COVID-19

Trends and Insights Report

Updated 19 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 per 1000** population for the week ending 17 April down 23% from 14.2 per 1000 in the previous week. (Note: last week it was reported the weekly case rate had decreased 30% from the week before but this was incorrect and should have been 23% as well.)
- EpiNow modelling based on data to 18 April predicts nationally, case numbers may continue to decrease in the coming week (median Reff= 0.9), but the estimates have high levels of uncertainty. For Auckland, Canterbury/South Canterbury, Taranaki and Toi Te Ora PHUs, the Reff is 1.0 or above.
- **For the week ending 17 April**, the estimates suggest that **2.3% (665/29,257) of healthcare workers** and **1.7% (353/20,672) of border workers tested positive.** While these are not representative samples of New Zealanders, **border workers' risk is very similar to the general community risk** (but more reflective of the Auckland population).
- **Border worker comparisons with Auckland** case rates **suggest substantial under ascertainment of cases (1.7% [17 per 1000] versus 6.5 per 1000**, respectively).
- A total of **34.9% of health care and 29.2% of border workers have had a COVID-19 diagnosis in 2022 as of 17 April 2022.**
- However, **wastewater viral concentrations have varied little** in Northern region in the past three weeks, with minimal decline in other regions; **contradictory to other infection level evidence, this suggests a sustained level of ongoing transmission could be occurring.**
- **Case rates continue to decline in all regions across the motu**, with the largest decreases seen in the Central region. **Case rates for the week ending 17 April were 7.3 per 1000 in the Northern region, 10.4 per 1000 in Te Manawa Taki, 12.6 per 1000 in Central and 17.3 per 1000 in Southern.**
- **West Coast DHB was the only DHB that had an increase in case rates when last reported but they have now decreased slightly (18.0 to 17.7). South Canterbury is the DHB with the highest case rate at 20.7 per 1000 but is closely followed by Southern DHB (20.2 per 1000).**
- **Nationally, European or Other now have the highest case rates at 12 per 1000**, followed closely by Māori (11.8 per 1000), Asian (8.7 per 1000) and Pacific Peoples with the lowest rate (7.6 per 1000).
- **Pacific Peoples continue to have the highest case rate in Southern region (23.6 per 1000) followed by Māori (20.4 per 1000).**

- In Te Manawa Taki and Central regions, all ethnicities have converged to approximately the same case rate. In the Northern region, Pacific Peoples have the lowest case rate and in the Southern region, European or Other have the lowest case rate.
- Rates continued to **decrease over the past two weeks to 17 April in those aged under 65 years**, the **highest rates of 14.3 per 1000 were seen in the 25-44 age range**, with those aged 15-24 at 13.6 per 1000 and 5-14 at 12.6 per 1000. Rates in those aged 65 or more have remained steady at 5.5 per 1000.
- **Hospitalised cases have slightly increased from 551 on 13 April to 572 on 19 April. All regions are now seeing a rise in hospitalised cases after being reported as decreasing last week.** 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 58 to 59.
- Overall, **602 people have died with or after COVID-19 infection as of 19 April 2022**. Of these, **570 have died within 28 days of being reported as a case**. The **7-day rolling average of deaths is 12, a slight drop from the week prior of 13.**

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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 (1.7% [17 per 1000]) are higher than Auckland metro (6.5 per 1000) and national (11.2 per 1000) case rates in the general population. Whilst this evidence suggests the underlying level of infection could be substantially higher than diagnosed rates, the downward trend for border workers, health care workers and Northern region inpatients are all consistent with the general case trends.

The decrease in regional case ascertainment rates has slowed for Northern region, but have remained in a steady decline for all other regions in the past three weeks. However, the **levels of viral RNA in wastewater has not changed significantly in the Northern region** for the past thee weeks and **decreased minimally in the other regions**. Contradictory to other evidence, **this may suggest a sustained level of new infections**. 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 started to deviate from the modelled 'high' scenario, and is not declining as quickly as predicted. Projections based on the effective reproduction rate, while having high uncertainty, suggest a decrease in all regions in the coming week, but not as substantial as the previous week.

Approximation of underlying infection incidence

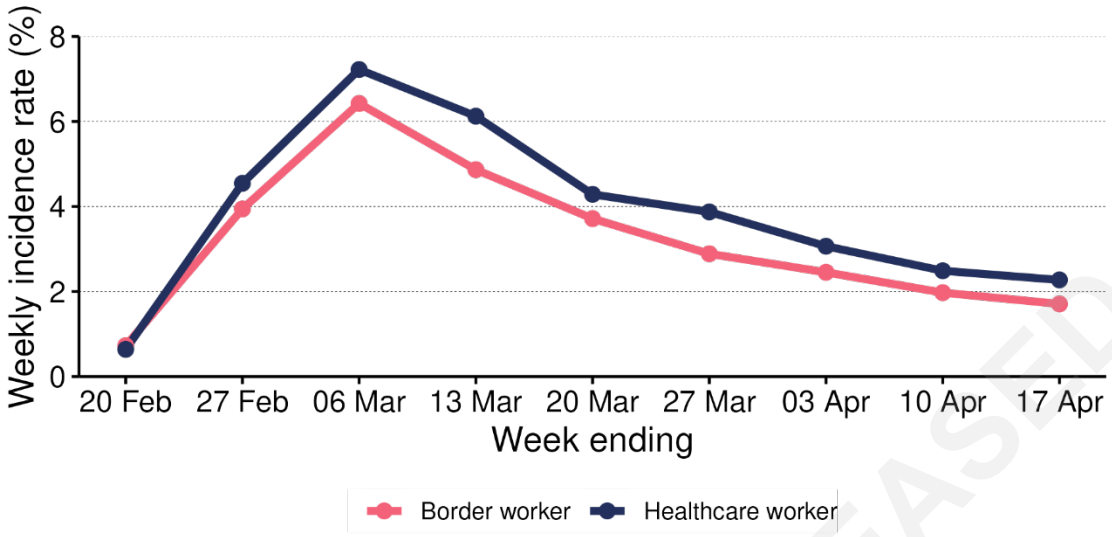
Underlying infection incidence has been gauged using a weekly case rate for routinely asymptomatically tested border workers, and for healthcare workers, where there was evidence of regular testing.[1]

For the week ending 17 April, estimates suggest that **2.3% (665/29,257) of healthcare workers** and **1.7% (353/20,672) of border workers have tested positive** (for the first time) (see Figure 1). These incidence rates continue to steadily decrease. A total of 34.9% of healthcare and 29.2% of border workers have had a COVID-19 diagnosis in the year to 17 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. Also, 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.

Figure 1: ***National weekly infection incidence rate (%) of COVID-19 for health care and border workers, for the weeks ending 20 Feb to 17 April 2022***

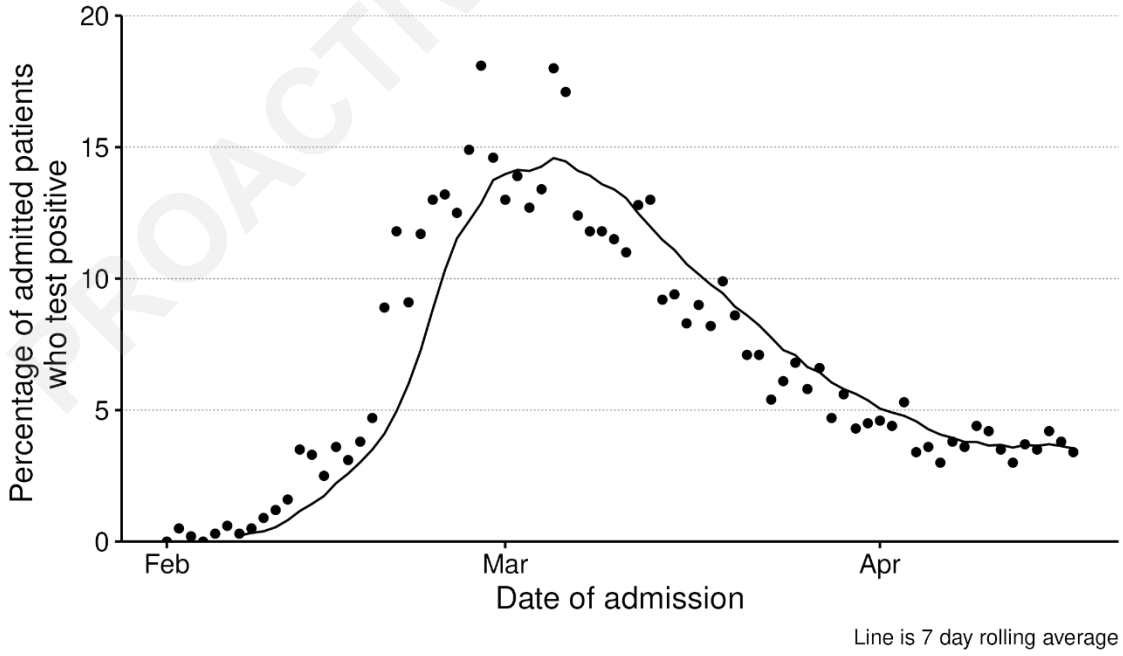


Source: Éclair/Episurv, 2359hrs 17 April 2022

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 but is slowing,** from 4.2% (277/7588) in the week ending 10 April to **3.4% (246/6944)** in the week ending 17 April.

Figure 2: ***Percent of tests positive among Northern region hospital admissions, 01 February to 17 April***



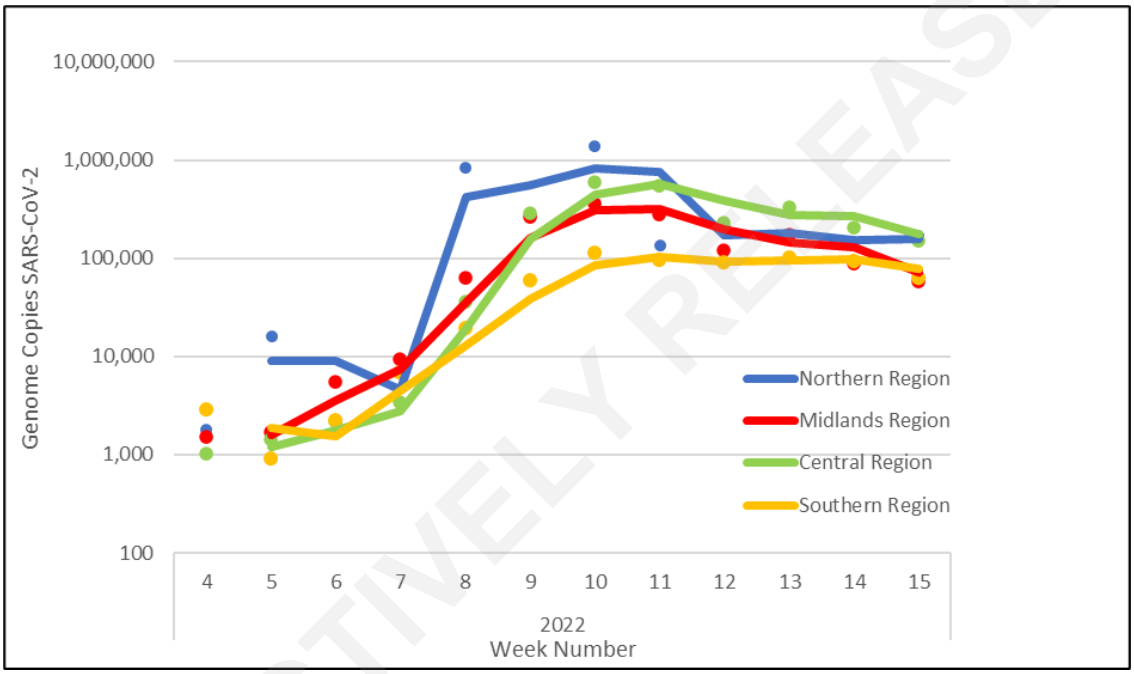
Source: Northern Region hospitalisation data, NCTS & EpiSurv as at 2359hrs 17 April 2022

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 remains unchanged in the past three weeks** despite an initial drop in levels detected in late February. **All other regions have seen a minimal decline.** 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, 16 January – 17 April 2022***



Source: ESR SARS-CoV-2 in Wastewater update for week ending 17 April 2022

Trends in diagnosed cases

Overall, **the weekly case rate was 11.2 per 1000** population for the week ending 17 April. This was a **decrease of 23% from the previous week,** which was 14.2 per 1000. Case rates in all DHBs are stable or declining including the West Coast which was the only DHB still increasing when last reported.

Figure 4 shows, that **the Te Manawa Taki (10.4 per 1000), Central (12.6 per 1000) and Southern (17.3 per 1000) regions had case rates around twice that of Northern region (7.3 per 1000)** in the week ending 17 April. In mid March, the outbreak was focused in the Central and Te Manawa Taki regions as the Northern region was steadily declining by this point after previously having the highest case rates. The Southern region had the lowest case rates but increased steadily before peaking on 27 March. **Case rates are now continuing to decline for all regions**.

DHB specific graphs for each region are shown in Figure 5.

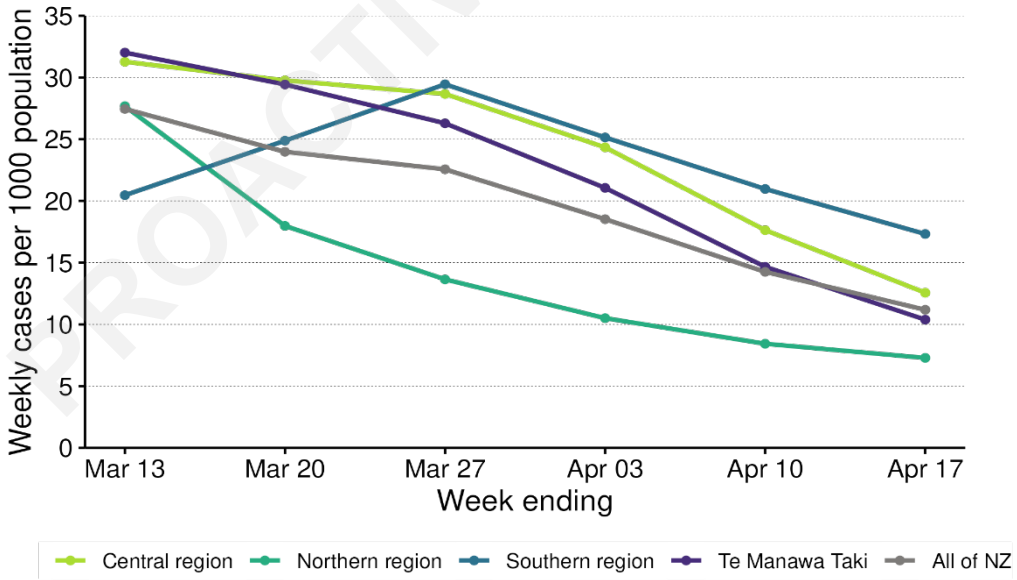
In the Northern region, weekly case rates were highest **for Northland DHB (14.1 per 1000),** just over double that of the **Auckland Metro DHBs (6.5 per 1000).**

In Te Manawa Taki, weekly case rates were highest in **Taranaki (14.8 per 1000)**.

The highest weekly case rates in the Central region were in **Whanganui (15.4 per 1000)**.

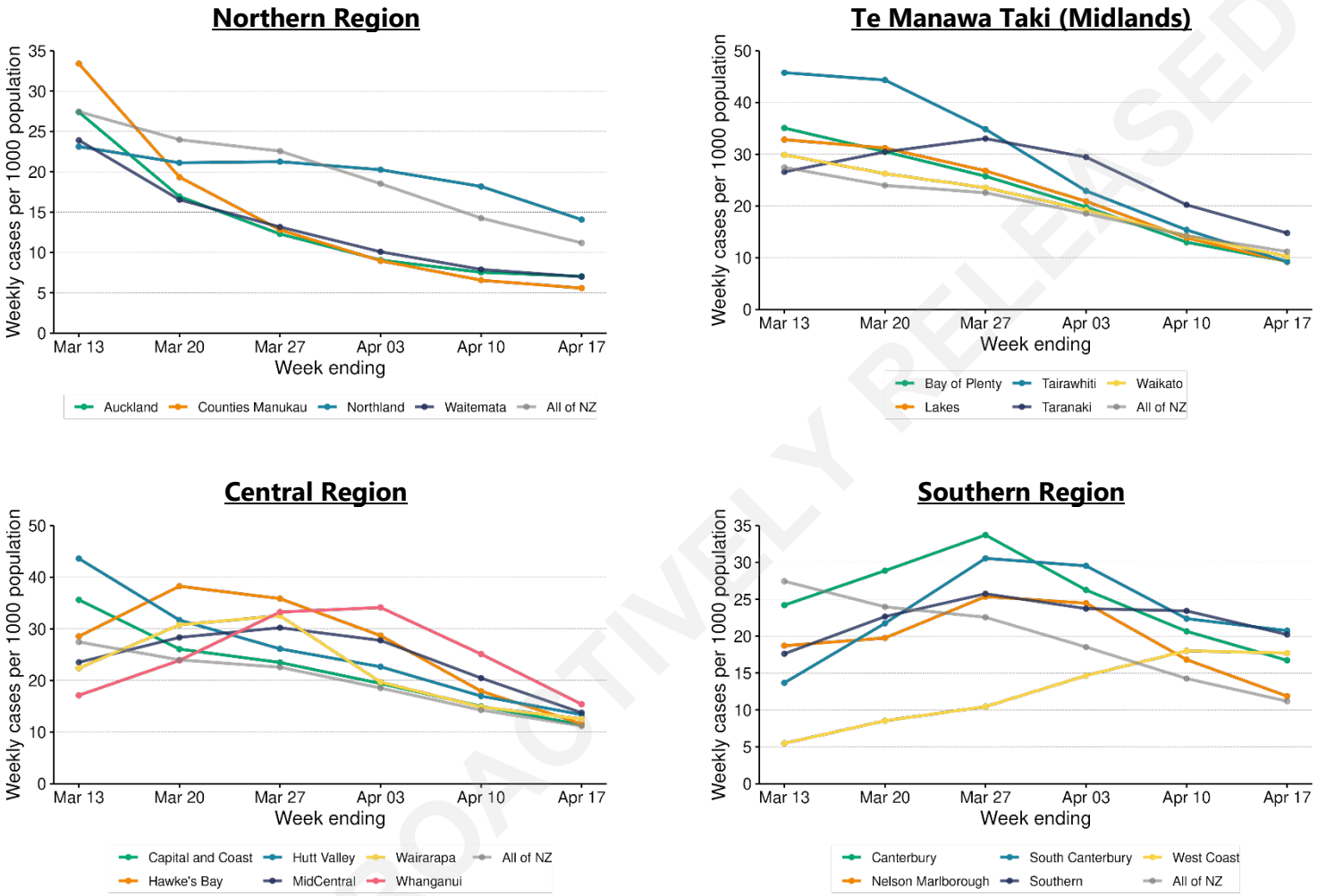
In the Southern region, the highest case rates were in South Canterbury (20.7 per 1000) **though were closely followed by Southern DHB (20.2 per 1000).** The West Coast case rate decreased **from 18.0 per 1000 last week to 17.7 per 1000 this week after having increased the week prior.**

Figure 4: ***Regional weekly COVID-19 case rates (per 1000), for the weeks ending 13 March to 17 April 2022***



Source: NCTS/EpiSurv as at 2359hrs 17 April 2022

Figure 5: ***DHB specific weekly COVID-19 case rates (per 1000) by region, for the weeks ending 13 March to 17 April 2022***



Source: NCTS/EpiSurv as at 2359hrs 17 April 2022

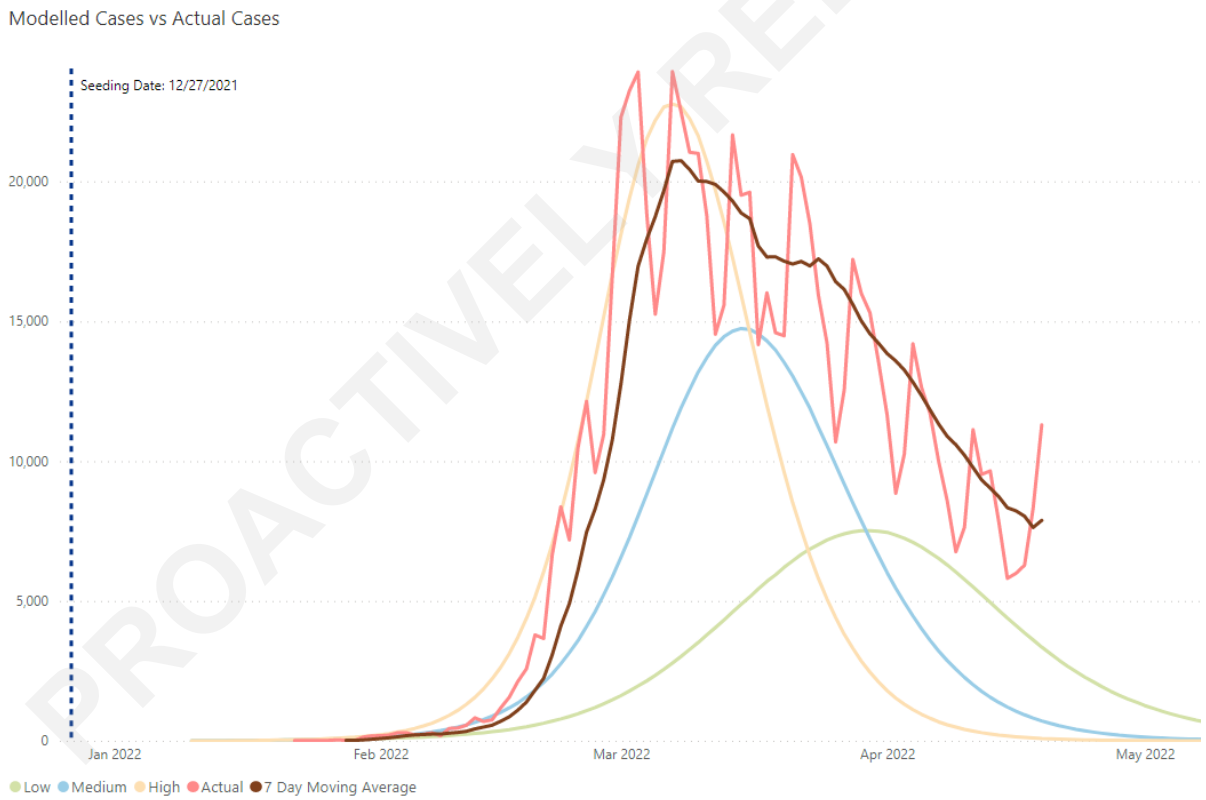
Modelling of cases comparison to case data

The number of diagnosed cases is continuing to track above all modelled scenarios nationally, with a wider peak than projected (Figure 6). 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 7). 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 7). 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.

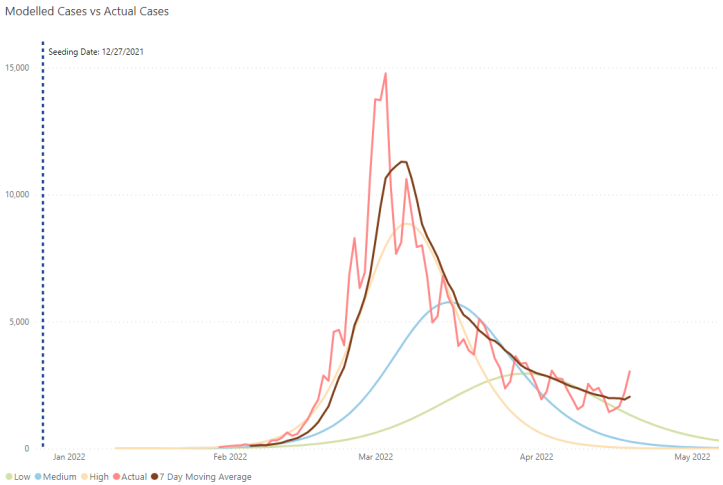
Figure 6: *COVID Modelling Aotearoa scenarios compared with reported cases nationally*



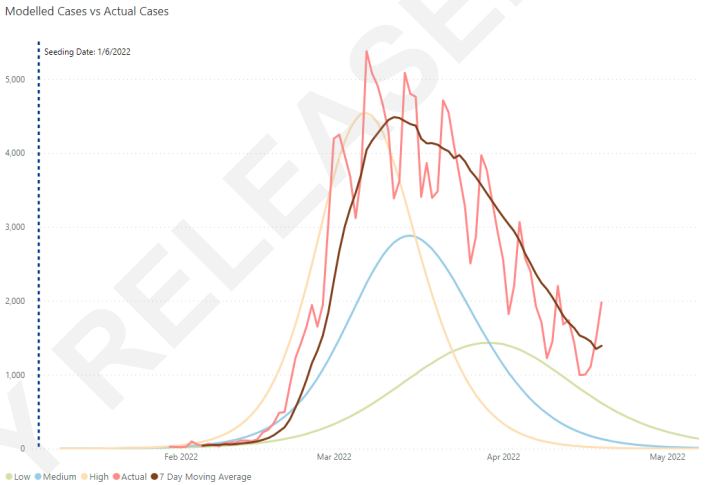
Sources: TAS, based on COVID-19 Modelling Aotearoa Branching Process Model 27 February 2022, and Ministry of Health reported case data 19 April 2022

Figure 7: ***COVID Modelling Aotearoa scenarios compared with reported cases by region***

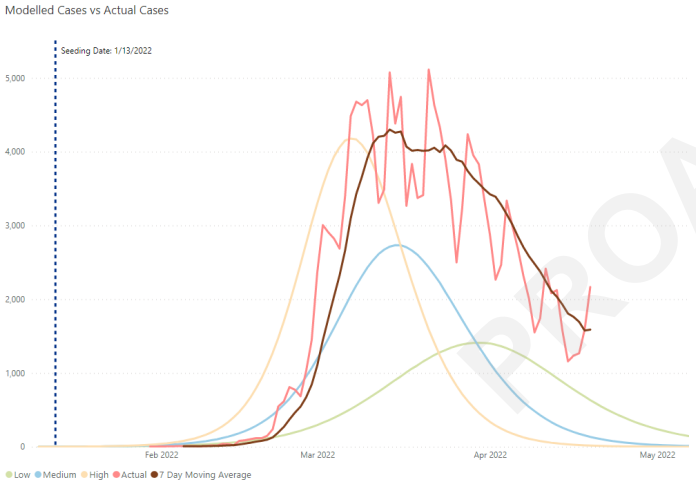
Northern Region



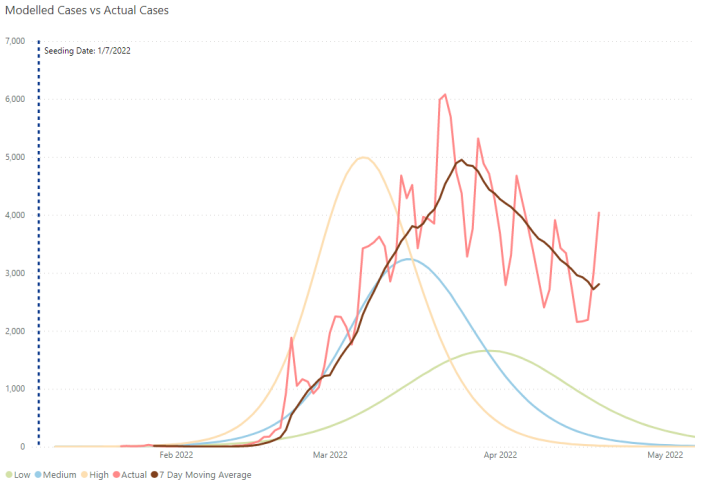
Te Manawa Taki (Midlands)



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 12 April 2022

Effective reproduction rate, and forecasts of cases and infections

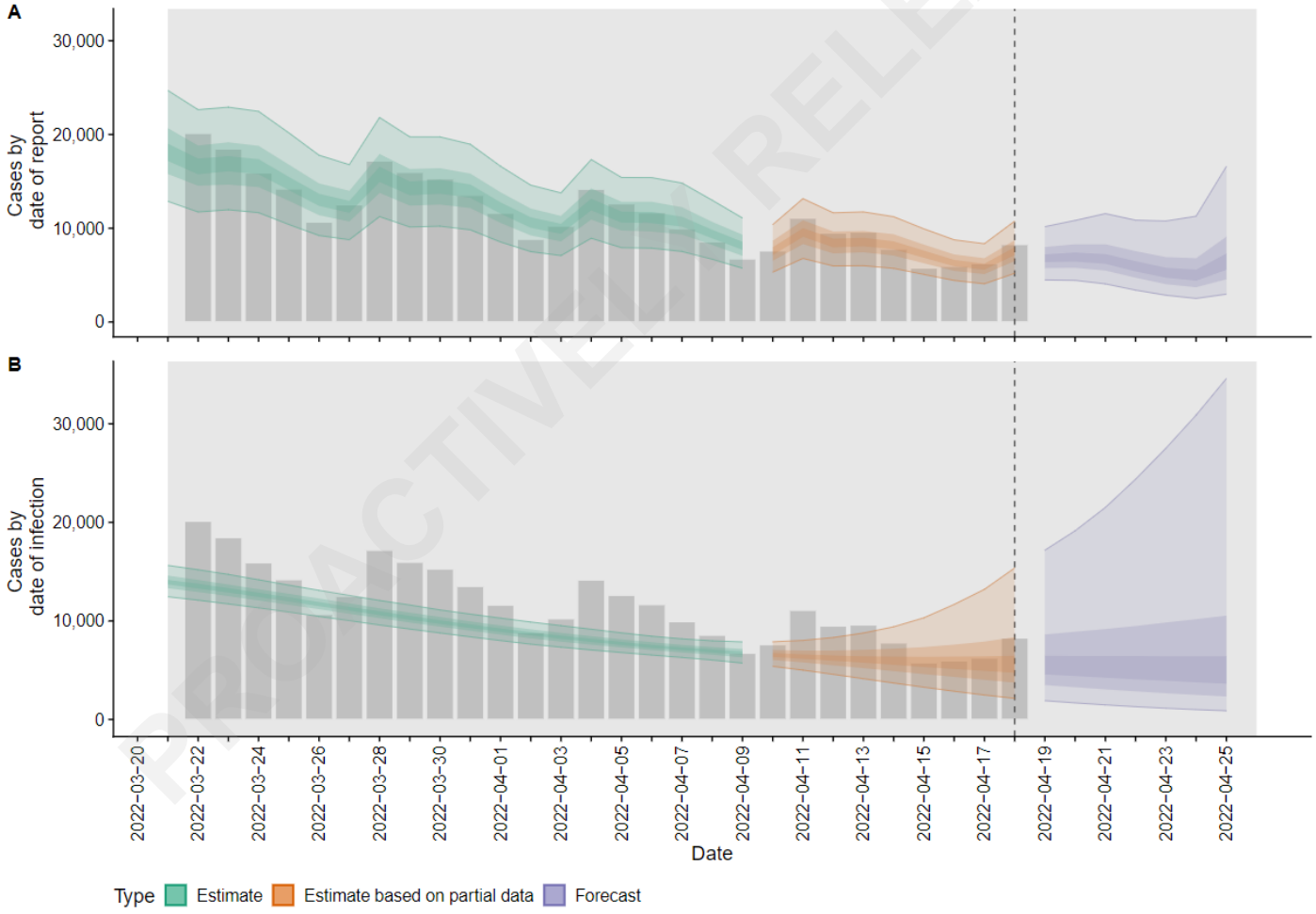
These estimates used the *EpiNow2* package on 21 April using data to 18 April.[2] Regional estimates for R_{eff} are shown in the accompanying **appendix document**. The median estimate of **effective R (R_{eff}) nationally is 0.9** (90% Credible Interval [CI]: 0.6-1.5) for cases to 18 April, after adjusting for data lags. The relatively wide confidence intervals indicate there is high uncertainty for this estimate.

For the Auckland, Canterbury/South Canterbury, Taranaki and Toi Te Ora 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 8.

The model's median estimate is that national reported cases could be 6,343 cases per day by 25 April (50% credible interval: 4,556–9,088). 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 8: *Projected national cases by (A) date of report and (B) date of infection*



Source: EpiNow 21 April 2022

[2] 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

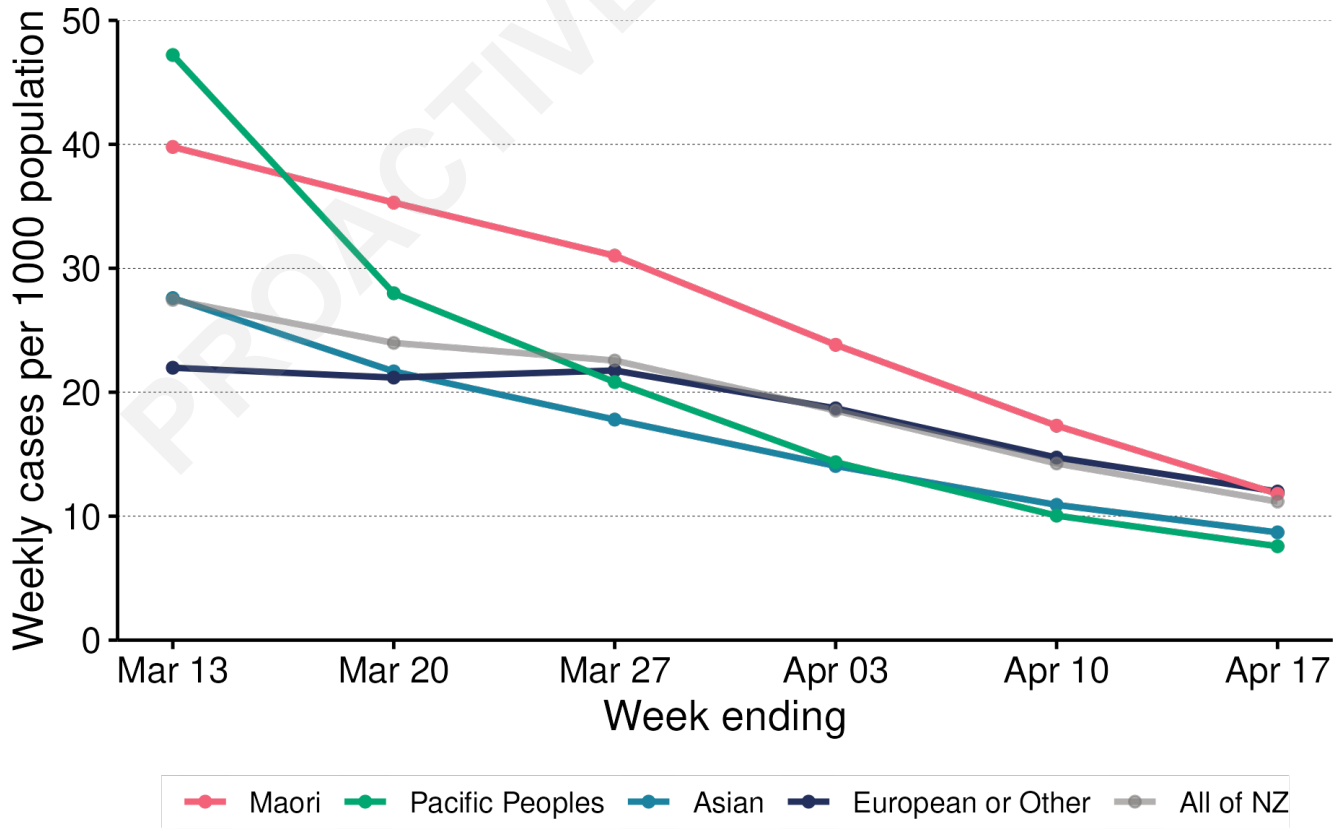
Ethnicity trends over time and by region

Figure 9 shows national and regional case rates by ethnicity. In the past week nationally, European or Other have the highest weekly case rate at 12 per 1000 population, with Māori following at 11.8 per 1000. This is followed by Asian (8.7 per 1000) and Pacific peoples (7.6 per 1000). Rates in all ethnicities are continuing to decline.

Case rates for Te Manawa Taki and Central regions have had all ethnic groups converge over time after periods in early-mid March where case rates for Māori and Pacific Peoples were higher than other groups at 44.7 per 1000 (Māori) and 55 per 1000 (Pacific Peoples) to now 10.3 per 1000 (Māori) and 10.2 per 1000 (Pacific Peoples) in Te Manawa Taki and 43.3 per 1000 (Māori) and 72.9 per 1000 (Pacific Peoples) respectively to now 12.9 per 1000 (Māori) and 11.1 per 1000 (Pacific Peoples) in Central.

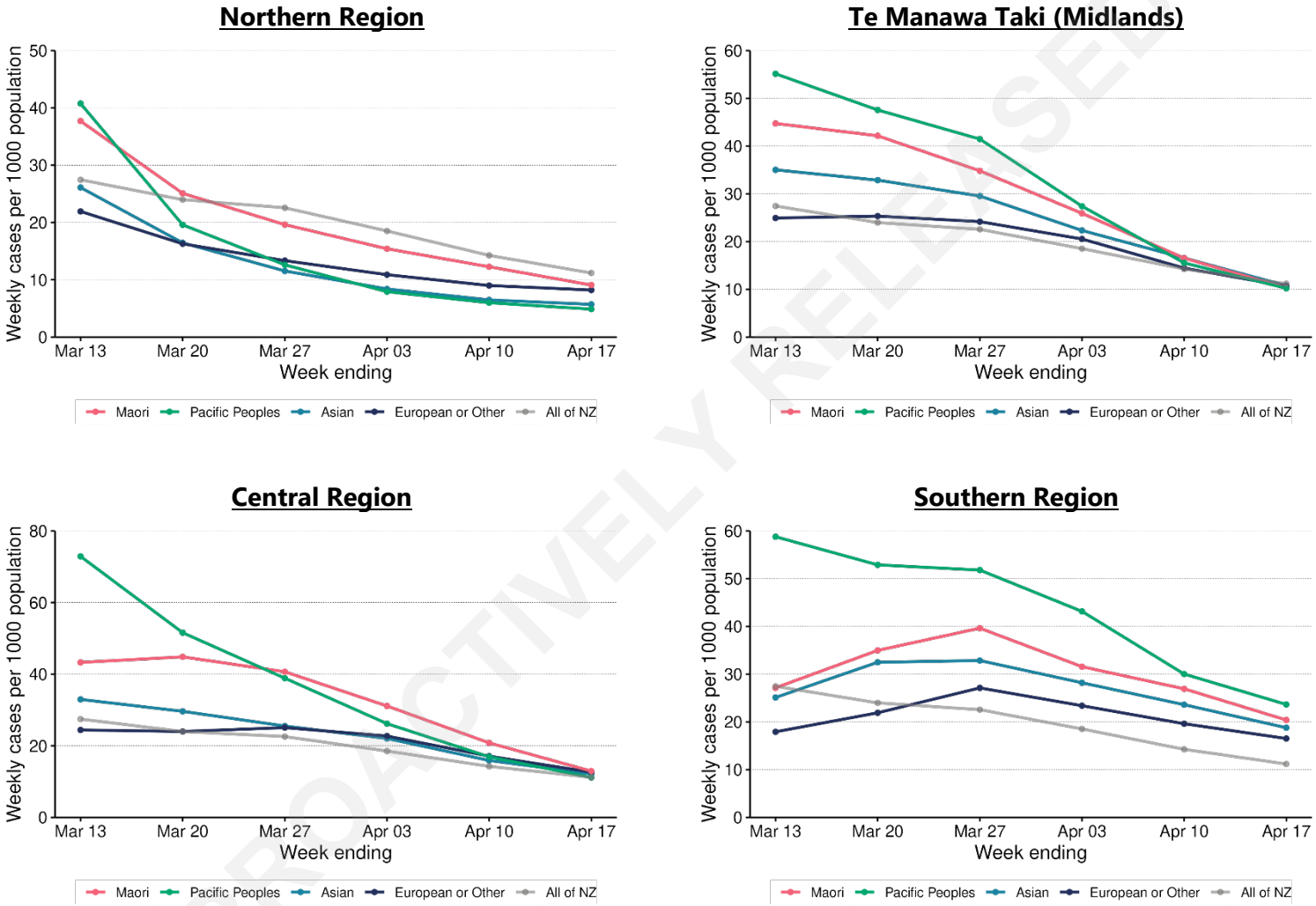
The Northern region's pattern most resembles the national pattern in terms of the effect on different ethnic groups with Māori (9.1 per 1000) and European or Other (8.2 per 1000) both at similar levels and at a higher rate to Asian (5.7 per 1000) and Pacific Peoples (4.9 per 1000) who are also affected at similar rates. The Southern region has converged slower than all other regions, primarily due to the disproportionate effect of cases in Pacific Peoples in this area throughout mid-March (58.8 per 1000) to early April (43.1 per 1000). Despite this, as cases decrease in this region, all ethnic groups have increasingly similar case rates (ranging between 16.5 per 1000 and 23.6 per 1000 now).

Figure 9: ***Ethnicity specific weekly COVID-19 case rates (per 1000) for New Zealand, for the weeks ending 13 March to 17 April 2022***



Source: NCTS/EpiSurv as at 2359hrs 17 April 2022

Figure 10: ***Ethnicity specific weekly COVID-19 case rates (per 1000) by region, for the weeks ending 13 March to 17 April 2022***



Source: NCTS/EpiSurv as at 2359hrs 17 April 2022

Age trends over time and by region

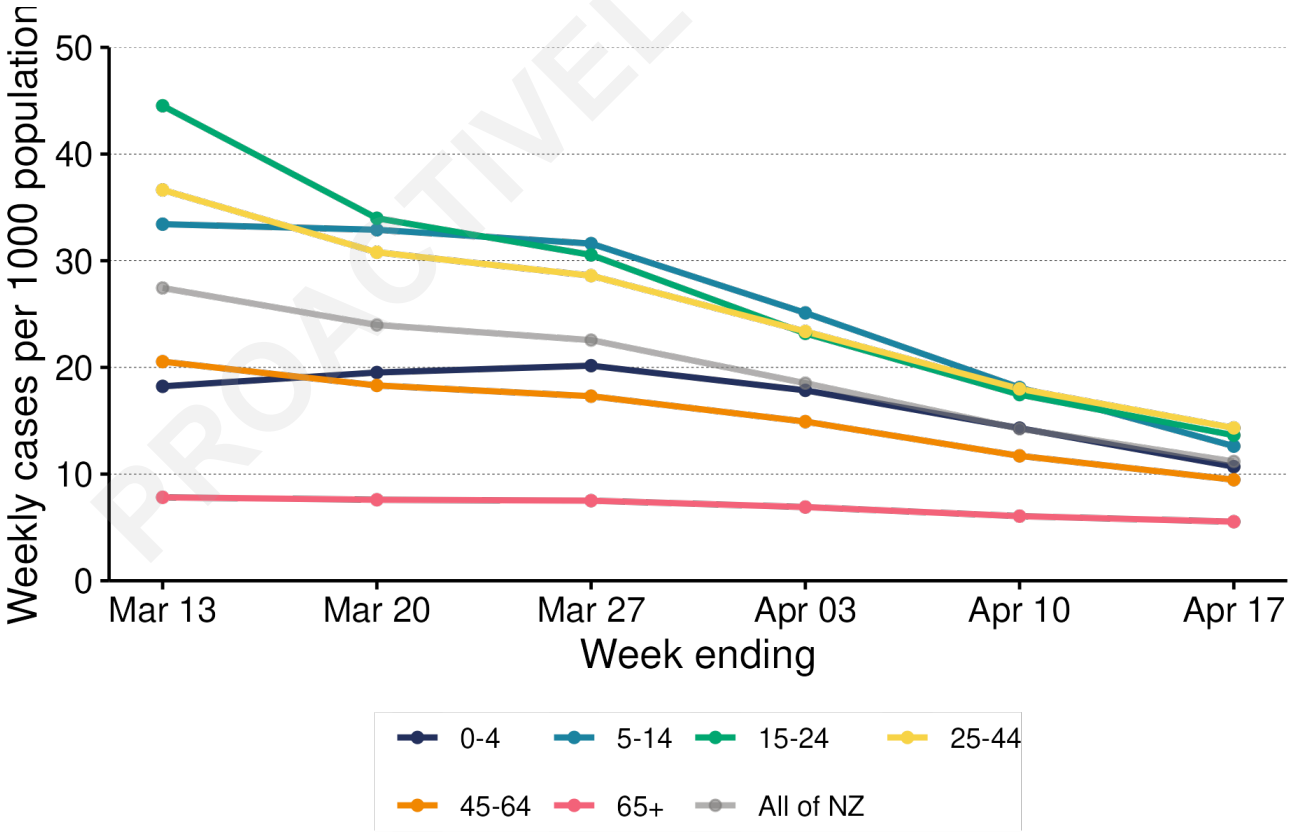
Figure 11 shows community cases by age nationally and by region in Figure 12. Case rates in all age groups continue to decrease. Nationally, **case rates are similar for 0-4, 5-14, 15-24, 25-44 and 45-64 age groups (10.7, 12.6, 13.6, 14.3 and 9.4 per 1000 respectively)** in the past week. Those aged 65+ continue to have the lowest weekly case rates at 5.5 per 1000 meaning other groups are nearly double or more than double their case rate. While rates in all groups have declined in the last week, those aged 5-14 had the largest decrease falling from 18.1 cases per 1000 to 12.6 cases per 1000. Case rates among those aged 65+ years and over have remained relatively steady in the past 2 weeks.

Please note that last week and in previous reports, different age brackets were used (0-9, 10-19, 20-29, 30-39, 40-49, 50-59, 60-69 and 70+).

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. 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.

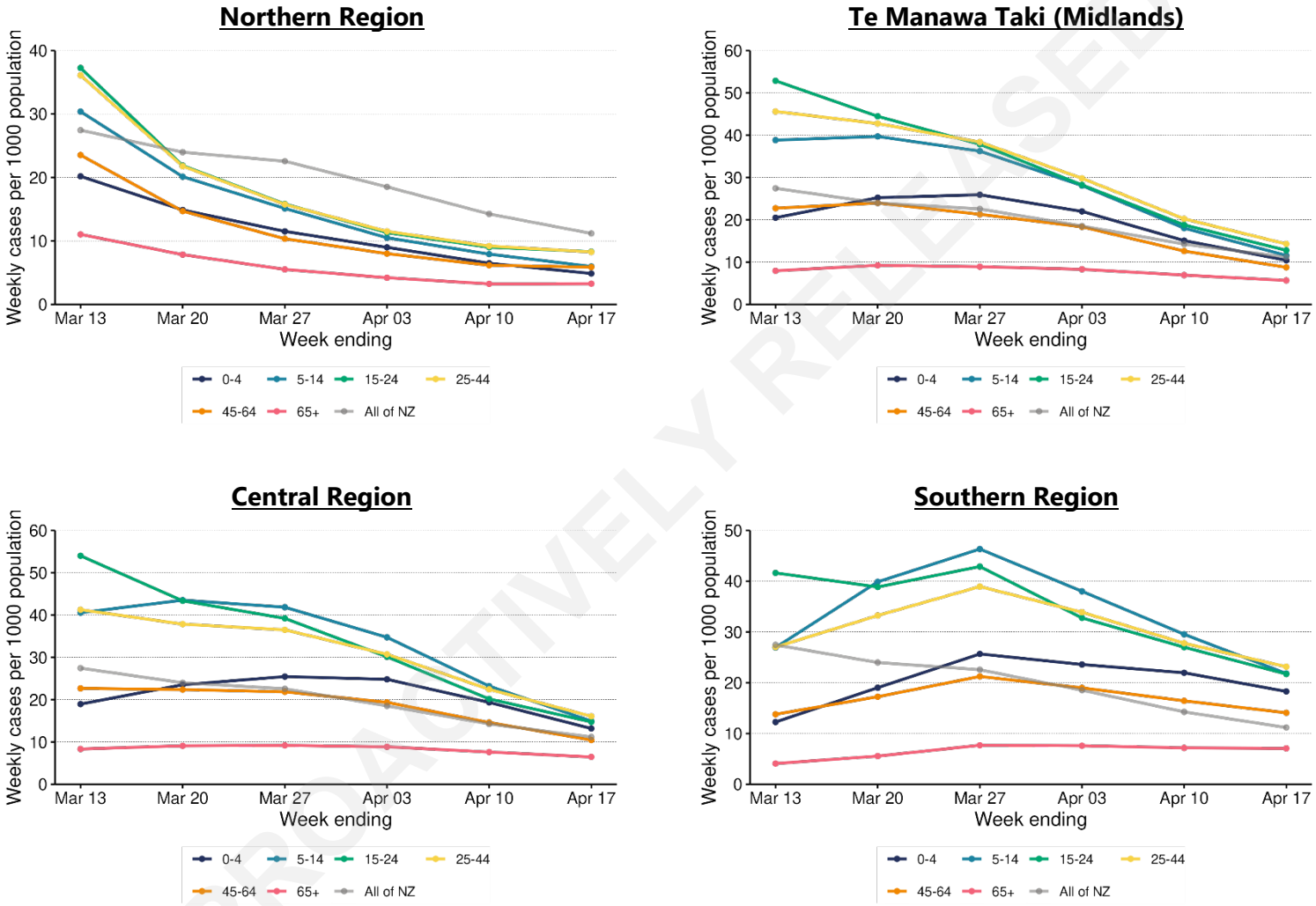
Patterns of age group risk were similar for all regions though the magnitude of the differences varied, in particular for Southern there still remains a greater difference in risk between those aged 5-44 compared to other groups (see Figure 12). **Declining trends in case rates were seen across all age groups under 65 in all regions**; those 65 years and over were stable and had only very shallow declines in some regions.

Figure 11: ***Age specific weekly COVID-19 case rates (per 1000) for New Zealand, for the weeks ending 07 March to 17 April 2022***



Source: NCTS/EpiSurv as at 2359hrs 17 April 2022

Figure 12: ***Age specific weekly COVID-19 case rates (per 1000) by region, for the weeks ending 07 March to 17 April 2022***



Source: NCTS/EpiSurv as at 2359hrs 17 April 2022

Housing Deprivation trends over time, by ethnicity and by region

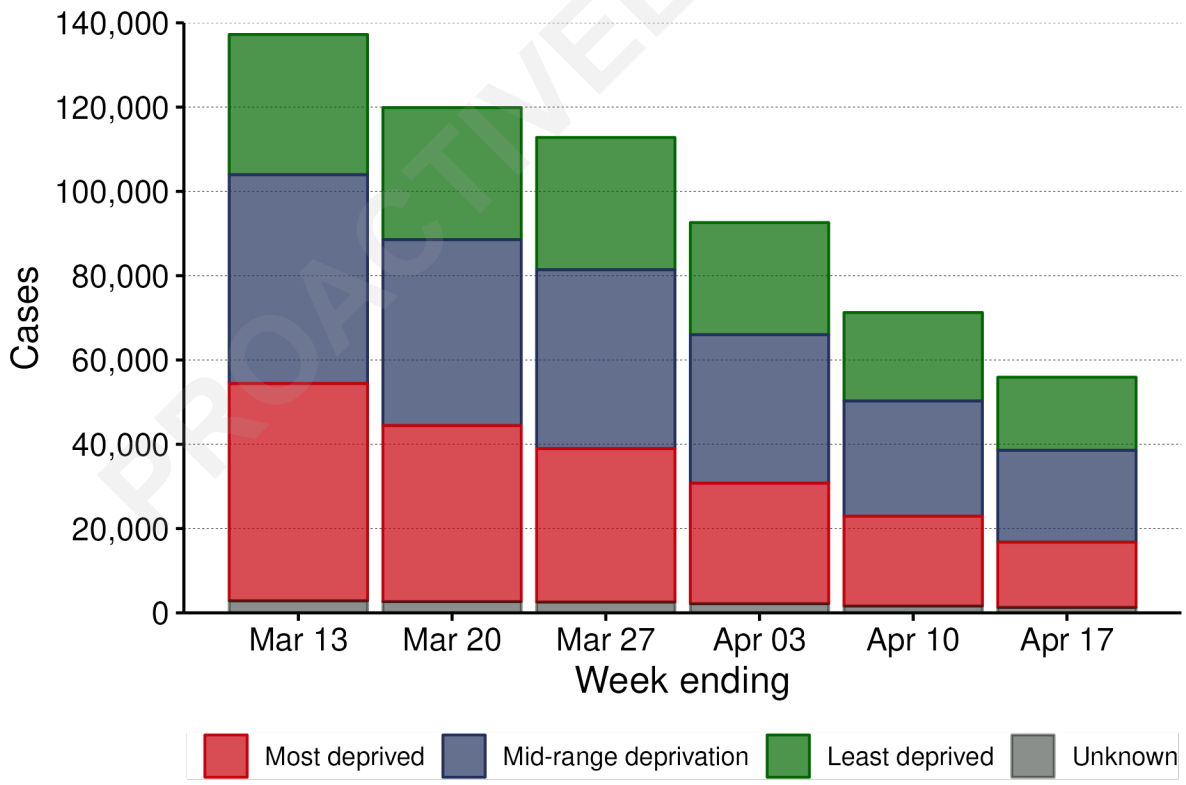
Figure 13 shows case *numbers* based on the Index of Multiple Deprivation 2018 housing deprivation scores. Housing is a key determinant of COVID-19 both in terms of risk and protection. Areas of high deprivation are ones where there is a higher number of renters, overcrowding and lack of amenities. These factors impact the ability to sustain self-isolation for cases and their household members.

Overall, in the past week the **proportion of cases was highest in the areas of mid-range deprivation (39%),** followed by areas least deprived (31%) and areas most deprived (28%).

For **the most deprived areas, cases in Māori made up 35%** despite only making up 15% of the total population. The proportion of cases in the most deprived areas for Pacific Peoples was 11%, for Asian 12% and for European and Other 42%. Whereas 76% of cases **in areas of least deprivation** were European and Other compared with 10% being Asian, **9.3% Māori** and 2.9% Pacific.

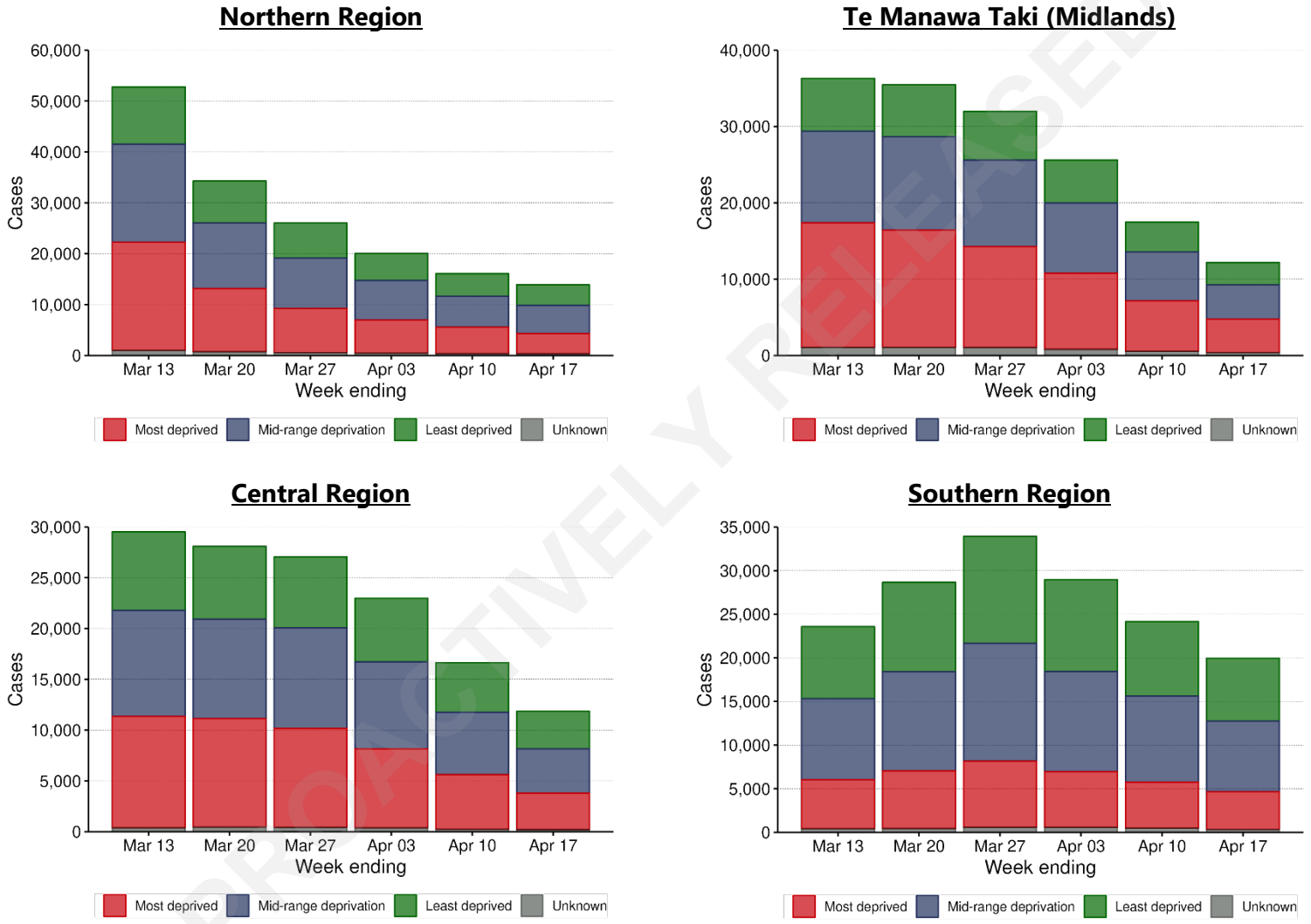
In Te Manawa Taki region, just over a third of cases were in the mid-range deprived (37%) and most deprived (36%) categories, respectively, and around a quarter (24.2%) in the least deprived (see **Figure 14**). In the Central region, cases are fairly evenly distributed between the least deprived (31%), mid-range deprived (37%) and most deprived (30%). Conversely, in Southern region, there were more cases in the least deprived (36%) areas than the most deprived (21.1%) areas while the majority of their cases came from mid-range deprived areas (40.1%). In the Northern region, cases were also predominantly in the mid-range deprived areas (40%) while being evenly distributed among the least deprived (29%) and most deprived (28.7%) areas.

Figure 13: ***Deprivation specific weekly COVID-19 case numbers for New Zealand, for the weeks ending 13 March to 17 April 2022***



Source: NCTS/EpiSurv as at 2359hrs 17 April 2022

Figure 14: ***Deprivation specific weekly COVID-19 case numbers by region, for the weeks ending 13 March to 17 April 2022***



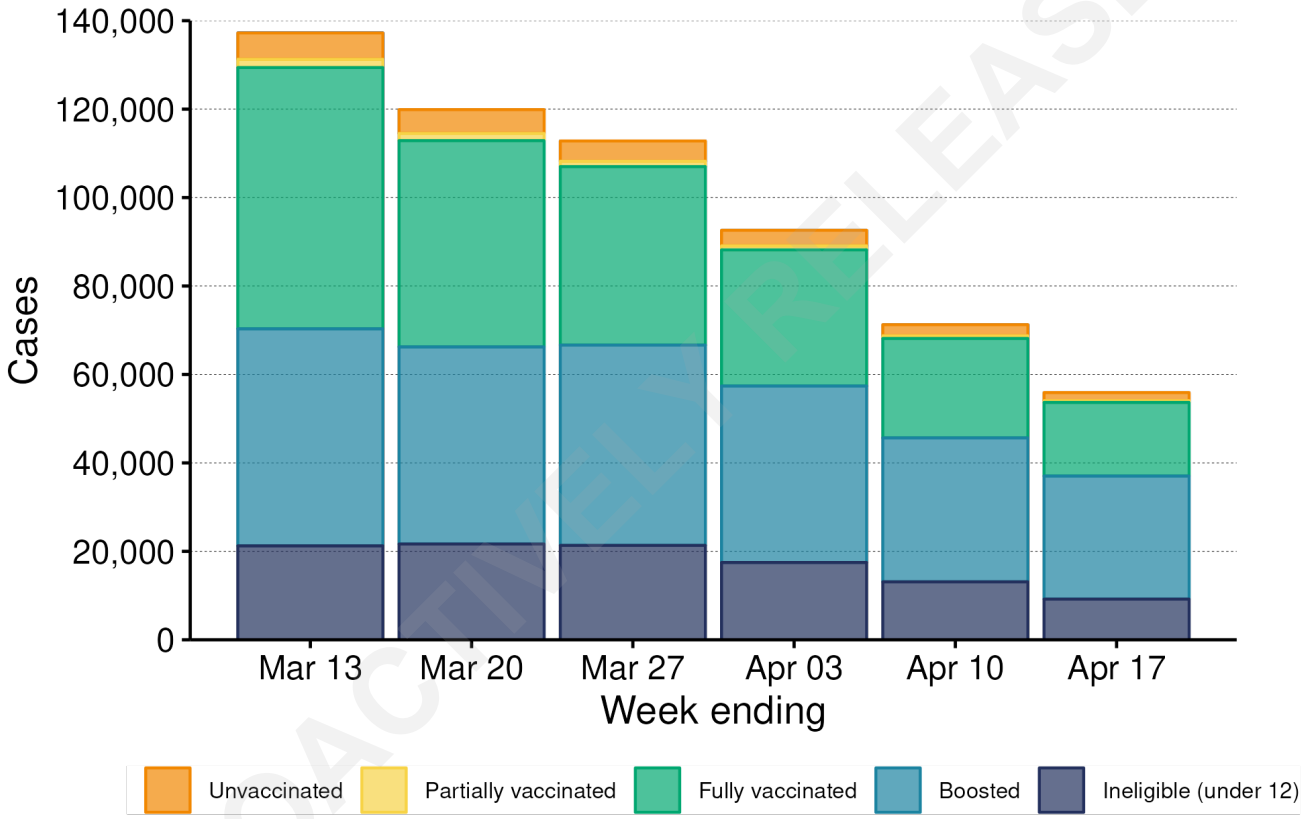
Source: NCTS/EpiSurv as at 2359hrs 17 April 2022

Vaccination trends over time

Figure 15 shows community case *numbers* by vaccination status nationally. The proportion of boosted cases rose from 44.4% to 48.4% of all cases in the week ending 17 April. A corresponding decrease in the proportion reported as fully vaccinated also occurred (from 32.1% to 30.2% of all cases).

The proportion of cases amongst those who are categorised as ineligible due to being under 12 years old[3] is 17.3%, a slight decrease from the previous week (18.9%). The proportion of cases reported as partially vaccinated has decreased slightly from 0.9% to 0.7% while cases reported in those unvaccinated has also decreased from 3.8% to 3.4%.

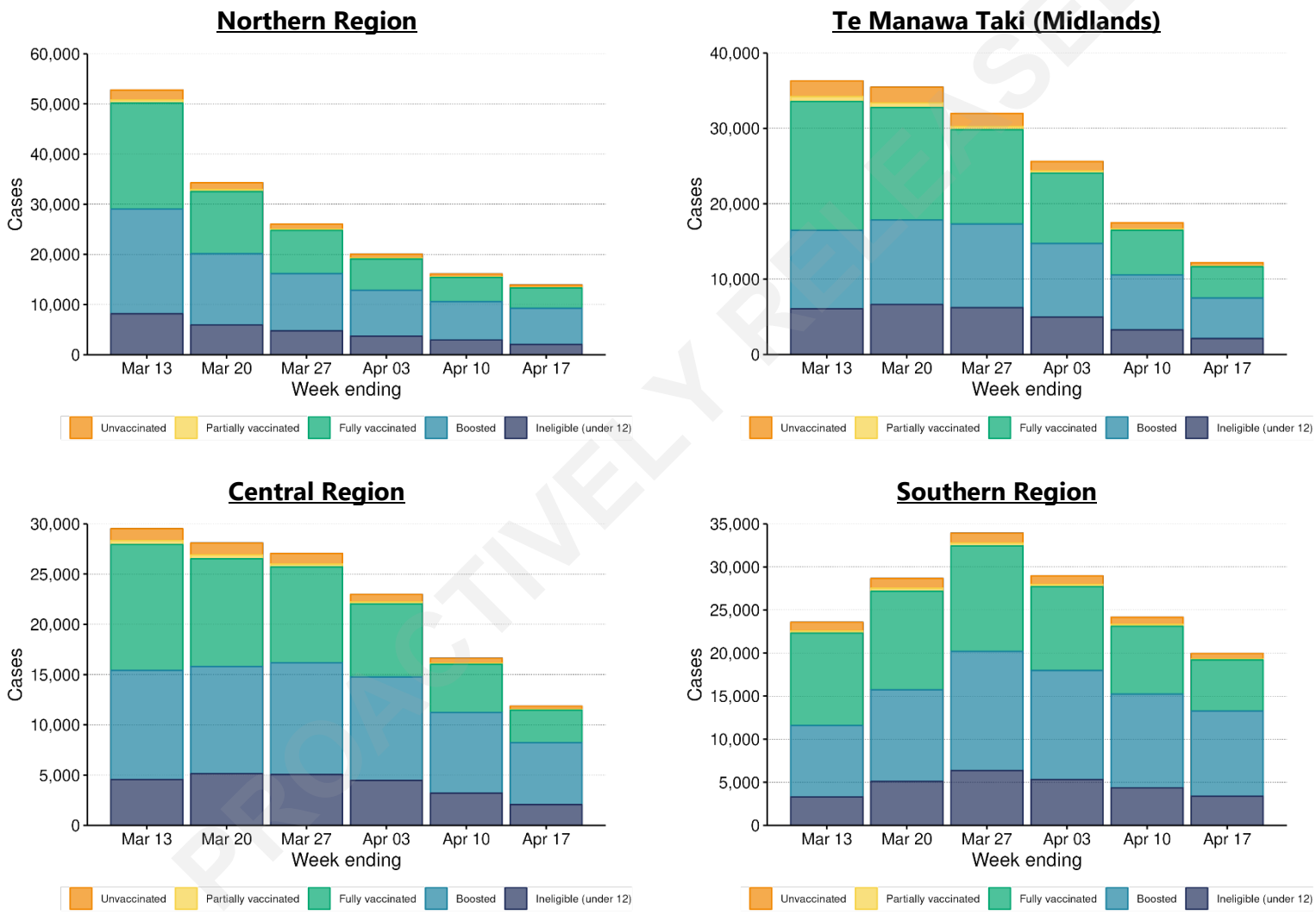
Figure 15: ***Vaccination specific weekly COVID-19 case numbers for New Zealand, for the weeks ending 13 March to 17 April 2022***



Source: NCTS/EpiSurv as at 2359hrs 17 April 2022

[3] Cases deemed Ineligible (under 12) are currently all cases that fall under the age of 12. Future modifications to vaccination categories are being developed and this will include under 12s.

Figure 16: ***Vaccination specific weekly COVID-19 case numbers by region, for the weeks ending 13 March to 17 April 2022***



Source: NCTS/EpiSurv as at 2359hrs 17 April 2022

PCR and RAT testing trends

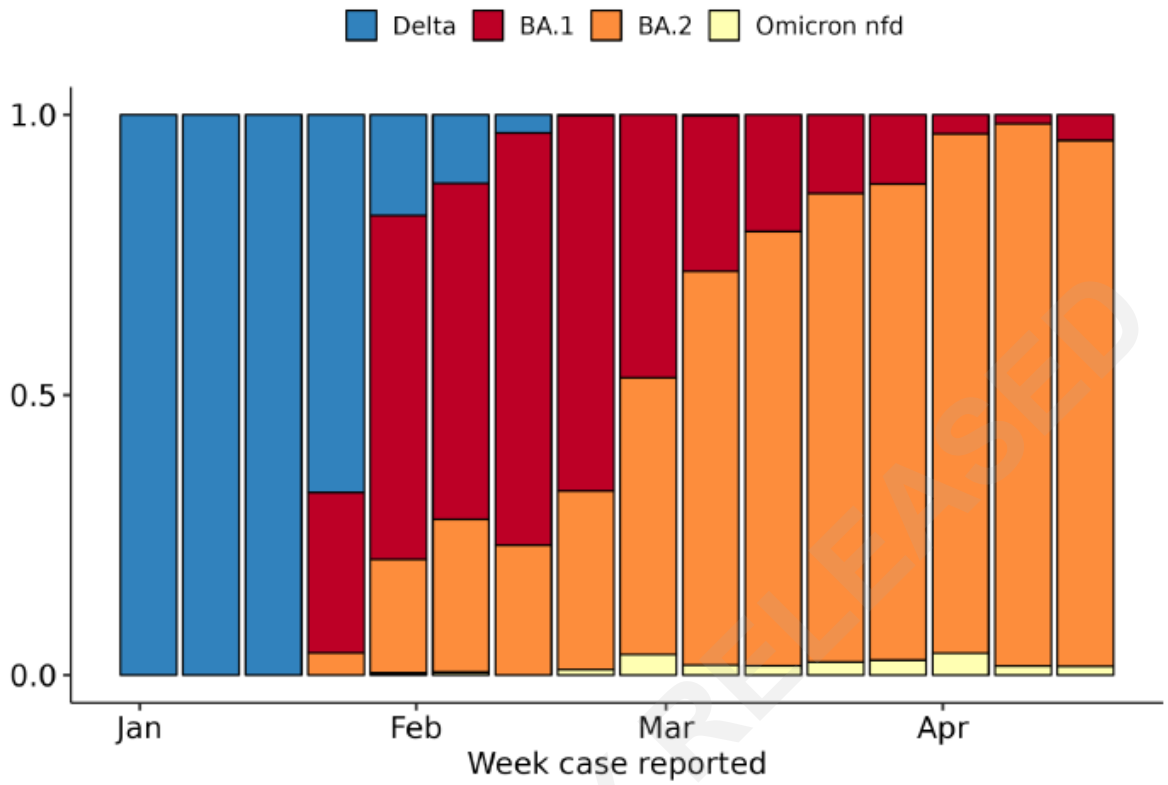
Since New Zealand entered Phase 3 of the Omicron response, most testing is by rapid antigen tests (RATs) rather than PCR tests. RATs are self-administered and therefore require the individual to self-report their results, which may result in under-reporting. In addition, RATs are more likely than PCR 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.

WGS of Community cases

As per Figure 17, Omicron is the dominant variant in New Zealand, outcompeting Delta, the previous dominant variant, which made up ~70% of all sequenced cases in the start of January 2022 to less than 10% of sequenced cases by the end of January 2022. Among Omicron cases, BA.1 was the dominant subvariant (~ 60%) in 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 18 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.

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

Figure 17: *Frequency of Variant of Concerns amongst community cases in New* Zealand



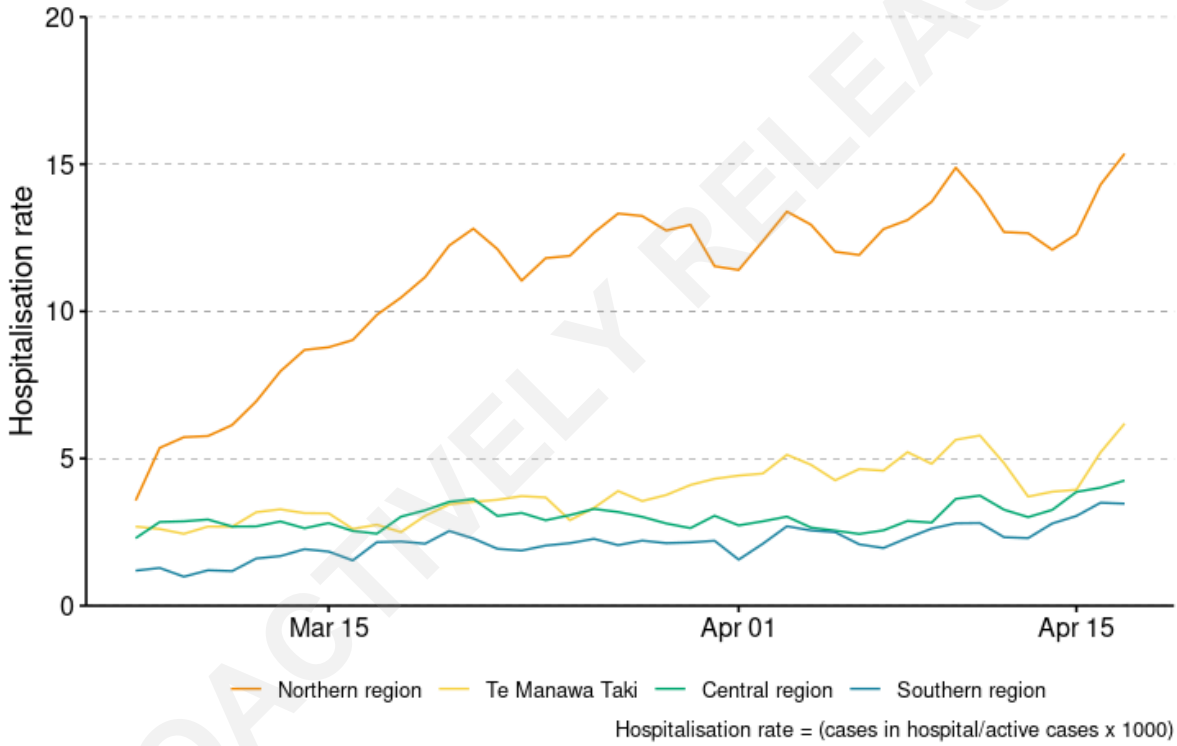
Source: ESR COVID-19 Genomics Insights Report #3, EpiSurv/Microreact 1200hrs 18 April 2022

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 (Figure 18). 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 slowly rising, now reaching around 3 to 4 cases hospitalised per 1000 cases where they previously remained steady at around 1 to 3 cases hospitalised per 1000 cases.

Figure 18: ***Rate of active hospitalisations by region***



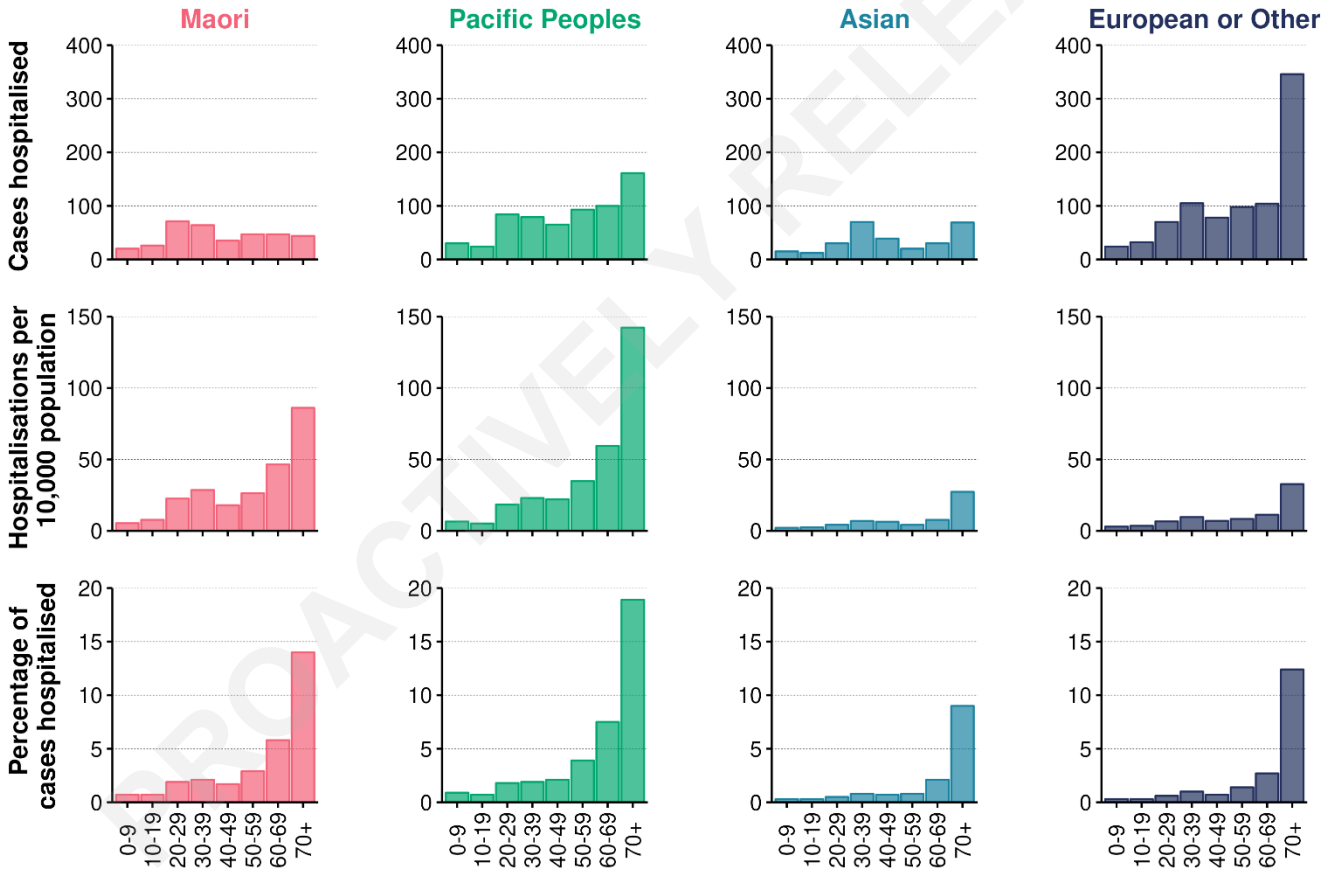
Source: Source: NCTS/EpiSurv as at 2359hrs 17 April 2022

Hospitalisation rates by age and ethnicity in the Auckland Metro DHBs

Figure 19 shows hospitalisations, hospitalisation rate and percentage of cases hospitalised by age and ethnicity. In the Auckland Metro region, those 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 19: ***COVID-19 hospitalisations for Auckland, Counties Manukau and Waitemata 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 17 April 2022

WGS of hospitalised cases

The majority of hospitalised COVID-19 cases sequenced since 1 January 2022 have been Omicron cases (92%), with the most recent hospitalised case found to be infected with the Delta variant reported on 02 March 2022 (Figure 20). Of the total 2,124 hospitalised cases sequenced to date, approximately 73% 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 1.5% 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 20: ***WGS of hospitalised cases reported from 01 January 2022 to 18 April 2022***

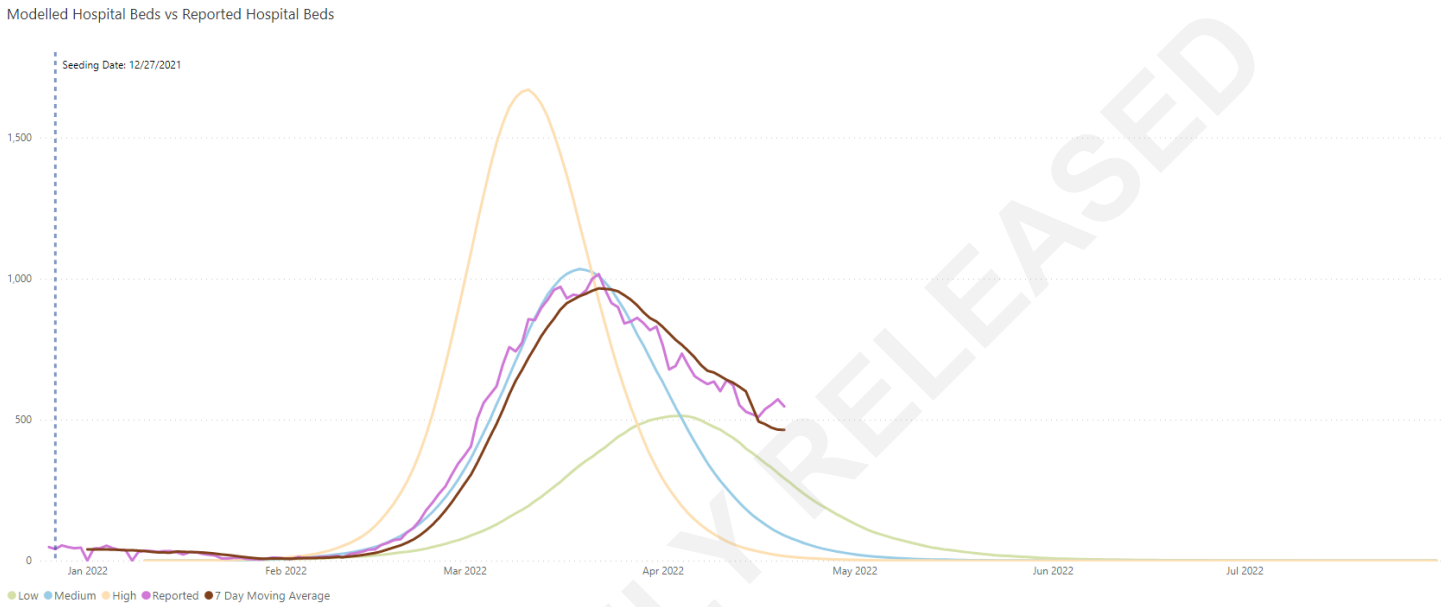
	Hospitalised cases						
DHB	Delta	Omicron (BA.1-like)	Omicron (BA.2-like)	Omicron (Unassigned)	Failed WGS	To be received	Total
Northland	3	3	6	0	0	19	**31**
Waitemata	8	78	255	2	19	297	**659**
Auckland	4	52	56	1	5	430	**548**
Counties Manukau	6	147	197	3	25	565	**943**
Waikato	1	4	16	0	2	472	**495**
Lakes	1	13	30	0	1	32	**77**
Bay of Plenty	3	23	236	1	16	89	**368**
Tairawhiti	0	0	4	0	1	26	**31**
Taranaki	1	5	57	0	2	30	**95**
Hawke's Bay	2	5	3	0	0	116	**126**
Whanganui	0	0	14	0	0	17	**31**
MidCentral	0	4	25	0	1	155	**185**
Wairarapa	0	2	20	0	6	5	**33**
Hutt Valley	0	2	5	0	3	161	**171**
Capital and Coast	1	5	32	0	1	205	**244**
Nelson Marlborough	0	0	0	0	0	5	**5**
West Coast	0	1	4	0	0	6	**11**
Canterbury	1	27	391	1	23	52	**495**
South Canterbury	0	1	1	0	0	2	**4**
Southern	0	16	190	2	34	30	**272**
Unknown	0	1	0	0	0	1	**2**
Border	0	3	9	0	1	4	**17**
Total	**31**	**392**	**1551**	**10**	**140**	**2719**	**4843**

Source: ESR COVID-19 Genomics Insights Report #3, EpiSurv/Microreact 1200hrs 18 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 21). 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 21: *Modelled hospital occupancy compared to actual nationally*



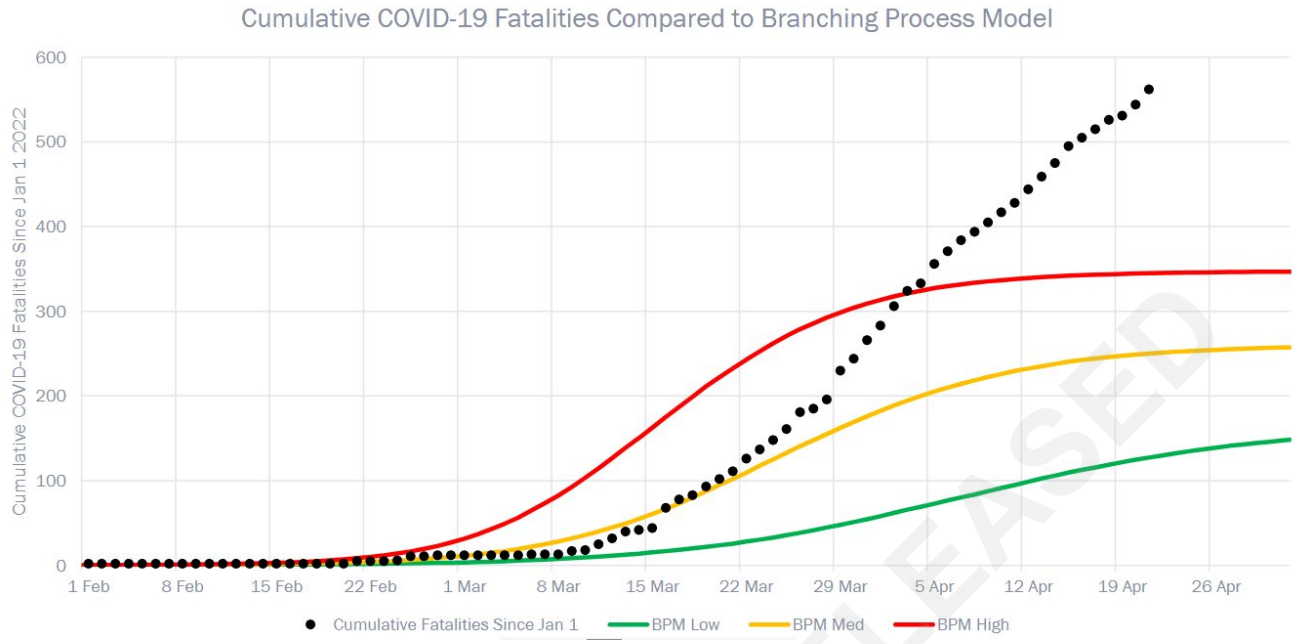
Sources: TAS, based on COVID-19 Modelling Aotearoa Branching Process Model 27 February 2022, and DHB reports to TAS of daily hospital occupancy (all COVID-19 positive people admitted as inpatients) as of 15:47 20 April 2022.

Mortality modelling

As of 19 April 2022, 602 people have died with or after COVID-19 infection. Of these, 570 have died within 28 days of being reported as a case. The 7-day rolling average of announced 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 almost 200 deaths (Figure 22).

Figure 22: *Cumulative deaths compared with modelled scenarios*



Sources: COVID-19 Modelling Aotearoa Branching Process Model 21 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 23, weekly all cause death rates have been outside the observed pre-pandemic range for those 80 years and older for the four weeks ending 03 April. (We define this as 1 standard deviation from the mean rates). In the week ending 03 April, weekly all cause death rates are 205 per 100,000. **This is around 1.2 times higher than the pre-pandemic average, and outside of the normal range observed prior to the pandemic.**

When looking at weekly all cause death rates for those 90 years and older in Figure 24, we see that deaths in the 90+ age group contribute significantly to the overall death rates of those 80 years and older. In the week ending 03 April, weekly all cause death rates are 500 per 100,000 for 90+ year olds. **This is almost 1.4 times higher than the pre-pandemic average, and again outside of the normal range observed prior to the pandemic.**

Figure 23: Weekly all cause death rates for 80-year-olds and over compared to pre-covid19 average (2012-2019)

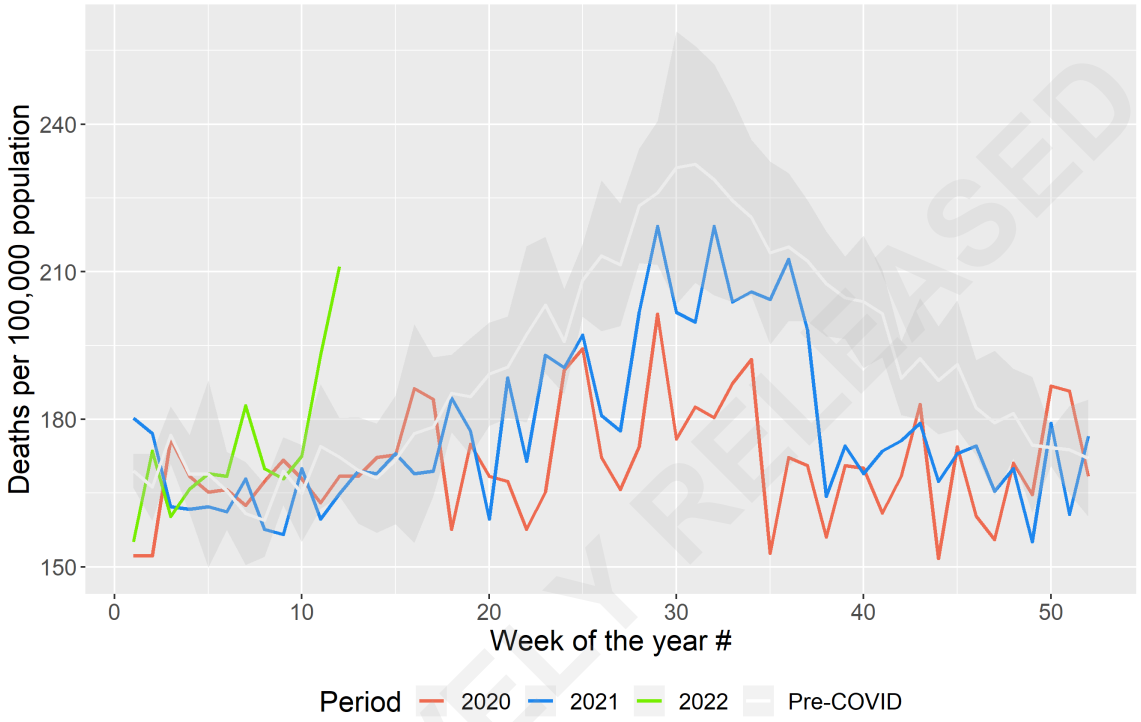
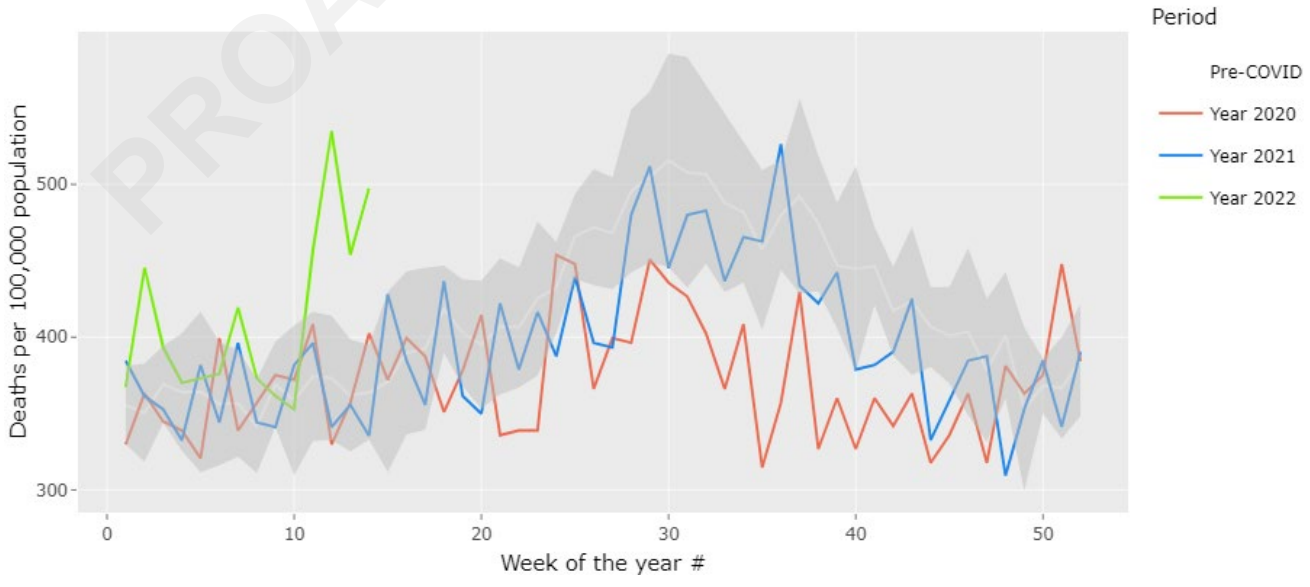


Figure 24: Weekly all cause death rates for 90-year-olds and over compared to pre-covid19 average (2012-2019)



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 13 April 2022.

Figure 25: *Omicron Health Sector Clinical Indicators Dashboard summary, week ending 13 April 2022*

Sector	Summary of data
General Practice	General Practice Encounter rates continue to be elevated above normal levels, especially for those up to 49 years. There has been a marked increase in the 60+ encounters this week which coincides with the flu vaccine roll out, however the increase is less than during previous years' flu campaigns.
Aged Residential Care	25% of the 656 Aged Residential Care (ARC) facilities have at least one active COVID-19 case (162 of 656 facilities). 20 of these facilities are relying on DHB staff to continue operations.
Māori Health Providers	No additional concerns to report this week.
Pacific Health	Pacific health providers continue to focus on vaccination uptake within their communities, particularly outside of Auckland.
Emergency Ambulance Service	111 calls and EAS incident numbers returned to normal levels for the first time in two months. However, response times, and timeat hospital remains elevated and at a much higher level than 2019. Reduction in number of Māori and Pacific call-outs over the last 5 weeks.
Mental Health	Waiting times for mental health services, and in particular child and adolescent services have been increasing.
Disability providers	COVID-19 is continuing to cause pressure for providers where case numbers are higher. Providers and funders are working together to address the issues raised and minimise the level of stress felt by the community.
Hospital	Overall hospital occupancy remains high across the North Island, however this is more attributed to acute demand rather than theomicron outbreak. In the Southern Region, cases are still appearing, and a steady stream of hospitalisations is still expected.
ED	Christchurch, Wellington, Palmerston North, and Middlemore hospitals had the highest number of times where ED occupancy was over 90% this week.
Planned Care (Hospital)	Planned care is resuming or continuing across the North Island, however the Southern Region still seeing reduced levels of planned care across the region. Staffing constraints continue to be an issue for resumption of planned care.
Pharmacy	As the COVID-19 wave moves south, pharmacies in the Southern Region are being impacted with staff shortages. DHBs are working with pharmacies on staffing plans where required.
Home and Community Support Services	Providers are reporting an average workforce reduction of 28.7% percent due to COVID-19, however, have recruited a surge workforce and service delivery has continued. With reduced case numbers in the Auckland region, providers are now accepting referrals for non-urgent care and are beginning to return to normal operation.

COVID care in the community	The percent of initial clinical assessments completed in CCCM within 24 and 48 hours of positive case notifications has continued to improve this week.
Workforce	Workforce pressures continue be a cause for concern across the system. While absenteeism from COVID-19 is decreasing, staffing shortages remain high for other reasons, such as ongoing job vacancies. Reports indicate that staff from across the system are fatigued. Nursing is still seeing the highest rates of absenteeism across the three groups of staff.
Rural Health	Continued pressure in rural hospitals this week, with 9 out of 11 rural hospitals at Amber status on Monday.

Sources: Omicron Health Sector Clinical Indicators Dashboard, 13 April 2022

COVID-19

Trends and Insights Report

Updated 19 April 2022

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Data & Notes

Data Sources

Community Cases

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

Whole genome sequencing (WGS)

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

Prevalence Estimates

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

Wastewater quantification

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

Data limitations

Prevalence estimates based on routinely tested populations

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

Wastewater quantification

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

Acknowledgements

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

Case Demographic Tables

DHB	Community cases reported since 11 April	Rate per 1000
Northland	2722	14.1
Waitemata	4399	7.0
Auckland	3466	7.0
Counties Manukau	3306	5.6
Bay of Plenty	2410	9.3
Waikato	4406	10.2
Tairawhiti	474	9.2
Lakes	1054	9.2
Taranaki	1816	14.8
Hawke's Bay	2023	11.6
Whanganui	1050	15.4
MidCentral	2497	13.7
Hutt Valley	2079	13.4
Capital and Coast	3601	11.4
Wairarapa	609	12.5
Nelson Marlborough	1869	11.9
West Coast	573	17.7
Canterbury	9467	16.7
South Canterbury	1270	20.7
Southern	6776	20.2
Unknown	39	-
Total	**55906**	**11.2**

Region	Community cases reported since 11 April	Rate per 1000
Northern	13893	7.3
Te Manawa Taki	10160	10.4
Central	11859	12.6
Southern	19955	17.3
Total	**55867**	**11.2**

Ethnicity	Community cases reported since 11 April	Rate per 1000
Māori	9052	11.8
Pacific Peoples	2785	7.6
Asian	6387	8.7
European or Other	37257	12.0
Unknown	425	-
Total	**55906**	**11.2**

Sex	Community cases reported since 11 April	Rate per 1000
Female	30323	12
Male	25530	10
Unknown	53	-
Total	**55906**	**11**

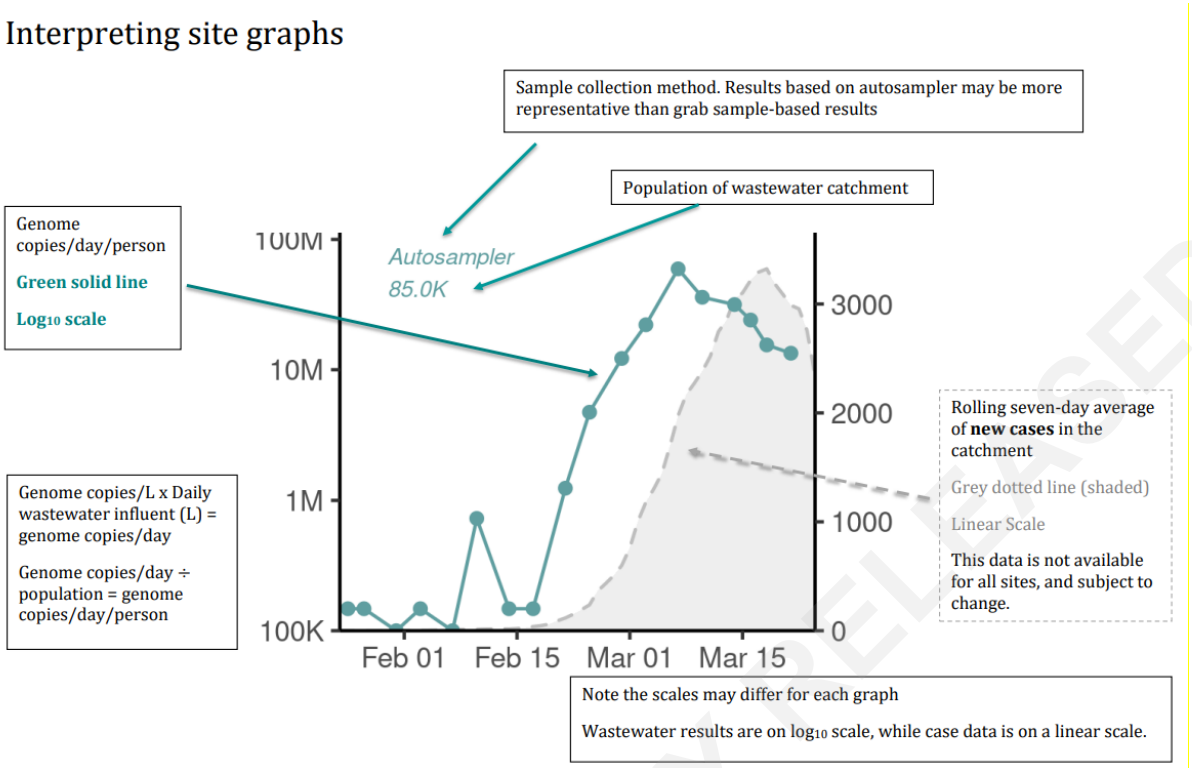
Age	Community cases reported since 11 April	Rate per 1000
0-9	7539	12
10-19	8462	13
20-29	9113	14
30-39	10138	15
40-49	8322	13
50-59	5831	9
60-69	3679	7
70+	2822	5
Total	**55906**	**11**

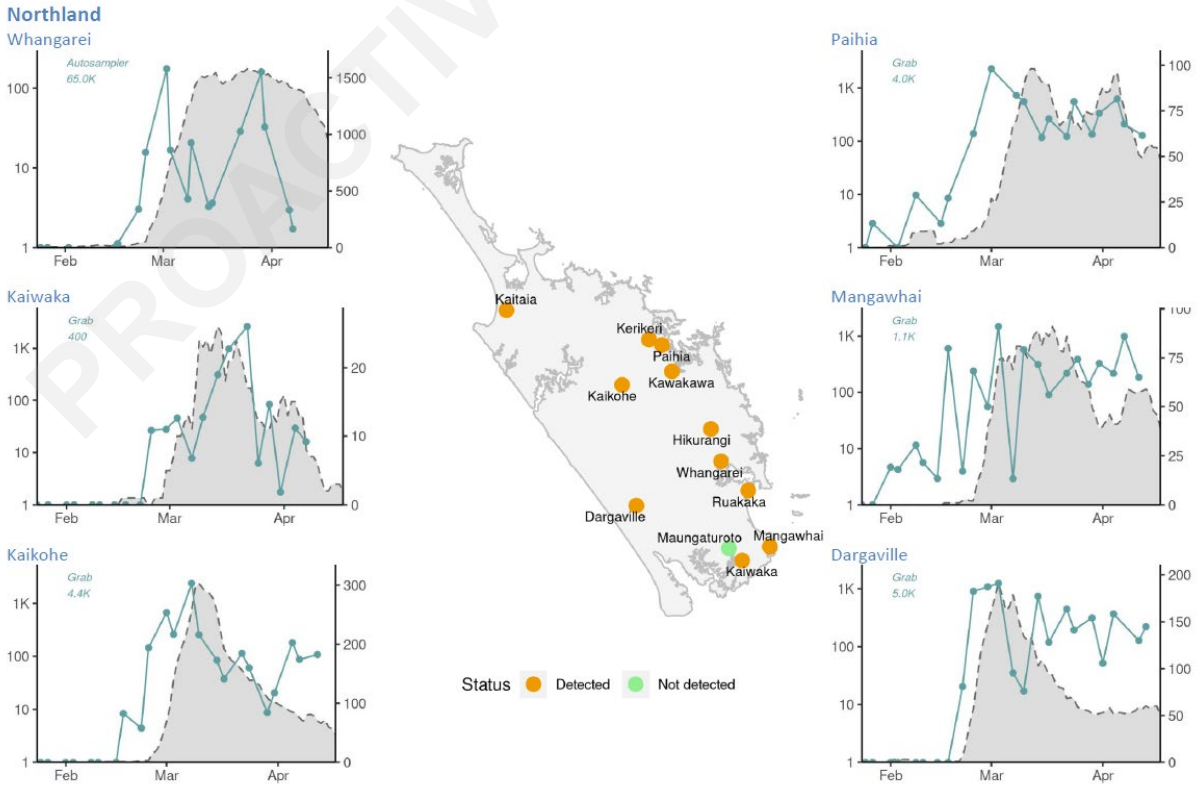
Table 1: ***Estimated median effective R (R_{eff}) by Public Health Unit region, cases to 18 April 2022***

Public Health Unit region	R_{eff} (90% Credible Interval [CI])
Northland	0.8 (0.4-1.5)
Auckland	1.1 (0.6–1.8)
Taranaki	1.2 (0.7-1.9)
Waikato	0.8 (0.5–1.4)
Toi Te Ora	1.0 (0.5–1.9)
Tairawhiti	0.7 (0.4-1.1)
Regional Public Health (Wellington Region)	0.9 (0.6–1.5)
Mid Central	0.8 (0.6-1.3)
Hawkes Bay	0.8 (0.6–1.3)
Canterbury/ South Canterbury	1.0 (0.4–2.5)
Southern	0.8 (0.3–1.7)
Nelson Marlborough	0.8 (0.3–2.0)
West Coast	0.8 (0.6–1.1)
National	0.9 (0.6-1.5)

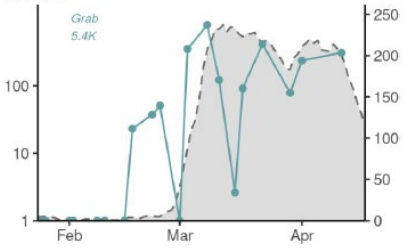
ESR Wastewater

Interpreting site graphs



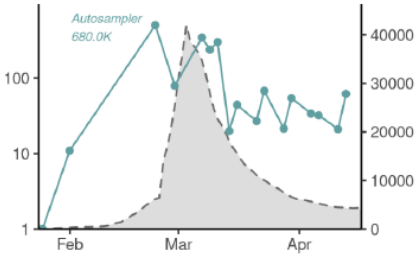


Kaitaia

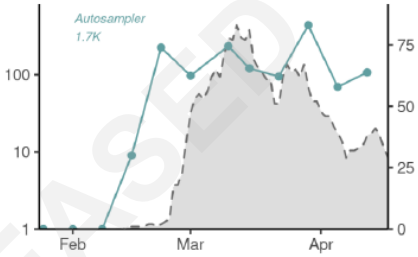


Auckland

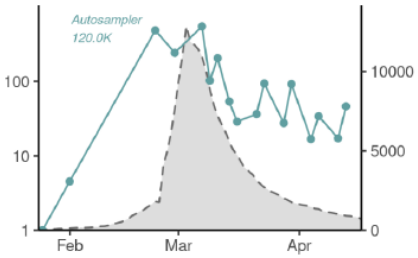
Auckland East

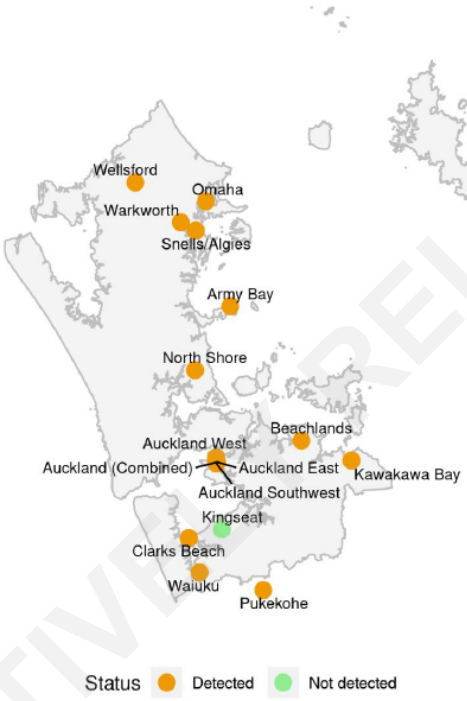


Wellsford

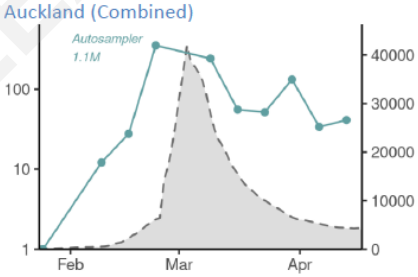


Auckland Southwest

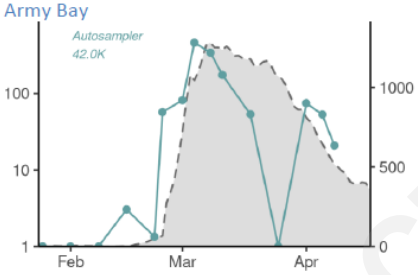




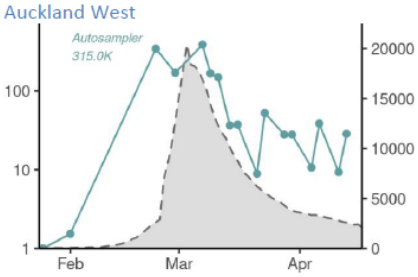
Auckland (Combined)

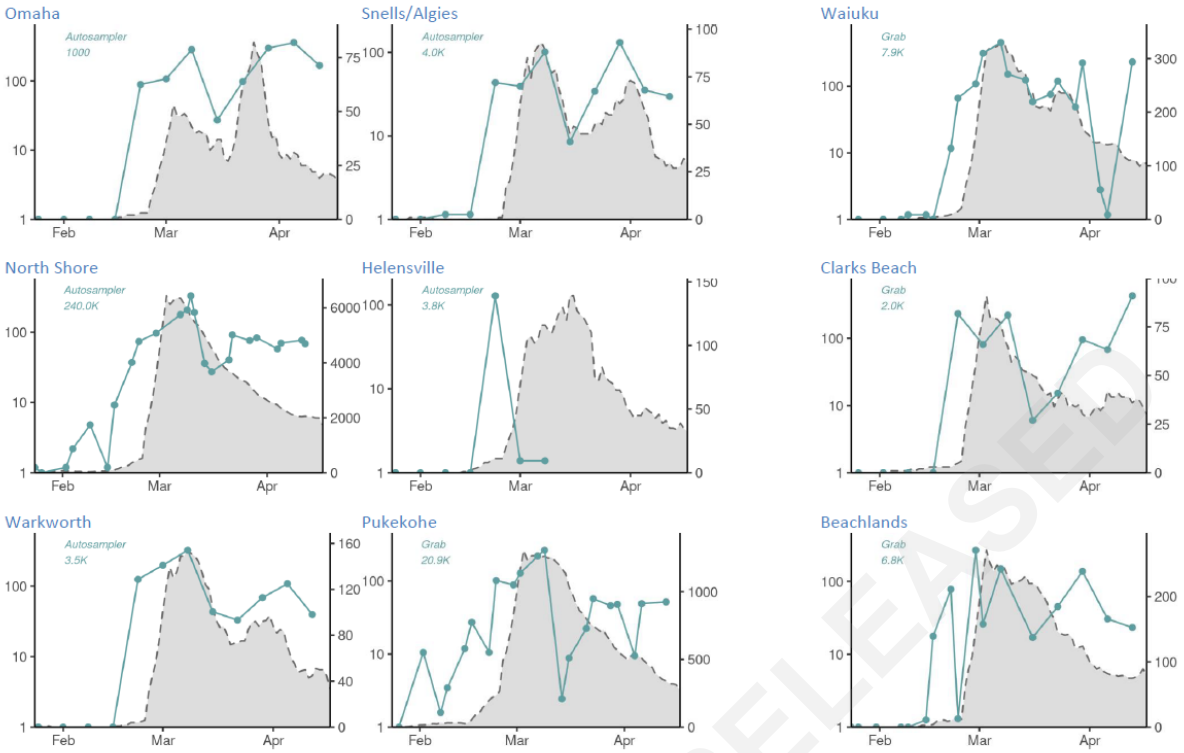


Army Bay

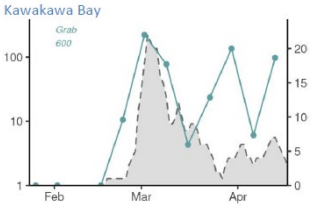


Auckland West



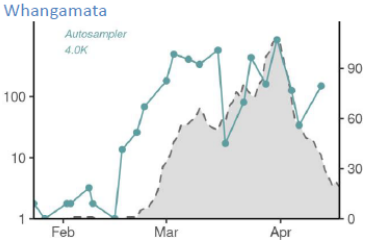


Kawakawa Bay

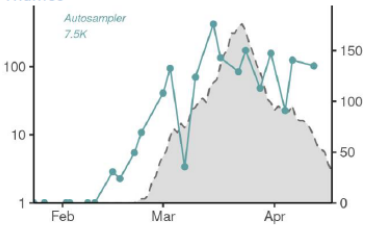


Waikato

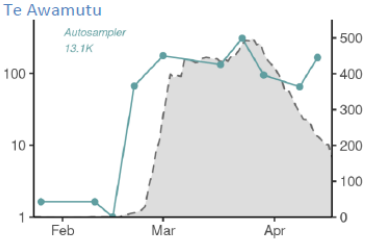
Whangamata

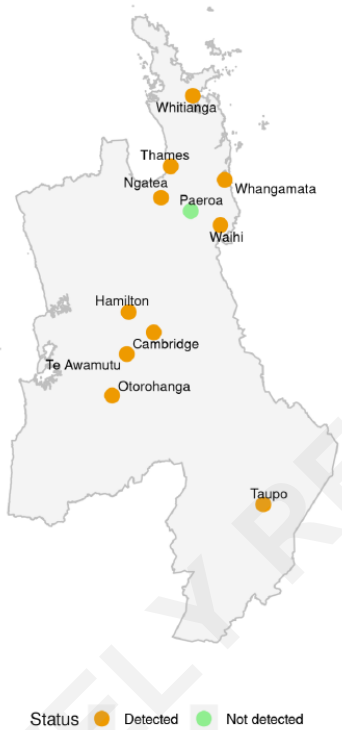


Thames

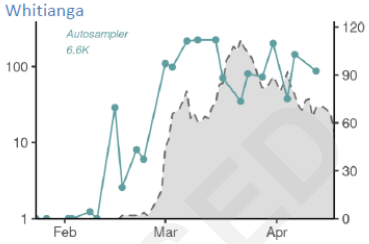


Te Awamutu

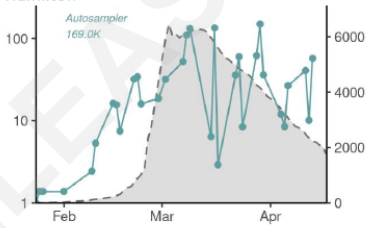




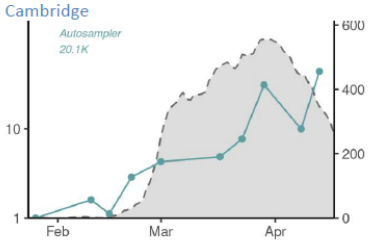
Whitianga



Hamilton



Cambridge



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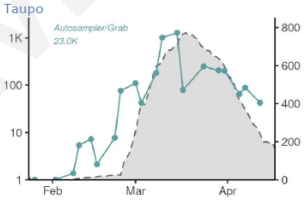
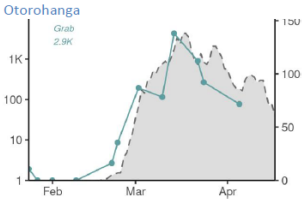
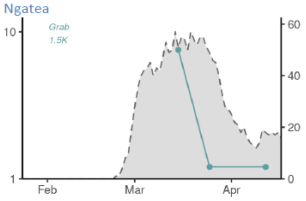


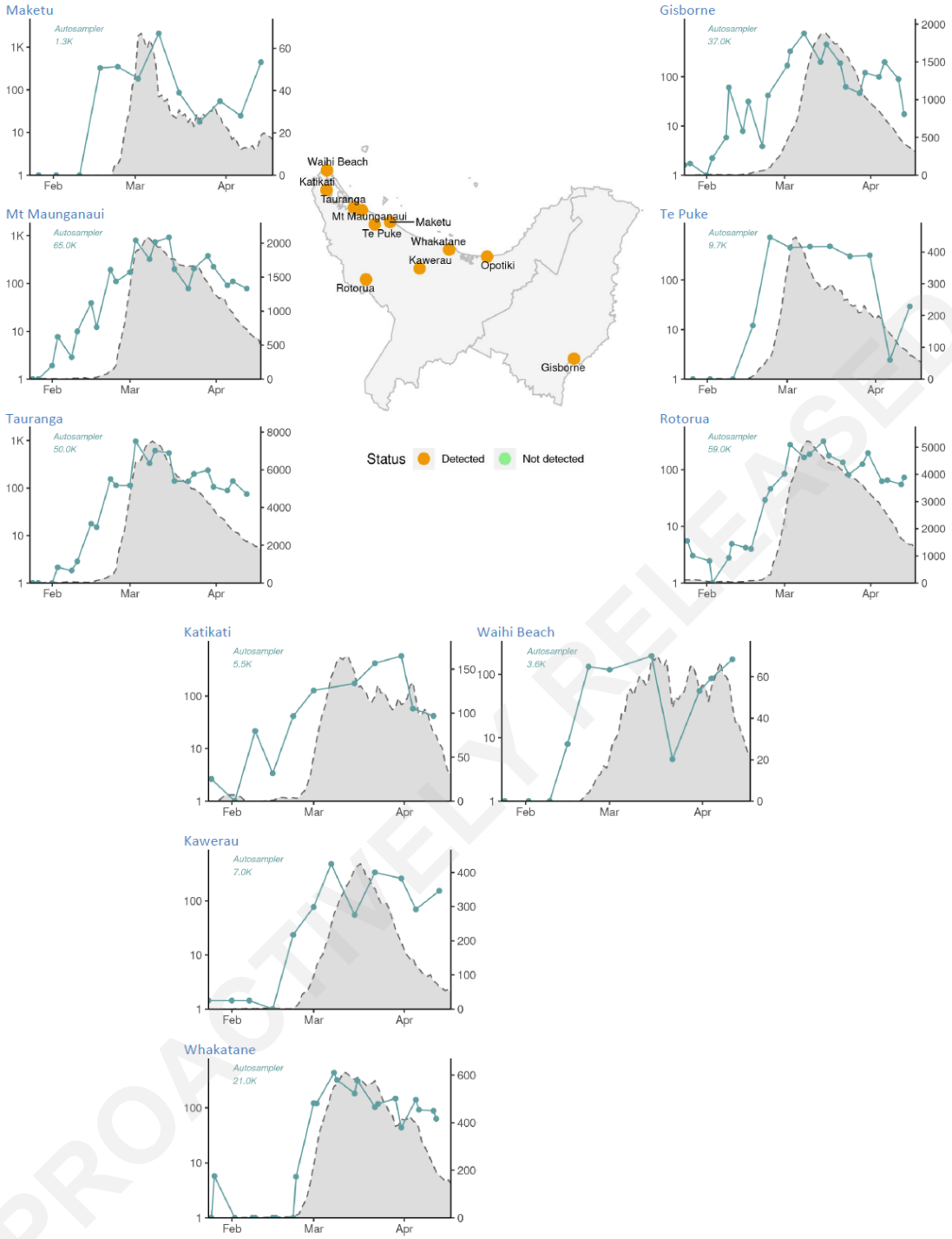
Otorohanga



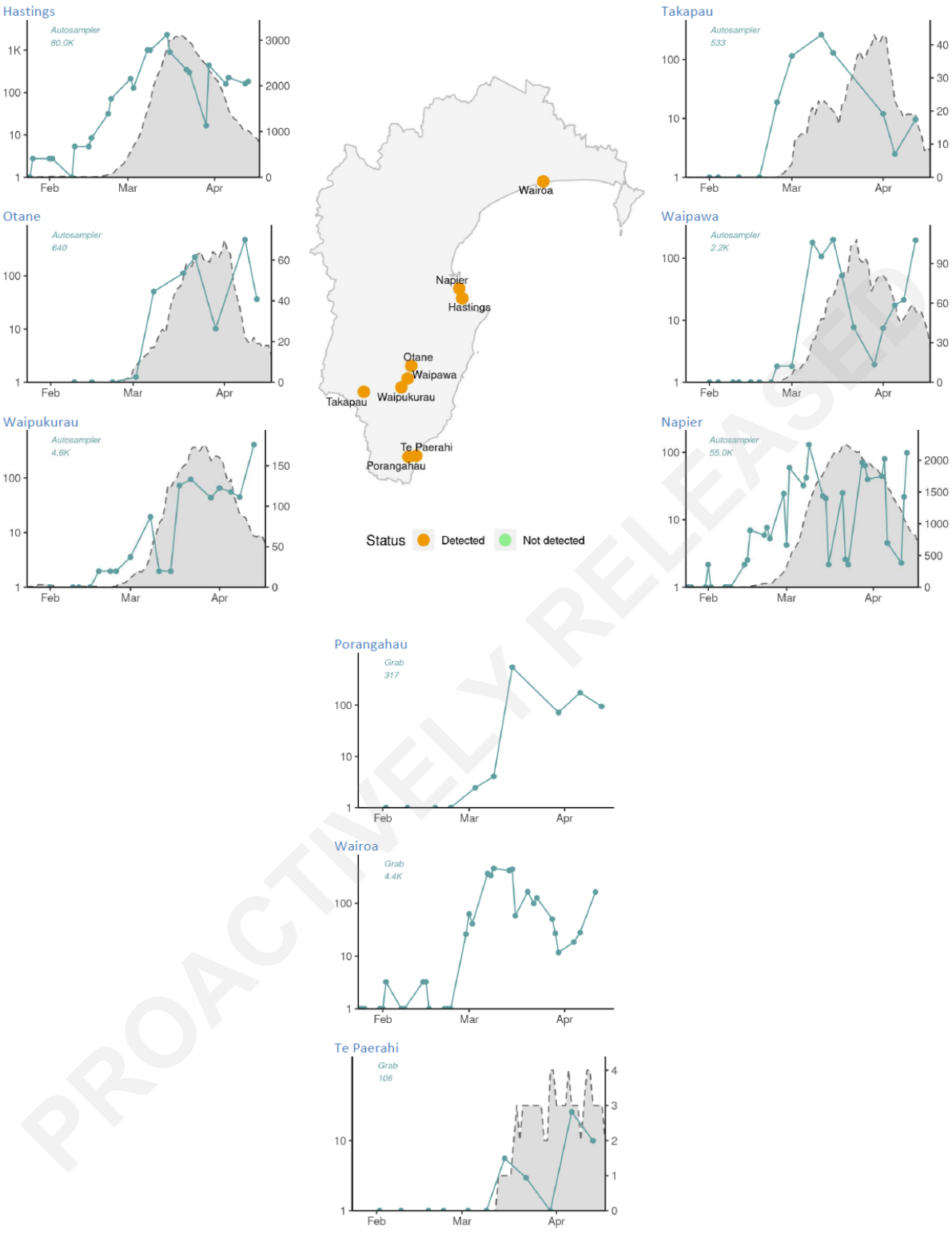
Ngatea



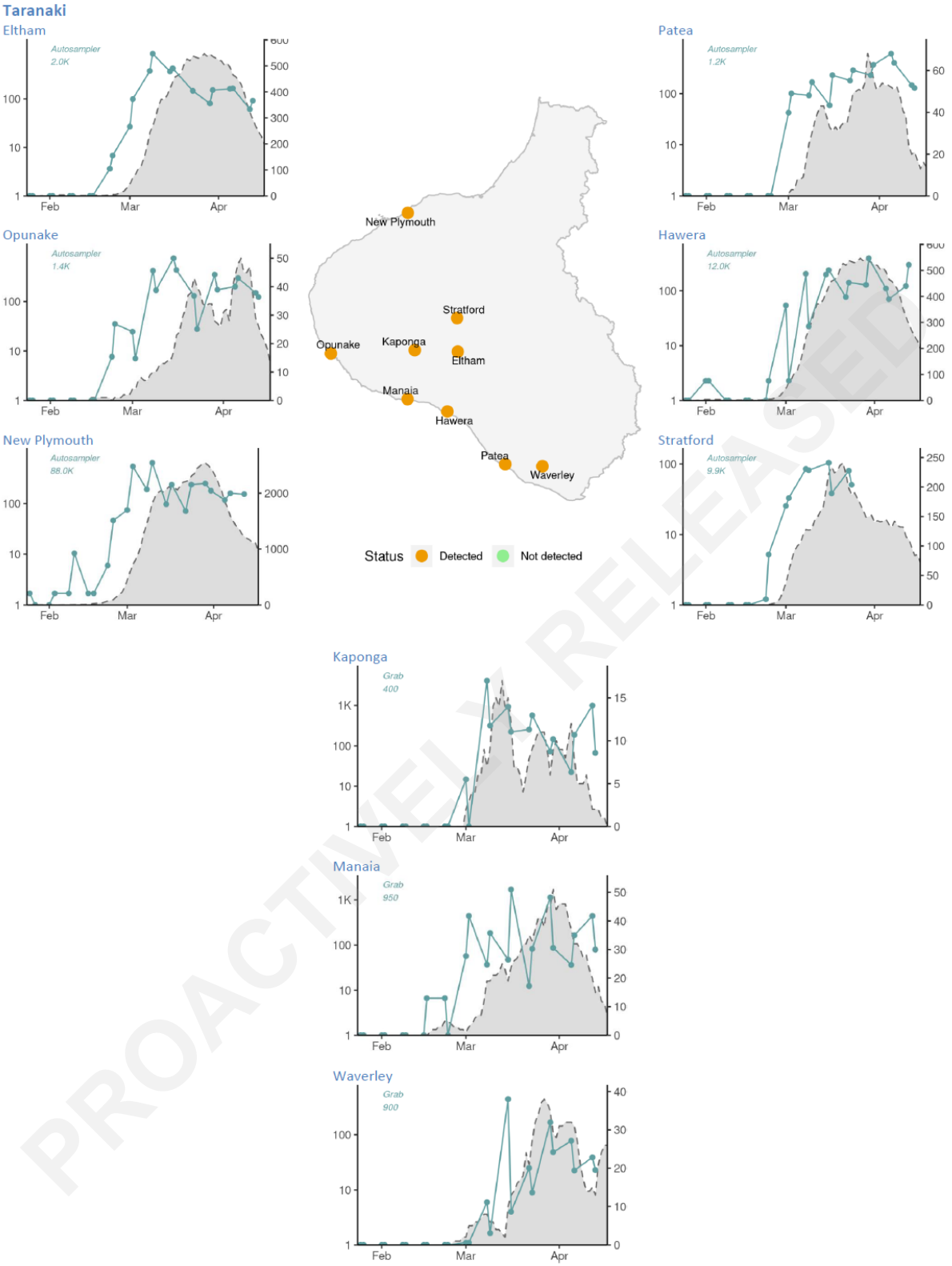
Bay of Plenty and Gisborne



Hawke's Bay



Taranaki



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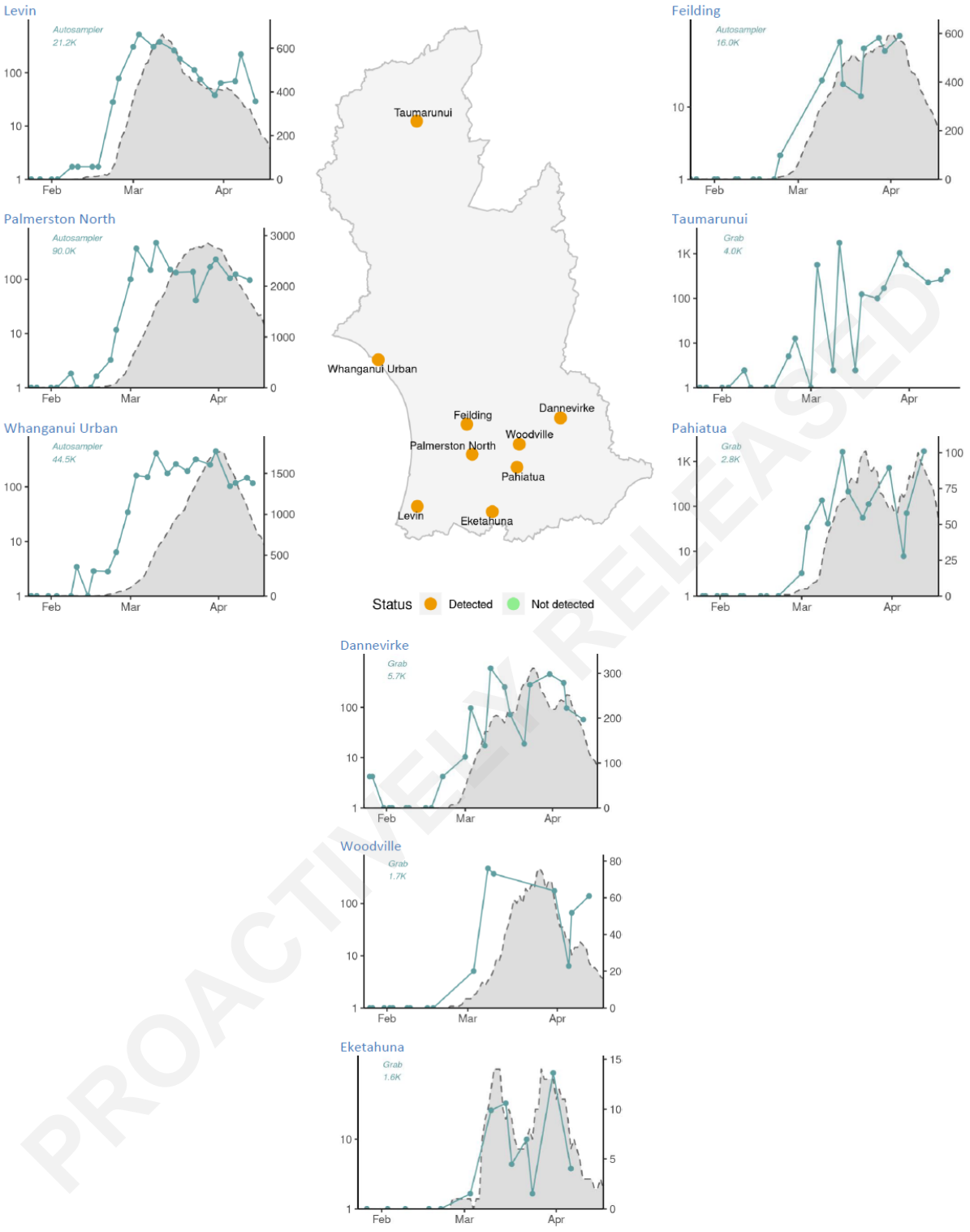
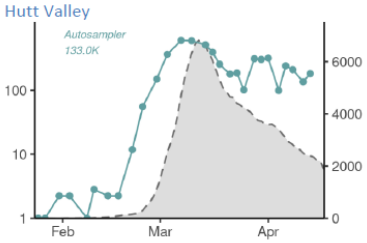
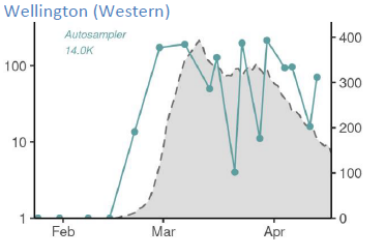


Wellington

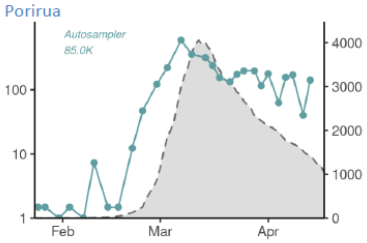
Hutt Valley



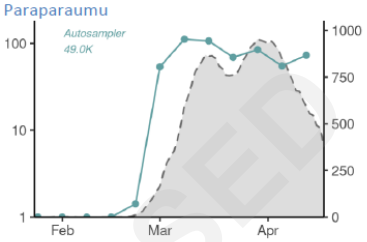
Wellington (Western)



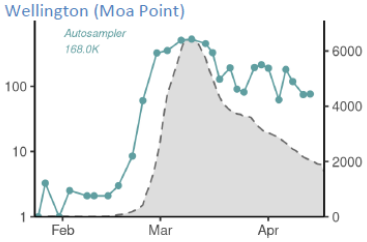
Porirua



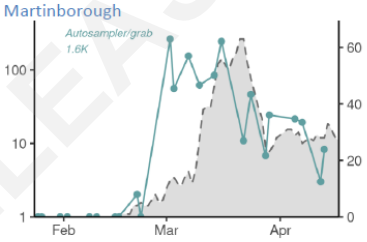
Paraparaumu



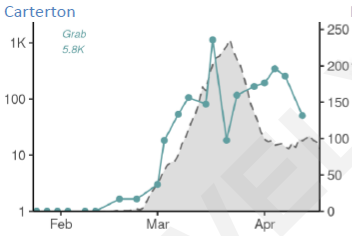
Wellington (Moa Point)



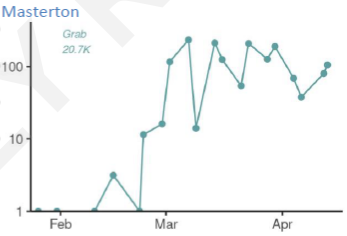
Martinborough



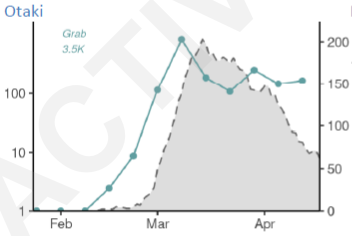
Carterton



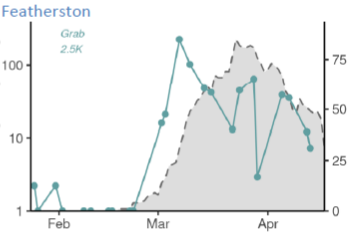
Masterton



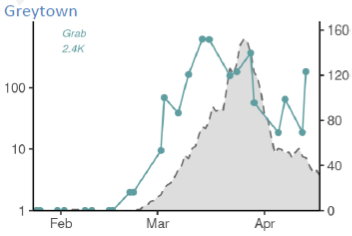
Otaki



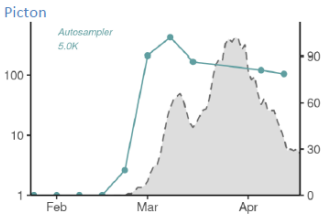
Featherston

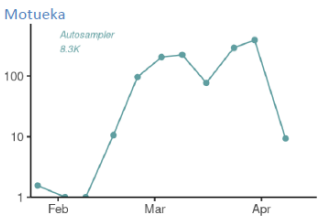


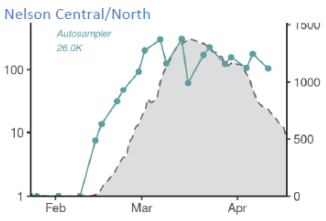
Greytown

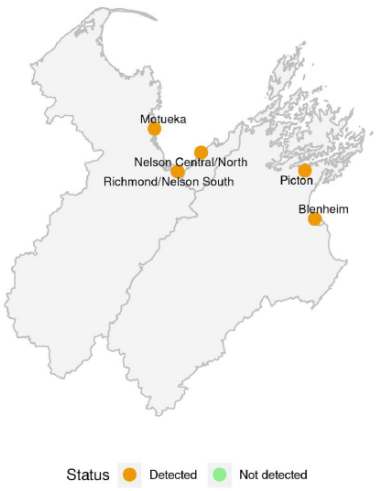


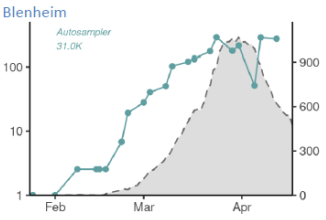
Tasman, Nelson, and Marlborough

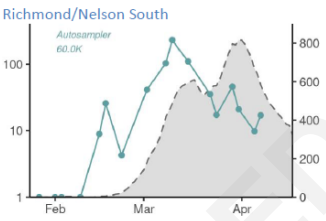




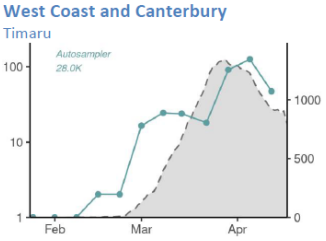


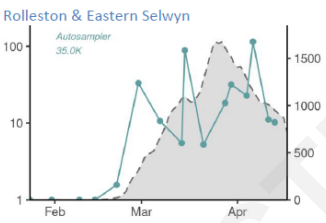


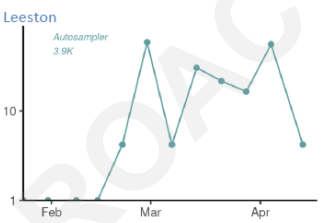


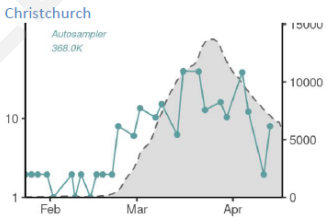


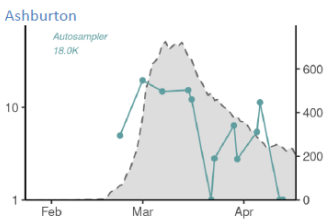
West Coast and Canterbury

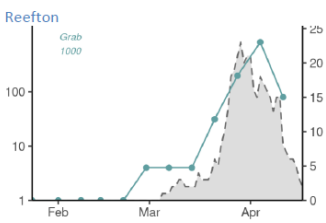


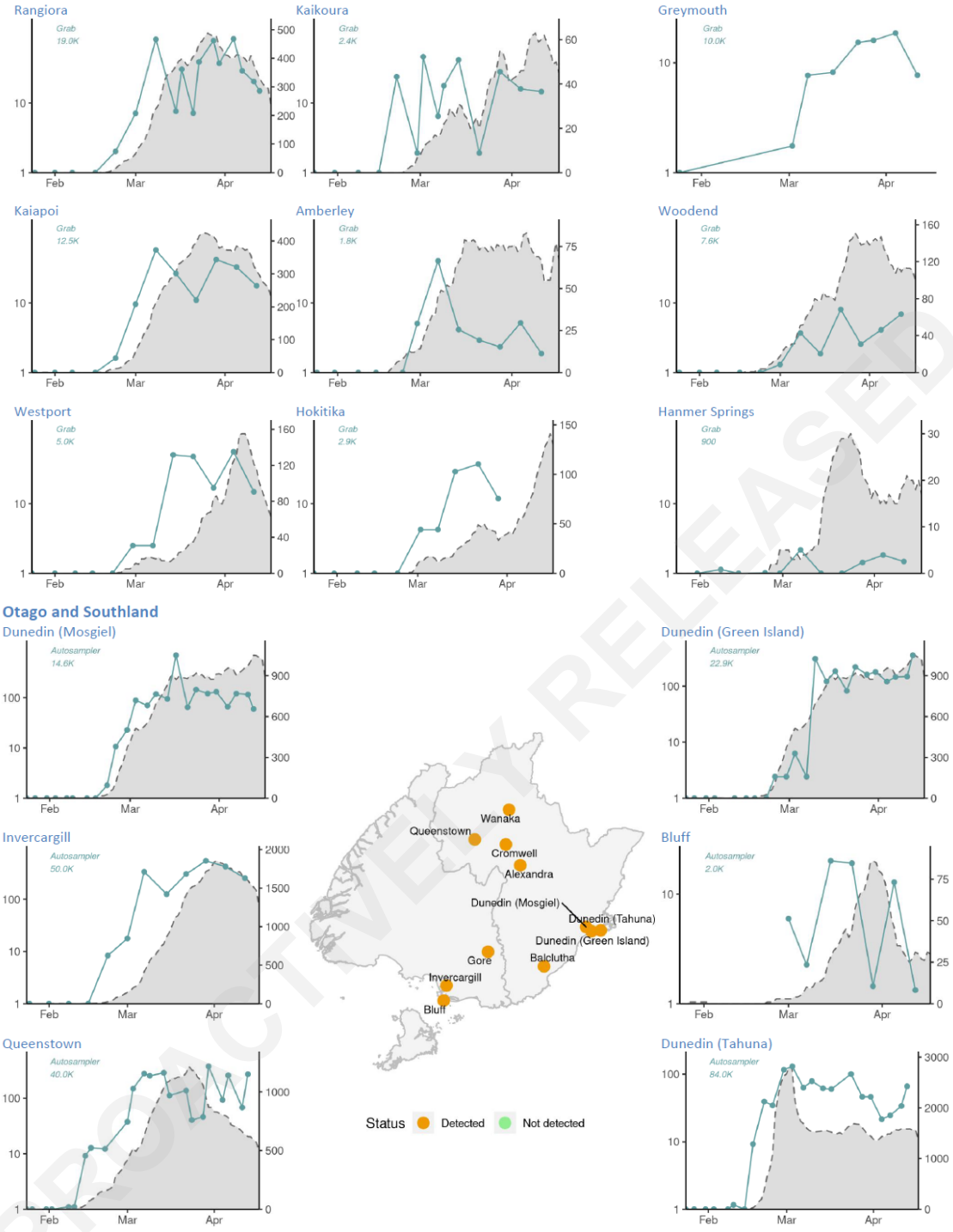


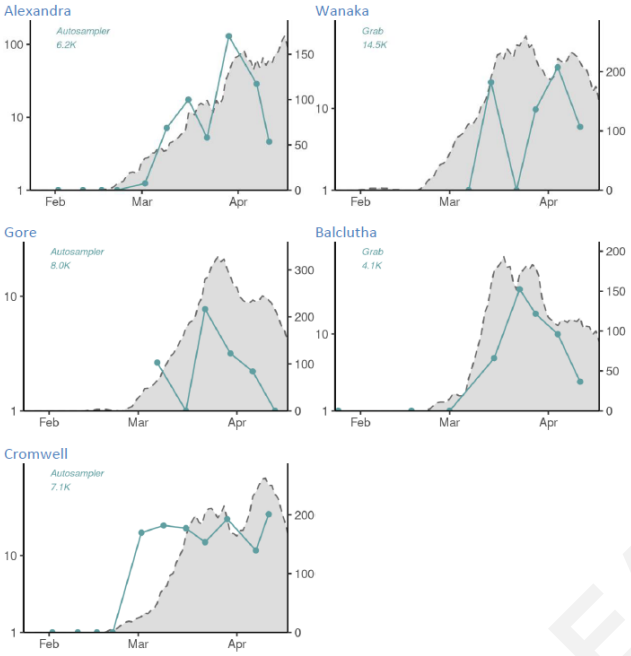






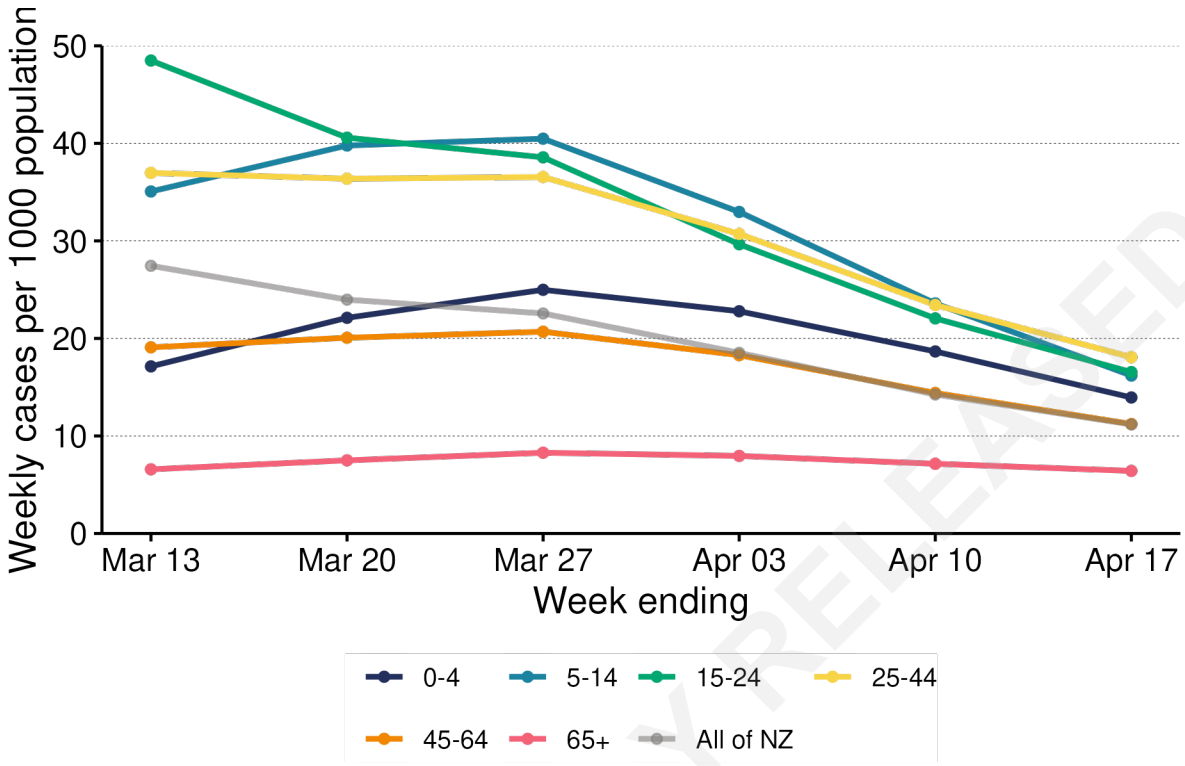




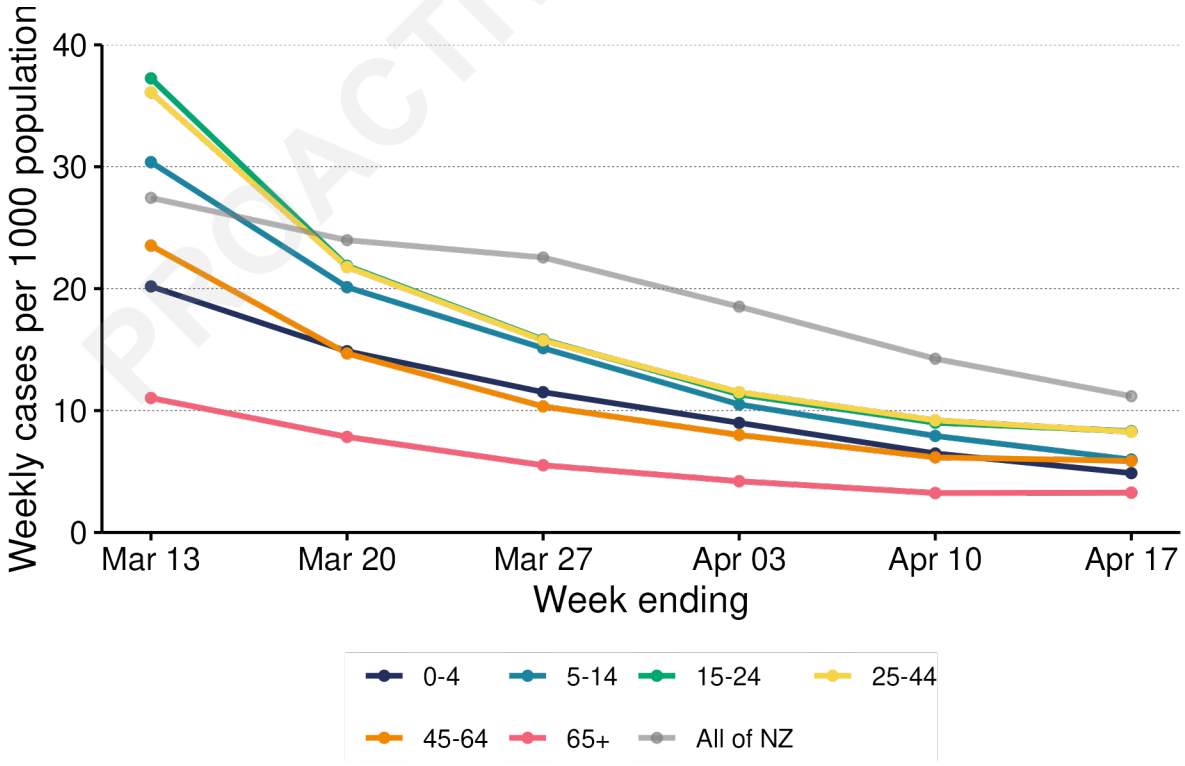


Age Graphs

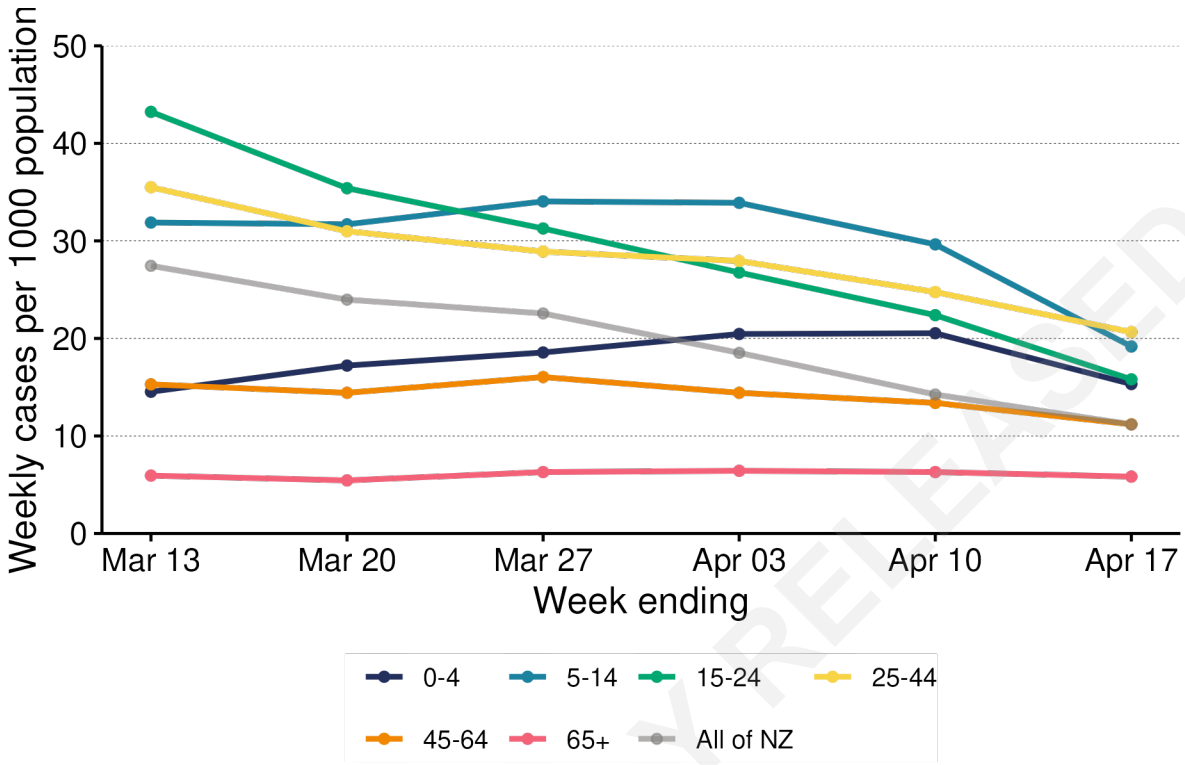
NZ Excluding Auckland Region



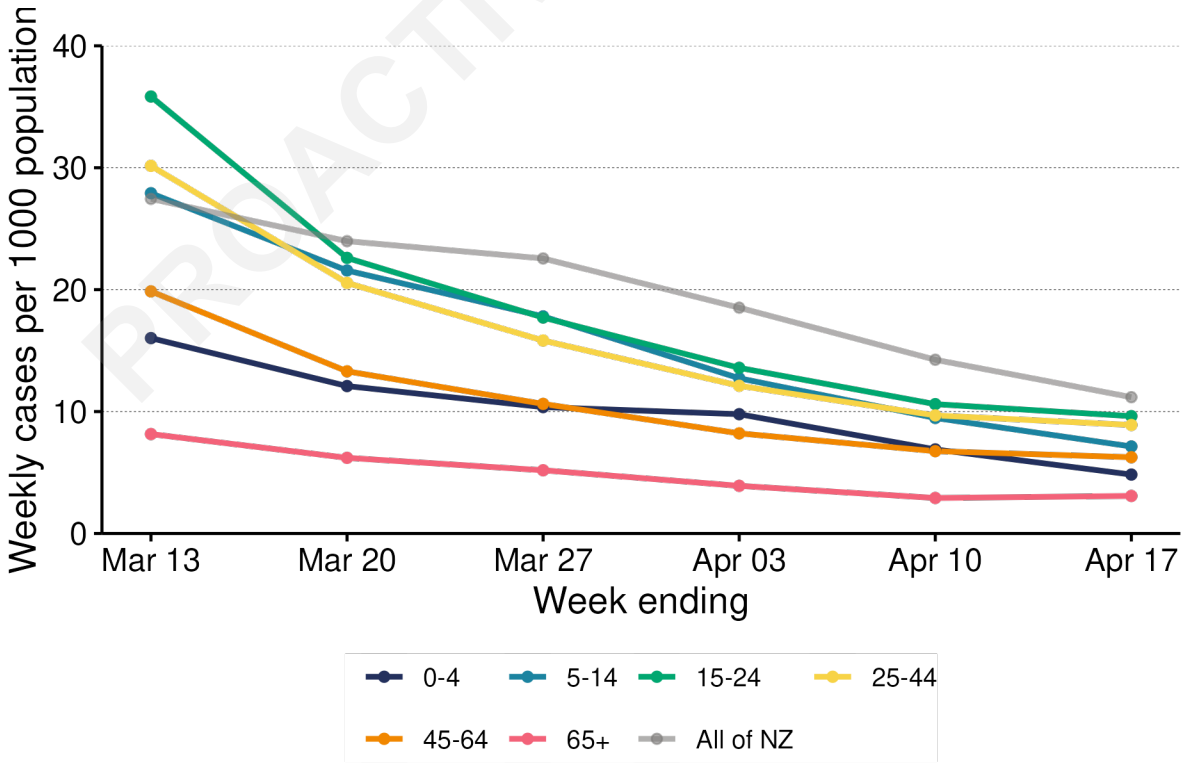
Auckland Region



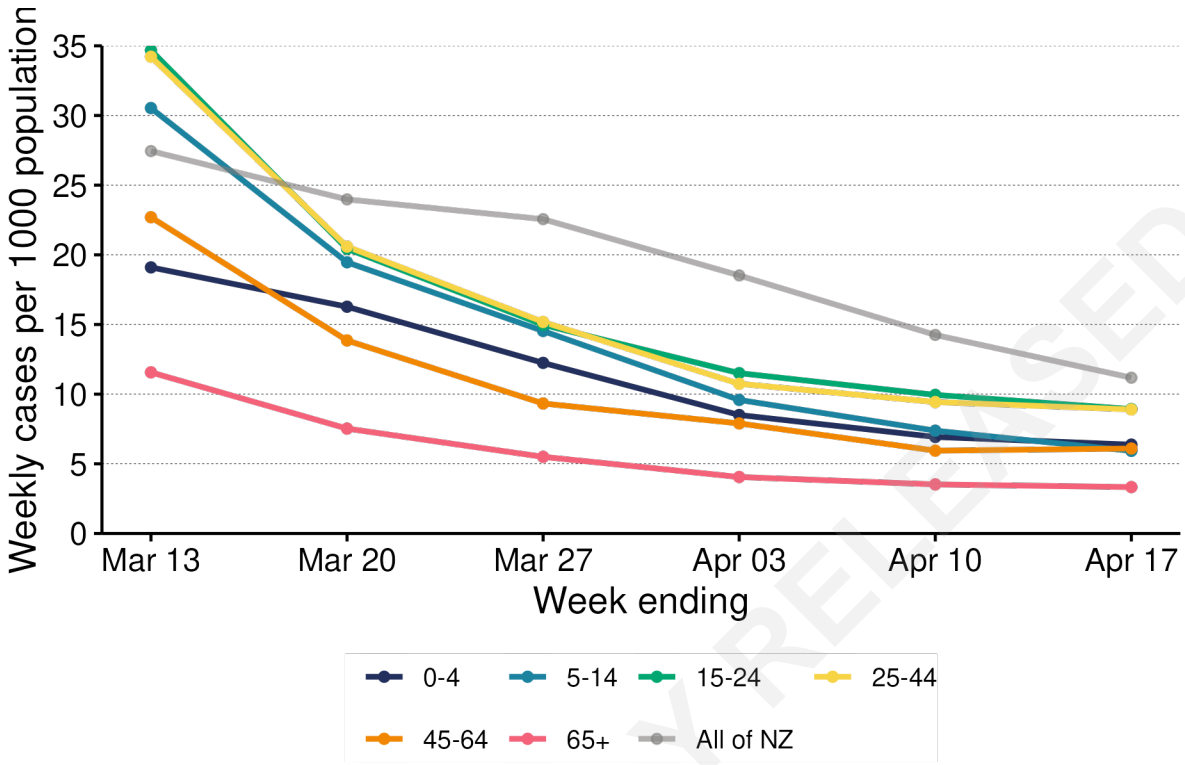
Northland DHB



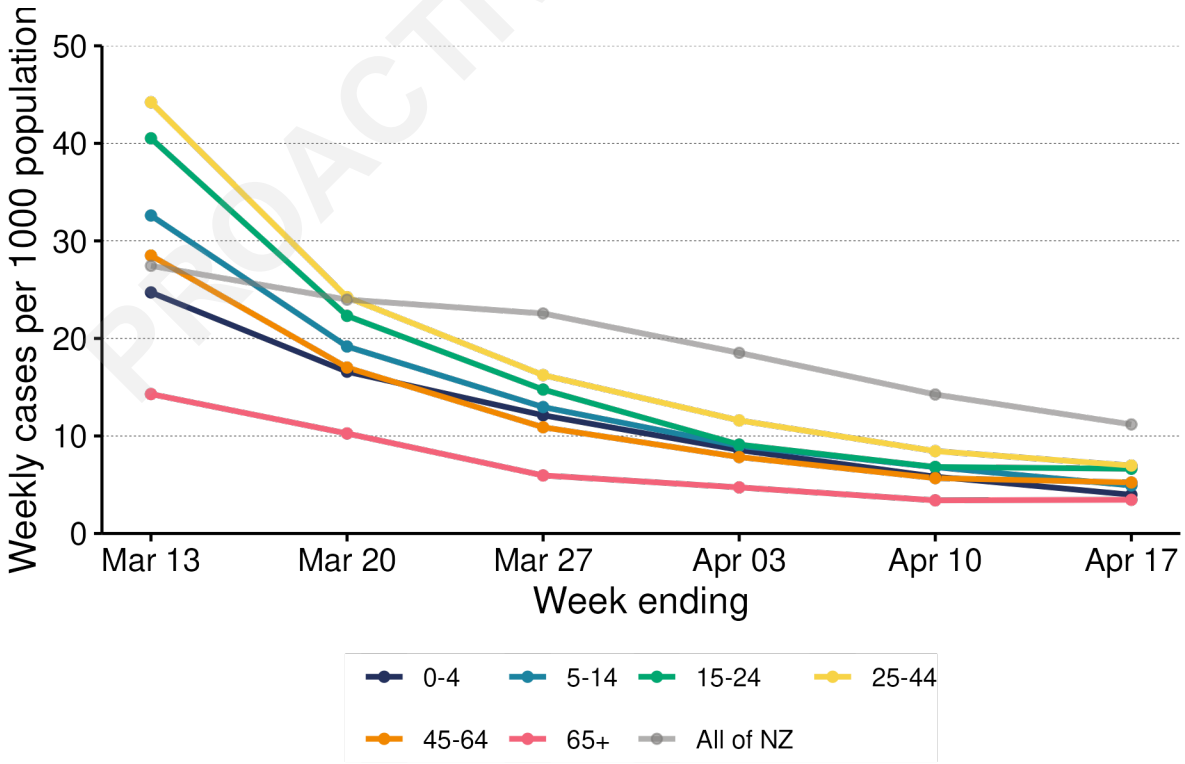
Waitemata DHB



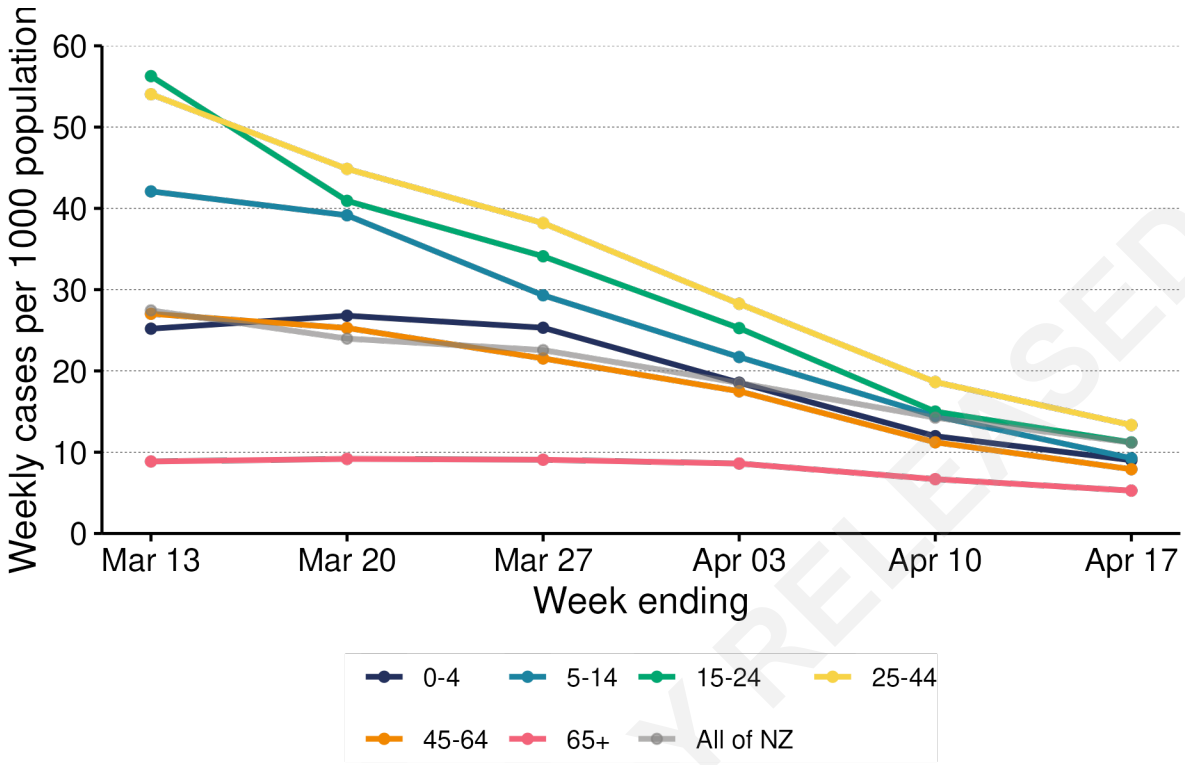
Auckland DHB



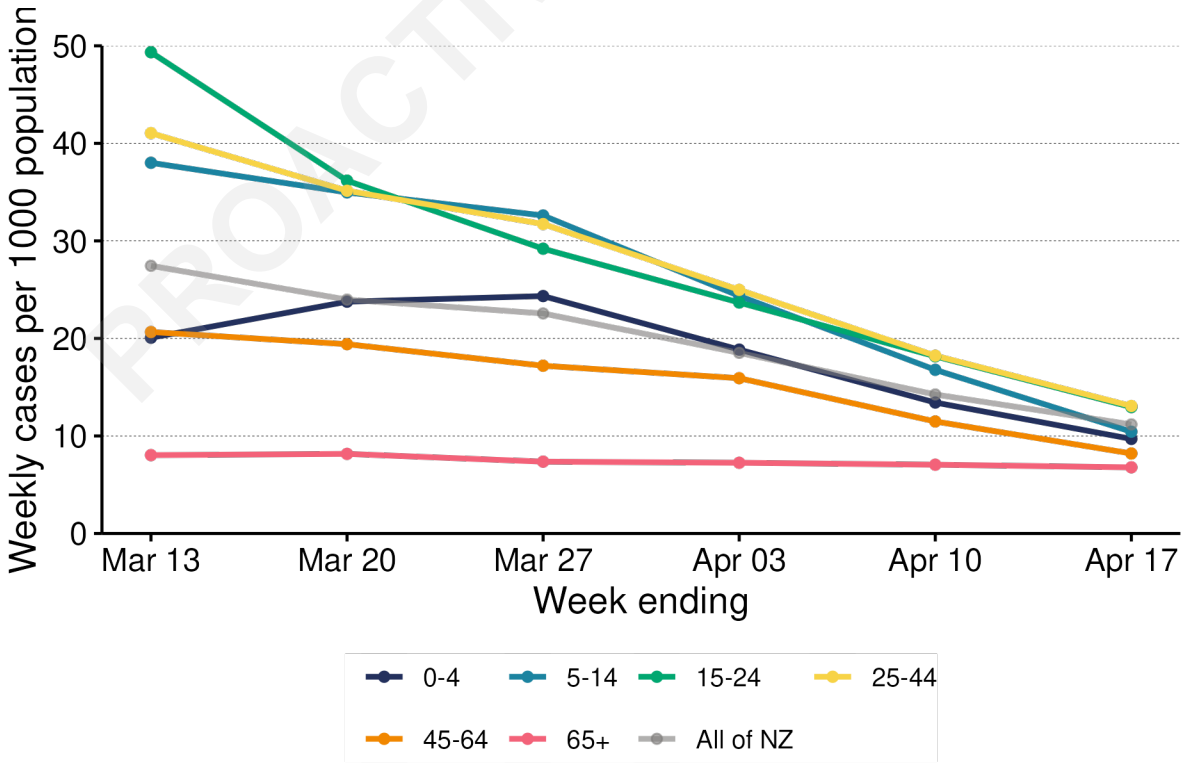
Counties Manukau DHB



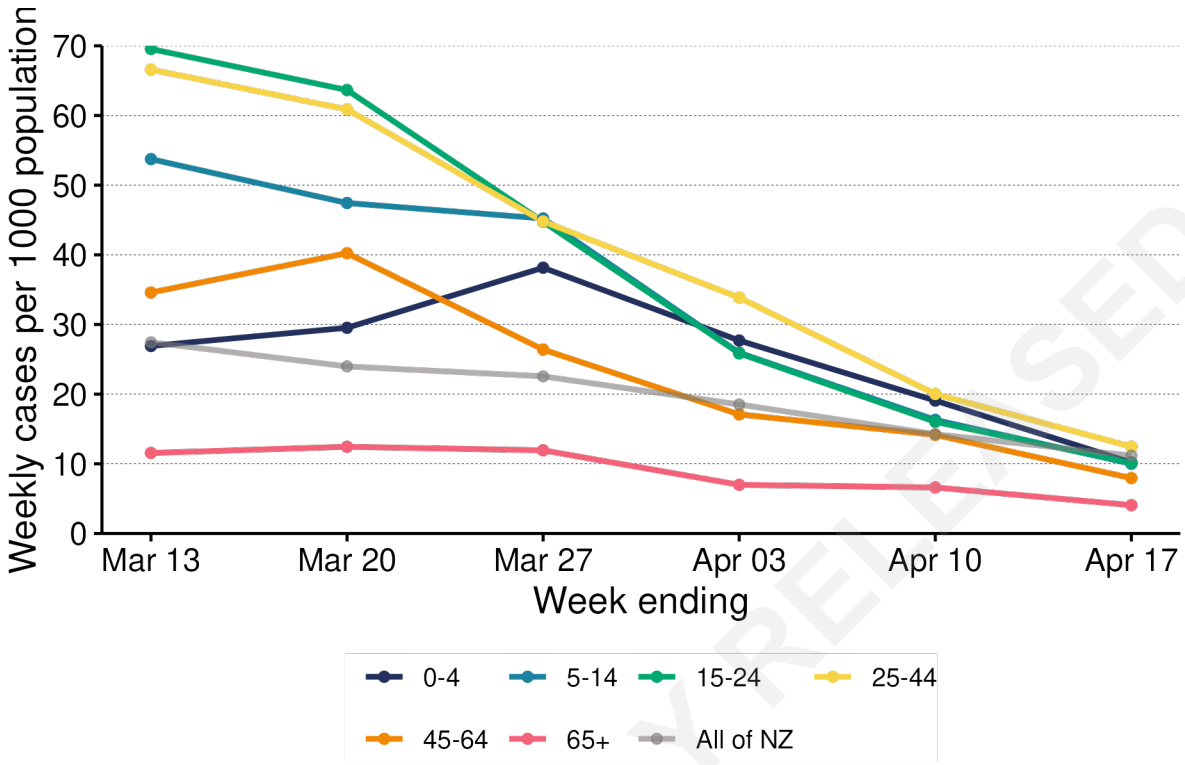
Bay of Plenty DHB



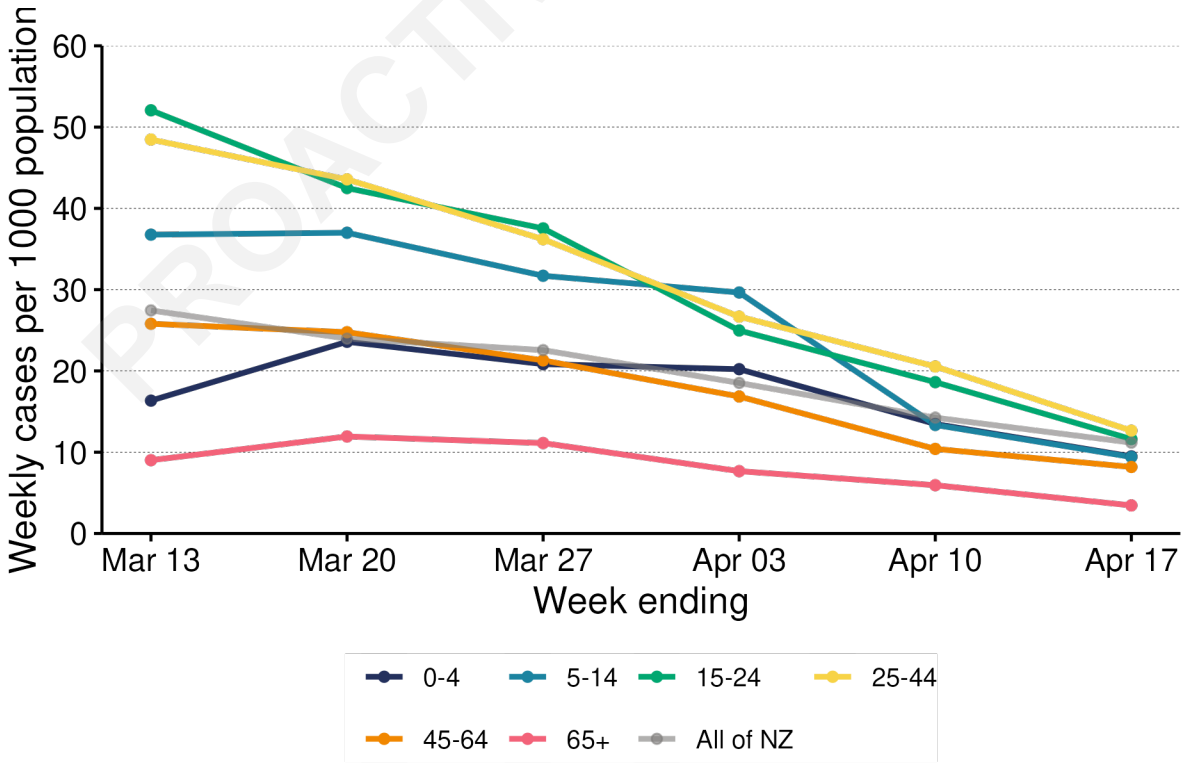
Waikato DHB



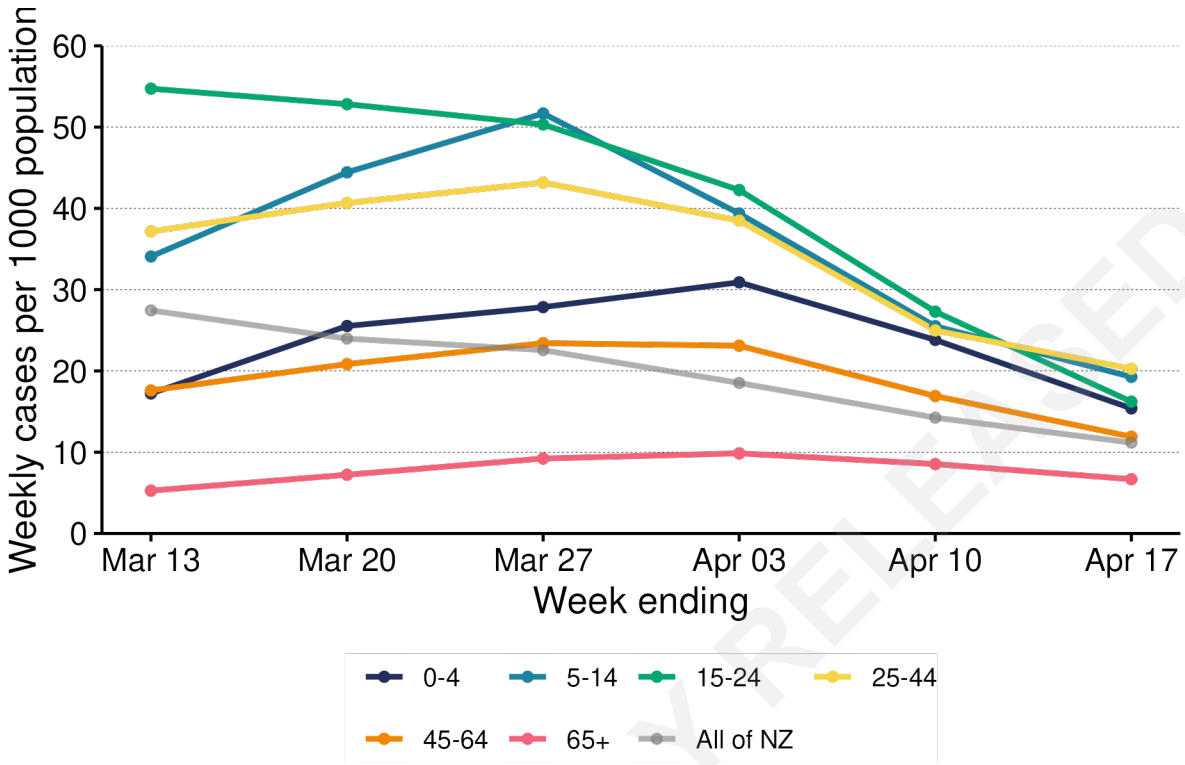
Tarawhiti DHB



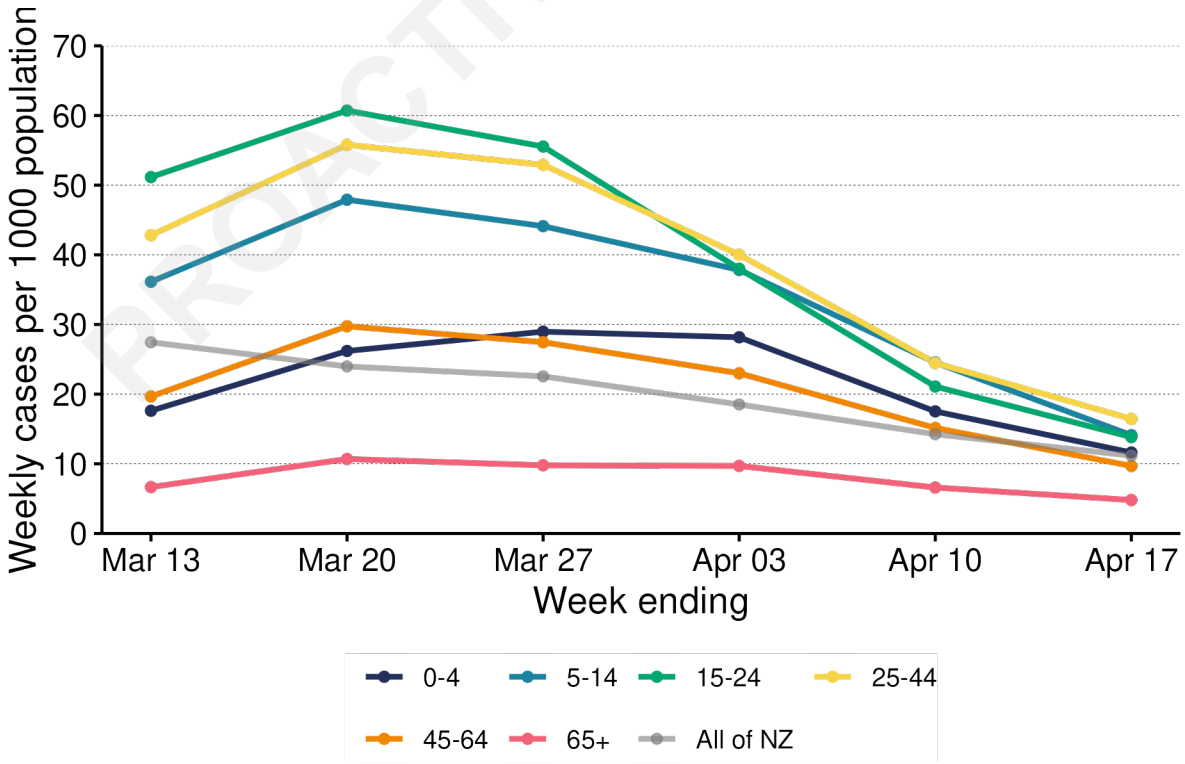
Lakes DHB



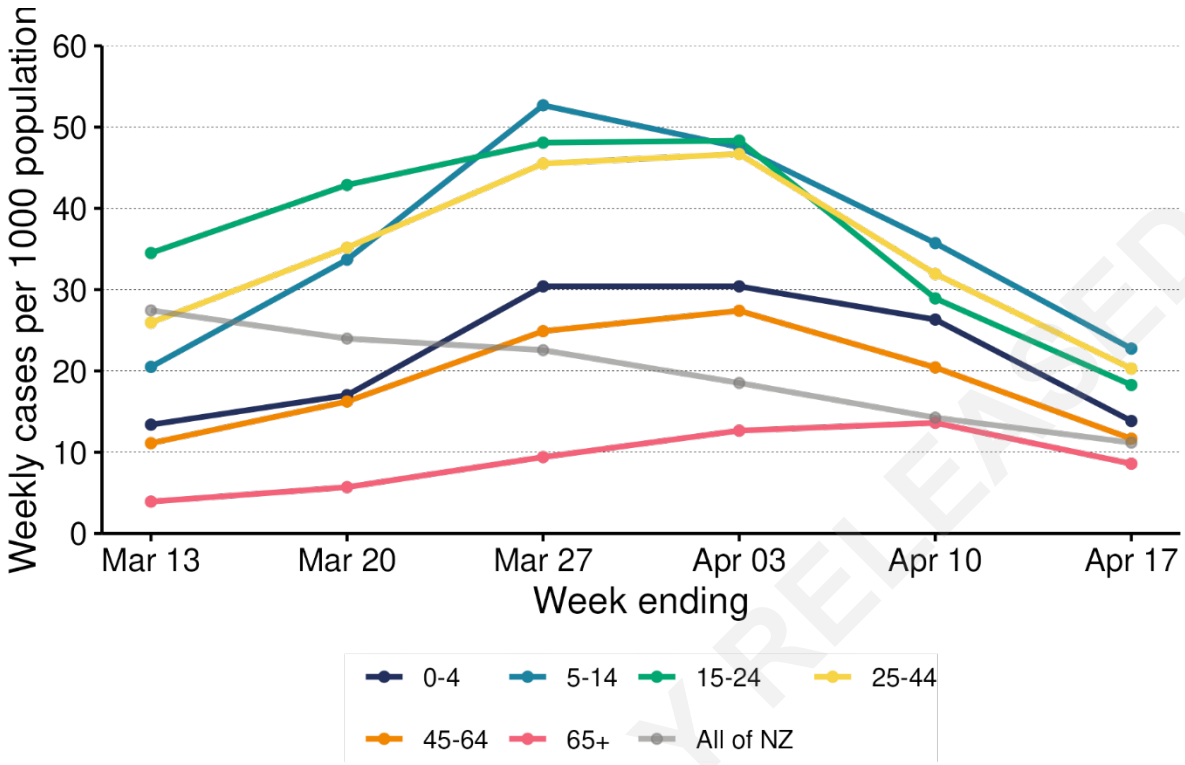
Taranaki DHB



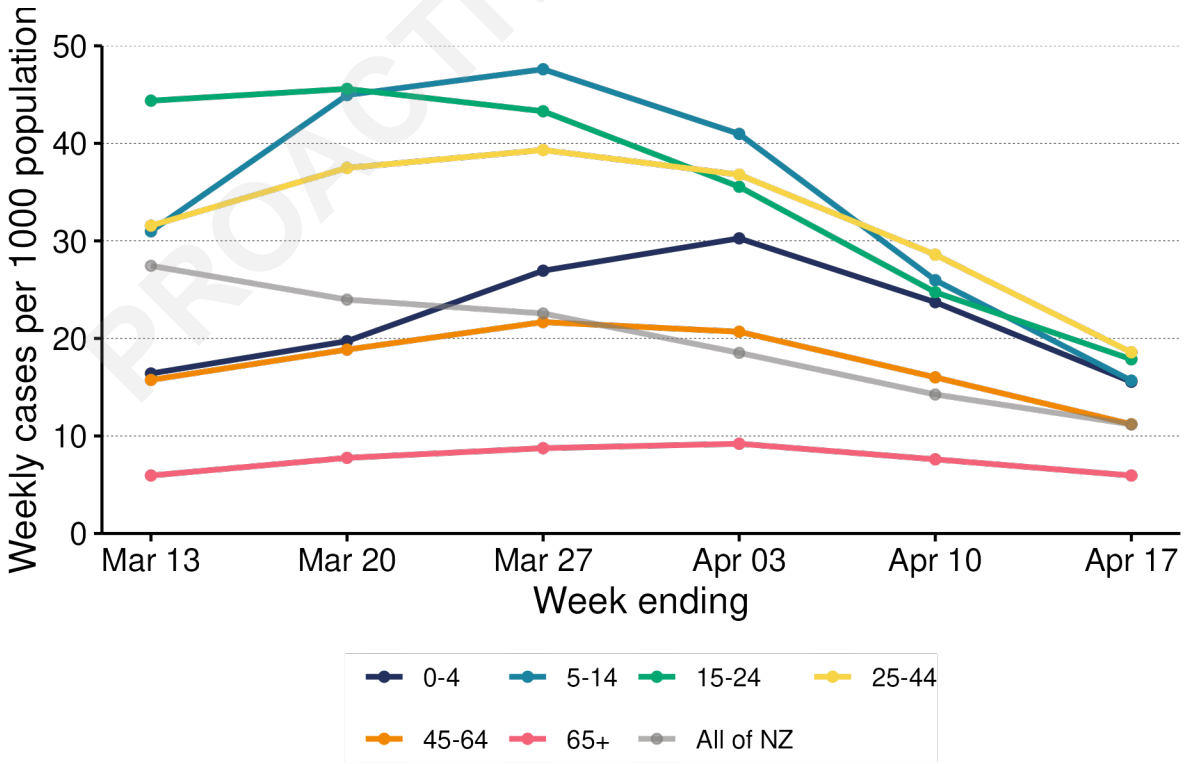
Hawke's Bay DHB



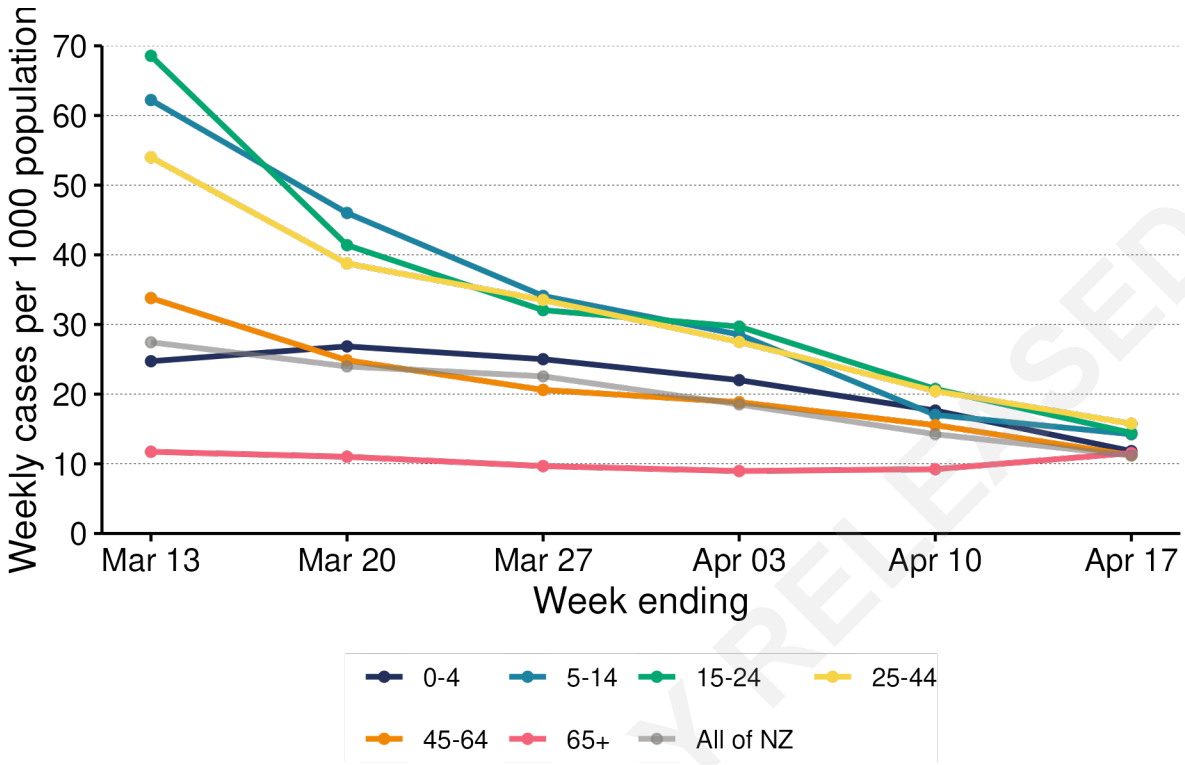
Whanganui DHB



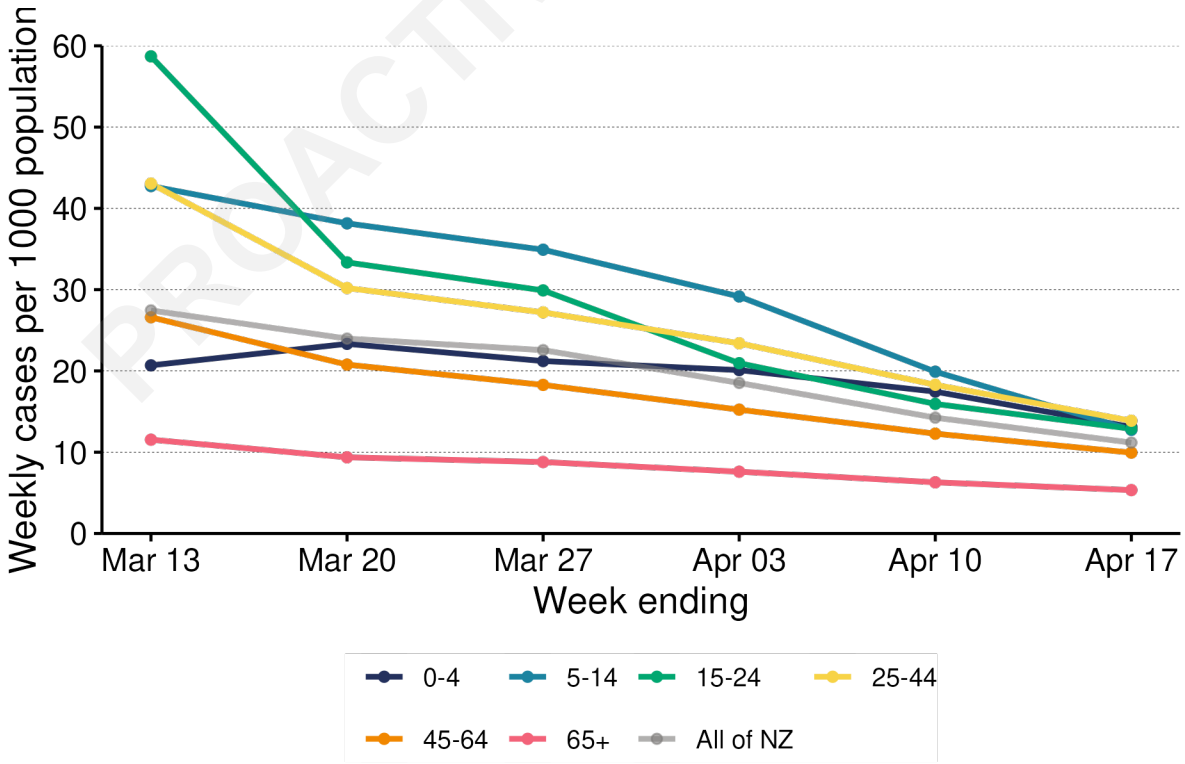
MidCentral DHB



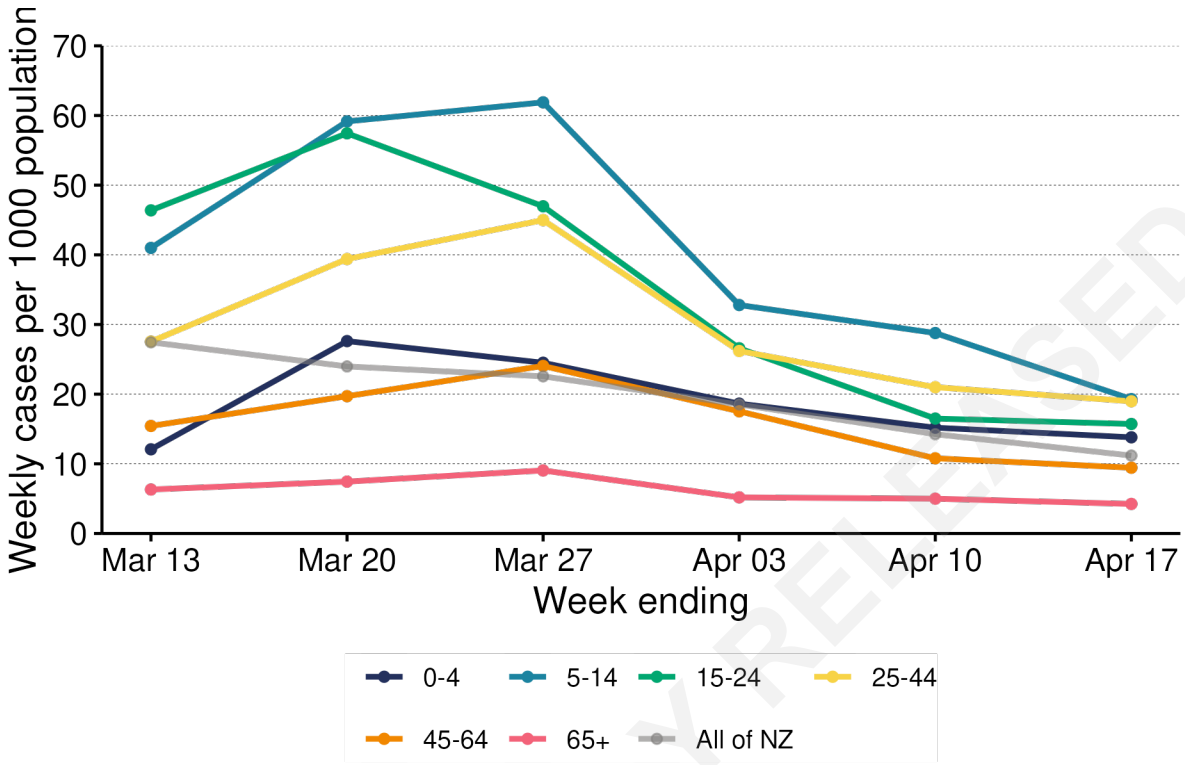
Hutt Valley DHB



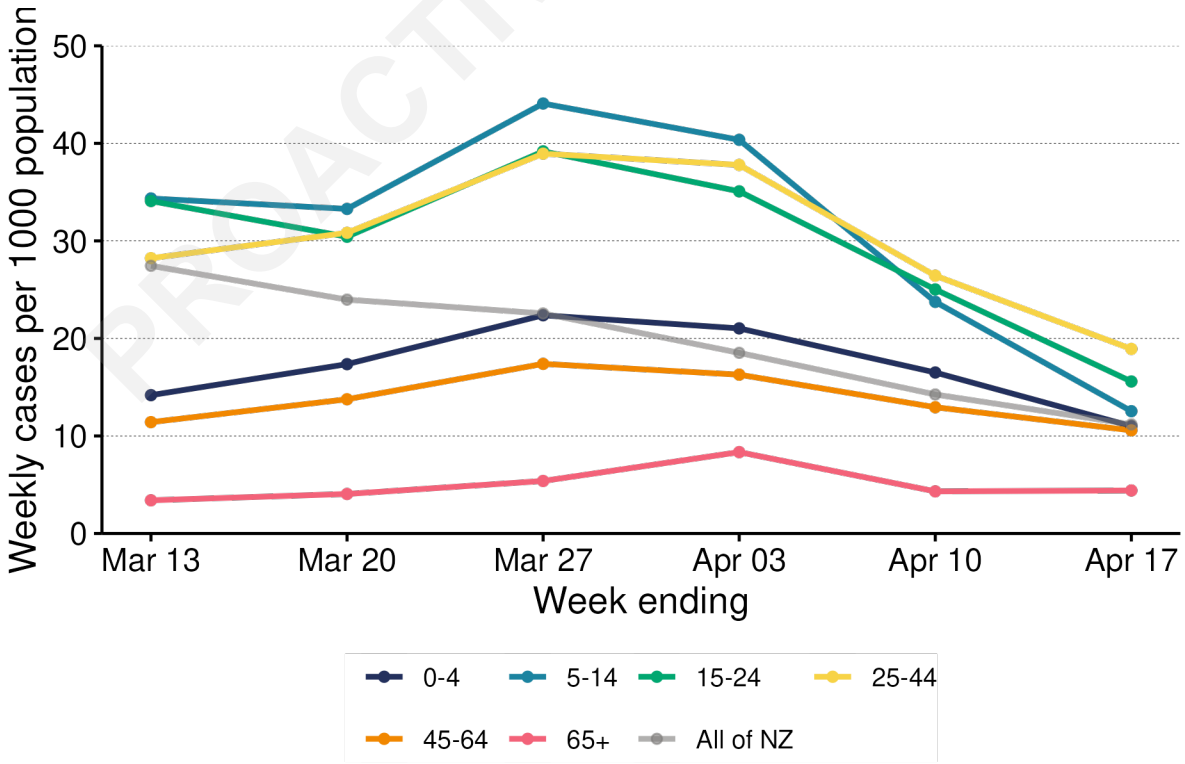
Capital and Coast DHB



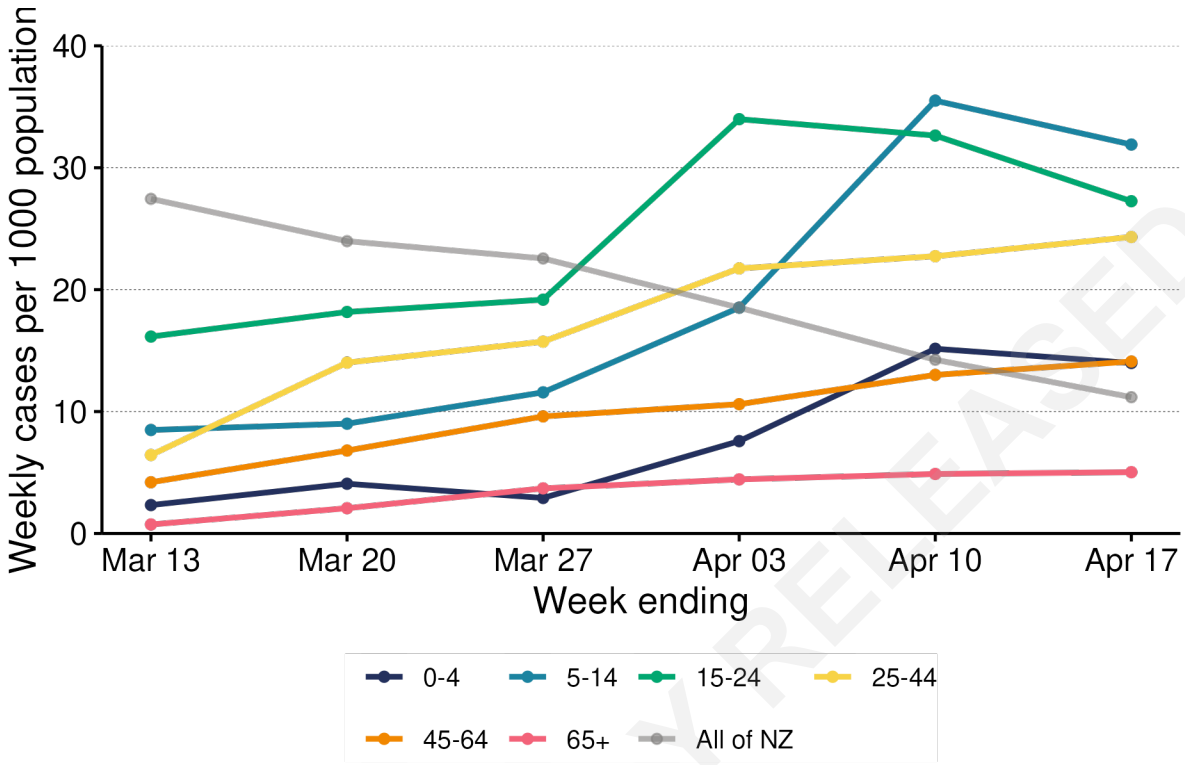
Wairarapa DHB



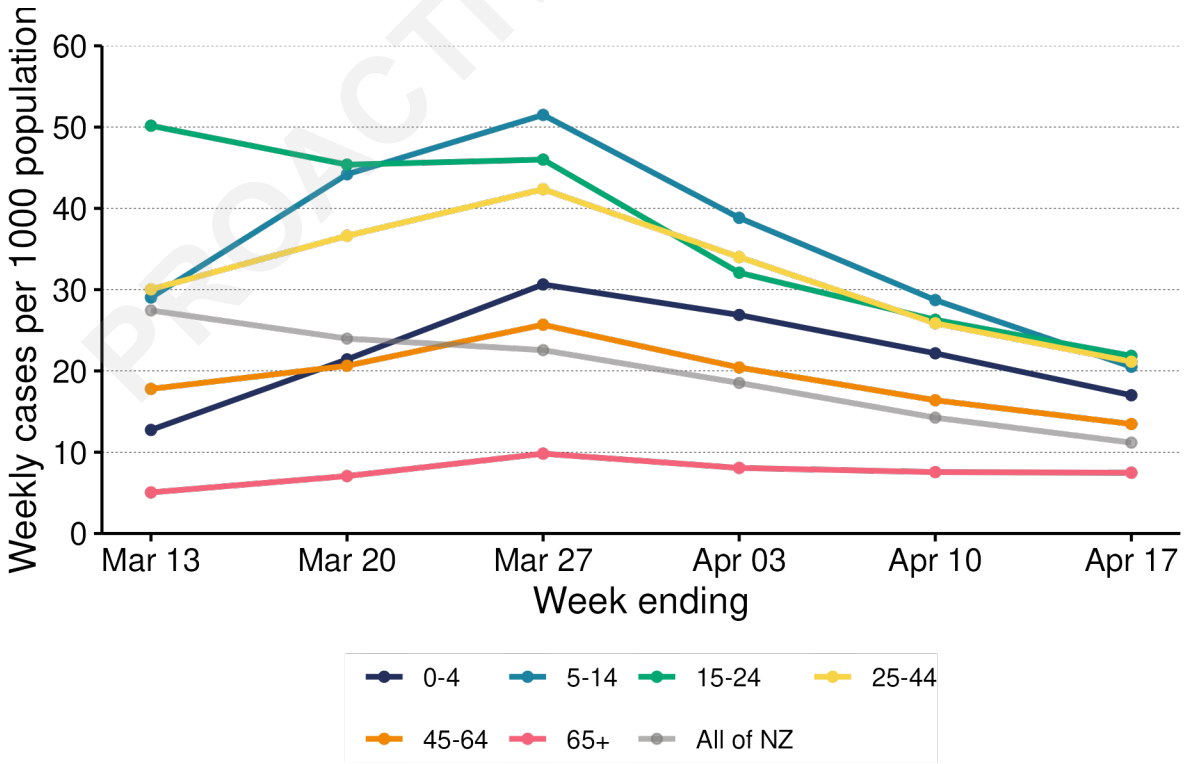
Nelson Marlborough DHB



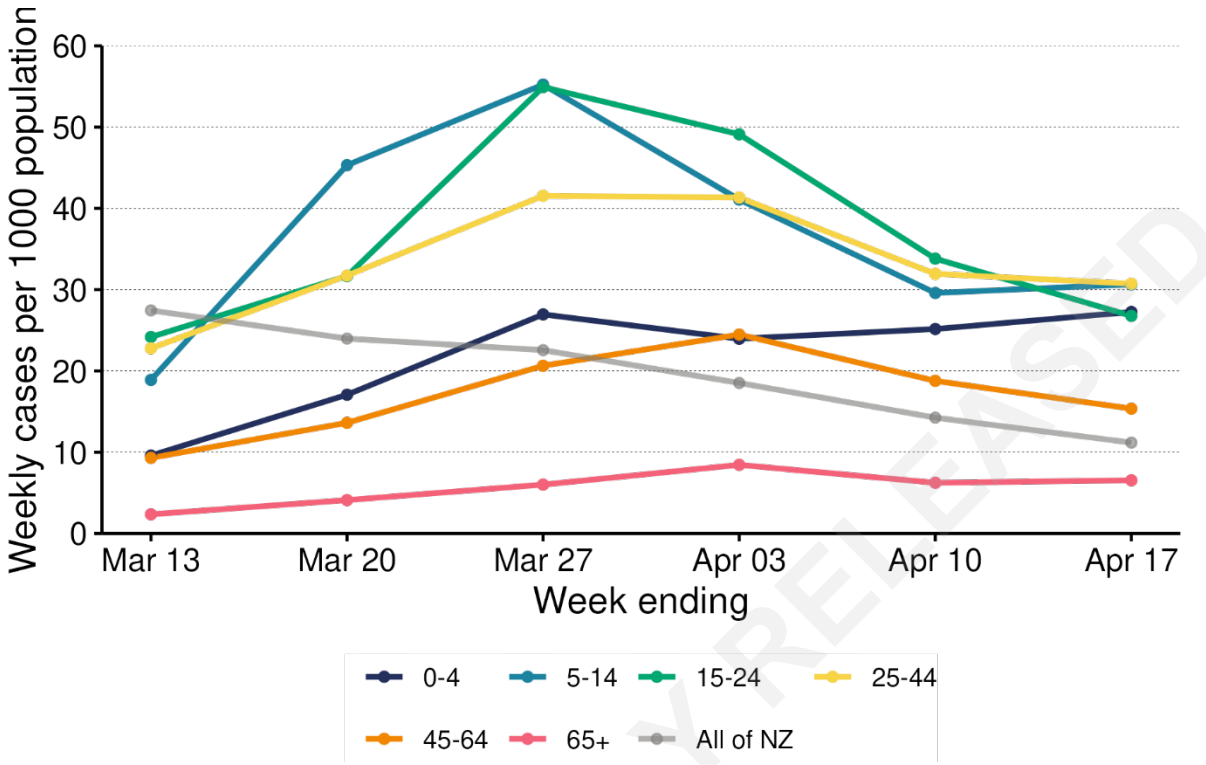
West Coast DHB



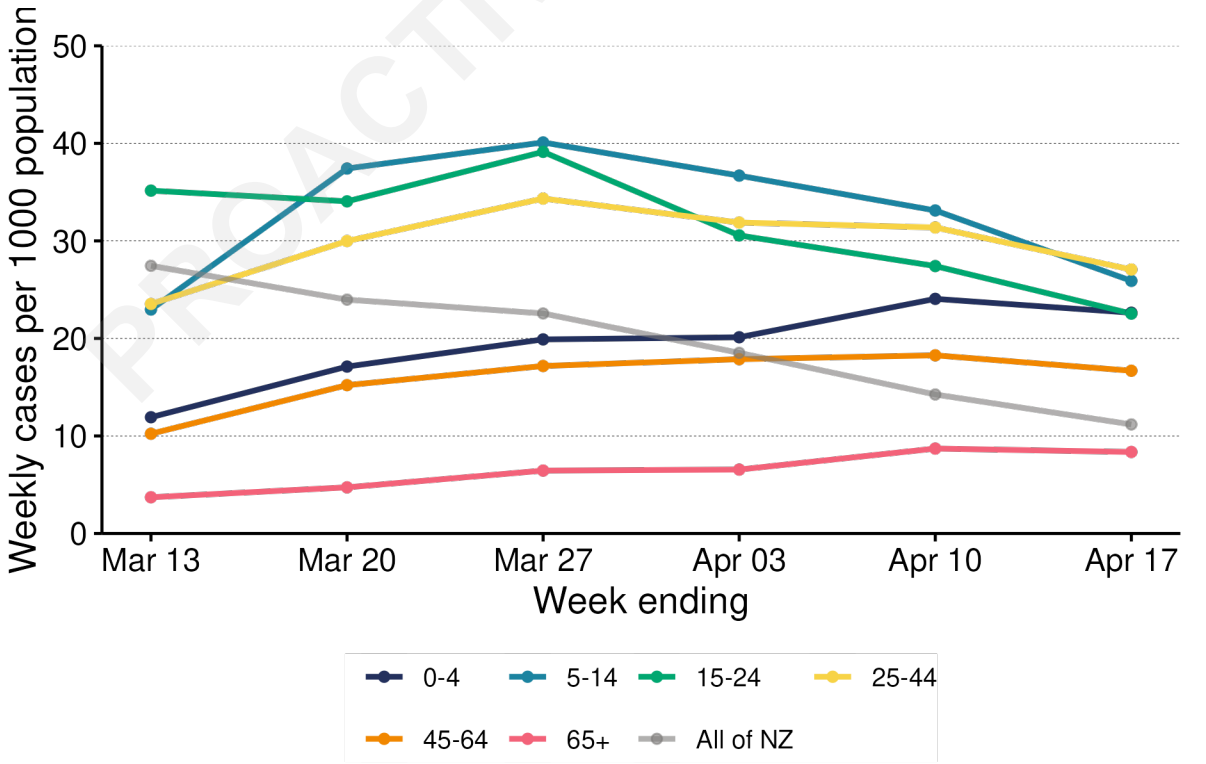
Canterbury DHB



South Canterbury DHB



Southern DHB



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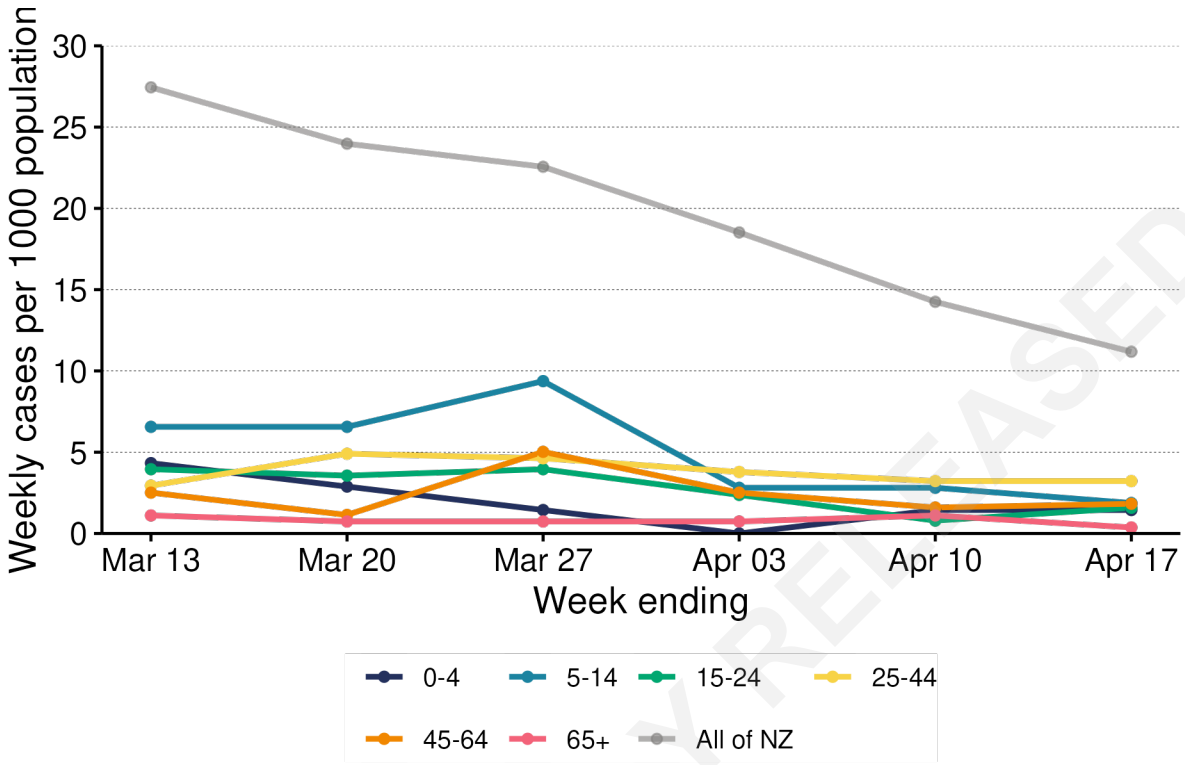
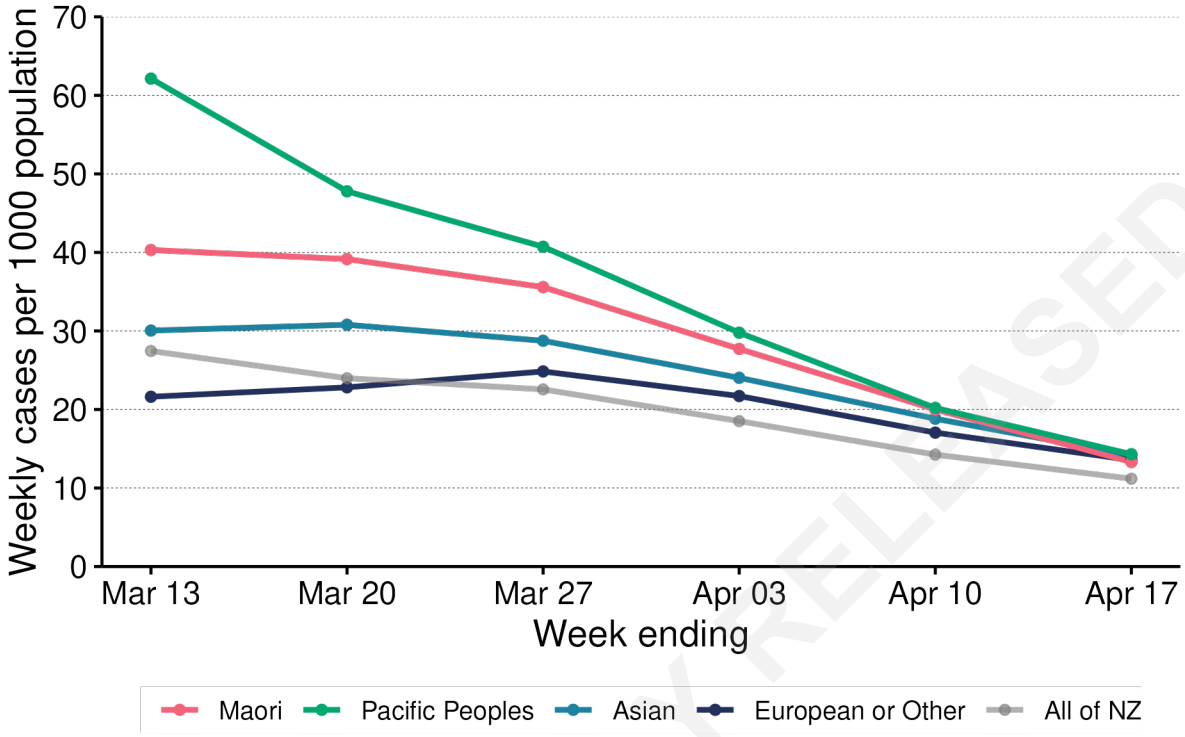
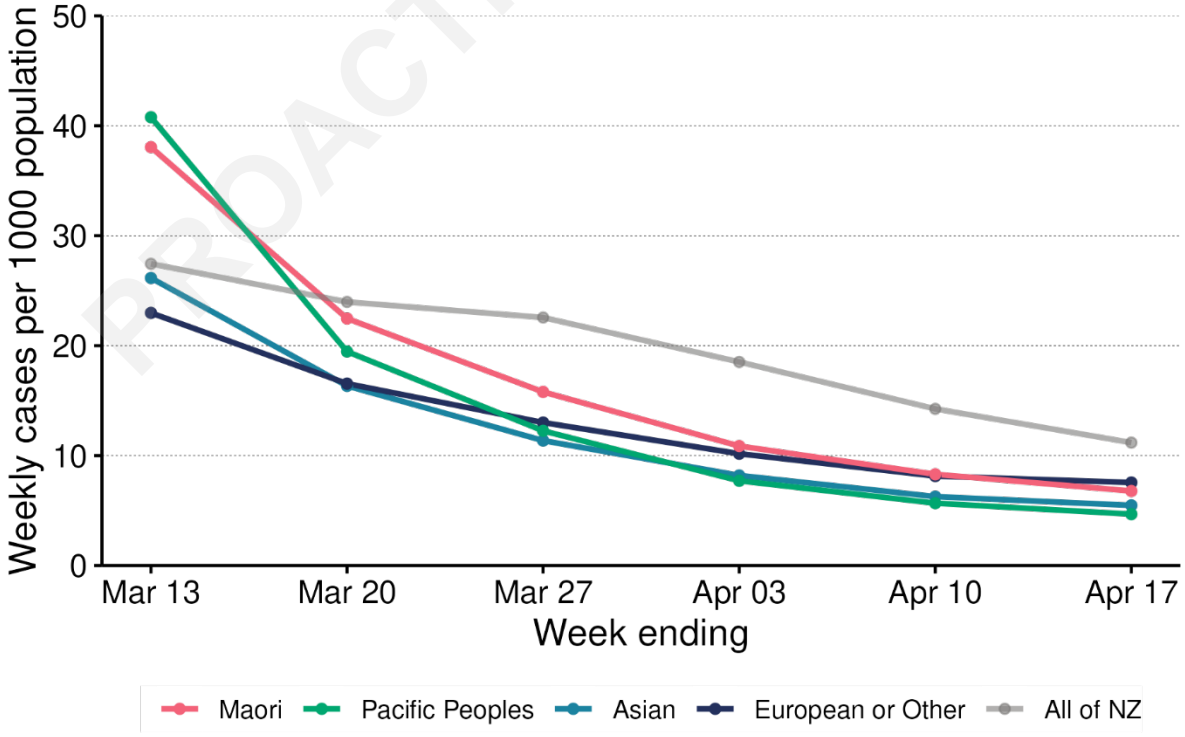


Ethnicity Graphs

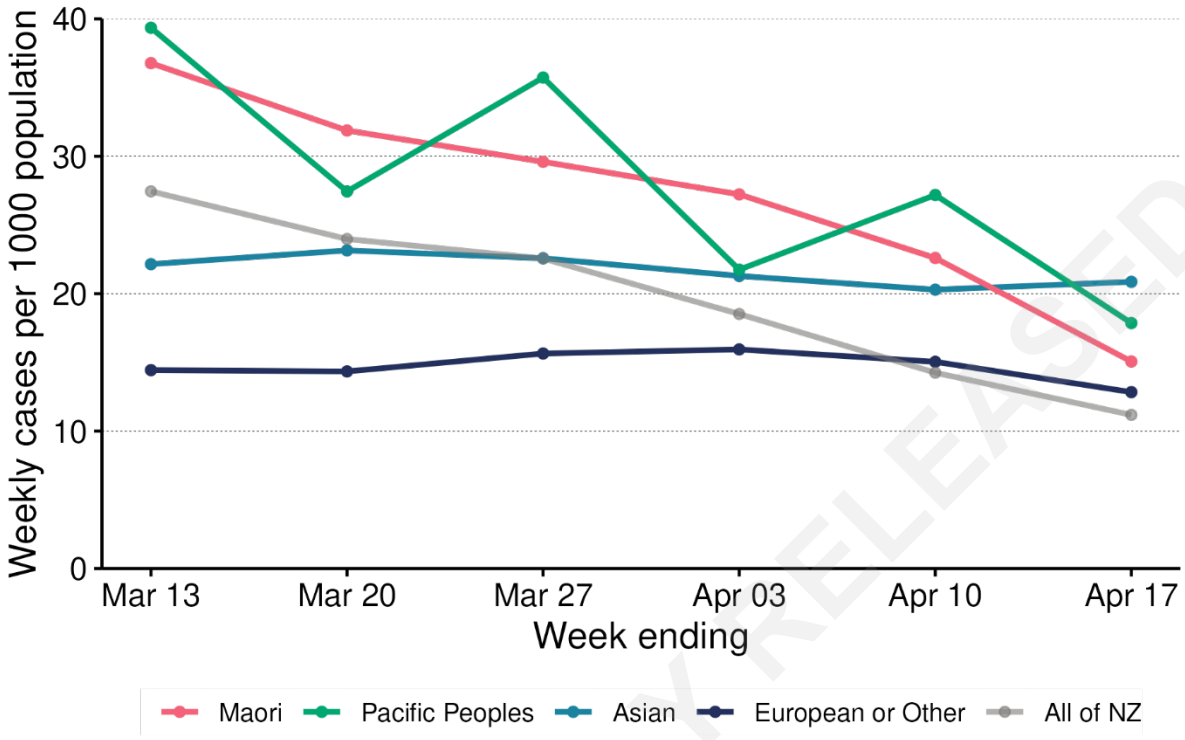
NZ Excluding Auckland Region



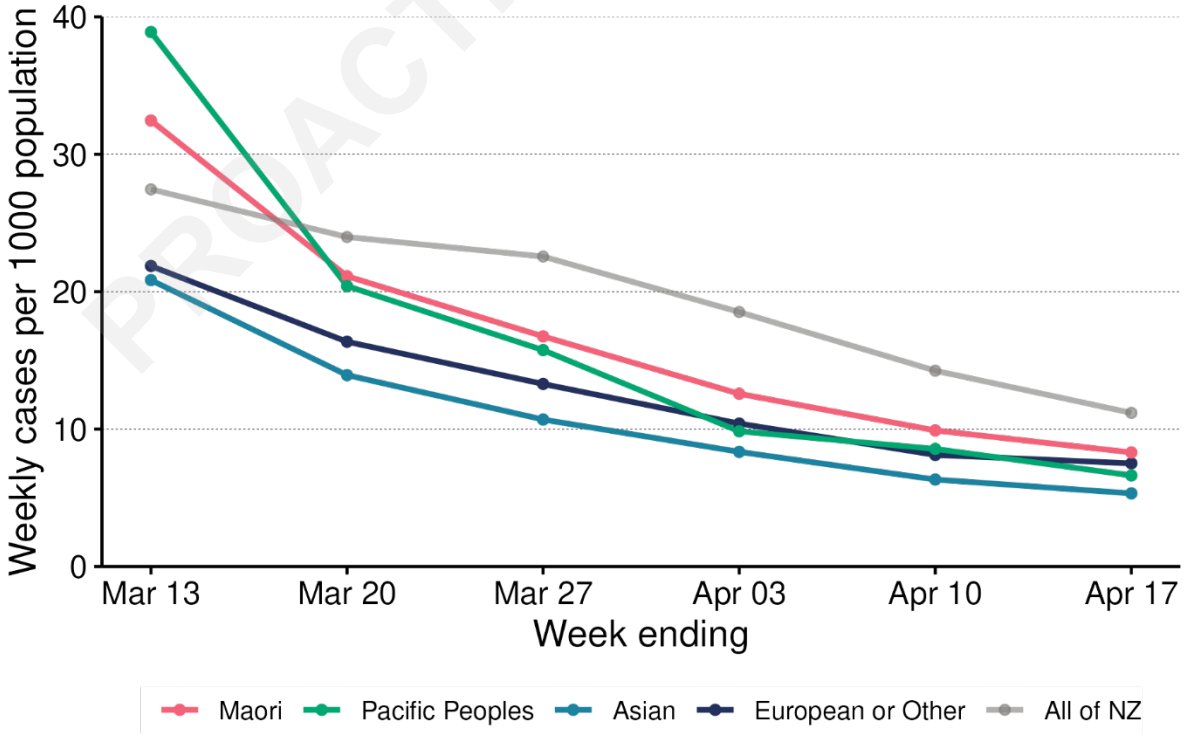
Auckland Region



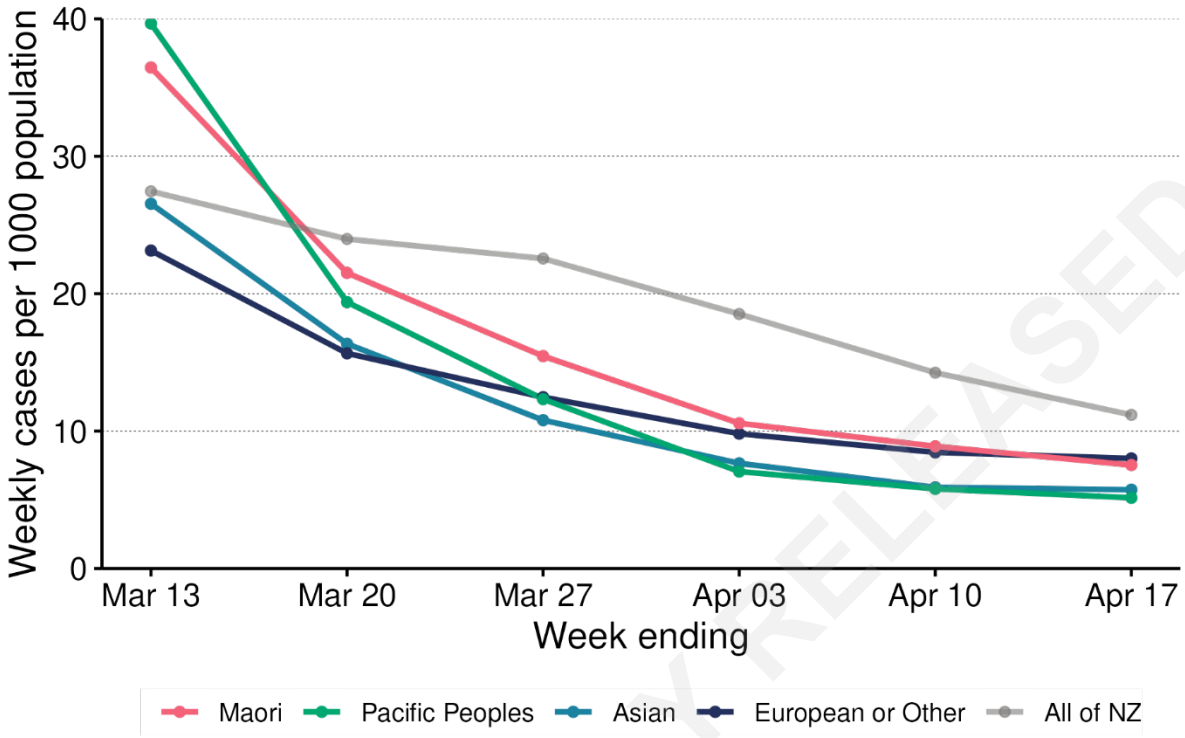
Northland DHB



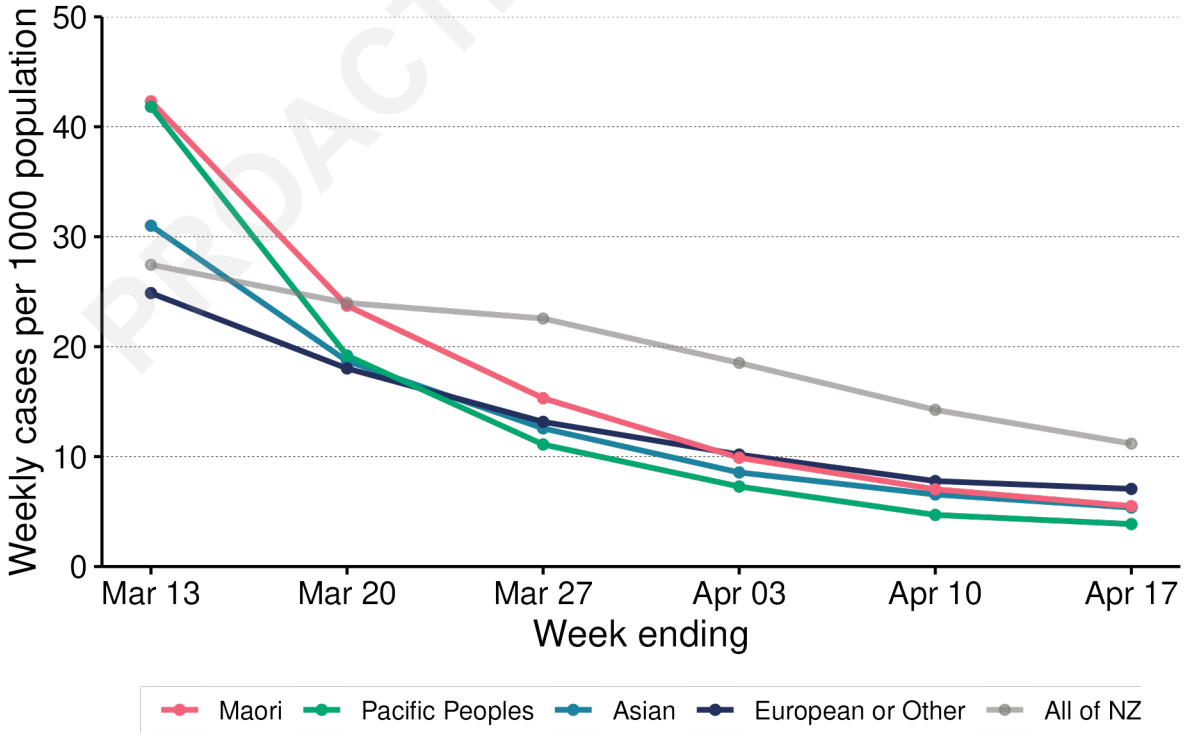
Waitemata DHB



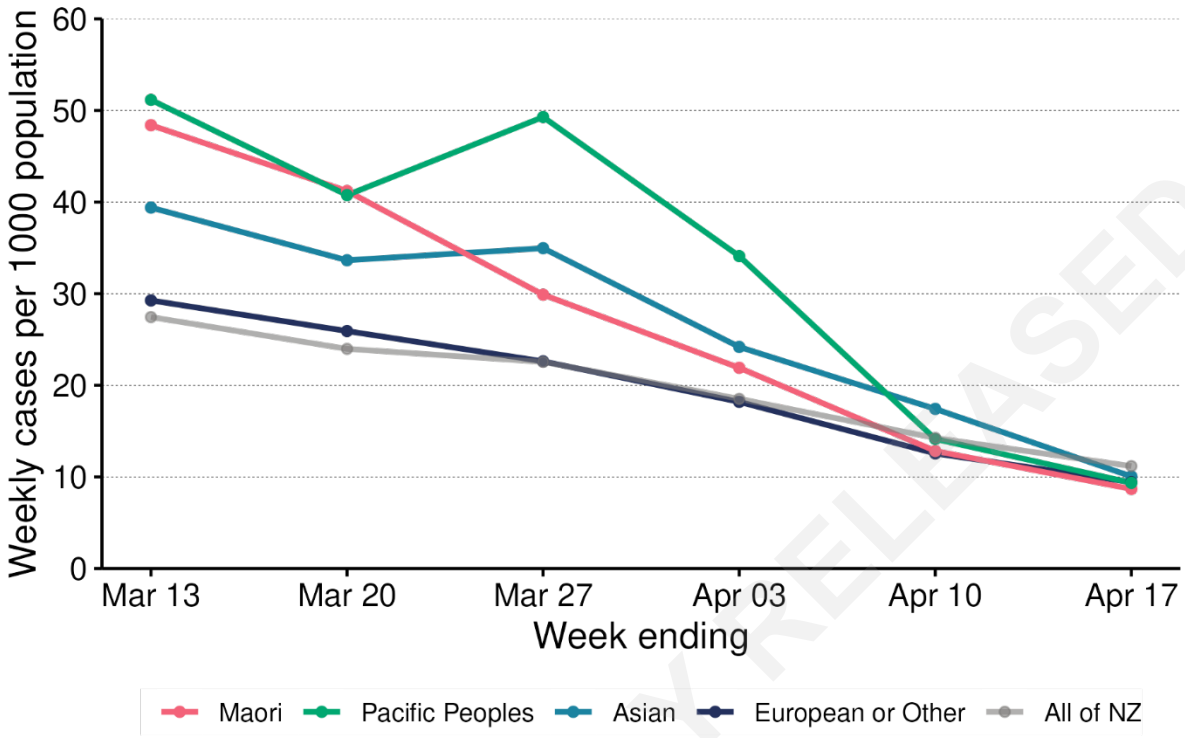
Auckland DHB



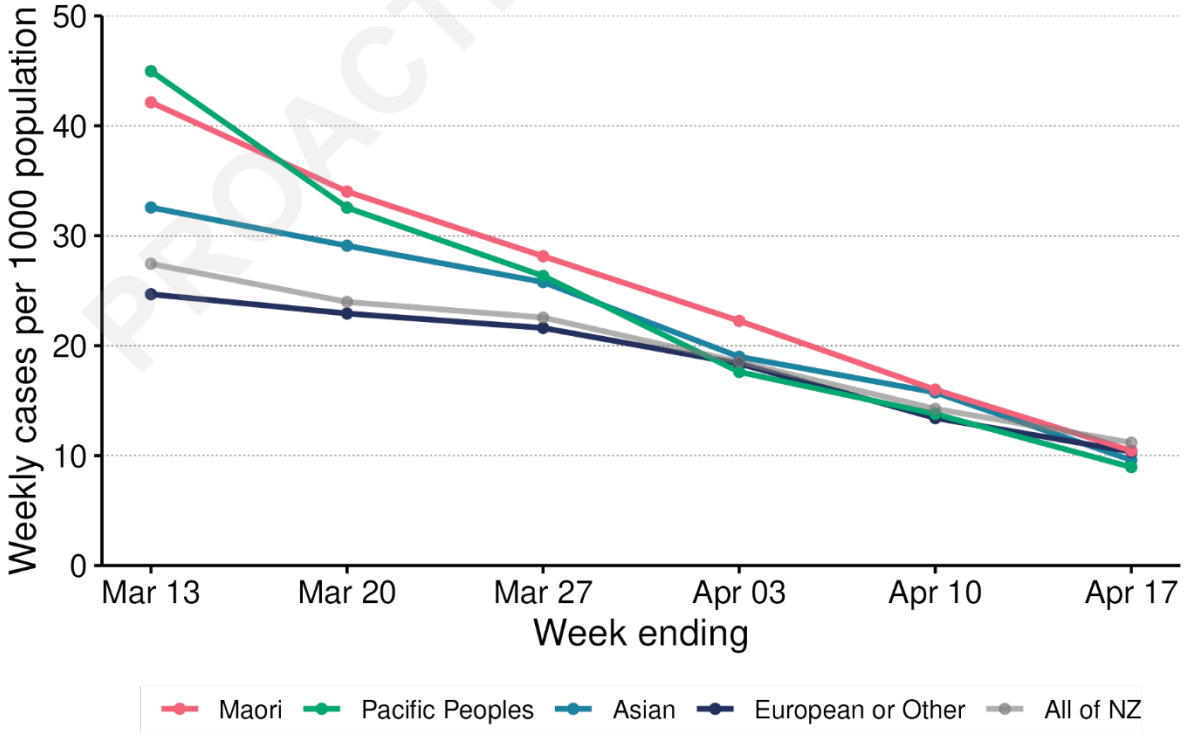
Counties Manukau DHB



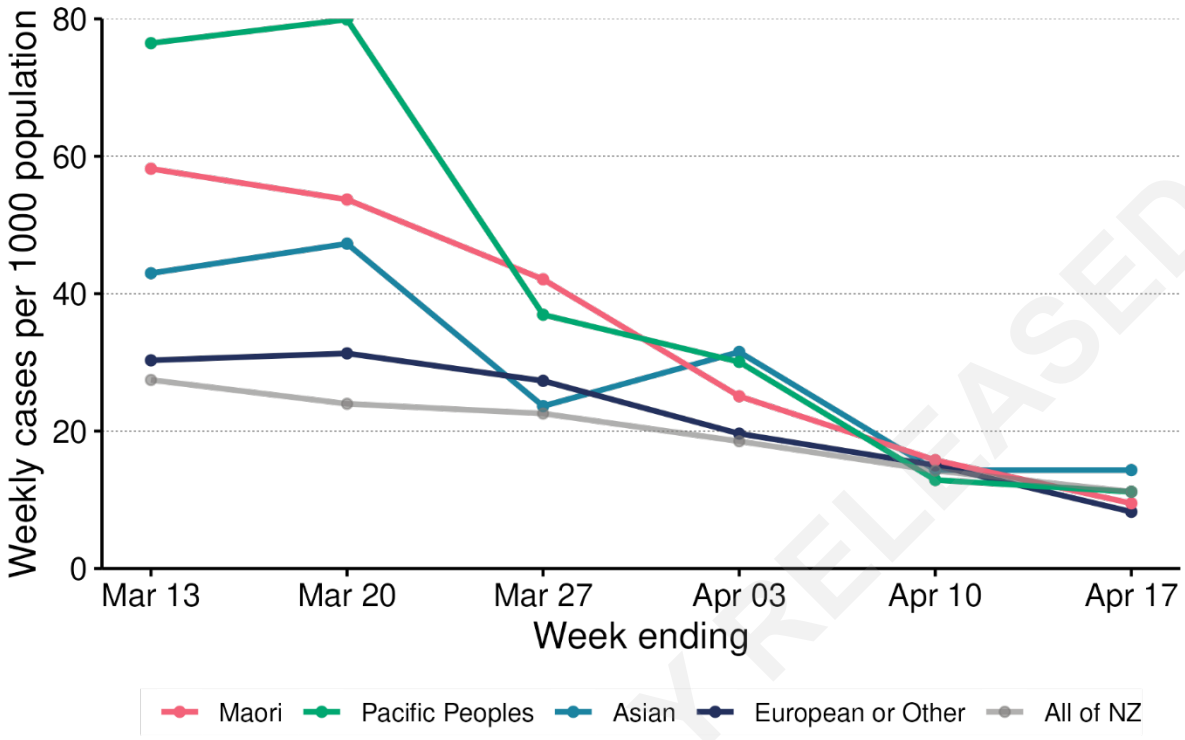
Bay of Plenty DHB



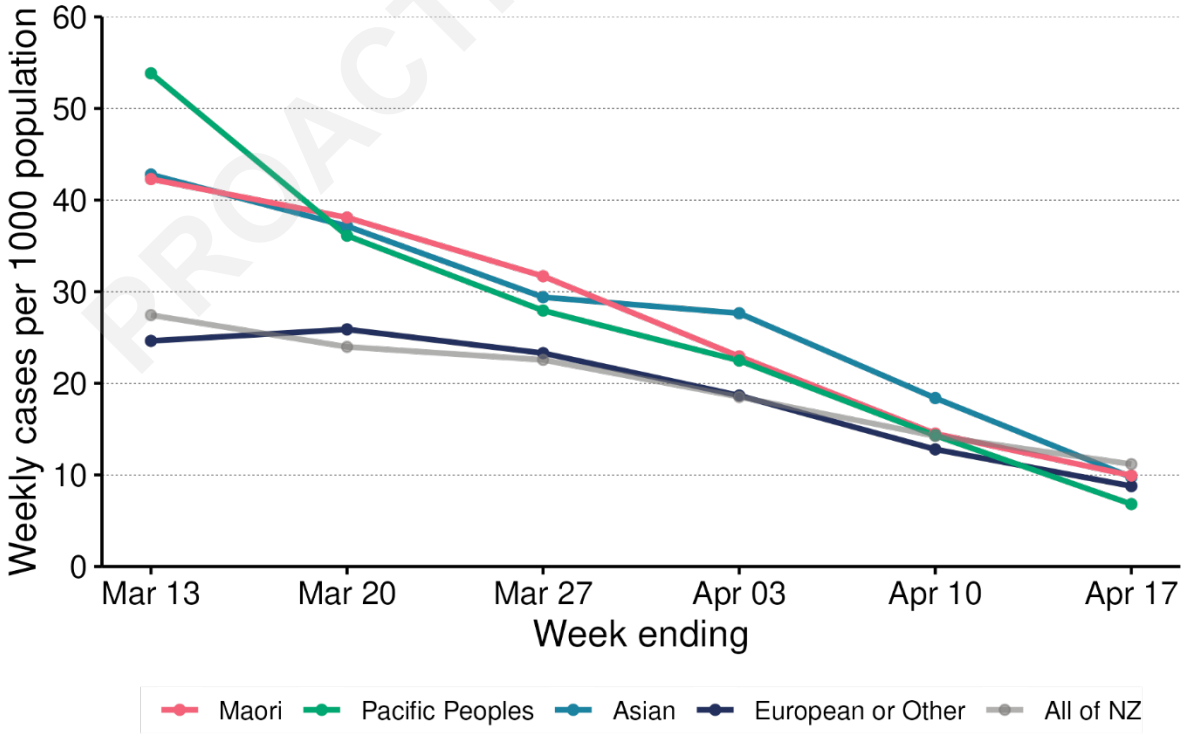
Waikato DHB



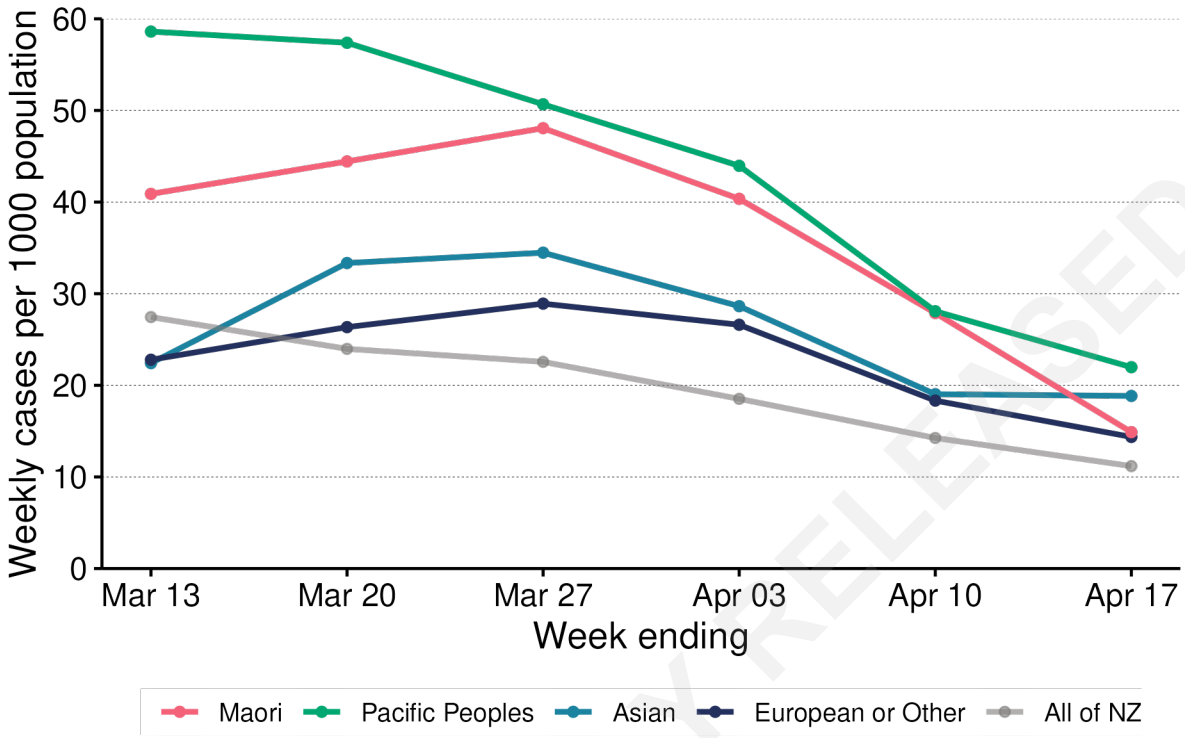
Tarawhiti DHB



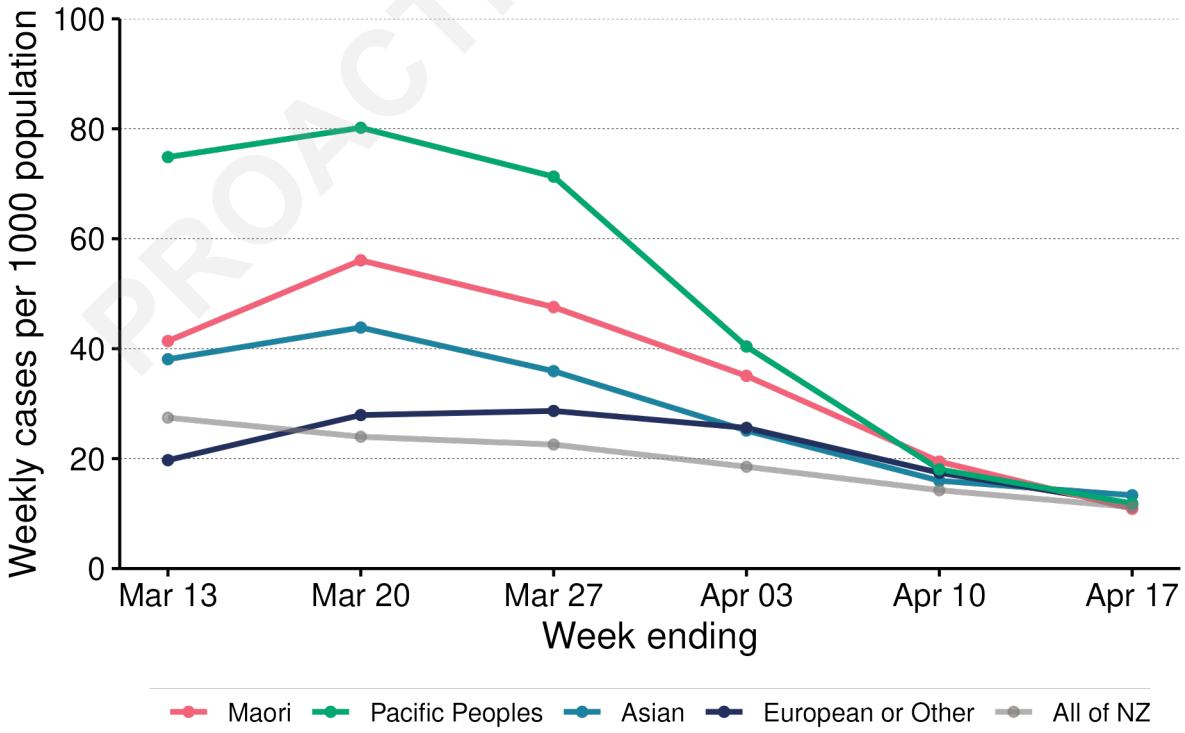
Lakes DHB



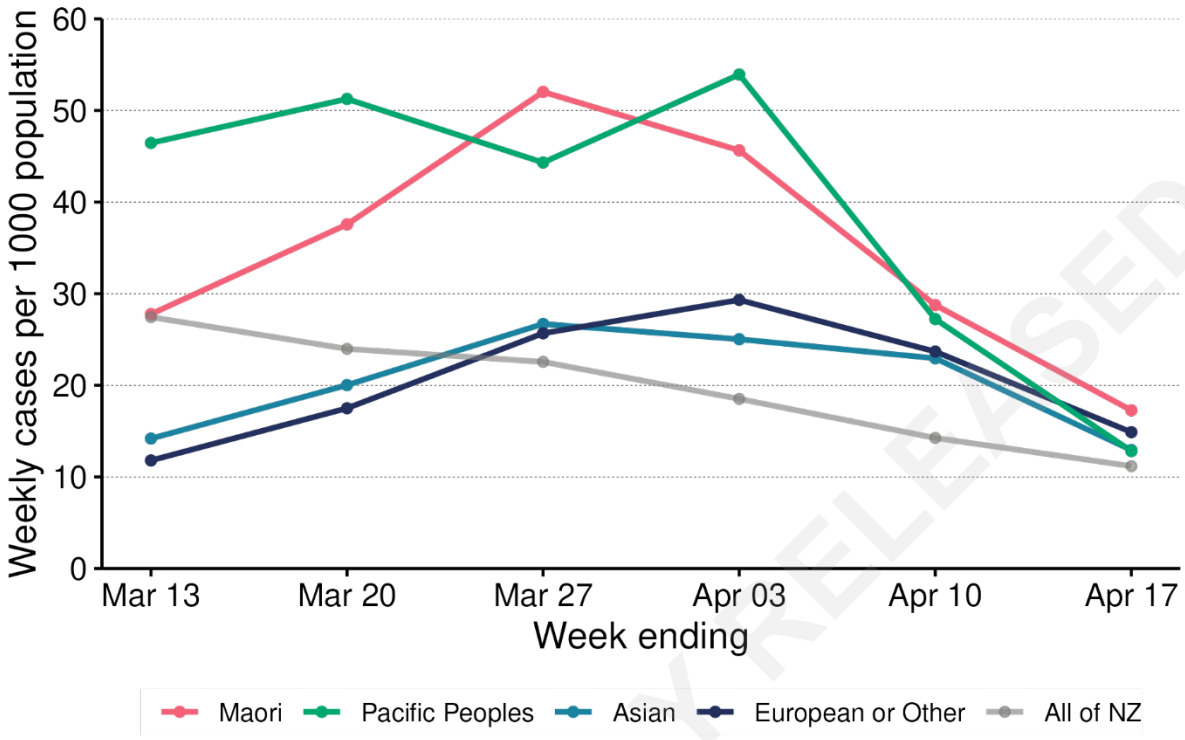
Taranaki DHB



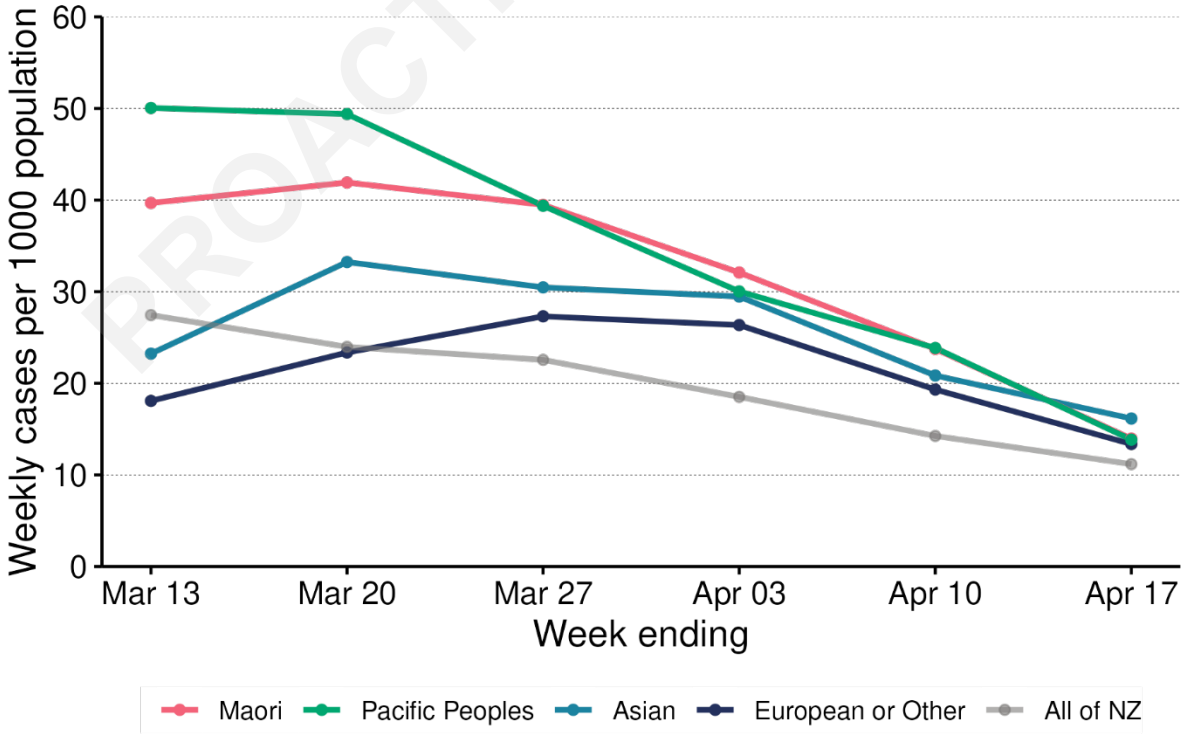
Hawke's Bay DHB



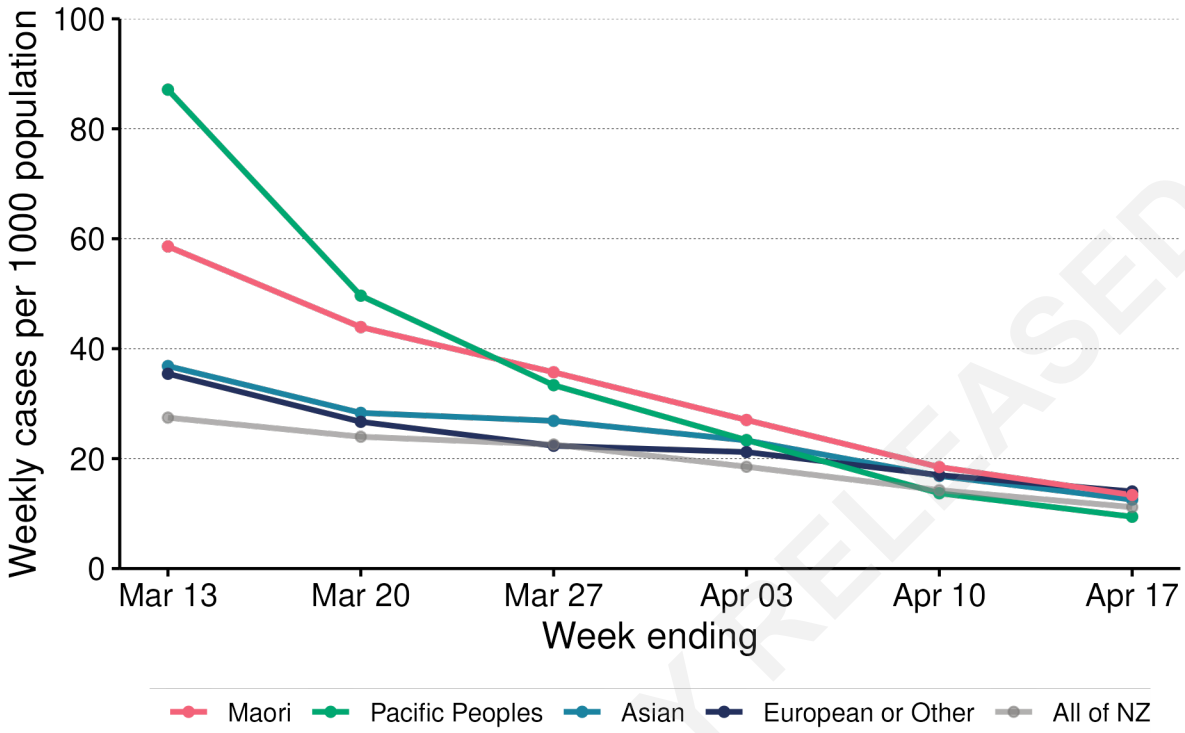
Whanganui DHB



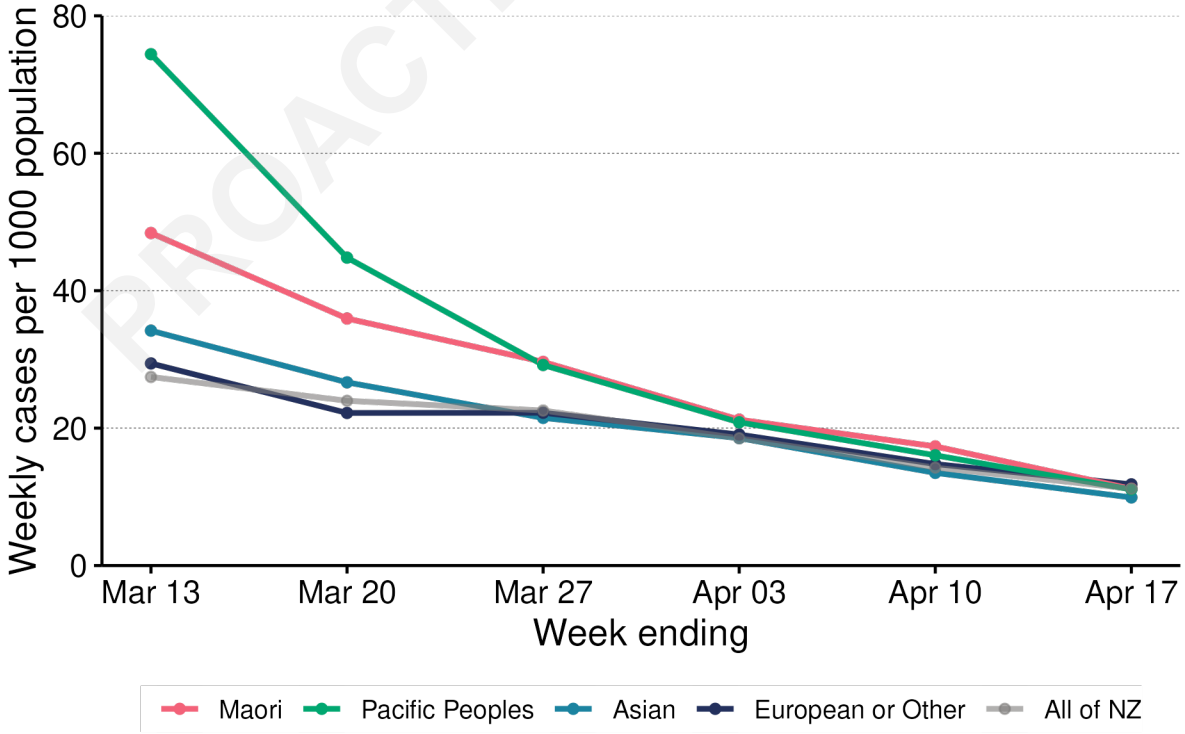
MidCentral DHB



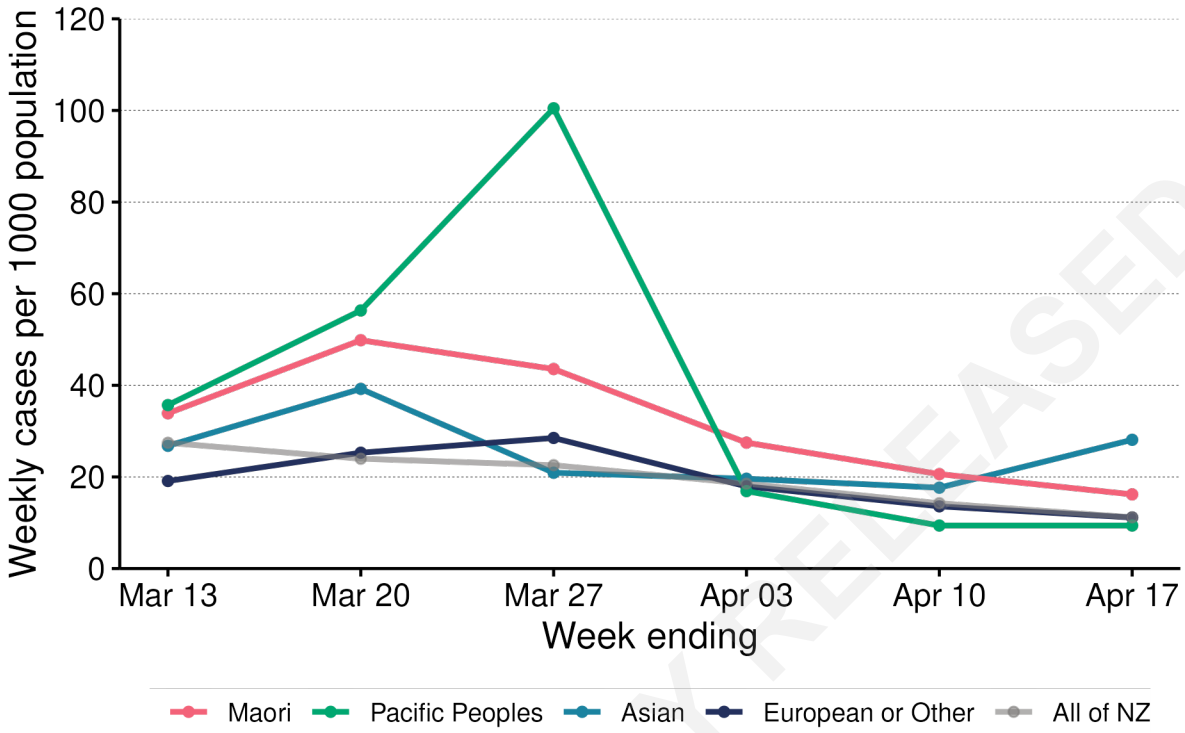
Hutt Valley DHB



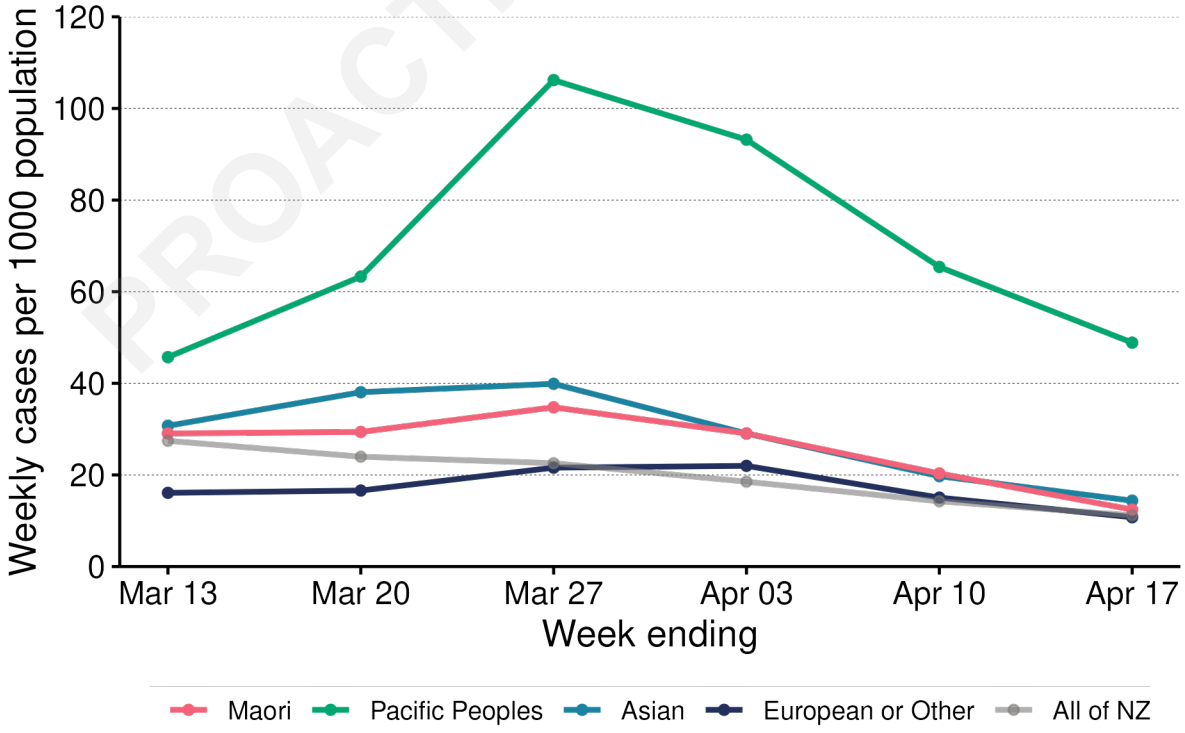
Capital and Coast DHB



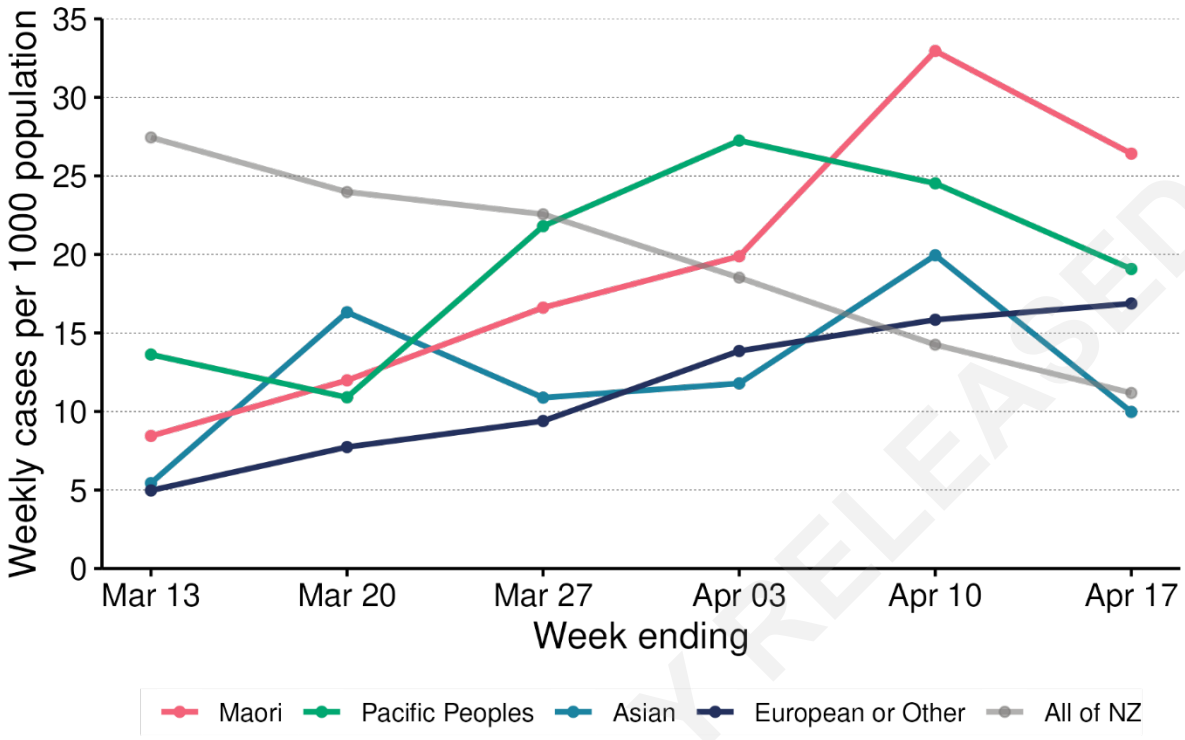
Wairarapa DHB



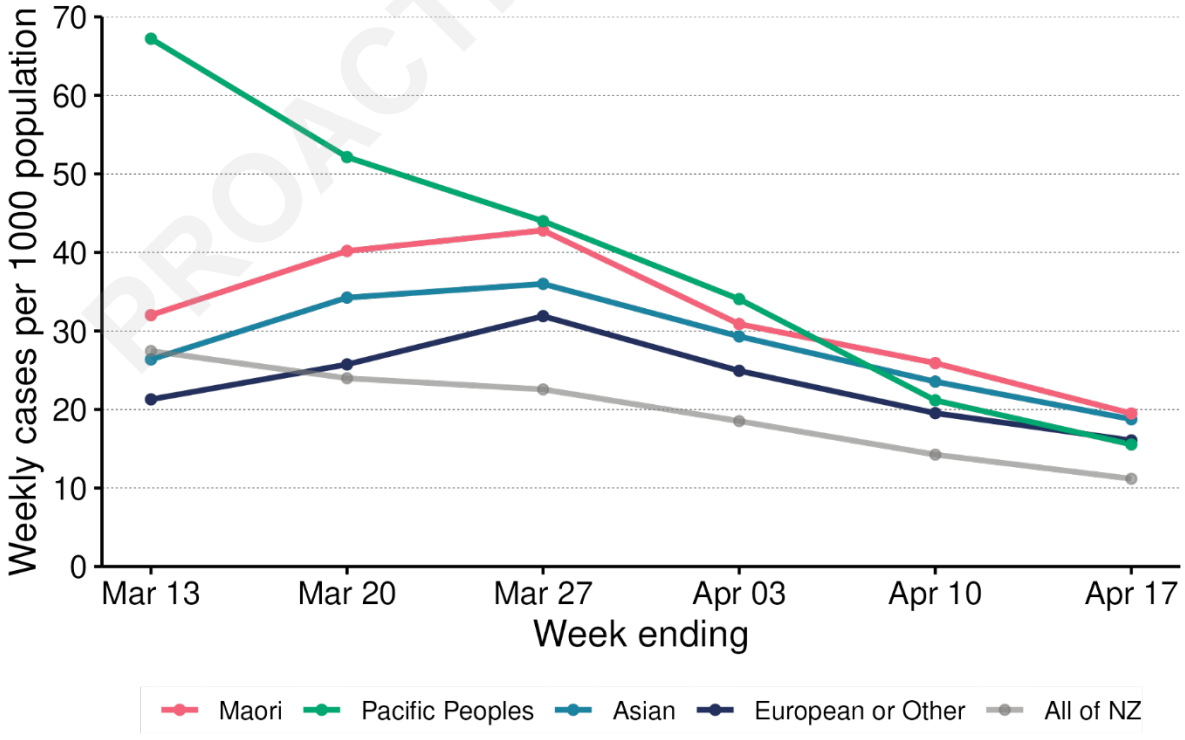
Nelson Marlborough DHB



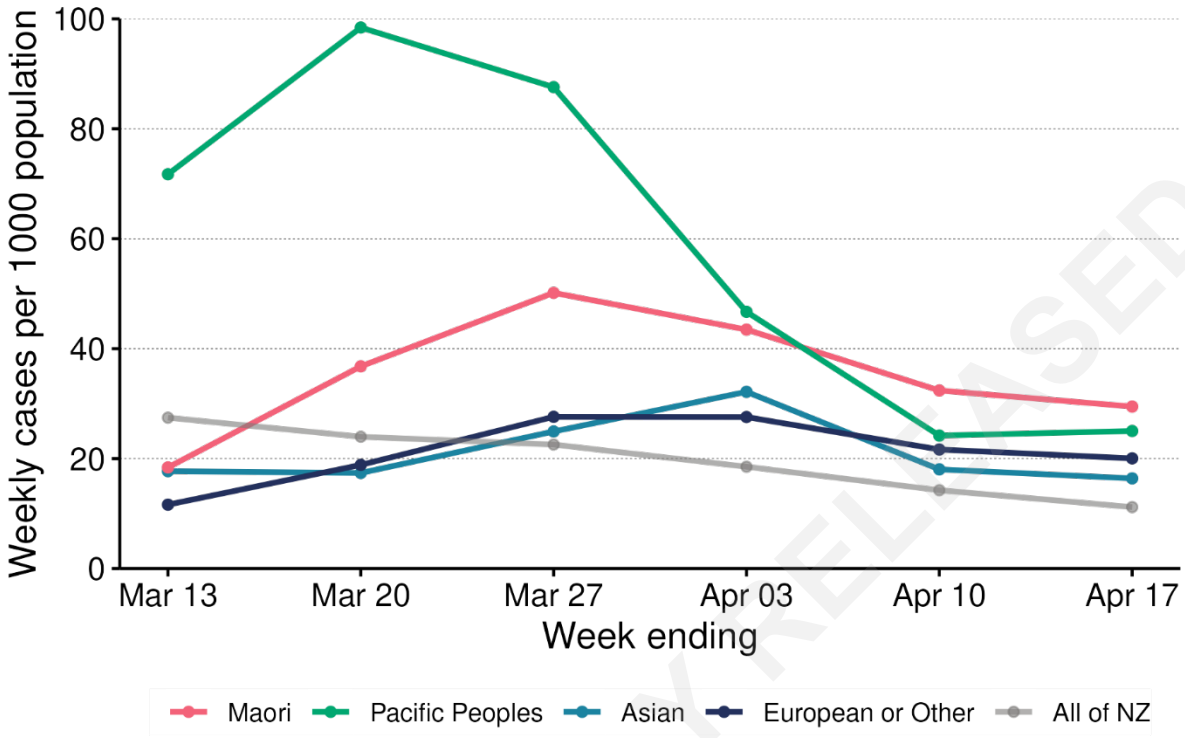
West Coast DHB



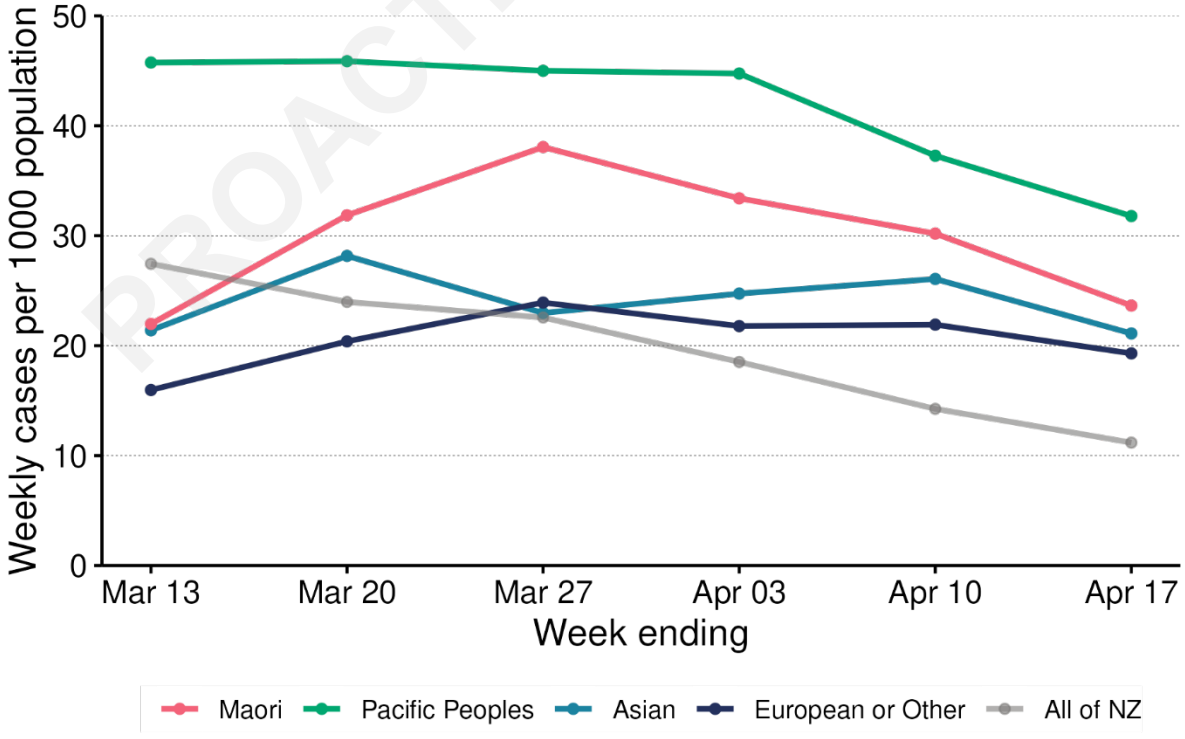
Canterbury DHB



South Canterbury DHB



Southern DHB



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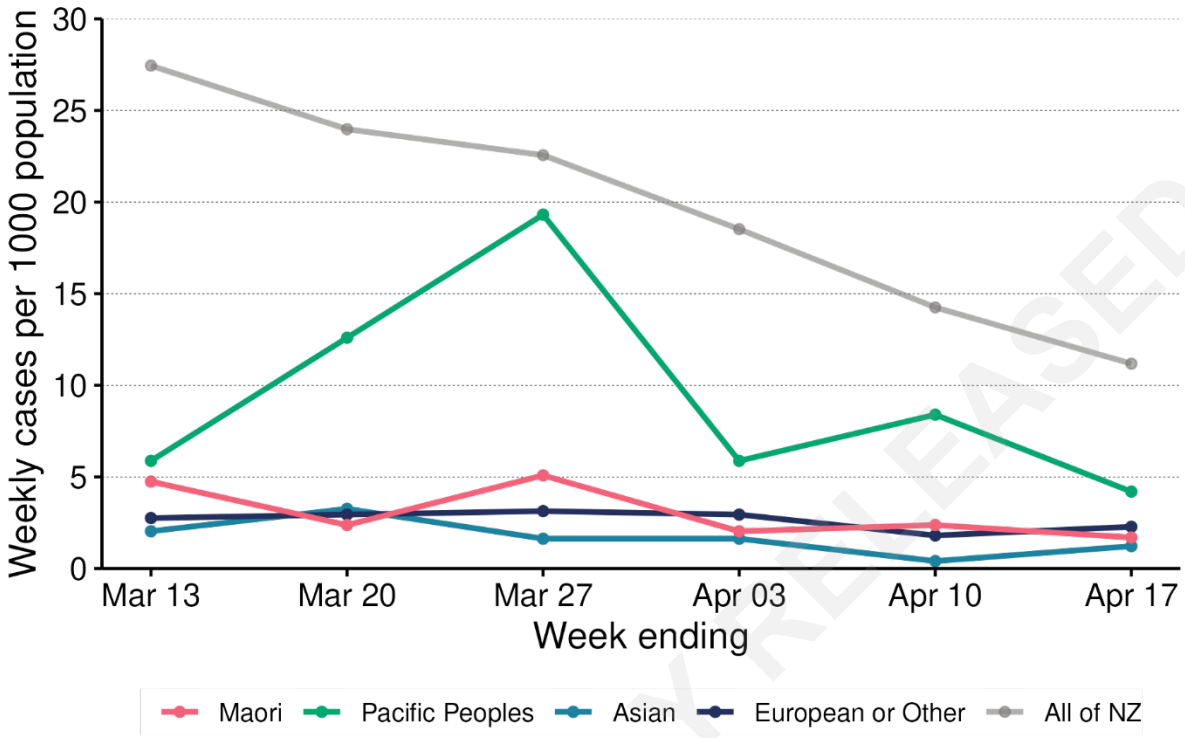
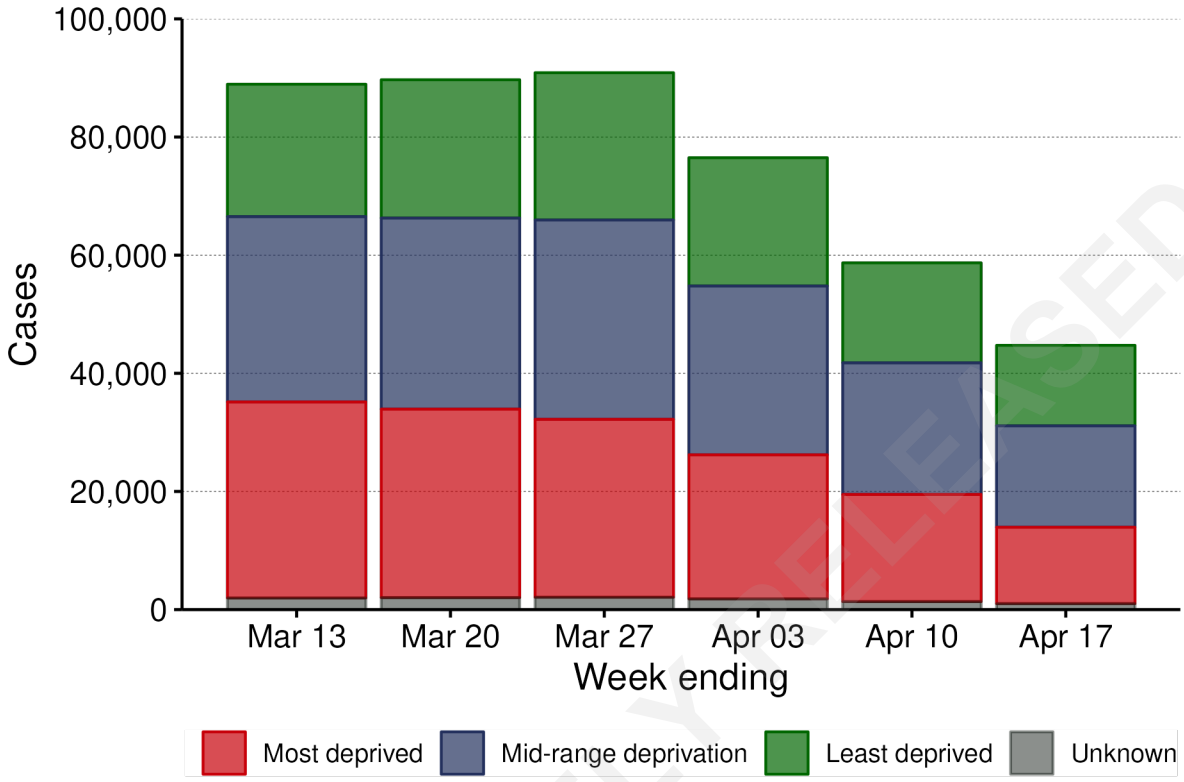
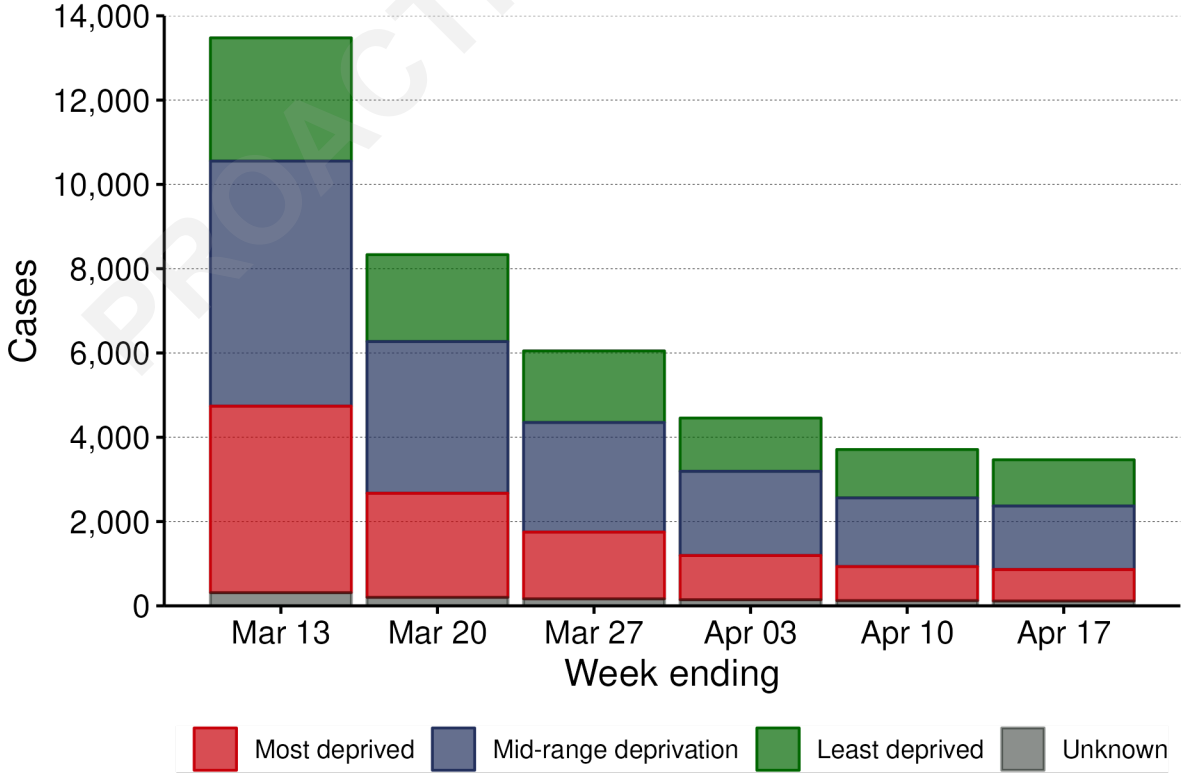


Deprivation Graphs

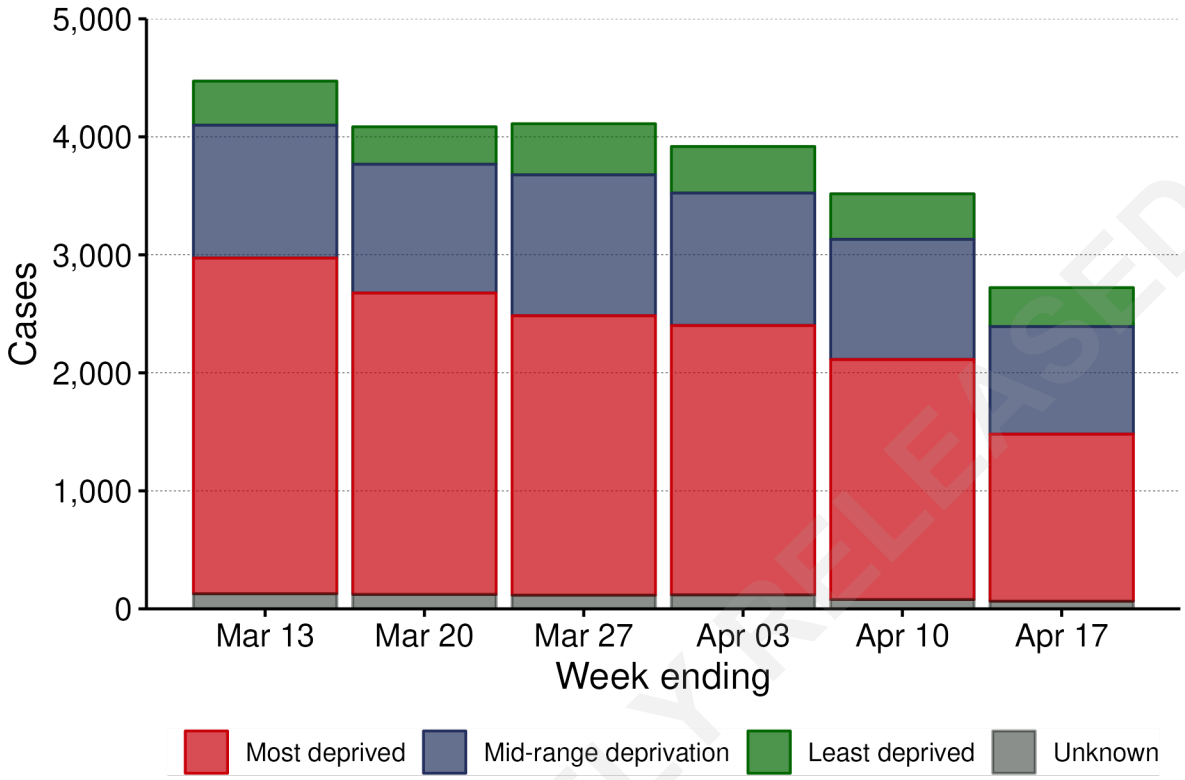
NZ Excluding Auckland Region



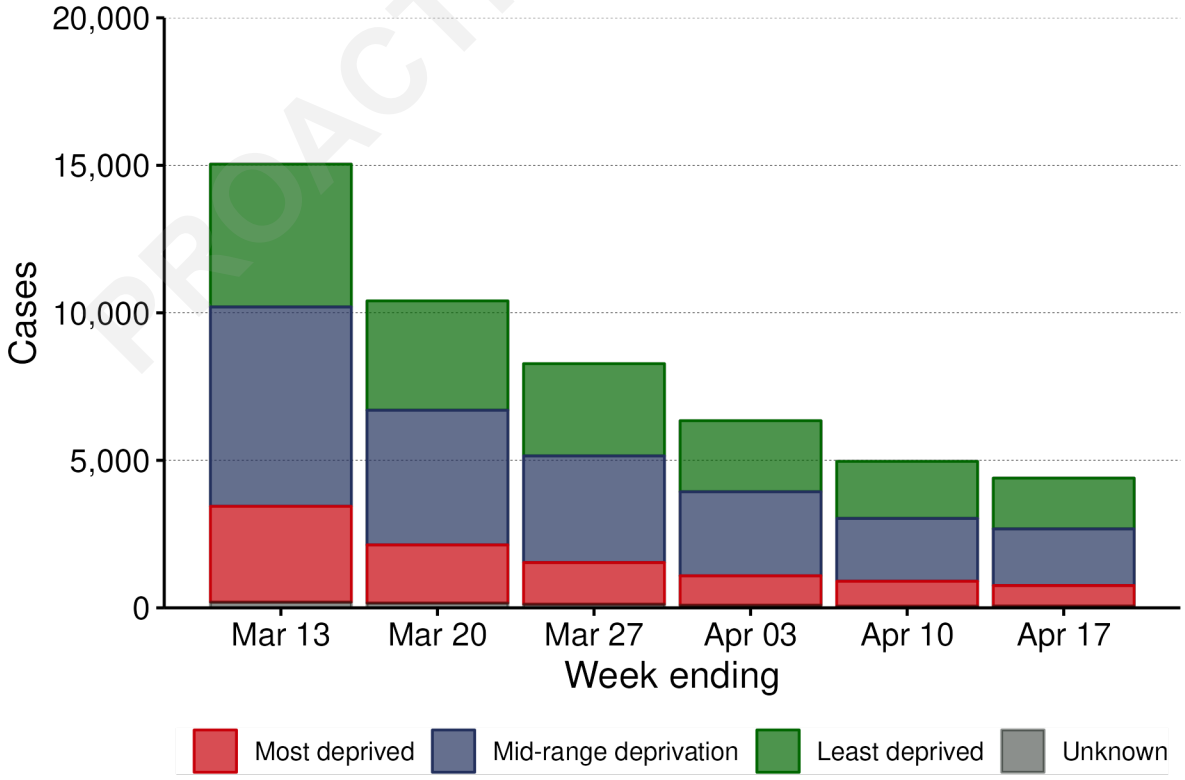
Auckland Region



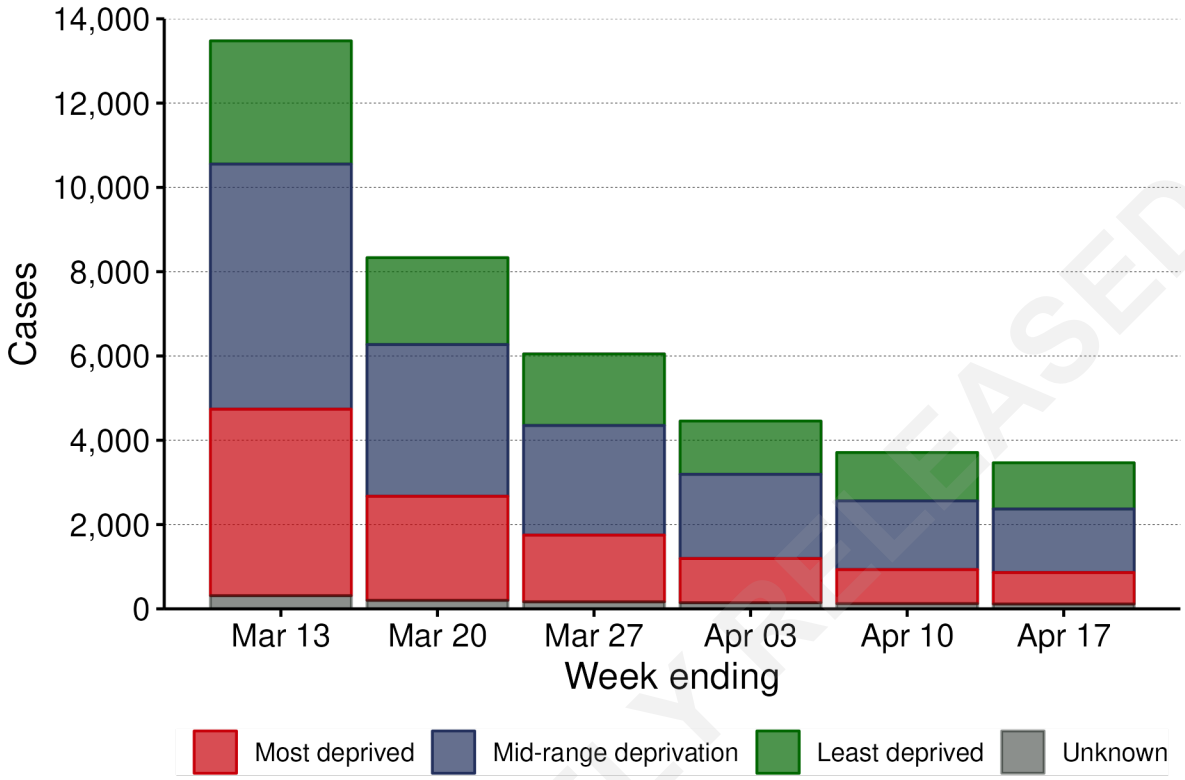
Northland DHB



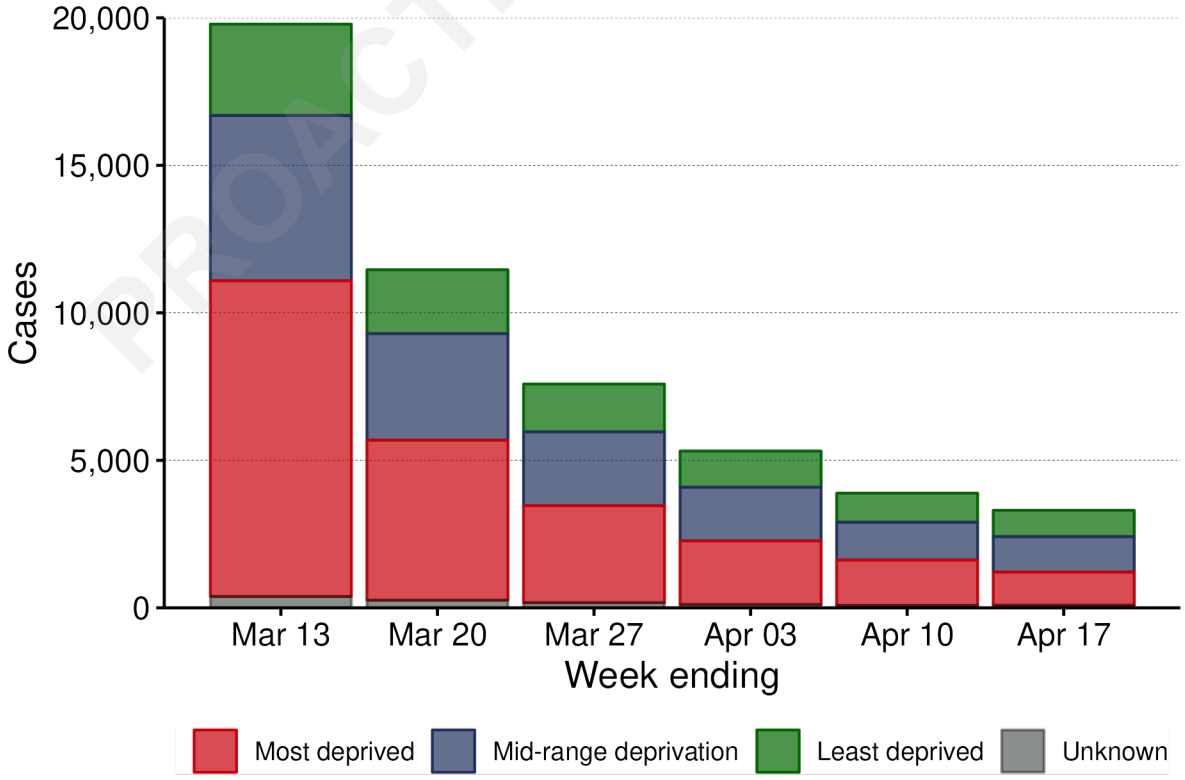
Waitemata DHB



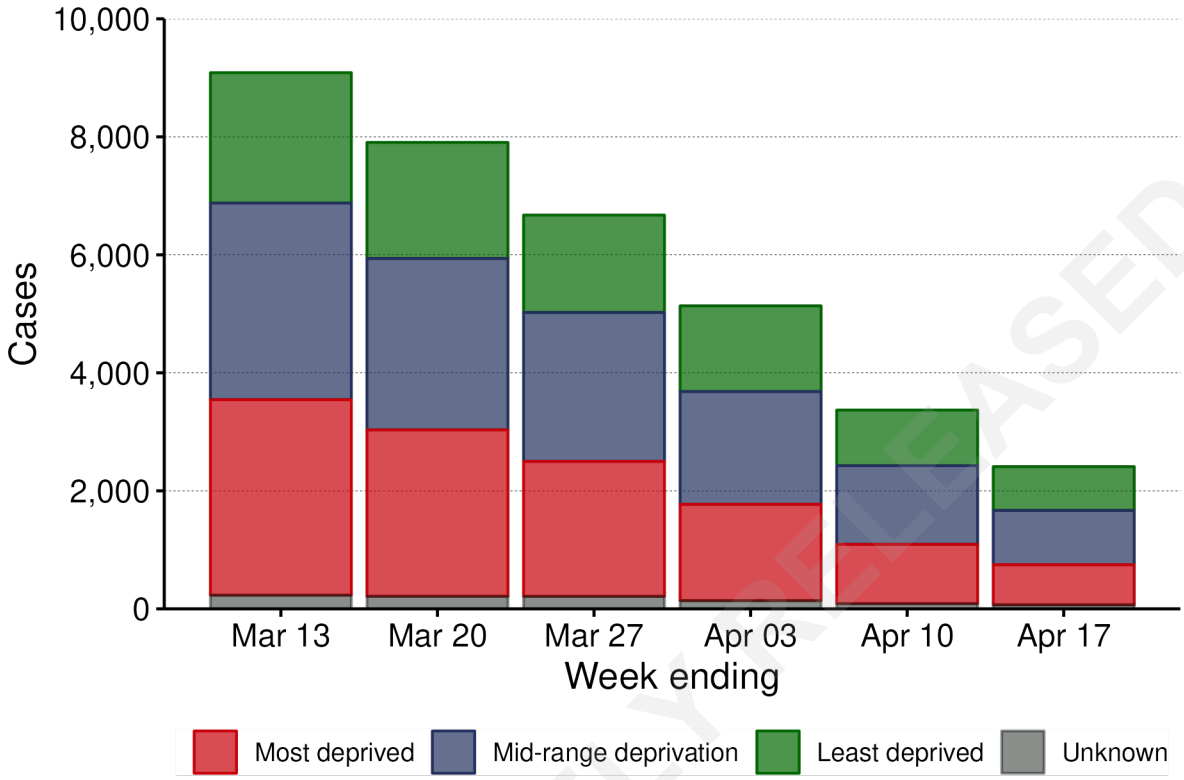
Auckland DHB



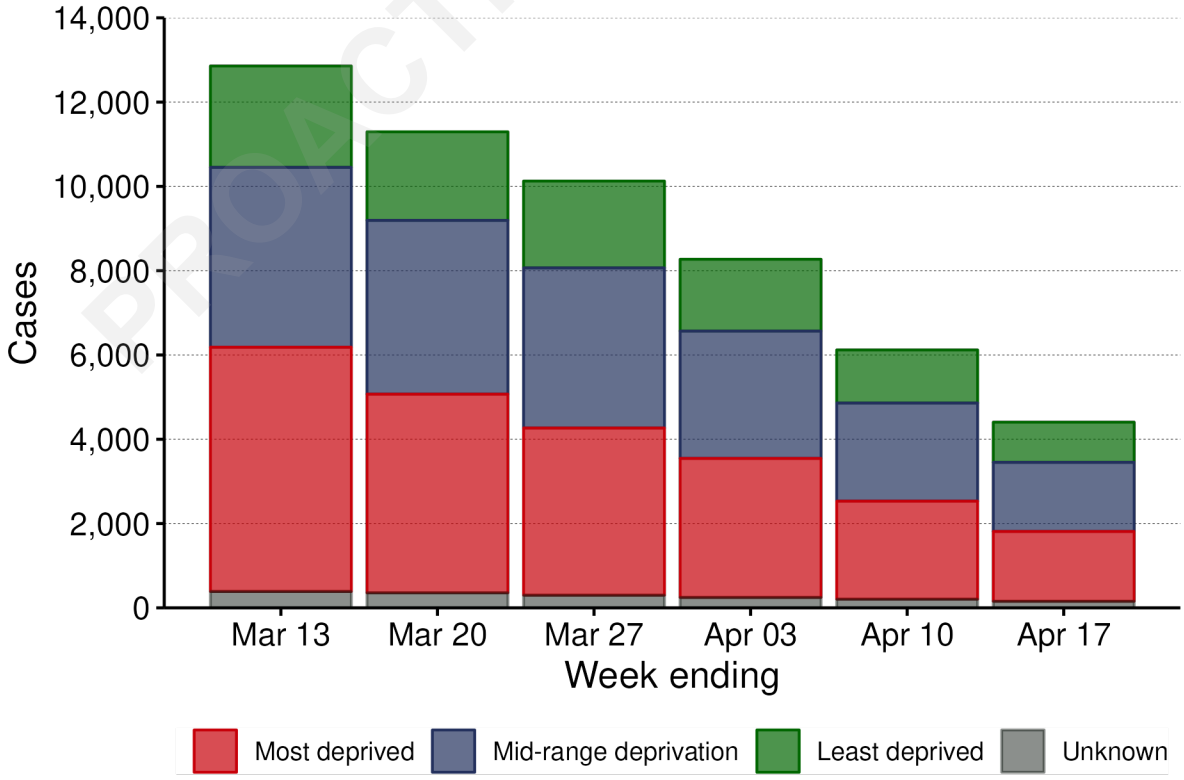
Counties Manukau DHB



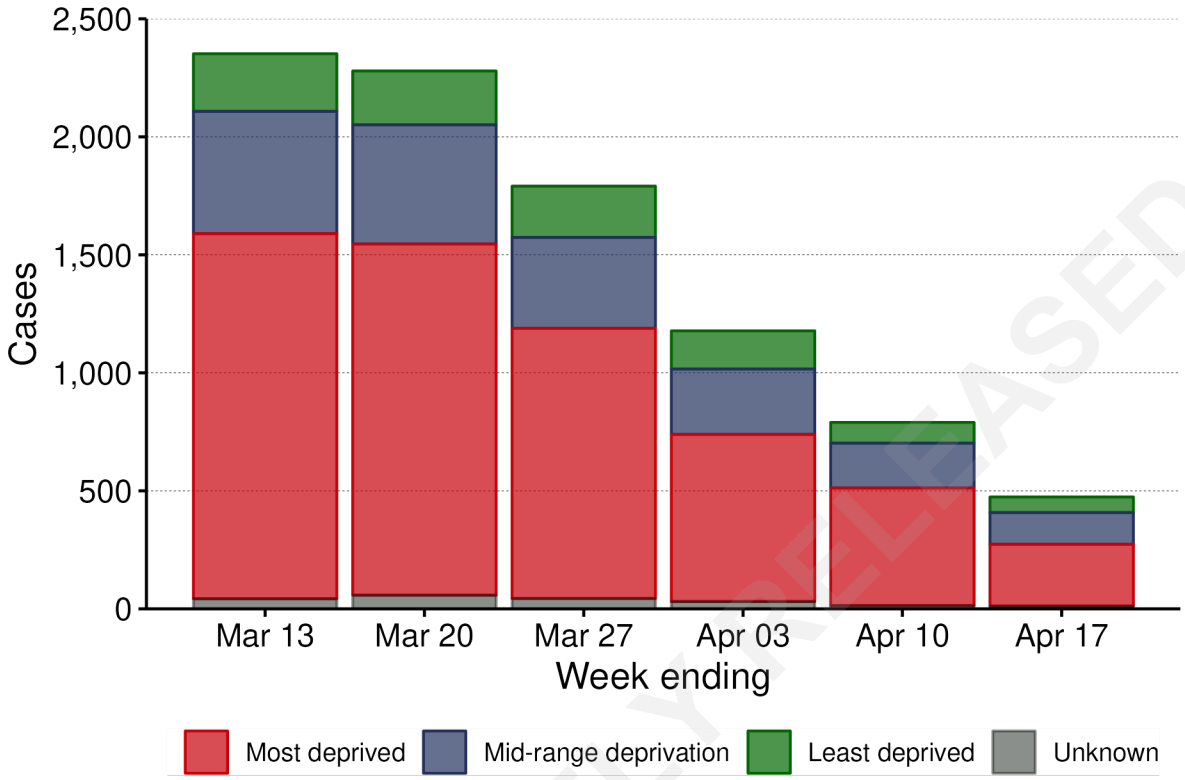
Bay of Plenty DHB



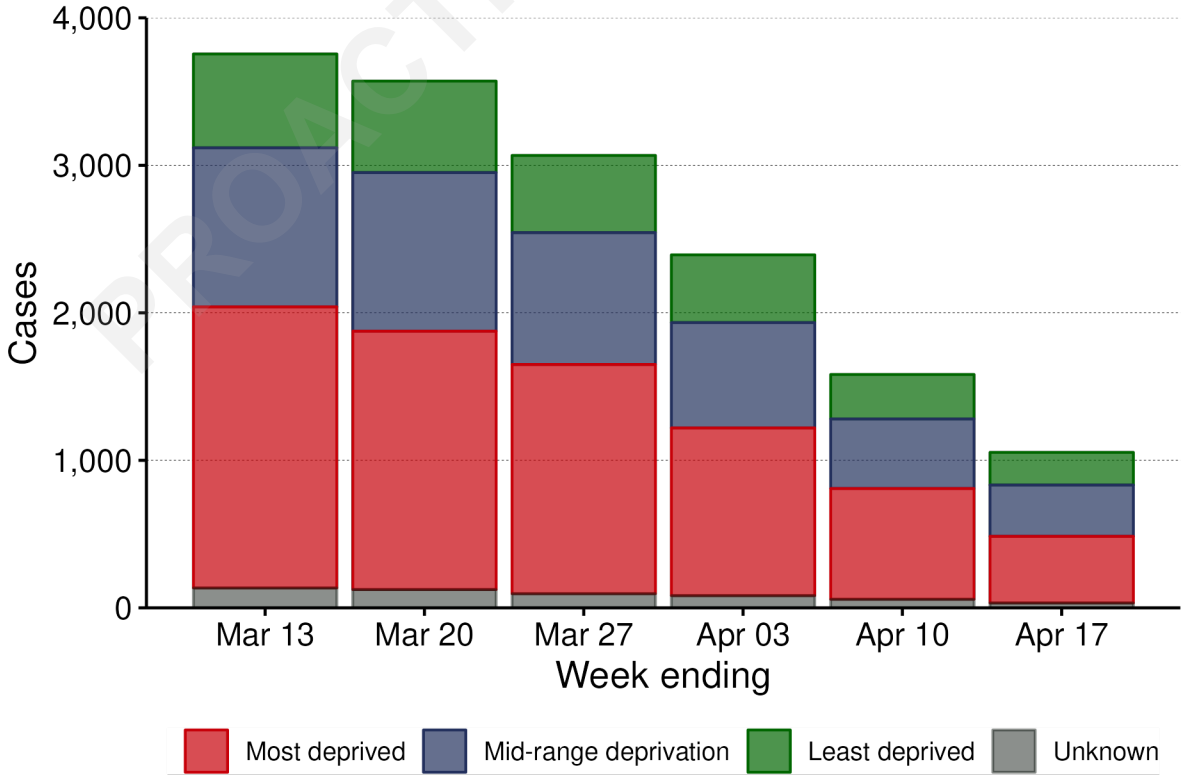
Waikato DHB



Tarawhiti DHB



Lakes DHB



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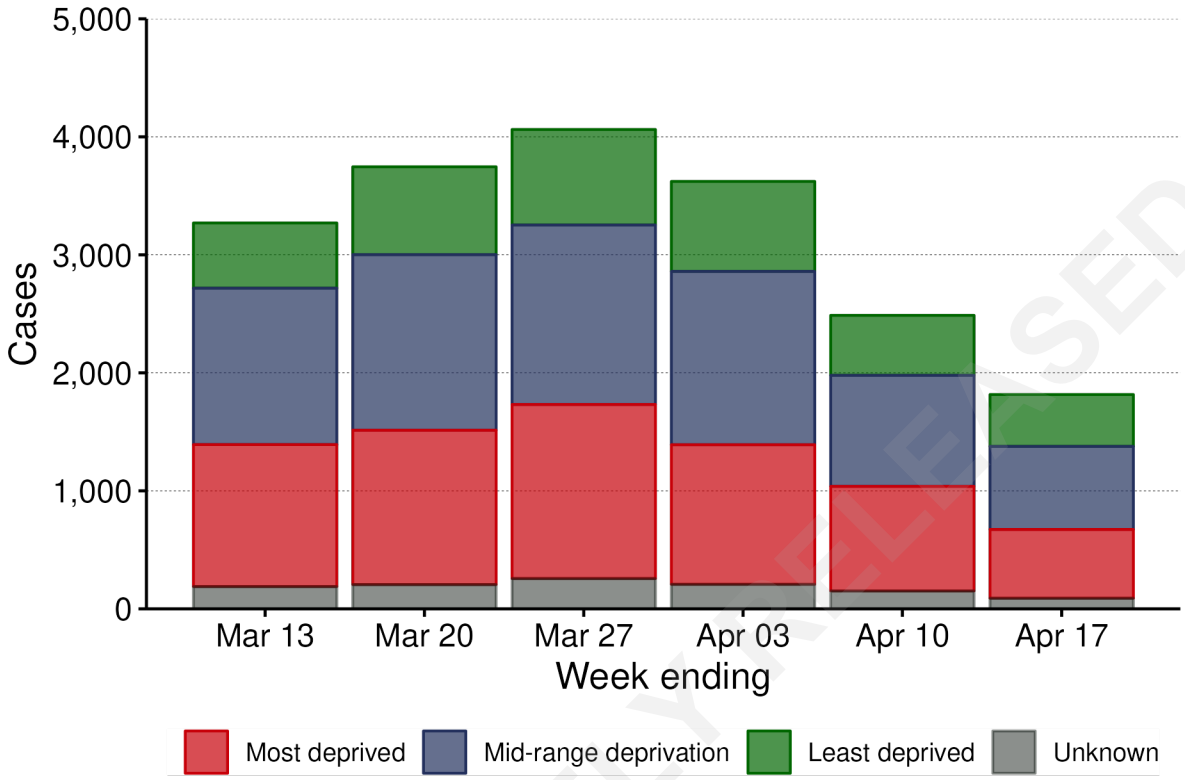
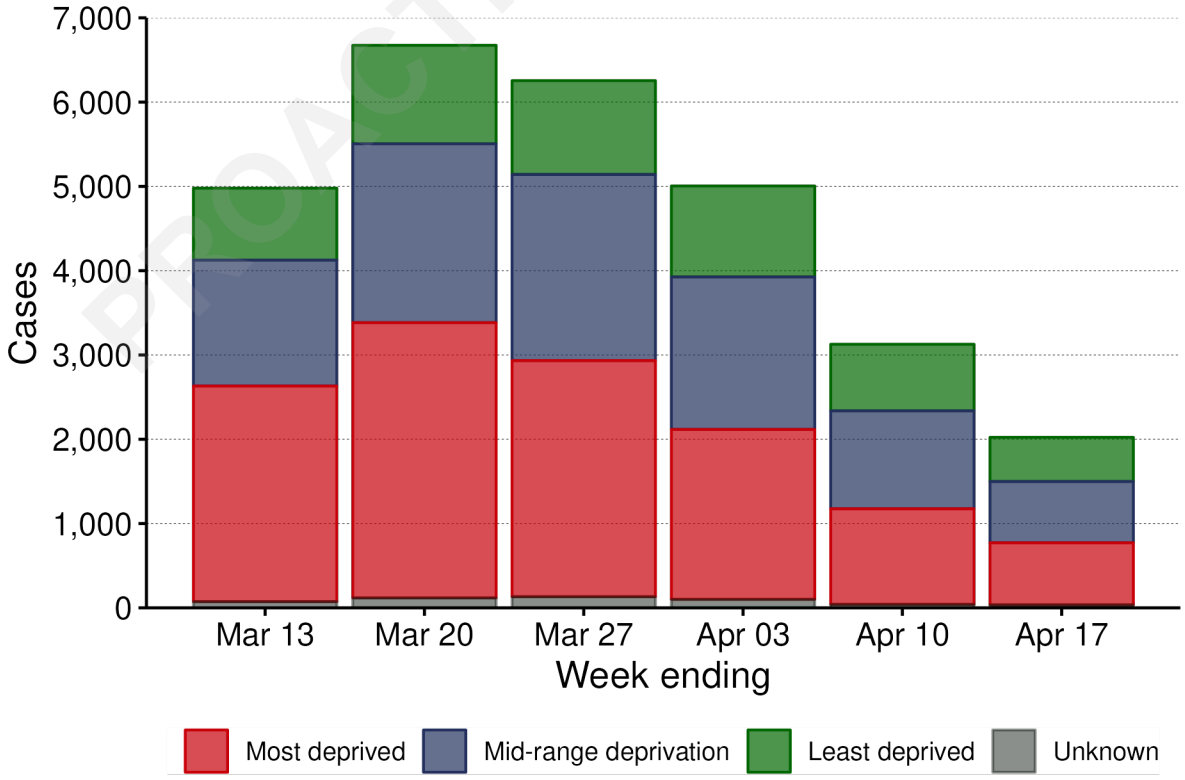
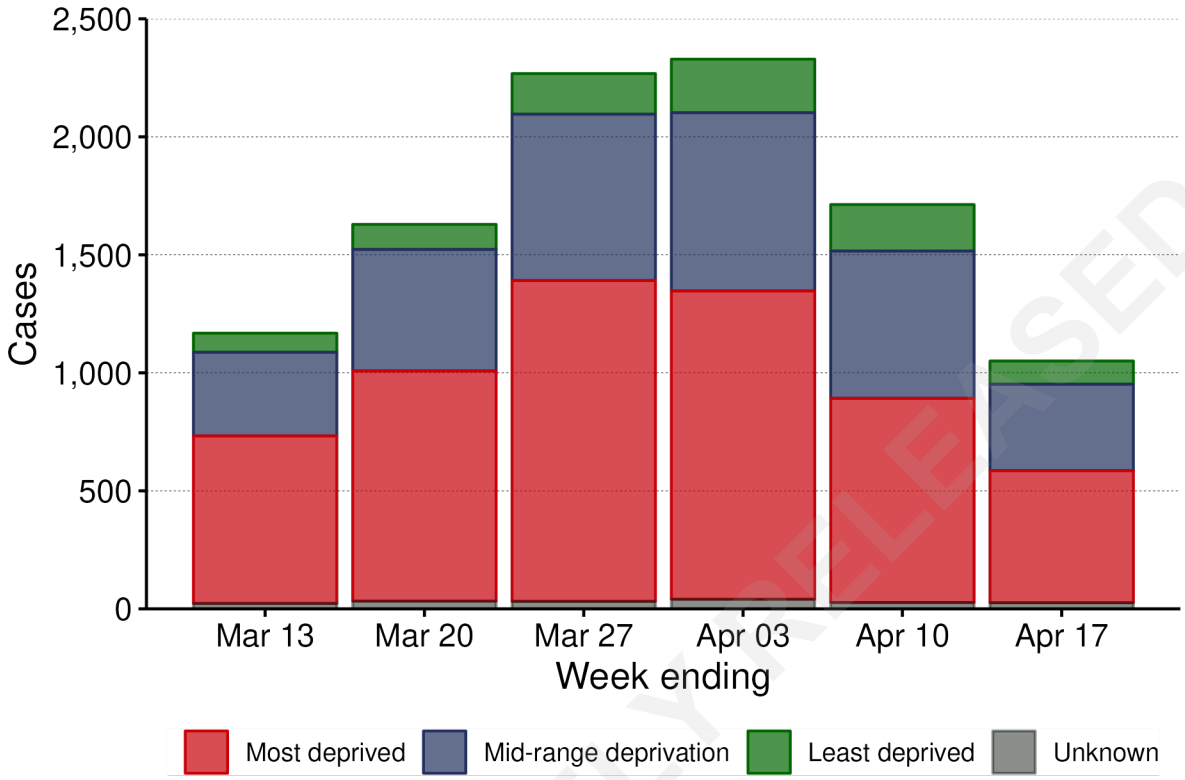


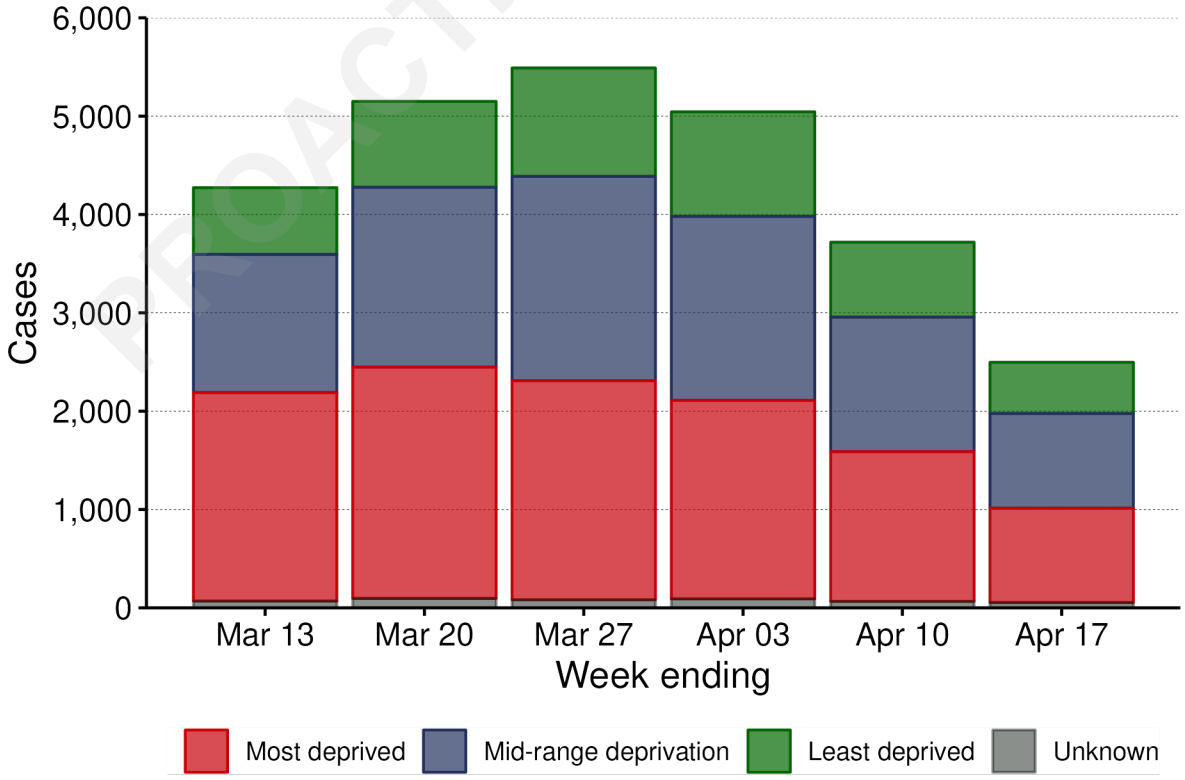
Hawke's Bay DHB



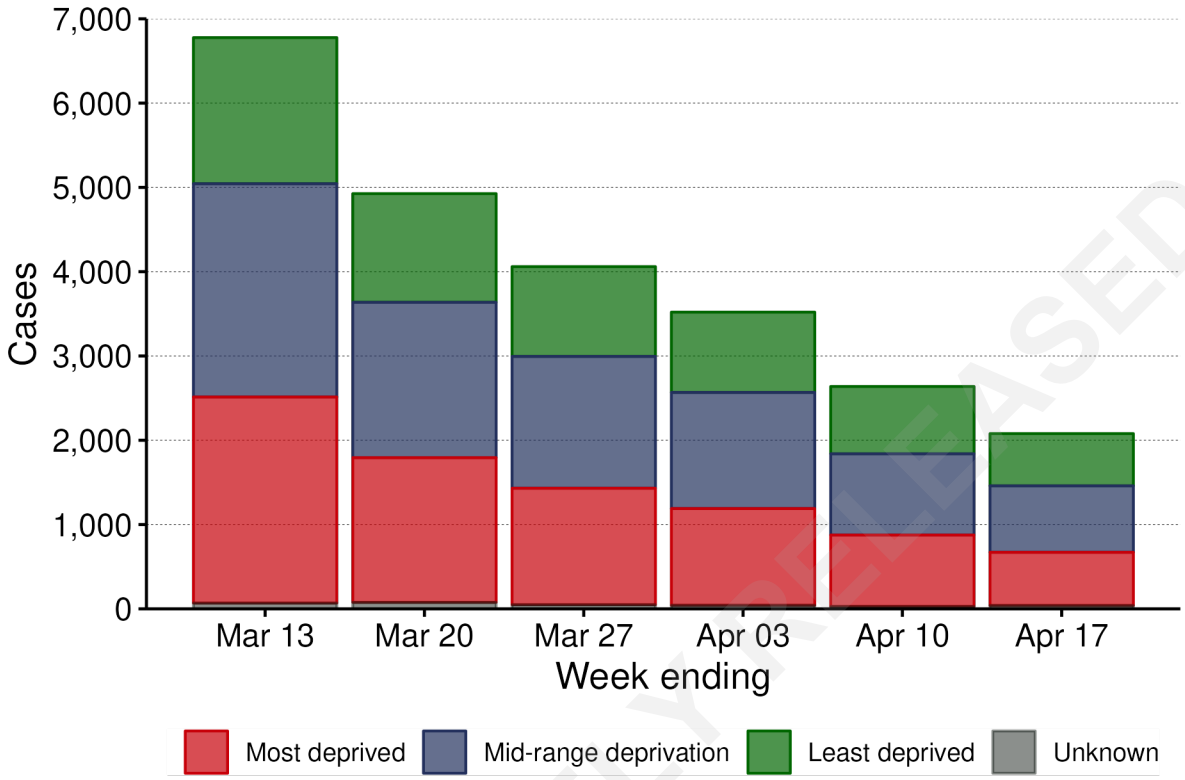
Whanganui DHB



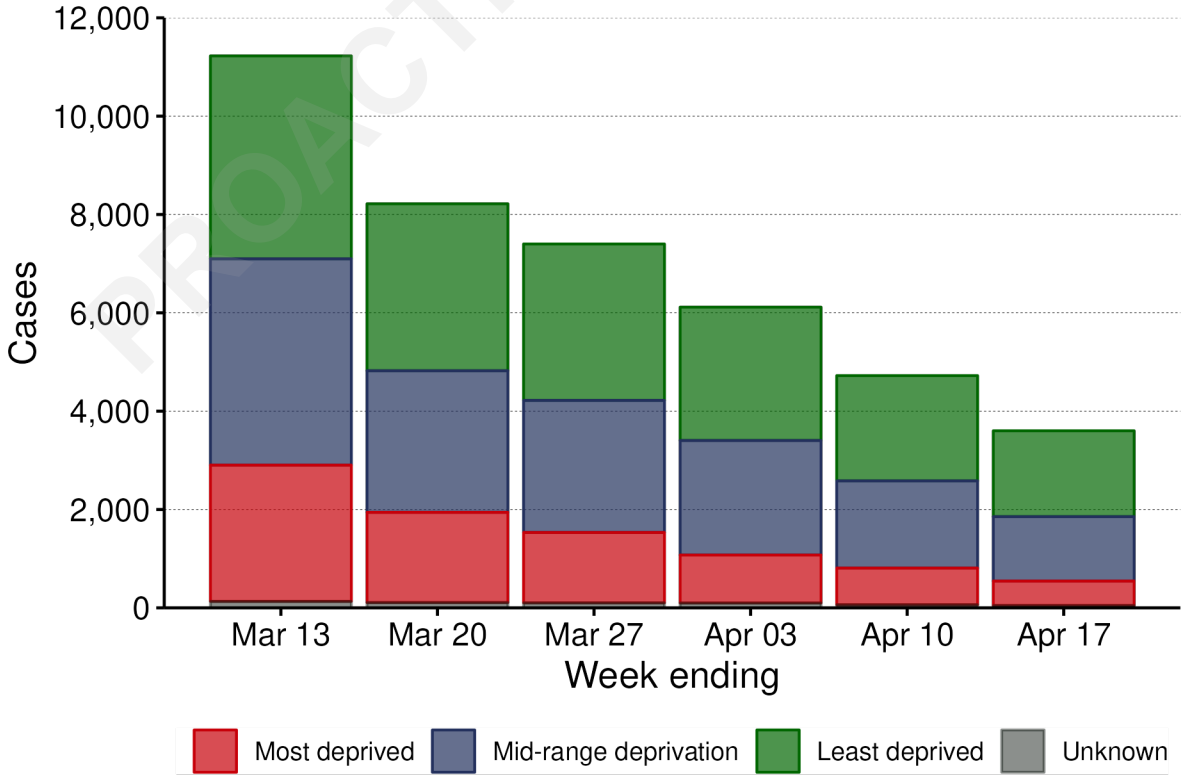
MidCentral DHB



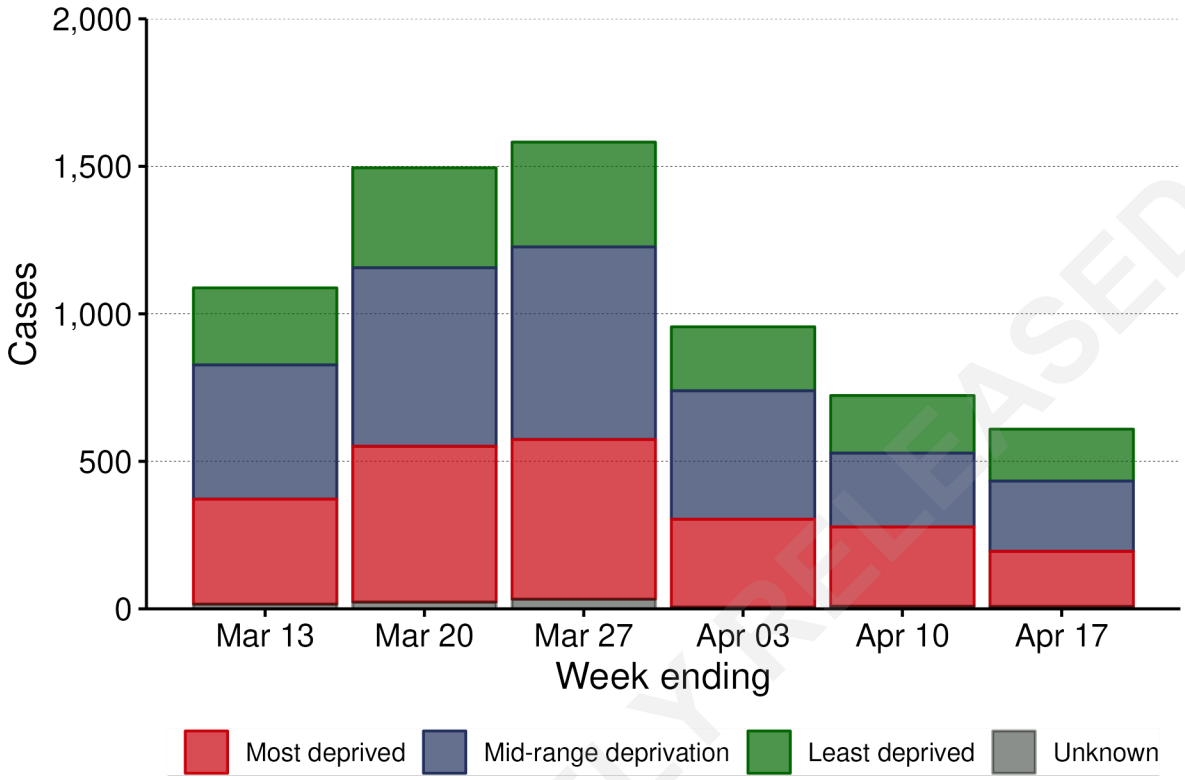
Hutt Valley DHB



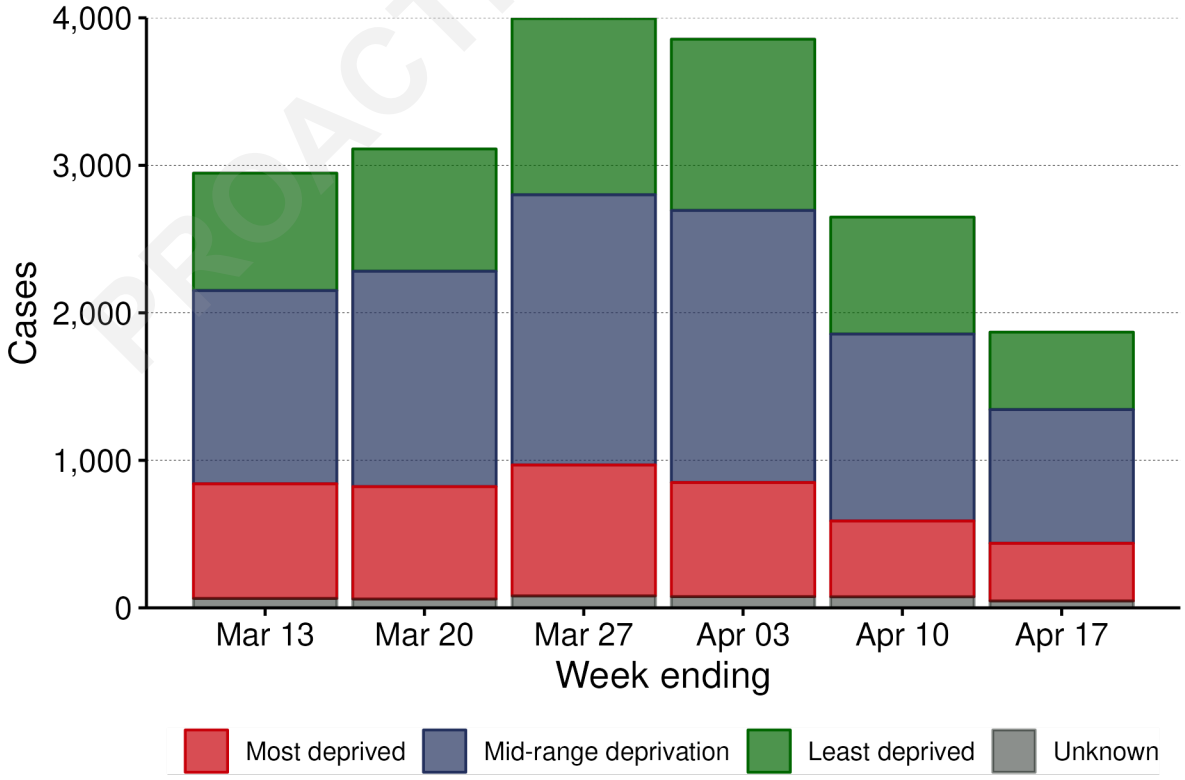
Capital and Coast DHB



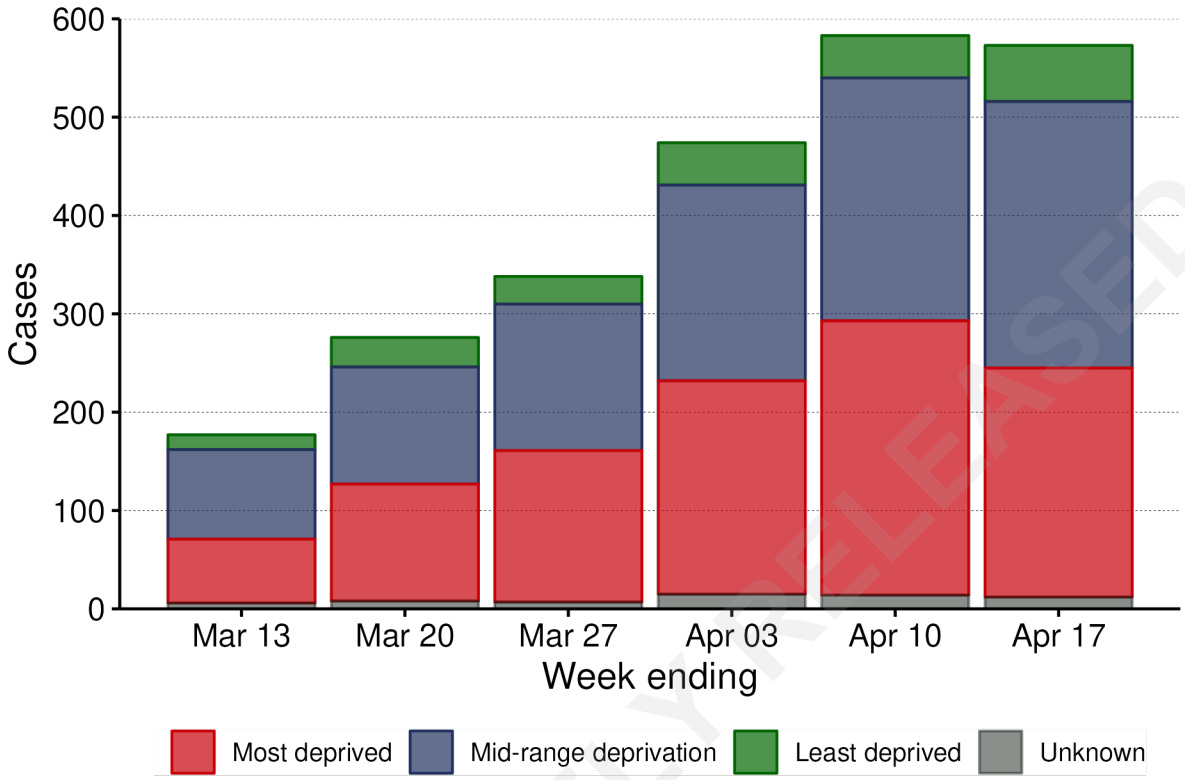
Wairarapa DHB



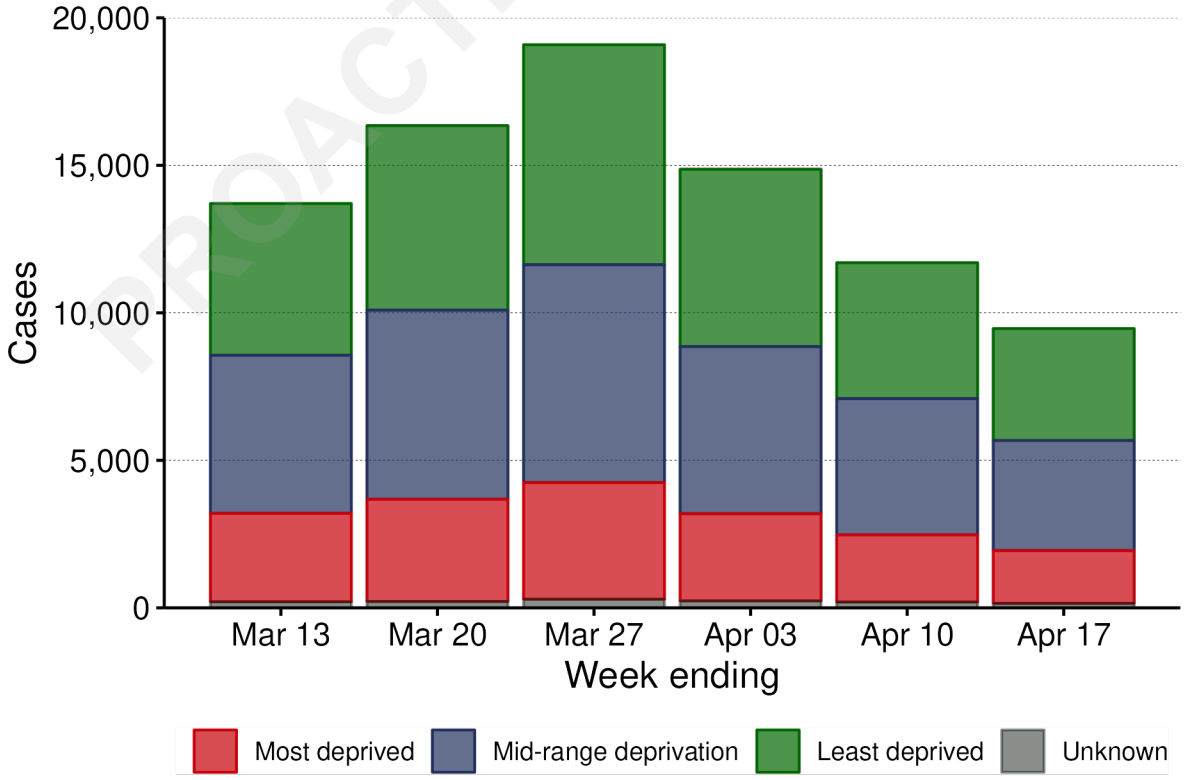
Nelson Marlborough DHB



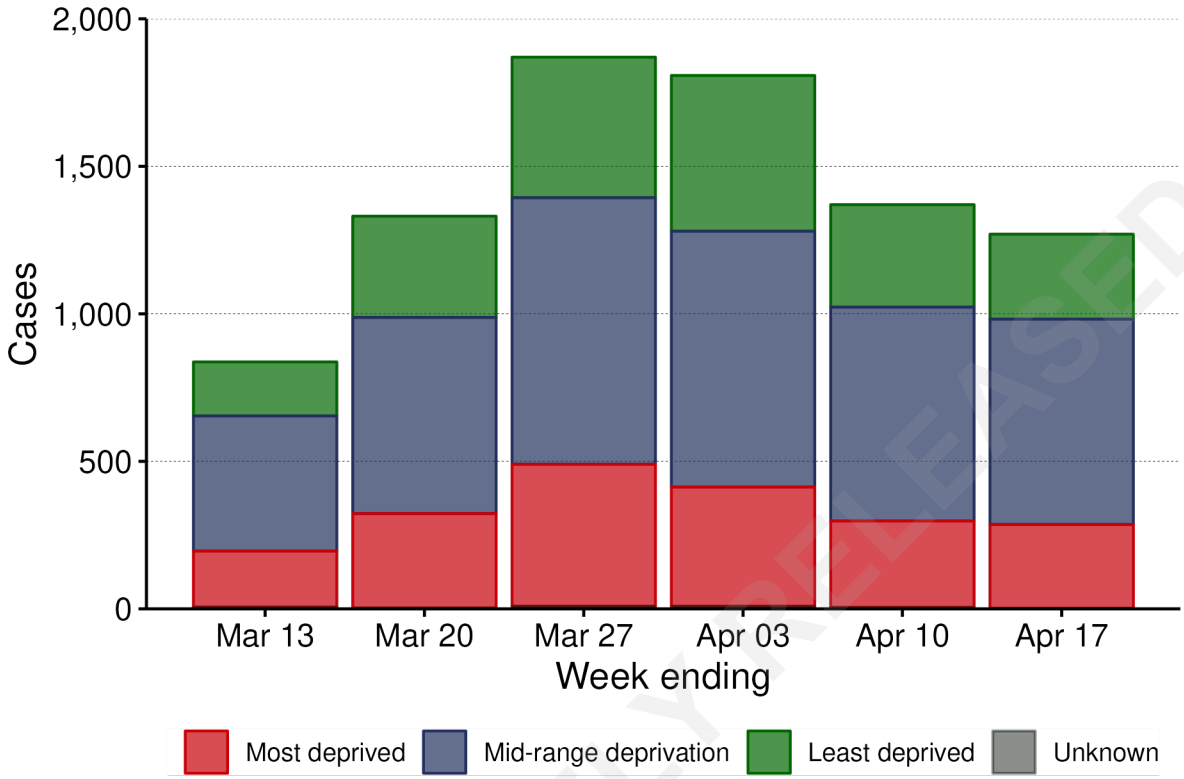
West Coast DHB



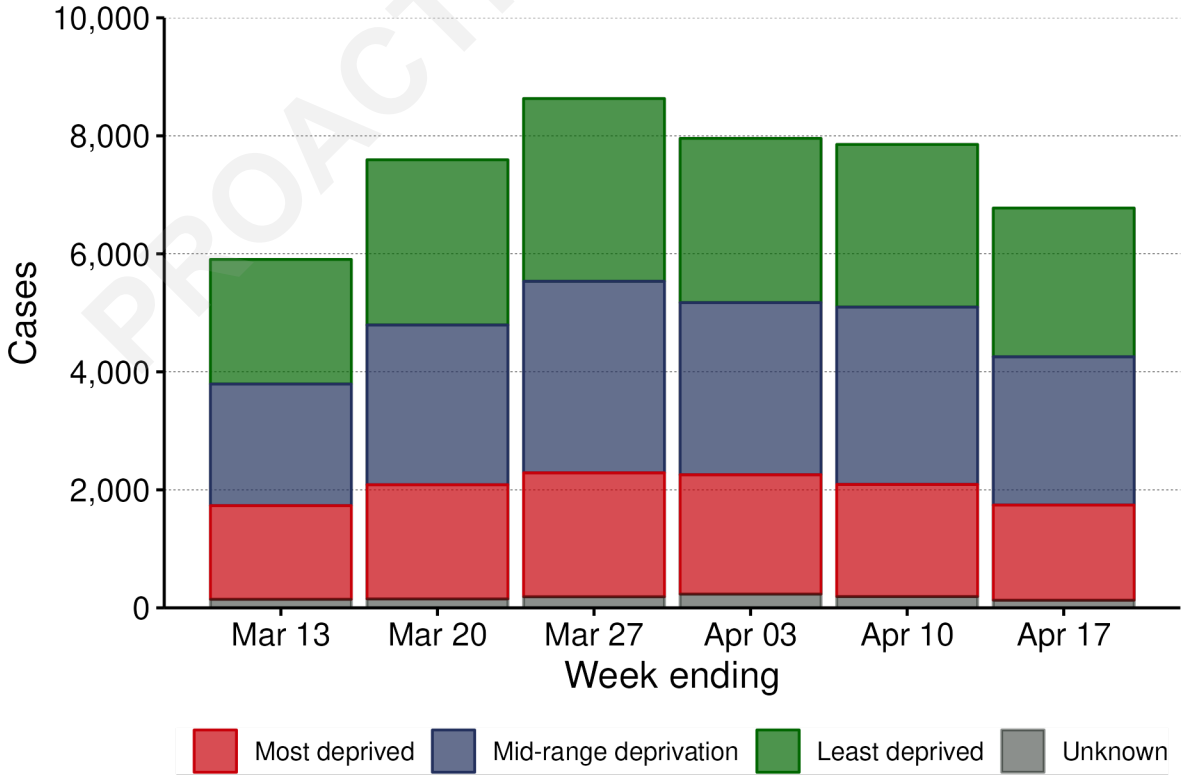
Canterbury DHB



South Canterbury DHB



Southern DHB



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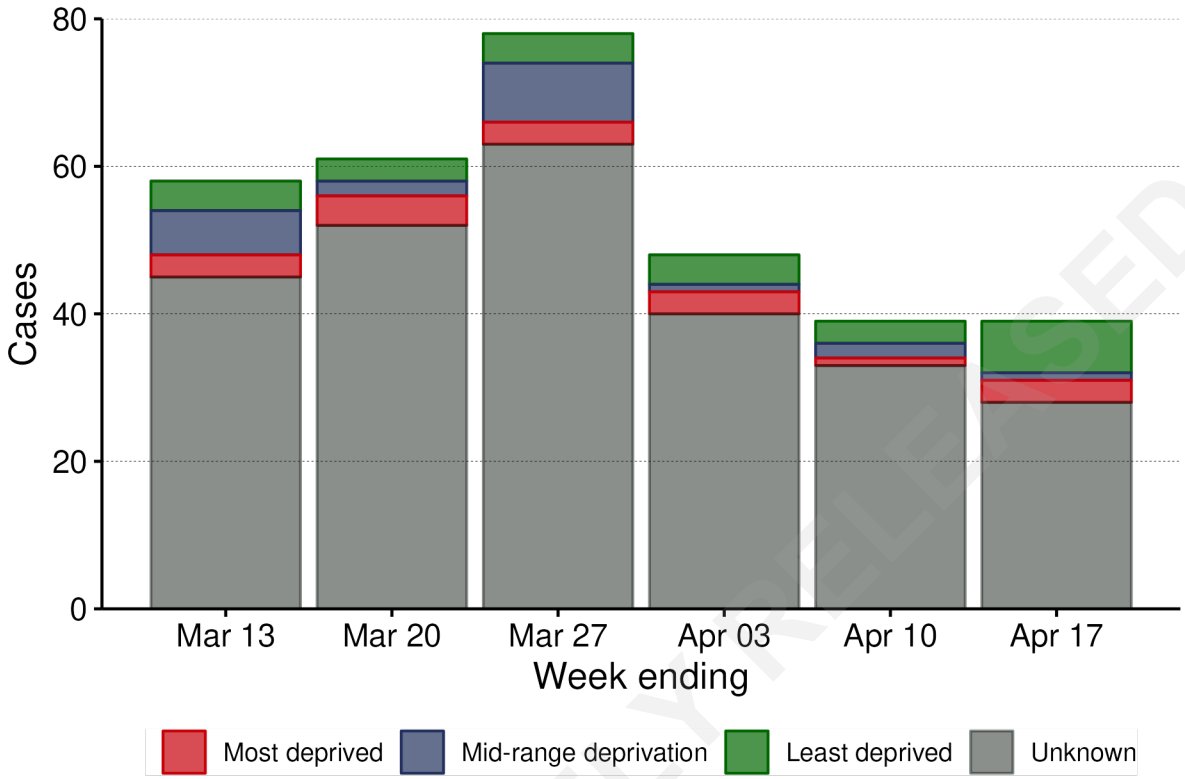
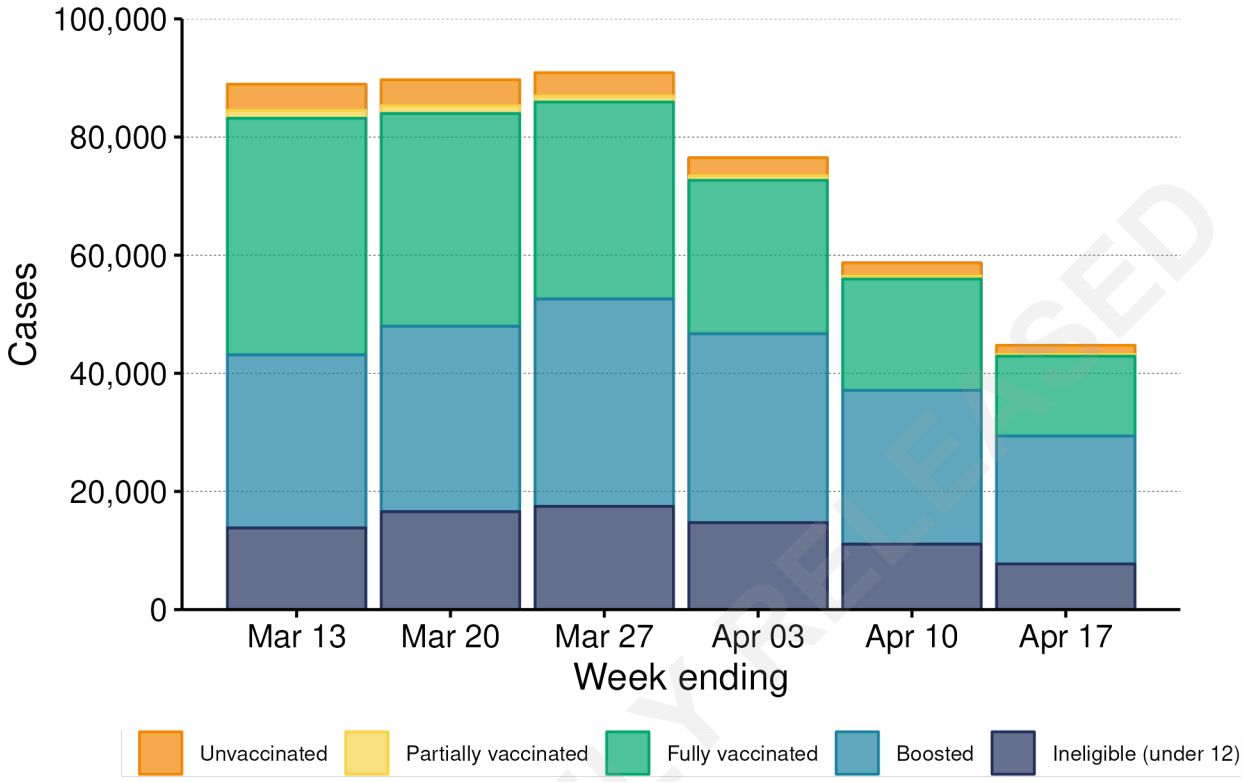
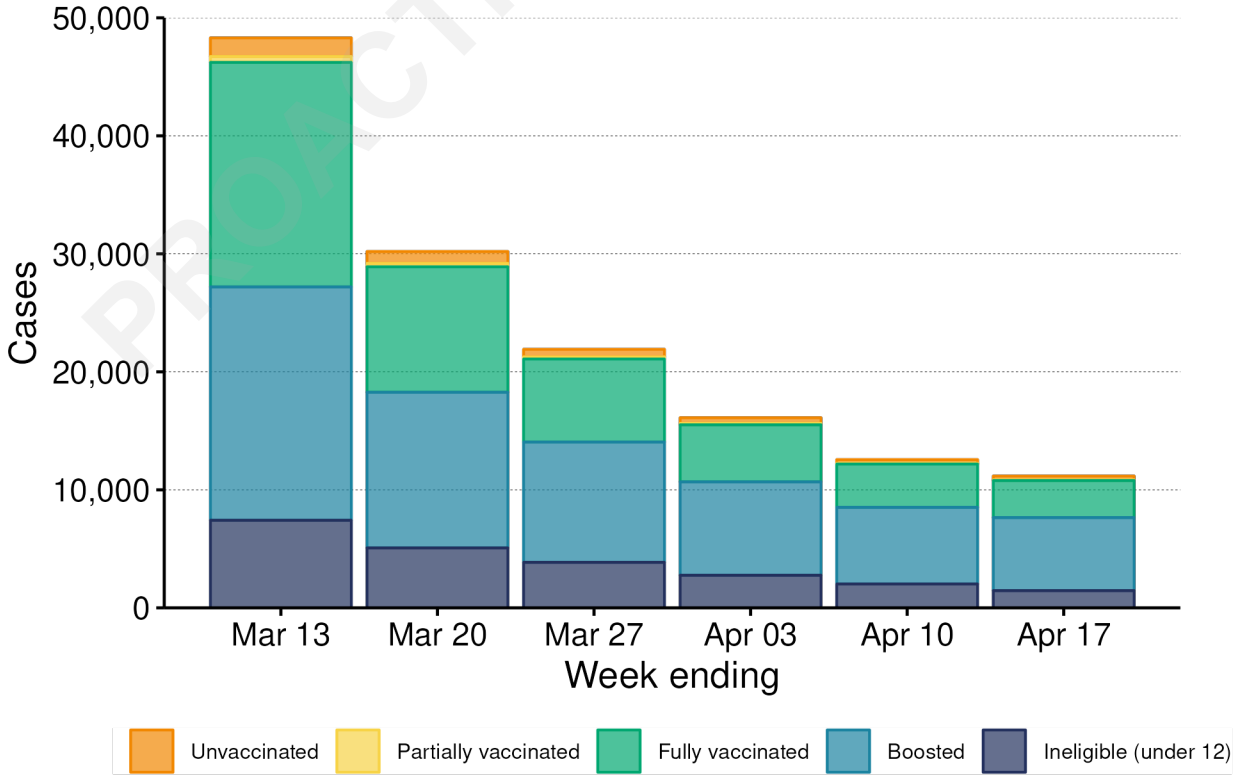


Vaccination Graphs

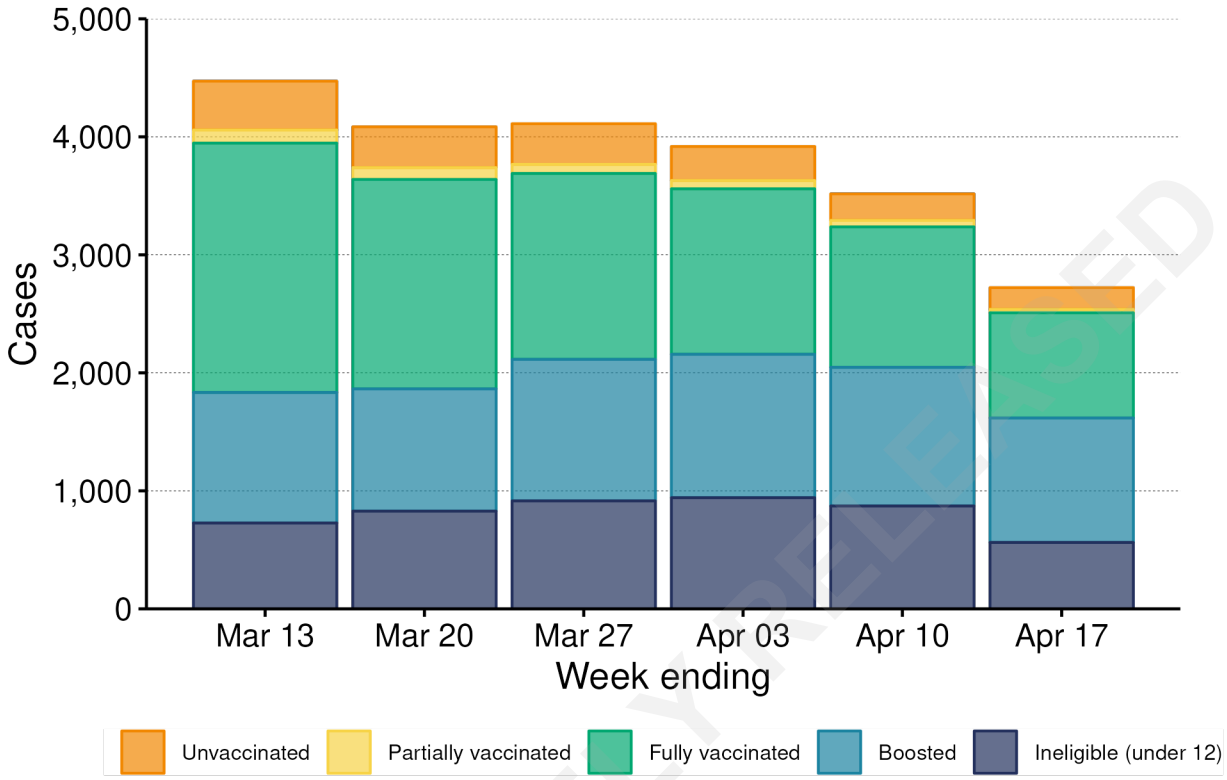
NZ Excluding Auckland Region



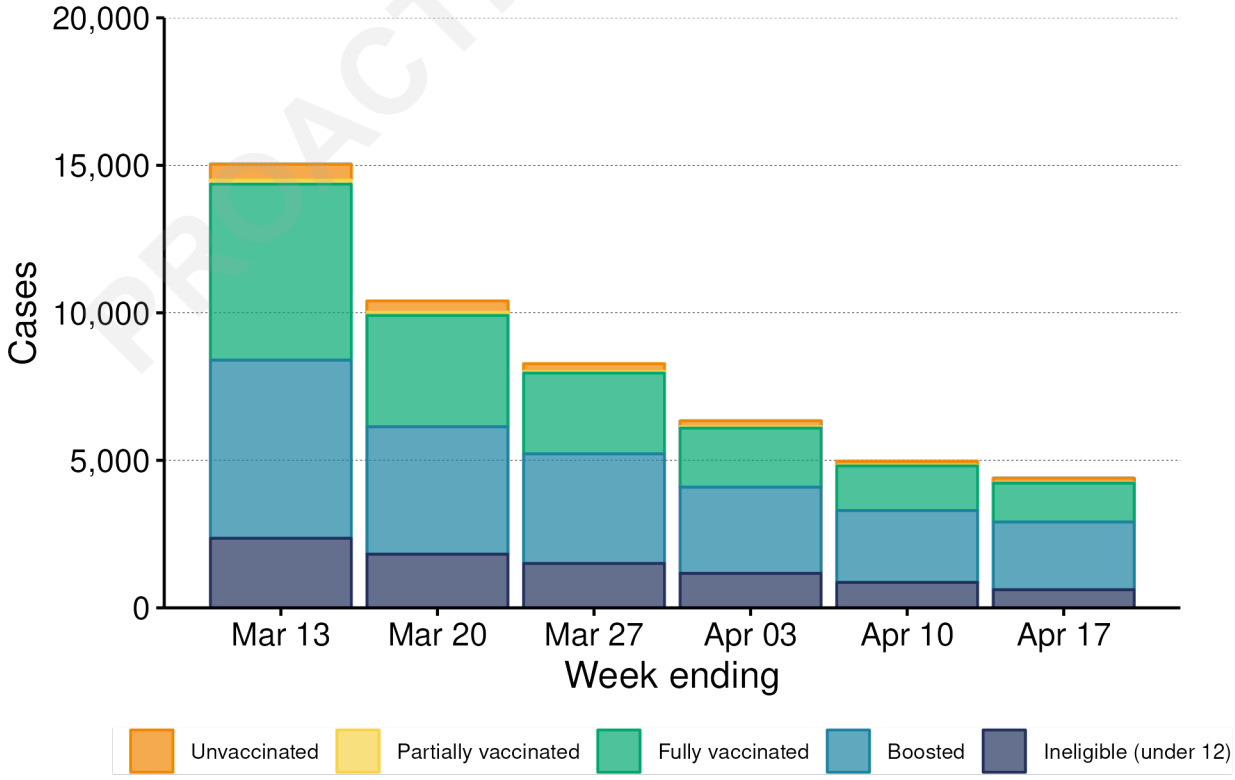
Auckland Region



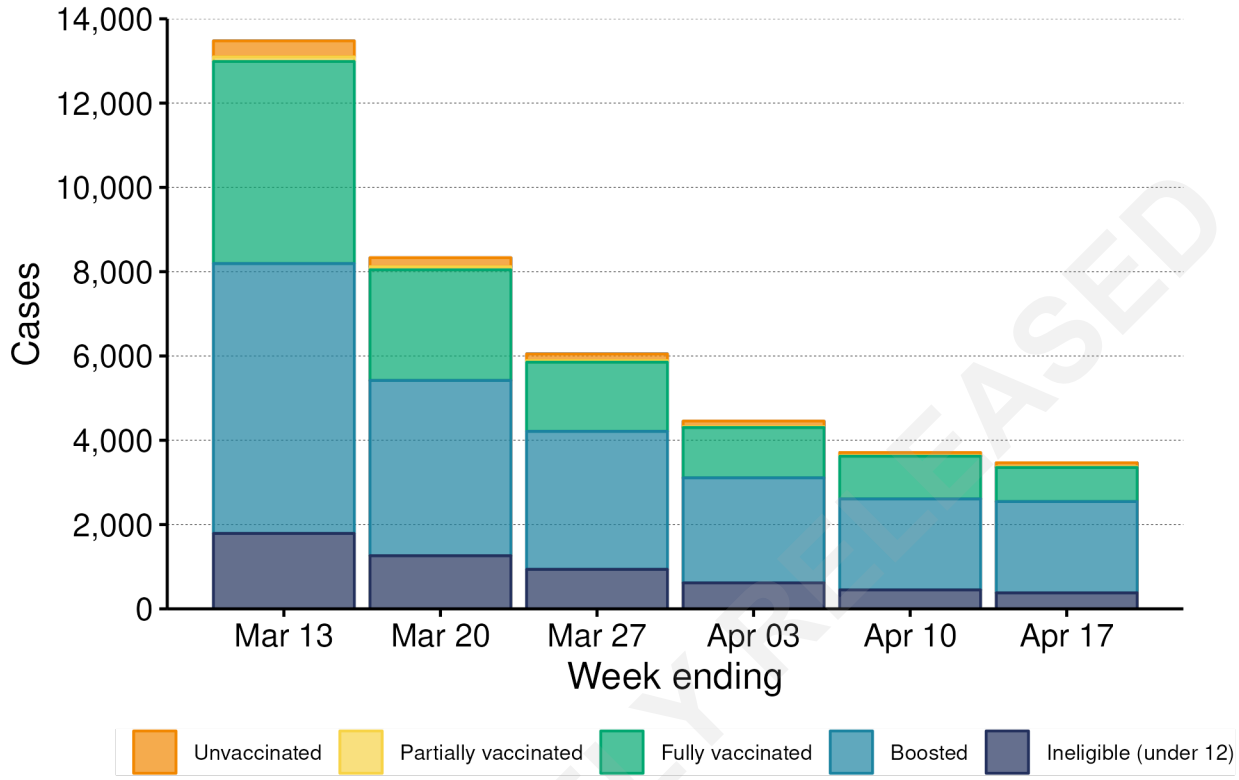
Northland DHB



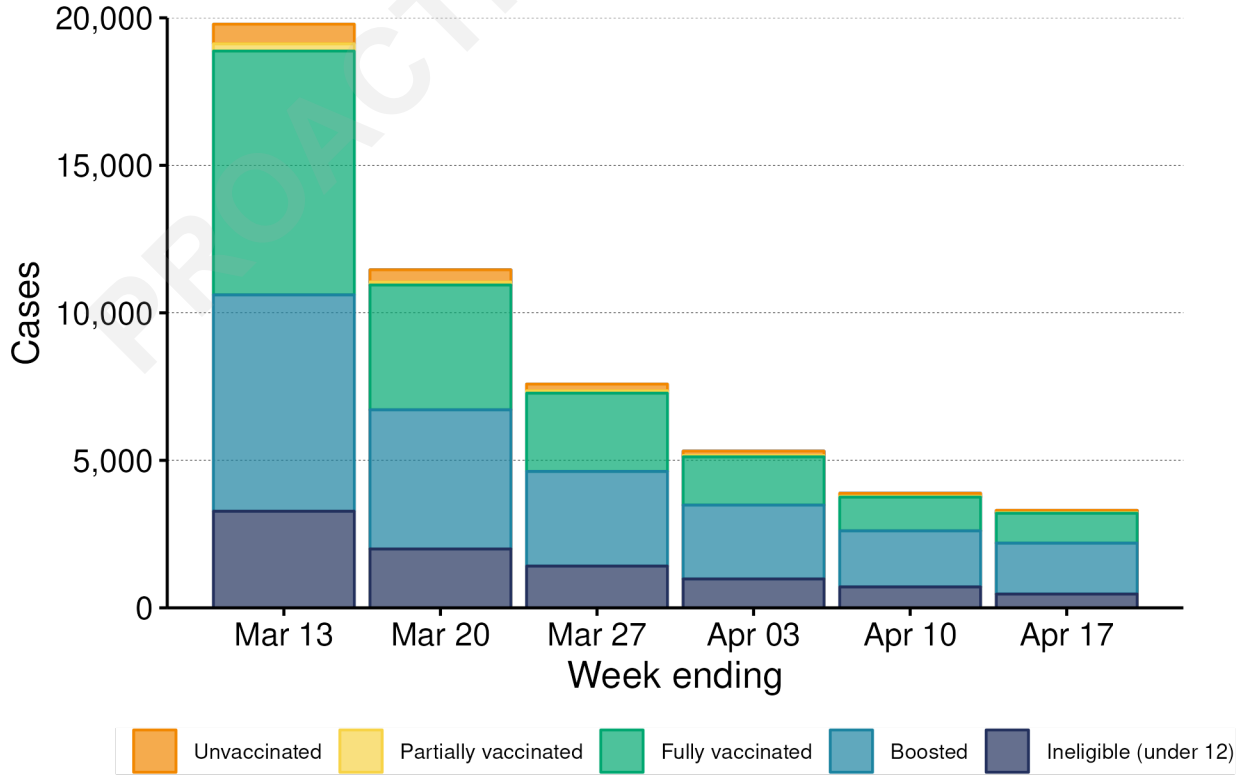
Waitemata DHB



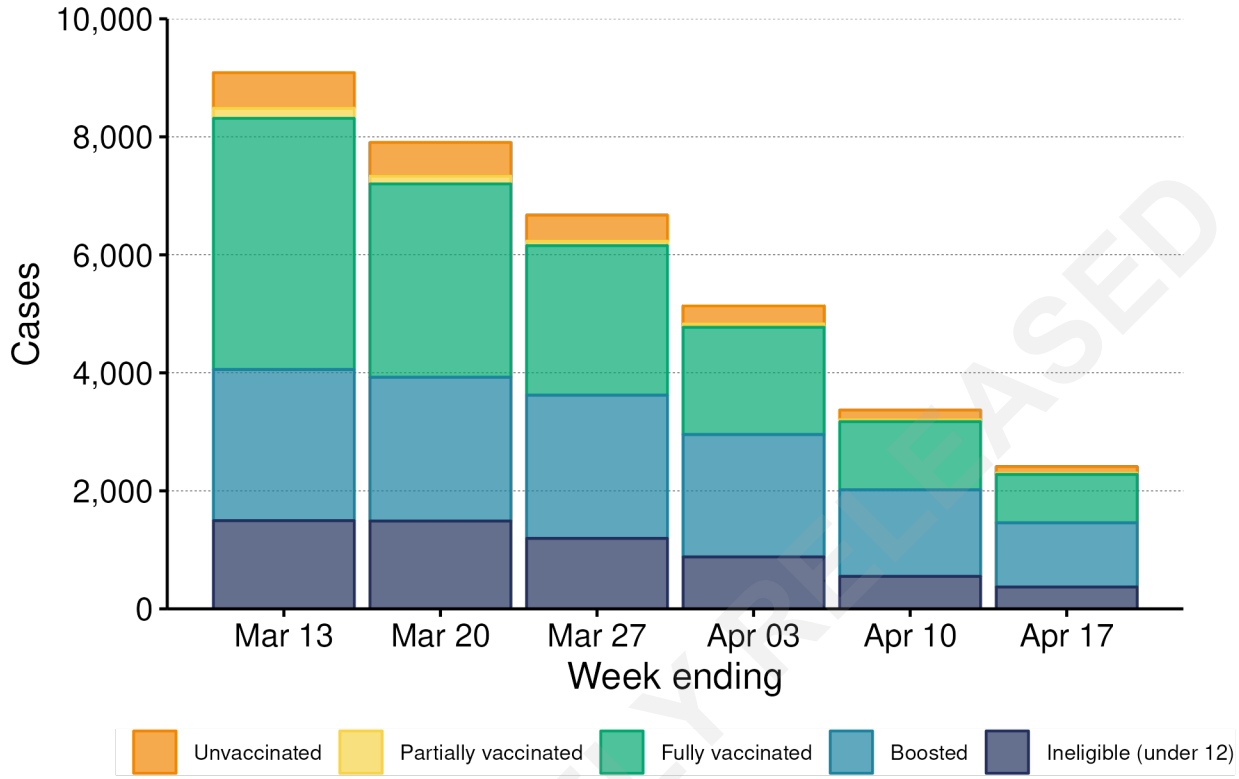
Auckland DHB



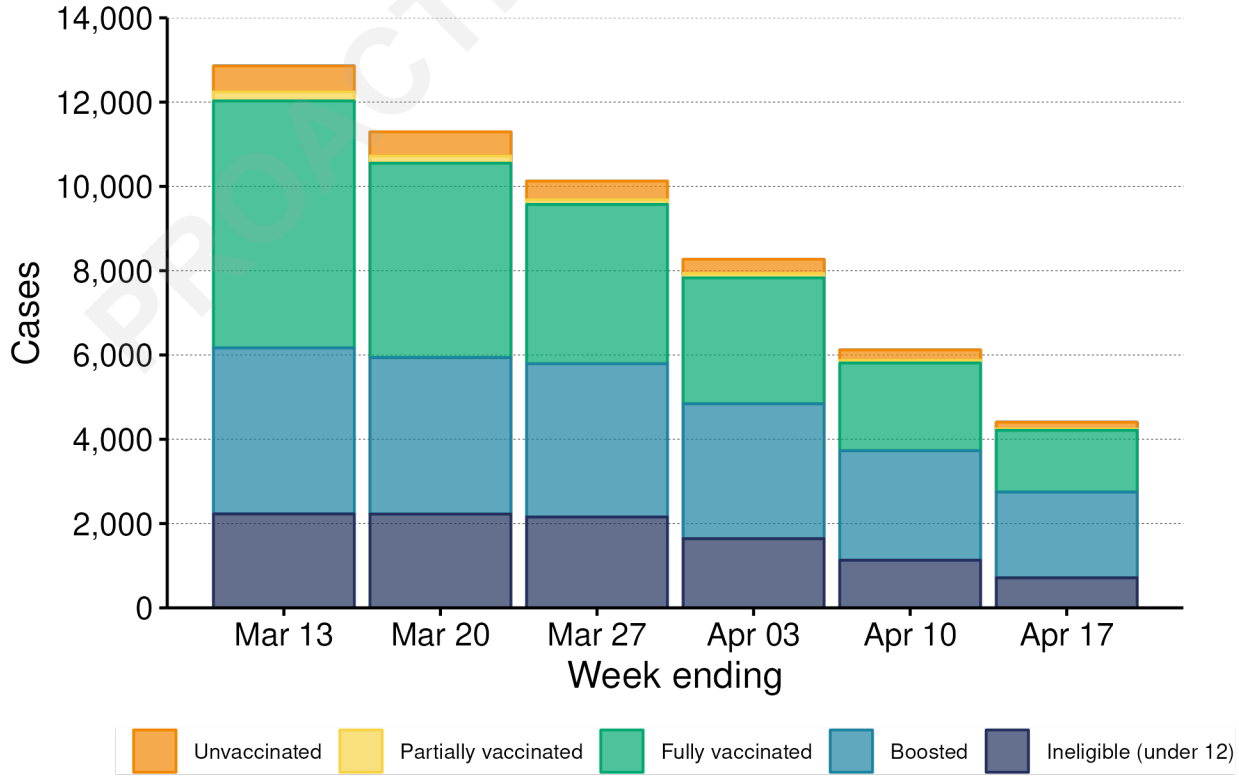
Counties Manukau DHB



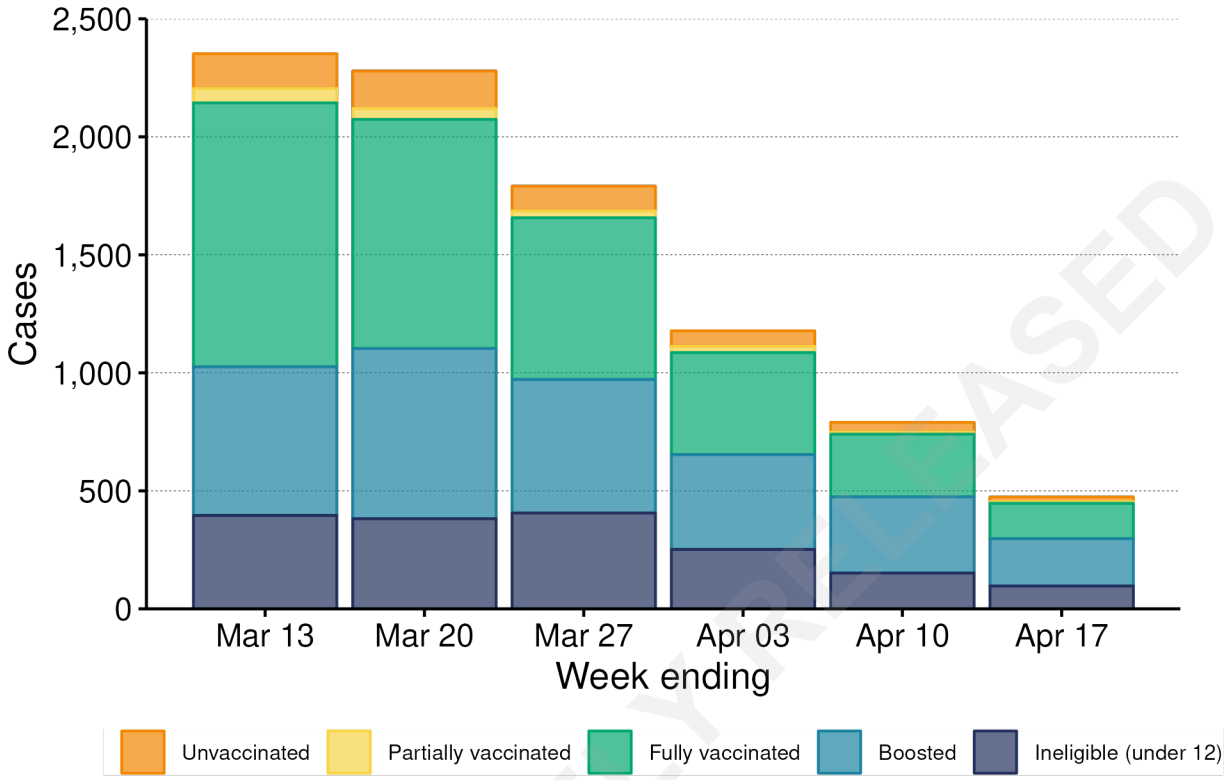
Bay of Plenty DHB



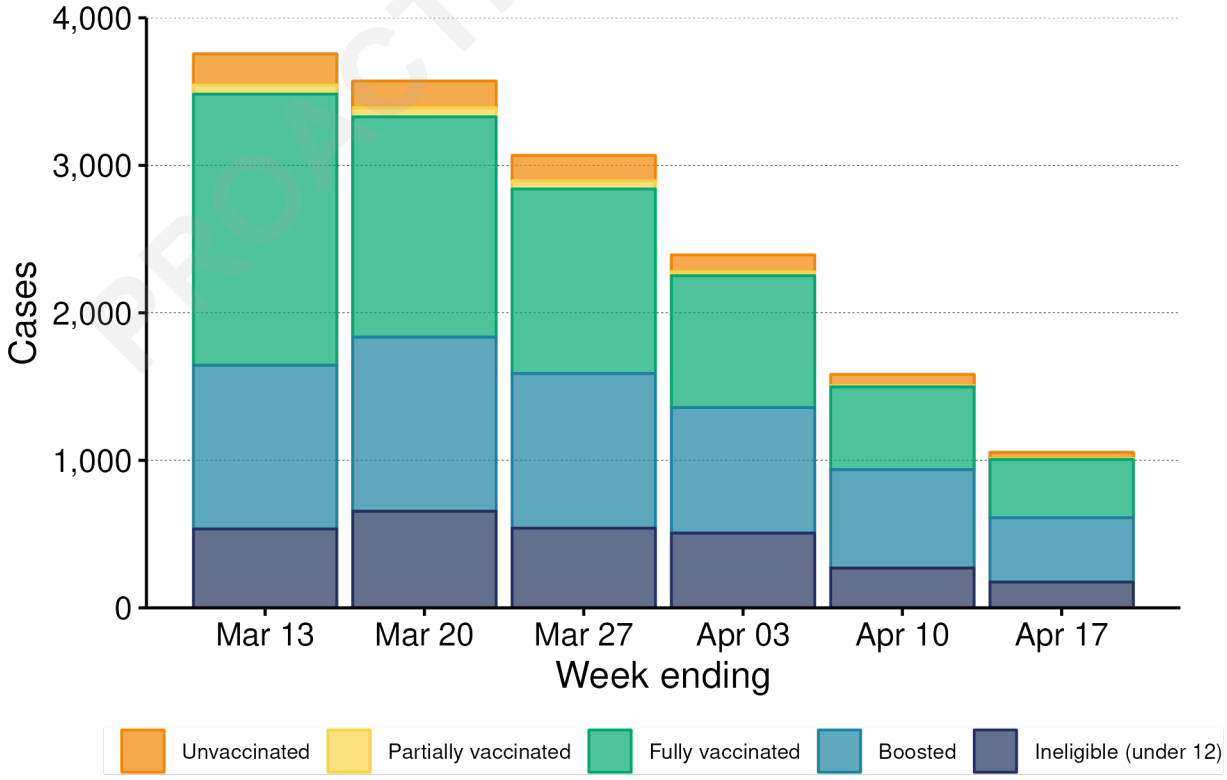
Waikato DHB



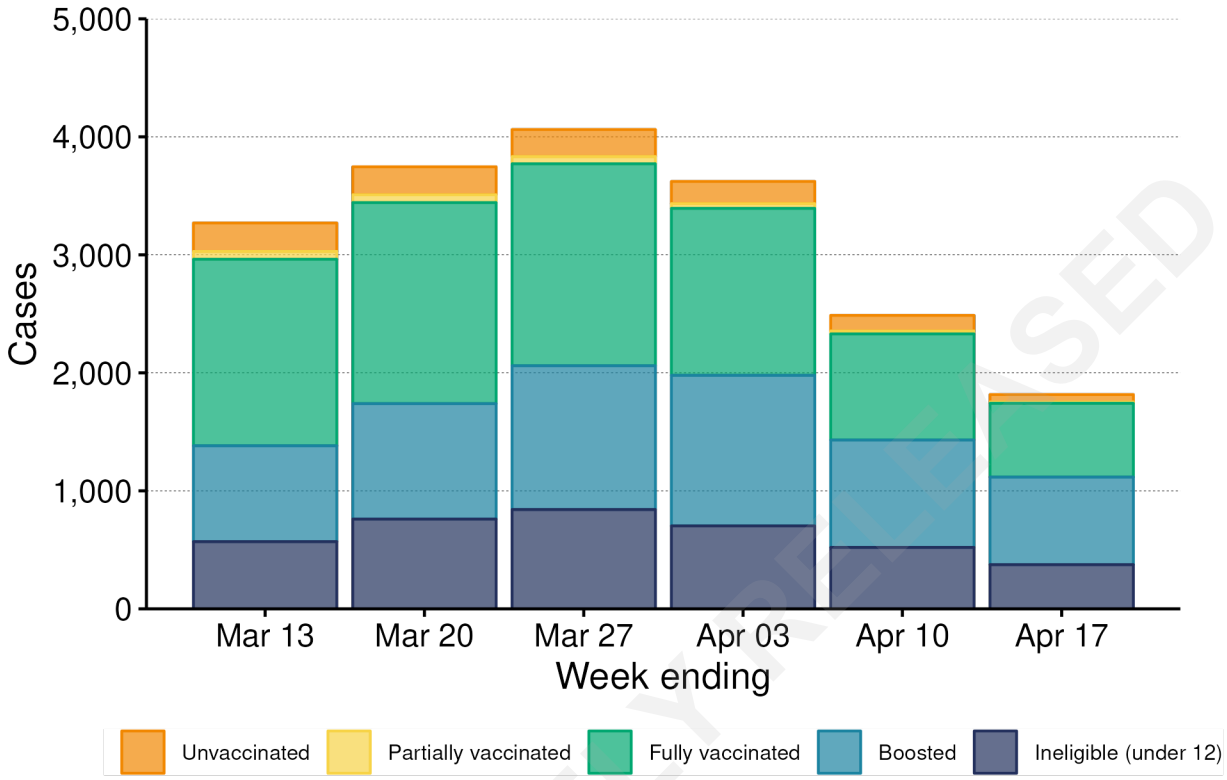
Tairawhiti DHB



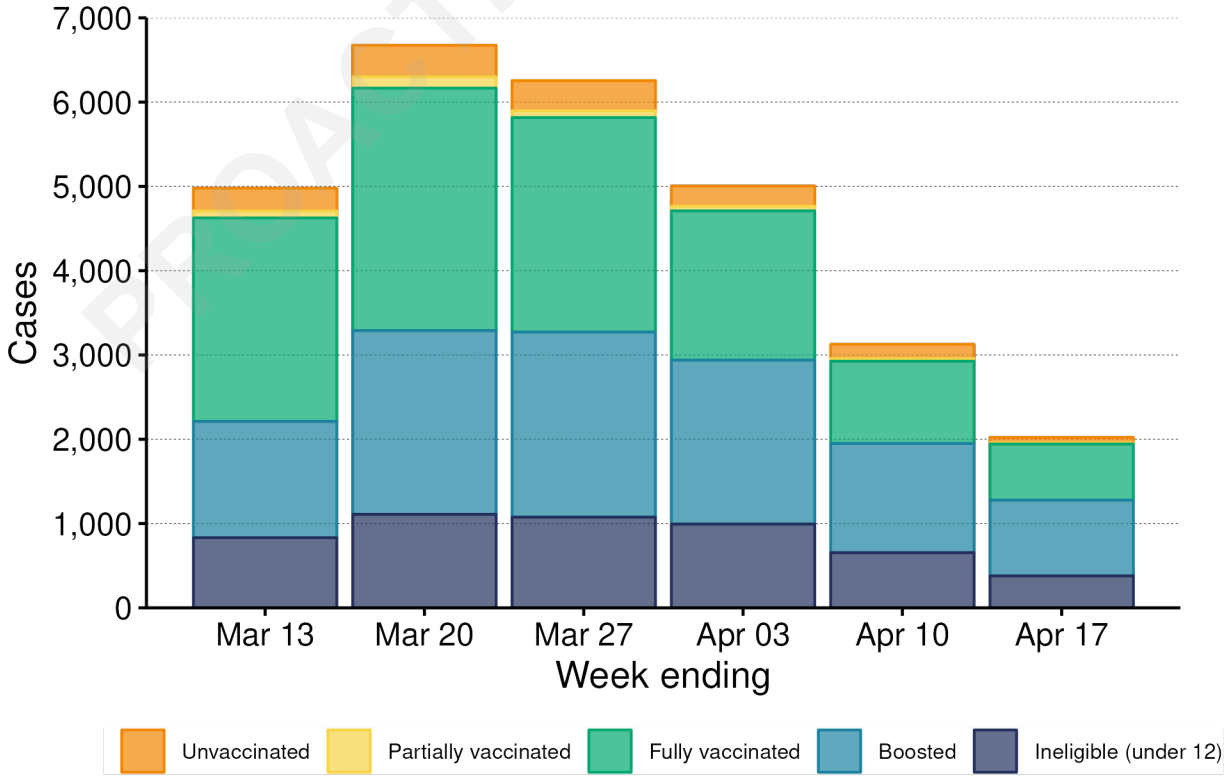
Lakes DHB



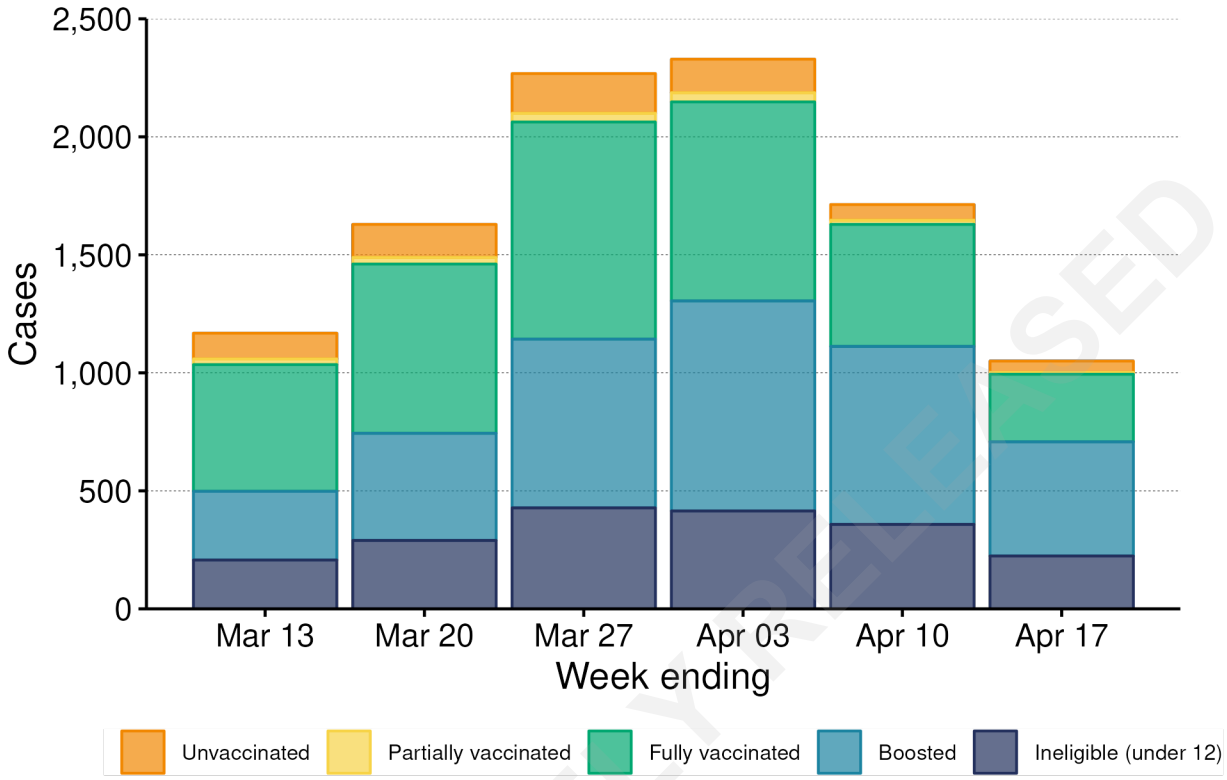
Taranaki DHB



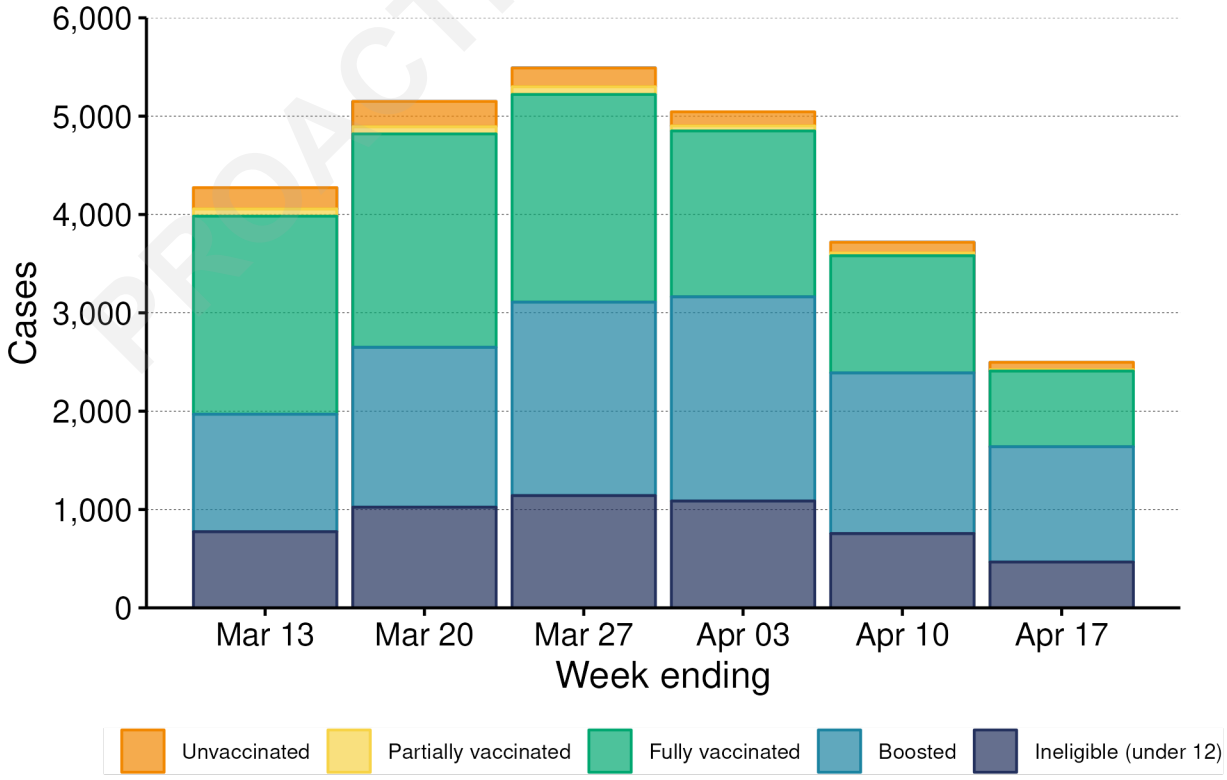
Hawke's Bay DHB



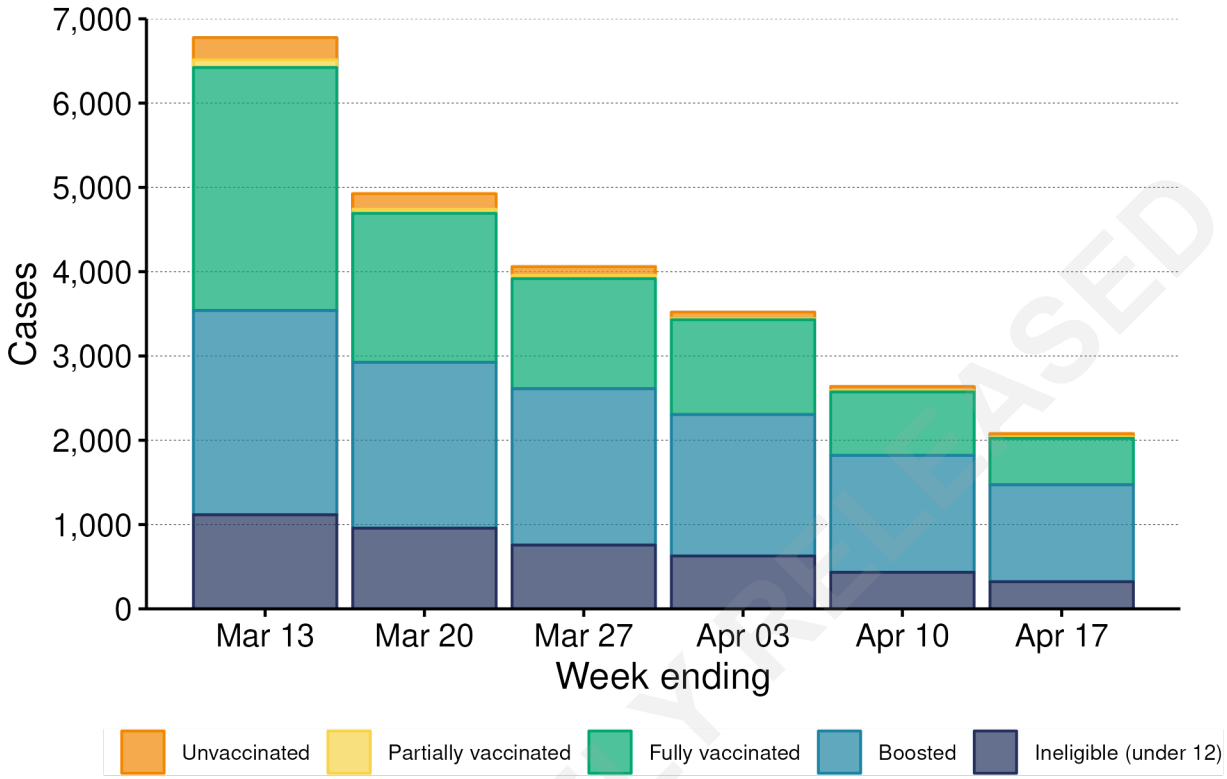
Whanganui DHB



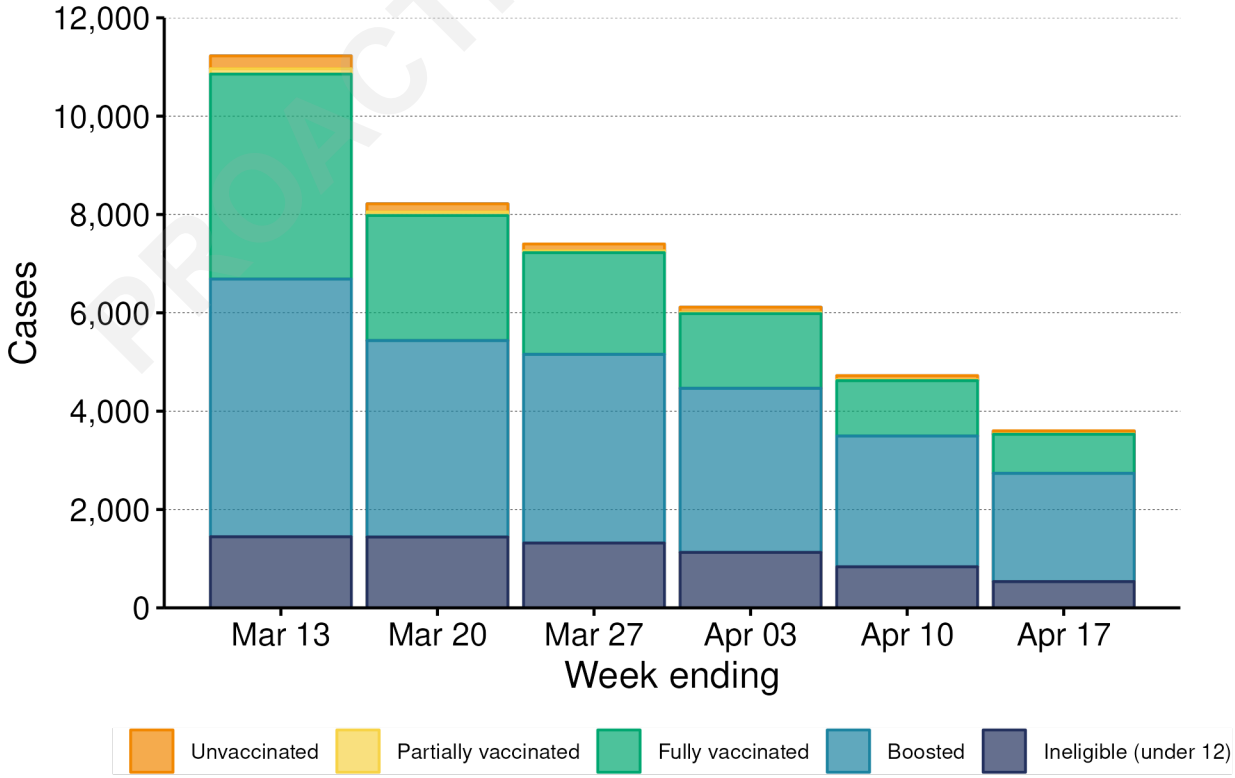
MidCentral DHB



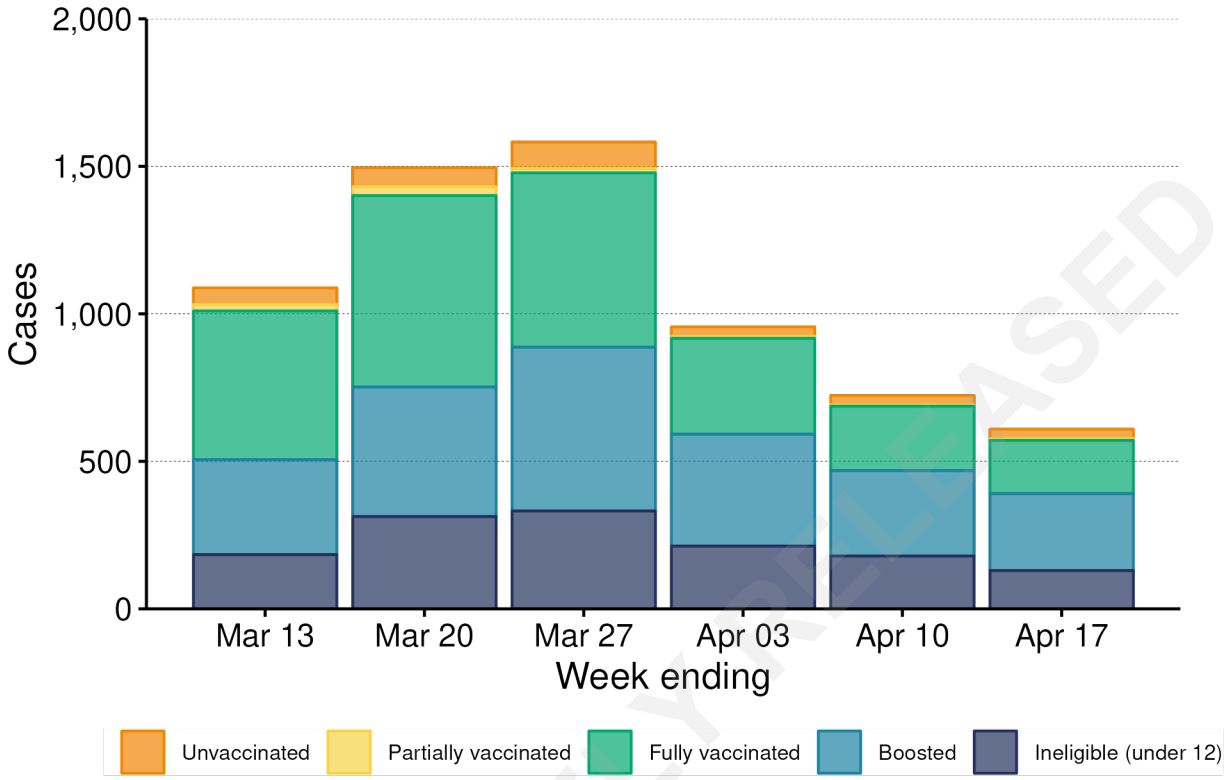
Hutt Valley DHB



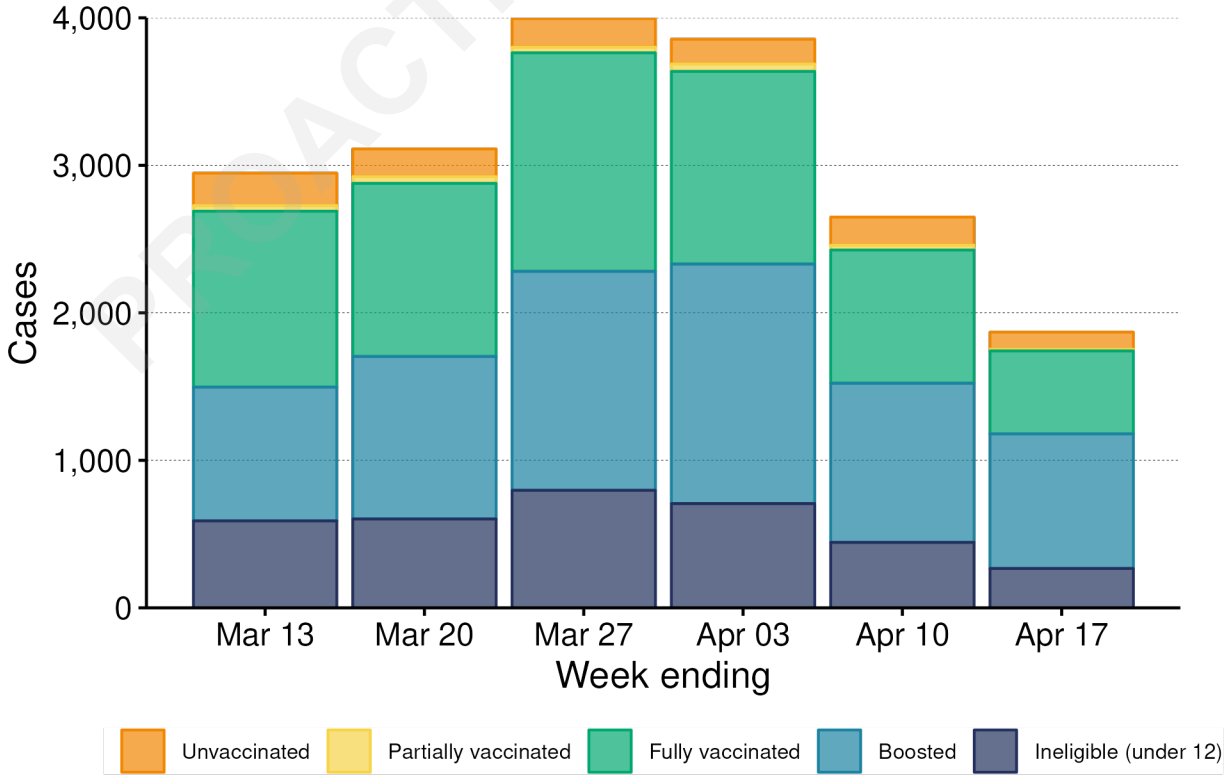
Capital and Coast DHB



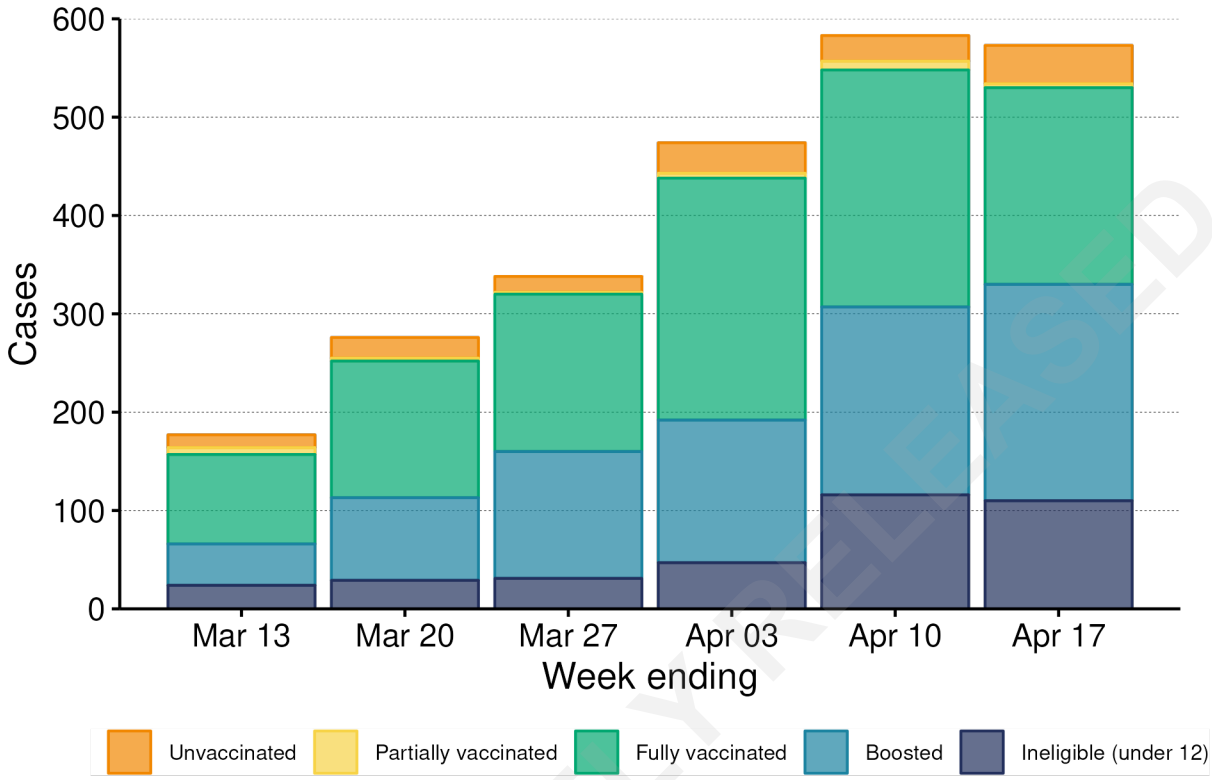
Wairarapa DHB



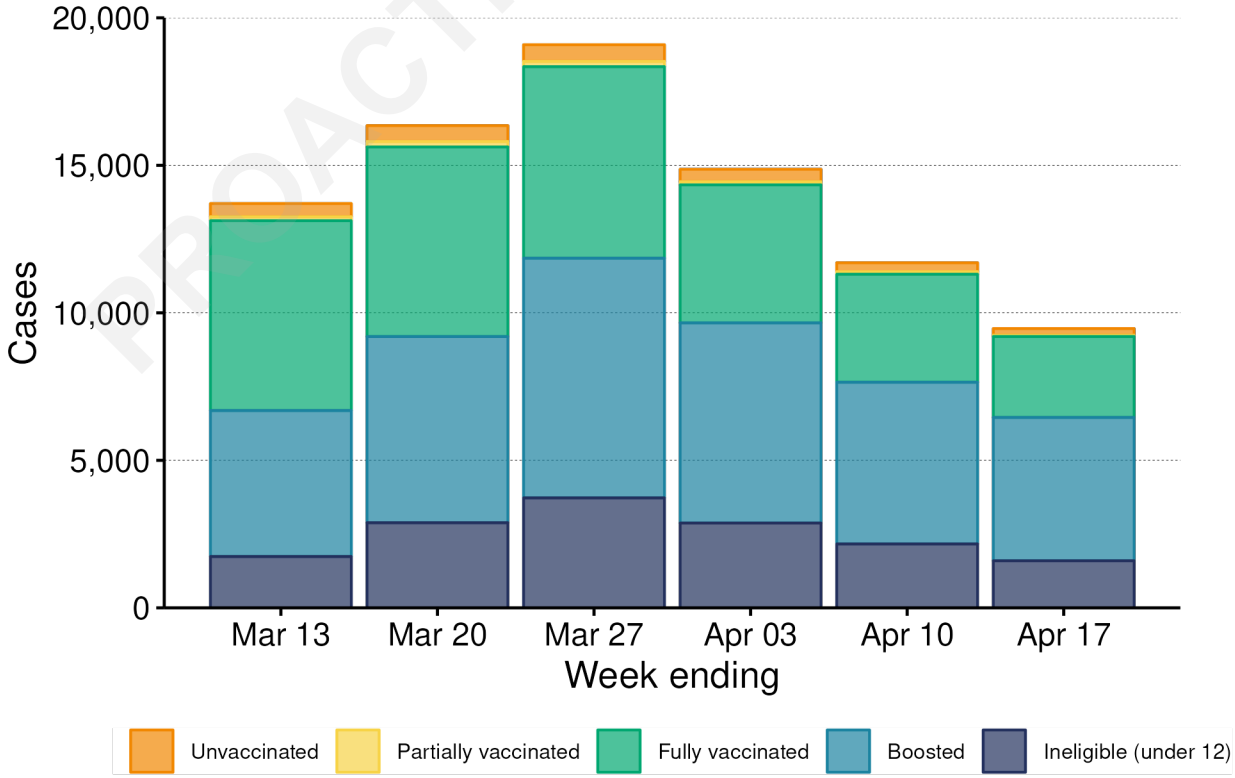
Nelson Marlborough DHB



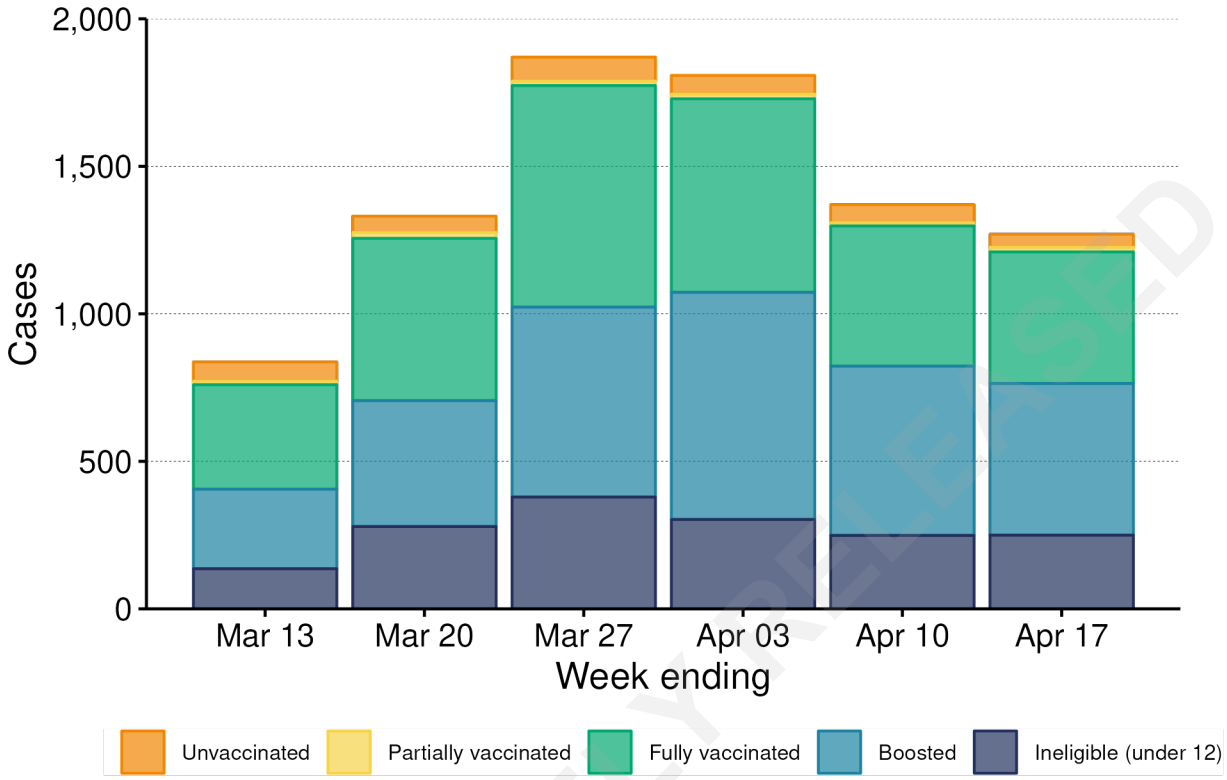
West Coast DHB



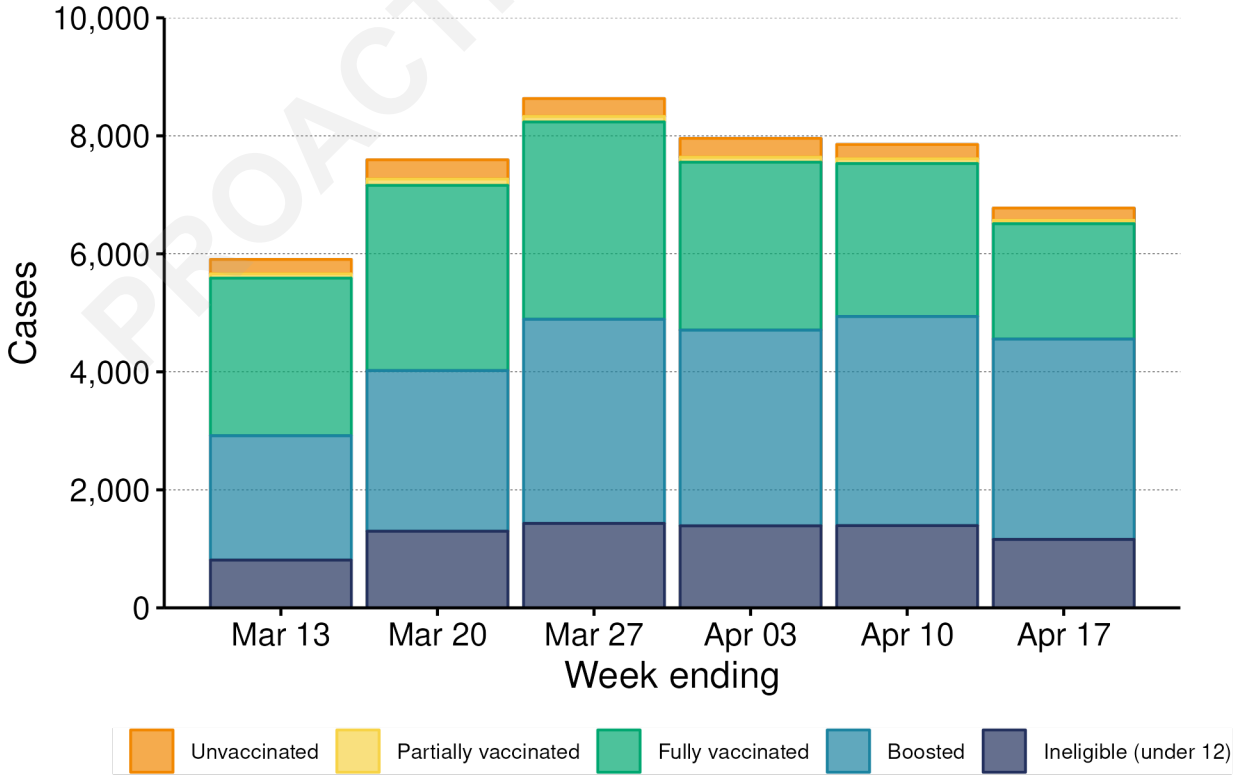
Canterbury DHB



South Canterbury DHB



Southern DHB



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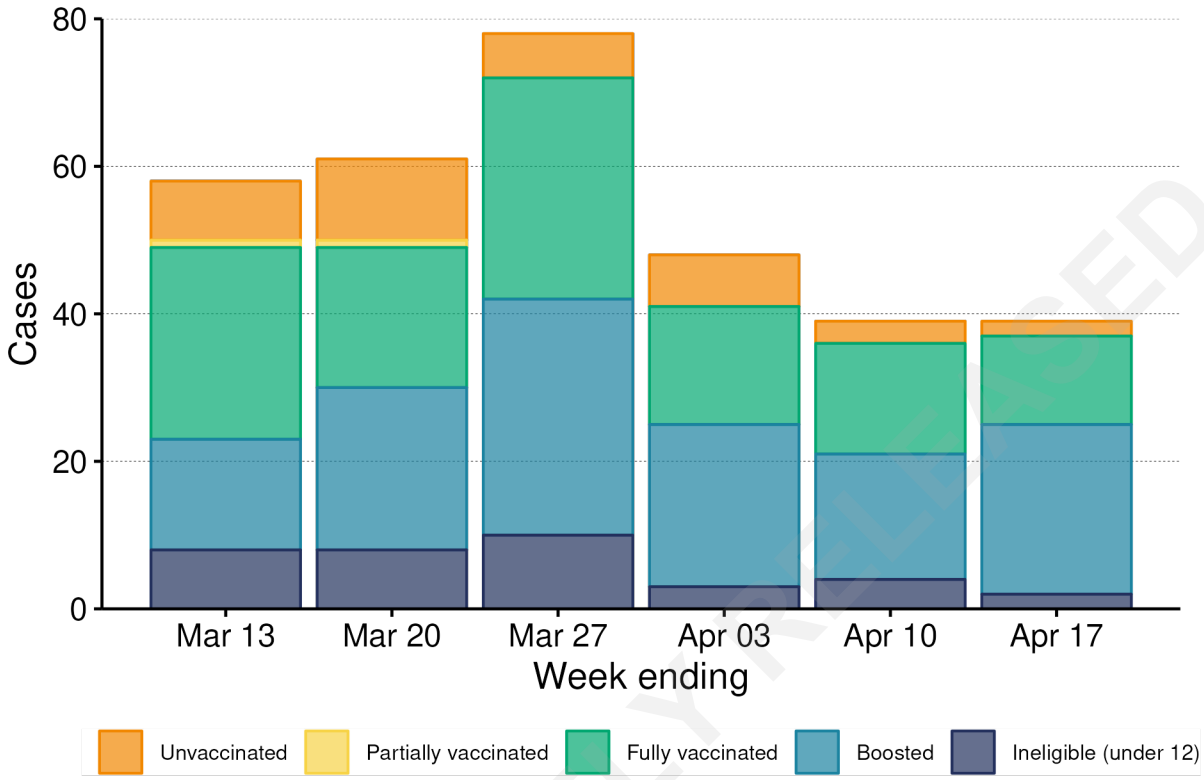

PCR Testing Rates