COVID-19

Trends and Insights Report

Updated 07 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 rate was 18.5 per 1000** population for the week ending 04 April down 22% from 22.5 per 1000 in the previous week
- EpiNow modelling based on data to 04 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. West Coast DHB is the only DHB with R_{eff} above 1.**
- **For the week ending 03 April**, the estimates suggest that **3.1% (866/27,797) of healthcare workers** and **2.5% (498/20,253) of border workers tested positive.** While these are not a representative sample 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 (2.5% [25 per 1000] versus 9.4 per 1000**, respectively).
- A total of **31.4% of health care and 25.9% of border workers have had a COVID-19 diagnosis in 2022.**
- However, **wastewater suggests that viral concentrations in all regions, including Northern Region and Auckland Metro, have varied little in the past few weeks;** while wastewater trends lag infection rates, these data suggest the possibility that the decrease in cases may be at least in part due to a decrease in testing and/or reporting.
- Wastewater and case diagnoses provide **consistent evidence that in Te Manawa Taki and Central regions infection has plateaued** and might have slightly decreased in the past week; whereas for **Southern Region the evidence is less clear but indicates that increases may have slowed.**
- **Case rates are declining in all regions across the motu**, with the largest decreases seen in the Northern and Te Manawa Taki regions. **Case rates for the week ending 04 April were 10.5 per 1000 in the Northern region, 21.0 per 1000 in Te Manawa Taki, 24.3 per 1000 in Central and 25.1 per 1000 in Southern.**
- **Whanganui and West Coast DHBs are the only DHBs that had (a slight) increase in case rates in the past week compared with the previous week**. **Whanganui is the only DHB with a case rate above 30 per 1000 (34.1).**
- **Nationally, Māori continue to have the highest case rates at 23.8 per 1000**, followed by European or Other (18.7 per 1000), Pacific People (14.3 per 1000) and Asian, with the lowest rate (14.0 per 1000).
- **Māori have the highest case rate in Central region (31.1 per 1000) followed by Pacific Peoples (26.1 per 1000). In the Southern region, Pacific Peoples have the highest case rate out of any regional population at 43.2 per 1000 followed by Māori at 31.5 per 1000**

- Outside of the Northern region European or Other have the lowest rates apart from the Central region where Asians have the lowest case rate**.**
- Rates continue to **decrease over the past week to 04 April in those aged under 70 years**, the **highest rates of 20-25 per 1000 were seen in the age ranges up to 49 years**, with 50-59 at 14.1 per 1000, 60-69 at 9.7 per 1000. Rates in those aged 70 or more remained similar at 6.2 per 1000.
- **Hospitalised cases have continued to decrease from 842 on 29 March to 692 on 05 April. All regions are beginning to see a drop in hospitalised case rates after reaching a peak in the past week. In the** Auckland Metro DHBs Māori and Pacific continue to be substantially disproportionately affected in terms of both the risk of cases being hospitalised and the population rate; for all ethnicities the likelihood of hospitalisation rises with age. The average age of those currently hospitalised in the Northern region is 58 years old.
- Overall, **428 people have died with or after COVID-19 infection as of 05 April 2022**. Of these, **386 have died within 28 days of being reported as a case**. The **7-day rolling average of deaths is 18.**

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Infections Trends

Summary of evidence for infection and case ascertainment trends

Currently, the national border workforce cases rates in the past week (2.5% [25 per 1000]) when compared with Auckland metro (9.4 per 1000) and national (18.5 per 1000) case rates in the general population, suggest that there may be under-ascertainment of community cases. The downward trend for border workers, health care workers and Northern region inpatients are all consistent with Auckland/Northern region case trends, which are driving observed declines nationally.

While, the wastewater epidemiology is in keeping with most regional case ascertainment trends, it does not reflect the large decreases seen in case ascertainment rates in the Northern region. The Northern region case rate was a quarter of the rate four weeks ago, whereas wastewater viral RNA concentrations have plateaued in Auckland metro/Northern region (and all other regions). **This suggests for all regions there has been an ongoing level of new infections sustaining the wastewater viral RNA levels**. Although we expect wastewater to follow a similar trend to the underlying prevalence, the same level of decrease may lag infection and recovery; while cases shed more viral RNA during the infectious period, cases may shed to a lesser extent in the few weeks following infection.

Auckland case ascertainment remains consistent with the modelled 'high' scenario, however, other regions, which have also tracked up to the high scenario, are not declining as quickly as predicted. Projections based on the effective reproduction rate, while having high uncertainty, suggest continuing decreases in all regions in the coming week.

Approximation of underlying infection incidence

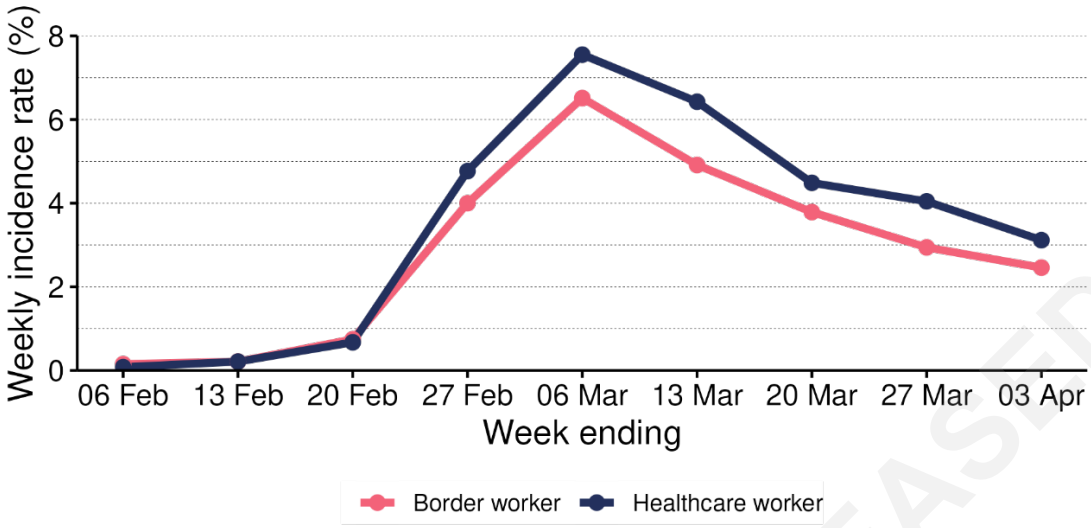
Underlying infection incidence has been gauged using a weekly case rate for routinely asymptomatically tested border workers, and for healthcare workers, where there was evidence of regular testing[1]

For the week ending 03 April, the estimates suggest that **3.1% (866/27,797) of healthcare workers** and **2.5% (498/20,253) of border workers have tested positive** for the first time ever (see Figure 1). These weekly infection incidence rates have been **steadily decreasing from highs of 7.6% for health care and 6.5% for border workers in the week ending 06 March**. A total of **31.4% of health care and 25.9% of border workers have had a COVID-19 diagnosis** in the year to 03 April 2022; the vast majority were reported in the past 6 weeks (30.4% and 24.6%, respectively).

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, 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 06 Feb to 03 April 2022***

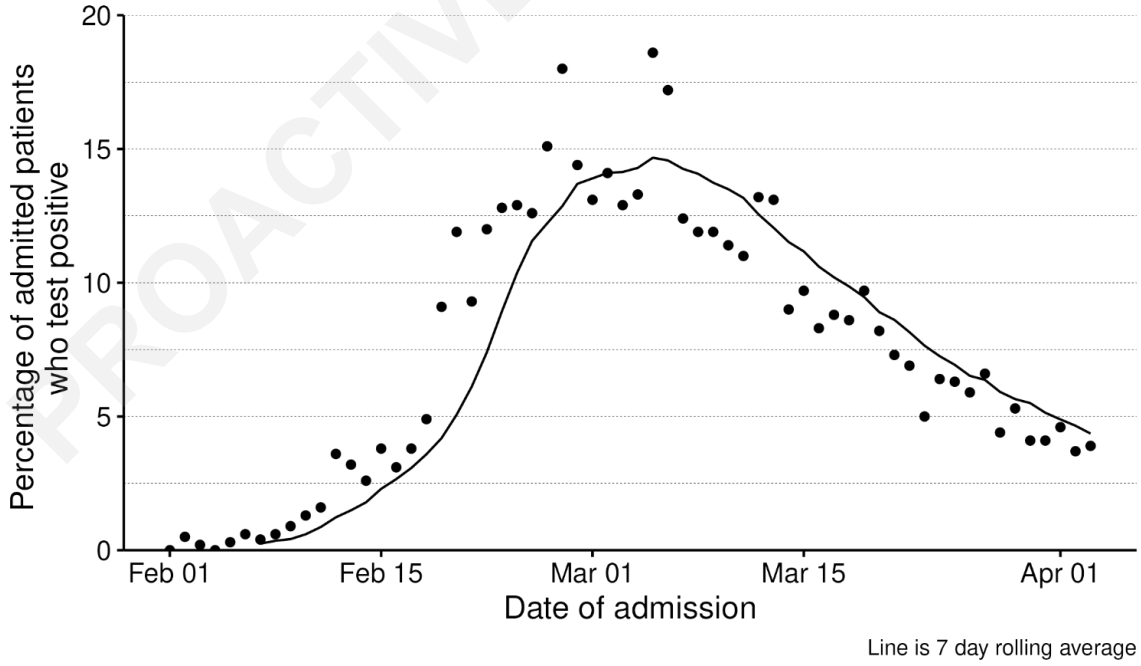


Source: Éclair/Episurv, 2359hrs 03 April 2022

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 6.6% (494/7526) in the week ending 27 March to **4.8% (378/7896)** in the week ending 03 April.

Figure 2: ***Percent of tests positive among Northern region hospital admissions, 01 February to 03 April***



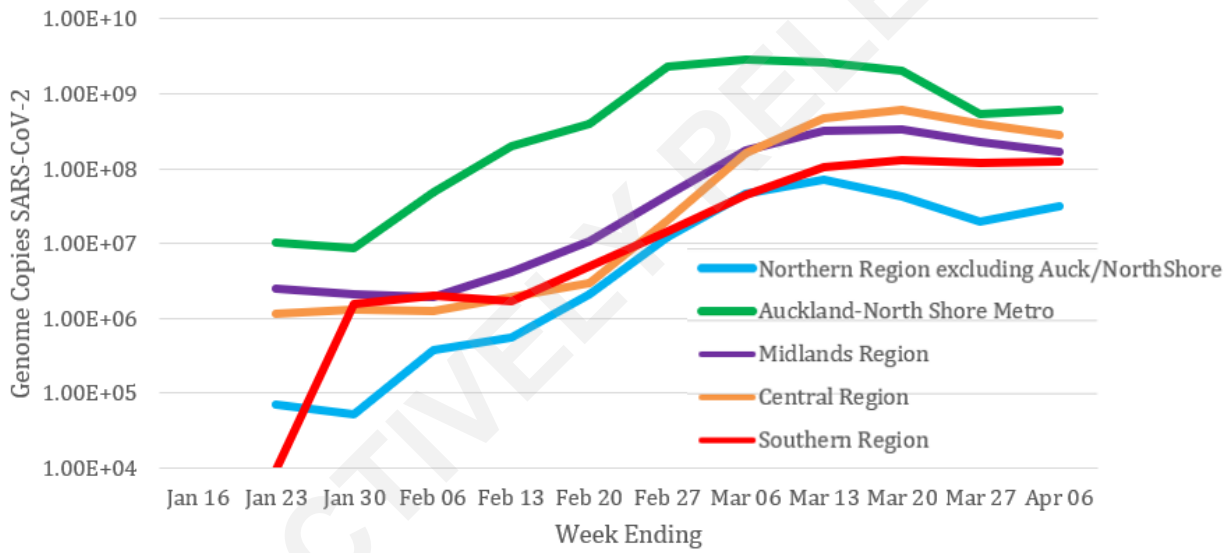
Source: Northern Regions hospitalisation data 07 April 2022 and NCTS/EpiSurv as at 2359hrs 03 April 2022

Wastewater quantification

Figure 3 provides an overview of wastewater results by region (noting that Auckland metro and the rest of Northern region are reported separately for this figure). 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 levels in wastewater **in the Northern region (both Auckland metro and the rest of Northern region) had been decreasing but appear to have plateaued in the past week;** reducing levels were first detected in Auckland metro area in late February. **All other regions appear to have plateaued in early March**, with some evidence of a decrease in the past week for Midlands and Central regions. However, these trends are **not necessarily consistent within regions**; 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– 06 April 2022***



Source: ESR SARS-CoV-2 in Wastewater update, 06 April 2022

Trends in diagnosed cases

Overall, **the weekly case rate was 18.5 per 1000** population for the week ending 03 April. This was a decrease of 22% from the previous week which was 22.5 per 1000. Case rates in all DHBs are stable or declining apart from the West Coast and Whanganui.

Figure 4 shows, that **the Te Manawa Taki (21.0 per 1000), Central (24.3 per 1000) and Southern (25.1 per 1000) regions had case rates almost 2 times higher than Northern region (10.5 per 1000)** in the week ending 03 April. In early March, the outbreak was still concentrated in the Northern region but as the outbreak spread across the country, rates in Te Manawa Taki and Central regions overtook the Northern region on 11 March and followed by the Southern region on 17 March. **Case rates have declined in the past week for all regions,** including Southern which was the only region increasing in the 2 weeks prior.

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

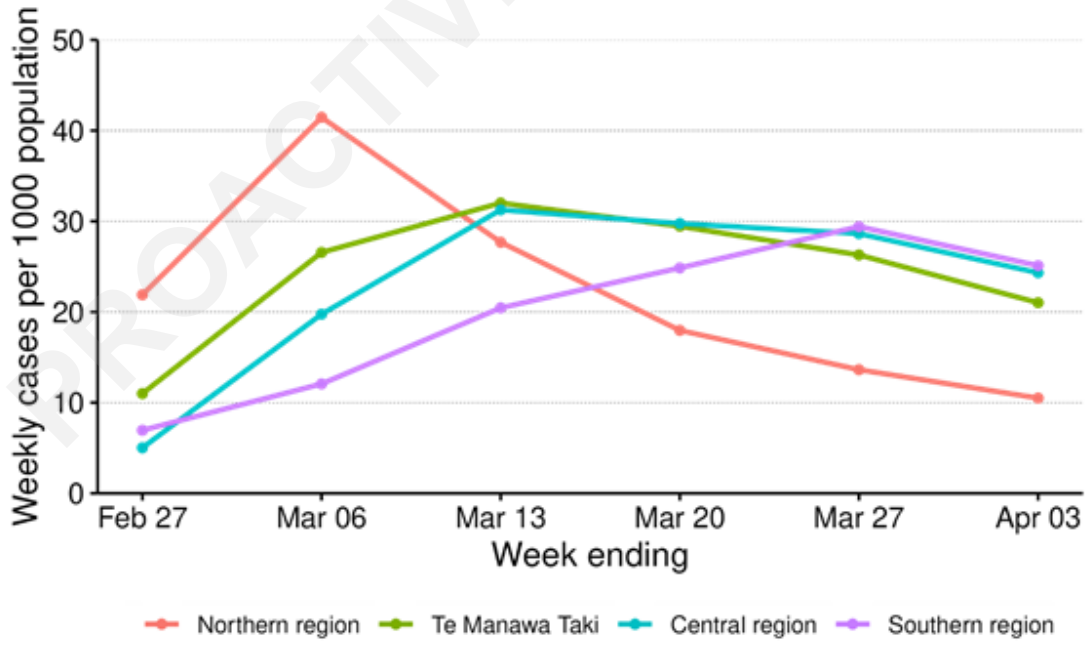
In the Northern region, weekly cases rates were highest for Northland DHB (20.2 per 1000) just over double that of the Auckland metro DHBs (9.4 per 1000).

In Te Manawa Taki, weekly case rates were highest in **Taranaki (29.4 per 1000)**.

The highest weekly case rates in the Central region were in **Whanganui at 34.1 per 1000** (which increased slightly from the previous week) and the **Hawke's Bay at 28.6 per 1000.**

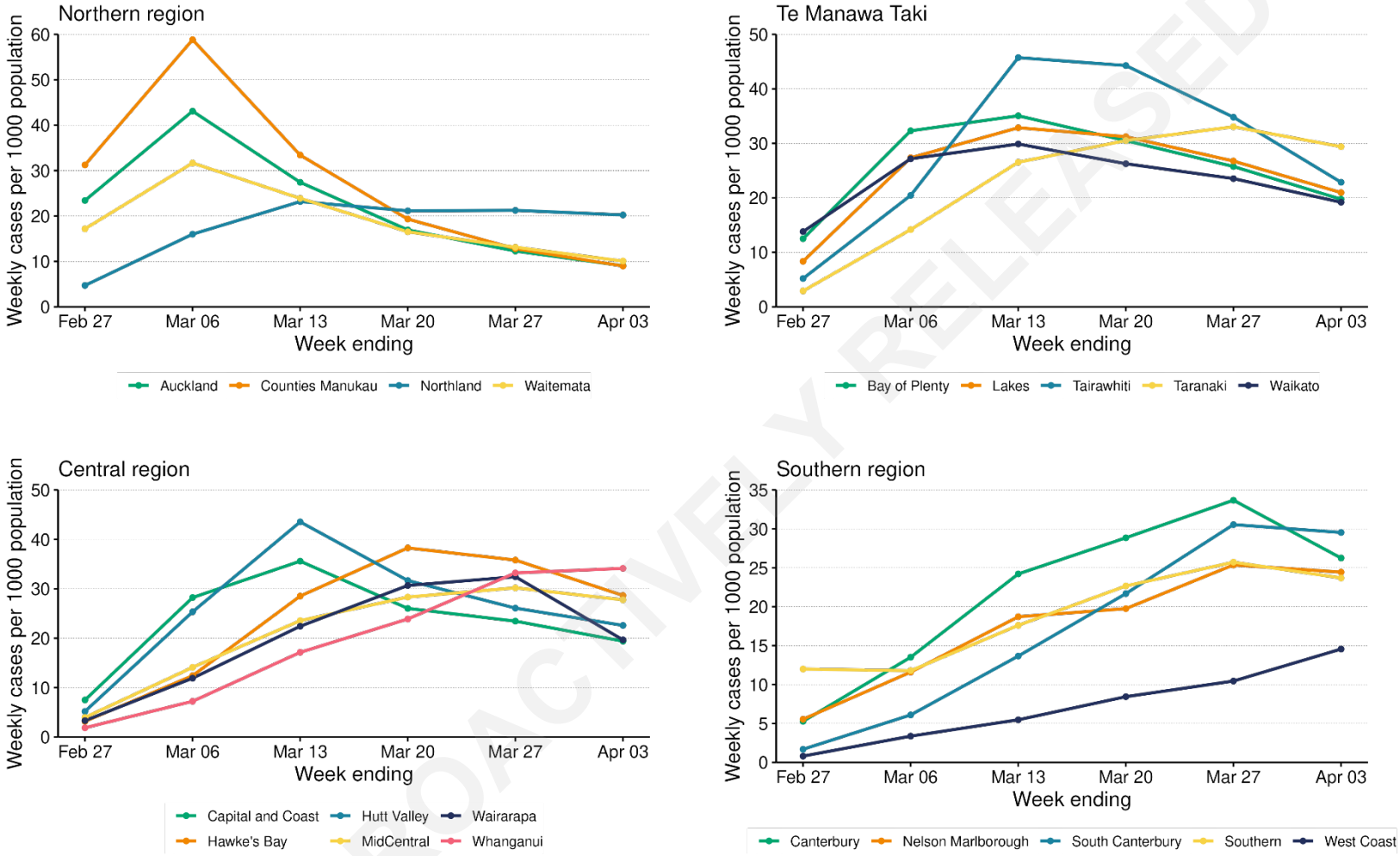
In the Southern region, the highest case rates were in **the South Canterbury DHB (29.5 per 1000)** followed by Canterbury DHB (26.3 per 1000). The West Coast case rate increased from the week prior (10.4 per 1000) to 14.6 per 1000 in the past week.

Figure 4: ***Regional weekly COVID-19 case rates (per 1000), for the weeks ending 27 Feb to 03 April 2022***



Source: NCTS/EpiSurv as at 2359hrs 03 April 2022

Figure 5: ***DHB specific weekly COVID-19 case rates (per 1000) by region, for the weeks ending 27 February to 03 April 2022***



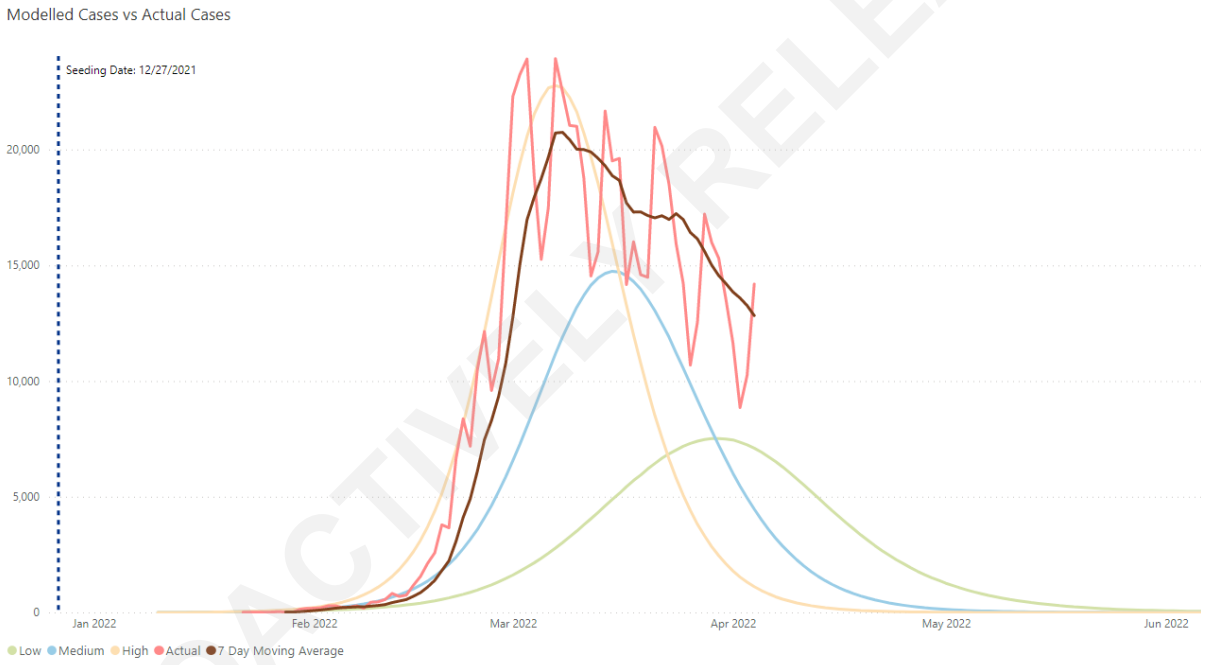
Source: NCTS/EpiSurv as at 2359hrs 03 April 2022

Modelling of cases comparison to case data

The number of diagnosed cases is now tracking close to the 'High' modelled scenario nationally (Figure 6). The number of diagnosed cases in the Auckland Region are also now tracking to the 'High' modelled scenario (Auckland metro DHBs and Northland) after previously peaking higher than this scenario (Figure 7). While the Te Manawa Taki and Central Regions reported cases reached the 'high' scenario peak levels in early March, this timing was closer to the 'Medium' scenario, since the a slower decrease/higher number of daily cases have been reported than predicted post peak (Figure 7). Cases in the Southern region have roughly tracked to the 'high' scenario, though also later than predicted in the 'High' scenario, indicating that the seeding date of the outbreak in this region may have been later, correlating with the return of tertiary students to Dunedin.

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

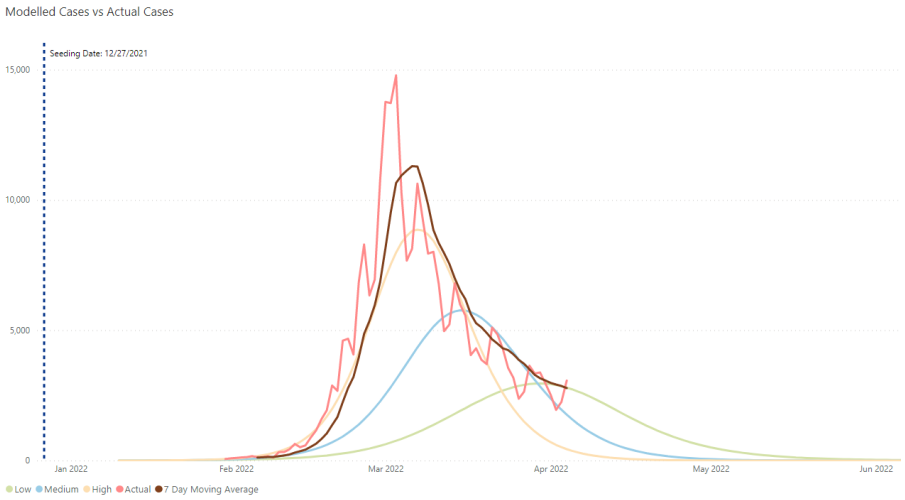
Figure 6: *COVID Modelling Aotearoa scenarios compared with reported cases nationally*



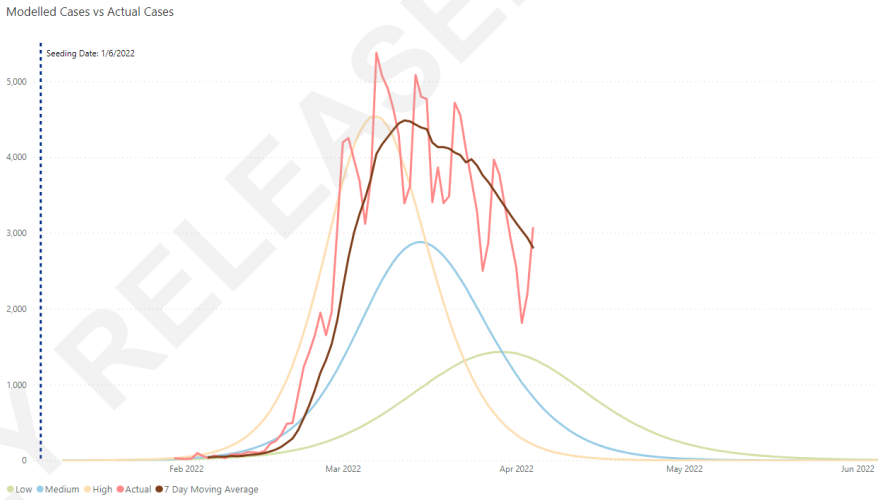
Sources: TAS, based on COVID-19 Modelling Aotearoa Branching Process Model 27 February 2022, and Ministry of Health reported case data.

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

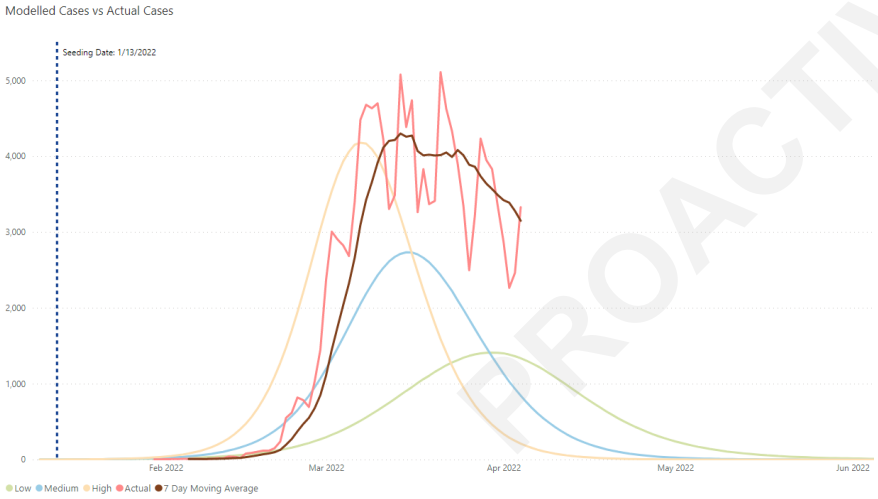
Northern Region



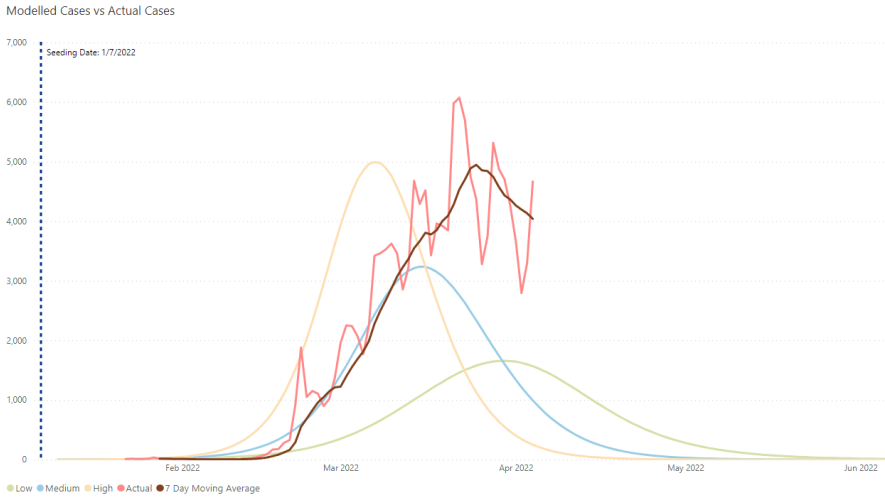
Te Manawa Taki (Midlands)



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

Effective reproduction rate, and forecasts of cases and infections

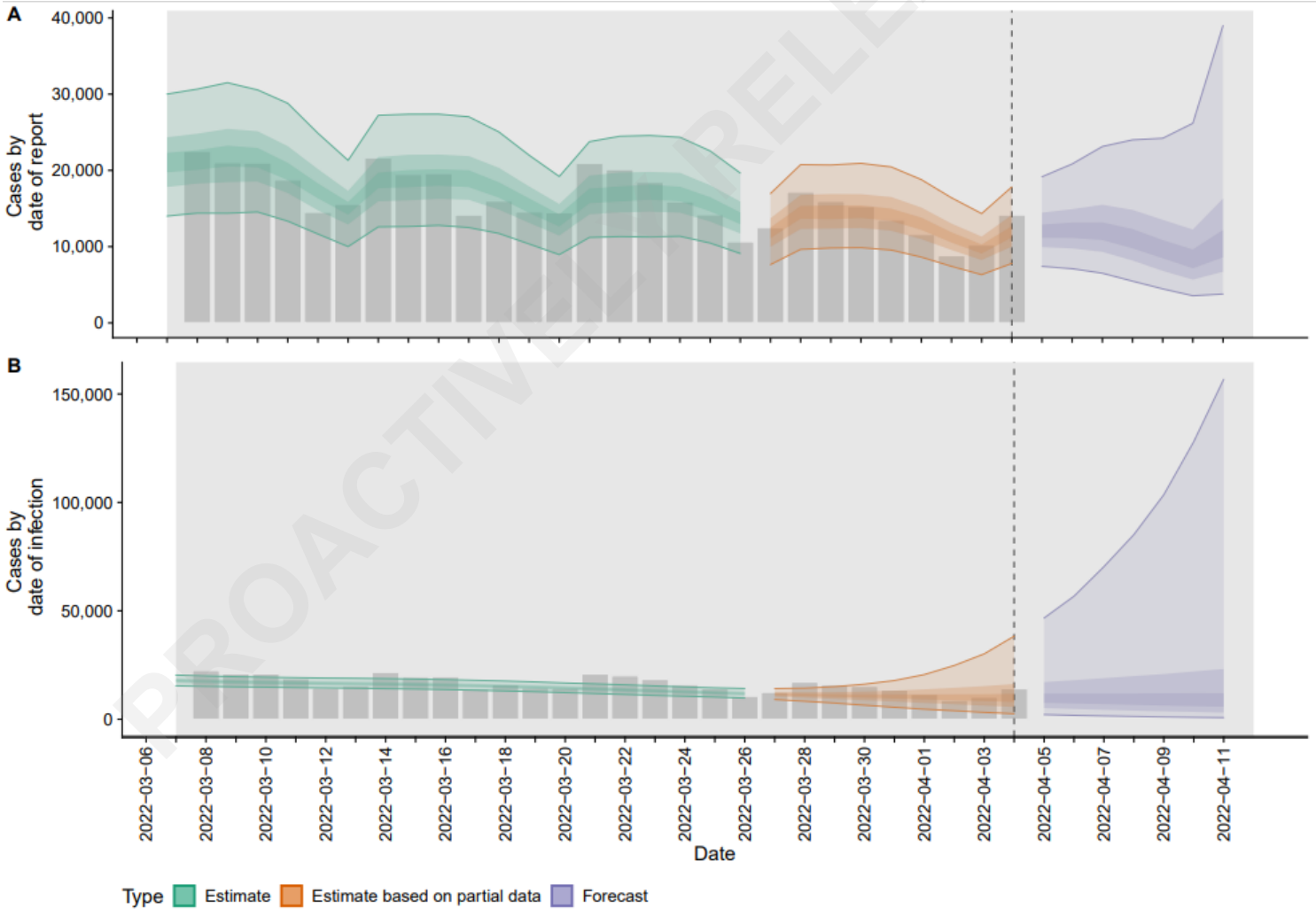
These estimates used the *EpiNow2* package on 07 April using data to 04 April.[2] Regional estimates for R_{eff} are shown in the accompanying **appendix document**. The median estimate of **effective R (R_{eff}) nationally is 0.9** (90% Credible Interval [CI]: 0.4-1.9) for cases to 04 April, after adjusting for data lags. The relatively wide confidence intervals indicate there is high uncertainty for this estimate.

For the West Coast, the model is **estimating a median R_{eff} of 1.7; this is the only region where the median R_{eff} is greater than 1.**

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 10,169 cases per day by 11 April (50% credible interval: 6,718–16,301). 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 04 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

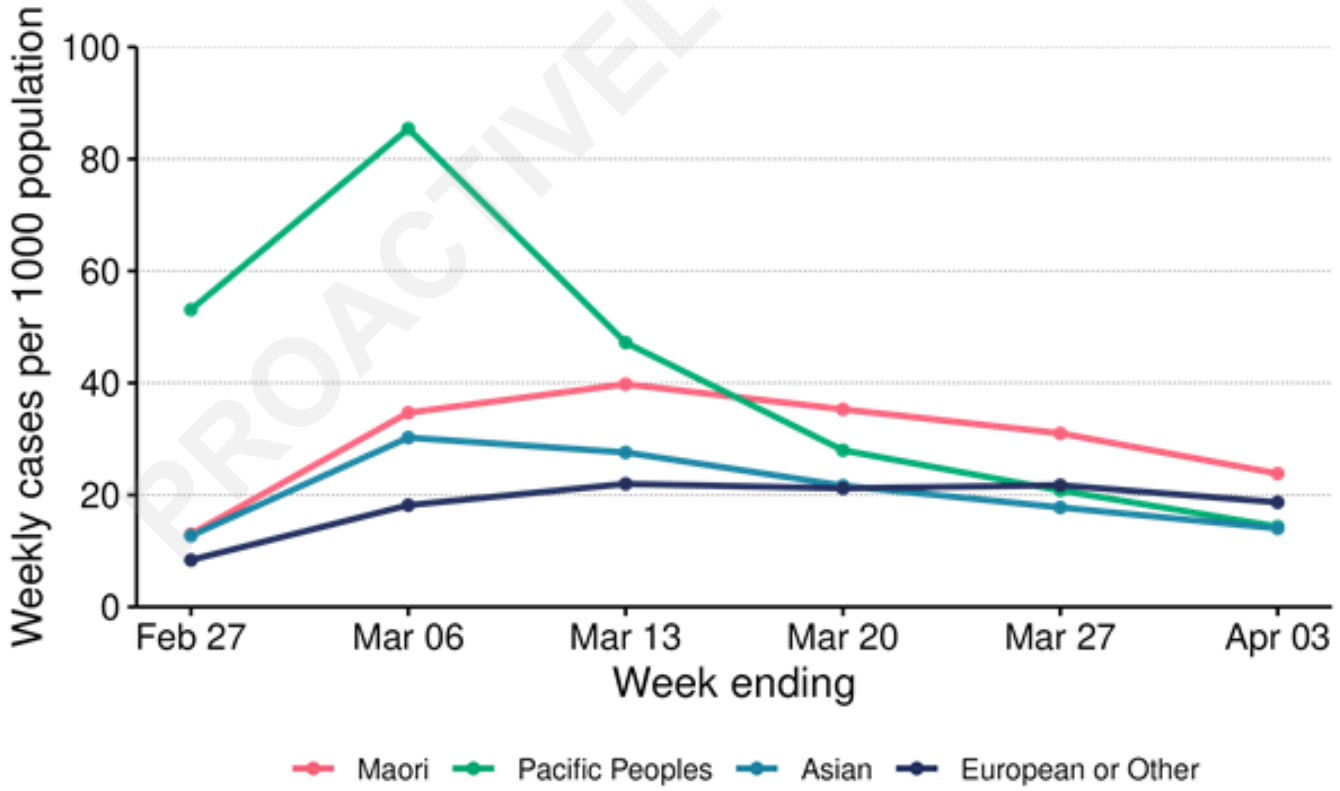
Ethnicity trends over time and by region

Error! Reference source not found. shows national and regional case rates by ethnicity. In the past week nationally, Māori have the highest weekly case rates at 23.8 per 1000 population, followed by European or Other (18.7 per 1000), Pacific People (14.3 per 1000) and Asian (14.0 per 1000) with similar case rates; rates in all ethnicities have declined in the past week.

In all regions Pacific people had the highest rate in early March, peaking at 98.3, 59.3, 72.8, and 58.6 per 1000 in the Northern, Te Manawa Taki, Central and Southern regions, respectively (See Figure 10). Whereas the highest observed rate for any region in Maori was 45.3 per 1000, in Asian 34.7 per 1000, and in European and other 27.1 per 1000. For non-Pacific ethnicities, these peak rates were similar across all regions; this suggests the difference in the overall higher peak rate seen in Northern compared with other regions (refer back to Figure 4) has mainly been driven by the large outbreak in the Pacific community in Auckland with Pacific people in Northern region having had a substantially higher peak rate than all ther regions (see Figure 10).

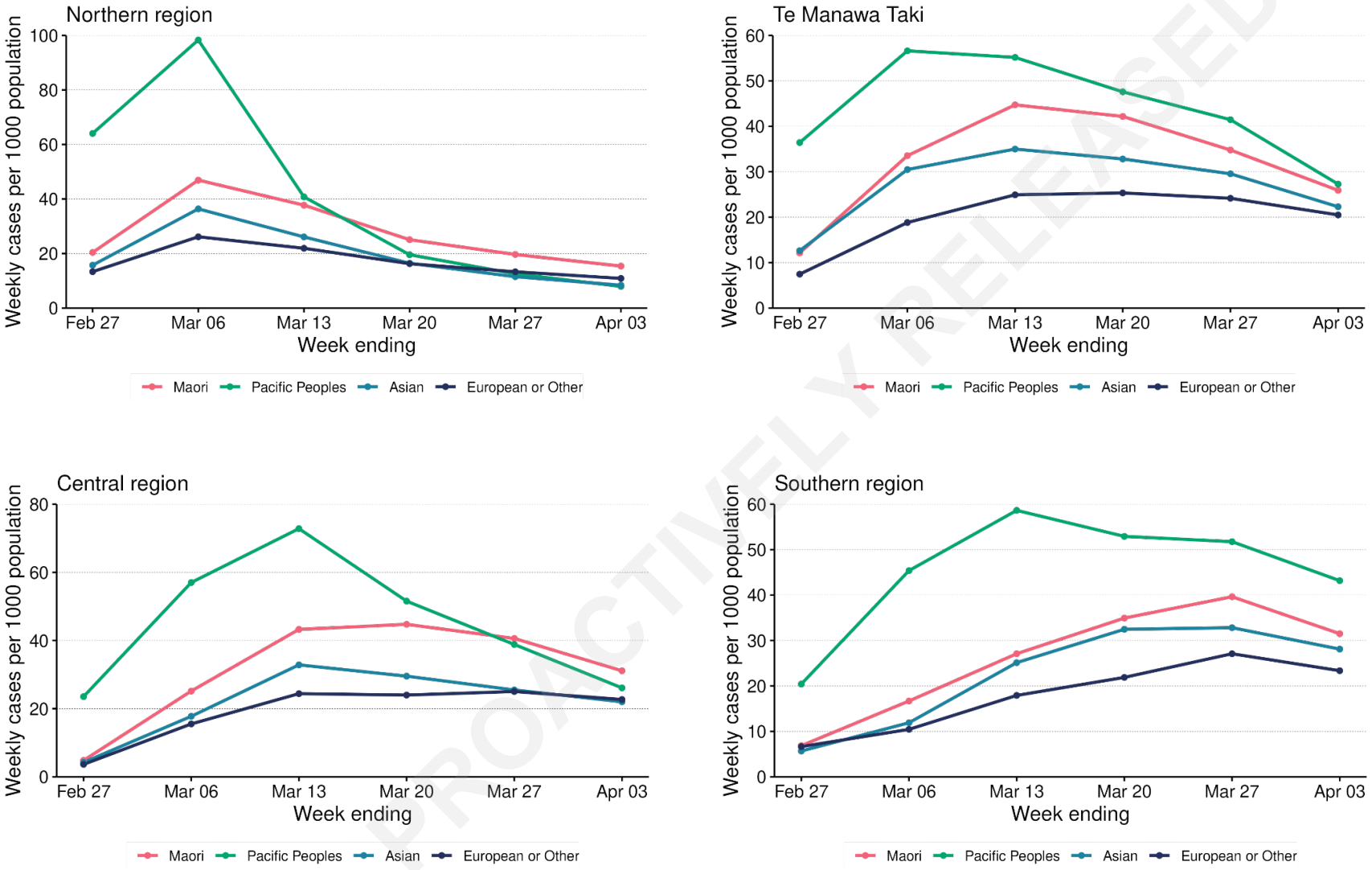
Pacific rates have declined rapidly in Northern, whereas the decline on other regions has been slower. For all ethnicities in all regions, the rates have declined in the week to 03 April.

Figure 9: ***Ethnicity specific weekly COVID-19 case rates (per 1000) for New Zealand, for the weeks ending 27 Feb to 03 April 2022***



Source: NCTS/EpiSurv as at 2359hrs 03 April 2022

Figure 10: ***Ethnicity specific weekly COVID-19 case rates (per 1000) by region, for the weeks ending 27 Feb to 03 April 2022***



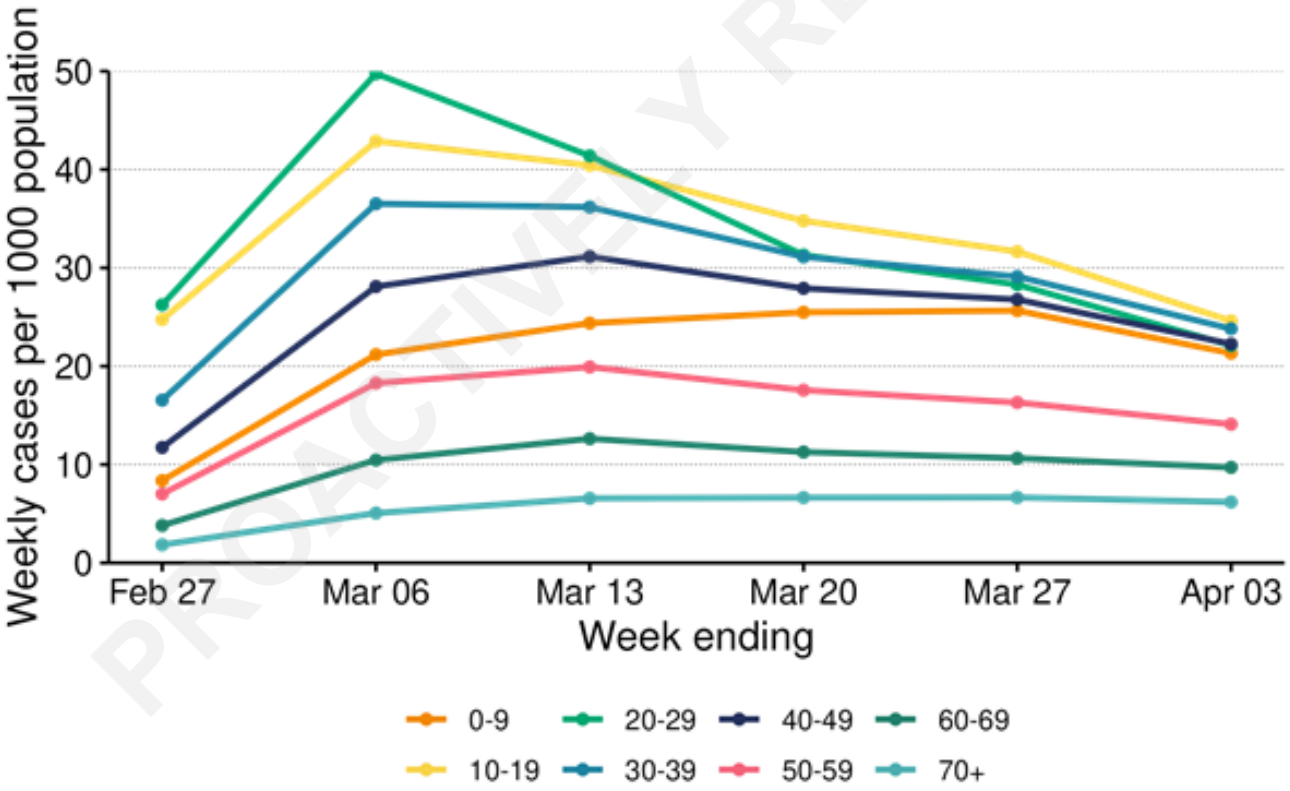
Source: NCTS/EpiSurv as at 2359hrs 03 April 2022

Age trends over time and by region

Figure 11 shows community cases by age nationally and by region. Case rates in all age groups continue to decrease. Nationally, **case rates are similar for 0-9, 10-19, 20-29, 30-39 and 40-49 age groups (21.3, 24.6, 22.1, 23.8 and 22.3 per 1000 respectively)** in the past week. Comparison of weekly case rates from the first week of March show the 10-19 and 20-29 age group (42.9 and 49.7 per 1000 respectively) were at least 4 times more likely to be a case compared with 60-69 age group (10.5 per 1000) and at least 8 times more likely to be a case compared to those aged 70+ (5.1 per 1000). The those aged 70 years and over continue to have the lowest weekly case rates at 6.2 per 1000 in the week ending 03 April. Rates in all age groups under 60 years have declined in the past week. Those 60 years and over have remained relatively steady in the past 2 weeks.

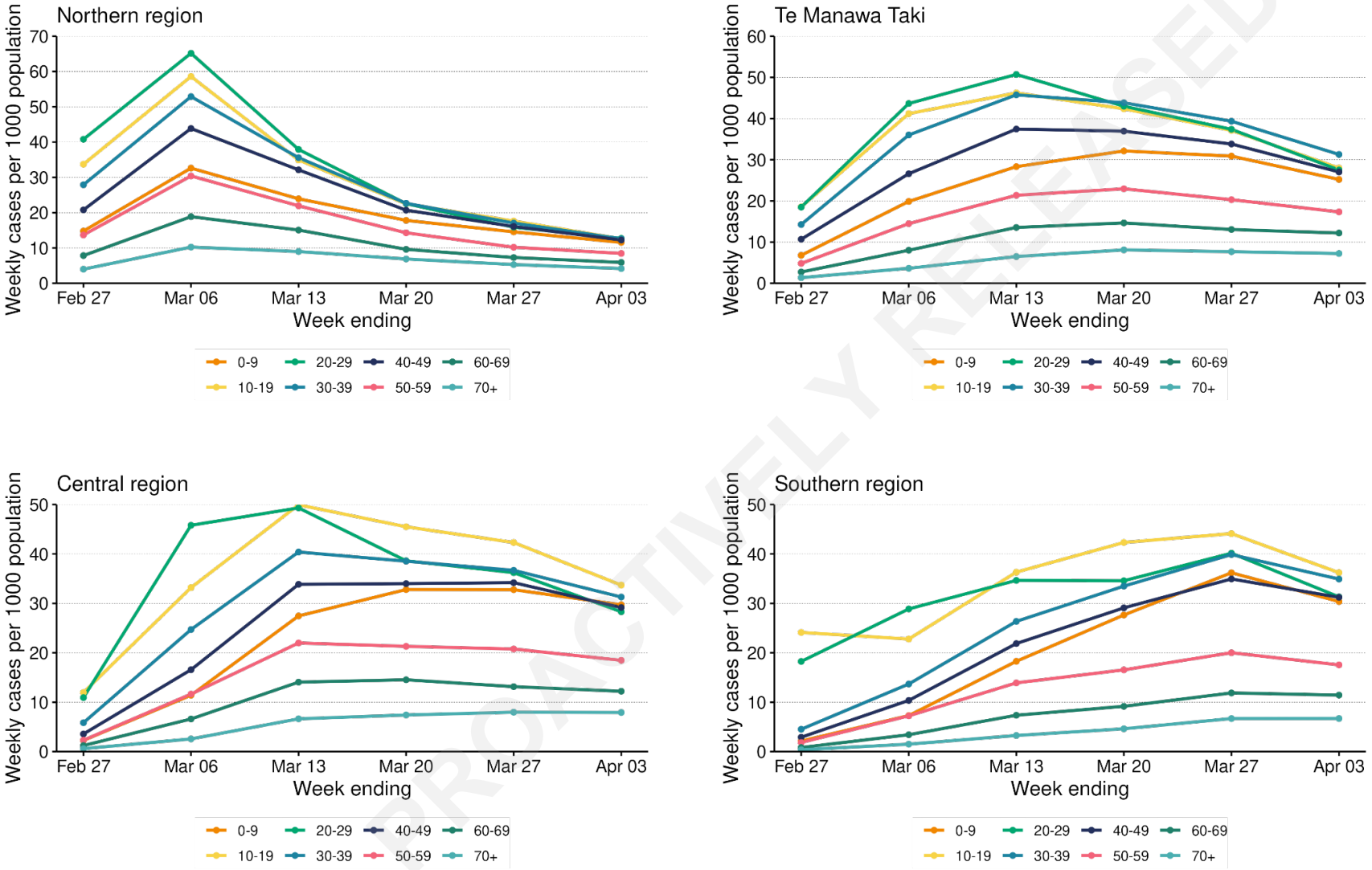
Patterns of age group risk were similar for all regions though the magnitude of the differences varied, in particular for Central and Southern where these was a more substantial increase in the risk for those age 10-19 years between from 13 to 27 March (see Figure 12). **Declining trends in case rates were seen across all age groups under 60 years in all regions**; **those 60 years and over** were stable in all regions, apart from **Southern where they have continued a gradual increase**.

Figure 11: ***Age specific weekly COVID-19 case rates (per 1000) for New Zealand, for the weeks ending 27 February to 03 April 2022***



Source: NCTS/EpiSurv as at 2359hrs 03 April 2022

Figure 12: ***Age specific weekly COVID-19 case rates (per 1000) by region, for the weeks ending 27 February to 03 April 2022***



Source: NCTS/EpiSurv as at 2359hrs 03 April 2022

Housing Deprivation trends over time, by ethnicity and by region

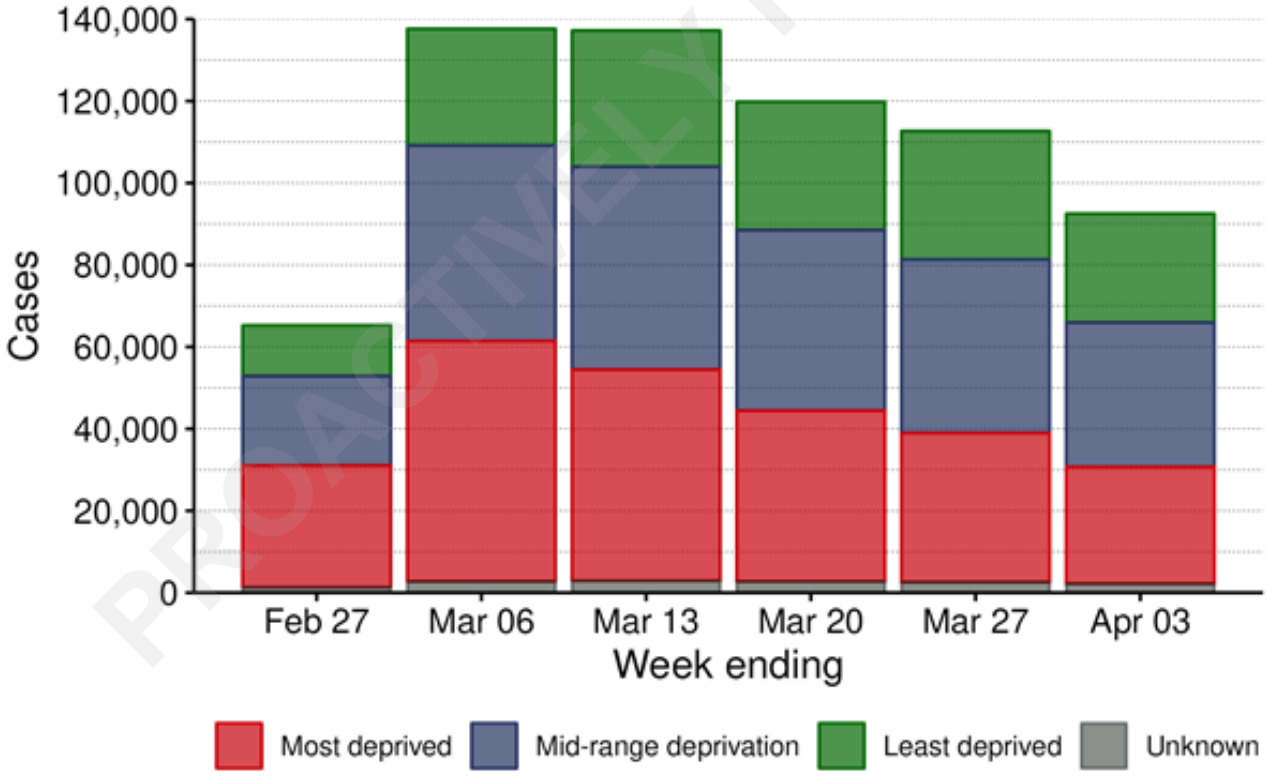
Figure 13 shows case *numbers* based on the Index of Multiple Deprivation 2018 housing deprivation scores. Housing is a key determinant of COVID – 19 both in terms of risk and protection. Areas of high deprivation are ones where there is a higher number of renters, overcrowding and lack of amenities.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

Overall, in the past week the **proportion of cases is highest in the areas of mid-range deprivation (38%),** followed by areas most deprived (31%) and areas least deprived (29%).

For **the most deprived areas, cases in Māori made up 34%** despite only making up 15% of the total population. The proportion of cases in the most deprived areas for Pacific Peoples was 9%, for Asian 11% and for European and Other 45%. Whereas 78% of cases **in areas of least deprivation** were European and Other compared with 10% being Asian, **9% Māori** and 3% Pacific,

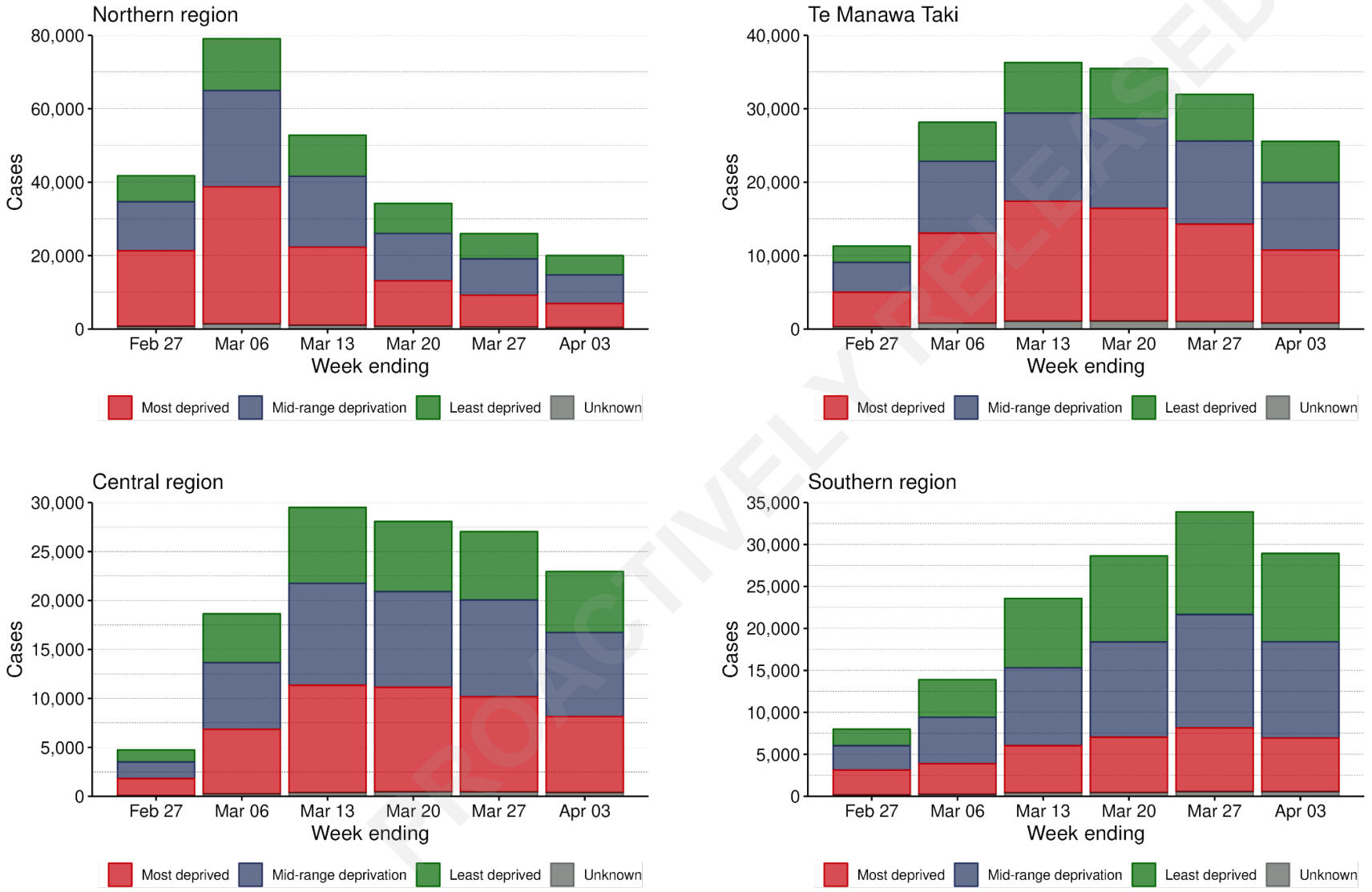
In Northern, Te Manawa Taki and Central regions just over a third of cases were in the most deprived and around a quarter in the least deprived (see Figure 14**Figure 13**). Conversely, in Southern cases from the most deprived areas made up 22% compared with least deprived areas at 36%.

Figure 13: ***Deprivation specific weekly COVID-19 case numbers for New Zealand, for the weeks ending 27 Feb to 03 April 2022***



Source: NCTS/EpiSurv as at 2359hrs 03 April 2022

Figure 14: ***Deprivation specific weekly COVID-19 case numbers by region, for the weeks ending 27 Feb to 03 April 2022***



Source: NCTS/EpiSurv as at 2359hrs 03 April 2022

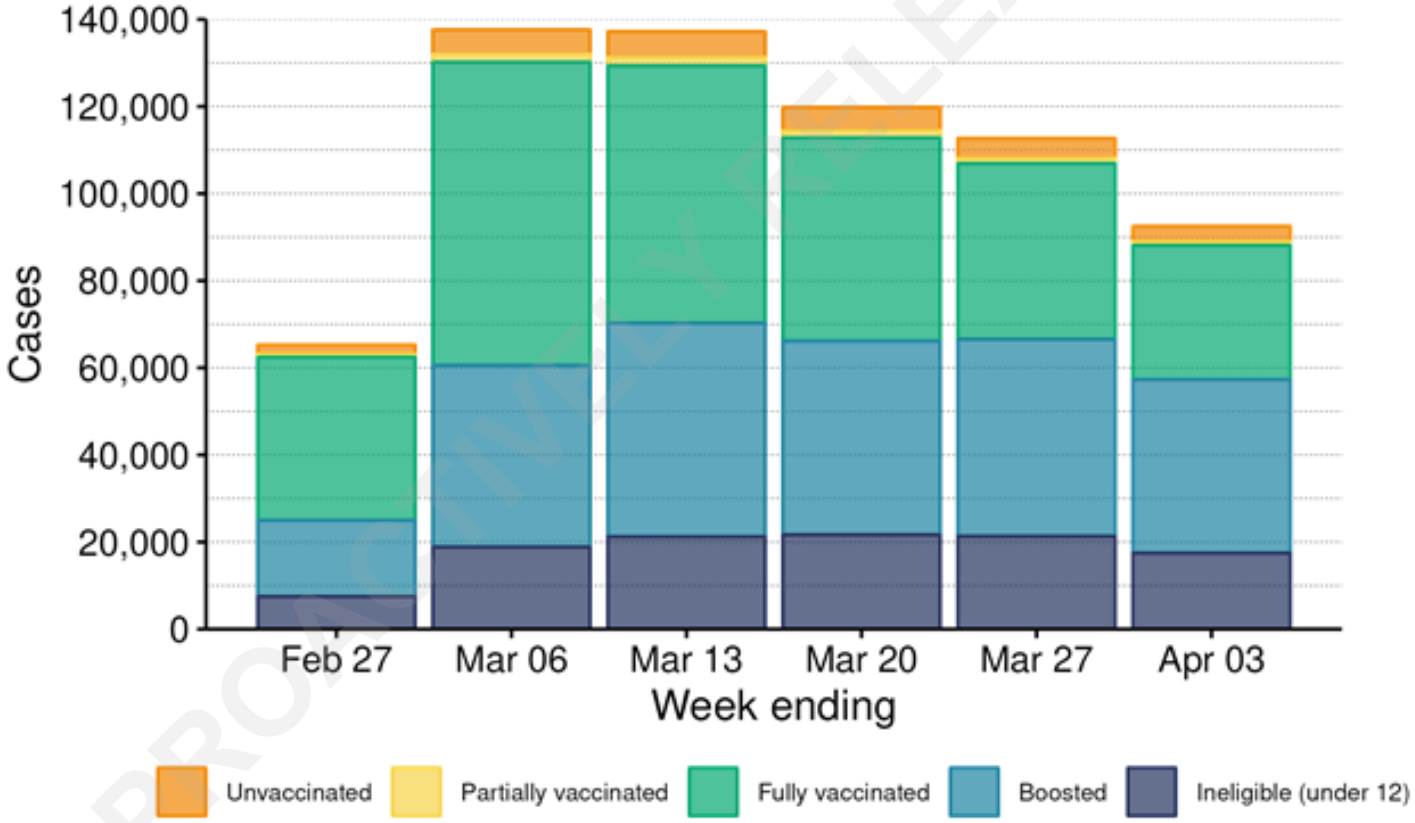
Vaccination trends over time

Figure 15 shows community case *numbers* by vaccination status nationally. The proportion boosted cases rose from 30.3% to 43.1% of all cases in the week ending 03 April. A corresponding decrease in the proportion reported as fully vaccinated also occurred (from 50.6% to 39.0% of all cases).

The proportion of cases amongst those who are categorised as ineligible due to being under 12 years old[3], remains unchanged from the previous week at 18.9%. The proportion of cases reported as partially vaccinated or unvaccinated, remains consistent at around 1% and 4%, respectively.

Weekly case rates for boosted have dropped slightly in the past week from 17.6 to 15.4 per 1000, whilst fully vaccinated case rates have increased in the past week from 15.4 to 22.2 per 1000. We have observed only a small effect of boosting *for reported cases*; however, these rates do not take into account key factors such as age.

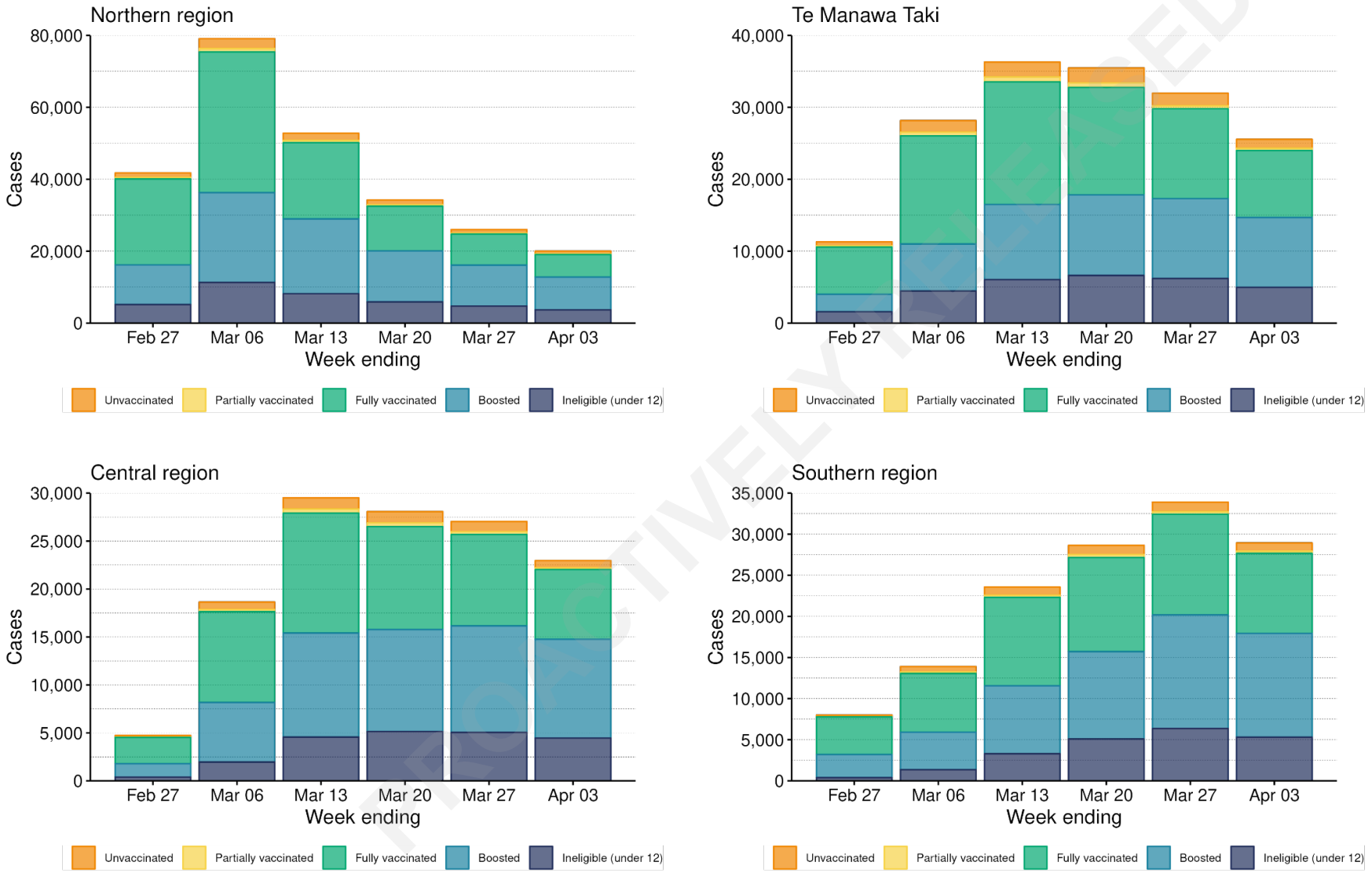
Figure 15: ***Vaccination specific weekly COVID-19 case numbers for New Zealand, for the weeks ending 27 Feb to 03 April 2022***



Source: NCTS/EpiSurv as at 2359hrs 03 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 27 Feb to 03 April 2022***



Source: NCTS/EpiSurv as at 2359hrs 03 April 2022

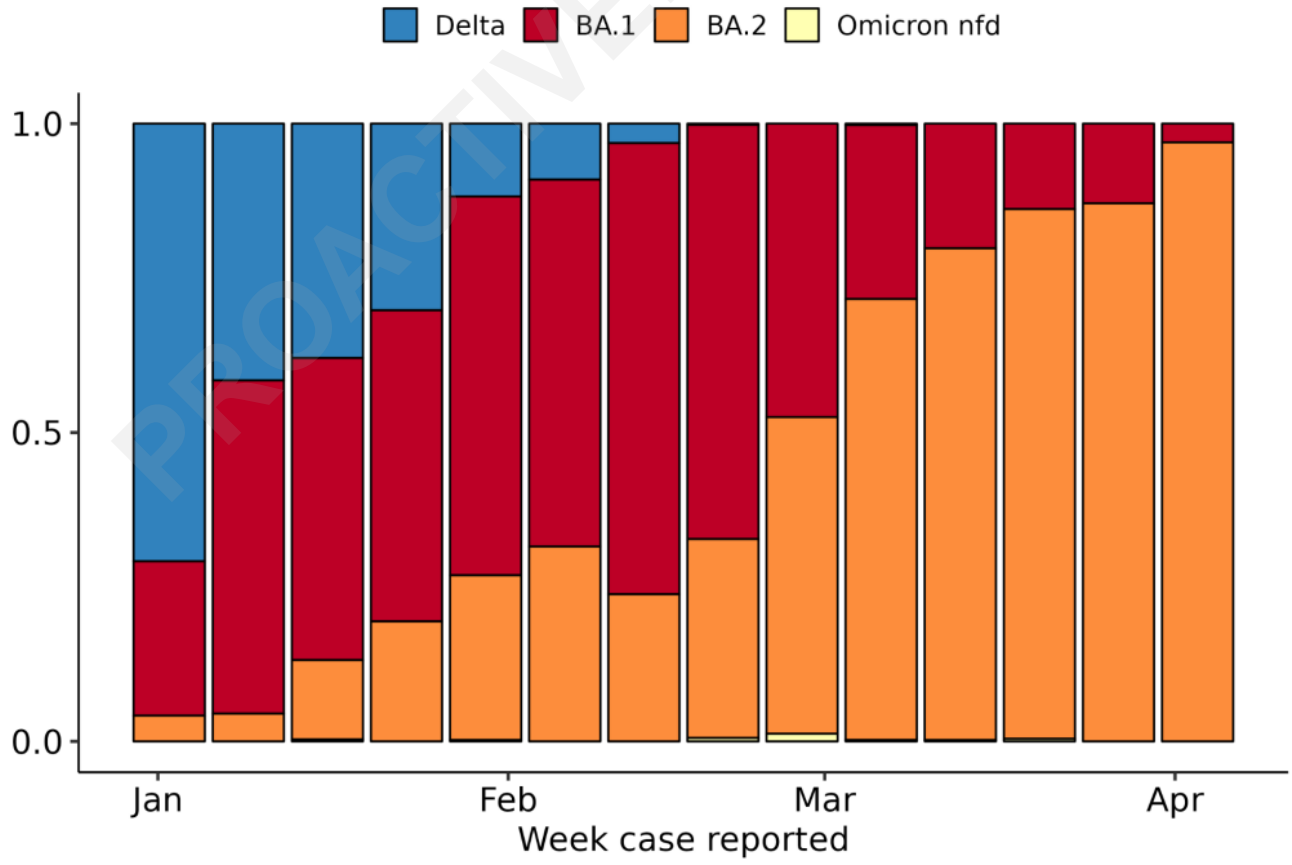
PCR and RAT testing trends

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 result, or a false-negative especially if used during early periods of infection. On the other hand, the better availability of RATs may mean that more people are tested than would have been the case had PCR tests continued to 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 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, out competing Delta, the previous dominant variant which made up a ~70% of all sequenced cases in the start of January 2022 to less than 10% of sequenced case 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 out-competed by BA.2 which makes up over 90% of sequenced cases at the end of March 2022. This matches international phylodynamic trends as BA.2 has enhanced transmission advantage compared to the BA.1 subvariant.

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



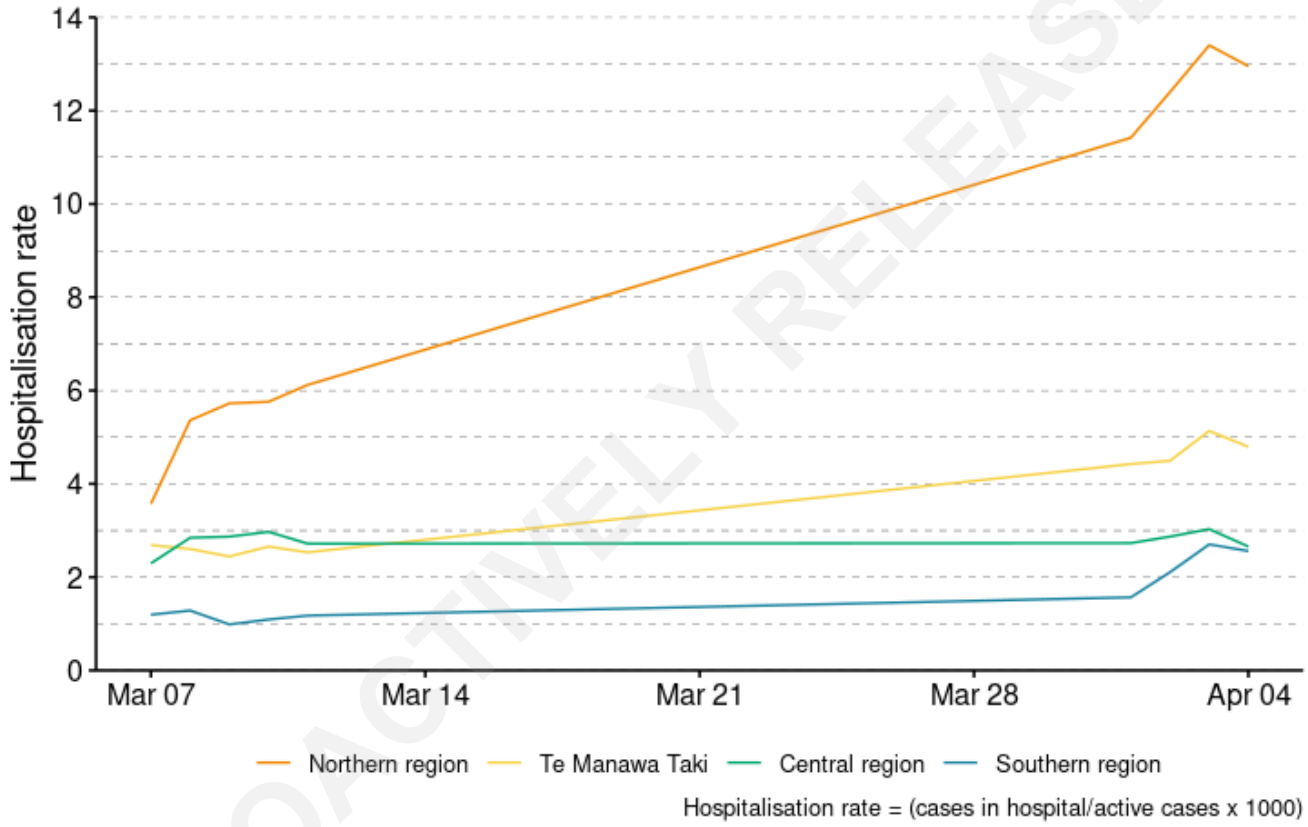
Source: ESR COVID-19 Genomics Insights Report #1, EpiSurv/Microreact 1200hrs 04 April 2022

Morbidity and Mortality

Hospitalisations

Hospitalisations in the Northern region rose sharply from the second week of March, reaching a peak of just over 13 cases hospitalised per 1000 cases (Figure 18). However, this rate appears to be declining both in the northern regions and across the motu. Hospitalisations in the Te Manawa Taki region have been rising slowly since the second week of March and appear to have peaked at 5 cases hospitalised per 1000 cases. Hospitalisation rates in the Central and Southern regions have remained steady at around 1 to 3 cases hospitalised per 1000 cases.

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

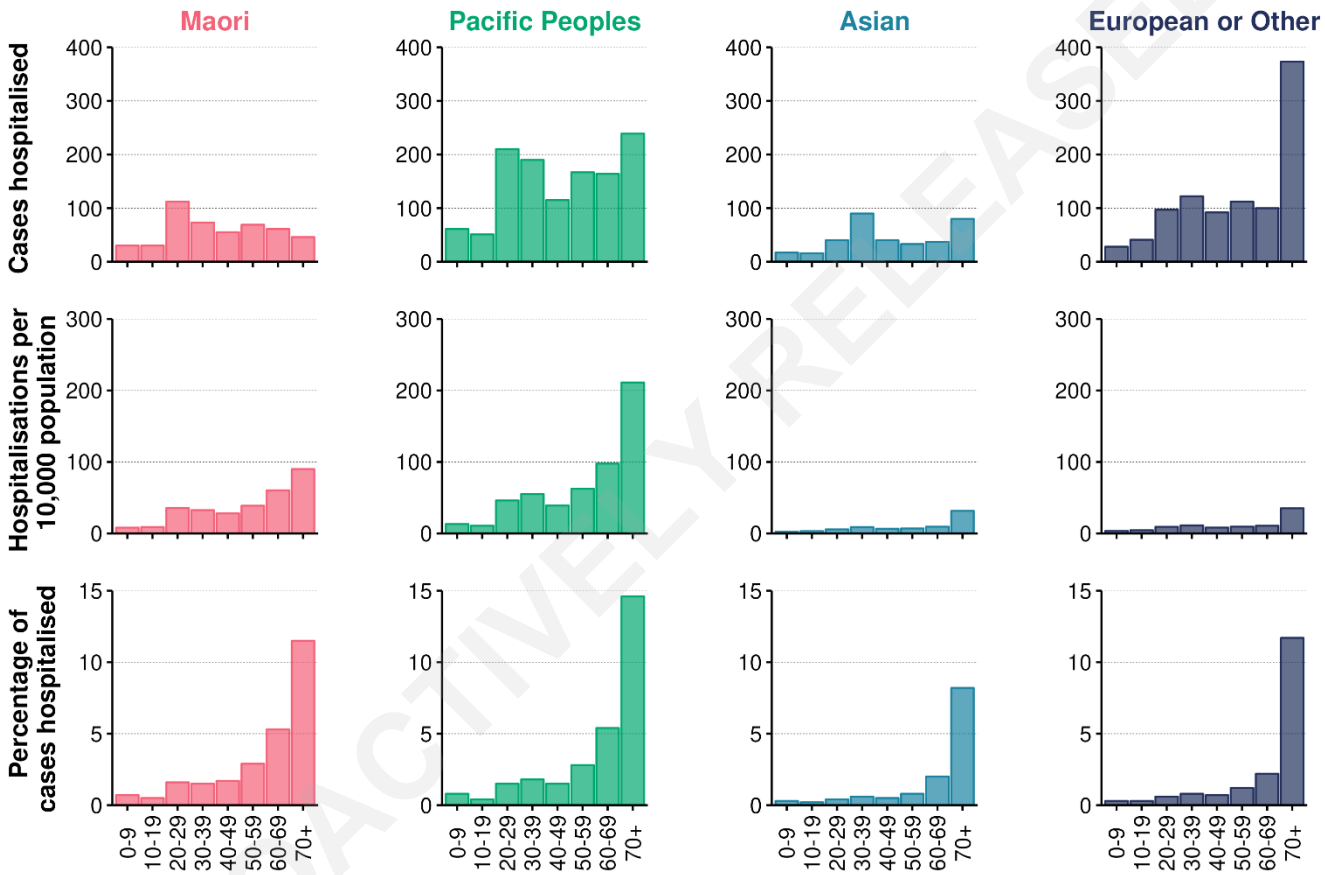


Source: Northern Regions hospitalisation data 07 April 2022 and NCTS/EpiSurv as at 2359hrs 03 April 2022

Hospitalisation rates by age and ethnicity in the Auckland Metro DHBs

Figure 19 shows hospitalisations, hospitalisation rate and percentage of cases hospitalised by region, age and ethnicity. In the Auckland Metro region, those aged 70+ of European or Other ethnicity make 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.

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 Regions hospitalisation data 07 April 2022 and NCTS/EpiSurv as at 2359hrs 03 April 2022

WGS of hospitalised cases

The majority of hospitalised COVID-19 cases sequenced since 1 January 2022 have been Omicron cases (98%), with the most recent hospitalised case found to be infected with the Delta variant reported on 02 March 2022 (Figure 20). Of the total 1438 hospitalised cases sequenced to date, approximately 74% were found to be the BA.2 sub-variant with a further 24% found to be the BA.1 sub-variant, of Omicron., 2% were discovered to be 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 04 April 2022***

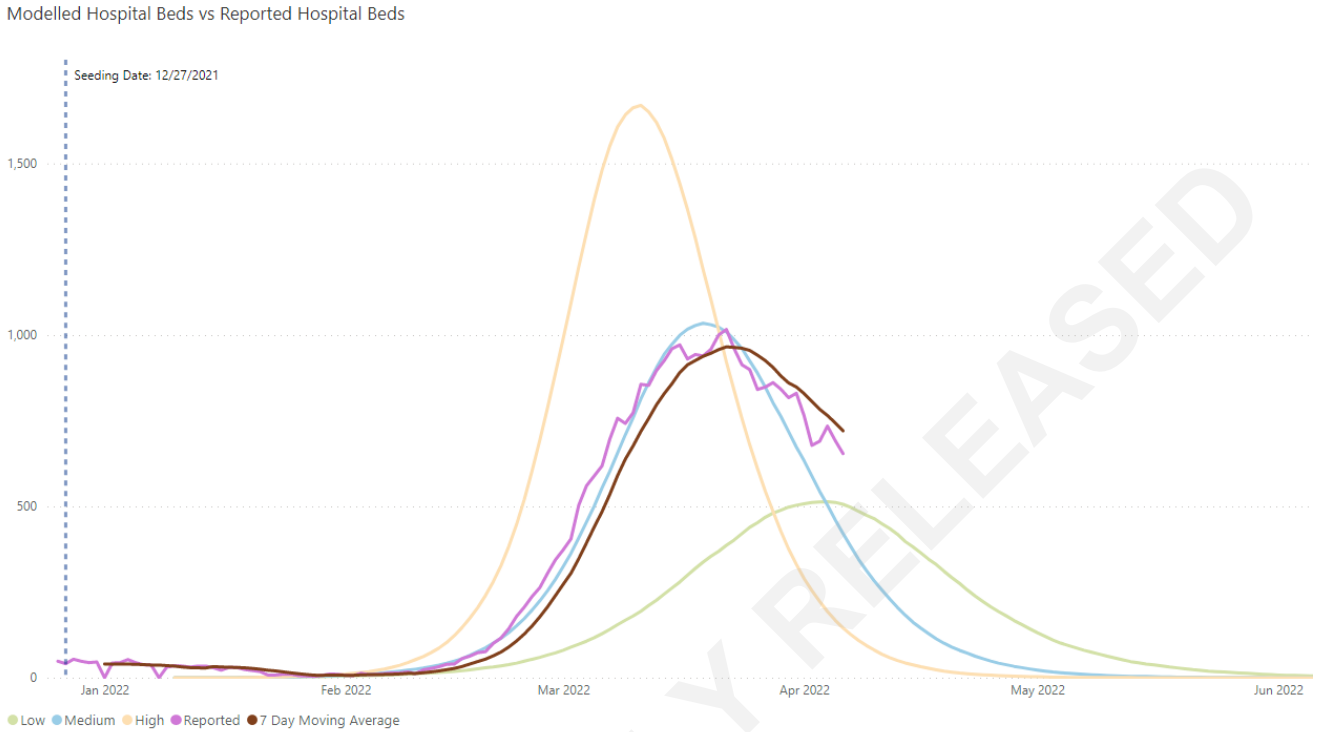
	Hospitalised cases						
DHB	Delta	Omicron (BA.1-like)	Omicron (BA.2-like)	Omicron (Unassigned)	No genome obtained	To be received	Total
Northland	3	2	6	0	0	15	**26**
Waitemata	8	73	226	2	18	225	**552**
Auckland	4	51	47	0	3	326	**431**
Counties Manukau	6	128	145	4	12	438	**733**
Waikato	1	4	11	0	2	375	**393**
Lakes	1	10	12	0	1	37	**61**
Bay of Plenty	3	22	164	1	14	120	**324**
Tairawhiti	0	0	1	0	1	21	**23**
Taranaki	0	4	44	0	1	15	**64**
Hawke's Bay	2	4	1	0	0	33	**40**
Whanganui	0	0	3	0	0	12	**15**
MidCentral	0	4	17	0	1	111	**133**
Wairarapa	0	2	15	0	5	3	**25**
Hutt Valley	0	3	4	0	2	104	**113**
Capital and Coast	1	5	29	0	1	176	**212**
Nelson Marlborough	0	0	0	0	0	2	**2**
West Coast	0	1	2	0	0	2	**5**
Canterbury	1	24	246	0	21	14	**306**
South Canterbury	0	1	2	0	0	1	**4**
Southern	0	10	84	0	20	30	**144**
Unknown	0	0	0	0	0	3	**3**
Border	0	1	0	0	1	1	**3**
Total	**30**	**349**	**1059**	**7**	**103**	**2064**	**3612**

Source: ESR COVID-19 Genomics Insights Report #1, EpiSurv/Microreact 1200hrs 04 April 2022

Hospitalisations predicted and actual

Hospitalisations continue to track closely to the "medium" scenario published 27 February 2022 (Figure 21).

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



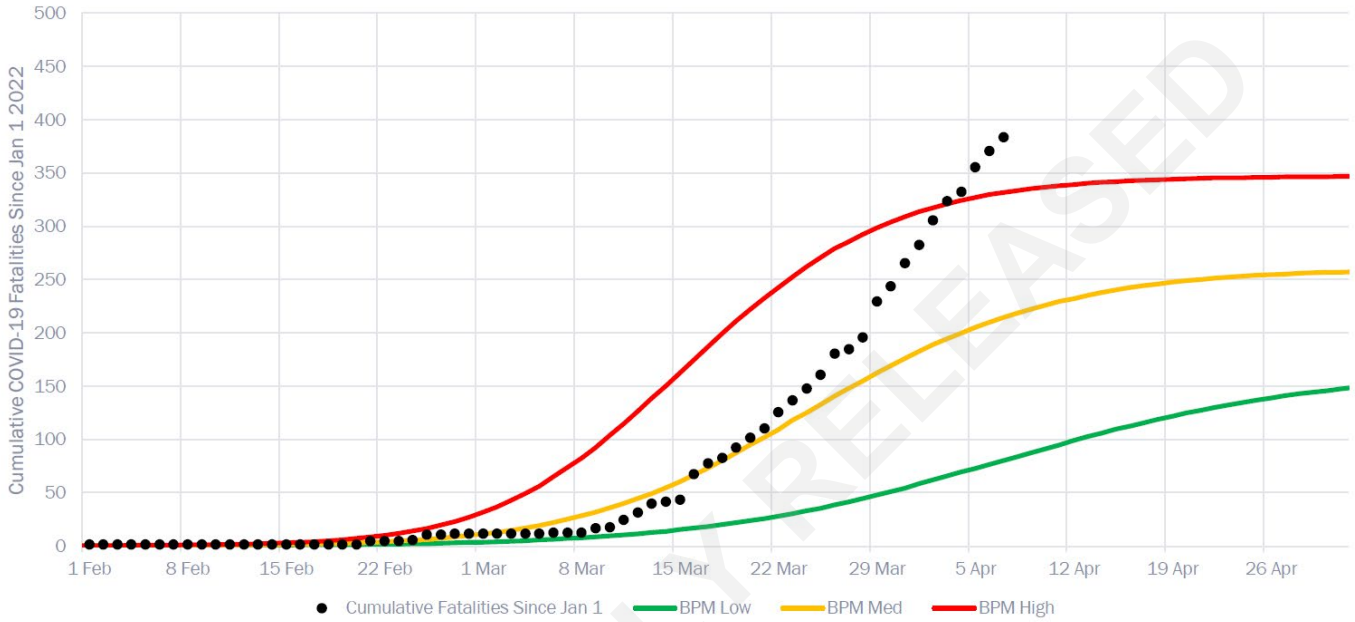
Sources: TAS, based on COVID-19 Modelling Aotearoa Branching Process Model 27 February 2022, and DHB reports to TAS of daily hospital occupancy (all COVID-19 positive people admitted as inpatients).

Mortality modelling

As of 07 April 2022, 456 people have died with or after COVID-19 infection. Of these, 426 have died within 28 days of being reported as a case. The 7-day rolling average of announced deaths is 17.

Mortality is now tracking towards the "high" scenario (Figure 22).

Figure 22: *Cumulative deaths compared with modelled scenarios*



Sources: COVID-19 Modelling Aotearoa Branching Process Model 27 February 2022, MoH published mortality

Public Health Response and Health System Capacity

Omicron Dashboard

The omicron dashboard providers 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 31 March 2022.

Figure 23: ***Omicron Health Sector Clinical Indicators Dashboard summary, week ending 31 March 2022***

Sector	Summary of data
General Practice	Increased activity continues in General Practice this week – with higher than normal encounters seen across the motu. Work is beginning on discussions of how to reset following the omicron surge. Winter planning is also underway.
Primary Care	Breast screening rates have reduced by 10% from Feb 2020 to Feb 2022, most notable reduction in the Pacific Community. Childhood immunisation rates have reduced for Māori and Pacific
Aged Residential Care	Work is underway to introduce a new reporting system for aged residential care facilities that will better capture positive cases. 16 facilities have been provided with DHB staff for additional support. 25% of the 656 Aged Residential Care (ARC) facilities have at least one active COVID-19 case
Māori Health Providers	Workforce constraints continue to be the primary area of concern
Pacific Health	Providers in Auckland are preparing for a potential surge of COVID-19 cases again in winter. Ongoing work with MSD to respond to the increased demand for welfare support, particularly for families isolating
Ambulance	Nationally there is continued pressure with the volume of 111 calls, road ambulance response times and callouts that don't require transport to ED. Air ambulance capacity continues to be unaffected.
Mental Health	Mental Health Inpatient units continue to experience peak case numbers putting pressure on the acute mental health system.
Disability providers	The Ministry is working across the wider health system and with government agencies to adjust its system response to the priority needs of disabled people and to changes required under the Covid Protection Framework.
Hospital	Workforce shortages continue to increase pressure on the hospital system. Hospitilisations for COVID-19 patients have started to reduce in the past week.
ED	Nationwide reductions in the number of emergency admissions within 6 hours have been seen this week. EDs are experiencing high occupancy this week in line with high case numbers in the community.
Planned Care (Hospital)	Planned care is still reduced across most of the motu. Radiology waiting lists remain high and increasing, with demand outstripping capacity of workforce and equipment in all areas.
Pharmacy	Pharmacy operations remain largely as normal
Home and Community Support Services	Essential care is continuing to be delivered. MoH is working with providers and others to support priority populations
COVID care in the community	Between 50-60% of assessments were completed by self service over the past week, there was an increase in completion of self-assessments by Māori and Pacific this week
Workforce	MoH Health workforce team and the Office of the Chief Clinical Officers continue to support strategies to increase workforce numbers across the motu
Rural Health	Rural hospitals are seeing a slight increase in demand across the motu but none are experiencing full capacity at this time.

Sources: Omicron Health Sector Clinical Indicators Dashboard, 31 March 2022

COVID-19

Trends and Insights Report

Updated 07 April 2022

Appendix Document

Contents

Data & Notes

Data Sources

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 27 March	Rate per 1,000
Northland	3698	19.1
Waitemata	5481	8.7
Auckland	3984	8.1
Counties Manukau	4424	7.5
Bay of Plenty	4006	15.5
Waikato	6829	15.9
Tairawhiti	930	18.1
Lakes	1928	16.8
Taranaki	2839	23.1
Hawke's Bay	3676	21.1
Whanganui	2000	29.3
MidCentral	4308	23.7
Hutt Valley	2906	18.7
Capital and Coast	5270	16.7
Wairarapa	760	15.6
Nelson Marlborough	3076	19.5
West Coast	582	18.0
Canterbury	12884	22.8
South Canterbury	1560	25.5
Southern	7785	23.2
Unknown	39	2.1
Total	**78965**	15.8

Regions	Community cases reported since 27 March	Case Rate per 1000
Northern	20023	10.5
Te Manawa Taki	20564	21.0
Central	22956	24.3
Southern	28934	25.1
Total	**92477**	**18.5**

Ethnicity	Community cases reported since 27 March	Rate per 1,000
Māori	18257	23.8
Pacific Peoples	5273	14.3
Asian	10304	14.0
European or Other	58053	18.7
Unknown	639	-
Total	**92526**	**18.5**

Sex	Community cases reported since 27 March	Rate per 1,000
Female	49465	19.4
Male	42978	17.6
Unknown	83	-
Total	**92526**	**18.5**

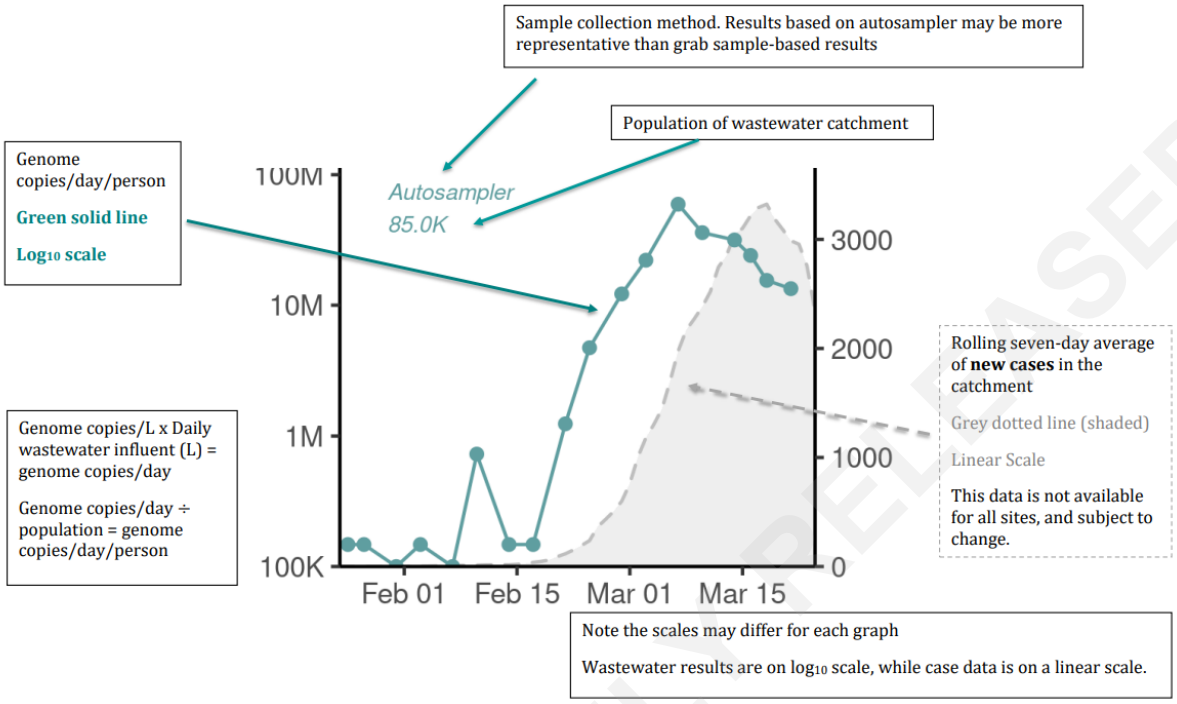
Age	Community cases reported since 27 March	Rate per 1,000
0-9	13930	21.3
10-19	15764	24.6
20-29	14901	22.1
30-39	16402	23.8
40-49	13967	22.3
50-59	9020	14.1
60-69	5192	9.7
70+	3350	6.2
Total	**92526**	**18.5**

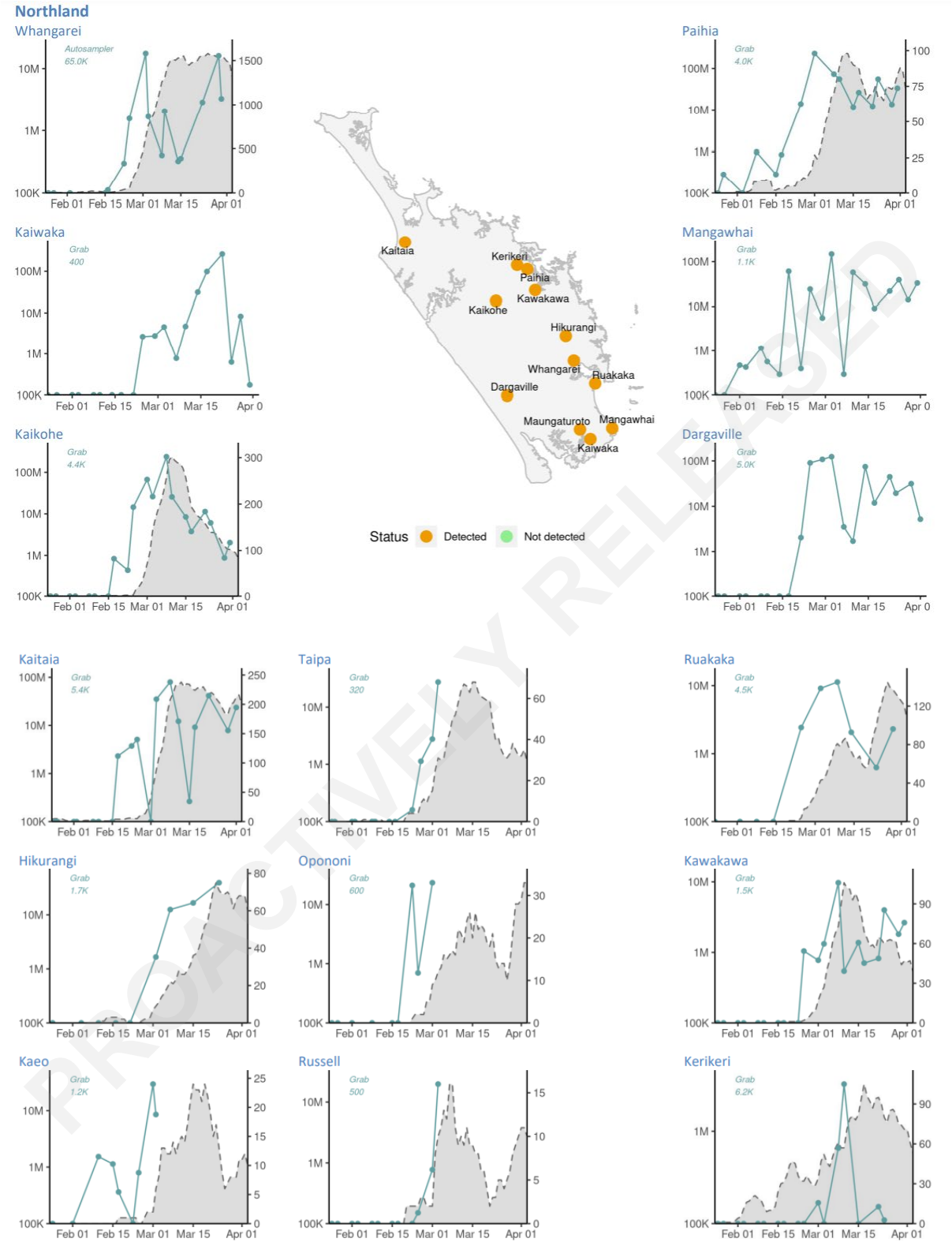
Table 1: ***Estimated median effective R (R_{eff}) by Public Health Unit region, cases to 04 April 2022***

Public Health Unit region	R_{eff} (90% Credible Interval [CI])
Northland	0.9 (0.5-1.7)
Auckland	0.9 (0.5–1.8)
Taranaki	0.8 (0.5-1.4)
Waikato	0.8 (0.4–1.7)
Toi Te Ora	1.0 (0.5–2.0)
Tairawhiti	0.9 (0.6-1.5)
Regional Public Health (Wellington Region)	0.9 (0.5–1.6)
Mid Central	0.8 (0.5-1.1)
Hawkes Bay	0.8 (0.5–1.2)
Canterbury/ South Canterbury	1.0 (0.4–2.5)
Southern	1.0 (0.4–2.3)
Nelson Marlborough	0.8 (0.3–2.2)
West Coast	1.7 (1.0–3.2)
National	0.9 (0.4-1.9)

ESR Wastewater

Interpreting site graphs





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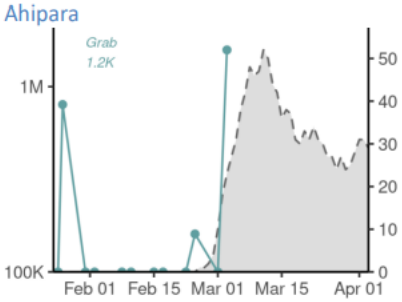

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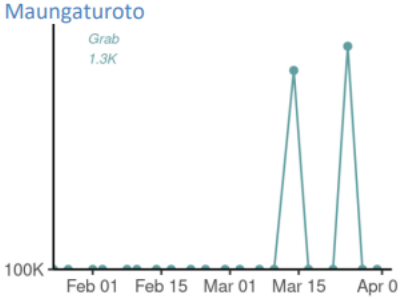
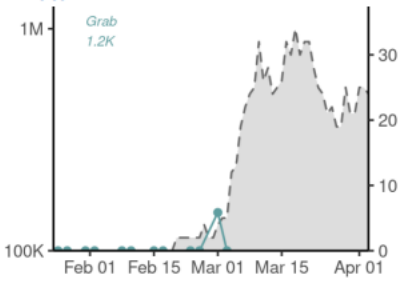
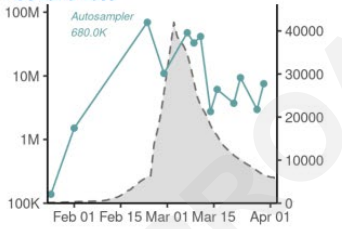


Whatuwhiwhi

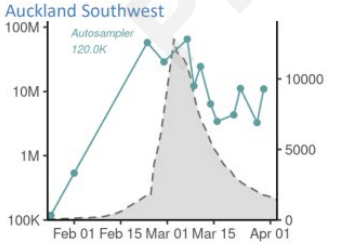


Auckland

Auckland East



Auckland Southwest



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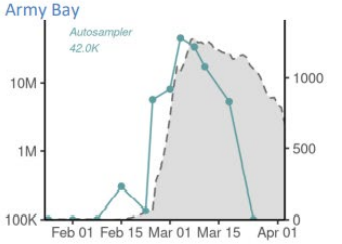

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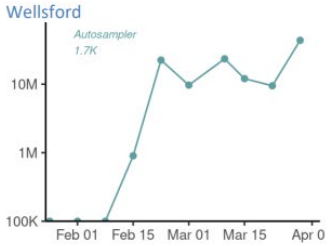

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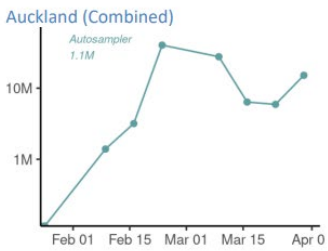

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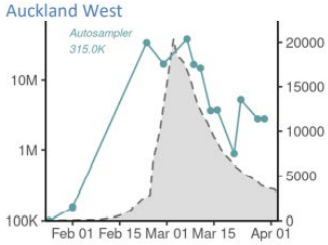

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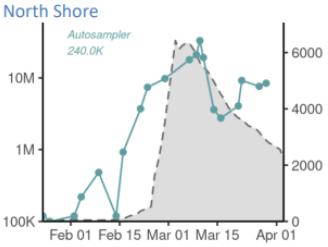

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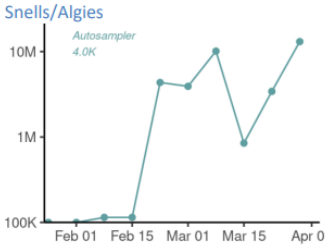

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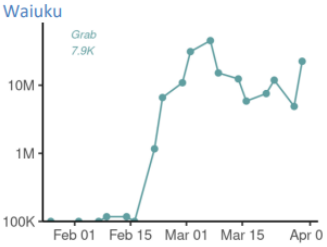

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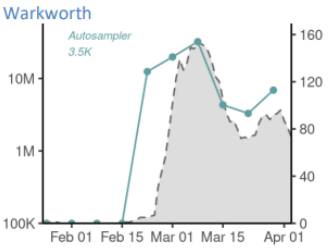

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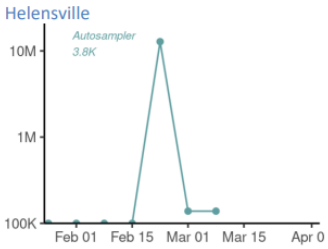

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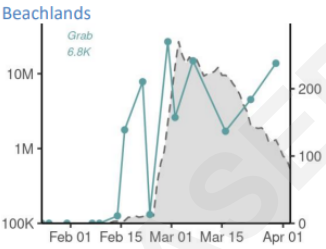

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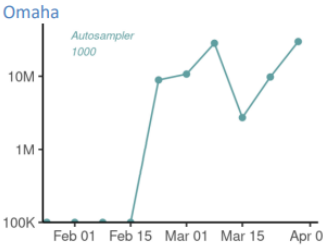

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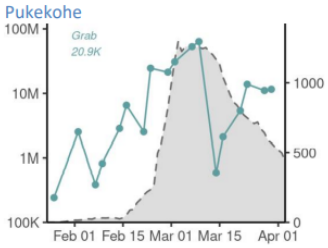

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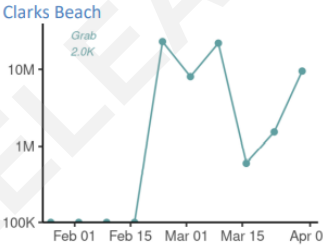

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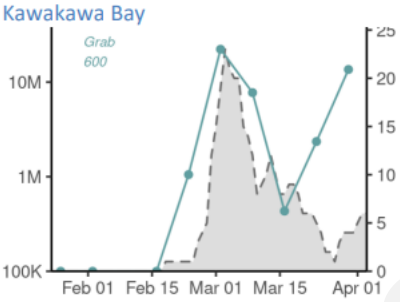
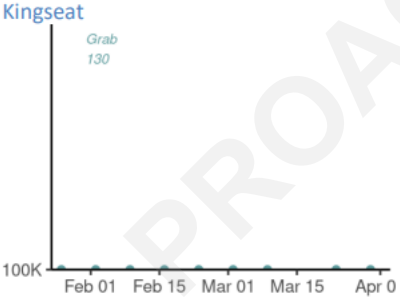


Kingseat



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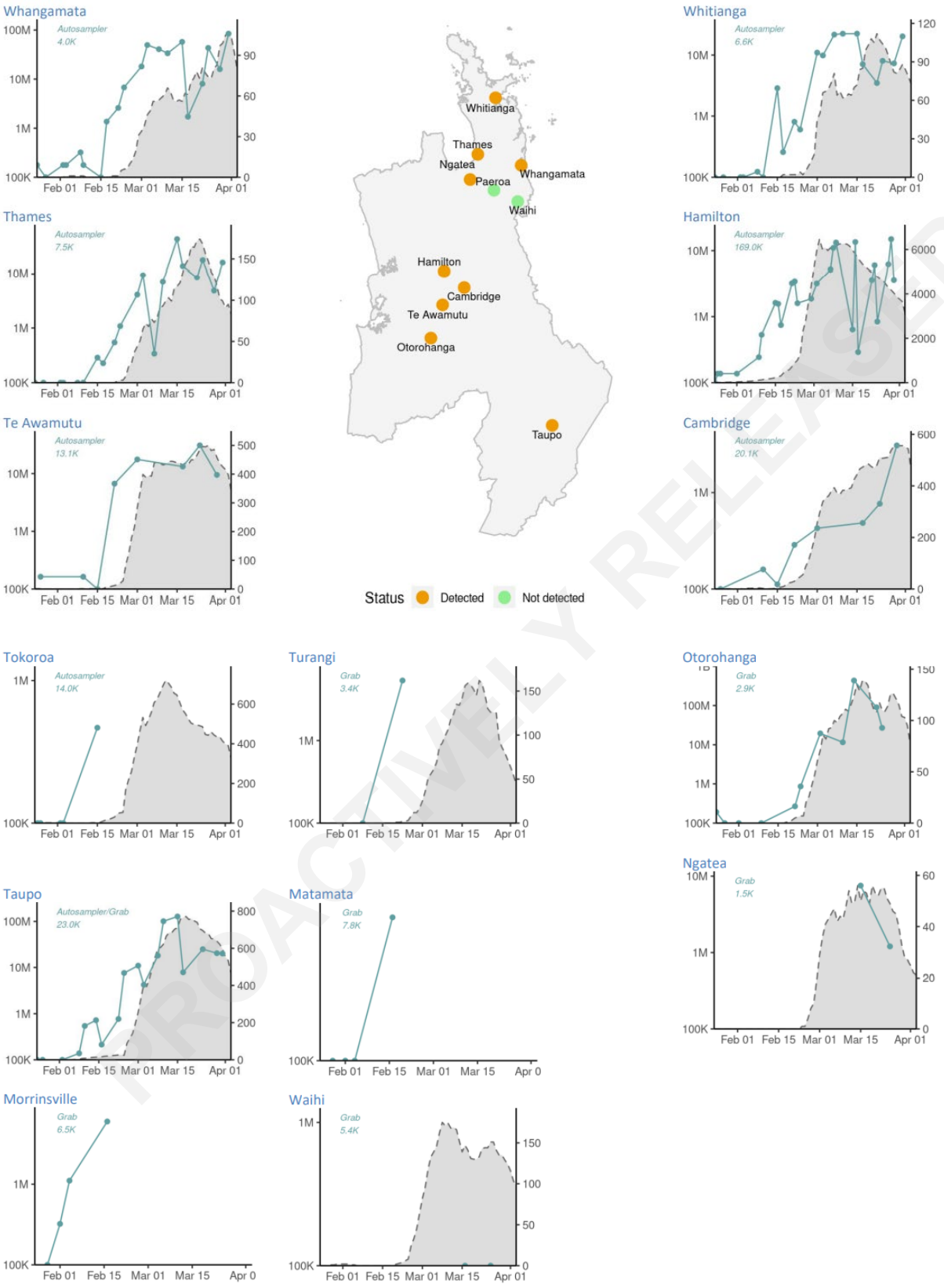
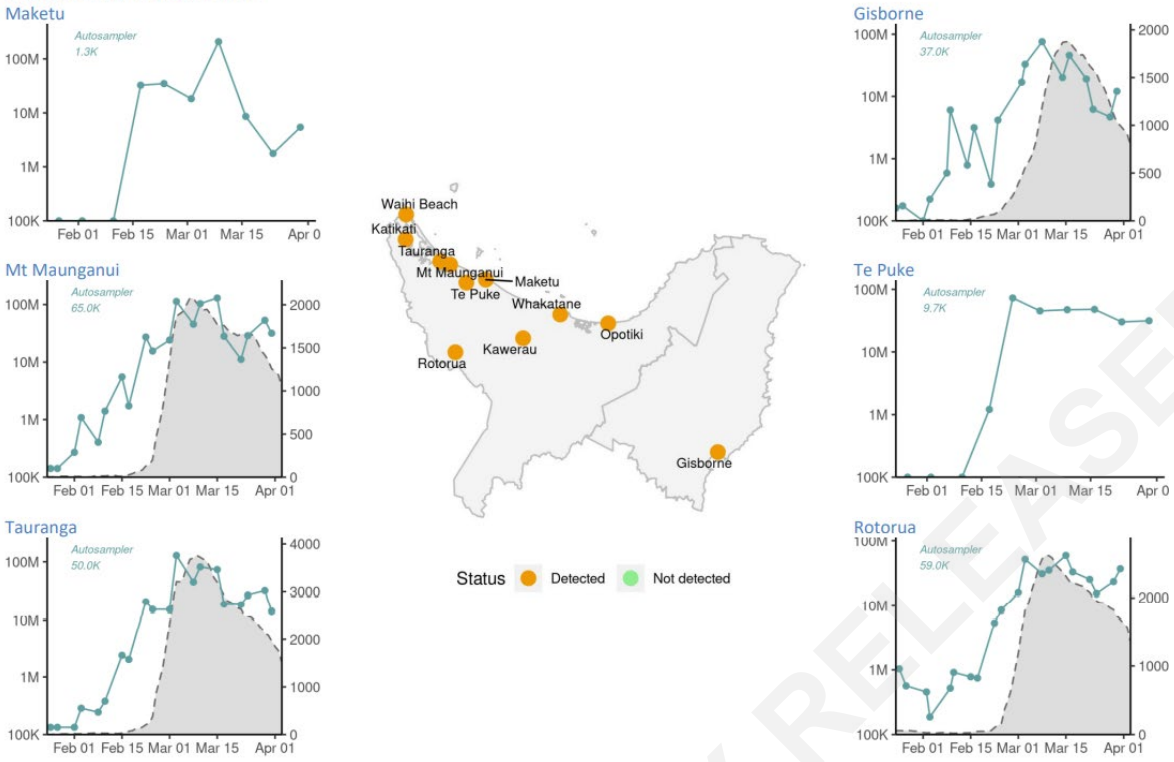
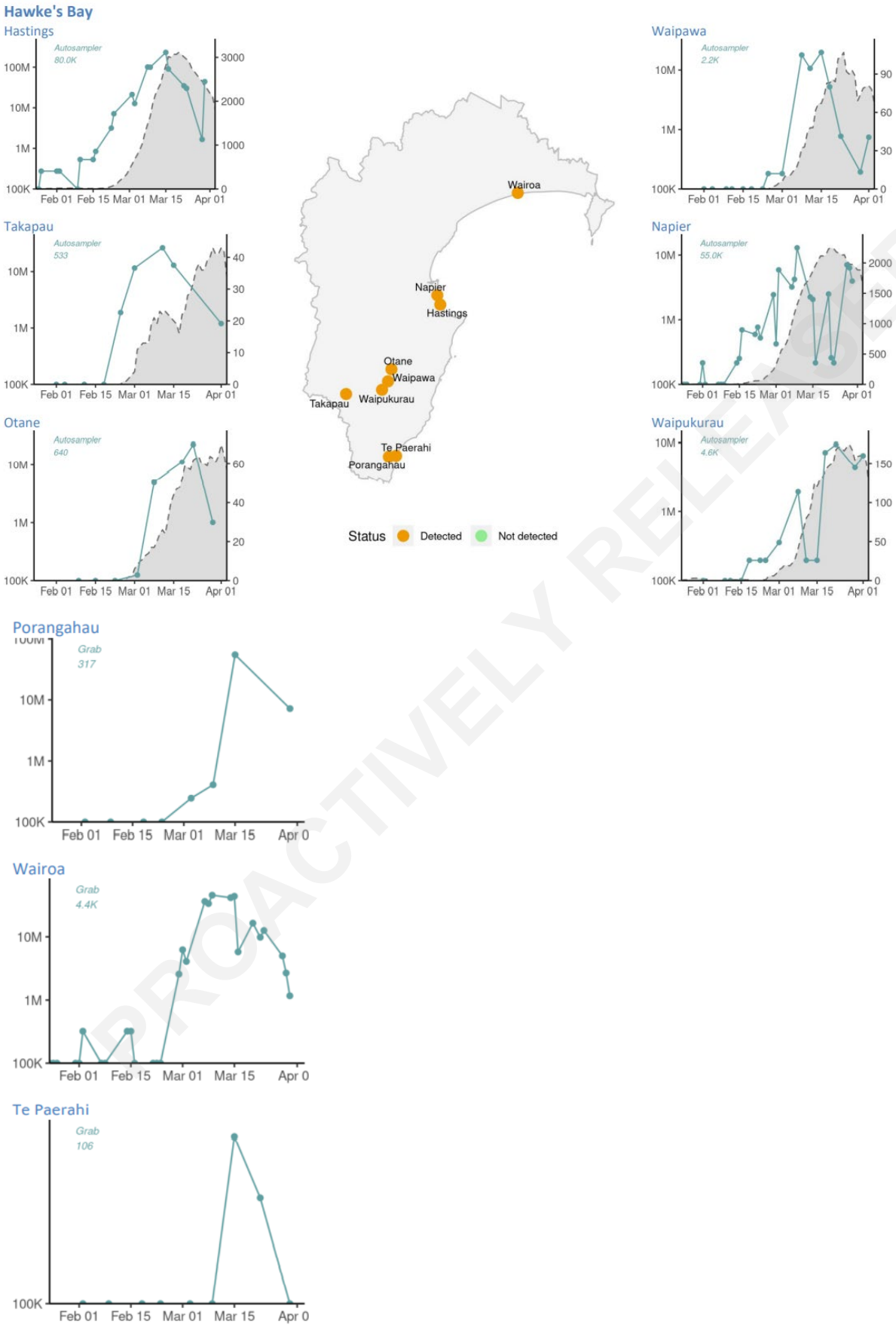


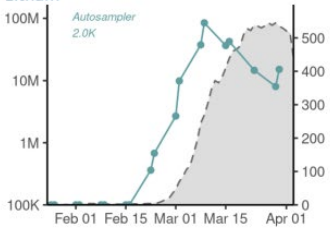
Bay of Plenty and Gisborne





Taranaki

Eltham



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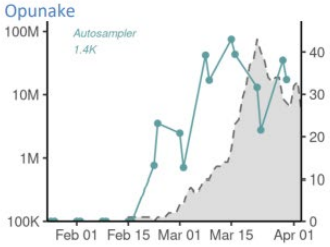

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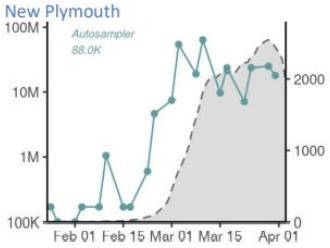

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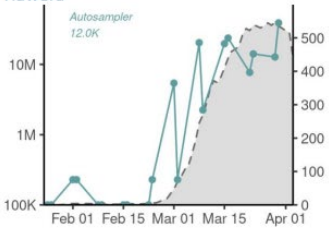

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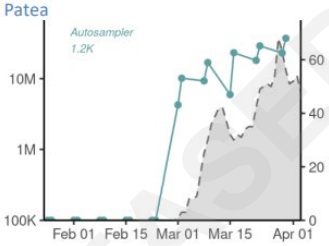
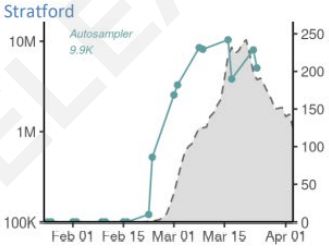
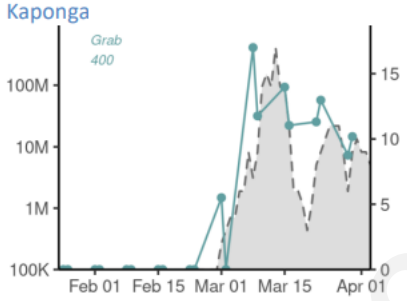


Stratford



Kaponga



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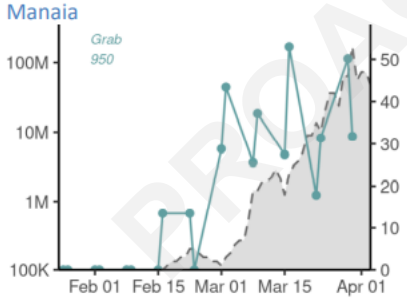
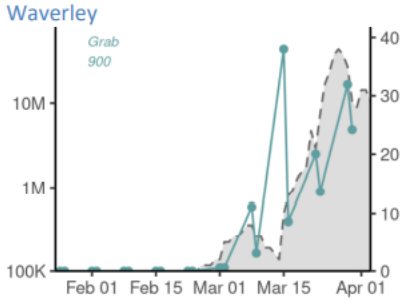
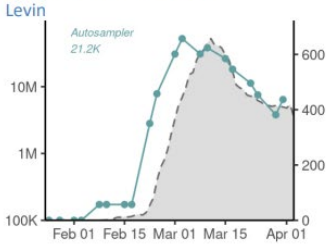


Waverley

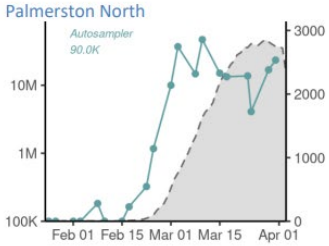


Manawatu-Wanganui

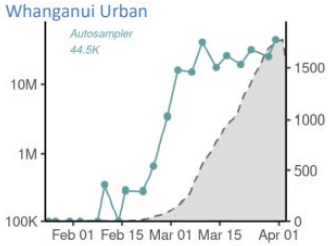
Levin



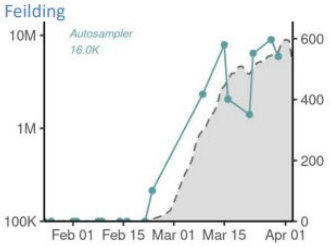
Palmerston North



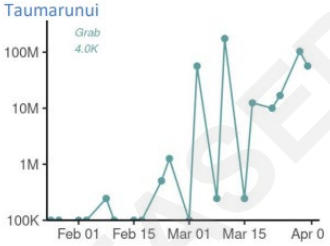
Whanganui Urban



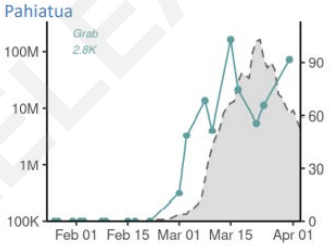
Feilding



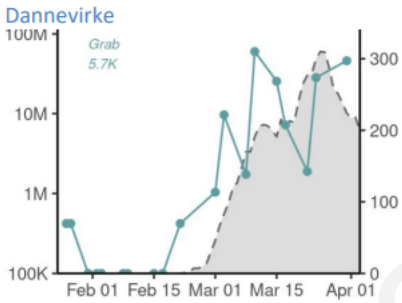
Taumarunui



Pahiatua



Dannevirke



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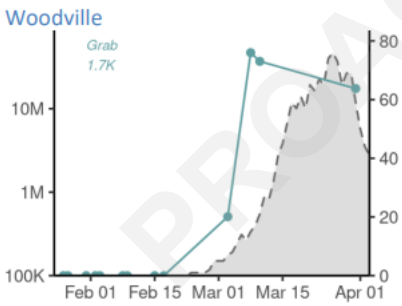
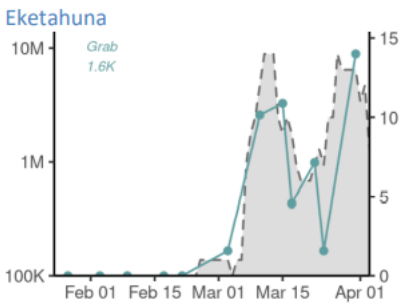
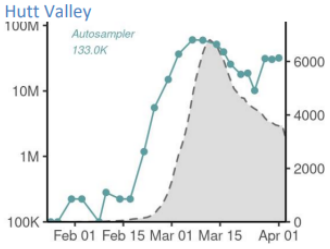


Eketahuna

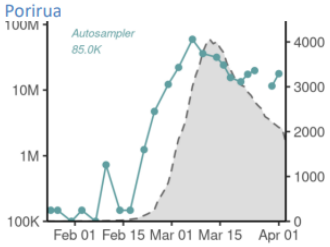


Wellington

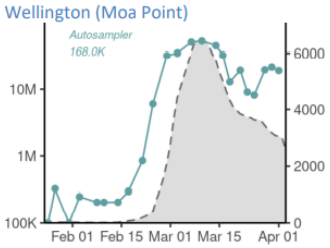
Hutt Valley

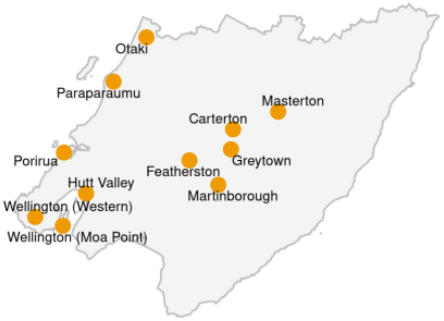


Porirua



Wellington (Moa Point)





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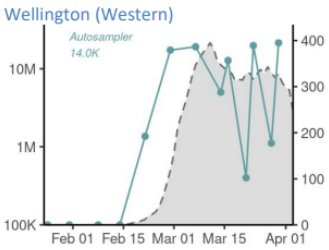
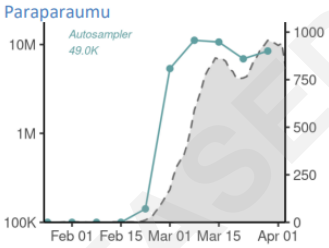
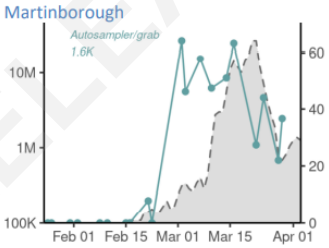
Wellington (Western)



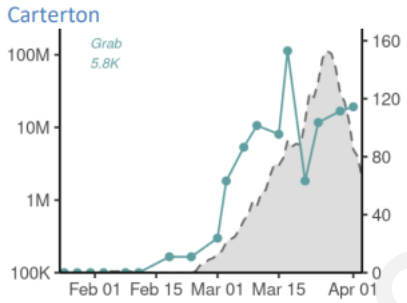
Paraparaumu



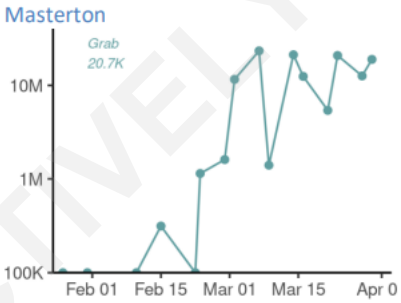
Martinborough



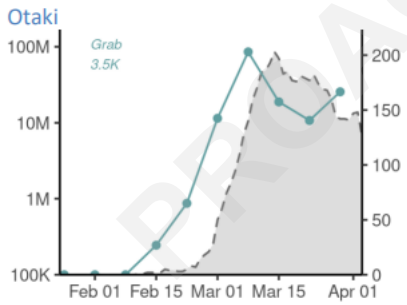
Carterton



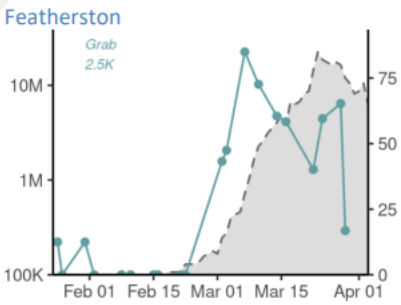
Masterton



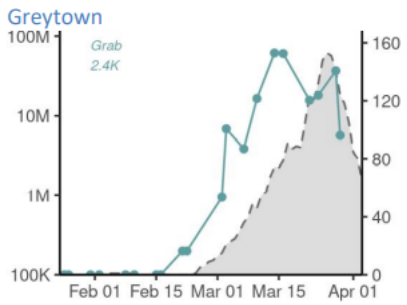
Otaki



Featherston

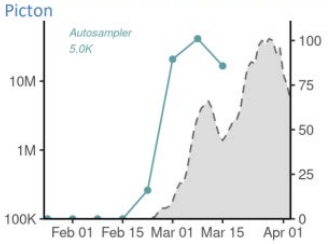


Greytown

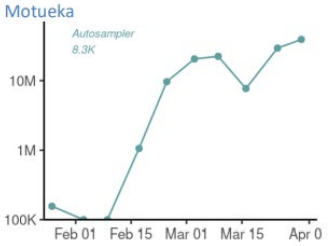


Tasman, Nelson, and Marlborough

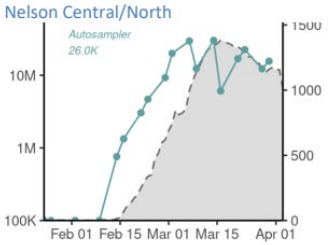
Picton

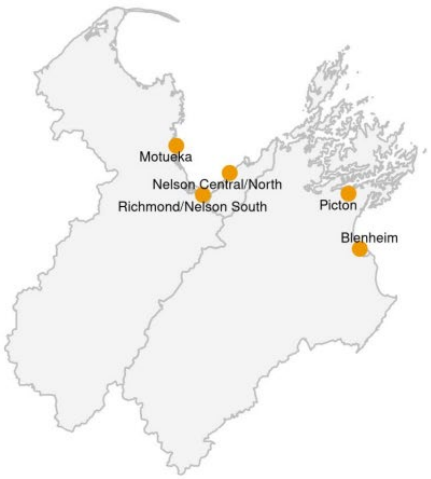


Motueka



Nelson Central/North





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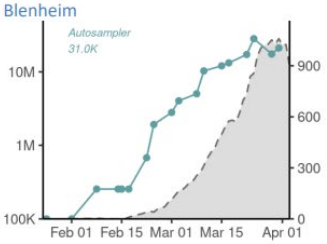
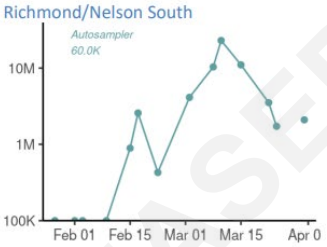
Blenheim



Richmond/Nelson South

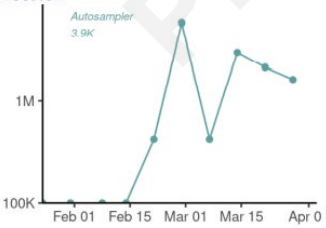


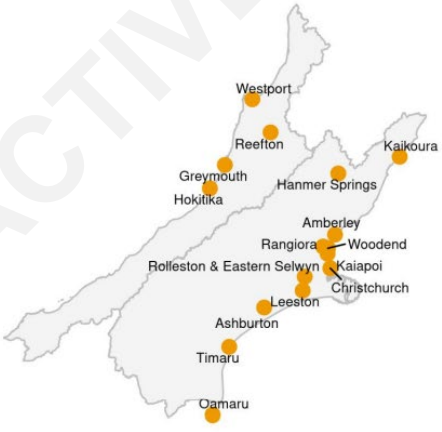
West Coast and Canterbury

Timaru

Rolleston & Eastern Selwyn

Leeston





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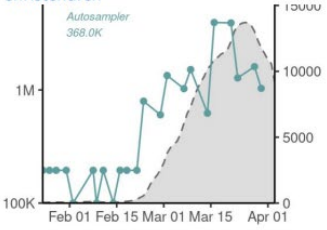
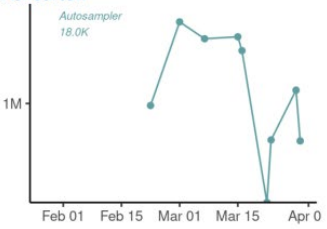
Christchurch



Ashburton



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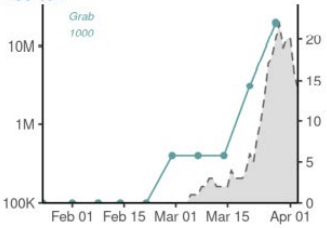
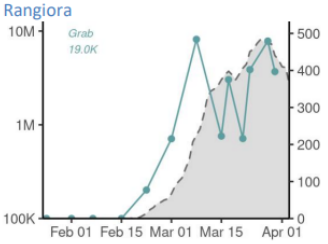
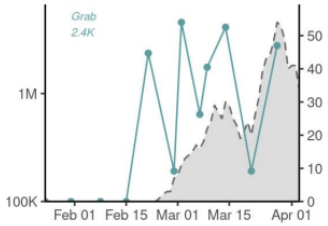


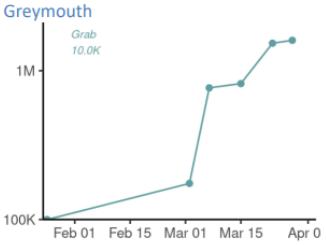
Rangiora



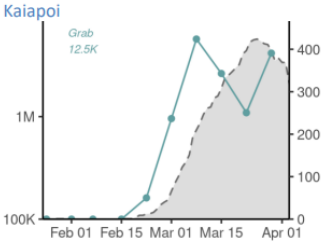
Kaikoura



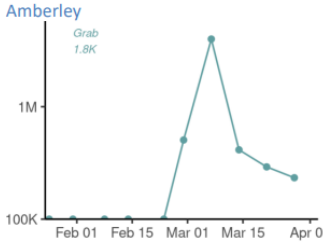
Greymouth



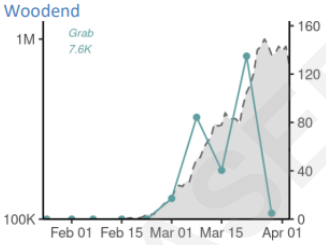
Kaiapoi



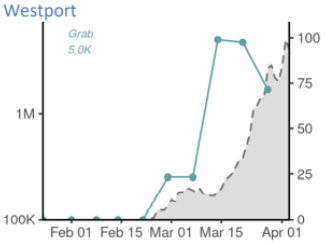
Amberley



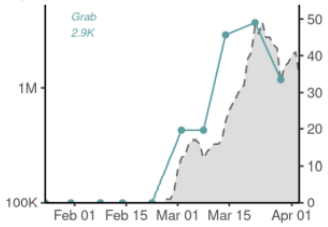
Woodend



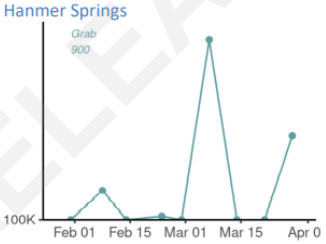
Westport



Hokitika

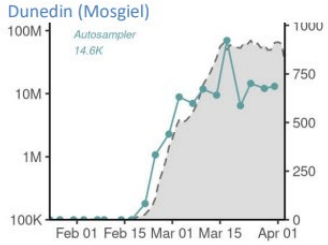


Hanmer Springs

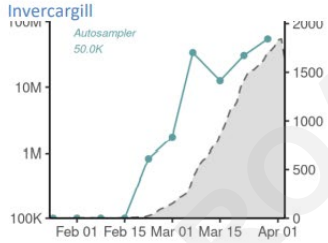


Otago and Southland

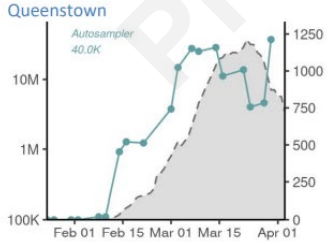
Dunedin (Mosgiel)

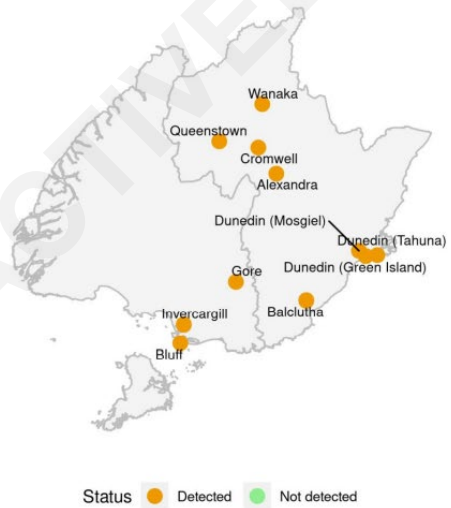


Invercargill

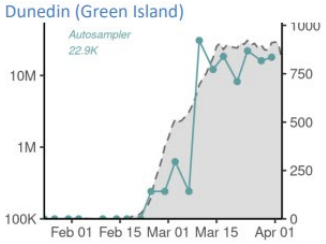


Queenstown

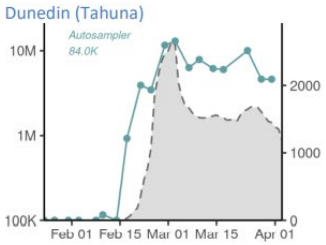




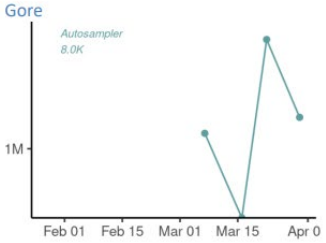
Dunedin (Green Island)



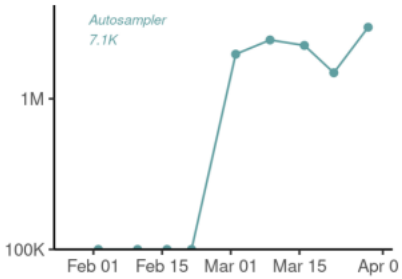
Dunedin (Tahuna)



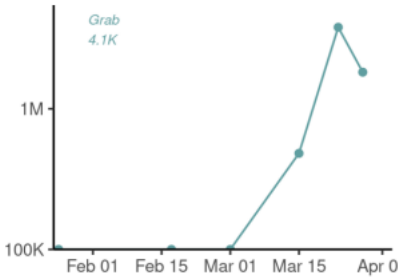
Gore



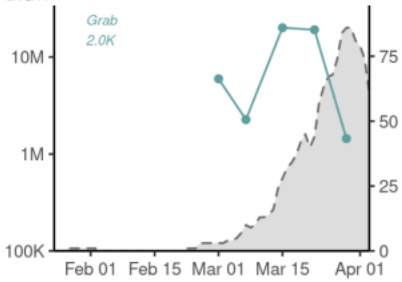
Cromwell



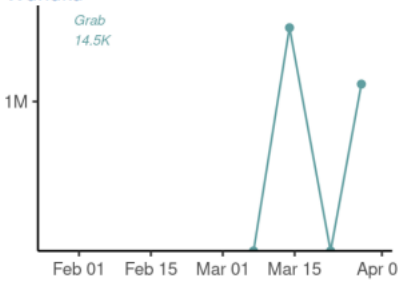
Balclutha



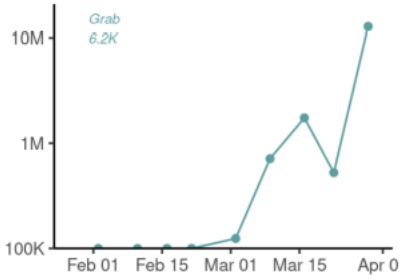
Bluff



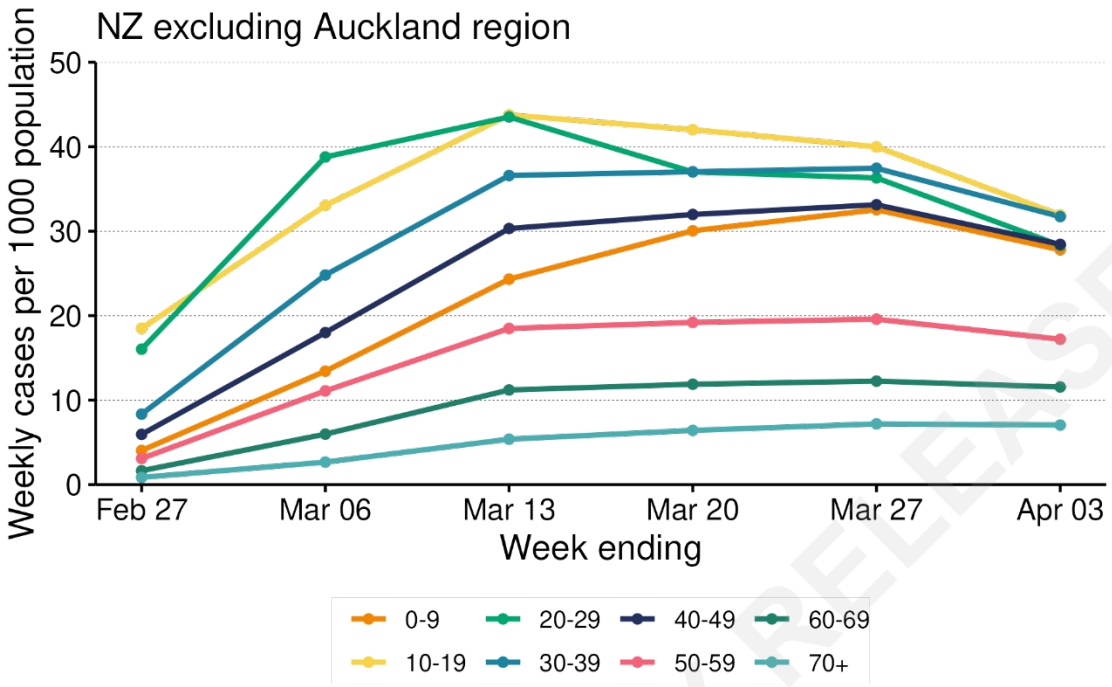
Wanaka

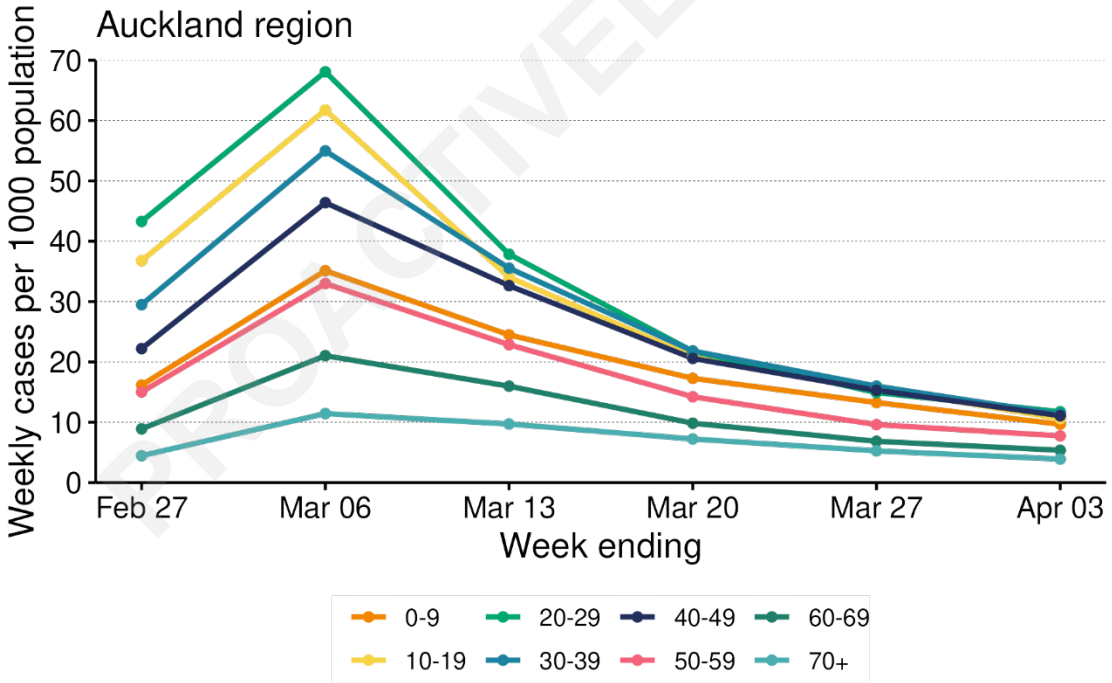


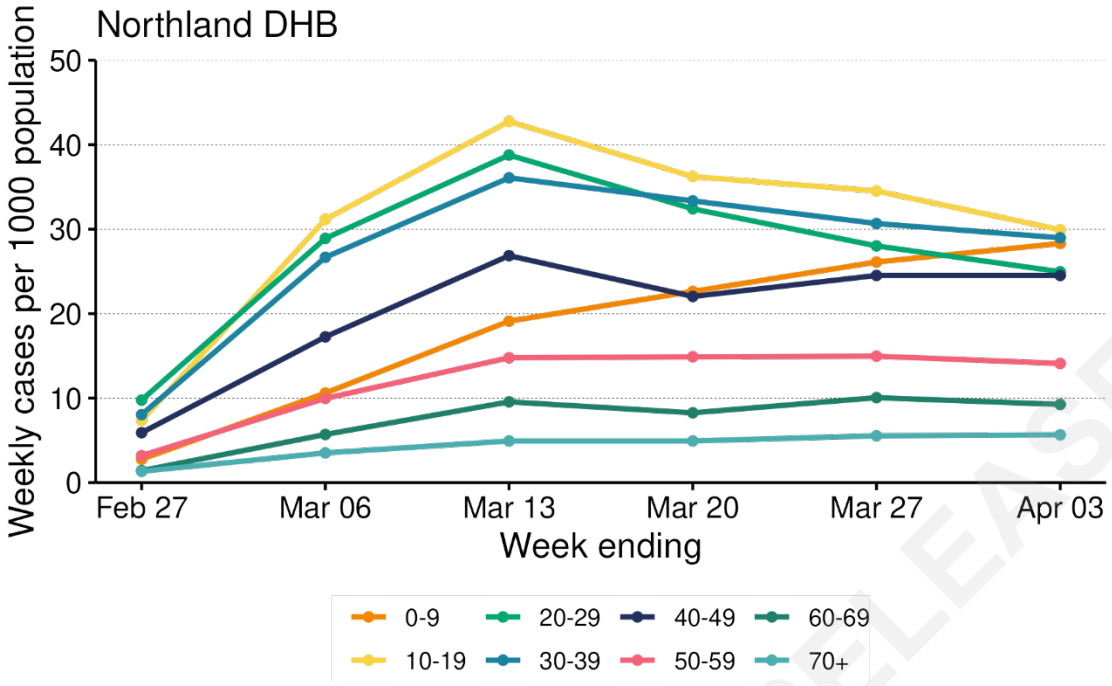
Alexandra

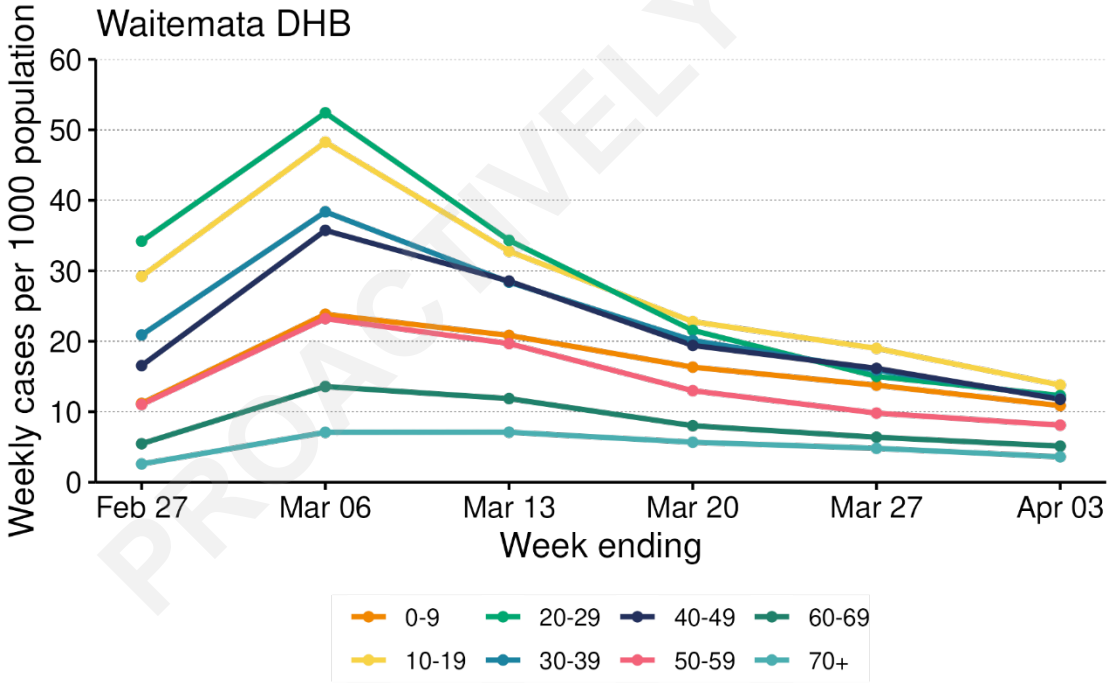


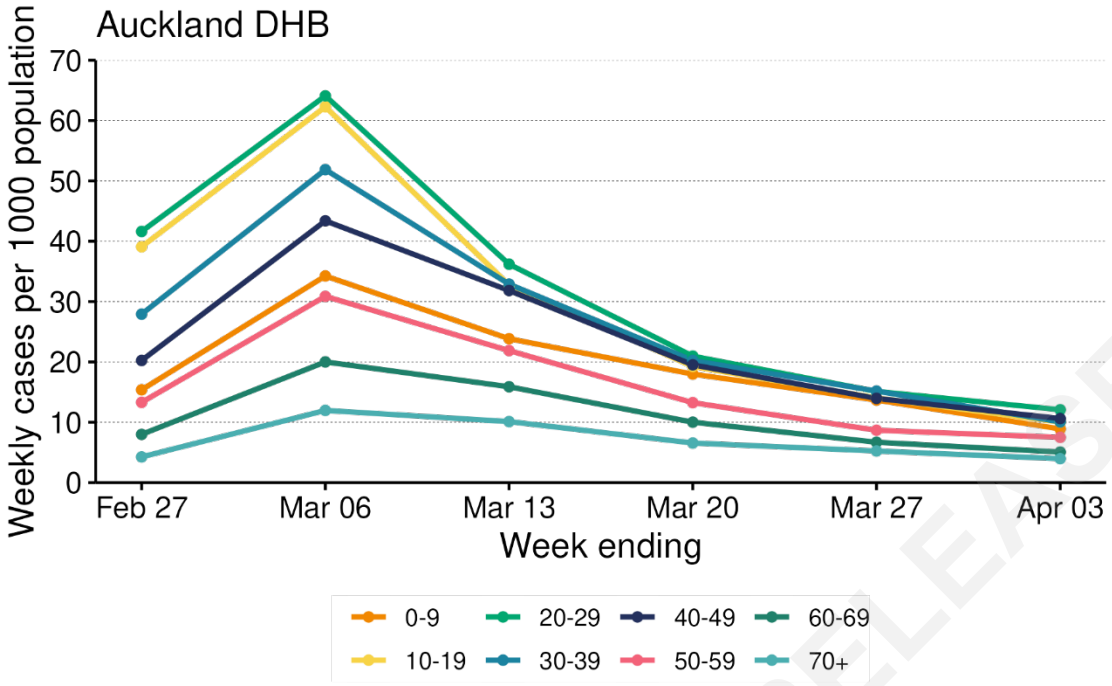
Age Graphs

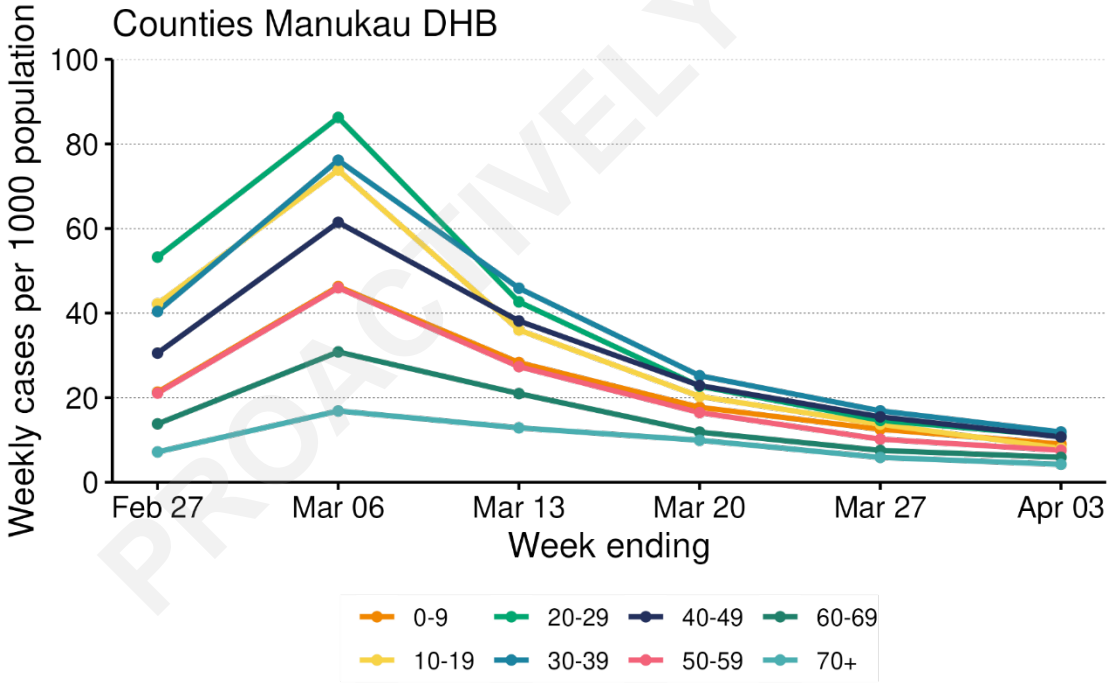


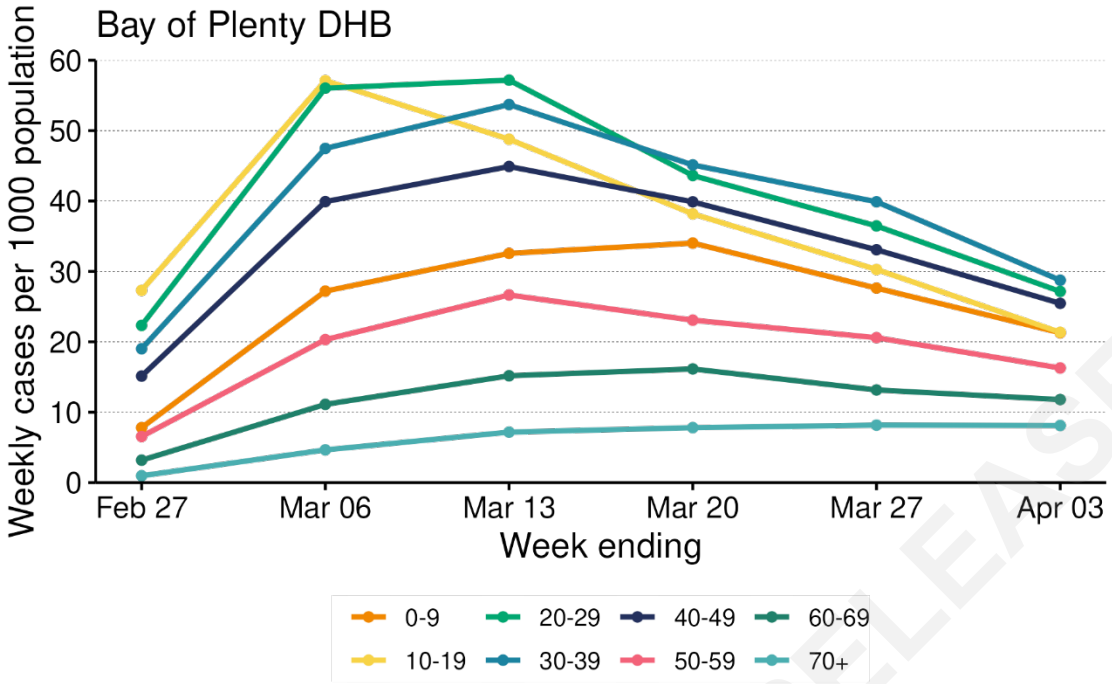


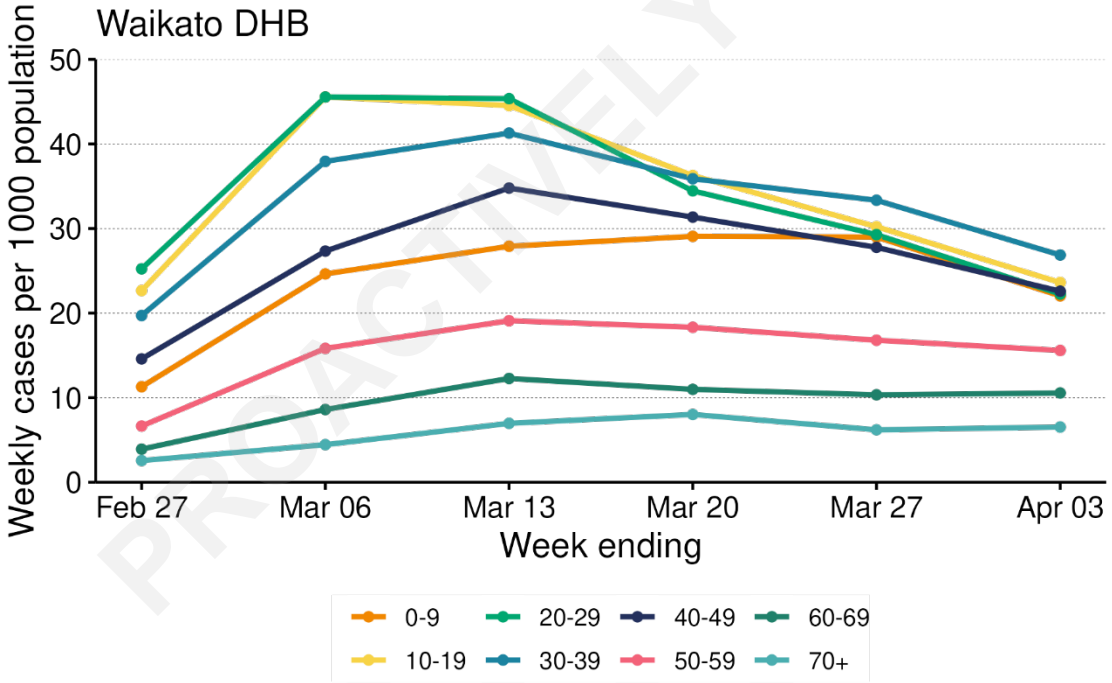


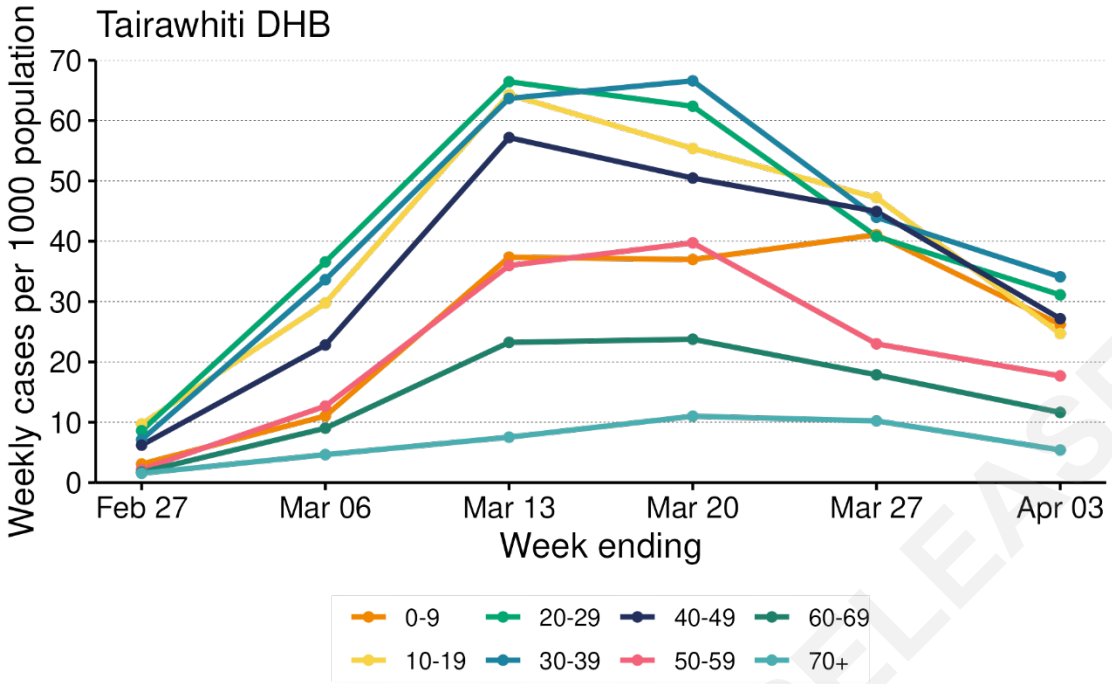


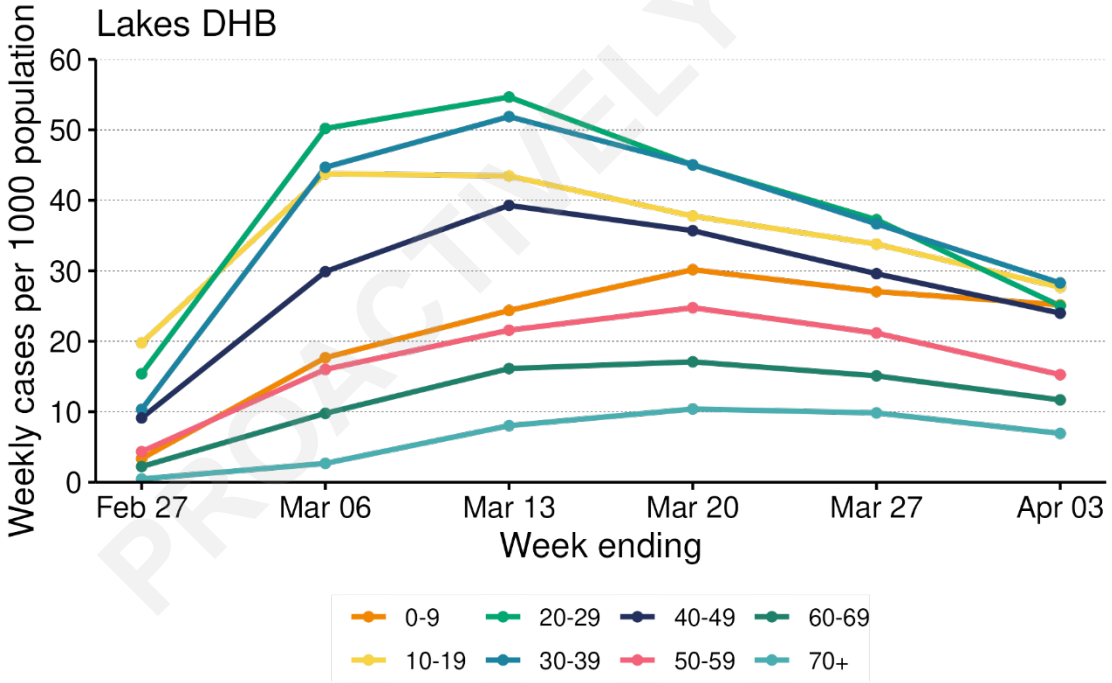


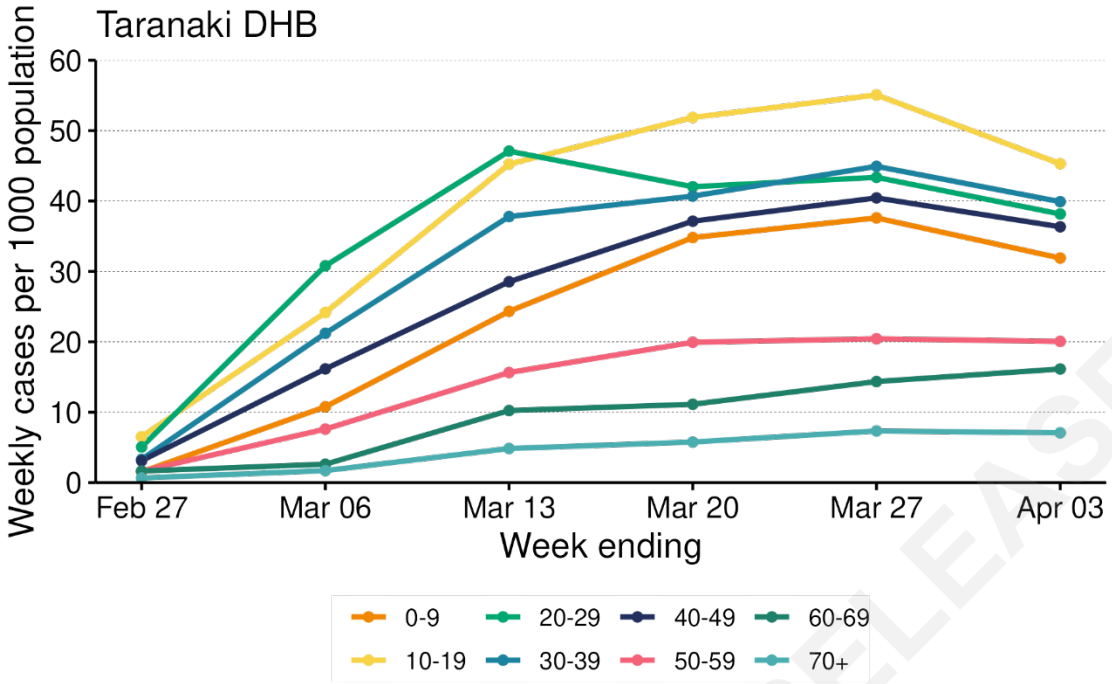


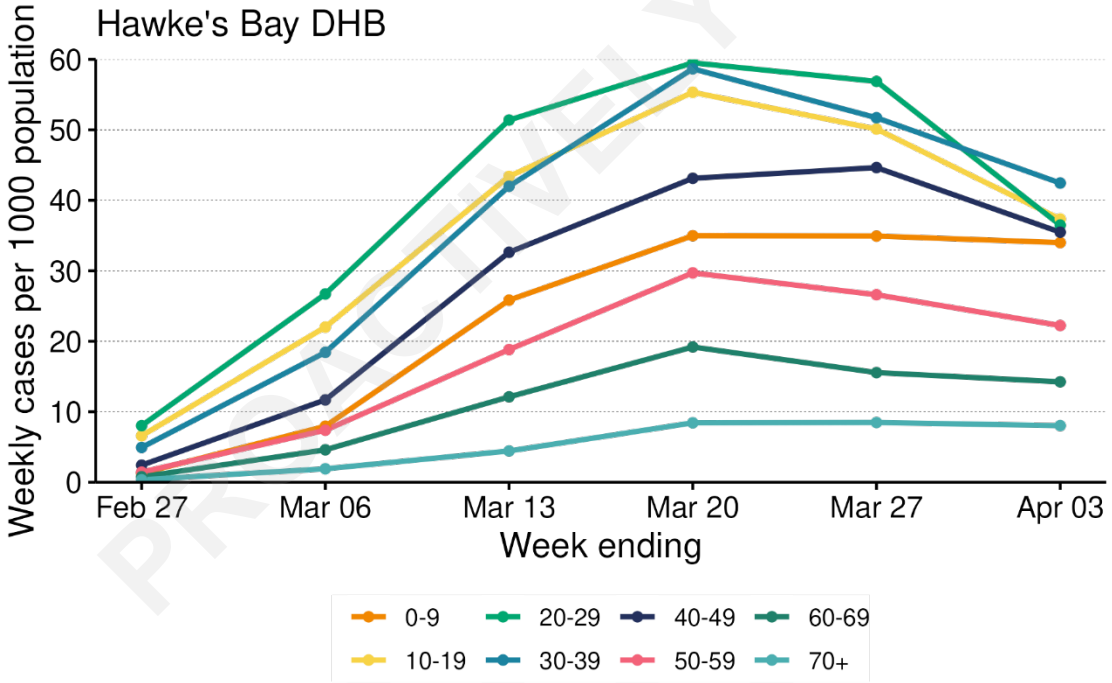


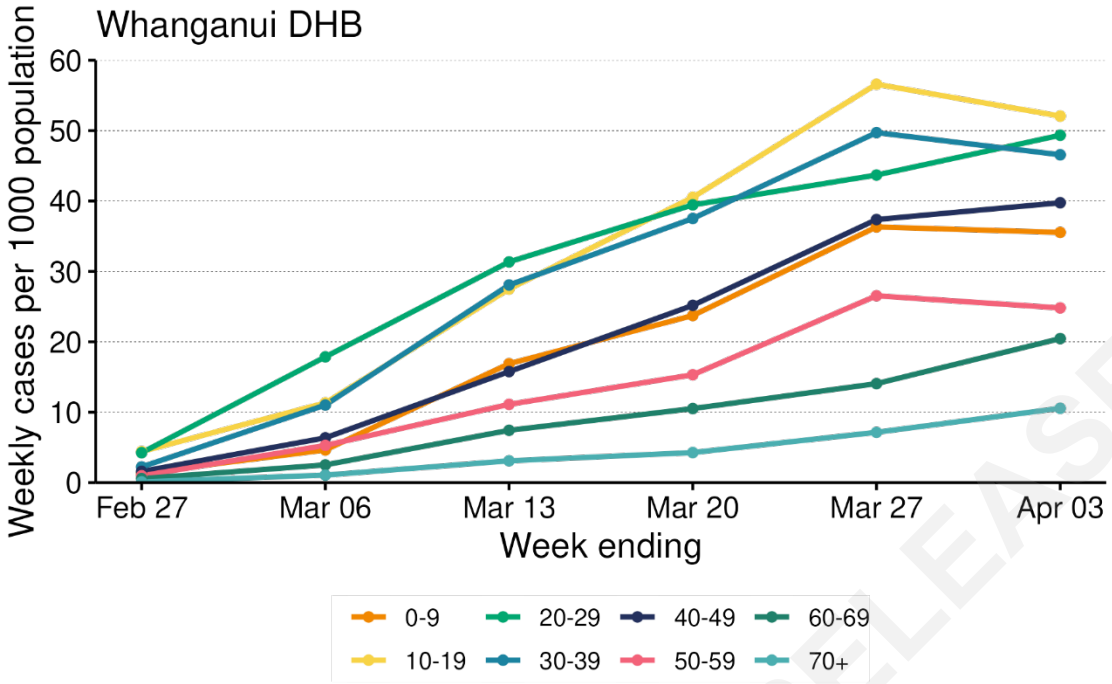


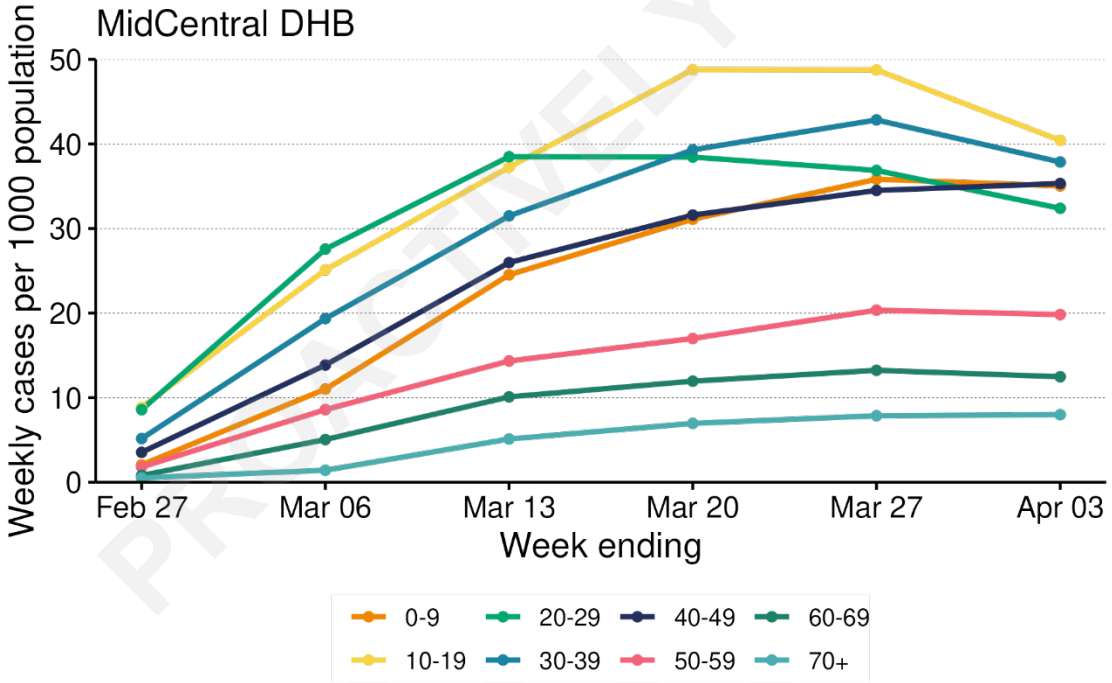


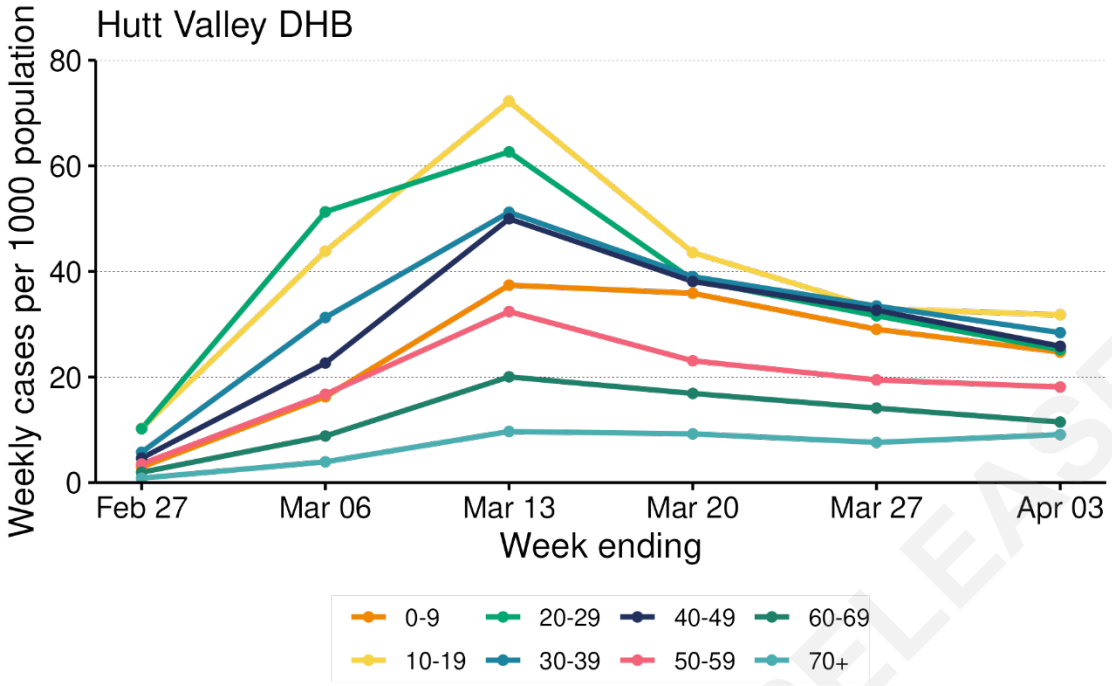


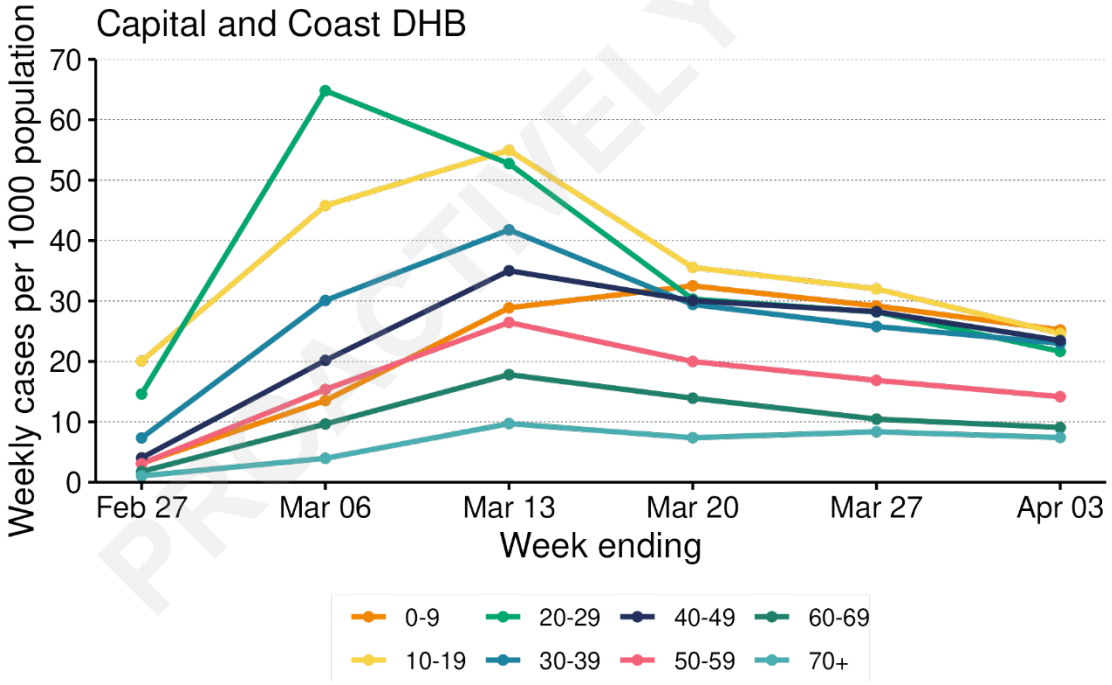


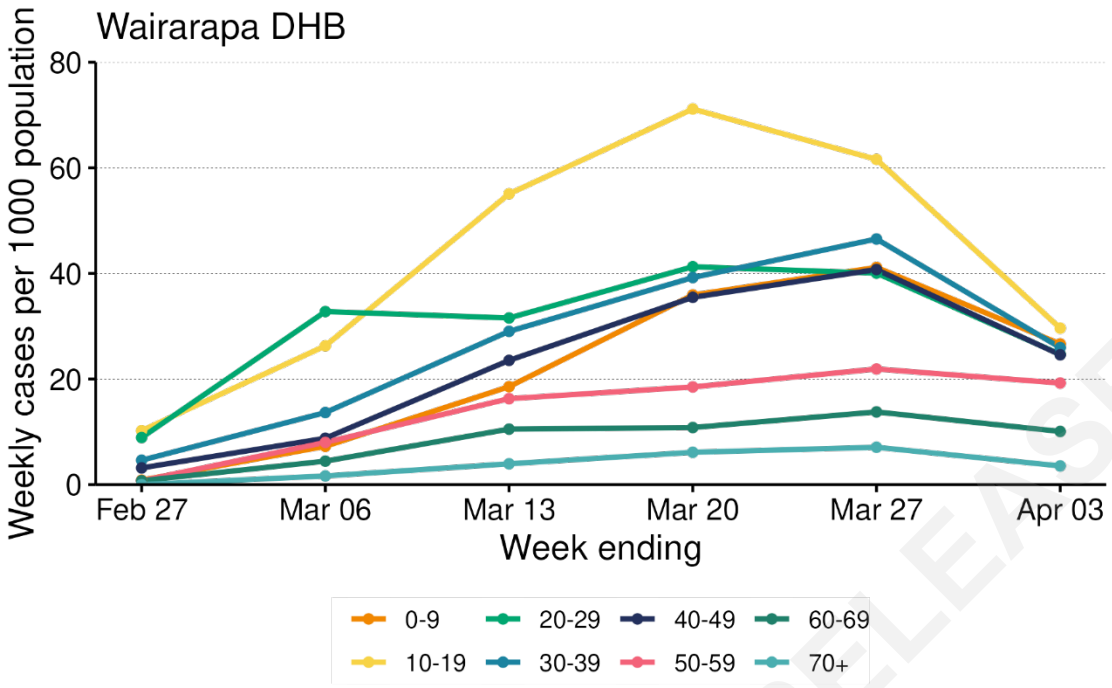


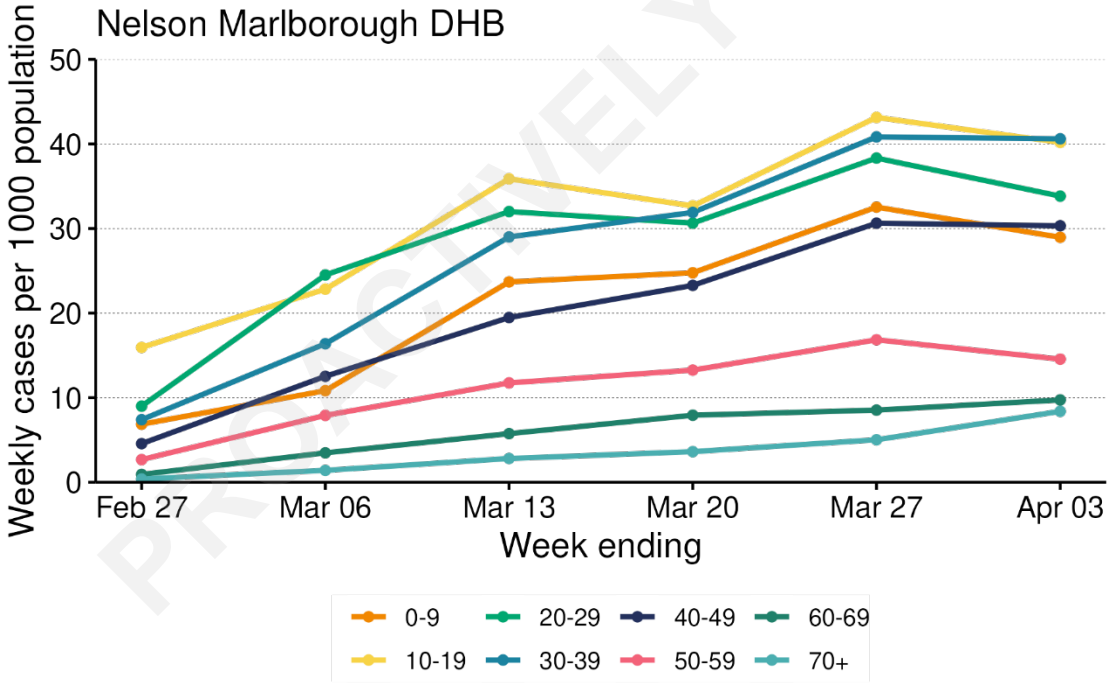


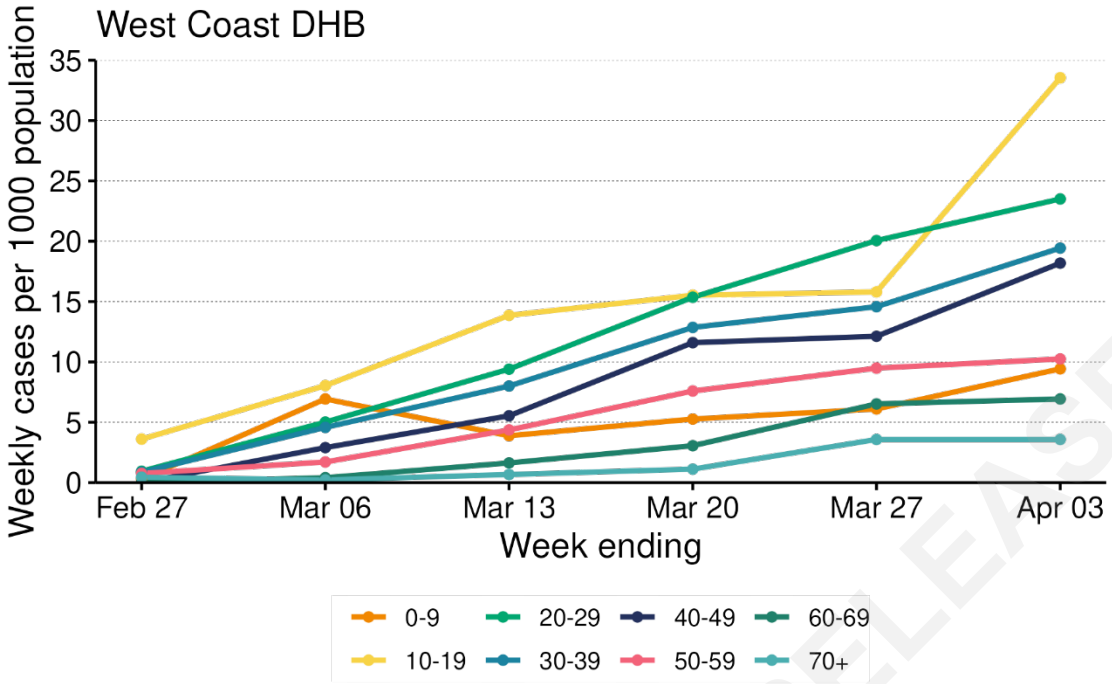


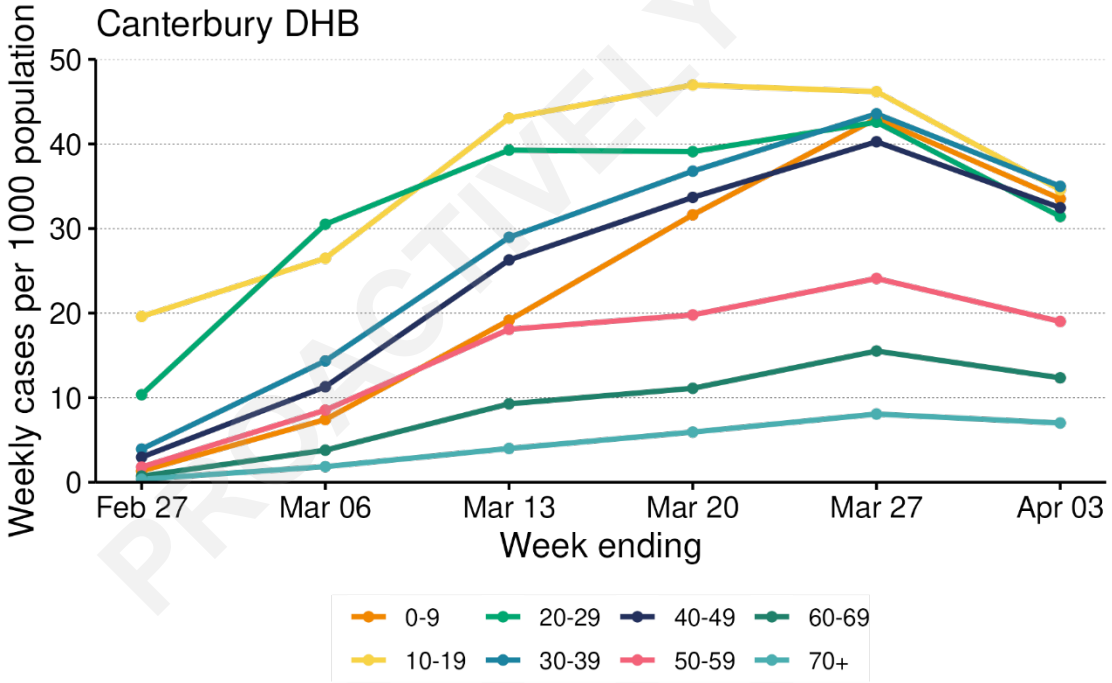


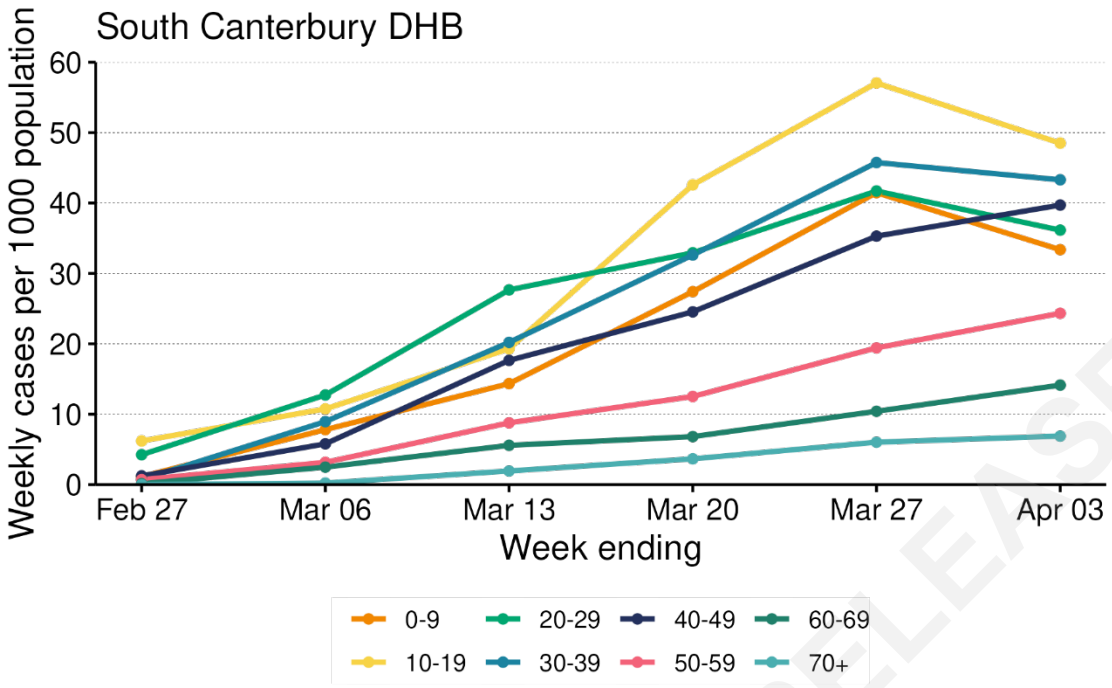


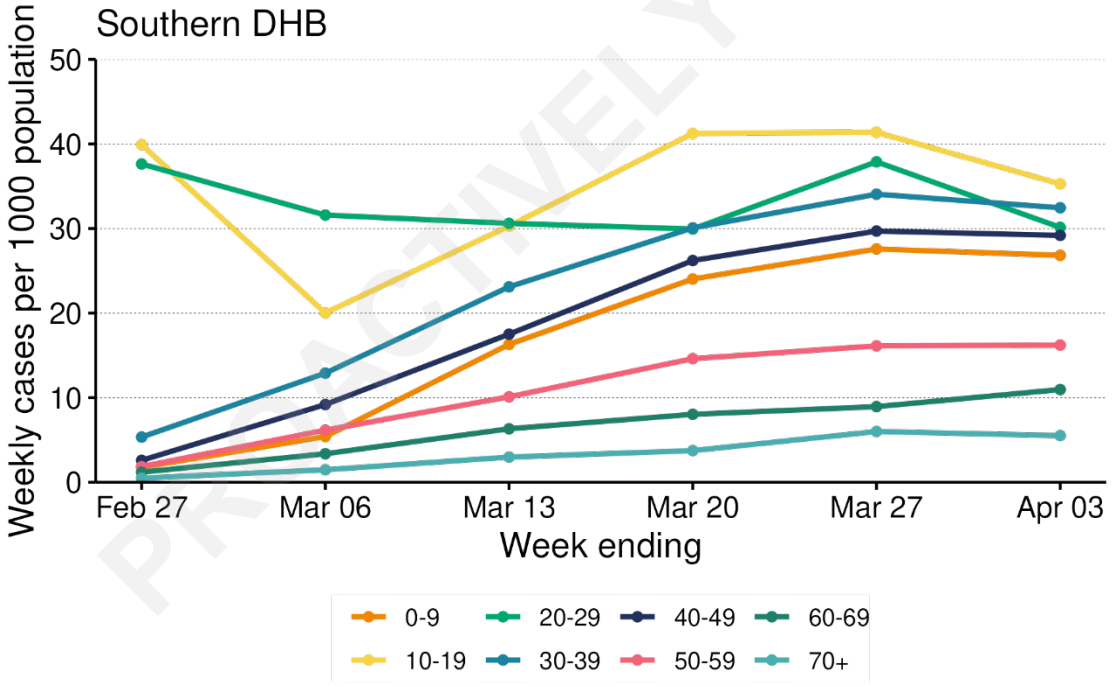


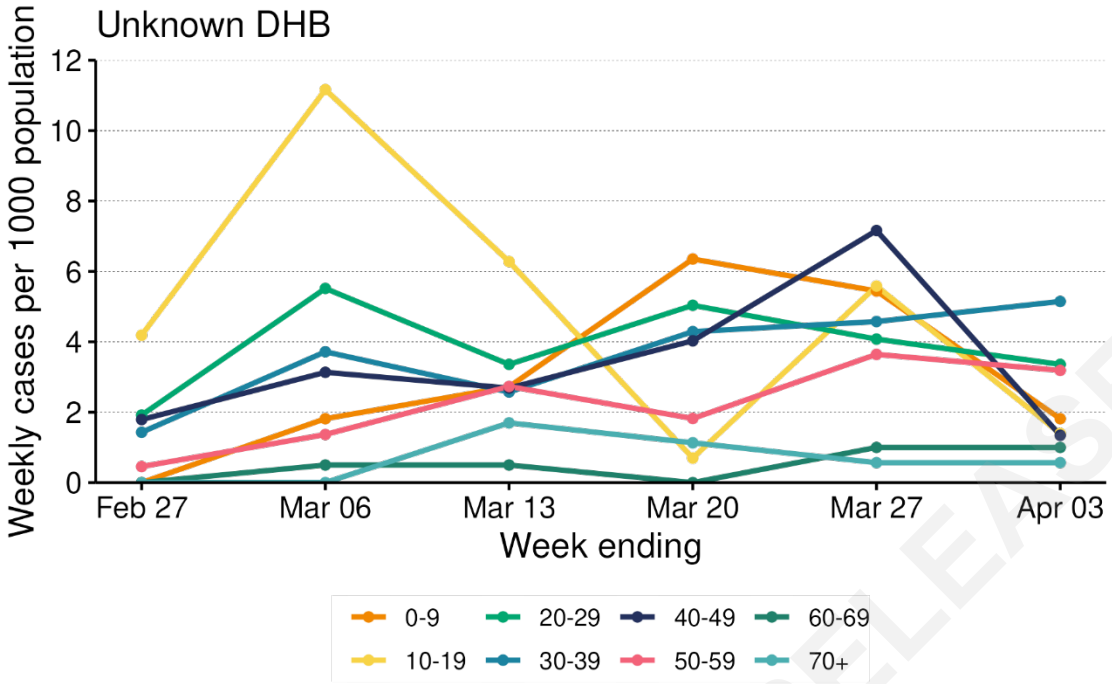




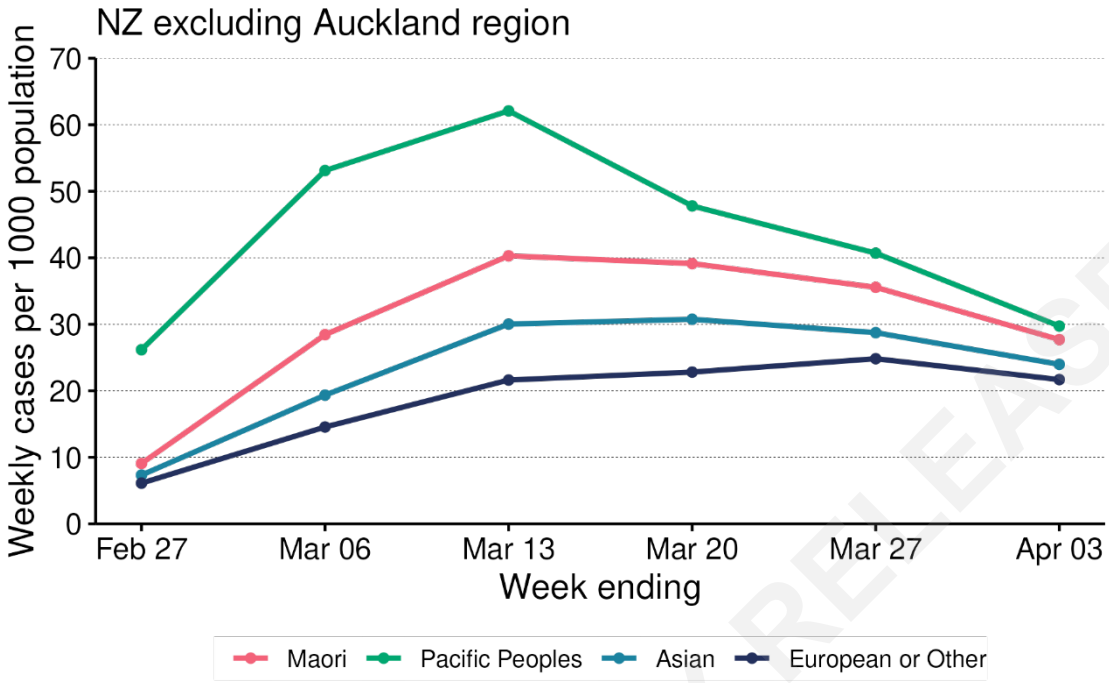


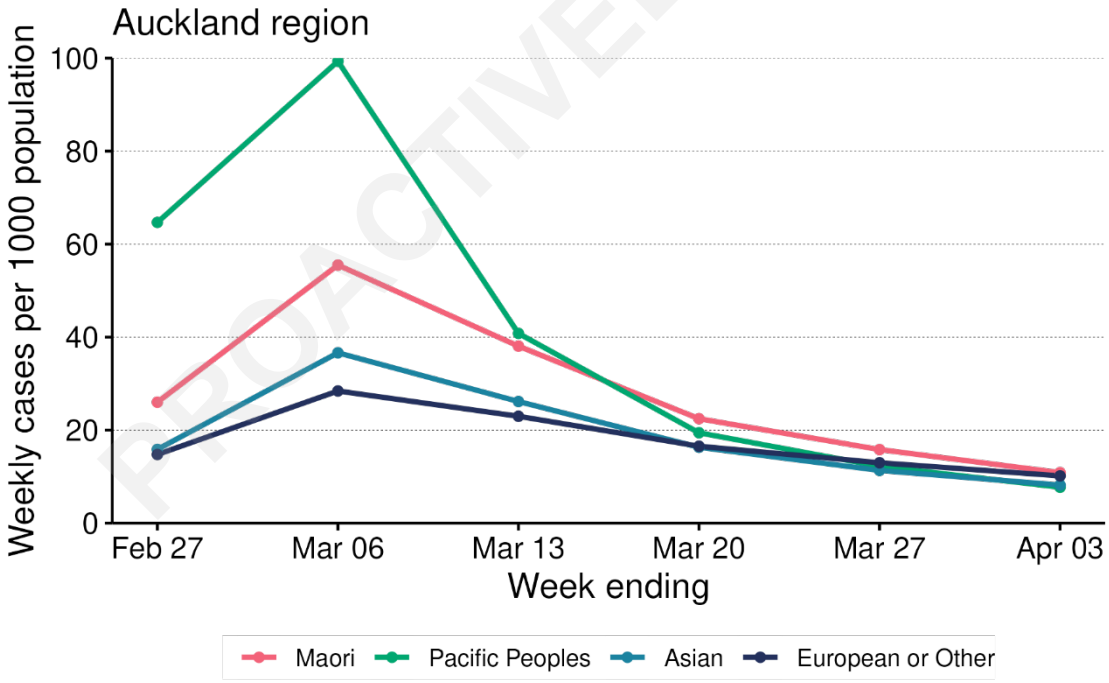


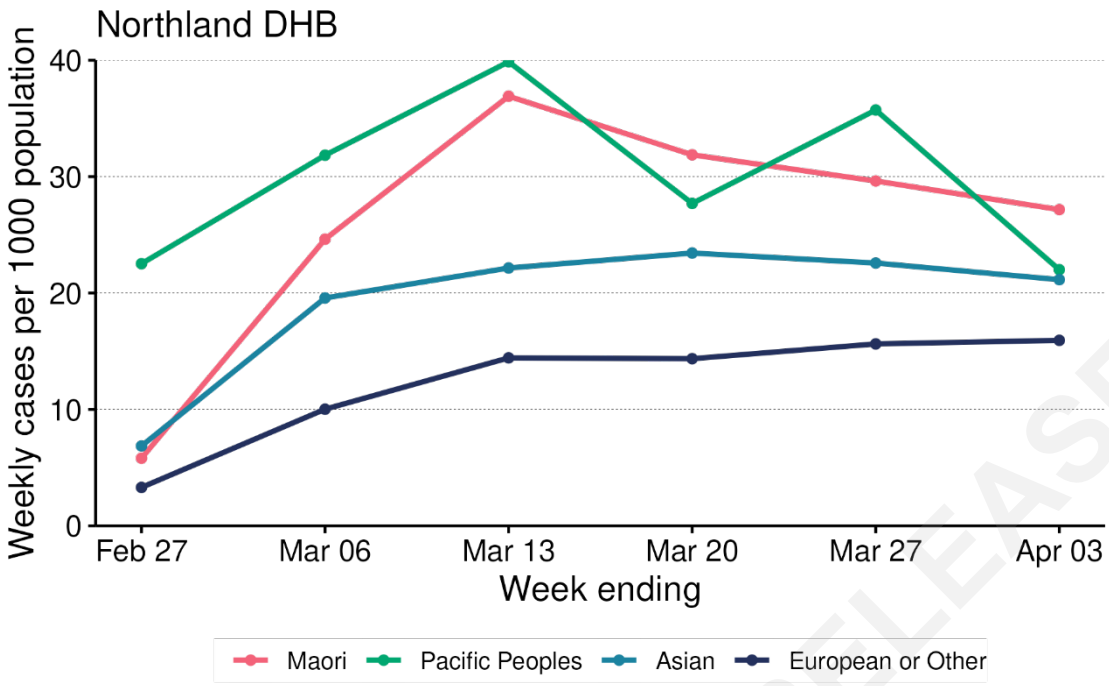


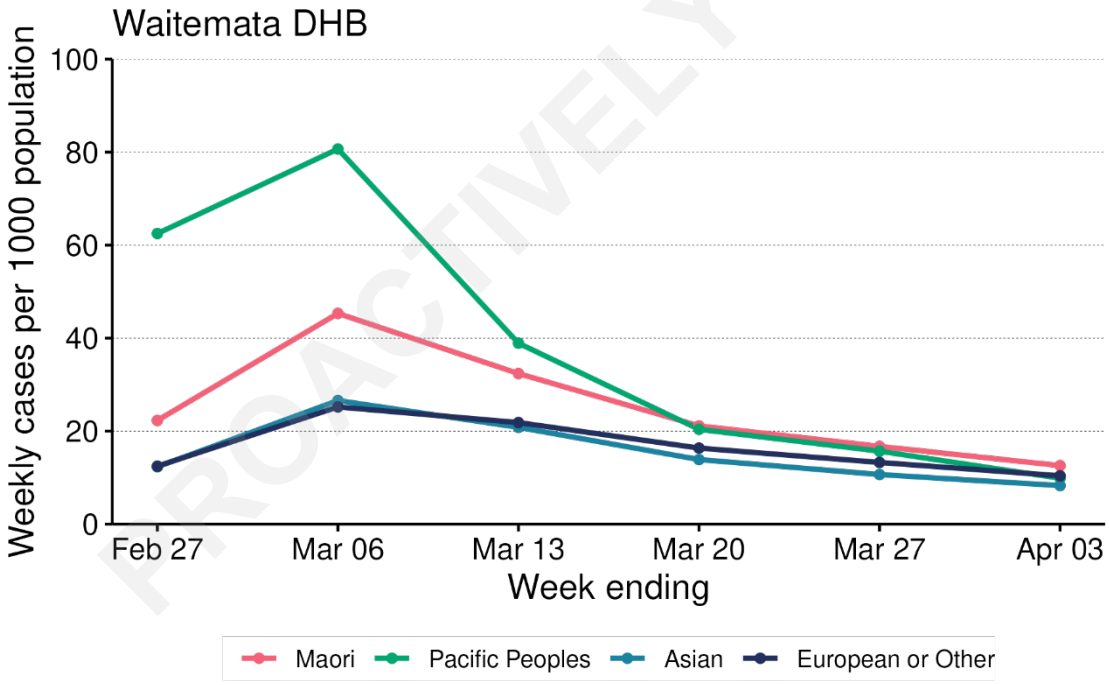


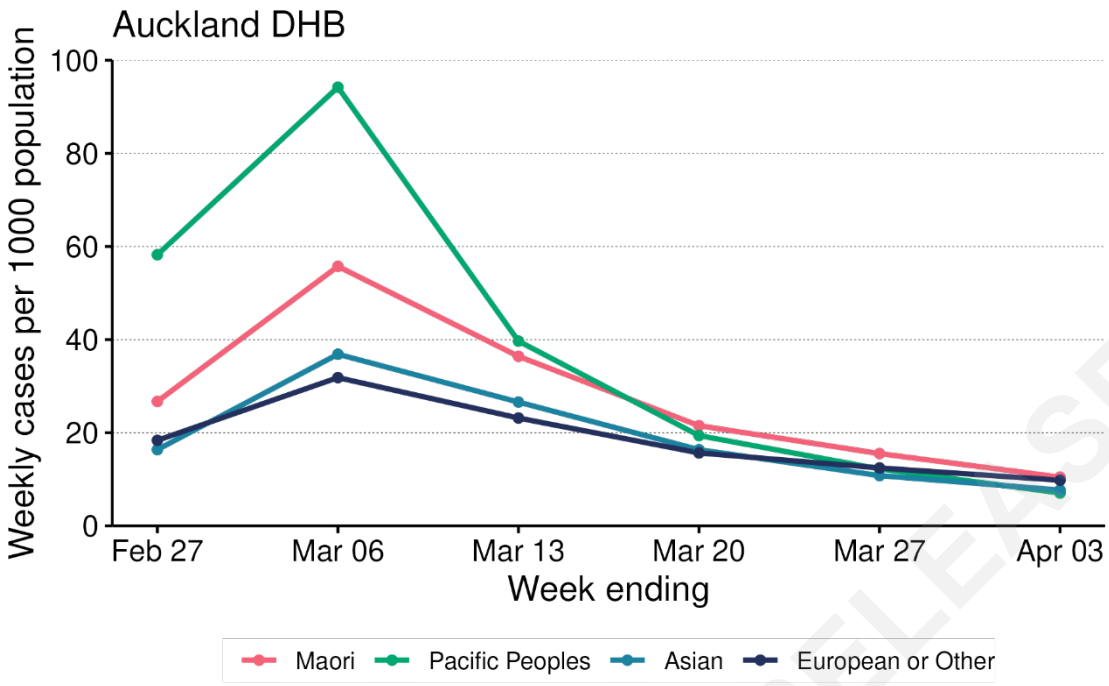
Ethnicity Graphs

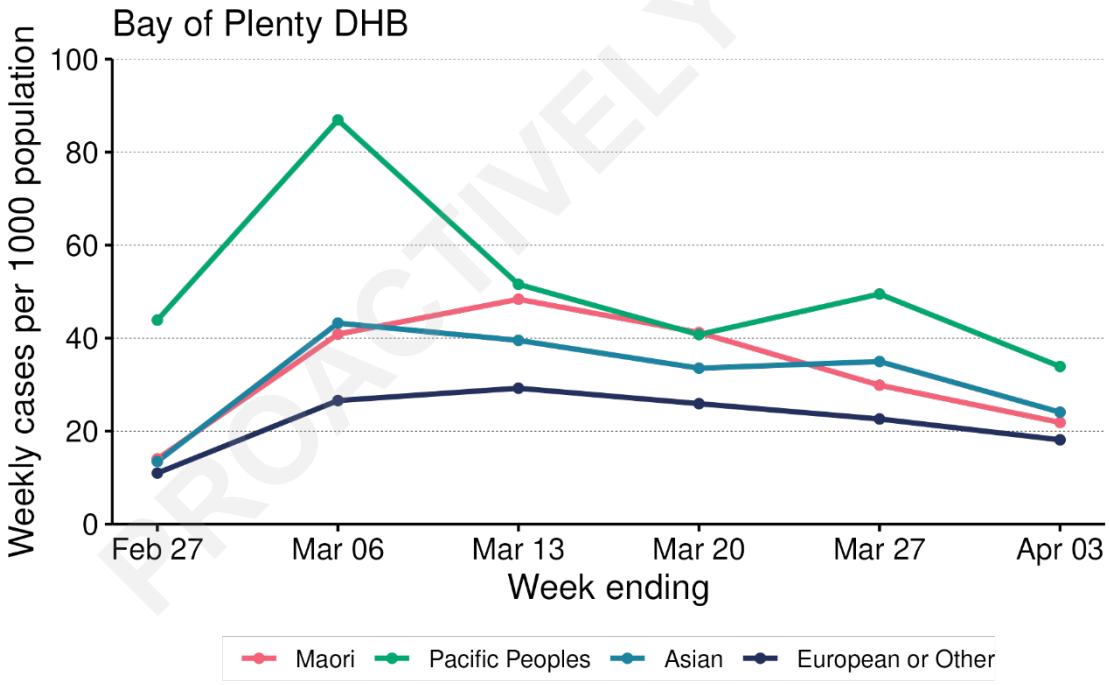


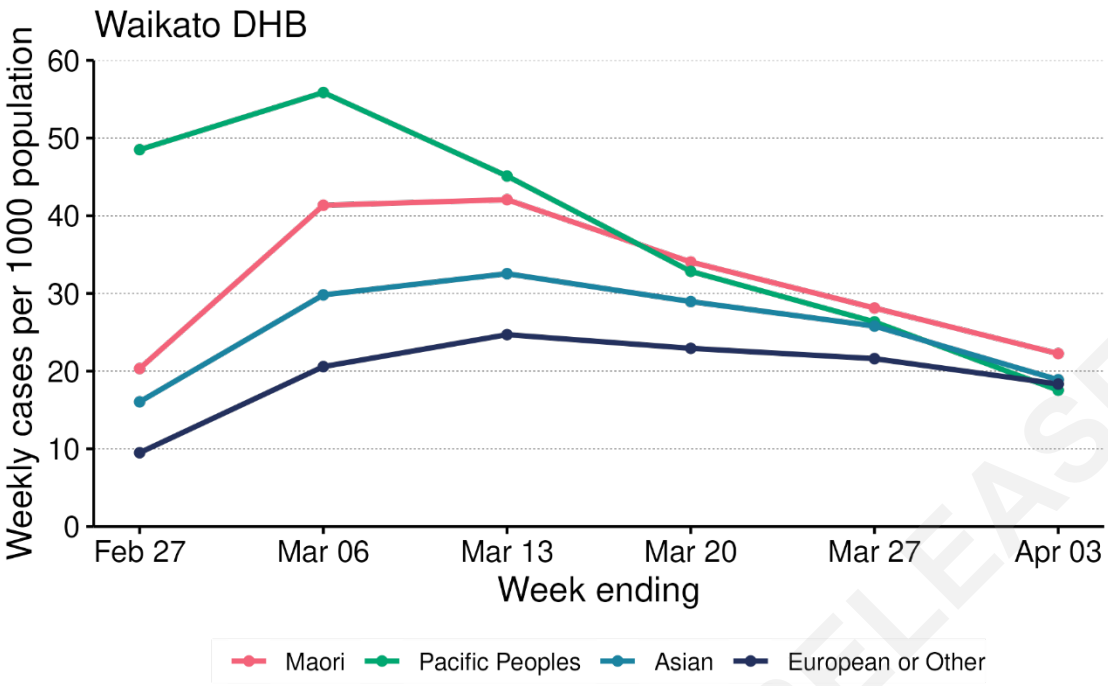


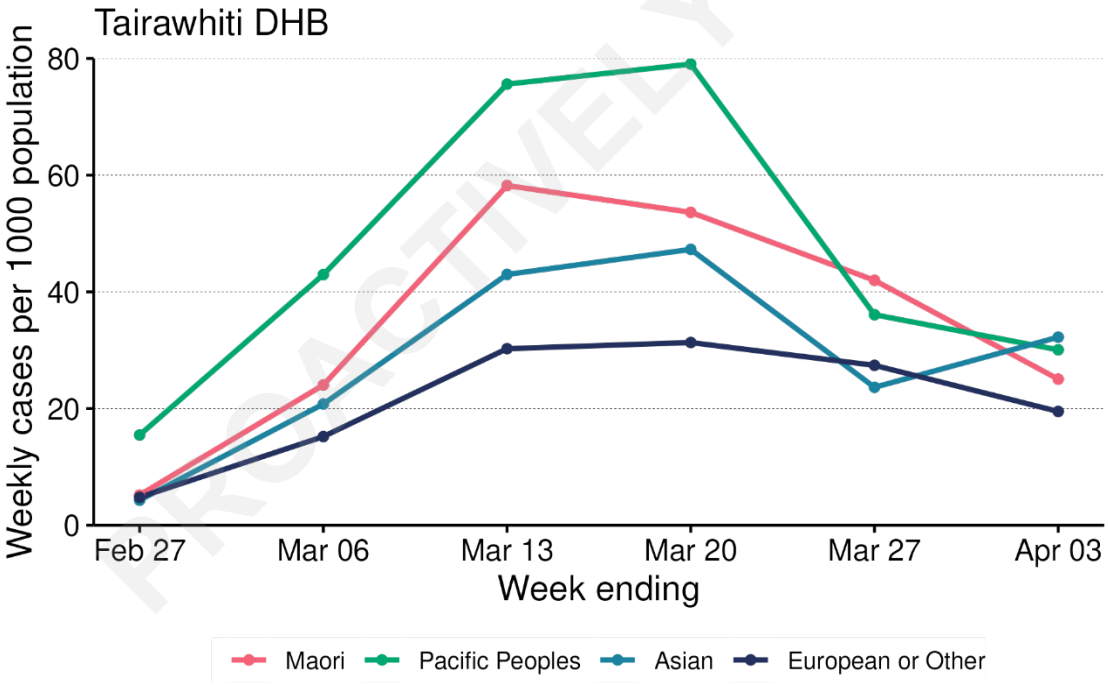


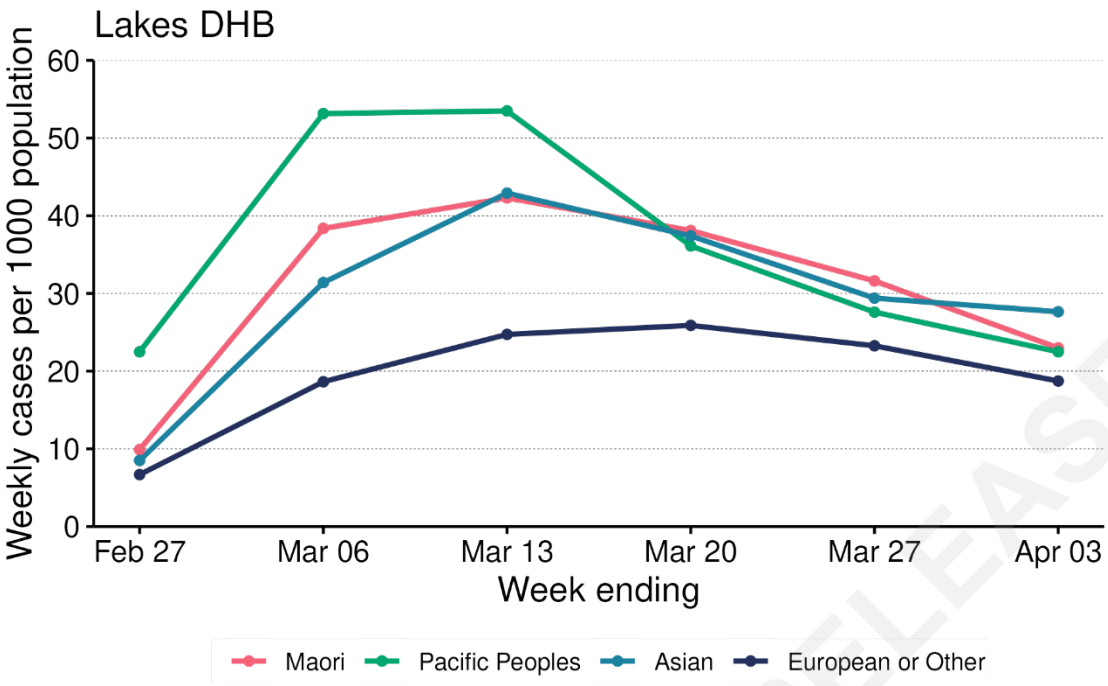


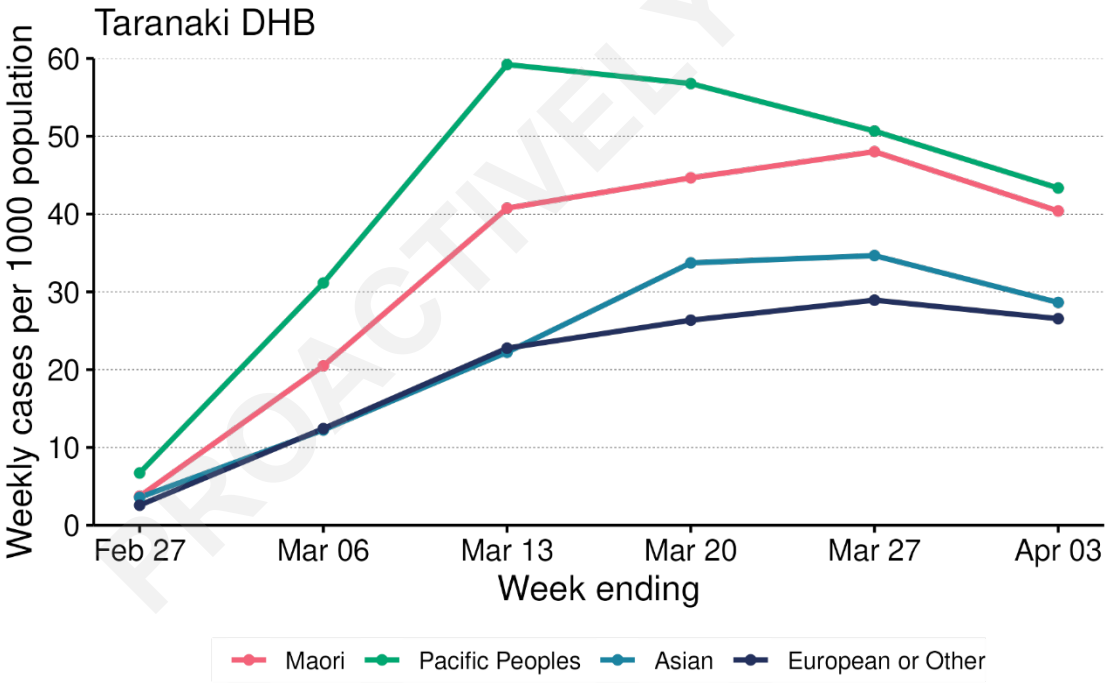


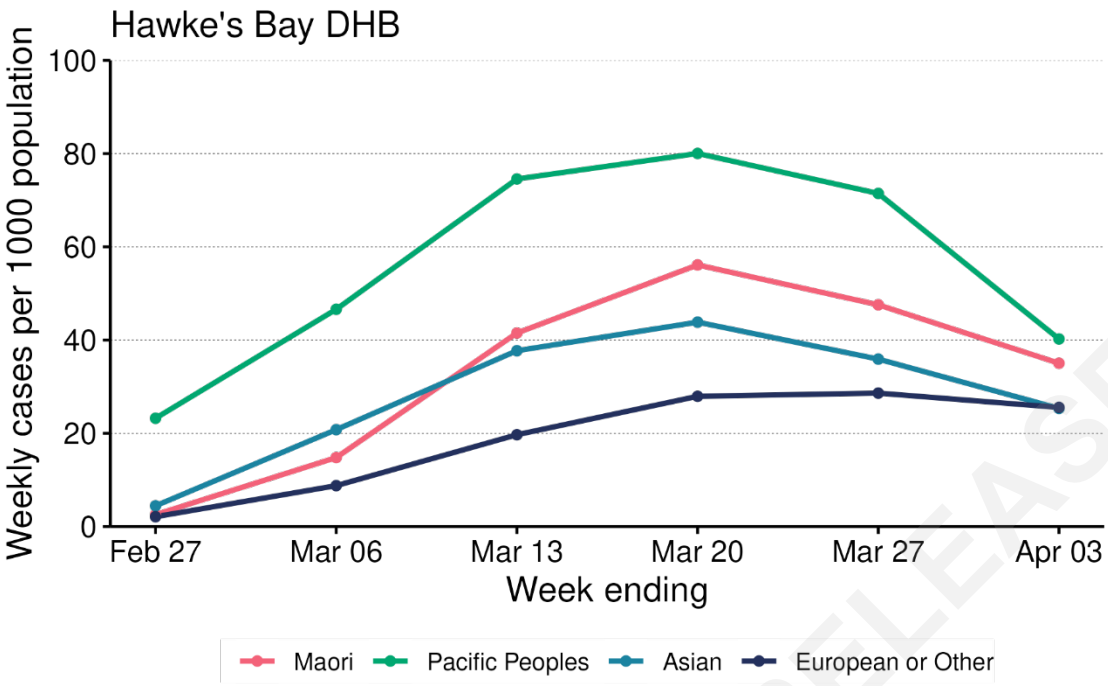


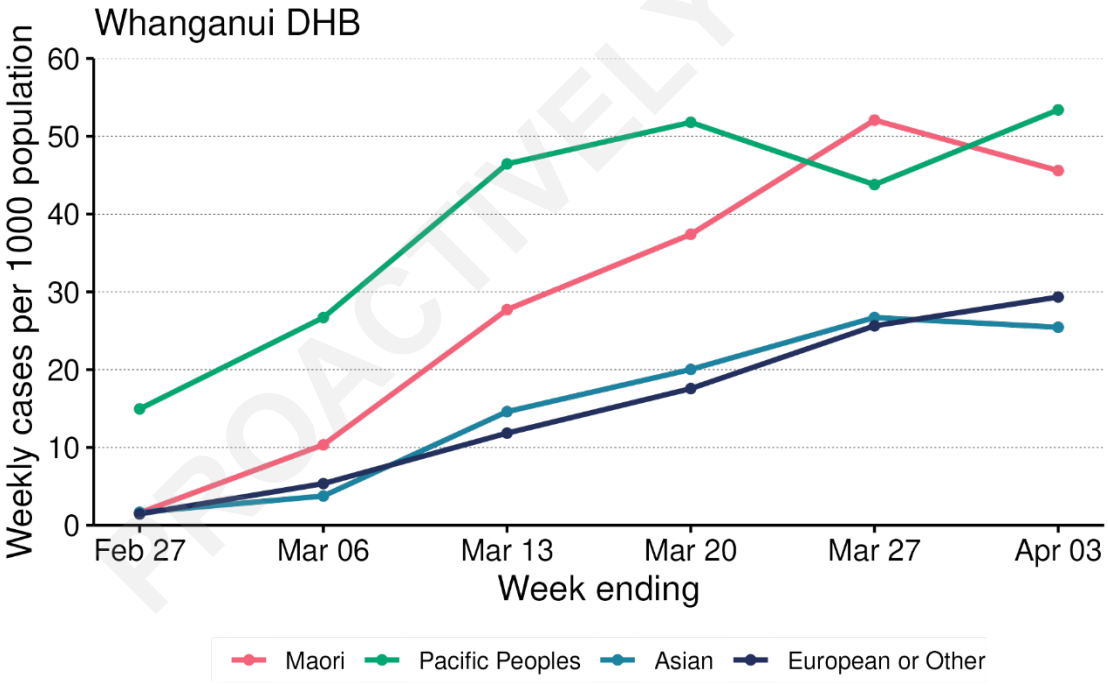


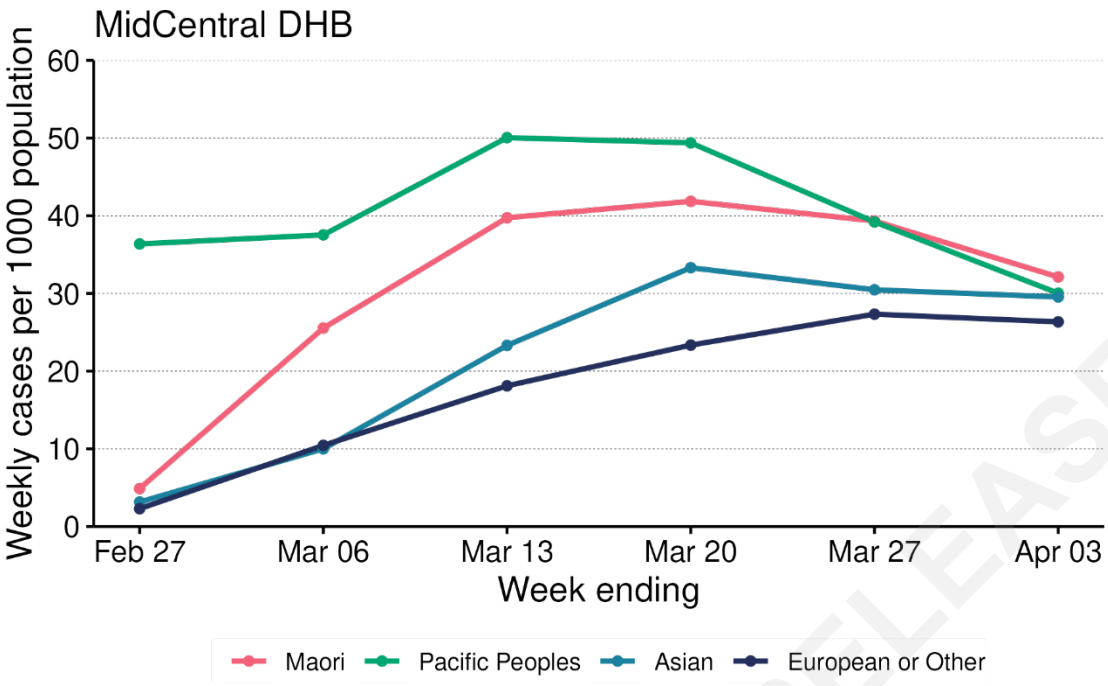


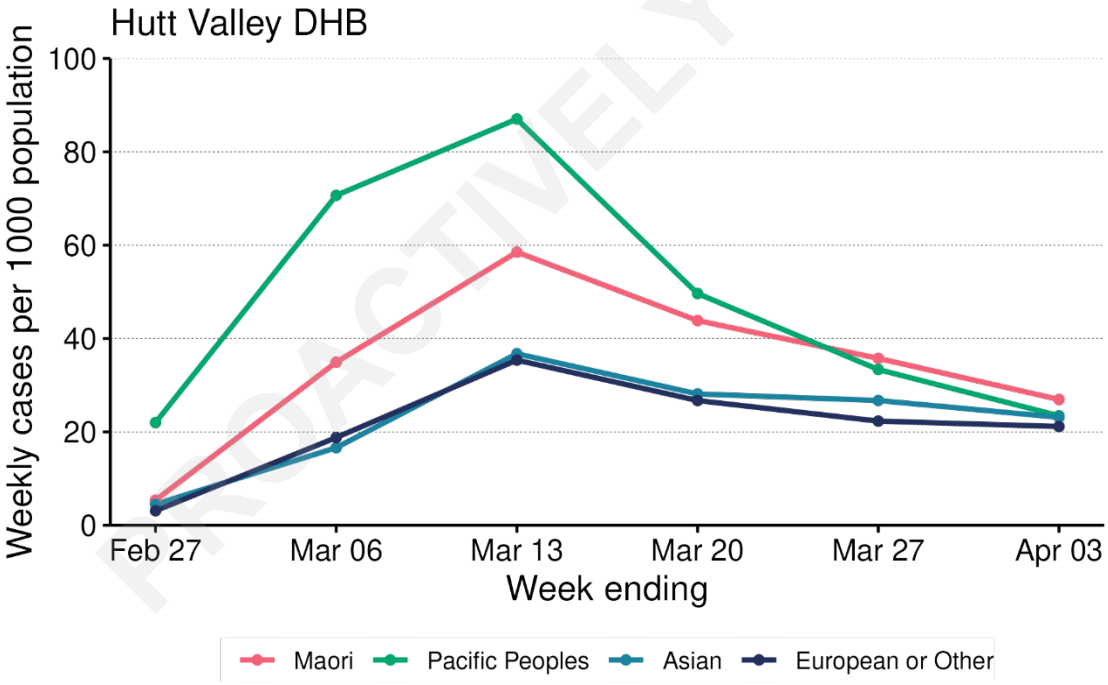


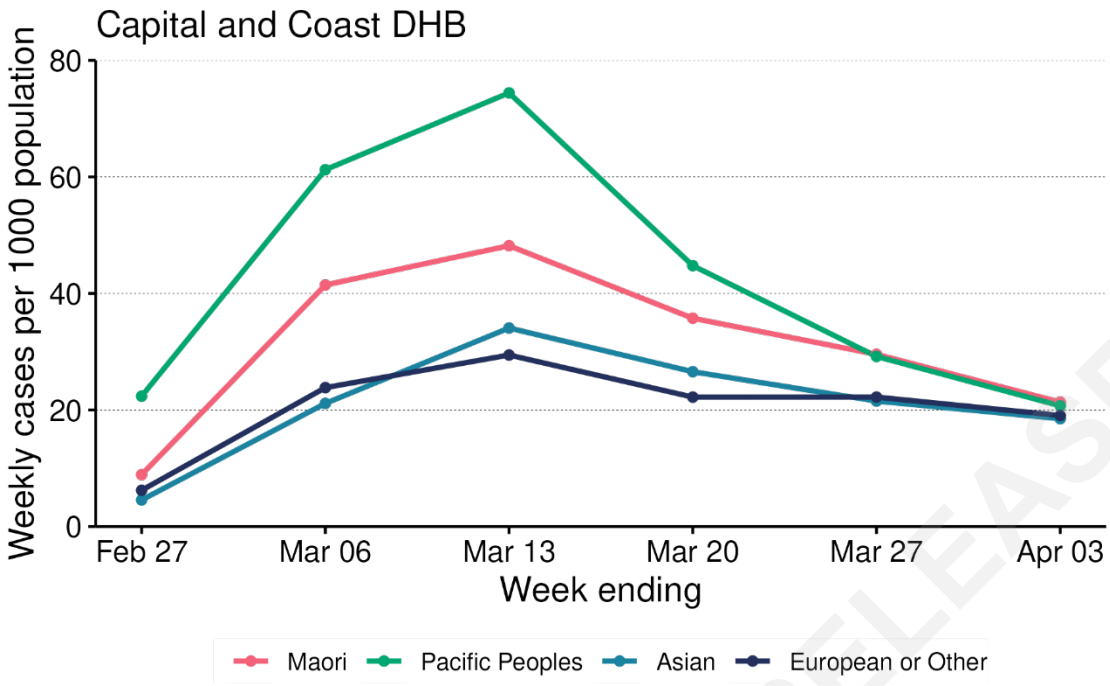


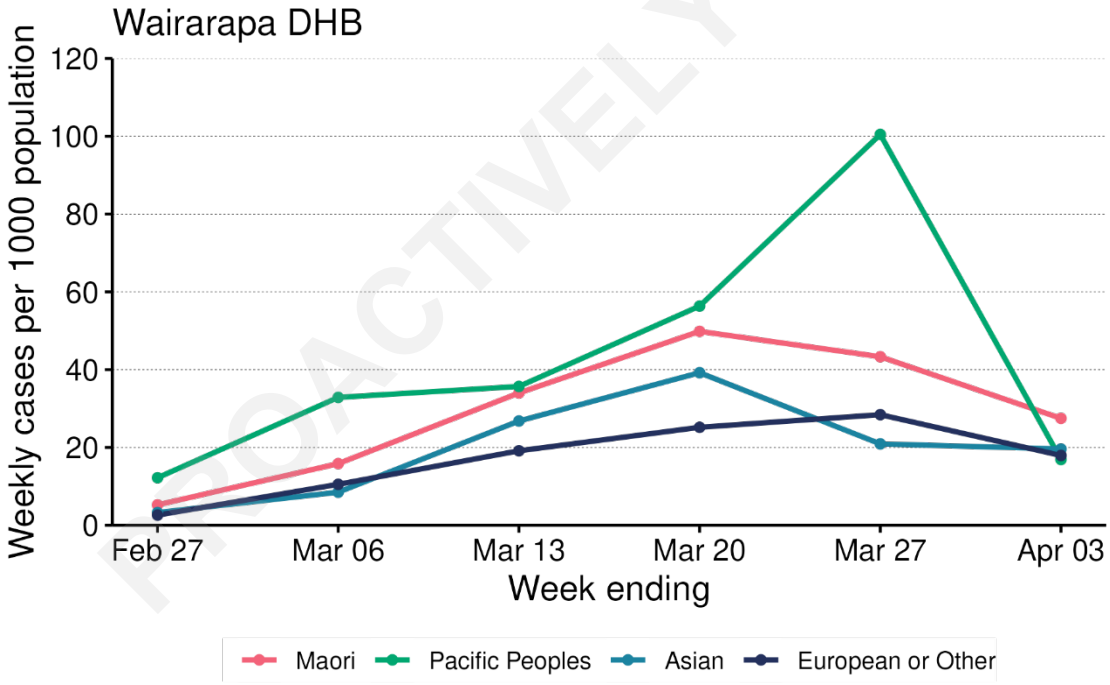


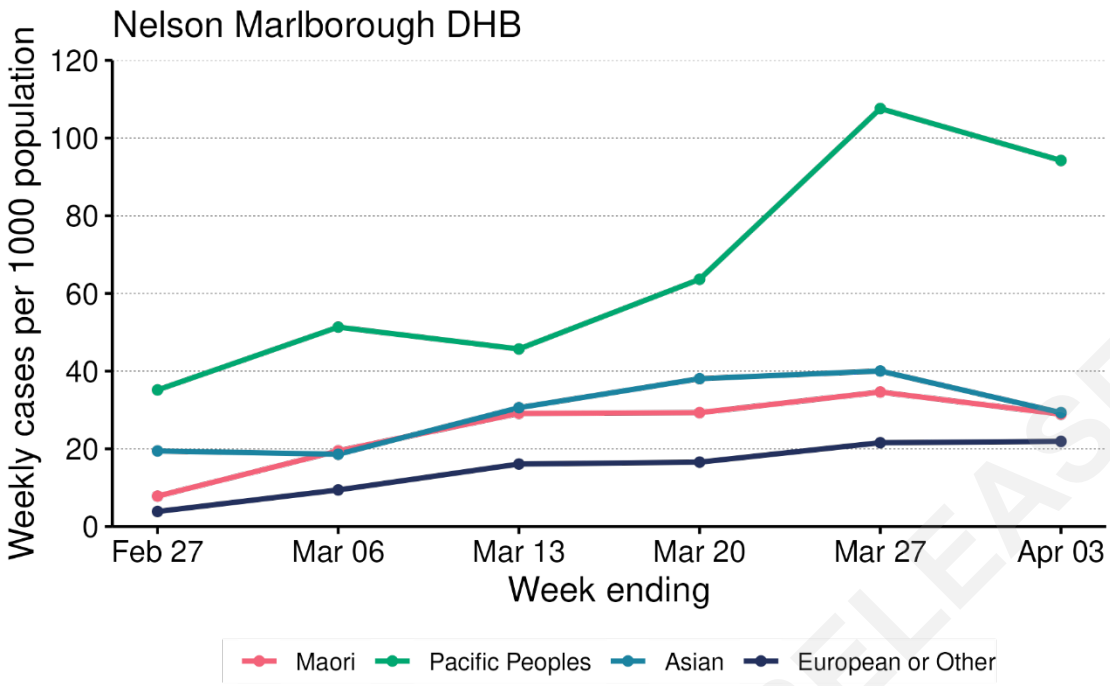


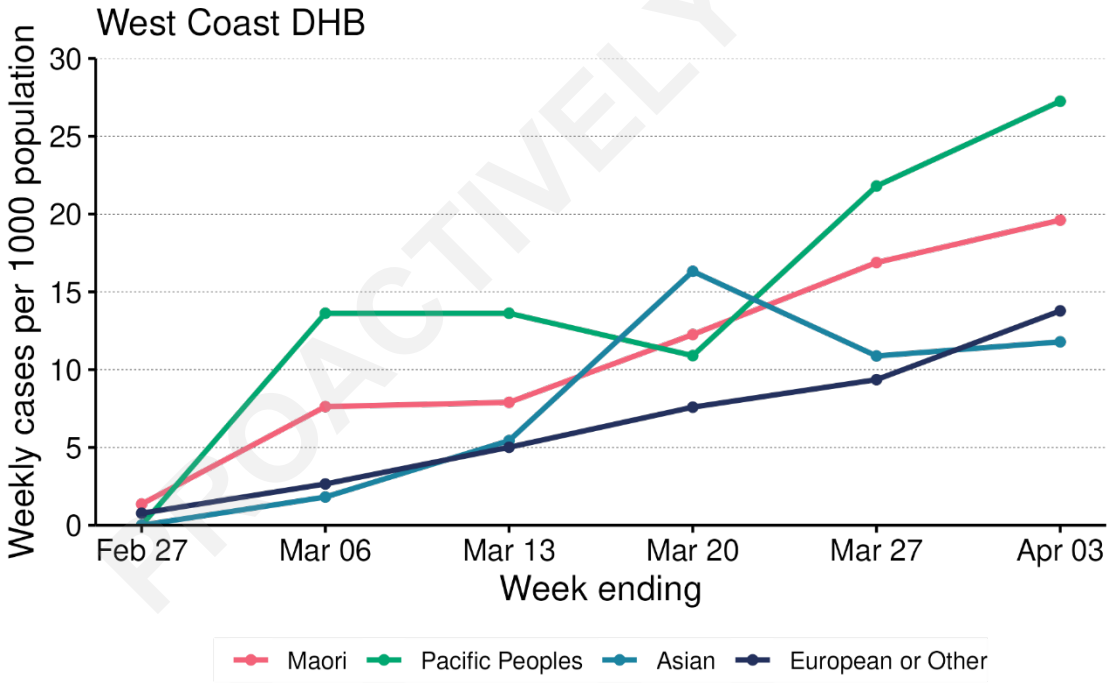


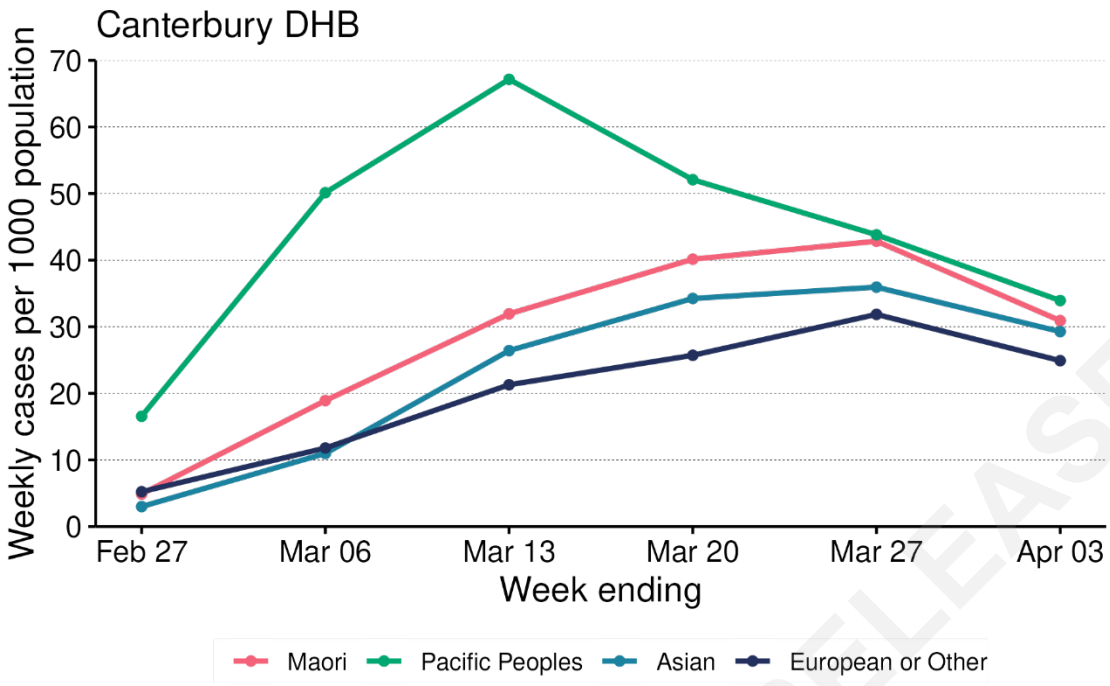


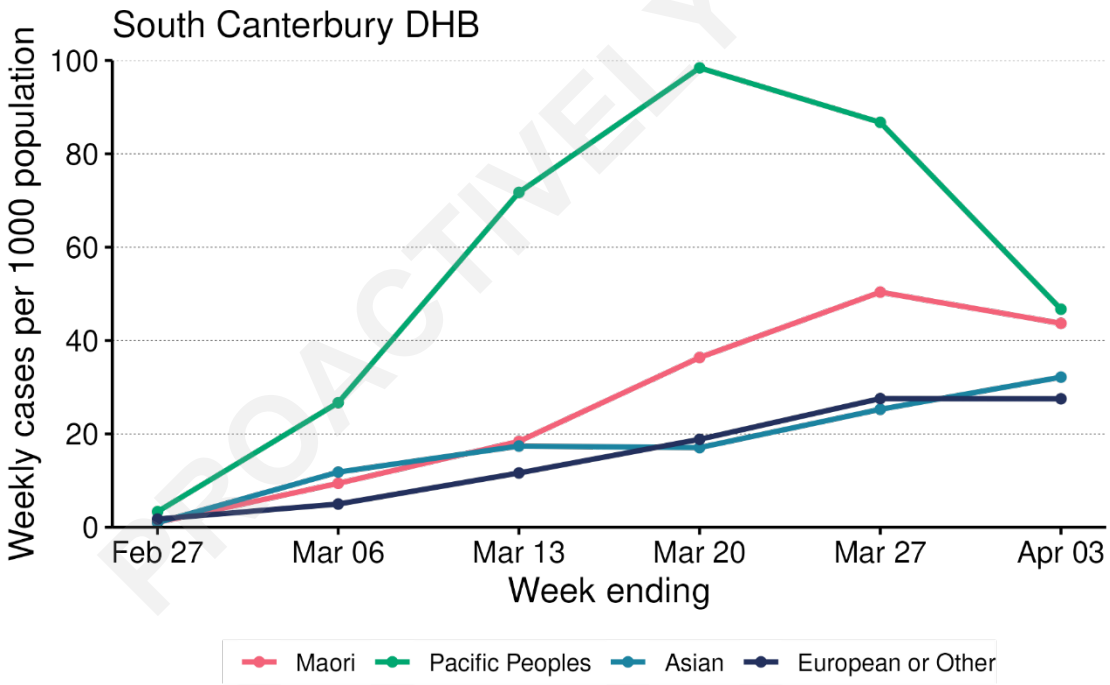


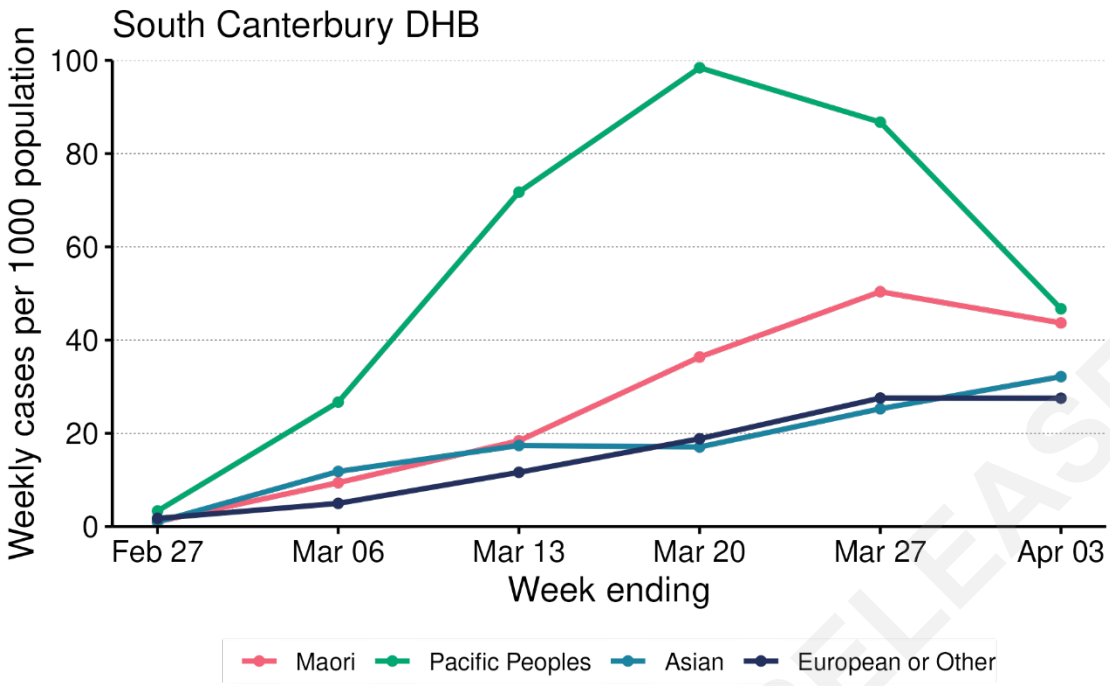


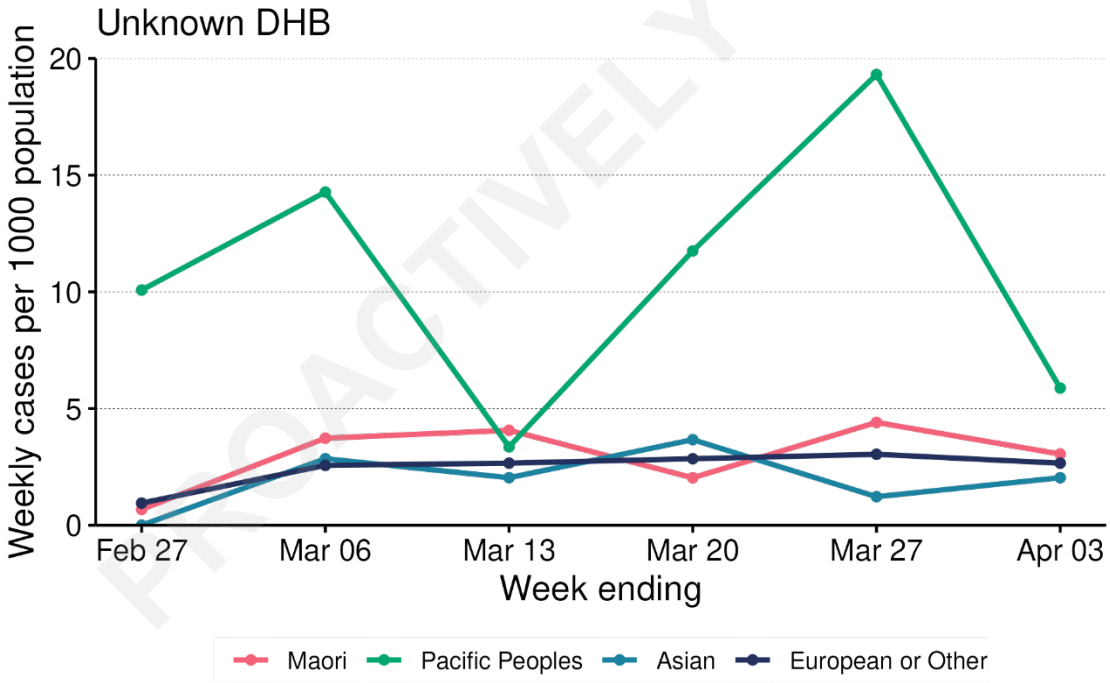




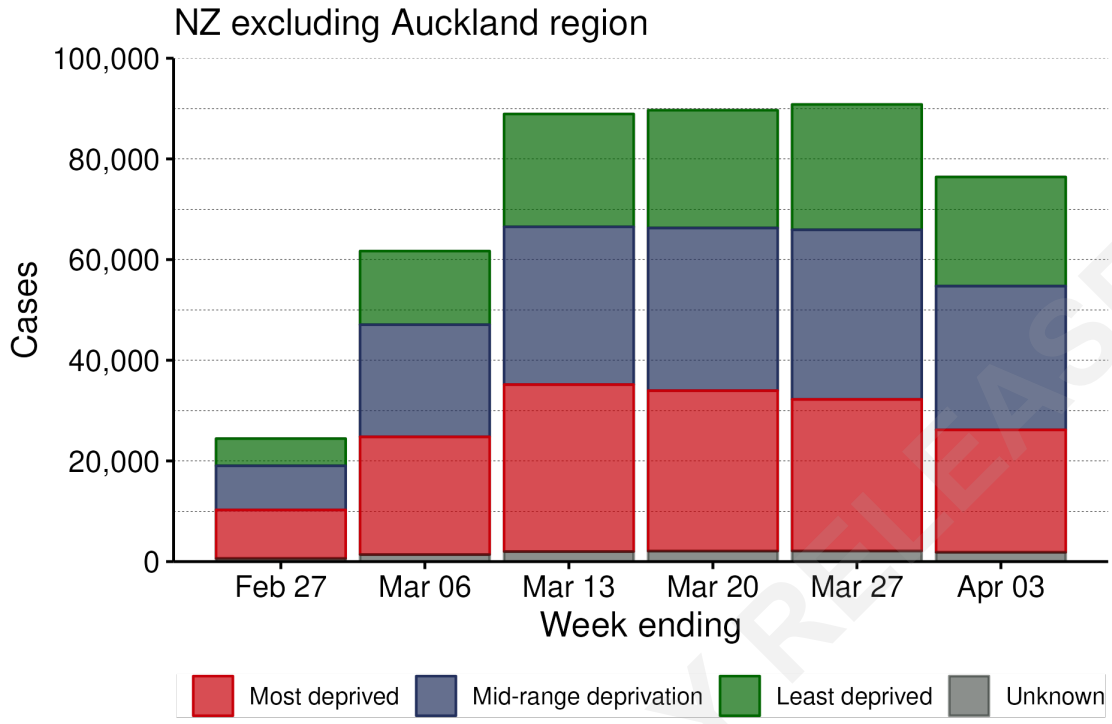


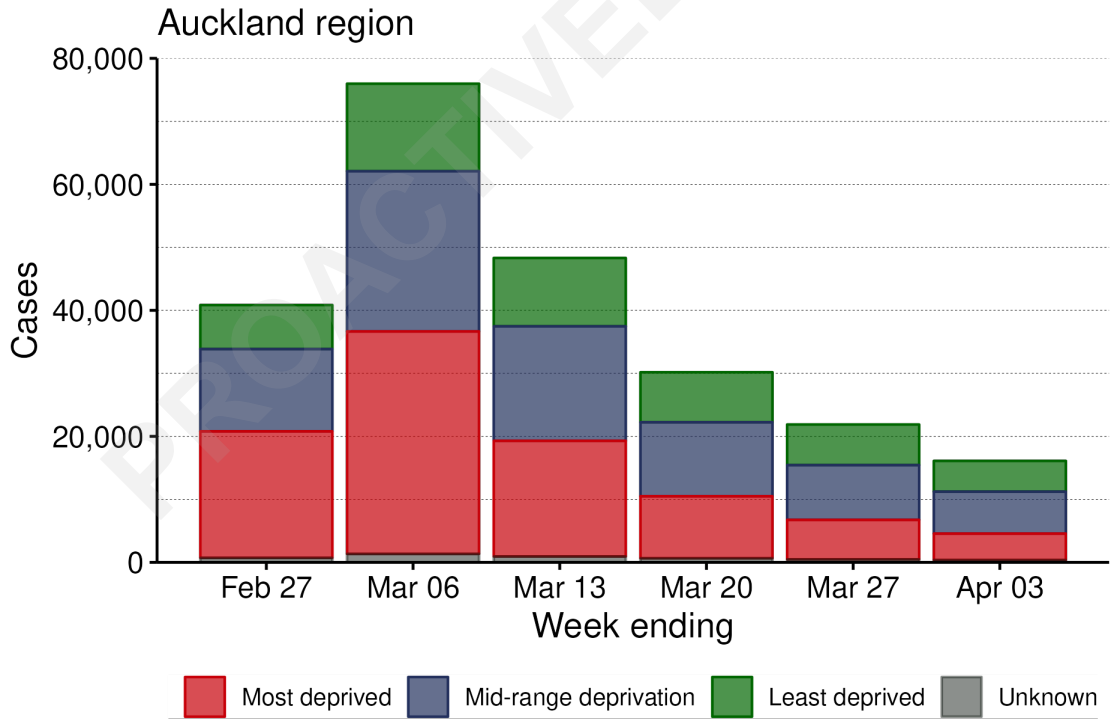


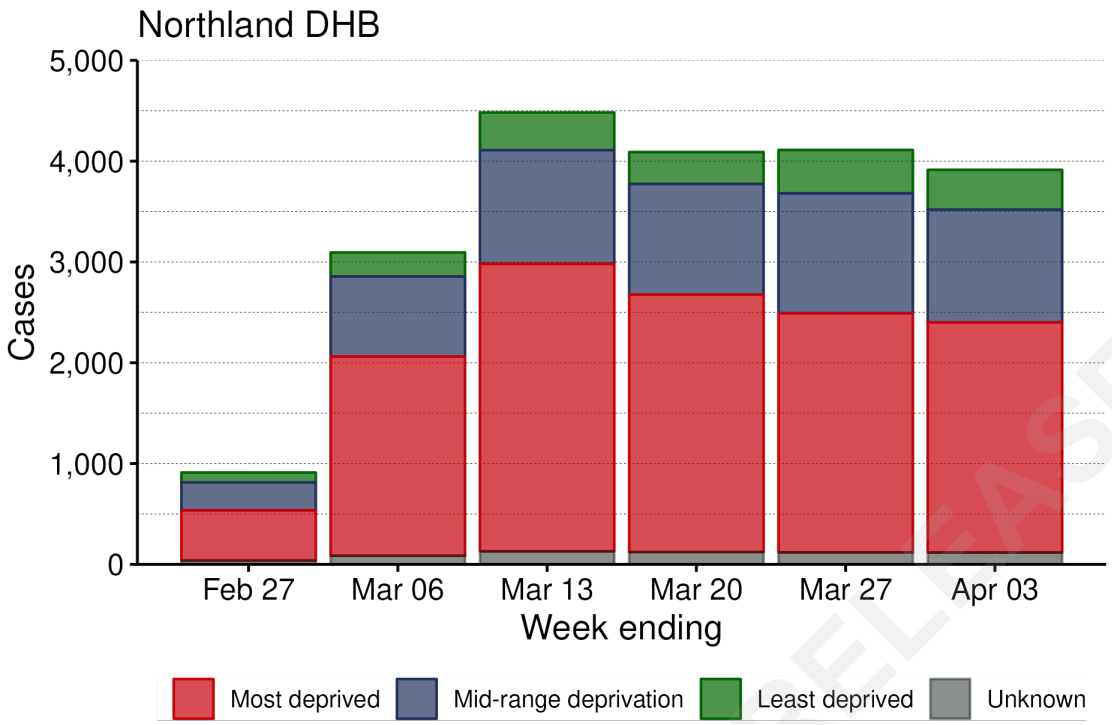


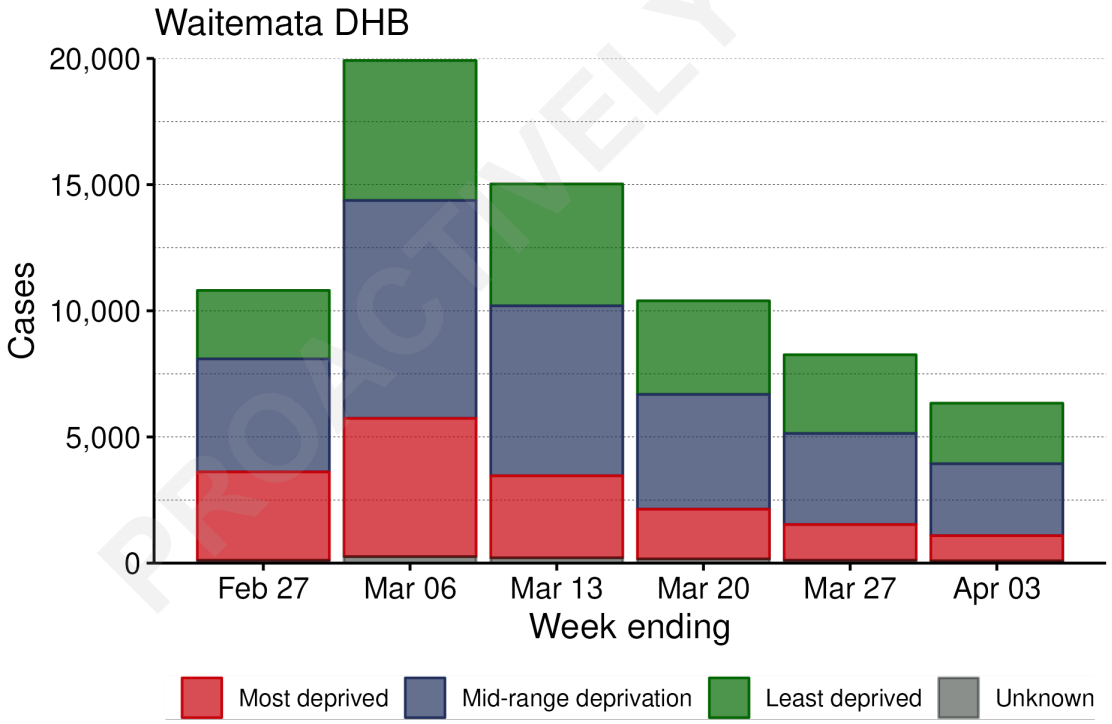


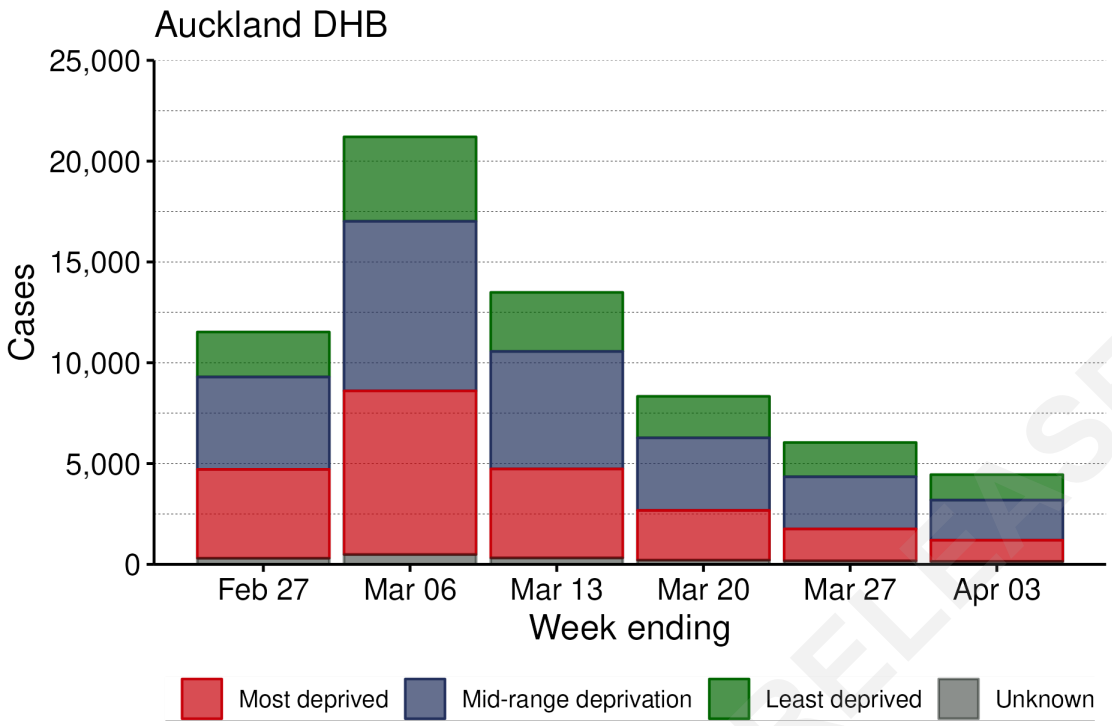
Deprivation Graphs

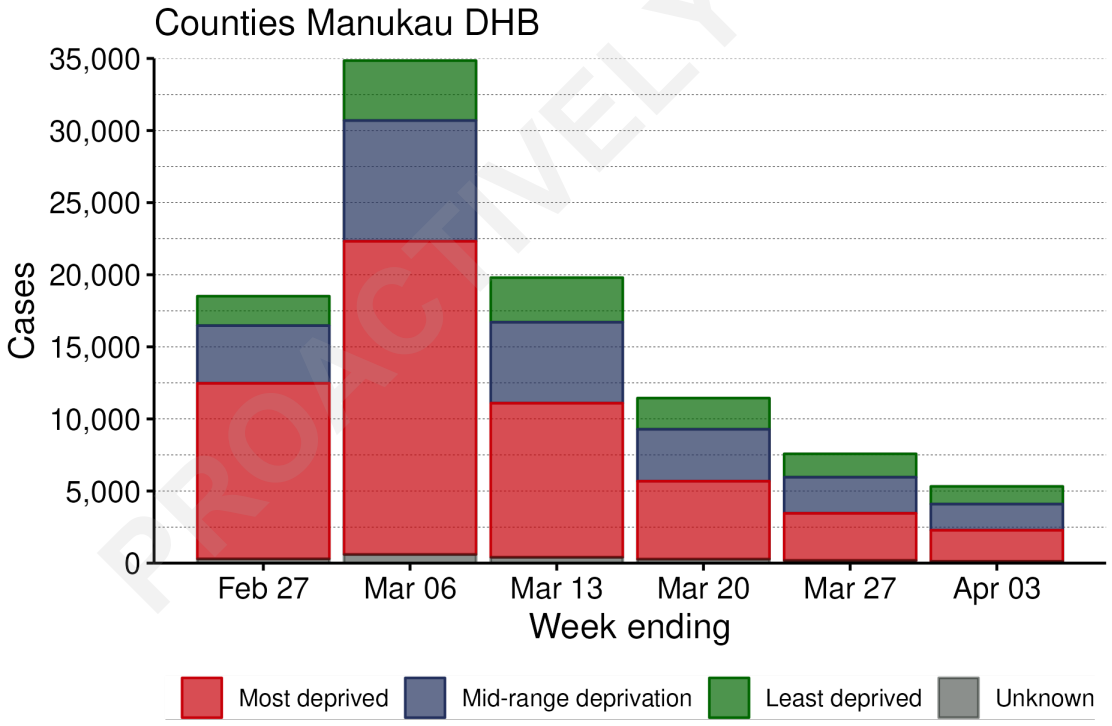


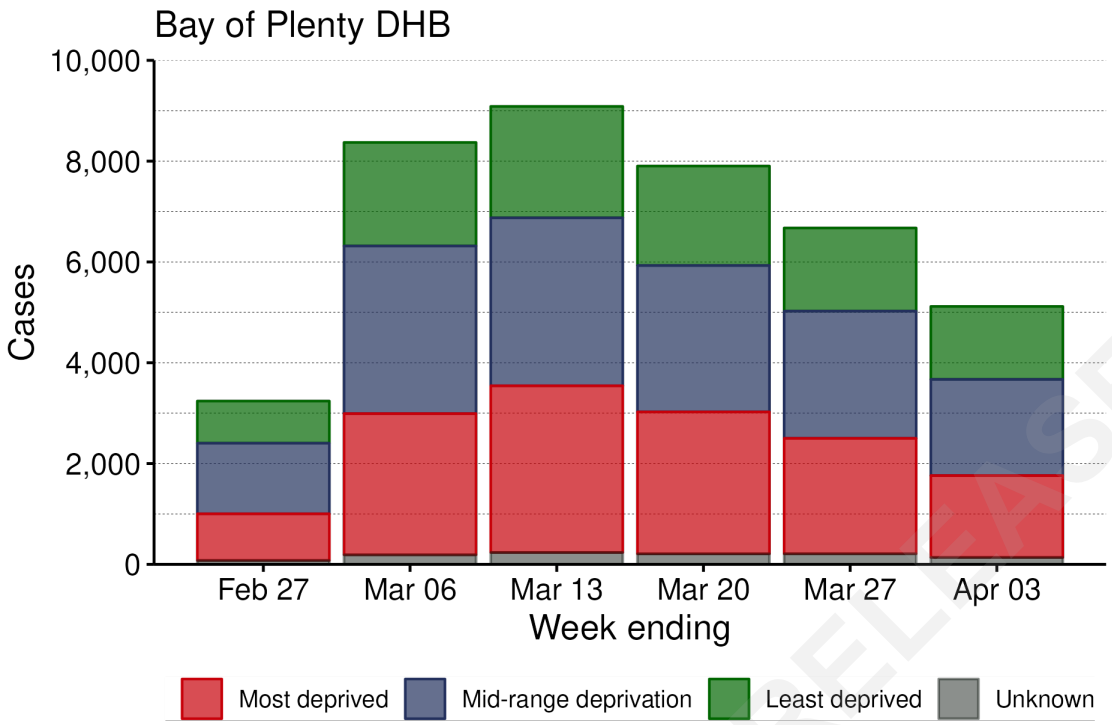


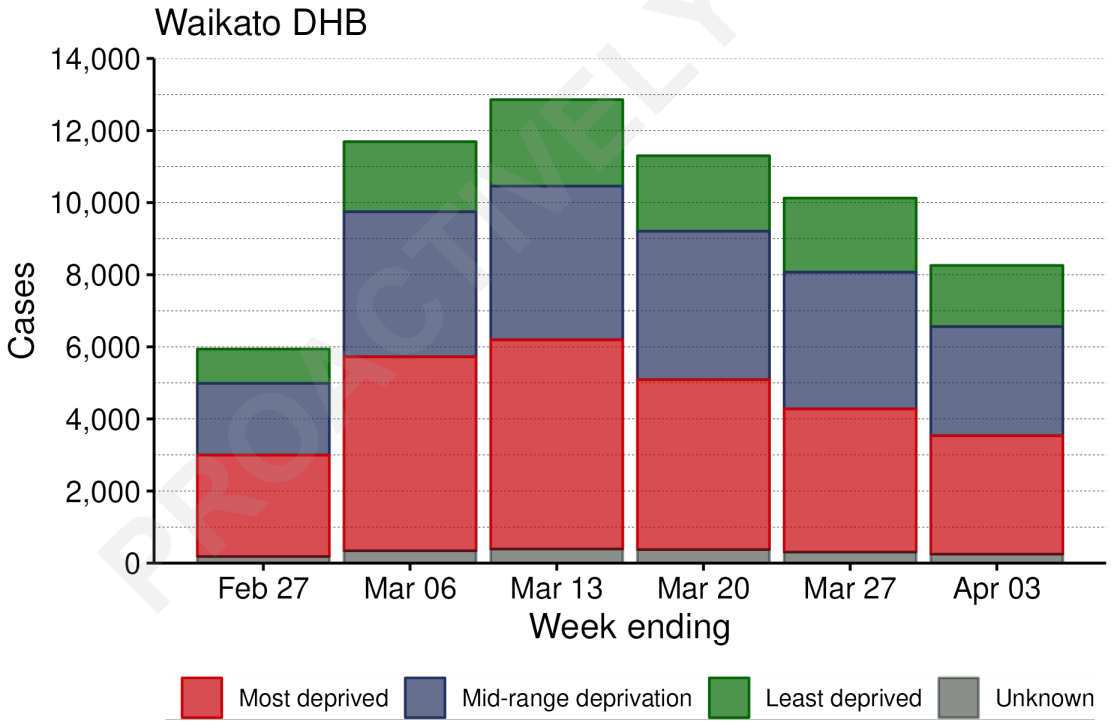


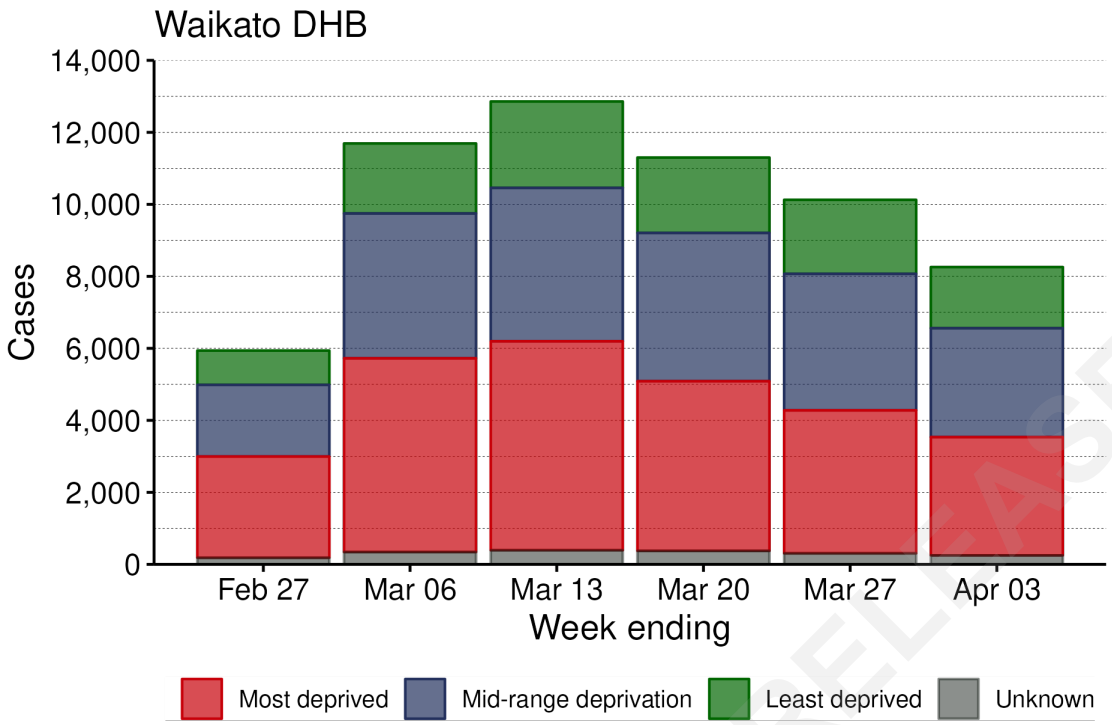


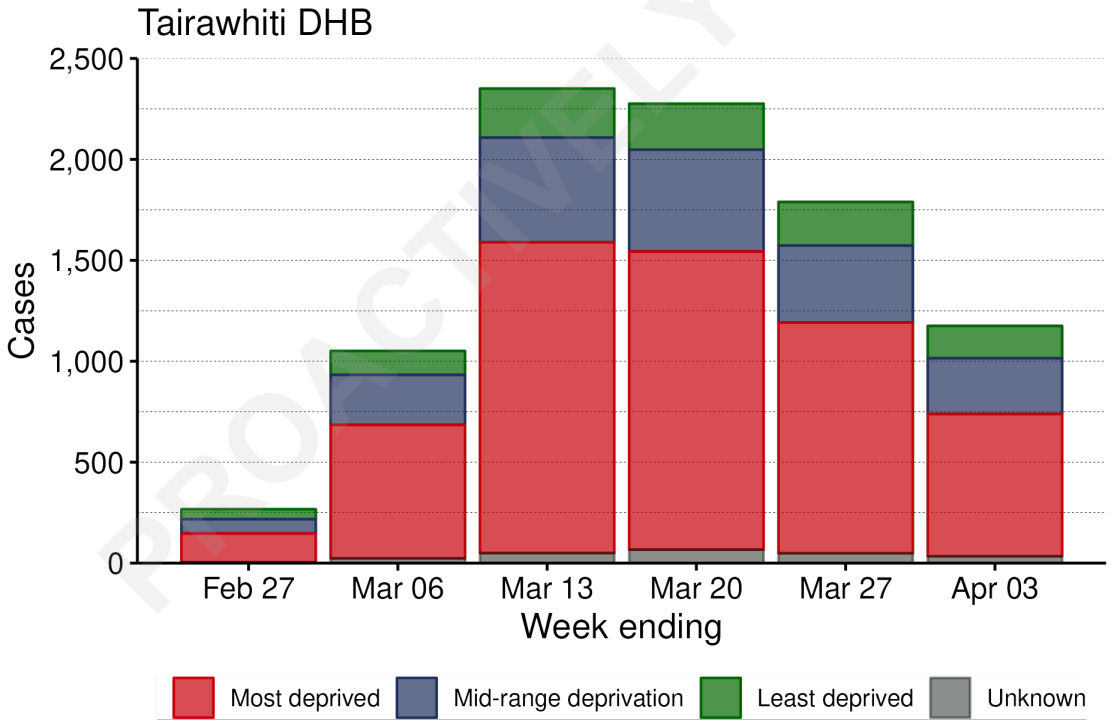


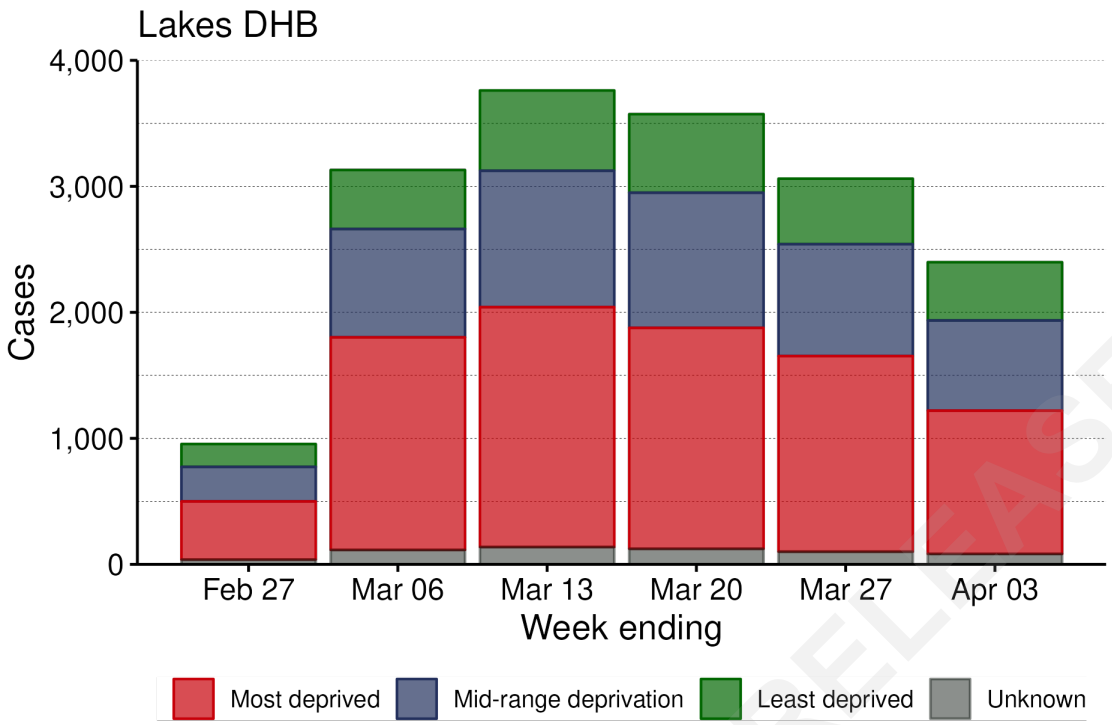


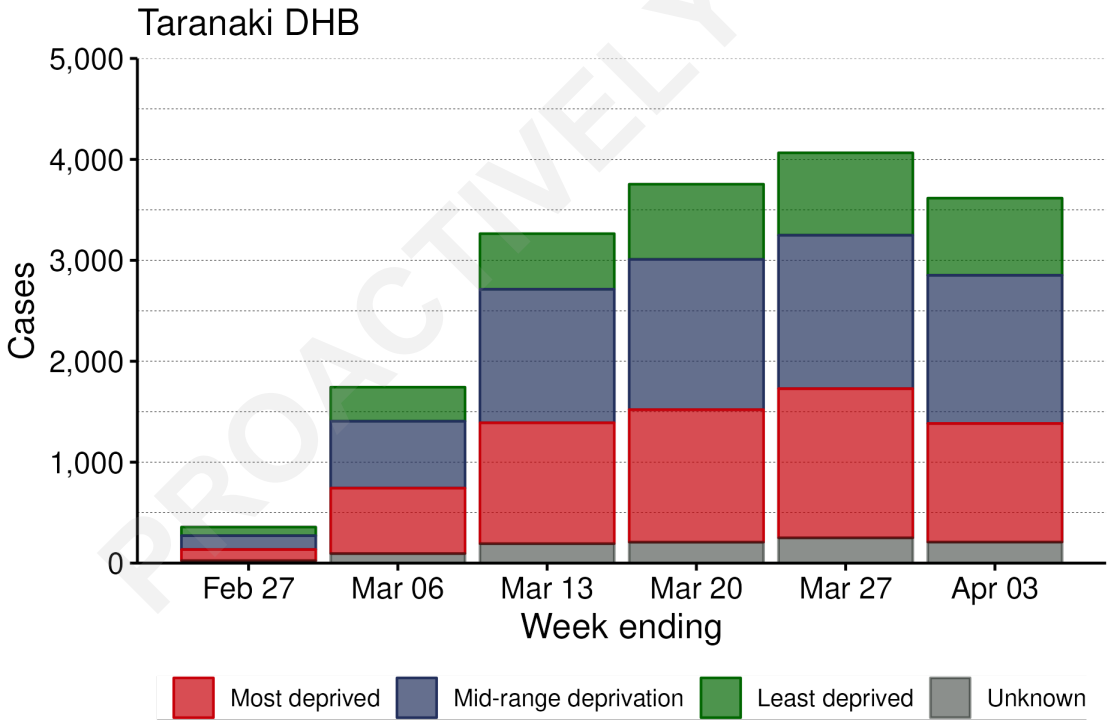


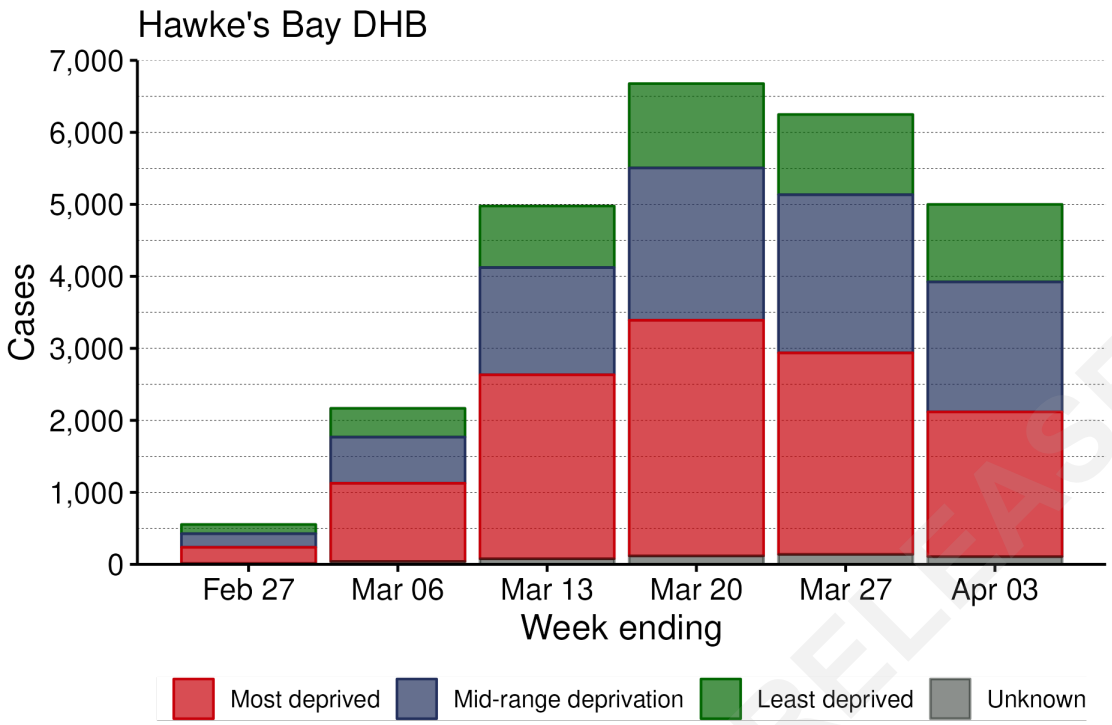


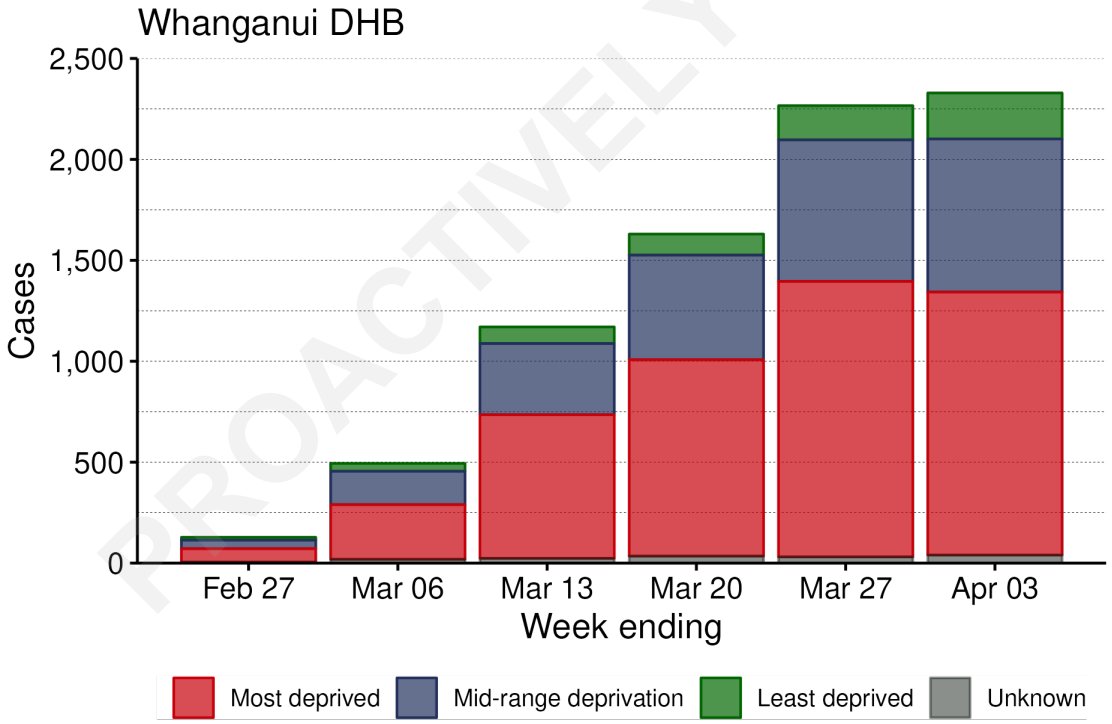


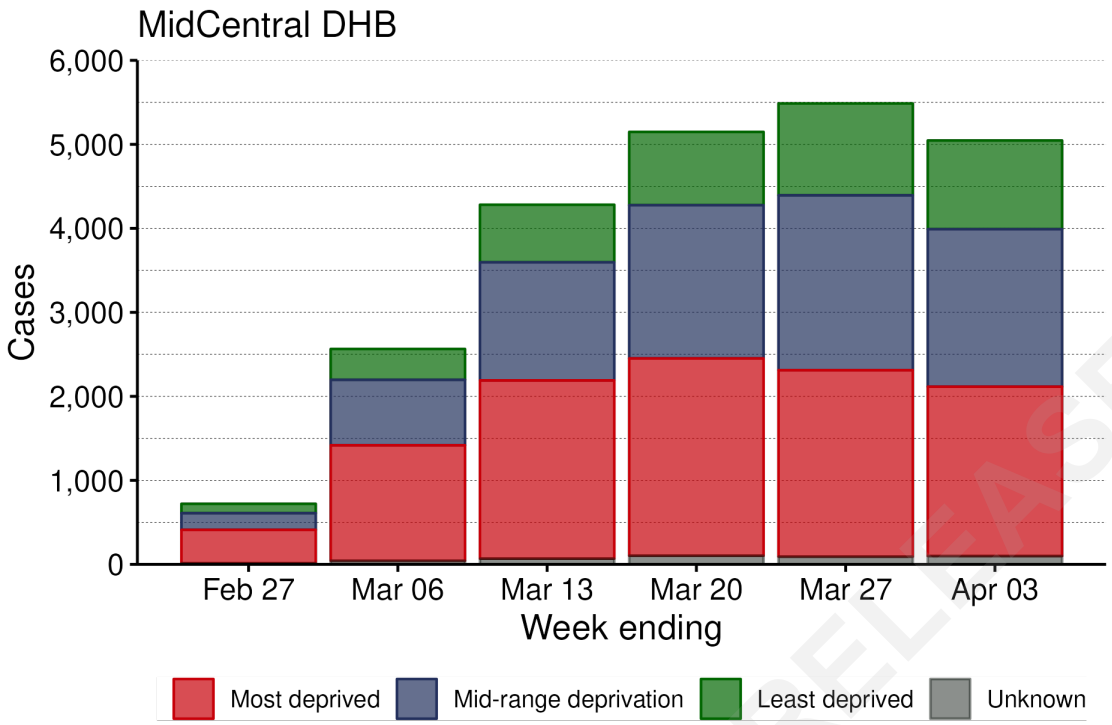


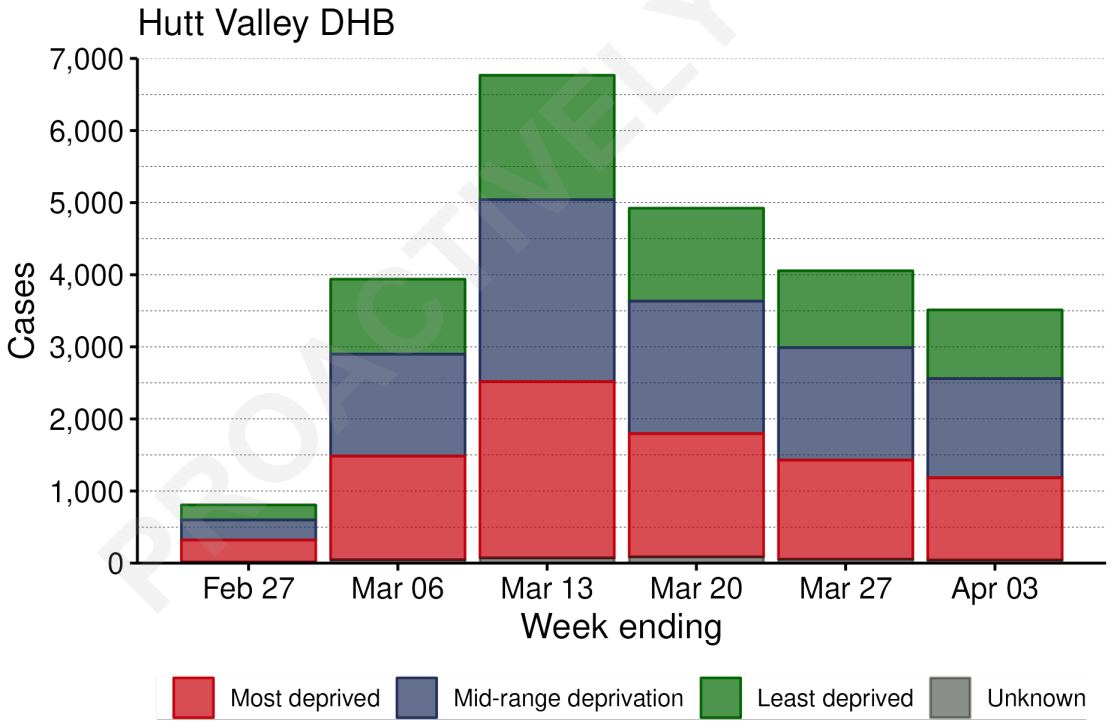


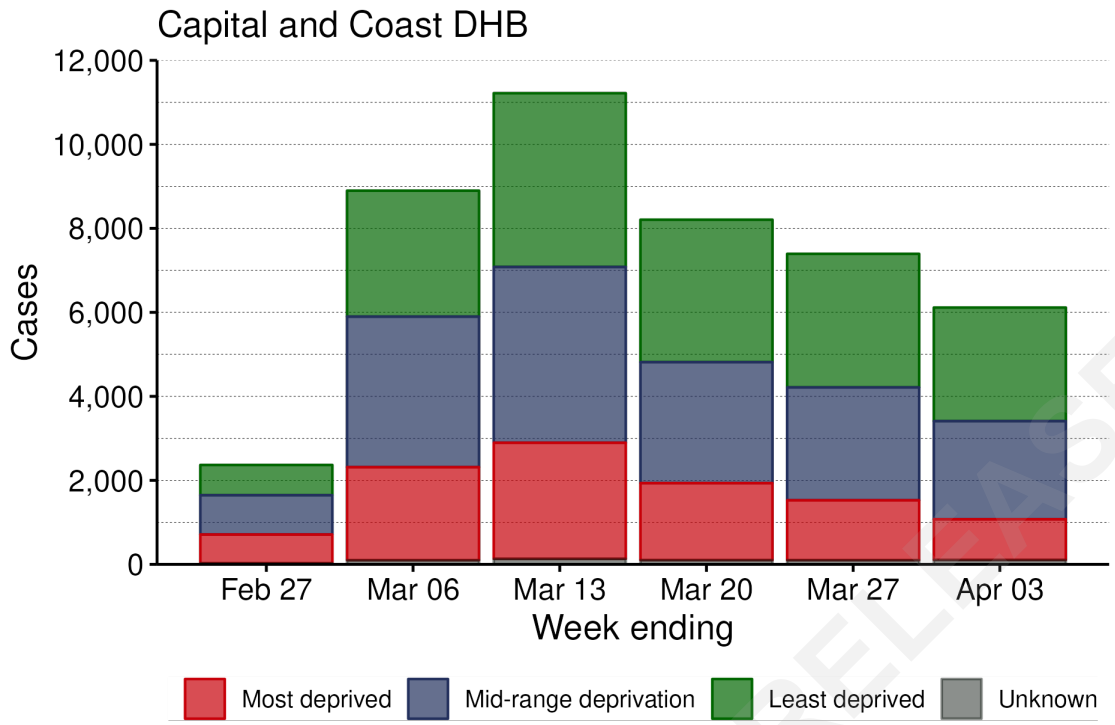


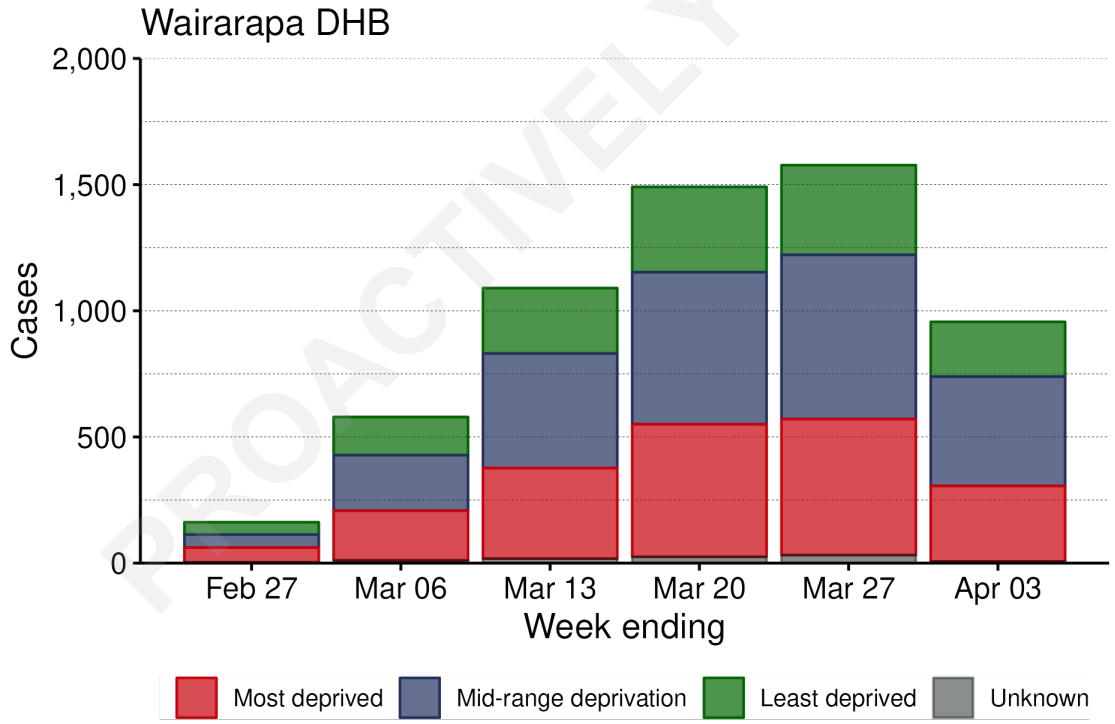


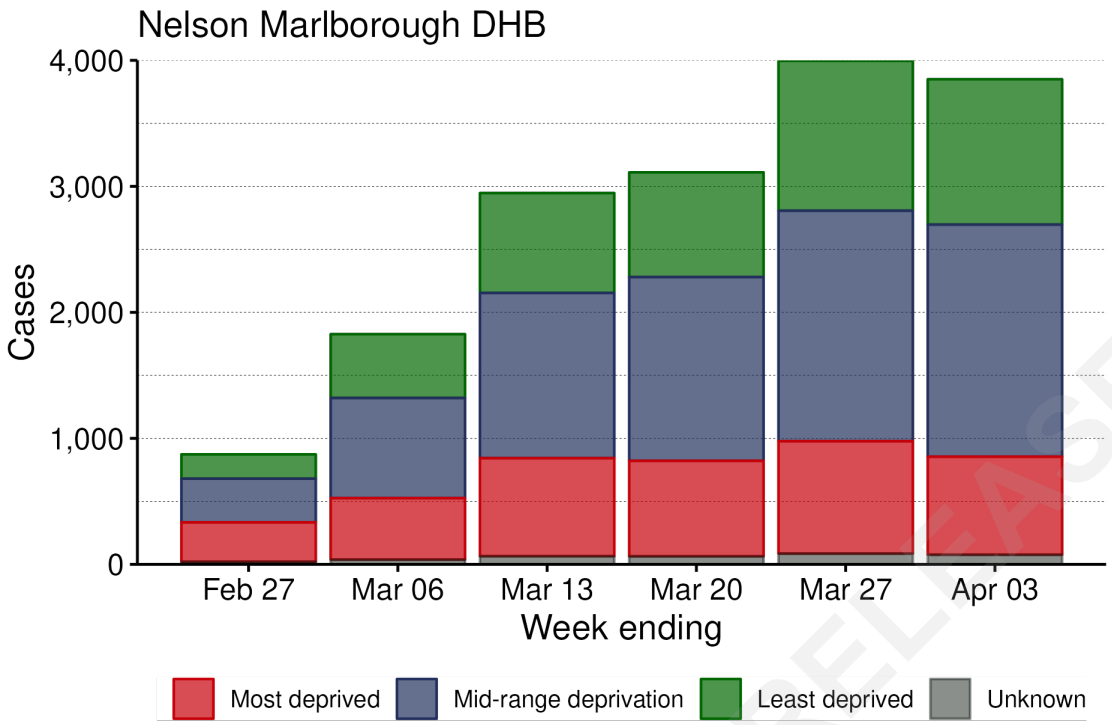


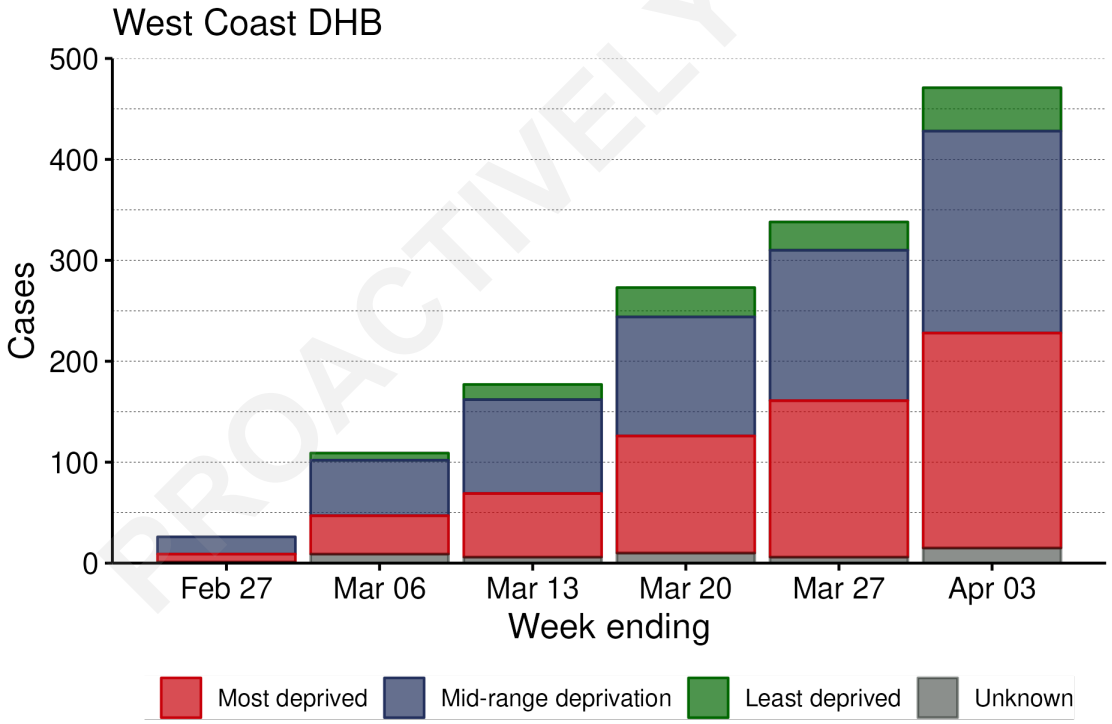


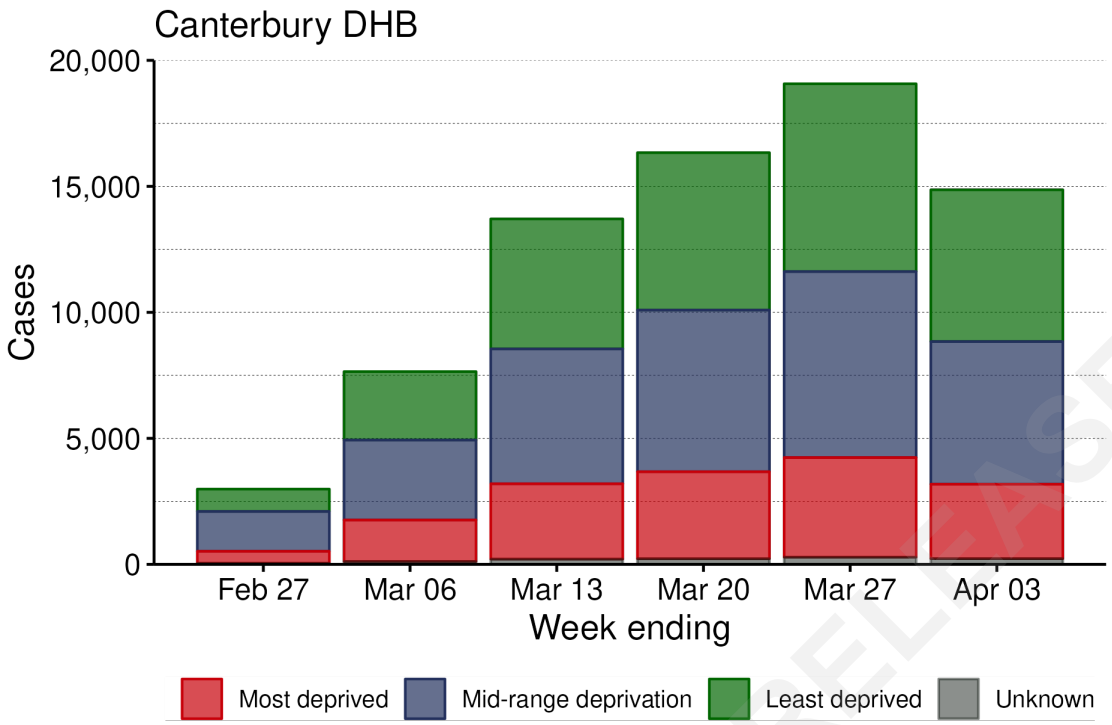


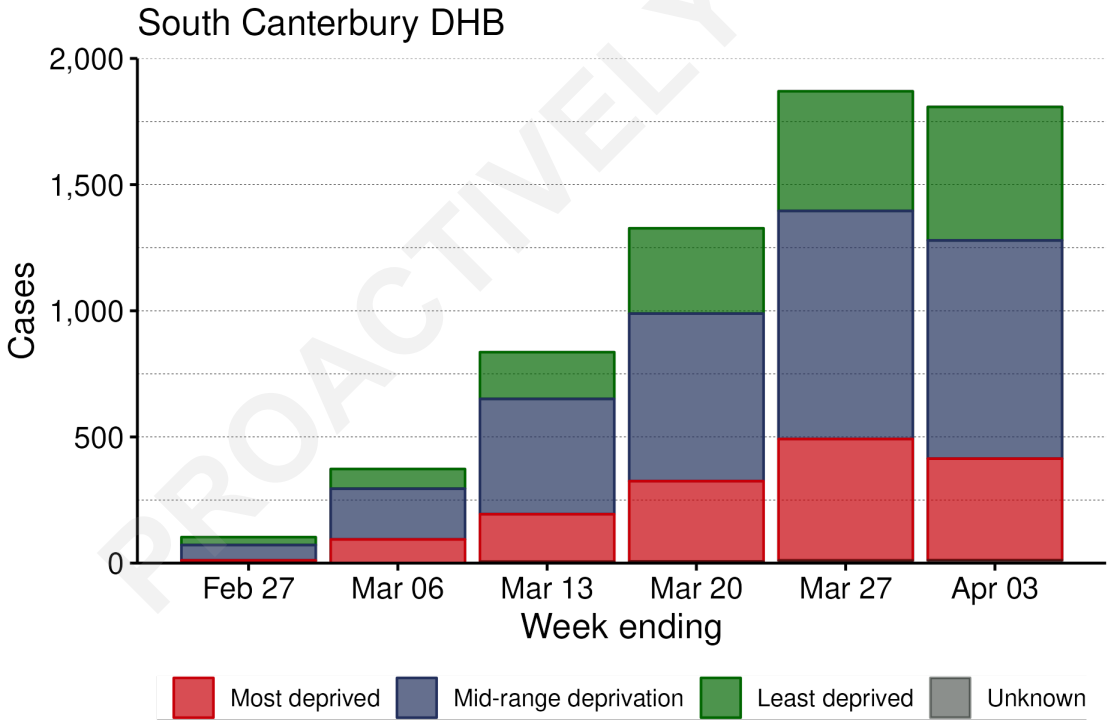


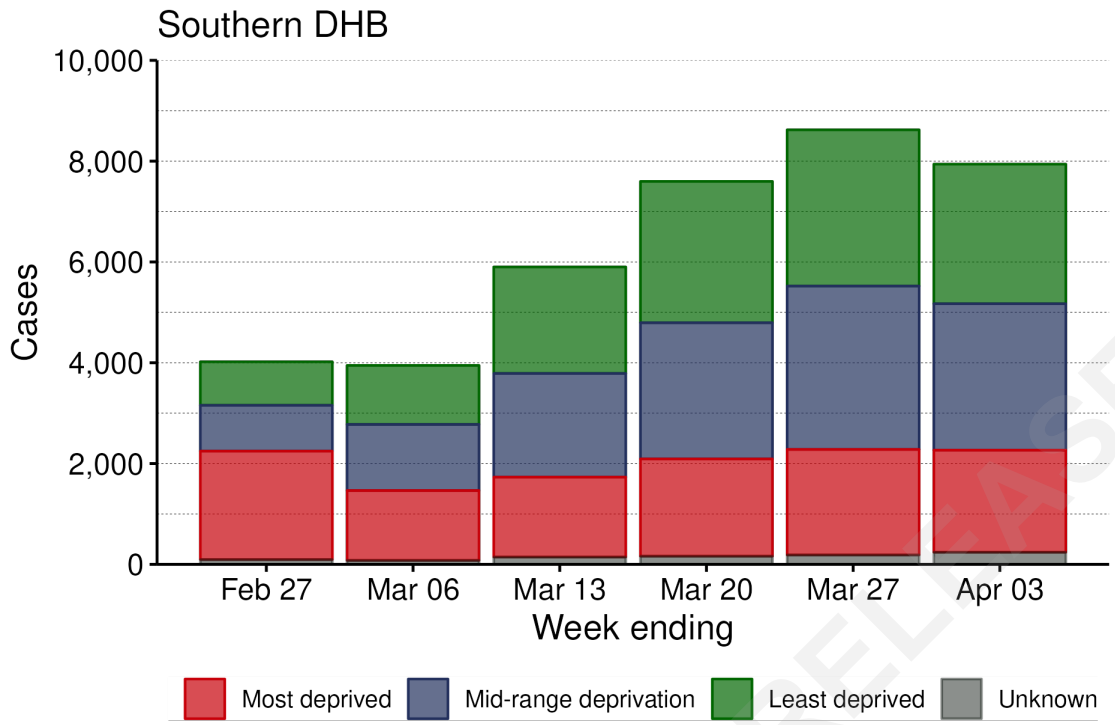


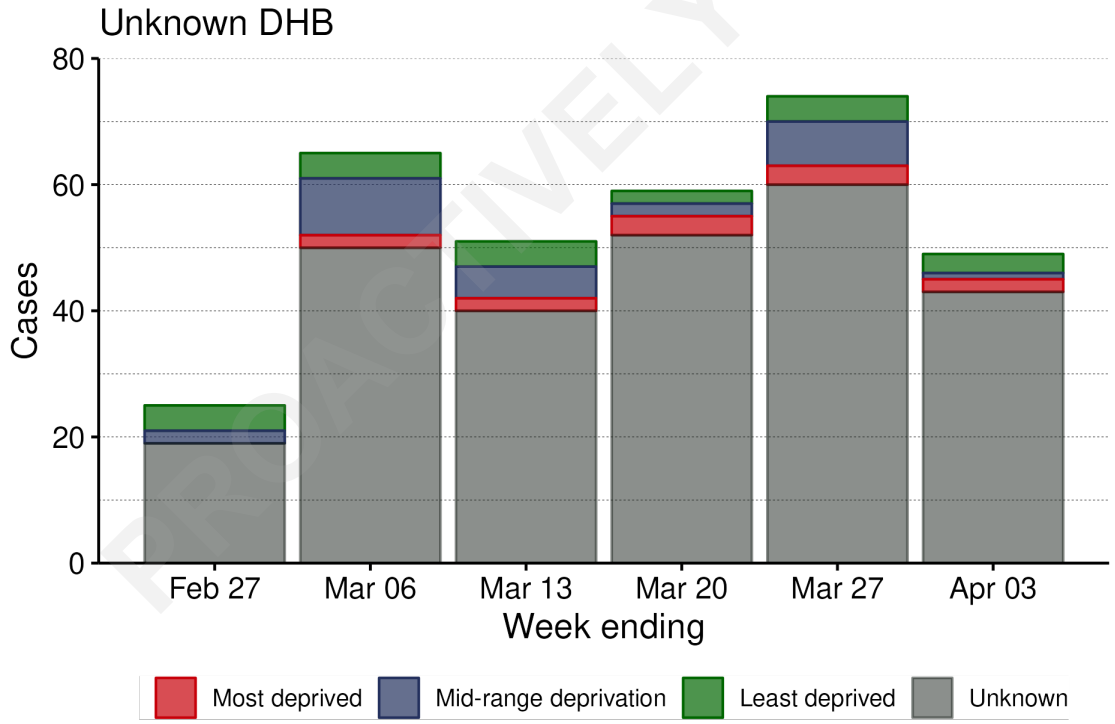




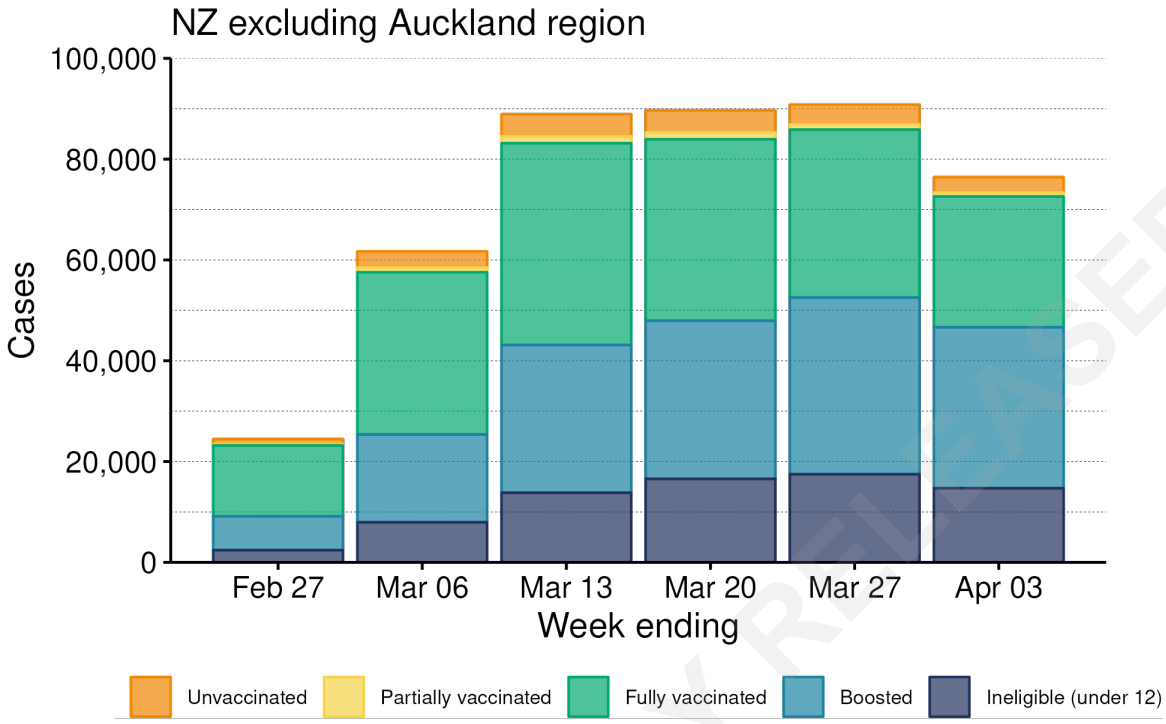


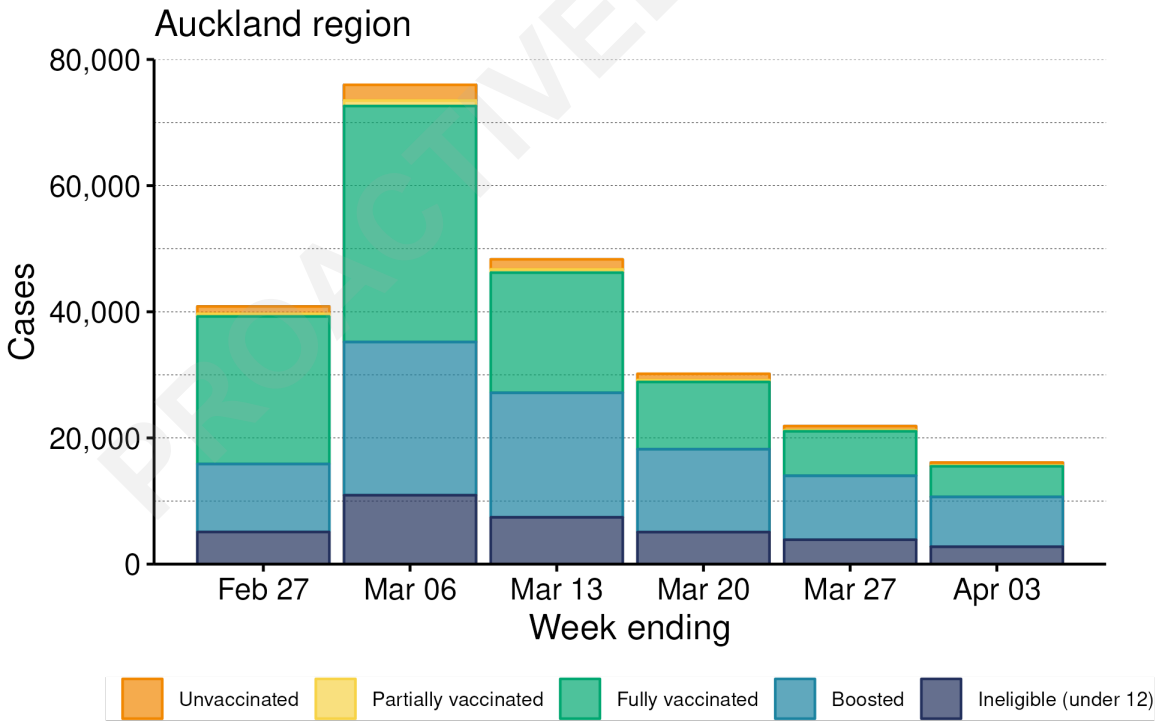


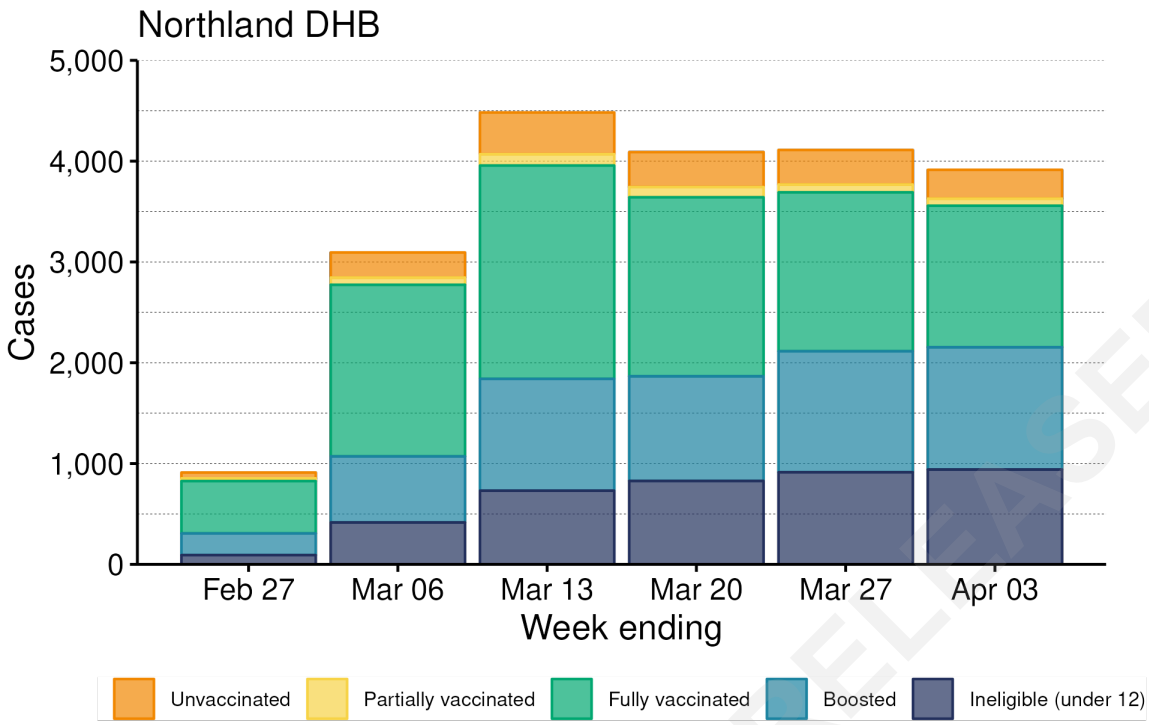


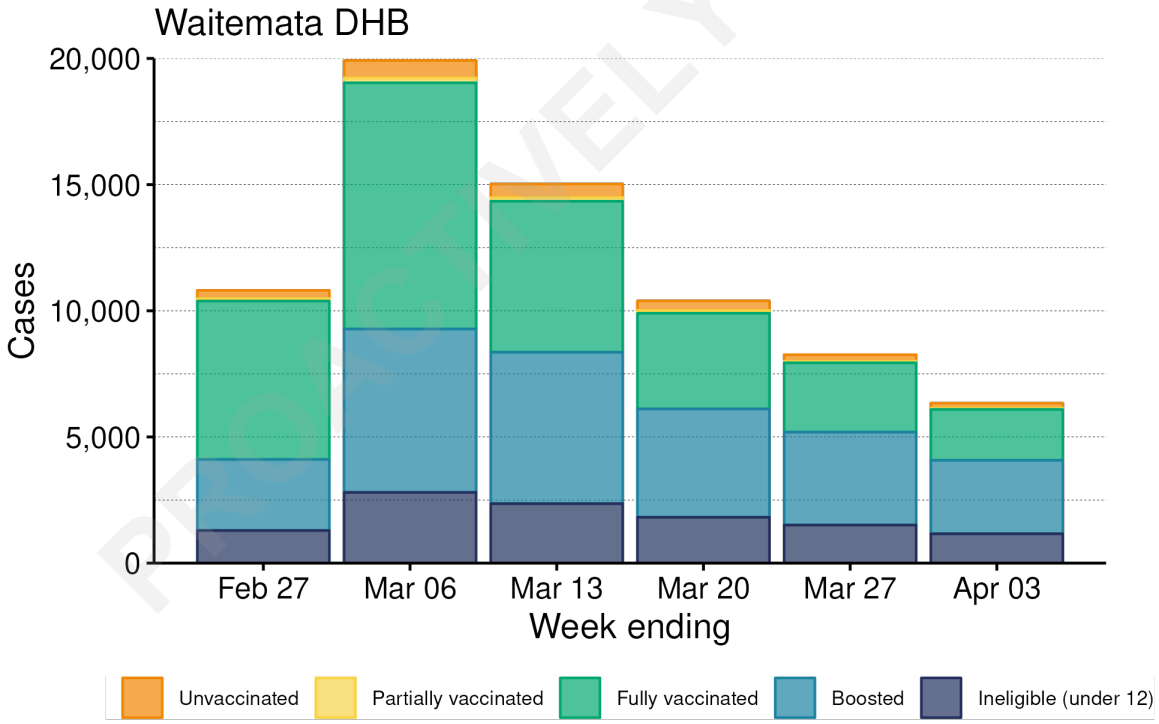


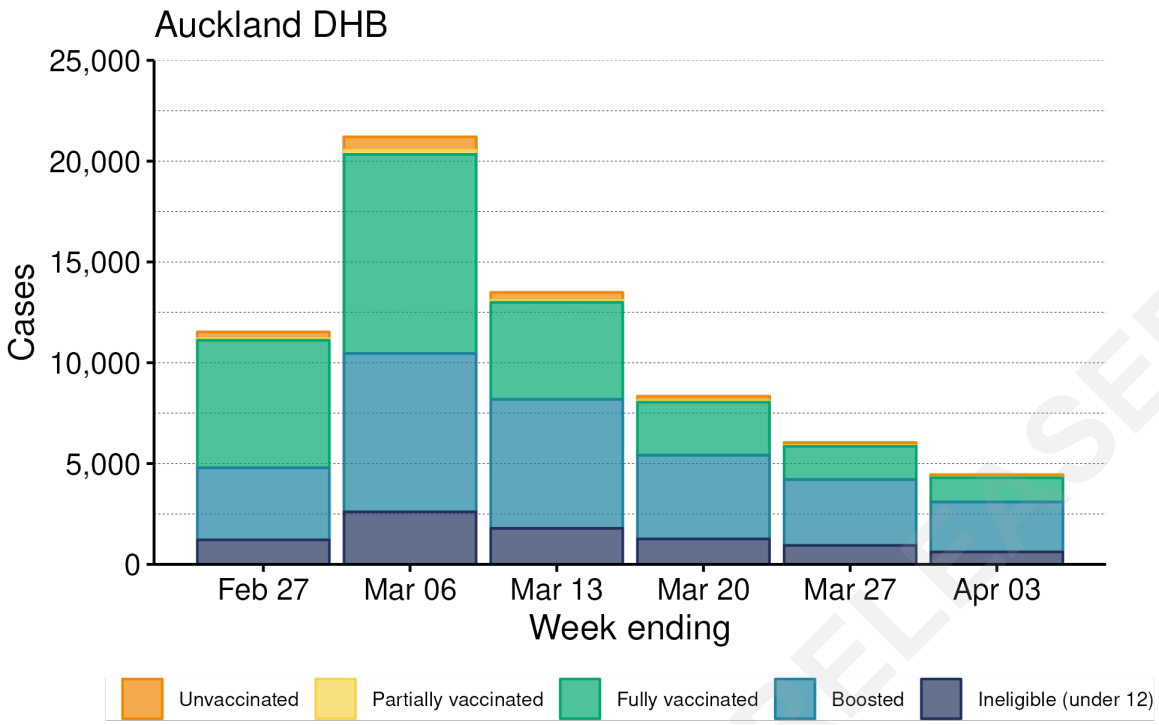
Vaccination Graphs

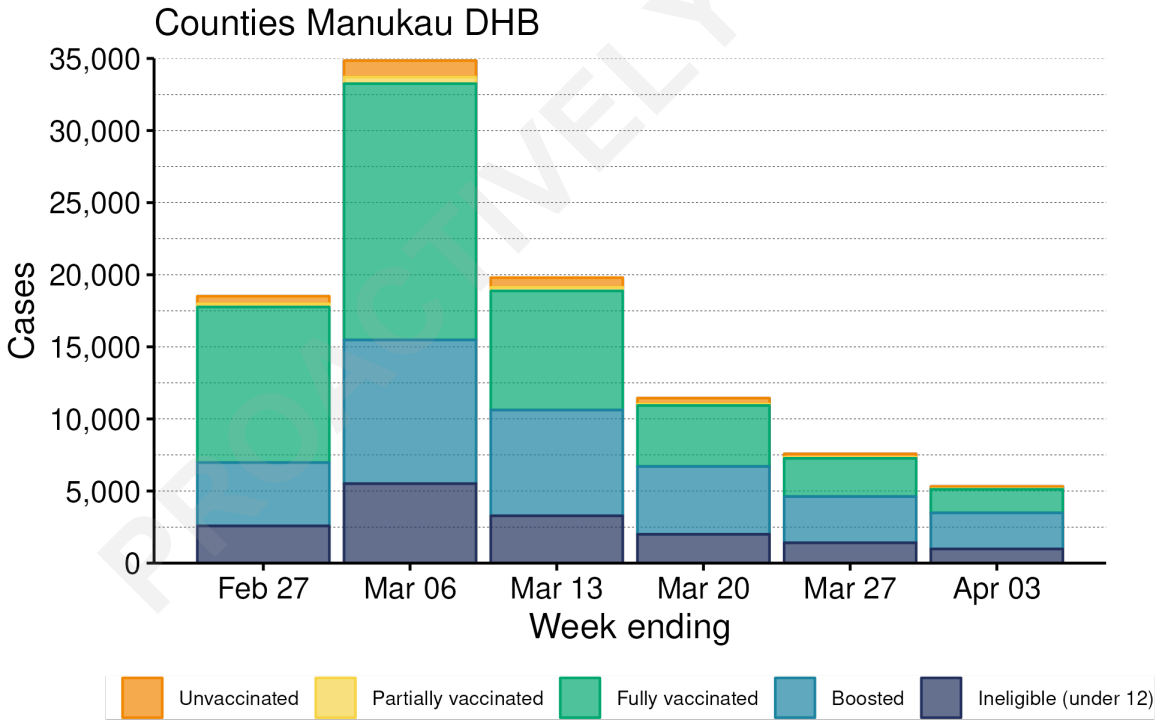


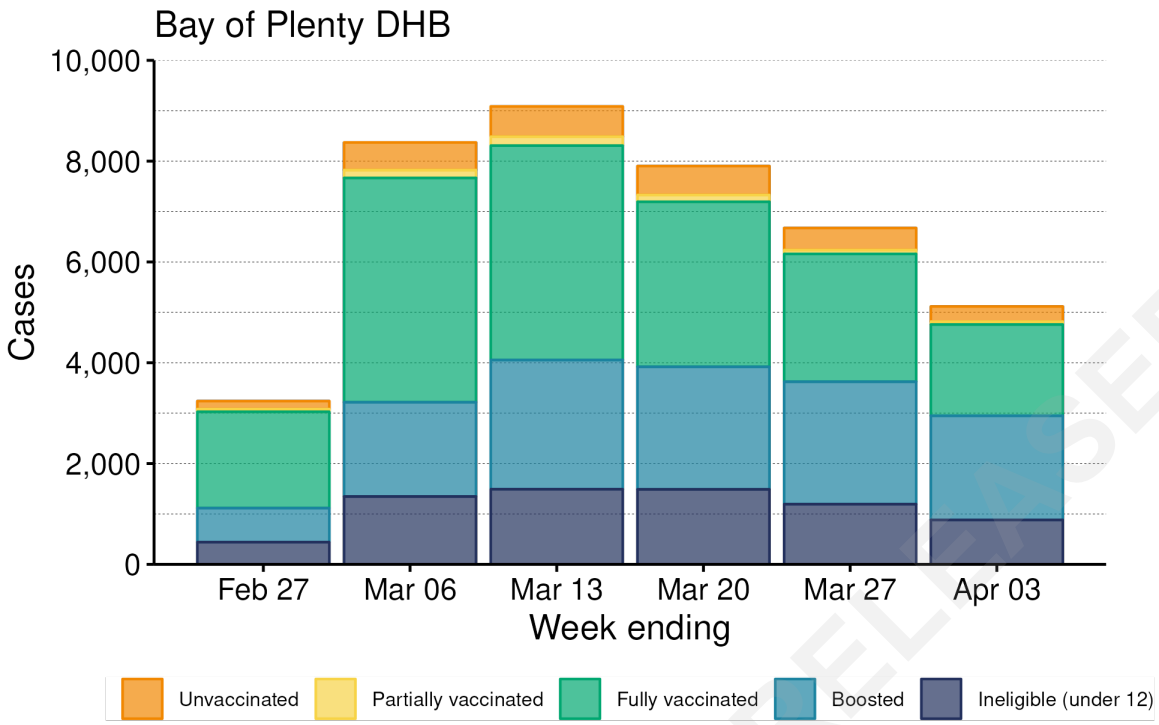


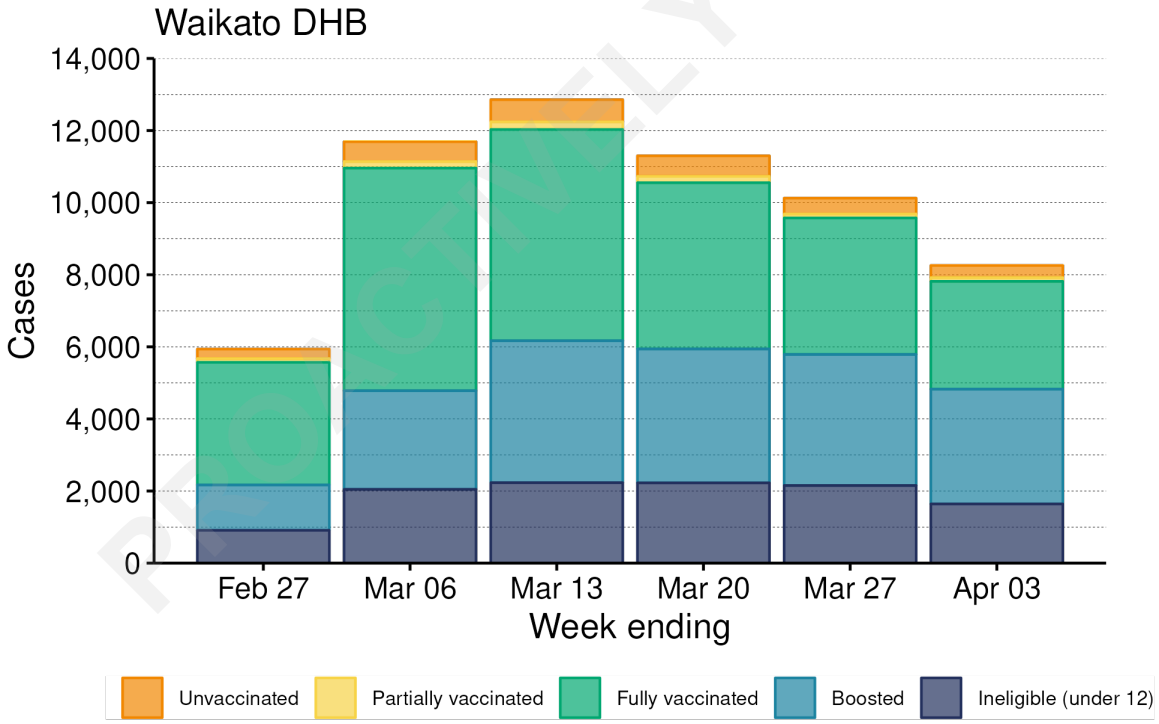


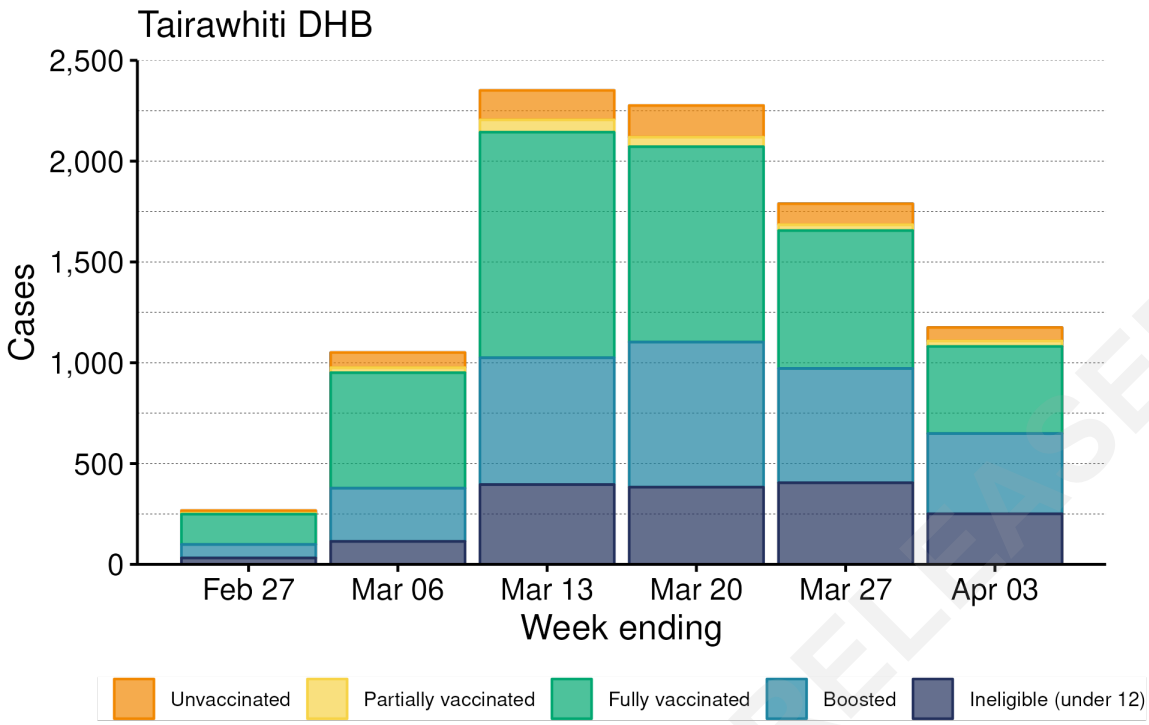


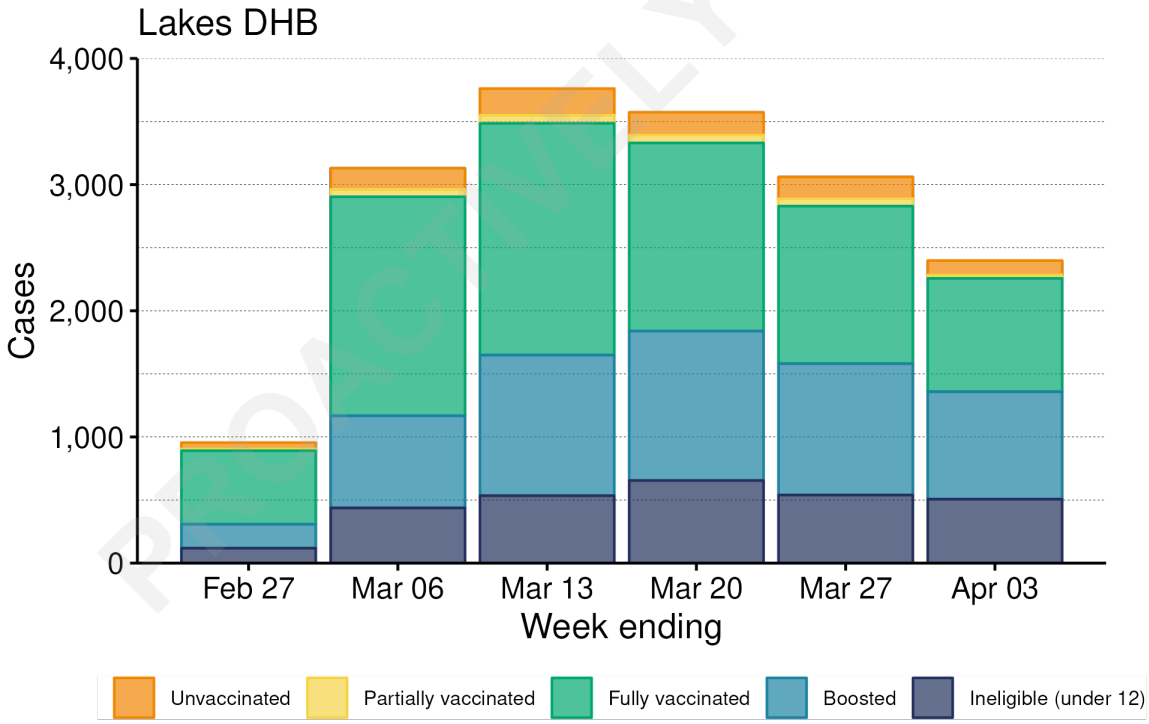


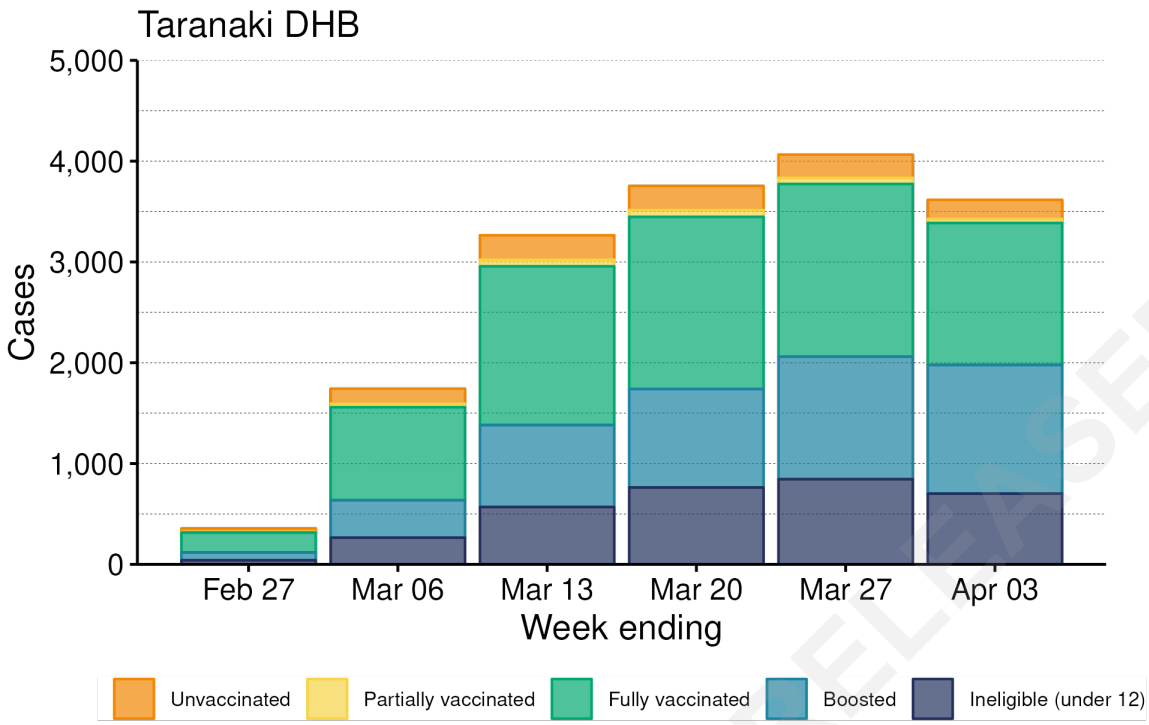


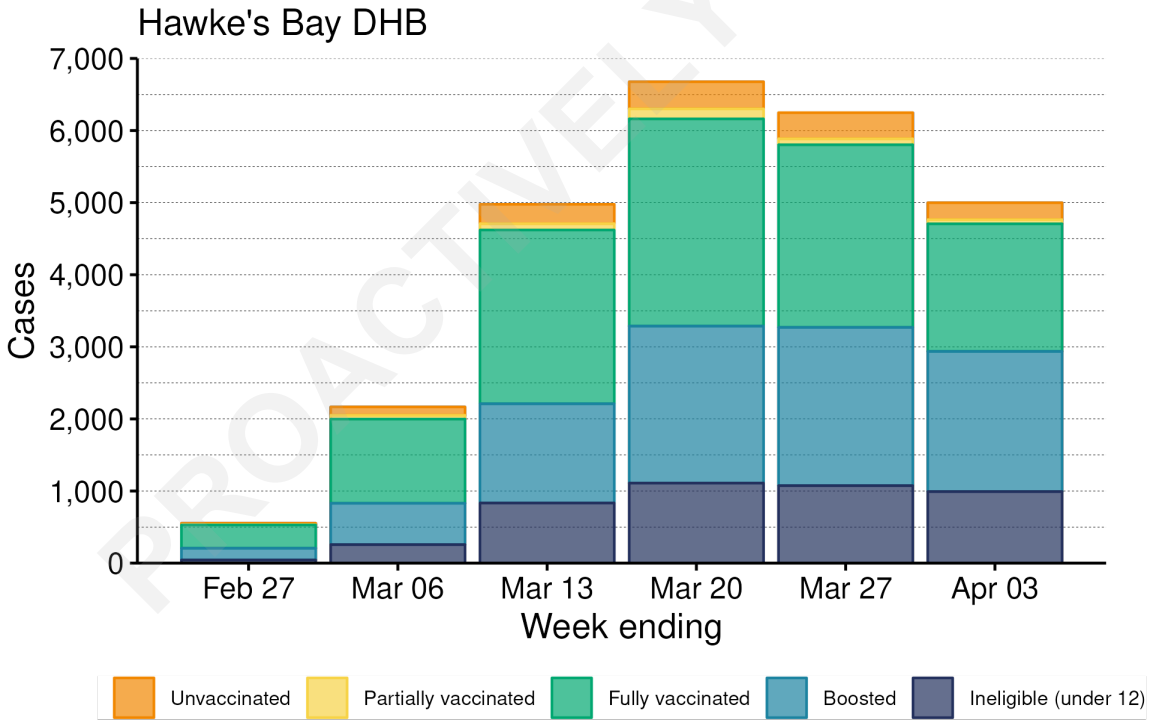


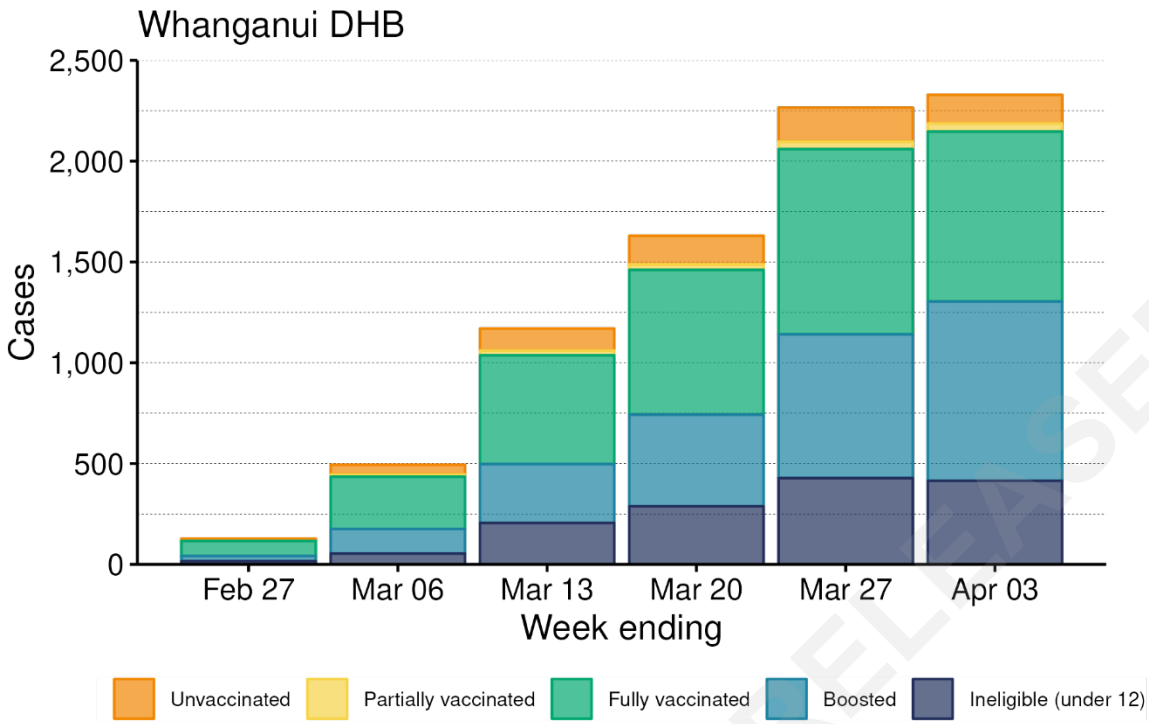


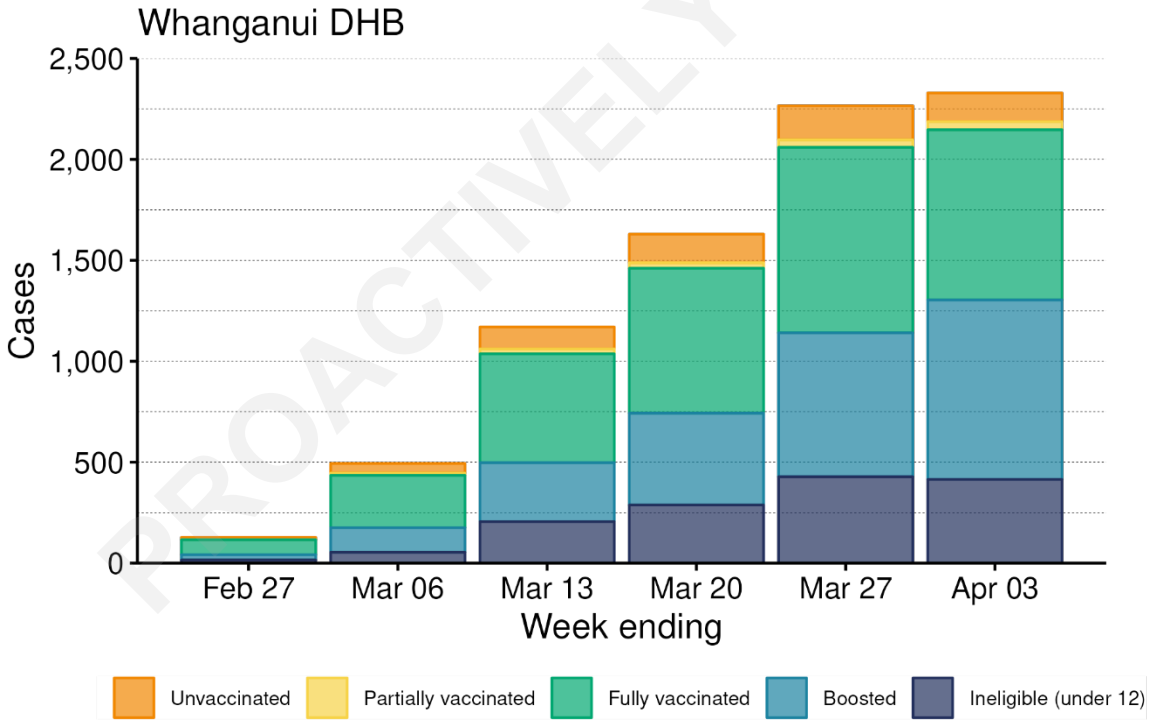


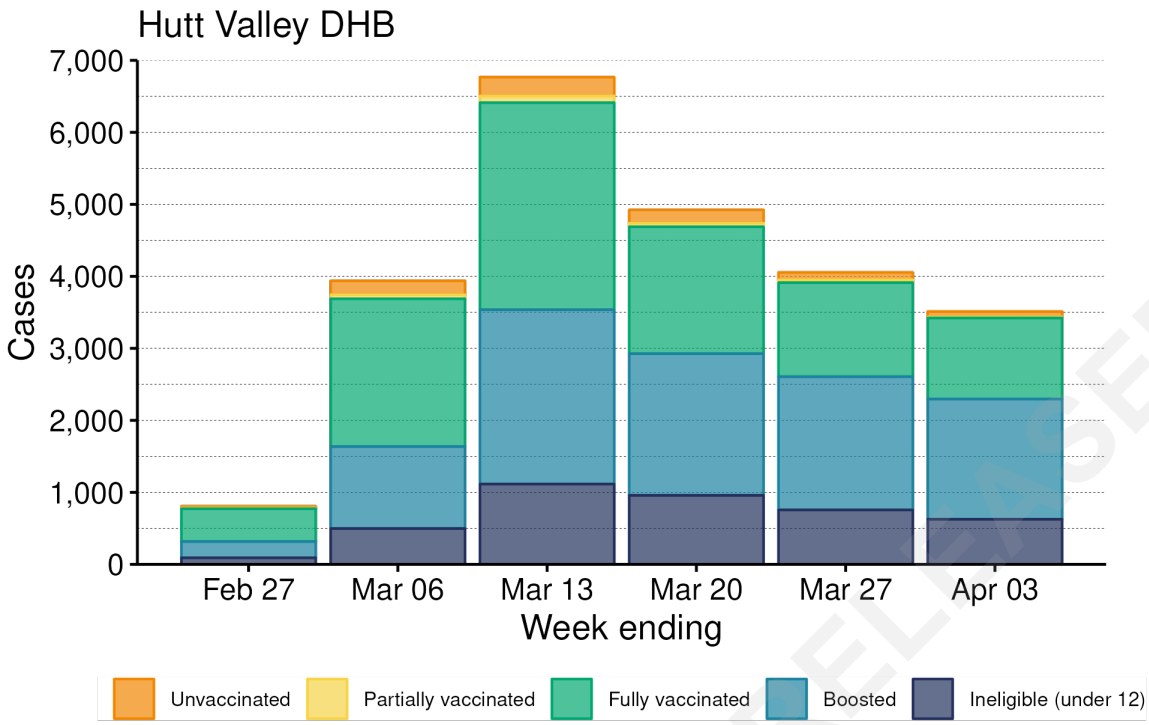


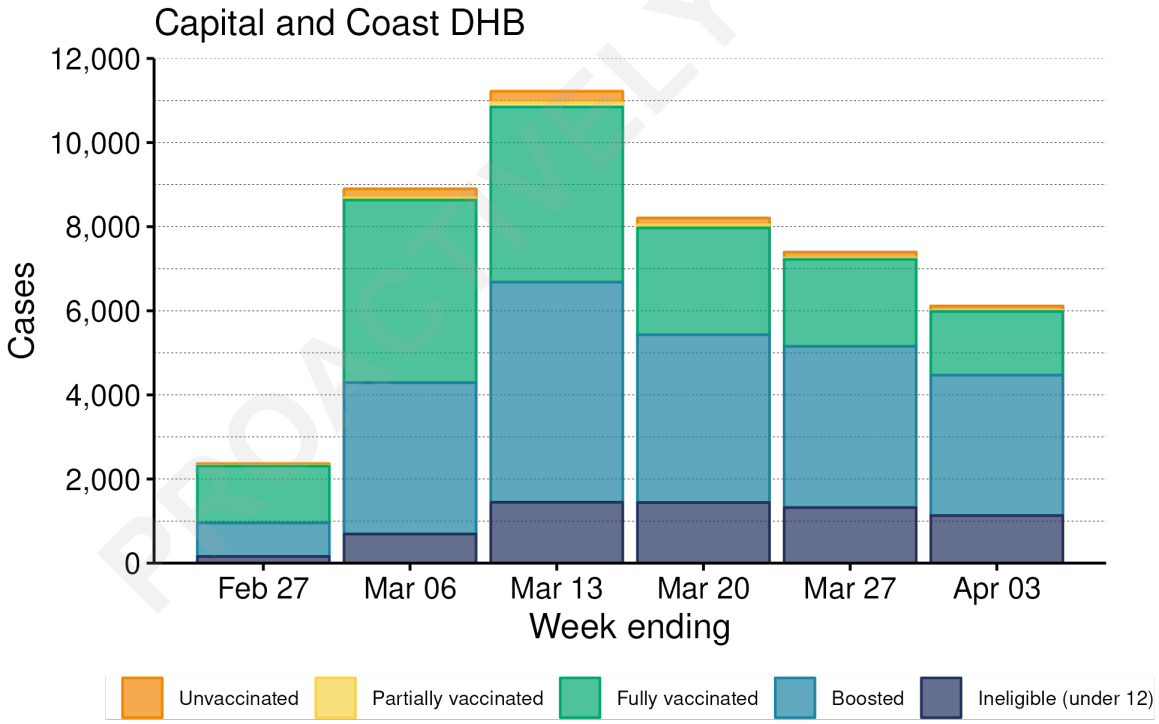


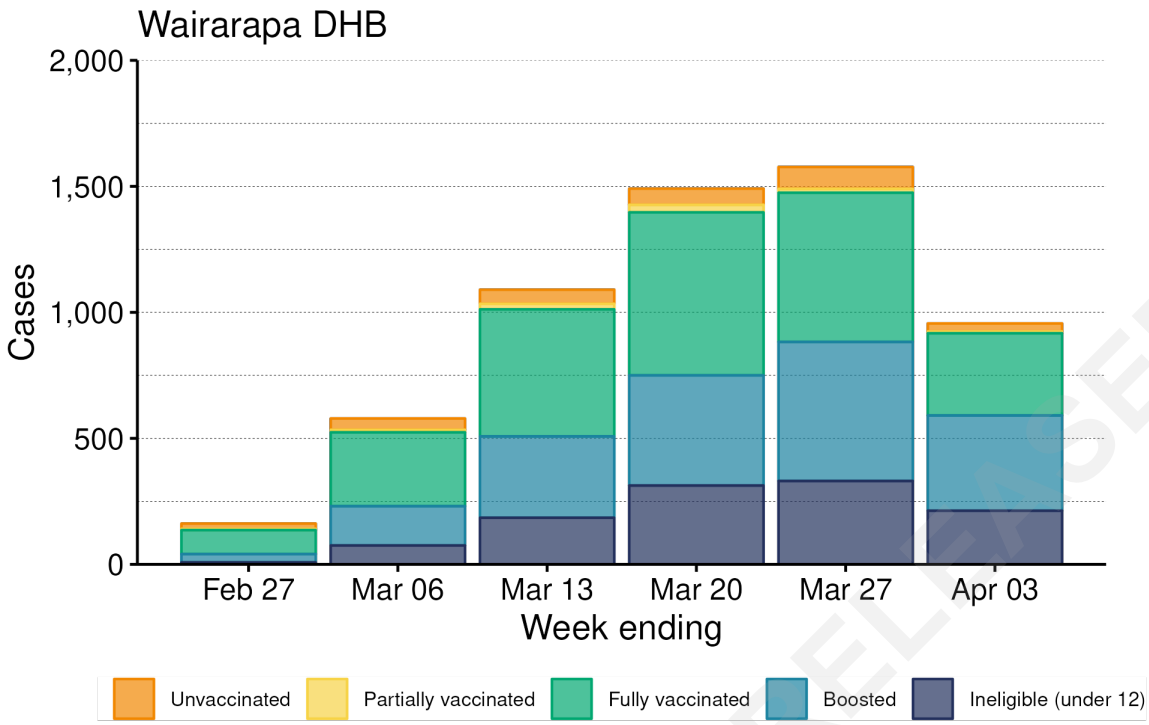


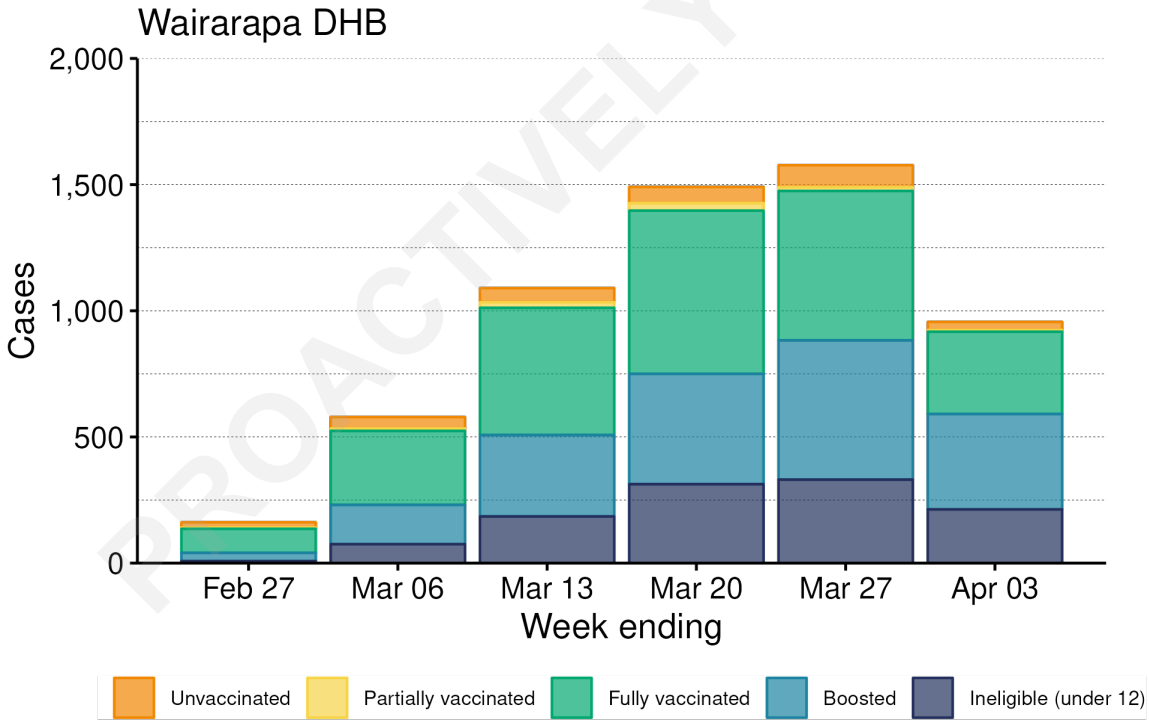


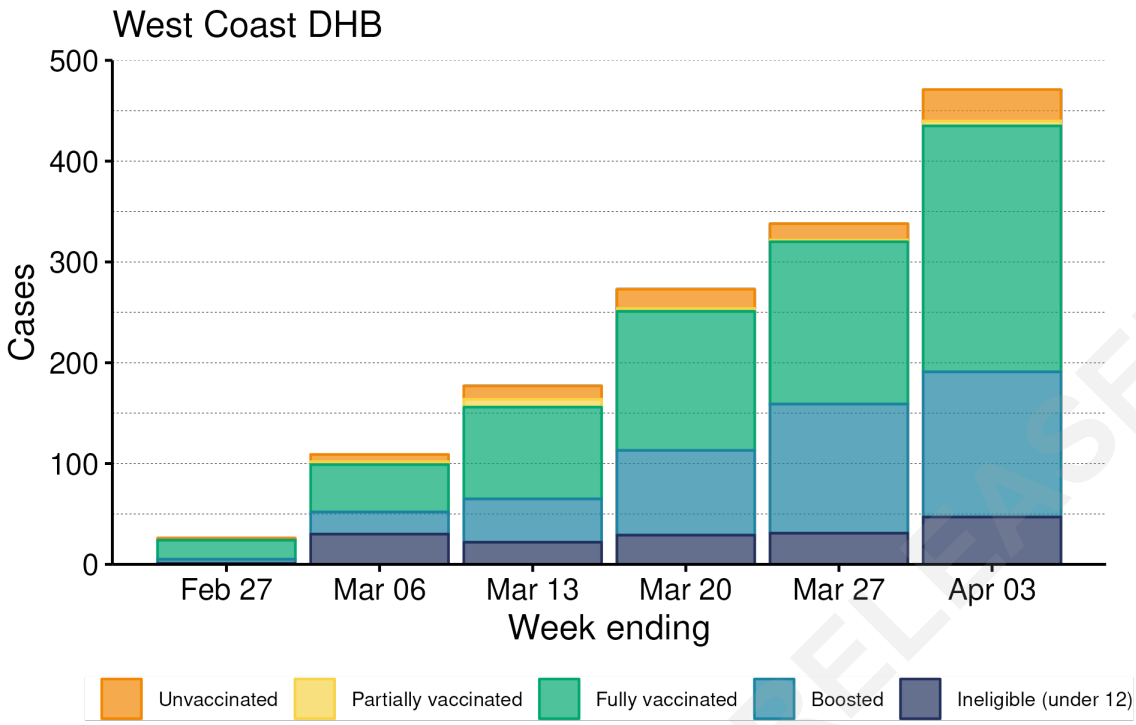


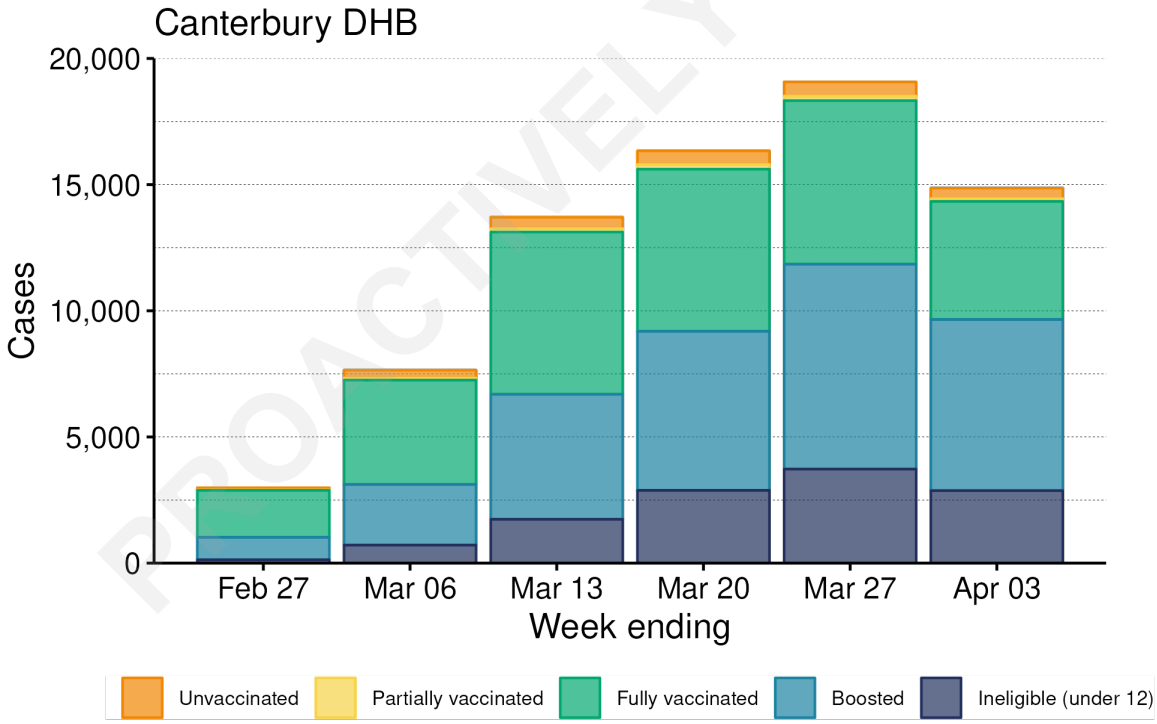


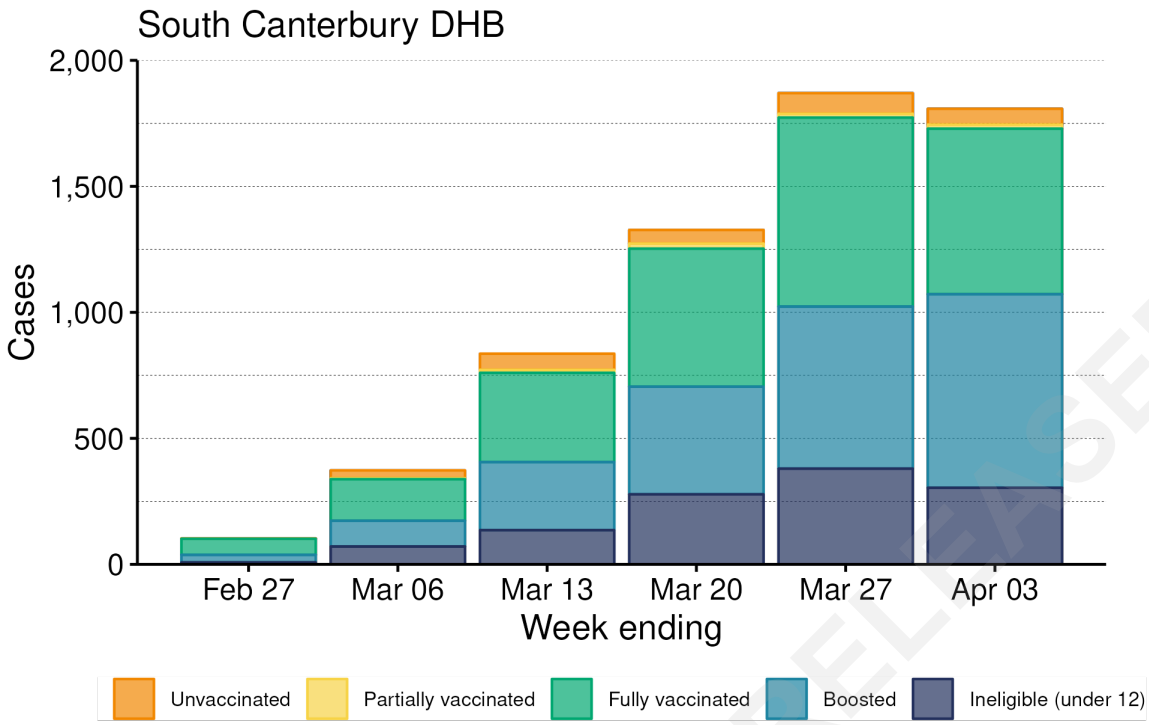


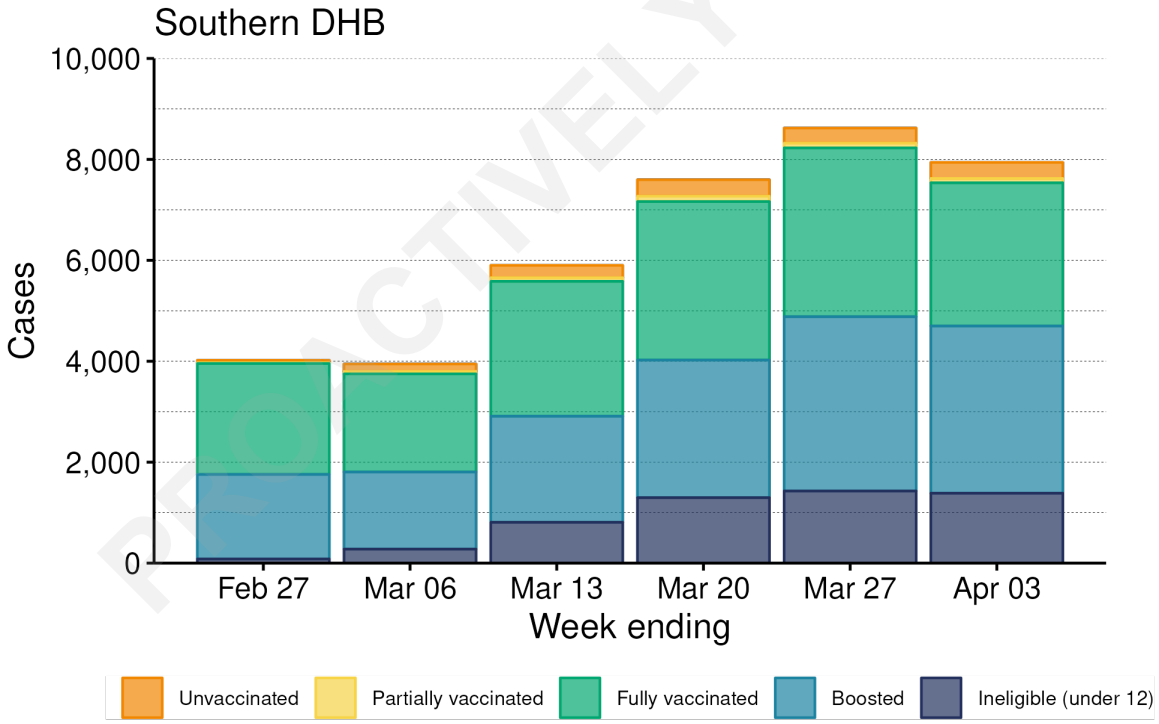


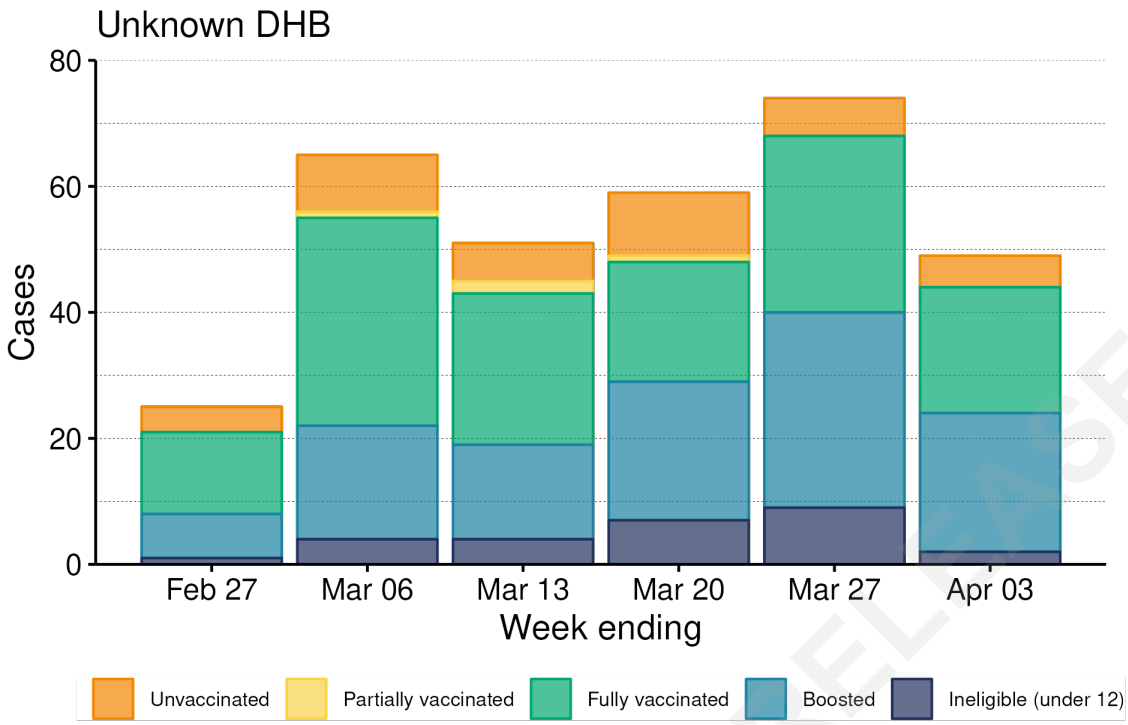












PCR Testing Rates