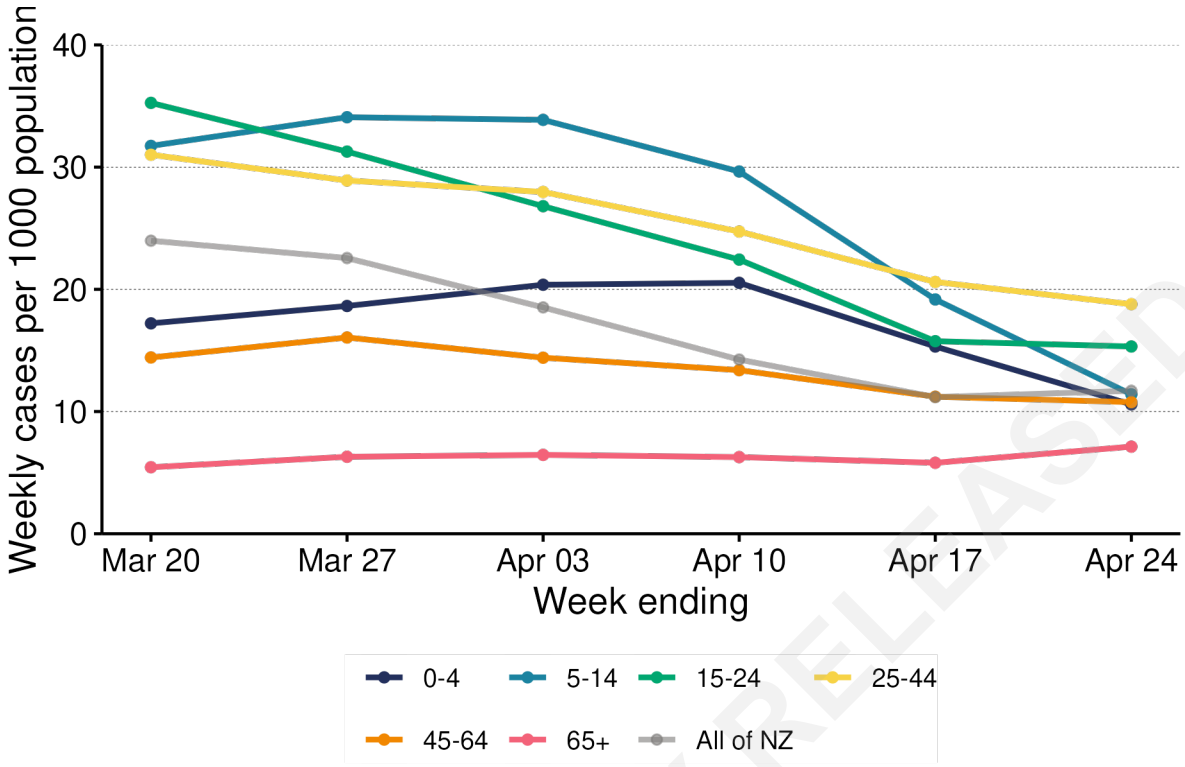
Central Region



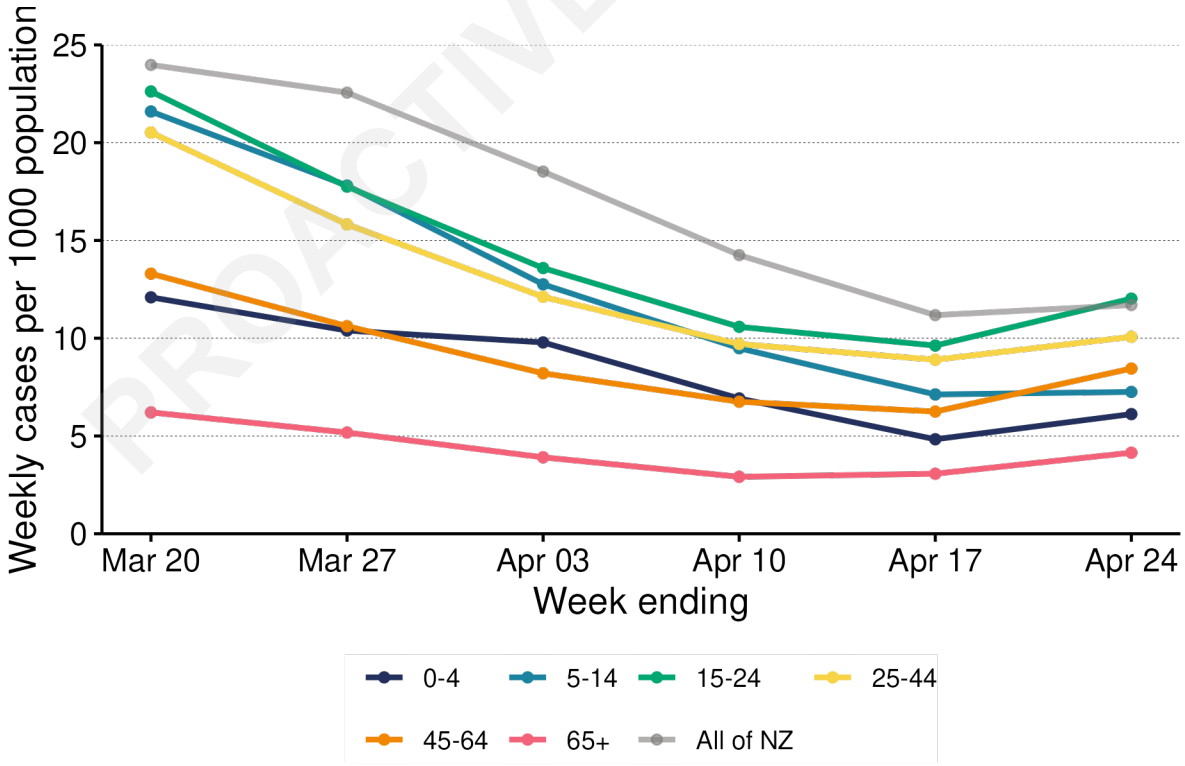
Southern Region



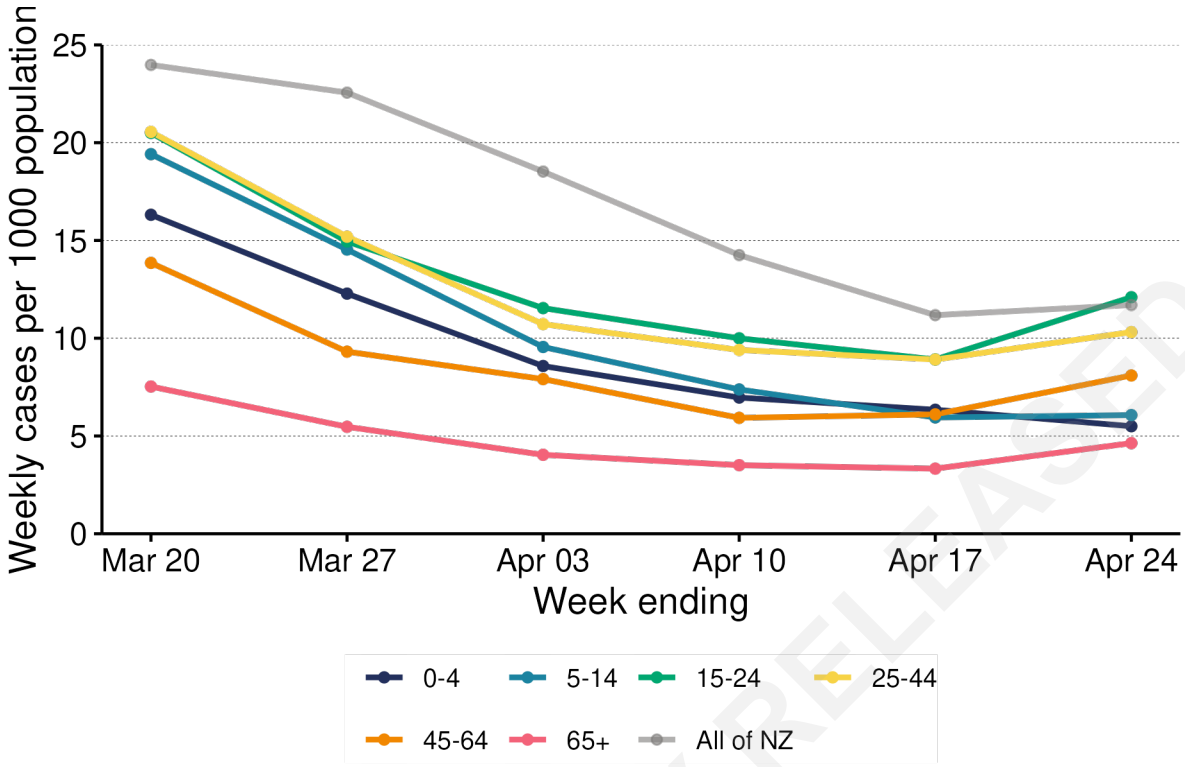
Northland DHB



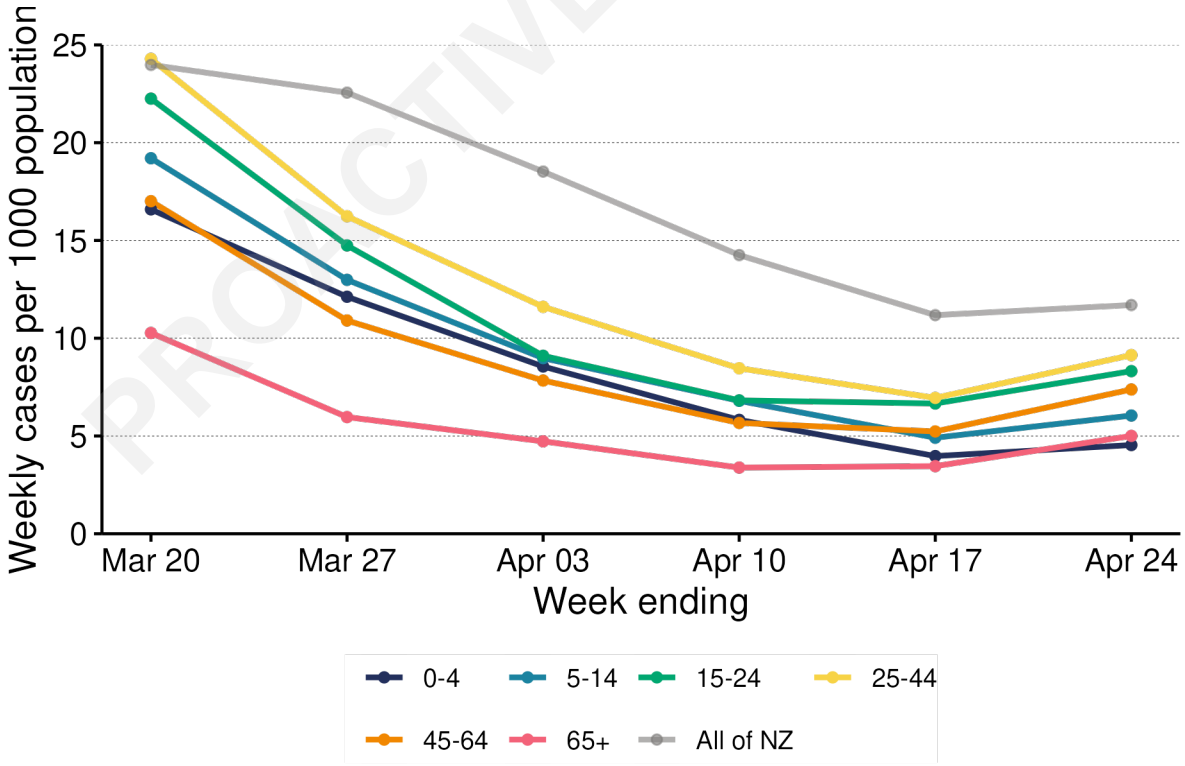
Waitemata DHB



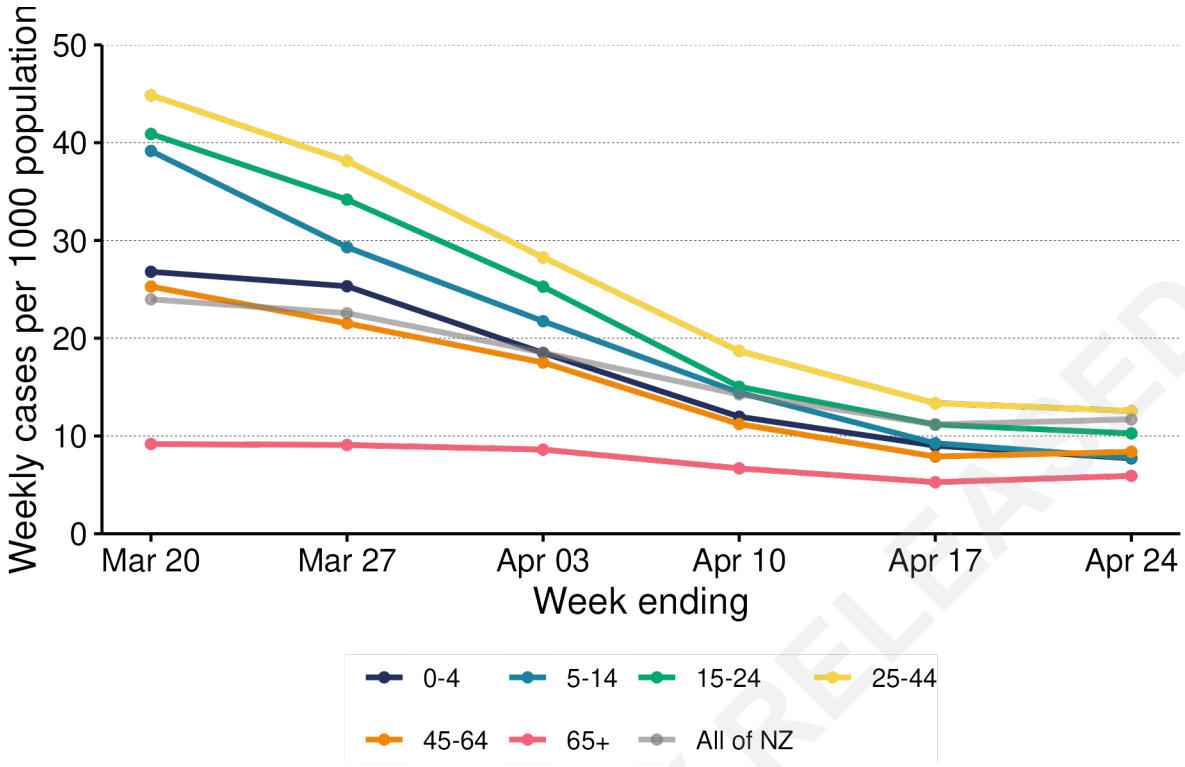
Auckland DHB



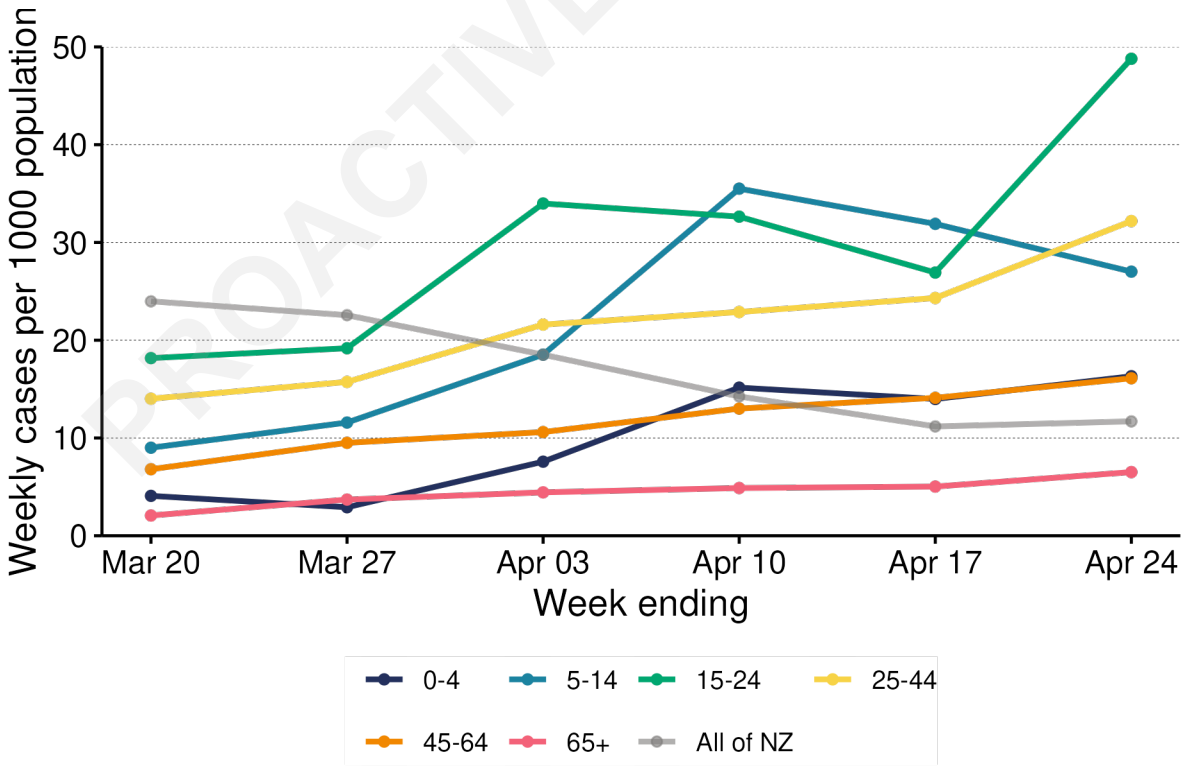
Counties Manukau DHB



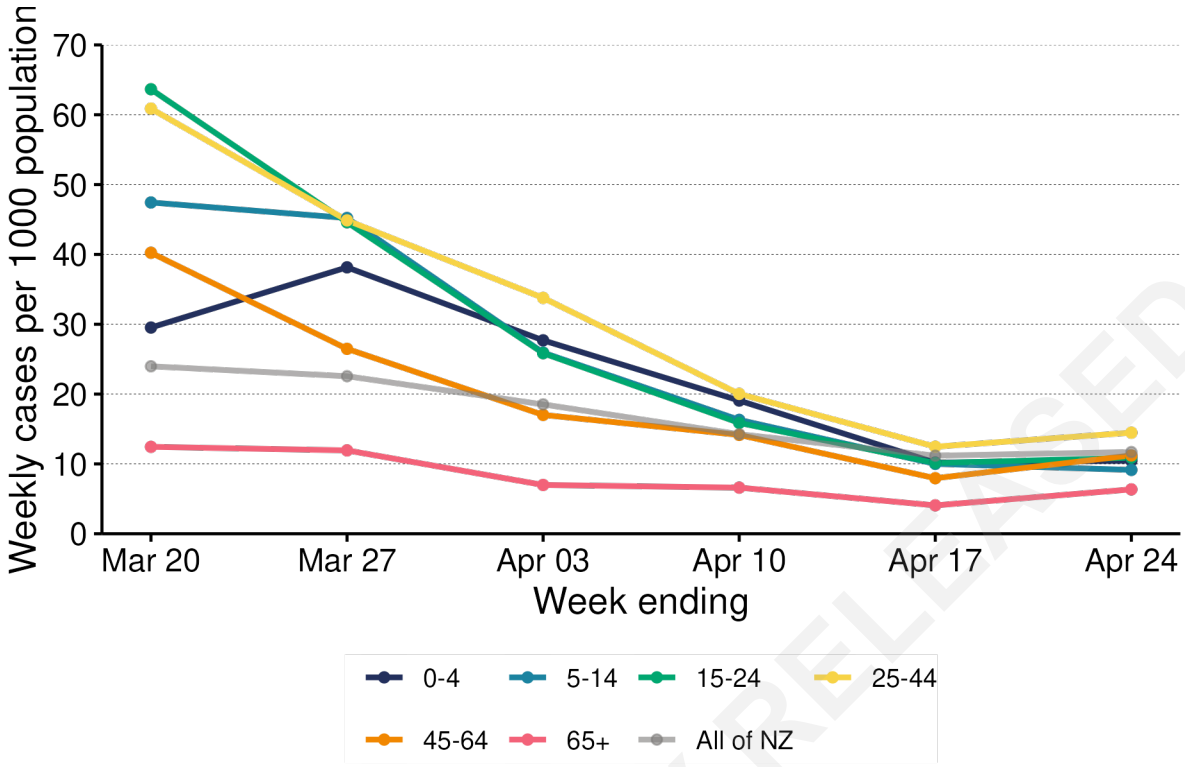
Bay of Plenty DHB



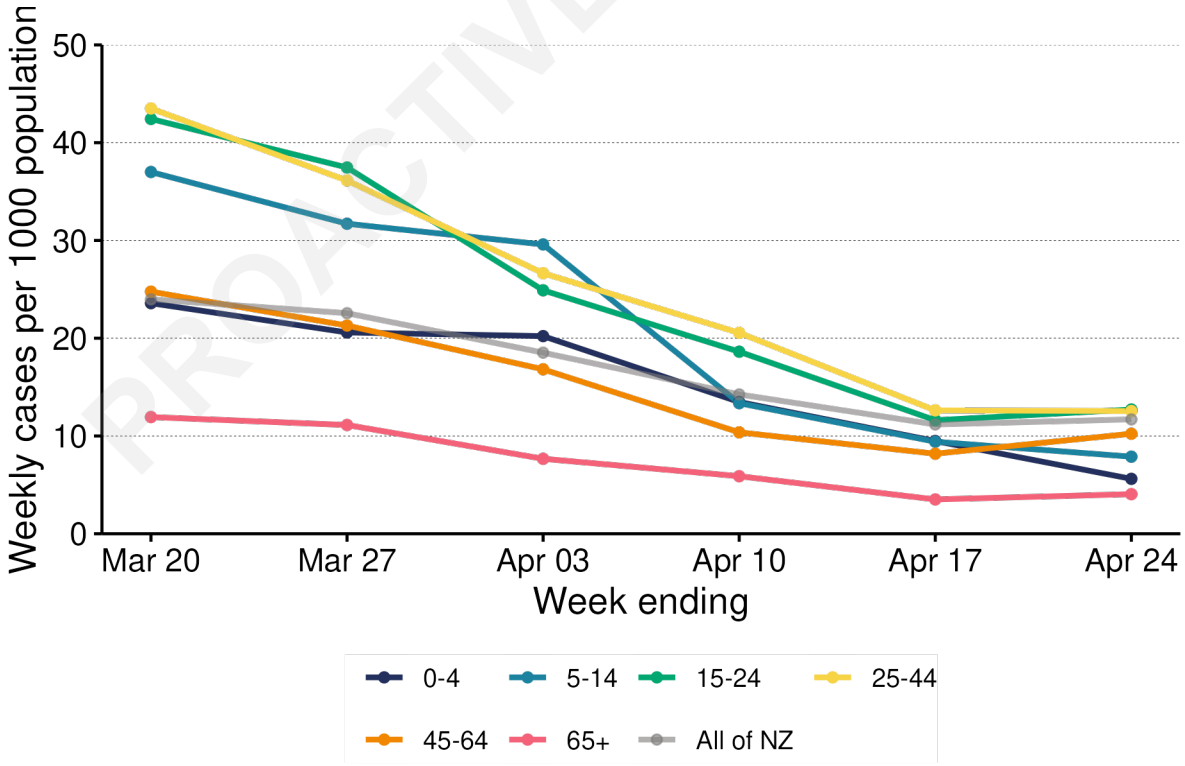
Waikato DHB



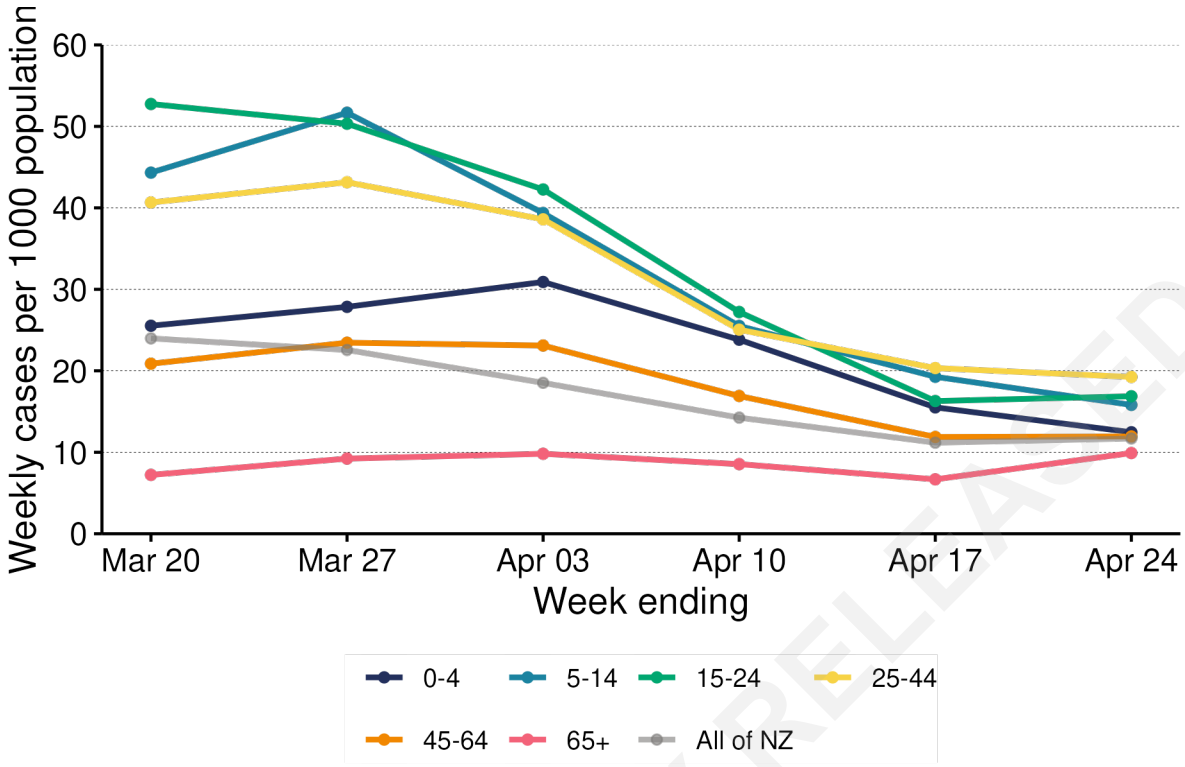
Tarawhiti DHB



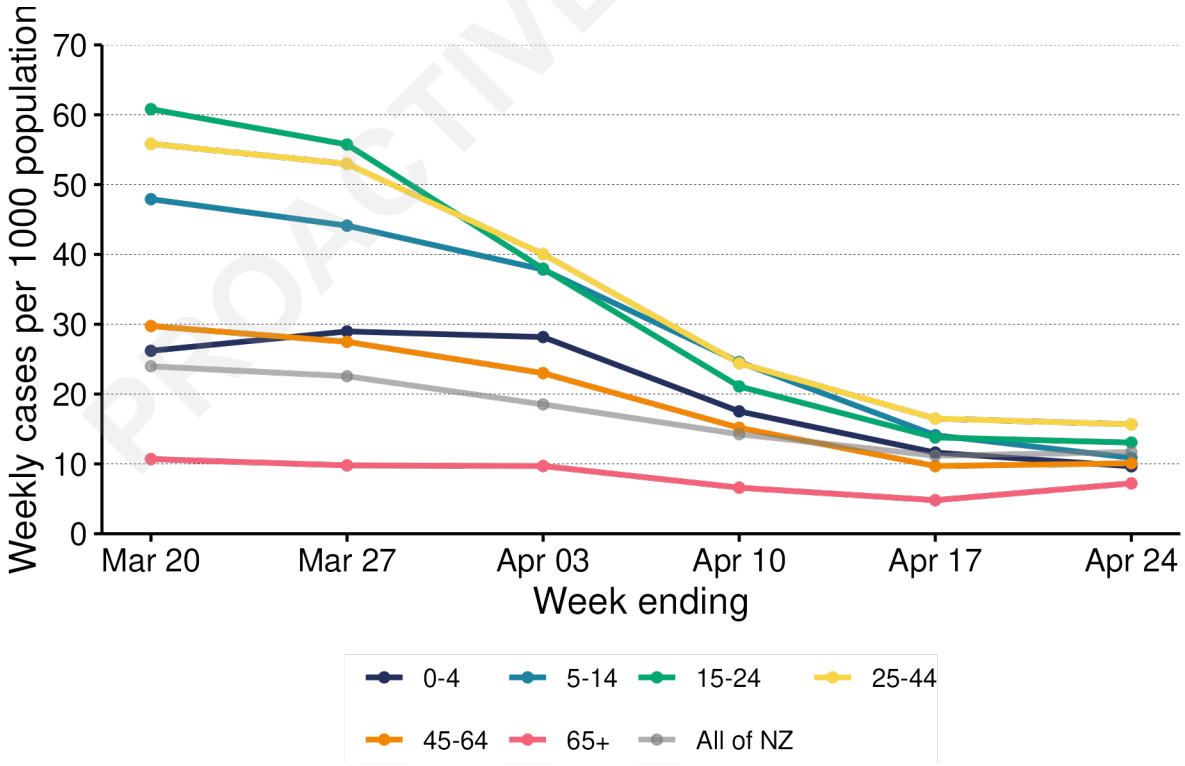
Lakes DHB



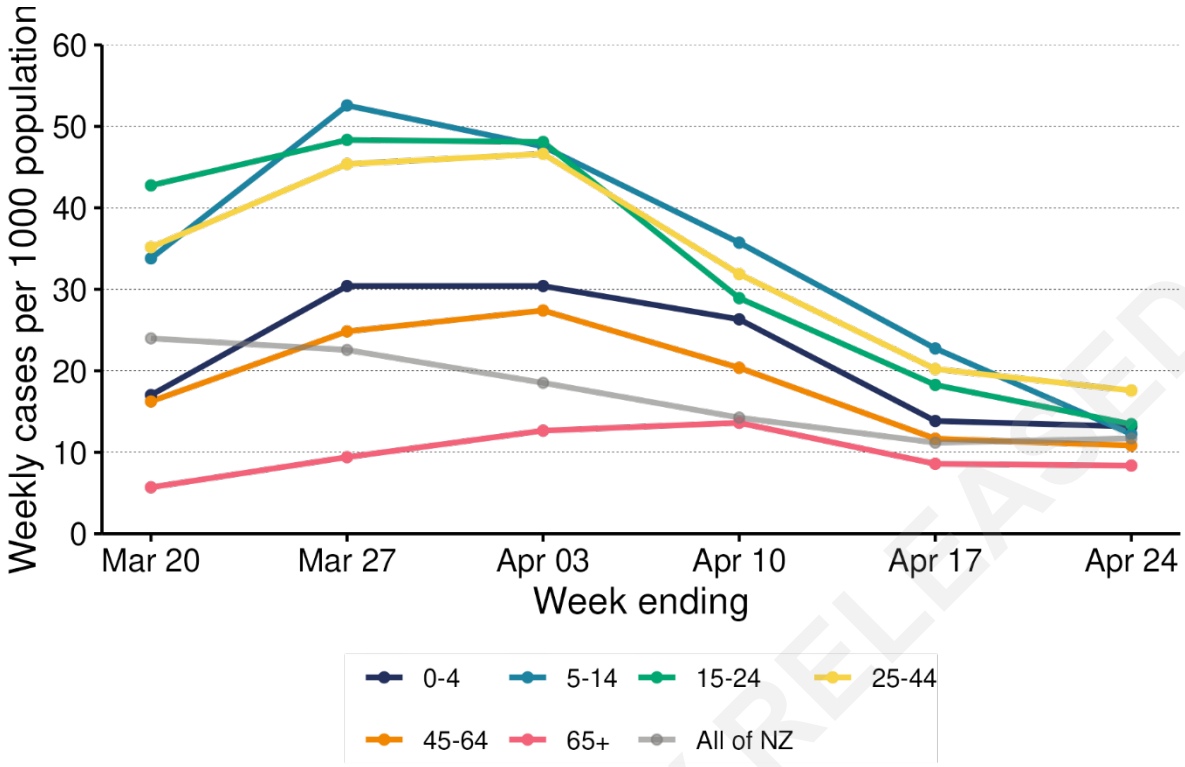
Taranaki DHB



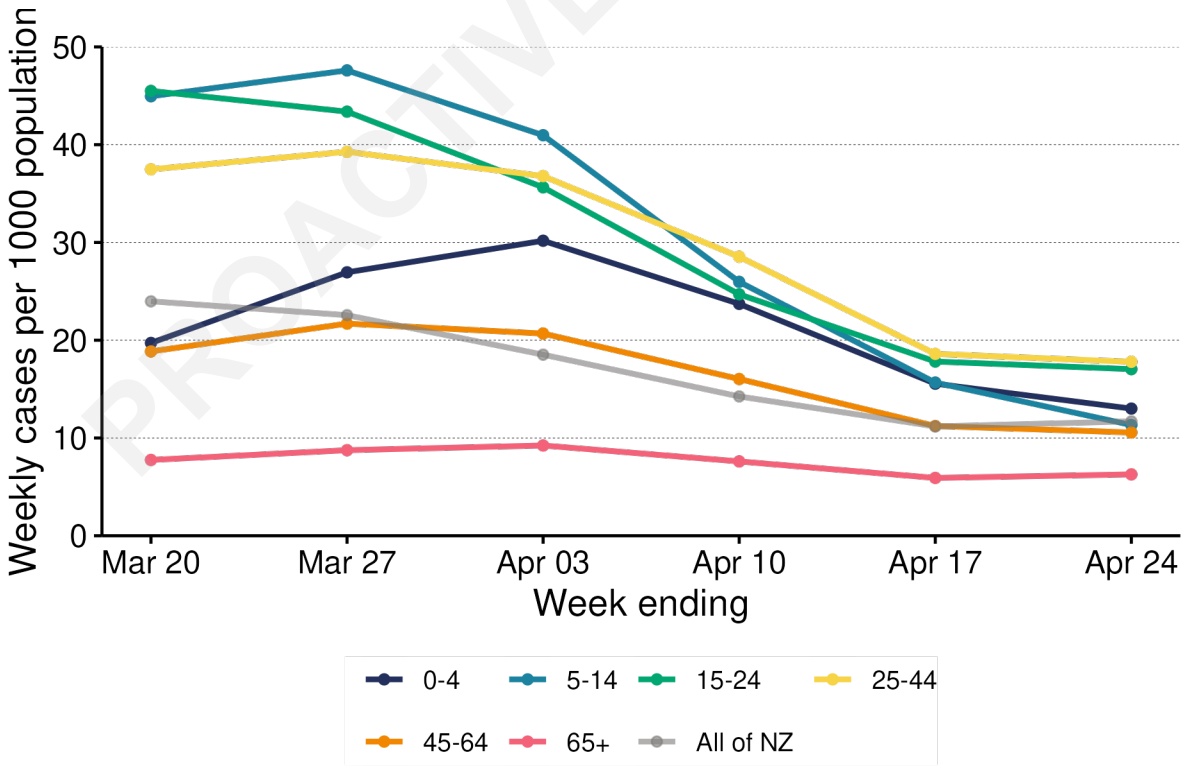
Hawke's Bay DHB



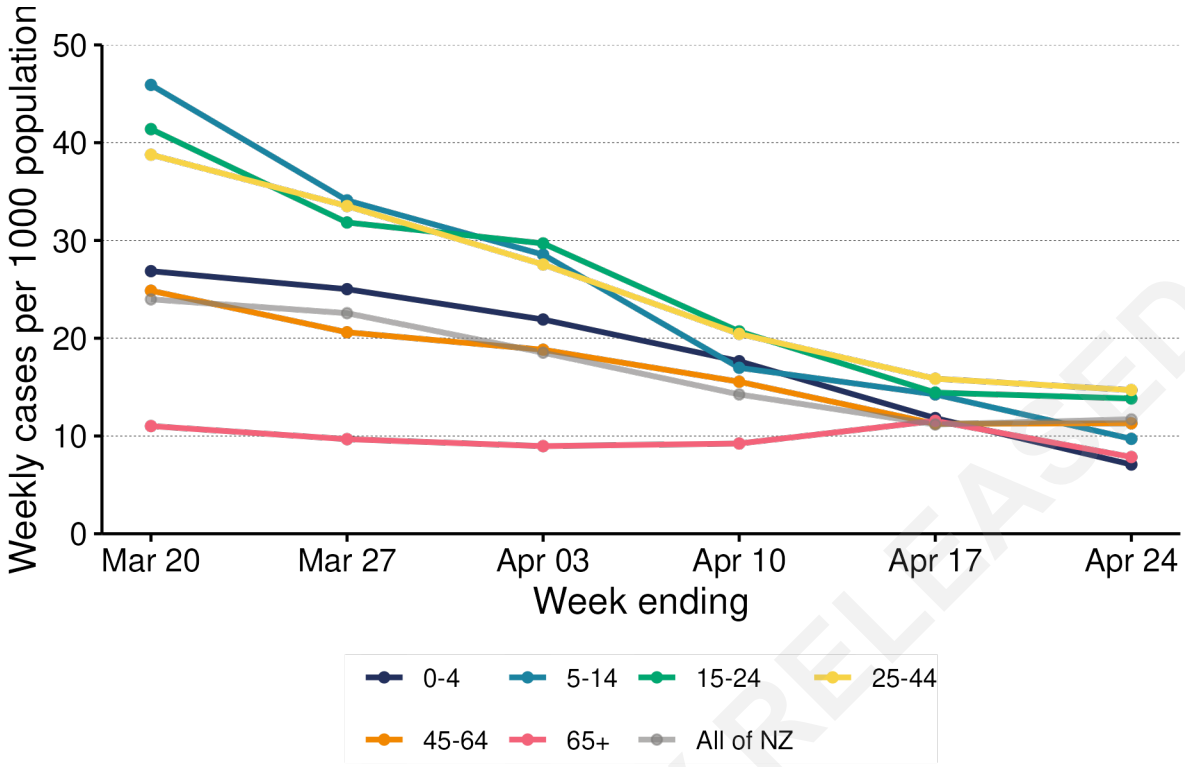
Whanganui DHB



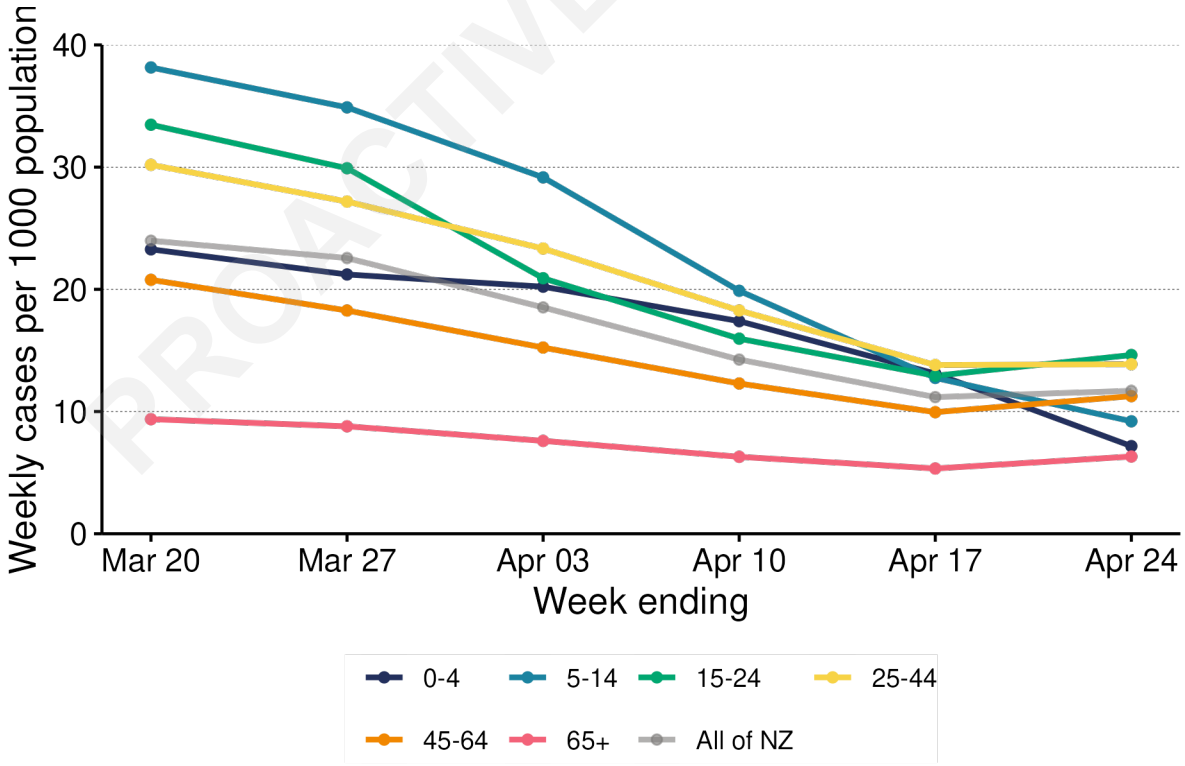
MidCentral DHB



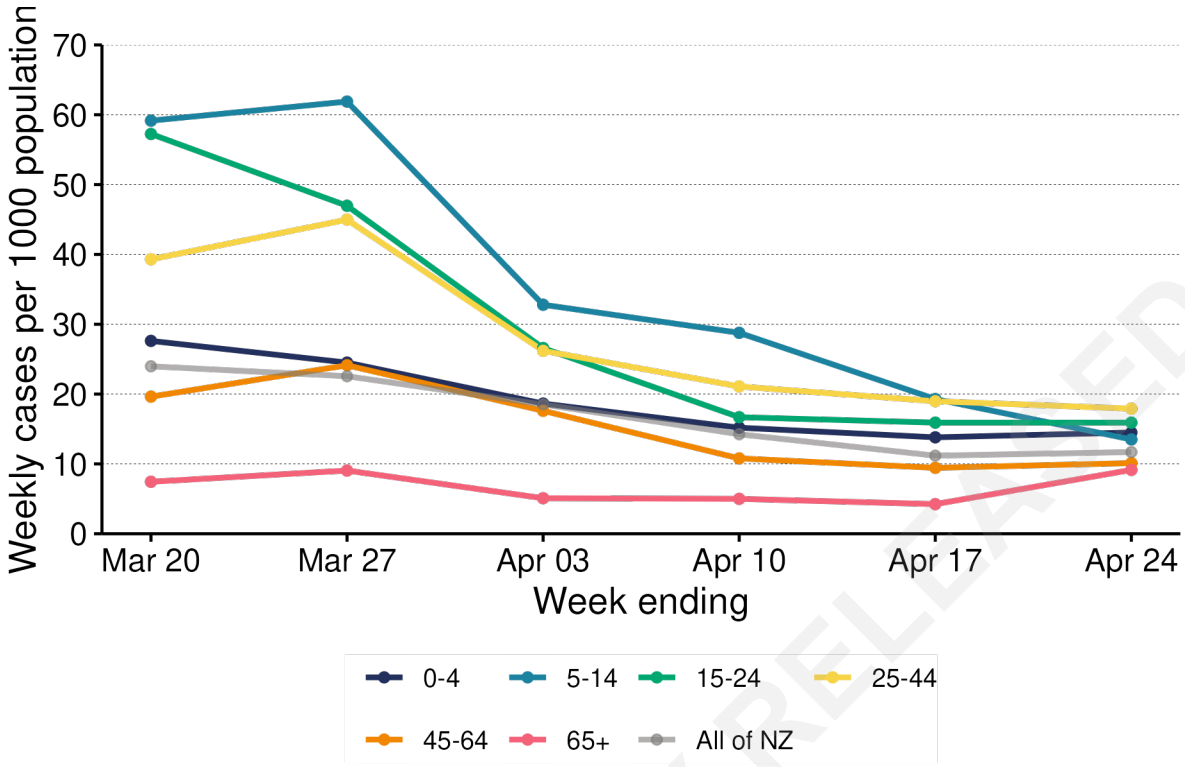
Hutt Valley DHB



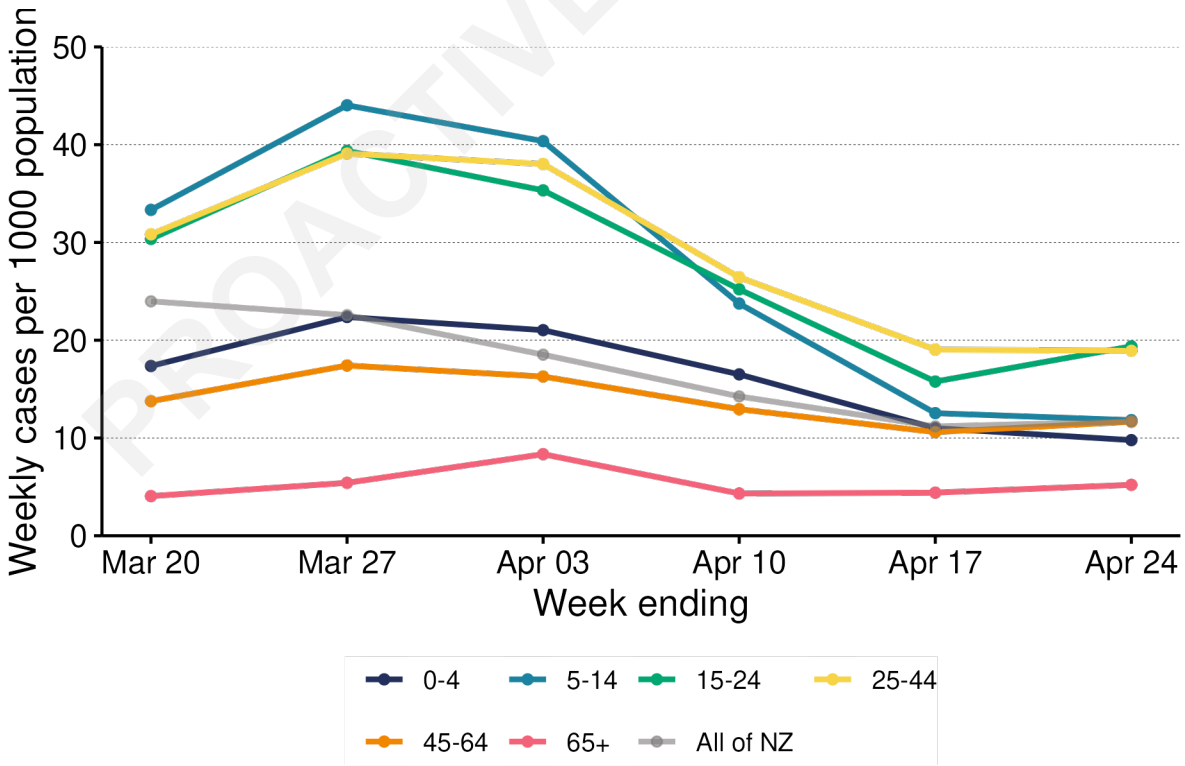
Capital and Coast DHB



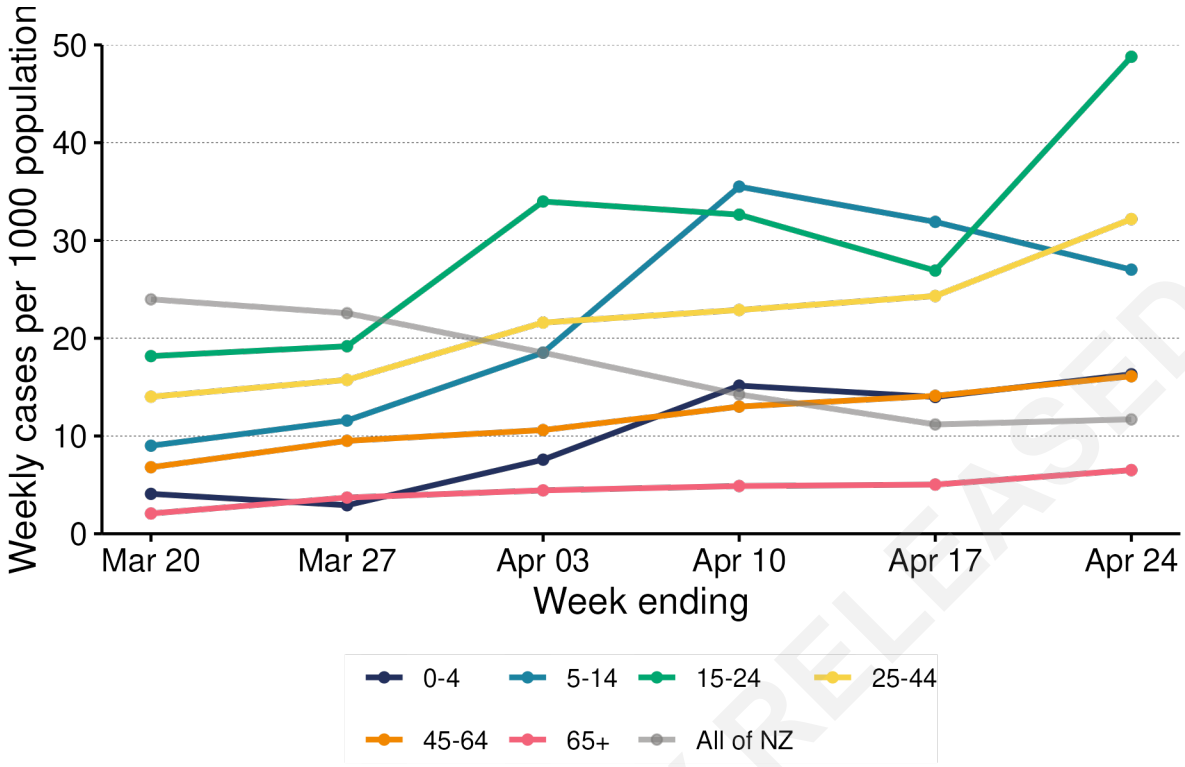
Wairarapa DHB



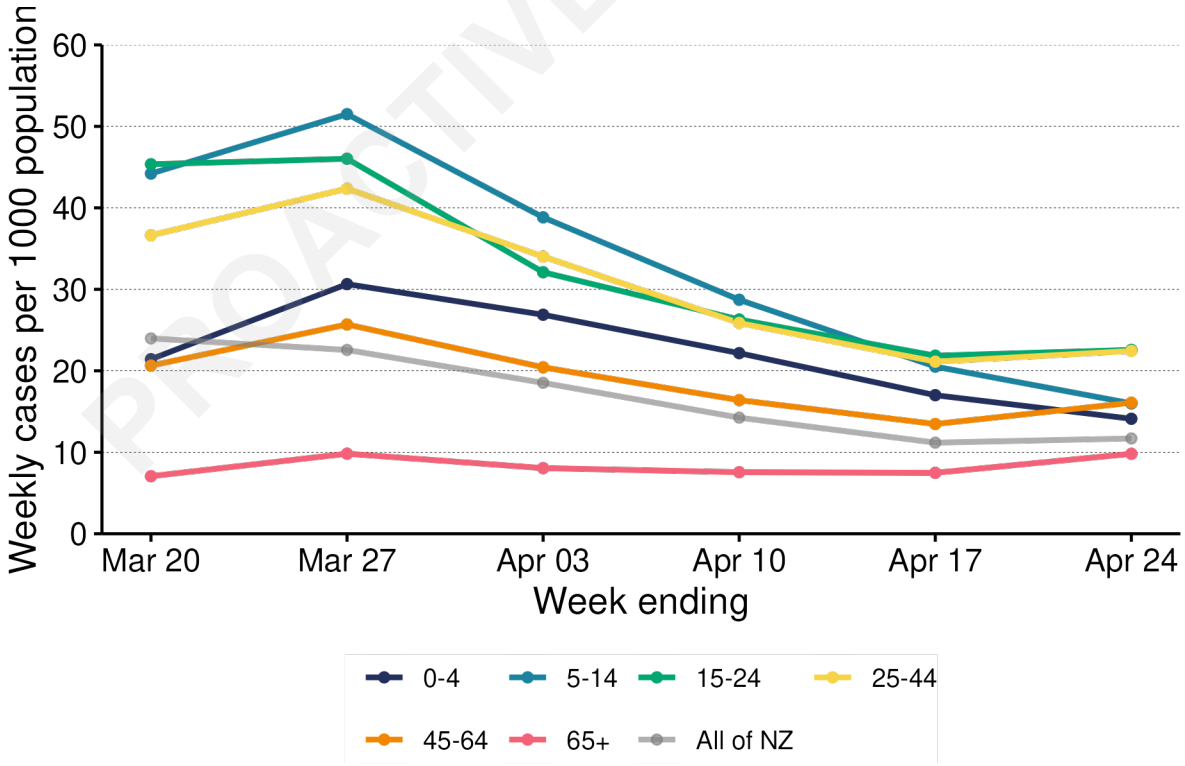
Nelson Marlborough DHB



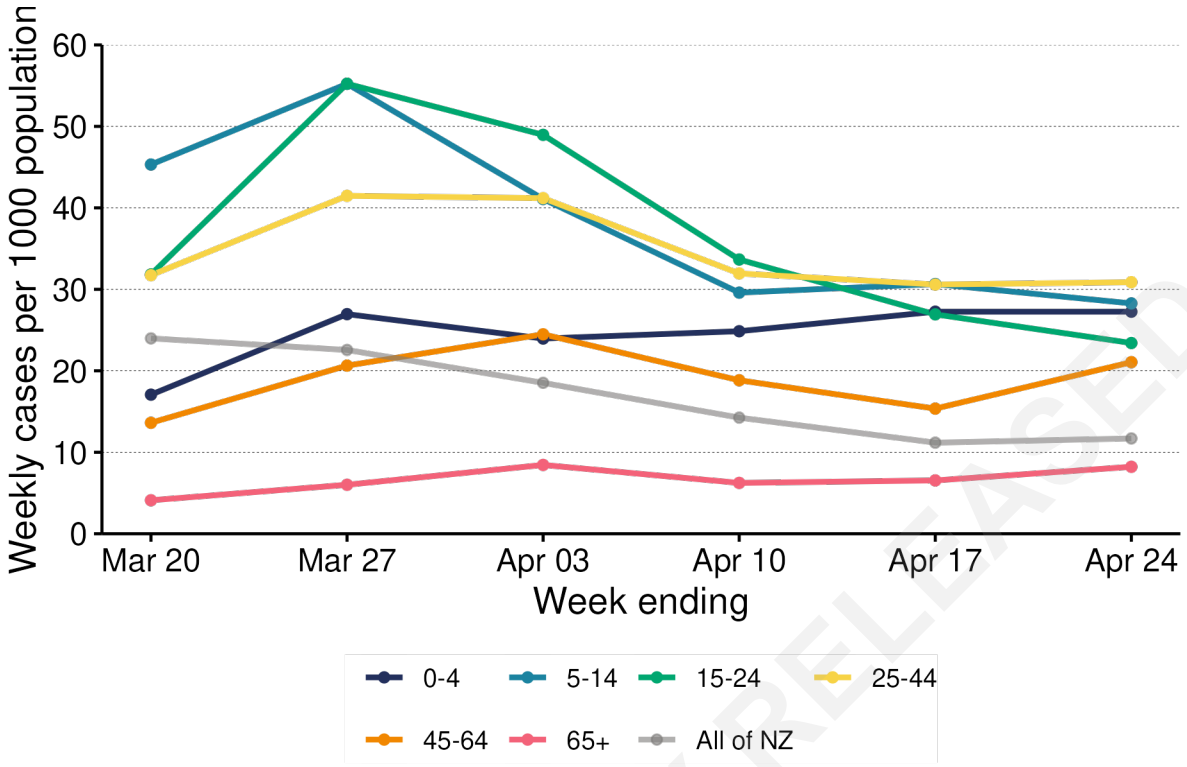
West Coast DHB



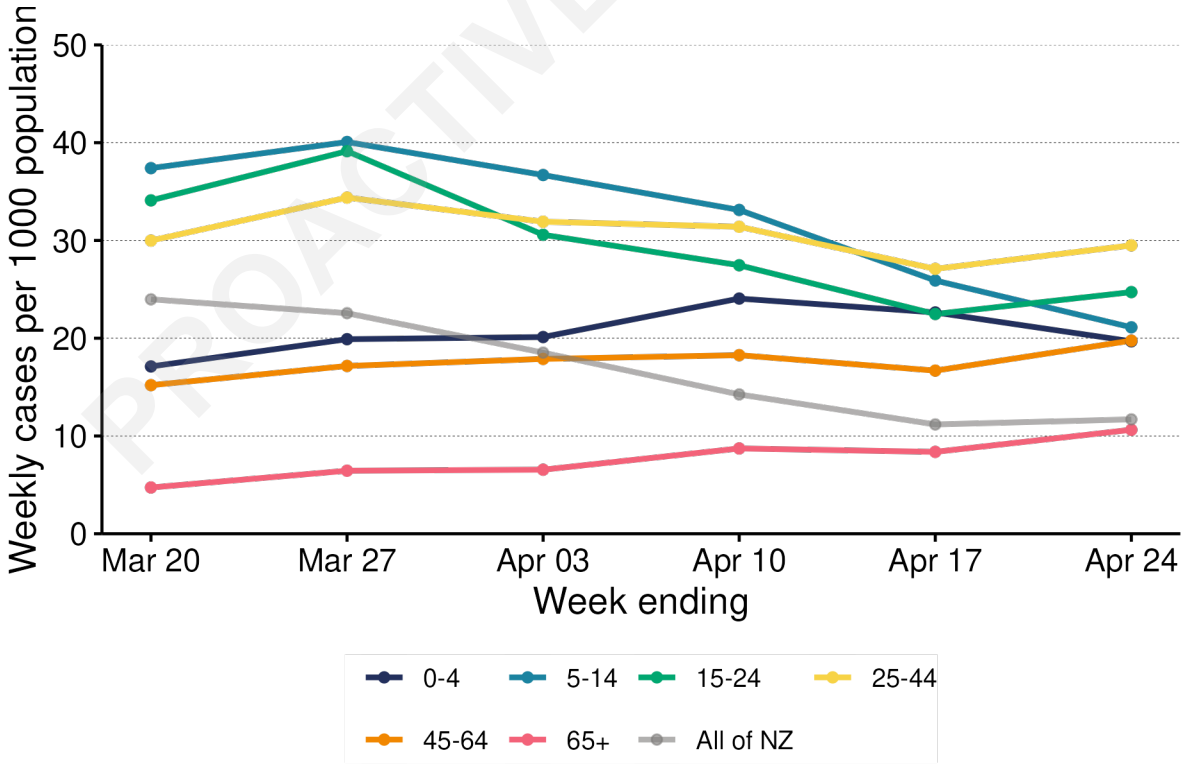
Canterbury DHB



South Canterbury DHB



Southern DHB



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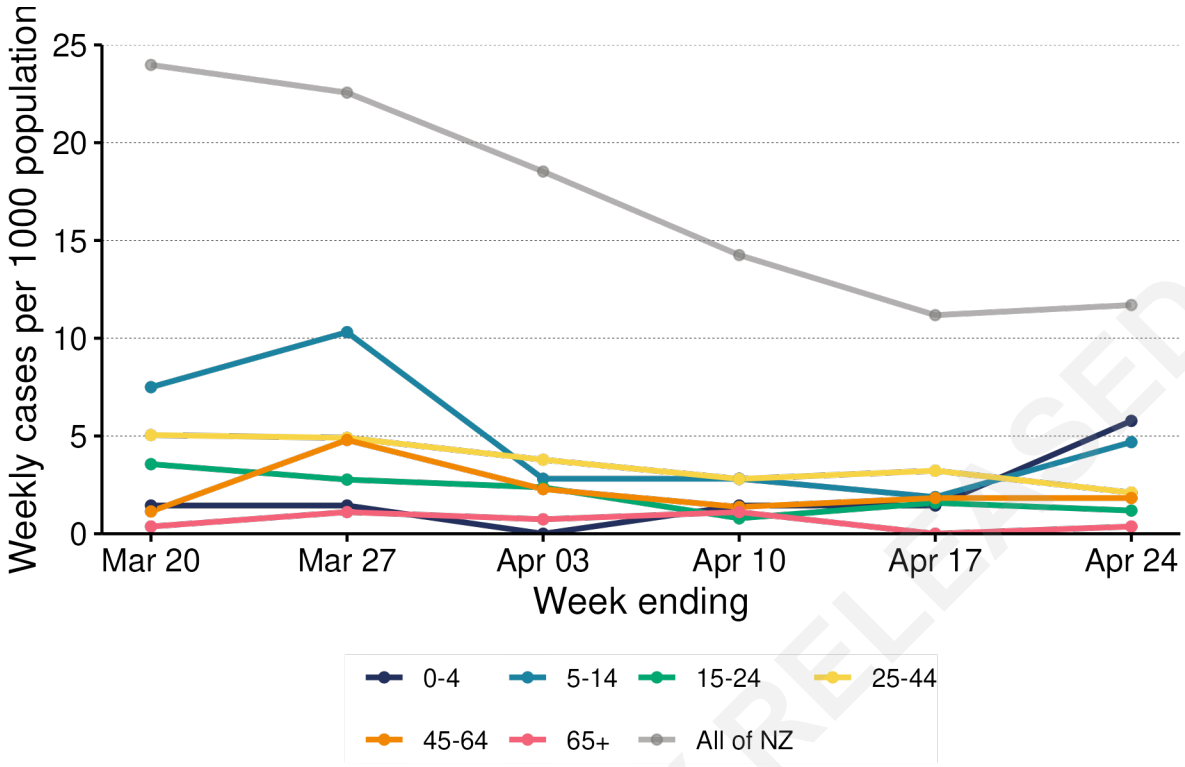
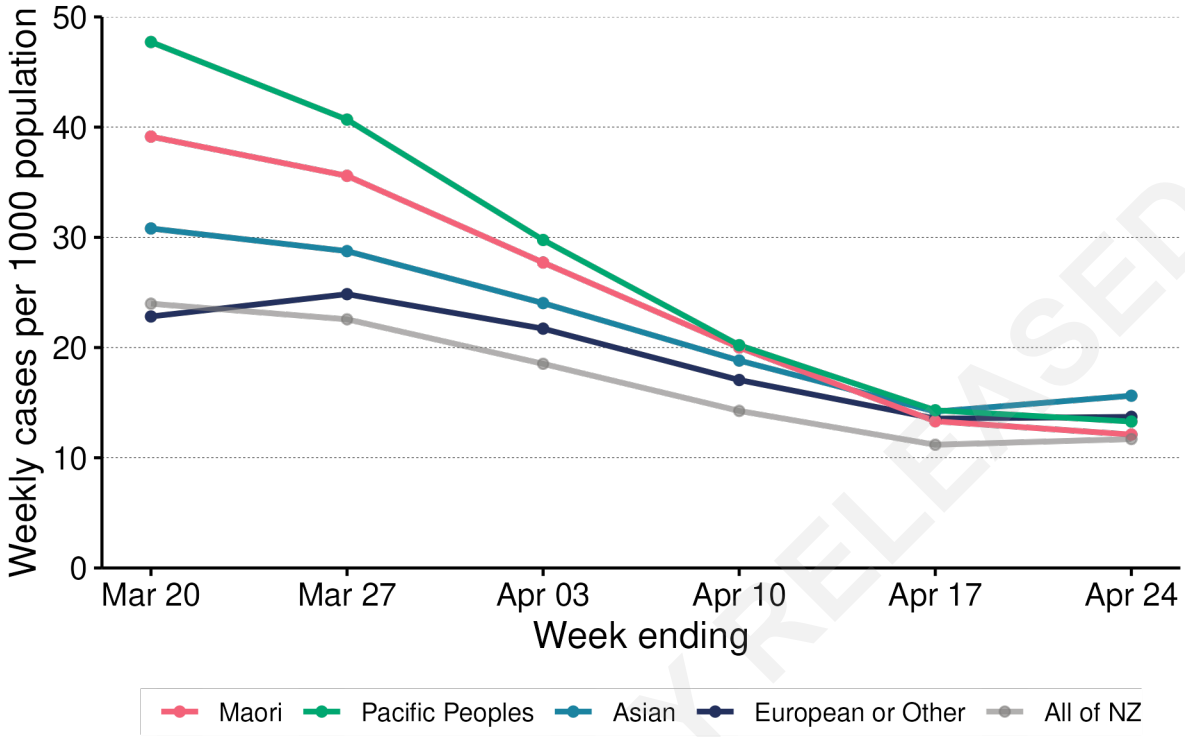
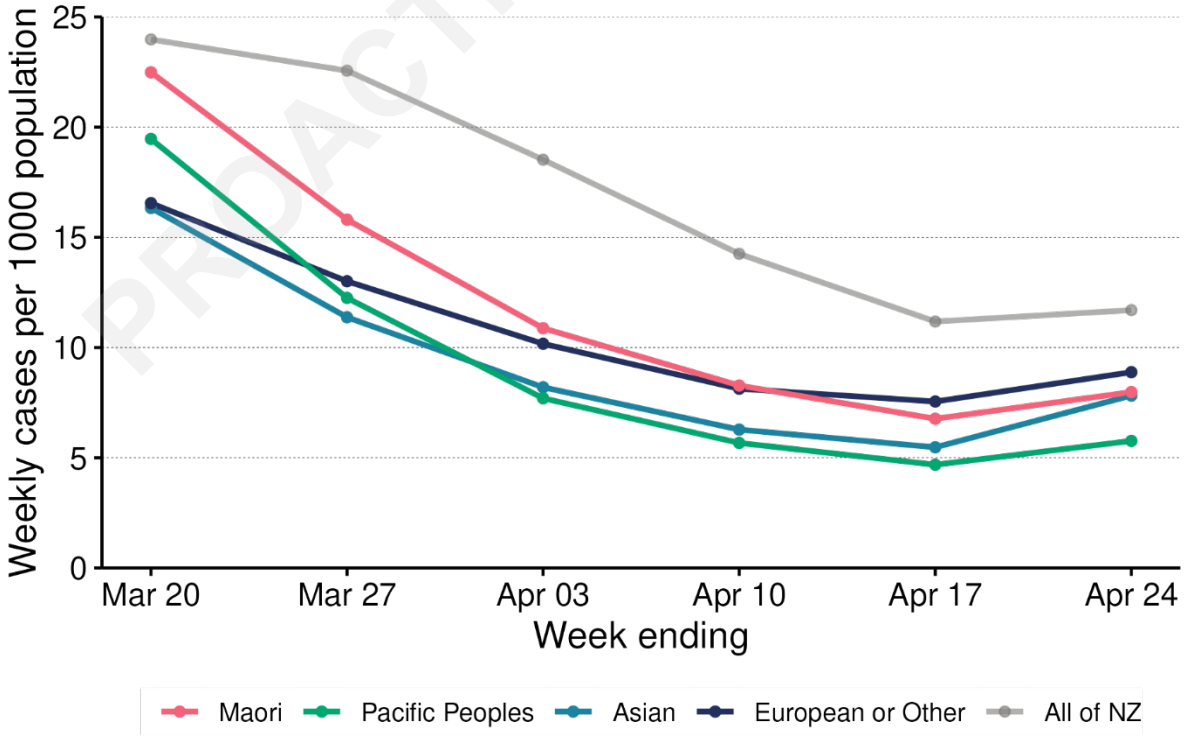


Ethnicity Graphs

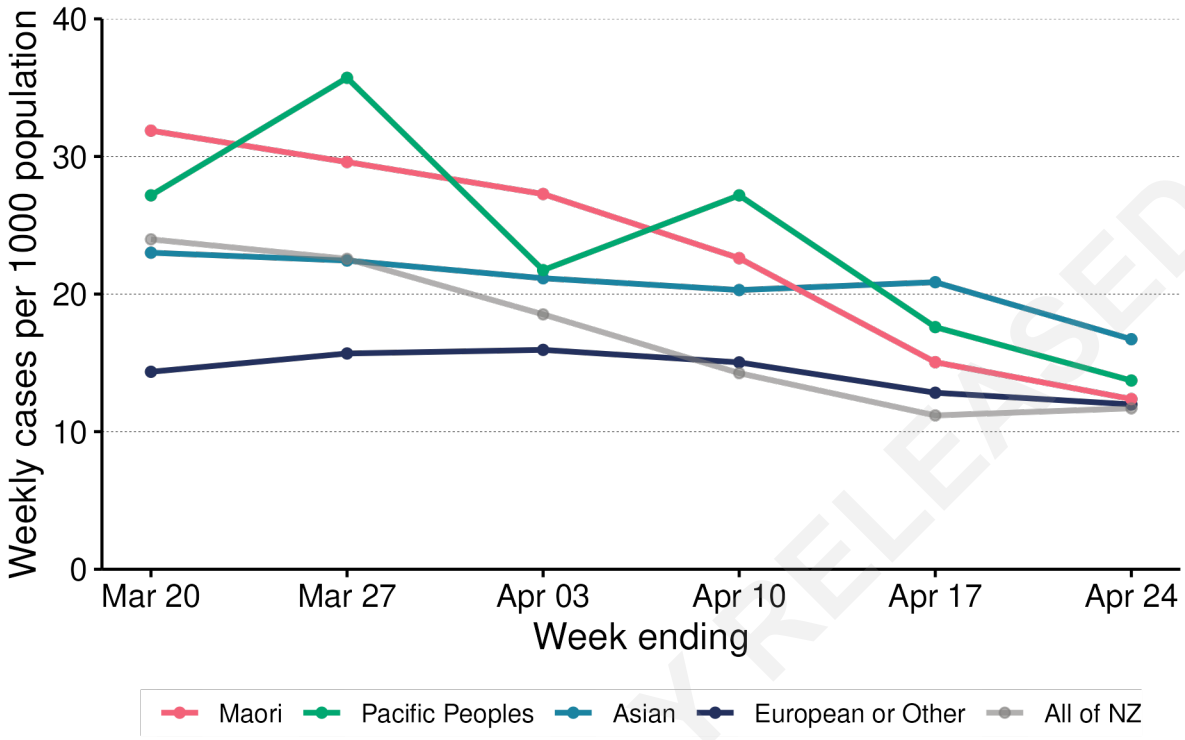
NZ Excluding Auckland Region



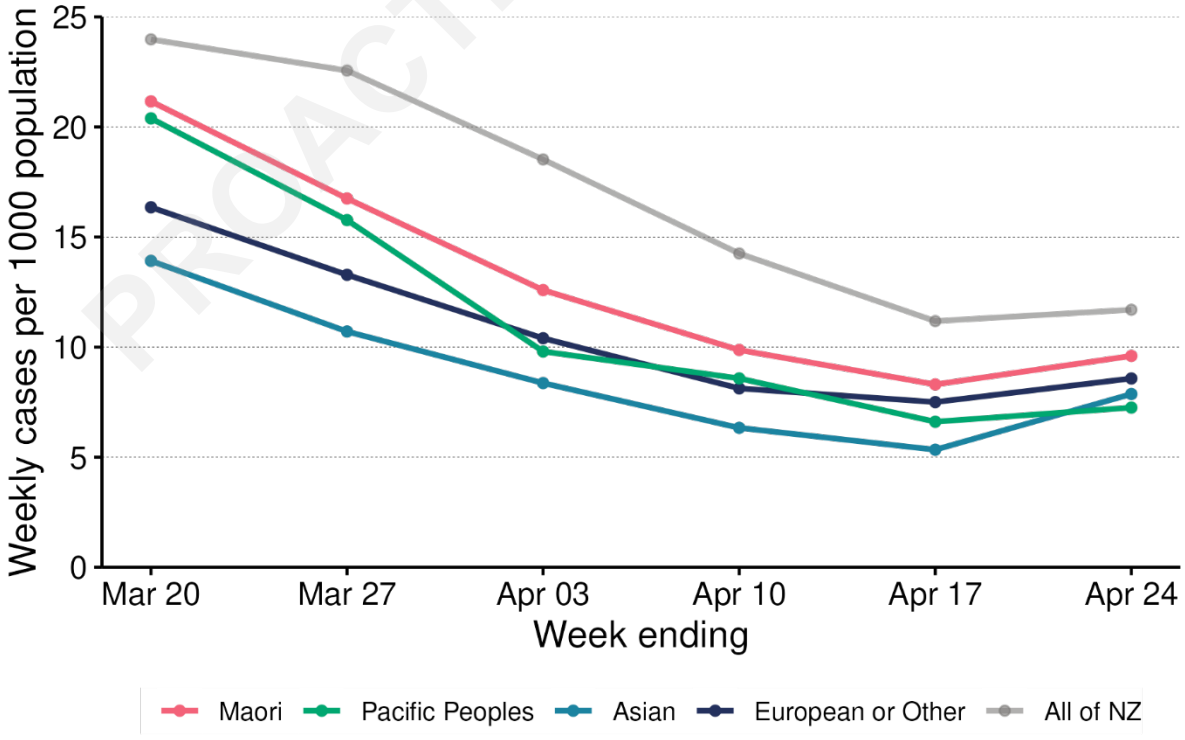
Auckland Region



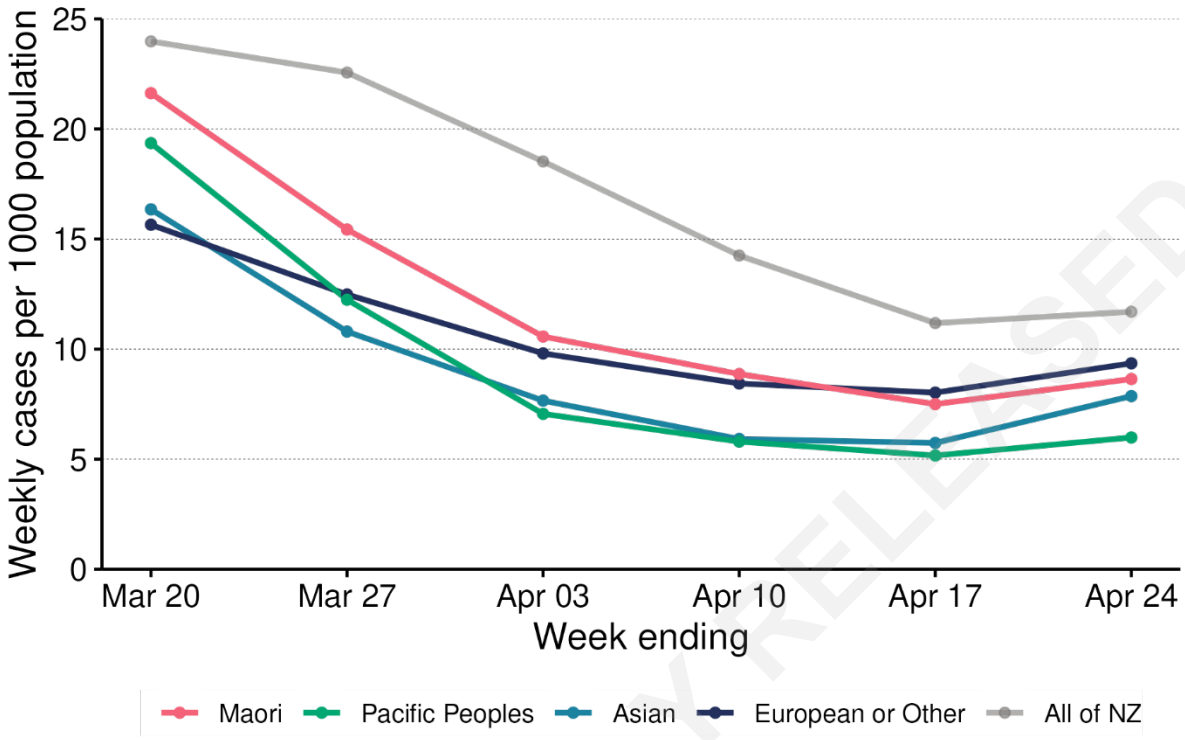
Northland DHB



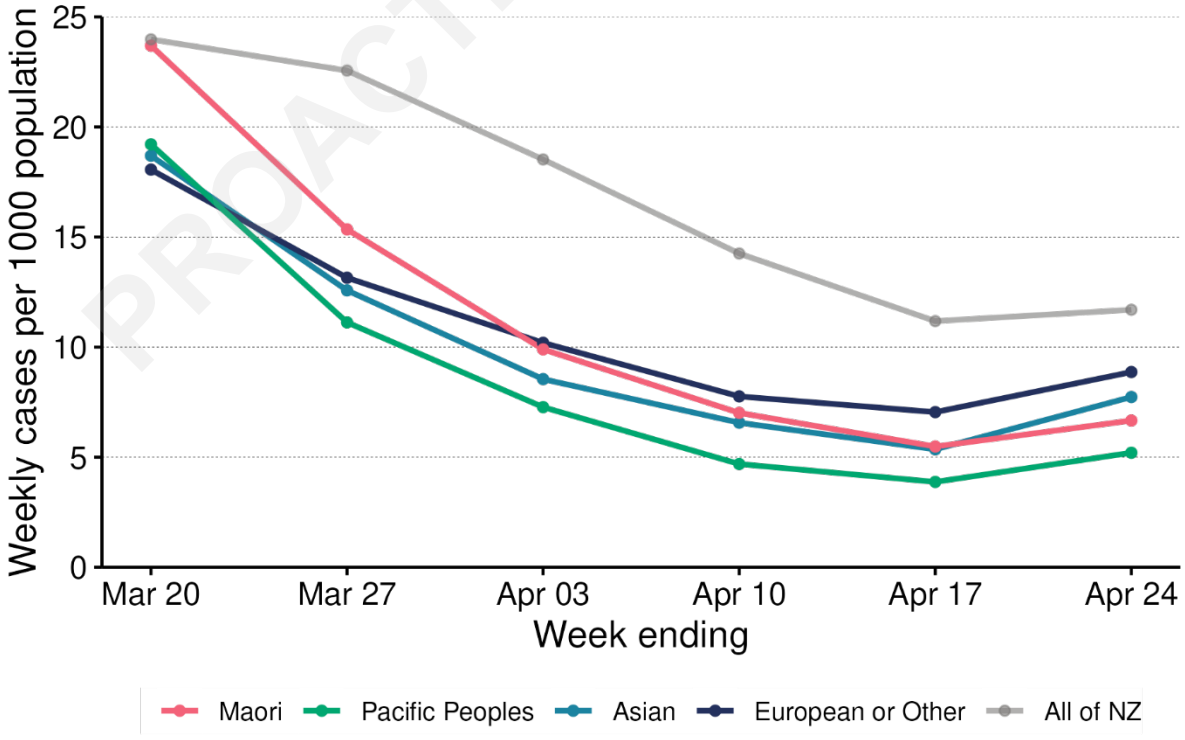
Waitemata DHB



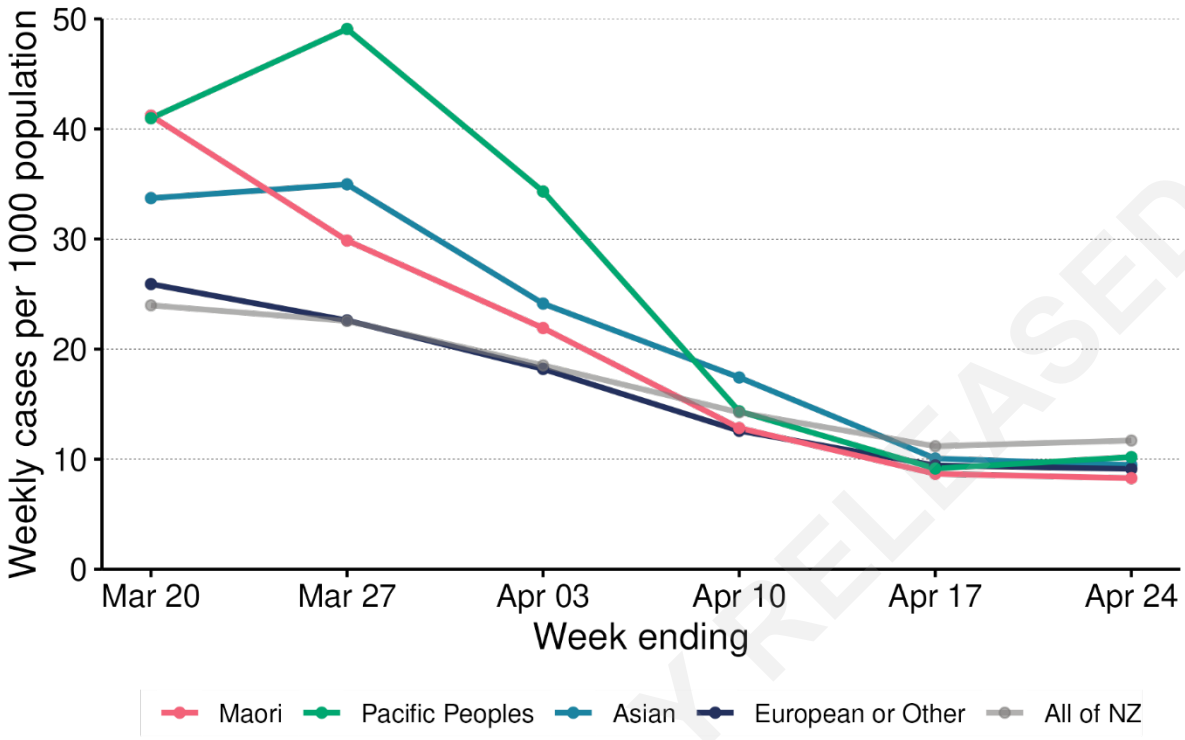
Auckland DHB



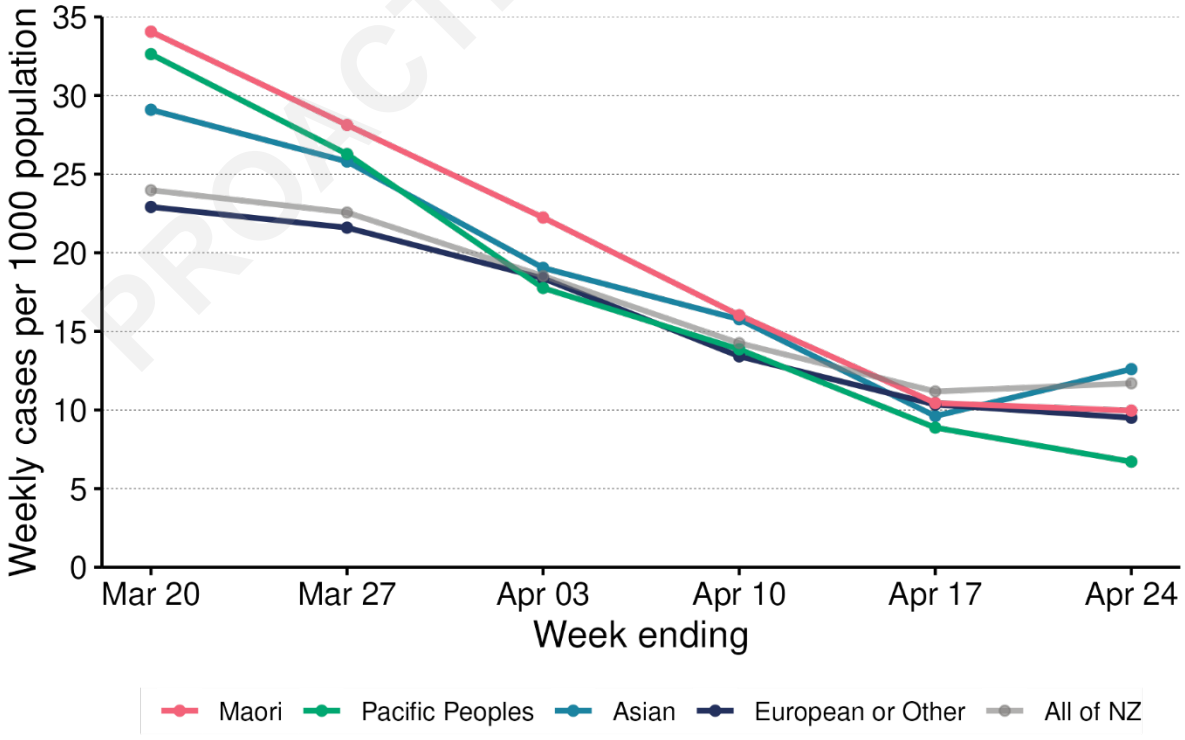
Counties Manukau DHB



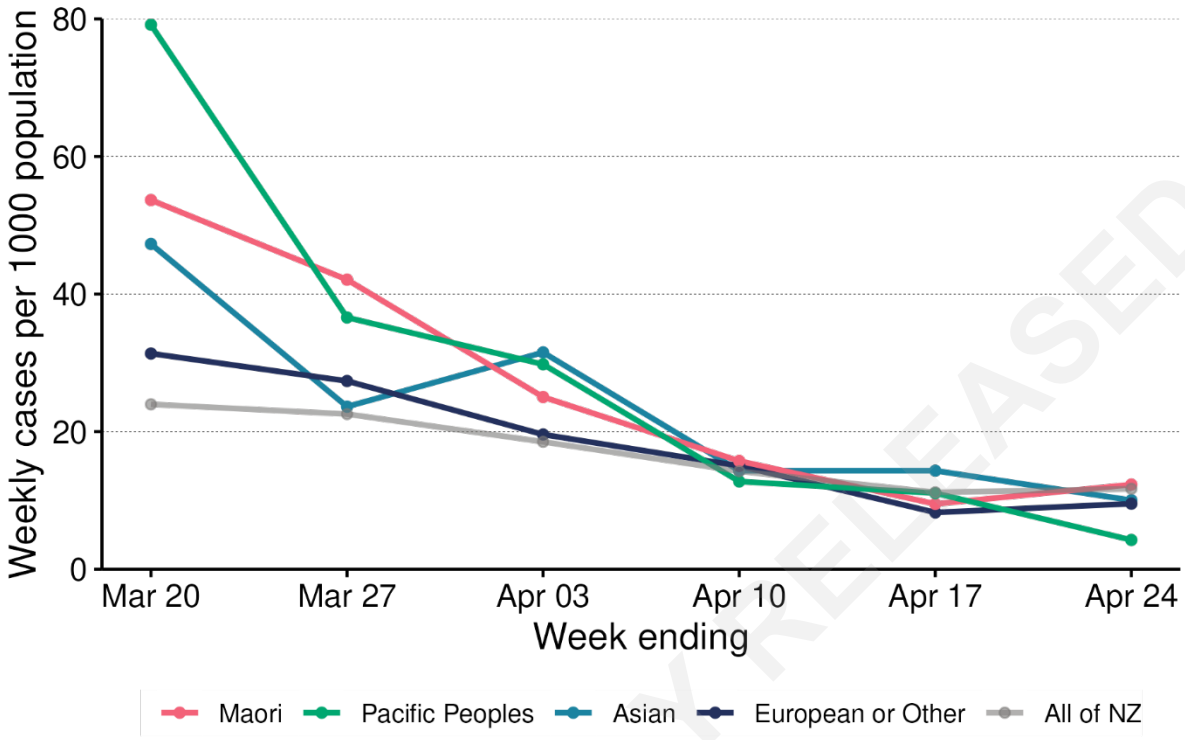
Bay of Plenty DHB



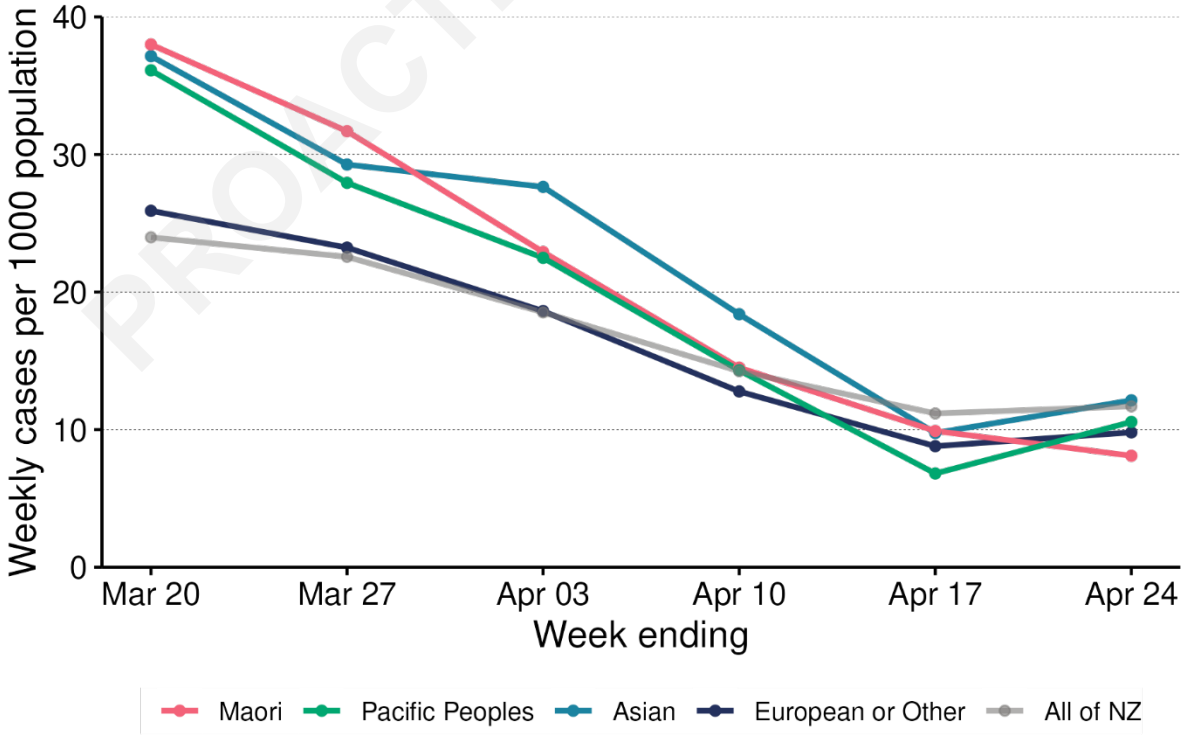
Waikato DHB



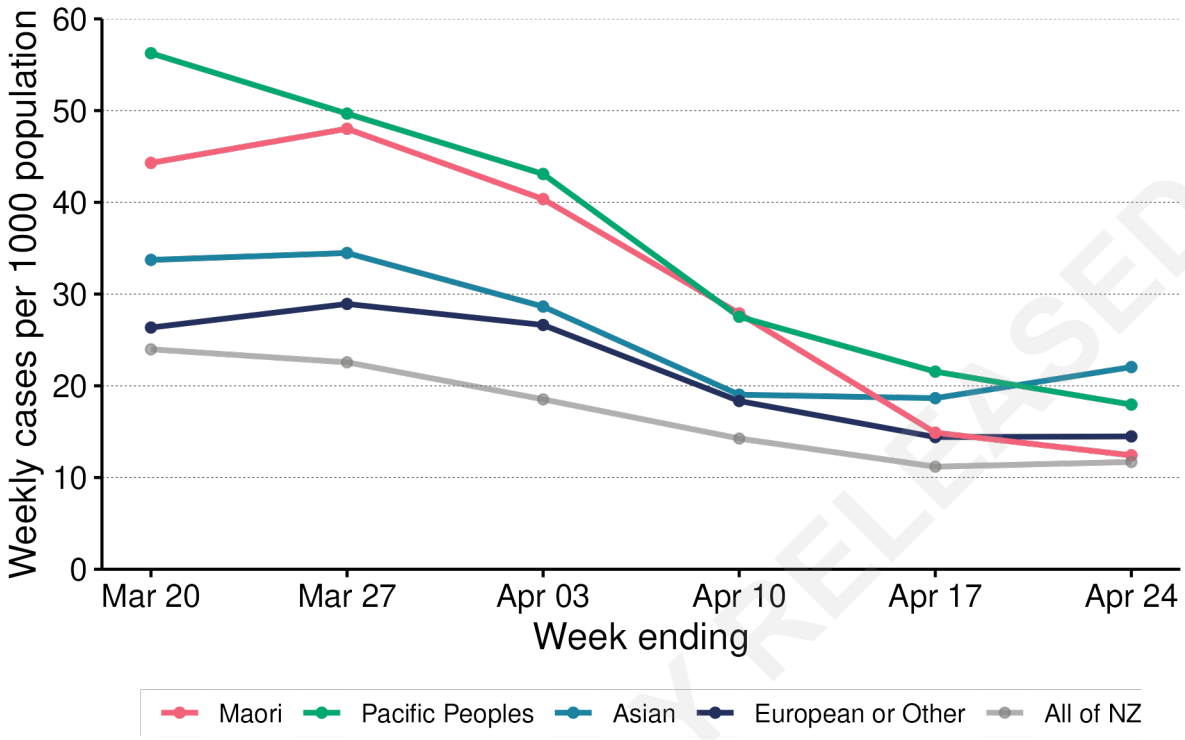
Tarawhiti DHB



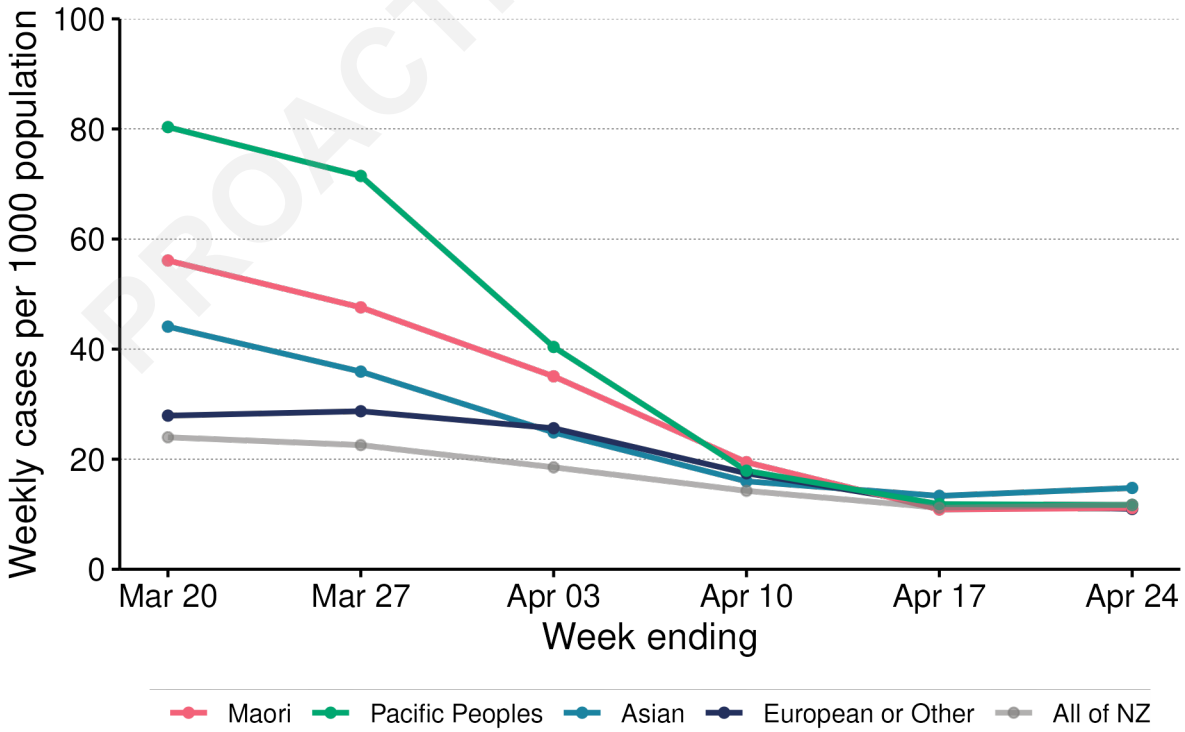
Lakes DHB



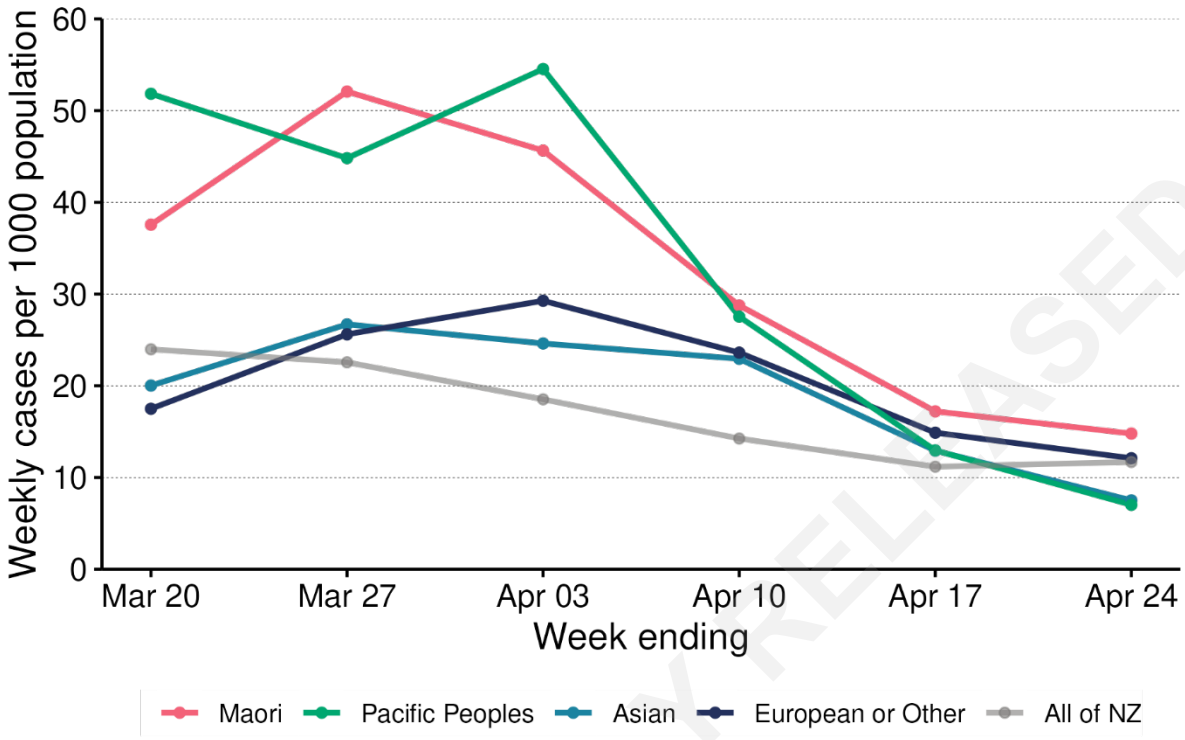
Taranaki DHB



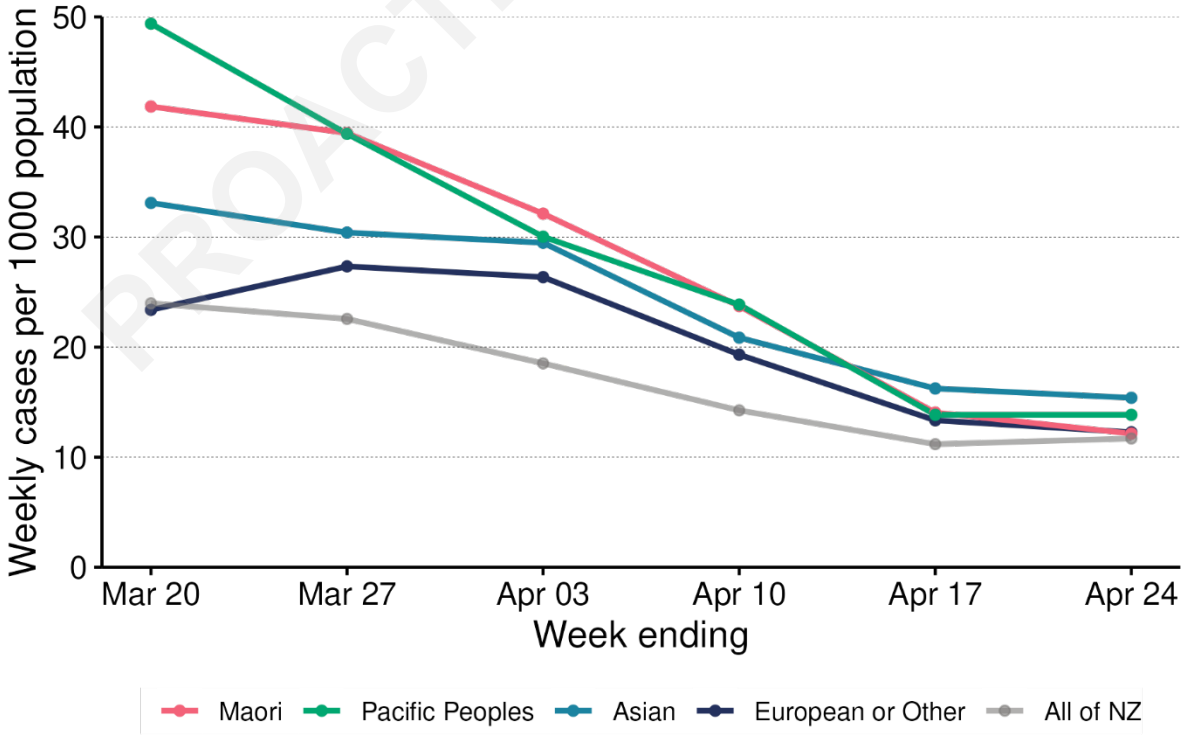
Hawke's Bay DHB



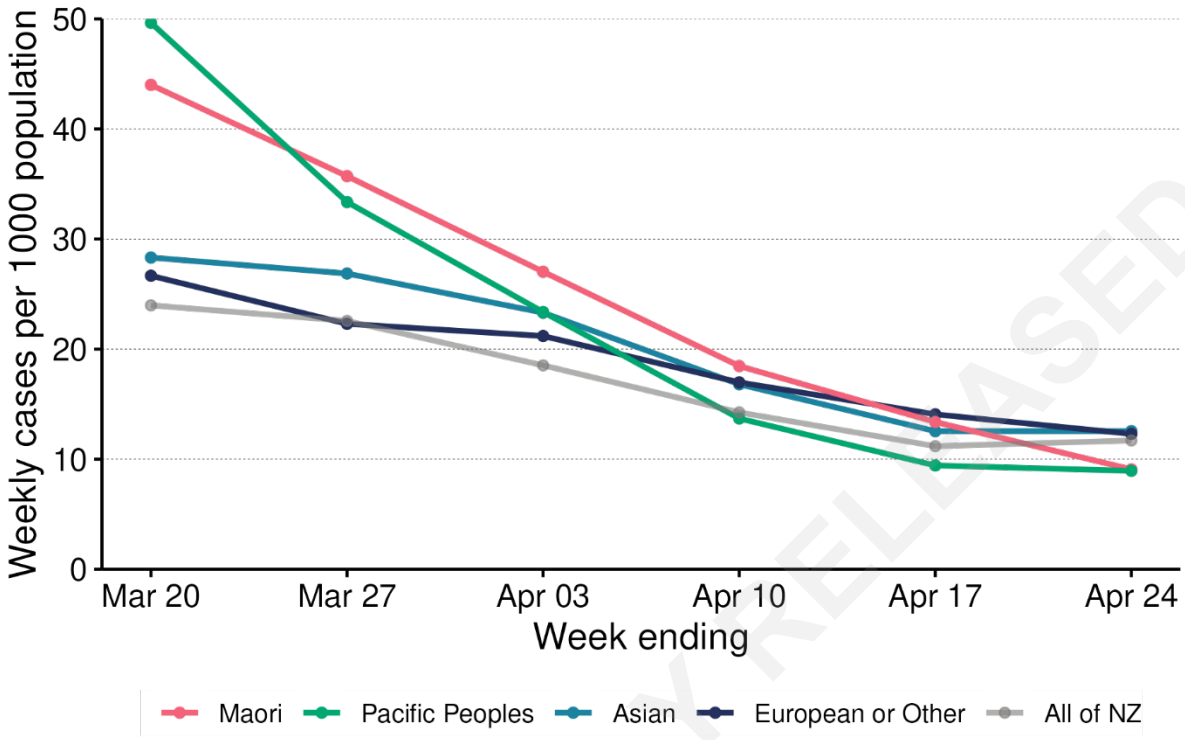
Whanganui DHB



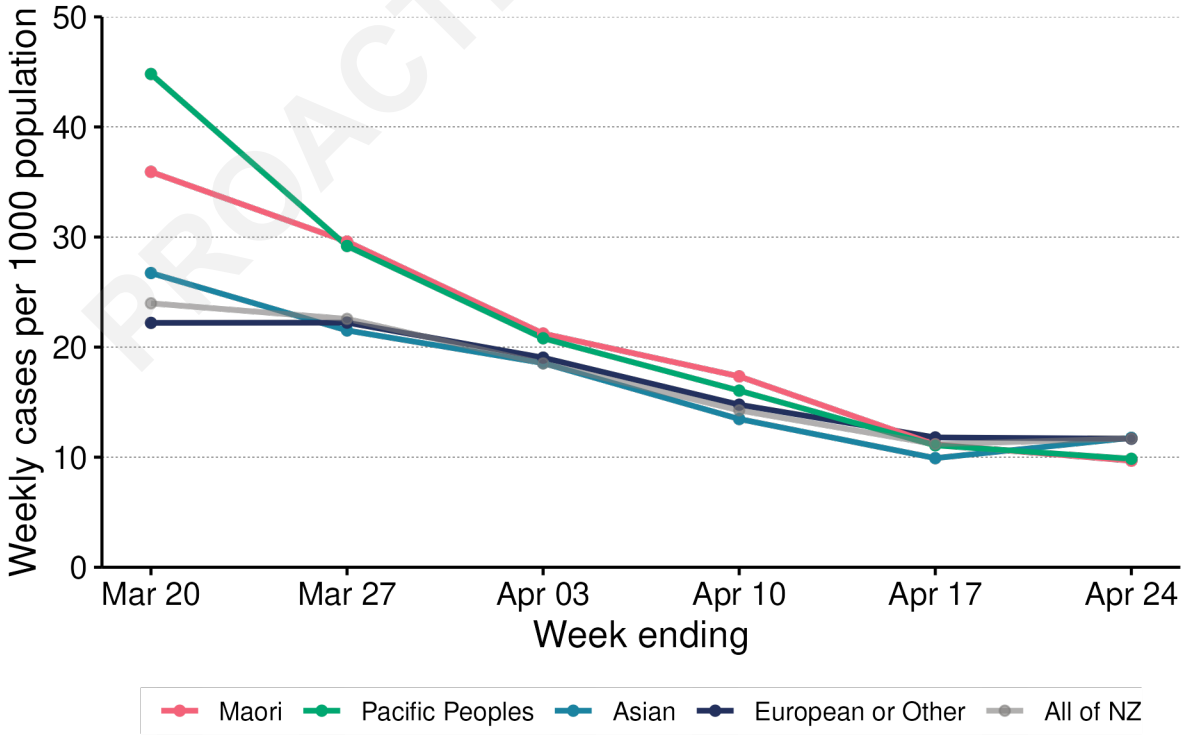
MidCentral DHB



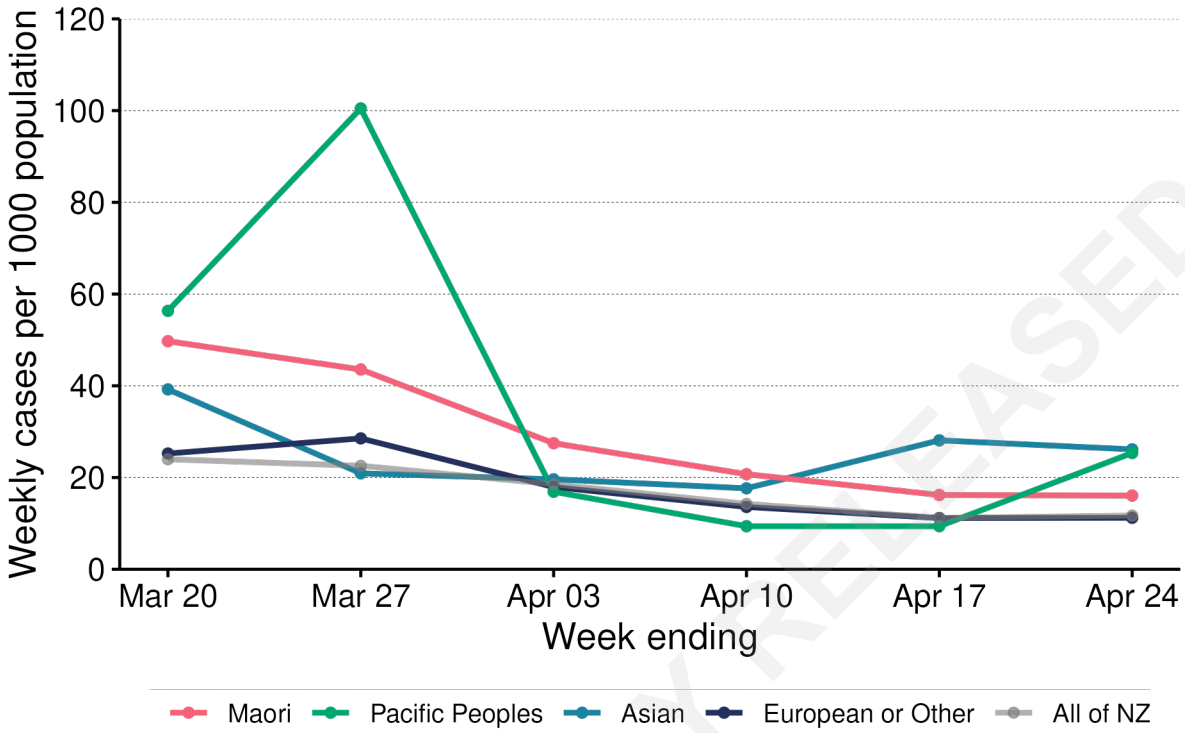
Hutt Valley DHB



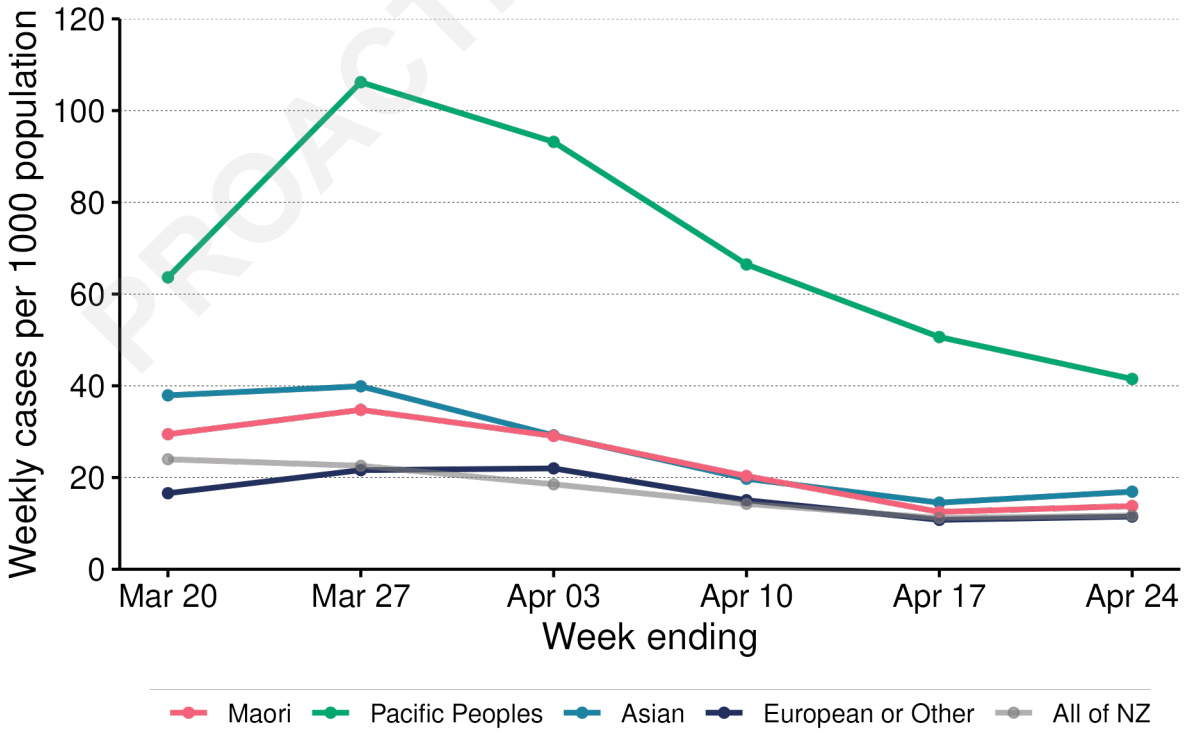
Capital and Coast DHB



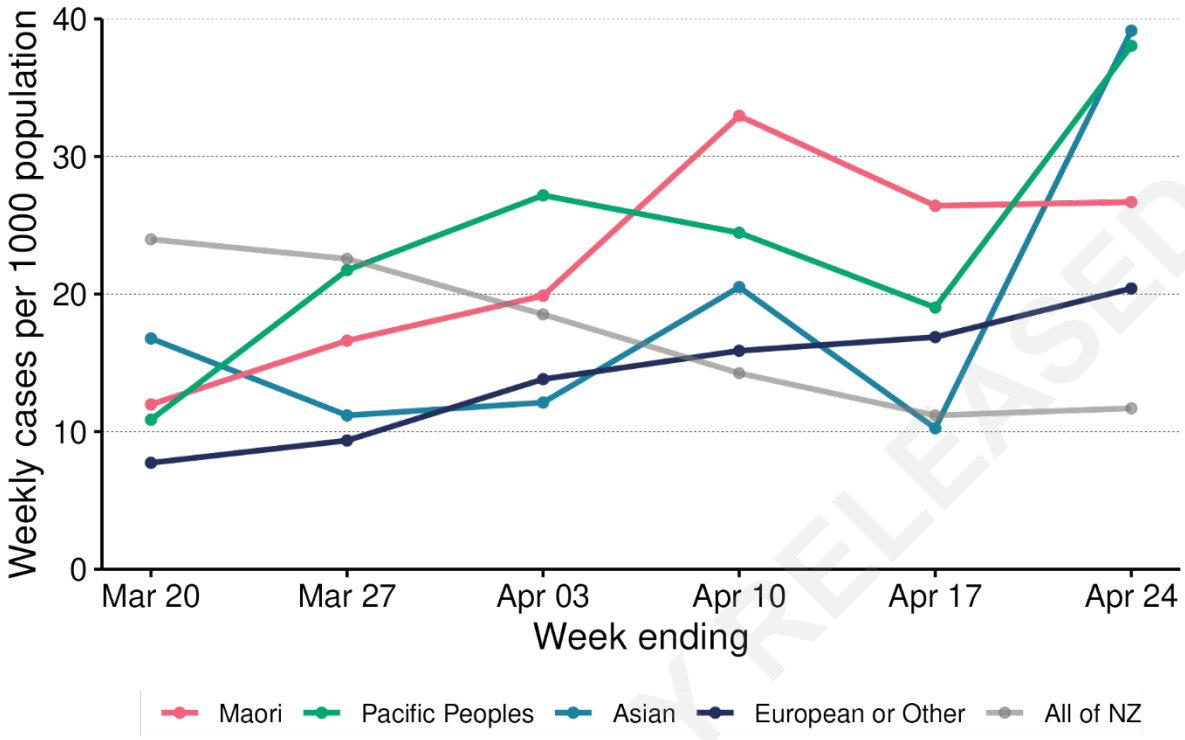
Wairarapa DHB



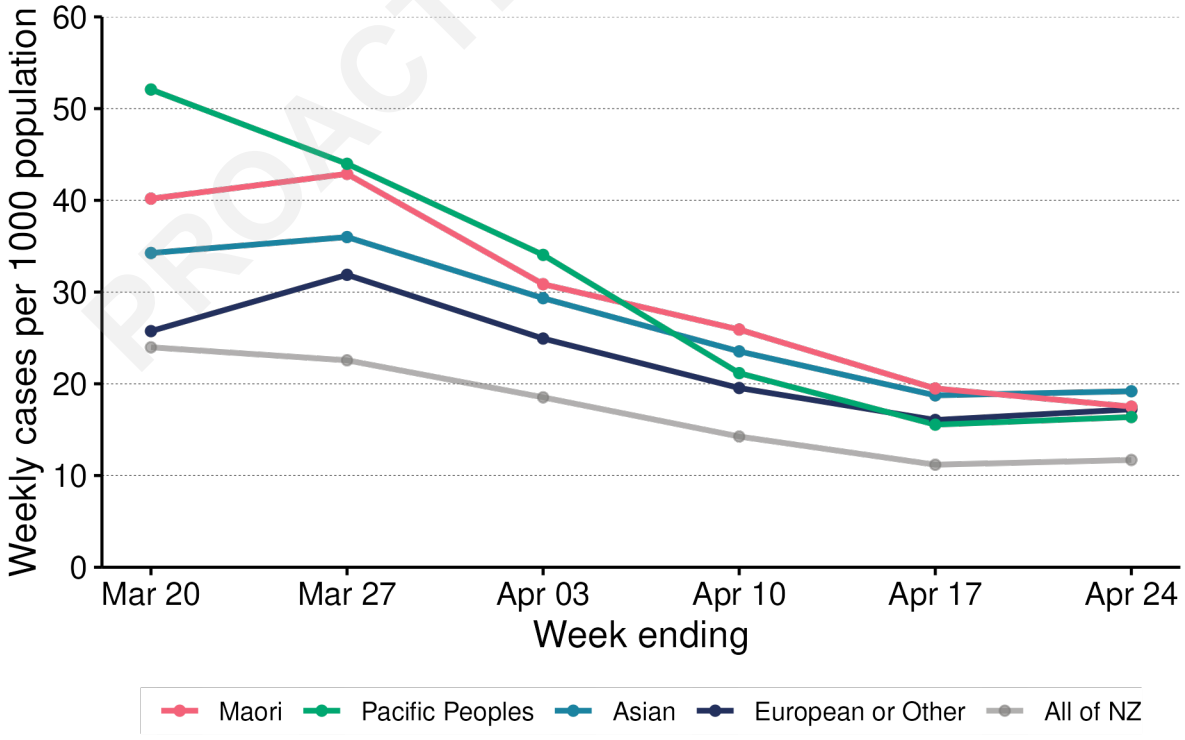
Nelson Marlborough DHB



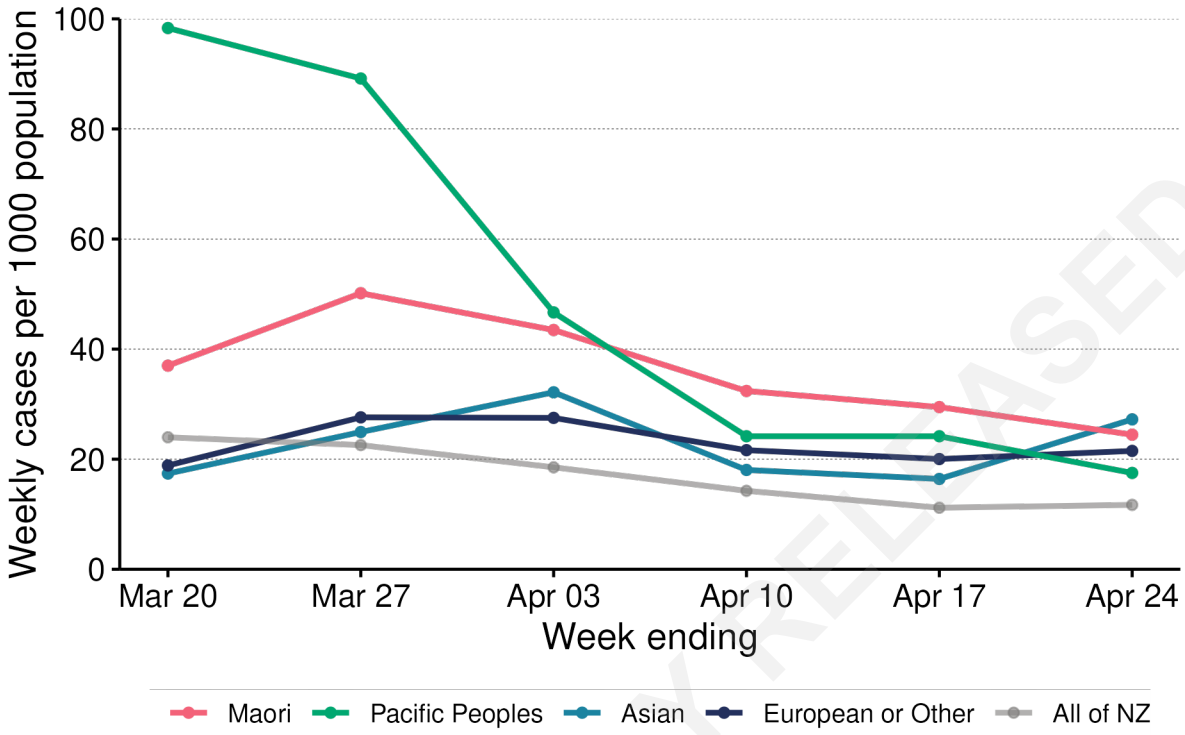
West Coast DHB



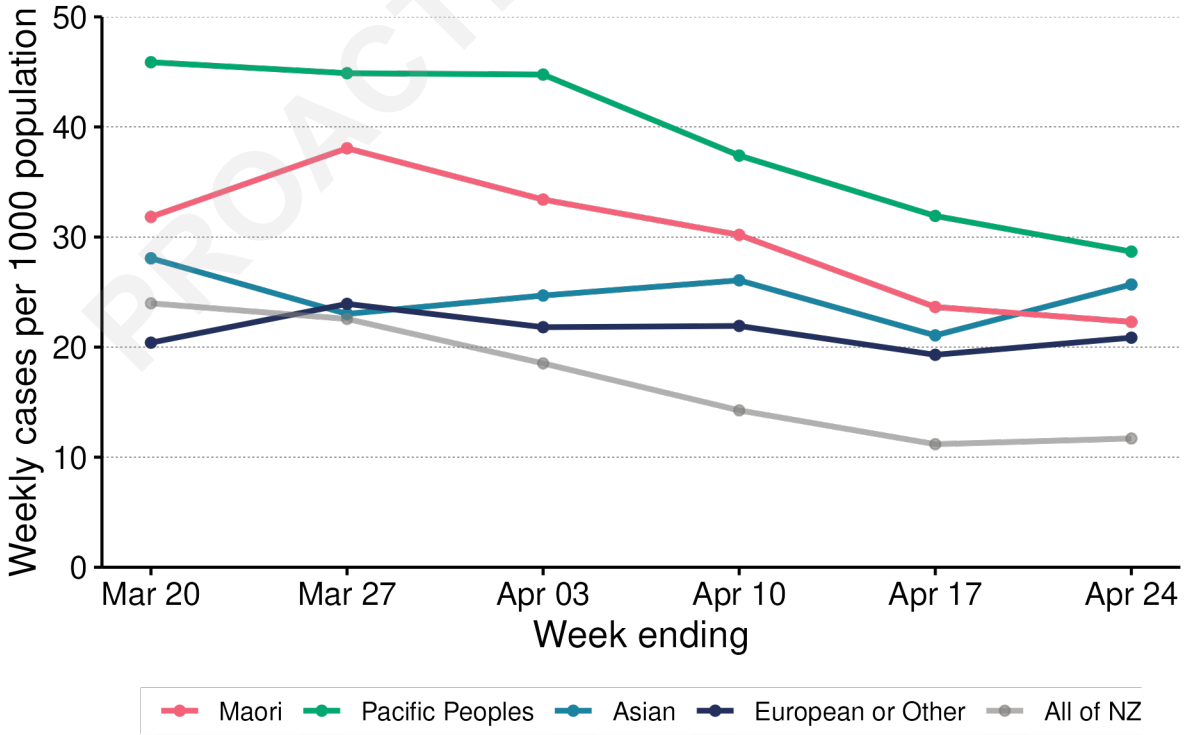
Canterbury DHB



South Canterbury DHB



Southern DHB



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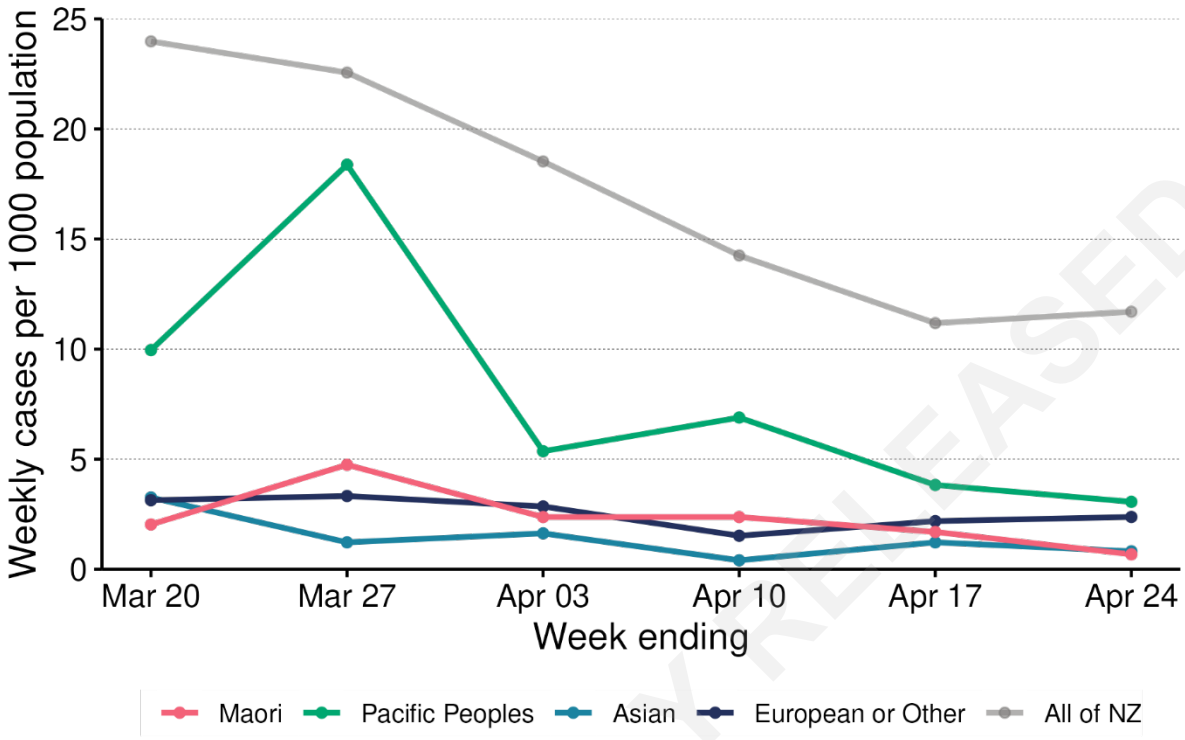
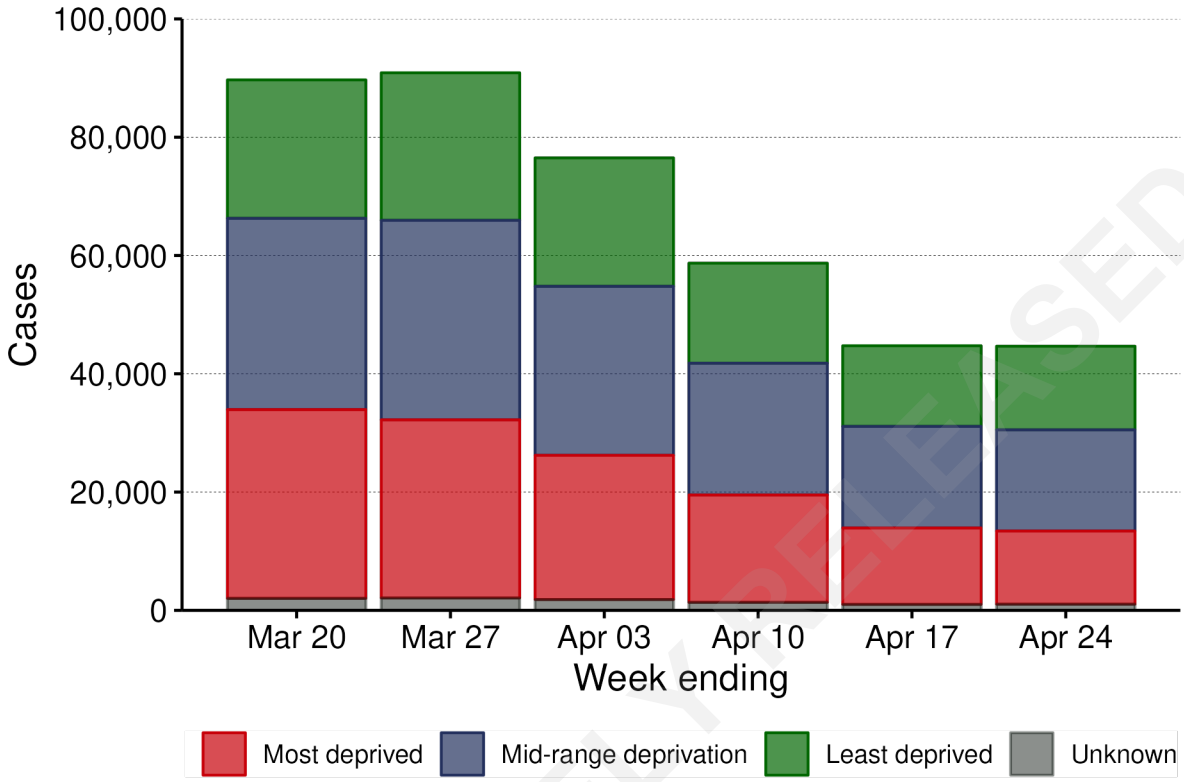
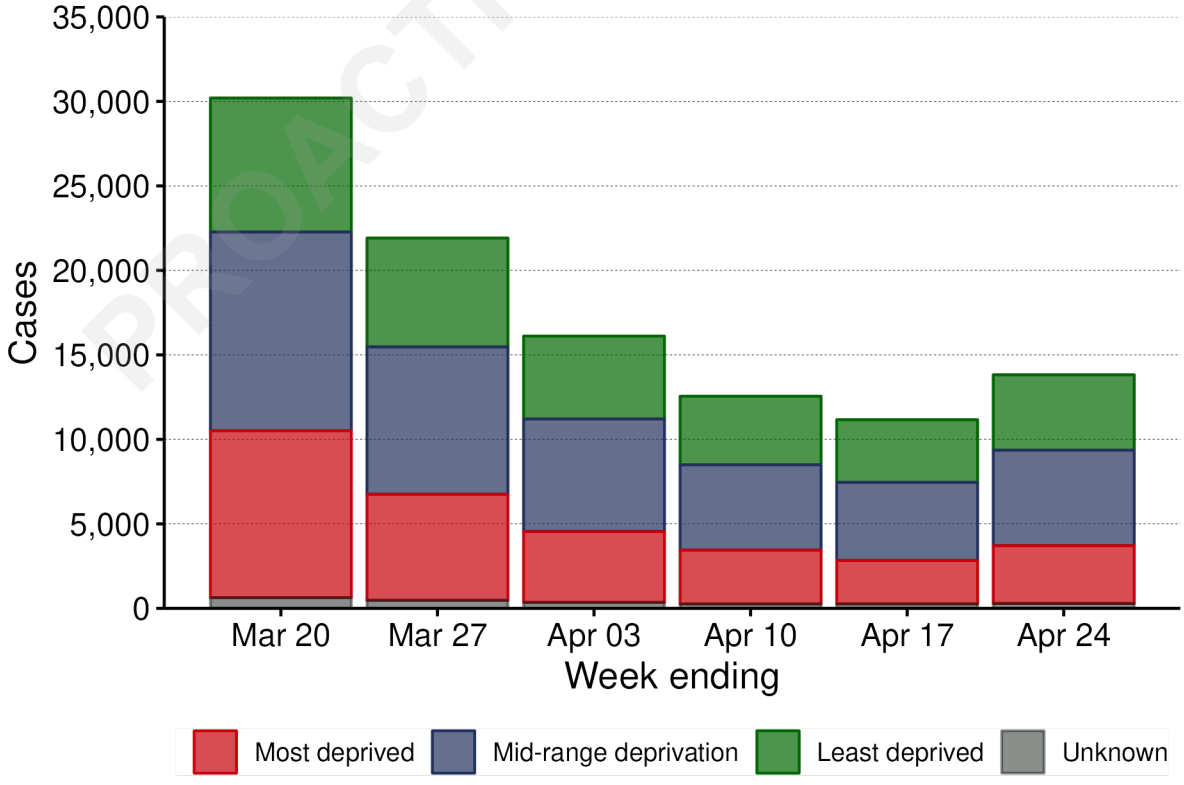


Deprivation Graphs

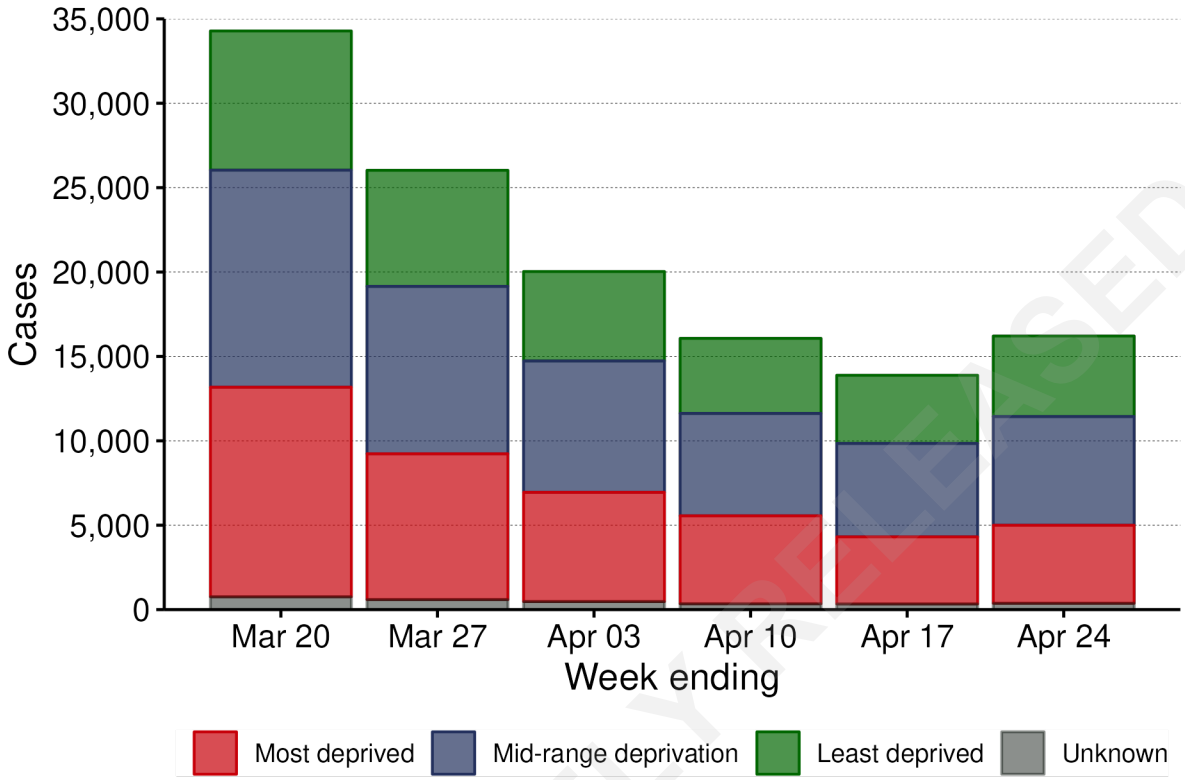
NZ Excluding Auckland Region



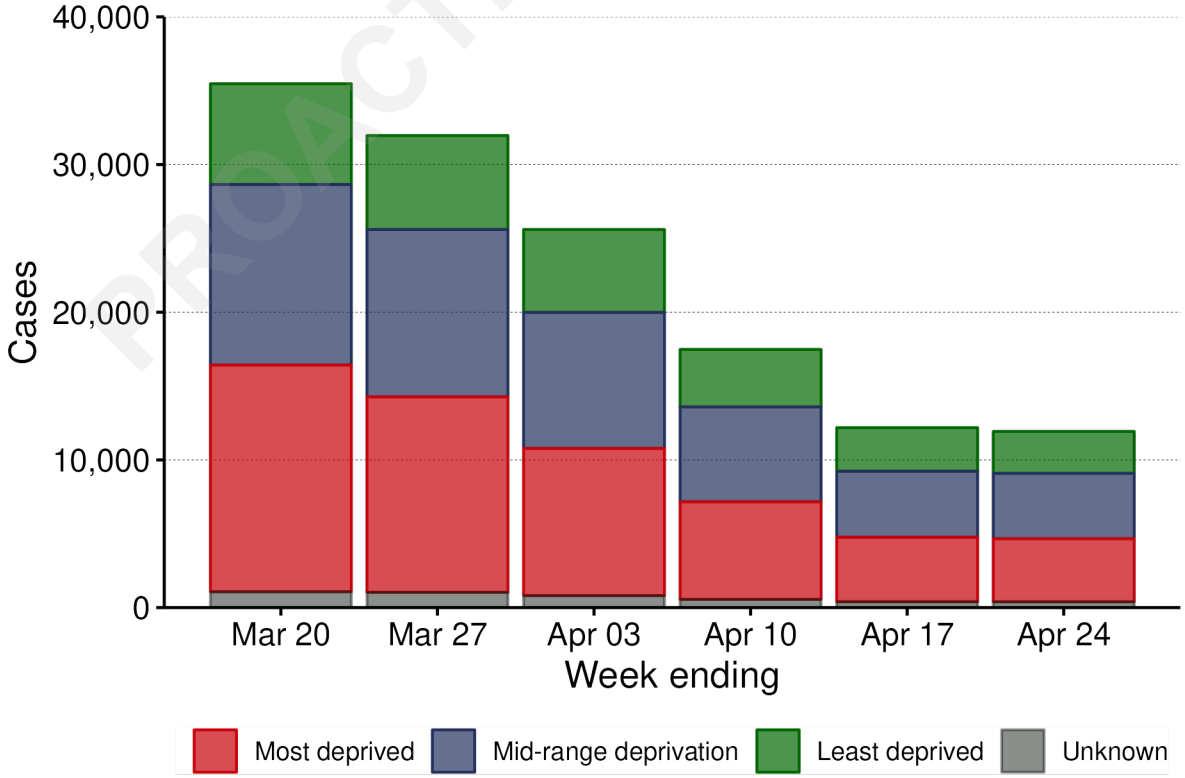
Auckland Region



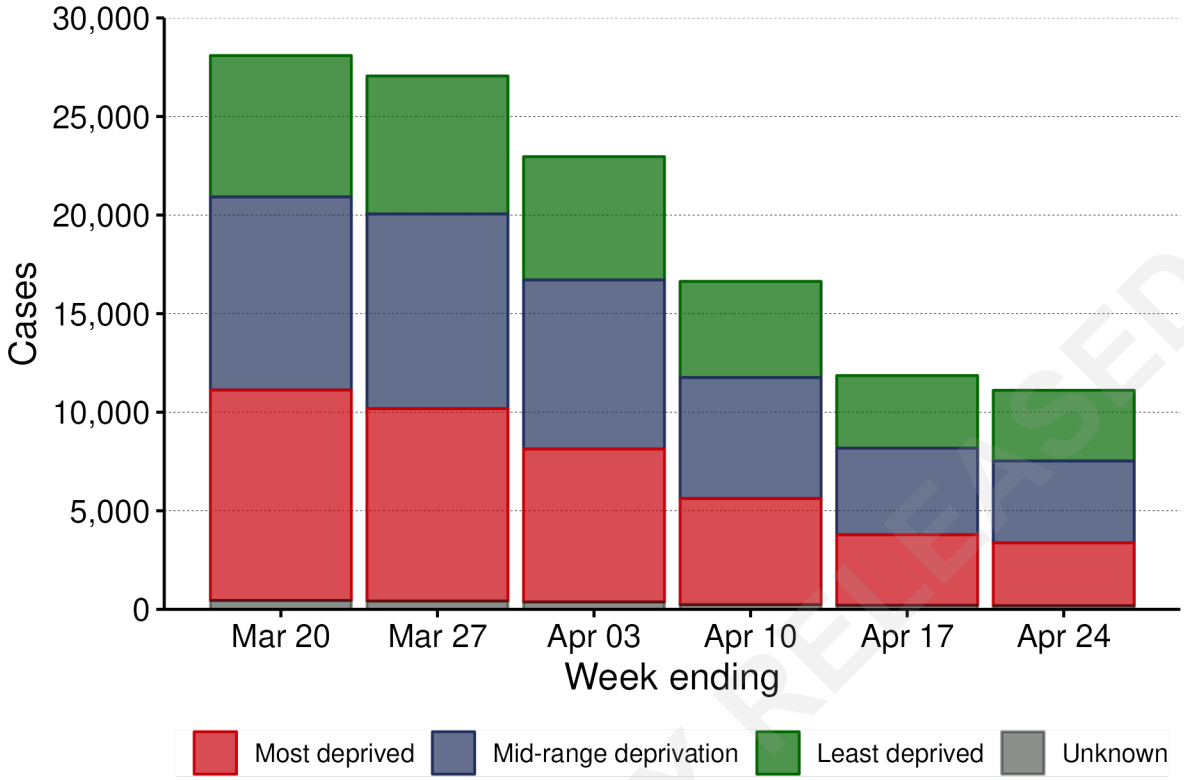
Northern Region



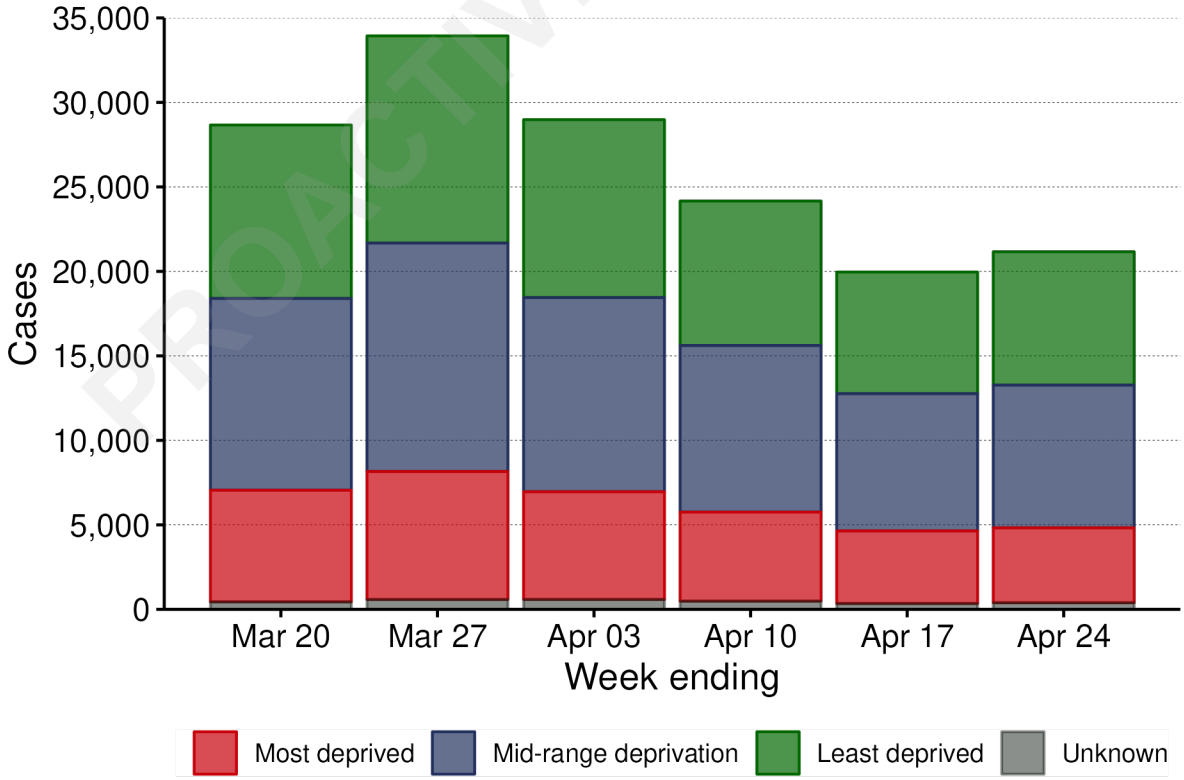
Te Manawa Taki



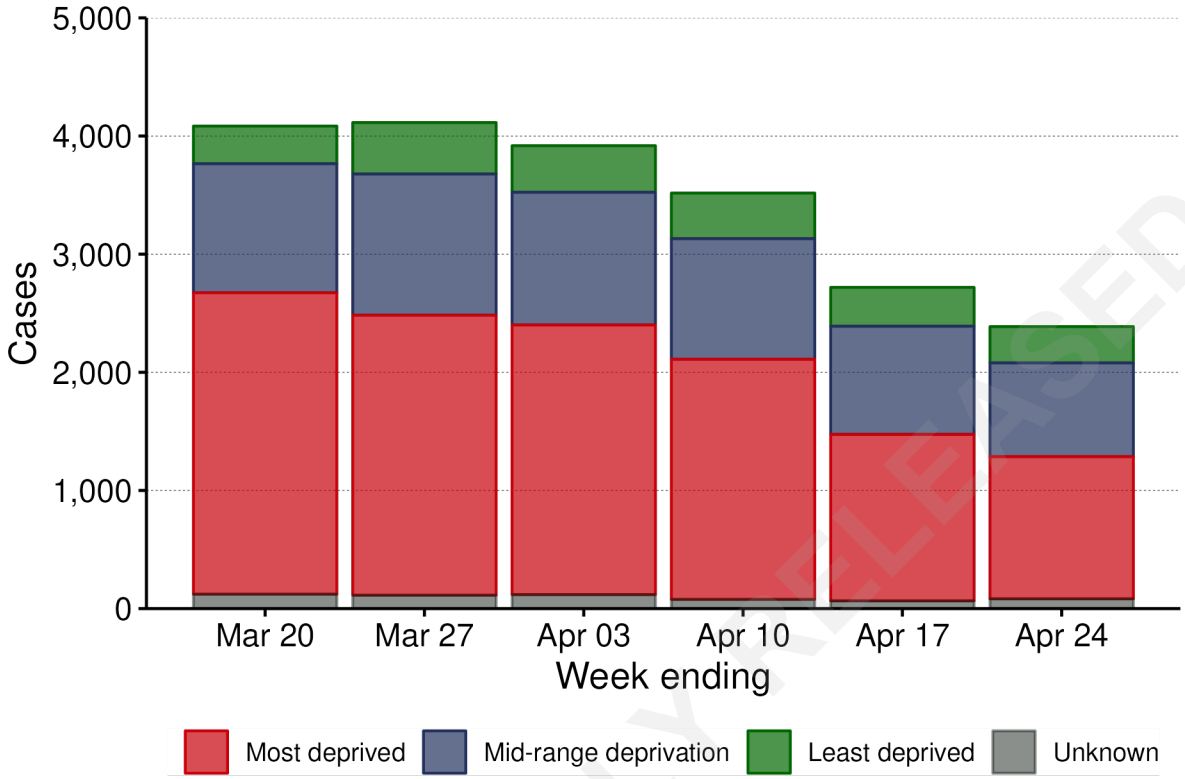
Central Region



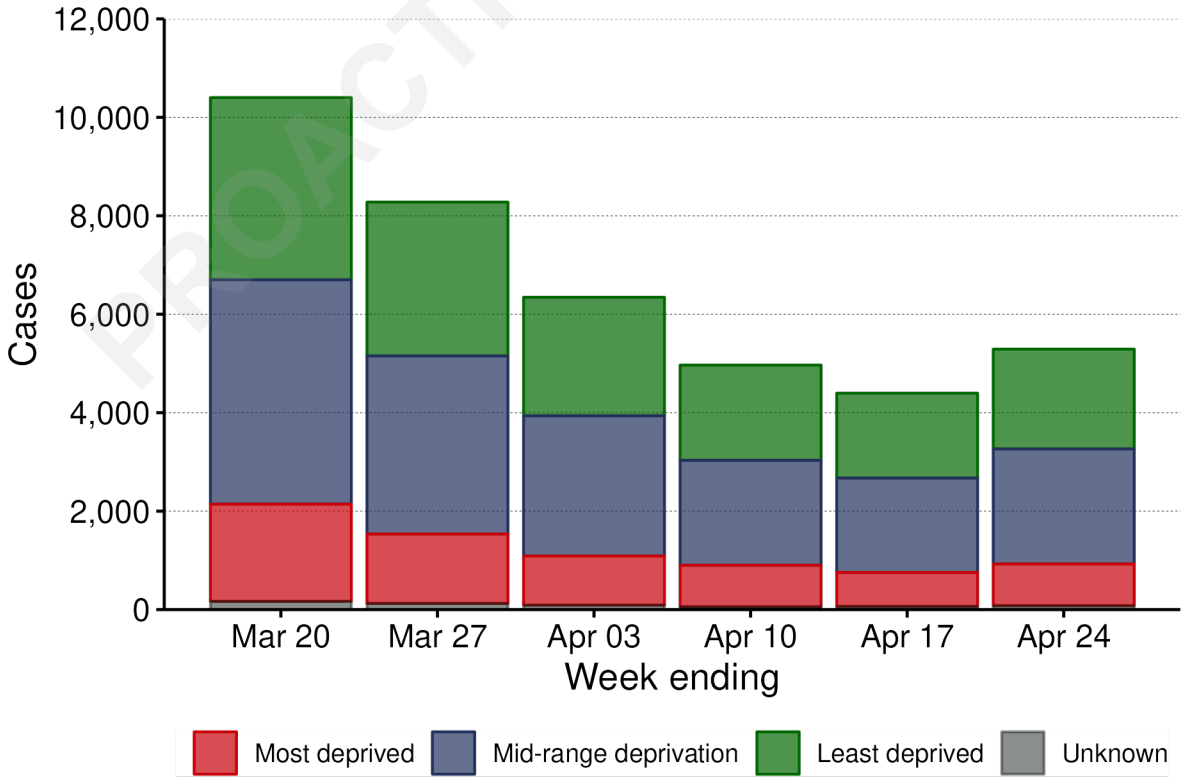
Southern Region



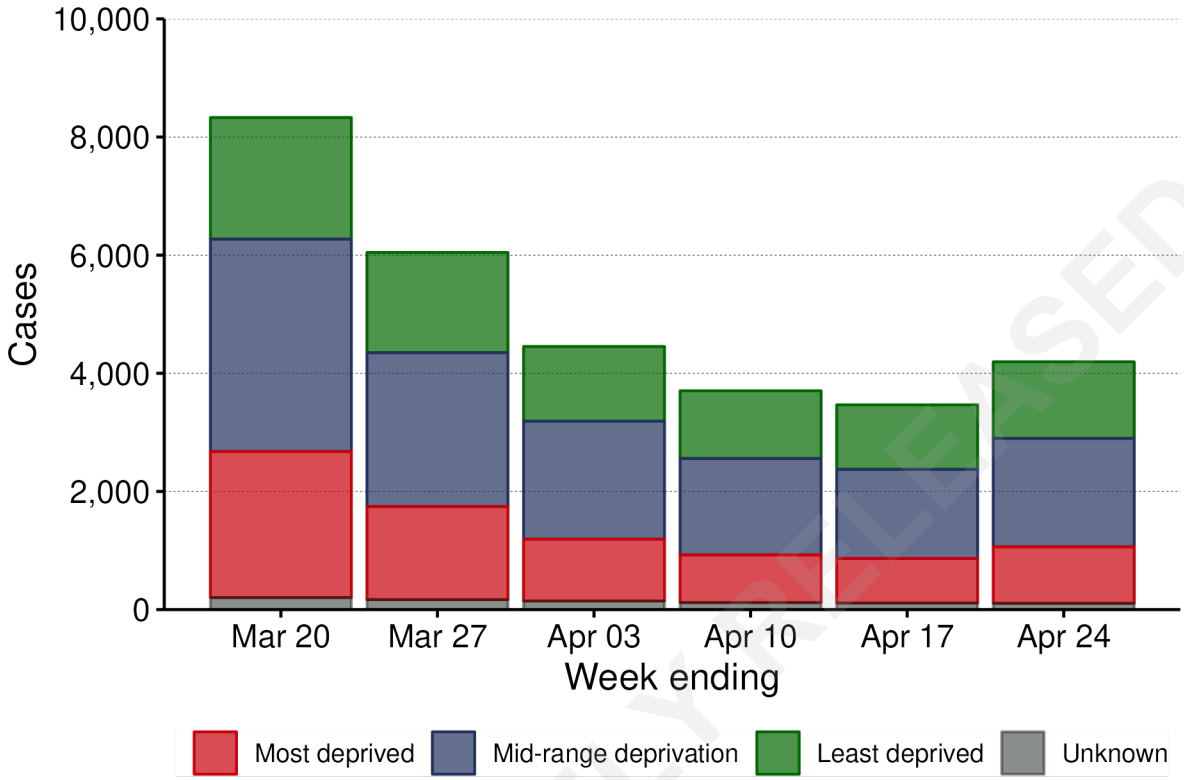
Northland DHB



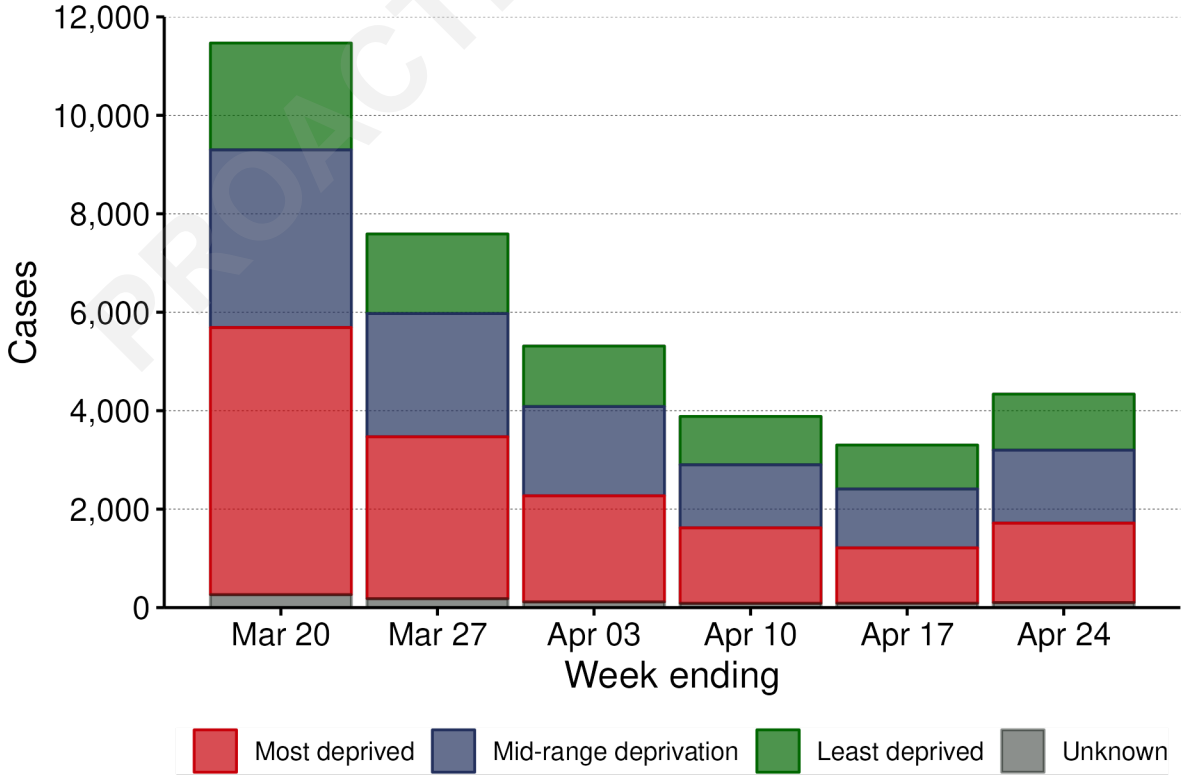
Waitemata DHB



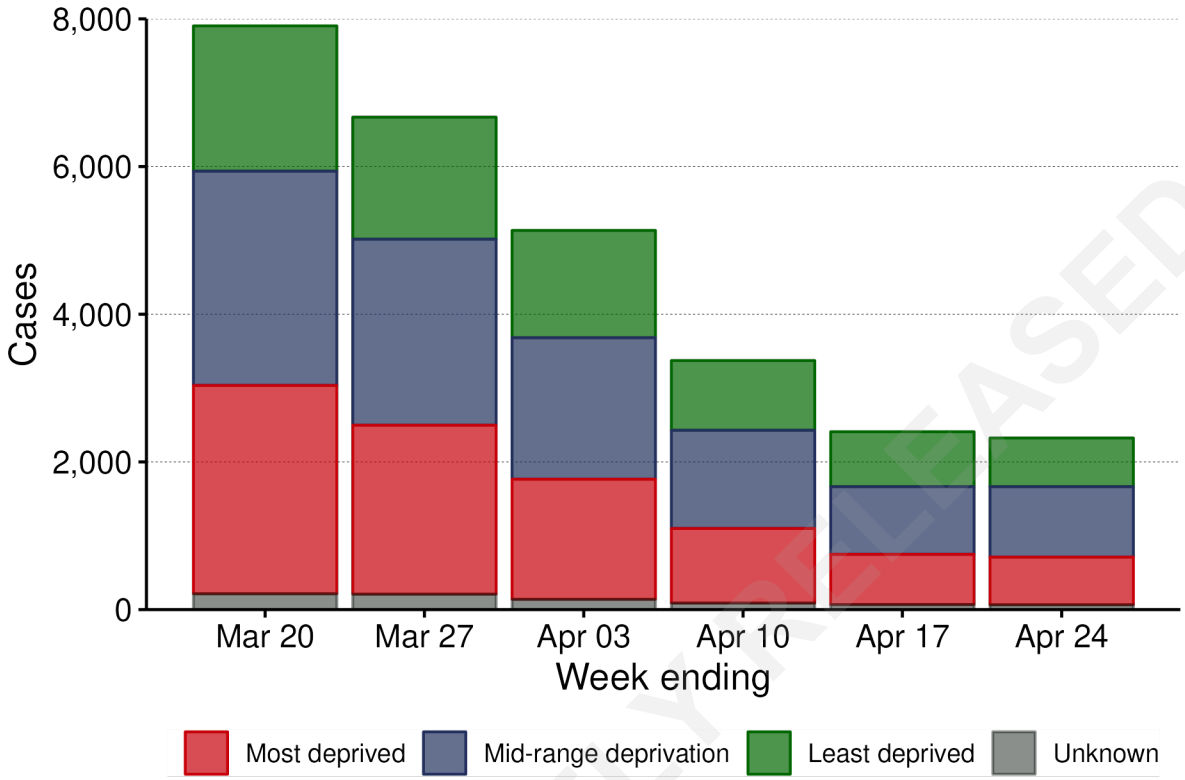
Auckland DHB



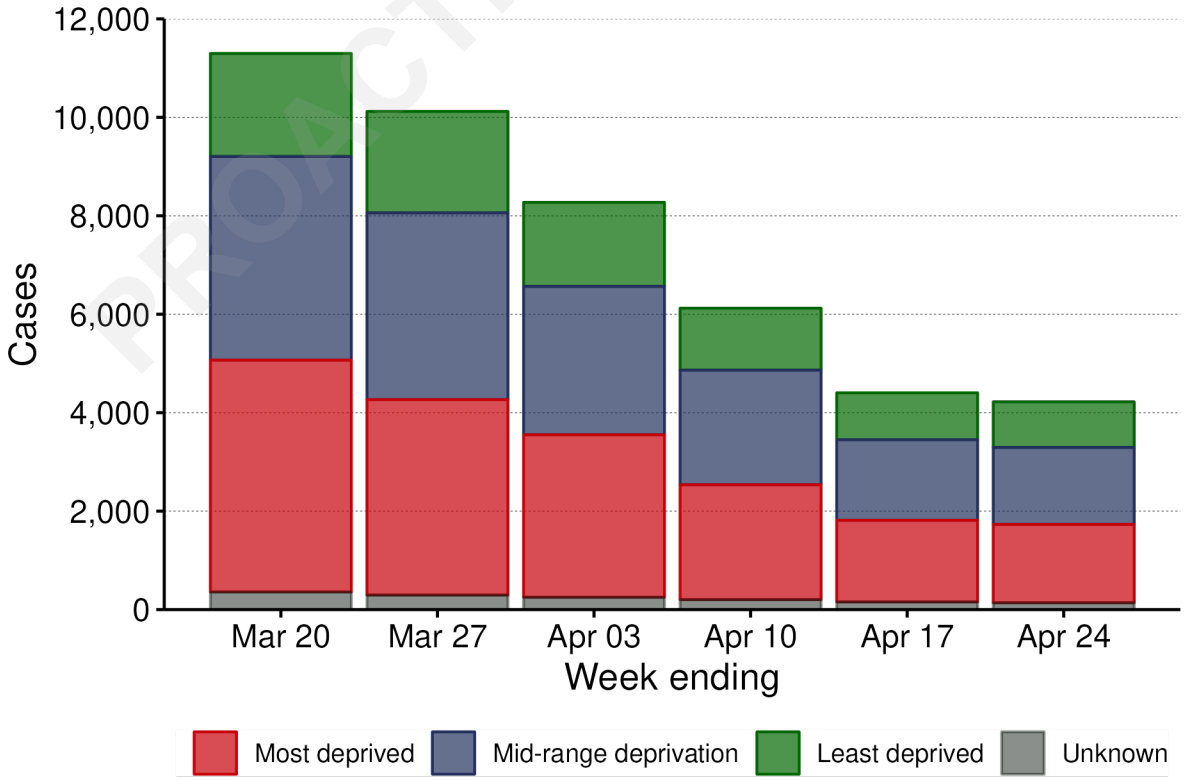
Counties Manukau DHB



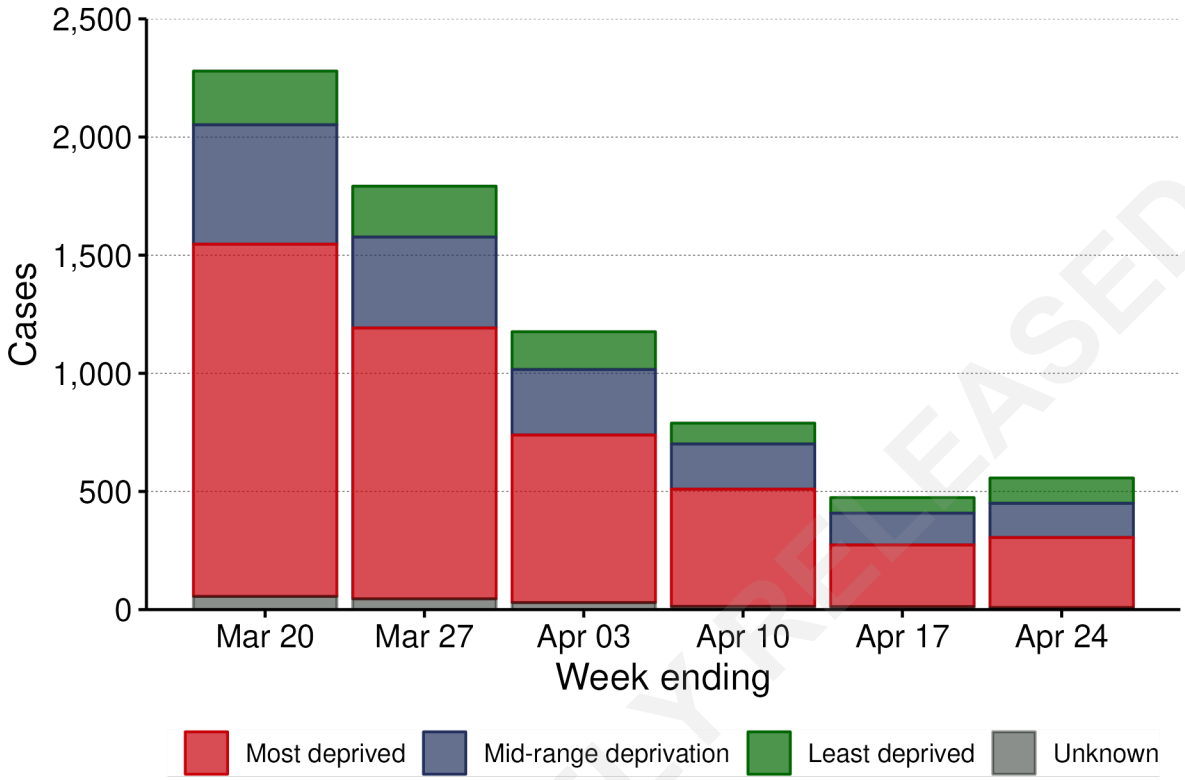
Bay of Plenty DHB



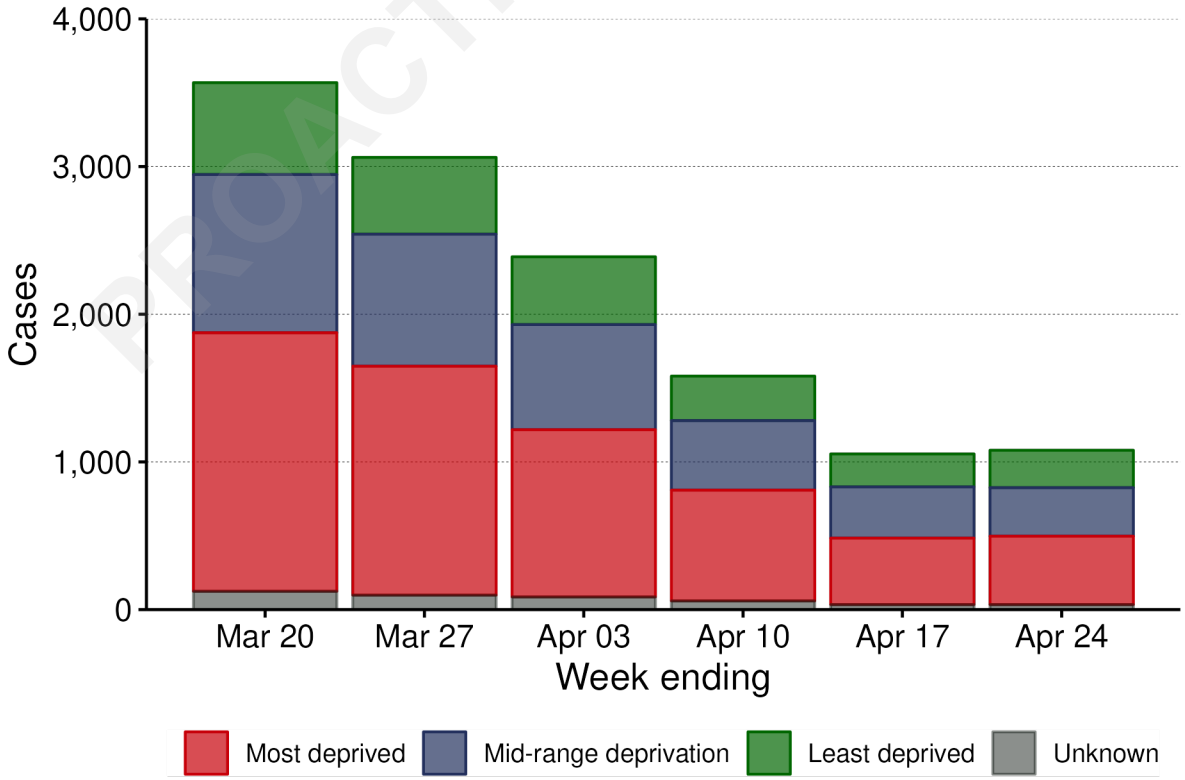
Waikato DHB



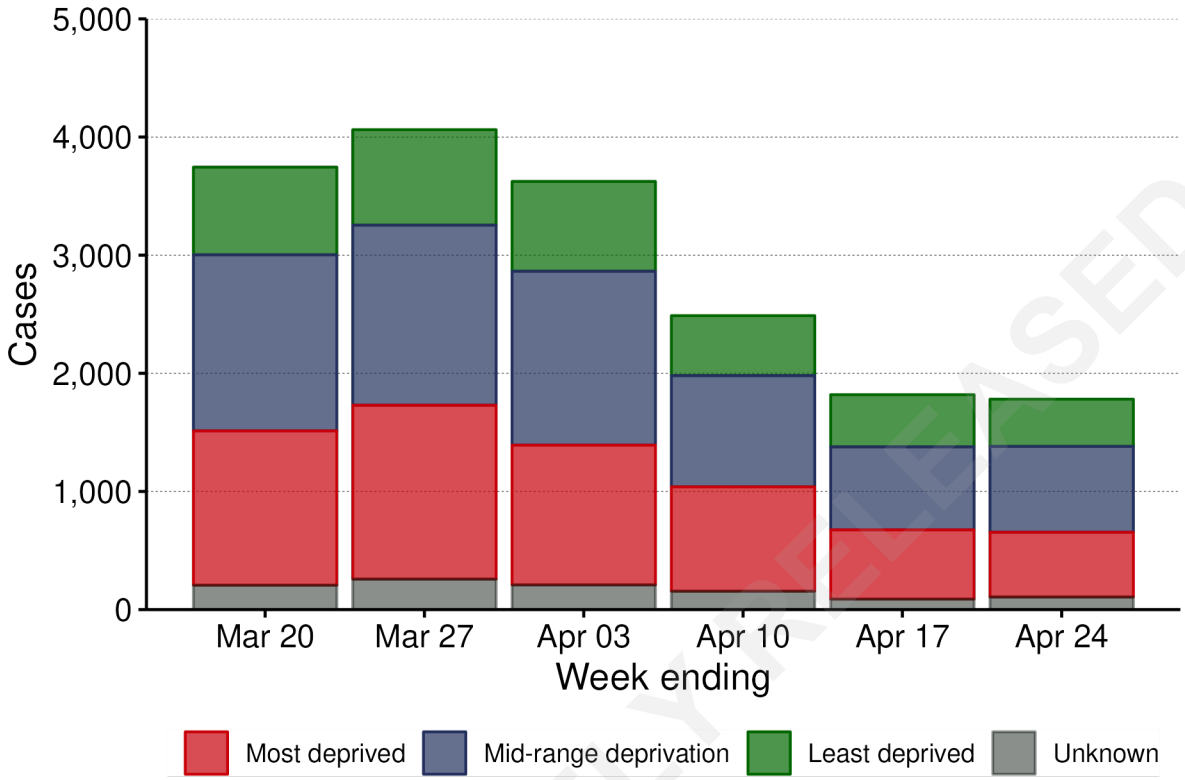
Tarawhiti DHB



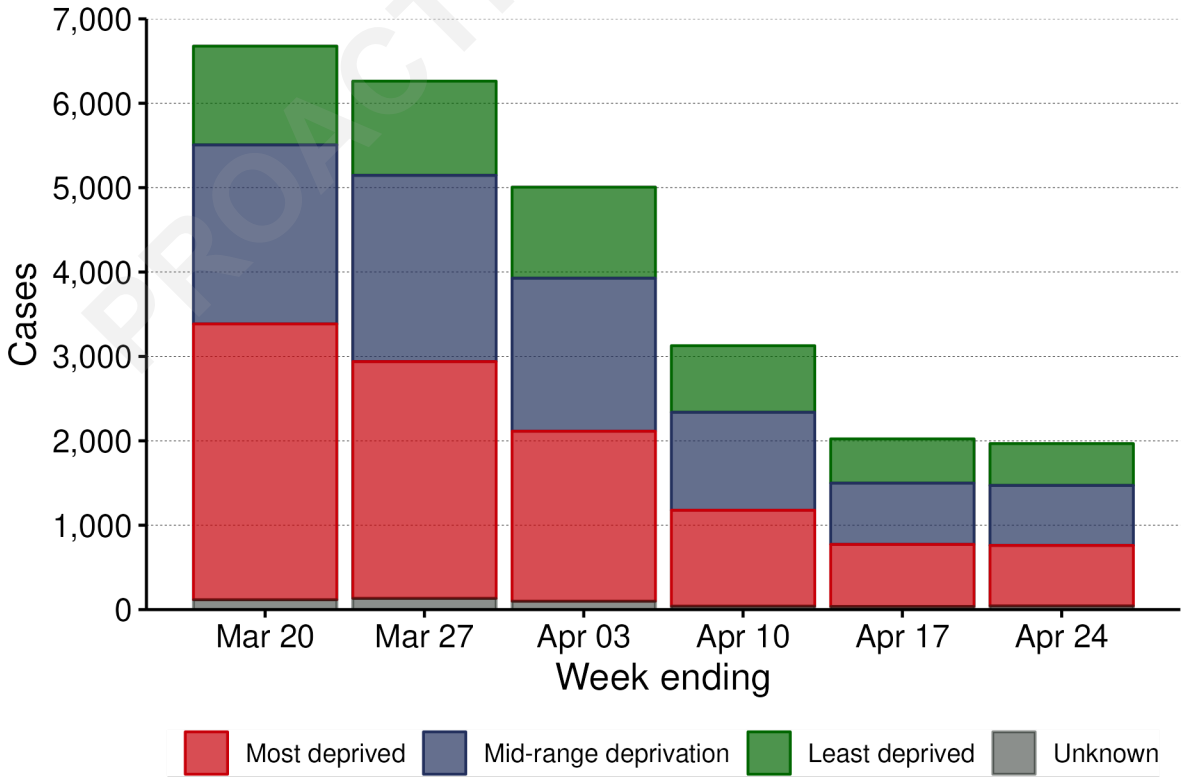
Lakes DHB



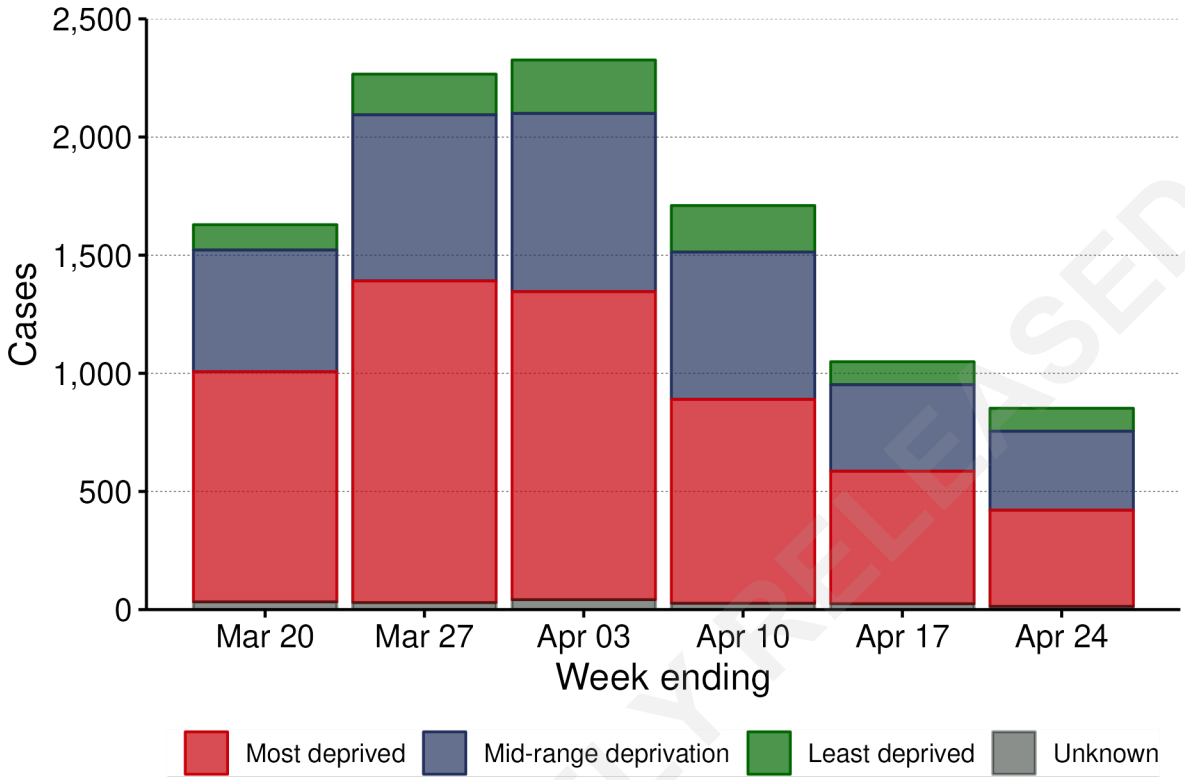
Taranaki DHB



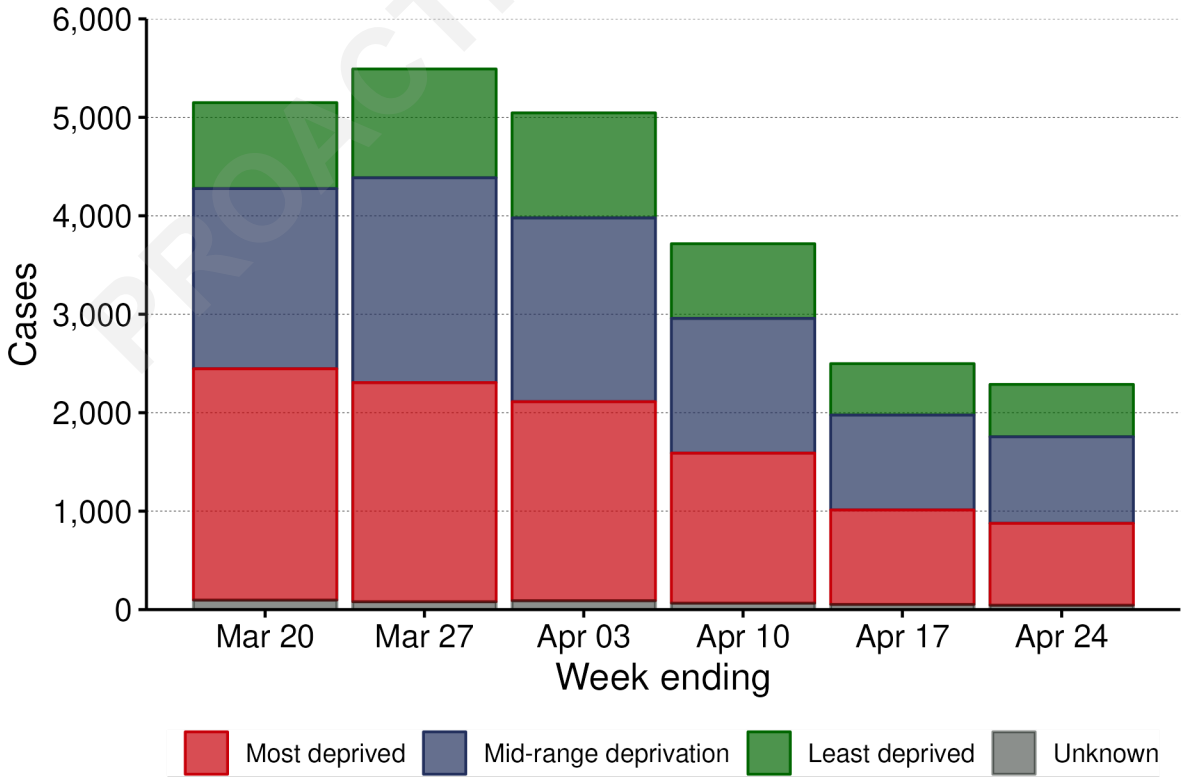
Hawke's Bay DHB



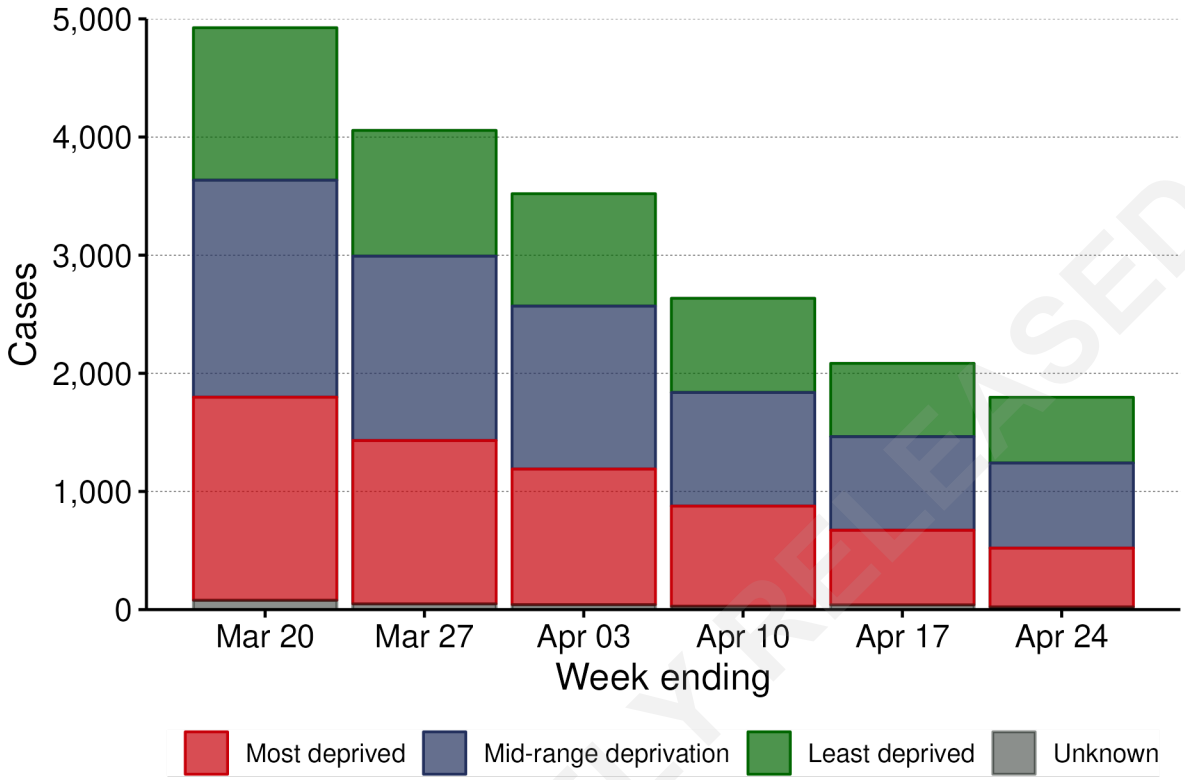
Whanganui DHB



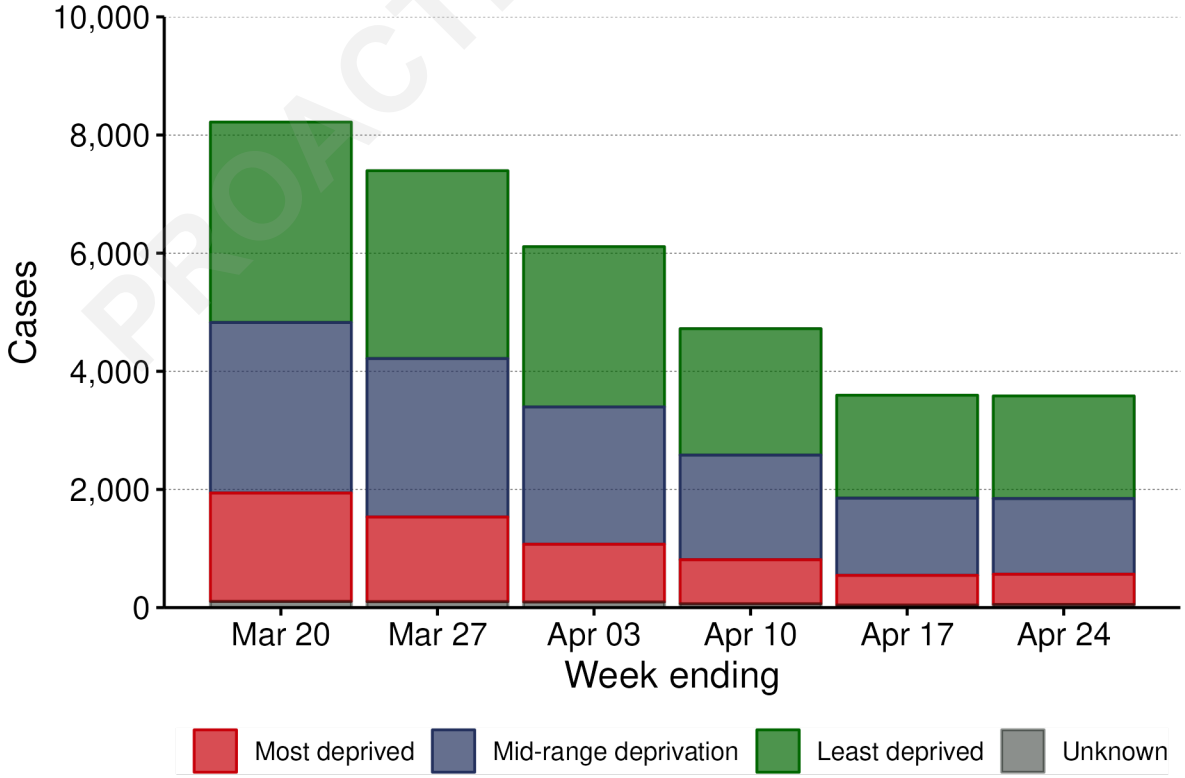
MidCentral DHB



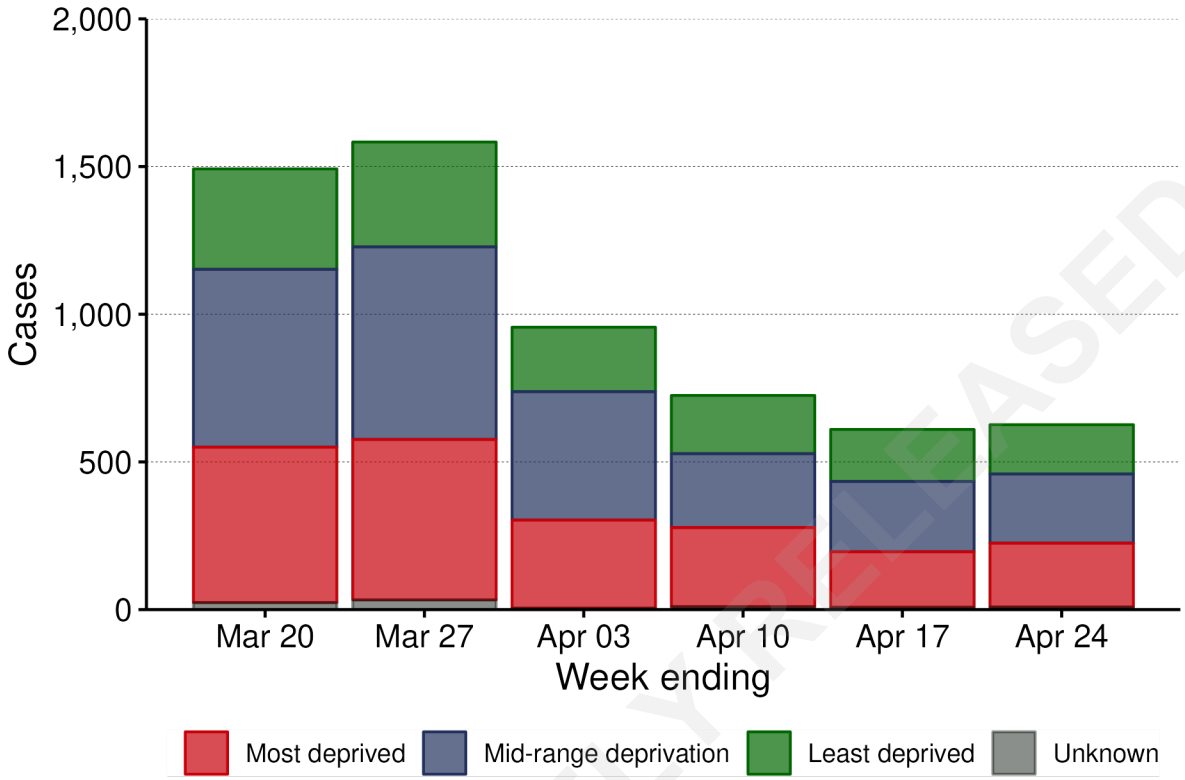
Hutt Valley DHB



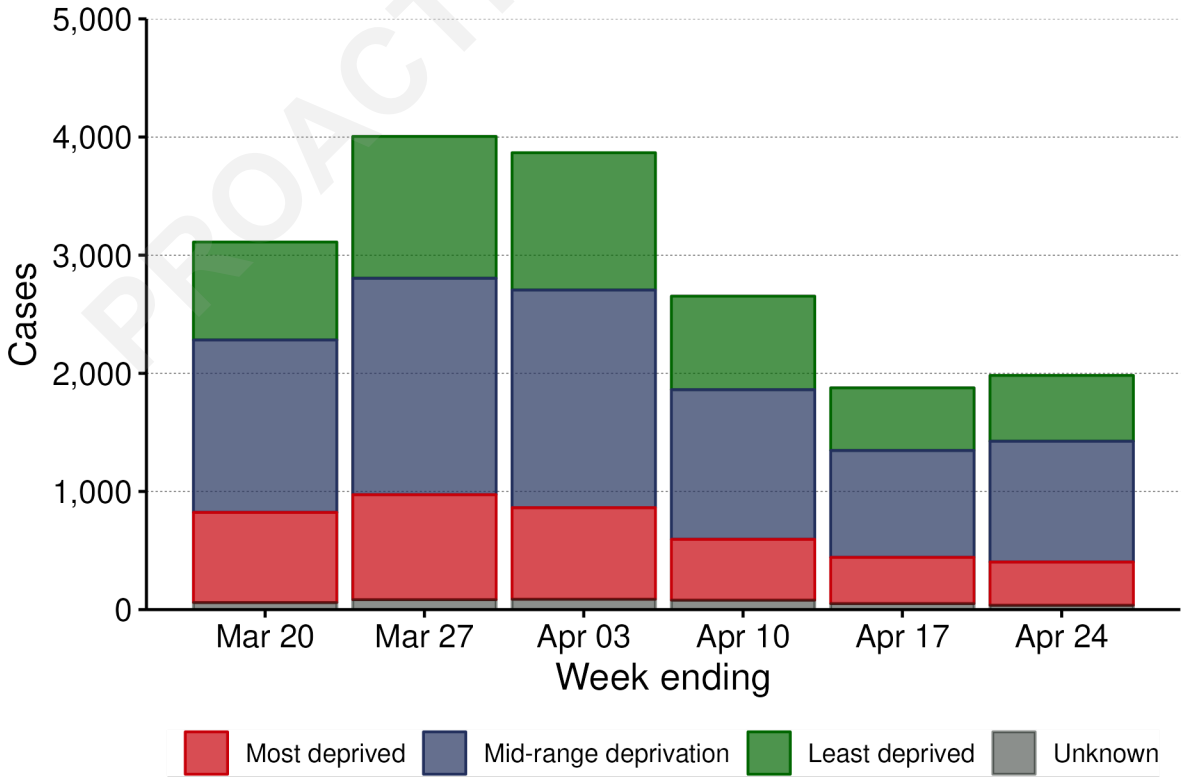
Capital and Coast DHB



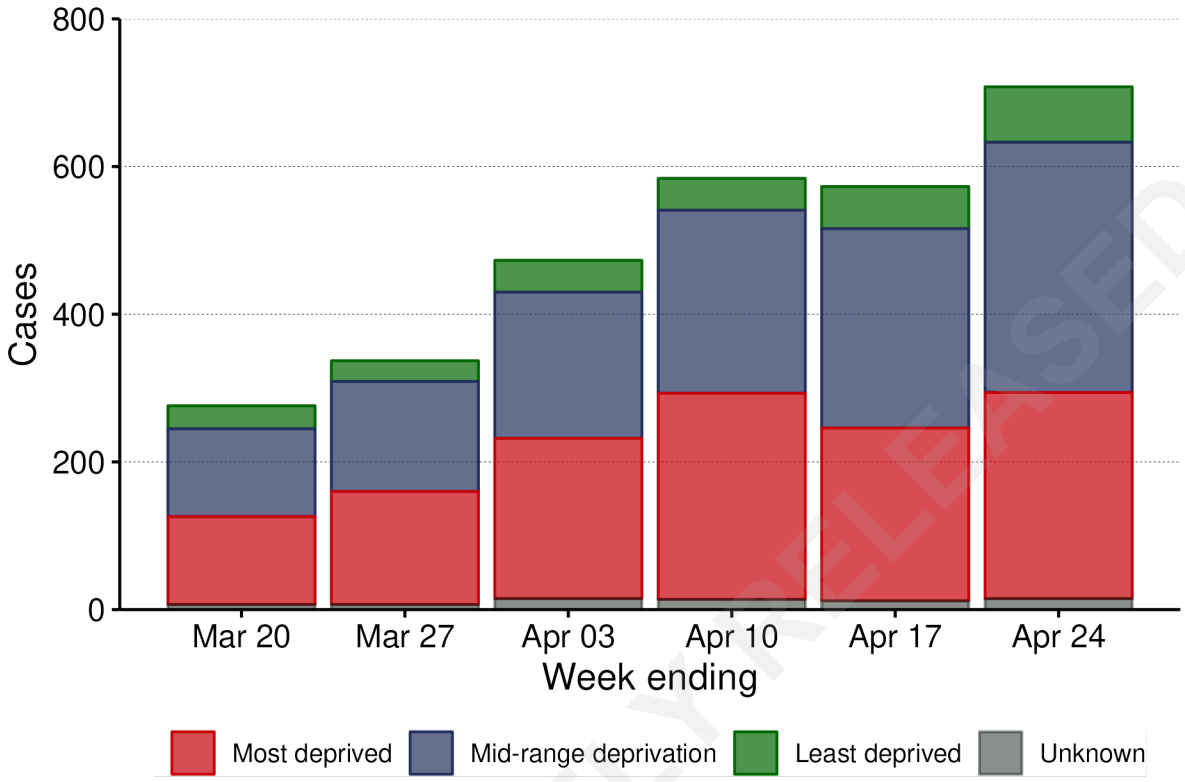
Wairarapa DHB



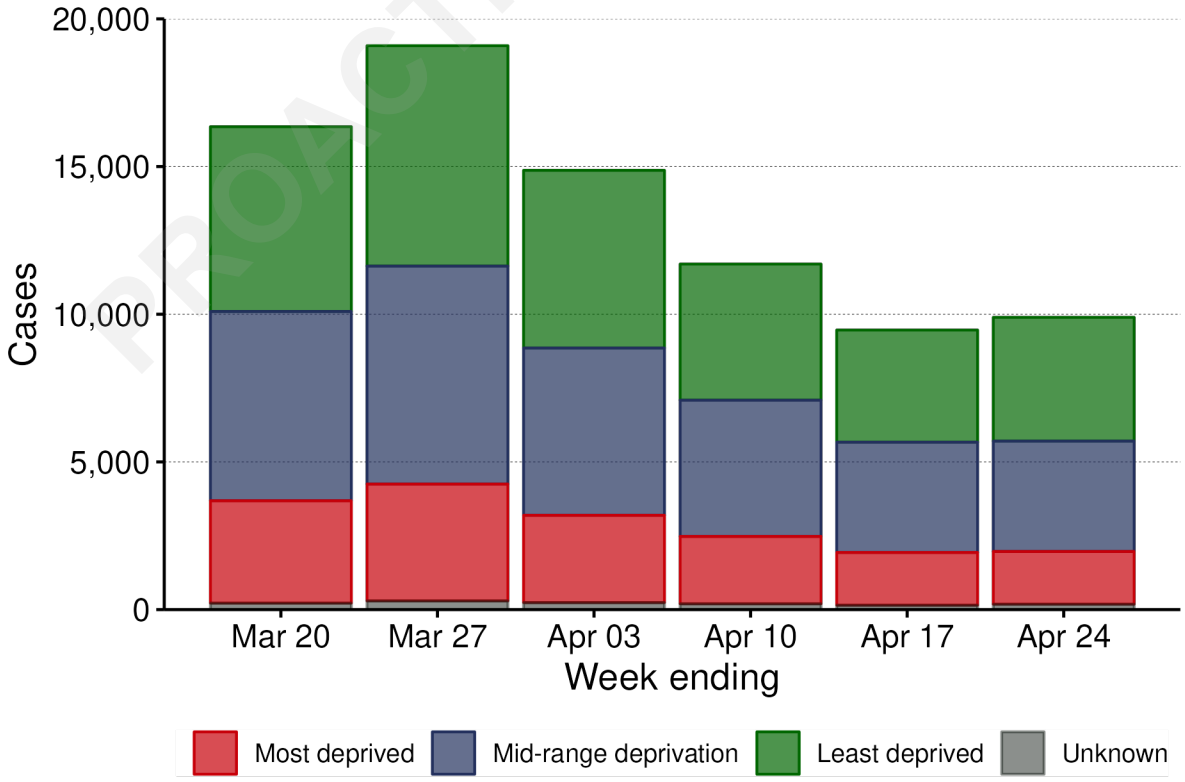
Nelson Marlborough DHB



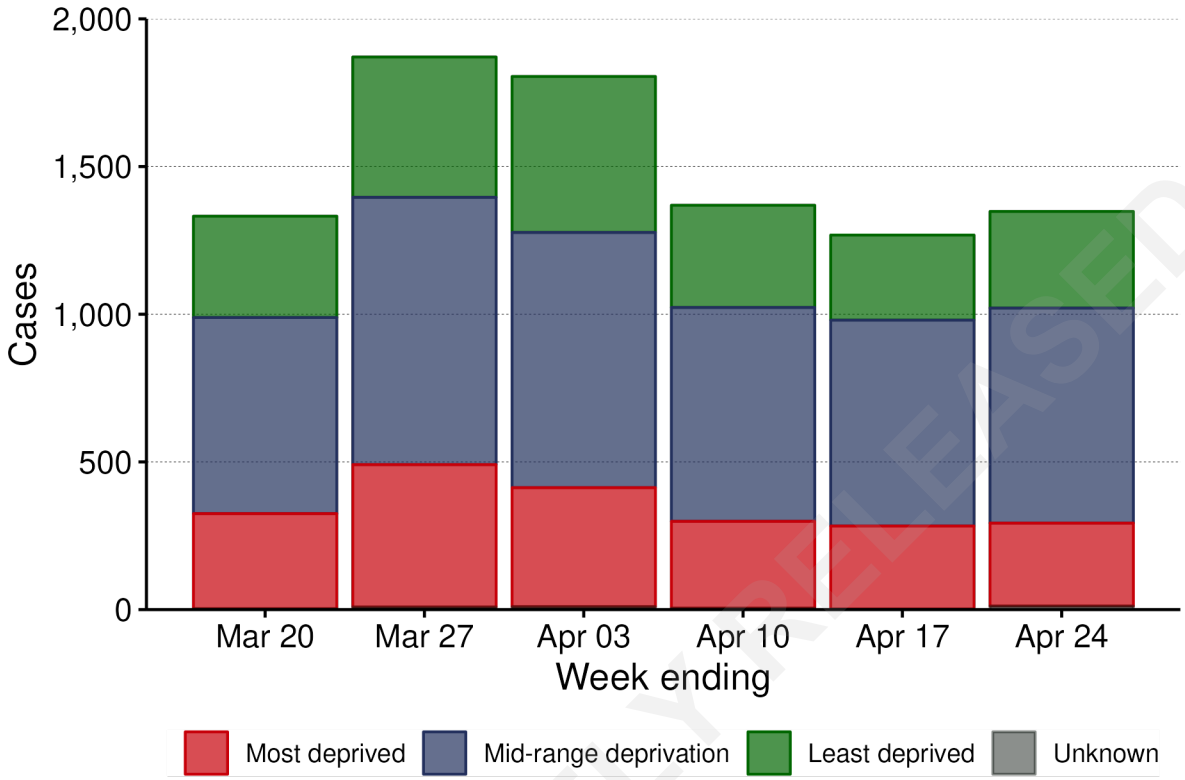
West Coast DHB



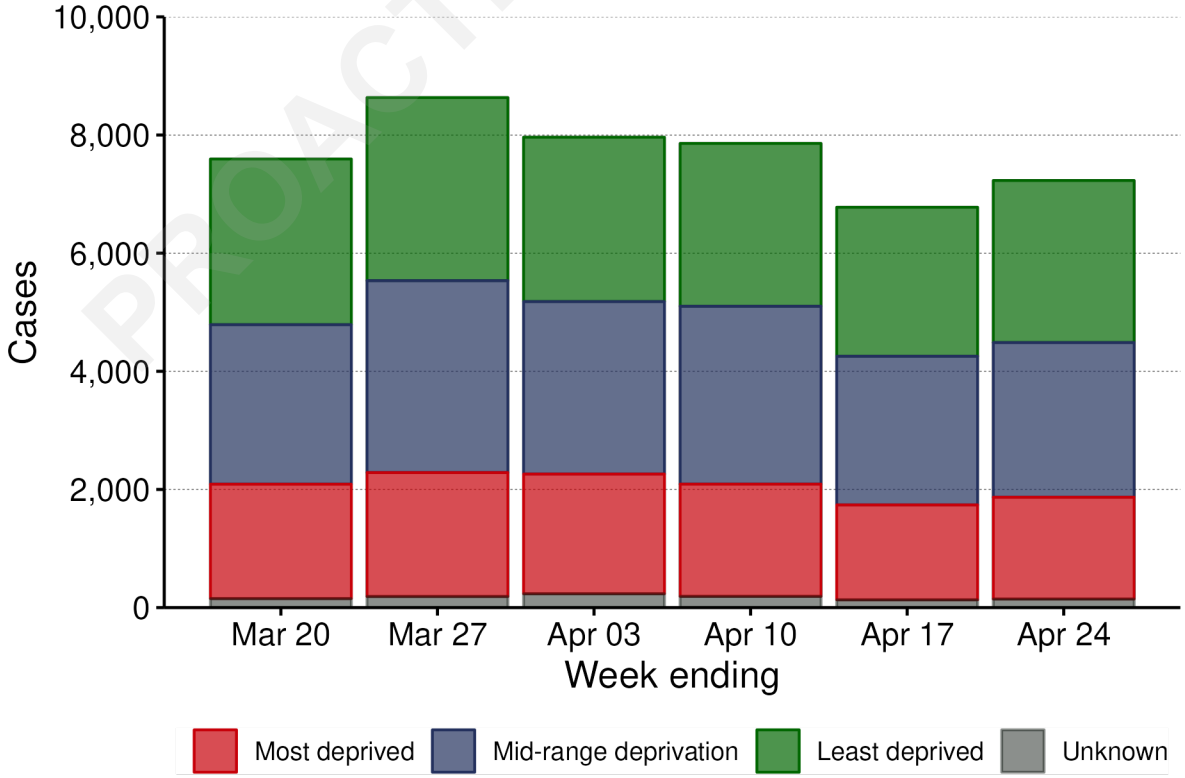
Canterbury DHB



South Canterbury DHB



Southern DHB



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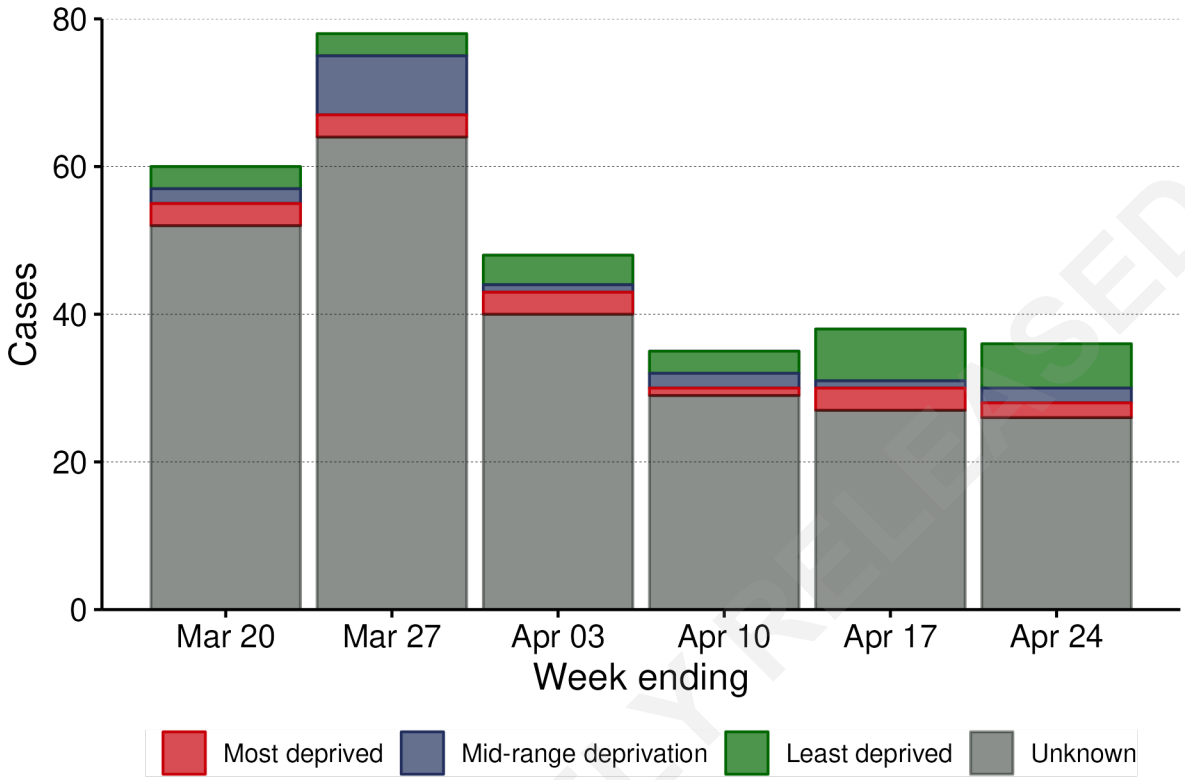
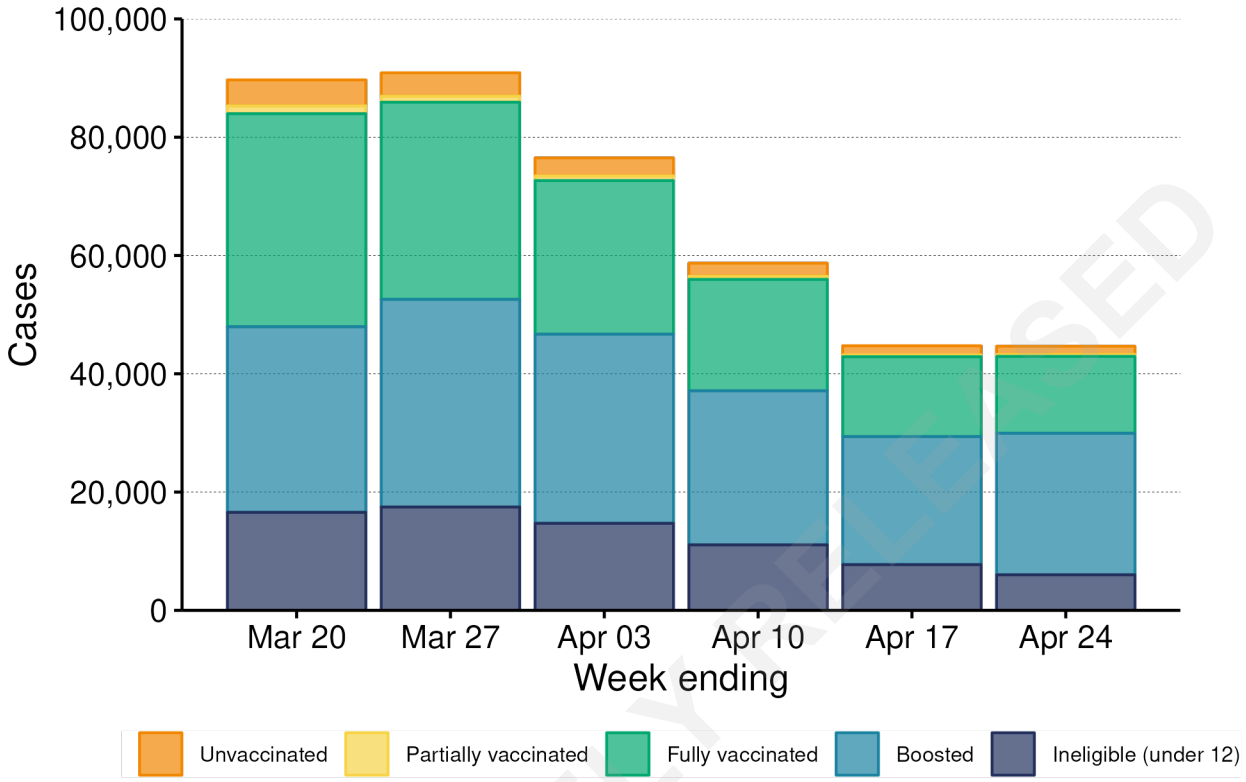
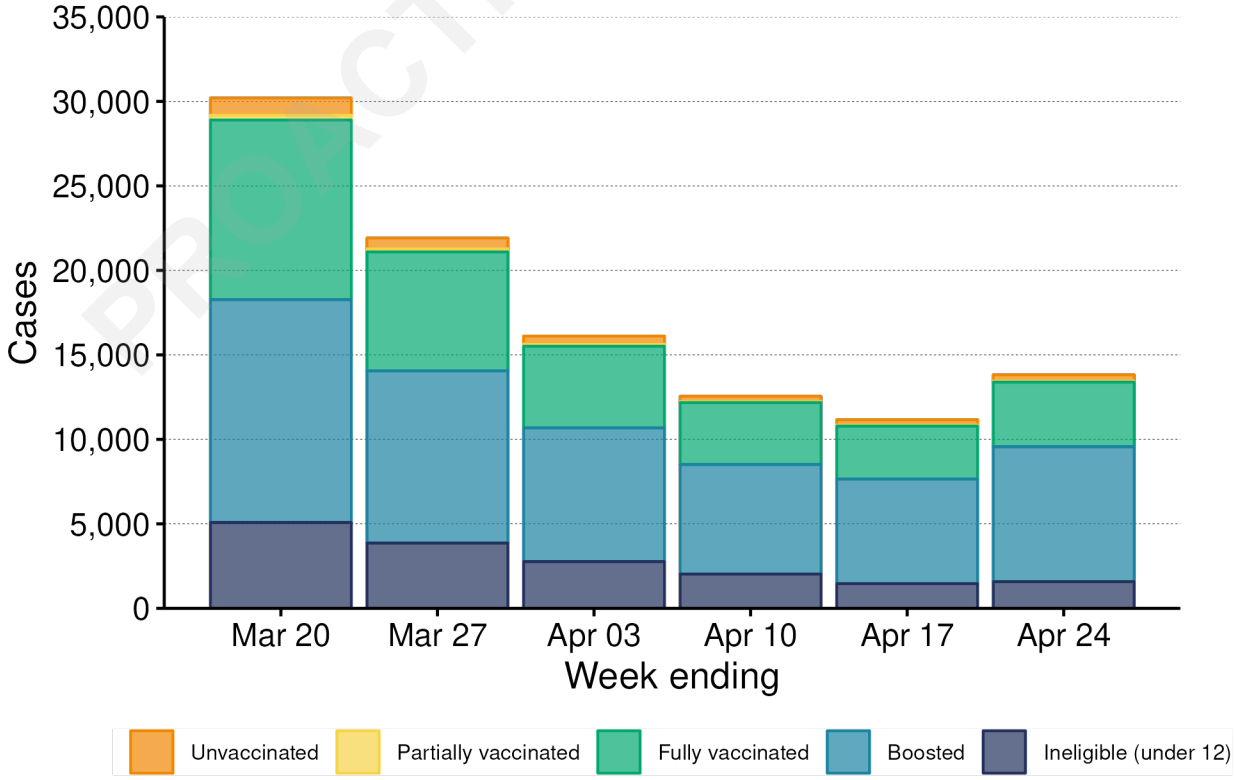


Vaccination Graphs

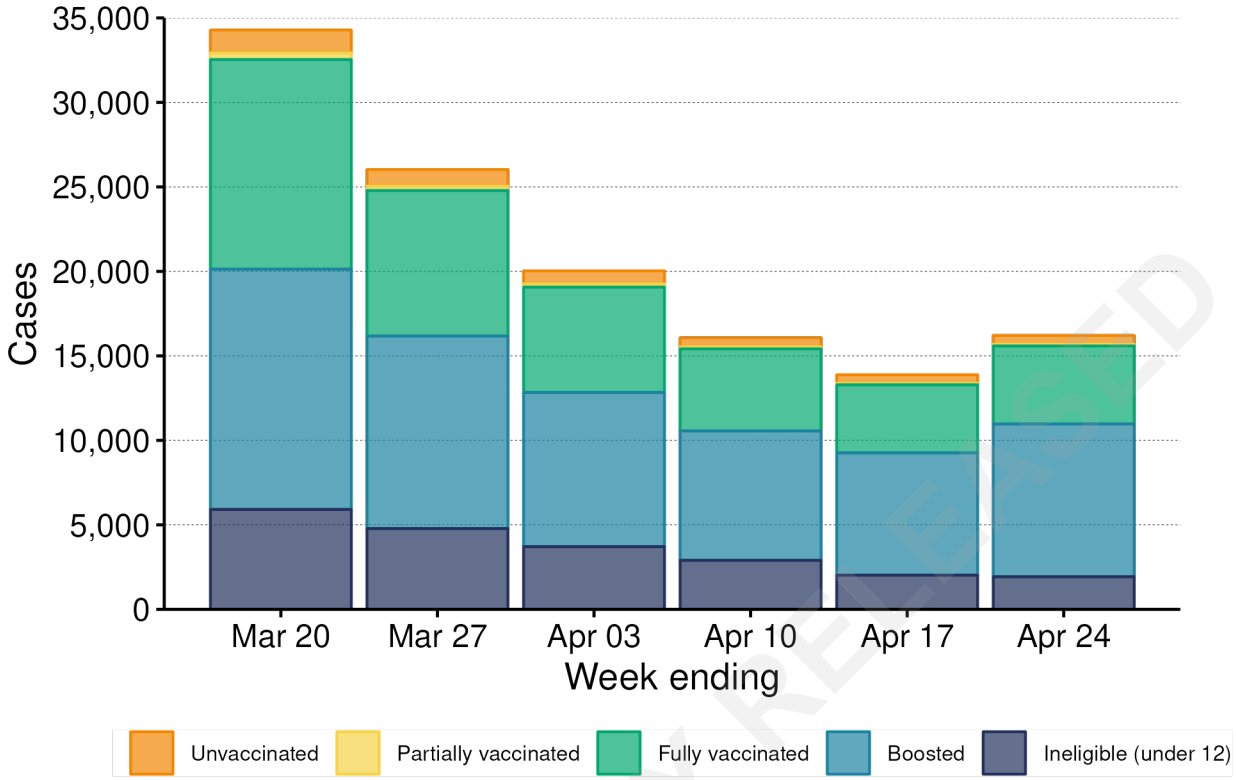
NZ Excluding Auckland Region



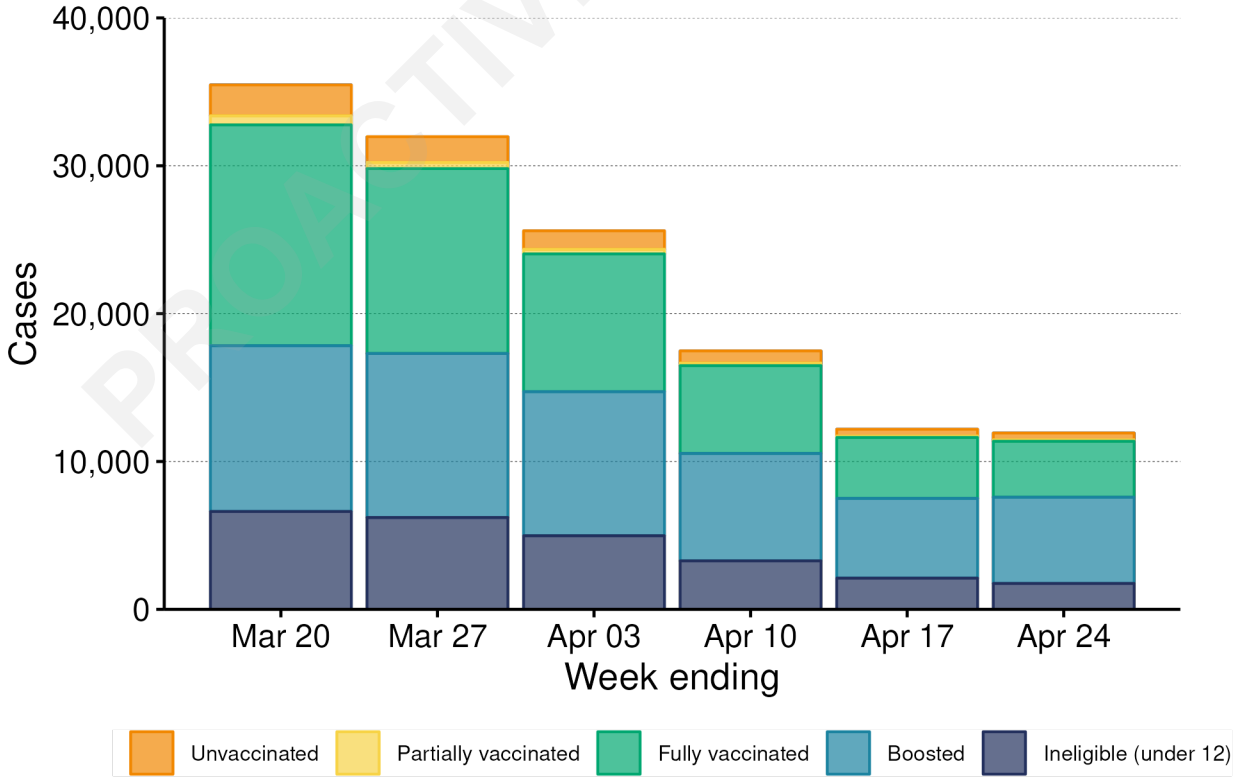
Auckland Region



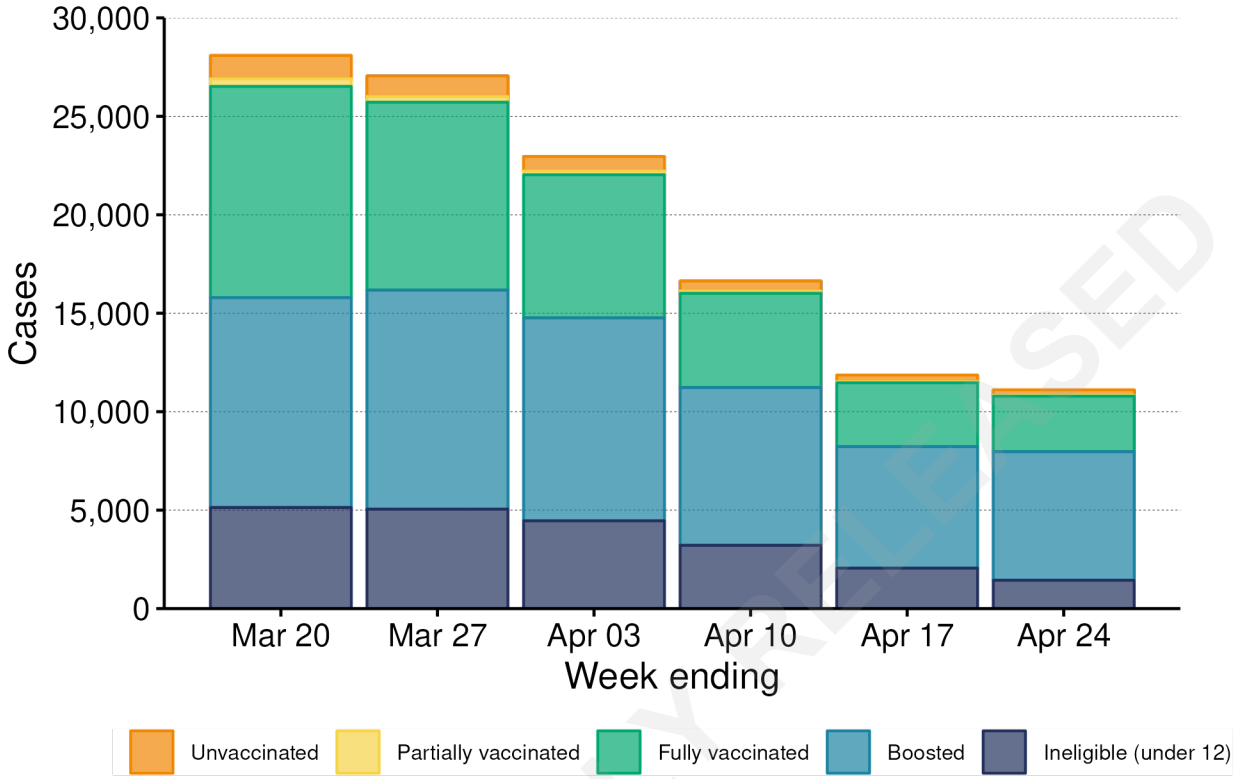
Northern Region



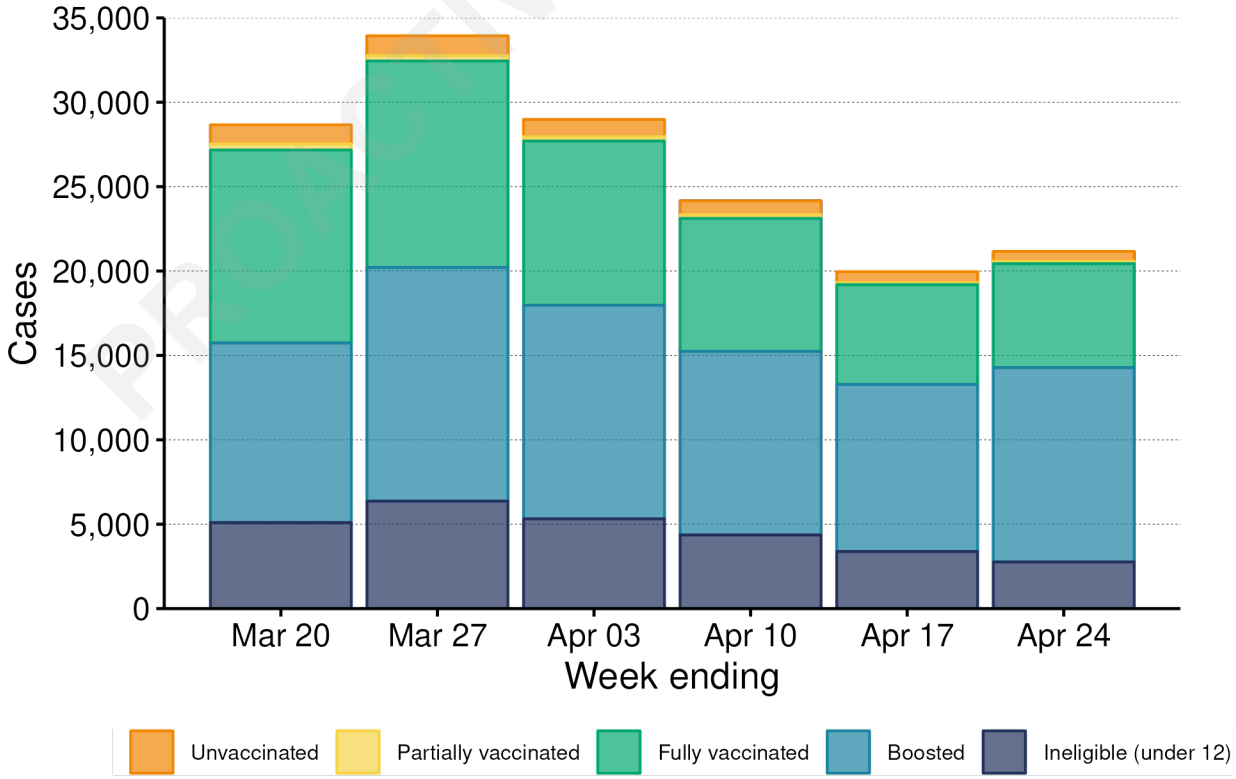
Te Manawa Taki



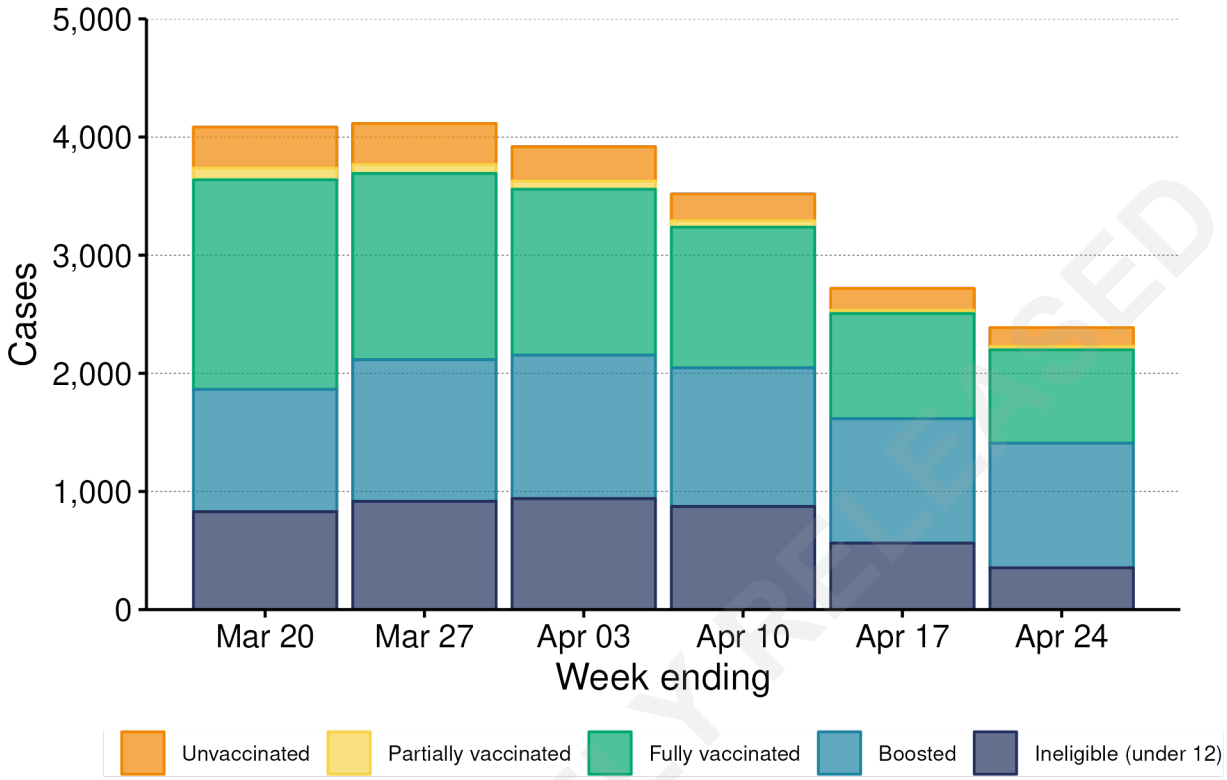
Central Region



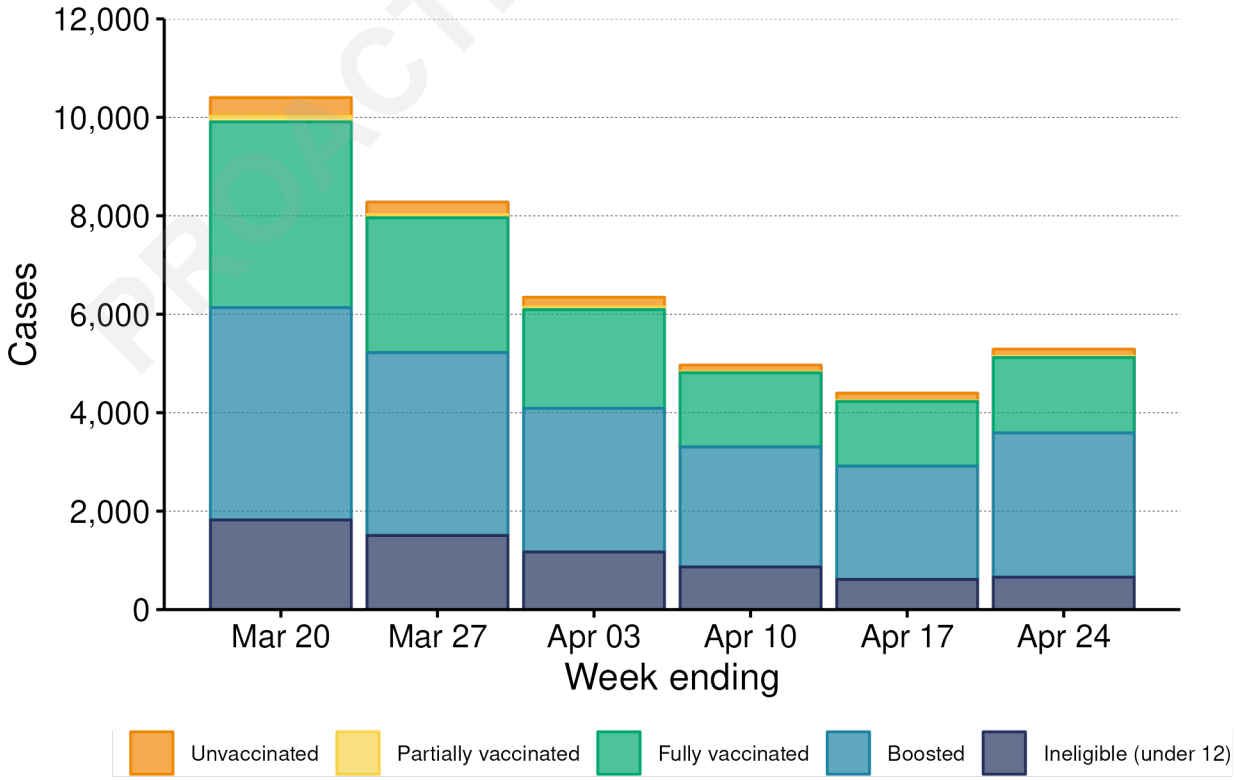
Southern Region



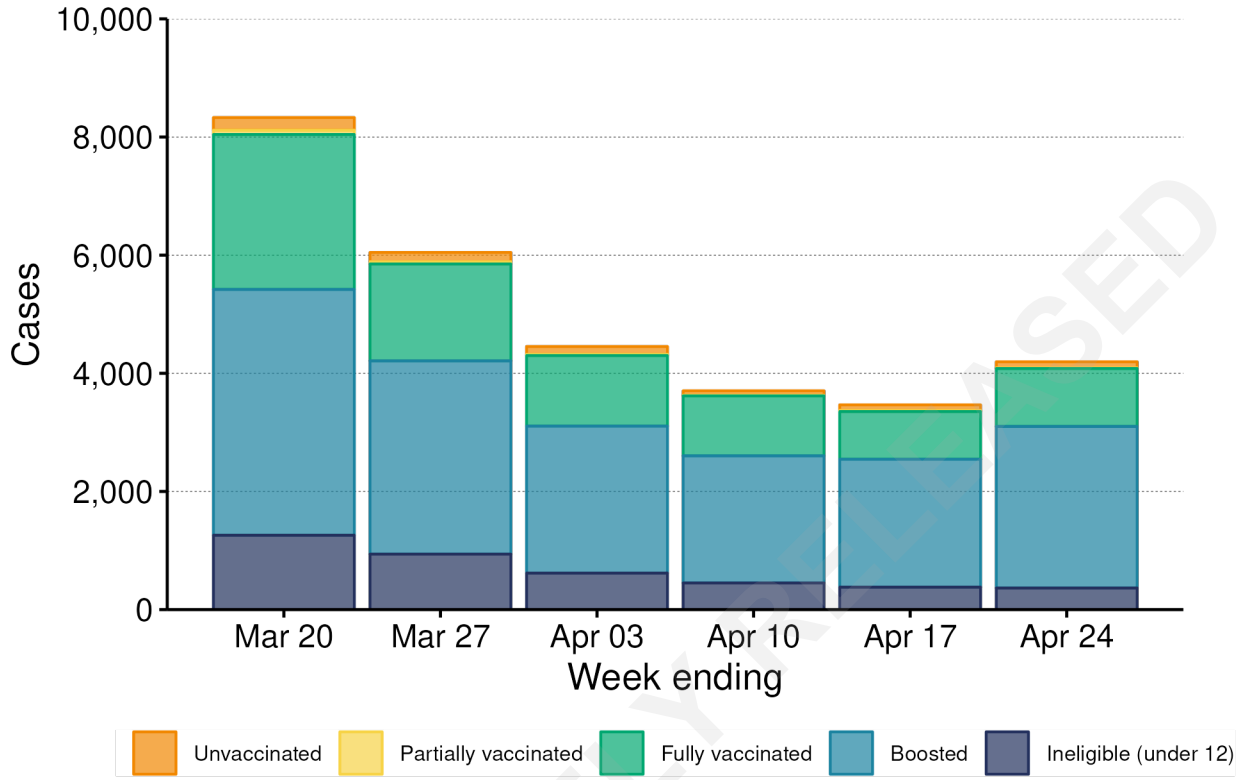
Northland DHB



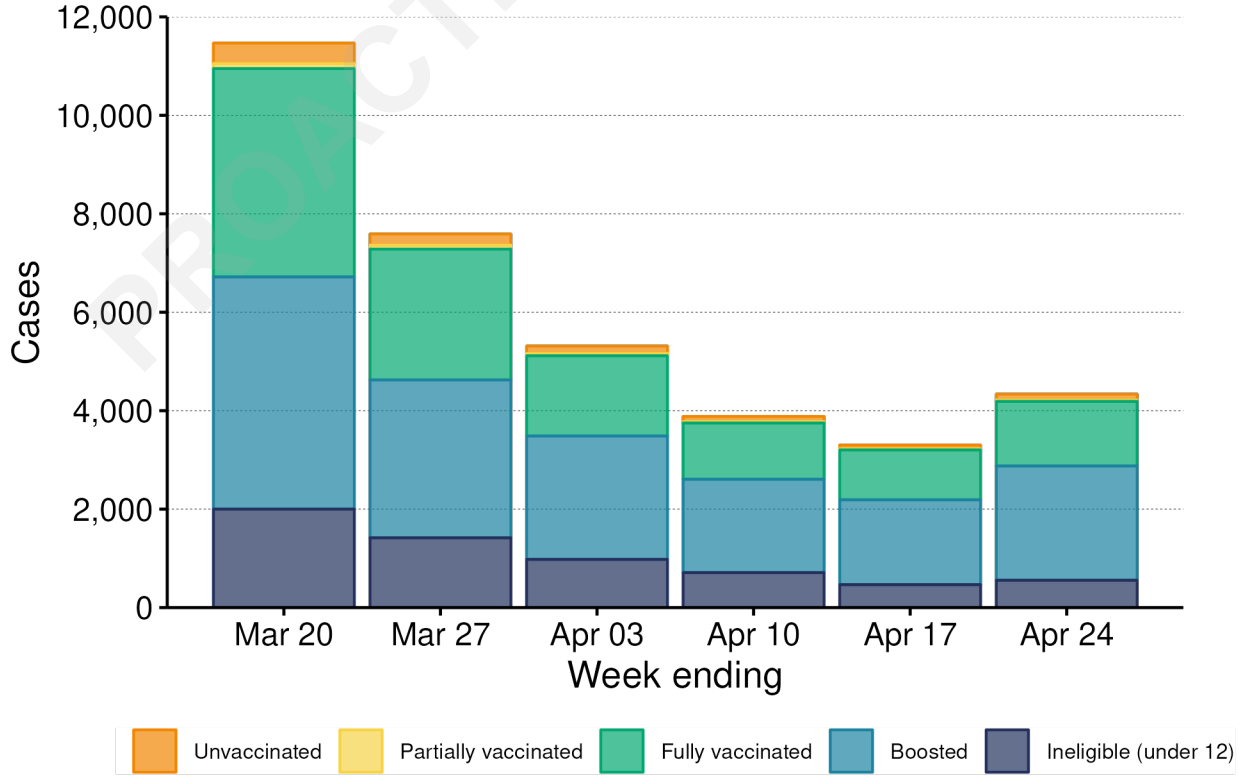
Waitemata DHB



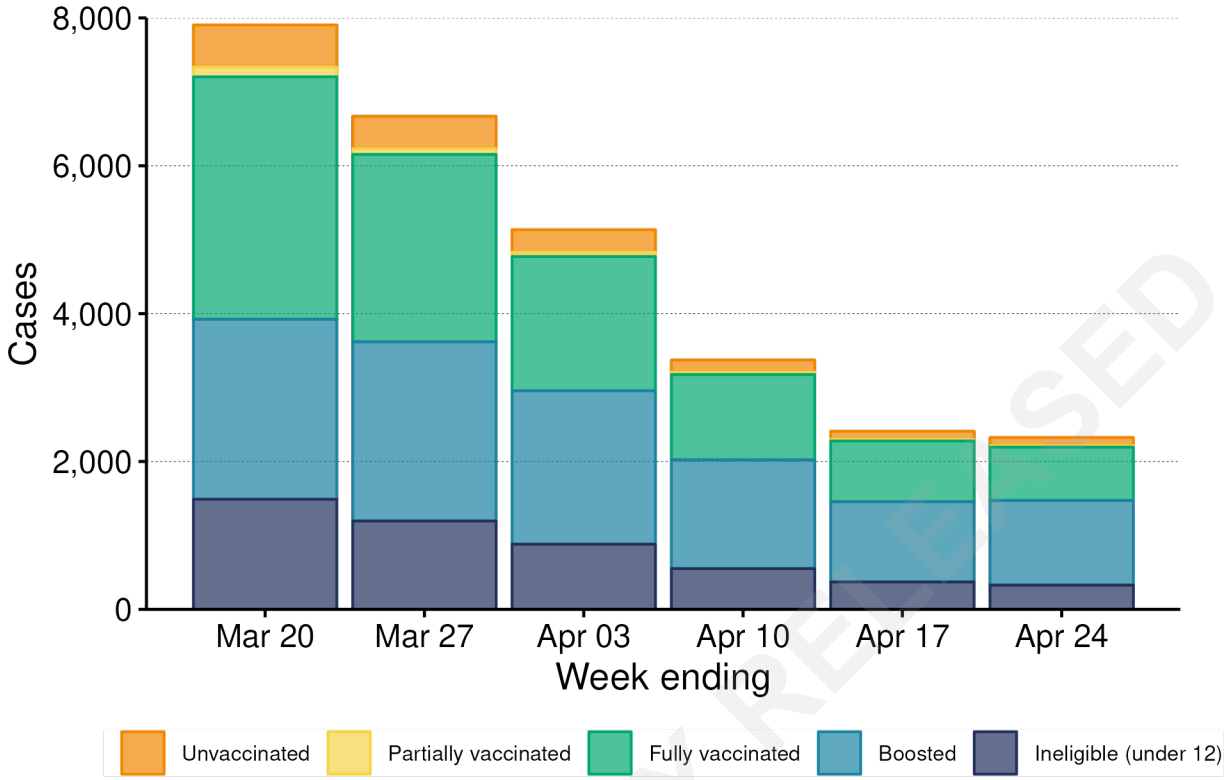
Auckland DHB



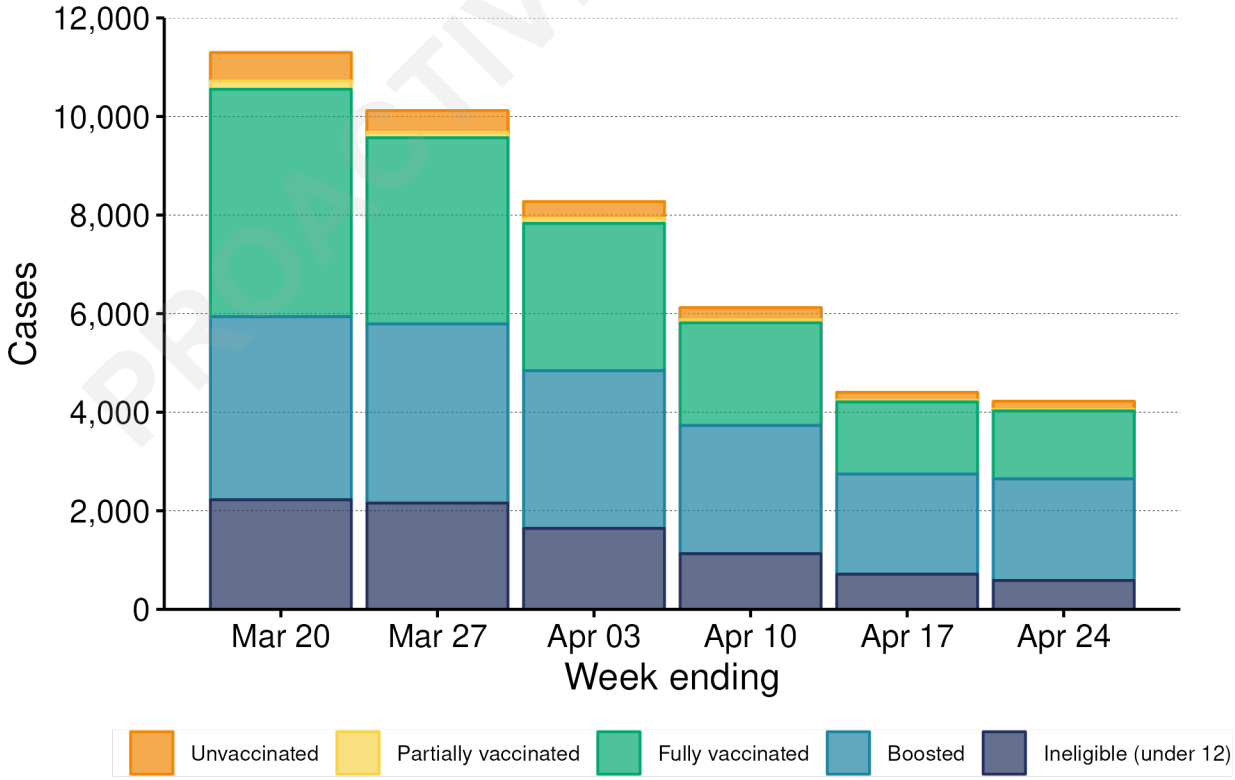
Counties Manukau DHB



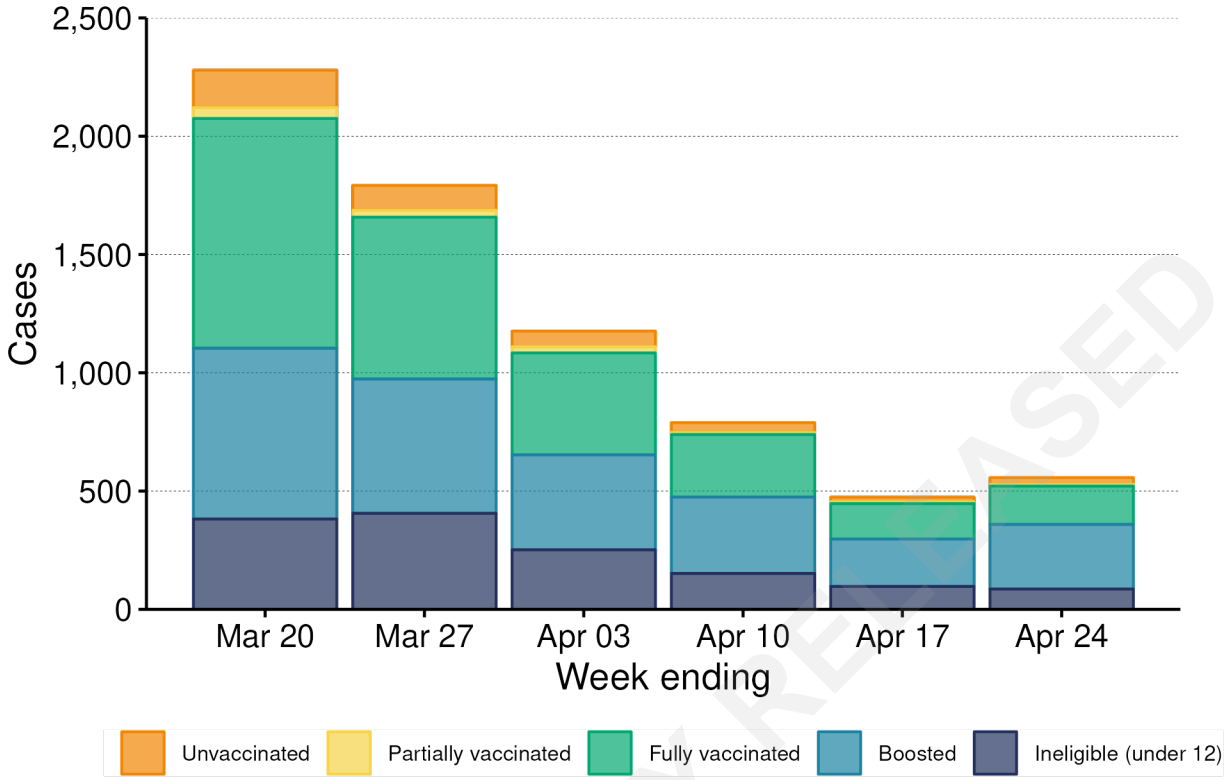
Bay of Plenty DHB



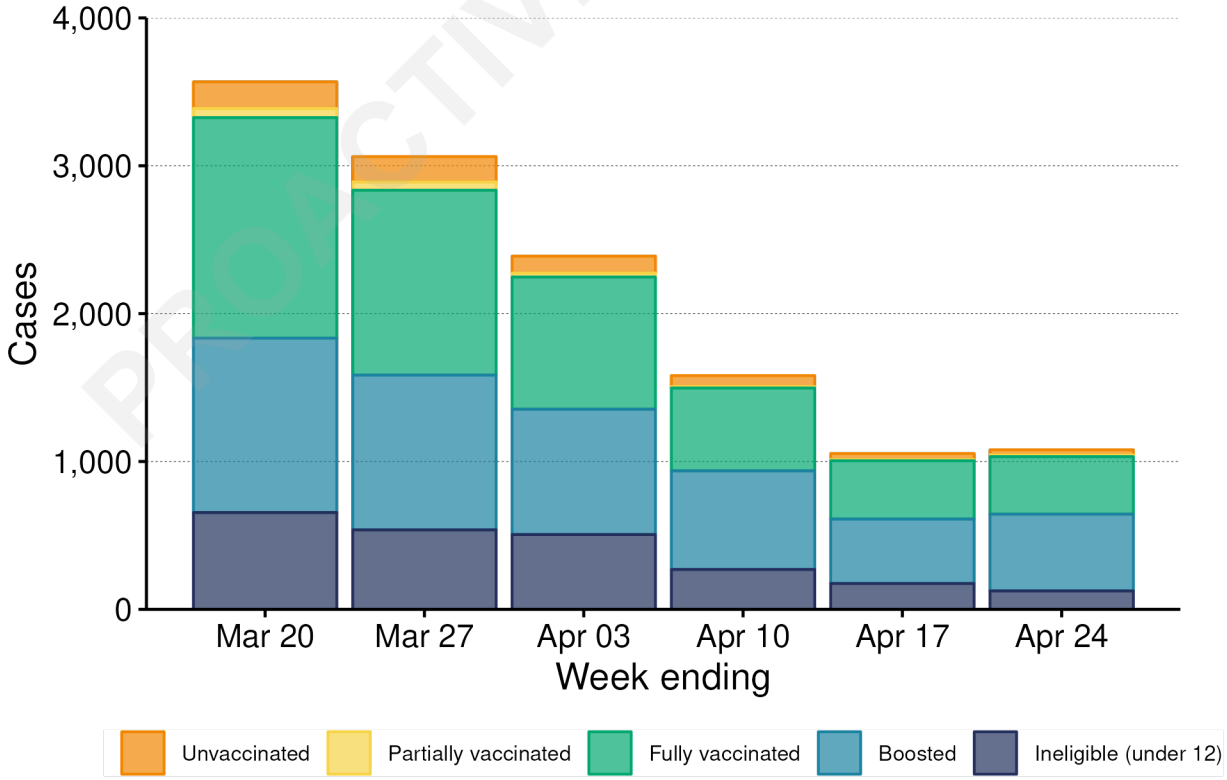
Waikato DHB



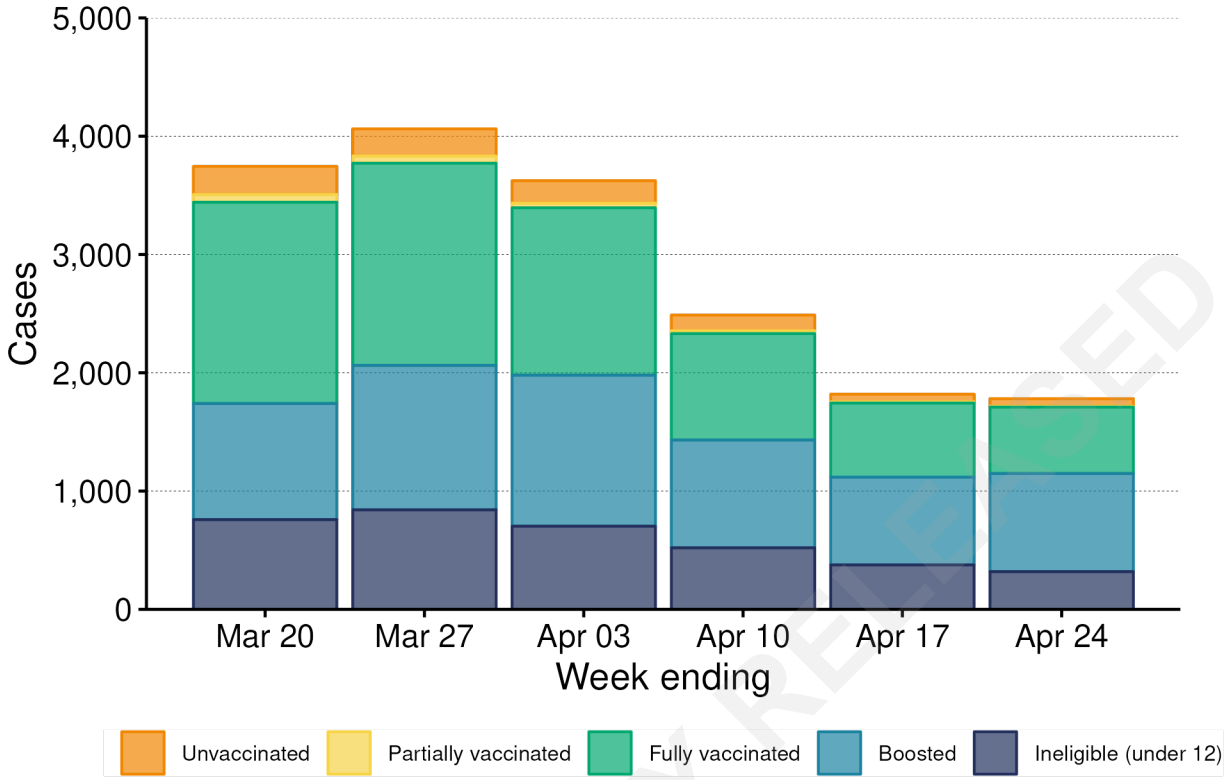
Tairawhiti DHB



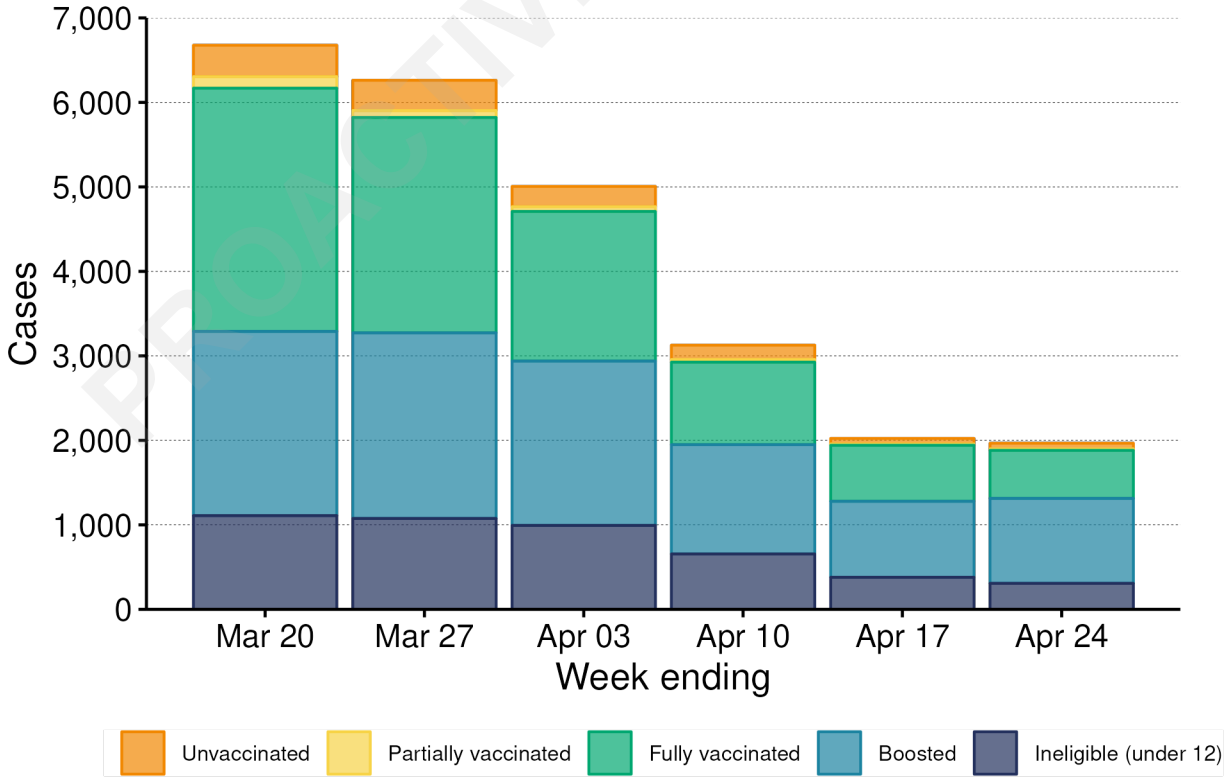
Lakes DHB



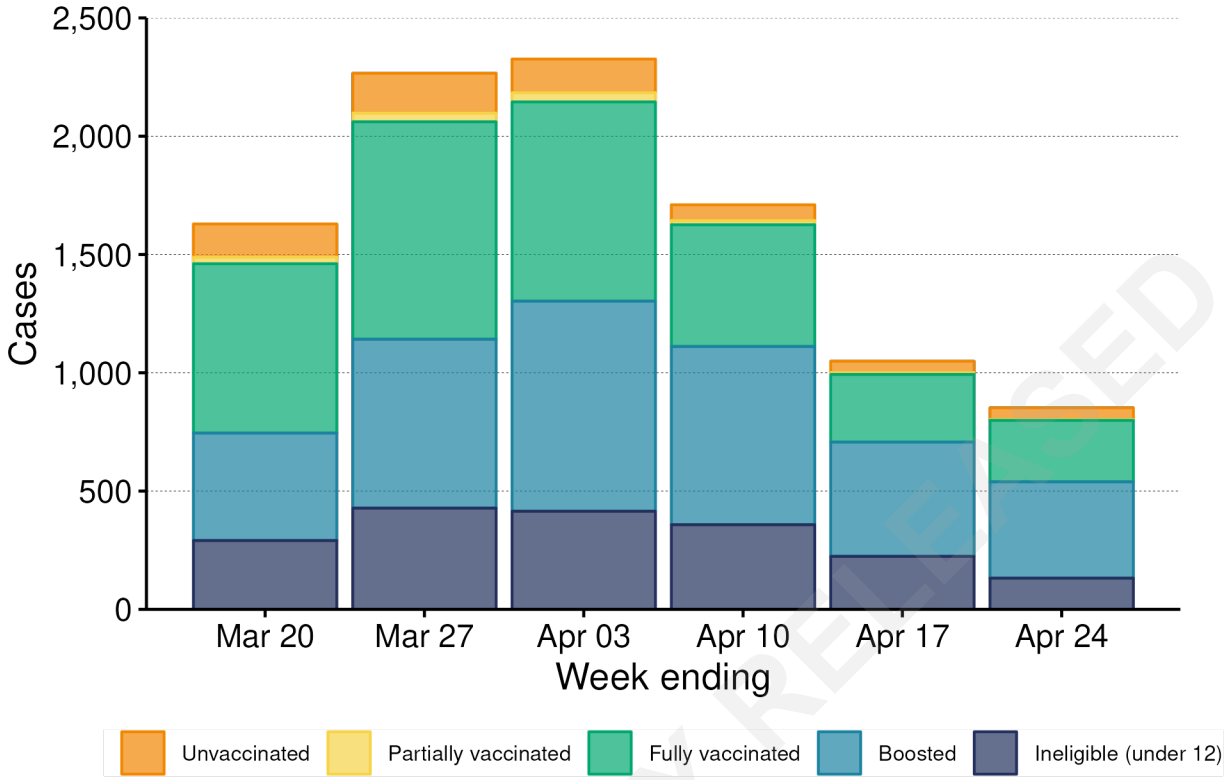
Taranaki DHB



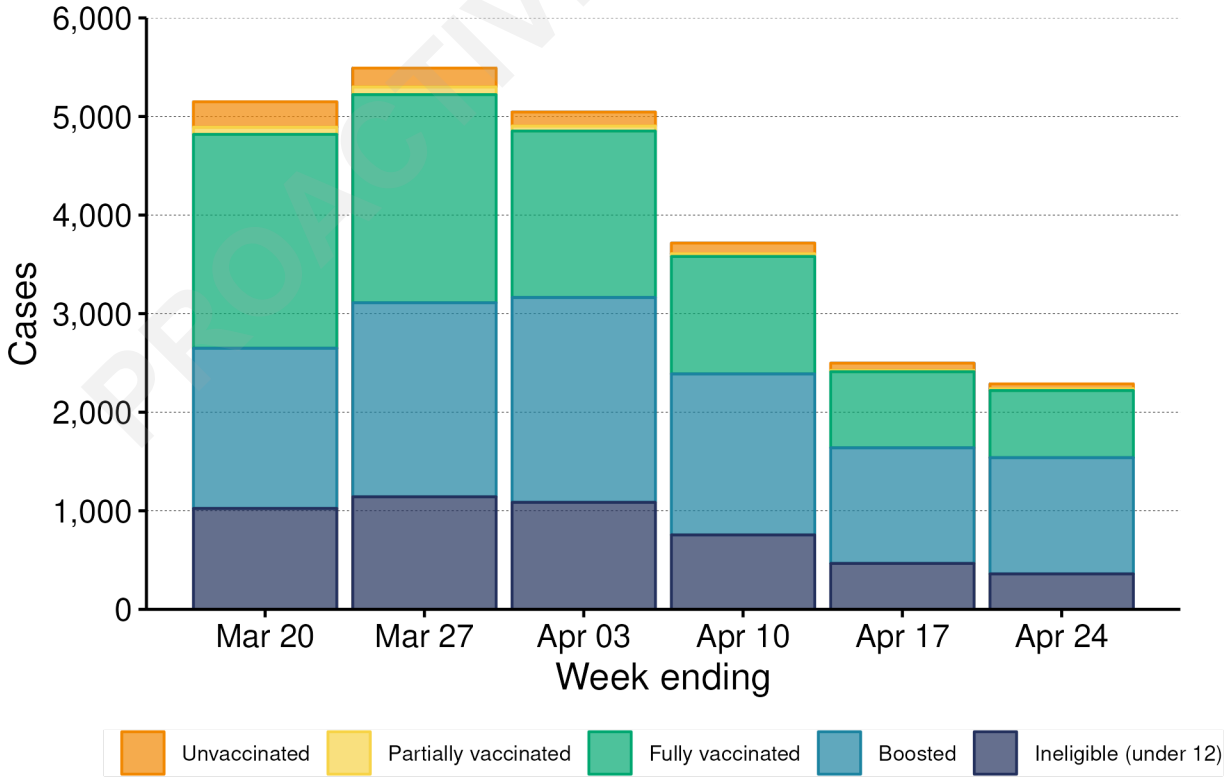
Hawke's Bay DHB



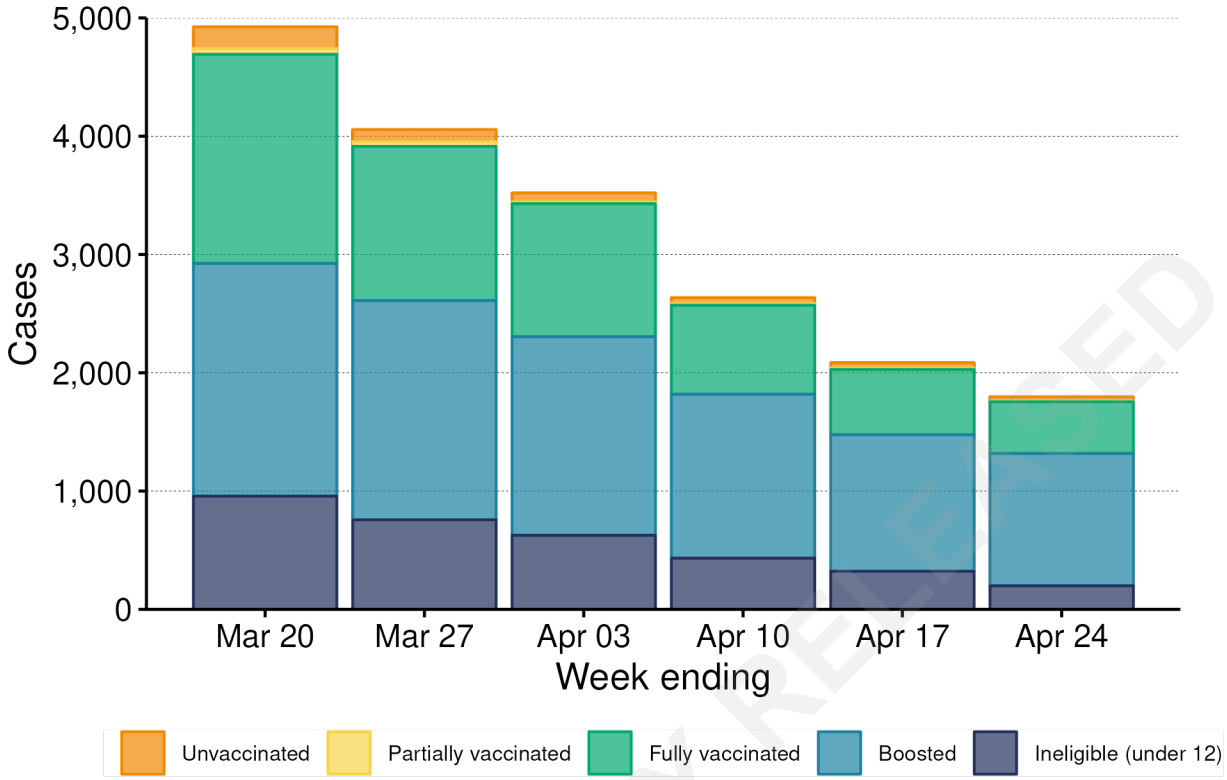
Whanganui DHB



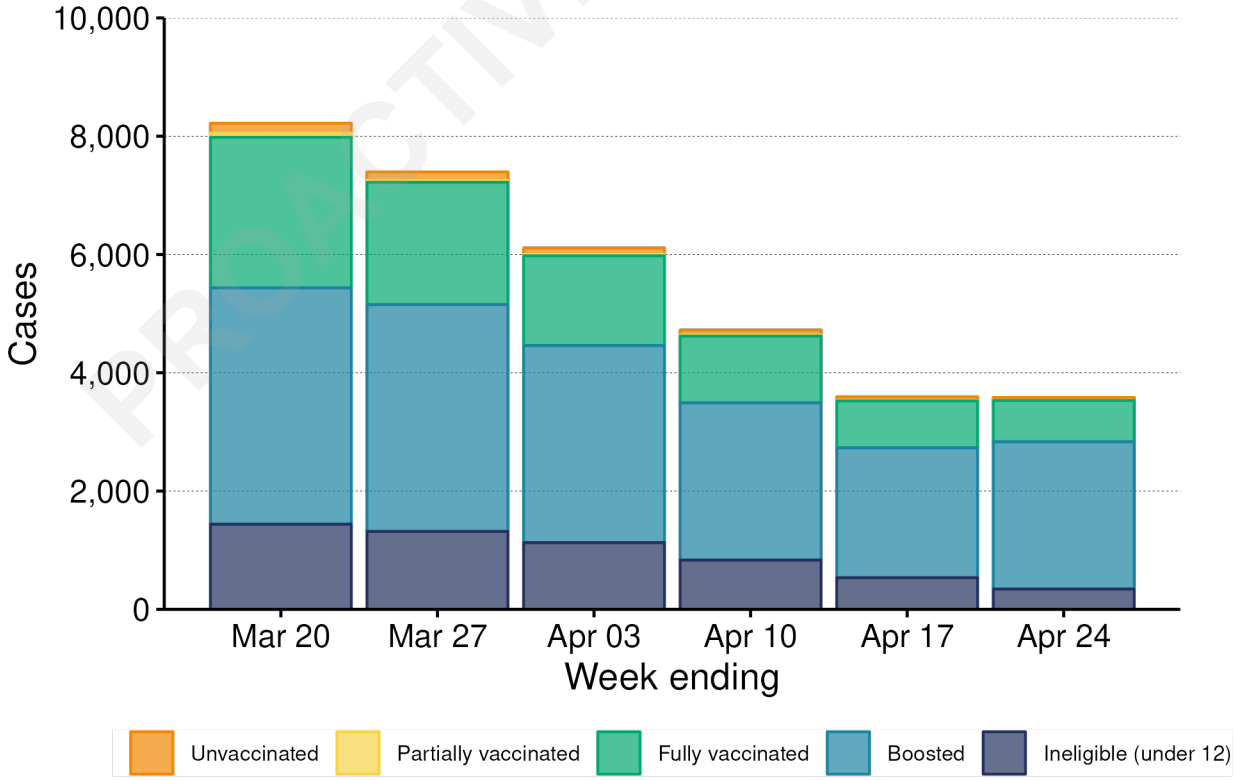
MidCentral DHB



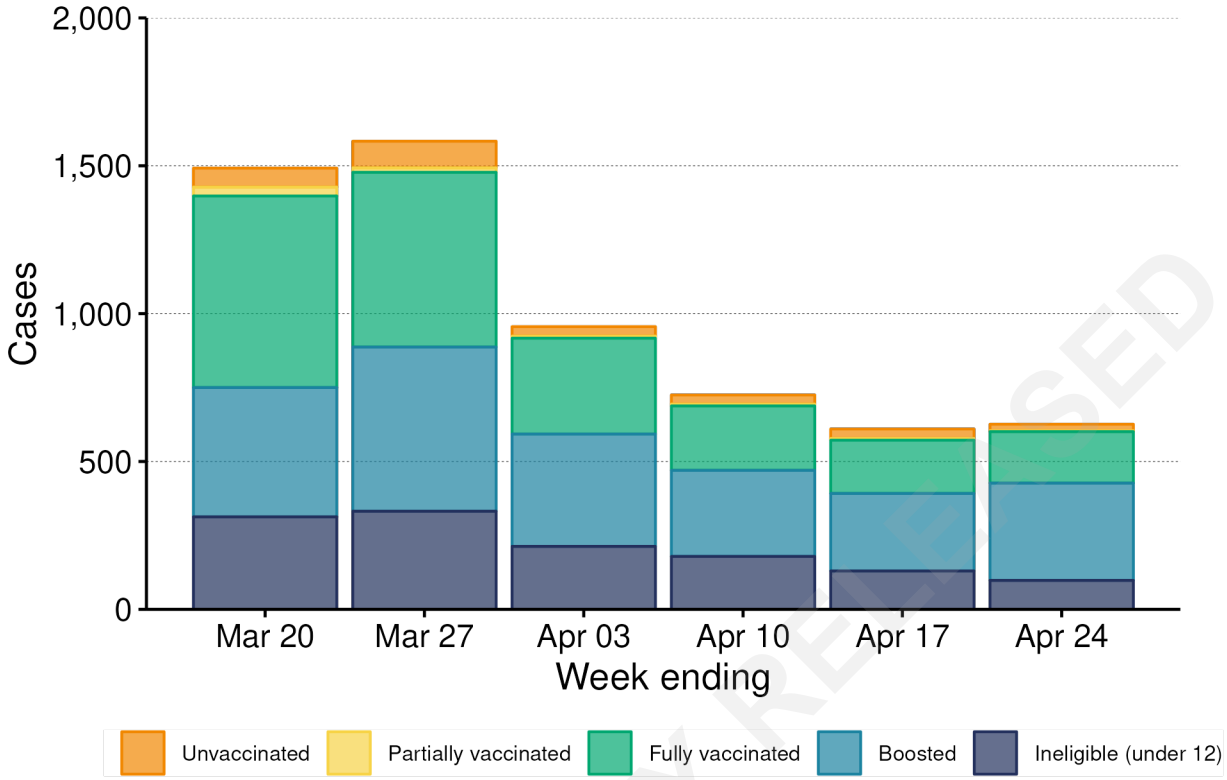
Hutt Valley DHB



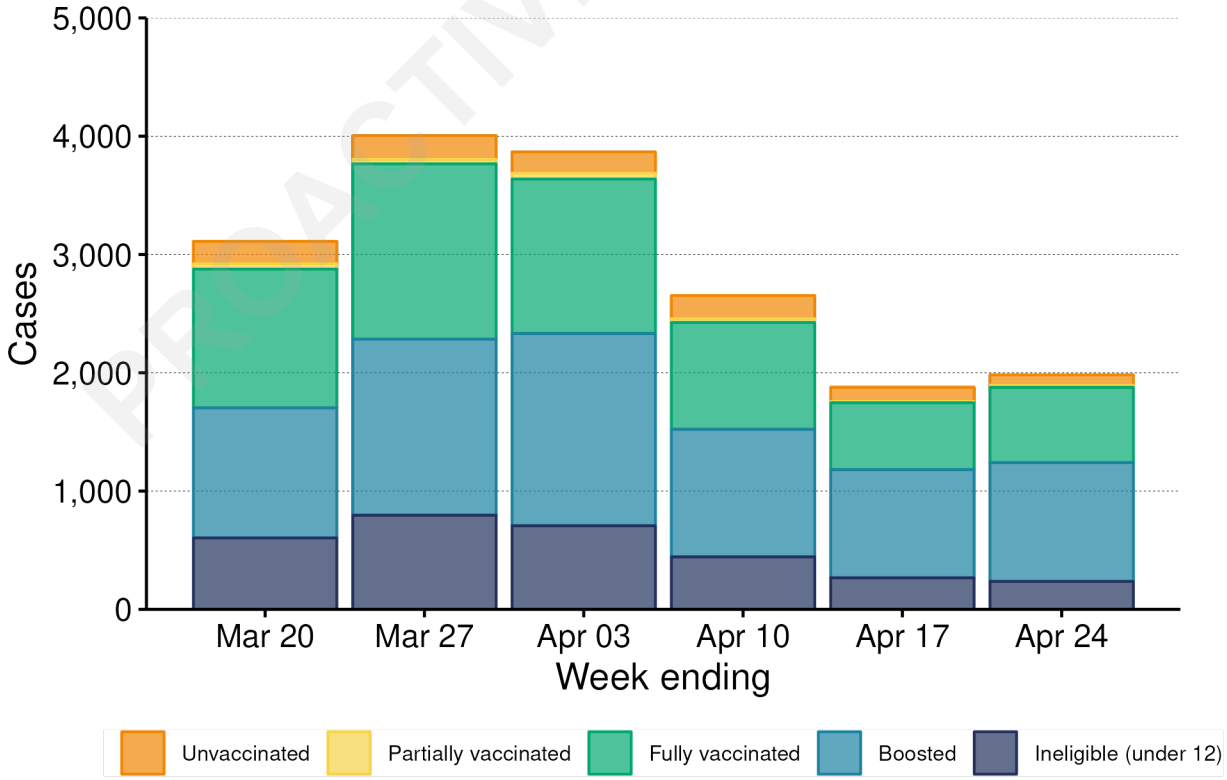
Capital and Coast DHB



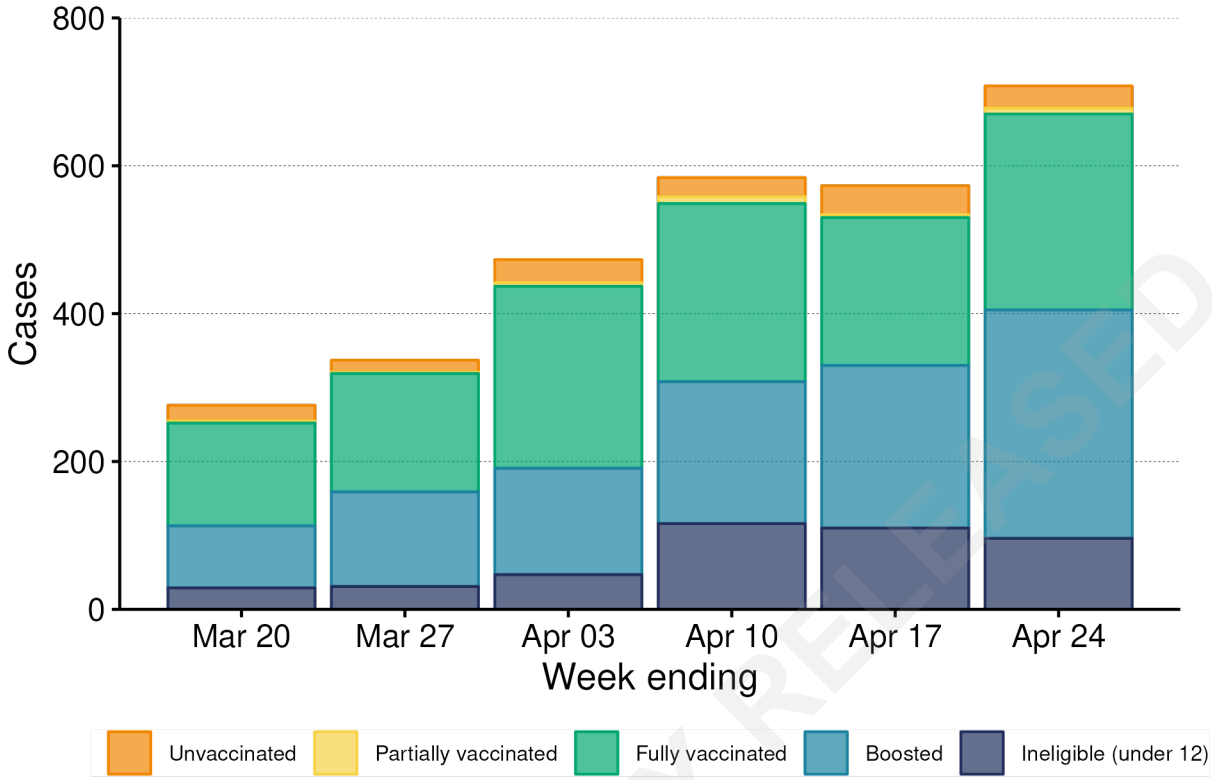
Wairarapa DHB



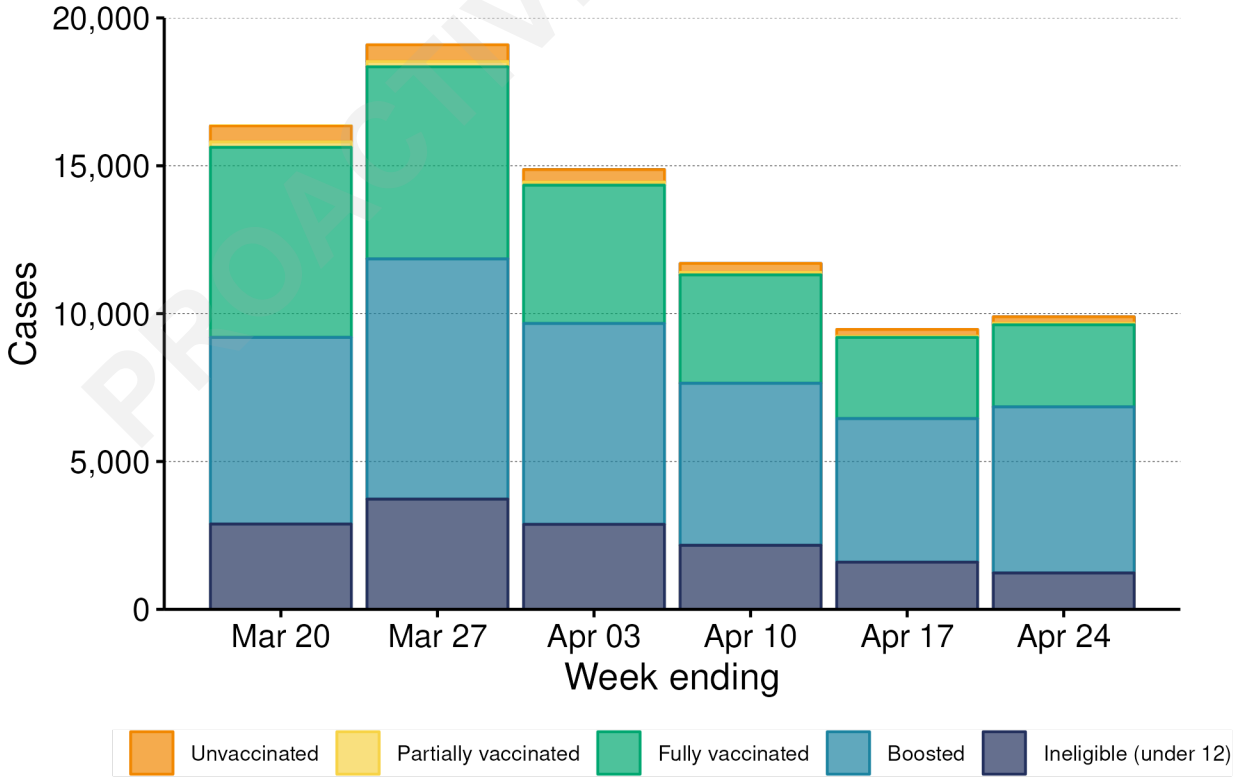
Nelson Marlborough DHB



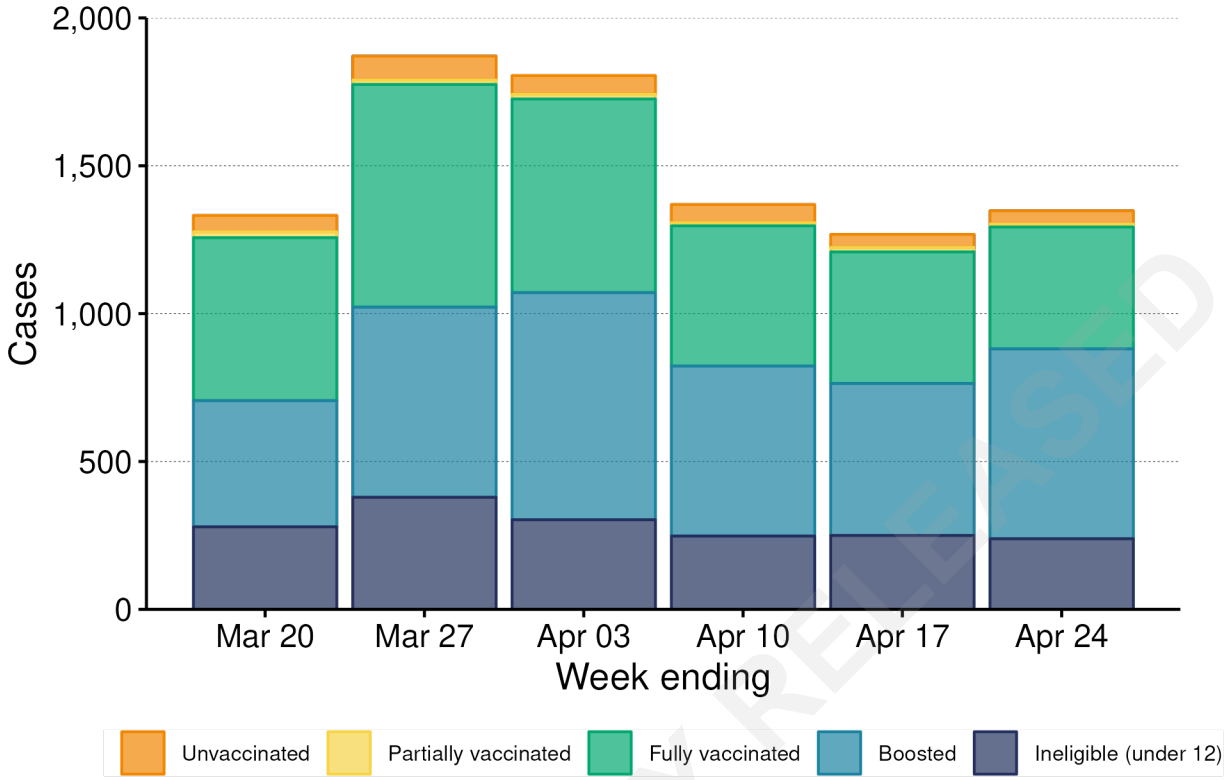
West Coast DHB



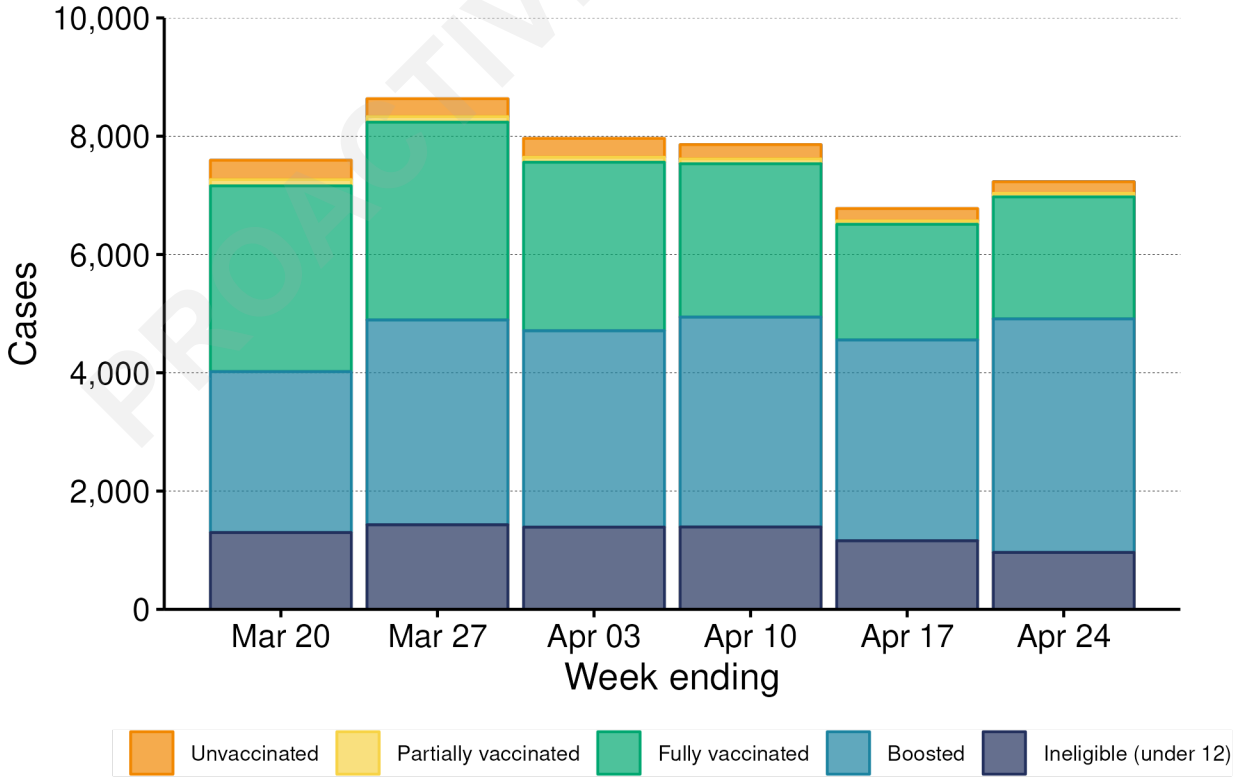
Canterbury DHB



South Canterbury DHB



Southern DHB



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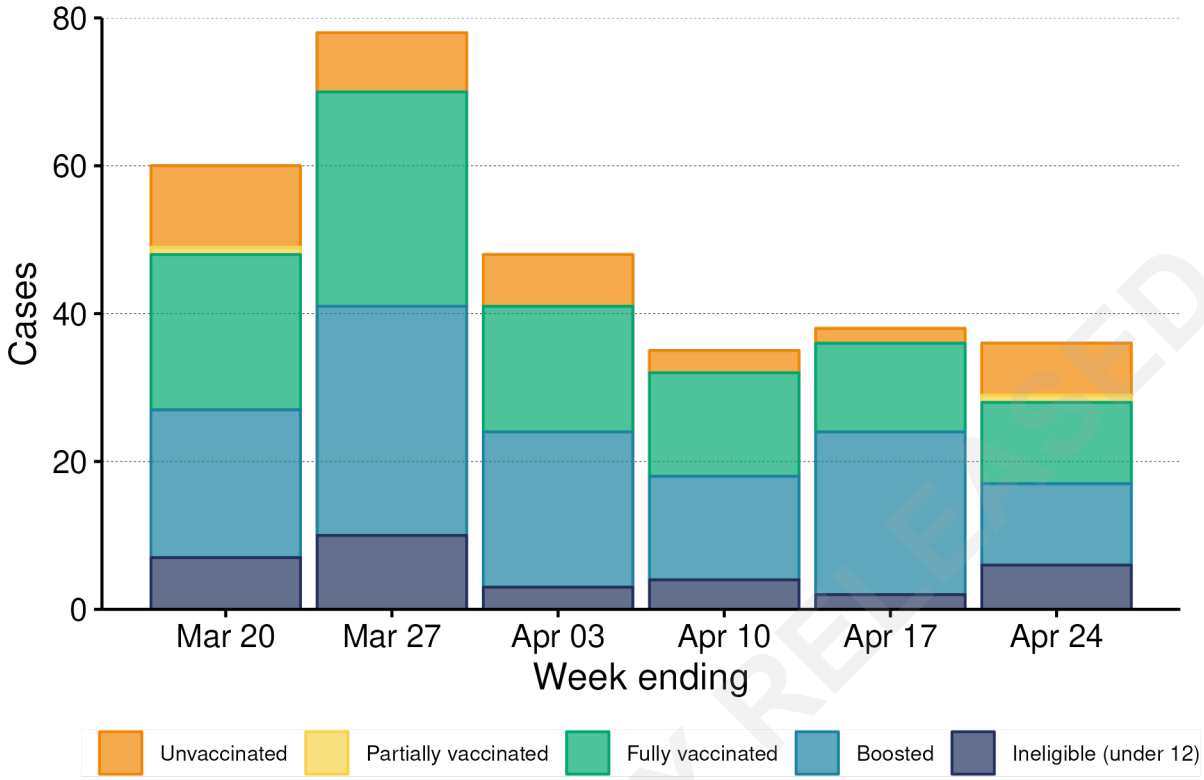

PCR Testing Rates