

QUALITY IMPROVEMENT MONITORING REPORT

**Route to diagnosis:
People diagnosed with cancer
within 30-days of an emergency
or acute (unplanned) hospital
admission**

March 2024

Acknowledgements

This report publishes quality performance indicator (QPI) data from the New Zealand Cancer Registry (NZCR) and other Health New Zealand | Te Whatu Ora national data collections for patients diagnosed with cancer in Aotearoa New Zealand from 1 January 2017 to 31 December 2021.

The development group acknowledges that each data point reflects an individual or cluster of patients and that each diagnosis of cancer will have significantly affected the patient and their whānau.

For noting

At the time of publishing this report, district health boards had been disestablished as part of the 1 July 2022 health and disability sector reforms. For this report, even though the data is from a period when district health boards were in existence (1 January 2017 to 31 December 2021), we use the new term 'district(s)' to refer to district health boards throughout the report.

Authors

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EXECUTIVE SUMMARY

A high rate of cancer patients diagnosed in emergency departments suggests we need to get better at earlier diagnosis in the community

A key goal of the *National Cancer Action Plan 2019–2029* (Ministry of Health 2019) is to improve cancer survival rates across Aotearoa New Zealand. Achieving this goal requires people to be diagnosed and treated as early as possible. However, compared to other countries, people in Aotearoa New Zealand experience a high rate of being first diagnosed with cancer after an emergency or acute (unplanned) hospital admission, which is likely to be after the cancer has been progressing for some time.

People who are diagnosed with cancer after an emergency admission to a hospital will experience poorer survival or health outcomes compared to those who are diagnosed through more appropriate pathways (ie, primary care and community-based diagnostic services). Patients being diagnosed through hospital emergency admissions often present with severe symptoms indicating advanced stage of disease and resulting in poorer outcomes. These outcomes include poorer survival, poorer quality of life and worse patient experience, and these patients are less likely to be offered curative treatment (McPhail et al 2022; Pham et al 2019; Zhou et al 2017).

The definition of a 'cancer diagnosis following emergency or acute (unplanned) hospital admission' is a cancer diagnosis that occurs within 30 days of an emergency or acute admission (ie, unplanned admission) to hospital, regardless of whether the reason for the visit is related to the cancer that is subsequently diagnosed. For this summary and the associated full report, we refer to this as an 'emergency admission'.

The data used to calculate this indicator is robust and, importantly, the method is consistent with that used by the International Cancer Benchmarking Partnership (ICBP) study published in *The Lancet Oncology* in 2022 (McPhail et al 2022). The ICBP analysed cancer registration and linked hospital admissions data from 14 jurisdictions in six countries (Australia, Canada, Denmark, Aotearoa New Zealand, Norway and the United Kingdom) for eight cancers (oesophageal, stomach, colon, rectal, liver, pancreatic, lung and ovarian). The ICBP report identified that Aotearoa New Zealand had the highest rates of emergency presentation prior to diagnosis for all of these cancers except liver cancer, for which we had the third highest rate.¹

Aotearoa New Zealand's results in this study, in addition to our understanding of poorer outcomes and inequity related to this indicator, gives additional weight to the importance of measuring and reporting on this indicator at a more granular level,

¹ The full document and other information about the ICBP can be found here: www.cancerresearchuk.org/health-professional/data-and-statistics/international-cancer-benchmarking-partnership-icbp.



including by district and ethnicity, to inform next steps in improving our performance against this measure relative to comparable countries.

We recognise that, because of the nature of some cancers, an emergency or unplanned admission is not always an indication of a failure in the system. We are also aware that there are rare instances when a cancer diagnosis 30 days after admission is a complete coincidence and not related to the reason for the admission. However, this limitation does not diminish the importance of this measure overall. The high rates of cancer diagnosis following emergency admission in Aotearoa New Zealand compared to other countries and the variation between geographical regions and inequities between population groups combine to tell us that we need to do better.

Key findings

The likelihood of diagnosis following emergency admission varies according to cancer type. As can be expected, rates are highest for cancers that typically have sudden onset of severe symptoms requiring urgent treatment (such as some brain and central nervous system cancers), and cancers that are initially 'quiet' or have non-specific symptoms (such as pancreatic and ovarian cancers) that can then require urgent review.

The main part of the report provides results by 22 cancer types, including by demographic criteria and between districts. There was variation in the findings for each cancer type, with some having broad variation between districts and others less so.

A key trend was found for Māori compared with people of European/other ethnicity. We found that Māori were more likely to be diagnosed following an emergency admission than people of European/other ethnicity in almost all districts.

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1 INTRODUCTION

1.1 About Te Aho o Te Kahu

Te Aho o Te Kahu | the Cancer Control Agency (‘the agency’) is a standalone departmental government agency. It was created in December 2019 in recognition of increasing cancer incidence, increasing complexities of treatment, and the impact cancer has on the lives of New Zealanders.

Evidence shows persistent inequity and unwarranted variation throughout the cancer care journey in Aotearoa New Zealand. Also, the number of people diagnosed with cancer is expected to double in the next two decades, New Zealanders have poorer cancer survival rates than Australians, and Māori and Pacific peoples have worse cancer survival rates than other New Zealanders (Te Aho o Te Kahu 2021a).

The agency’s purpose and functions were defined in a 2020 Cabinet paper, which states:

The agency will develop initiatives to monitor and improve cancer system performance and practice improvements. Robust monitoring and evaluation will support stronger governance and drive the actions forward.

The agency’s focus is on leading and uniting efforts to deliver better cancer outcomes for Aotearoa New Zealand. In this it is guided by the goals and outcomes in the *National Cancer Action Plan 2019–2029* (Ministry of Health 2019).

Te Aho o Te Kahu has the following vision:

Kia whakaiti iho te mate pukupuku <i>Fewer cancers</i>	Kia runga noa ake te mataora <i>Better survival</i>	Kia taurite ngā huanga <i>Equity for all</i>
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And the following values:

He Mana Taurite <i>Equity-led</i>	Mana Tāngata <i>Whānau-centred</i>	Whai Māramatanga <i>Knowledge-driven</i>	Kia Angitū <i>Outcomes-focused</i>
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In the years since its creation, Te Aho o Te Kahu has learned about where gains can be made to improve cancer diagnosis, treatment and outcomes and has refined its role and functions. The cancer quality performance indicator (QPI) programme has been an important part of this.



1.2 The cancer quality performance indicator programme

The cancer QPI programme uses national data from the New Zealand Cancer Registry (NZCR) and other Health New Zealand | Te Whatu Ora collections and registries, such as Te Rēhita Mate Ūtaetae | the Breast Cancer Foundation National Register, to develop reports and provide information to support activities aimed at the improvement of cancer services and the achievement of equitable outcomes for people diagnosed with cancer.

To date, Te Aho o Te Kahu has reported on cancer-specific QPIs for bowel, lung, prostate and pancreas cancers and is currently working to calculate and report on QPIs for breast cancer. These reports and information about the cancer QPI programme are available on the agency's website at teaho.govt.nz/reports/qpi.

This report forms a key part of ensuring that information regarding the current state of cancer care in Aotearoa New Zealand is available and able to be used to support quality improvement (QI) prioritisation discussions at national, regional and local levels. It provides data for one indicator for 22 different cancer types.

1.3 Context

With the advent of the 1 July 2022 health and disability sector reforms, the patient safety and health care QI landscape has changed. There are now new agencies with the mandate to work alongside existing agencies to ensure that cancer patients and whānau are receiving diagnosis, treatment and outcomes that are high-quality, timely, equitable and safe.

The agencies with significant roles to play in this space include (but are not limited to):

- Te Aho o Te Kahu | the Cancer Control Agency
- Health New Zealand | Te Whatu Ora
- Māori Health Authority | Te Akai Whai Ora. As the Authority was disestablished on 27 February, 2024 we will engage with the teams who will be transferred to Health New Zealand and the Ministry of Health by the end of March 2024.
- Ministry of Health | Manatū Hauora
- Health Quality & Safety Commission | Te Tāhū Hauora.

Te Aho o Te Kahu intends that the reports from the cancer QPI programme be used by those involved in the care of cancer patients – especially cancer clinicians, cancer service management, those responsible for commissioning health care services, and those responsible for the quality and safety of those services – to identify their district or region's results, consider how they compare with other districts or regions and, where this comparison is less than favourable, take improvement action.



It is also intended that the organisations listed above make use of the cancer QPI programme reports to inform their national, regional and local cancer service QI priorities.

1.4 Patient voice

An important rationale for this indicator is patient experience. People's stories play a central role in QI by providing actionable information about patient experiences in the health system (Grob et al 2019; Tsianakas et al 2012).

In 2021, the agency met with more than 2,500 whānau affected by cancer across the motu to hear their stories. Their stories are captured in the hui report *Rongohia Te Reo, Whatua He Oranga: The voices of whānau Māori affected by cancer* (Te Aho o Te Kahu 2023a). This makes for compelling reading and provides insight into some of the barriers faced by whānau accessing health care and throughout their cancer experience.

Although we do not know if any of these whānau were diagnosed following an emergency admission, they do provide vivid examples of the lived reality for whānau that may contribute to delayed diagnosis in the current health system. When those involved in health care QI are asking how they can make improvements to the system, the whānau voice provides concrete information about improvements that would be meaningful for patients and whānau.

1.5 Next steps for Te Aho o Te Kahu

Releasing this report in draft is 'step 1' in a series of steps the agency intends to take to ensure that the information is acted on to reduce inequities and improve cancer care and patient outcomes.

The steps are:

- Step 1** Share this report with key stakeholders at all levels of the cancer control system and ask for information about planned next steps based on the information contained in the report – ie, what local, regional or national QI activity will be undertaken as a result of the information in this report (plus other local data and contextual information)?
- Step 2** Work with key stakeholders at all levels of the cancer control system to better understand the results, implications and next steps – ie, undertake additional drill down at a local level to understand local issues and potential solutions.
- Step 3** Work with key stakeholders at all levels of the cancer control system to support the identification, prioritisation and resourcing of associated QI activity so that local, regional and national plans are understood, and duplication of effort or resource is avoided.



Step 4 Undertake QI activity, share and learn from successes and failures – undertake continuous QI (CQI) over coming years.

We will work with Health New Zealand | Te Whatu Ora, primary and community care organisations (eg, GPs, pharmacists) and other key agencies to use the findings in the report to improve cancer detection and diagnosis services and outcomes for cancer patients and their whānau.



2 WHY DOES THIS MATTER?

There are a number of factors that make this indicator relevant and important – most notably, Aotearoa New Zealand’s performance compared with other countries and clear evidence of poorer experience and outcomes for those who have emergency admissions.

A fully optimised and well supported primary care, community diagnostics and specialist referral system (supported by effective screening programmes) should lead to more cancer patients being diagnosed earlier, which in turn should lead to improved outcomes. A lack thereof will result in a disproportionate percentage of patients being diagnosed through hospital emergency admissions, often when presenting with severe symptoms indicating advanced stage of disease, and resulting in poorer outcome, as seen in Figure 3 below.

The other important consideration is the extent to which vulnerable or under-served populations (such as Māori, Pacific peoples, and/or people living in rural and remote communities) are more likely to be diagnosed after emergency admission. Data on this will be used to inform discussions with Health New Zealand, community and primary health care providers (eg, GPs, pharmacists) and other key agencies on ways to improve cancer detection and diagnosis processes and reduce cancer diagnoses via emergency admission across the country.

2.1 New Zealand compares poorly to peer countries

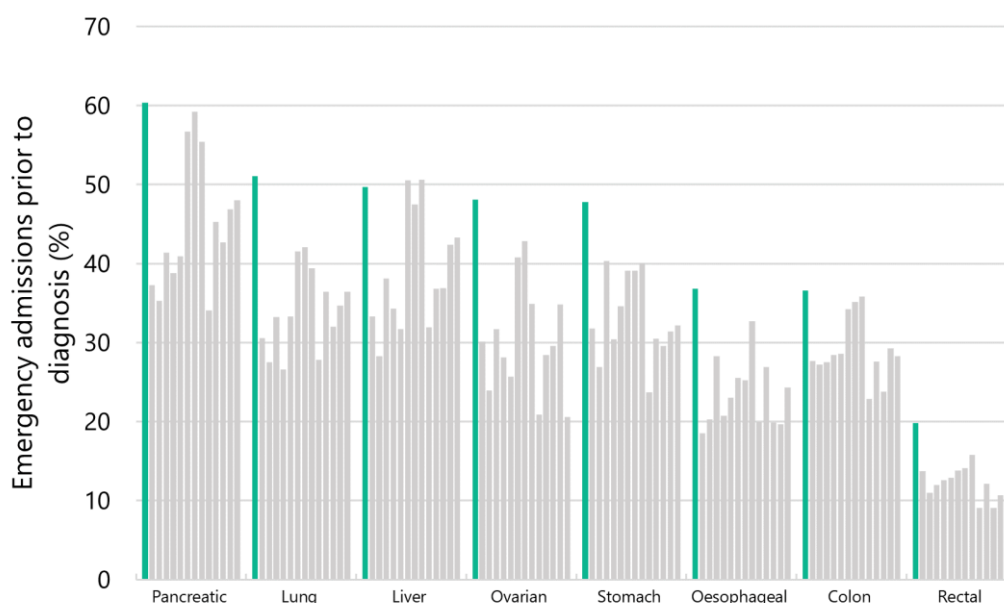
In 2022, an International Cancer Benchmarking Partnership (ICBP) study analysed cancer registrations and linked hospital admissions data from 14 jurisdictions in six countries: Australia, Canada, Denmark, Aotearoa New Zealand, Norway and the United Kingdom. This focused on eight cancers: oesophageal, stomach, colon, rectal, liver, pancreatic, lung and ovarian. The findings were published in *The Lancet Oncology* in 2022 (McPhail et al 2022).

The ICBP report identified that Aotearoa New Zealand had the highest rates of emergency presentation prior to diagnosis for all of these cancers except liver cancer, for which we had the third highest rate (Figure 1).

Being included in the ICBP study presents both an opportunity and a challenge. The opportunity is to identify the best practices in the highest performing countries that can be adapted and implemented in New Zealand. The challenge is to change the system in Aotearoa to address this poor performance.



Figure 1: International Cancer Benchmarking Programme cancer diagnosis following emergency admission: Aotearoa compared with 13 other international jurisdictions for eight cancer types. The green bars indicate Aotearoa proportions; the grey bars indicate the other jurisdictions.



Aotearoa New Zealand’s results in this study, in addition to our understanding of poorer outcomes and inequity related to this indicator, give additional weight to the importance of measuring this indicator at a more granular level – for example, by district and ethnicity – to inform next steps in improving our performance against this measure relative to comparable countries.

2.2 Brain, pancreatic and lung cancers are among the cancers with the highest rate of emergency diagnosis

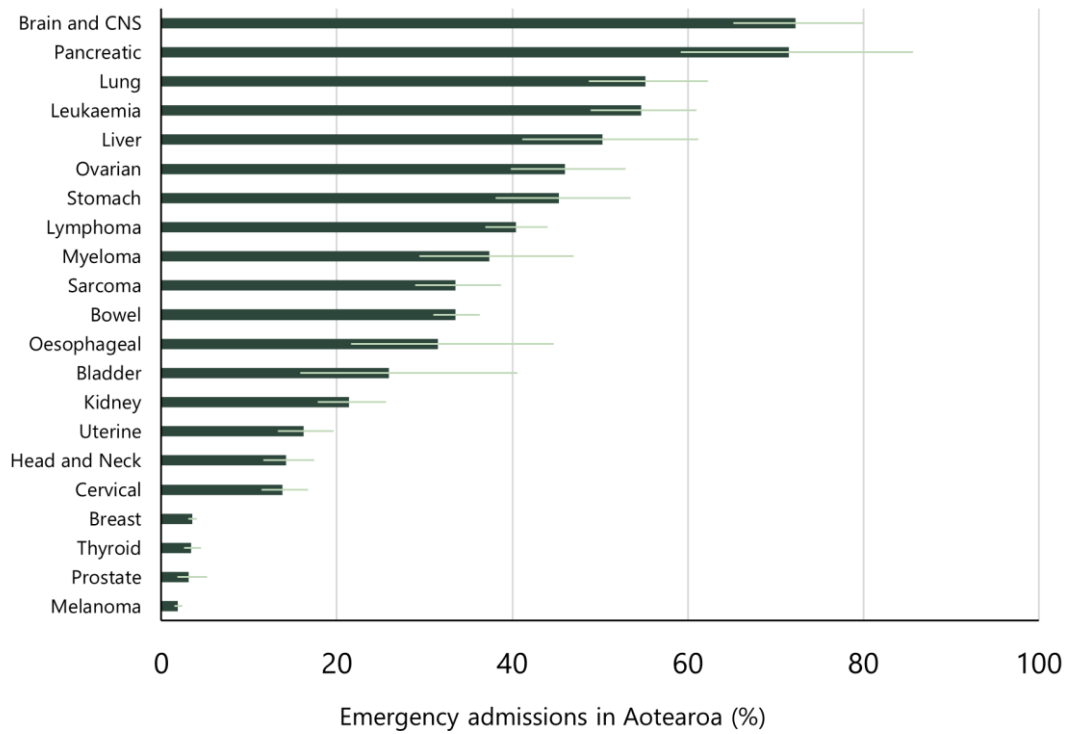
The likelihood of emergency admission varies between cancer types. This finding is expected because each cancer has different symptoms or characteristics.

As shown in Figure 2 below, proportions are highest for cancers that are more likely to have sudden onset of severe symptoms requiring urgent treatment, such as some brain and central nervous system cancers, and cancers that can be initially ‘quiet’ or have non-specific symptoms that can then require urgent review, such as pancreatic cancer. However, many other cancer types (like lung, stomach and bladder) can present with



symptoms and/or indications that could (should) be detected and managed in the primary care/community setting.

Figure 2: Proportion of emergency admissions by cancer type in Aotearoa, 2017–2021



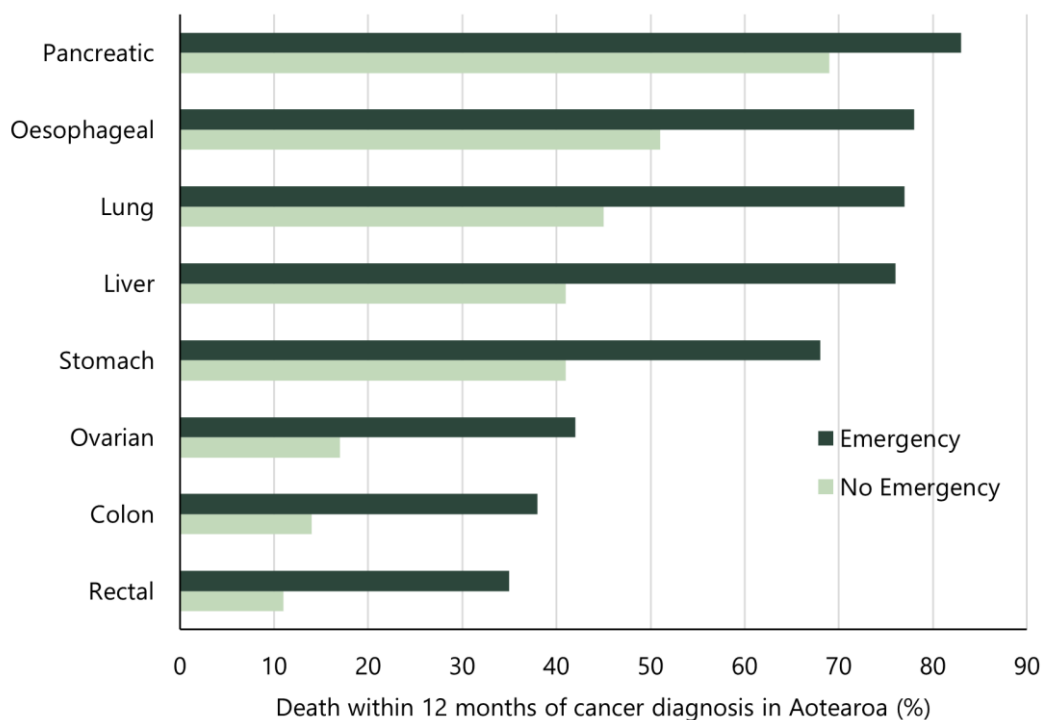
Note: The light green line indicates the 95% confidence interval. CNS = central nervous system.

2.3 Impact on experiences and outcomes

Cancer patients diagnosed after an emergency admission to hospital have poorer survival and other outcomes compared to patients with non-emergency diagnoses (Pham et al 2019; Zhou et al 2017), as shown in Figure 3.



Figure 3: Proportion of deaths within 12 months of cancer diagnosis in Aotearoa, by diagnosis following emergency admission and no emergency admission, 2012–2017



Note: Graph created using data from McPhail et al 2022.

Other outcomes include worse quality of life, worse patient experiences and less-frequent use of treatments with curative intent (Zhou et al 2017). For example, patients diagnosed following an emergency admission are also less likely to receive any anti-cancer treatment, regardless of age, gender, ethnicity, social deprivation, comorbidity, tumour type and tumour stage (Beatty et al 2009). Zhou et al (2017) found that patients with any of the 15 different types of cancers included in the study that were diagnosed through emergency admission had a lower one-year survival compared with those who were diagnosed electively. For example, for colorectal cancer the one-year survival rates for patients diagnosed via an emergency versus elective route were 50% and 82%, respectively. Similarly, for patients with lung cancer the one-year survival rates were 12% and 40%, respectively (Zhou et al 2017).

There are several reasons why people with cancer may be diagnosed soon after an emergency admission. In some cases, emergency admissions may be unavoidable and represent an appropriate treatment pathway. For example, an individual may have minimal symptoms and therefore had no prior contact with the health system (Abel et al 2015), or may have had a relatively sudden onset of symptoms requiring urgent treatment, such as for some central nervous system cancers. Alternatively, in some individuals, symptoms preceded the emergency admission, but clinicians or patients may not have recognised their significance right away (McPhail et al 2022). We can see examples of this in the hui report *Rongohia Te Reo, Whatua He Oranga* from Thomas and Karen, two patients whose symptoms were not picked up for different reasons. Thomas states:



Now I tell people, 'If you notice any changes in your body which you are concerned about, go and get checked'. The earlier people are diagnosed the better chance we have of surviving (Te Aho o Te Kahu 2023a).

Karen describes navigating the health system as 'harder than our ancestors navigating the Pacific' and two years passing before it was admitted that her diagnosis had been missed.

I kept asking questions but kept being told there was nothing to worry about – that is despite getting sicker and sicker. I was losing weight and turning yellow before they admitted something was wrong (Te Aho o Te Kahu 2023a).

Te Aho o Te Kahu has already examined the proportion of diagnosis after emergency admission for four cancer types: bowel, lung, prostate and pancreatic. For bowel, lung and prostate cancer, the proportion of diagnosis following an emergency presentation (not an emergency admission to hospital) was 26%, 45% and 6%, respectively (Te Aho o Te Kahu 2021 a, b, c). More recently, for pancreatic cancer, where a more specific definition was used (diagnosis with pancreatic cancer within 30 days of an emergency admission to hospital), the proportion was 69% (Te Aho o Te Kahu 2023b).

In our recent lung cancer QPI report, we identified that for lung cancer, New Zealand had high emergency admission rates compared with other countries (36% in Canada, 34% in England and 35% for non-small cell lung cancer in Australia; Te Aho o Te Kahu 2021a).



3 MĀORI ARE MORE LIKELY TO BE DIAGNOSED AFTER AN EMERGENCY ADMISSION

Te Tiriti o Waitangi provides an imperative for the Crown to protect and promote the health and wellbeing of Māori, including by responding to and meeting Māori health needs.

In Aotearoa New Zealand, Māori and Pacific peoples have health differences that are not only avoidable but unfair and unjust. We note that a first step in addressing our challenges as a country is to produce information in a way that highlights inequities. Our equity-focused reporting aims to recognise that different people with different levels of advantage require different approaches and resources to experience equitable health outcomes. As noted earlier in the report, people diagnosed in an emergency setting are more likely to have poorer experiences and outcomes compared to patients with non-emergency diagnoses. The information in this report will support targeted work to recognise and improve cancer detection and diagnosis for those who need it most.

Figure 4 compares the total rate of cancer diagnosis following emergency admission between Māori and non-Māori/non-Pacific/non-Asian people (ie, European/other ethnicity), and shows the results by district (where people live).

It shows that, in all districts, Māori are more likely to be diagnosed following an emergency admission compared to people of European/other ethnicity. For example, the figure shows that in Auckland, Māori are twice as likely to be diagnosed following an emergency admission compared to people of European/other ethnicity. These results are not surprising given Māori are less likely than people of European/other ethnicity to have reliable access to primary care services and other supports that decrease the likelihood of late stage, emergency admission based diagnoses.

The standardised ratios for all cancers combined by district (Figure 4) indicates the difference in proportion of diagnoses following emergency admission for Māori compared to people of European/other ethnicity (not including Pacific peoples or Asian people).

For the West Coast and South Canterbury districts, the error bars are wider than others and cross 1. One reason for this is smaller case numbers for Māori in those areas, and while less statistically certain there is likely to be an inequitable ratio for Māori in these areas.



Figure 4: Māori compared to European/other ethnicity emergency admission for all cancers combined, by district of residence. Points represent the standardised ratio, and lines represent the 95% confidence interval.

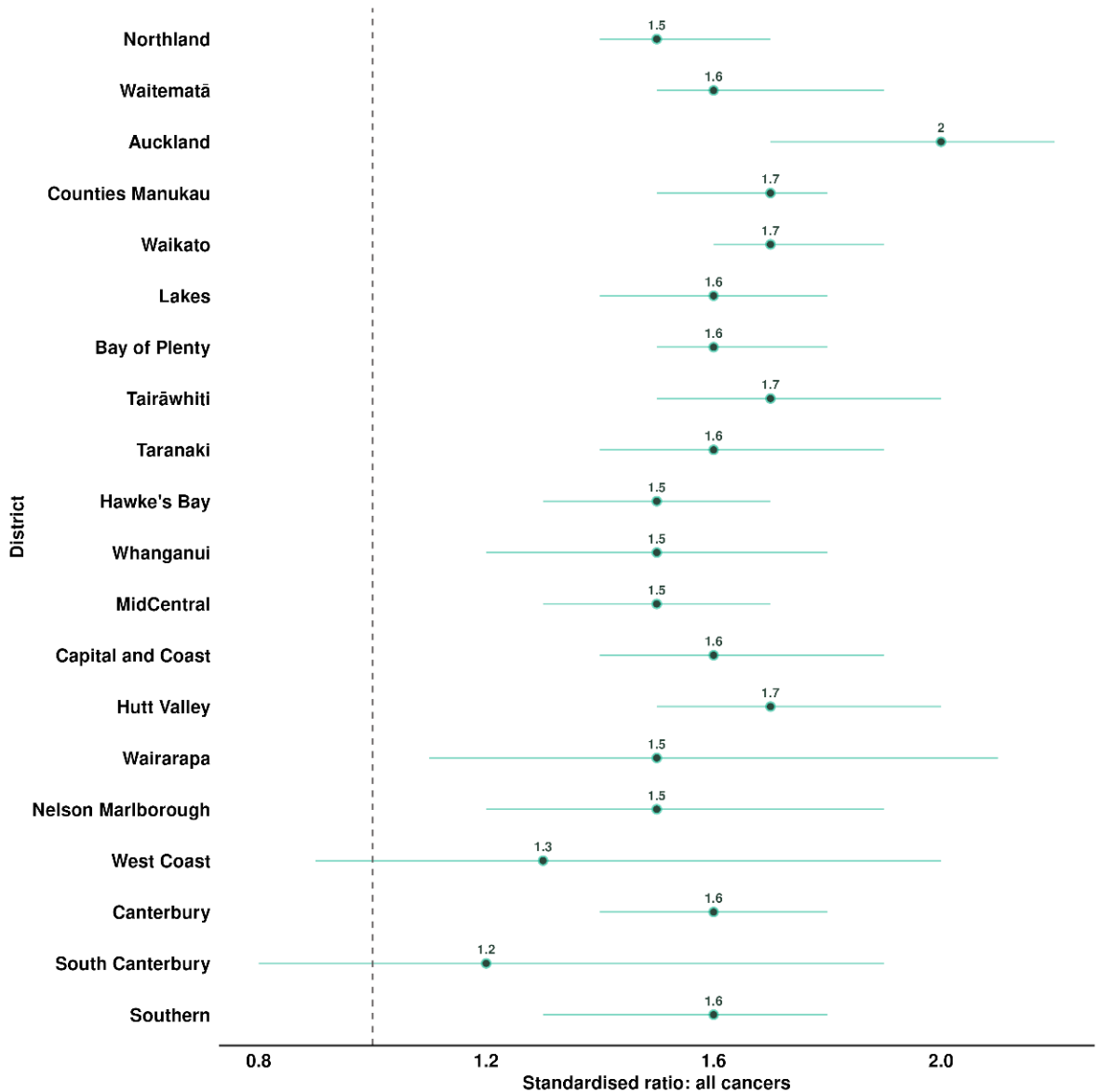


Table 1 presents age-standardised proportions of people diagnosed following an emergency admission by ethnicity. For the majority of cancer types included in this report, as found above, there was a higher proportion of Māori diagnosed following an emergency admission compared to the total population. Similarly, higher proportions were found for Pacific peoples across cancer types (noting that for some cancer types there were small case numbers for Pacific peoples, so the data should be interpreted with caution). More detailed information about case numbers can be found in Appendix D.

Looking more closely at the four most commonly diagnosed cancers among Māori (Te Aho o Te Kahu 2021a):

- For Māori diagnosed with **lung cancer**, 67.5% were diagnosed following an emergency admission, compared with 47.9% of people of European/other ethnicity.



- For Māori diagnosed with **bowel cancer**, 47% were diagnosed following an emergency admission, compared with 30.6% of people of European/other ethnicity.
- For Māori diagnosed with **breast cancer**, 4.2% were diagnosed following an emergency admission, compared with 2.8% of people of European/other ethnicity.
- For Māori diagnosed with **prostate cancer**, 8.3% were diagnosed following an admission, compared with 2.1% of people of European/other ethnicity.

Looking more closely at the four most commonly diagnosed cancers among Pacific peoples (Te Aho o Te Kahu 2021a):

- For Pacific peoples diagnosed with **lung cancer**, 72.6% were diagnosed following an emergency admission, compared with 46% of people of European/other ethnicity.
- For Pacific peoples diagnosed with **uterine cancer**, 27.4% were diagnosed following an emergency admission, compared with 6.7% of people of European/other ethnicity.
- For Pacific peoples diagnosed with **breast cancer**, 7.3% were diagnosed following an emergency admission, compared with 2.8% of people of European/other ethnicity.
- For Pacific peoples diagnosed with **prostate cancer**, 24.5% were diagnosed following an emergency admission, compared with 2.1% of people of European/other ethnicity.

Table 1: Age-standardised proportions (%) of people diagnosed within 30 days of an emergency admission by cancer types, by ethnic group

Cancer type	Ethnic group				
	Total	Māori	Pacific peoples	Asian	European/ other
All cancers	20.7% (20.1–21.2)	31.1% (29.3–32.9)	33.4% (30.9–36.1)	20.9% (19.3–22.7)	16.8% (16.2–17.5)
Bladder cancer	25.9% (15.8–40.7)	39.8% (15.3–87.3)	26% (6.3–75.8)	1.3% (0.5–96.3)	24.6% (12–45.6)
Bowel cancer	33.5% (30.9–36.2)	47% (38.2–57.3)	52.7% (39.8–68.6)	30.9% (22.7–41.4)	30.6% (27.8–33.6)
Brain and central nervous system cancer	72.3% (65.2–80)	82.5% (60.3–110.7)	66% (38.3–108.1)	84.2% (61–114)	69.5% (61.5–78.3)
Breast cancer	3.5% (3.1–4)	4.2% (3–5.6)	7.3% (5.1–10.2)	4.1% (2.8–5.8)	2.8% (2.3–3.4)
Cervical cancer	13.9% (11.4–16.8)	21.9% (15.1–30.7)	30.7% (17.4–50.5)	10% (4.9–18.6)	10.3% (7.6–13.6)
Head and neck cancer	14.2% (11.6–17.4)	26.1% (17.4–37.7)	22% (12–37.6)	10% (4.9–18.6)	11.4% (8.4–15.1)
Kidney cancer	21.4% (17.8–25.6)	32.2% (22.4–45.2)	20% (9.8–38.3)	16.6% (8.6–29.6)	19.4% (15–24.7)
Leukaemia	54.7% (48.9–61)	63.1% (49.8–78.9)	71.2% (53.7–92.8)	64.6% (48–85.4)	47.6% (40.3–55.8)
Liver cancer	50.3% (41.1–61.2)	58.8% (40.8–82.5)	70.6% (46.1–104.1)	40.9% (22–70.4)	37.8% (25.6–54.4)



	Ethnic group				
	Total	Māori	Pacific peoples	Asian	European/ other
Lung cancer	56.5% (50.2–63.3)	67.5% (54.4–82.9)	72.6% (54–96)	49.3% (35.8–66.4)	47.9% (39.4–57.9)
Lymphoma	40.4% (36.9–44)	52.2% (42.4–63.6)	49.8% (34.7–69.9)	45.8% (36.6–56.7)	35.7% (31.7–40)
Melanoma	1.9% (1.5–2.4)	1.7% (0.9–5.8)	16.1% (0.5–87)	7.7% (0.8–32.9)	1.8% (1.4–2.4)
Myeloma	37.4% (29.4–47)	51.6% (33.7–76.2)	37.2% (16.8–73.4)	52.1% (21.3–108.8)	29.1% (20.1–41.2)
Neuroendocrine tumours (NETs)	54.3% (47.9–61.4)	63.1% (50.1–78.7)	58.2% (37.8–86.3)	31.8% (16.3–56.9)	52.9% (44.6–62.5)
NETs (poorly differentiated)	51.7% (31.2–81.5)	61.5% (11.7–195)	91.7% (5.6–443.2)	39.3% (5.2–156.4)	50% (26.6–87.1)
NETs (moderately differentiated)	46.7% (33.1–64.3)	60.8% (30.6–109.1)	32.7% (4.6–113.7)	0.9% (0–100.7)	46.5% (29.7–69.8)
NETs (well differentiated)	58.9% (50.2–68.8)	65.5% (49.4–85.5)	62.5% (36.6–100.5)	35.4% (15–72.5)	59.1% (47.3–73.2)
NETs (other)	44.2% (30.4–62.4)	58.1% (29.2–104.9)	51.5% (11.8–152.2)	37.2% (3.9–156.8)	38.3% (22.3–62.1)
Oesophageal cancer	31.5% (21.6–44.8)	32.3% (11.4–75.9)	30% (4.6–116.5)	32.1% (9.7–81.4)	30.2% (18.2–47.7)
Ovarian cancer	46% (39.8–52.9)	67% (48.9–89.9)	53.9% (35.2–79.5)	39% (26.9–55.4)	40.9% (33.2–50.1)
Pancreatic cancer	71.5% (59.2–85.7)	75.4% (51.1–108.1)	86.5% (48.2–145.1)	69% (34.7–125.7)	67.4% (51.8–86.8)
Prostate cancer	3.1% (1.8–5.2)	8.3% (1.7–25.7)	24.5% (4–82)	0.9% (0.6–32.3)	2.1% (1–4.1)
Sarcoma	33.5% (28.9–38.7)	45.4% (34.9–58.3)	30.5% (20–45.2)	29.4% (18.5–44.8)	30.3% (24.1–37.8)
Stomach cancer	45.3% (38.1–53.5)	49.5% (37.1–65)	63.3% (43.7–89.4)	47.8% (30–73)	34.2% (24.2–47.3)
Thyroid cancer	3.4% (2.6–4.5)	5.3% (2.8–9.5)	9% (4.6–16.4)	2% (0.9–4.1)	2.7% (1.8–4.3)
Uterine cancer	16.2% (13.3–19.6)	18% (11.3–27.4)	27.4% (21.4–34.7)	8.8% (4–17.5)	6.7% (3.7–11.4)

Figures between parentheses represent the 95 percent confidence intervals.

Sources: New Zealand Cancer Registry (NZCR) and National Minimum Dataset (NMDS; hospital events)

Note: Age standardised to the 2001 Census Māori population. Figures in parentheses represent 95% confidence intervals.



4 MANY FACTORS MAY CONTRIBUTE TO HIGH EMERGENCY DEPARTMENT DIAGNOSIS RATES

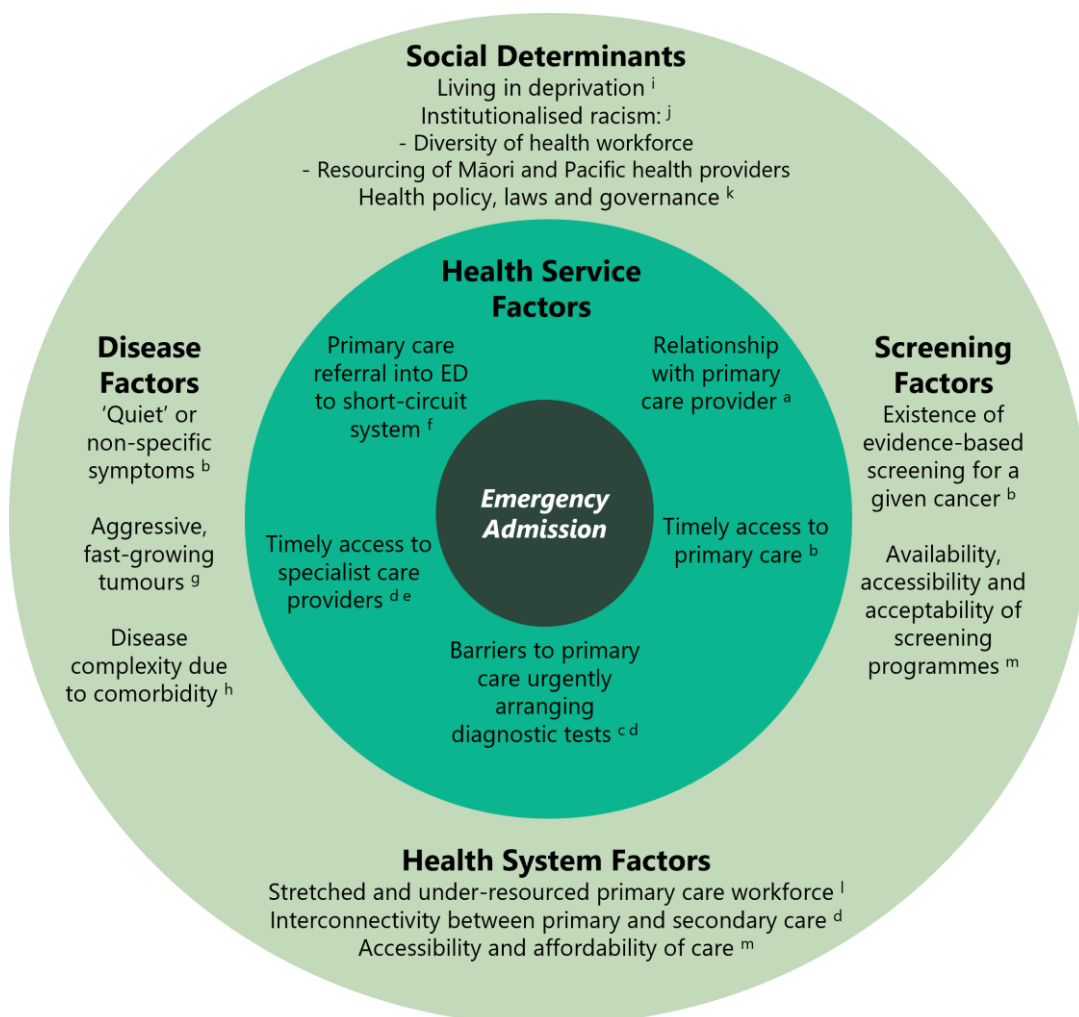
4.1 What are some of the causal factors?

When someone develops cancer, it is important for them to be diagnosed as early as possible, through an established referral pathway, starting in primary and community care. They should also be supported by a health service that is culturally safe and trusted by the person and their whānau.

Understanding precursors or causal factors is an important part of determining where to act to improve (reduce) our rates of cancer diagnosis following emergency admission. There are a range of factors that lead to a person receiving a cancer diagnosis following an emergency admission to a hospital. Understanding these precursors or causal factors is an important part of determining where to act to identify cancer earlier and improve survival rates and treatment experiences for patients. Figure 5 lists some of the causal factors identified through research.



Figure 5: Factors that contribute to a cancer diagnosis following an emergency admission



Notes:

- a) (Cassim et al 2019)
- b) (McPhail et al 2022)
- c) (Htun et al 2017)
- d) (Nekhlyudov and Latosinsky 2010)
- e) (Murchie et al 2017)
- f) (Beatty et al 2009)
- g) (Lyratzopoulos et al 2014)
- h) (Majano et al 2022)
- i) (Abel et al 2015)
- j) (Waitangi Tribunal 2019)
- k) (Lieberman J 2019)
- l) (Grimmond et al 2021)
- m) (Meheus et al 2019).

With this initial understanding of the causal factors that contribute to a higher proportion of emergency presentations, we can further explore the opportunities for the health sector to improve cancer early detection and diagnosis.



4.2 What are some of the potential solutions?

When someone develops cancer, it is important for them to be diagnosed as early as possible, through an established referral pathway, starting in primary and community care. They should also be supported by a health service that is culturally safe and trusted by the person and their whānau.

Several factors that impact the diagnosis of cancer, such as workforce shortages and institutional racism, also affect the entire health system. These issues are well known and are being addressed at the national, regional and local level.

Within the path to cancer diagnosis, there are key opportunities and initiatives to develop and build on, some already underway and some requiring further investigation. Figure 6 outlines example actions along the path to diagnosis. It highlights, alongside the causal factors outlined in Figure 5, the complexity of health system and other factors leading to a high proportion of emergency admissions.

Te Aho o Te Kahu carried out this analysis to understand how different locations and population groups, such as age groups and ethnicities, are affected by diagnosis after emergency admission. The results will be used to inform discussions with Health New Zealand | Te Whatu Ora, community and primary health care providers (eg, GPs, pharmacists) and other key agencies, on ways to improve cancer detection and diagnosis processes and reduce cancer diagnoses via emergency admission across Aotearoa New Zealand.



Figure 6: The path to diagnosis showing possible areas of focus to improve early cancer detection and diagnosis, with examples of opportunities



5 HOW TO USE THE REMAINDER OF THIS REPORT

The next section describes reports on the 'Route to diagnosis' indicator by cancer type. The intention of the results are to highlight differences between districts at a specific cancer type for this indicator. For each of the 22 cancer types reported, the results are presented in two sections:

1. **Bar charts** that show the age-standardised data stratified by ethnicity, deprivation, sex and rurality
2. **Funnel plots** that demonstrate differences between districts.

Funnel plots are used to show variation between districts² and visually depict when a district falls outside of the 95% limits. We plotted the proportions for each district along with the total number of patients used to estimate the proportion. The average across all districts appears as a green line; this is not an evidence-based best practice target or a benchmark – it is the national average.

Where the funnel plots show that a district's performance varies in an unfavourable way compared to others, clinicians, health care managers, commissioners and those focused on health care QI should investigate whether this variation is unwarranted and identify appropriate QI actions based on their local context and priorities. Alongside each funnel plot, data by demographic characteristic (eg, ethnicity) is provided to further identify differences between groups that may need attention.

Note to readers about the confidence intervals shown in this report

Confidence intervals are most used when working with sample data to estimate how likely it is that the result is true of the whole population. Therefore, confidence intervals are often used to decide if a difference between two groups being looked at is likely to be a true difference (if the confidence intervals overlap, there may not be a true difference). This report uses whole population data (ie, it is not a sample), so confidence intervals should be interpreted differently. They are presented in this report to give an impression of what variation there may be over time (rather than the likelihood the result is true). Therefore, overlapping confidence intervals do not indicate the absence of a difference between compared groups.

The methods used in this report involved analysing patient data obtained from administrative data sets maintained by Health New Zealand, which included the New Zealand Cancer Registry (NZCR) and the National Minimum Dataset (NMDS).

² Funnel plots are not presented for cervical and thyroid cancers because the numbers of people diagnosed following an emergency admission were small.



Statistical analysis was primarily descriptive, with results presented as percentages and grouped by age, sex, ethnicity, extent of disease at diagnosis, socioeconomic deprivation, rural–urban status, and districts.

Age standardisation was used to compare ethnicity, sex, deprivation quintiles and rural–urban status. Moreover, standardised ratios were calculated to identify equity gaps between Māori and other ethnic groups in district areas.

At the time of publishing this report, district health boards have been disestablished (as part of the 1 July 2022 health and disability sector reforms). For consistency, this report uses the term ‘district’ throughout, including in data tables, graphs and some commentary, even though the data used is from a time when district health boards were in existence (1 January 2017 to 31 December 2021).

For confidentiality, we have not presented results when there are fewer than six patients in a group. This is to ensure adequate privacy and confidentiality for patients and providers. We have not included values in columns where the numbers can be added across columns to a number lower than six even if the value is above five. More information as to this approach can be found on the Stats NZ website (Stats NZ 2019).

For more detailed information on the methods, please refer to Appendix A.

The technical specifications are provided at Appendix B.

Appendix C provides information about differences between this report and other similar reports/indicators/analysis.

Appendix D provides the data behind the bar charts and funnel plots in two tables for each cancer type:

1. people diagnosed with specific cancer following emergency admission, by year of diagnosis, sex, age group, ethnicity, deprivation quintile (according to the New Zealand Deprivation Index 2018 (NZDep2018)) and rural–urban status
2. people diagnosed with specific cancer following emergency admission, by district of residence.

Presenting the same or similar data in multiple formats enables reviewers coming from different perspectives to glean information from the data that is most relevant, depending on their interest or viewpoint.

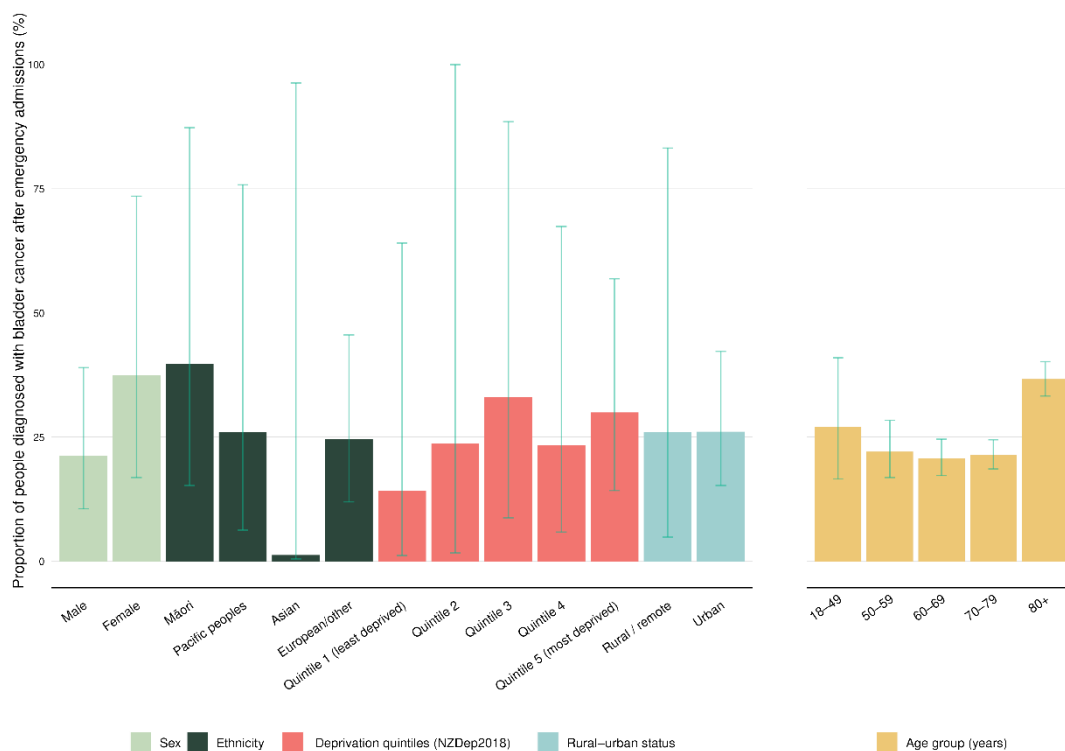


6 RESULTS BY CANCER TYPE

6.1 Bladder cancer

There were 2,210 people diagnosed with bladder cancer between 2017 and 2021, with 26.6% diagnosed in the 30 days following an emergency admission. The proportion was higher for women than for men (37.5% compared to 21.3%, respectively), and for Māori (39.8%) compared with people of European/other ethnicity (24.6%) (Figure 7).

Figure 7: Proportion of people diagnosed with bladder cancer in the 30 days following emergency admission, by sex, ethnicity, NZDep2018 quintile, rural-urban status (all age-standardised), and age (non-standardised) for the years 2017–2021

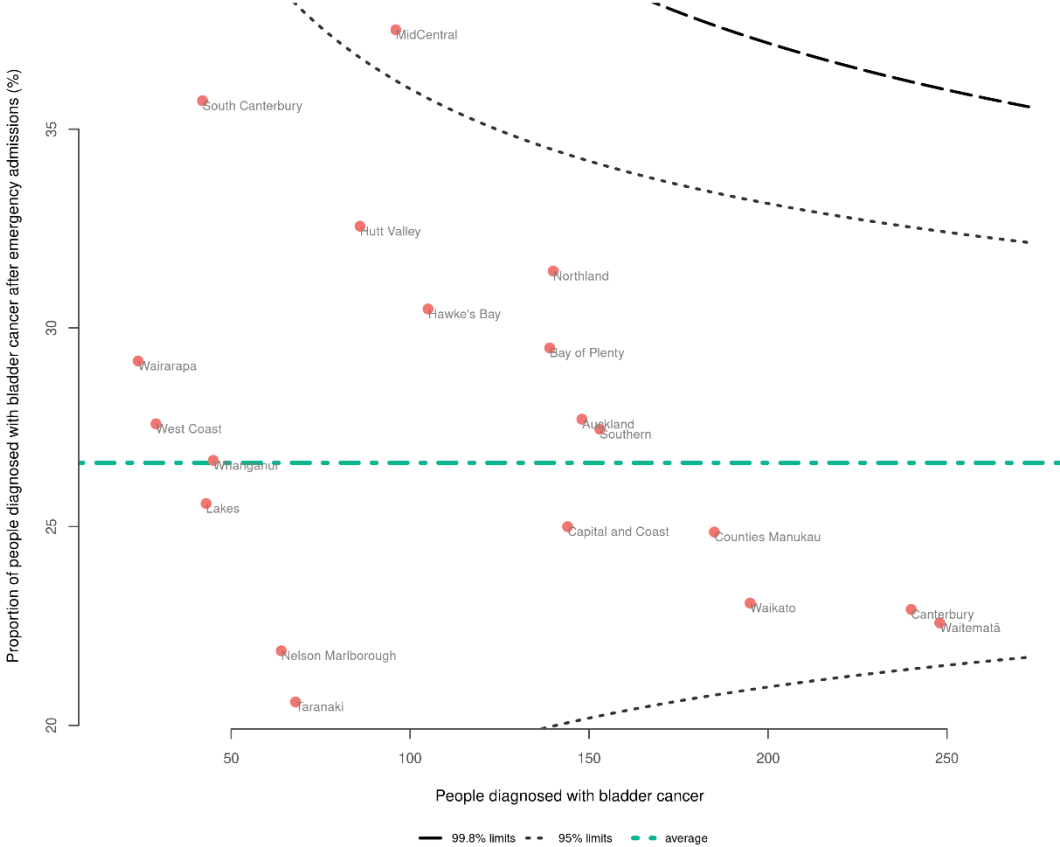


Note: See Appendix D for more detailed information. Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

There was a broad range of proportions across districts, ranging from 20.6% diagnosed in the 30 days following an emergency admission in Taranaki to 37.5% in MidCentral. There were no districts outside the 99.8% limits, with MidCentral alone sitting above the 95% upper limit (Figure 8).



Figure 8: Funnel plot showing proportion of people diagnosed with bladder cancer in the 30 days following emergency admission, by district of residence, for the years 2017–2021 (un-standardised)



Note: See Appendix D for more detailed information.

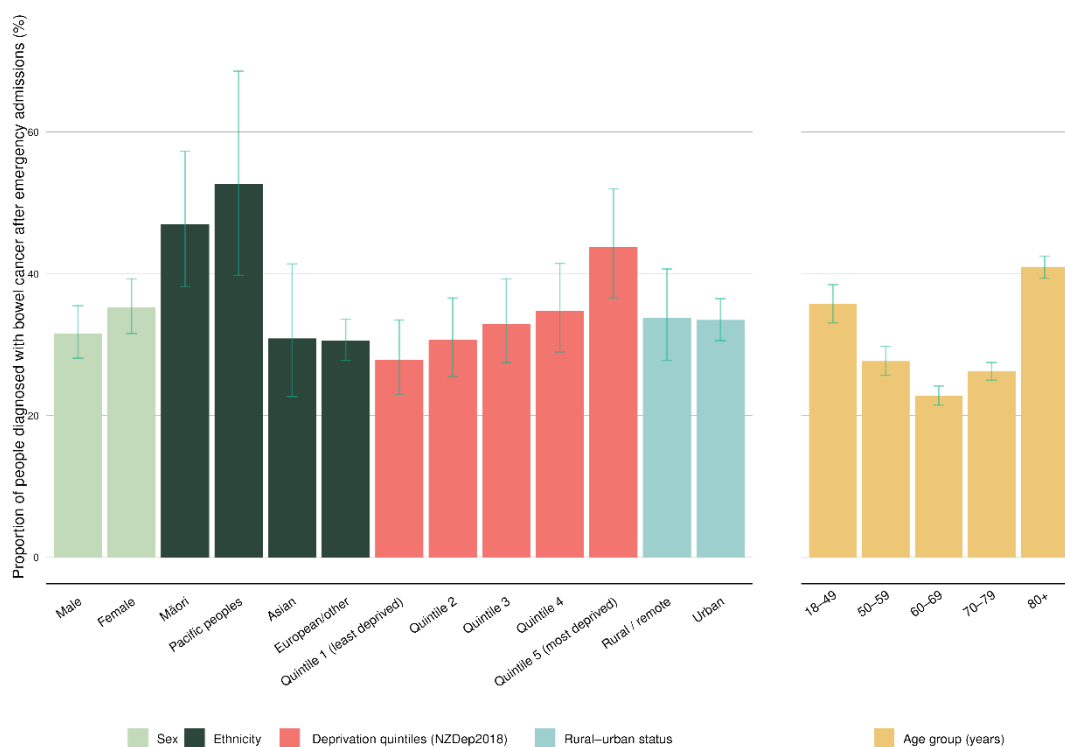


6.2 Bowel cancer

There were 15,139 people diagnosed with bowel cancer between 2017 and 2021. Overall, 30.1% of those people were diagnosed in the 30 days following an emergency admission.

Pacific peoples and Māori were more commonly diagnosed following an emergency admission compared with other ethnicities. There was a proportion of 52.7% for Pacific peoples and 47% for Māori compared with 30.6% for people of European/other ethnicity. There was a higher number of men than women with bowel cancer; however, there was an indication that more females presented following an emergency admission (35.3%) compared to males (31.6%) (Figure 9).

Figure 9: Proportion of people diagnosed with bowel cancer in the 30 days following emergency admission, by sex, ethnicity, NZDep2018 quintile, rural-urban status (all age-standardised), and age (non-standardised) for the years 2017–2021



Note: See Appendix D for more detailed information. Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

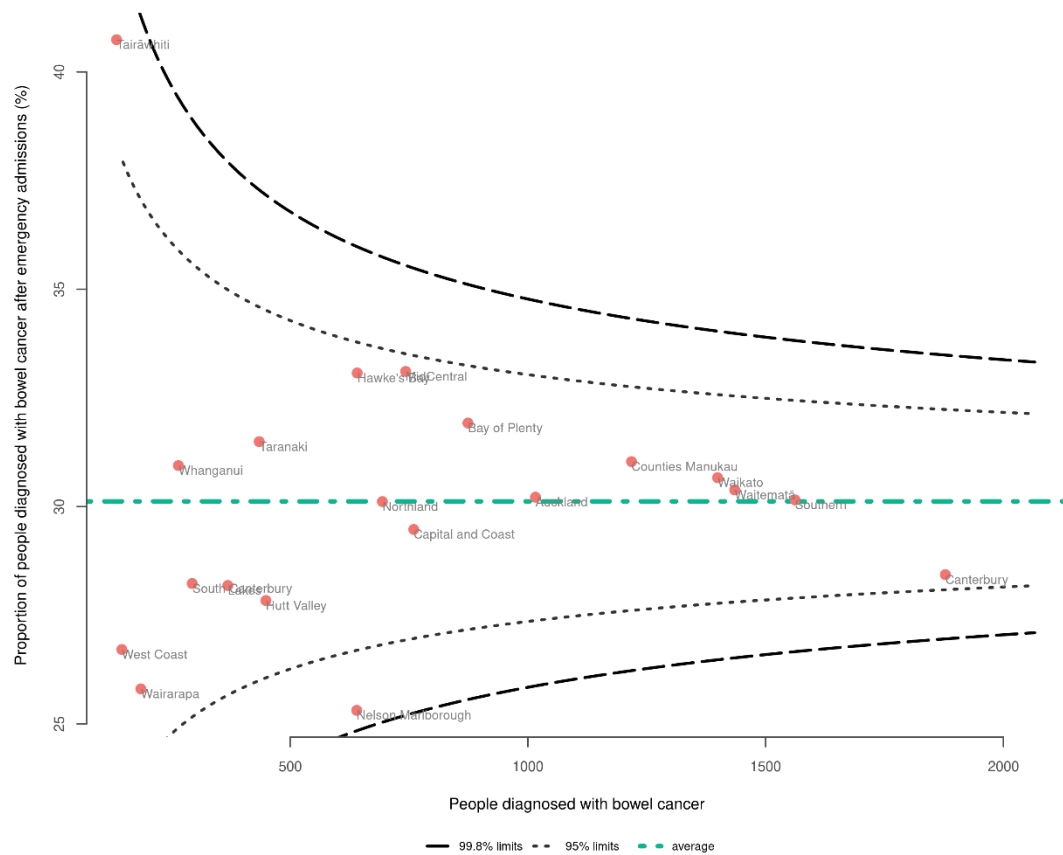
Tairāwhiti was above the upper 95% limit line with a proportion of 40.7%; however, numbers of people diagnosed in this district were smaller than in many districts. Nelson Marlborough sat below the lower 95% limit, having a smaller proportion than other districts, with 25.3% people being diagnosed in the 30 days after an emergency admission (Figure 10).

As part of the cancer QPI programme, we published the *Bowel Cancer Quality Improvement Monitoring Report Update 2022 (Te Aho o Te Kahu 2022)*, which provides quality performance indicators specific to bowel cancer, including route to diagnosis. Note that the time period of data included and the definition of ‘emergency admission’



(see Table 2 in Appendix C) differ between reports, therefore variation in data will be seen.

Figure 10: Funnel plot showing proportion of people diagnosed with bowel cancer in the 30 days following emergency admission, by district of residence, for the years 2017–2021 (un-standardised)



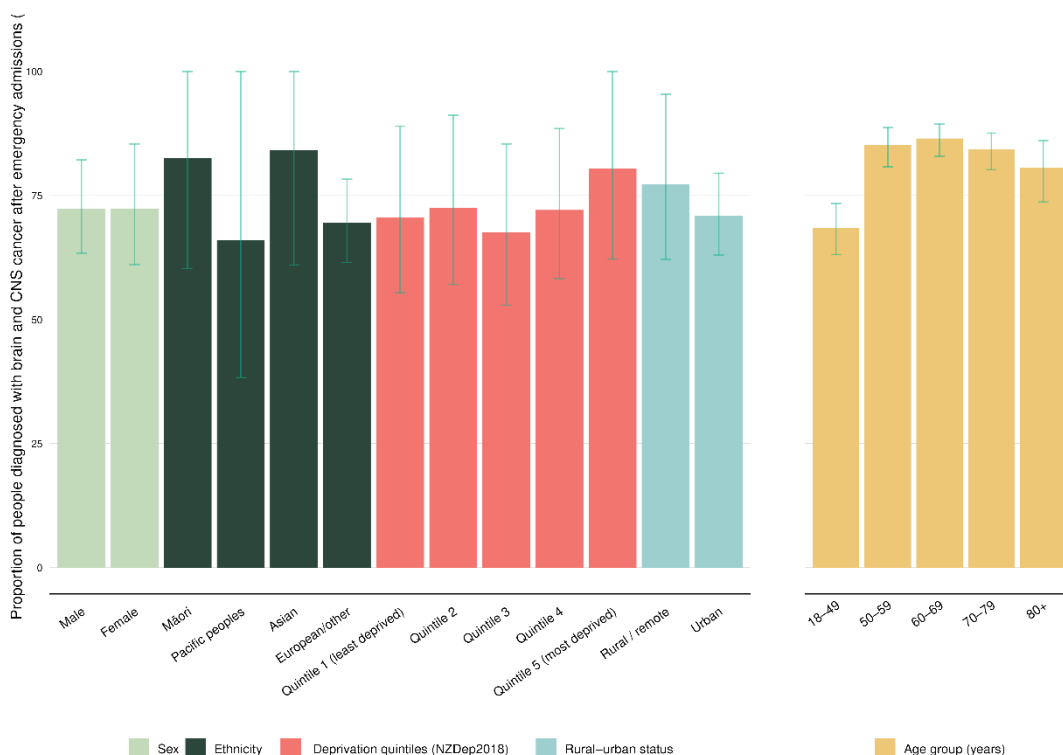
Note: See Appendix D for more detailed information.



6.3 Brain and central nervous system cancers

There were 1,571 people diagnosed with brain and central nervous system (CNS) cancer between 2017 and 2021. Overall, 81.5% of those people were diagnosed in the 30 days following an emergency admission. This high proportion likely reflects the acute nature of presentation of this cancer type and the urgency often required for investigation and treatment, which may require an acute admission to hospital. There was minimal variation between ethnicities, deprivation quintiles, sex, rurality and age with the exception of people aged 18–49, who had a slightly lower proportion of 68.5% (Figure 11).

Figure 11: Proportion of people diagnosed with brain and central nervous system (CNS) cancer in the 30 days following emergency admission, by sex, ethnicity, NZDep2018 quintile, rural–urban status (all age-standardised), and age (non-standardised) for the years 2017–2021

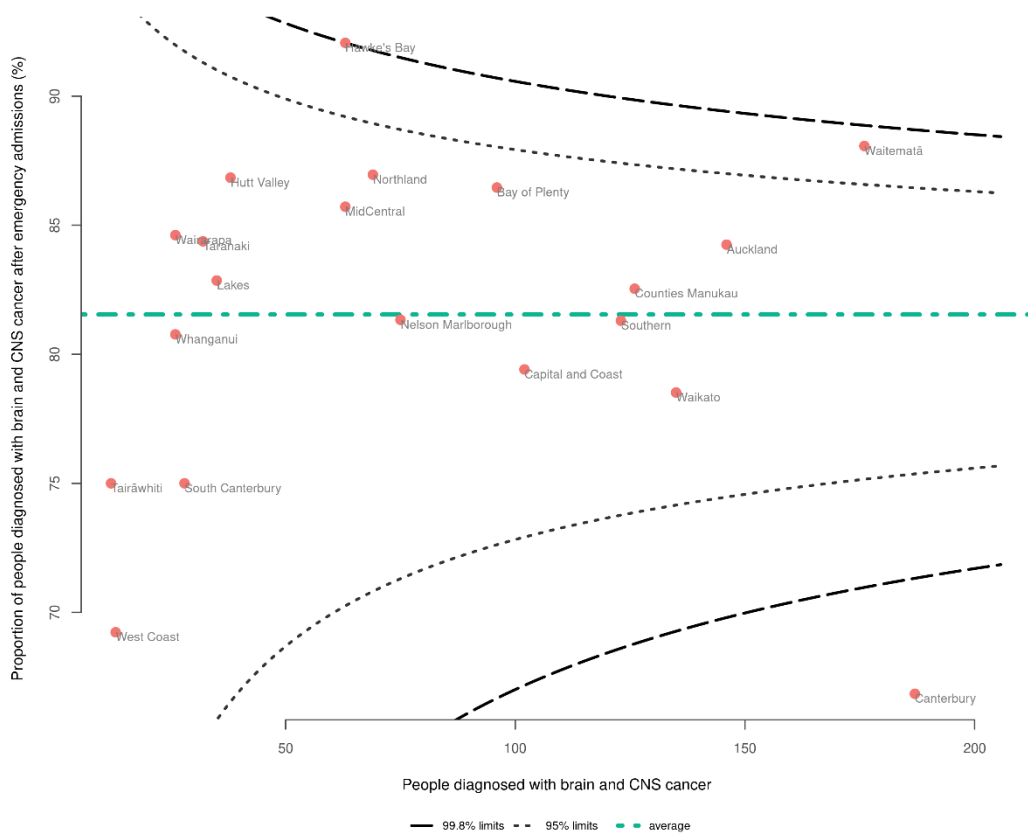


Note: See Appendix D for more detailed information. Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

Canterbury had the lowest proportion of diagnoses in the 30 days after an emergency admission at 66.8%. The overall average was high, with two districts above the upper 95% limit line – Hawke’s Bay at 92.1% and Waitematā at 88.1% (Figure 12).



Figure 12: Funnel plot showing proportion of people diagnosed with brain and central nervous system cancer in the 30 days following emergency admission, by district of residence, for the years 2017–2021 (un-standardised)



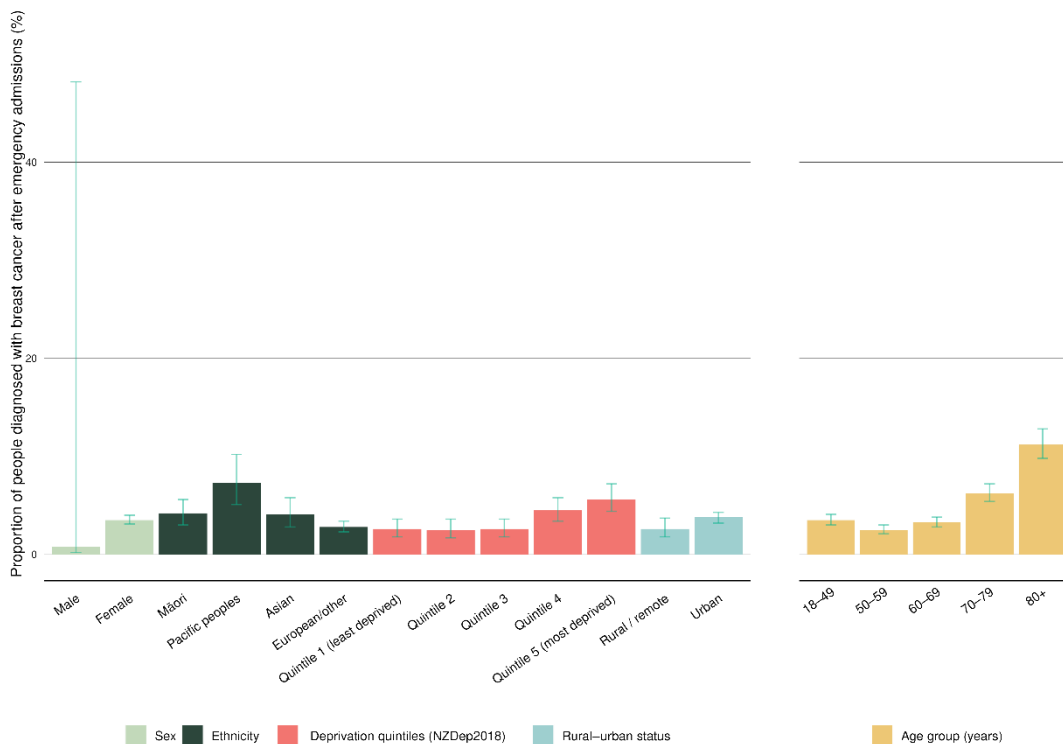
Note: See Appendix D for more detailed information.



6.4 Breast cancer

There were 17,301 people diagnosed with breast cancer between 2017 and 2021. Overall, 4.4% of those people were diagnosed in the 30 days following an emergency admission. Pacific peoples in particular were more commonly diagnosed following an emergency admission (7.3%) compared with Māori (4.2%), Asian people (4.1%) and people of European/other ethnicity (2.8%). People aged 80+ were more likely to be diagnosed after an emergency admission (11.2%) compared with younger people. People living in areas of higher deprivation also had a higher proportion compared to people in the least deprived areas (Figure 13).

Figure 13: Proportion of people diagnosed with breast cancer in the 30 days following emergency admission, by sex, ethnicity, NZDep2018 quintile, rural–urban status (all age-standardised), and age (non-standardised) for the years 2017–2021

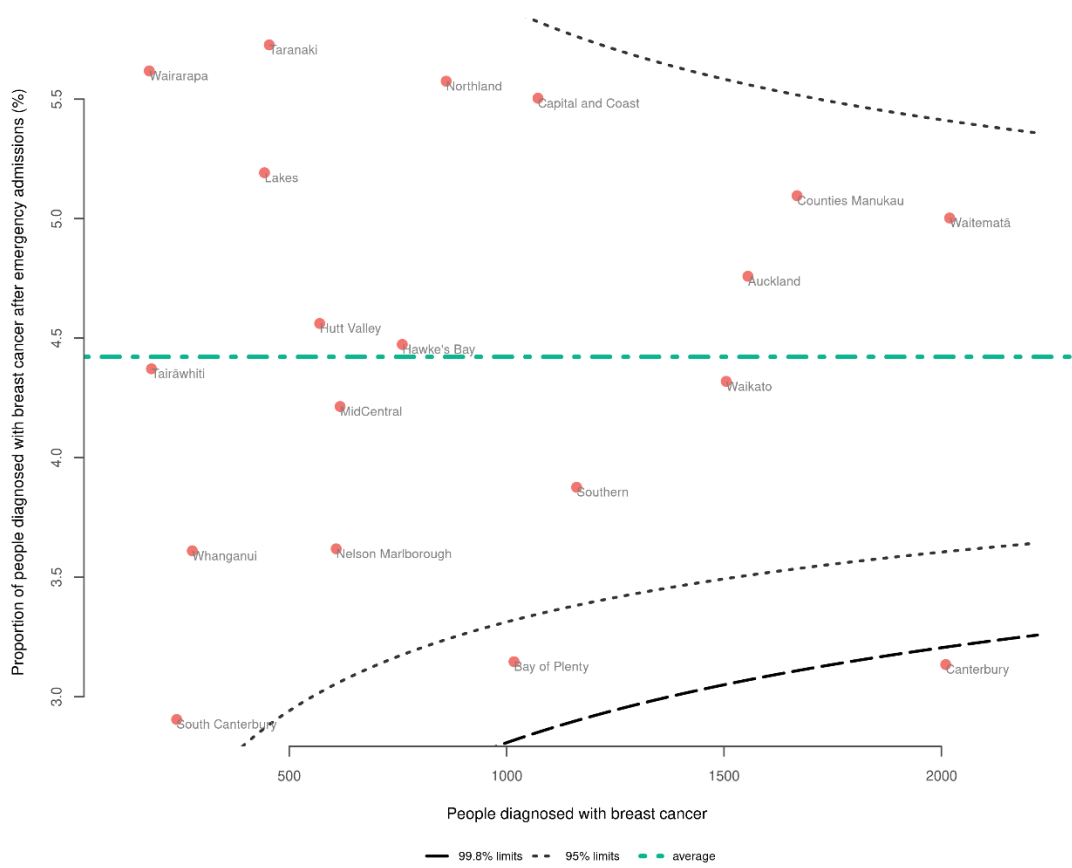


Note: See Appendix D for more detailed information. Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

Two districts were below the lower 95% limit – Bay of Plenty (3.1%) and Canterbury (3.1%) – with no districts above the upper 95% limit and all districts sitting within a 2.9% to 5.7% proportion range (Figure 14).



Figure 14: Funnel plot showing proportion of people diagnosed with breast cancer in the 30 days following emergency admission, by district of residence, for the years 2017–2021 (un-standardised)



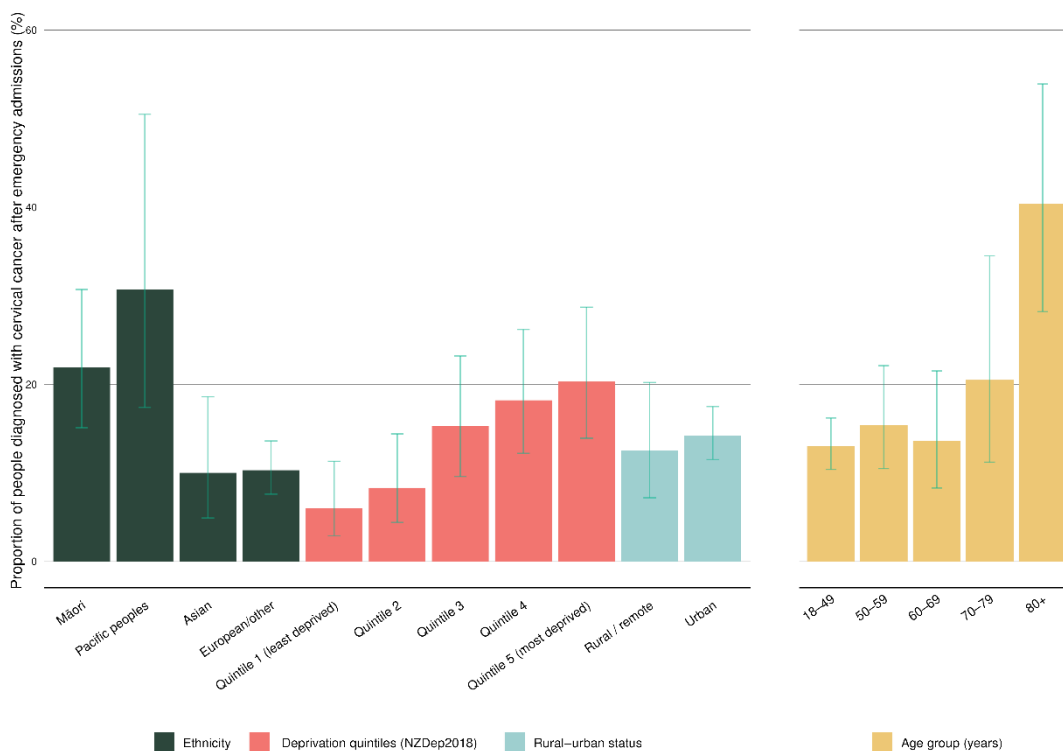
Note: See Appendix D for more detailed information.



6.5 Cervical cancer

There were 863 people diagnosed with cervical cancer between 2017 and 2021. Overall, 15.5% of those people were diagnosed in the 30 days following an emergency admission. Women aged 80+ were more likely to be diagnosed following an emergency admission; however, the small numbers mean this information should be interpreted with caution (see Appendix D, which includes information about actual numbers/volumes, as opposed to the proportions illustrated in Figure 15 below). Pacific women and wāhine Māori had higher proportions (30.7% and 21.9%, respectively) than Asian women and women of European/other ethnicity (10.0% and 10.3%, respectively) (Figure 15).

Figure 15: Proportion of people diagnosed with cervical cancer in the 30 days following emergency admission, by sex, ethnicity, NZDep2018 quintile, rural–urban status (all age-standardised), and age (non-standardised) for the years 2017–2021



Note: See Appendix D for more detailed information. Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

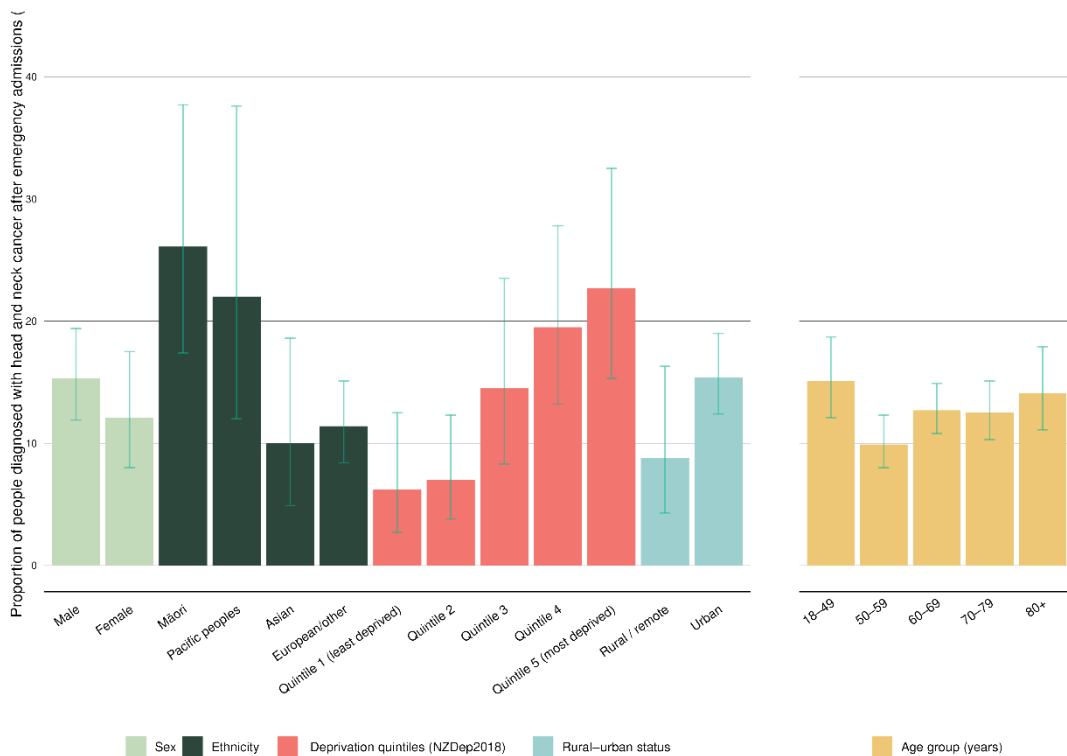
Due to small case numbers in many districts, a funnel plot is not presented for cervical cancer; however, additional information can be found in Appendix D.



6.6 Head and neck cancer

There were 3,361 people diagnosed with head and neck cancer between 2017 and 2021. Overall, 12.5% of those people were diagnosed in the 30 days following an emergency admission. Although the numbers are small, Māori and Pacific peoples were more commonly diagnosed following an emergency admission (26.1% and 22.0%, respectively) compared to people of European/other ethnicity (11.4%) (Figure 16).

Figure 16: Proportion of people diagnosed with head and neck cancer in the 30 days following emergency admission, by sex, ethnicity, NZDep2018 quintile, rural–urban status (all age-standardised), and age (non-standardised) for the years 2017–2021

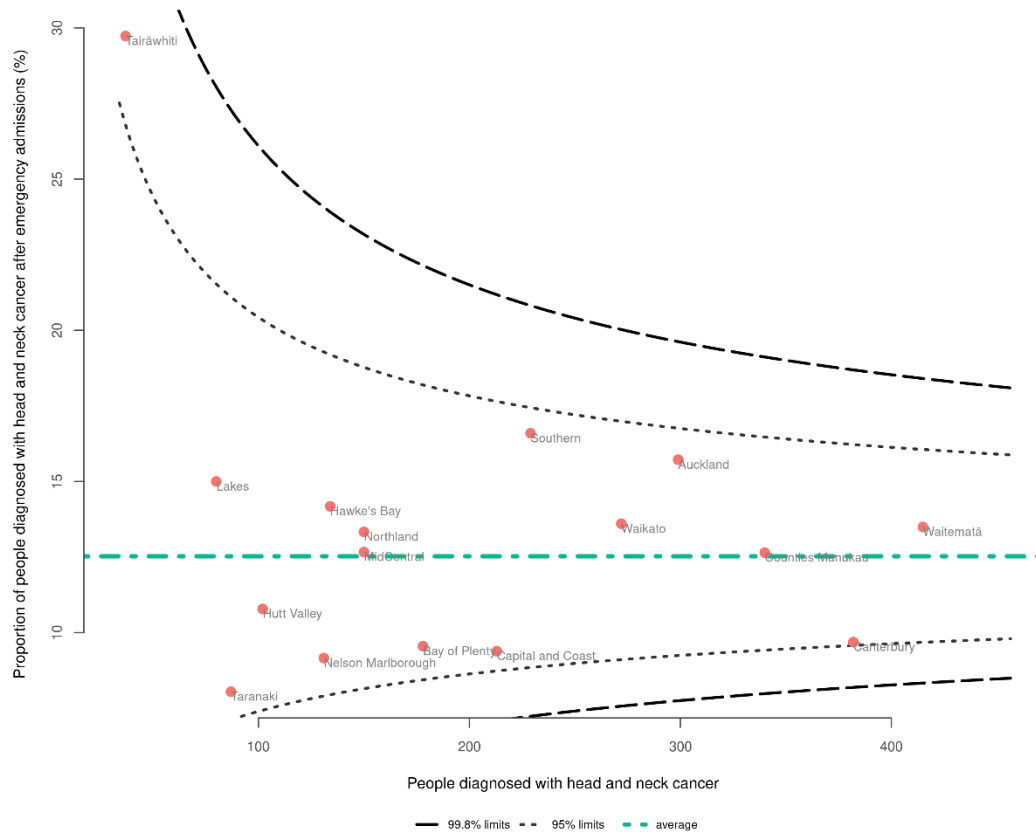


Note: See Appendix D for more detailed information. Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

There was a generally narrow spread between districts – from 8.0% to 16.6% – with Tairāwhiti an outlier above the upper 95% limit. However, numbers in this district were small, so this data should be interpreted with caution (Figure 17).



Figure 17: Funnel plot showing proportion of people diagnosed with head and neck cancer in the 30 days following emergency admission, by district of residence, for the years 2017–2021 (un-standardised)



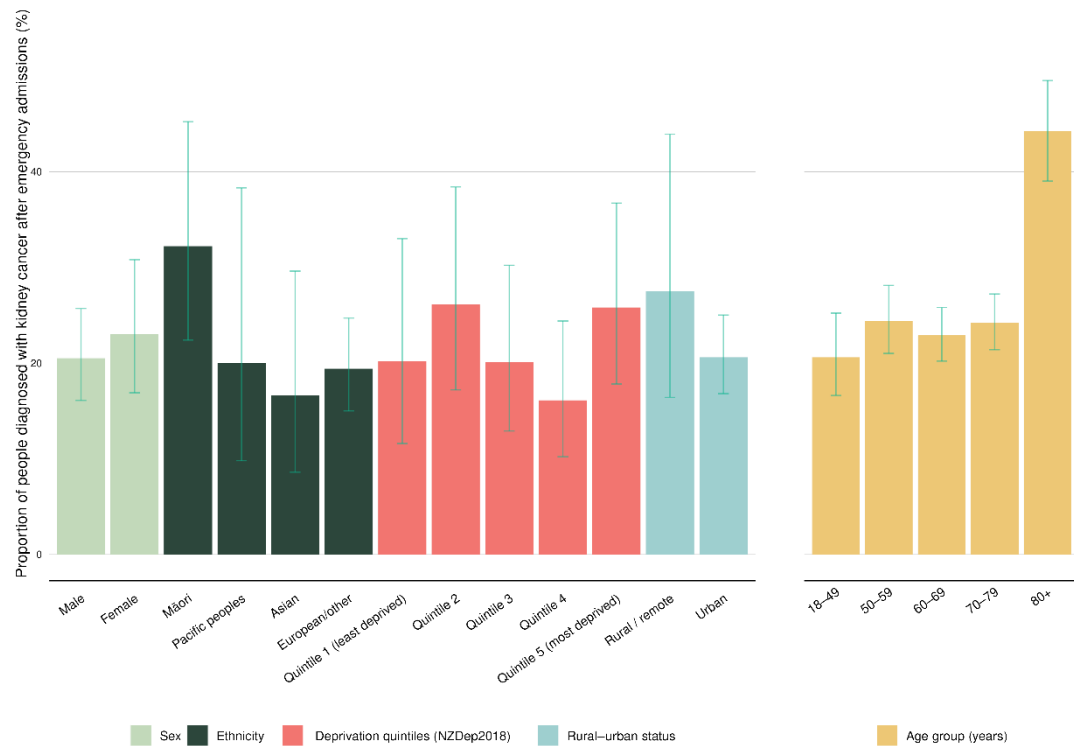
Note: See Appendix D for more detailed information.



6.7 Kidney cancer

There were 2,944 people diagnosed with kidney cancer between 2017 and 2021. Overall, 25.7% of those people were diagnosed in the 30 days following an emergency admission. Māori had higher proportions (32.2%) compared to people of European/other ethnicity (19.4%) and Asian people (16.6%) (Figure 18).

Figure 18: Proportion of people diagnosed with kidney cancer in the 30 days following emergency admission, by sex, ethnicity, NZDep2018 quintile, rural–urban status (all age-standardised), and age (non-standardised) for the years 2017–2021

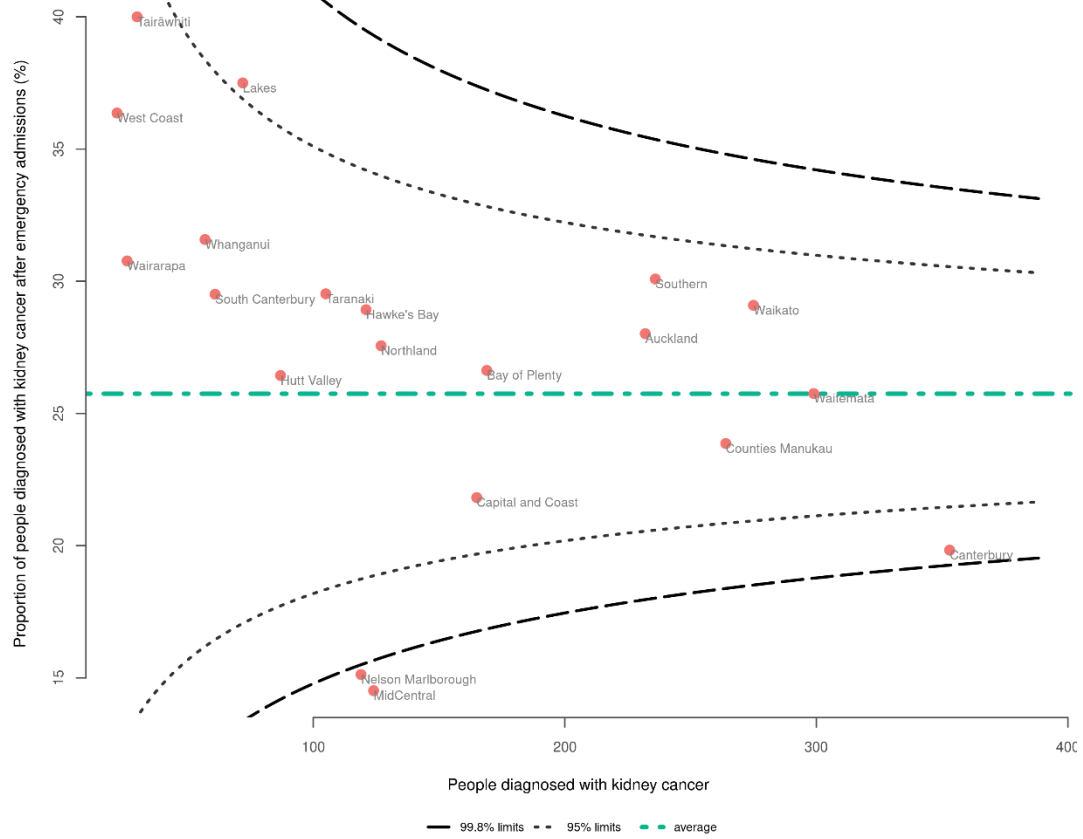


Note: See Appendix D for more detailed information. Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

Nelson Marlborough, MidCentral and Canterbury had proportions below the lower 95% limits, and Lakes was above the upper 95% limits. However, the small numbers in some districts mean this data should be interpreted with caution (Figure 19).



Figure 19: Funnel plot showing proportion of people diagnosed with kidney cancer in the 30 days following emergency admission, by district of residence, for the years 2017–2021 (un-standardised)



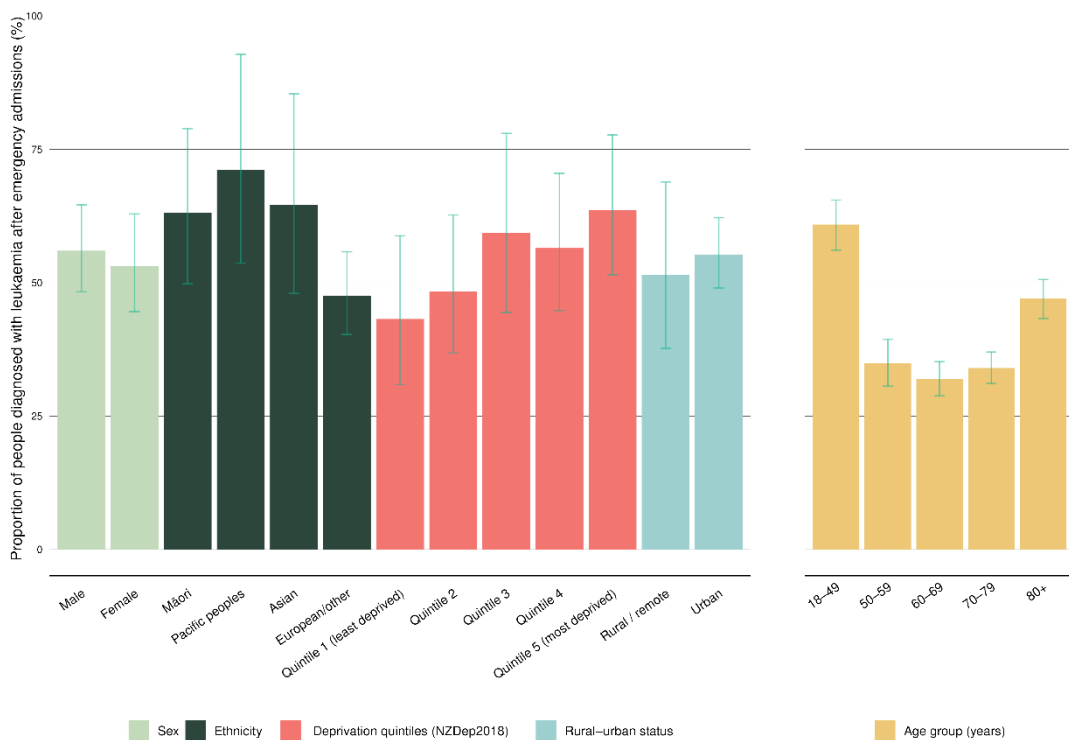
Note: See Appendix D for more detailed information.



6.8 Leukaemia

There were 3,385 people diagnosed with leukaemia between 2017 and 2021. Overall, 39.5% of those people were diagnosed in the 30 days following an emergency admission. Pacific peoples had the highest proportion (71.2%), followed by Asian people (64.6%), Māori (63.1%) and people of European/other ethnicity (47.6%). People aged 18–49 were the most likely to be diagnosed following an emergency admission (60.9%) (Figure 20).

Figure 20: Proportion of people diagnosed with leukaemia in the 30 days following emergency admission, by sex, ethnicity, NZDep2018 quintile, rural–urban status (all age-standardised), and age (non-standardised) for the years 2017–2021

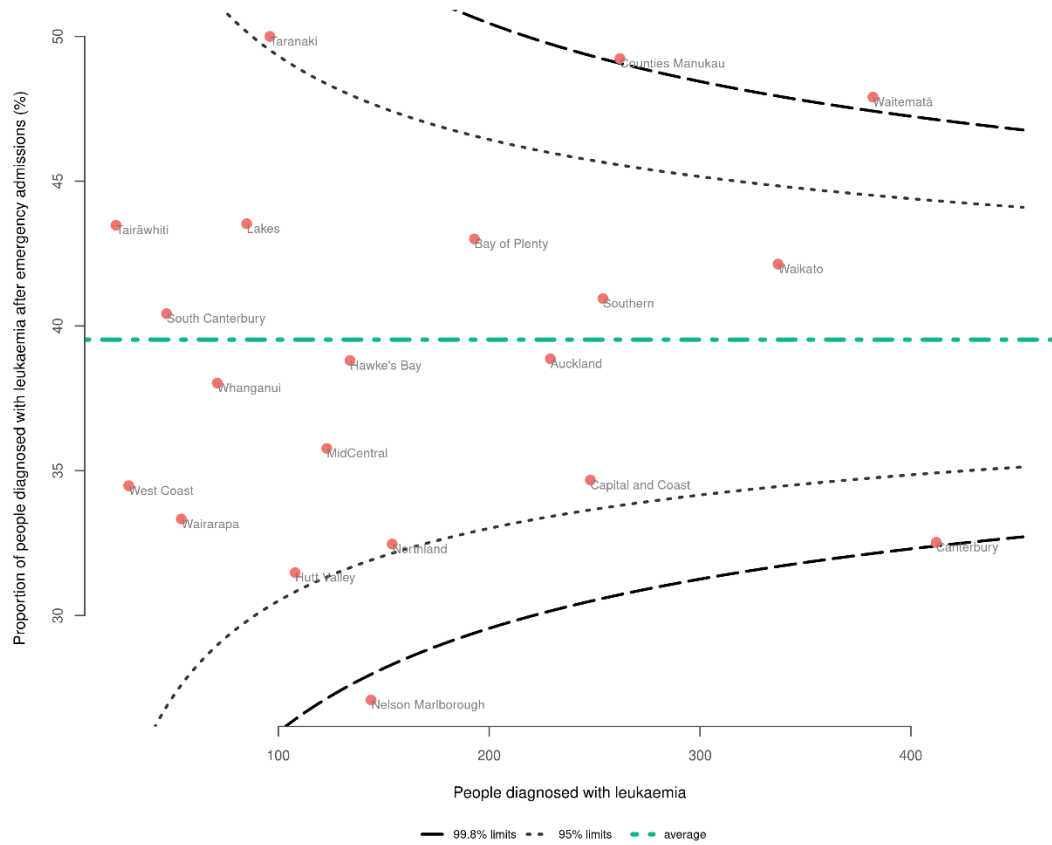


Note: See Appendix D for more detailed information. Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

Counties Manukau, Taranaki and Waitematā had proportions above the upper 95% limit, while Nelson Marlborough and Canterbury sat below the lower 95% limit. However, the small numbers in some districts (including Taranaki and Nelson Marlborough) mean this data should be interpreted with caution (Figure 21).



Figure 21: Funnel plot showing proportion of people diagnosed with leukaemia in the 30 days following emergency admission, by district of residence, for the years 2017–2021 (un-standardised)



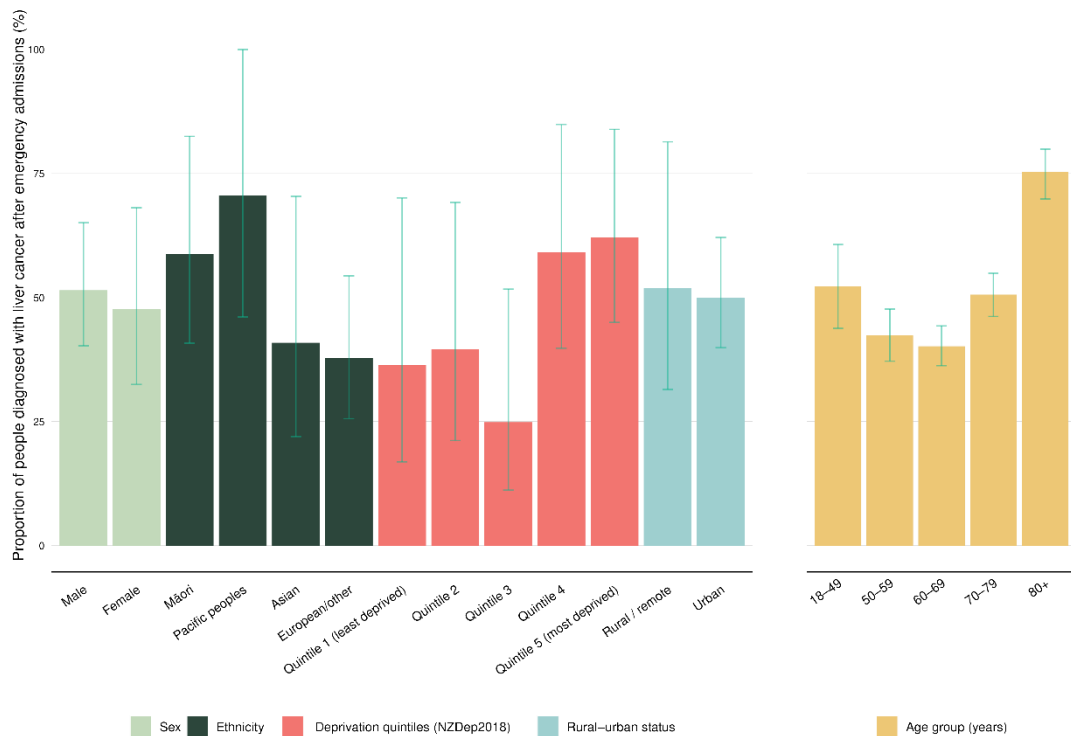
Note: See Appendix D for more detailed information.



6.9 Liver cancer

There were 1,824 people diagnosed with liver cancer between 2017 and 2021. Overall, 49.8% of those people were diagnosed in the 30 days following an emergency admission. Pacific peoples had a notably higher proportion than other ethnicities (Figure 22). Pacific peoples had a proportion of 70.6%, compared with 58.8% for Māori, 40.9% for Asian and 37.8% for people of European/other ethnicity. People aged 80+ were more likely to be diagnosed following an emergency admission (75.3%) compared to other age groups (Figure 22).

Figure 22: Proportion of people diagnosed with liver cancer in the 30 days following emergency admission, by sex, ethnicity, NZDep2018 quintile, rural–urban status (all age-standardised), and age (non-standardised) for the years 2017–2021

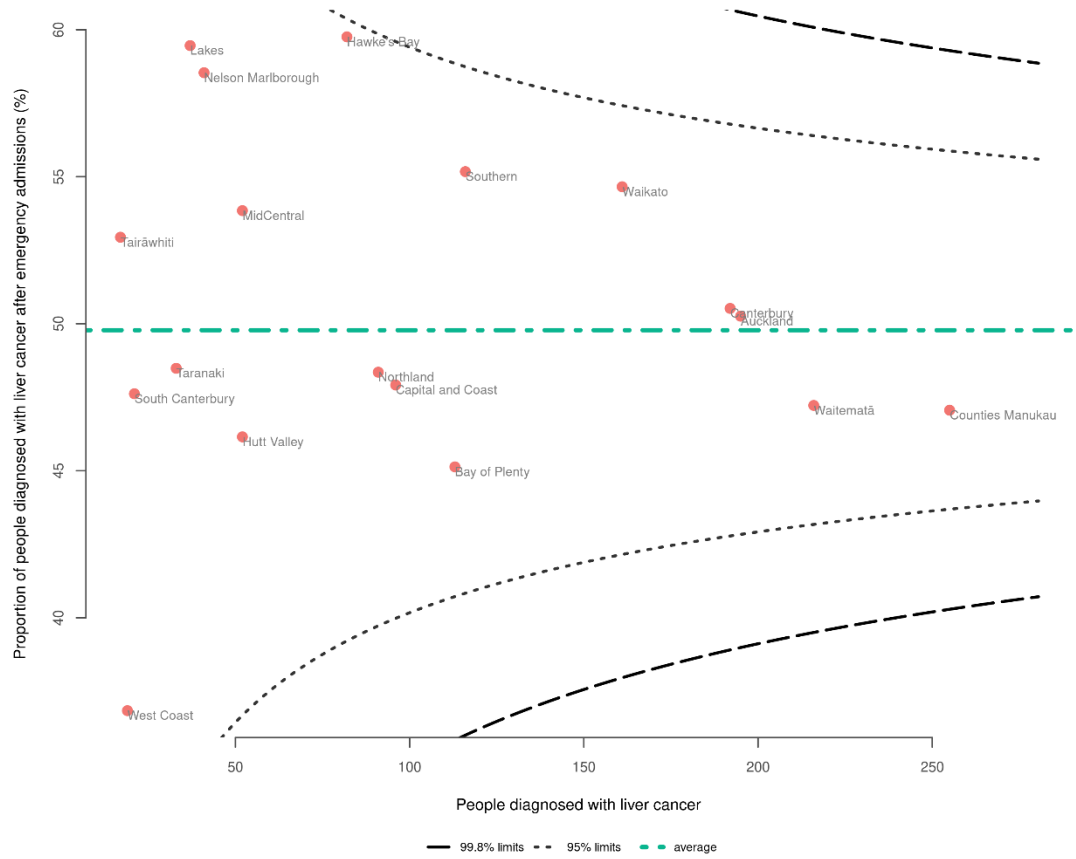


Note: See Appendix D for more detailed information. Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

No districts sat outside the 95% limits of the funnel plot (Figure 23).



Figure 23: Funnel plot showing proportion of people diagnosed with liver cancer in the 30 days following emergency admission, by district of residence, for the years 2017–2021 (un-standardised)



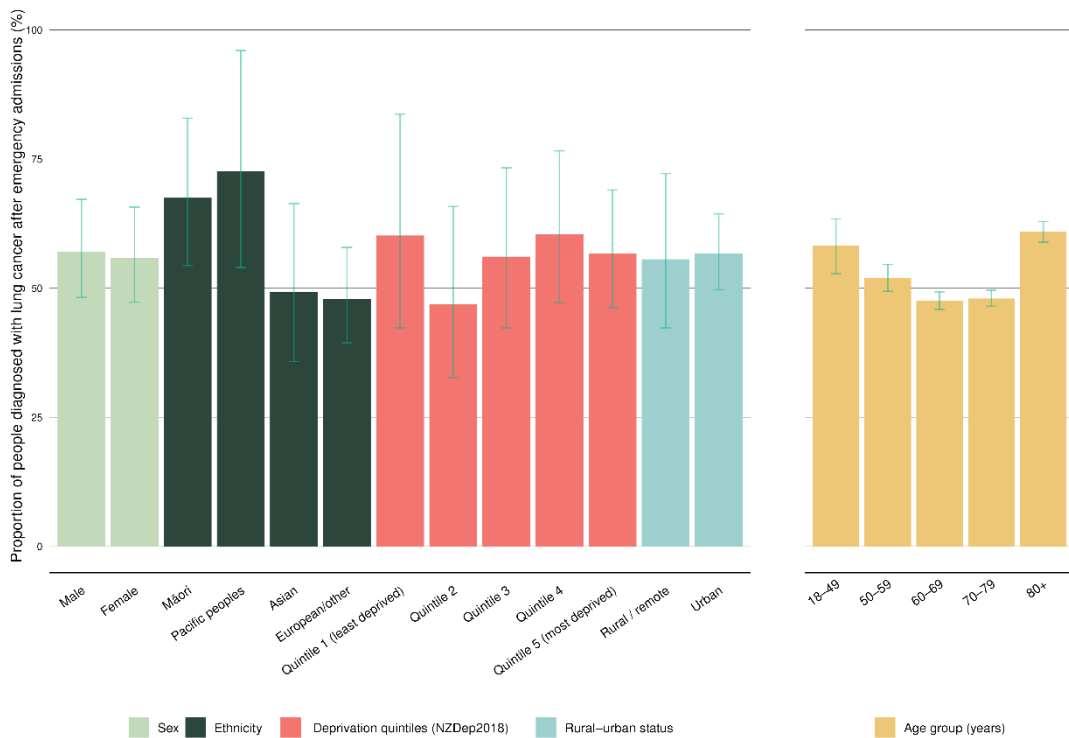
Note: See Appendix D for more detailed information.



6.10 Lung cancer

There were 11,141 people diagnosed with lung cancer between 2017 and 2021. Overall, 51.3% of those people were diagnosed in the 30 days following an emergency admission. Pacific peoples had the highest proportion (65.4%), followed by Māori (54.1%), people of European/other ethnicity (49.6%) and Asian people (48.1%). People aged 80+ (60.9%) and those aged 18–49 (58.2%) were more commonly diagnosed after an emergency admission compared to other age groups (47.6%–52.0%) (Figure 24).

Figure 24: Proportion of people diagnosed with lung cancer in the 30 days following emergency admission, by sex, ethnicity, NZDep2018 quintile, rural–urban status (all age-standardised), and age (non-standardised) for the years 2017–2021

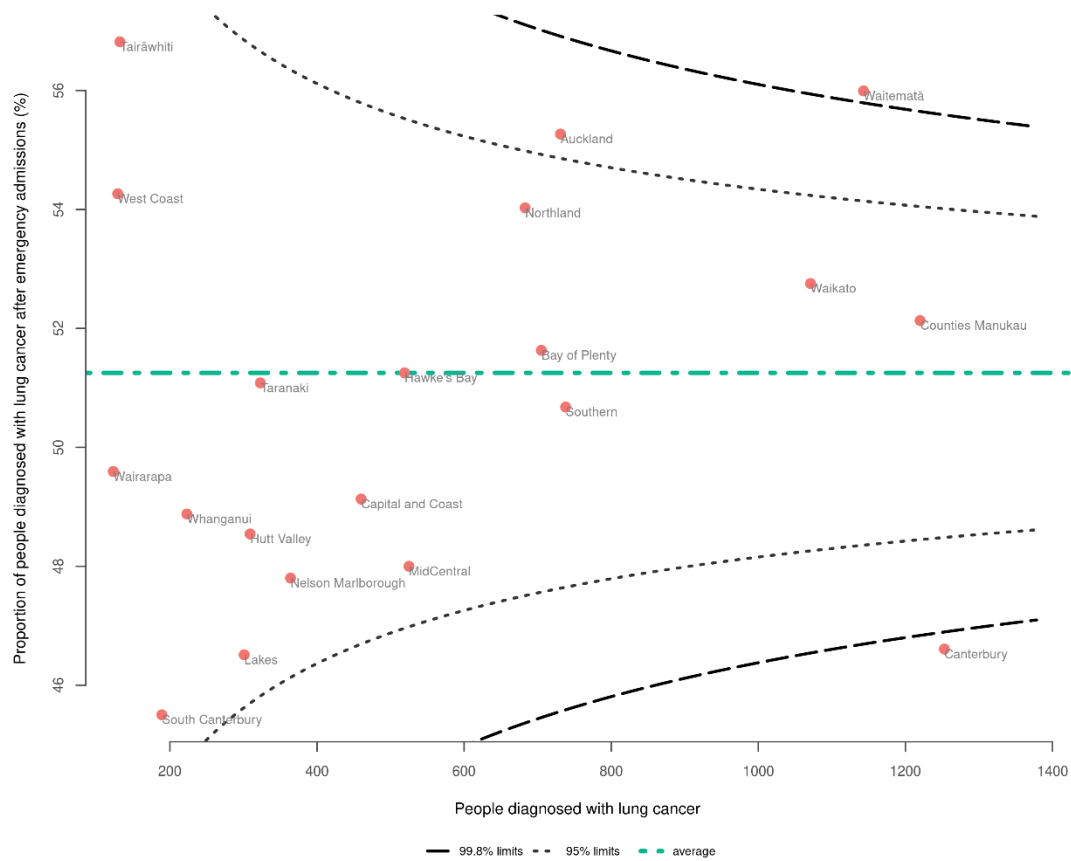


Note: See Appendix D for more detailed information. Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

Canterbury sat below the lower 95% limit with a proportion of 46.6%, while two districts were above the upper 95% limit: Auckland (55.3%) and Waitemata (56.0%) (Figure 25).



Figure 25: Funnel plot showing proportion of people diagnosed with lung cancer in the 30 days following emergency admission, by district of residence, for the years 2017–2021 (un-standardised)



Note: See Appendix D for more detailed information.

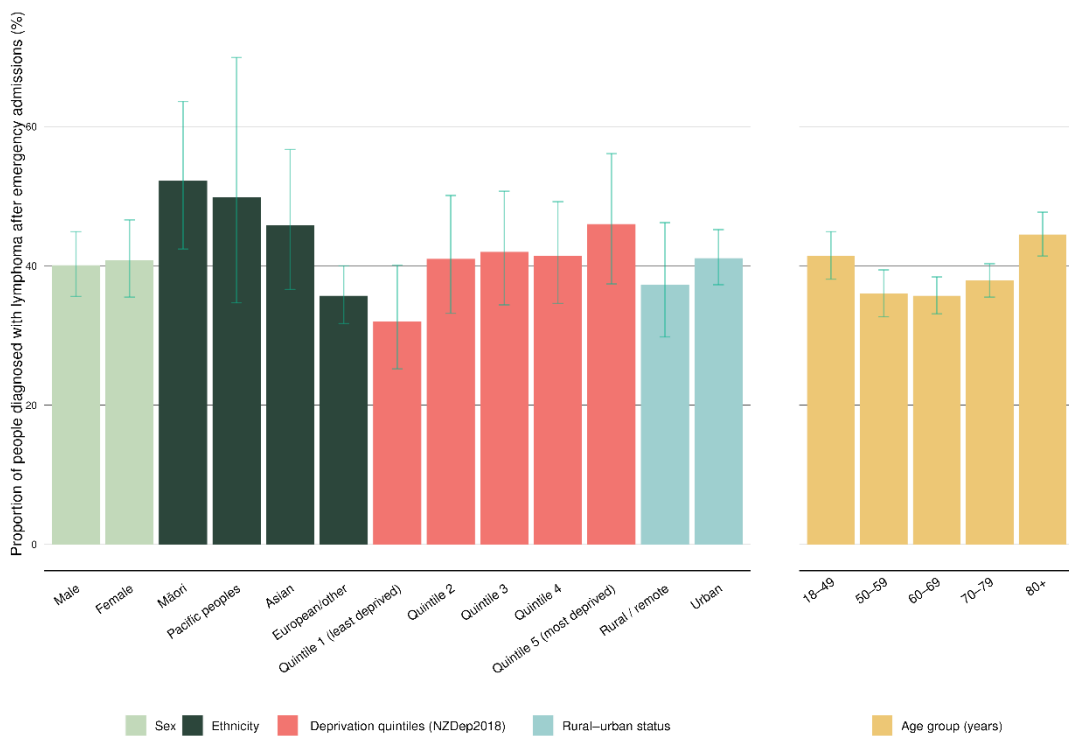
As part of the cancer QPI programme, we published the *Lung Cancer Quality Improvement Monitoring Report 2021* (Te Aho o Te Kahu 2021b), which provides quality performance indicators specific to lung cancer, including route to diagnosis. Note that the time period of data included and the definition of ‘emergency admission’ (see Table 2 in Appendix C) differ between reports, therefore variation in data will be seen.



6.11 Lymphoma

There were 5,362 people diagnosed with lymphoma between 2017 and 2021. Overall, 38.8% of those people were diagnosed in the 30 days following an emergency admission. Māori and Pacific peoples were more commonly diagnosed following an emergency admission than people of European/other ethnicity. The proportions were 47.7% for Māori, 55.6% for Pacific peoples, 44.0% for Asian people, and 36.5% for people of European/other ethnicity (Figure 26).

Figure 26: Proportion of people diagnosed with lymphoma in the 30 days following emergency admission, by sex, ethnicity, NZDep2018 quintile, rural-urban status (all age-standardised), and age (non-standardised) for the years 2017–2021

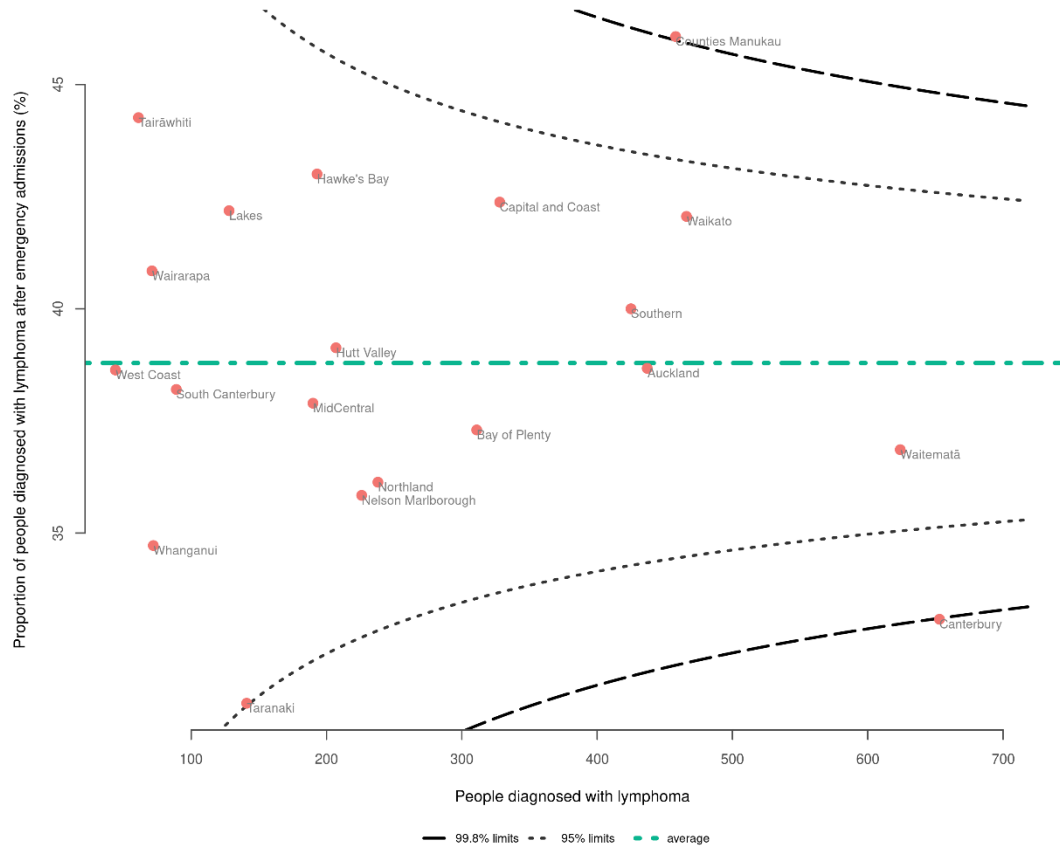


Note: See Appendix D for more detailed information. Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

Counties Manukau sat above the upper 95% limit at 46.1%, while Canterbury was below the lower 95% limit with a proportion of 33.1% (Figure 27).



Figure 27: Funnel plot showing proportion of people diagnosed with lymphoma in the 30 days following emergency admission, by district of residence, for the years 2017–2021 (un-standardised)



Note: See Appendix D for more detailed information.

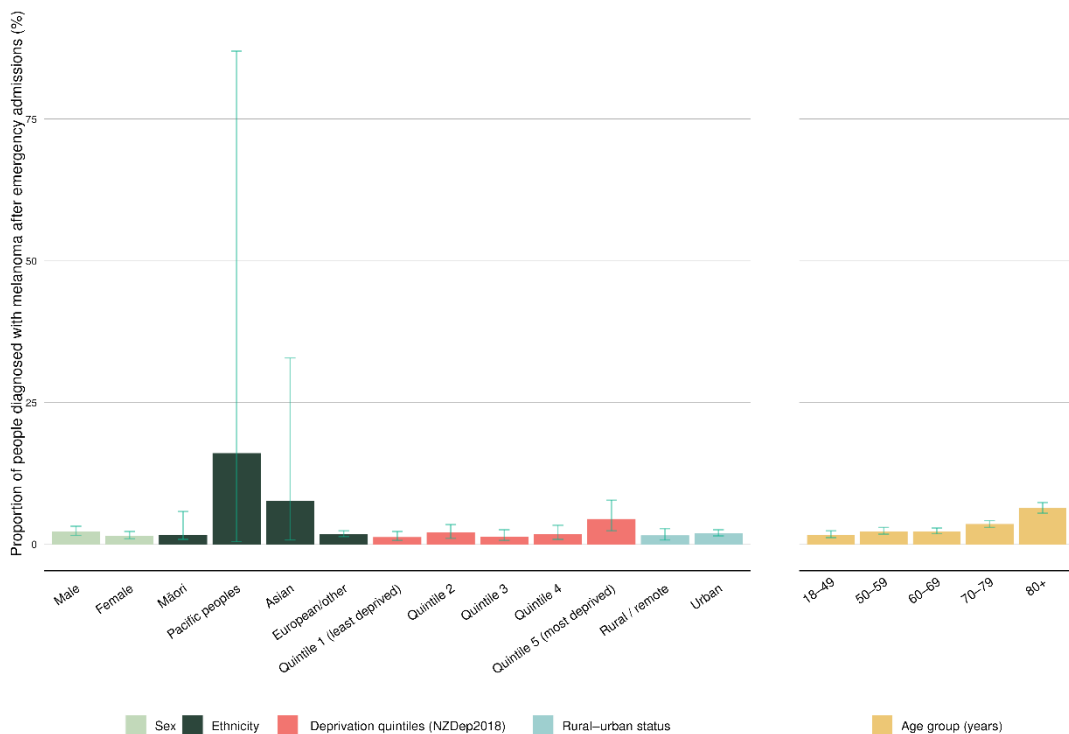


6.12 Melanoma

There were 13,461 people diagnosed with melanoma between 2017 and 2021. Overall, 3.3% of those people were diagnosed in the 30 days following an emergency admission. People aged 80+ had a higher proportion (6.4%) compared to younger age groups (1.7%–3.6%) (Figure 28).

People living in the most deprived areas had a higher proportion (4.5%) than those in the least deprived areas (1.3%). Small numbers of people of Pacific, Māori and Asian ethnicity who were diagnosed with melanoma make it challenging to compare between ethnicities (see Appendix D for case numbers).

Figure 28: Proportion of people diagnosed with melanoma in the 30 days following emergency admission, by sex, ethnicity, NZDep2018 quintile, rural–urban status (all age-standardised), and age (non-standardised) for the years 2017–2021

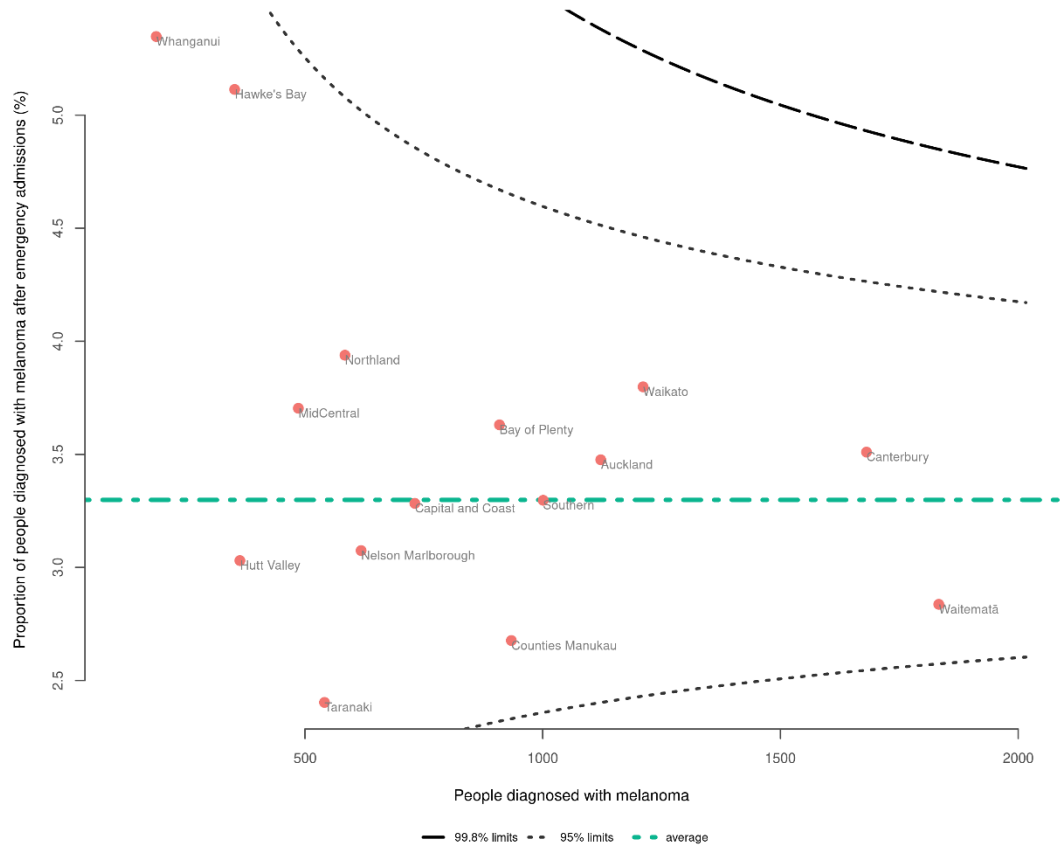


Note: See Appendix D for more detailed information. Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

District comparison using a funnel plot did not reveal any notable outliers (Figure 29).



Figure 29: Funnel plot showing proportion of people diagnosed with melanoma in the 30 days following emergency admission, by district of residence, for the years 2017–2021 (un-standardised)



Note: See Appendix D for more detailed information.

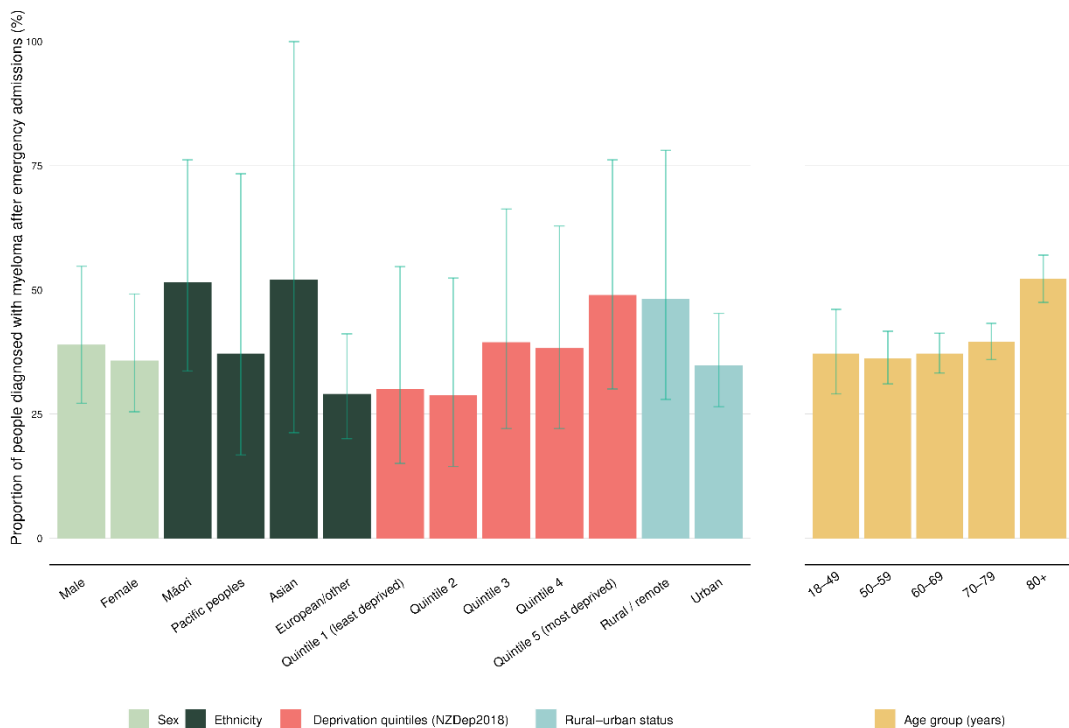


6.13 Myeloma

There were 2,094 people diagnosed with myeloma between 2017 and 2021. Overall, 40.9% of those people were diagnosed in the 30 days following an emergency admission. People aged 80+ most commonly were diagnosed following an emergency admission (52.3%) (Figure 30).

Māori and Asian people were most likely to be diagnosed following an emergency admission (51.6% and 52.1%, respectively), followed by Pacific peoples (37.2%) and people of European/other ethnicity (29.1%). However, the small numbers, particularly for Pacific peoples and Asian people, mean this data should be interpreted with caution (see Appendix D for case numbers).

Figure 30: Proportion of people diagnosed with myeloma in the 30 days following emergency admission, by sex, ethnicity, NZDep2018 quintile, rural–urban status (all age-standardised), and age (non-standardised) for the years 2017–2021

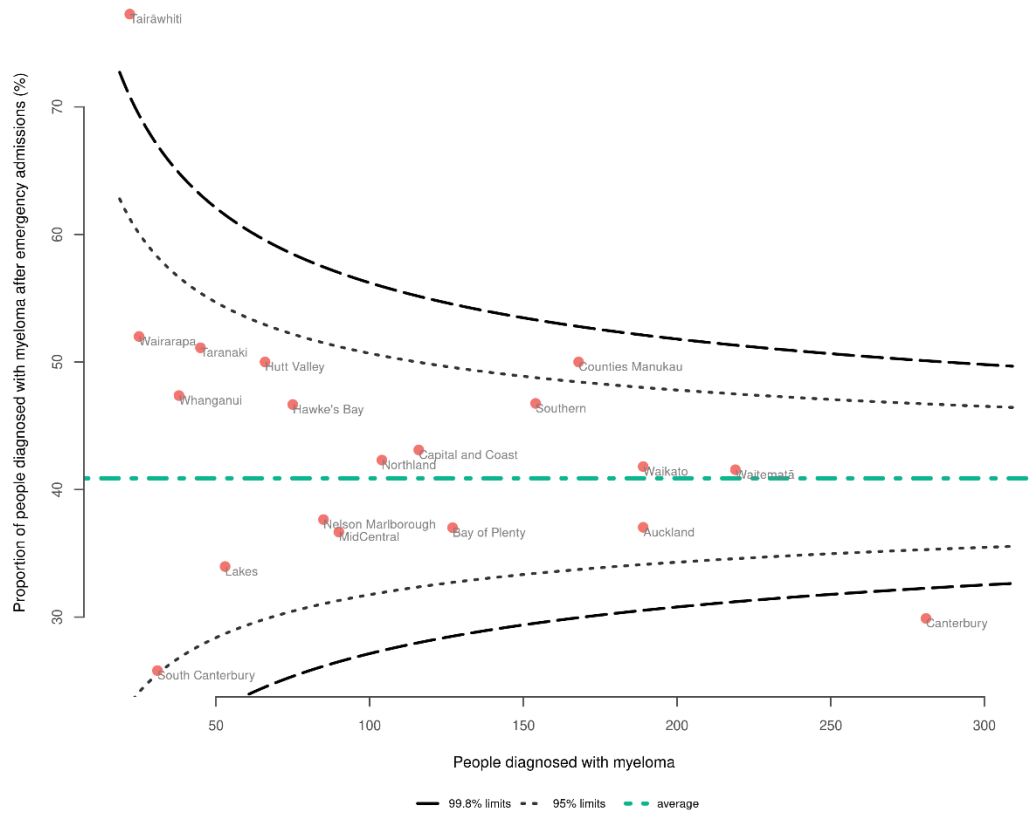


Note: See Appendix D for more detailed information. Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

District comparison by funnel plot shows Canterbury below the lower 95% limit with a proportion of 29.9%. Tairāwhiti was an outlier; however, there were small numbers in this district. Counties Manukau was above the upper 95% limit with a proportion of 50.0% (Figure 31).



Figure 31: Funnel plot showing proportion of people diagnosed with myeloma in the 30 days following emergency admission, by district of residence, for the years 2017–2021 (un-standardised)



Note: See Appendix D for more detailed information.

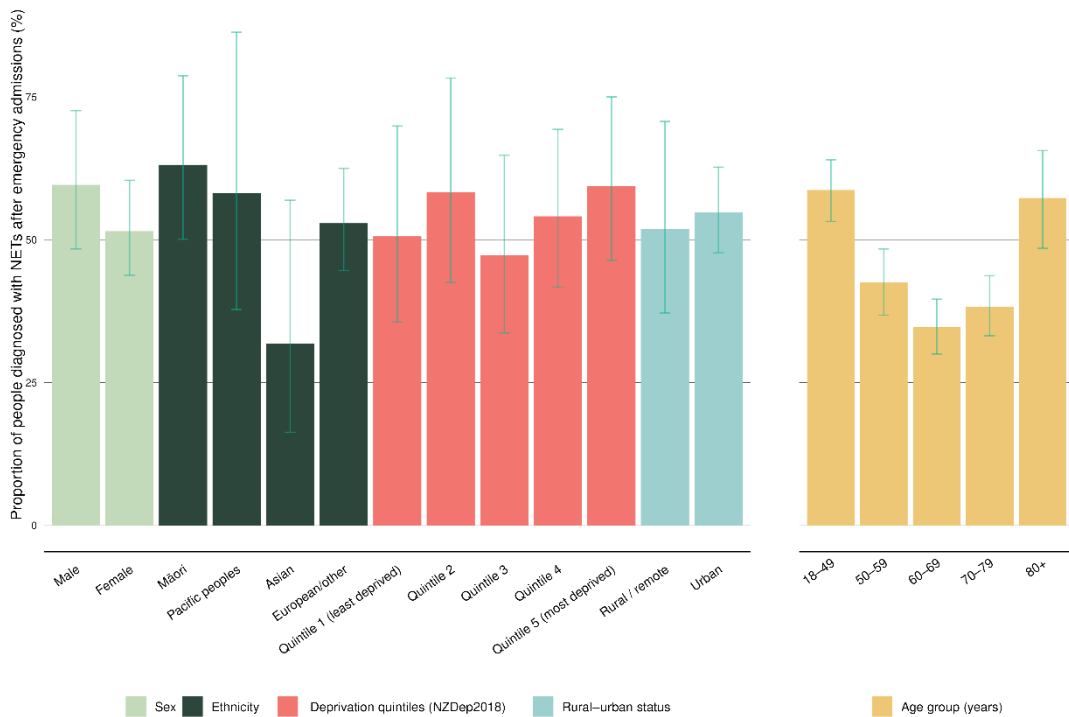


6.14 Neuroendocrine tumours (NETs)

There were 1,419 people diagnosed with neuroendocrine tumours (NETs) between 2017 and 2021. Overall, 44.3% of those people were diagnosed in the 30 days following an emergency admission.

Asian people were less likely to be diagnosed following an emergency admission (32.4%) compared with Māori (55.3%), Pacific peoples (51.2%) and people of European/other ethnicity (41.9%). People aged 15–49 and people aged 80+ were more likely to be diagnosed following an emergency admission (58.7% and 57.3%, respectively) compared to the other age groups (50–59 years, 42.5%; 60–69 years, 34.7%; 70–79 years, 38.3%) (Figure 32).

Figure 32: Proportion of people diagnosed with NETs in the 30 days following emergency admission, by sex, ethnicity, NZDep2018 quintile, rural–urban status (all age-standardised), and age (non-standardised) for the years 2017–2021

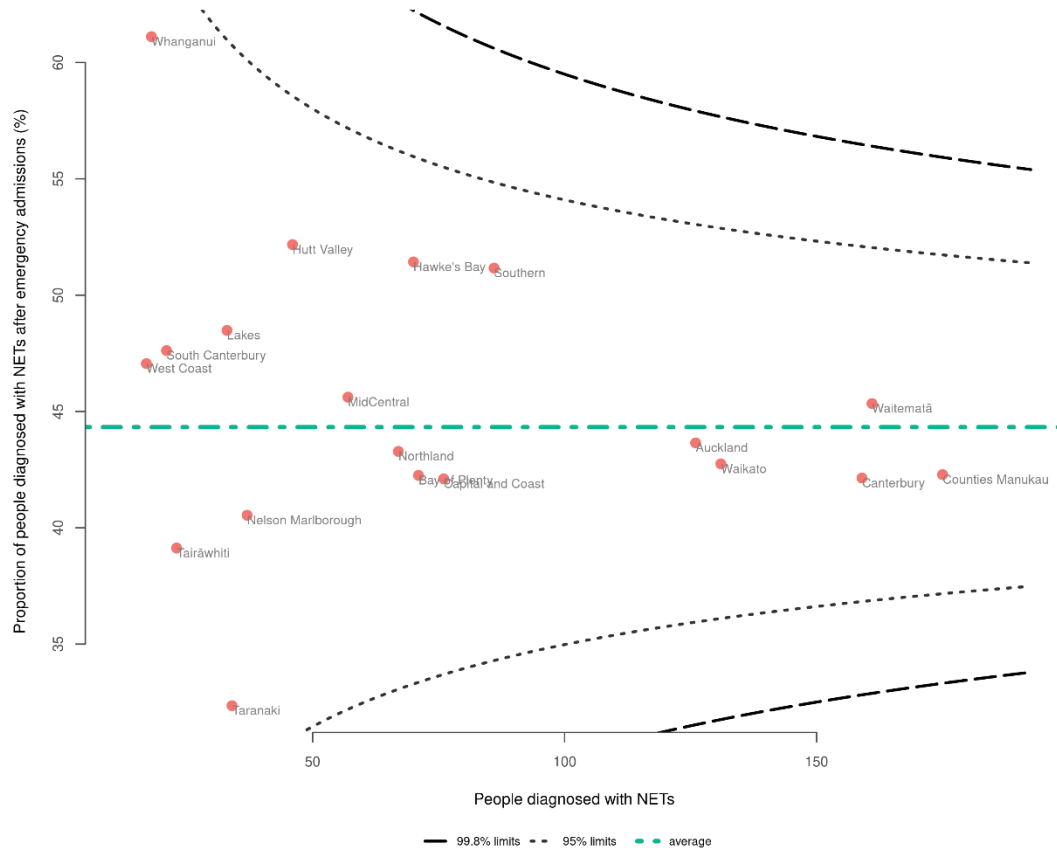


Note: See Appendix D for more detailed information. Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

The funnel plot for NETs shows no outliers (Figure 33).



Figure 33: Funnel plot showing proportion of people diagnosed with NETs in the 30 days following emergency admission, by district of residence, for the years 2017–2021 (un-standardised)



Note: See Appendix D for more detailed information.

Considering the variety of presentations and prognoses of NETs, we have analysed the results for NETs according to the category given in the NZCR. More detail is available in Appendix A.

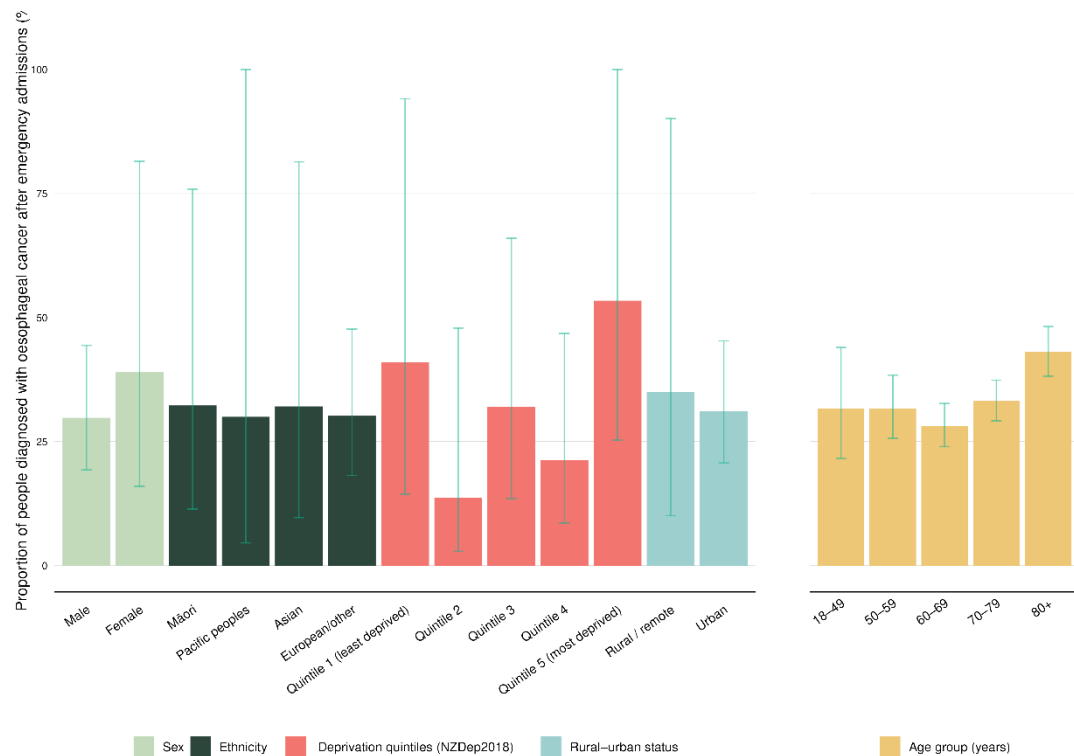


6.15 Oesophageal cancer

There were 1,553 people diagnosed with oesophageal cancer between 2017 and 2021. Overall, 34.0% of those people were diagnosed in the 30 days following an emergency admission. People aged 80+ were more likely to be diagnosed following an emergency admission (43.1%) than those aged 60–69 (28.2%) (Figure 34).

There are no clear differences between ethnicities, which is likely due to smaller numbers of people not of European/other ethnicity (see Appendix D for case numbers).

Figure 34: Proportion of people diagnosed with oesophageal cancer in the 30 days following emergency admission, by sex, ethnicity, NZDep2018 quintile, rural–urban status (all age-standardised), and age (non-standardised) for the years 2017–2021

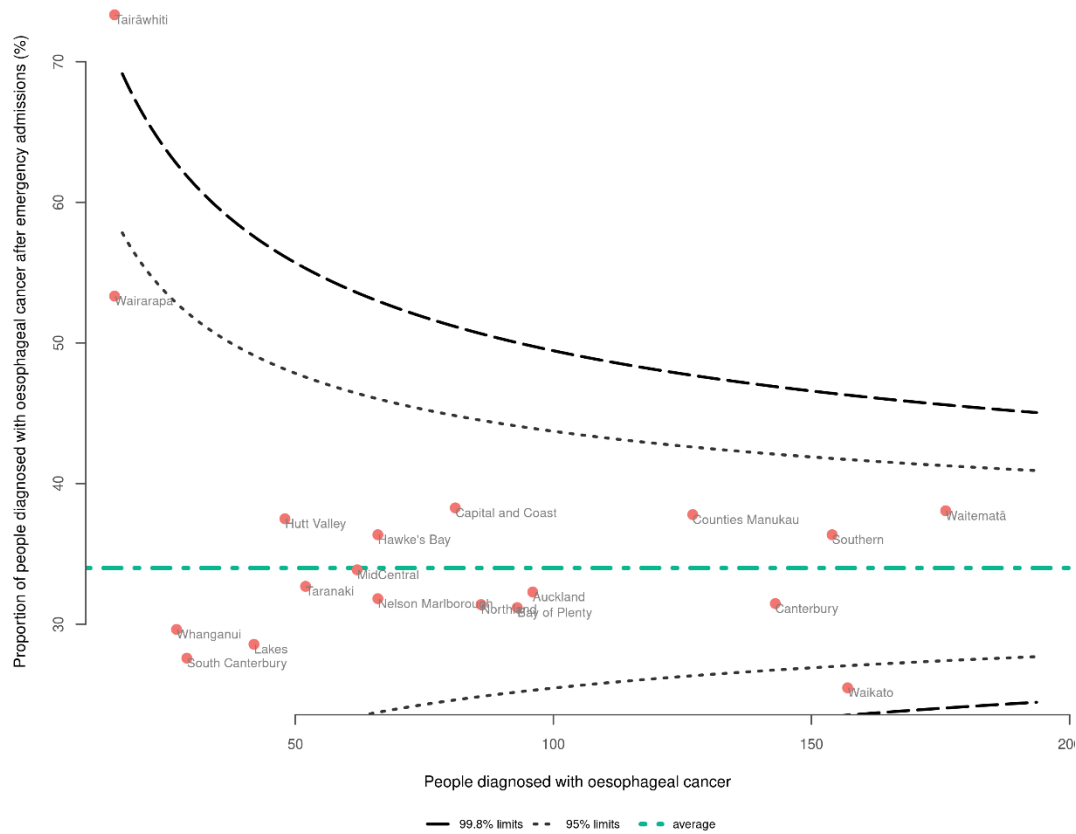


Note: See Appendix D for more detailed information. Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

The numbers of people with oesophageal cancer are small, so outliers plotted closest to the y-axis should be interpreted with caution (such as Tairāwhiti). Waikato was below the lower 95% limit with a proportion of 25.5% (Figure 35).



Figure 35: Funnel plot showing proportion of people diagnosed with oesophageal cancer in the 30 days following emergency admission, by district of residence, for the years 2017–2021 (un-standardised)



Note: See Appendix D for more detailed information.



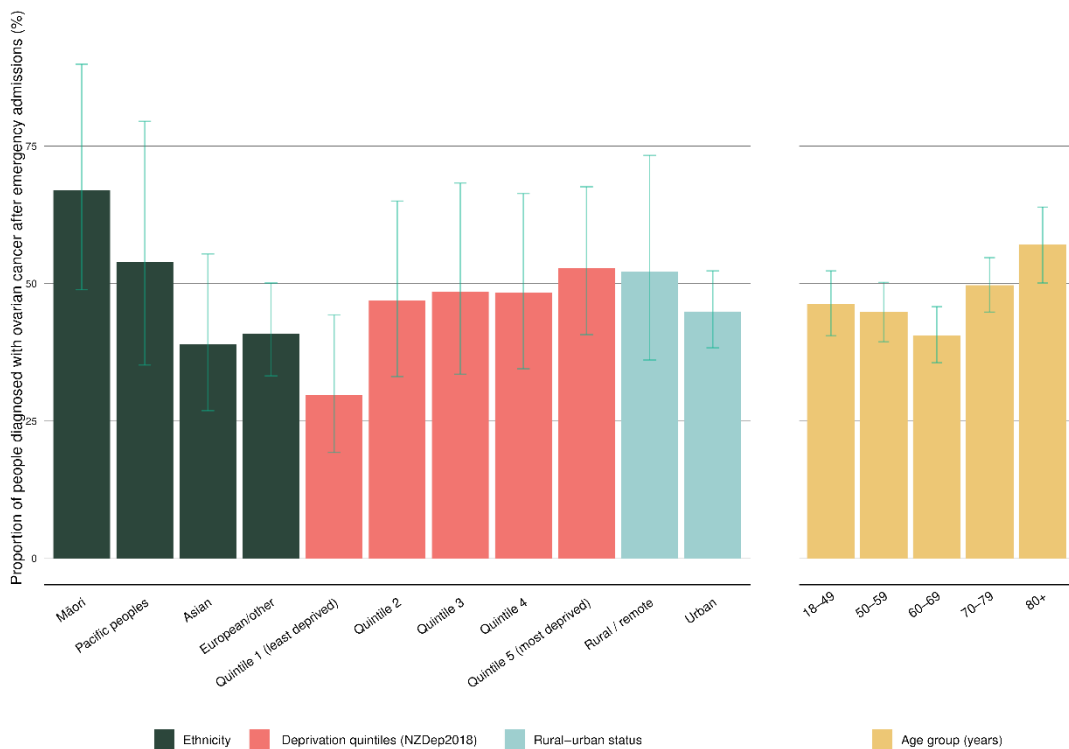
6.16 Ovarian cancer

There were 1,531 people diagnosed with ovarian cancer between 2017 and 2021. Overall, 46.9% of those people were diagnosed in the 30 days following an emergency admission.

When comparing by ethnicity, Māori had the highest proportion (67.0%), followed by Pacific peoples (53.9%), people of European/other ethnicity (40.9%), and Asian people (39.0%).

People aged 80+ had a higher proportion (57.1%) compared to those aged 60–69 (40.6%), and those living in more deprived areas had a higher proportion (52.8%) compared to those in the least deprived areas (29.7%) (Figure 36).

Figure 36: Proportion of people diagnosed with ovarian cancer in the 30 days following emergency admission, by sex, ethnicity, NZDep2018 quintile, rural–urban status (all age-standardised), and age (non-standardised) for the years 2017–2021

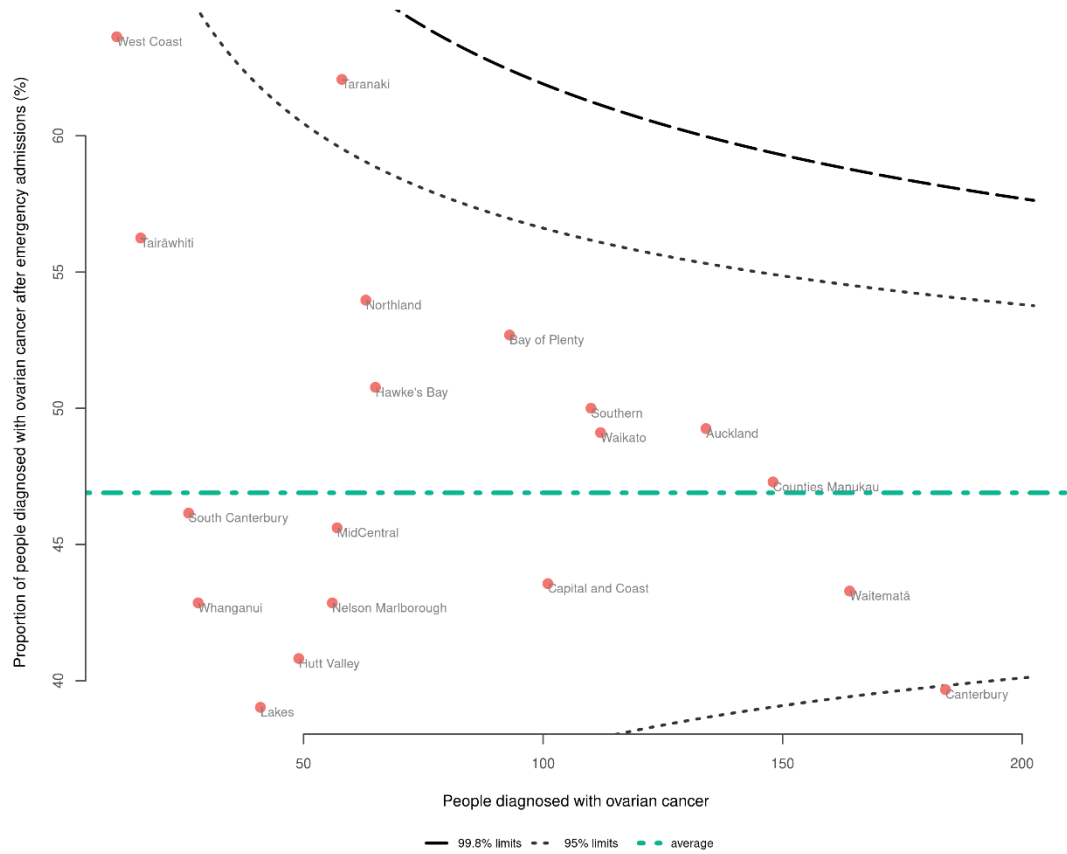


Note: See Appendix D for more detailed information. Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

When comparing districts, there appeared to be a broad range of proportions across Aotearoa. Taranaki sat above the upper 95% limit with a proportion of 62.1%, and Canterbury sat on the lower 95% limit with a proportion of 39.7% (Figure 37).



Figure 37: Funnel plot showing proportion of people diagnosed with ovarian cancer in the 30 days following emergency admission, by district of residence, for the years 2017–2021 (un-standardised)



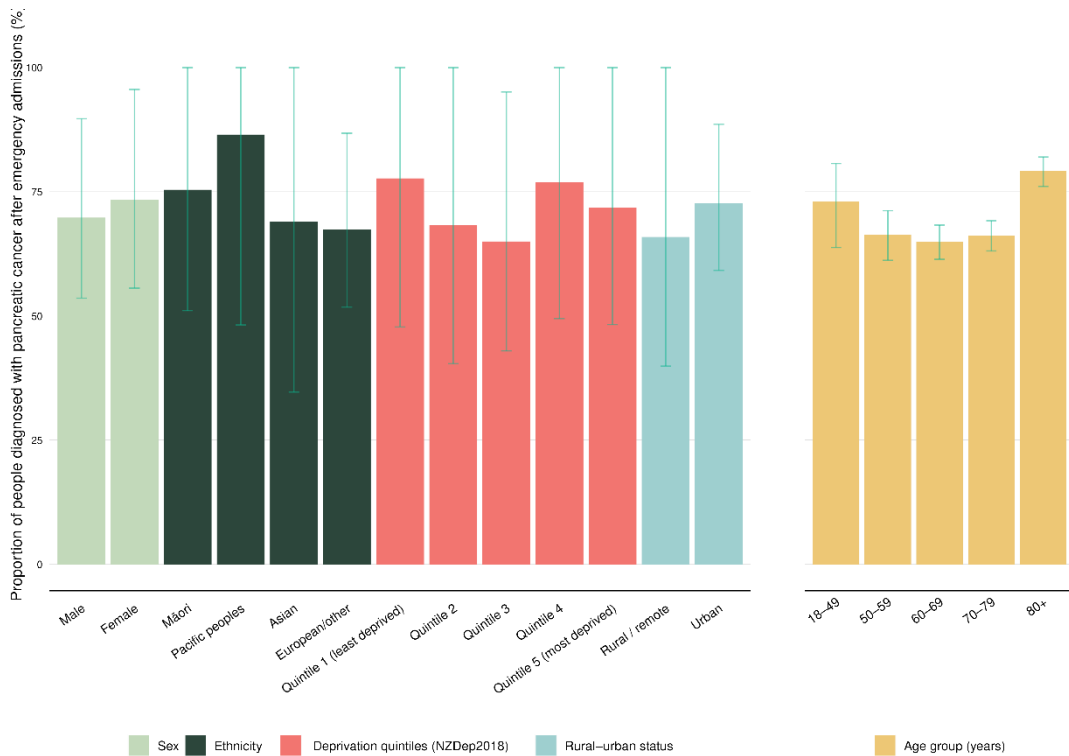
Note: See Appendix D for more detailed information.



6.17 Pancreatic cancer

There were 2,804 people diagnosed with pancreatic cancer between 2017 and 2021. Overall, 69.5% of those people were diagnosed in the 30 days following an emergency admission. While this overall proportion is high, Māori and Pacific peoples had higher proportions (75.4% and 86.5%, respectively) compared to Asian people (69.0%) and people of European/other ethnicity (67.4%). People aged 80+ had a higher proportion (79.2%) compared to those aged 50–79 (Figure 38).

Figure 38: Proportion of people diagnosed with pancreatic cancer in the 30 days following emergency admission, by sex, ethnicity, NZDep2018 quintile, rural–urban status (all age-standardised), and age (non-standardised) for the years 2017–2021

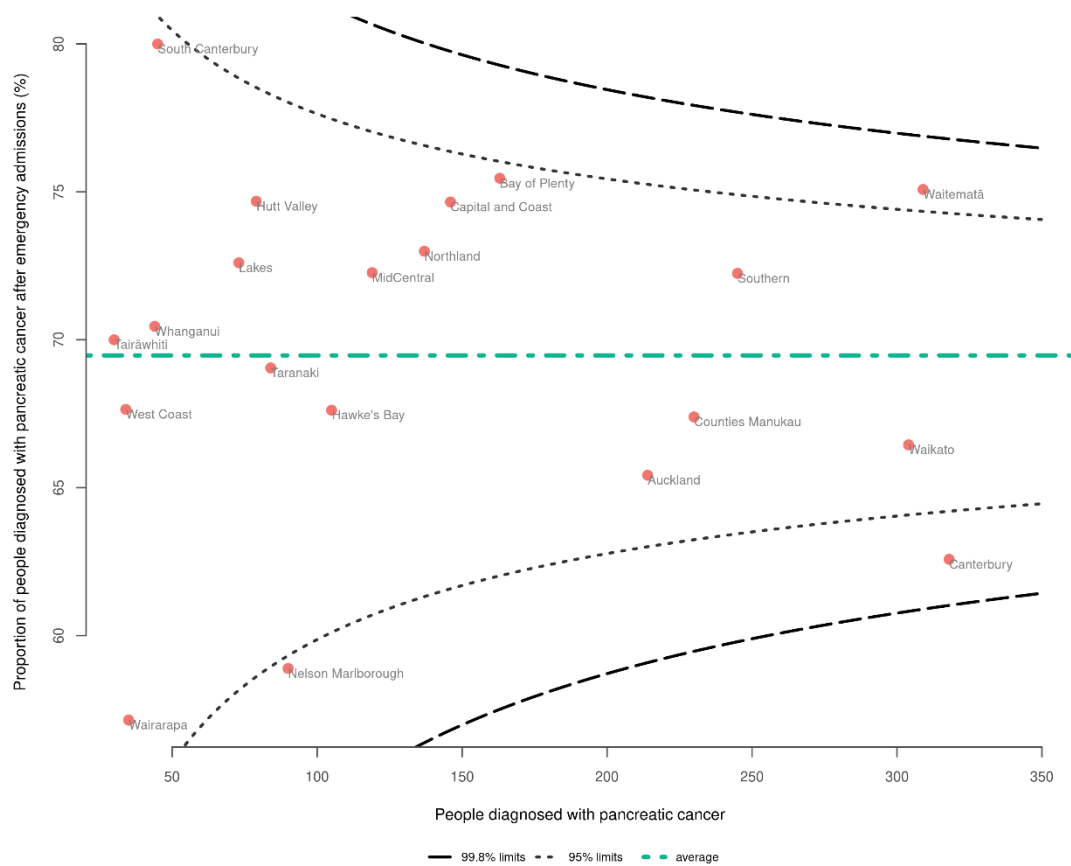


Note: See Appendix D for more detailed information. Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

Waitematā sat above the upper 95% limit with a proportion of 75.1%. Nelson Marlborough and Canterbury were below the lower 95% limit with proportions of 58.9% and 62.6%, respectively (Figure 39).



Figure 39: Funnel plot showing proportion of people diagnosed with pancreatic cancer in the 30 days following emergency admission, by district of residence, for the years 2017–2021 (un-standardised)



Note: See Appendix D for more detailed information.

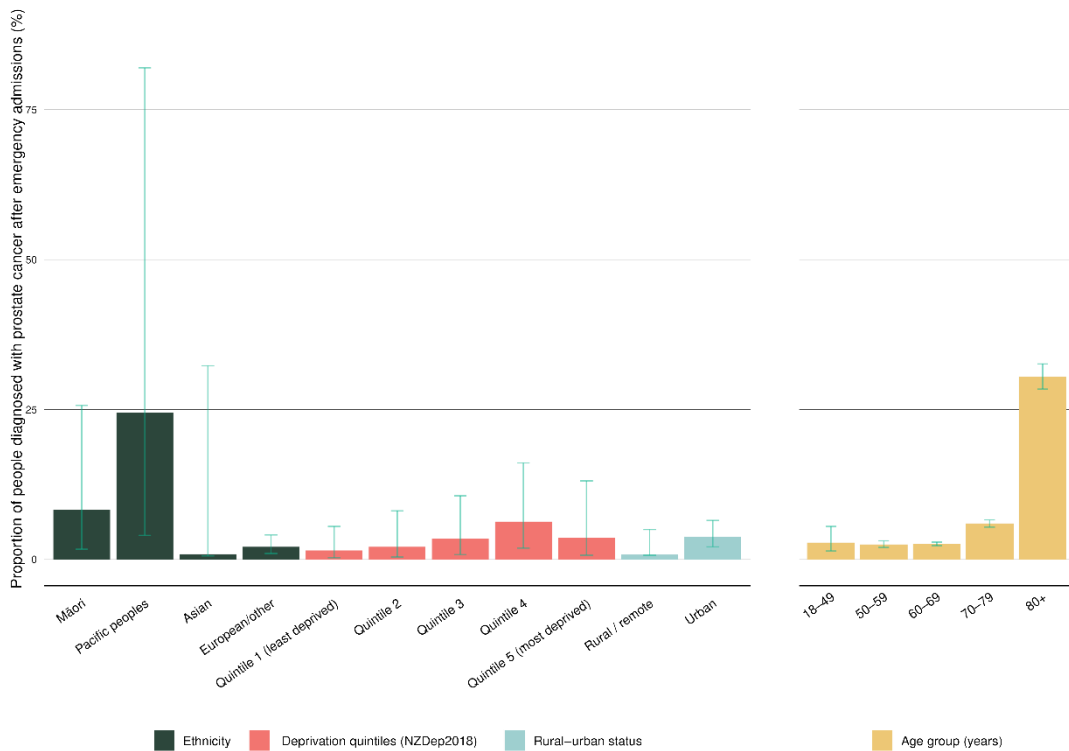
As part of the cancer QPI programme, we published the *Pancreatic Cancer Quality Improvement Monitoring Report 2023 (Te Aho o Te Kahu 2023b)*, which provides quality performance indicators specific to pancreatic cancer, including route to diagnosis. Note that while the definition of ‘emergency presentation’ is the same in both reports, the time period differs, therefore there will be differences between the results reported.



6.18 Prostate cancer

There were 20,241 people diagnosed with prostate cancer between 2017 and 2021. Overall, 6.1% of those people were diagnosed in the 30 days following an emergency admission. People aged 80+ were notably more likely to be diagnosed following an emergency admission, with a proportion of 30.5%. Māori and Pacific peoples were more commonly diagnosed following an emergency admission (8.3% and 24.5%, respectively) compared to people of European/other ethnicity (2.1%) (Figure 40).

Figure 40: Proportion of people diagnosed with prostate cancer in the 30 days following emergency admission, by sex, ethnicity, NZDep2018 quintile, rural–urban status (all age-standardised), and age (non-standardised) for the years 2017–2021

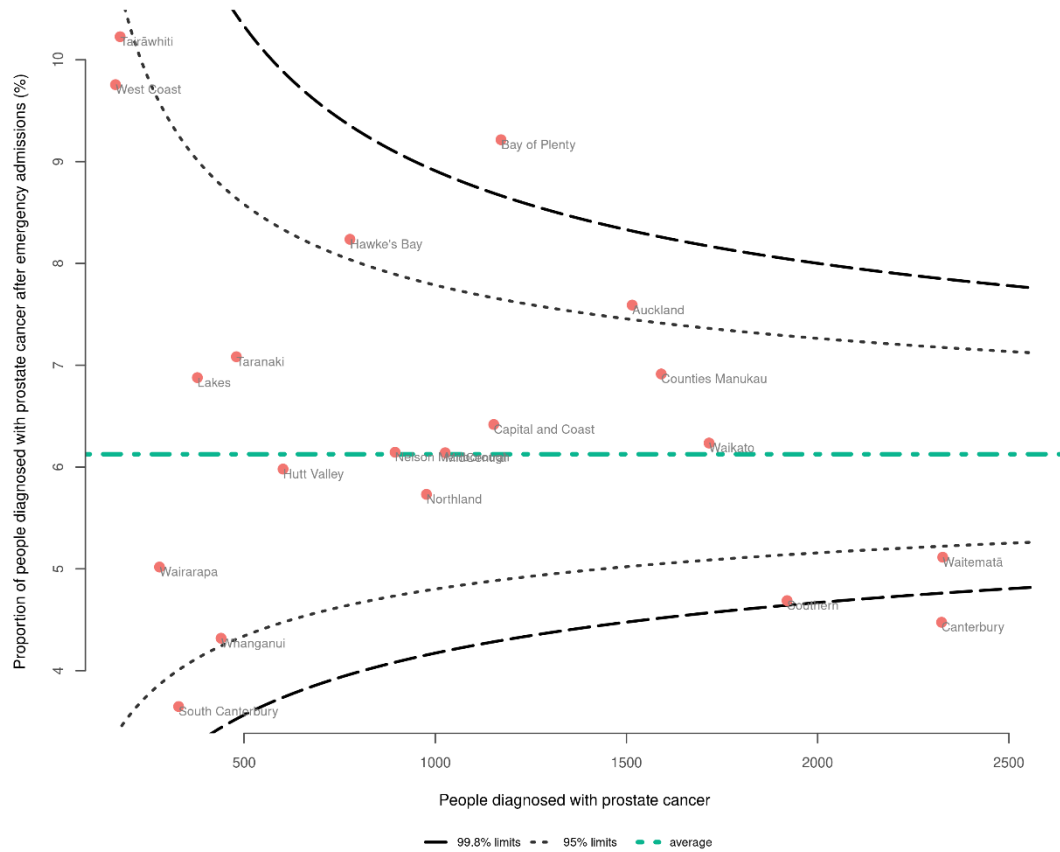


Note: See Appendix D for more detailed information. Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

There were three districts above the upper 95% limit: Bay of Plenty (9.2%), Hawke's Bay (8.2%), and Auckland (7.6%). There were four districts below the lower 95% limit: Waitematā (5.1%), South Canterbury (3.6%), Southern (4.7%) and Canterbury (4.5%) (Figure 41).



Figure 41: Funnel plot showing proportion of people diagnosed with prostate cancer in the 30 days following emergency admission, by district of residence, for the years 2017–2021 (un-standardised)



Note: See Appendix D for more detailed information.

As part of the cancer QPI programme, we published the *Prostate Cancer Monitoring Report Update 2021* (Te Aho o Te Kahu 2021c), which provides quality performance indicators specific to prostate cancer, including route to diagnosis. Note that the time period of data included and the definition of ‘emergency admission’ (see Table 2 in Appendix C) differ between reports, therefore variation in data will be seen.

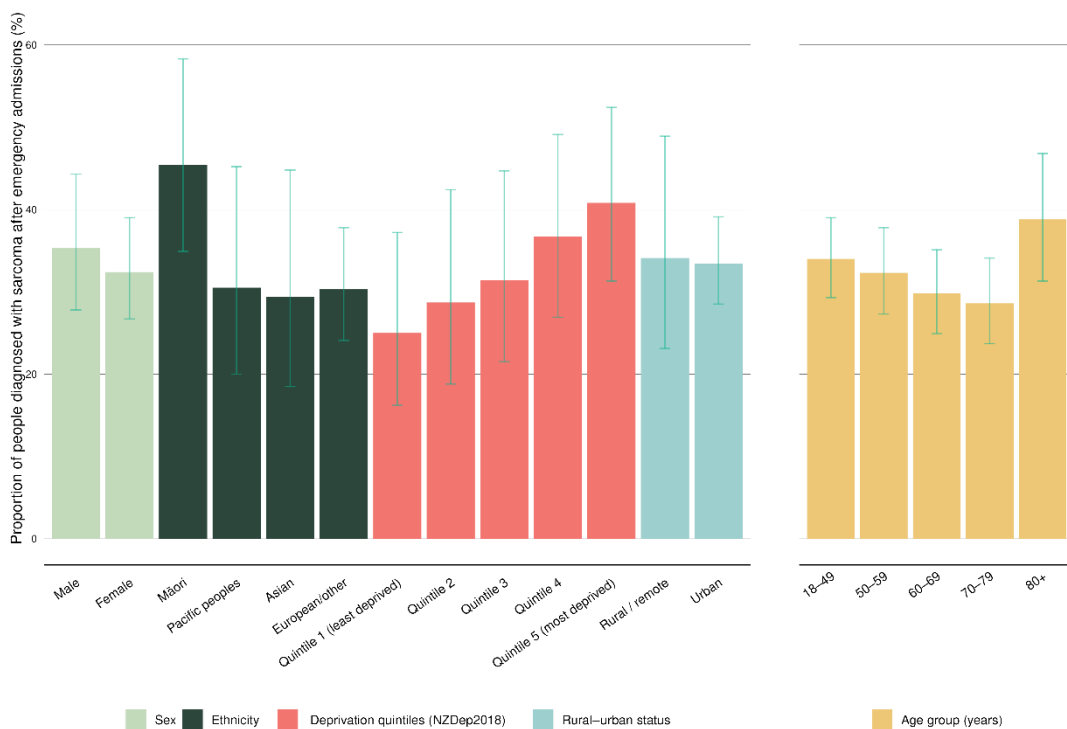


6.19 Sarcoma

There were 1,398 people diagnosed with sarcoma between 2017 and 2021. Overall, 32.1% of those people were diagnosed in the 30 days following an emergency admission.

Māori were more commonly diagnosed following an emergency admission (45.4%) compared to people of European/other ethnicity (30.3%). People living in the most deprived quintile were more likely to be diagnosed following an emergency admission (40.8%) compared to those in the least deprived areas (25.0%) (Figure 42).

Figure 42: Proportion of people diagnosed with sarcoma in the 30 days following emergency admission, by sex, ethnicity, NZDep2018 quintile, rural–urban status (all age-standardised), and age (non-standardised) for the years 2017–2021

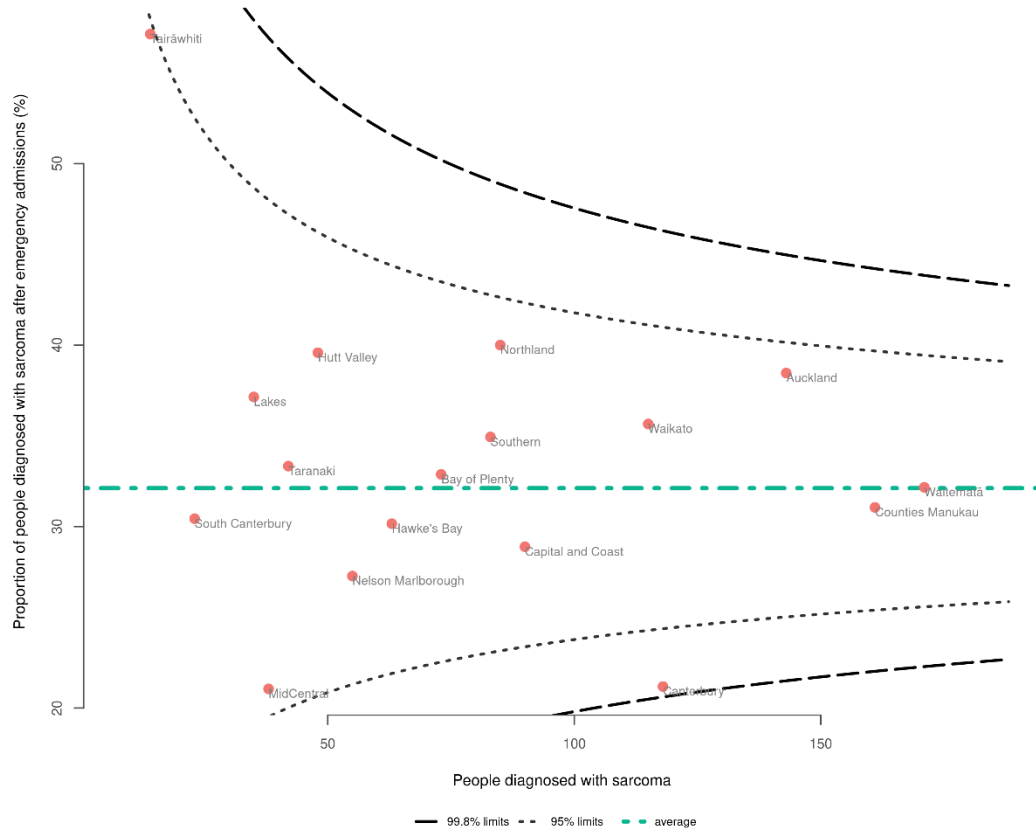


Note: See Appendix D for more detailed information. Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

Not all districts are represented on the funnel plot due to small numbers. Tairāwhiti was an outlier; however, small numbers mean interpretation requires caution. Canterbury was below the lower 95% limit with a proportion of 21.2% (Figure 43).



Figure 43: Funnel plot showing proportion of people diagnosed with sarcoma in the 30 days following emergency admission, by district of residence, for the years 2017–2021 (un-standardised)



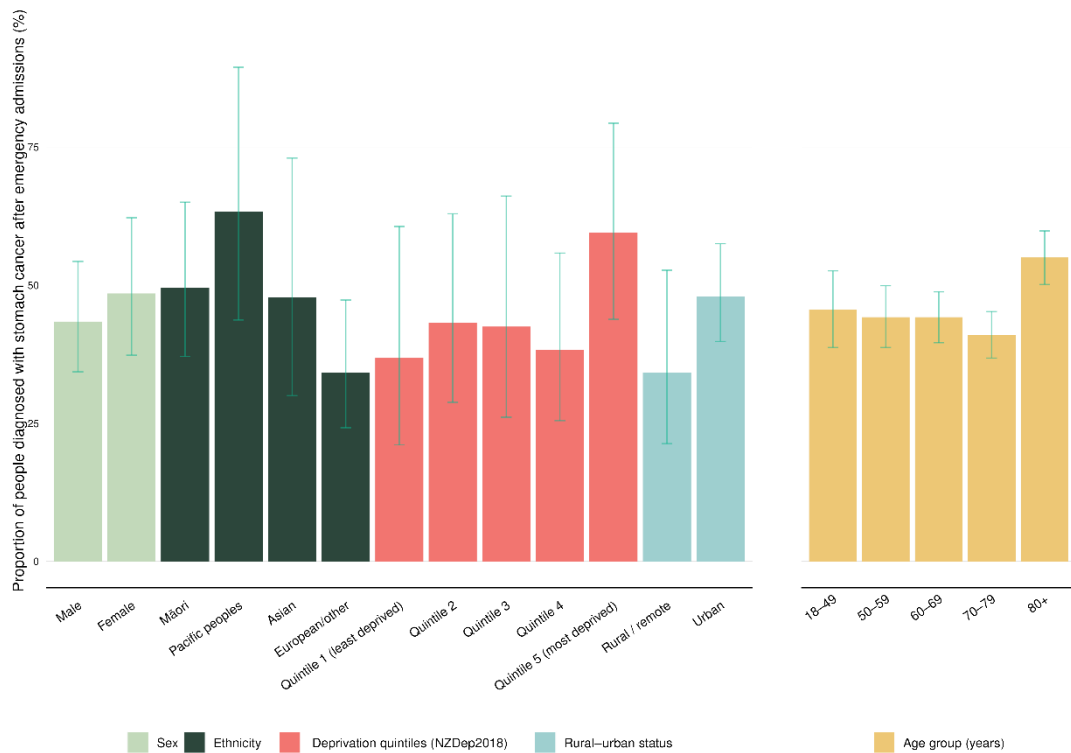
Note: See Appendix D for more detailed information.



6.20 Stomach cancer

There were 1,858 people diagnosed with stomach cancer between 2017 and 2021. Overall, 45.7% of those people were diagnosed in the 30 days following an emergency admission. Māori and Pacific people had higher proportions (49.5% and 63.3%, respectively) compared with people of European/other ethnicity (34.2%). Those living in more deprived areas had a higher proportion compared to those in the least deprived areas (Figure 44).

Figure 44: Proportion of people diagnosed with stomach cancer in the 30 days following emergency admission, by sex, ethnicity, NZDep2018 quintile, rural–urban status (all age-standardised), and age (non-standardised) for the years 2017–2021

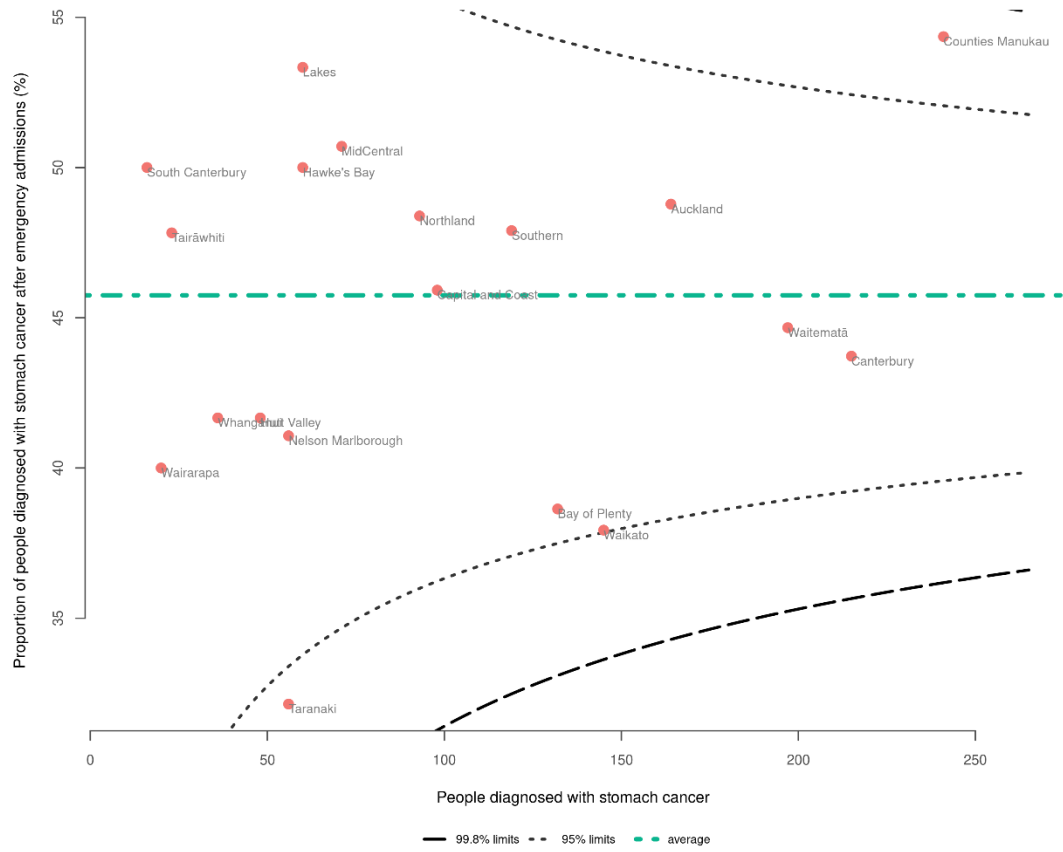


Note: See Appendix D for more detailed information. Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

Counties Manukau was an outlier compared to other districts, with a proportion of 54.4%. One district, Taranaki, was below the lower 95% limit with a proportion of 32.1% (Figure 45).



Figure 45: Funnel plot showing proportion of people diagnosed with stomach cancer in the 30 days following emergency admission, by district of residence, for the years 2017–2021 (un-standardised)



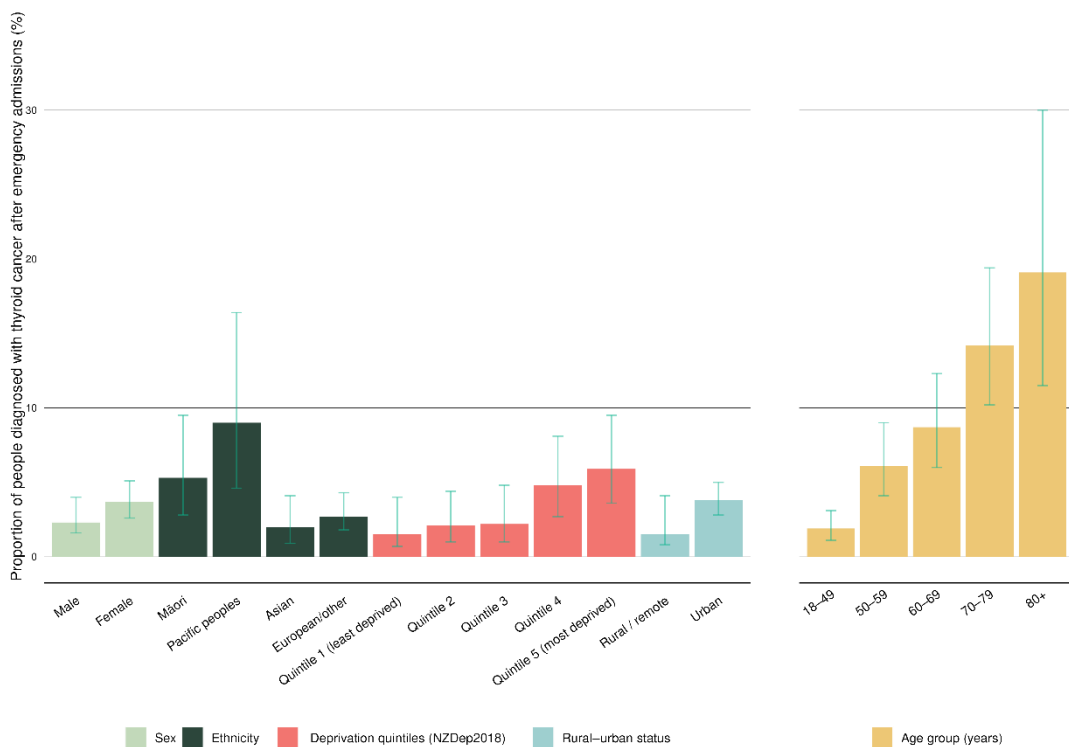
Note: See Appendix D for more detailed information.



6.21 Thyroid cancer

There were 1,720 people diagnosed with thyroid cancer between 2017 and 2021. Overall, 6.3% of those people were diagnosed in the 30 days following an emergency admission. Pacific peoples had the highest proportion (9.0%) compared with people of European/other ethnicity (2.7%) (although small case numbers for Pacific peoples means this should be interpreted with caution). Older people had higher proportions compared with people in younger age groups (80+ years at 19.1%, 18–49 years at 1.9%) (Figure 46).

Figure 46: Proportion of people diagnosed with thyroid cancer in the 30 days following emergency admission, by sex, ethnicity, NZDep2018 quintile, rural–urban status (all age-standardised), and age (non-standardised) for the years 2017–2021



Note: See Appendix D for more detailed information. Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

Due to small case numbers in many districts, a funnel plot is not included for thyroid cancer; however, more information can be found in Appendix D.

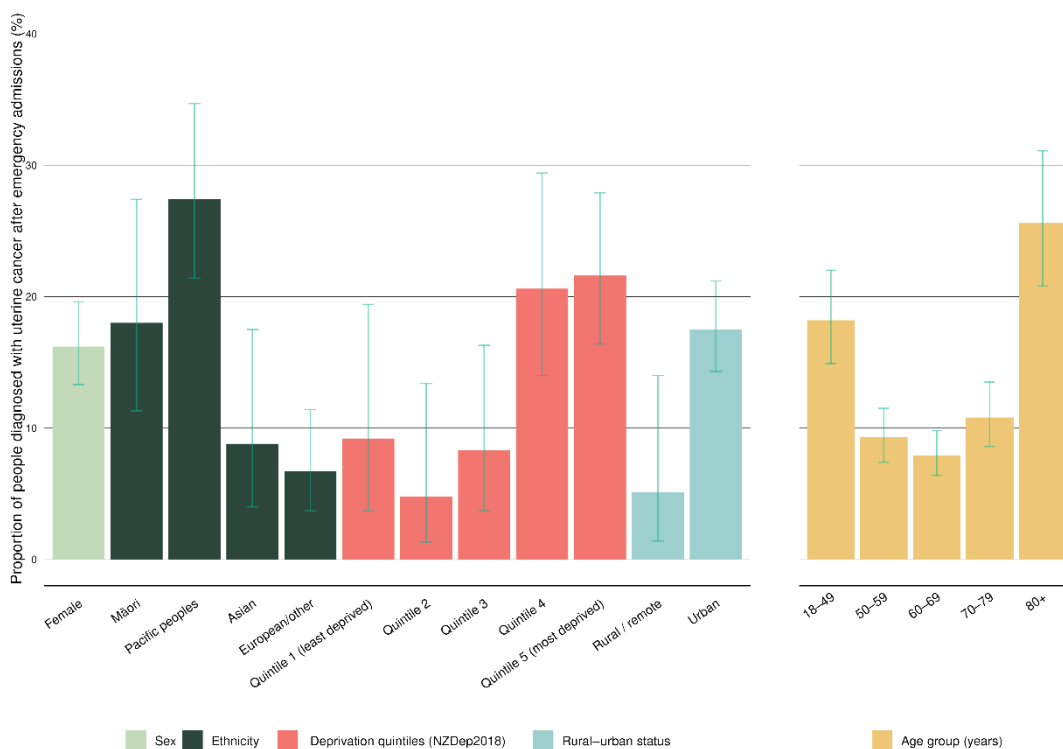


6.22 Uterine cancer

There were 3,124 people diagnosed with uterine cancer between 2017 and 2021. Overall, 11.9% of those people were diagnosed in the 30 days following an emergency admission.

Pacific peoples were most likely to be diagnosed following an emergency admission. The proportion for Pacific peoples was 27.4%, compared with Māori at 18%, Asian people at 8.8% and people of European/other ethnicity at 6.7%. People aged 80+ and people aged 18–49 were more commonly diagnosed following an emergency admission (25.6%) than other age groups. Urban dwellers and those living in more deprived areas had a higher proportion compared to those in the least deprived areas (Figure 47).

Figure 47: Proportion of people diagnosed with uterine cancer in the 30 days following emergency admission, by sex, ethnicity, NZDep2018 quintile, rural–urban status (all age-standardised), and age (non-standardised) for the years 2017–2021

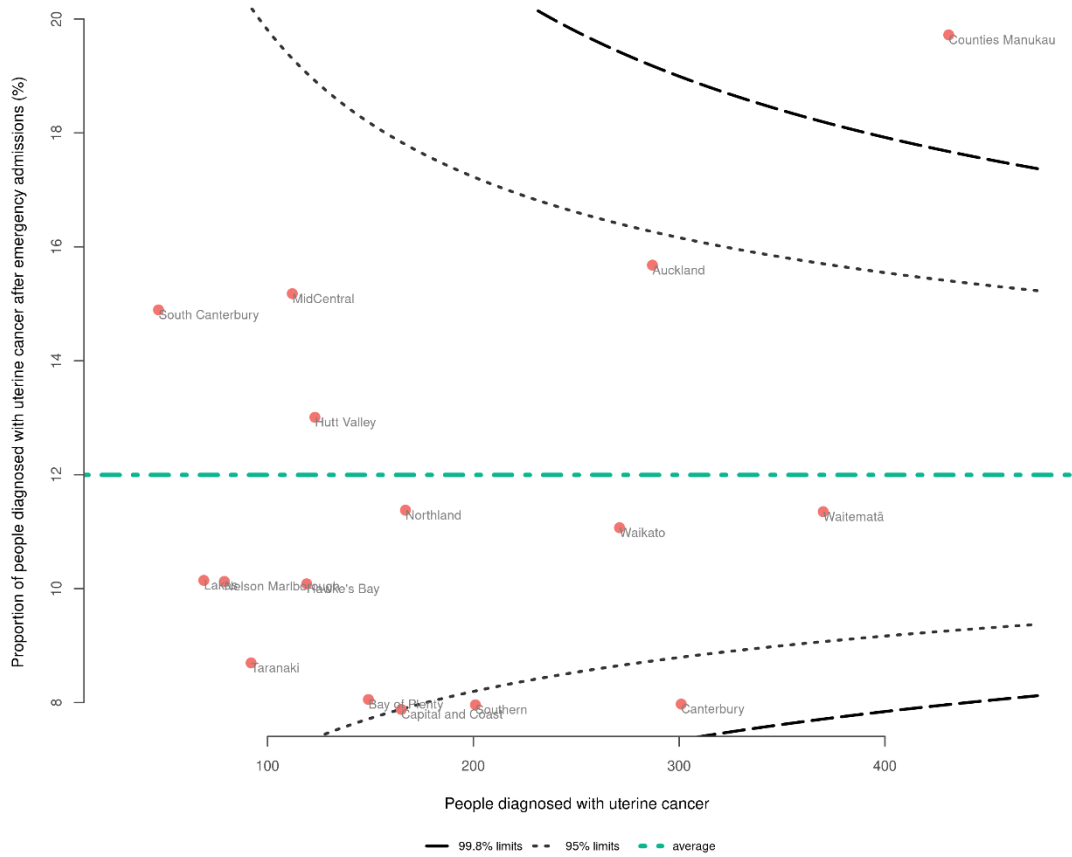


Note: See Appendix D for more detailed information. Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

Counties Manukau was an outlier, sitting above the upper 95% limit with a proportion of 19.7%. Three districts were below the lower 95% limit: Capital & Coast (7.9%), Southern (8.0%) and Canterbury (8.0%) (Figure 48).



Figure 48: Funnel plot showing proportion of people diagnosed with uterine cancer in the 30 days following emergency admission, by district of residence, for the years 2017–2021 (un-standardised)



Note: See Appendix D for more detailed information.



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APPENDIX B: METHODS

To fully understand the methods used, this section should be read alongside the technical specifications provided in Appendix B. The technical specifications include details on data sources (more detail than what is provided below), criteria for numerator and denominator, data codes, descriptions and a data flow diagram.

Data sources

All patient data for this report was obtained from administrative data sets (national collections) maintained by Health New Zealand. These data sets include:

- **New Zealand Cancer Registry (NZCR):** The NZCR is a comprehensive registry that provides information on cancer diagnoses in Aotearoa. It collects data from pathology reports, death certificates, radiation oncology treatment, and diagnosis coding for people admitted to public hospitals.
- **National Minimum Dataset (NMDS):** The NMDS is a national collection of hospital discharge information, including clinical data for inpatients and day patients. Linking NZCR data to NMDS data allowed us to examine hospital admissions prior to cancer diagnosis.

Data processing

We identified patients as being diagnosed with primary cancer when they were registered on the NZCR for the first time with a diagnosis of specific cancers. We extracted data from the NZCR for individuals diagnosed with cancer between 1 January 2017 and 31 December 2021. Data linkage between the NMDS and the NZCR was done at the patient level using National Health Index (NHI) numbers to gather information on patient care and follow-up.

Statistical analysis

Most results discussed in this report are descriptive. We have reported the results of categorical data as percentages. We typically grouped results by district of residence (ie, where the patient resided at the time of diagnosis).

For confidentiality, we have not presented results when there were fewer than six patients in a group. This is to ensure adequate privacy and confidentiality for patients and providers. We have not included values in columns where the numbers can be added across columns to fewer than six even if the value is above five. More information on this approach can be found on the Stats NZ website (Stats NZ 2019).



Funnel plots

Where appropriate, this report uses funnel plots to make comparisons between districts. We plotted the proportion for each district along with the total number of patients used to estimate this proportion to demonstrate how the number of patients differ by district. The average across all districts appears as a green line.

There are two 'control limit' lines on each plot. The funnel limits are statistically calculated based on the average proportion and the number of patients included in the estimate, and therefore create a 'funnel' shape. The inner line is the 95% limit, where 5 out of every 100 might be expected to be positioned on the basis of expected random variation. The outer line is the 99.8% limit, where 2 out of every 1000 might be expected to be positioned. Where a district's results lie outside these limits, this could represent expected variation, but may also represent unwarranted variation requiring further investigation.

Note that the estimated proportions have greater uncertainty when estimated from fewer patients.

Stratification

Stratifying variables include age, sex, ethnicity, New Zealand Deprivation Index 2018 (NZDep2018) quintile (linked to cancer registrations using domicile codes) and rural-urban status. Data is stratified and presented in data tables in Appendix C.

The New Zealand Deprivation Index (NZDep) is an area-based measure of socioeconomic deprivation in Aotearoa (Atkinson et al 2019). It measures the level of deprivation for people in each small area. It is based on nine census variables. In this report, NZDep is displayed in quintiles.

Rural-urban status at time of diagnosis was determined using health domicile codes for people with cancer based on Stats NZ's Statistical Standard for Geographic Areas 2018, which classifies New Zealand into areas that share common rural or urban characteristics and is used to disseminate a broad range of Stats NZ's social, demographic and economic statistics.

Other variables (such as risk group, performance status, TNM (tumour, node, metastasis) group stage and comorbidity) were not available for inclusion in this broad report. We did not make any standardisation adjustments (aside from where we have age standardised) due to lack of data in the data sets used such as complete stage at diagnosis and comorbidity. We encourage providers to interpret their results in the context of the case mix for their region.

Confidence intervals

Confidence intervals are most commonly used when working with sample data to estimate how likely it is that the result is true of the whole population. Therefore, confidence intervals are often used to decide if a difference between two groups being looked at is likely to be a true difference (if the confidence intervals overlap, there may not be a true difference). This report uses whole population data (ie, it is not a sample), so confidence intervals should be interpreted differently. They are presented in this report to give an impression of what variation there may be over time (rather than the



likelihood the result is true). Therefore, overlapping confidence intervals do not indicate the absence of a difference between compared groups.

Standardisation

In New Zealand, different groups of people have different age distributions. This means that the populations can vary in terms of the ages of people in each group. For example, some ethnicities, genders and regions may have more young people or older people compared to others. Age is also an important determinant of cancer outcomes, so a population with a younger age distribution may seem to have similar or better outcomes than those with an older population – but this may be only because of differences between the groups in their age distribution.

To make fairer comparisons between groups, we use age standardisation. This method helps us remove the influence of these age differences when comparing different groups. We calculate an overall standardised rate for each group at a national level, using a standard population as a reference point. In this case, the Māori population from the 2001 Census is used as the standard.

It is important to note that age-standardised rates are those rates that groups would have if they had the same age structure as the standard population. Sometimes there were only a few cases when analysing data at the regional or district level. In these cases, we used a method called indirect standardisation to calculate standardised ratios. This helped us compare the Māori population with the European/other population group within the same region or district. These ratios are used to determine whether a particular population is more, less or equally likely to achieve a certain outcome compared to a standard or reference group.

Standardised ratios cannot be used to compare results between different regions or over time. Their main purpose is to make comparisons within the same region or district and understand how different populations within that area may differ in terms of achieving specific outcomes.

Classification of NETs and sarcoma

NETs occurring between 2017 and 2021 across all sites were grouped and reported as a separate cancer type. An exception was made to exclude large cell neuroendocrine and small cell carcinomas of the lung from the NETs analysis due to their high incidence in this organ, which could potentially bias the results (White et al 2022). Additionally, services for small cell carcinomas, particularly, are typically overseen by respiratory physicians, given their strong association with smoking, resulting in distinct characteristics and treatment pathways. Please refer to Appendix B for a comprehensive list of morphology codes falling under the NETs category.

For sarcoma cases within the same timeframe, we followed the classification provided by the Information Network on Rare Cancers (RARECARENet), aligning with previously published research on sarcomas using registry data specific to Western Australia (Wright et al 2020). You can find a comprehensive list of morphology codes in Appendix B.



APPENDIX C: TECHNICAL SPECIFICATIONS

Description

Measurability	Measurable
Indicator title	Route to diagnosis
Indicator description	Proportion of people diagnosed with <<type>> cancer within 30 days of an emergency admission.
Specifications	Numerator Number of people with <<type>> cancer who were admitted to hospital via emergency admission within 30 days of cancer diagnosis.
	Denominator Number of people diagnosed with <<type>> cancer.
	Exclusions Number of people diagnosed with <<type>> cancer at death. People registered with cancer from death certificates only.
Data sources	National Non-Admitted Patients Collection, New Zealand Cancer Registry, National Minimum Dataset
Data items	
Date range	2017–2021 data
Justification or notes	<ul style="list-style-type: none"> • No assumptions about clinical state of the emergency of admitted patients nor the coded reason (diagnosis) relating to the emergency hospital admission episode. • ‘Emergency admission’ was defined as diagnosis of cancer within 30 days after an emergency hospital admission (not just presentation to an emergency department). • 30-day cut off – histologically verified diagnosis and aligns with other health care measures (eg, 30-day post-operative mortality or 30-day hospital readmission). • There is a chance that the emergency admission preceding diagnosis is unrelated to the cancer.



Data source, items and description

Data set	Data item	Description
NZCR	NHI	Patient identifier
NZCR	Cancer event ID	Cancer registration identifier
NZCR	Date of initial diagnosis	Date person first diagnosed with <<type>> cancer
NZCR	Diagnosis year	Calendar year of first diagnosis
NZCR	Site	Primary organ of origin of the cancer (ICD-10-AM 8th edition code)
NZCR	Morphology code	4-digit code for microscopic or cellular anatomy of the cancer (ICD-O-3)
NZCR	Basis	Basis of diagnosis
NZCR	Extent of disease	A code describing the stage of development reached by the tumour at diagnosis
NZCR	District of domicile	District code for domicile of patient at diagnosis
NZCR	District	District name based on domicile of patient at diagnosis
NZCR	Age at diagnosis	Age of patient at diagnosis in years
NZCR	Prioritised ethnicity	Ethnic group derived from patient's ethnicity
NZCR	Sex	Sex of patient
NZCR	Deprivation quintile	NZDep2018 index of social deprivation quintile based on patient's domicile
NZCR	Behaviour code	Neoplastic behaviour of the cancer
NZCR	Multiple tumour flags	Person diagnosed with more than one tumour
NZCR	Registration status code	Status of registration processing
NMDS	District name	District of service for patient
NMDS	Admission type	Type of inpatient admission
NMDS	Event start date	Date of admission
NMDS	Event end date	Date of discharge



Case eligibility criteria (denominator)

Diagram reference	Assessment	Item	Codes
1	First or only diagnosis of malignant neoplasm	Primary site	<p>First diagnosis of:</p> <ul style="list-style-type: none"> • bladder cancer (C67) • bowel cancer (colorectal cancer) (C18–C20, excl. C18.1 and morphology codes 8240, 8249, 8246, 8070, 8720, 8013, 8041, 8244, 8936) • brain and central nervous system cancers (C71–C72) • breast cancer (C50) • cervical cancer (C53) • head and neck cancer (C00–C14, C30–C32) • kidney cancer (C64) • leukaemia (C91–C95) • liver cancer (C22) • lung cancer (C33–C34, excl. morphology codes 8333, 8720, 8772, 8800, 8801, 8803, 8805, 8815, 8890, 9040, 9041, 9133) • lymphoma (C81–C86) • melanoma of the skin (C43) • myeloma (C90) • oesophageal cancer (C15) • ovarian cancer (C48.1–2 and C56–C57) • pancreatic cancer (C25, excl. C25.4 and incl. morphology codes 8000, 8010, 8020, 8021, 8022, 8140, 8141, 8211, 8230, 8500, 8521, 8050, 8260, 8441, 8450, 8453, 8470, 8471, 8472, 8473, 8480, 8481, 8503, 8560, 8576, 8510, 8490, 8035) • prostate cancer (C61, excl. morphology codes 8041, 8045, 8246, 8890, 8980) • stomach cancer (C16) • thyroid cancer (C73) • uterine cancer (C54–C55) • neuroendocrine tumours (NETs), incl. any cancer site with morphology codes 8013 (excl. lung [C34 and C78]), 8041–8045 (excl. lung), 8150–8158, 8240–8247, 8249, 9091 and 8510, 8512, 8513 (for thyroid only) • sarcoma (soft tissue sarcoma), including: <ul style="list-style-type: none"> – all cancers sites except C40.0–C41.9 (includes unknown primary sites) with morphology codes 8710–8711, 8800–8935, 8959, 8963–8964, 8990–8991, 9020, 9040–9044, 9120–9133, 9150, 9170, 9180, 9231, 9240, 9251, 9260, 9364–9365, 9540, 9560–9571, 9580–9581



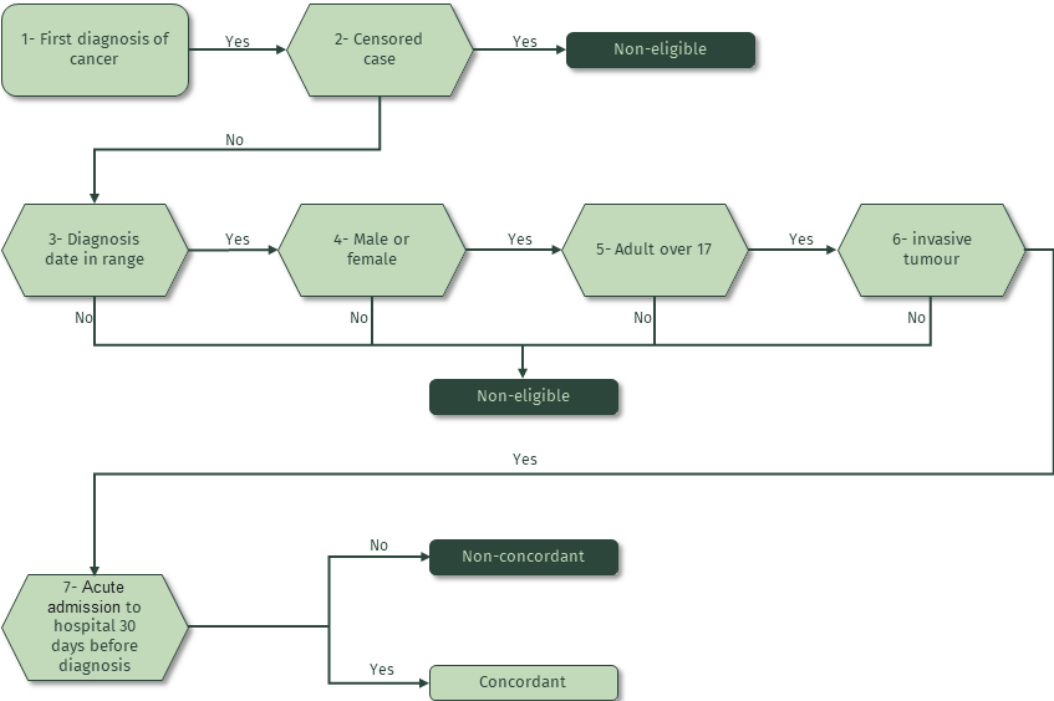
Diagram reference	Assessment	Item	Codes
			<ul style="list-style-type: none"> – all cancer sites except C40.0–C41.9, C7–C8, C60, C44, C63.2 with morphology code 8940 – all cancer sites except C40.0–C41.9, C56, C62, C71, C72 with morphology code 9473 – bone sarcoma (C40.0–C41.9), incl. morphology codes 8800–8801, 8803–8806, 8810, 8811–8812, 8815, 8830, 8840, 8850–8855, 8890–8891, 8894–8896, 8900–8902, 8910, 8912, 8920, 9040–9044, 9120–9133, 9150, 9170, 9180–9250, 9260–9261, 9310, 9364, 9370–9372, 9540–9581 – gastrointestinal stromal tumour, incl. any cancer site with morphology code 8936 – Kaposi's sarcoma, incl. any cancer site with following morphology code 9140.
2	Exclude manually censored case	Exclusion	<ul style="list-style-type: none"> • Appendix (C18.1), islets of Langerhans (C25.4), non-melanoma skin cancer (C44) • Registration codes not R_C (registered complete) or R_R (registered) • No incident cancer (exclude people with multiple tumour flags = yes) • People diagnosed following death certificate only (basis = 0) • People domiciled outside of New Zealand (district_code = 999)
3	Diagnosis date	Date of initial diagnosis	2017–2021
4	Male or female	Sex	M or F
5	Adult patient 18 years and older at diagnosis	Age at diagnosis	18 years and older
6	Invasive tumours	Behaviour code	3 (specifying the behaviour of the tumour, in terms of its malignancy and metastasis)

Numerator

Diagram reference	Assessment	Item	Codes
7	Number of people diagnosed with cancer within 30 days of an emergency hospital admission.	ed_diag	<ul style="list-style-type: none"> • Inpatient (NMDS) • Admission type = 'Acute' • Includes admissions within 30 days prior to diagnosis date.



Calculation process/flow chart



APPENDIX D: COMPARISONS WITH OTHER SIMILAR REPORTS

Definitions

We note that in previous research and quality improvement reporting, a range of methods have been used to define ‘emergency admission prior to diagnosis’. These variations include:

- the terminology used (eg, route to diagnosis vs emergency presentation vs emergency hospital or acute admission)
- the timeframe post-presentation to a cancer diagnosis (eg, 30 days)
- the scope of the definition (eg, ‘emergency presentation’ vs ‘emergency presentation leading to admission to hospital’ vs ‘emergency admission to hospital via emergency or acute services’).

In Table 2 we have extracted the definitions from three articles (McPhail et al 2022; Pham et al 2019; Zhou et al 2017) as well as from our existing cancer QPI programme to help interpret the evidence effectively. The definition used in the current report is consistent with the ICBP study published in *The Lancet Oncology* in 2022 (McPhail et al 2022).

Table 2: Referenced definitions of emergency admission and route to diagnosis

Citation	Definition
McPhail et al (2022)	‘Emergency presentation’ was defined as the diagnosis of cancer within 30 days after an emergency hospital admission.
Pham et al (2019)	‘Emergency hospital admission’ was defined as cancer diagnosis soon after any emergency hospital admission, attendance at the accident and emergency department, emergency general practice referral or emergency between hospital transfer.
Zhou et al (2017)	‘Emergency presentation’ was defined as patients who present to emergency health care services and/or received emergency treatment shortly before their diagnosis.
Pancreatic cancer – Te Aho o Te Kahu (2023b)	‘Route to diagnosis’ was defined as ‘diagnosis with pancreatic cancer within 30 days of an emergency or acute admission to hospital’. An acute or unplanned hospital admission does not include people who attended the emergency department for review and then were discharged. An emergency admission may occur by a number of routes such as via the emergency department or outpatient clinic.
Bowel cancer – Te Aho o Te Kahu (2022)	‘Route to diagnosis’ was defined as the ‘proportion of people with bowel cancer who are diagnosed following a referral to a clinic, screening or presentation to an emergency department (with or without surgery)’.



Citation	Definition
Lung cancer – Te Aho o Te Kahu (2021b)	‘Route to diagnosis’ was defined as the ‘proportion of people with lung cancer who are diagnosed following a referral to a clinic or presentation to an emergency department’.
Prostate cancer – Te Aho o Te Kahu (2021c)	‘Route to diagnosis’ was defined as the ‘proportion of men with prostate cancer who are diagnosed following a presentation to an emergency department’.

Regardless of method used, there is a general trend of poorer outcomes for people who have their cancer diagnosis associated with an emergency admission compared with primary care or screening settings. Considering the variation in methods and definitions, there should be caution when comparing results between previous findings and those shown in this report.

Inequities found in our cancer-specific quality performance indicator reports

Previous cancer QPI programme reports for bowel, lung, prostate and pancreatic cancers have identified inequities relating to cancer diagnosis following an emergency admission. Table 3 gives an overview of the results from our previous cancer-specific QPI reports.

Table 3: Percentage of people diagnosed with cancer following emergency admission, by sex, ethnic group and social deprivation, 2015/16³ to 2018

	Lung cancer (%)	Prostate cancer (%)	Bowel cancer (%)	Pancreatic cancer (%)
Ethnicity				
Māori	48.9	8.4	36.7	74.8
Pacific peoples	57.4	10.7	44.4	76.6
Asian	41.5	8.0	27.3	63.8
European/other	43.2	5.8	25.0	67.8
Unknown	–	1.4	9.4	69.0
Sex				
Female	44.5	–	28.0	67.0
Male	45.6	100	24.7	70.7
Deprivation quintile (NZDep2018)				
Quintile 1 – least deprived	39.0	3.9	22.3	63.4
Quintile 2	42.0	5.3	23.7	68.1
Quintile 3	44.8	6.2	25.0	68.3

³ Data for 2015 was unavailable in the previous QPI report for prostate cancer.



	Lung cancer (%)	Prostate cancer (%)	Bowel cancer (%)	Pancreatic cancer (%)
Quintile 4	46.4	7.2	26.3	69.6
Quintile 5 – most deprived	48.1	8.7	34.4	73.4

Almost half of all lung cancers were diagnosed via an emergency presentation (not admission), but this is not evenly spread throughout the population or country (see Table 3). We identified:

- geographical inequities ranging from 30.8% to 62.7% between districts
- ethnicity inequities, with higher rates for Māori (48.9%) and Pacific peoples (57.4%) compared with people of European/other ethnicity (43.2%)
- deprivation inequities with rates increasing as social deprivation increased (NZDep2018quintile 1 at 39% and quintile 5 at 48.1%) (Te Aho o Te Kahu 2021a).

For bowel cancer, 26.3% of all cases are diagnosed after an emergency presentation, and this is not evenly spread throughout the population or country. We identified:

- age inequities for people aged younger than 50 years (32.7%) or over 75 years (30.5%)
- ethnicity inequities for Pacific peoples (44.4%) and Māori (36.7%)
- deprivation inequities for those living in areas of high social deprivation (NZDep2018 quintile 1 at 22.3% and quintile 5 at 34.4%) (Te Aho o Te Kahu 2021a).

For prostate cancer, the rate of diagnosis following emergency presentation in Aotearoa was 6.1%, slightly lower than the rate for prostate cancer in the United Kingdom of 7% (National Cancer Registration and Analysis Service 2021). We identified:

- age inequities, with patients aged 75 years and over more likely to be diagnosed following emergency presentation (not admission) (17.2%) compared with those in younger age groups (5.3% or less)
- ethnicity inequities, with Māori, Pacific peoples and Asian people more likely to be diagnosed following emergency presentation (not admission) (8.4%, 10.7% and 8.0%, respectively) than people of European/other ethnicity (5.8%)
- deprivation inequities, with patients living in areas of high social deprivation more likely to be diagnosed following emergency presentation (not admission) (8.7%) than those living in areas of low social deprivation (3.9%) (Te Aho o Te Kahu 2021c).

A considerable proportion (68.7%) of people with pancreatic cancer had an emergency admission in the 30 days before their diagnosis. Also, the proportion of people who had an emergency admission prior to diagnosis was higher for Māori and Pacific peoples (74.8% and 76.6%, respectively) compared with people of European/other ethnicity (67.8%). Those living in the most deprived areas were also more likely to be diagnosed within 30 days of an emergency admission (Te Aho o Te Kahu 2023b).

These inequities present in very real ways for whānau as they try to access health services. This is highlighted in the hui report *Rongohia Te Reo, Whatua He Oranga*, where whānau Māori describe ‘racism’ being ‘rife’ among the ‘gatekeepers’ of the system.

‘I am not welcomed in my language, then you mispronounce my name. It just goes on and on ... it all determines my level of trust.’ (Te Aho o Te Kahu 2023a)



APPENDIX E:

SUPPLEMENTARY TABLES BY

CANCER TYPE

Bladder cancer

Table 4: People diagnosed with bladder cancer following emergency admission, by year of diagnosis, sex, age group, ethnicity, deprivation quintile (NZDep2018) and rural-urban status

	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
All cases				
Total	2,210	26.6	25.9	15.8–40.7
Year of diagnosis				
2017	394	26.1	25.1	5.8–74.8
2018	435	27.1	38.5	10.5–101.7
2019	460	23.9	28.5	11.3–60.5
2020	460	27.0	12.0	1.8–46.5
2021	461	28.9	27.3	5.7–84.3
Sex				
Male	1,629	24.1	21.3	10.6–39.0
Female	580	33.6	37.5	16.9–73.5
Age group				
18–49	48	27.1	–	–
50–59	199	22.1	–	–
60–69	469	20.7	–	–
70–79	748	21.4	–	–
80+	746	36.7	–	–
Ethnicity				
Māori	153	39.2	39.8	15.3–87.3
Pacific peoples	55	32.7	26.0	6.3–75.8
Asian	72	15.3	1.3	0.5–96.3
European/other	1,915	25.8	24.6	12.0–45.6



	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
Deprivation quintiles (NZDep2018)				
Quintile 1 – least deprived	398	20.1	14.2	1.2–64.1
Quintile 2	450	26.0	23.7	1.7–111.3
Quintile 3	516	26.4	33.1	8.8–88.5
Quintile 4	446	28.7	23.4	5.9–67.4
Quintile 5 – most deprived	400	31.8	30.0	14.3–56.9
Rural–urban status				
Rural/remote	456	21.7	26.0	4.9–83.2
Urban	1,754	27.9	26.1	15.3–42.3

¹ Excludes people registered with cancer from death certificates only.

² Non-age-standardised data.

Sources: NZCR and NMDS (hospital events)

Note: Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.



Table 5: People diagnosed with bladder cancer following emergency admission, by district of residence

	People with cancer ¹	% emergency admission ^{1,2}	Ratio (Māori to European/other) ^{2,3}
District of residence			
National	2,210	26.6 (24.8–28.5)	1.8 (1.4–2.3)
Northland	140	31.4 (24.3–39.5)	1.6 (0.8–3.4)
Waitematā	248	22.6 (17.8–28.2)	5.8 (2.9–11.6)
Auckland	148	27.7 (21.1–35.4)	1.8 (0.4–7)
Counties Manukau	185	24.9 (19.2–31.6)	1.4 (0.5–3.7)
Waikato	195	23.1 (17.7–29.5)	2.2 (1.1–4.5)
Lakes	43	25.6 (14.9–40.2)	1.9 (0.6–5.7)
Bay of Plenty	139	29.5 (22.5–37.5)	1.8 (0.9–3.9)
Tairāwhiti	16	(14.2–55.6)*	8 (2–32)
Taranaki	68	20.6 (12.7–31.6)	†
Hawke's Bay	105	30.5 (22.5–39.8)	1.2 (0.4–3.6)
Whanganui	45	26.7 (16–41)	0.9 (0.1–6.5)
MidCentral	96	37.5 (28.5–47.5)	†
Capital & Coast	144	25 (18.6–32.7)	5.2 (1.7–16.3)
Hutt Valley	86	32.6 (23.6–43)	1.4 (0.5–4.4)
Wairarapa	24	29.2 (14.9–49.2)	†
Nelson Marlborough	64	21.9 (13.5–33.4)	†
West Coast	29	27.6 (14.7–45.7)	†
Canterbury	240	22.9 (18.1–28.6)	4.2 (1.8–10.1)
South Canterbury	42	35.7 (23–50.8)	3.3 (0.8–13.2)
Southern	153	27.5 (21–35)	0.7 (0.2–2.9)

* Indicates that there were either fewer than six or no reported cases of that particular cancer in the district during the study period.

† Indicates that ratio unable to be reported due to small numbers in at least one group.

¹ Excludes people registered with cancer from death certificates only.

² Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

³ Standardised ratios were used here to compare the likelihood that Māori will be diagnosed with cancer following an emergency admission compared to people of European/other ethnicity.

Sources: NZCR and NMDS (hospital events)



Bowel cancer

Table 6: People diagnosed with bowel cancer following emergency admission, by year of diagnosis, sex, age group, ethnicity, deprivation quintile (NZDep2018) and rural-urban status

	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
All cases				
Total	15,139	30.1	33.5	30.9–36.2
Year of diagnosis				
2017	2,801	30.0	33.6	27.8–40.4
2018	2,991	31.7	37.0	31.1–43.9
2019	3,065	30.5	32.9	27.2–39.5
2020	3,156	30.0	31.3	26.2–37.2
2021	3,126	28.5	32.9	27.4–39.2
Sex				
Male	8,176	28.6	31.6	28.1–35.5
Female	6,955	31.9	35.3	31.6–39.3
Age group				
18–49	1,221	35.8	–	–
50–59	1,834	27.7	–	–
60–69	3,541	22.8	–	–
70–79	4,713	26.3	–	–
80+	3,830	41.0	–	–
Ethnicity				
Māori	1,004	38.7	47.0	38.2–57.3
Pacific peoples	373	48.5	52.7	39.8–68.6
Asian	757	25.8	30.9	22.7–41.4
European/other	12,906	29.1	30.6	27.8–33.6
Deprivation quintiles (NZDep2018)				
Quintile 1 – least deprived	2,854	25.9	27.9	23.0–33.5
Quintile 2	3,098	28.5	30.7	25.5–36.6
Quintile 3	3,355	28.8	32.9	27.5–39.3
Quintile 4	3,198	31.5	34.8	29.0–41.5
Quintile 5 – most deprived	2,630	36.7	43.8	36.6–52.0



	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
Rural–urban status				
Rural/remote	3,121	27.3	33.8	27.8–40.7
Urban	12,018	30.9	33.5	30.6–36.5

¹ Excludes people registered with cancer from death certificates only.

² Non-age-standardised data.

Sources: NZCR and NMDS (hospital events)

Note: Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.



Table 7: People diagnosed with bowel cancer following emergency admission, by district of residence

	People with cancer ¹	% emergency admission ^{1,2}	Ratio (Māori to European/other) ^{2,3}
District of residence			
National	15,139	30.1 (29.4–30.9)	1.5 (1.3–1.6)
Northland	694	30.1 (26.8–33.6)	1.5 (1.1–2.1)
Waitematā	1,435	30.4 (28.1–32.8)	1.5 (1–2.3)
Auckland	1,016	30.2 (27.5–33.1)	1.6 (1–2.7)
Counties Manukau	1,218	31 (28.5–33.7)	1.6 (1.1–2.1)
Waikato	1,399	30.7 (28.3–33.1)	1.5 (1.1–1.9)
Lakes	369	28.2 (23.8–33)	1.9 (1.3–2.8)
Bay of Plenty	874	31.9 (28.9–35.1)	1.3 (0.9–1.9)
Tairāwhiti	135	40.7 (32.8–49.2)	1.8 (1.1–2.9)
Taranaki	435	31.5 (27.3–36)	1 (0.5–2)
Hawke's Bay	641	33.1 (29.5–36.8)	1.7 (1.1–2.4)
Whanganui	265	30.9 (25.7–36.7)	1.3 (0.7–2.4)
MidCentral	743	33.1 (29.8–36.6)	1.5 (1–2.3)
Capital and Coast	760	29.5 (26.3–32.8)	1.3 (0.8–2.2)
Hutt Valley	449	27.8 (23.9–32.2)	1.4 (0.8–2.6)
Wairarapa	186	25.8 (20.1–32.5)	0.6 (0.1–4.4)
Nelson Marlborough	640	25.3 (22.1–28.8)	1.4 (0.7–2.9)
West Coast	146	26.7 (20.2–34.4)	2 (0.8–4.8)
Canterbury	1,878	28.4 (26.4–30.5)	1.1 (0.7–1.8)
South Canterbury	294	28.2 (23.4–33.6)	0.5 (0.1–3.5)
Southern	1,562	30.2 (27.9–32.5)	1.1 (0.7–1.9)

* Indicates that there were either less than six or no reported cases of that particular cancer in the district during the study period.

† Indicates that ratio unable to be reported due to small numbers in at least one group.

¹ Excludes people registered with cancer from death certificates only.

² Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

³ Standardised ratios were used here to compare the likelihood that Māori will be diagnosed with cancer following an emergency admission compared to people of European/other ethnicity.

Sources: NZCR and NMDS (hospital events)



Brain and central nervous system cancer

Table 8: People diagnosed with brain and central nervous system cancer following emergency admission, by year of diagnosis, sex, age group, ethnicity, deprivation quintile (NZDep2018) and rural–urban status

	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
All cases				
Total	1,571	81.5	72.3	65.2–80.0
Year of diagnosis				
2017	300	77.3	64.6	51.7–80.1
2018	314	79.6	80.7	62.6–102.7
2019	290	84.5	73.8	57.6–93.6
2020	319	80.6	72.2	56.3–91.6
2021	348	85.3	73.6	59.0–91.0
Sex				
Male	913	81.3	72.3	63.4–82.2
Female	656	82.0	72.4	61.1–85.4
Age group				
18–49	314	68.5	–	–
50–59	311	85.2	–	–
60–69	422	86.5	–	–
70–79	369	84.3	–	–
80+	155	80.6	–	–
Ethnicity				
Māori	108	83.3	82.5	60.3–110.7
Pacific peoples	46	80.4	66.0	38.3–108.1
Asian	80	82.5	84.2	61.0–114.0
European/other	1,328	81.4	69.5	61.5–78.3
Deprivation quintiles (NZDep2018)				
Quintile 1 – least deprived	342	82.7	70.6	55.4–89.0
Quintile 2	350	80.3	72.5	57.1–91.2
Quintile 3	330	79.1	67.6	52.9–85.4
Quintile 4	328	81.1	72.1	58.3–88.5
Quintile 5 – most deprived	220	85.9	80.4	62.2–102.7



	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
Rural-urban status				
Rural/remote	367	82.0	77.3	62.1–95.4
Urban	1,204	81.4	70.9	63.0–79.5

¹ Excludes people registered with cancer from death certificates only.

² Non-age-standardised data.

Sources: NZCR and NMDS (hospital events)

Note: Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.



Table 9: People diagnosed with brain and central nervous system cancer following emergency admission, by district of residence

District of residence	People with cancer ¹	% emergency admission ^{1,2}	Ratio (Māori to European/other) ^{2,3}
National	1,571	81.5 (79.5–83.4)	1 (0.9–1.3)
Northland	69	87 (77–93)	1.1 (0.6–2.1)
Waitematā	176	88.1 (82.4–92.1)	0.9 (0.4–1.8)
Auckland	146	84.2 (77.5–89.3)	1.1 (0.4–2.6)
Counties Manukau	126	82.5 (75–88.2)	1.3 (0.6–2.7)
Waikato	135	78.5 (70.9–84.6)	0.9 (0.5–1.7)
Lakes	35	82.9 (67.3–91.9)	0.4 (0.1–2.8)
Bay of Plenty	96	86.5 (78.2–91.9)	1.2 (0.6–2.4)
Tairāwhiti	12	75 (46.8–91.1)	1.5 (0.6–4)
Taranaki	32	84.4 (68.2–93.1)	0.6 (0.1–2.3)
Hawke's Bay	63	92.1 (82.7–96.6)	1.1 (0.6–2.2)
Whanganui	26	80.8 (62.1–91.5)	1.6 (0.4–6.3)
MidCentral	63	85.7 (75–92.3)	1.2 (0.6–2.5)
Capital and Coast	102	79.4 (70.6–86.1)	1.4 (0.5–3.6)
Hutt Valley	38	86.8 (72.7–94.2)	†
Wairarapa	26	84.6 (66.5–93.8)	†
Nelson Marlborough	75	81.3 (71.1–88.5)	†
West Coast	13	69.2 (42.4–87.3)	†
Canterbury	187	66.8 (59.8–73.2)	0.9 (0.4–2.2)
South Canterbury	28	75 (56.6–87.3)	0.6 (0.1–4.1)
Southern	123	81.3 (73.5–87.2)	1.1 (0.5–2.6)

* Indicates that there were either less than six or no reported cases of that particular cancer in the district during the study period.

† Indicates that ratio unable to be reported due to small numbers in at least one group.

¹ Excludes people registered with cancer from death certificates only.

² Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

³ Standardised ratios were used here to compare the likelihood that Māori will be diagnosed with cancer following an emergency admission compared to people of European/other ethnicity.

Sources: NZCR and NMDS (hospital events)



Breast cancer

Table 10: People diagnosed with breast cancer following emergency admission, by year of diagnosis, sex, age group, ethnicity, deprivation quintile (NZDep2018) and rural-urban status

	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
All cases				
Total	17,301	4.4	3.5	3.1–4.0
Year of diagnosis				
2017	3,290	4.2	3.9	2.9–5.3
2018	3,544	4.0	3.3	2.4–4.5
2019	3,449	5.0	4.3	3.2–5.6
2020	3,445	4.3	2.4	1.7–3.4
2021	3,573	4.6	3.7	2.7–4.9
Sex				
Male	139	5.8	0.8	0.2–48.2
Female	17,151	4.4	3.5	3.1–4.0
Age group				
18–49	3,931	3.5	–	–
50–59	4,236	2.5	–	–
60–69	4,593	3.3	–	–
70–79	2,775	6.2	–	–
80+	1,766	11.2	–	–
Ethnicity				
Māori	2,398	4.7	4.2	3.0–5.6
Pacific peoples	933	7.4	7.3	5.1–10.2
Asian	1,386	4.0	4.1	2.8–5.8
European/other	12,504	4.2	2.8	2.3–3.4
Deprivation quintiles (NZDep2018)				
Quintile 1 – least deprived	3,482	3.4	2.6	1.8–3.6
Quintile 2	3,565	3.7	2.5	1.7–3.6
Quintile 3	3,446	4.2	2.6	1.8–3.6
Quintile 4	3,563	4.9	4.5	3.4–5.8
Quintile 5 – most deprived	3,239	6.1	5.6	4.4–7.2



	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
Rural–urban status				
Rural/remote	3,354	3.4	2.6	1.8–3.7
Urban	13,947	4.7	3.8	3.2–4.3

¹ Excludes people registered with cancer from death certificates only.

² Non-age-standardised data.

Sources: NZCR and NMDS (hospital events)

Note: Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.



Table 11: People diagnosed with breast cancer following emergency admission, by district of residence

District of residence	People with cancer ¹	% emergency admission ^{1,2}	Ratio (Māori to European/other) ^{2,3}
National	17,301	4.4 (4.1–4.7)	1.4 (1.2–1.7)
Northland	861	5.6 (4.2–7.3)	1.1 (0.7–1.9)
Waitematā	2,019	5 (4.1–6)	1.5 (0.8–3)
Auckland	1,555	4.8 (3.8–5.9)	1.3 (0.5–3.4)
Counties Manukau	1,668	5.1 (4.1–6.3)	1.1 (0.6–2)
Waikato	1,505	4.3 (3.4–5.5)	1.9 (1.2–3)
Lakes	443	5.2 (3.5–7.7)	1.7 (0.9–3)
Bay of Plenty	1,017	3.1 (2.2–4.4)	0.8 (0.3–1.9)
Tairāwhiti	183	4.4 (2.2–8.4)	0.7 (0.3–1.9)
Taranaki	454	5.7 (3.9–8.3)	0.9 (0.3–2.8)
Hawke's Bay	760	4.5 (3.2–6.2)	1.7 (0.9–3.2)
Whanganui	277	3.6 (2–6.5)	2 (0.7–5.3)
MidCentral	617	4.2 (2.9–6.1)	0.7 (0.2–2.7)
Capital and Coast	1,072	5.5 (4.3–7)	0.2 (0–1.6)
Hutt Valley	570	4.6 (3.1–6.6)	1.9 (0.8–4.5)
Wairarapa	178	5.6 (3.1–10)	†
Nelson Marlborough	608	3.6 (2.4–5.4)	2.7 (1–7.3)
West Coast	102	(0.2–5.3)*	†
Canterbury	2,010	3.1 (2.5–4)	2 (0.9–4.5)
South Canterbury	241	2.9 (1.4–5.9)	†
Southern	1,161	3.9 (2.9–5.1)	1.8 (0.7–4.8)

* Indicates that there were either less than six or no reported cases of that particular cancer in the district during the study period.

† Indicates that ratio unable to be reported due to small numbers in at least one group.

¹ Excludes people registered with cancer from death certificates only.

² Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

³ Standardised ratios were used here to compare the likelihood that Māori will be diagnosed with cancer following an emergency admission compared to people of European/other ethnicity.

Sources: NZCR and NMDS (hospital events)



Cervical cancer

Table 12: People diagnosed with cervical cancer following emergency admission, by year of diagnosis, sex, age group, ethnicity, deprivation quintile (NZDep2018) and rural-urban status

	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
All cases				
Total	863	15.5	13.9	11.4–16.8
Year of diagnosis				
2017	165	17.0	14.0	8.8–21.5
2018	181	15.5	14.6	9.3–21.8
2019	182	9.3	8.5	4.8–14.2
2020	166	18.7	17.9	11.6–26.6
2021	169	17.8	15.0	9.4–22.8
Age group				
18–49	515	13.0	–	–
50–59	149	15.4	–	–
60–69	103	13.6	–	–
70–79	44	20.5	–	–
80+	52	40.4	–	–
Ethnicity				
Māori	157	23.6	21.9	15.1–30.7
Pacific peoples	63	28.6	30.7	17.4–50.5
Asian	111	11.7	10.0	4.9–18.6
European/other	532	12.4	10.3	7.6–13.6
Deprivation quintiles (NZDep2018)				
Quintile 1 – least deprived	155	7.7	6.0	2.9–11.3
Quintile 2	159	10.7	8.3	4.4–14.4
Quintile 3	163	17.8	15.3	9.6–23.2
Quintile 4	186	17.7	18.2	12.2–26.2
Quintile 5 – most deprived	200	21.5	20.3	13.9–28.7



	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
Rural-urban status				
Rural/remote	156	11.5	12.5	7.2-20.2
Urban	707	16.4	14.2	11.5-17.5

¹ Excludes people registered with cancer from death certificates only.

² Non-age-standardised data.

Sources: NZCR and NMDS (hospital events)

Note: Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.



Table 13: People diagnosed with cervical cancer following emergency admission, by district of residence

	People with cancer ¹	% emergency admission ^{1,2}	Ratio (Māori to European/other) ^{2,3}
District of residence			
National	863	15.5 (13.3–18.1)	2.1 (1.5–2.9)
Northland	48	18.8 (10.2–31.9)	2.2 (0.9–5.3)
Waitematā	92	14.1 (8.4–22.7)	2.6 (0.6–10.4)
Auckland	97	16.5 (10.4–25.1)	2.7 (0.7–10.9)
Counties Manukau	99	21.2 (14.3–30.3)	2.4 (1.1–5.4)
Waikato	66	21.2 (13.1–32.5)	2.3 (1.1–4.9)
Lakes	24	(0.7–20.2)*	†
Bay of Plenty	42	(1.3–15.8)*	†
Tairāwhiti	6	*	†
Taranaki	27	(5.9–32.5)*	1.3 (0.2–9.2)
Hawke's Bay	38	15.8 (7.4–30.4)	†
Whanganui	12	(1.5–35.4)*	†
MidCentral	21	(5–34.6)*	0.9 (0.1–6.5)
Capital and Coast	75	14.7 (8.4–24.4)	3.8 (1–15.3)
Hutt Valley	19	(5.5–37.6)*	3.3 (0.5–23.7)
Wairarapa	9	*	†
Nelson Marlborough	26	(2.1–24.1)*	†
West Coast	*	(11.8–76.9)*	†
Canterbury	97	17.5 (11.2–26.3)	3.2 (1.2–8.5)
South Canterbury	13	(4.3–42.2)*	†
Southern	47	14.9 (7.4–27.7)	1 (0.1–7.4)

* Indicates that there were either less than six or no reported cases of that particular cancer in the district during the study period.

¹ Excludes people registered with cancer from death certificates only.

† Indicates that ratio unable to be reported due to small numbers in at least one group.

² Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

³ Standardised ratios were used here to compare the likelihood that Māori will be diagnosed with cancer following an emergency admission compared to people of European/other ethnicity.

Sources: NZCR and NMDS (hospital events)



Head and neck cancer

Table 14: People diagnosed with head and neck cancer following emergency admission, by year of diagnosis, sex, age group, ethnicity, deprivation quintile (NZDep2018) and rural–urban status

	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
All cases				
Total	3,361	12.5	14.2	11.6–17.4
Year of diagnosis				
2017	648	12.2	14.2	8.5–22.4
2018	681	12.2	11.4	6.7–18.4
2019	652	11.0	14.7	8.7–23.5
2020	656	11.7	18.1	11.5–27.2
2021	724	15.2	12.9	8.0–20.0
Sex				
Male	2,360	13.9	15.3	11.9–19.4
Female	1,001	9.4	12.1	8.0–17.5
Age group				
18–49	450	15.1	–	–
50–59	764	9.9	–	–
60–69	1,025	12.7	–	–
70–79	712	12.5	–	–
80+	410	14.1	–	–
Ethnicity				
Māori	406	21.9	26.1	17.4–37.7
Pacific peoples	156	21.2	22.0	12.0–37.6
Asian	215	11.6	10.0	4.9–18.6
European/other	2,572	10.6	11.4	8.4–15.1
Deprivation quintiles (NZDep2018)				
Quintile 1 – least deprived	646	9.3	6.2	2.7–12.5
Quintile 2	668	10.0	7.0	3.8–12.3
Quintile 3	654	12.4	14.5	8.3–23.5
Quintile 4	708	13.4	19.5	13.2–27.8
Quintile 5 – most deprived	682	17.3	22.7	15.3–32.5



	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
Rural–urban status				
Rural/remote	662	8.8	8.8	4.3–16.3
Urban	2,699	13.4	15.4	12.4–19.0

¹ Excludes people registered with cancer from death certificates only.

² Non-age-standardised data.

Sources: NZCR and NMDS (hospital events)

Note: Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.



Table 15: People diagnosed with head and neck cancer following emergency admission, by district of residence

District of residence	People with cancer ¹	% emergency admission ^{1,2}	Ratio (Māori to European/other) ^{2,3}
National	3,361	12.5 (11.4–13.7)	2.2 (1.8–2.7)
Northland	150	13.3 (8.8–19.7)	1.7 (0.9–3.4)
Waitematā	415	13.5 (10.5–17.1)	2.8 (1.5–5)
Auckland	299	15.7 (12–20.3)	1.4 (0.5–3.7)
Counties Manukau	340	12.6 (9.5–16.6)	1.6 (0.8–3.1)
Waikato	272	13.6 (10–18.2)	3.2 (1.6–6.1)
Lakes	80	15 (8.8–24.4)	1.5 (0.6–3.9)
Bay of Plenty	178	9.6 (6–14.8)	6 (3–12.1)
Tairāwhiti	37	29.7 (17.5–45.8)	4.5 (2–10.1)
Taranaki	87	8 (4–15.7)	4.2 (1.3–12.9)
Hawke's Bay	134	14.2 (9.3–21.1)	1.3 (0.5–3.4)
Whanganui	57	10.5 (4.9–21.1)	3.3 (1.1–10.2)
MidCentral	150	12.7 (8.3–18.9)	0.6 (0.1–4.3)
Capital and Coast	213	9.4 (6.2–14.1)	2.6 (1–6.8)
Hutt Valley	102	10.8 (6.1–18.3)	15.2 (6.8–33.8)
Wairarapa	32	(1.7–20.1)*	†
Nelson Marlborough	131	9.2 (5.3–15.3)	†
West Coast	31	(3.3–24.9)*	†
Canterbury	382	9.7 (7.1–13.1)	3.2 (1.4–7.2)
South Canterbury	42	(3.8–22.1)*	†
Southern	229	16.6 (12.3–22)	2 (0.6–6.1)

* Indicates that there were either less than six or no reported cases of that particular cancer in the district during the study period.

† Indicates that ratio unable to be reported due to small numbers in at least one group.

¹ Excludes people registered with cancer from death certificates only.

² Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

³ Standardised ratios were used here to compare the likelihood that Māori will be diagnosed with cancer following an emergency admission compared to people of European/other ethnicity.

Sources: NZCR and NMDS (hospital events)



Kidney cancer

Table 16: People diagnosed with kidney cancer following emergency admission, by year of diagnosis, sex, age group, ethnicity, deprivation quintile (NZDep2018) and rural-urban status

	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
All cases				
Total	2,944	25.7	21.4	17.8–25.6
Year of diagnosis				
2017	546	22.5	16.2	9.4–26.5
2018	565	27.3	30.7	20.8–43.9
2019	546	24.2	21.2	13.3–32.6
2020	630	25.6	17.8	11.8–26.2
2021	657	28.6	21.5	14.2–31.8
Sex				
Male	1,984	25.9	20.5	16.1–25.7
Female	957	25.6	23.0	16.9–30.8
Age group				
18–49	340	20.6	–	–
50–59	558	24.4	–	–
60–69	878	22.9	–	–
70–79	826	24.2	–	–
80+	342	44.2	–	–
Ethnicity				
Māori	373	30.6	32.2	22.4–45.2
Pacific peoples	98	30.6	20.0	9.8–38.3
Asian	156	19.9	16.6	8.6–29.6
European/other	2,303	25.3	19.4	15.0–24.7
Deprivation quintiles (NZDep2018)				
Quintile 1 – least deprived	521	19.4	20.2	11.6–33.0
Quintile 2	597	26.3	26.1	17.2–38.4
Quintile 3	663	25.8	20.1	12.9–30.2
Quintile 4	599	25.0	16.1	10.2–24.4
Quintile 5 – most deprived	561	31.7	25.8	17.8–36.7



	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
Rural-urban status				
Rural/remote	630	24.4	27.5	16.4-43.9
Urban	2,314	26.1	20.6	16.8-25.0

¹ Excludes people registered with cancer from death certificates only.

² Non-age-standardised data.

Sources: NZCR and NMDS (hospital events)

Note: Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.



Table 17: People diagnosed with kidney cancer following emergency admission, by district of residence

	People with cancer ¹	% emergency admission ^{1,2}	Ratio (Māori to European/other) ^{2,3}
District of residence			
National	2,944	25.7 (24.2–27.4)	1.4 (1.1–1.6)
Northland	127	27.6 (20.5–35.9)	1.2 (0.6–2.3)
Waitematā	299	25.8 (21.1–31)	1.2 (0.6–2.6)
Auckland	232	28 (22.6–34.1)	1.7 (0.8–3.8)
Counties Manukau	264	23.9 (19.1–29.4)	1.8 (1.1–2.9)
Waikato	275	29.1 (24–34.7)	1.3 (0.8–2.1)
Lakes	72	37.5 (27.2–49)	1.9 (1.1–3.3)
Bay of Plenty	169	26.6 (20.5–33.8)	1.1 (0.6–2.2)
Tairāwhiti	30	(24.6–57.7)*	1.8 (0.7–4.9)
Taranaki	105	29.5 (21.6–38.8)	1 (0.4–2.3)
Hawke’s Bay	121	28.9 (21.6–37.6)	1.4 (0.8–2.6)
Whanganui	57	31.6 (21–44.5)	0.7 (0.1–4.9)
MidCentral	124	14.5 (9.4–21.8)	1.6 (0.5–5)
Capital and Coast	165	21.8 (16.2–28.7)	1.1 (0.4–3.4)
Hutt Valley	87	26.4 (18.3–36.6)	0.7 (0.2–2.9)
Wairarapa	26	(16.5–50)*	†
Nelson Marlborough	119	15.1 (9.8–22.6)	0.6 (0.1–4.1)
West Coast	22	(19.7–57)*	†
Canterbury	353	19.8 (16–24.3)	1.3 (0.5–3.6)
South Canterbury	61	29.5 (19.6–41.9)	†
Southern	236	30.1 (24.6–36.2)	1.6 (0.7–3.5)

* Indicates that there were either less than six or no reported cases of that particular cancer in the district during the study period.

† Indicates that ratio unable to be reported due to small numbers in at least one group.

¹ Excludes people registered with cancer from death certificates only.

² Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

³ Standardised ratios were used here to compare the likelihood that Māori will be diagnosed with cancer following an emergency admission compared to people of European/other ethnicity.

Sources: NZCR and NMDS (hospital events)



Leukaemia

Table 18: People diagnosed with leukaemia following emergency admission, by year of diagnosis, sex, age group, ethnicity, deprivation quintile (NZDep2018) and rural-urban status

	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
All cases				
Total	3,385	39.5	54.7	48.9–61.0
Year of diagnosis				
2017	661	39.2	58.0	44.6–74.2
2018	697	36.3	47.4	35.9–61.5
2019	691	37.8	46.9	36.1–60.0
2020	666	40.5	63.1	49.9–78.7
2021	670	44.0	59.6	45.6–76.7
Sex				
Male	2,111	38.3	56.0	48.3–64.6
Female	1,272	41.6	53.1	44.6–62.9
Age group				
18–49	404	60.9	–	–
50–59	456	34.9	–	–
60–69	815	31.9	–	–
70–79	1,003	34.0	–	–
80+	707	47.0	–	–
Ethnicity				
Māori	361	51.0	63.1	49.8–78.9
Pacific peoples	136	66.9	71.2	53.7–92.8
Asian	148	54.7	64.6	48.0–85.4
European/other	2,718	35.9	47.6	40.3–55.8
Deprivation quintiles (NZDep2018)				
Quintile 1 – least deprived	645	31.6	43.2	30.9–58.8
Quintile 2	707	36.9	48.4	36.8–62.7
Quintile 3	723	39.1	59.4	44.4–78.0
Quintile 4	730	42.6	56.5	44.8–70.5
Quintile 5 – most deprived	579	48.0	63.6	51.5–77.7



	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
Rural–urban status				
Rural/remote	687	37.8	51.5	37.7–68.9
Urban	2,698	40.0	55.3	49.0–62.2

¹ Excludes people registered with cancer from death certificates only.

² Non-age-standardised data.

Sources: NZCR and NMDS (hospital events)

Note: Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.



Table 19: People diagnosed with leukaemia cancer following emergency admission, by district of residence

District of residence	People with cancer ¹	% emergency admission ^{1,2}	Ratio (Māori to European/other) ^{2,3}
National	3,385	39.5 (37.9–41.2)	1.4 (1.2–1.6)
Northland	154	32.5 (25.6–40.2)	0.8 (0.4–1.6)
Waitematā	382	47.9 (42.9–52.9)	0.8 (0.4–1.9)
Auckland	229	38.9 (32.8–45.3)	2.2 (1–4.8)
Counties Manukau	262	49.2 (43.2–55.3)	1.1 (0.7–1.8)
Waikato	337	42.1 (37–47.5)	1.2 (0.8–1.8)
Lakes	85	43.5 (33.5–54.1)	1.6 (0.9–2.7)
Bay of Plenty	193	43 (36.2–50.1)	1.3 (0.9–2)
Tairāwhiti	23	43.5 (25.6–63.2)	1.7 (0.7–3.7)
Taranaki	96	50 (40.2–59.8)	1.3 (0.6–2.8)
Hawke's Bay	134	38.8 (31–47.3)	1.5 (0.9–2.6)
Whanganui	71	38 (27.6–49.7)	1.6 (0.8–3.1)
MidCentral	123	35.8 (27.9–44.6)	2.3 (1.2–4.4)
Capital and Coast	248	34.7 (29–40.8)	1.7 (1–3.1)
Hutt Valley	108	31.5 (23.5–40.7)	2 (0.9–4.4)
Wairarapa	54	33.3 (22.2–46.6)	2 (0.8–5.4)
Nelson Marlborough	144	27.1 (20.5–34.9)	0.9 (0.2–3.7)
West Coast	29	34.5 (19.9–52.7)	0.6 (0.2–2.4)
Canterbury	412	32.5 (28.2–37.2)	1 (0.5–2)
South Canterbury	47	40.4 (27.6–54.7)	†
Southern	254	40.9 (35.1–47.1)	1.3 (0.6–2.8)

* Indicates that there were either less than six or no reported cases of that particular cancer in the district during the study period.

† Indicates that ratio unable to be reported due to small numbers in at least one group.

¹ Excludes people registered with cancer from death certificates only.

² Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

³ Standardised ratios were used here to compare the likelihood that Māori will be diagnosed with cancer following an emergency admission compared to people of European/other ethnicity.

Sources: NZCR and NMDS (hospital events)



Liver cancer

Table 20: People diagnosed with liver cancer following emergency admission, by year of diagnosis, sex, age group, ethnicity, deprivation quintile (NZDep2018) and rural–urban status

	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
All cases				
Total	1,824	49.8	50.3	41.1–61.2
Year of diagnosis				
2017	336	50.3	31.4	17.7–52.9
2018	338	50.6	57.4	37.3–85.2
2019	364	51.1	57.7	37.4–85.8
2020	407	47.7	52.9	32.6–82.0
2021	379	49.6	51.4	30.2–82.6
Sex				
Male	1,236	48.1	51.5	40.3–65.1
Female	588	53.2	47.7	32.5–68.1
Age group				
18–49	130	52.3	–	–
50–59	335	42.4	–	–
60–69	574	40.2	–	–
70–79	502	50.6	–	–
80+	283	75.3	–	–
Ethnicity				
Māori	382	47.1	58.8	40.8–82.5
Pacific peoples	155	63.2	70.6	46.1–104.1
Asian	189	40.7	40.9	22.0–70.4
European/other	1,083	50.2	37.8	25.6–54.4
Deprivation quintiles (NZDep2018)				
Quintile 1 – least deprived	245	45.7	36.4	16.9–70.1
Quintile 2	322	47.5	39.6	21.2–69.2
Quintile 3	348	51.7	24.9	11.2–51.7
Quintile 4	424	51.2	59.1	39.8–84.9
Quintile 5 – most deprived	484	50.6	62.1	45.0–83.9



	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
Rural-urban status				
Rural/remote	314	50.6	51.9	31.5–81.4
Urban	1,510	49.6	50.0	39.9–62.1

¹ Excludes people registered with cancer from death certificates only.

² Non-age-standardised data.

Sources: NZCR and NMDS (hospital events)

Note: Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.



Table 21: People diagnosed with liver cancer following emergency hospital admission, by district of residence

	People with cancer ¹	% emergency admission ^{1,2}	Ratio (Māori to European/other) ^{2,3}
District of residence			
National	1,824	49.8 (47.5–52.1)	1.1 (1–1.3)
Northland	91	48.4 (38.4–58.5)	1.4 (0.8–2.5)
Waitematā	216	47.2 (40.7–53.9)	0.9 (0.5–1.7)
Auckland	195	50.3 (43.3–57.2)	1.1 (0.6–2)
Counties Manukau	255	47.1 (41–53.2)	1.2 (0.8–1.9)
Waikato	161	54.7 (46.9–62.2)	1.2 (0.8–1.8)
Lakes	37	59.5 (43.5–73.7)	2.6 (1.6–4.4)
Bay of Plenty	113	45.1 (36.3–54.3)	1.1 (0.7–1.8)
Tairāwhiti	17	52.9 (31–73.8)	5 (1.9–13.3)
Taranaki	33	48.5 (32.5–64.8)	0.5 (0.1–3.8)
Hawke's Bay	82	59.8 (48.9–69.7)	1.2 (0.8–1.8)
Whanganui	16	(6.6–43)*	†
MidCentral	52	53.8 (40.5–66.7)	0.4 (0.1–1.6)
Capital and Coast	96	47.9 (38.2–57.8)	0.8 (0.3–2.2)
Hutt Valley	52	46.2 (33.3–59.5)	1.4 (0.7–2.7)
Wairarapa	19	31.6 (15.4–54)	1.1 (0.3–4.4)
Nelson Marlborough	41	58.5 (43.4–72.2)	0.8 (0.2–3.3)
West Coast	19	36.8 (19.1–59)	†
Canterbury	192	50.5 (43.5–57.5)	1.2 (0.7–1.9)
South Canterbury	21	47.6 (28.3–67.6)	†
Southern	116	55.2 (46.1–63.9)	0.8 (0.4–1.7)

* Indicates that there were either less than six or no reported cases of that particular cancer in the district during the study period.

† Indicates that ratio unable to be reported due to small numbers in at least one group.

¹ Excludes people registered with cancer from death certificates only.

² Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

³ Standardised ratios were used here to compare the likelihood that Māori will be diagnosed with cancer following an emergency admission compared to people of European/other ethnicity.

Sources: NZCR and NMDS (hospital events)



Lung cancer

Table 22: People diagnosed with lung cancer following emergency admission, by year of diagnosis, sex, age group, ethnicity, deprivation quintile (NZDep2018) and rural-urban status

	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
All cases				
Total	11,141	51.3	56.5	50.2–63.3
Year of diagnosis				
2017	2,094	52.2	53.7	40.7–69.8
2018	2,240	51.7	56.8	44.3–72.1
2019	2,194	48.2	56.8	42.5–74.6
2020	2,344	51.4	55.6	41.5–73.3
2021	2,269	52.7	59.2	45.8–75.6
Sex				
Male	5,568	52.8	57.1	48.2–67.2
Female	5,570	49.7	55.9	47.3–65.7
Age group				
18–49	330	58.2	–	–
50–59	1,419	52.0	–	–
60–69	3,215	47.6	–	–
70–79	3,979	48.0	–	–
80+	2,198	60.9	–	–
Ethnicity				
Māori	2,291	54.1	67.5	54.4–82.9
Pacific peoples	555	65.4	72.6	54.0–96.0
Asian	628	48.1	49.3	35.8–66.4
European/other	7,602	49.6	47.9	39.4–57.9
Deprivation quintiles (NZDep2018)				
Quintile 1 – least deprived	1,396	46.4	60.2	42.3–83.7
Quintile 2	1,760	48.8	46.9	32.7–65.8
Quintile 3	2,296	50.7	56.1	42.3–73.3
Quintile 4	2,632	51.8	60.5	47.2–76.6
Quintile 5 – most deprived	3,049	54.8	56.7	46.2–69.0



	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
Rural–urban status				
Rural/remote	2,083	50.5	55.6	42.3–72.2
Urban	9,058	51.4	56.7	49.7–64.4

¹ Excludes people registered with cancer from death certificates only.

² Non-age-standardised data.

Sources: NZCR and NMDS (hospital events)

Note: Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.



Table 23: People diagnosed with lung cancer following emergency admission, by district of residence

District of residence	People with cancer ¹	% emergency admission ^{1,2}	Ratio (Māori to European/other) ^{2,3}
National	11,141	51.3 (50.3–52.2)	1.1 (1.1–1.2)
Northland	683	54 (50.3–57.7)	1 (0.8–1.2)
Waitematā	1,143	56 (53.1–58.8)	1.1 (0.8–1.4)
Auckland	731	55.3 (51.6–58.8)	1.3 (1–1.7)
Counties Manukau	1,220	52.1 (49.3–54.9)	1.1 (1–1.3)
Waikato	1,071	52.8 (49.8–55.7)	1.2 (1–1.4)
Lakes	301	46.5 (41–52.2)	0.9 (0.7–1.2)
Bay of Plenty	705	51.6 (47.9–55.3)	1.1 (0.9–1.3)
Tairāwhiti	132	56.8 (48.3–65)	1.6 (1.2–2.1)
Taranaki	323	51.1 (45.7–56.5)	1.1 (0.8–1.6)
Hawke's Bay	519	51.3 (47–55.5)	1.1 (0.8–1.3)
Whanganui	223	48.9 (42.4–55.4)	1.4 (1–2)
MidCentral	525	48 (43.8–52.3)	1 (0.7–1.4)
Capital and Coast	460	49.1 (44.6–53.7)	1.3 (1–1.8)
Hutt Valley	309	48.5 (43–54.1)	1.3 (1–1.8)
Wairarapa	123	49.6 (40.9–58.3)	1.4 (0.8–2.2)
Nelson Marlborough	364	47.8 (42.7–52.9)	0.9 (0.6–1.5)
West Coast	129	54.3 (45.7–62.6)	0.8 (0.4–1.7)
Canterbury	1,253	46.6 (43.9–49.4)	0.9 (0.7–1.2)
South Canterbury	189	45.5 (38.6–52.6)	1.3 (0.6–3)
Southern	738	50.7 (47.1–54.3)	1.3 (0.9–1.7)

* Indicates that there were either less than six or no reported cases of that particular cancer in the district during the study period.

† Indicates that ratio unable to be reported due to small numbers in at least one group.

¹ Excludes people registered with cancer from death certificates only.

² Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

³ Standardised ratios were used here to compare the likelihood that Māori will be diagnosed with cancer following an emergency admission compared to people of European/other ethnicity.

Sources: NZCR and NMDS (hospital events)



Lymphoma

Table 24: People diagnosed with lymphoma following emergency admission, by year of diagnosis, sex, age group, ethnicity, deprivation quintile (NZDep2018) and rural-urban status

	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
All cases				
Total	5,362	38.8	40.4	36.9–44.0
Year of diagnosis				
2017	967	35.9	40.4	32.6–49.6
2018	1,068	36.4	35.3	28.5–43.2
2019	1,042	38.3	40.7	33.3–49.3
2020	1,129	40.8	40.6	33.0–49.5
2021	1,156	41.9	44.7	37.0–53.6
Sex				
Male	3,075	38.7	40.1	35.6–44.9
Female	2,283	38.9	40.8	35.5–46.6
Age group				
18–49	806	41.4	–	–
50–59	773	36.0	–	–
60–69	1,291	35.7	–	–
70–79	1,546	37.9	–	–
80+	946	44.5	–	–
Ethnicity				
Māori	516	47.7	52.2	42.4–63.6
Pacific peoples	187	55.6	49.8	34.7–69.9
Asian	357	44.0	45.8	36.6–56.7
European/other	4,289	36.5	35.7	31.7–40.0
Deprivation quintile (NZDep2018)				
Quintile 1 – least deprived	1,100	33.5	32.0	25.2–40.1
Quintile 2	1,041	37.0	41.0	33.2–50.1
Quintile 3	1,167	38.8	42.0	34.4–50.7
Quintile 4	1,154	40.5	41.4	34.6–49.2
Quintile 5 – most deprived	899	45.1	46.0	37.4–56.1



	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
Rural-urban status				
Rural/remote	1,099	35.5	37.3	29.8-46.2
Urban	4,263	39.6	41.1	37.3-45.2

¹ Excludes people registered with cancer from death certificates only.

² Non-age-standardised data.

Sources: NZCR and NMDS (hospital events)

Note: Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.



Table 25: People diagnosed with lymphoma following emergency admission, by district of residence

	People with cancer ¹	% emergency admission ^{1,2}	Ratio (Māori to European/other) ^{2,3}
District of residence			
National	5,362	38.8 (37.5–40.1)	1.3 (1.2–1.5)
Northland	238	36.1 (30.3–42.4)	1.3 (0.9–2.1)
Waitematā	624	36.9 (33.2–40.7)	1.6 (1–2.5)
Auckland	437	38.7 (34.2–43.3)	1.6 (1–2.6)
Counties Manukau	458	46.1 (41.6–50.6)	1.2 (0.8–1.9)
Waikato	466	42.1 (37.7–46.6)	0.9 (0.6–1.4)
Lakes	128	42.2 (34–50.8)	0.9 (0.5–1.5)
Bay of Plenty	311	37.3 (32.1–42.8)	1 (0.6–1.6)
Tairāwhiti	61	44.3 (32.5–56.7)	0.9 (0.5–1.7)
Taranaki	141	31.2 (24.1–39.3)	3.2 (1.9–5.4)
Hawke’s Bay	193	43 (36.2–50.1)	1.1 (0.6–1.9)
Whanganui	72	34.7 (24.8–46.2)	1.6 (0.7–3.6)
MidCentral	190	37.9 (31.3–45)	1.8 (1.1–2.9)
Capital and Coast	328	42.4 (37.1–47.8)	1.7 (1–2.8)
Hutt Valley	207	39.1 (32.7–45.9)	1.7 (1–2.9)
Wairarapa	71	40.8 (30.2–52.5)	1.1 (0.4–3.5)
Nelson Marlborough	226	35.8 (29.9–42.3)	1.6 (0.7–3.3)
West Coast	44	38.6 (25.7–53.4)	†
Canterbury	653	33.1 (29.6–36.8)	1.6 (1–2.5)
South Canterbury	89	38.2 (28.8–48.6)	†
Southern	425	40 (35.5–44.7)	0.9 (0.5–1.8)

* Indicates that there were either less than six or no reported cases of that particular cancer in the district during the study period.

† Indicates that ratio unable to be reported due to small numbers in at least one group.

¹ Excludes people registered with cancer from death certificates only.

² Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

³ Standardised ratios were used here to compare the likelihood that Māori will be diagnosed with cancer following an emergency admission compared to people of European/other ethnicity.

Sources: NZCR and NMDS (hospital events)



Melanoma

Table 26: People diagnosed with melanoma following emergency admission, by year of diagnosis, sex, age group, ethnicity, deprivation quintile (NZDep2018) and rural-urban status

	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
All cases				
Total	13,461	3.3	1.9	1.5–2.4
Year of diagnosis				
2017	2,548	4.0	1.5	0.8–2.8
2018	2,726	2.9	0.9	0.4–1.9
2019	2,721	3.2	2.2	1.2–3.7
2020	2,620	3.0	2.2	1.1–3.9
2021	2,846	3.5	2.7	1.6–4.3
Sex				
Male	7,443	4.0	2.3	1.6–3.2
Female	6,012	2.4	1.5	1.0–2.3
Age group				
18–49	1,841	1.7	–	–
50–59	2,298	2.3	–	–
60–69	3,363	2.3	–	–
70–79	3,527	3.6	–	–
80+	2,432	6.4	–	–
Ethnicity				
Māori	267	5.6	1.7	0.9–5.8
Pacific peoples	30	6.7	16.1	0.5–87.0
Asian	37	8.1	7.7	0.8–32.9
European/other	13,067	3.2	1.8	1.4–2.4
Deprivation quintiles (NZDep2018)				
Quintile 1 – least deprived	3,412	2.3	1.3	0.7–2.3
Quintile 2	3,017	2.8	2.1	1.1–3.5
Quintile 3	3,116	3.2	1.4	0.7–2.6
Quintile 4	2,484	3.6	1.8	0.9–3.4
Quintile 5 – most deprived	1,426	6.2	4.5	2.4–7.8



	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
Rural–urban status				
Rural/remote	3,053	2.6	1.6	0.8–2.8
Urban	10,408	3.5	2.0	1.5–2.6

¹ Excludes people registered with cancer from death certificates only.

² Non-age-standardised data.

Sources: NZCR and NMDS (hospital events)

Note: Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.



Table 27: People diagnosed with melanoma following emergency admission, by district of residence

District of residence	People with cancer ¹	% emergency admission ^{1,2}	Ratio (Māori to European/other) ^{2,3}
National	13,461	3.3 (3–3.6)	2.6 (1.6–4.3)
Northland	584	3.9 (2.6–5.8)	4.2 (1–16.6)
Waitematā	1,833	2.8 (2.2–3.7)	†
Auckland	1,122	3.5 (2.6–4.7)	†
Counties Manukau	934	2.7 (1.8–3.9)	7.2 (1.8–28.8)
Waikato	1,211	3.8 (2.9–5)	4 (1–16.2)
Lakes	291	2.1 (0.9–4.4)	†
Bay of Plenty	909	3.6 (2.6–5.1)	3.4 (0.8–13.5)
Tairāwhiti	129	3.9 (1.7–8.8)	11.3 (1.6–80.5)
Taranaki	541	2.4 (1.4–4.1)	†
Hawke's Bay	352	5.1 (3.3–7.9)	7.6 (1.1–53.6)
Whanganui	187	5.3 (2.9–9.6)	†
MidCentral	486	3.7 (2.4–5.8)	†
Capital and Coast	731	3.3 (2.2–4.8)	2.2 (0.3–15.5)
Hutt Valley	363	3 (1.7–5.3)	†
Wairarapa	181	0.6 (0.1–3.1)	†
Nelson Marlborough	618	3.1 (2–4.8)	†
West Coast	103	2.9 (1–8.2)	19.5 (2.7–138.4)
Canterbury	1,681	3.5 (2.7–4.5)	†
South Canterbury	204	2.9 (1.4–6.3)	6.6 (0.9–46.5)
Southern	1,001	3.3 (2.4–4.6)	4.3 (1.1–17.1)

* Indicates that there were either less than six or no reported cases of that particular cancer in the district during the study period.

† Indicates that ratio unable to be reported due to small numbers in at least one group.

¹ Excludes people registered with cancer from death certificates only.

² Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

³ Standardised ratios were used here to compare the likelihood that Māori will be diagnosed with cancer following an emergency admission compared to people of European/other ethnicity.

Sources: NZCR and NMDS (hospital events)



Myeloma

Table 28: People diagnosed with myeloma following emergency admission, by year of diagnosis, sex, age group, ethnicity, deprivation quintile (NZDep2018) and rural-urban status

	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
All cases				
Total	2,094	40.9	37.4	29.4–47.0
Year of diagnosis				
2017	402	39.6	36.1	18.0–65.9
2018	407	40.8	27.1	13.3–51.0
2019	424	38.7	37.0	21.6–60.0
2020	417	44.4	33.7	19.6–55.5
2021	444	41.0	51.6	31.3–80.8
Sex				
Male	1,243	41.6	39.0	27.2–54.8
Female	850	39.9	35.8	25.5–49.2
Age group				
18–49	121	37.2	–	–
50–59	309	36.2	–	–
60–69	551	37.2	–	–
70–79	692	39.6	–	–
80+	421	52.3	–	–
Ethnicity				
Māori	230	44.3	51.6	33.7–76.2
Pacific peoples	113	45.1	37.2	16.8–73.4
Asian	102	42.2	52.1	21.3–108.8
European/other	1,640	40.0	29.1	20.1–41.2
Deprivation quintiles (NZDep2018)				
Quintile 1 – least deprived	425	36.2	30.1	15.1–54.7
Quintile 2	422	34.1	28.8	14.5–52.4
Quintile 3	455	42.2	39.5	22.1–66.3
Quintile 4	406	47.8	38.3	22.1–62.9
Quintile 5 – most deprived	385	44.4	49.0	30.1–76.2



	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
Rural-urban status				
Rural/remote	436	38.3	48.2	28.0-78.1
Urban	1,658	41.6	34.8	26.5-45.3

¹ Excludes people registered with cancer from death certificates only.

² Non-age-standardised data.

Sources: NZCR and NMDS (hospital events)

Note: Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.



Table 29: People diagnosed with myeloma following emergency hospital admission, by district of residence

	People with cancer ¹	% emergency admission ^{1,2}	Ratio (Māori to European/other) ^{2,3}
District of residence			
National	2,094	40.9 (38.8–43)	1.2 (1–1.5)
Northland	104	42.3 (33.3–51.9)	1 (0.6–1.9)
Waitematā	219	41.6 (35.2–48.2)	0.6 (0.1–2.3)
Auckland	189	37 (30.5–44.1)	1.9 (0.9–4.3)
Counties Manukau	168	50 (42.5–57.5)	1.2 (0.7–2.1)
Waikato	189	41.8 (35–48.9)	1 (0.6–1.6)
Lakes	53	34 (22.7–47.4)	2.4 (1.1–5)
Bay of Plenty	127	37 (29.1–45.7)	0.9 (0.4–2)
Tairāwhiti	22	77.3 (56.6–89.9)	†
Taranaki	45	51.1 (37–65)	1.5 (0.5–4.7)
Hawke's Bay	75	46.7 (35.8–57.8)	1.2 (0.5–2.6)
Whanganui	38	47.4 (32.5–62.7)	0.6 (0.2–2.4)
MidCentral	90	36.7 (27.4–47)	0.6 (0.1–4.2)
Capital & Coast	116	43.1 (34.5–52.2)	0.8 (0.3–2.2)
Hutt Valley	66	50 (38.3–61.7)	1.1 (0.6–2.3)
Wairarapa	25	52 (33.5–70)	†
Nelson Marlborough	85	37.6 (28.1–48.3)	2.3 (0.6–9)
West Coast	17	(13.3–53.1)*	†
Canterbury	281	29.9 (24.8–35.5)	1.2 (0.4–3.1)
South Canterbury	31	25.8 (13.7–43.2)	†
Southern	154	46.8 (39–54.6)	1.6 (0.7–3.3)

* Indicates that there were either less than six or no reported cases of that particular cancer in the district during the study period.

† Indicates that ratio unable to be reported due to small numbers in at least one group.

¹ Excludes people registered with cancer from death certificates only.

² Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

³ Standardised ratios were used here to compare the likelihood that Māori will be diagnosed with cancer following an emergency admission compared to people of European/other ethnicity.

Sources: NZCR and NMDS (hospital events)



Neuroendocrine tumours (NETs)

Table 30: People diagnosed with NETs following emergency admission, by year of diagnosis, sex, age group, ethnicity, deprivation quintile (NZDep2018) and rural-urban status

	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
All cases				
Total	1,419	44.3	54.3	47.9–61.4
Differentiation				
Poorly	226	51.8	51.7	31.2–81.5
Moderately	212	38.2	46.7	33.1–64.3
Well	700	44.9	58.9	50.2–68.8
Year of diagnosis				
2017	257	47.9	61.5	46.5–80.1
2018	249	47.8	56.9	42.2–75.2
2019	260	43.8	56.9	42.0–75.5
2020	355	41.7	49.2	37.3–64.0
2021	298	41.9	49.0	35.8–65.7
Sex				
Male	629	46.7	59.6	48.4–72.6
Female	789	42.5	51.5	43.8–60.4
Age group				
18–49	315	58.7	–	–
50–59	273	42.5	–	–
60–69	378	34.7	–	–
70–79	329	38.3	–	–
80+	124	57.3	–	–
Ethnicity				
Māori	244	55.3	63.1	50.1–78.7
Pacific peoples	84	51.2	58.2	37.8–86.3
Asian	68	32.4	31.8	16.3–56.9
European/other	1,017	41.9	52.9	44.6–62.5
Deprivation quintiles (NZDep2018)				
Quintile 1 – least deprived	246	38.2	50.6	35.6–69.9
Quintile 2	278	45.3	58.3	42.5–78.3
Quintile 3	294	43.2	47.3	33.7–64.8



	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
Quintile 4	302	42.7	54.1	41.7–69.3
Quintile 5 – most deprived	299	51.2	59.4	46.4–75.0
Rural–urban status				
Rural/remote	277	44.8	51.9	37.2–70.7
Urban	1,142	44.2	54.8	47.7–62.7

¹ Excludes people registered with cancer from death certificates only.

² Non-age-standardised data.

Sources: NZCR and NMDS (hospital events)

Note: Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.



Table 31: People diagnosed with NETs following emergency admission, by district of residence

District of residence	People with cancer ¹	% emergency admission ^{1,2}	Ratio (Māori to European/other) ^{2,3}
National	1,419	44.3 (41.8–46.9)	1.3 (1.1–1.5)
Northland	67	43.3 (32.1–55.2)	2.3 (1.4–3.8)
Waitematā	161	45.3 (37.8–53.1)	1 (0.5–2.3)
Auckland	126	43.7 (35.3–52.4)	0.9 (0.4–2.1)
Counties Manukau	175	42.3 (35.2–49.7)	1.3 (0.8–2.1)
Waikato	131	42.7 (34.6–51.3)	1.5 (1–2.4)
Lakes	33	48.5 (32.5–64.8)	†
Bay of Plenty	71	42.3 (31.5–53.8)	1.6 (0.9–2.9)
Tairāwhiti	23	39.1 (22.2–59.2)	0.4 (0.2–1.2)
Taranaki	34	32.4 (19.1–49.2)	4.3 (1.9–9.5)
Hawke's Bay	70	51.4 (40–62.8)	1.4 (0.7–2.7)
Whanganui	18	61.1 (38.6–79.7)	0.9 (0.3–2.7)
MidCentral	57	45.6 (33.4–58.4)	0.9 (0.4–1.9)
Capital and Coast	76	42.1 (31.6–53.3)	1.7 (0.6–5.3)
Hutt Valley	46	52.2 (38.1–65.9)	0.6 (0.2–2.4)
Wairarapa	11	27.3 (9.7–56.6)	†
Nelson Marlborough	37	40.5 (26.3–56.5)	1.3 (0.2–9.5)
West Coast	17	47.1 (26.2–69)	†
Canterbury	159	42.1 (34.7–49.9)	1.4 (0.7–2.6)
South Canterbury	21	47.6 (28.3–67.6)	†
Southern	86	51.2 (40.8–61.4)	1.7 (0.8–3.6)

* Indicates that there were either less than six or no reported cases of that particular cancer in the district during the study period.

† Indicates that ratio unable to be reported due to small numbers in at least one group.

¹ Excludes people registered with cancer from death certificates only.

² Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

³ Standardised ratios were used here to compare the likelihood that Māori will be diagnosed with cancer following an emergency admission compared to people of European/other ethnicity.

Sources: NZCR and NMDS (hospital events)



NETs (poorly differentiated)

Table 32: People diagnosed with poorly differentiated NETs following emergency admission, by year of diagnosis, sex, age group, ethnicity, deprivation quintile (NZDep2018) and rural–urban status

	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
All cases				
Total	226	51.8	51.7	31.2–81.5
Year of diagnosis				
2017	35	45.7	48.6	10.2–148.7
2018	39	56.4	13.2	7.9–104.3
2019	40	50.0	60.0	19.0–148.3
2020	65	50.8	62.4	22.3–142.0
2021	47	55.3	56.9	16.9–145.2
Sex				
Male	122	51.6	48.2	10.2–147.8
Female	104	51.9	53.6	31.1–87.6
Age group				
18–49	23	52.2	–	–
50–59	50	52.0	–	–
60–69	57	50.9	–	–
70–79	75	50.7	–	–
80+	21	57.1	–	–
Ethnicity				
Māori	35	51.4	61.5	11.7–195.0
Pacific peoples	15	66.7	91.7	5.6–443.2
Asian	13	46.2	39.3	5.2–156.4
European/other	162	50.6	50.0	26.6–87.1
Deprivation quintiles (NZDep2018)				
Quintile 1 – least deprived	29	51.7	65.6	26.0–139.1
Quintile 2	48	47.9	11.3	6.6–102.9
Quintile 3	48	54.2	55.7	20.7–124.2
Quintile 4	50	48.0	50.1	4.4–224.7
Quintile 5 – most deprived	51	56.9	49.9	11.3–149.5



	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
Rural-urban status				
Rural/remote	47	61.7	70.9	20.9-181.2
Urban	179	49.2	47.5	26.5-80.1

¹ Excludes people registered with cancer from death certificates only.

² Non-age-standardised data.

Sources: NZCR and NMDS (hospital events)

Note: Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.



Table 33: People diagnosed with poorly differentiated NETs following emergency admission, by district of residence

District of residence	People with cancer ¹	% emergency admission ^{1,2}	Ratio (Māori to European/other) ^{2,3}
National	226	51.8 (45.3–58.2)	1 (0.6–1.6)
Northland	12	50 (25.4–74.6)	3.4 (1.3–9.1)
Waitematā	15	53.3 (30.1–75.2)	†
Auckland	18	44.4 (24.6–66.3)	†
Counties Manukau	33	48.5 (32.5–64.8)	0.5 (0.1–2.2)
Waikato	27	66.7 (47.8–81.4)	2.1 (0.8–5.6)
Lakes	*	(23.1–88.2)*	†
Bay of Plenty	17	41.2 (21.6–64)	0.7 (0.2–2.7)
Tairāwhiti	*	(4.6–69.9)*	†
Taranaki	7	(2.6–51.3)*	†
Hawke's Bay	13	69.2 (42.4–87.3)	†
Whanganui	*	(43.9–100)*	†
MidCentral	7	(8.2–64.1)*	†
Capital & Coast	9	(12.1–64.6)*	†
Hutt Valley	6	(18.8–81.2)*	†
Nelson Marlborough	10	(23.7–76.3)*	†
Canterbury	23	60.9 (40.8–77.8)	†
South Canterbury	*	(3.6–62.4)*	†
Southern	12	75 (46.8–91.1)	†

* Indicates that there were either less than six or no reported cases of that particular cancer in the district during the study period.

† Indicates that ratio unable to be reported due to small numbers in at least one group.

¹ Excludes people registered with cancer from death certificates only.

² Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

³ Standardised ratios were used here to compare the likelihood that Māori will be diagnosed with cancer following an emergency admission compared to people of European/other ethnicity.

Sources: NZCR and NMDS (hospital events)



NETs (moderately differentiated)

Table 34: People diagnosed with moderately differentiated NETs following emergency admission, by year of diagnosis, sex, age group, ethnicity, deprivation quintile (NZDep2018) and rural–urban status

	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
All cases				
Total	212	38.2	46.7	33.1–64.3
Year of diagnosis				
2017	33	27.3	42.9	13.5–103.2
2018	32	46.9	65.4	32.6–117.8
2019	37	51.4	49.7	21.2–101.3
2020	65	33.8	35.1	15.7–69.1
2021	45	35.6	43.6	16.4–96.9
Sex				
Male	92	35.9	37.4	18.4–69.1
Female	119	40.3	52.4	34.7–76.5
Age group				
18–49	55	50.9	–	–
50–59	39	25.6	–	–
60–69	53	34.0	–	–
70–79	51	37.3	–	–
80+	14	42.9	–	–
Ethnicity				
Māori	35	45.7	60.8	30.6–109.1
Pacific peoples	10	30.0	32.7	4.6–113.7
Asian	9	11.1	0.9	0.0–100.7
European/other	157	38.2	46.5	29.7–69.8
Deprivation quintiles (NZDep2018)				
Quintile 1 – least deprived	43	34.9	39.5	14.8–86.3
Quintile 2	39	35.9	53.1	18.7–121.6
Quintile 3	58	46.6	54.9	24.0–109.2
Quintile 4	39	33.3	38.4	16.3–77.4
Quintile 5 – most deprived	33	36.4	48.9	22.6–93.4



	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
Rural–urban status				
Rural/remote	30	36.7	59.7	21.3–133.4
Urban	182	38.5	45.0	30.9–63.6

¹ Excludes people registered with cancer from death certificates only.

² Non-age-standardised data.

Sources: NZCR and NMDS (hospital events)

Note: Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.



Table 35: People diagnosed with moderately differentiated NETs following emergency admission, by district of residence

	People with cancer ¹	% emergency admission ^{1,2}	Ratio (Māori to European/other) ^{2,3}
District of residence			
National	212	38.2 (31.9–44.9)	1.3 (0.8–2.1)
Northland	*	(3.6–62.4)*	†
Waitematā	20	30 (14.5–51.9)	†
Auckland	25	36 (20.2–55.5)	†
Counties Manukau	25	40 (23.4–59.3)	1.2 (0.4–3.9)
Waikato	12	(19.3–68)*	0.9 (0.2–3.4)
Lakes	*	*	†
Bay of Plenty	8	(7.1–59.1)*	†
Tairāwhiti	*	(6.1–79.2)*	†
Taranaki	*	*	†
Hawke's Bay	7	(15.8–75)*	†
Whanganui	*	(9.5–90.5)*	†
MidCentral	6	(9.7–70)*	1 (0.1–7.1)
Capital and Coast	17	41.2 (21.6–64)	†
Hutt Valley	7	(35.9–91.8)*	0.5 (0.1–3.5)
Wairarapa	*	(9.5–90.5)*	†
Nelson Marlborough	*	(4.6–69.9)*	†
West Coast	*	(11.8–76.9)*	†
Canterbury	26	42.3 (25.5–61.1)	†
South Canterbury	7	(25–84.2)*	†
Southern	26	38.5 (22.4–57.5)	†

* Indicates that there were either less than six or no reported cases of that particular cancer in the district during the study period.

† Indicates that ratio unable to be reported due to small numbers in at least one group.

¹ Excludes people registered with cancer from death certificates only.

² Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

³ Standardised ratios were used here to compare the likelihood that Māori will be diagnosed with cancer following an emergency admission compared to people of European/other ethnicity.

Sources: NZCR and NMDS (hospital events)



NETs (well differentiated)

Table 36: People diagnosed with well differentiated NETs following emergency admission, by year of diagnosis, sex, age group, ethnicity, deprivation quintile (NZDep2018) and rural-urban status

	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
All cases				
Total	700	44.9	58.9	50.2–68.8
Year of diagnosis				
2017	132	53.8	66.6	47.6–91.0
2018	130	42.3	60.2	40.5–86.6
2019	127	42.5	61.1	41.3–87.4
2020	161	42.2	54.9	37.8–77.4
2021	150	44.0	52.2	35.3–74.7
Sex				
Male	303	45.9	65.3	50.5–83.1
Female	397	44.1	55.2	44.7–67.4
Age group				
18–49	189	65.1	–	–
50–59	139	43.9	–	–
60–69	181	29.8	–	–
70–79	143	32.9	–	–
80+	48	60.4	–	–
Ethnicity				
Māori	124	60.5	65.5	49.4–85.5
Pacific peoples	47	51.1	62.5	36.6–100.5
Asian	39	30.8	35.4	15.0–72.5
European/other	487	41.5	59.1	47.3–73.2
Deprivation quintiles (NZDep2018)				
Quintile 1 – least deprived	125	36.0	51.6	31.3–80.6
Quintile 2	135	49.6	65.0	43.8–93.3
Quintile 3	134	41.0	44.5	26.4–70.9
Quintile 4	148	44.6	60.2	43.7–80.9
Quintile 5 – most deprived	158	51.3	65.5	48.8–86.2



	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
Rural-urban status				
Rural/remote	137	46.0	54.2	34.4-81.8
Urban	563	44.6	59.6	50.1-70.5

¹ Excludes people registered with cancer from death certificates only.

² Non-age-standardised data.

Sources: NZCR and NMDS (hospital events)

Note: Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.



Table 37: People diagnosed with well differentiated NETs following emergency admission, by district of residence

District of residence	People with cancer ¹	% emergency admission ^{1,2}	Ratio (Māori to European/other) ^{2,3}
National	700	44.9 (41.2–48.6)	1.3 (1–1.6)
Northland	28	39.3 (23.6–57.6)	1 (0.4–2.7)
Waitematā	106	49.1 (39.7–58.4)	1.4 (0.6–3.2)
Auckland	58	41.4 (29.6–54.2)	1.1 (0.5–2.7)
Counties Manukau	95	47.4 (37.6–57.3)	1.3 (0.7–2.4)
Waikato	62	32.3 (22–44.6)	2 (1–3.8)
Lakes	21	52.4 (32.4–71.7)	†
Bay of Plenty	34	41.2 (26.4–57.8)	1.4 (0.6–3.4)
Tairāwhiti	11	54.5 (28–78.7)	1.5 (0.5–4.7)
Taranaki	22	40.9 (23.3–61.3)	2.3 (0.9–6.1)
Hawke's Bay	38	47.4 (32.5–62.7)	1.3 (0.6–2.7)
Whanganui	7	(25–84.2)*	†
MidCentral	27	48.1 (30.7–66)	1 (0.4–2.8)
Capital and Coast	33	51.5 (35.2–67.5)	3 (0.7–11.9)
Hutt Valley	22	45.5 (26.9–65.3)	1.2 (0.2–8.5)
Wairarapa	*	(11.8–76.9)*	†
Nelson Marlborough	14	(11.7–54.6)*	†
West Coast	8	(13.7–69.4)*	†
Canterbury	78	41 (30.8–52.1)	1.1 (0.4–2.8)
South Canterbury	*	(15–85)*	†
Southern	27	63 (44.2–78.5)	1.2 (0.4–3.8)

* Indicates that there were either less than six or no reported cases of that particular cancer in the district during the study period.

† Indicates that ratio unable to be reported due to small numbers in at least one group.

¹ Excludes people registered with cancer from death certificates only.

² Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

³ Standardised ratios were used here to compare the likelihood that Māori will be diagnosed with cancer following an emergency admission compared to people of European/other ethnicity.

Sources: NZCR and NMDS (hospital events)



Oesophageal cancer

Table 38: People diagnosed with oesophageal cancer following emergency admission, by year of diagnosis, sex, age group, ethnicity, deprivation quintile (NZDep2018) and rural–urban status

	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
All cases				
Total	1,553	34.0	31.5	21.6–44.8
Year of diagnosis				
2017	285	36.1	25.2	9.1–58.7
2018	274	32.1	40.3	13.8–93.5
2019	325	32.9	29.2	9.1–73.2
2020	359	33.4	29.1	14.1–54.7
2021	310	35.5	39.6	15.2–87.1
Sex				
Male	1,100	33.5	29.8	19.3–44.4
Female	453	35.1	39.0	16.0–81.5
Age group				
18–49	63	31.7	–	–
50–59	205	31.7	–	–
60–69	408	28.2	–	–
70–79	506	33.2	–	–
80+	371	43.1	–	–
Ethnicity				
Māori	149	38.9	32.3	11.4–75.9
Pacific peoples	34	50.0	30.0	4.6–116.5
Asian	54	38.9	32.1	9.7–81.4
European/other	1,297	32.6	30.2	18.2–47.7
Deprivation quintiles (NZDep2018)				
Quintile 1 – least deprived	257	28.0	41.0	14.4–94.1
Quintile 2	294	32.0	13.7	2.9–47.9
Quintile 3	348	31.6	32.0	13.5–66.0
Quintile 4	343	36.7	21.3	8.6–46.8
Quintile 5 – most deprived	310	40.6	53.4	25.3–100.9



	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
Rural–urban status				
Rural/remote	299	30.8	35.0	10.1–90.1
Urban	1,254	34.8	31.1	20.7–45.3

¹ Excludes people registered with cancer from death certificates only.

² Non-age-standardised data.

Sources: NZCR and NMDS (hospital events)

Note: Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.



Table 39: People diagnosed with oesophageal cancer following emergency admission, by district of residence

District of residence	People with cancer ¹	% emergency admission ^{1,2}	Ratio (Māori to European/other) ^{2,3}
National	1,553	34 (31.7–36.4)	1.3 (1–1.7)
Northland	86	31.4 (22.6–41.8)	†
Waitematā	176	38.1 (31.2–45.4)	1.2 (0.4–3.1)
Auckland	96	32.3 (23.8–42.2)	1.7 (0.7–4.6)
Counties Manukau	127	37.8 (29.8–46.5)	1.7 (0.7–4.2)
Waikato	157	25.5 (19.3–32.8)	1.1 (0.5–2.4)
Lakes	42	28.6 (17.2–43.6)	0.6 (0.1–3.9)
Bay of Plenty	93	31.2 (22.7–41.2)	1.8 (0.8–3.9)
Tairāwhiti	15	73.3 (48–89.1)	†
Taranaki	52	32.7 (21.5–46.2)	0.3 (0.1–1.3)
Hawke's Bay	66	36.4 (25.8–48.4)	1.2 (0.5–3.3)
Whanganui	27	29.6 (15.9–48.5)	3.3 (0.5–23.7)
MidCentral	62	33.9 (23.3–46.3)	1.4 (0.4–4.3)
Capital & Coast	81	38.3 (28.4–49.2)	0.7 (0.1–4.9)
Hutt Valley	48	37.5 (25.2–51.6)	2.5 (1–6)
Wairarapa	15	53.3 (30.1–75.2)	†
Nelson Marlborough	66	31.8 (21.8–43.8)	†
West Coast	18	33.3 (16.3–56.3)	†
Canterbury	143	31.5 (24.4–39.5)	†
South Canterbury	29	27.6 (14.7–45.7)	1.4 (0.2–9.8)
Southern	154	36.4 (29.2–44.2)	1.1 (0.3–3.3)

* Indicates that there were either less than six or no reported cases of that particular cancer in the district during the study period.

† Indicates that ratio unable to be reported due to small numbers in at least one group.

¹ Excludes people registered with cancer from death certificates only.

² Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

³ Standardised ratios were used here to compare the likelihood that Māori will be diagnosed with cancer following an emergency admission compared to people of European/other ethnicity.

Sources: NZCR and NMDS (hospital events)



Ovarian cancer

Table 40: People diagnosed with ovarian cancer following emergency admission, by year of diagnosis, sex, age group, ethnicity, deprivation quintile (NZDep2018) and rural-urban status

	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
All cases				
Total	1,531	46.9	46.0	39.8–52.9
Year of diagnosis				
2017	299	48.5	46.4	32.3–65.0
2018	307	45.9	42.1	29.7–58.3
2019	297	45.5	41.2	29.0–57.4
2020	321	47.0	45.1	32.9–60.7
2021	307	47.6	55.0	40.4–73.6
Age group				
18–49	272	46.3	–	–
50–59	324	44.8	–	–
60–69	357	40.6	–	–
70–79	382	49.7	–	–
80+	196	57.1	–	–
Ethnicity				
Māori	176	58.5	67.0	48.9–89.9
Pacific peoples	90	53.3	53.9	35.2–79.5
Asian	145	44.8	39.0	26.9–55.4
European/other	1,113	44.7	40.9	33.2–50.1
Deprivation quintiles (NZDep2018)				
Quintile 1 – least deprived	277	37.5	29.7	19.3–44.3
Quintile 2	320	45.9	46.9	33.1–65.0
Quintile 3	303	47.5	48.5	33.5–68.3
Quintile 4	319	48.9	48.4	34.5–66.4
Quintile 5 – most deprived	311	53.4	52.8	40.7–67.6



	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
Rural-urban status				
Rural/remote	271	48.0	52.2	36.1-73.3
Urban	1,260	46.7	44.9	38.3-52.3

¹ Excludes people registered with cancer from death certificates only.

² Non-age-standardised data.

Sources: NZCR and NMDS (hospital events)

Note: Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.



Table 41: People diagnosed with ovarian cancer following emergency admission, by district of residence

	People with cancer ¹	% emergency admission ^{1,2}	Ratio (Māori to European/other) ^{2,3}
District of residence			
National	1,531	46.9 (44.4–49.4)	1.4 (1.1–1.7)
Northland	63	54 (41.8–65.7)	0.8 (0.4–1.6)
Waitematā	164	43.3 (35.9–50.9)	1 (0.4–2.5)
Auckland	134	49.3 (40.9–57.6)	0.6 (0.1–2.3)
Counties Manukau	148	47.3 (39.4–55.3)	1.3 (0.8–2.3)
Waikato	112	49.1 (40–58.2)	1.7 (1–3.1)
Lakes	41	39 (25.7–54.3)	3.1 (1.5–6.1)
Bay of Plenty	93	52.7 (42.6–62.5)	1.6 (0.9–2.8)
Tairāwhiti	16	56.2 (33.2–76.9)	†
Taranaki	58	62.1 (49.2–73.4)	0.6 (0.3–1.6)
Hawke’s Bay	65	50.8 (38.9–62.5)	1.3 (0.6–3)
Whanganui	28	42.9 (26.5–60.9)	†
MidCentral	57	45.6 (33.4–58.4)	1.2 (0.5–3)
Capital and Coast	101	43.6 (34.3–53.3)	1.8 (0.8–4)
Hutt Valley	49	40.8 (28.2–54.8)	1.5 (0.7–3.4)
Wairarapa	15	40 (19.8–64.3)	†
Nelson Marlborough	56	42.9 (30.8–55.9)	†
West Coast	11	63.6 (35.4–84.8)	†
Canterbury	184	39.7 (32.9–46.9)	1.6 (0.6–4.3)
South Canterbury	26	46.2 (28.8–64.5)	†
Southern	110	50 (40.8–59.2)	1 (0.4–2.4)

* Indicates that there were either less than six or no reported cases of that particular cancer in the district during the study period.

† Indicates that ratio unable to be reported due to small numbers in at least one group.

¹ Excludes people registered with cancer from death certificates only.

² Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

³ Standardised ratios were used here to compare the likelihood that Māori will be diagnosed with cancer following an emergency admission compared to people of European/other ethnicity.

Sources: NZCR and NMDS (hospital events)



Pancreatic cancer

Table 42: People diagnosed with pancreatic cancer following emergency admission, by year of diagnosis, sex, age group, ethnicity, deprivation quintile (NZDep2018) and rural-urban status

	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
All cases				
Total	2,804	69.5	71.5	59.2–85.7
Year of diagnosis				
2017	457	70.2	72.8	46.3–110.1
2018	518	71.4	65.5	40.9–100.8
2019	599	68.3	54.3	33.7–84.3
2020	650	69.4	81.1	53.2–119.3
2021	580	68.4	84.3	55.6–123.4
Sex				
Male	1,448	67.8	69.8	53.6–89.7
Female	1,356	71.2	73.4	55.6–95.6
Age group				
18–49	104	73.1	–	–
50–59	342	66.4	–	–
60–69	724	64.9	–	–
70–79	918	66.2	–	–
80+	716	79.2	–	–
Ethnicity				
Māori	339	74.9	75.4	51.1–108.1
Pacific peoples	92	80.4	86.5	48.2–145.1
Asian	160	65.6	69.0	34.7–125.7
European/other	2,186	68.6	67.4	51.8–86.8
Deprivation quintiles (NZDep2018)				
Quintile 1 – least deprived	512	65.8	77.7	47.8–120.5
Quintile 2	515	70.1	68.3	40.4–109.7
Quintile 3	623	68.1	65.0	43.0–95.1
Quintile 4	588	68.0	76.9	49.5–115.2
Quintile 5 – most deprived	566	75.3	71.8	48.3–103.8



	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
Rural–urban status				
Rural/remote	560	66.2	65.9	39.9–104.0
Urban	2,244	70.3	72.7	59.2–88.6

¹ Excludes people registered with cancer from death certificates only.

² Non-age-standardised data.

Sources: NZCR and NMDS (hospital events)

Note: Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.



Table 43: People diagnosed with pancreatic cancer following emergency admission, by district of residence

District of residence	People with cancer ¹	% emergency admission ^{1,2}	Ratio (Māori to European/other) ^{2,3}
National	2,804	69.5 (67.7–71.1)	1.1 (1–1.3)
Northland	137	73 (65–79.7)	1.4 (1–1.9)
Waitematā	309	75.1 (70–79.6)	1 (0.7–1.6)
Auckland	214	65.4 (58.8–71.5)	1.2 (0.7–2.1)
Counties Manukau	230	67.4 (61.1–73.1)	1 (0.6–1.7)
Waikato	304	66.4 (61–71.5)	1.2 (0.9–1.7)
Lakes	73	72.6 (61.4–81.5)	1.4 (0.9–2.2)
Bay of Plenty	163	75.5 (68.3–81.4)	0.9 (0.6–1.4)
Tairāwhiti	30	70 (52.1–83.3)	0.9 (0.4–2)
Taranaki	84	69 (58.5–77.9)	1.3 (0.6–2.8)
Hawke's Bay	105	67.6 (58.2–75.8)	0.7 (0.4–1.3)
Whanganui	44	70.5 (55.8–81.8)	1.3 (0.6–2.7)
MidCentral	119	72.3 (63.6–79.5)	1 (0.5–1.9)
Capital and Coast	146	74.7 (67–81)	1.1 (0.6–1.9)
Hutt Valley	79	74.7 (64.1–83)	1.4 (0.7–2.6)
Wairarapa	35	57.1 (40.9–72)	1.3 (0.3–5.3)
Nelson Marlborough	90	58.9 (48.6–68.5)	1.9 (0.8–4.6)
West Coast	34	67.6 (50.8–80.9)	†
Canterbury	318	62.6 (57.1–67.7)	1.1 (0.6–2.1)
South Canterbury	45	80 (66.2–89.1)	†
Southern	245	72.2 (66.3–77.5)	1.1 (0.6–1.8)

* Indicates that there were either less than six or no reported cases of that particular cancer in the district during the study period.

† Indicates that ratio unable to be reported due to small numbers in at least one group.

¹ Excludes people registered with cancer from death certificates only.

² Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

³ Standardised ratios were used here to compare the likelihood that Māori will be diagnosed with cancer following an emergency admission compared to people of European/other ethnicity.

Sources: NZCR and NMDS (hospital events)



Prostate cancer

Table 44: People diagnosed with prostate cancer following emergency admission, by year of diagnosis, sex, age group, ethnicity, deprivation quintile (NZDep2018) and rural-urban status

	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
All cases				
Total	20,241	6.1	3.1	1.8–5.2
Year of diagnosis				
2017	3,798	6.7	2.5	0.5–8.9
2018	4,111	5.9	4.6	1.4–11.6
2019	4,148	5.7	3.5	0.8–10.3
2020	3,943	6.1	2.4	0.4–9.0
2021	4,241	6.3	2.3	0.5–8.4
Age group				
18–49	282	2.8	–	–
50–59	3,079	2.5	–	–
60–69	9,215	2.6	–	–
70–79	5,789	6.0	–	–
80+	1,876	30.5	–	–
Ethnicity				
Māori	1,623	8.6	8.3	1.7–25.7
Pacific peoples	647	12.5	24.5	4.0–82.0
Asian	709	5.4	0.9	0.6–32.3
European/other	17,096	5.7	2.1	1.0–4.1
Deprivation quintiles (NZDep2018)				
Quintile 1 – least deprived	4,753	4.3	1.5	0.3–5.5
Quintile 2	4,354	5.1	2.1	0.4–8.1
Quintile 3	4,280	5.7	3.5	0.8–10.6
Quintile 4	3,837	8.0	6.3	1.9–16.1
Quintile 5 – most deprived	3,011	8.6	3.6	0.7–13.1



	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
Rural-urban status				
Rural/remote	5,067	5.0	0.8	0.7-5.0
Urban	15,174	6.5	3.8	2.1-6.5

¹ Excludes people registered with cancer from death certificates only.

² Non-age-standardised data.

Sources: NZCR and NMDS (hospital events)

Note: Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.



Table 45: People diagnosed with prostate cancer following emergency admission, by district of residence

	People with cancer ¹	% emergency admission ^{1,2}	Ratio (Māori to European/other) ^{2,3}
District of residence			
National	20,241	6.1 (5.8–6.5)	1.9 (1.6–2.2)
Northland	977	5.7 (4.4–7.4)	2.2 (1.3–3.5)
Waitematā	2,327	5.1 (4.3–6.1)	1.2 (0.5–3)
Auckland	1,515	7.6 (6.4–9)	2.1 (1–4.3)
Counties Manukau	1,591	6.9 (5.8–8.3)	1.7 (0.9–3.2)
Waikato	1,716	6.2 (5.2–7.5)	1.6 (1–2.8)
Lakes	378	6.9 (4.7–9.9)	3 (1.5–6)
Bay of Plenty	1,172	9.2 (7.7–11)	1.7 (1.1–2.7)
Tairāwhiti	176	10.2 (6.6–15.6)	0.7 (0.3–1.9)
Taranaki	480	7.1 (5.1–9.7)	2.1 (0.9–4.7)
Hawke's Bay	777	8.2 (6.5–10.4)	1.4 (0.7–2.9)
Whanganui	440	4.3 (2.8–6.6)	3.2 (1.4–7.1)
MidCentral	1,026	6.1 (4.8–7.8)	2.2 (1.2–4.3)
Capital and Coast	1,153	6.4 (5.1–8)	1.7 (0.8–3.5)
Hutt Valley	602	6 (4.4–8.2)	1.3 (0.5–3.4)
Wairarapa	279	5 (3–8.2)	3.1 (1–9.6)
Nelson Marlborough	895	6.1 (4.8–7.9)	1.7 (0.4–6.9)
West Coast	164	9.8 (6.1–15.3)	†
Canterbury	2,324	4.5 (3.7–5.4)	1.8 (0.8–4.3)
South Canterbury	329	3.6 (2.1–6.3)	†
Southern	1,920	4.7 (3.8–5.7)	1.8 (0.8–3.9)

* Indicates that there were either less than six or no reported cases of that particular cancer in the district during the study period.

† Indicates that ratio unable to be reported due to small numbers in at least one group.

¹ Excludes people registered with cancer from death certificates only.

² Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

³ Standardised ratios were used here to compare the likelihood that Māori will be diagnosed with cancer following an emergency admission compared to people of European/other ethnicity.

Sources: NZCR and NMDS (hospital events)



Sarcoma

Table 46: People diagnosed with sarcoma following emergency admission, by year of diagnosis, sex, age group, ethnicity, deprivation quintile (NZDep2018) and rural-urban status

	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
All cases				
Total	1,398	32.1	33.5	28.9–38.7
Year of diagnosis				
2017	207	26.6	29.6	19.1–44.2
2018	257	29.6	30.8	21.6–42.9
2019	248	35.9	38.5	27.5–52.5
2020	330	35.5	35.1	25.7–47.1
2021	356	31.5	32.8	23.8–44.2
Sex				
Male	676	32.7	35.3	27.8–44.3
Female	722	31.6	32.4	26.7–39.0
Age group				
18–49	362	34.0	–	–
50–59	297	32.3	–	–
60–69	309	29.8	–	–
70–79	283	28.6	–	–
80+	147	38.8	–	–
Ethnicity				
Māori	242	43.4	45.4	34.9–58.3
Pacific peoples	137	34.3	30.5	20.0–45.2
Asian	114	28.9	29.4	18.5–44.8
European/other	895	29.3	30.3	24.1–37.8
Deprivation quintiles (NZDep2018)				
Quintile 1 – least deprived	261	28.0	25.0	16.2–37.2
Quintile 2	272	27.2	28.7	18.8–42.4
Quintile 3	273	30.8	31.4	21.5–44.7
Quintile 4	280	35.0	36.7	26.9–49.1
Quintile 5 – most deprived	312	38.5	40.8	31.3–52.4



	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
Rural–urban status				
Rural/remote	259	30.9	34.1	23.1–48.9
Urban	1,139	32.4	33.4	28.5–39.1

¹ Excludes people registered with cancer from death certificates only.

² Non-age-standardised data.

Sources: NZCR and NMDS (hospital events)

Note: Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.



Table 47: People diagnosed with sarcoma following emergency admission, by district of residence

District of residence	People with cancer ¹	% emergency admission ^{1,2}	Ratio (Māori to European/other) ^{2,3}
National	1,398	32.1 (29.7–34.6)	1.5 (1.2–1.8)
Northland	85	40 (30.2–50.6)	1.2 (0.8–2)
Waitematā	171	32.2 (25.6–39.5)	1.6 (0.9–3.1)
Auckland	143	38.5 (30.9–46.6)	2 (1.1–3.7)
Counties Manukau	161	31.1 (24.4–38.6)	1.2 (0.7–2.1)
Waikato	115	35.7 (27.5–44.7)	1.5 (0.8–2.8)
Lakes	35	37.1 (23.2–53.7)	2.3 (0.9–6)
Bay of Plenty	73	32.9 (23.2–44.3)	1.7 (1–3.1)
Tairāwhiti	14	57.1 (32.6–78.6)	†
Taranaki	42	33.3 (21–48.4)	0.6 (0.1–4.5)
Hawke's Bay	63	30.2 (20.2–42.4)	1.2 (0.5–2.9)
Whanganui	23	(7–37.1)*	1.2 (0.2–8.9)
MidCentral	38	21.1 (11.1–36.3)	†
Capital and Coast	90	28.9 (20.5–39)	1.2 (0.5–3.3)
Hutt Valley	48	39.6 (27–53.7)	1.9 (0.9–3.9)
Wairarapa	11	(5.1–47.7)*	†
Nelson Marlborough	55	27.3 (17.3–40.2)	7.1 (2.7–18.9)
West Coast	7	(2.6–51.3)*	†
Canterbury	118	21.2 (14.8–29.4)	0.7 (0.2–2.9)
South Canterbury	23	30.4 (15.6–50.9)	†
Southern	83	34.9 (25.6–45.7)	1.1 (0.2–7.9)

* Indicates that there were either less than six or no reported cases of that particular cancer in the district during the study period.

† Indicates that ratio unable to be reported due to small numbers in at least one group.

¹ Excludes people registered with cancer from death certificates only.

² Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

³ Standardised ratios were used here to compare the likelihood that Māori will be diagnosed with cancer following an emergency admission compared to people of European/other ethnicity.

Sources: NZCR and NMDS (hospital events)



Stomach cancer

Table 48: People diagnosed with stomach cancer following emergency admission, by year of diagnosis, sex, age group, ethnicity, deprivation quintile (NZDep2018) and rural-urban status

	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
All cases				
Total	1,858	45.7	45.3	38.1–53.5
Year of diagnosis				
2017	375	46.9	43.3	26.9–66.9
2018	368	46.7	47.1	31.9–67.6
2019	344	41.6	42.8	28.9–61.5
2020	364	46.2	46.0	31.2–66.1
2021	407	46.9	47.0	31.5–68.1
Sex				
Male	1,263	43.6	43.4	34.3–54.3
Female	595	50.3	48.5	37.3–62.2
Age group				
18–49	193	45.6	–	–
50–59	294	44.2	–	–
60–69	453	44.2	–	–
70–79	520	41.0	–	–
80+	398	55.0	–	–
Ethnicity				
Māori	319	54.5	49.5	37.1–65.0
Pacific peoples	165	65.5	63.3	43.7–89.4
Asian	176	44.3	47.8	30.0–73.0
European/other	1,186	41.0	34.2	24.2–47.3
Deprivation quintiles (NZDep2018)				
Quintile 1 – least deprived	304	35.5	36.8	21.1–60.6
Quintile 2	349	42.7	43.2	28.8–62.9
Quintile 3	372	43.0	42.5	26.1–66.1
Quintile 4	380	46.3	38.3	25.5–55.8
Quintile 5 – most deprived	452	56.9	59.5	43.8–79.3



	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
Rural–urban status				
Rural/remote	356	40.7	34.2	21.3–52.7
Urban	1,502	46.9	47.9	39.8–57.5

¹ Excludes people registered with cancer from death certificates only.

² Non-age-standardised data.

Sources: NZCR and NMDS (hospital events)

Note: Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.



Table 49: People diagnosed with stomach cancer following emergency admission, by district of residence

	People with cancer ¹	% emergency admission ^{1,2}	Ratio (Māori to European/other) ^{2,3}
District of residence			
National	1,858	45.7 (43.5–48)	1.4 (1.2–1.6)
Northland	93	48.4 (38.5–58.4)	1.4 (0.9–2.1)
Waitematā	197	44.7 (37.9–51.6)	1.6 (0.9–2.8)
Auckland	164	48.8 (41.2–56.4)	1.7 (0.9–3.1)
Counties Manukau	241	54.4 (48–60.5)	1.5 (1–2.2)
Waikato	145	37.9 (30.4–46)	1.7 (1–2.9)
Lakes	60	53.3 (40.9–65.4)	1.3 (0.8–2.1)
Bay of Plenty	132	38.6 (30.8–47.2)	1.7 (1.1–2.7)
Tairāwhiti	23	47.8 (29.2–67)	1.2 (0.5–2.7)
Taranaki	56	32.1 (21.4–45.2)	1.4 (0.5–3.7)
Hawke's Bay	60	50 (37.7–62.3)	1 (0.5–2.3)
Whanganui	36	41.7 (27.1–57.8)	1.8 (0.7–4.9)
MidCentral	71	50.7 (39.3–62)	0.9 (0.5–1.8)
Capital and Coast	98	45.9 (36.4–55.8)	1.1 (0.5–2.2)
Hutt Valley	48	41.7 (28.8–55.7)	1 (0.4–2.7)
Wairarapa	20	40 (21.9–61.3)	†
Nelson Marlborough	56	41.1 (29.2–54.1)	1.6 (0.4–6.6)
West Coast	8	(13.7–69.4)*	†
Canterbury	215	43.7 (37.3–50.4)	1.8 (1–3)
South Canterbury	16	50 (28–72)	†
Southern	119	47.9 (39.1–56.8)	1.3 (0.4–4)

* Indicates that there were either less than six or no reported cases of that particular cancer in the district during the study period.

† Indicates that ratio unable to be reported due to small numbers in at least one group.

¹ Excludes people registered with cancer from death certificates only.

² Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

³ Standardised ratios were used here to compare the likelihood that Māori will be diagnosed with cancer following an emergency admission compared to people of European/other ethnicity.

Sources: NZCR and NMDS (hospital events)



Thyroid cancer

Table 50: People diagnosed with thyroid cancer following emergency admission, by year of diagnosis, sex, age group, ethnicity, deprivation quintile (NZDep2018) and rural-urban status

	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
All cases				
Total	1,720	6.3	3.4	2.6–4.5
Year of diagnosis				
2017	322	6.5	3.1	1.6–6.0
2018	300	6.7	3.2	1.5–6.4
2019	354	7.3	4.5	2.5–7.7
2020	369	4.9	2.7	1.2–5.4
2021	375	6.1	3.6	1.9–6.5
Sex				
Male	527	7.2	2.3	1.6–4.0
Female	1,192	5.8	3.7	2.6–5.1
Age group				
18–49	746	1.9	–	–
50–59	375	6.1	–	–
60–69	312	8.7	–	–
70–79	219	14.2	–	–
80+	68	19.1	–	–
Ethnicity				
Māori	272	7.4	5.3	2.8–9.5
Pacific peoples	141	13.5	9.0	4.6–16.4
Asian	349	2.9	2.0	0.9–4.1
European/other	951	6.2	2.7	1.8–4.3
Deprivation quintiles (NZDep2018)				
Quintile 1 – least deprived	303	4.0	1.5	0.7–4.0
Quintile 2	362	4.7	2.1	1.0–4.4
Quintile 3	330	5.2	2.2	1.0–4.8
Quintile 4	365	7.1	4.8	2.7–8.1
Quintile 5 – most deprived	357	10.1	5.9	3.6–9.5



	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
Rural–urban status				
Rural/remote	280	4.6	1.5	0.8–4.1
Urban	1,440	6.6	3.8	2.8–5.0

¹ Excludes people registered with cancer from death certificates only.

² Non-age-standardised data.

Sources: NZCR and NMDS (hospital events)

Note: Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.



Table 51: People diagnosed with thyroid cancer following emergency admission, by district of residence

	People with cancer ¹	% emergency admission ^{1,2}	Ratio (Māori to European/other) ^{2,3}
District of residence			
National	1,720	6.3 (5.2–7.5)	1.6 (1–2.5)
Northland	70	(3.1–15.7)*	1.2 (0.3–4.9)
Waitematā	267	5.6 (3.4–9.1)	1.2 (0.3–5)
Auckland	240	5.8 (3.5–9.6)	3.9 (1.3–12.2)
Counties Manukau	239	7.5 (4.8–11.6)	3.2 (1.2–8.4)
Waikato	135	4.4 (2.1–9.4)	1.9 (0.5–7.6)
Lakes	53	(1–12.8)*	†
Bay of Plenty	91	7.7 (3.8–15)	†
Tairāwhiti	8	(2.2–47.1)*	†
Taranaki	23	(0.8–21)*	†
Hawke's Bay	57	12.3 (6.1–23.2)	13.5 (4.4–41.9)
Whanganui	25	(8.9–39.1)*	†
MidCentral	64	(2.5–15)*	2.2 (0.3–15.4)
Capital and Coast	115	(1.4–8.6)*	17.3 (4.3–69.3)
Hutt Valley	32	(3.2–24.2)*	†
Wairarapa	15	(1.2–29.8)*	†
Nelson Marlborough	28	(7.9–35.6)*	†
West Coast	*	(6.1–79.2)*	†
Canterbury	157	(1.4–7.2)*	†
South Canterbury	12	*	†
Southern	86	(1.8–11.4)*	†

* Indicates that there were either less than six or no reported cases of that particular cancer in the district during the study period.

¹ Excludes people registered with cancer from death certificates only.

² Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

³ Standardised ratios were used here to compare the likelihood that Māori will be diagnosed with cancer following an emergency admission compared to people of European/other ethnicity.

Sources: NZCR and NMDS (hospital events)



Uterine cancer

Table 52: People diagnosed with uterine cancer following emergency admission, by year of diagnosis, sex, age group, ethnicity, deprivation quintile (NZDep2018) and rural–urban status

	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
All cases				
Total	3,124	11.9	16.2	13.3–19.6
Year of diagnosis				
2017	535	10.3	12.4	6.3–22.3
2018	603	11.8	18.2	11.4–27.6
2019	651	12.9	16.3	10.5–24.1
2020	687	12.5	16.6	10.7–24.6
2021	648	11.7	16.5	10.6–24.7
Sex				
Female	3,123	11.9	16.2	13.3–19.6
Age group				
18–49	451	18.2	–	–
50–59	775	9.3	–	–
60–69	984	7.9	–	–
70–79	637	10.8	–	–
80+	277	25.6	–	–
Ethnicity				
Māori	490	12.4	18.0	11.3–27.4
Pacific peoples	514	24.3	27.4	21.4–34.7
Asian	252	9.9	8.8	4.0–17.5
European/other	1,856	8.6	6.7	3.7–11.4
Deprivation quintiles (NZDep2018)				
Quintile 1 – least deprived	479	7.9	9.2	3.7–19.4
Quintile 2	530	7.9	4.8	1.3–13.4
Quintile 3	592	10.1	8.3	3.7–16.3
Quintile 4	646	14.6	20.6	14.0–29.4
Quintile 5 – most deprived	876	15.8	21.6	16.4–27.9



	People with cancer ¹	% emergency admission ²	Age-standardised proportion	
			%	Confidence interval (95%)
Rural-urban status				
Rural/remote	539	7.1	5.1	1.4-14.0
Urban	2,585	12.9	17.5	14.3-21.2

¹ Excludes people registered with cancer from death certificates only.

² Non-age-standardised data.

Sources: NZCR and NMDS (hospital events)

Note: Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.



Table 53: People diagnosed with uterine cancer following emergency admission, by district of residence

District of residence	People with cancer ¹	% emergency admission ^{1,2}	Ratio (Māori to European/other) ^{2,3}
National	3,124	11.9 (10.8–13.1)	1.8 (1.4–2.3)
Northland	167	11.4 (7.4–17.1)	0.6 (0.3–1.5)
Waitematā	370	11.4 (8.5–15)	1.2 (0.3–5)
Auckland	287	15.7 (11.9–20.3)	3.2 (1.4–7.2)
Counties Manukau	431	19.7 (16.2–23.7)	2.7 (1.4–5)
Waikato	271	11.1 (7.9–15.4)	1.1 (0.6–2.2)
Lakes	69	10.1 (5–19.5)	1.6 (0.5–5)
Bay of Plenty	149	8.1 (4.7–13.5)	8.5 (3.8–18.9)
Tairāwhiti	34	(4.7–26.6)*	†
Taranaki	92	8.7 (4.5–16.2)	4.6 (1.7–12.2)
Hawke's Bay	119	10.1 (5.9–16.8)	1.5 (0.2–10.7)
Whanganui	58	(3.7–18.6)*	6.7 (1.7–26.7)
MidCentral	112	15.2 (9.7–23)	0.8 (0.1–5.8)
Capital and Coast	165	7.9 (4.7–13)	8 (2.6–24.7)
Hutt Valley	123	13 (8.2–20.1)	0.9 (0.3–2.8)
Wairarapa	26	(2.1–24.1)*	†
Nelson Marlborough	79	10.1 (5.2–18.7)	4.3 (0.6–30.7)
West Coast	23	*	†
Canterbury	301	8 (5.4–11.6)	0.8 (0.1–6)
South Canterbury	47	14.9 (7.4–27.7)	1.9 (0.3–13.4)
Southern	201	8 (5–12.5)	2.4 (0.6–9.7)

* Indicates that there were either less than six or no reported cases of that particular cancer in the district during the study period.

† Indicates that ratio unable to be reported due to small numbers in at least one group.

¹ Excludes people registered with cancer from death certificates only.

² Confidence intervals are presented to indicate potential variation over time. Overlapping confidence intervals do not indicate an absence of differences between compared groups.

³ Standardised ratios were used here to compare the likelihood that Māori will be diagnosed with cancer following an emergency admission compared to people of European/other ethnicity.

Sources: NZCR and NMDS (hospital events)

