



**TE AHO  
O TE KAHU**  
CANCER  
CONTROL  
AGENCY

# **COVID-19 and cancer services**

Working report on the impact of COVID-19 on cancer services for the period ending September 2022

**Released December 2022**

# ACKNOWLEDGEMENTS

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# SUMMARY OF FINDINGS

This report includes data up to September 2022, except for cancer registration data which were available up to August 2022.

Cancer registrations until August 2022 show an 8% increase overall compared with the average of 2018/19 (ie, pre-COVID-19). For Māori there was a 7% increase in registrations over this time. Overall, for 2022 to date there were 3% fewer cancer surgeries performed compared to the average of 2018/19, due to lower volumes of colorectal cancer and breast cancer surgeries. For Māori, there has been a 5% increase in combined cancer surgeries for the year to date relative to 2018/19. The proportion of Māori lung cancer surgery in particular was down by 16% for the year to date relative to 2018/19 (15 fewer surgeries), however this proportion has improved compared to the 25% seen in the previous report using data up to June 2022. Some types of surgery showed a decrease in July 2022 compared with 2018/19 that improved by September.

For 2022 up until September, medical oncology first specialist assessments (FSAs) increased by 7% compared to the same period in 2018/19 and IV chemotherapy increased by 8%. Radiation oncology FSAs increased by 6% for 2022 to date compared to 2018/19 and radiation therapy attendances decreased by 10%. Although completed radiation therapy courses decreased by 3% compared to 2018/19, this was improved compared to the previous report. For haematology, there was a 2% decrease in FSAs for 2022 to date, and an increase of 5% for IV chemotherapy attendances compared with 2018/19.

For medical oncology, radiation oncology and haematology first specialist appointments and treatment measures, there was a decrease in the month of July 2022 compared with July 2019/18 that was not seen or much less notable in September. Disruption seen in July aligns with the peak of winter illnesses including COVID-19 in July which then improved into September.

There was evidence of some downturns in delivery of some services, particularly during July. These downturns are likely to be the result of the impact of the COVID-19 pandemic on the normal delivery of care, with the added impact of other illnesses such as influenza. There are some signs of improvement in this report (particularly August and September), however Te Aho o Te Kahu acknowledges the ongoing pressures on the cancer care system at this time, in particular on the cancer workforce due to staff illness and capacity issues as a result of COVID-19 and other illnesses.

That this reporting shows trends back towards the pre-pandemic period suggests that cancer care staff are working diligently to ensure the continuation of cancer care in Aotearoa New Zealand. Te Aho o Te Kahu continues to work with the sector and will monitor and further investigate downturns in service delivery, with particularly focus on evidence on inequity.

## Background and data

- The purpose of this report is to provide a rapid assessment of the impact of COVID-19 on cancer services. It includes data up until 30 Sep 2022 (31 Aug 2022 for cancer registrations). This period includes a surge of other viral illnesses spreading throughout the community the during winter months

- We acknowledge individuals with cancer may have been impacted in significant ways by COVID-19, including by changes to the way care has been delivered and that these may not be captured within the available data.
- Te Aho o Te Kahu acknowledges the considerable challenges cancer services are working under during the current COVID-19 pandemic. Our reporting so far has not identified extensive disruption; however, this is not to say that there have not been significant impacts on cancer services as a result of COVID-19 and other winter illnesses such as influenza (in particular staff capacity).
- The report focuses on the aspects of the cancer care pathway for which we have readily available data and does not capture all aspects of cancer care.
- This report compares 2022 with an average of 2018/19 data and provides additional graphs comparing 2022 data with that from 2021, 2020 and 2018/2019.
- For the purposes of this report, we have not adjusted for expected changes in incidence over time (such as due to population growth). We acknowledge that the value of comparing current trends in registrations and treatment to pre-pandemic trends is reducing over time.
- There may be some backlogs in data entry with pandemic-related impacts on staffing across the health sector, and in particular this has prevented the presentation of cancer registration data for September. This may result in future data updates altering the current results.

## Cancer diagnosis

### Registrations

- Cumulatively up to August 2022, there has been an increase of 8% in cancer registrations compared to the average of 2018/19 and a 7% increase for Māori.

### Diagnostics

- **Gastrointestinal endoscopies:** for 2022 to date (January to September), there was an increase of 15% in gastrointestinal endoscopies, compared with the average of 2018/19. For Māori there was a 34% increase and for Pacific peoples the increase was 38%.
- **Bronchoscopies:** For January to September 2022 (cumulatively), there was a 10% decrease in bronchoscopies compared with the same period in 2018/19. For Māori there was a 2% increase over the same time period.

## Cancer Treatment

### Faster Cancer Treatment

- For 2022 to date, there has been some fluctuation in the proportion of people with a high suspicion of cancer receiving their first treatment within 62 days of receipt of referral, however the measure has been met for 83% of people overall and 85% for Māori.

### Surgery

- For 2022 until September 2022, there were 3% fewer cancer surgeries (breast, prostate, lung and colorectal combined) compared to 2018/19. These decreases are due to decreases in colorectal cancer surgery and breast cancer surgery (mastectomy). There were 5% fewer colorectal cancer surgeries and 6% fewer breast cancer surgeries performed in 2022 to date compared with 2018/19.
- For Māori, there has been a 5% increase in combined cancer surgeries for the year to date relative to 2018/19 (reflecting 24 more surgeries). For Māori there was a 16% decrease in lung cancer surgery, numbering 15 fewer surgeries in 2022 compared with 2018/19.

- For Pacific peoples there was a 17% increase for the year to date relative to 2018/19 (reflecting 28 more surgeries).
- Breast cancer surgery (mastectomy only) volumes showed a decrease in August 2022 compared with 2018/19, this was improved in September. Colorectal cancer surgery volumes showed a decrease in July 2022 compared with 2018/19 but volumes were increased in August and September 2022 compared with 2018/19. Lung cancer surgery showed a decrease in August and September 2022 compared with 2018/19, however the September decrease was less notable (and small numbers make it difficult to be clear if there is a true trend). These decreases may have been related to the peak of COVID-19 (and other winter illnesses) seen in July 2022.

## Chemotherapy and radiotherapy

- **Medical oncology:** for 2022 to date (January to September), there was an overall 7% increase in medical oncology first specialist assessments compared with 2018/19 and a 12% increase for Māori. There was an 8% increase in IV chemotherapy attendances compared with 2018/19 overall and a 28% increase for Māori.
- **Radiation oncology:** for 2022 to date, there was a 6% increase in radiation oncology first specialist assessments compared with 2018/19, with a 13% increase for Māori over this time period. There was an 10% decrease in radiation therapy attendances overall and a 3% decrease in completed radiation therapy courses.
- **Haematology:** for 2022 to date, there was a 2% decrease in haematology first specialist assessments compared with 2018/19, and for Māori there was an 8% increase. There was a 5% increase in haematology intravenous (IV) chemotherapy compared with 2018/19 overall and for Māori an increase of 8%.
- **Overall trends:** for medical oncology, radiation oncology and haematology first specialist appointments and treatment measures, there was a decrease in the month of July 2022 compared with July 2019/18. However, the majority of measures decreased in September 2022 compared with September 2018/19, showing improvement compared to July. Disruption seen in July aligns with the peak of winter illnesses including COVID-19 in July which then improved into September (see Appendix 1).

## Focus on lung cancer

- As He Pūrongo Mate Pukupuku o Aotearoa | The State of Cancer in New Zealand 2020 report outlines, lung cancer is the most significant cancer for Māori in terms of mortality and is one of the largest contributors to inequity in mortality between Māori and non-Māori<sup>1</sup>.
- Work undertaken by Te Aho o Te Kahu and published in the New Zealand Medical Journal (Gurney et al, 2022) showed a downtrend in lung cancer registrations in 2020 compared to pre-pandemic years and disparities in bronchoscopy rates for Māori<sup>2</sup>. In this section of the report we build on these findings.
- The rate of lung cancer registration for Māori in 2021 was similarly lower than that observed prior to the pandemic, with some flattening off during the course of the year. For bronchoscopy, the 2021 rate for Māori was higher than 2020 for the first part of the year but flattened from around mid-year. The timing of the downturn in registrations and bronchoscopy procedures is highly suggestive that

<sup>1</sup> Te Aho o Te Kahu. (2021). *He Pūrongo Mate Pukupuku o Aotearoa 2020, The State of Cancer in New Zealand 2020*. Retrieved from Wellington: <https://teaho.govt.nz/publications/cancer-state>

<sup>2</sup> Gurney, J. K., Dunn, A., Liu, M., Mako, M., Millar, E., Ruka, M., . . . Sarfati, D. (2022). The impact of COVID-19 on lung cancer detection, diagnosis and treatment for Māori in Aotearoa New Zealand. *N Z Med J*, 135(1556), 23-43.  
Te Aho o Te Kahu, Cancer Control Agency

these were affected by lockdowns that began in mid-2021. It is possible that there were more Māori in 2021 than the previous 3 years with an advanced stage of lung cancer at the time of diagnosis, although the large proportion in the unstaged category makes it challenging to interpret.

- There was overall a higher rate of lung cancer surgery for Māori compared to non-Māori/non-Pacific, in line with the higher incidence for Māori of this cancer. The rate for Māori is increased in 2021 compared to 2020, although there was a flattening of the trend mid-year. However, small numbers of lung cancer surgery for Māori, makes it challenging to interpret these findings in detail.
- This section includes an outline of some of the actions being undertaken to address inequities in lung cancer in Aotearoa.

# INTRODUCTION

## Purpose

The aim of this work is to provide a rapid collation of evidence on impacts to cancer diagnosis and treatment to support policy development and response planning.

## Background

In 2020, Te Aho o Te Kahu released a series of reports outlining the impact of COVID-19 on cancer services in New Zealand<sup>3</sup>. The 2020 reports showed that cancer treatment services – surgery, medical oncology, radiation oncology and haematology – continued during the start of the COVID-19 pandemic. Following an initial drop in new cancer registrations during the April 2020 lockdown, the number of cancer registrations in 2020 increased steadily in the following months and, by the end of September, had caught up to the number seen in 2019. As the COVID-19 situation and disruptions to health care settled, Te Aho o Te Kahu stopped regular COVID-19 and cancer reporting at the end of 2020. Te Aho o Te Kahu re-instated COVID-19 monitoring with the re-emergence of COVID-19 in the community in August 2021 (Delta strain), and continued with the arrival of the Omicron variant which continues to circulate in the community.

Te Aho o Te Kahu acknowledges the considerable challenges cancer services are working under during the pandemic. Our reporting so far has not identified extensive disruption; however, this is not to say that there have not been significant impacts on cancer services as a result of COVID-19 and other winter illnesses such as influenza. In particular, we are aware of widespread issues with staff capacity and pressures on the cancer workforce. It is affirmation of the hard work and dedication of the cancer workforce that this national reporting continues to only highlight pockets of disruption. We continue to liaise with cancer clinicians and service providers through our advisory groups and regional hubs and, when issues are identified, work with them to problem solve and support any work underway. We also note that the pandemic has further highlighted long-term issues within both the cancer care system (and wider health system). Te Aho o Te Kahu is maintaining a focus on supporting Te Whatu Ora, Te Aka Whai Ora, and the Ministry of Health to navigate these issues and work towards system improvement.

## Scope

The report focuses on the aspects of the cancer care pathway for which we have readily available national data and does not capture all aspects of care. Critical aspects of cancer care, including access to primary health care, radiology, palliative care, and patient experience are not measured.

As the purpose of the analysis is to rapidly measure the impact of COVID-19 and the response on cancer services; therefore, the analysis does not consider pre-existing unmet need or population growth over time.

The report focuses on the aspects of the cancer care pathway for which we have readily available national data and does not capture all aspects of care. Critical aspects of cancer care, including access to primary health care, radiology, palliative care, and patient experience are not measured.

We acknowledge that whānau affected by cancer may have been impacted in significant ways by COVID-19, including by changes to the way care has been delivered, and that this may not be captured within the available data.

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<sup>3</sup> Reports available here: <https://teaho.govt.nz/reports/cancer-care>  
Te Aho o Te Kahu, Cancer Control Agency



## Data and analysis

The data in this report comes from the Ministry of Health's national data collections. Each section of the report includes information on where the data is from, and any limitations associated with the data.

Numbers in this report may not match the previous report, due to exclusion of incomplete data in the previous reports and delayed coding or submission of data.

There may be some backlogs in data entry due to pandemic-related impacts on staffing across the health sector. In particular, this backlog has meant that it is not possible to report cancer registration data for September 2022 within the current report. These backlogs may result in future data updates altering the current results, for example, apparent disruption to services may be less severe than is reported here.

purpose of the analysis is to rapidly measure the impact of COVID-19 and the response on cancer services; therefore, the analysis does not consider pre-existing unmet need. In addition, the report makes direct comparisons between 2022 and previous years and does not consider any increase in cancer diagnoses or population size over time.

### Comparator for this report

The first set of COVID-19 and Cancer reports, published in 2020, compared 2020 data directly with 2019 data. The main comparison used was an average of 2018 and 2019 data, due to 2020 not being considered an appropriate comparator given the disruption to health services in 2020 due to COVID-19. For this report, we have actively chosen to continue the methodology of comparing to the 2018/19 average, for a) consistency, b) to account for the variation seen in 2021 data<sup>4</sup>, and c) to enable comparison to a pre-pandemic time period. We acknowledge that the value of comparing current trends in registrations and treatment to pre-pandemic trends is reducing over time.

Appendix 1 outlines key dates for COVID-19 in Aotearoa that may be of use when reviewing this report.

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<sup>4</sup> For example, for several measures in the March 2022 report, there were notably higher volumes for March 2021 compared with March in other recent years, including years presented in this report (2018, 2019, and 2020). The reasons for this data spike in March 2021 may include a catch-up period following lockdowns of the previous year. Te Aho o Te Kahu, Cancer Control Agency

# CANCER REGISTRATIONS

## Notes on data

- The data below comes from laboratory reports to the New Zealand Cancer Register (NZCR). Cancers diagnosed without haematology or pathology, for example radiology alone, will not be counted in this analysis. Further information on these data is included in Appendix 2.
- The data below are provisional, and exact numbers will change as data are finalised. Data were extracted from NZCR on 14 November 2022.
- 'Date' is date of diagnosis on the NZCR – usually the date the specimen was taken from the person and sent to the laboratory. Analyses include all new provisional and registered cancer events based on pathology and haematology reports.
- The extract used for this report excludes carcinoma in situ for breast and cervical, meaning the numbers are lower than in the 2020 COVID-19 and Cancer reports.
- September NZCR data are excluded from this report as a lower volume of laboratory reports for the month of September were able to be processed and administered at the national level.

## Key points

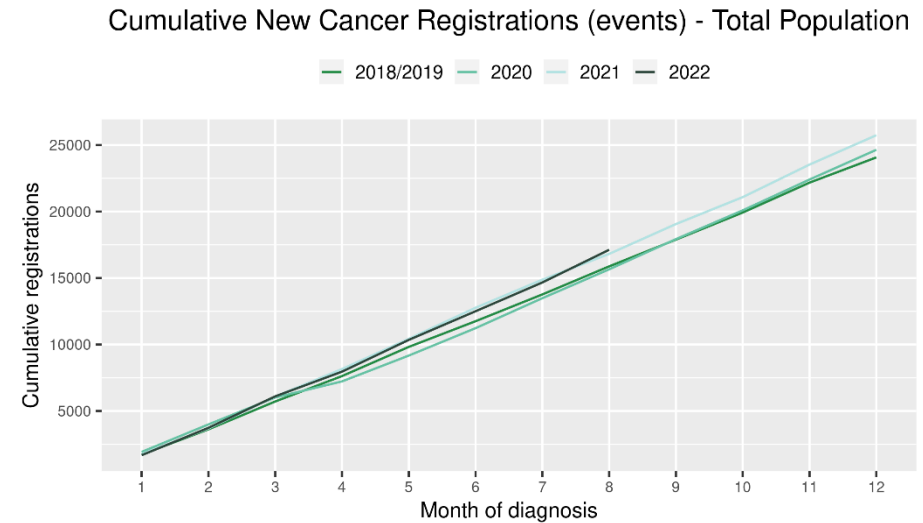
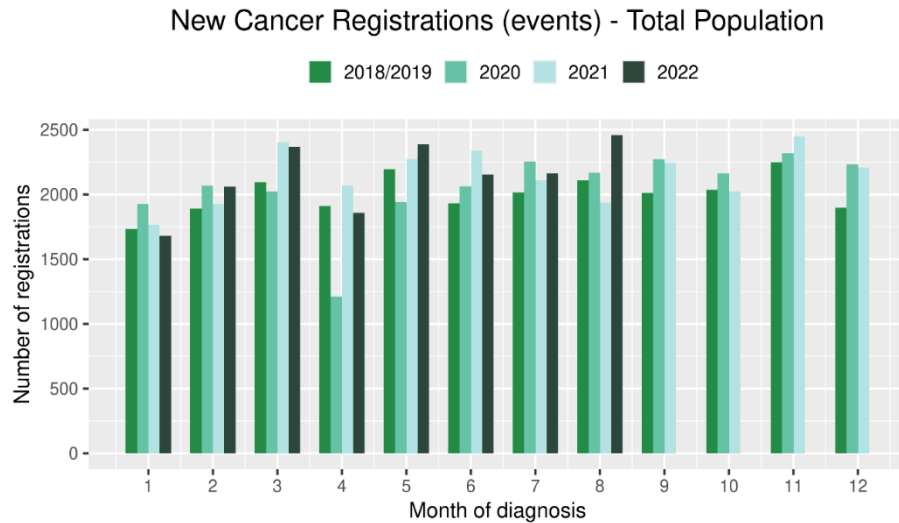
- Cumulatively up to August 2022, there has been an increase of 8% in cancer registrations compared to the average of 2018/19 and a 7% increase for Māori.
- While our primary comparison is with 2018/19, we note that figure 1 shows Māori registrations are lower in 2022 thus far compared with 2021. Cumulatively, there is a 5% decrease for Māori cancer registrations in 2022 thus far compared with 2021. There was 21% decrease for Māori for the month of July 2022 compared with 2021, however there was a 22% increase in August and a 13% increase in July compared with 2021.
- Haematology and lymphoid cancer registrations showed a decrease of 3% for the year to date compared with 2018/19 and prostate cancer registrations showed a decrease of 1%, with other cancer types showing an increase compared to the same time period.

# Results

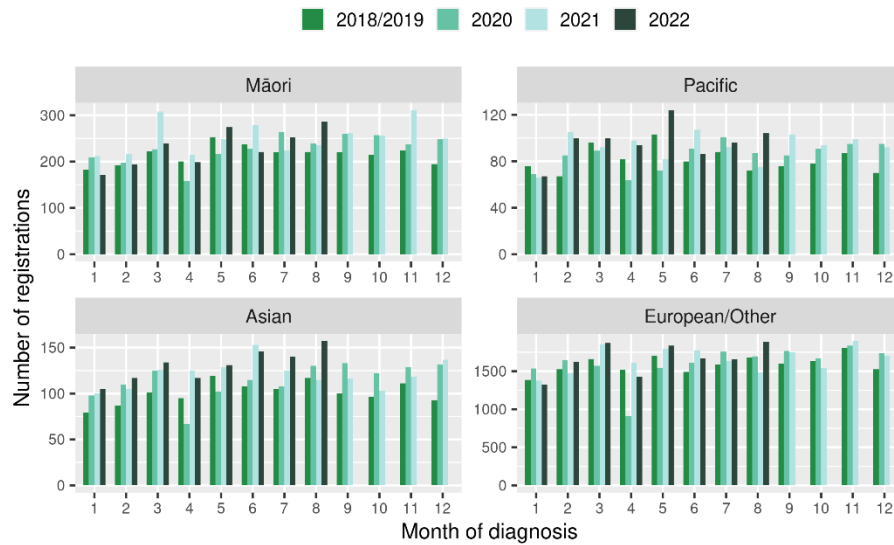
**Table 1: Number of provisional cancer registrations and percentage difference in 2022 compared to the average of 2018 and 2019, by month and cumulative year to date, by ethnicity**

	June			July			August			Cumulative Jan-Aug		
	2018/2019	2022	% change	2018/2019	2022	% change	2018/2019	2022	% change	2018/2019	2022	% change
Māori	237	221	-7%	220	252	15%	221	287	30%	1,725	1,838	7%
Pacific Island	80	86	8%	88	96	9%	72	104	44%	662	771	16%
Asian	108	146	36%	105	140	33%	117	157	35%	809	1,047	29%
European/Other	1,508	1,702	13%	1,601	1,675	5%	1,700	1,910	12%	12,682	13,471	6%
Total population	1,932	2,155	12%	2,014	2,163	7%	2,109	2,458	17%	15,877	17,127	8%

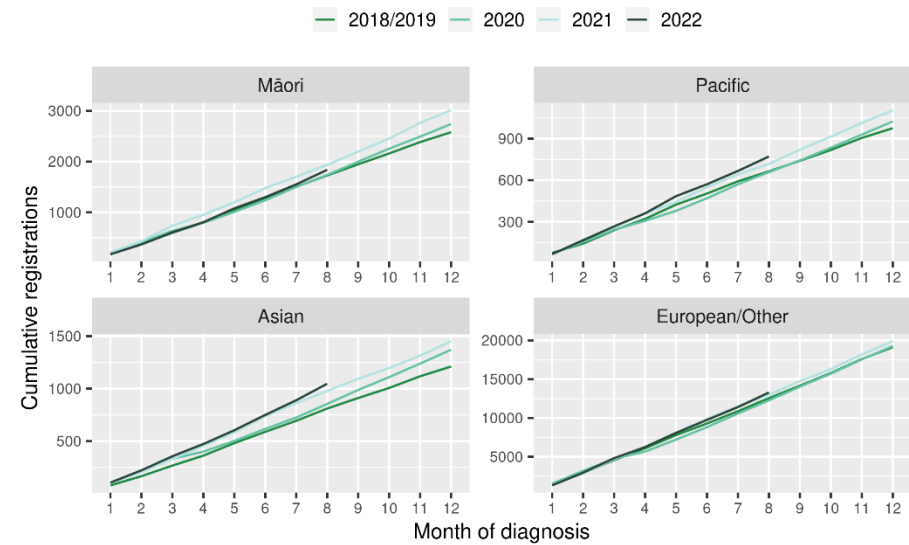
**Figure 1: Number of cancer registrations by month, 2018/19 average, 2020, 2021 and 2022, total population and by ethnicity**



### New Cancer Registrations - by Ethnicity



### Cumulative New Cancer Registrations - by Ethnicity



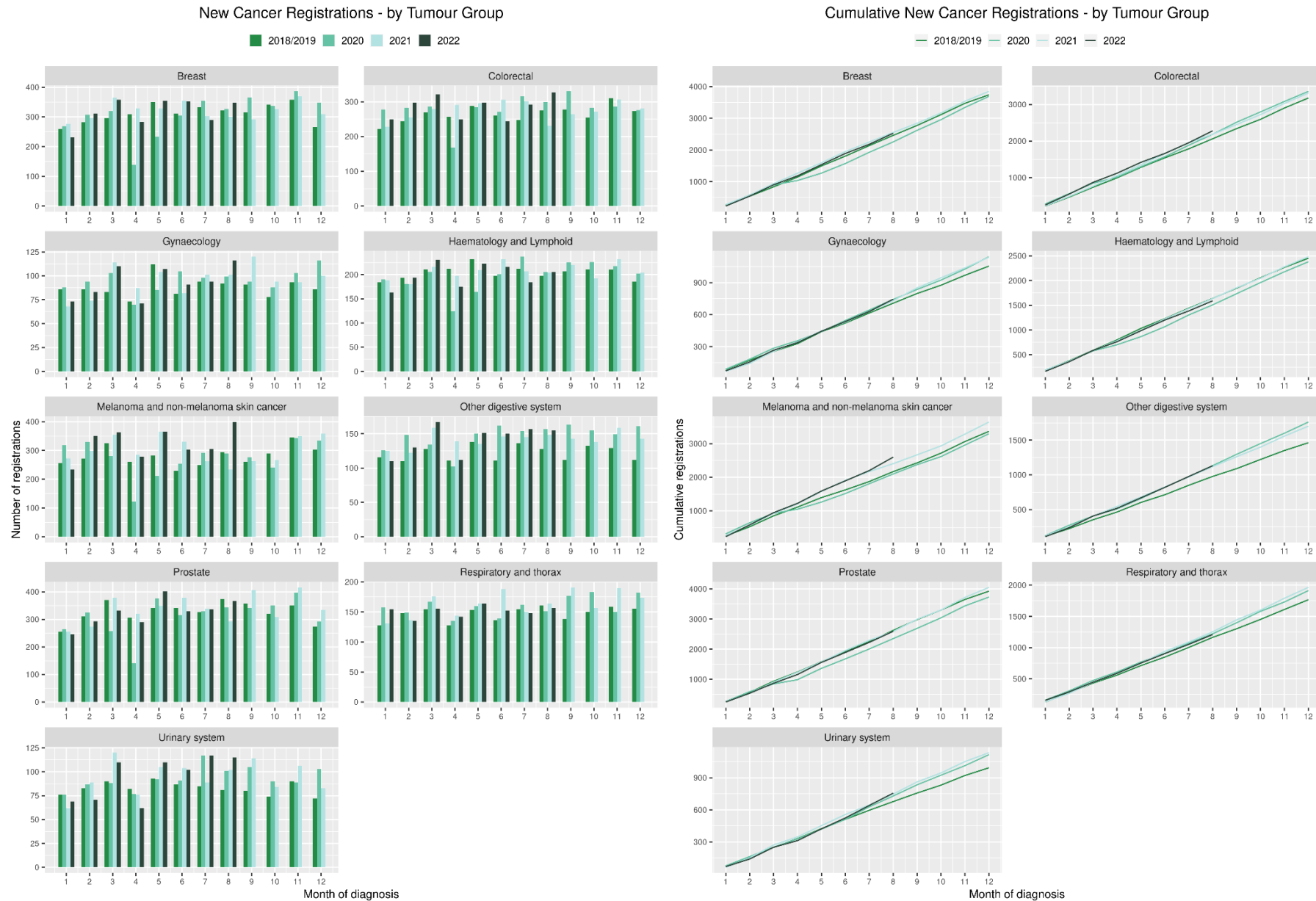
**Table 2: Number of provisional cancer registrations\* and percentage difference in 2022 compared to the average of 2018 and 2019, by month and cumulative year to date, by tumour group**

Tumour group	June			July			August			Cumulative January-August		
	2018/2019	2022	%change	2018/2019	2022	%change	2018/2019	2022	%change	2018/2019	2022	%change
Breast	311	353	14%	332	290	-13%	322	347	8%	2,458	2,528	3%
Colorectal	260	244	-6%	247	292	18%	275	327	19%	2,060	2,280	11%
Gynaecology	81	91	13%	94	94	0%	92	116	26%	705	745	6%
Haematology and Lymphoid	197	216	10%	212	184	-13%	197	205	4%	1,635	1,590	-3%
Melanoma and non-melanoma skin cancer	229	303	33%	249	306	23%	294	399	36%	2,166	2,599	20%
Other digestive system	111	150	36%	136	157	15%	128	155	22%	976	1,132	16%
Prostate	341	330	-3%	326	336	3%	374	367	-2%	2,624	2,594	-1%
Respiratory and thorax	136	152	12%	155	148	-5%	161	157	-2%	1,163	1,209	4%
Urinary system	87	102	18%	85	117	38%	81	115	43%	674	756	12%

\*This analysis uses provisional data for the 2022 registrations, some cancers may initially be classified as 'non-specified' and subsequently be re-classified into one of the cancer groups as more information becomes available.

\*\*For the purposes of this report, non-melanoma skin cancer excludes basal cell carcinoma and squamous cell carcinoma

**Figure 2: Number of cancer registrations by month, 2018/19 average, 2020, 2021 and 2022, by tumour group**



# GASTROINTESTINAL ENDOSCOPY

## Notes on data

- Gastrointestinal endoscopy data were extracted from the National Non-admitted Patient Collection (NNPAC) and National Minimum Dataset (NMDS) on 14 November 2022.
- Includes colonoscopies and gastroscopies for all indications – not just cancer.
- Technical information: gastroscopies (Purchase Unit Code: MS02005), colonoscopies (Purchase Unit Code: MS02007), combined gastroscopies and colonoscopies (Purchase Unit Code: MS02014).

## Key points

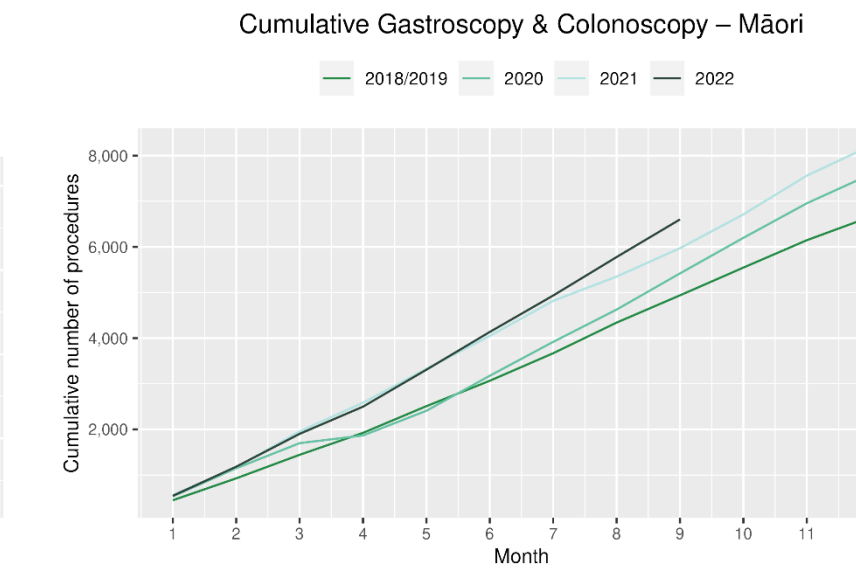
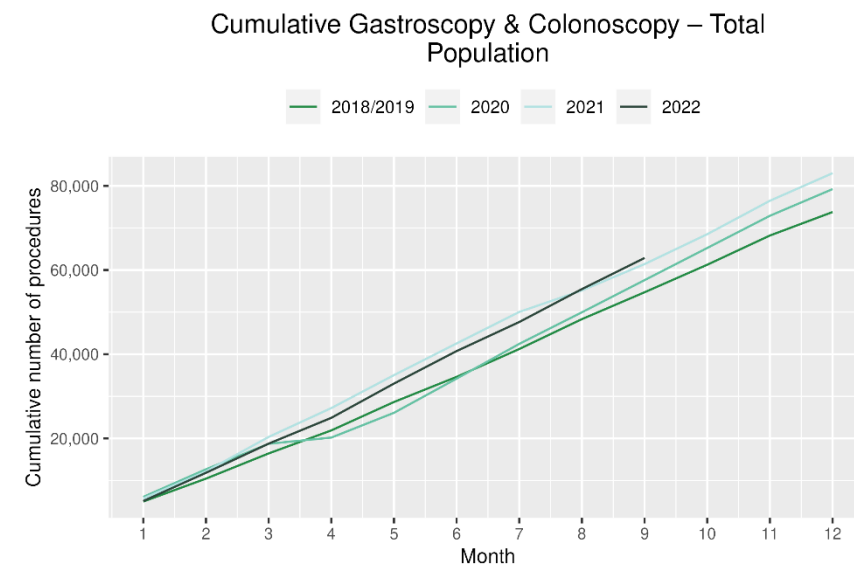
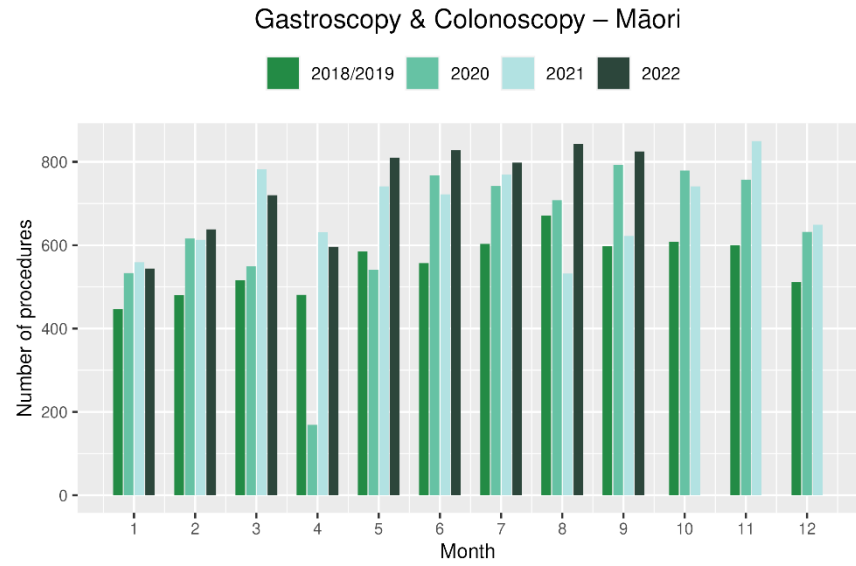
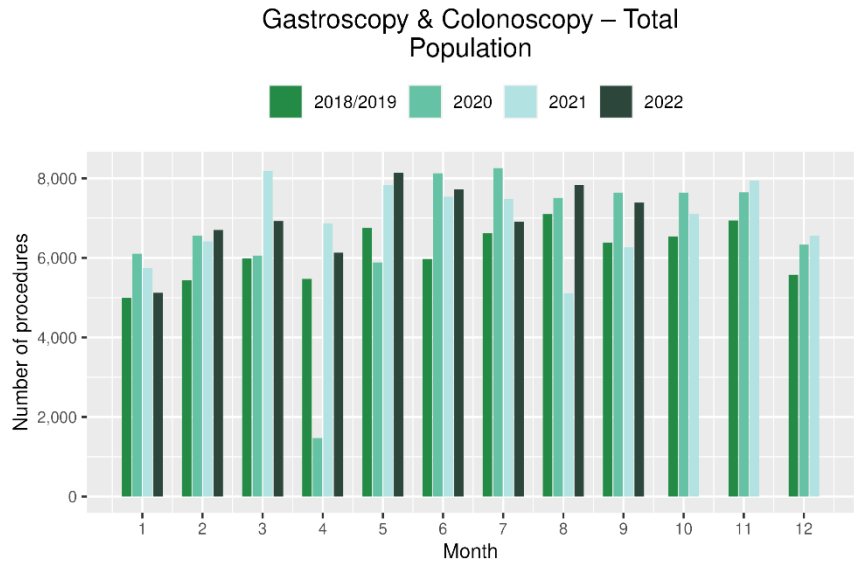
- For 2022 until September 2022, there was an increase of 15% in gastrointestinal endoscopies, compared with the average of 2018/19. For Māori there was a 34% increase and for Pacific peoples the increase was 38%.

## Results

**Table 3: Number of colonoscopy and gastroscopy procedures and percentage difference in 2022 compared to the average of 2018 and 2019, by month and cumulative year to date, by ethnicity**

	July			August			September			Cumulative Jan-Sep		
	2018/2019	2022	% change	2018/2019	2022	% change	2018/2019	2022	% change	2018/2019	2022	% change
Māori	603	798	32%	671	843	26%	598	825	38%	4,936	6,602	34%
Pacific Peoples	232	300	30%	243	307	27%	208	297	43%	1,837	2,544	38%
Non-Māori/Non-Pacific	5,786	5,811	0%	6,189	6,677	8%	5,579	6,269	12%	47,950	53,726	12%
Total Population	6,620	6,909	4%	7,102	7,827	10%	6,384	7,391	16%	54,723	62,872	15%

**Figure 3: Number of gastrointestinal endoscopy procedures by month, 2018/19 average, 2020, 2021 and 2022 total population and Māori**



# BRONCHOSCOPY

## Notes on data

- Bronchoscopy and CT Lung Biopsy data were extracted from NNPAAC and NMDS on 14 November 2022.
- These data include bronchoscopies and CT lung biopsies for all indications, not solely cancer related procedures.
- Technical information: bronchoscopies (Purchase Unit Code: MS02003) and CT Lung Biopsy (Procedure codes: 3841808 and 3881200<sup>5</sup>)

## Key points

- For January to September 2022 (cumulatively), there was a 10% decrease in bronchoscopies compared with the same period in 2018/19. For Māori there was a 2% increase over the same time period. Overall, a similar number of bronchoscopies were performed from January to September 2022 as were performed from January to September 2020 (ie, the first year of the pandemic).
- Te Aho o Te Kahu has discussed the potential reasons for the overall decrease in bronchoscopy volumes with respiratory physicians in the sector. It has been highlighted that due to the risks of COVID-19 transmission, logistical challenges and other factors, there has been a shift in modes of diagnosis for lung cancer away from bronchoscopy (noting that bronchoscopy is performed for a number of reasons, not just cancer diagnosis). These modes are thought to include Endobronchial Ultrasound Bronchoscopy (EBUS), Positron Emission Tomography - Computed Tomography (PET CT) scans and CT lung biopsy. PET CT and EBUS data are not reported here because the clinical coding of these procedures is not anatomically specific, meaning that we would not know whether they were performed on the lung. CT lung biopsy data were examined and are presented below (Figure 5), with these data suggesting a downturn in CT lung biopsies overall (but not for Māori). Even with this additional data, the overall picture of diagnosis remains incomplete, and it is therefore difficult to interpret whether any changes in volume of lung cancer diagnostic procedures have occurred. Of note, there has not been a decrease in lung cancer registrations overall for the year to date compared with 2018/19, although this is not true for Māori (see *Focus on lung cancer*, below).

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<sup>5</sup> This report includes an additional procedure code for CT Lung Biopsy (3881200). This is the back mapping code for CT Lung Biopsy prior to July 2019  
Te Aho o Te Kahu, Cancer Control Agency



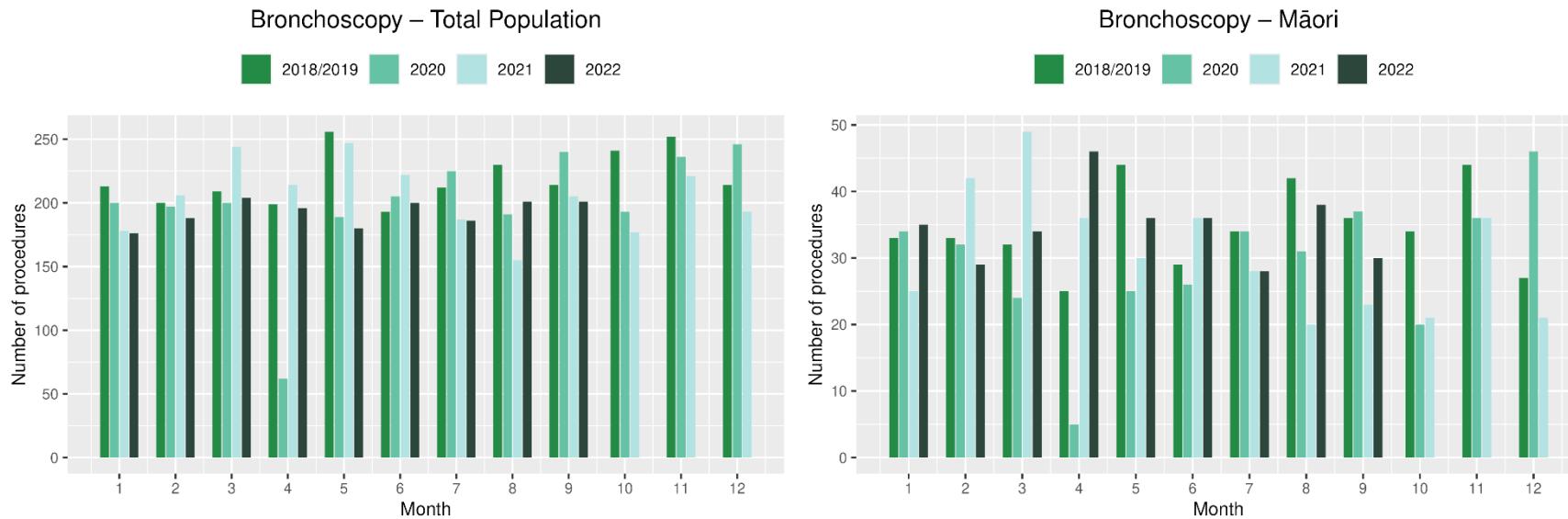
# Results

**Table 4: Number of bronchoscopies and percentage difference in 2022 compared to the average of 2018 and 2019, by month and cumulative year to date, by ethnicity**

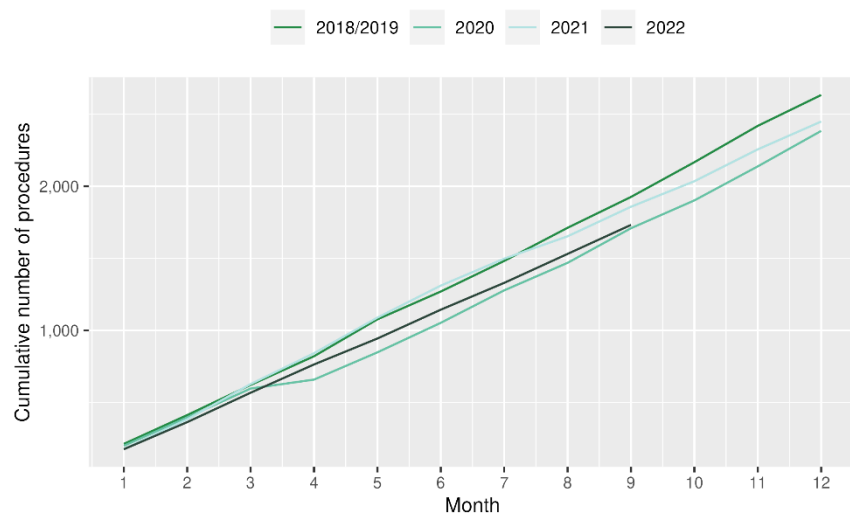
	July			August			September			Cumulative Jan -Sep		
	2018/2019	2022	% change	2018/2019	2022	% change	2018/2019	2022	% change	2018/2019	2022	% change
Māori	34	28	-16%	42	38	-8%	36	30	-17%	306	312	2%
Pacific Peoples	10	10	5%	14	9	-33%	11	15	36%	88	90	3%
Non-Māori/Non-Pacific	169	148	-12%	175	154	-12%	167	156	-6%	1,531	1,330	-13%
Total Population	212	186	-12%	230	201	-13%	214	201	-6%	1,924	1,732	-10%

\*Due to small numbers, monthly figures have not been included for Māori and Pacific peoples

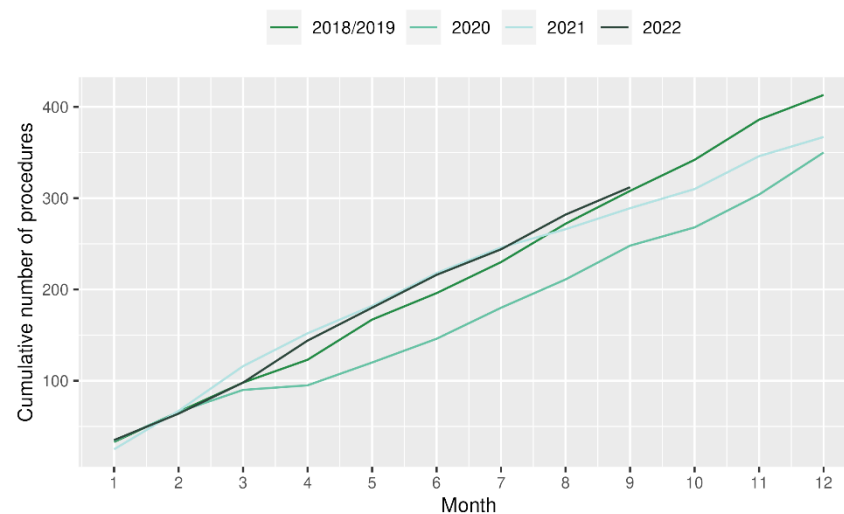
**Figure 4: Number of bronchoscopies by month, 2018/19 average, 2020, 2021 and 2022, total population and Māori**



Cumulative Bronchoscopy – Total Population



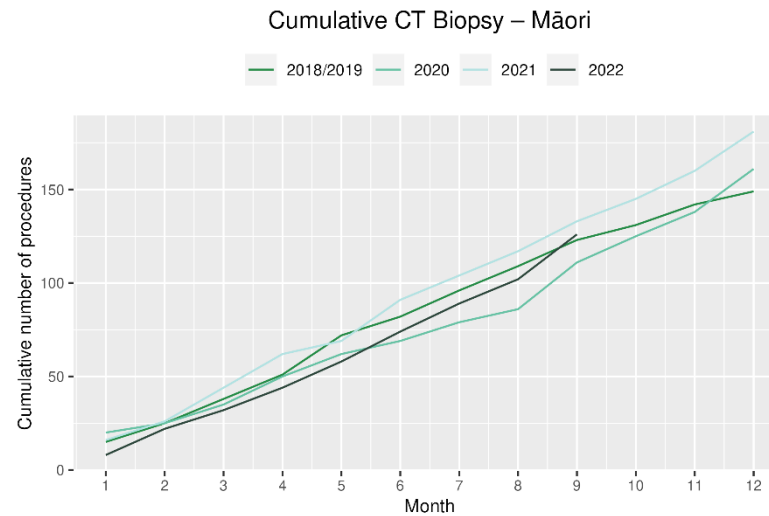
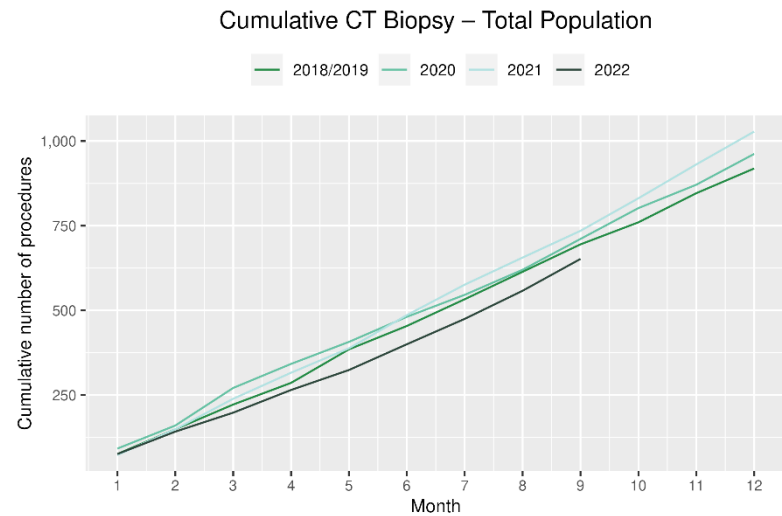
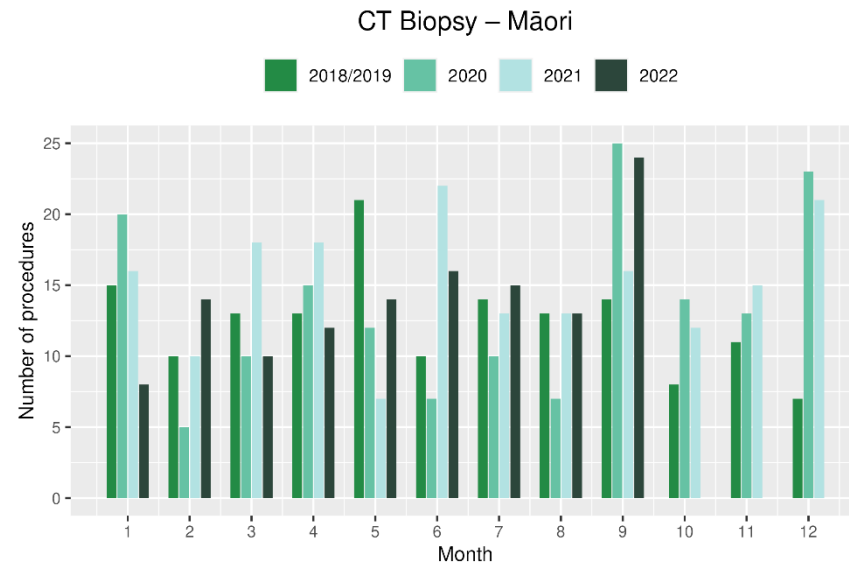
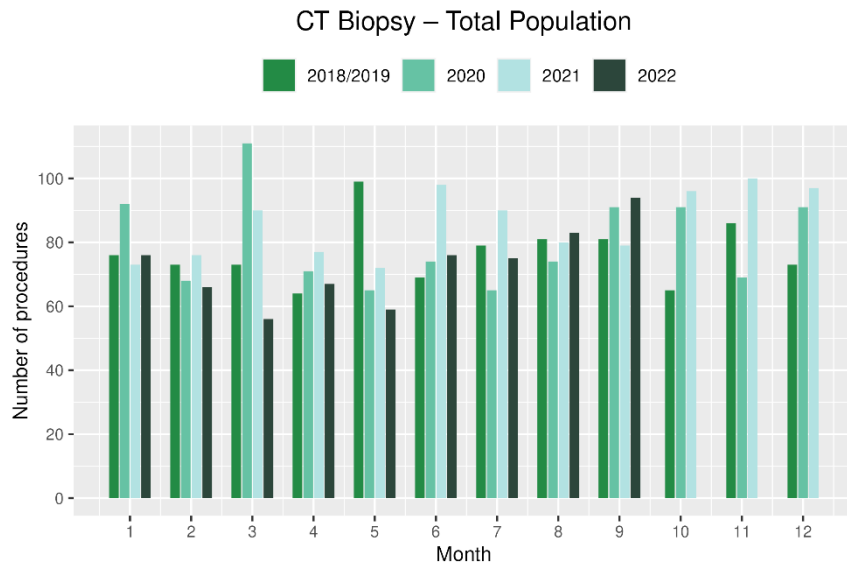
Cumulative Bronchoscopy – Māori



**Table 5: Number of CT lung biopsies and percentage difference in 2022 compared to the average of 2018 and 2019, by month and cumulative year to date, by ethnicity**

	July			August			September			Cumulative Jan-Sep		
	2018/2019	2022	% change	2018/2019	2022	% change	2018/2019	2022	% change	2018/2019	2022	% change
Māori	*	*	*	*	*	*	*	*	*	121	126	5%
Pacific Peoples	*	*	*	*	*	*	*	*	*	30	26	-12%
Non-Māori/Non-Pacific	62	58	-6%	62	67	8%	64	64	0%	541	500	-8%
Total Population	79	75	-4%	81	83	3%	81	94	17%	691	652	-6%

**Figure 5: Number of CT lung biopsies by month, 2018/19 average, 2020, 2021 and 2022, total population and Māori**



# FASTER CANCER TREATMENT

## Notes on data

- The data were extracted from the Faster Cancer Treatment (FCT) database on 28 Oct 2022. Fast Cancer Treatment Data is reported quarterly.
- These data aim to capture a broader part of the diagnostic and referral pathway; however, they only include a subset of people being investigated for cancer. Data relate to the 62-day pathway and includes people with a high-suspicion of cancer and a need to be seen within two weeks. This group of people should receive their first treatment within 62-day of receipt of referral. The target is 90%.
- Te Aho o Te Kahu has an escalation pathway for monitoring the performance of DHBs against the FCT measure. Escalation includes regular meetings with service teams and CE to CE discussions against recovery planning and actions.
- Some Districts have not been able to submit all FCT data for 2022/23 quarter one, as a result of Patient Information System upgrade or reduced capacity for data coding and entry.

## Key point

- For 2022 to date, there has been some fluctuation in the proportion of people with a high suspicion of cancer receiving their first treatment within 62 days of receipt of referral, however the measure has been met for 83% of people overall and 85% for Māori.
- The proportion of Māori seen within two weeks in August was 72% compare with the total percentage of 85%. There were 15 records coded as delayed due to capacity constraints, with no further information available at a national level. Te Whatu Ora is provided with data at District level.

## Results

**Table 6: Number of referrals for people with a high suspicion of cancer, in 2022 by month, and cumulative year to date**

	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Total Jan to Sep
Māori	63	56	58	51	64	57	42	67	56	514
Non-Māori/Non-Pacific	298	382	436	298	380	348	296	379	300	3,117
Total Population	383	448	518	373	470	426	368	470	376	3,832

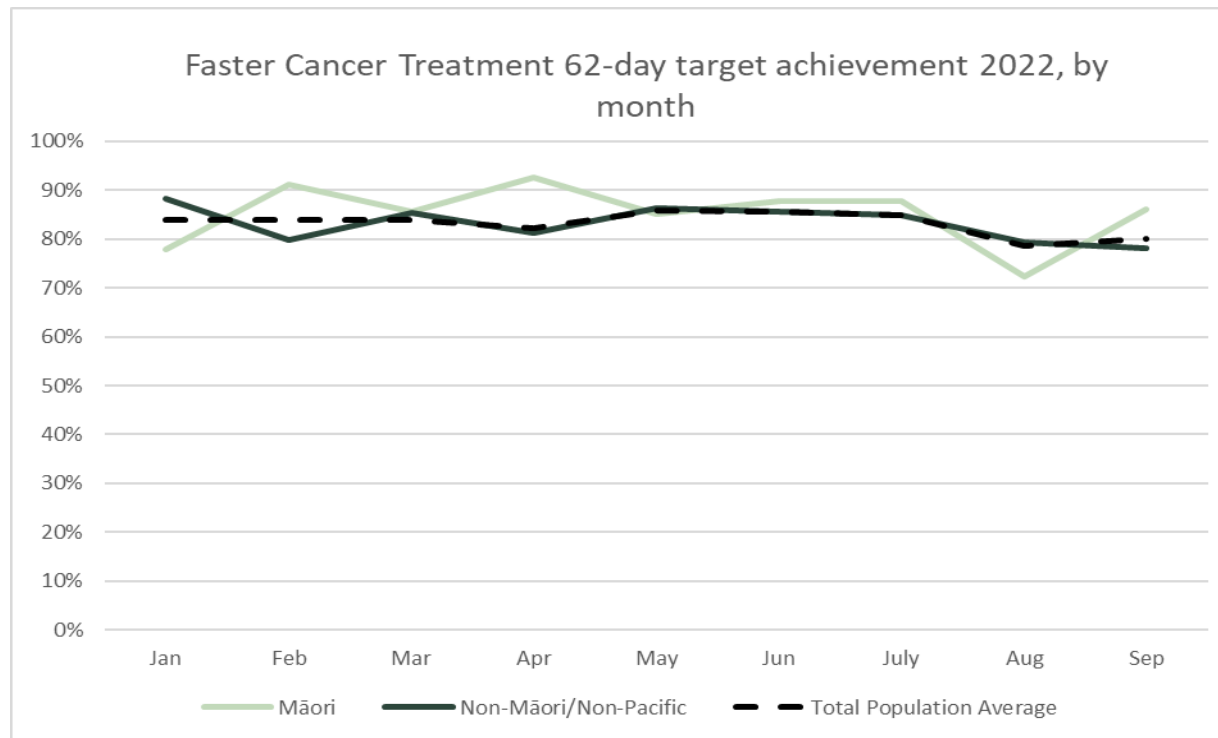
\*Due to small numbers, volumes have not been included for Pacific peoples

**Table 7: Proportion of people with a high-suspicion of cancer and a need to be seen within 2-weeks who received their first treatment within 62 days of receipt of referral, in 2022 by month, and average for the year to date**

	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Total Jan to Sep
Māori	78%	91%	86%	93%	85%	88%	88%	72%	86%	85%
Non-Māori/Non-Pacific	88%	80%	85%	81%	86%	86%	85%	79%	78%	83%
Total Population Average	84%	84%	84%	82%	86%	86%	85%	79%	80%	83%

\*Due to small numbers, percentages have not been included for Pacific peoples

**Figure 6: Proportion of patients with a high-suspicion of cancer and a need to be seen within 2-weeks who received their first treatment within 62 days of receipt of referral, by ethnicity, in 2022 by month**



# COMBINED CANCER SURGERY

## Notes on data

- This report includes data on surgery for breast, colorectal, lung and prostate cancer. These four cancers are therefore used as case studies for cancer surgery more generally.
- Colorectal, lung and prostate cancers were chosen because Te Aho o Te Kahu has a pre-validated list of surgical procedure codes for these cancers, agreed on as part of the quality performance indicator (QPI) work programme.
- For breast cancer, as the development of QPIs are currently underway, we have been able to provide provisional surgical procedure codes for the purposes of this report.
- The surgical procedure codes are listed in Appendix 5.
- The data were extracted from the NMDS on 14 November 2022.

## Key points

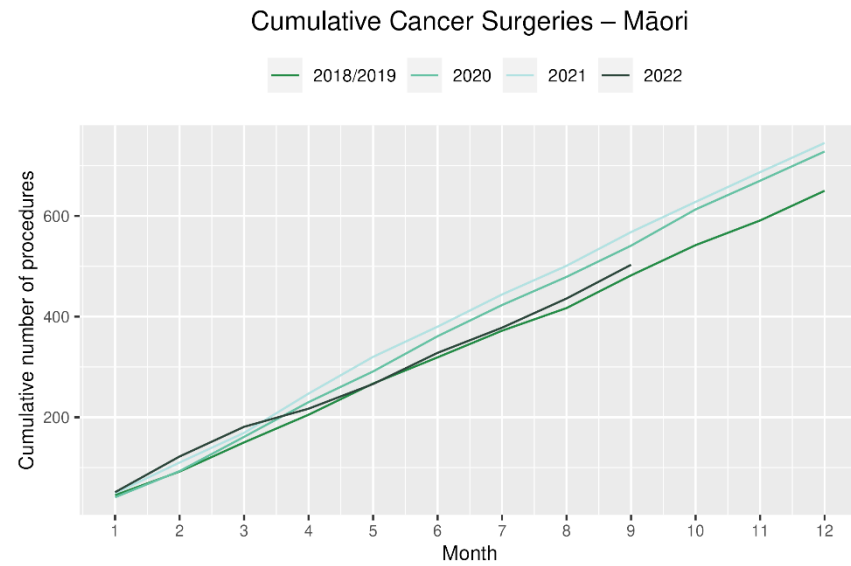
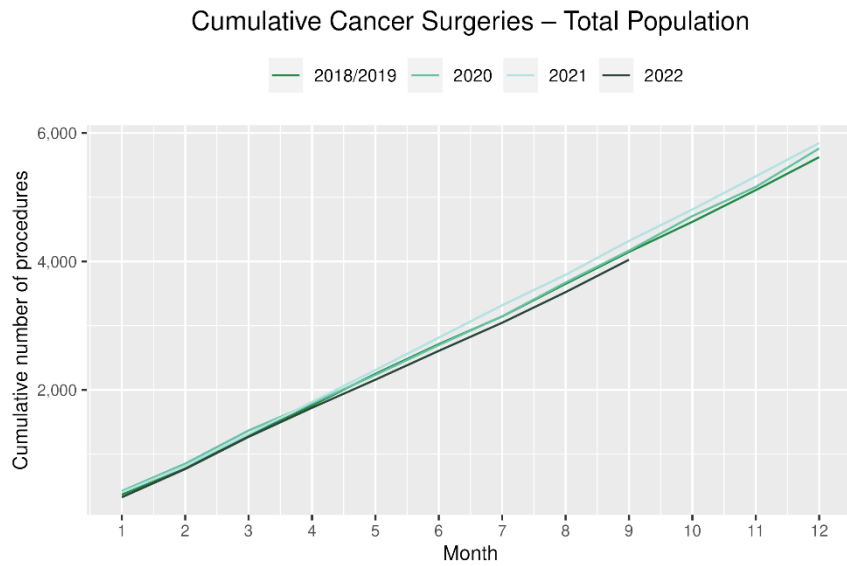
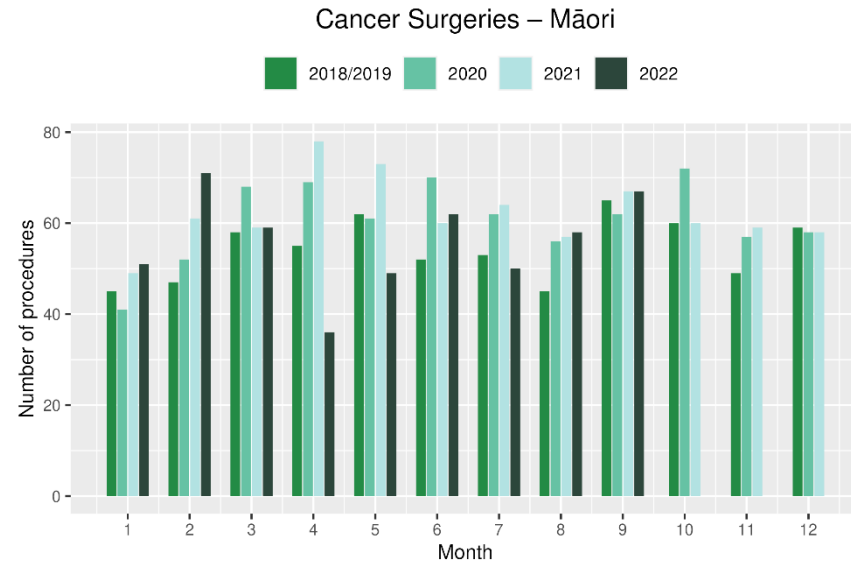
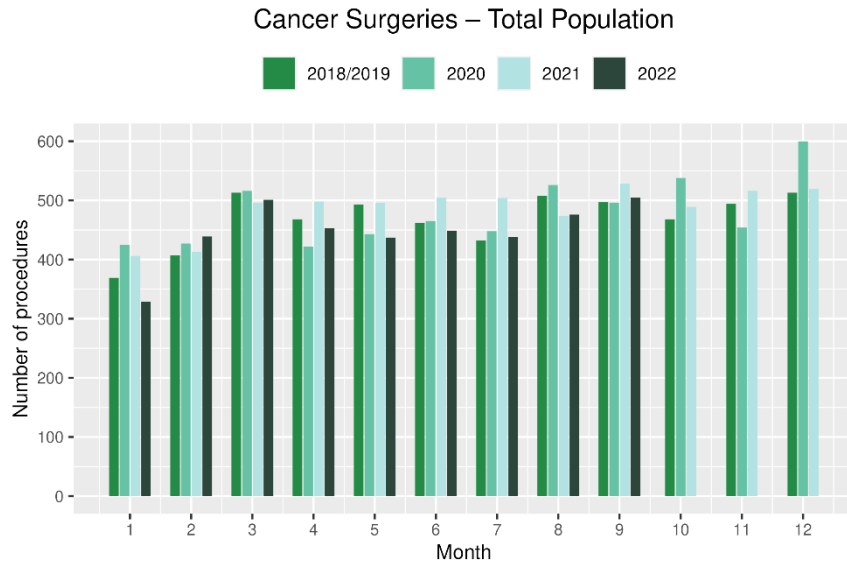
- For 2022 until September, there were 3% fewer cancer surgeries (breast, prostate, lung and colorectal combined) compared to 2018/19.
- For Māori, there has been a 5% increase in combined cancer surgeries for the year to date relative to 2018/19 (reflecting 24 more surgeries), although the cumulative number of surgeries in the year to date remain below those performed over the same period in either 2020 or 2021.
- For Pacific peoples there was a 17% increase for the year to date relative to 2018/19 (reflecting 28 more surgeries).

## Results

**Table 8: Number of cancer surgeries (breast, prostate, colorectal, lung) and percentage difference in 2022 compared to the average of 2018 and 2019, by month and cumulative year to date, by ethnicity**

	July			August			September			Cumulative Jan-Sep		
	2018/2019	2022	% change	2018/2019	2022	% change	2018/2019	2022	% change	2018/2019	2022	% change
Māori	53	50	-5%	45	58	30%	65	67	4%	479	503	5%
Pacific Peoples	19	23	21%	22	24	12%	20	16	-20%	162	190	17%
Non-Māori/Non-Pacific	361	365	1%	442	394	-11%	413	422	2%	3,507	3,334	-5%
Total Population	432	438	1%	508	476	-6%	497	505	2%	4,147	4,027	-3%

**Figure 7: Number of cancer surgeries (breast, prostate, colorectal, lung) by month, 2018/19 average, 2020, 2021 and 2022, total population and Māori**



# BREAST CANCER SURGERY (MASTECTOMY)

## Notes on data

- A list of the surgical procedure codes used for analysis are included in Appendix 5.
- The data were extracted from the NMDS on 14 November 2022.
- The number of mastectomies performed each month is relatively small, so caution is needed when comparing data by month.
- Procedure codes for mastectomy only are included in this report. There are a number of additional procedure codes used for breast cancer surgeries in addition to mastectomy, however the procedure codes for these surgeries are less specific for cancer. Therefore, using only mastectomy codes allows a more accurate view of any changes in breast cancer surgery volumes<sup>6</sup>.

## Key points

- For 2022 to date, there has been a 6% decrease in mastectomies in 2022 compared with 2018/19. For Māori this decrease was 4% and for Pacific peoples there was a 12% increase.
- August saw a 20% decrease compared to the same time period in 2018/19, with July and September less affected.

## Results

**Table 9: Number of mastectomies and percentage difference in 2022 compared to the average of 2018 and 2019, by month and cumulative year to date, by ethnicity**

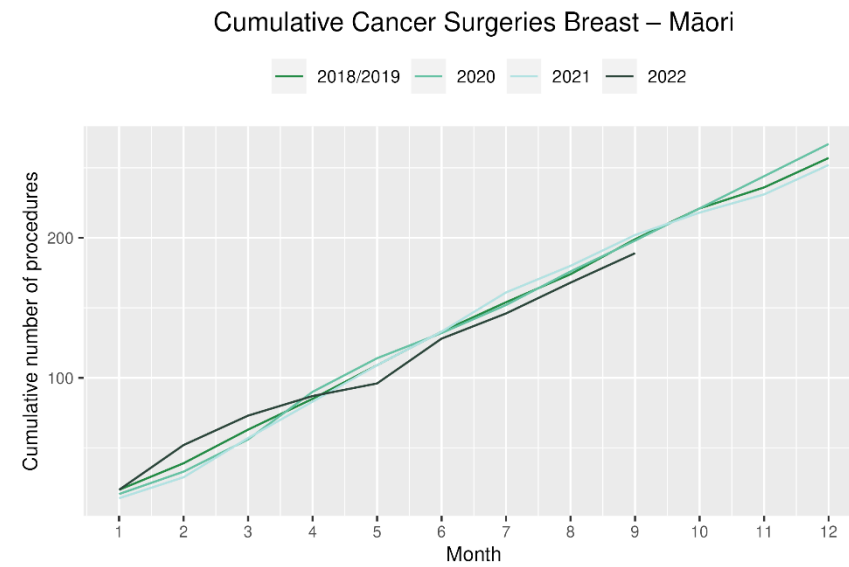
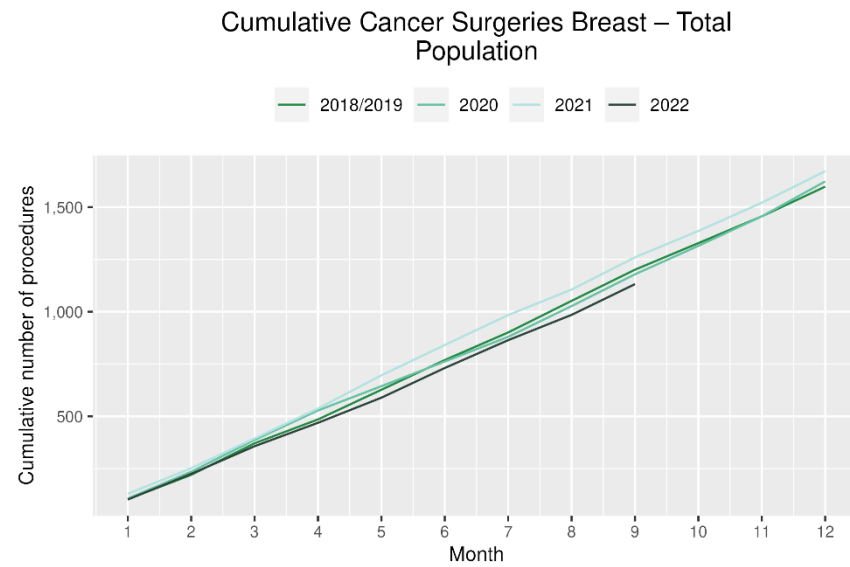
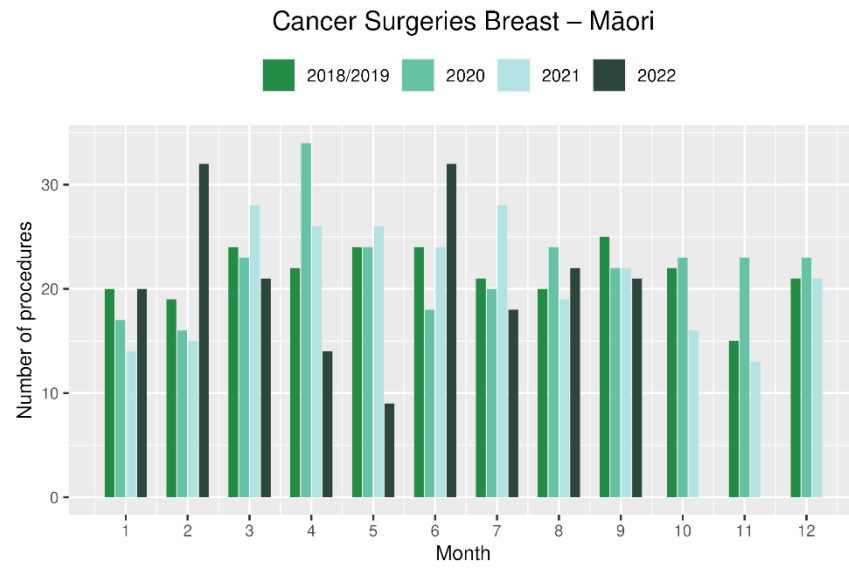
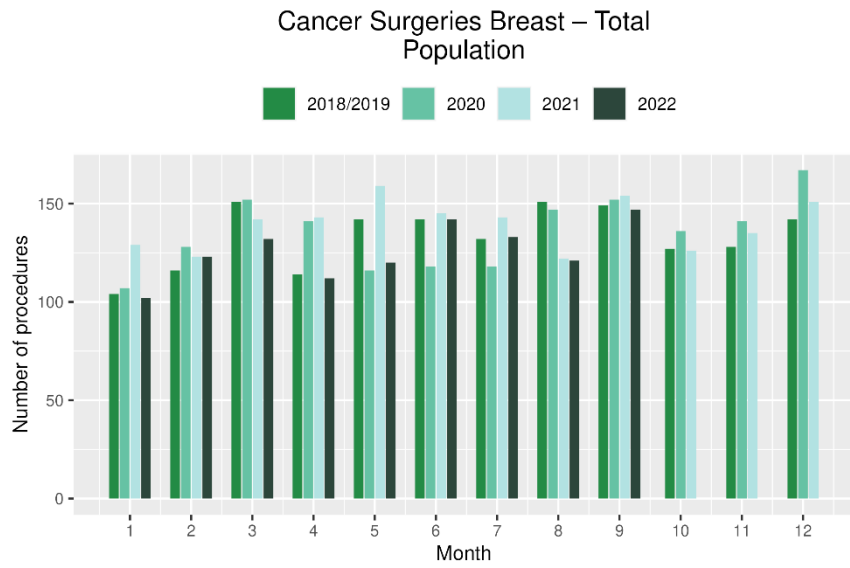
	July			August			September			Cumulative Jan-Sep		
	2018/2019	2022	% change	2018/2019	2022	% change	2018/2019	2022	% change	2018/2019	2022	% change
Māori	*	*	*	*	*	*	*	*	*	197	189	-4%
Pacific Peoples	*	*	*	*	*	*	*	*	*	73	81	12%
Non-Māori/Non-Pacific	102	107	5%	123	92	-25%	115	116	1%	929	862	-7%
Total Population	132	133	1%	151	121	-20%	149	147	-1%	1,199	1,132	-6%

\*Due to small numbers, some figures have not been included for Māori and Pacific peoples

<sup>6</sup> We recognise there are limitations to this approach and aim to strike a balance between timely data availability, completeness, and accuracy, with the purpose of the reporting being to provide an initial indication of the current situation which may then require further interrogation at a regional level.



**Figure 8: Number of mastectomies by month, 2018/19 average, 2020, 2021 and 2022, total population and Māori**



# COLORECTAL CANCER SURGERY

## Notes on data

- The surgical procedure codes used for analysing colorectal cancer are listed in Appendix 5.
- The data were extracted from the NMDS on 14 November 2022.

## Key points

- For 2022 to date, there were 5% fewer colorectal cancer surgeries performed in total, 7% increase for Pacific peoples (noting small numbers) and a 22% increase for Māori compared with 2018/19. However, the number of colorectal cancer surgeries performed among Māori in the year to date remains lower than that performed over the same time period in either 2020 or 2021
- Colorectal cancer surgery volumes showed a decrease in July 2022 compared with 2018/19 (8% decrease) but volumes were increased in August and September 2022 compared with 2018/19.

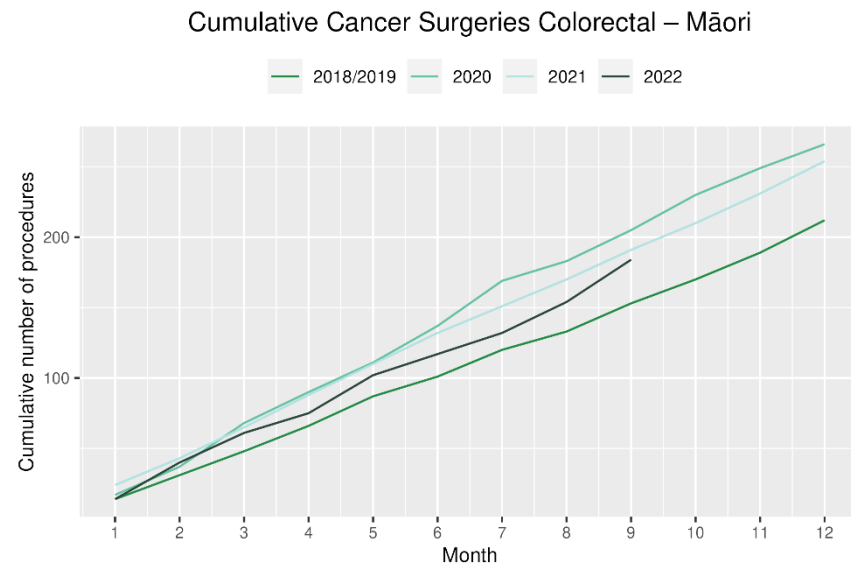
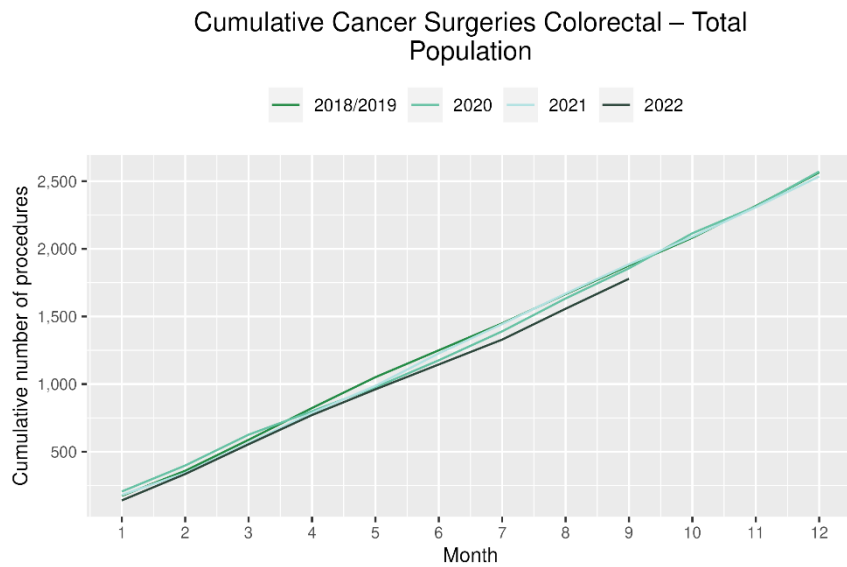
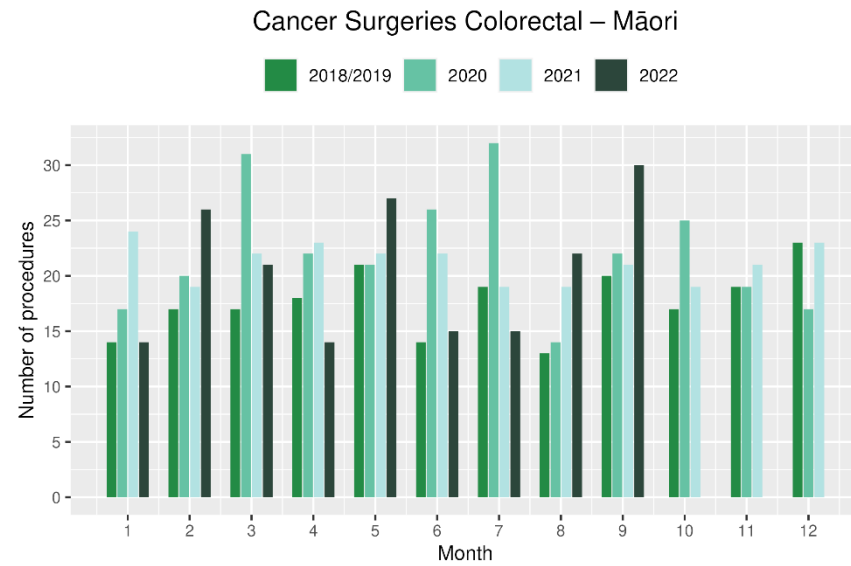
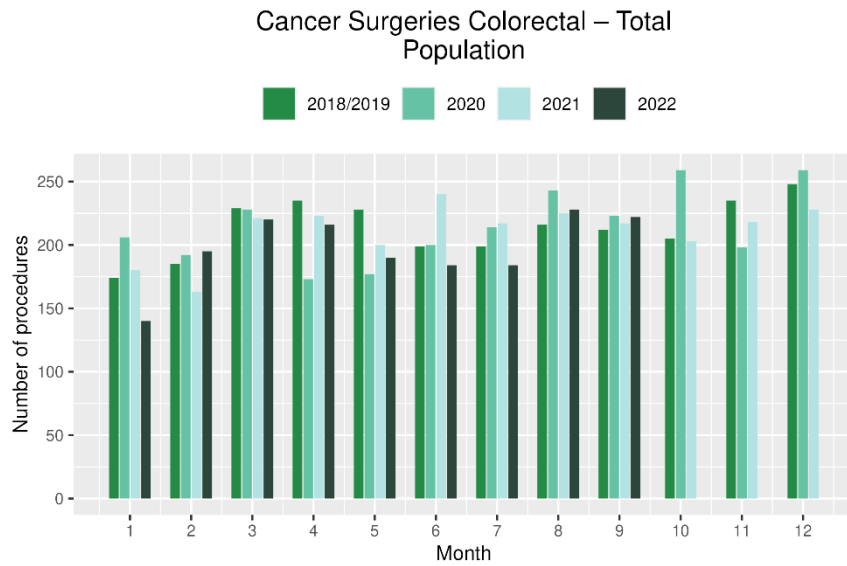
## Results

**Table 10: Number of colorectal cancer surgeries and percentage difference in 2022 compared to the average of 2018 and 2019, by month and cumulative year to date, by ethnicity**

	July			August			September			Cumulative Jan -Sep		
	2018/2019	2022	% change	2018/2019	2022	% change	2018/2019	2022	% change	2018/2019	2022	% change
Māori	*	*	*	*	*	*	*	*	*	151	184	22%
Pacific Peoples	*	*	*	*	*	*	*	*	*	54	58	7%
Non-Māori/Non-Pacific	175	162	-7%	196	199	2%	185	190	3%	1,670	1,537	-8%
Total Population	199	184	-8%	216	228	6%	212	222	5%	1,875	1,779	-5%

\*Due to small numbers, monthly figures have not been included for Māori and Pacific peoples

**Figure 9: Number of colorectal cancer surgeries by month, 2018/19 average, 2020, 2021 and 2022, total population and Māori**



# LUNG CANCER SURGERY

## Notes on data

- A list of the surgical procedure codes used for analysis are included in Appendix 5.
- The data were extracted from the NMDS on 14 November 2022.
- The number of lung cancer surgeries performed each month is relatively small, so caution is needed when comparing data by month.

## Key points

- For 2022 to date there was a 1% increase in the number of surgeries performed for the total population compared with 2018/19.
- Lung cancer surgery showed a decrease in August and September 2022 compared with 2018/19 (25% and 10% respectively). Small numbers make it difficult to be clear if there is a true trend.
- For Māori there was a 16% decrease in lung cancer surgery, numbering 15 fewer surgeries in 2022 compared with 2018/19. This represents a marginal improvement compared to the previous report, where the cumulative data up until June 2022 showed a 25% decrease (16 fewer surgeries over this time).
- For Pacific peoples there was a 38% increase, numbering 8 more surgeries.

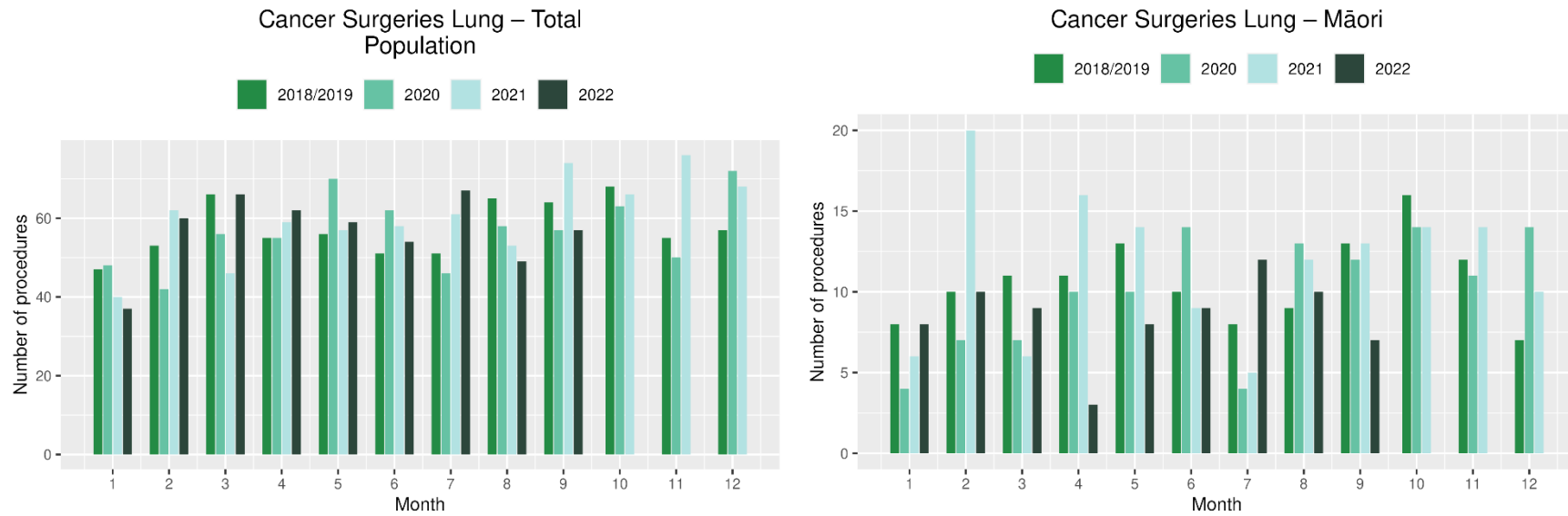
## Results

**Table 11: Number of lung cancer surgeries and percentage difference in 2022 compared to the average of 2018 and 2019, by month and cumulative year to date, by ethnicity**

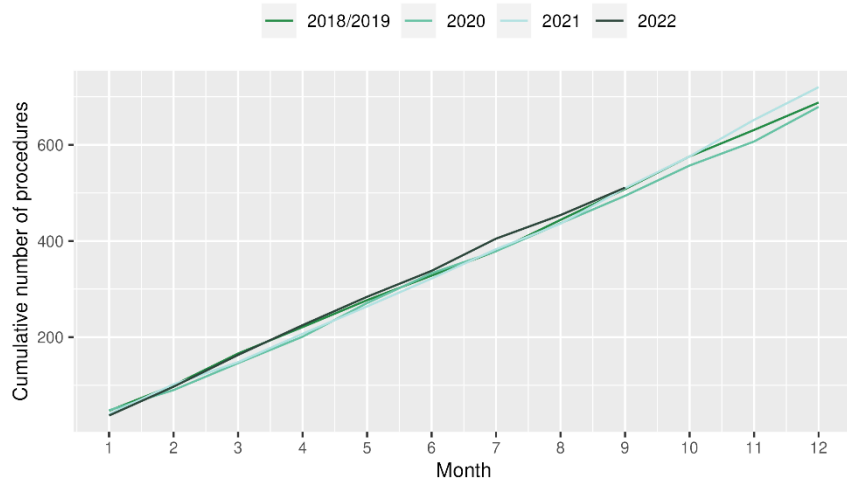
	July			August			September			Cumulative Jan-Sep		
	2018/2019	2022	% change	2018/2019	2022	% change	2018/2019	2022	% change	2018/2019	2022	% change
Māori	*	*	*	*	*	*	*	*	*	91	76	-16%
Pacific Peoples	*	*	*	*	*	*	*	*	*	23	31	38%
Non-Māori/Non-Pacific	41	51	26%	53	34	-36%	49	48	-2%	395	404	2%
Total Population	51	67	33%	65	49	-25%	64	57	-10%	506	511	1%

\* Due to small numbers, monthly figures have not been included for Māori and Pacific peoples

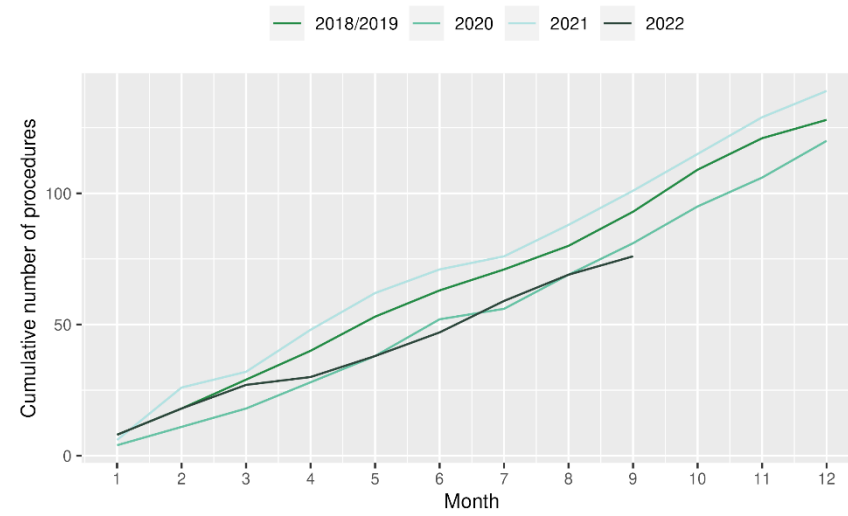
**Figure 10: Number of lung cancer surgeries by month, 2018/19 average, 2020, 2021 and 2022, total population and Māori**



Cumulative Cancer Surgeries Lung – Total Population



Cumulative Cancer Surgeries Lung – Māori



# PROSTATE CANCER SURGERY

## Notes on data

- A list of the surgical procedure codes used for analysis are included in Appendix 5.
- The data was extracted from the NMDS on 14 November 2022.
- The number of prostate cancer surgeries performed each month is relatively small, so caution is needed when comparing data by month.

## Key points

- For 2022 to date there were 7% more prostate cancer surgeries compared with cumulative figures from 2018/19. For Māori, there were 33% more surgeries performed for 2022 to date and for Pacific Peoples there were 38% more surgeries performed (noting small numbers).
- However, both overall and for Māori, the number of prostate cancer surgeries performed among Māori in the year to date remains lower than that performed over the same time period in either 2020 or 2021.

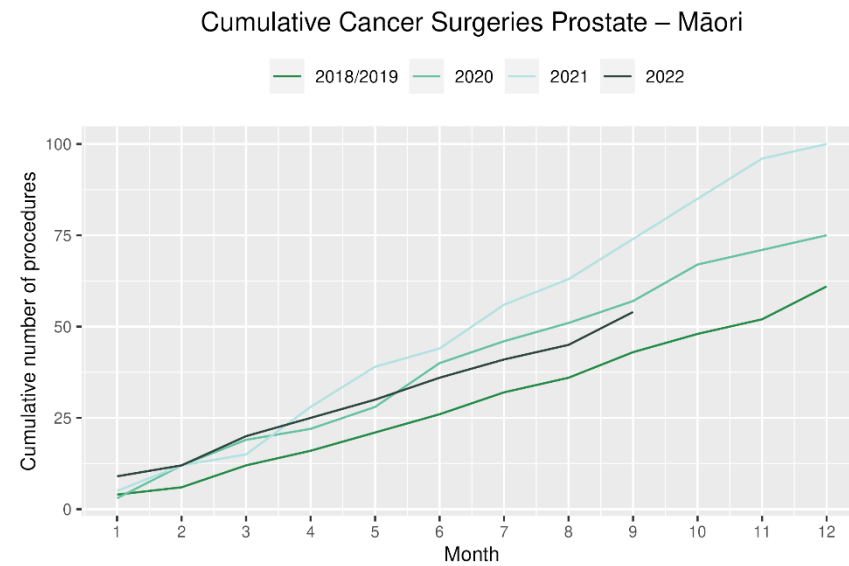
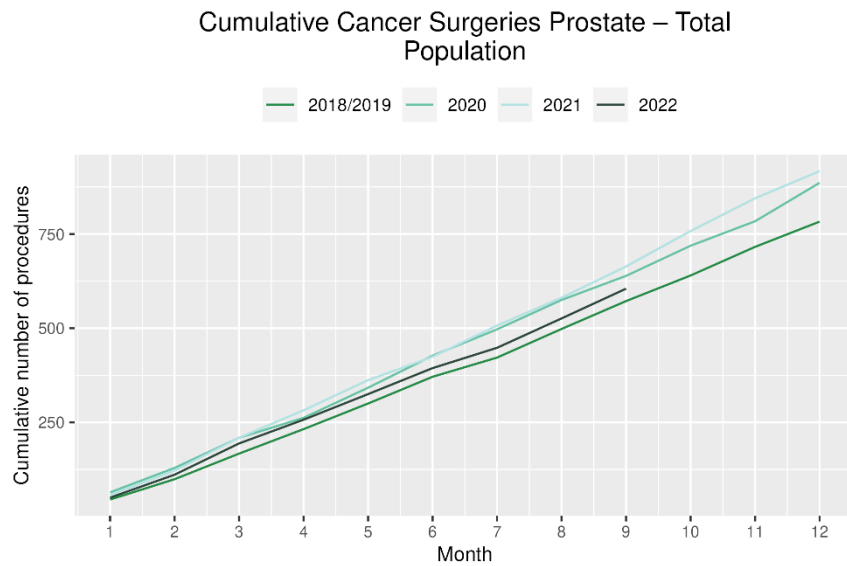
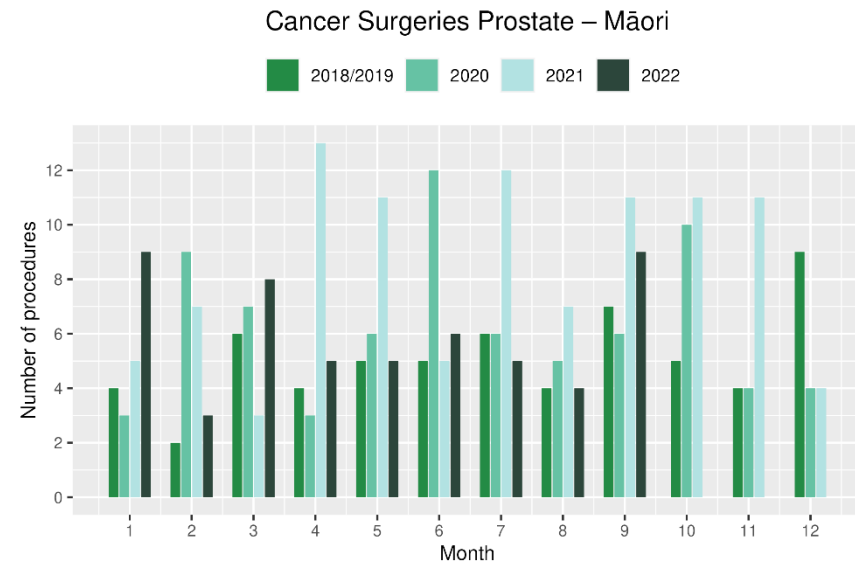
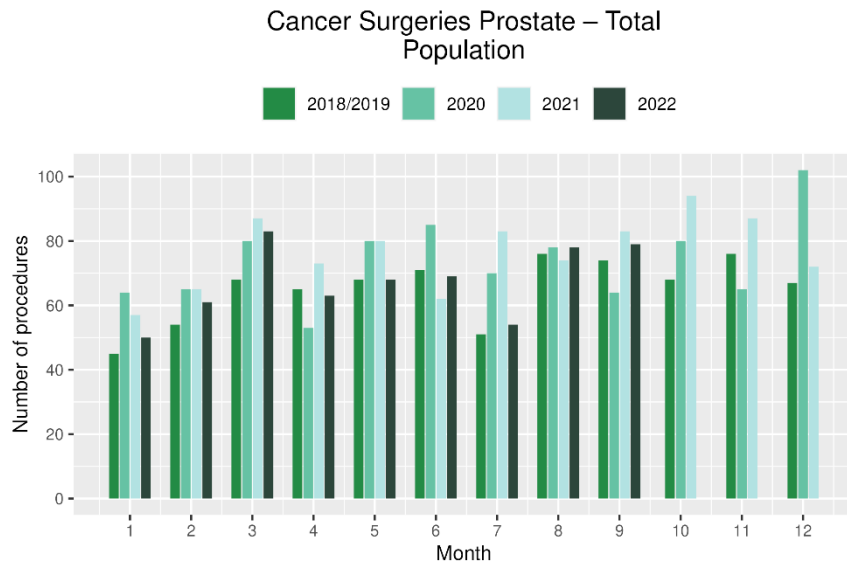
## Results

**Table 12: Number of prostate cancer surgeries and percentage difference in 2022 compared to the average of 2018 and 2019 by month and cumulative year to date**

	July			August			September			Cumulative Jan-Sep		
	2018/2019	2022	% change	2018/2019	2022	% change	2018/2019	2022	% change	2018/2019	2022	% change
Māori	*	*	*	*	*	*	*	*	*	41	54	33%
Pacific Peoples	*	*	*	*	*	*	*	*	*	15	20	38%
Non-Māori/Non-Pacific	44	45	3%	70	69	-1%	64	68	7%	513	531	4%
Total Population	51	54	6%	76	78	3%	74	79	7%	568	605	7%

\*Due to small numbers, some figures have not been included for Māori and Pacific peoples

**Figure 11: Number of prostate cancer surgeries by month, 2018/19 average, 2020,2021 and 2022, total population and Māori**





# MEDICAL ONCOLOGY

## Notes on data

- Data were extracted from NNPAAC on 14 November 2022.
- First specialist assessment (FSA) reflects counts of first attendance for specialist medical oncology assessment.
- Intravenous (IV) chemotherapy reflects appointments for outpatient and inpatient IV chemotherapy for non-haematological indications.
- Technical information: medical oncology FSA (Purchase Unit Code: M50020) and IV chemotherapy (Purchase Unit Code: MS02009).

## Key points

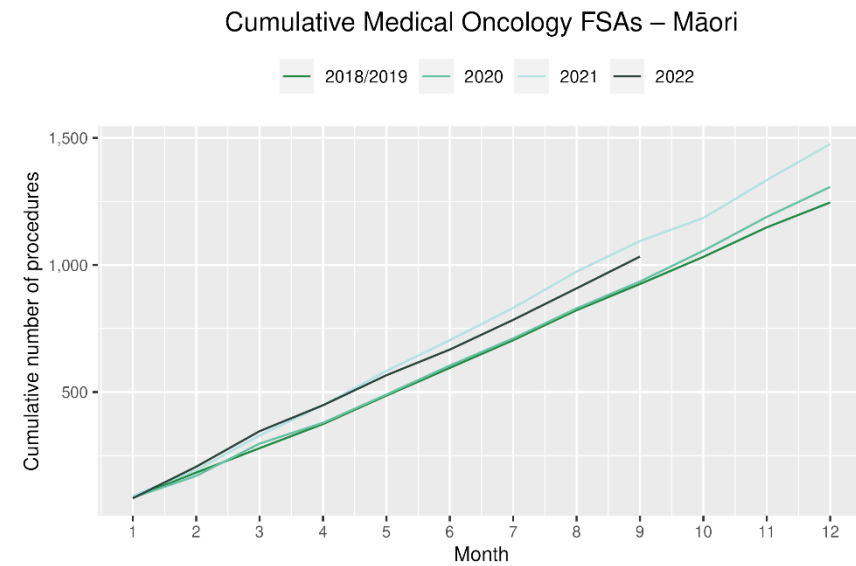
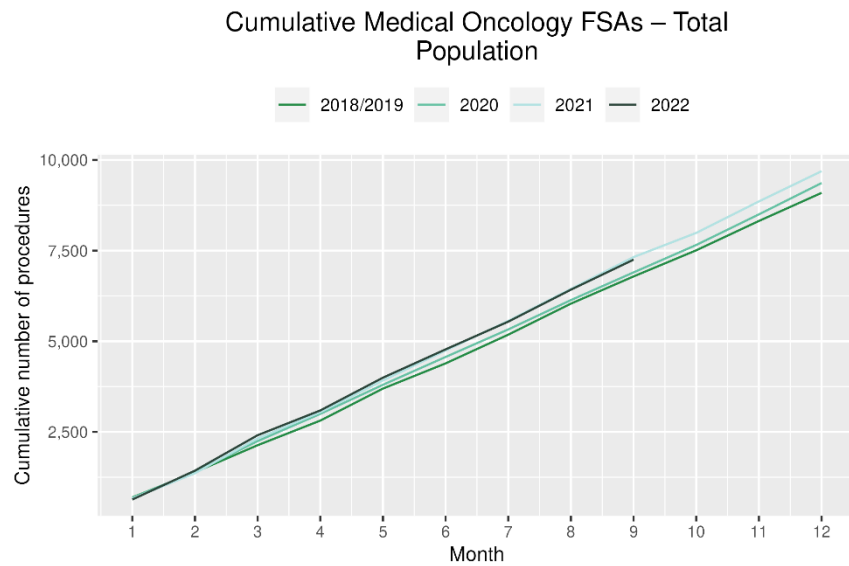
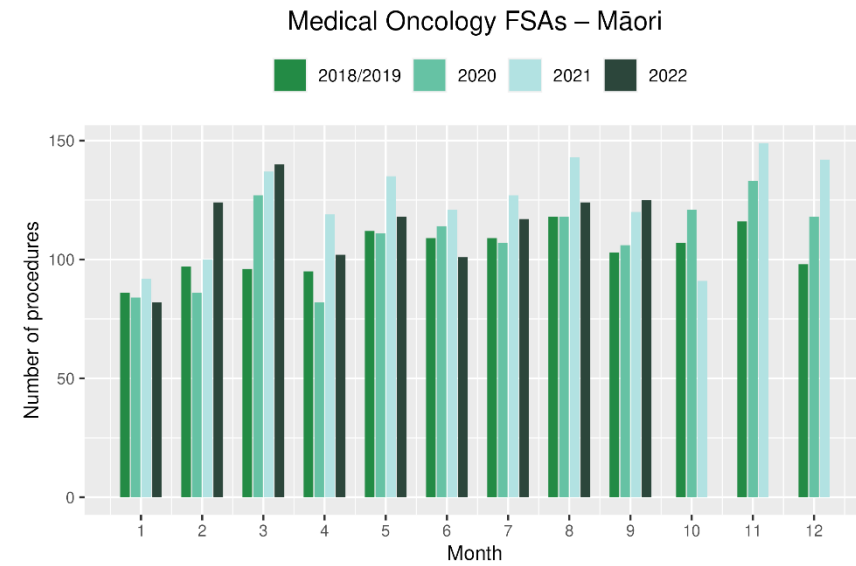
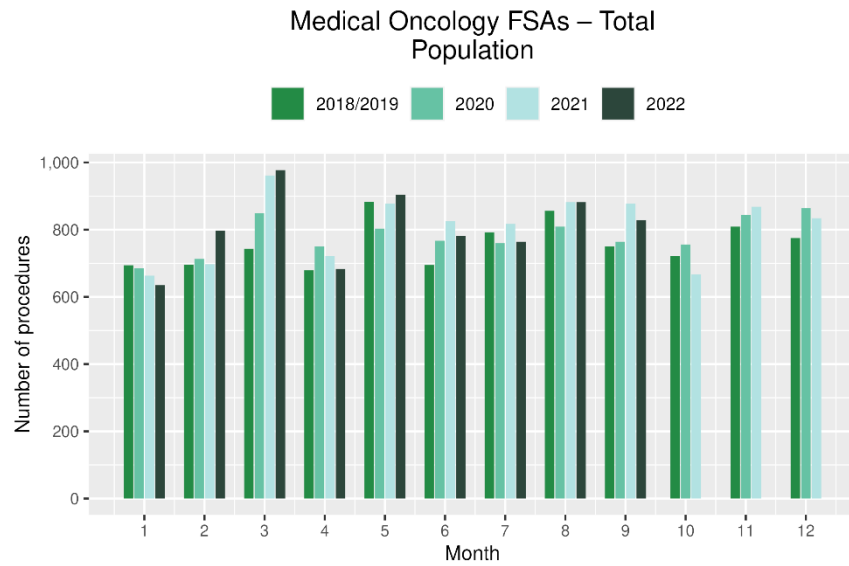
- For 2022 to date (January to September), there was an overall 7% increase in medical oncology first specialist assessments (FSAs) compared with 2018/19 and a 12% increase for Māori.
- For 2022 to date, there was an 8% increase in IV chemotherapy attendances compared with 2018/19 overall and a 28% increase for Māori.
- Both FSAs and IV chemotherapy attendances showed decreases in July 2022 compared with 2018/19. Disruption seen in July aligns with the peak of winter illnesses including COVID-19 in July which then improved into September (see Appendix 1).

## Results

**Table 13: Number of medical oncology first specialist assessments and percentage difference in 2022 compared to the average of 2018 and 2019, by month and cumulative year to date, by ethnicity**

	July			August			September			Cumulative Jan-Sep		
	2018/2019	2022	% change	2018/2019	2022	% change	2018/2019	2022	% change	2018/2019	2022	% change
Māori	109	117	8%	118	124	5%	103	125	21%	923	1,033	12%
Pacific Peoples	40	46	15%	43	43	0%	31	49	58%	315	389	23%
Non-Māori/Non-Pacific	644	601	-7%	695	715	3%	616	654	6%	5,549	5,829	5%
Total Population	792	764	-4%	856	882	3%	750	828	10%	6,787	7,251	7%

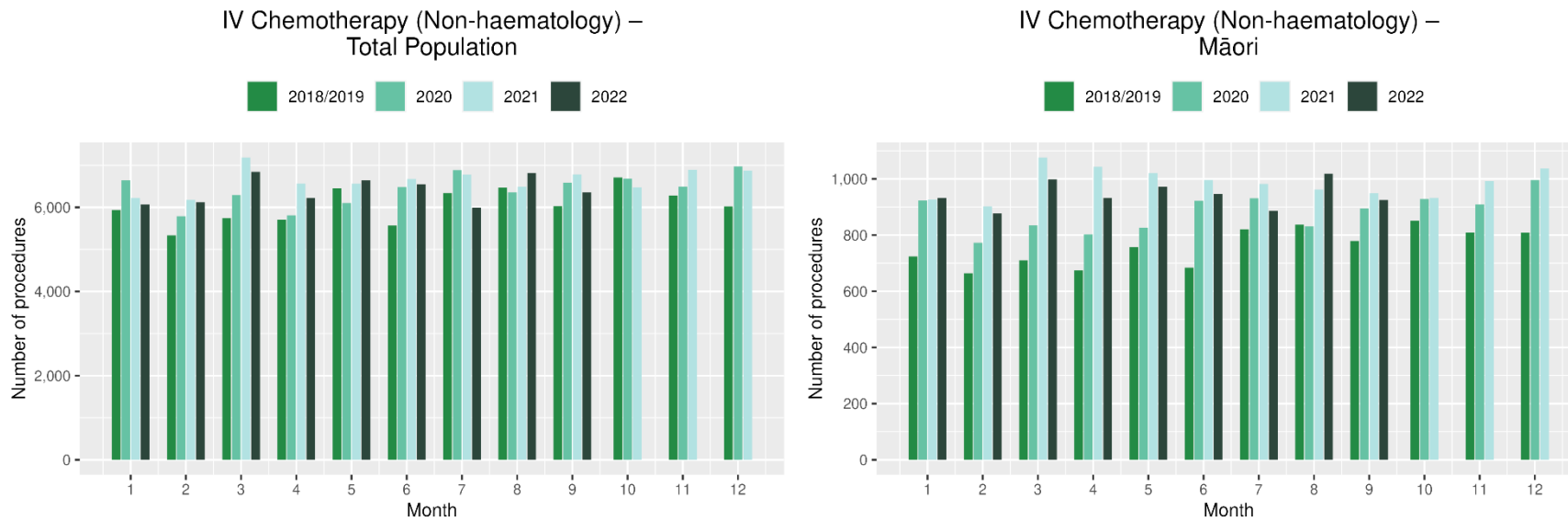
**Figure 12: Number of medical oncology first specialist assessments by month, 2018/19 average, 2020, 2021 and 2022, total population and Māori**



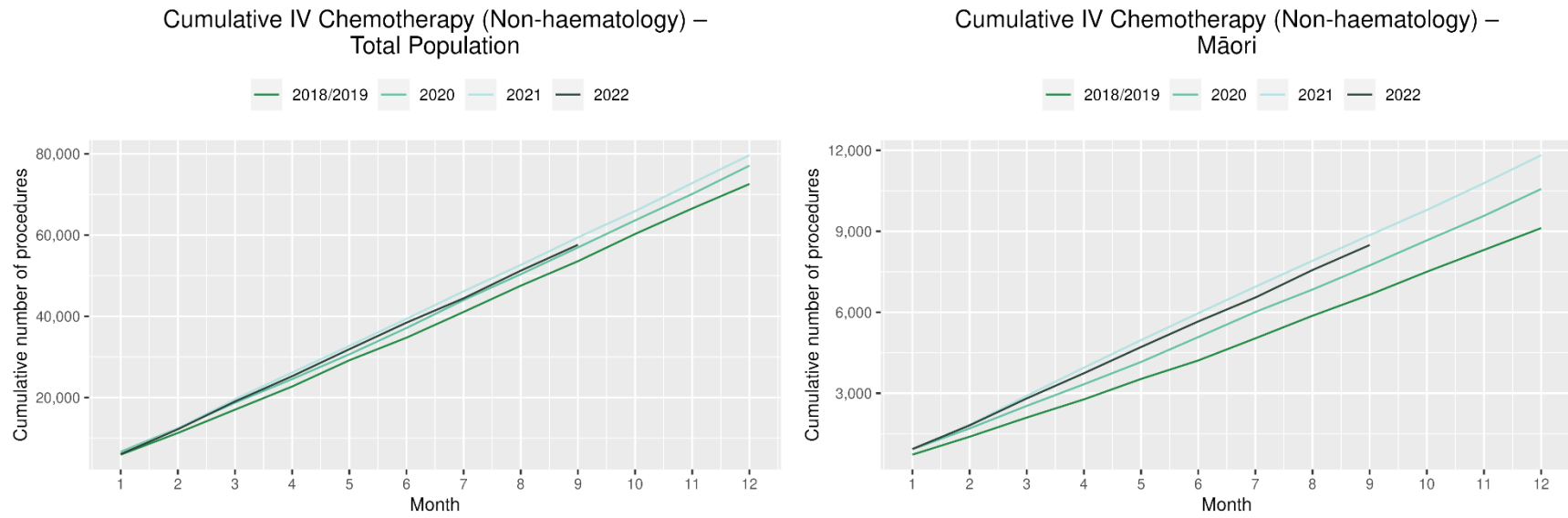
**Table 14: Number of IV chemotherapy attendances and percentage difference in 2022 compared to the average of 2018 and 2019, by month and cumulative year to date, by ethnicity**

	July			August			September			Cumulative Jan-Sep		
	2018/2019	2022	% change	2018/2019	2022	% change	2018/2019	2022	% change	2018/2019	2022	% change
Māori	821	887	8%	837	1,019	22%	779	925	19%	6,649	8,490	28%
Pacific Peoples	274	363	33%	259	400	54%	267	383	44%	2,397	3,362	40%
Non-Māori/Non-Pacific	5,246	4,741	-10%	5,371	5,393	0%	4,980	5,049	1%	44,513	45,740	3%
Total Population	6,340	5,991	-5%	6,467	6,812	5%	6,025	6,357	6%	53,558	57,592	8%

**Figure 13: Number of IV chemotherapy attendances by month, 2018/19 average, 2020 and 2021, total population and Māori**



**Figure 14: Cumulative number of attendances for IV chemotherapy, 2018/19 average, 2020 and 2021, total population and Māori**



# RADIATION ONCOLOGY

## Notes on data

- Radiation oncology first specialist assessments and megavoltage attendances data were extracted from NN PAC on 14 November 2022.
- First specialist assessment (FSA) reflects counts of first attendance for radiation oncology specialist assessment.
- Radiation therapy attendances include appointments for planning/simulation and for treatment with radiation therapy on a linear accelerator.
- Radiation therapy courses data were extracted from Radiation Oncology Collection (ROC) on 14 November 2022. ROC is a national collection that contains diagnosis and treatment data for patients receiving radiation therapy from both the public and private providers. ROC is updated quarterly.
- A course of radiation therapy is a set of radiotherapy treatment(s) to a continuous or contiguous volume with a single intent from a single referral. A course can include multiple phases and multiple radiotherapy modalities. The monthly data here refers to the number of completed courses. The course starting date may not be in the same month.
- Radiation therapy course data reflect *completed* radiation therapy courses.
- Technical information: radiation oncology FSA (Purchase Unit Code: M50022), megavoltage attendances (Purchase Unit Code: M50025).

## Key points

- For 2022 to date, there was a 6% increase in radiation oncology first specialist assessments (FSAs) compared with 2018/19, with a 13% increase for Māori over this time period. The month of July saw a decrease of 5% compared with 2018/19. Disruption seen in July aligns with the peak of winter illnesses including COVID-19 in July which then improved into September (see Appendix 1).
- For 2022 to date, there was an 10% decrease in radiation therapy attendances overall and a 4% decrease for Māori. It is helpful to consider these results in relation to completed radiation therapy courses. This measure likely reflects trends in service volume over time better than radiation therapy attendance, as the increased use of hypofractionation<sup>7</sup> is likely to contribute to a decrease in the number of attendances required to complete a course of treatment.
- For 2022 to date, there was a decrease of 3% in completed radiation therapy courses. This appears to be improved compared to the previous report where there was a decrease of 7% as of June 2022 compared to 2018/19.
- For 2022 to date there was an increase of 8% for Māori in completed radiation therapy courses.

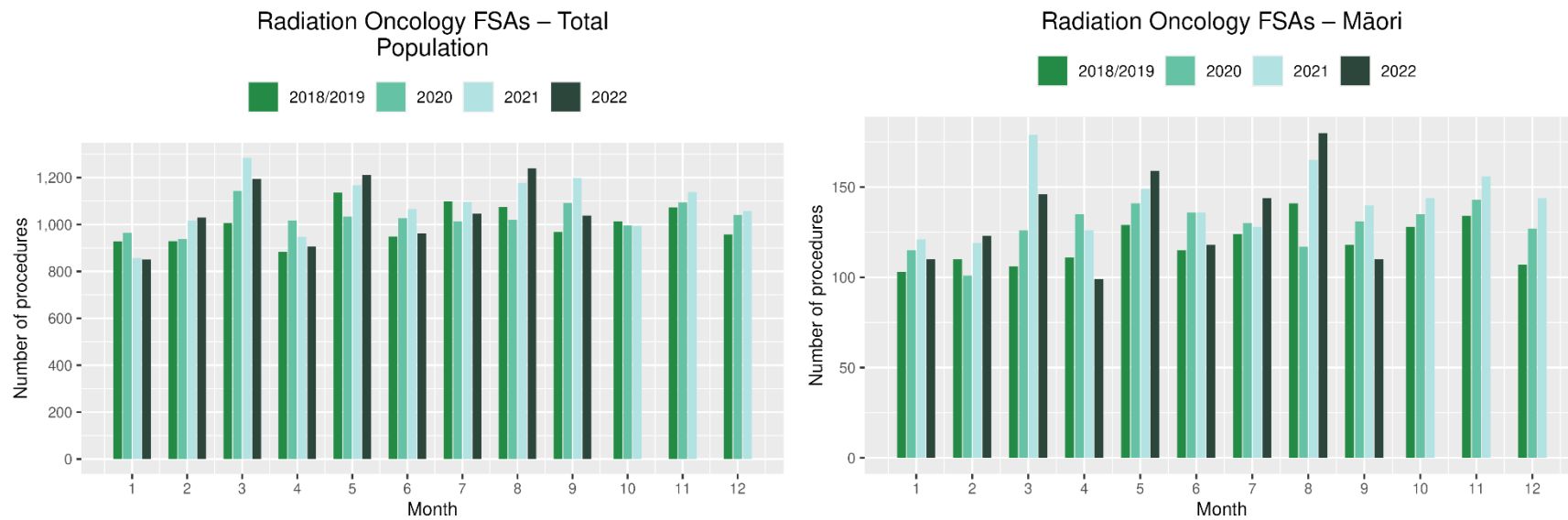
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<sup>7</sup> Hypofractionation is a radiation treatment technique used to treat some cancers, whereby larger doses of radiation are given each treatment, meaning that patients require fewer sessions to complete their treatment. The technique is being increasingly used for some prostate and breast cancers in New Zealand and around the world.

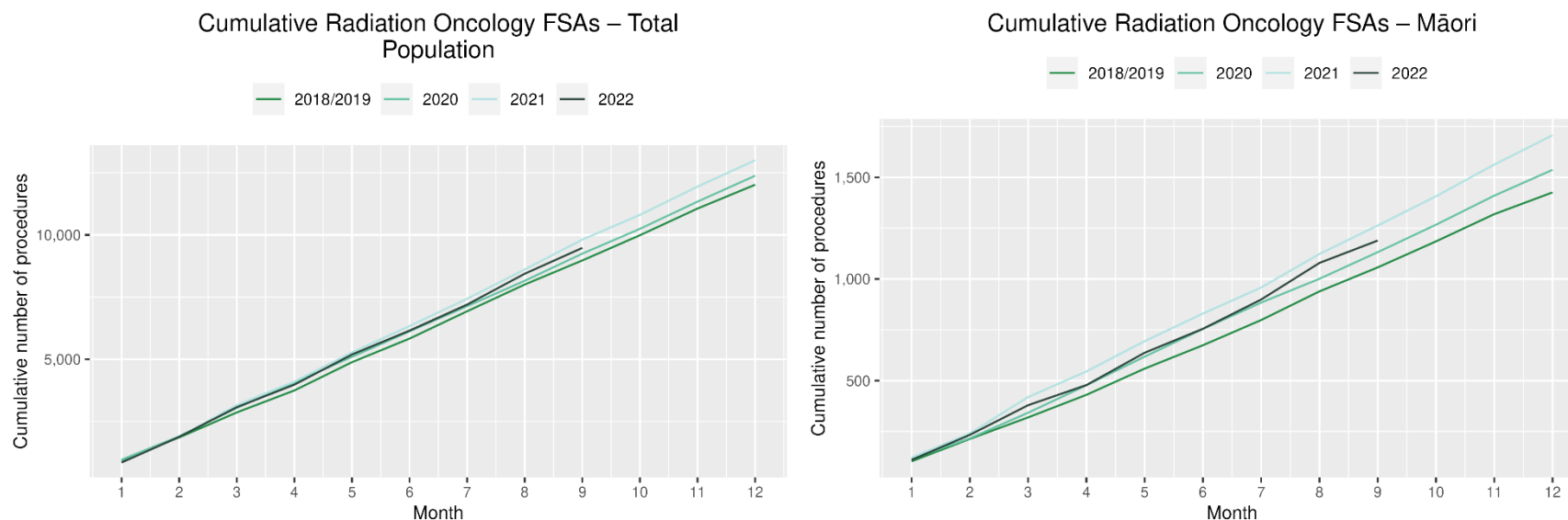
**Table 15: Number of radiation oncology first specialist assessments and percentage difference in 2022 compared to the average of 2018 and 2019, by month and cumulative year to date, by ethnicity**

	July			August			September			Cumulative Jan-Sep		
	2018/2019	2022	% change	2018/2019	2022	% change	2018/2019	2022	% change	2018/2019	2022	% change
Māori	124	144	17%	141	180	28%	118	110	-6%	1,054	1,189	13%
Pacific Peoples	49	65	33%	51	58	14%	39	49	26%	412	498	21%
Non-Māori/Non-Pacific	926	837	-10%	884	1,002	13%	812	879	8%	7,506	7,790	4%
Total Population	1,098	1,046	-5%	1,075	1,240	15%	968	1,038	7%	8,972	9,477	6%

**Figure 15: Number of radiation oncology first specialist assessments by month, 2018/19 average, 2020, 2021 and 2022, total population and Māori**



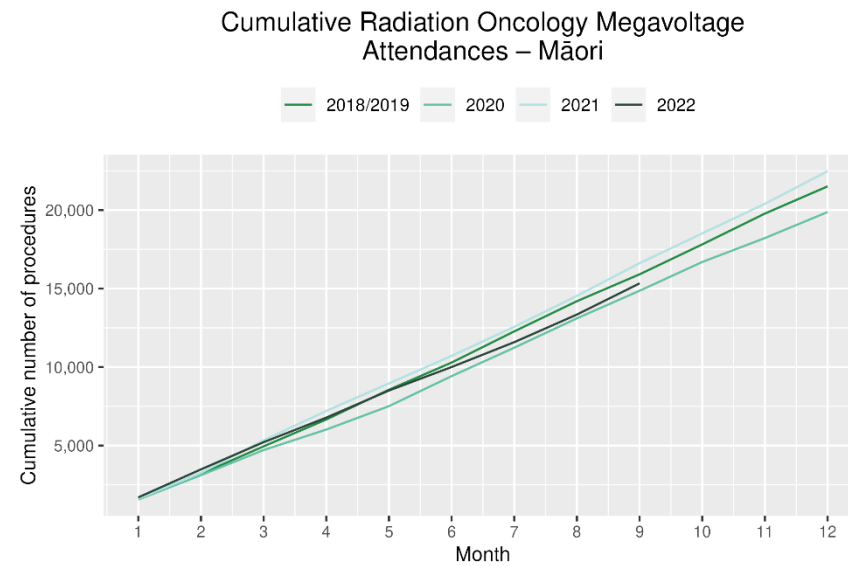
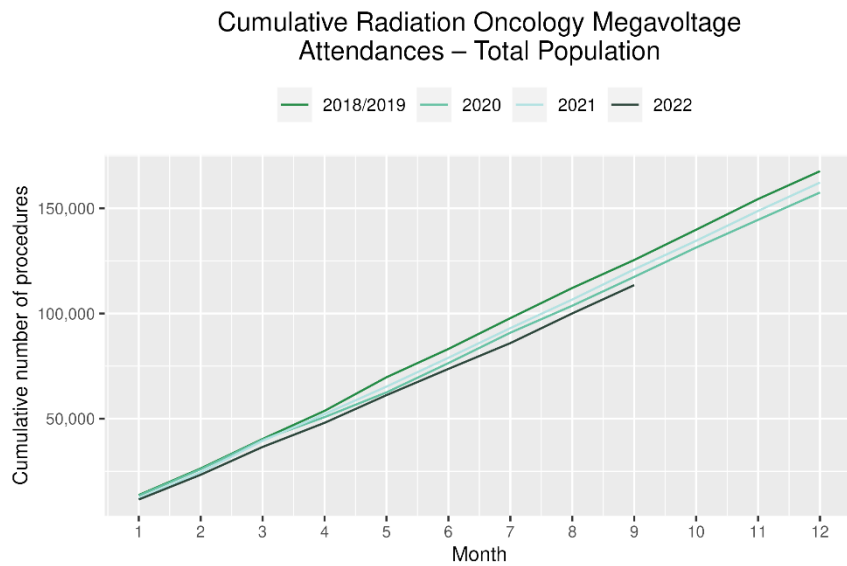
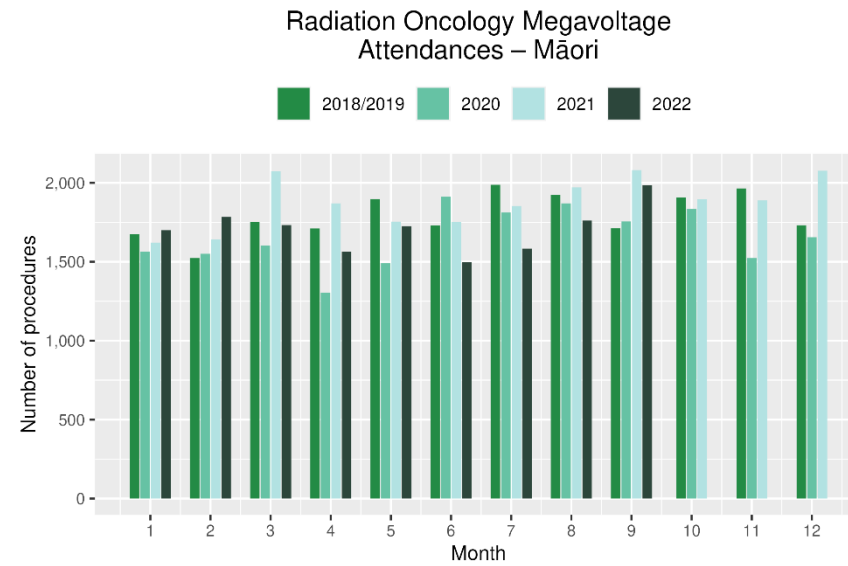
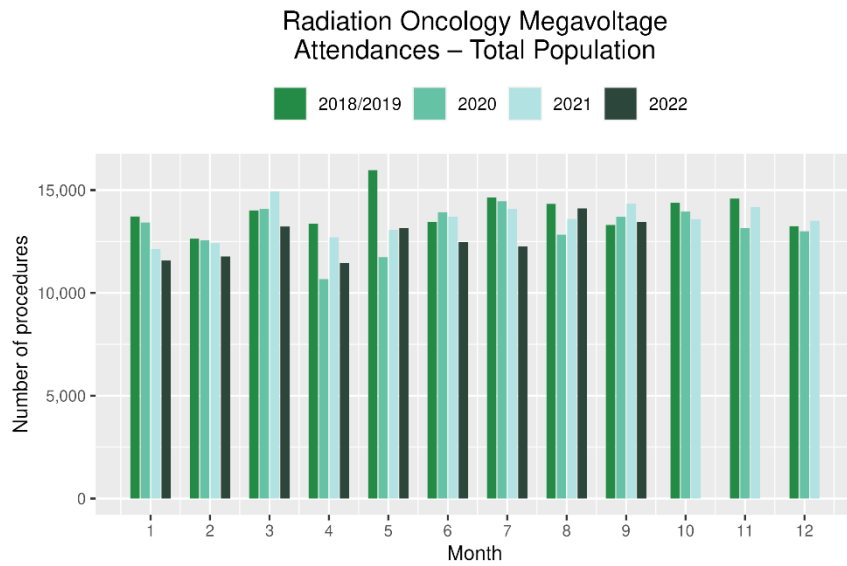
**Figure 16: Cumulative number of radiation oncology first specialist assessments by month, 2018/19 average, 2020, 2021 and 2022, total population and Māori**



**Table 16: Number of radiation therapy attendances and percentage difference in 2022 compared to the average of 2018 and 2019, by month and cumulative year to date, by ethnicity**

	July			August			September			Cumulative Jan-Sep		
	2018/2019	2022	% change	2018/2019	2022	% change	2018/2019	2022	% change	2018/2019	2022	% change
Māori	1,987	1,583	-20%	1,922	1,761	-8%	1,712	1,984	16%	15,906	15,331	-4%
Pacific Peoples	757	609	-19%	563	718	28%	516	698	35%	5,196	5,071	-2%
Non-Māori/Non-Pacific	11,906	10,066	-15%	11,846	11,632	-2%	11,074	10,773	-3%	104,324	93,087	-11%
Total Population	14,650	12,258	-16%	14,330	14,111	-2%	13,302	13,455	1%	125,425	113,489	-10%

**Figure 17: Number of radiation therapy attendances by month, 2018/19 average, 2020, 2021 and 2022, total population and Māori**

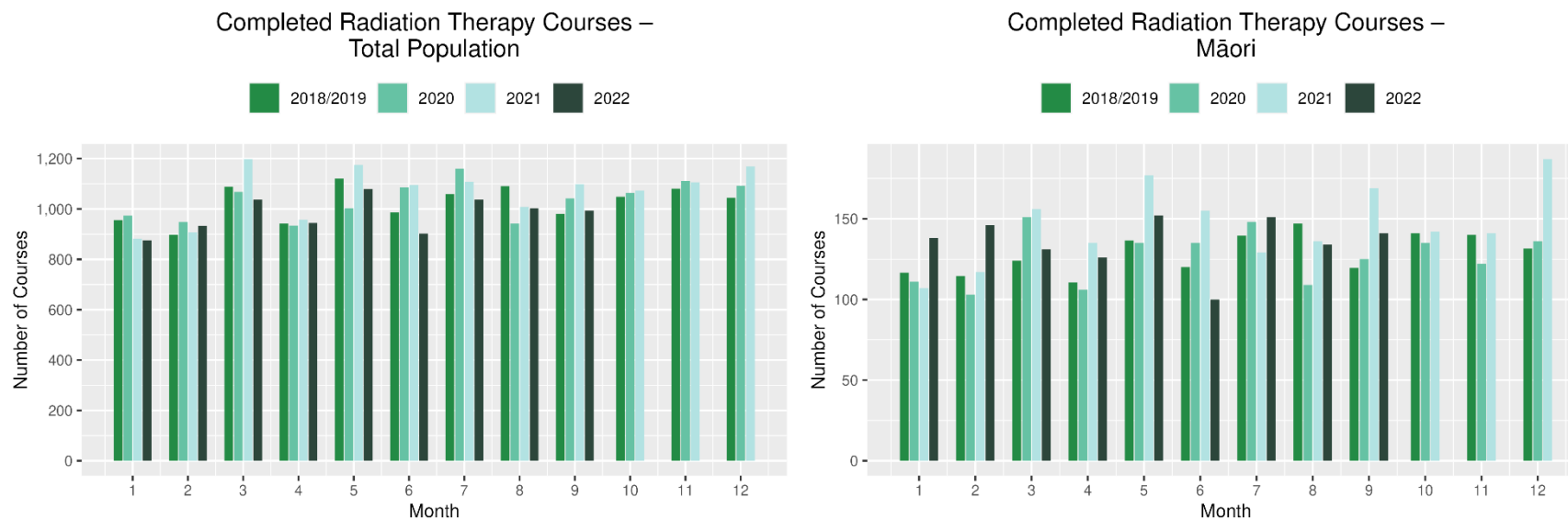




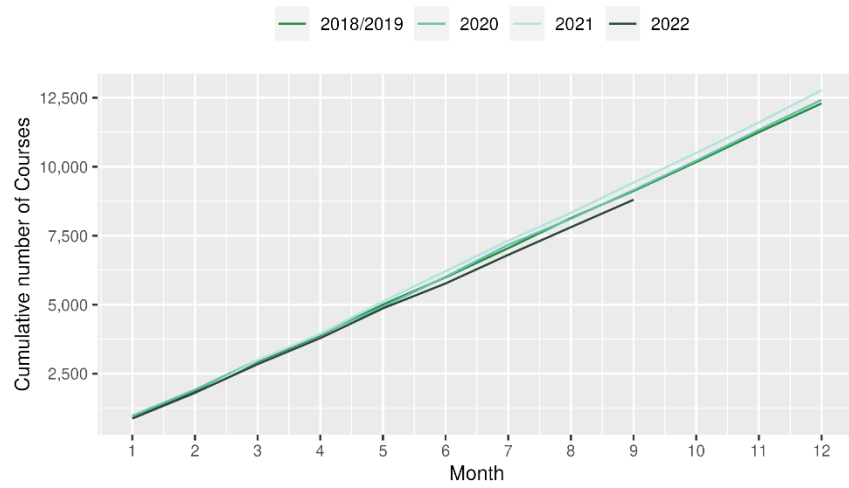
**Table 17: Number of completed radiation therapy courses and percentage difference in 2022 compared to the average of 2018 and 2019, by month and cumulative year to date, by ethnicity**

	July			August			September			Cumulative Jan-Sep		
	2018/2019	2022	% change	2018/2019	2022	% change	2018/2019	2022	% change	2018/2019	2022	% change
Māori	140	151	8%	147	134	-9%	120	141	18%	1,128	1,219	8%
Pacific Peoples	59	50	-15%	49	50	3%	41	43	6%	394	388	-2%
Non-Māori/Non-Pacific	861	836	-3%	895	819	-8%	821	810	-1%	7,600	7,197	-5%
Total Population	1,059	1,037	-2%	1,091	1,003	-8%	981	994	1%	9,122	8,804	-3%

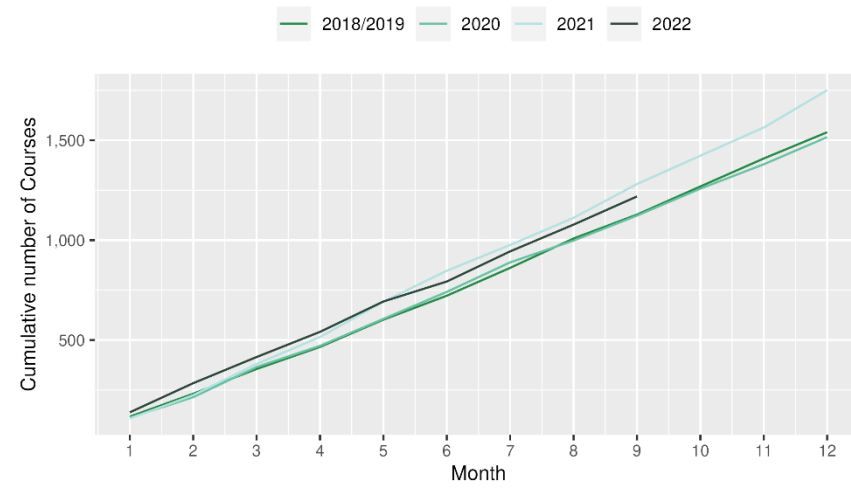
**Figure 20: Number of completed radiation therapy courses by month, 2018/19 average, 2020, 2021 and 2022, total population and Māori**



Cumulative Completed Radiation Therapy Courses – Total Population



Cumulative Completed Radiation Therapy Courses – Māori



# HAEMATOLOGY

## Notes on data

- Data were extracted from NNPAC and NMDS on 14 November 2022.
- First specialist assessment (FSA) reflects counts of first attendance for specialist haematology assessment for any indication, not just cancer.
- IV chemotherapy reflects appointments for IV chemotherapy for haematological malignancies.
- Technical information: Haematology FSA (Purchase Unite Code: M30002), IV haem/chemo (Purchase Unit Code: M30020).

## Key points

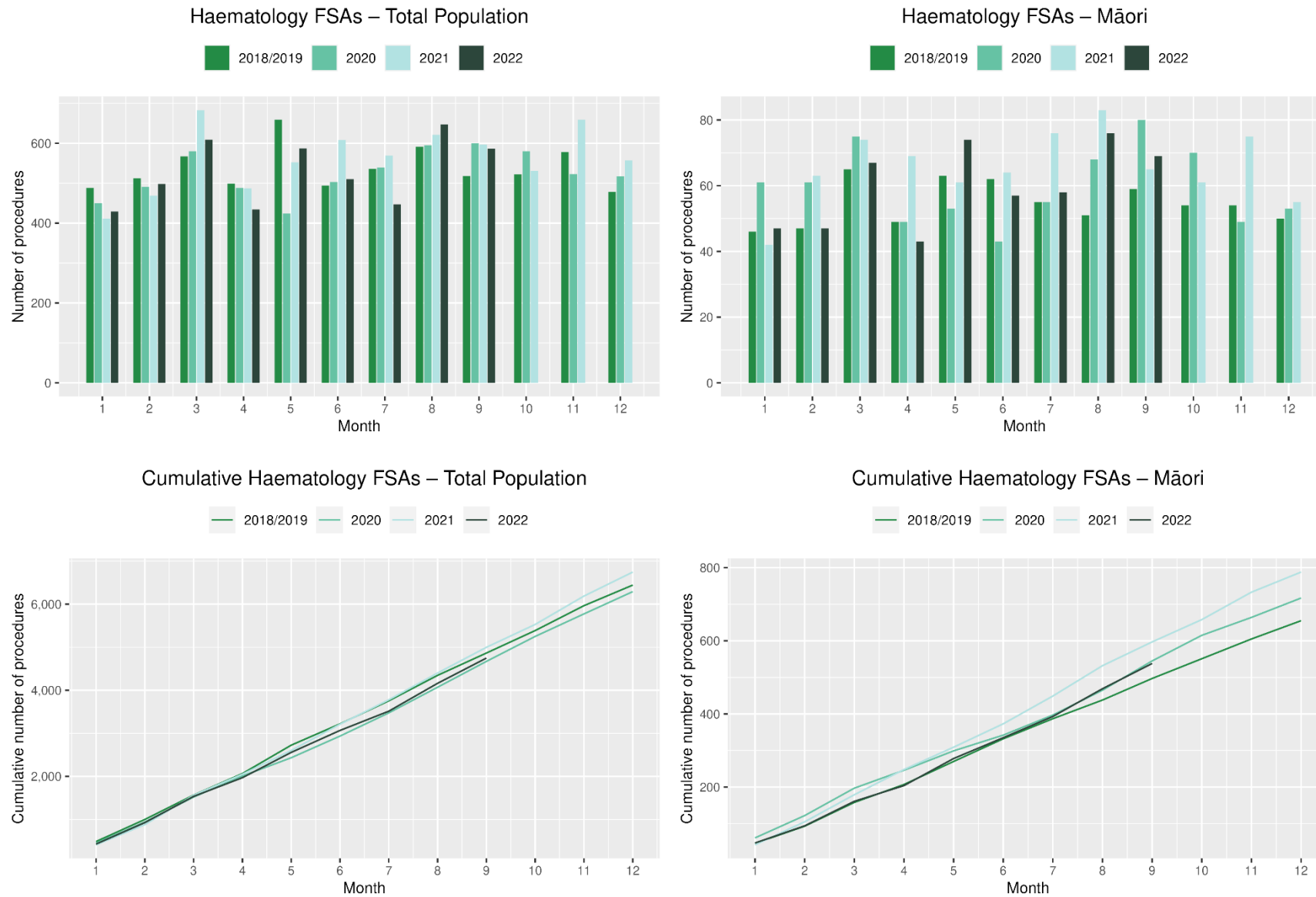
- For 2022 to date, there was a 2% decrease in haematology first specialist assessments (FSAs) compared with 2018/19, and for Māori there was an 8% increase. The decrease has improved compared to the previous report where there was an 11% decrease overall for FSAs until June 2022, noting the increase in FSAs for the months of August and September 2022 (Table 18). FSAs showed a decrease of 17% in July 2022 compared with 2018/19.
- For 2022 to date, there was a 5% increase in haematology intravenous (IV) chemotherapy compared with 2018/19 overall and for Māori an increase of 8%. July showed a decrease of 17% compared to 2018/19 which was not seen in September.
- Disruption seen in July aligns with the peak of winter illnesses including COVID-19 in July which then improved into September (see Appendix 1).

## Results

**Table 18: Number of haematology first specialist assessment attendances and percentage difference in 2022 compared to the average of 2018 and 2019, by month and cumulative year to date, by ethnicity**

	July			August			September			Cumulative Jan-Sep		
	2018/2019	2022	% change	2018/2019	2022	% change	2018/2019	2022	% change	2018/2019	2022	% change
Māori	55	58	5%	51	76	49%	59	69	17%	496	538	8%
Pacific Peoples	26	25	-2%	30	32	8%	26	29	14%	240	283	18%
Non-Māori/Non-Pacific	455	364	-20%	511	539	6%	434	488	13%	4,126	3,926	-5%
Total Population	536	447	-17%	591	647	9%	518	586	13%	4,862	4,747	-2%

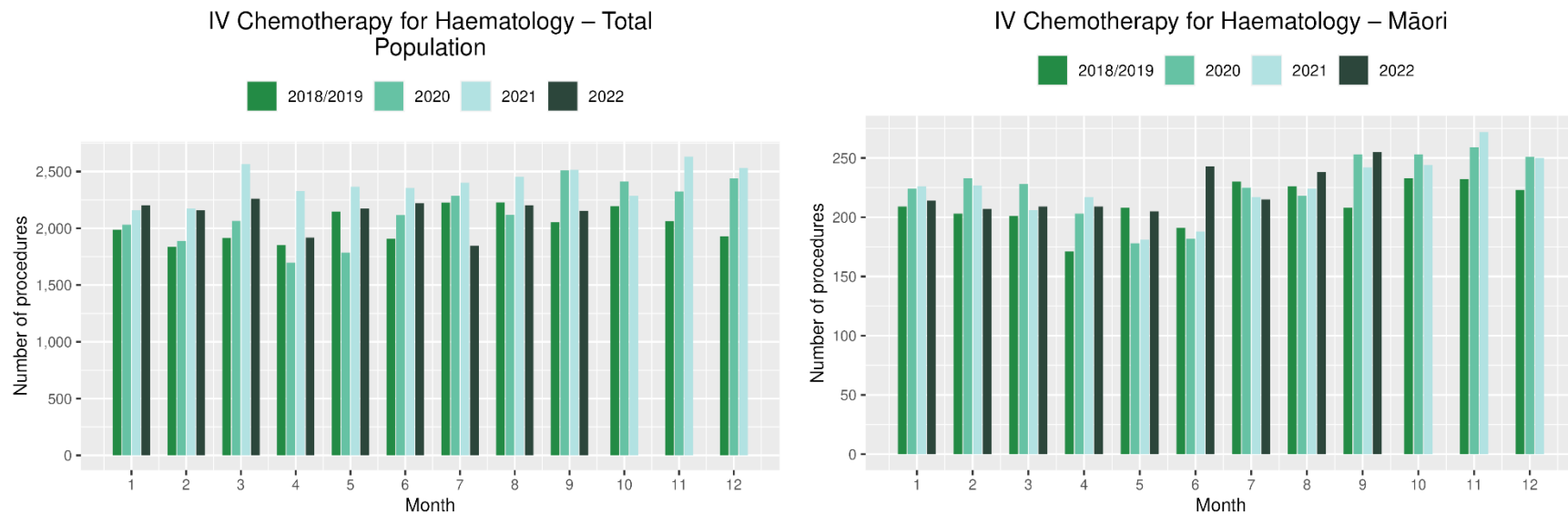
**Figure 18: Number of haematology first specialist assessments by month, 2018/19 average, 2020, 2021 and 2022, total population and Māori**



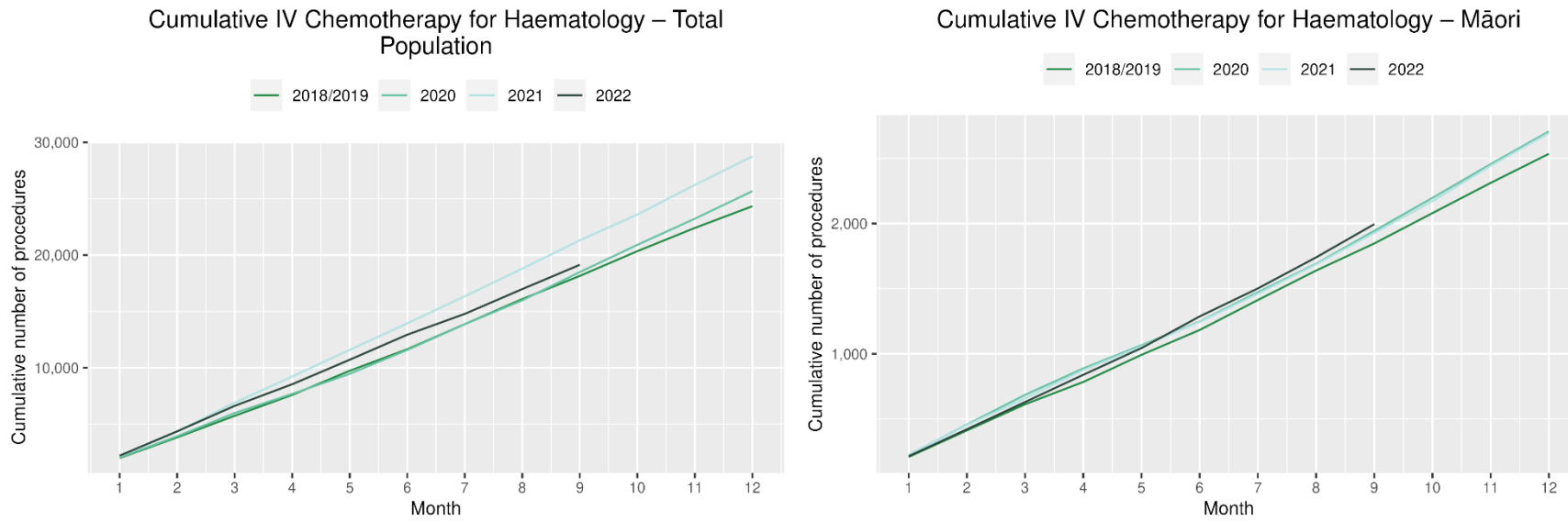
**Table 19: Number of IV chemotherapy attendances for haematological malignancies and percentage difference in 2022 compared to the average of 2018 and 2019, by month and cumulative year to date, by ethnicity**

	July			August			September			Cumulative Jan-Sep		
	2018/2019	2022	% change	2018/2019	2022	% change	2018/2019	2022	% change	2018/2019	2022	% change
Māori	230	215	-6%	226	238	5%	208	255	23%	1,844	1,995	8%
Pacific Peoples	114	87	-23%	112	116	4%	101	101	0%	905	962	6%
Non-Māori/Non-Pacific	1,883	1,545	-18%	1,889	1,848	-2%	1,744	1,797	3%	15,399	16,178	5%
Total Population	2,226	1,847	-17%	2,227	2,202	-1%	2,053	2,153	5%	18,148	19,135	5%

**Figure 19: Number of attendances for IV chemotherapy for haematological malignancies by month, 2018/19 average, 2020, 2021 and 2022, total population and Māori**



**Figure 20: Cumulative number of attendances for IV chemotherapy for haematological malignancies, 2018/19 average, 2020, 2021 and 2022, total population and Māori**



# FOCUS ON LUNG CANCER

## Introduction

As He Pūrongo Mate Pukupuku o Aotearoa | The State of Cancer in New Zealand 2020 report outlines, lung cancer is the most significant cancer for Māori in terms of mortality and is one of the largest contributors to inequity in mortality between Māori and non-Māori<sup>8</sup>.

Previous Te Aho o Te Kahu COVID-19 and cancer reporting has identified potential disruption in bronchoscopy for the total population<sup>9</sup>. Work undertaken by Te Aho o Te Kahu and published in the New Zealand Medical Journal (NZMJ) showed a downtrend in lung cancer registrations and disparities in bronchoscopy rates for Māori in 2020 compared to pre-pandemic years (2018 and 2019), but no such disruption to registrations and service for other cancers<sup>10</sup>. In addition, more recent Te Aho o Te Kahu COVID-19 and cancer reporting using data up to June 2022 indicated lower volumes of lung cancer surgery for Māori<sup>11</sup>.

This section of the report updated the data presented in the NZMJ paper with data from 2021, to allow further examination of disparities in detection, diagnosis and treatment for Māori over the COVID-19 pandemic period.

## Notes on methods

- Full details of methods used in this section can be found in the NZMJ paper by Gurney et al.<sup>10</sup> with the exception of CT lung biopsy.
- Age-standardisation was performed using the 2001 Māori Census population.<sup>12</sup>
- Age-standardised graphs are used for comparison between ethnicities rather than as a standalone assessment of one ethnicity, therefore each graph in this section should be interpreted as a comparison between Māori and non-Māori/non-Pacific peoples.
- The numerators included in this section are cancer registrations, bronchoscopies, CT lung biopsies and lung cancer surgeries.
- The denominator is the total estimated residential population. The analysis used Stats NZ custom population projections as the denominator, mean year ended June 2018, 2019, 2020 and 2021.
- For the purposes of this analysis, in order to ensure an adequate volume of data we only included two ethnic group classifications: Māori and non-Māori/non-Pacific (ie, primarily the European/Pākehā population).
- Lung cancer surgical procedure codes are listed in Appendix 5.

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<sup>8</sup> Te Aho o Te Kahu. (2021). *He Pūrongo Mate Pukupuku o Aotearoa 2020, The State of Cancer in New Zealand 2020*. Retrieved from Wellington: <https://teaho.govt.nz/publications/cancer-state>

<sup>9</sup> <https://teaho.govt.nz/covid-19/cancer-care>

<sup>10</sup> Gurney, J. K., Dunn, A., Liu, M., Mako, M., Millar, E., Ruka, M., . . . Sarfati, D. (2022). The impact of COVID-19 on lung cancer detection, diagnosis and treatment for Māori in Aotearoa New Zealand. *N Z Med J*, 135(1556), 23-43.

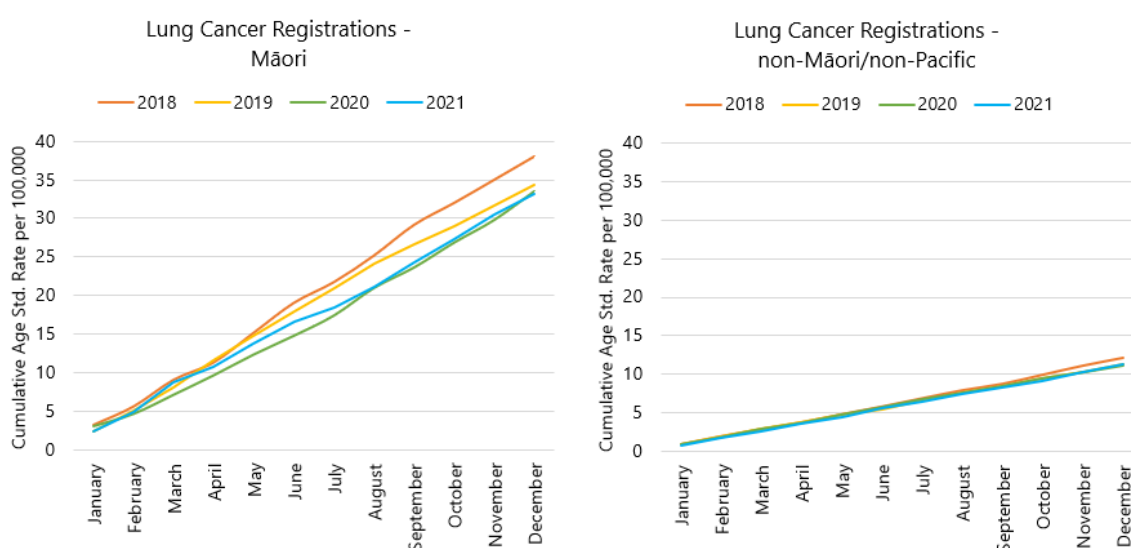
<sup>11</sup> <https://teaho.govt.nz/covid-19/cancer-care>

<sup>12</sup> Robson, B., Purdie, G., Cram, F., & Simmonds, S. (2007). Age standardisation - an indigenous standard? *Emerg Themes Epidemiol*, 4, 3. doi:10.1186/1742-7622-4-3

# Results and discussion

## Registrations

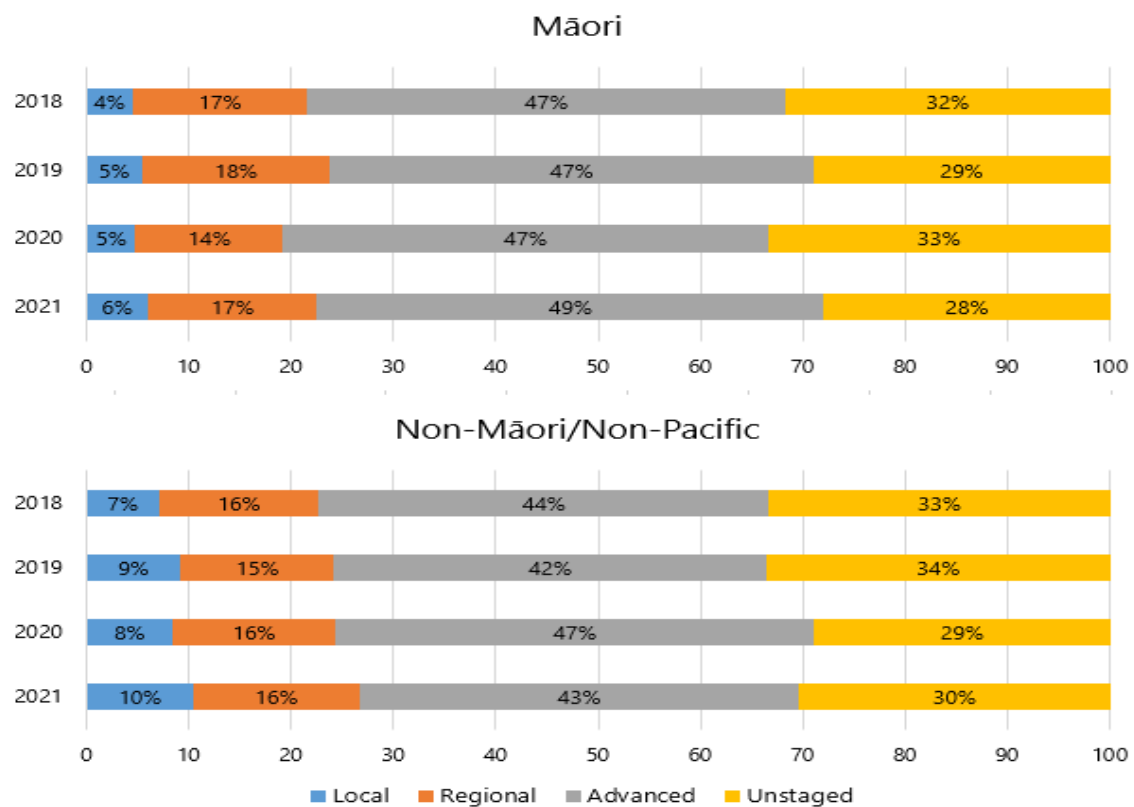
- Overall, as anticipated, the rate of registration for Māori was notably higher than non-Māori/non-Pacific across all years.
- Lung cancer registrations were lower in both 2020 and 2021 for Māori than for 2018/2019 (Figure 21). In contrast, there was little difference in registration rates for non-Māori/non-Pacific peoples across the 2018-2021 period. As noted in the NZMJ paper, this downturn in lung cancer registrations in 2020 largely coincided with the first national lockdown from late-March 2020<sup>13</sup>. In 2021, the downturn in lung cancer registrations appears to coincide with the Level 3 and Level 4 lockdowns associated with the outbreak of the Delta variant (see Key Dates in Appendix 1). In combination, these observations suggest that the diagnosis of lung cancer for Māori was negatively impacted by the COVID-19 lockdowns.
- Figure 22 shows a similar distribution of stage of disease at diagnosis for both Māori and non-Māori/non-Pacific across the four years, with the possibility of a marginal increase in the relative proportion of Māori being diagnosed with advanced cancer (49%) relative to non-Māori/non-Pacific (43%). However, given the high proportion of unstaged lung cancers on the NZ Cancer Registry, it is difficult to adequately determine whether a shift in stage of disease at diagnosis has occurred, and also whether such a shift has occurred inequitably by ethnicity.



**Figure 21 Cumulative age-standardised rate of lung cancer registrations by month and year (2018-2021) per 100,000 New Zealanders, for Māori (left) and non-Māori/non-Pacific (right)**

<sup>13</sup> Gurney, J. K., Dunn, A., Liu, M., Mako, M., Millar, E., Ruka, M., . . . Sarfati, D. (2022). The impact of COVID-19 on lung cancer detection, diagnosis and treatment for Māori in Aotearoa New Zealand. *N Z Med J*, 135(1556), 23-43.  
Te Aho o Te Kahu, Cancer Control Agency

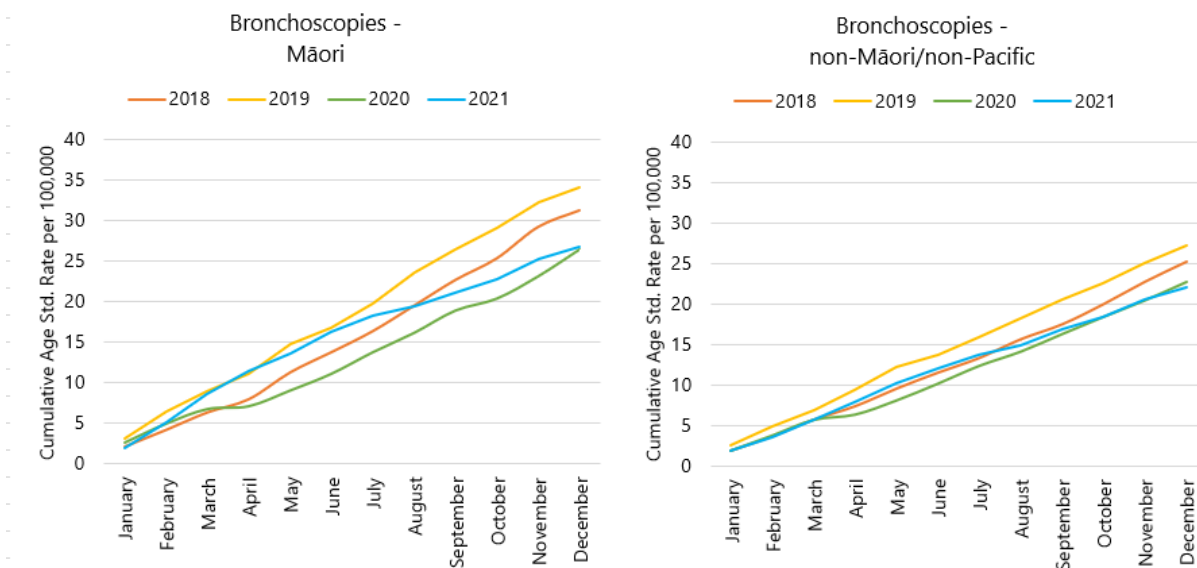




**Figure 22** Stacked bar chart showing crude distribution of local, regional, advance and unstaged lung cancer on the New Zealand Cancer Registry, by year (2018-2020), for Māori and non-Māori/non-Pacific patients

## Diagnosis: Bronchoscopy

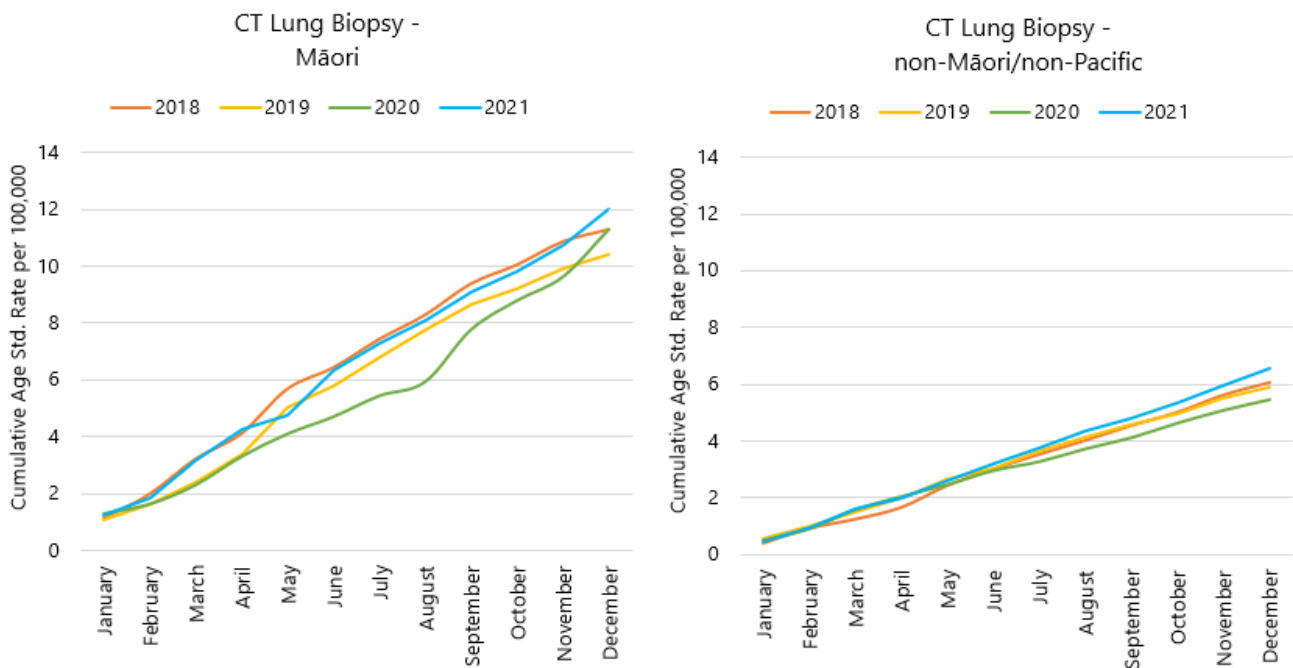
- In 2020 there was a decrease in rates of bronchoscopy for Māori and non-Māori/non-Pacific, particularly early in the first lockdown period in March (Figure 23). The first half of 2021 saw bronchoscopy rates comparable to 2019, with a flattening of the trend over the second half of the year largely coinciding with the lockdowns associated with the Delta variant outbreak. As a result, by the end of the year the total bronchoscopy rate for Māori in 2021 was largely similar to that of 2020.
- As noted in the bronchoscopy section of this report, this method of diagnosis has likely been used less during the COVID-19 pandemic due to the risk of aerosol spread. The data used for this measure covers all bronchoscopies, not just those completed for cancer, and it is possible that non-cancer reasons for bronchoscopy have been reduced and/or that people with suspicion of cancer have been offered other methods of diagnosis. CT biopsy is one such method that is captured in this report; however, as noted earlier, robust data are not available for all diagnostic procedures.



**Figure 23 Cumulative age-standardised rate of bronchoscopy by month and year (2018-2021) per 100,000 New Zealanders, for Māori (left) and non-Māori/non-Pacific (right)**

## Diagnosis: CT lung biopsy

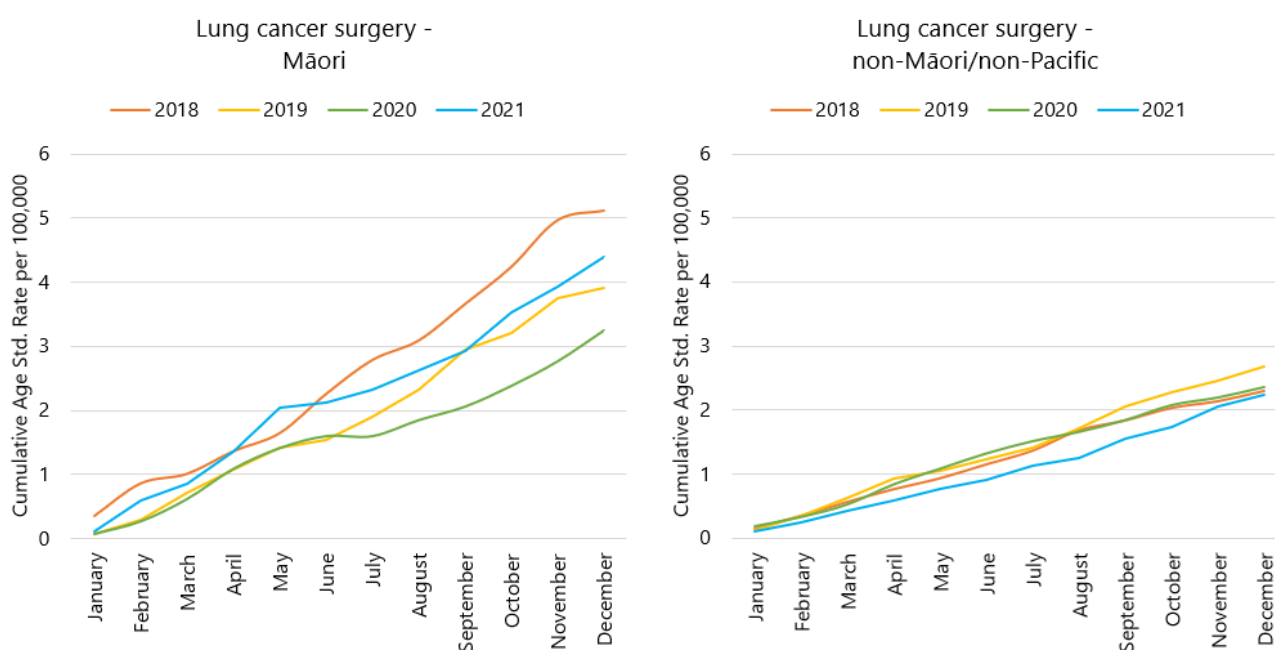
- The cumulative rate of CT lung biopsy was substantially lower than the rate of bronchoscopy across all years (Figure 24). Rates of CT lung biopsy were higher for Māori than they were for non-Māori/non-Pacific.
- For both Māori and non-Māori/non-Pacific, the majority of the year of 2020 saw lower rates of CT lung biopsy compared with 2018 and 2019 although there appeared to be an increase in the final months of the year to match the rates in 2018. In 2021, rates of CT lung biopsy appeared similar to those performed in 2018 and 2019. Trends were similar for non-Māori/non-Pacific peoples.



**Figure 24 Cumulative age-standardised rate of CT lung biopsy by month and year (2018-2021) per 100,000 New Zealanders, for Māori (left) and non-Māori/non-Pacific (right)**

## Surgery

- There was overall a higher rate of lung cancer surgery for Māori compared to non-Māori/non-Pacific (Figure 25), in line with the higher incidence for Māori of this cancer.
- The rate for Māori is increased in 2021 compared to 2020, although there was a flattening of the trend mid-year. However, small numbers of lung cancer surgery for Māori makes it challenging to interpret these findings in detail.
- Of note, the rate of lung cancer surgery for non-Māori/non-Pacific peoples in Figure 25 appears lower in 2021 compared to other years. As this rate is age-standardised to the 2001 Māori population, this finding reflects a difference in the age distribution of non-Māori/non-Pacific peoples receiving lung cancer surgery rather than a true decrease in volumes. The Lung Cancer section earlier in the report shows that volumes for the overall population are largely unchanged for 2021.



**Figure 25 Cumulative age-standardised rate of lung cancer surgeries by month and year (2018-2021) per 100,000 New Zealanders, for Māori (left) and non-Māori/non-Pacific (right)**

## Summary of key points

This section of the current report builds on the findings published by Te Aho o Te Kahu in the NZMJ<sup>14</sup>, where a downturn in cancer registrations was apparent for Māori but not non-Māori/non-Pacific. The rate of lung cancer registration for Māori in 2021 was similarly lower than that observed prior to the pandemic, with some flattening off during the course of the year. For bronchoscopy, the 2021 rate for Māori was higher than 2020 for the first part of the year but flattened from around mid-year. The timing of the downturn in registrations and bronchoscopy procedures is highly suggestive that these were affected by lockdowns that began in mid-2021.

It is possible that there were more Māori in 2021 than the previous 3 years with an advanced stage of lung cancer at the time of diagnosis, although the large proportion in the unstaged category makes it challenging to interpret. Te Aho o Te Kahu is looking at the feasibility of an investigation into whether a shift in stage of disease at diagnosis has occurred over the pandemic.

There was overall a higher rate of lung cancer surgery for Māori compared to non-Māori/non-Pacific, in line with the higher incidence for Māori of this cancer. The rate for Māori is increased in 2021 compared to 2020, although there was a flattening of the trend mid-year. However, small numbers of lung cancer surgery for Māori, makes it challenging to interpret these findings in detail.

## Government action to reduce inequities in lung cancer

In light of the above examples of the possible differential impact of the COVID-19 pandemic on access to lung cancer services for Māori, it is worthwhile to summarise the actions that are currently underway to reduce inequities in lung cancer outcomes for Māori in general.

### The National Lung Cancer Working Group

Te Aho o Te Kahu currently convenes the National Lung Cancer Working Group which brings together a range of clinicians, consumers, and Māori from across the motu to provide their expert input to ensure a consistent and equitable approach to timely and quality care for lung cancer patients.

### Lung cancer quality performance indicators

Quality performance indicators (QPIs) are used to improve the quality of cancer services and deliver better outcomes for people diagnosed with cancer. This Te Aho o Te Kahu programme develops, calculates, and reports on QPIs using national data collections. The data includes ethnicity data stratification and is presented in a way that allows for comparisons between districts with the intention that districts can identify unwarranted variation and implement quality improvement strategies as required.

The lung cancer QPI work was drafted and published with the support and advice of the National Lung Cancer Working Group and developed in partnership with the cancer sector.

### Reducing the incidence of lung cancer via tobacco control

The Smokefree 2025 Action Plan was launched in December 2021. Key areas in the Action Plan are:

- Māori leadership and decision-making

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<sup>14</sup> Gurney, J. K., Dunn, A., Liu, M., Mako, M., Millar, E., Ruka, M., . . . Sarfati, D. (2022). The impact of COVID-19 on lung cancer detection, diagnosis and treatment for Māori in Aotearoa New Zealand. *N Z Med J*, 135(1556), 23-43.  
Te Aho o Te Kahu, Cancer Control Agency

- health promotion and community mobilisation
- support for people to quit
- mandating low-level nicotine smoked tobacco products to make them non-addictive
- reducing the number of shops selling smoked tobacco products and implementing a smokefree generation (those born from 1 January 2009 will never be able to lawfully be sold smoked tobacco products)
- better compliance and enforcement

The Smokefree Environments and Regulated Products (Smoked Tobacco) Amendment Bill (the Bill) was introduced to Parliament on 21 June 2022<sup>15</sup>.

The Bill introduces three key legislative changes: reducing retail availability, amending the age limits for sale of smoked tobacco products and reducing the appeal and addictiveness of smoked tobacco products. A specific provision provides for a regulation-making power to set limits on the quantity of nicotine levels and other constituents of smoked tobacco products.

The intent of these provisions is to increase the number of people who successfully stop smoking, and support tamariki/young people to remain smokefree, by making smoked tobacco products less appealing and addictive.

## Primary care

Early diagnosis can have a significant impact on lung cancer outcomes. To support primary care providers, the Agency commissioned Best Practice Advocacy Centre NZ (BPAC) to develop journal articles on the early detection of lung cancer in primary care and lung cancer follow-up and surveillance. BPAC articles have a wide reach and are read by approximately 11 thousand clinicians.

In addition, the Agency has partnered with the Goodfellow Institute and delivered a webinar in November 2022 to support knowledge and awareness of the early detection of lung cancer within the primary care sector and gave updates on developments in lung cancer management.

## Preliminary work into lung cancer screening

There is growing evidence that screening asymptomatic people at high risk of lung cancer (people who smoke heavily or have previously smoked heavily) using low-dose computer tomography can reduce mortality by identifying lung cancer at an earlier stage - when it is more treatable. A modelling study from Aotearoa has also shown such a lung cancer screening programme is likely to be cost-effective, especially for Māori<sup>16</sup>.

The National Screening Advisory Committee (which provides leadership and strategic direction for national population-based screening programmes) considered the evidence for lung cancer screening in November 2020. Their overall position was supportive of the development of lung cancer screening. Minister Little indicated his support for ongoing work in this area in April 2021.

Any potential lung cancer screening programme in Aotearoa must be designed to be pro-equity from the outset and have high and equitable participation and leadership by Māori. Several information gaps need to

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<sup>15</sup> [https://www.parliament.nz/en/pb/sc/reports/document/SCR\\_130048/smokefree-environments-and-regulated-products-smoked-tobacco](https://www.parliament.nz/en/pb/sc/reports/document/SCR_130048/smokefree-environments-and-regulated-products-smoked-tobacco)

<sup>16</sup> McLeod M, Sandiford P, Kvizhinadze G, et al. Impact of low-dose CT screening for lung cancer on ethnic health inequities in New Zealand: a cost-effectiveness analysis. *BMJ Open* 2020;10:e037145. doi: 10.1136/bmjopen-2020-037145

be filled including recruitment/invitation strategies to achieve high participation in priority populations, strategies to accurately identify high-risk populations, diagnostic and treatment pathways that maximise benefit and minimise harm and ensuring adequate health system capacity.

There is also a Māori-led trial of lung cancer screening in the Waitematā and Auckland districts, led by University of Otago senior Māori health researcher Professor Sue Crengle (Kāi Tahu, Kāti Māmoe, Waitaha). This research is investigating a key factor in participation in a future screening programme: invitation pathways.

## Medicines for lung cancer

Te Pātaka Whaioranga – Pharmac funds a number of treatments for lung cancer and recently has either approved funding or communicated the potential funding of further medicines associated with substantial clinical benefit for people with lung cancer: durvalumab for moderate stage lung cancer, and immunotherapies for late-stage lung cancer. As Pharmac’s report on equity of access to medicine in Aotearoa notes, equitable access is broader than availability alone and includes complex issues such as access to medical assessment and pharmacy services<sup>17</sup>.

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<sup>17</sup> Achieving medicine access equity in Aotearoa New Zealand. Towards a theory of change. Pharmac. 2019. <https://pharmac.govt.nz/assets/achieving-medicine-access-equity-in-aotearoa-new-zealand-towards-a-theory-of-change.pdf>

# APPENDIX 1: KEY DATES

The follow provides a brief overview of key dates relating to COVID-19 restrictions (Alert Levels 3 and 4 where the greatest restrictions were in place) and outbreaks. More detailed information can be found on the Unite COVID-19 website<sup>18</sup>, including an overview of Alert Levels and the COVID-19 Protection Framework (traffic lights)<sup>19</sup>.

23 March – 14 May 2020	All Aotearoa New Zealand was at Alert Level 3 or 4
12 August – 30 September 2020	Auckland only moved to Alert Level 3
28 Feb – 7 March 2021	Auckland only was at Alert Level 3
17 August to 7 September 2021	All Aotearoa New Zealand was at Alert 3 or 4 at the outset of the Delta variant outbreak
From 7 September 2021	Auckland remained at Alert Level 4; the rest of the country moved to Alert Level 2
September – December 2021	Auckland moved to and remained at Alert Level 3 from 21 September. There were various regional changes between Alert Level 2 and 3 over this period some parts of the North Island including parts of Waikato. Details are available on the Unite COVID-19 website <sup>4</sup> . Note: The definition of Alert Level 3 was eased in early October and three gradually reducing steps of level 3 were introduced in October
3 Dec 2021	End of COVID-19 Alert System. All Aotearoa New Zealand moved to the COVID-19 Protection Framework (traffic lights)
29 Dec 2021	The first case of the Omicron variant in the community in New Zealand was detected
February 2022	Omicron case numbers and hospitalisations increased more significantly in the second half of February onwards <sup>20</sup>
10 March 2022	Seven day rolling average of cases is over 20,000, while daily count reaches over 23,000. This was the peak of case numbers at the time of writing.
23 March 2022	Changes were made to the <i>red-light</i> setting: no limitations on numbers of people gathering outdoors, indoors limit increase to 2000 people.
14 April 2022	New Zealand moved to the <i>orange</i> traffic light setting: indoor venue capacity rules are removed but facemasks are still required in most indoor venues.
April – September 2022	Continued Omicron outbreak. There were over 20,000 cases at the peak of the first Omicron wave in late February and over 11,000 cases at the peak of the second wave in mid-July before a downward trend into September 2022. See Figure 21. The 'traffic light' system ended in September 2022.

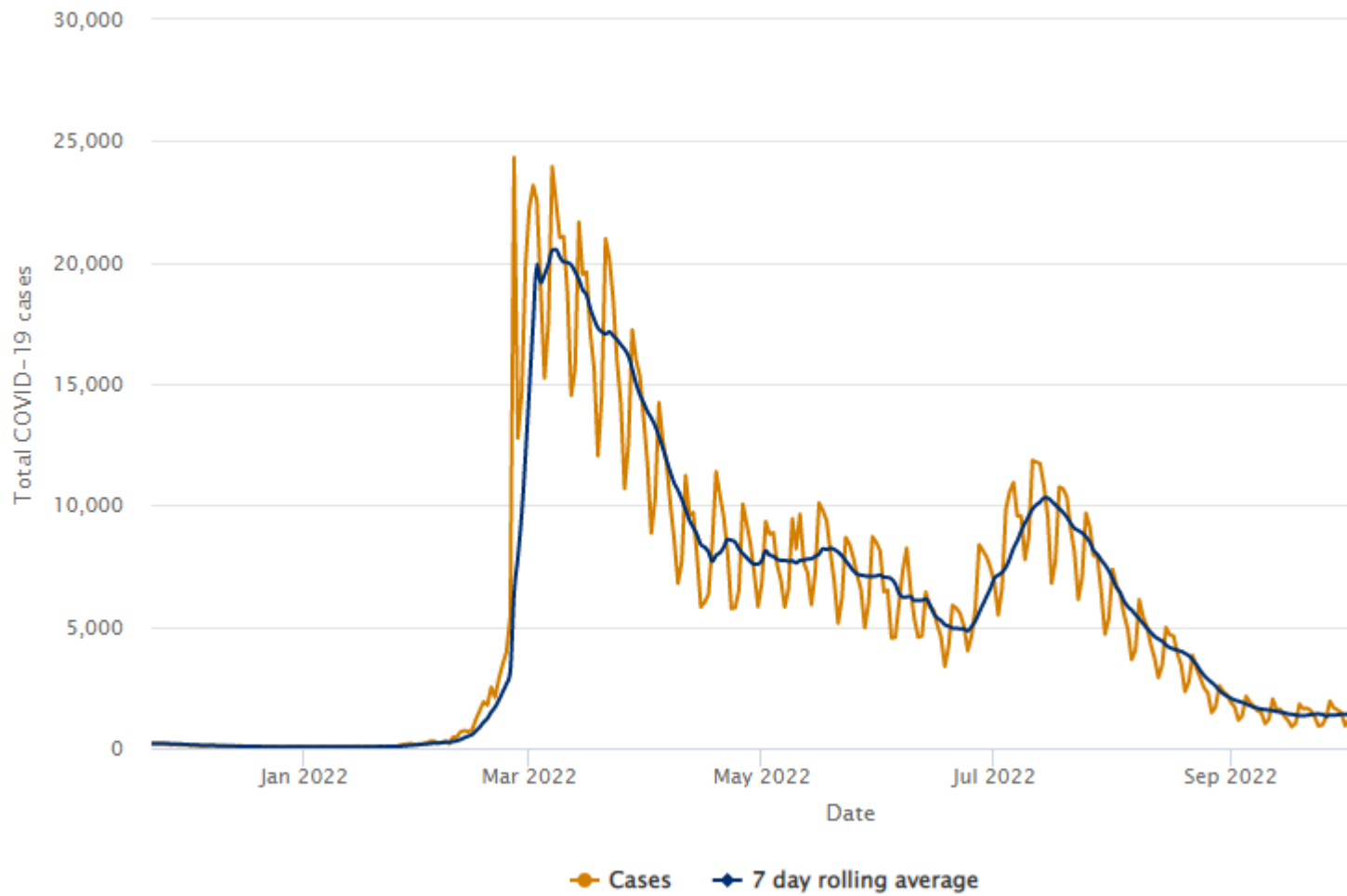
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<sup>18</sup> <https://covid19.govt.nz/about-our-covid-19-response/history-of-the-covid-19-alert-system/>

<sup>19</sup> <https://covid19.govt.nz/traffic-lights/covid-19-protection-framework>

<sup>20</sup> <https://www.health.govt.nz/covid-19-novel-coronavirus/covid-19-data-and-statistics/covid-19-current-cases>





**Figure 26 New reported COVID-19 cases and 7 day rolling average, Aotearoa New Zealand.** Source: Unite Against COVID-19, accessed November 22 2022, <https://covid19.health.nz/advice/covid-19-data>

# APPENDIX 2: NZCR DATA INFORMATION

## The New Zealand Cancer Registry as a data source for new cancer diagnoses

Cancer registration is a process where data is collated from multiple sources about people diagnosed with cancer and rules are applied to determine the type of cancer they have. This information is recorded in the New Zealand Cancer Registry. Each tumour is classified using an international World Health Organization standard so that cancer incidence can be compared between countries. The tumour is staged based on all the information available within 4 months of diagnosis. This process may take up to six months or more depending on the number of missing reports that need to be followed up with laboratories.

For each registration there may be multiple pathology reports as there may be multiple procedures performed on the tumour. This means there will be more than one registration for people diagnosed with more than one type of tumour.

Cancer registrations come from pathology laboratories, haematology laboratories, mortality records and reviewing hospital discharge records. Laboratory reports provide the best source of near real time data to monitor new diagnoses of cancer in New Zealand.

## Pathology reports as a data source for providing near real time monitoring of cancer diagnoses

Pathology reports (documents) are received by the NZCR as electronic messages. An administrator triages these documents each day and if the document appears to meet the requirements for registration the document is “administered”. The document may relate to an existing registration or may contain information for a new cancer event. Documents that do not meet the cancer reporting requirements will be marked as “deleted”, “rejected” or “agreed not for registration”.

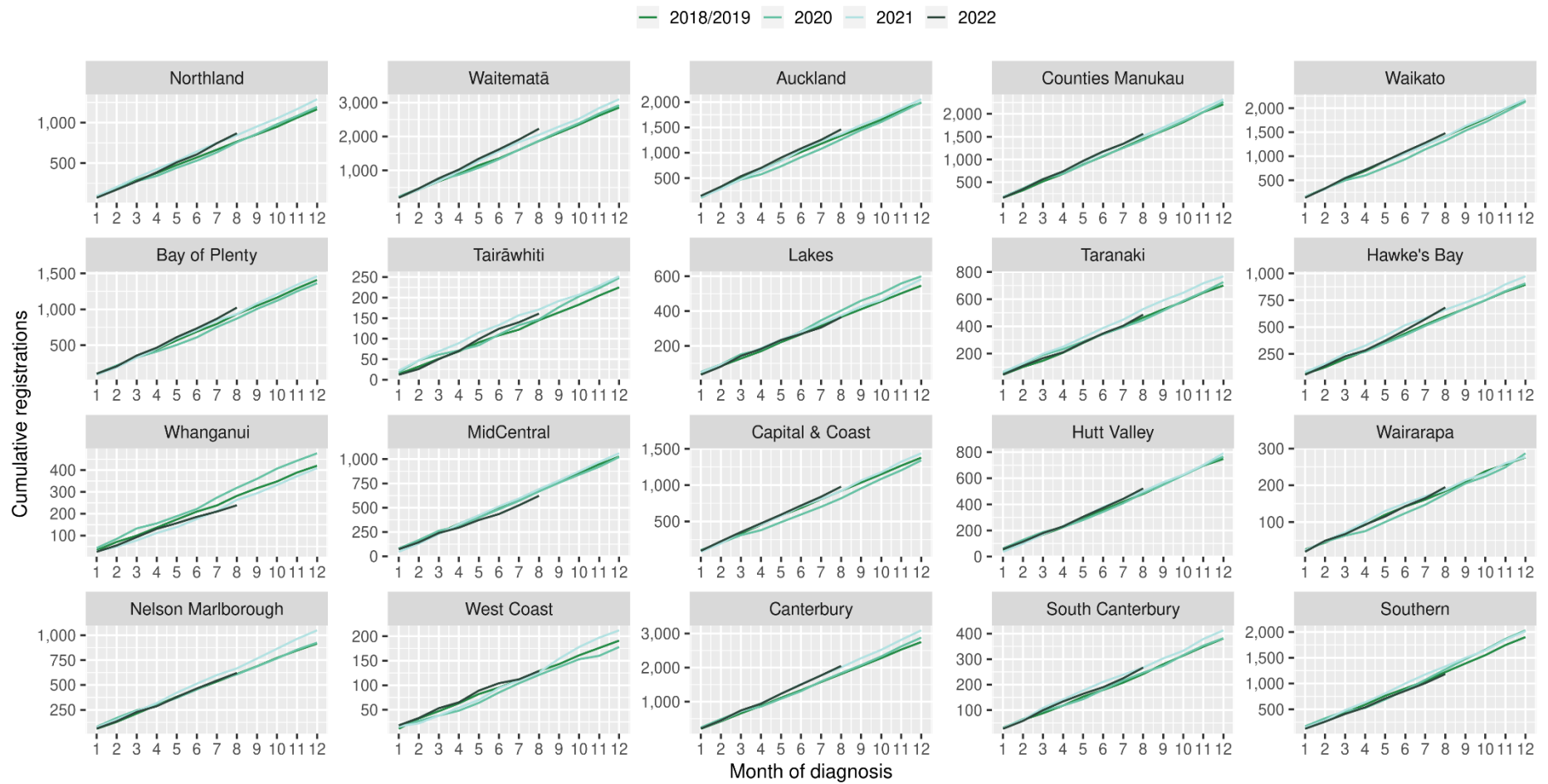
The administrator creates a new provisional cancer event if the pathology report identifies a new cancer diagnosis for this person. This new cancer event is assigned to a cancer group and this provisional event is then queued for further assessment by a clinical coder. If the required information has been provided the coder creates a new registration. If some information is not yet available, then the registration is held open until further information arrives to complete the registration or determine that the tumour does not meet the registration criteria.

# APPENDIX 3: NZCR REGISTRATIONS BY TE WHATU ORA DISTRICT

Number of cancer registrations and percentage difference in 2022 compared to 2018/19 average, by month and cumulative year to date, by Te Whatu Ora district of domicile

DHB	June			July			August			Cumulative January-August		
	2018/19	2022	%Change	2018/19	2022	%Change	2018/19	2022	%Change	2018/19	2022	%Change
Northland	93	97	4%	96	139	46%	100	123	24%	763	869	14%
Waitematā	201	272	35%	252	289	15%	262	319	22%	1869	2230	19%
Auckland	170	182	7%	163	170	4%	160	206	29%	1336	1460	9%
Counties Manukau	179	207	16%	195	168	-14%	190	219	16%	1451	1563	8%
Waikato	165	193	17%	175	186	6%	180	199	11%	1411	1479	5%
Bay of Plenty	120	122	2%	108	134	24%	137	155	13%	932	1024	10%
Tairāwhiti	17	25	52%	14	16	14%	23	21	-7%	143	161	13%
Lakes	45	35	-22%	50	37	-25%	49	59	20%	365	365	0%
Taranaki	67	67	1%	57	56	-1%	63	82	30%	463	486	5%
Hawkes Bay	87	98	13%	81	102	26%	78	108	38%	599	682	14%
Whanganui	36	29	-18%	28	24	-13%	44	29	-34%	280	239	-15%
MidCentral	87	61	-30%	86	90	5%	97	98	2%	687	623	-9%
Capital and Coast	106	126	19%	121	121	0%	113	139	24%	917	979	7%
Hutt Valley	64	68	6%	64	69	9%	60	80	33%	478	522	9%
Wairarapa	22	28	30%	19	22	19%	23	30	33%	182	195	7%
Nelson Marlborough	75	86	15%	77	79	3%	77	77	1%	609	621	2%
West Coast	13	15	20%	16	8	-50%	18	17	-6%	127	129	2%
Canterbury	222	271	22%	242	268	11%	233	278	19%	1809	2048	13%
South Canterbury	26	26	2%	29	35	21%	34	42	24%	240	267	11%
Southern	141	147	5%	146	150	3%	172	177	3%	1221	1185	-3%

### Cumulative New Cancer Registrations – by Te Whatu Ora District



# Cumulative cancer registrations by DHB and ethnicity

	Total Population						Māori						Non-Māori/Non-Pacific					
	Cumulative January-August				Difference between 2018/19 and 2022		Cumulative January-August				Difference between 2018/19 and 2022		Cumulative January-August				Difference between 2018/19 and 2022	
	2018/2019	2020	2021	2022	Number	%change	2018/2019	2020	2021	2022	Number	%change	2018/2019	2020	2021	2022	Number	%change
Northland	763	758	845	869	106	14%	177	174	206	196	20	11%	577	575	633	668	91	16%
Waitematā	1,869	1,877	2,051	2,230	361	19%	112	128	118	124	13	11%	1,676	1,645	1,829	1,966	290	17%
Auckland	1,336	1,261	1,368	1,460	125	9%	78	75	86	100	22	28%	1,124	1,060	1,157	1,222	99	9%
Counties Manukau	1,451	1,429	1,515	1,563	112	8%	189	205	194	179	-10	-5%	1,001	982	1,051	1,102	102	10%
Waikato	1,411	1,322	1,408	1,479	69	5%	231	218	217	220	-11	-5%	1,159	1,086	1,166	1,235	76	7%
Bay of Plenty	932	871	935	1,024	93	10%	150	146	154	156	7	4%	776	719	774	858	82	11%
Tairāwhiti	143	147	171	161	19	13%	53	61	65	62	10	18%	88	85	104	97	9	10%
Lakes	365	403	375	365	1	0%	89	107	115	86	-3	-3%	270	291	249	274	4	1%
Taranaki	463	446	527	486	24	5%	48	48	66	53	5	10%	412	397	452	428	16	4%
Hawkes Bay	599	589	662	682	84	14%	112	109	129	127	15	13%	473	472	521	542	69	15%
Whanganui	280	319	264	239	-41	-15%	43	46	58	40	-3	-7%	235	272	204	197	-38	-16%
MidCentral	687	668	691	623	-64	-9%	73	77	86	80	7	10%	608	583	598	533	-75	-12%
Capital and Coast	917	818	920	979	62	7%	65	75	93	86	21	32%	806	690	769	835	30	4%
Hutt Valley	478	486	500	522	44	9%	69	52	63	57	-12	-17%	390	408	402	443	53	14%
Wairarapa	182	176	187	195	14	7%	16	20	25	17	1	6%	164	156	160	175	11	7%
elson Marlborough	609	607	667	621	12	2%	34	25	36	36	2	6%	570	578	627	578	9	1%
West Coast	127	121	126	129	2	2%	*	*	13	*	*	*	118	116	113	122	4	3%
Canterbury	1,809	1,837	2,006	2,048	240	13%	104	89	114	129	26	25%	1,672	1,719	1,867	1,890	219	13%
South Canterbury	240	247	267	267	27	11%	12	*	*	15	3	25%	227	240	258	252	26	11%
Southern	1,221	1,275	1,332	1,185	-36	-3%	64	72	90	68	4	6%	1,148	1,186	1,229	1,101	-47	-4%
Total	15,877	15,657	16,817	17,127	1251	8%	1,725	1,739	1,937	1,838	114	7%	13,490	13,260	14,163	14,518	1028	8%

# Cumulative cancer registrations by cancer type and ethnicity

	Total Population							Māori						Non-Māori/Non-Pacific					
	Cumulative January-August				Difference between 2018/19 and 2022			Cumulative January-August				Difference between 2018/19 and 2022		Cumulative January-August				Difference between 2018/19 and 2022	
	2018/2019	2020	2021	2022	Number	%change	2018/2019	2020	2021	2022	Number	%change	2018/2019	2020	2021	2022	Number	%change	
Breast	2,458	2,255	2,553	2,528	70	3%	348	348	389	357	10	3%	1,987	1,767	2,013	2,020	34	2%	
Colorectal	2,060	2,185	2,188	2,280	221	11%	142	178	184	166	25	17%	1,864	1,964	1,940	2,026	162	9%	
Gynaecology	705	742	731	745	41	6%	110	99	108	91	-19	-17%	509	552	533	537	29	6%	
Haematology and Lymphoid	1,635	1,508	1,634	1,590	-45	-3%	175	157	196	149	-26	-15%	1,391	1,275	1,366	1,374	-17	-1%	
Melanoma and non-melanoma skin cancer	2,166	2,098	2,405	2,599	434	20%	53	44	64	68	15	28%	2,108	2,045	2,329	2,521	414	20%	
Other digestive system	976	1,133	1,119	1,132	157	16%	145	181	179	160	15	10%	757	879	861	887	130	17%	
Prostate	2,624	2,351	2,588	2,594	-30	-1%	210	193	222	251	41	20%	2,329	2,081	2,286	2,262	-67	-3%	
Respiratory and thorax	1,163	1,221	1,253	1,209	46	4%	265	247	259	275	11	4%	832	910	933	866	34	4%	
Urinary system	674	729	747	756	82	12%	68	81	95	88	20	29%	588	618	622	643	56	9%	
Total	14,459	14,222	15,218	15,433	974	7%	1,514	1,528	1,696	1,605	92	6%	12,363	12,091	12,883	13,136	774	6%	

# APPENDIX 4: DIAGNOSIS AND TREATMENT DATA BY TE WHATU ORA DISTRICT

Percentage differences are only presented if the cumulative total the year is 10 or greater. In some cases, the totals may differ to those presented in the national report due to non-Te Whatu Ora providers being excluded from the analyses within this appendix.

## Gastrointestinal endoscopy

	Total population						Māori						Non-Māori / Non-Pacific					
	Cumulative number for Jan- Sep				Difference between 2022 and 2018/19		Cumulative number for Jan-Sep				Difference between 2022 and 2018/19		Cumulative number for Jan- Sep				Difference between 2022 and 2018/19	
	2018/2019	2020	2021	2022	Number	% change	2018/2019	2020	2021	2022	Number	% change	2018/2019	2020	2021	2022	Number	% change
Northland	2,897	2,719	3,397	3,521	625	22%	533	505	666	727	194	36%	2,343	2,192	2,699	2,751	408	17%
Waitematā	6,677	6,942	7,251	8,104	1,428	21%	382	389	449	453	71	19%	6,080	6,246	6,530	7,359	1,280	21%
Auckland	4,713	4,481	4,463	4,268	-445	-9%	242	264	266	307	65	27%	4,149	3,869	3,863	3,646	-503	-12%
Counties Manukau	6,770	7,274	6,819	8,469	1,699	25%	649	734	647	847	199	31%	5,278	5,531	5,197	6,358	1,080	20%
Waikato	4,409	5,016	4,569	4,717	308	7%	530	583	599	664	134	25%	3,821	4,365	3,909	3,981	161	4%
Bay of Plenty	3,686	3,810	5,031	4,505	819	22%	446	495	620	617	171	38%	3,222	3,303	4,380	3,849	628	19%
Lakes	1,484	1,416	1,792	1,343	-141	-9%	269	287	335	293	24	9%	1,193	1,105	1,432	1,026	-167	-14%
Tairāwhiti	572	551	600	679	108	19%	167	163	164	198	32	19%	401	381	430	473	73	18%
Taranaki	1,445	1,538	1,892	1,805	361	25%	149	135	201	206	58	39%	1,290	1,391	1,684	1,585	296	23%
Whanganui	1,127	986	1,009	727	-400	-35%	158	141	141	118	-40	-25%	961	836	862	603	-358	-37%
Hawkes Bay	2,050	2,202	2,627	2,596	546	27%	246	308	349	460	215	87%	1,783	1,858	2,245	2,105	323	18%
MidCentral	1,631	1,723	2,277	2,042	412	25%	117	156	228	230	113	97%	1,499	1,546	2,025	1,785	286	19%
Capital and Coast	2,132	2,535	2,504	2,734	603	28%	151	195	229	219	68	45%	1,896	2,252	2,175	2,379	484	26%
Hutt Valley	1,973	2,474	2,446	2,784	811	41%	164	250	234	301	138	84%	1,740	2,135	2,114	2,380	640	37%
Wairarapa	778	692	784	706	-72	-9%	67	65	79	72	5	7%	704	622	700	628	-76	-11%
Nelson Marlborough	1,586	2,022	2,086	2,008	422	27%	83	120	114	131	49	59%	1,496	1,885	1,961	1,867	371	25%
West Coast	505	518	644	543	39	8%	36	24	47	41	5	14%	467	491	595	496	30	6%
Canterbury	5,805	6,090	5,712	6,808	1,004	17%	339	347	324	463	125	37%	5,382	5,658	5,314	6,243	861	16%
South Canterbury	929	901	1,003	898	-31	-3%	37	46	34	48	12	32%	890	853	964	843	-47	-5%
Southern	3,559	3,718	4,514	3,615	57	2%	175	212	245	207	32	18%	3,360	3,461	4,226	3,369	10	0%
Grand total	54,723	57,608	61,420	62,872	8,150	15%	4,936	5,419	5,971	6,602	1,666	34%	47,950	49,980	53,305	53,726	5,777	12%

# Bronchoscopy

	Total population							Māori						Non-Māori / Non-Pacific					
	Cumulative number for Jan- Sep				Difference between 2022 and 2018/19			Cumulative number for Jan- Sep				Difference between 2022 and 2018/19		Cumulative number for Jan- Sep				Difference between 2022 and 2018/19	
	2018/2019	2020	2021	2022	Number	% change	2018/2019	2020	2021	2022	Number	% change	2018/2019	2020	2021	2022	Number	% change	
Northland	61	55	83	74	13	21%	19	21	24	24	5	26%	41	33	59	49	8	20%	
Waitematā	110	115	157	157	47	43%	*	10	20	11	*	*	100	99	135	141	42	42%	
Auckland	265	217	209	240	-25	-9%	35	24	26	48	14	39%	205	173	174	178	-27	-13%	
Counties Manukau	266	255	232	282	16	6%	48	35	45	56	9	18%	179	184	149	181	2	1%	
Waikato	203	161	171	140	-63	-31%	46	35	32	22	-24	-52%	154	122	139	116	-38	-25%	
Bay of Plenty	127	100	130	86	-41	-32%	31	22	34	18	-13	-41%	94	78	96	68	-26	-28%	
Lakes	67	59	61	39	-28	-42%	23	24	20	12	-11	-48%	44	32	41	26	-18	-40%	
Tairāwhiti	*	21	20	*	6	*	*	*	*	*	*	*	*	12	14	*	*	*	
Taranaki	41	31	46	56	16	38%	*	*	*	*	*	*	33	28	36	46	13	39%	
Whanganui	12	10	12	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Hawkes Bay	50	37	53	53	4	7%	13	*	15	21	9	68%	37	28	37	31	-6	-15%	
MidCentral	28	21	25	28	0	0%	*	*	*	*	*	*	22	20	17	23	1	5%	
Capital and Coast	72	54	50	55	-17	-23%	*	*	*	11	*	*	61	44	42	40	-21	-34%	
Hutt Valley	87	73	64	60	-27	-31%	16	12	10	24	8	50%	68	56	48	33	-35	-51%	
Nelson Marlborough	57	66	67	63	7	12%	*	*	*	*	*	*	52	59	65	59	7	13%	
Canterbury	285	278	266	259	-26	-9%	21	18	16	27	7	32%	261	254	247	224	-37	-14%	
South Canterbury	*	14	13	*	*	*	*	*	*	*	*	*	10	14	13	*	*	*	
Southern	184	142	199	124	-60	-33%	17	*	10	10	-7	-39%	166	133	186	108	-58	-35%	
Grand total	1,924	1,709	1,858	1,732	-192	-10%	306	248	289	312	7	2%	1,531	1,375	1,503	1,330	-201	-13%	

Southern District data is incomplete for 2022 due to code mapping issue. The District is actively working to resolve the issue and data will be updated in the next report.



# CT Lung Biopsy

	Total population						Māori						Non-Māori / Non-Pacific					
	Cumulative number for Jan- Sep				Difference between 2022 and 2018/19		Cumulative number for Jan- Sep				Difference between 2022 and 2018/19		Cumulative number for Jan- Sep				Difference between 2022 and 2018/19	
	2018/2019	2020	2021	2022	Number	% change	2018/2019	2020	2021	2022	Number	% change	2018/2019	2020	2021	2022	Number	% change
Northland	34	43	82	48	14	41%	12	12	35	19	8	65%	22	31	47	28	7	30%
Waitematā	21	27	24	26	6	27%	*	*	*	*	*	*	16	25	16	25	9	56%
Auckland	*	25	21	11	*	*	*	*	*	*	*	*	*	17	12	*	*	*
Counties Manukau	69	70	49	55	-14	-20%	14	12	13	11	-3	-19%	41	45	29	32	-9	-22%
Waikato	73	71	65	83	10	14%	16	14	17	18	2	13%	57	57	48	63	7	12%
Bay of Plenty	43	37	45	46	3	7%	13	11	11	18	6	44%	30	26	34	28	-2	-7%
Lakes	12	26	20	18	6	50%	*	*	*	*	*	*	*	16	13	*	*	*
Tairāwhiti	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Taranaki	27	28	32	19	-8	-30%	*	*	*	*	*	*	23	25	28	17	-6	-26%
Whanganui	12	14	14	10	-2	-17%	*	*	*	*	*	*	10	*	*	*	*	*
Hawkes Bay	38	28	27	27	-11	-28%	11	*	*	*	*	*	27	18	24	19	-8	-30%
MidCentral	54	53	36	46	-8	-15%	*	*	*	10	*	*	47	46	30	36	-11	-23%
Capital and Coast	25	22	22	24	-1	-2%	*	*	*	*	*	*	18	14	19	17	-1	-3%
Hutt Valley	23	21	20	32	9	39%	*	*	*	*	*	*	16	20	16	26	10	63%
Wairarapa	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Nelson Marlborough	30	25	46	26	-4	-13%	*	*	*	*	*	*	27	22	42	23	-4	-13%
Canterbury	156	155	174	126	-30	-19%	16	13	14	13	-3	-16%	139	141	156	110	-29	-21%
South Canterbury	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Southern	54	54	52	41	-13	-24%	*	*	*	*	*	*	49	49	52	37	-12	-24%
Grand total	691	711	735	652	-39	-6%	121	111	133	126	6	5%	541	571	581	500	-42	-8%

# Breast cancer surgery (mastectomy)

	Total population						Māori						Non-Māori / Non-Pacific					
	Cumulative number for Jan-Sep				Difference between 2022 and 2018/19		Cumulative number for Jan- Sep				Difference between 2022 and 2018/19		Cumulative number for Jan- Sep				Difference between 2022 and 2018/19	
	2018/2019	2020	2021	2022	Number	% change	2018/2019	2020	2021	2022	Number	% change	2018/2019	2020	2021	2022	Number	% change
Northland	56	61	73	72	16	29%	16	20	15	25	9	56%	40	39	56	47	7	18%
Waitematā	98	93	98	125	28	28%	13	*	*	*	*	*	80	77	86	110	30	38%
Auckland	90	65	89	91	1	1%	*	*	10	*	*	*	72	49	62	68	-4	-5%
Counties Manukau	185	197	187	185	0	0%	30	30	29	36	6	20%	119	126	121	108	-11	-9%
Waikato	86	78	80	68	-18	-20%	27	28	14	20	-7	-26%	57	49	65	45	-12	-21%
Bay of Plenty	71	76	82	60	-11	-15%	13	20	18	12	-1	-4%	58	56	63	48	-10	-17%
Lakes	35	47	41	30	-5	-14%	18	17	18	14	-4	-22%	17	29	23	15	-2	-12%
Tairāwhiti	16	8	20	10	-6	-35%	*	*	11	*	*	*	*	*	*	*	*	*
Taranaki	36	35	60	35	-1	-3%	*	10	*	*	*	*	30	25	50	28	-2	-5%
Whanganui	29	22	29	29	0	0%	*	*	*	*	*	*	24	18	20	24	1	2%
Hawkes Bay	64	57	60	36	-28	-43%	15	20	23	10	-5	-31%	47	36	36	25	-22	-47%
MidCentral	43	27	32	32	-11	-26%	*	*	*	*	*	*	35	21	24	26	-9	-26%
Capital and Coast	43	49	57	62	20	46%	*	*	*	*	*	*	34	41	46	48	14	41%
Hutt Valley	63	66	50	52	-11	-17%	*	*	*	*	*	*	51	61	40	44	-7	-13%
Wairarapa	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Nelson Marlborough	51	49	58	40	-11	-22%	*	*	*	*	*	*	47	44	56	37	-10	-21%
Canterbury	128	129	131	105	-23	-18%	11	10	*	*	*	*	114	112	122	94	-20	-17%
South Canterbury	21	18	31	21	1	2%	*	*	*	*	*	*	18	17	27	20	2	11%
Southern	86	100	79	70	-16	-18%	*	*	*	*	*	*	80	94	69	61	-19	-23%
Grand total	1,199	1,179	1,259	1,132	-67	-6%	197	198	202	189	-8	-4%	929	898	977	862	-67	-7%

# Colorectal cancer surgery

	Total population							Māori						Non-Māori / Non-Pacific					
	Cumulative number for Jan-Sep				Difference between 2022 and 2018/19			Cumulative number for Jan- Sep				Difference between 2022 and 2018/19		Cumulative number for Jan- Sep				Difference between 2022 and 2018/19	
	2018/2019	2020	2021	2022	Number	% change	2018/2019	2020	2021	2022	Number	% change	2018/2019	2020	2021	2022	Number	% change	
Northland	67	62	73	81	15	22%	12	16	16	13	1	8%	55	46	57	68	14	25%	
Waitematā	191	161	144	139	-52	-27%	12	10	*	*	*	*	170	148	130	130	-40	-23%	
Auckland	146	153	166	159	13	9%	*	18	13	14	*	*	122	127	134	122	0	0%	
Counties Manukau	101	107	94	80	-21	-20%	*	16	*	10	*	*	84	78	73	53	-31	-37%	
Waikato	165	205	199	150	-15	-9%	16	30	32	28	12	75%	146	174	164	120	-26	-18%	
Bay of Plenty	103	139	105	109	7	6%	11	22	18	16	5	45%	91	117	82	93	2	2%	
Lakes	57	60	58	62	5	9%	*	*	10	14	*	*	46	50	45	48	2	4%	
Tairāwhiti	20	20	25	22	3	13%	*	*	*	*	*	*	15	13	13	13	-2	-13%	
Taranaki	65	64	63	81	17	26%	*	*	*	*	*	*	59	55	57	74	15	25%	
Whanganui	37	41	35	35	-2	-4%	*	*	*	*	*	*	31	38	34	34	3	10%	
Hawkes Bay	106	110	96	83	-23	-21%	11	15	*	14	3	27%	94	92	86	68	-26	-28%	
MidCentral	89	97	102	91	3	3%	*	11	15	11	*	*	82	85	87	79	-3	-4%	
Capital and Coast	125	97	107	122	-3	-2%	11	12	17	13	2	18%	108	83	84	104	-4	-4%	
Hutt Valley	54	44	46	44	-10	-18%	*	*	*	*	*	*	47	40	42	40	-7	-15%	
Wairarapa	15	*	15	10	-5	-33%	*	*	*	*	*	*	14	*	13	*	*	-33%	
Nelson Marlborough	70	49	58	72	2	3%	*	*	*	*	*	*	67	46	57	70	4	5%	
West Coast	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Canterbury	232	226	270	250	18	8%	14	15	15	19	6	41%	215	208	252	228	13	6%	
South Canterbury	39	34	42	41	3	6%	*	*	*	*	*	*	38	32	42	40	3	7%	
Southern	196	175	184	143	-53	-27%	*	*	*	*	*	*	186	169	172	139	-47	-25%	
Grand total	1,875	1,855	1,886	1,779	-96	-5%	151	205	191	184	34	22%	1,670	1,612	1,628	1,537	-133	-8%	

# Lung cancer surgery

	Total population						Māori						Non-Māori / Non-Pacific					
	Cumulative number for Jan-Sep				Difference between 2022 and 2018/19		Cumulative number for Jan-Sep				Difference between 2022 and 2018/19		Cumulative number for Jan-Sep				Difference between 2022 and 2018/19	
	2018/2019	2020	2021	2022	Number	% change	2018/2019	2020	2021	2022	Number	% change	2018/2019	2020	2021	2022	Number	% change
Auckland	213	199	183	222	10	4%	38	35	27	32	-6	-15%	160	146	140	169	9	6%
Counties Manukau	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Waikato	101	115	112	98	-3	-2%	28	26	32	15	-13	-46%	71	88	78	82	11	15%
Bay of Plenty	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Capital and Coast	96	63	113	83	-13	-13%	20	8	22	18	-2	-8%	72	52	85	60	-12	-17%
Canterbury	64	90	71	71	7	11%	*	*	18	*	*	*	61	80	52	59	-2	-2%
Southern	32	24	28	37	6	17%	*	*	*	*	*	*	30	21	27	34	5	15%
Grand total	506	493	508	511	6	1%	91	81	100	76	-15	-16%	394	388	383	404	10	3%

# Prostate cancer surgery

	Total population							Māori						Non-Māori / Non-Pacific					
	Cumulative number for Jan-Sep				Difference between 2022 and 2018/19			Cumulative number for Jan-Sep				Difference between 2022 and 2018/19		Cumulative number for Jan-Sep				Difference between 2022 and 2018/19	
	2018/2019	2020	2021	2022	Number	% change	2018/2019	2020	2021	2022	Number	% change	2018/2019	2020	2021	2022	Number	% change	
Northland	42	25	45	30	-12	-28%	*	*	*	*	*	*	35	19	37	27	-8	-22%	
Waitematā	57	81	74	77	21	36%	*	*	*	*	*	*	52	75	62	70	19	36%	
Auckland	71	94	71	81	10	14%	*	*	*	*	*	*	59	81	49	63	4	7%	
Counties Manukau	*	*	11	10	10	*	*	*	*	*	*	*	*	*	*	*	*	*	
Waikato	49	44	39	31	-18	-37%	*	*	10	*	*	*	46	40	29	25	-21	-46%	
Bay of Plenty	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Lakes	37	41	34	42	5	14%	*	11	*	*	*	*	32	30	25	37	5	16%	
Tairāwhiti	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Taranaki	18	26	36	28	11	60%	*	*	*	*	*	*	16	22	33	25	10	61%	
Whanganui	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Hawkes Bay	13	19	27	30	18	140%	*	*	*	*	*	*	12	14	24	27	15	125%	
MidCentral	59	62	45	45	-14	-23%	*	*	*	*	*	*	54	59	39	36	-18	-33%	
Capital and Coast	50	53	72	57	8	15%	*	*	*	*	*	*	43	49	65	53	10	23%	
Wairarapa	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Nelson Marlborough	32	32	32	23	-9	-28%	*	*	*	*	*	*	32	32	29	22	-10	-30%	
West Coast	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Canterbury	50	59	56	63	14	27%	*	*	*	*	*	*	49	55	51	59	11	22%	
South Canterbury	11	12	*	*	*	*	*	*	*	*	*	*	11	12	*	*	*	*	
Southern	60	69	81	64	4	7%	*	*	*	*	*	*	56	64	74	58	3	5%	
Grand total	568	639	664	605	37	7%	41	57	74	54	14	33%	513	571	560	531	18	4%	

# Medical oncology first specialist assessments

	Total population						Māori						Non-Māori / Non-Pacific					
	Cumulative number for Jan- Sep				Difference between 2022 and 2018/19		Cumulative number for Jan-Sep				Difference between 2022 and 2018/19		Cumulative number for Jan- Sep				Difference between 2022 and 2018/19	
	2018/2019	2020	2021	2022	Number	% change	2018/2019	2020	2021	2022	Number	% change	2018/2019	2020	2021	2022	Number	% change
Northland	347	322	395	407	61	17%	95	89	114	132	38	40%	249	229	276	271	22	9%
Auckland	1,762	1,835	1,920	1,919	158	9%	203	210	222	222	19	9%	1,333	1,355	1,433	1,432	99	7%
Waikato	609	652	612	656	48	8%	130	140	143	144	15	11%	468	505	459	496	29	6%
Bay of Plenty	362	396	449	391	30	8%	71	71	88	76	5	7%	288	322	355	310	22	8%
Lakes	127	157	183	156	29	23%	44	45	64	50	7	15%	82	110	116	105	24	29%
Tairāwhiti	85	107	107	78	-7	-8%	36	47	49	28	-8	-22%	48	60	58	47	-1	-2%
Taranaki	183	175	189	213	31	17%	21	19	31	22	2	7%	161	155	155	186	25	16%
MidCentral	821	835	908	807	-14	-2%	127	136	175	143	16	13%	679	688	719	643	-36	-5%
Capital and Coast	664	660	701	673	10	1%	79	80	88	72	-7	-9%	549	533	563	562	14	2%
Wairarapa DHB	*	*	10	36	*	*	*	*	*	*	*	*	*	*	*	30	*	*
Nelson Marlborough	318	342	340	330	13	4%	24	17	15	26	3	11%	293	323	323	300	7	2%
West Coast	22	11	24	39	18	81%	*	*	*	*	*	*	20	11	21	38	19	95%
Canterbury	978	872	948	960	-18	-2%	67	55	70	65	-2	-3%	899	801	871	878	-21	-2%
South Canterbury	*	45	98	107	103	*	*	*	*	*	*	*	*	43	94	104	*	*
Southern	509	491	438	479	-30	-6%	27	24	27	43	16	59%	478	461	404	427	-51	-11%
Grand total	6,787	6,900	7,322	7,251	465	7%	923	935	1,094	1,033	110	12%	5,549	5,596	5,856	5,829	281	5%

# Medical oncology IV chemotherapy

	Total population						Māori						Non-Māori / Non-Pacific					
	Cumulative number for Jan-Sep				Difference between 2022 and 2018/19		Cumulative number for Jan-Sep				Difference between 2022 and 2018/19		Cumulative number for Jan-Sep				Difference between 2022 and 2018/19	
	2018/2019	2020	2021	2022	Number	% change	2018/2019	2020	2021	2022	Number	% change	2018/2019	2020	2021	2022	Number	% change
Northland	2,285	2,413	2,585	2,594	310	14%	518	746	827	898	381	74%	1,742	1,645	1,716	1,680	-62	-4%
Waitematā	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Auckland	14,016	16,818	17,554	17,760	3,745	27%	1,350	1,910	1,890	1,956	606	45%	11,030	12,955	13,279	13,244	2,214	20%
Waikato	5,576	4,931	6,057	5,418	-158	-3%	914	788	1,053	1,048	135	15%	4,598	4,051	4,920	4,284	-314	-7%
Bay of Plenty	3,832	4,234	3,971	4,130	299	8%	651	863	893	848	198	30%	3,141	3,346	3,044	3,262	122	4%
Lakes	2,259	2,365	2,412	2,391	132	6%	635	685	796	710	76	12%	1,583	1,655	1,552	1,639	56	4%
Tairāwhiti	504	618	1,021	463	-41	-8%	224	252	469	177	-47	-21%	279	365	535	278	-1	0%
Taranaki	1,283	1,544	1,612	1,554	272	21%	130	153	287	257	127	98%	1,141	1,372	1,323	1,265	124	11%
Whanganui	84	69	74	138	55	65%	13	*	*	*	*	*	71	60	67	129	59	83%
Hawkes Bay	29	62	38	17	-12	-41%	*	52	23	*	*	*	22	10	12	16	-6	-26%
MidCentral	5,410	5,914	7,015	5,929	520	10%	909	1,017	1,479	1,144	235	26%	4,365	4,829	5,434	4,646	281	6%
Capital and Coast	4,988	4,679	4,614	4,655	-333	-7%	520	521	524	563	44	8%	4,236	3,879	3,706	3,835	-401	-9%
Hutt Valley	88	85	118	86	-2	-2%	*	*	11	*	*	*	75	73	102	74	-1	-1%
Wairarapa	20	54	39	41	21	105%	*	16	*	*	*	*	18	33	31	35	17	94%
Nelson Marlborough	2,217	2,282	2,120	2,493	277	12%	172	92	107	223	52	30%	2,012	2,169	2,013	2,256	244	12%
West Coast	22	28	15	32	10	45%	*	*	*	*	*	*	21	23	15	30	9	43%
Canterbury	4,826	4,764	4,792	5,361	535	11%	308	318	296	335	28	9%	4,394	4,297	4,429	4,909	516	12%
South Canterbury	792	820	876	894	102	13%	*	21	26	63	*	*	780	799	850	831	51	7%
Southern	5,330	5,263	4,511	3,635	-1,695	-32%	285	282	166	246	-39	-14%	5,006	4,906	4,277	3,326	-1,680	-34%
Grand total	53,558	56,943	59,426	57,592	4,034	8%	6,649	7,736	8,857	8,490	1,842	28%	44,513	46,467	47,306	45,740	1,227	3%

# Radiation oncology first specialist assessments

	Total population						Māori					Non-Māori / Non-Pacific						
	Cumulative number for Jan-Sep				Difference between 2022 and 2018/19		Cumulative number for Jan-Sep				Difference between 2022 and 2018/19		Cumulative number for Jan-Sep				Difference between 2022 and 2018/19	
	2018/2019	2020	2021	2022	Number	% change	2018/2019	2020	2021	2022	Number	% change	2018/2019	2020	2021	2022	Number	% change
Northland	271	217	310	264	-7	-3%	72	72	96	82	11	15%	196	144	211	181	-15	-7%
Auckland	2,395	2,504	2,536	2,463	68	3%	291	298	312	285	-6	-2%	1,810	1,938	1,905	1,844	35	2%
Waikato	1,020	1,119	1,169	1,199	179	18%	176	241	231	245	70	40%	825	866	920	930	106	13%
Bay of Plenty	707	717	844	728	22	3%	104	108	149	122	18	17%	596	604	689	595	-1	0%
Lakes	21	13	15	10	-11	-51%	*	*	*	*	*	*	14	10	*	*	*	*
Tairāwhiti	55	34	45	77	23	41%	21	18	13	33	12	57%	33	16	32	42	10	29%
MidCentral	1,292	1,339	1,400	1,238	-54	-4%	165	174	202	175	10	6%	1,113	1,149	1,181	1,040	-73	-7%
Capital and Coast	1,065	1,021	1,147	1,123	58	5%	99	96	121	94	-5	-5%	922	873	966	961	40	4%
Wairarapa	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Nelson Marlborough	118	130	176	139	22	18%	*	*	*	11	*	*	110	121	166	128	18	16%
West Coast	*	*	10	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Canterbury	1,224	1,371	1,376	1,339	115	9%	74	59	75	72	-2	-2%	1,137	1,295	1,286	1,248	112	10%
Southern	796	777	776	887	92	12%	40	55	47	65	25	63%	745	708	720	806	62	8%
Grand total	8,970	9,247	9,810	9,476	506	6%	1,054	1,132	1,263	1,188	134	13%	7,505	7,729	8,099	7,790	286	4%



# Radiation oncology megavoltage fractions

	Total population							Māori						Non-Māori / Non-Pacific					
	Cumulative number for Jan-Sep				Difference between 2022 and 2018/19			Cumulative number for Jan-Sep				Difference between 2022 and 2018/19		Cumulative number for Jan-Sep				Difference between 2022 and 2018/19	
	2018/2019	2020	2021	2022	Number	% change	2018/2019	2020	2021	2022	Number	% change	2018/2019	2020	2021	2022	Number	% change	
Auckland	33,724	31,056	31,305	28,973	-4,751	-14%	4,631	4,118	5,036	4,080	-551	-12%	25,667	23,764	22,543	21,739	-3,928	-15%	
Waikato	16,363	14,567	13,974	14,777	-1,586	-10%	3,012	3,265	3,017	3,184	172	6%	13,034	11,108	10,718	11,276	-1,758	-13%	
Bay of Plenty	12,504	12,541	13,340	12,330	-174	-1%	2,160	2,077	2,374	1,930	-230	-11%	10,220	10,285	10,834	10,323	104	1%	
MidCentral	16,931	16,818	18,321	17,406	476	3%	2,421	2,265	2,915	2,748	328	14%	14,389	14,237	15,243	14,362	-27	0%	
Capital and Coast	15,006	14,547	15,493	14,148	-858	-6%	1,763	1,653	1,835	1,609	-154	-9%	12,517	11,989	12,846	11,630	-887	-7%	
Canterbury	19,789	18,442	18,826	17,705	-2,084	-11%	1,340	1,057	930	1,117	-223	-17%	18,115	17,190	17,644	16,400	-1,715	-9%	
Southern	11,110	9,426	9,715	8,150	-2,960	-27%	581	422	510	663	83	14%	10,384	8,858	9,154	7,357	-3,027	-29%	
Grand total	125,425	117,397	120,974	113,489	-11,936	-10%	15,906	14,857	16,617	15,331	-575	-4%	104,324	97,431	98,982	93,087	-11,237	-11%	

# Radiation therapy completed courses

	Total population						Māori						Non-Māori / Non-Pacific					
	Cumulative number for Jan-Sep				Difference between 2022 and 2018/19		Cumulative number for Jan-Sep				Difference between 2022 and 2018/19		Cumulative number for Jan-Sep				Difference between 2022 and 2018/19	
	2018/2019	2020	2021	2022	Number	% change	2018/2019	2020	2021	2022	Number	% change	2018/2019	2020	2021	2022	Number	% change
Auckland	2,341	2,309	2,458	2,204	-137	-6%	315	305	400	344	29	9%	1,763	1,738	1,779	1,636	-127	-7%
Canterbury	1,517	1,521	1,436	1,357	-160	-11%	107	86	92	83	-24	-22%	1,392	1,419	1,327	1,261	-131	-9%
Southern	894	923	899	885	-9	-1%	59	54	45	75	16	27%	824	860	848	792	-32	-4%
Bay of Plenty	755	756	796	606	-149	-20%	121	118	146	94	-27	-22%	629	635	645	506	-123	-19%
MidCentral	1,086	1,190	1,243	1,208	122	11%	166	152	194	214	49	29%	910	1,019	1,037	974	64	7%
Waikato	1,153	1,221	1,199	1,222	69	6%	225	285	255	267	42	19%	909	913	924	930	21	2%
Capital and Coast	1,378	1,236	1,396	1,322	-56	-4%	137	123	149	142	6	4%	1,175	1,038	1,181	1,098	-77	-7%
Grand total	9,122	9,156	9,427	8,804	-318	-3%	1,128	1,123	1,281	1,219	91	8%	7,600	7,622	7,741	7,197	-403	-5%

# Haematology first specialist assessment

	Total population						Māori						Non-Māori / Non-Pacific					
	Cumulative number for Jan-Sep				Difference between 2022 and 2018/19		Cumulative number for Jan-Sep				Difference between 2022 and 2018/19		Cumulative number for Jan-Sep				Difference between 2022 and 2018/19	
	2018/2019	2020	2021	2022	Number	% change	2018/2019	2020	2021	2022	Number	% change	2018/2019	2020	2021	2022	Number	% change
Northland	165	201	151	159	-6	-3%	33	54	39	52	20	60%	130	144	111	106	-24	-18%
Waitematā	517	537	507	543	27	5%	28	35	38	27	-1	-4%	467	476	440	481	14	3%
Auckland	738	585	805	682	-56	-8%	58	47	77	60	3	4%	609	464	658	556	-53	-9%
Counties Manukau	568	572	553	617	50	9%	63	74	65	66	3	5%	421	410	398	424	4	1%
Waikato	532	548	533	461	-71	-13%	92	91	92	77	-15	-16%	432	449	429	377	-55	-13%
Bay of Plenty	291	252	291	316	25	9%	50	37	40	59	9	18%	237	212	247	253	17	7%
Lakes	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Tairāwhiti	31	34	41	36	6	18%	10	11	15	18	9		21	23	24	17	-4	-17%
Taranaki	121	131	148	147	27	22%	12	18	16	17	5	42%	108	112	132	129	21	19%
MidCentral	584	591	636	560	-24	-4%	71	81	108	74	3	4%	506	496	521	477	-29	-6%
Capital and Coast	583	489	485	413	-170	-29%	43	56	49	47	5	11%	517	405	396	346	-171	-33%
Nelson Marlborough	132	87	101	102	-30	-23%	*	*	*	*	*	*	127	83	96	94	-33	-26%
West Coast	13	*	*	*	*	*	*	*	*	*	*	*	12	*	*	*	*	*
Canterbury	369	400	448	396	28	7%	19	22	28	17	-2	-8%	339	375	414	378	40	12%
Southern	221	239	292	308	87	39%	15	15	24	18	4	24%	203	222	264	281	78	38%
Grand total	4,862	4,670	4,997	4,747	-115	-2%	496	545	597	538	42	8%	4,126	3,875	4,135	3,926	-200	-5%

# Haematology IV chemotherapy

	Total population							Māori						Non-Māori / Non-Pacific					
	Cumulative number for Jan-Sep				Difference between 2022 and 2018/19			Cumulative number for Jan-Sep				Difference between 2022 and 2018/19		Cumulative number for Jan-Sep				Difference between 2022 and 2018/19	
	2018/2019	2020	2021	2022	Number	% change	2018/2019	2020	2021	2022	Number	% change	2018/2019	2020	2021	2022	Number	% change	
Northland	1,315	1,082	1,163	934	-381	-29%	301	223	277	228	-73	-24%	989	814	863	706	-283	-29%	
Waitematā	3,048	2,857	2,901	2,815	-233	-8%	83	125	110	146	63	76%	2,803	2,553	2,670	2,558	-245	-9%	
Auckland	2,748	2,571	3,176	2,486	-262	-10%	177	105	217	216	39	22%	2,287	2,190	2,584	1,944	-343	-15%	
Counties Manukau	1,401	1,883	2,432	1,965	564	40%	173	186	248	211	38	22%	948	1,402	1,772	1,423	475	50%	
Waikato	1,508	1,741	1,887	1,755	248	16%	260	328	334	228	-32	-12%	1,240	1,413	1,493	1,476	236	19%	
Bay of Plenty	996	942	1,269	1,302	306	31%	94	144	159	111	17	18%	882	788	1,077	1,185	303	34%	
Lake	525	530	549	489	-36	-7%	132	139	120	109	-23	-17%	393	391	396	355	-38	-10%	
Tairāwhiti	134	81	135	88	-46	-34%	16	15	22	25	10	61%	110	66	113	52	-58	-53%	
MidCentral	2,053	1,837	1,772	1,836	-217	-11%	251	140	145	274	23	9%	1,789	1,678	1,607	1,549	-240	-13%	
Capital and Coast	2,454	2,518	2,116	1,646	-808	-33%	201	301	116	282	81	40%	2,164	1,966	1,797	1,282	-882	-41%	
Nelson Marlborough	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
West Coast	10	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Canterbury	1,786	2,058	2,076	2,265	479	27%	153	206	69	58	-95	-62%	1,619	1,810	2,004	2,206	588	36%	
Southern	171	376	1,825	1,552	1,381	808%	*	32	108	107	104	*	168	342	1,703	1,440	1273	760%	
Grand total	18,148	18,494	21,311	19,134	986	5%	1,844	1,944	1,925	1,995	151	8%	15,399	15,431	18,089	16,177	778	5%	

\* Note the relatively low volumes in Southern DHB in prior years are due to variation in coding.

# APPENDIX 5: SURGICAL PROCEDURE CODES

Below is a list of the surgical procedure codes that were used for analysis on cancer surgery.

COLORECTAL CANCER SURGERY		
Clinical code	Block short description	Clinical code description
3200000	Colectomy	Limited excision of large intestine with formation of stoma
3200001	Colectomy	Right hemicolectomy with formation of stoma
3200300	Colectomy	Limited excision of large intestine with anastomosis
3200301	Colectomy	Right hemicolectomy with anastomosis
3200400	Colectomy	Subtotal colectomy with formation of stoma
3200401	Colectomy	Extended right hemicolectomy with formation of stoma
3200500	Colectomy	Subtotal colectomy with anastomosis
3200501	Colectomy	Extended right hemicolectomy with anastomosis
3200600	Colectomy	Left hemicolectomy with anastomosis
3200601	Colectomy	Left hemicolectomy with formation of stoma
3200900	Colectomy	Total colectomy with ileostomy
3201200	Colectomy	Total colectomy with ileorectal anastomosis
3201500	Total proctocolectomy	Total proctocolectomy with ileostomy
3202400	Anterior resection of rectum	High anterior resection of rectum
3202500	Anterior resection of rectum	Low anterior resection of rectum
3202600	Anterior resection of rectum	Ultra low anterior resection of rectum
3202800	Anterior resection of rectum	Ultra low anterior resection of rectum with hand sutured coloanal anastomosis
3203000	Rectosigmoidectomy or proctectomy	Rectosigmoidectomy with formation of stoma
3203900	Rectosigmoidectomy or proctectomy	Abdominoperineal proctectomy
3205100	Total proctocolectomy	Total proctocolectomy with ileo-anal anastomosis
3205101	Total proctocolectomy	Total proctocolectomy with ileo-anal anastomosis and formation of temporary ileostomy
3206000	Rectosigmoidectomy or proctectomy	Restorative proctectomy
3209900	Excision of lesion or tissue of rectum or anus	Per anal submucosal excision of lesion or tissue of rectum
3211200	Rectosigmoidectomy or proctectomy	Perineal rectosigmoidectomy
9220800	Anterior resection of rectum	Anterior resection of rectum, level unspecified

### LUNG CANCER SURGERY

Clinical code	Clinical code description	Block Description
3844000	Wedge resection of lung	Partial resection of lung
3844001	Radical wedge resection of lung	Partial resection of lung
3843800	Segmental resection of lung	Partial resection of lung
9016900	Endoscopic wedge resection of lung	Partial resection of lung
3843801	Lobectomy of lung	Lobectomy of lung
3844100	Radical lobectomy	Lobectomy of lung
3844101	Radical pneumonectomy	Pneumonectomy
3843802	Pneumonectomy	Pneumonectomy

### PROSTATE CANCER SURGERY

Clinical code	Block short description	Clinical code description
3720004	Open prostatectomy	Retropubic prostatectomy
3720900	Open prostatectomy	Radical prostatectomy
3720901	Other closed prostatectomy	Laparoscopic radical prostatectomy
3721000	Open prostatectomy	Radical prostatectomy with bladder neck reconstruction
3721001	Other closed prostatectomy	Laparoscopic radical prostatectomy with bladder neck reconstruction
3721100	Open prostatectomy	Radical prostatectomy with bladder neck reconstruction and pelvic lymphadenectomy
3721101	Other closed prostatectomy	Laparoscopic radical prostatectomy with bladder neck reconstruction and pelvic lymphadenectomy
3720900	Open prostatectomy	Radical prostatectomy
3720901	Closed prostatectomy	Laparoscopic radical prostatectomy
3721000	Open prostatectomy	Radical prostatectomy with bladder neck reconstruction
3721001	Closed prostatectomy	Laparoscopic radical prostatectomy with bladder neck reconstruction
3721100	Open prostatectomy	Radical prostatectomy with bladder neck reconstruction and pelvic lymphadenectomy

### BREAST CANCER SURGERY

Clinical code	Block short description	Clinical code description
3152400	Subcutaneous mastectomy	Subcutaneous mastectomy, unilateral
3152401	Subcutaneous mastectomy	Subcutaneous mastectomy, bilateral
3151800	Simple mastectomy	Simple mastectomy, unilateral
3151801	Simple mastectomy	Simple mastectomy, bilateral