



Prepared by:



An assessment of cancer health needs in the Midland Cancer Network region: 2009



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For more information and queries regarding this document please refer to:

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Executive summary

This needs assessment will provide an overview of the current cancer burden in the Midland Cancer Network and three of the district health boards that comprise it: Waikato, Bay of Plenty and Lakes.

Expected population growth areas have been highlighted, as have areas with high rates of cancer risk factors and the incidence and mortality for individual cancers. A description of the inequalities for the above between Māori and non-Māori has also been provided.

This document should be used as a baseline against which to measure improvement and a tool to establish where the focus is required to reduce inequalities and the burden of cancer in the Midland Cancer Network.

Overview

Cancer was one of the leading causes of death in the Midland Cancer Network region and in 2004, 28% of all Midland deaths were due to cancer. Midland Māori had higher age specific cancer mortality rates across all age groups when compared to the NZ European/Other ethnicity. Māori also had nearly twice the age standardised cancer mortality rates than that of NZ European/Other within the individual DHBs.

The cancers with the greatest number of registrations in the network were colorectal, prostate, breast, melanoma, and lung. However comparatively, breast and prostate had the highest age standardised registration rates as they were gender specific.

Common cancers

Colorectal

The Midland Cancer Network age standardised rate for the incidence of colorectal cancer was similar to that seen for the individual DHBs. Colorectal was the second leading cause of cancer in males and females and was the leading cause in those aged 65 years and over. It was also the leading cause of cancer in NZ European/Other, second in Pacific and fourth in Māori.

Prostate

Prostate cancer was the leading cause of cancer in men and the second leading cause of cancer in those aged 65 years and over. Prostate was the leading cause of cancer in males for all ethnic groups. Age standardised rates for NZ European/Other and Māori were similar at approximately 90 registrations per 100,000. Prostate cancer had the highest age standardised death rate for cancer in NZ European/Other males but that was still a lower rate than that of Māori males.

Breast

Breast cancer was the leading cause of cancer for females. It was also the leading cause of cancer in those aged 25-64 years and for females across all ethnic groups. The age standardised breast cancer registration rate was higher for Māori females than NZ European/Other. Breast cancer was the leading cause of cancer death in all females and all ethnicities.

Melanoma

Melanoma was the leading cause of cancer in those aged 15-24 years and the second leading cause for those aged 25-64 years. Melanoma was the third leading cause of cancer in both sexes, and the third leading cause of cancer for NZ European/Other. It was not however, one of the five leading causes for Māori or Pacific.

Lung

Lung cancer was the fifth leading cause of cancer for those aged 45-64 years and fourth for those aged 65 years and over. Lung was the fourth leading cause of cancer in both males and in females. Lung cancer was the leading cause of cancer for Maori, but ranked fifth in NZ European/Other and

Pacific people. For both sexes of Māori, lung cancer had the highest age standardised mortality rate. This rate was three to four times that of non-Māori.

Major risk factors

Smoking was the major risk factor for many cancers; in particular lung cancer, which was a leading cause of cancer and cancer death. Across the Midland Cancer Network area, 20% of people smoked regularly, which was similar for Bay of Plenty and Waikato. Lakes DHB had a higher proportion of smokers at 25%.

Age groups with the highest rates of smokers were those aged 15-24 and 25-44 years where approximately one-quarter to one-third were smokers. For Māori males and females the age standardised rates for smoking were twice as high as those for NZ European/Other and this was seen across all age groups.

Inequalities summary

Midland Cancer Network district health board inequalities

Findings indicate that of the three Midland Cancer Network DHBs, Lakes showed the highest proportion of cancer risk factors including: regular smokers, parental smokers (as perceived by year 10 students), youth smokers, obese people and hazardous drinkers.

Lakes also had the highest proportion of its population residing in high deprivation areas, particularly the urban population. This, in relation to a high proportion of risk factors, poses health concerns for Lakes.

For all five common cancers within the Midland Cancer Network area, Lakes DHB has the lowest relative survival rates; lower than the New Zealand rate.

Within the Midland Cancer Network area generally, a higher proportion of people live in a quintile 5 area (most deprived). A high proportion, particularly of urban populations, lived in a quintile 5 area.

Hepatitis B notifications for cancer networks across New Zealand show on average that Midland Cancer Network has the lowest number of notifications compared to other New Zealand cancer networks. The number of hepatitis B and hepatitis C notifications within the Midland Cancer Network area has decreased between the years 1997-2007.

For the 12-month period ending June 2008, hepatitis B immunisation coverage for all Midland Cancer Network DHBs across ethnicities was lower than the national coverage.

Ethnic inequalities

Findings indicate Māori are disproportionately affected by the cancer burden compared to non-Māori, and have a higher rate of cancer registrations both in New Zealand and the Midland Cancer Network area. This is particularly true for Māori females.

In terms of cancer incidence and cancer deaths, rates are considerably increased in those aged 65 years and over. Still, Māori have the highest rates of cancer mortality compared to other ethnicities across *all* age groups, particularly for Māori aged 65 years and over.

Māori also have had considerably higher levels of cancer mortality in all Midland Cancer Network DHBs than non-Māori, as well as higher rates of avoidable cancer hospitalisations. Māori aged 65 and over had the highest rates of avoidable cancer-related hospitalisations; the incidence of which increased as age increased.

The national Māori rate for cancer registrations, cancer mortality and avoidable cancer related hospitalisations is lower than all Māori rates for Midland Cancer Network DHBs.

Proportionally, Māori had the highest incidence of lung cancer, while their NZ European/Other counterparts had the highest incidence of colorectal cancer. Pacific people had the highest proportion of breast cancer incidence.

The proportion of lung cancer mortality for Māori was highest in both New Zealand and the Midland Cancer Network area. Both breast and lung cancer registrations for Māori increased during 1995-2004. One of the key risk factors of lung cancer is smoking, which Māori have a much higher daily rate of doing.

For Māori males in the Midland Cancer Network area, the numbers for lung cancer registrations were the highest above other cancers for the period 1994-2004. Other important cancers for Māori males were stomach and liver and for females, cancer of the uterus and cervix.

Across all ethnicities and the Midland Cancer Network DHBs, Māori have the highest proportion of hazardous drinking.

Meanwhile across all of the DHBs in the Midland Cancer Network area, Māori had noticeably lower breast screening rates than their NZ European/Other counterparts, followed by Pacific women who also had lower rates.

In regard to cervical screening, Māori and Pacific women show a coverage rate averaging 50% while for NZ European/Other the coverage rate is 82%.

Gender inequalities

Females have higher levels of daily and regular smoking than males, while men have a much higher prevalence of hazardous drinking than women.

More females are getting their daily recommended fruit intake than males. This is consistent across all DHBs in the Midland Cancer Network area.

Lung cancer appeared to be the number one common fatal cancer across ethnicities for males in New Zealand and the Midland Cancer Network area during 2000-2004. In comparison to cancer incidence in males, prostate was more common than lung cancer.

Lung cancer was generally the common fatal cancer for all ethnicities in females, followed by breast cancer in the Midland Cancer Network area for the period 2000-2004. In comparison to cancer incidence in females, breast was the most common cancer, as opposed to lung cancer.

1. Introduction

1.1. Purpose of the document

The overall aim of the Midland Cancer Network health needs assessment is to provide information to aid planning, and prioritisation of cancer health care services within the Midland Cancer Network area. The Midland Cancer Network area comprises of three primary district health boards: Bay of Plenty, Lakes and Waikato (with an open invitation to Tairāwhiti and Taranaki DHBs; whose primary regional cancer network is the Central Cancer Network).

The Midland Cancer Network health needs assessment is required to inform the development of the Midland Cancer Network Strategy Plan due June 2009. Regional priorities must be identified that align with the Midland Cancer Network area DHBs District Annual Plans and Cancer Control Action Plans.

The Midland Cancer Network health needs assessment is a descriptive study utilising routinely collected health and social data. The main goal of this health needs assessment is to generate and support existing hypotheses and to justify need for further investigations.

1.2. Disclaimer

Figures provided in this document need to be interpreted with caution. Some discrepancies may exist between tables, as a result following Section 37 of the Statistics Act (1975), which requires all published statistical information to be arranged in such a way that particulars from a respondent are prevented from being identified by a person or undertaking (other than the person by whom those particulars are supplied).

Statistics New Zealand and others often utilise a confidentiality assurance technique of randomly rounding statistics to base three (where cells smaller than three are not shown and all numbers are rounded to a multiplier of three). This enables the greatest possible amount of data to be published, without compromising the privacy of individual respondents. As a result, some tables may appear to differ in totals.

While every effort has been made to ensure accuracy in obtaining and collating information, the Midland Cancer Network can give no warranty as to the correctness of the information contained in the document; the information is only as accurate as the sources that provide the data and the Midland Cancer Network will not be liable for any loss or damage arising directly or indirectly from the supply of this publication.

1.3. Sources of data

The data used to inform this document were obtained from a number of sources. Specific documents have been referenced in the text. Sources of data include:

- EpiSurv; a national notifiable disease surveillance system. ESR (Institute of Environmental Science & Research Limited) operates EpiSurv on behalf of the Ministry of Health. EpiSurv collates notifiable disease information on a real-time basis from Public Health Services in New Zealand¹.
- Maternity and Newborn Information System (MNIS): The maternity and newborn collection provides information relating to maternity and newborn services up to 9-months before and 3-months after birth. This was the source for the breastfeeding data.
- The Ministry of Health supplied information on cancer survival rates, cancer incidence projections, and cancer mortality projections.
- National Screening Unit - all breast and cervical screening data was sourced from the National Screening Unit's database (via BreastScreen Midland).
- National Year 10 ASH Snapshot Survey, 1999-2007: Trends in tobacco use by students aged 14-15 years. This survey is conducted on behalf of Action on Smoking and Health, Health Sponsorship Council and the Ministry of Health. The Year 10 Snapshot Survey is a census-

style survey of around 25,000 14-15 year olds investigating trends in teenage smoking. Parental smoking and smoking in the home as reported by students are also measured because they increase the risk of a teenager smoking. This survey has been conducted annually since 1999. Trends in prevalence of daily, regular, and of students who never smoked are reported by gender, ethnicity, school deciles and District Health Board. <http://www.ash.org.nz/pdf/ASHYear10Report19992007v2.pdf>.

- Portrait of Health: A Portrait of Health is the first release of key descriptive findings from the 2006/07 New Zealand Health Survey. Analyses have been presented by gender, age group, ethnic group, neighbourhood deprivation and regional area where possible. Results are compared with earlier surveys where possible for the total population and for Māori by gender.
- The 2006/07 New Zealand Health Survey was carried out from October 2006 to November 2007, collecting information on 4921 children aged from birth to 14 years and 12,488 adults aged 15 years and over. The 2006/07 New Zealand Health Survey measured self-reported physical and mental health states (including diagnosed health conditions), modifiable risk and protective factors for health outcomes, and the use of health care services.
- Statistics New Zealand (<http://www.statsnz.govt.nz/>) – 2006 Census Data was used for all population data.
- Sun Protection Market Research Report, 2006. The Cancer Society of New Zealand and Health Sponsorship Council commission an independent survey of New Zealanders' sun protection behaviour and attitudes every three years. The latest survey was carried out during the summer of 2005/06.
- The Technical Advisory Service (TAS) reporting system was used throughout the Midland Cancer Network health needs assessment for mortality, morbidity, cancer registration, and population projections. The Technical Advisory Service was established in 2001 and is a shared support agency for six central region DHBs. The Technical Advisory Service is an expert advisory service which combines information management and analytical capabilities with health service experience and project management skills to provide health service advice to the DHBs².

1.4. Technical notes / definitions

Age specific rates: refer to the number of events that occurred in an age group as a proportion of the total population in that age group. Age-specific rates are useful for comparing age-defined subgroups when rates are strongly age-dependent.

Age standardised rates: adjust for differences in the size and population structure of the groups being compared. They are calculated by weighing age-specific rates by a standard population. These rates are most useful when comparing age-standardised rates from more than one population or for comparing trends in a given population over time. Throughout the Midland Cancer Network health needs assessment all rates are age-standardised to the World Health Organisation (WHO) standard population and are expressed as rates per 100,000 population.

Cancer health needs in the Midland Cancer Network area, 2009

Table 1: World Health Organisation (WHO) world standard figures used for direct age standardisation throughout the Midland Cancer Network health needs assessment

Age Group	World Average 2000 - 2025	Age Group (continued)	World Average 2000 - 2025
0 - 4	8.86	55 - 59	4.55
5 - 9	8.69	60 - 64	3.72
10 - 14	8.6	65 - 69	2.96
15 - 19	8.47	70 - 74	2.21
20 - 24	8.22	75 - 79	1.52
25 - 29	7.93	80 - 84	0.91
30 - 34	7.61	85 - 89	0.44
35 - 39	7.15	90 - 94	0.15
40 - 44	6.59	95 - 99	0.04
45 - 49	6.04	100+	0.005
50 - 54	5.37	Total	100

Source: World Health Organisation; <http://www.who.int/whosis/indicators/compendium/2008/1mst/en/index.html>.

Cancer incidence: A cancer incidence rate is the number of new cancers of a specific site/type occurring in a specified population during the time period, expressed throughout this document as the number of cancers per 100,000 population at risk. That is, Incidence rate = (New cancers / Population) × 100,000. The numerator of the incidence rate is the number of new cancers; the denominator is the size of the population. The number of new cancers may include multiple primary cancers occurring in one patient. The primary site reported is the site of origin and not the metastatic site. In general, the incidence rate should not include recurrences. The population used depends on the rate to be calculated. For cancer sites that occur in only one gender, the gender-specific population is used (e.g., females for cervical cancer).

Cancer mortality: A cancer mortality rate is the number of deaths, with cancer as the underlying cause of death, occurring in a specified population during a period of time. Cancer mortality is usually expressed as the number of deaths due to cancer per 100,000 population. That is, Mortality Rate = (Cancer Deaths / Population) × 100,000. The numerator of the mortality rate is the number of deaths; the denominator is the size of the population. The population used depends on the rate to be calculated. For cancer sites that occur in only one gender, the gender-specific population (e.g., females for cervical cancer) is used. The mortality rate can be computed for a given cancer site or for all cancers combined.

Avoidable hospitalisations: are hospital admissions that could potentially have been avoided by earlier intervention. Most potentially avoidable hospitalisations “are conditions that could have been identified and treated earlier by either public health or primary healthcare interventions, thereby preventing deterioration” that might lead to a hospital admission or even death³. Examples include cervical and breast cancer; infectious, cardiovascular, and vaccine preventable diseases; lung disease; and early detection and excision of melanoma³.

Cancer registry: The New Zealand Cancer Registry is a population-based register of all primary malignant diseases diagnosed in New Zealand, excluding squamous cell and basal cell skin cancers. Data is used in research, and in monitoring and evaluating cancer screening programmes⁴.

Crude rates: A crude rate is defined as the number of cause-specific events (e.g. deaths, disease cases, individuals at risk) over a specified period of time (e.g. a year) divided by the total population.

Ethnicity: The ethnic structure of the population has important implications for how services are delivered. Service delivery needs to be targeted according to the requirements of different populations, including any specific cultural needs. There are also priority populations within the different ethnic groups⁵.

Predominately three categories for ethnicity collection were used throughout the Midland Cancer Network health needs assessment; NZ European/Other, Māori and Pacific people.

The category NZ European/Other includes: African, European not further defined, Latin American, Middle Eastern, Not Stated, NZ European, Other, Other European, Asians not further defined, Chinese, Indian. When the category Asian is also used this covers: Asians not further defined, Chinese, Indian.

The New Zealand Health Survey 2006/07 used the statistical method 'synthetic estimates' to produce the individual DHB population estimates by ethnicity and gender. These estimates are provided to help DHBs with planning and should not be used to evaluate targeted health programmes.

ICD-10 codes: International Statistical Classification of Diseases and Related Health Problems, is a coding of diseases and signs, symptoms, abnormal findings, complaints, social circumstances and external causes of injury or diseases, as classified by the http://en.wikipedia.org/wiki/World_Health_Organization (WHO).

It is important to note that from 1999 there were changes in the clinical coding system used for diagnoses and procedures, in particular the change from the ICD-9 to ICD-10.

Table 2: ICD-10 codes identified and used throughout the Midland Cancer Network health needs assessment

C00-C97 Malignant neoplasm's (ALL):			
C14	Oral	C62 - C63	Testis
C16	Stomach	C64	Kidney
C18 - C21	Colorectal	C67	Bladder
C22	Liver	C69	Eye
C33 - C34	Lung	C71	Brain
C40 - C41	Bone	C76 - C79	Neoplasm's (other or unspecified)
C43	Melanoma	C80	Unspecified Site
C50	Breast	C81	Hodgkin's Disease
C53	Cervix	C83	Non-Hodgkin's Lymphoma
C54 - C55	Uterus	C83	Diffuse Non-Hodgkin's Lymphoma
C56	Ovary	C91	Lymphoid Leukaemia
C61	Prostate	C92	Myeloid Leukaemia

Source: World Health Organisation.

Age groups: Throughout the Midland Cancer Network health needs assessment the data is often categorised into five age groups for ease of interpretation; 0 - 14 years, 15 - 24 years, 25 - 44 years, 45 - 64 years and over 65 years. The age structure of the population has important implications for service provision in any given area. For instance there are specific service requirements between age groups, with children and older populations generally having a greater demand for services.

NZDep2006: NZDep2006 combines nine variables from the 2006 census which reflect eight dimensions of deprivation. NZDep2006 provides a deprivation score for each meshblock in New Zealand. Meshblocks are geographical units defined by Statistics New Zealand, containing a median of approximately 87 people in 2006⁶.

The NZDep2006 index of deprivation ordinal scale ranges from 1 to 10, where 1 represents the areas with the least deprived scores and 10 the areas with the most deprived scores.

The NZDep2006 scale of deprivation from 1 to 10 divides New Zealand into tenths of the distribution of the first principal component scores. For example, a value of 10 indicates that the meshblock is in the most deprived 10 percent of areas in New Zealand, according the NZDep2006 scores. Quintiles have also been used in this document. To compare between both scales (deciles and quintiles): 1-2 is quintile 1, 3-4 is quintile 2, 5-6 is quintile 3, 7-8 is quintile 4 and 9-10 is quintile 5.

It should be noted that NZDep2006 deprivation scores apply to areas rather than individual people.

Regional cancer networks in New Zealand: There are four regional cancer networks in New Zealand that have been formed to facilitate and coordinate services across health providers at all levels and bring various providers and consumer organisations together to ensure co-operation and integration of services, where appropriate⁷.

The four regional networks cover the following district health board regions:

- Northern Cancer Network - Auckland, Counties Manukau, Northland, Waitemata
- Midland Cancer Network - Bay of Plenty, Lakes, Waikato
- Central Cancer Network - Capital & Coast, Hawke's Bay, Hutt Valley, MidCentral, Tairāwhiti, Taranaki, Wairarapa, Whanganui, and
- Southern Cancer Network - Nelson/Marlborough, Canterbury, Otago, West Coast. South Canterbury, Southland.

¹ Public Health Surveillance. (2009). EpiSurv. Retrieved January 19, 2009, from <http://www.surv.esr.cri.nz/episurv/index.php>.

² Technical Advisory Service. (2002). Retrieved January 19, 2009, from <http://www.centrahtas.co.nz/>.

³ Sheerin, I., Allen, G., Henare, M., & Craig, K. (2006). Avoidable hospitalisations: potential for primary and public health initiatives in Canterbury, New Zealand. NZMJ. 119,1236. Retrieved February 20, 2009, from <http://www.nzma.org.nz/journal/119-1236/2029/>.

⁴ New Zealand Health Information Service. (2008). New Zealand cancer registry (NZCR). Retrieved February 11, 2009, from <http://www.nzhis.govt.nz/moh.nsf/pagesns/64>.

⁵ Population Health Service. (2007). Population Health planning resource. Hamilton: Waikato District Health Board.

⁶ Salmond, C., Crampton, P., & Atkinson, J. (August 2007). NZDep2006 Index of Deprivation. Wellington: Department of Public Health, University of Otago.

⁷ Ministry of Health, (2008). Cancer control in New Zealand - Regional cancer networks in New Zealand. Retrieved January 19, 2009, from <http://www.moh.govt.nz/moh.nsf/indexmh/cancercontrol-regionalnetworks>.

2. Midland Cancer Network demographics

2.1. Summary

The Midland area covers 40,459 km², comprising 15% of New Zealand's total land area. This area contains 17 territorial authorities. Within the Midland Cancer Network area, iwi areas are found in regional groupings that include: Tainui, Arawa and Mataatua. Taranaki and Tairāwhiti border these regional groupings in the Midland Cancer Network area.

Approximately 16% of the New Zealand population reside in the Midland Cancer Network area with Waikato DHB having the largest population. The population distribution by age group for the Midland Cancer Network area is very similar to the New Zealand distribution, as is the gender distribution across all age bands.

The Midland Cancer Network area Māori population shows a high birth rate and young death rate in comparison to the non-Māori population with a steady birth rate and older death rate.

The biggest projected growth rate by age group will occur in the 65 years and over age group.

The projected growth rate for the Midland Cancer Network area for 2006-2026 is an estimated 16%. The Māori growth rate will increase for all three DHBs with 21% (Lakes), 25% (Waikato) and 35% (Bay of Plenty). In comparison the Māori growth rate for New Zealand will be 28%. The Pacific population will have the largest growth rate in the Bay of Plenty (65%), followed by Waikato (28%) and the least growth in Lakes (-13%). The Pacific growth rate for New Zealand will be 42%.

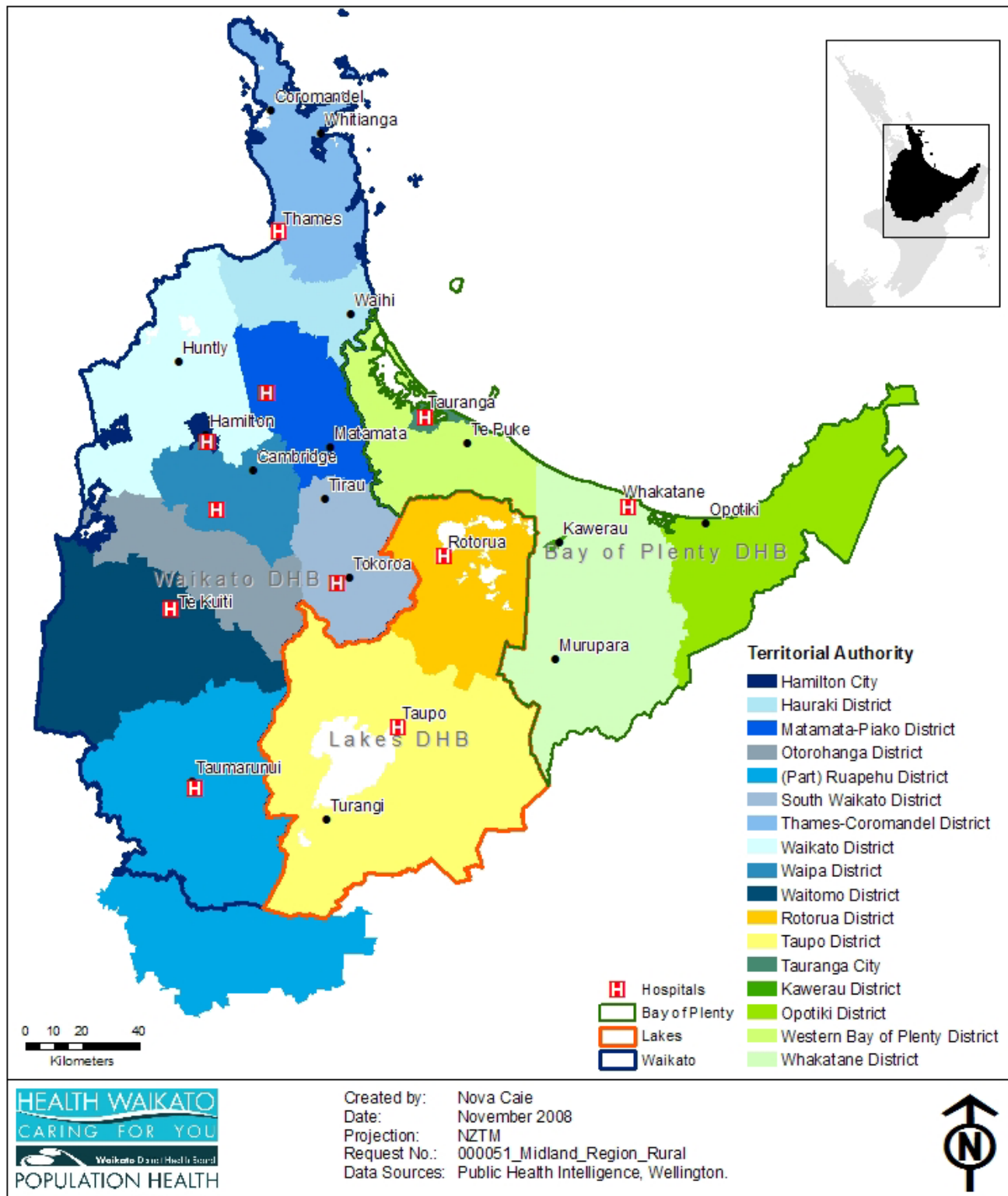
Within the Midland Cancer Network area generally, a higher proportion of people live in a quintile 5 area (most deprived). Lakes DHB has the highest proportion of their population living in either a quintile 5 or quintile 1 area (less deprived).

For each of the three DHBs, a high proportion of their urban populations live in a quintile 5 area. The highest proportion residing in Lakes DHB (35%) followed by Waikato DHB (28%) and the lowest in the Bay of Plenty DHB (25%). These rates are all above the New Zealand rate (22%).

2.2. Geographical overview

The Midland Cancer Network area comprises three primary DHBs: Bay of Plenty, Lakes and Waikato. This region covers an area of 40,459 km², approximately 15% of New Zealand's total land area. This area contains 17 territorial authorities – Hamilton City, Hauraki, Kawerau, Matamata-Piako, Otago, Otorohanga, Rotorua, Ruapehu (part of), South Waikato, Taupo, Tauranga City, Thames-Coromandel, Waikato, Waipa, Waitomo, Western Bay of Plenty and Whakatane (Figure 1).

Figure 1: Map of the Midland Cancer Network area, outlining the DHB boundaries, location of territorial authorities and public hospitals



Cancer health needs in the Midland Cancer Network area, 2009

Within the Midland Cancer Network area, iwi areas are found in regional groupings that include: Tainui, Arawa and Mataatua (Figure 2). Taranaki and Tairāwhiti border these regional groupings.

Figure 2: Iwi of the North Island



Source: www.takoa.co.nz/iwi_maps_north.htm.

2.3. Population overview

There are approximately 632,442 people residing in the Midland Cancer Network area (Bay of Plenty, Lakes, and Waikato DHBs) which comprises of approximately 16% of New Zealand's population. Waikato DHB has the largest population followed by Bay of Plenty and Lakes DHBs (Table 3, Figure 5).

Table 3: Midland Cancer Network area's population, 2006

Area	Population	% of NZ population
Bay of Plenty DHB	194,931	5%
Lakes DHB	98,319	2%
Waikato DHB	339,192	8%
MCN	632,442	16%
New Zealand	4,027,947	100%

Source: Statistics NZ, Census 2006.

2.3.1. Age and gender distribution

The population distribution by age group for the Midland Cancer Network area is very similar to the New Zealand distribution, with little variation between DHBs. The three age bands that account for approximately 75% of the Midland Cancer Network area's population are; 0 – 14 years, 25 – 44 years and 45 – 64 years (Table 4). Overall, the gender distribution across all age bands shows slightly more females than males. Waikato DHB has the largest population followed by Bay of Plenty and Lakes DHBs (Table 4).

Table 4: Population distribution by age group and gender, for the Midland Cancer Network area, 2006

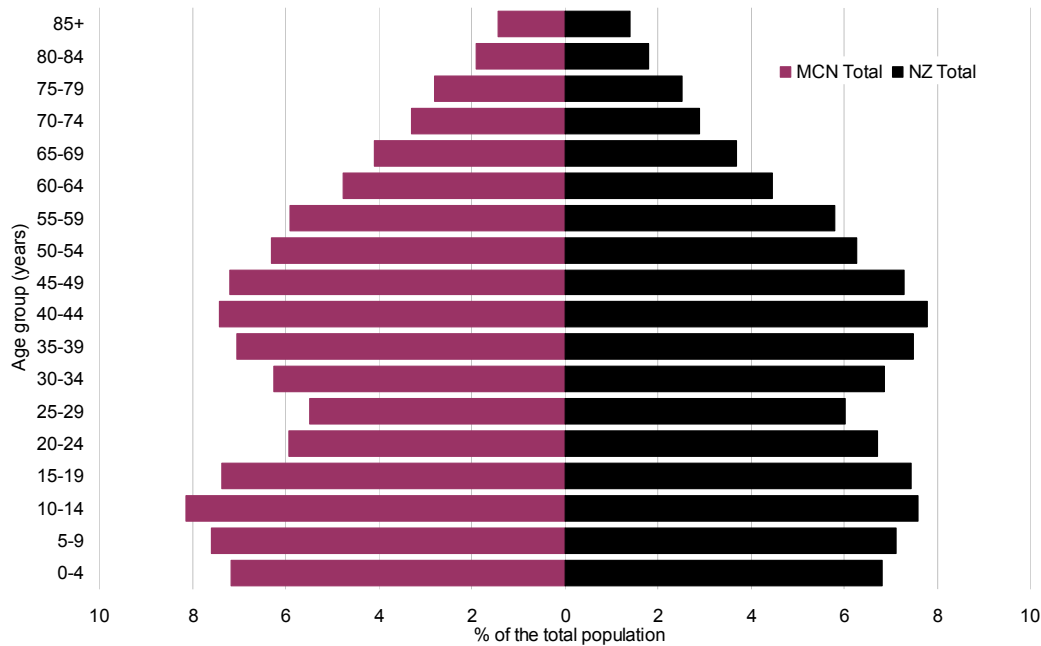
Age group (years)	Gender	Bay of Plenty DHB		Lakes DHB		Waikato DHB		MCN Area		NZ Total	
0-14	Male	22,392	11%	12,240	12%	39,582	12%	74,214	12%	444,030	11%
	Female	21,222	11%	11,625	12%	37,776	11%	70,623	11%	423,546	11%
	Total	43,611	22%	23,862	24%	77,358	23%	144,831	23%	867,573	22%
15-24	Male	11,487	6%	6318	6%	24,771	7%	42,576	7%	287,523	7%
	Female	11,124	6%	6147	6%	24,153	7%	41,424	7%	283,656	7%
	Total	22,611	12%	12,459	13%	48,924	14%	83,994	13%	571,176	14%
25-44	Male	22,995	12%	12,600	13%	43,152	13%	78,747	12%	542,001	13%
	Female	25,848	13%	14,082	14%	46,995	14%	86,925	14%	592,251	15%
	Total	48,840	25%	26,685	27%	90,147	27%	165,672	26%	1,134,252	28%
45-64	Male	23,589	12%	11,517	12%	39,114	12%	74,220	12%	470,928	12%
	Female	25,377	13%	12,081	12%	40,929	12%	78,387	12%	488,415	12%
	Total	48,963	25%	23,607	24%	80,040	24%	152,610	24%	959,337	24%
65+	Male	14,166	7%	5391	5%	19,476	6%	39,033	6%	221,139	5%
	Female	16,728	9%	6309	6%	23,241	7%	46,278	7%	274,461	7%
	Total	30,906	16%	11,706	12%	42,717	13%	85,329	13%	495,600	12%
Total	Male	94,629	49%	48,063	49%	166,095	49%	308,787	49%	1,965,618	49%
	Female	100,302	51%	50,256	51%	173,094	51%	323,652	51%	2,062,329	51%
	Total	194,931	100%	98,319	100%	339,189	100%	632,439	100%	4,027,947	100%

Source: Statistics NZ, Census 2006.

Cancer health needs in the Midland Cancer Network area, 2009

The population pyramid (Figure 3) show the Midland Cancer Network area's population structure is similar to the structure of New Zealand's population.

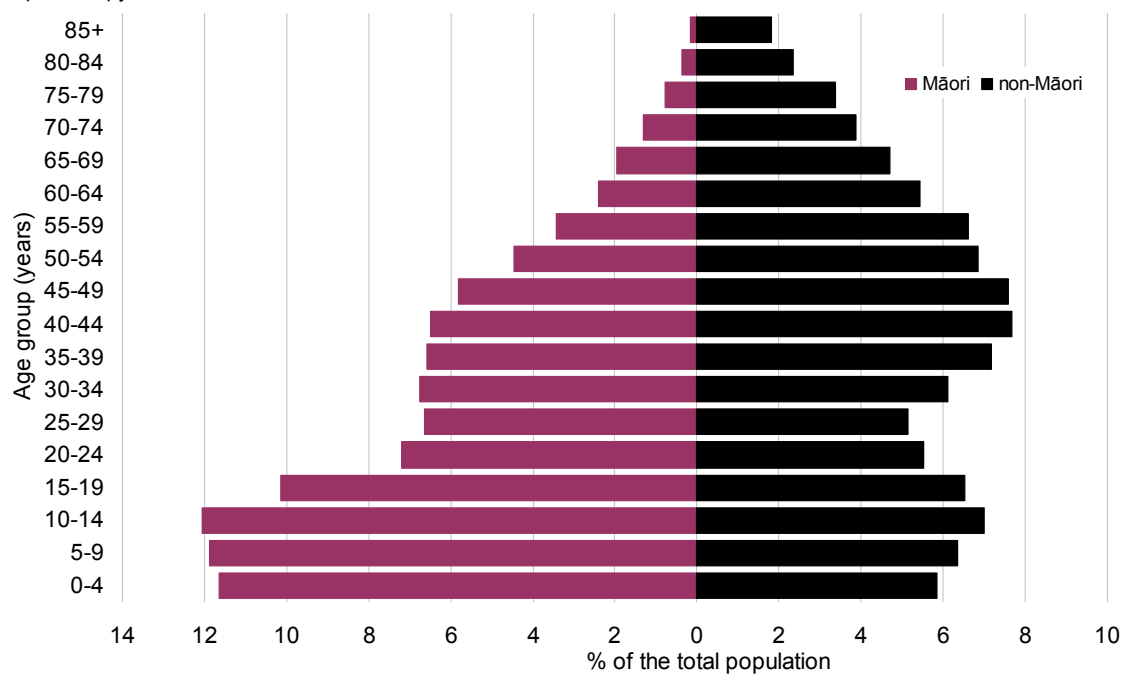
Figure 3: Population pyramid comparing population distributions, for the Midland Cancer Network area and New Zealand, 2006



Source: Statistics NZ, Census 2006.

The population pyramids below (Figure 4) show a noticeably different structure for Māori compared with non-Māori in the Midland Cancer Network area. The Māori population shows a high birth rate and a high death rate at a young age. Whereas the non-Māori population follows the overall population structure of New Zealand, with a steady birth rate and a higher death rate for older people.

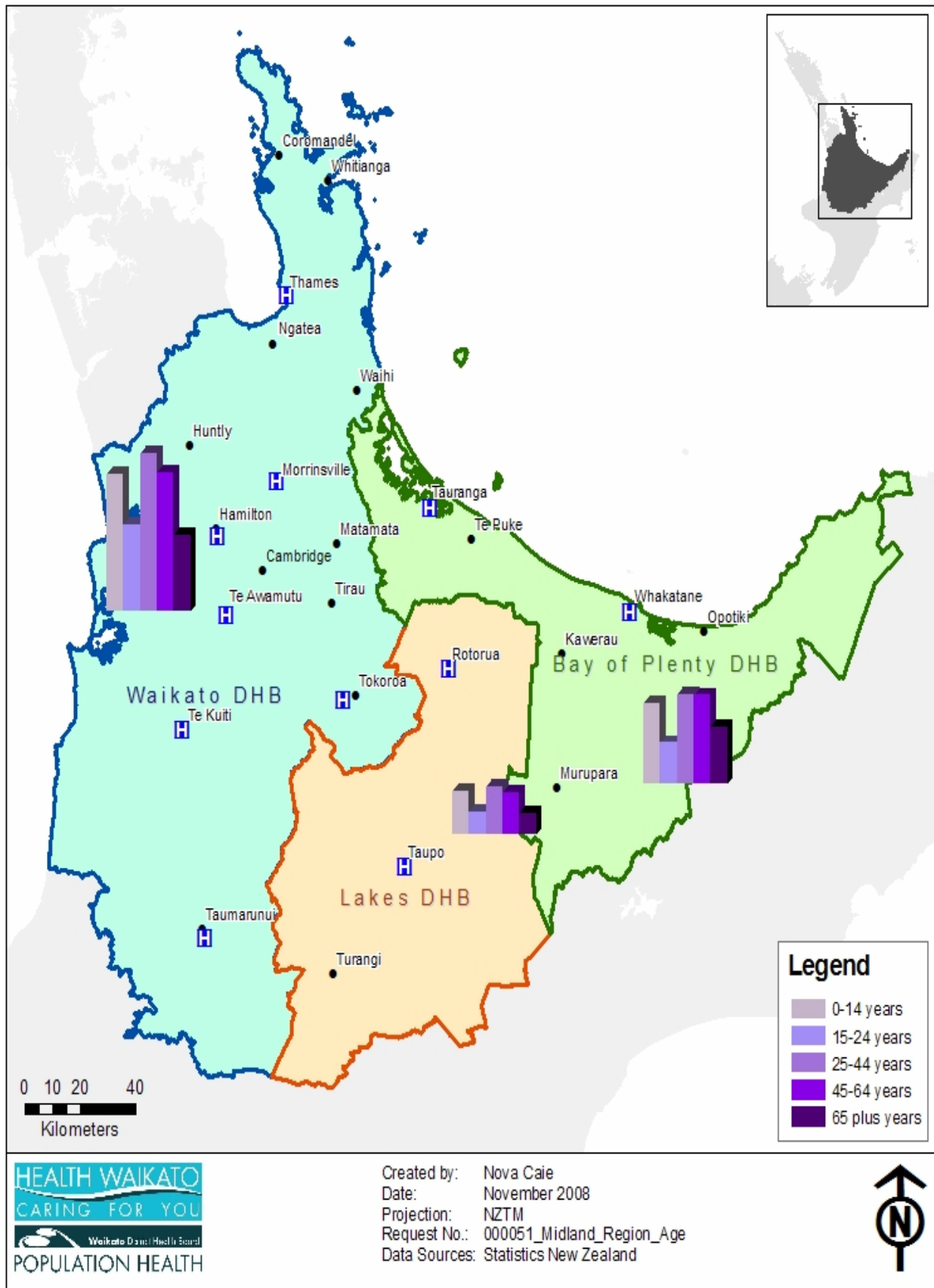
Figure 4: Population pyramids, Māori and non-Māori, for the Midland Cancer Network area, 2006



Source: Statistics NZ, Census 2006.

Cancer health needs in the Midland Cancer Network area, 2009

Figure 5: Map showing age distribution of the Midland Cancer Network area, outlining the DHB boundaries, and public hospitals

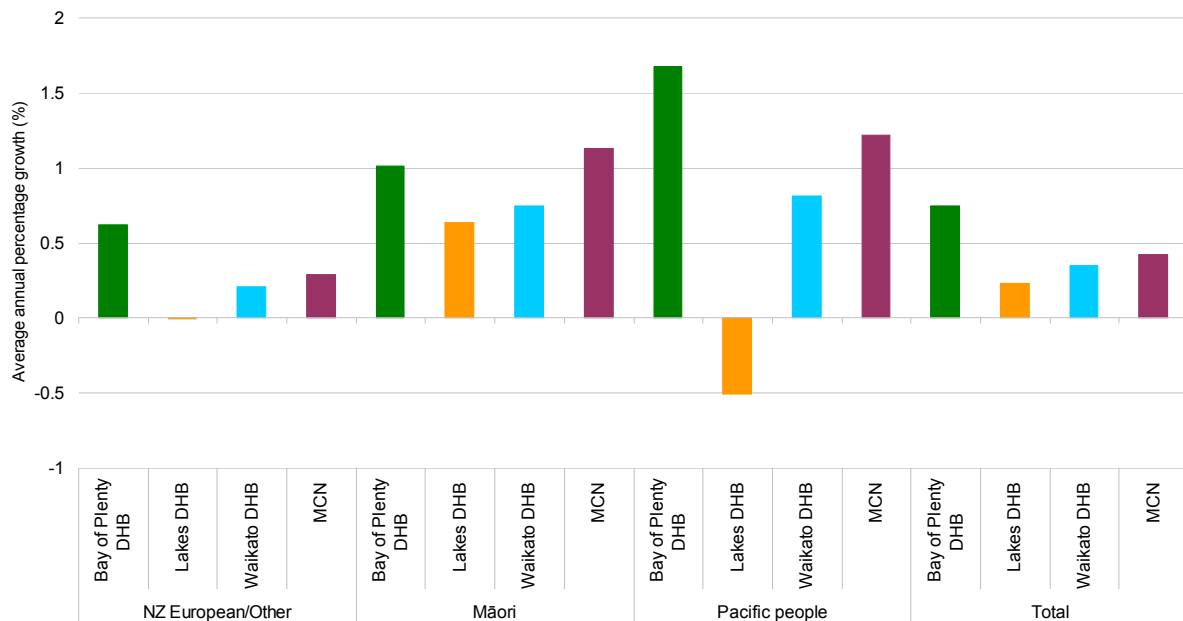


2.3.2. Population projections

Annual growth rates

For the Midland Cancer Network area's overall population from the year 2006 to the year 2026 there is an expected annual growth rate of 0.42%. For the districts the lowest growth is expected in the Lakes DHB (0.25%) and the highest in the Bay of Plenty DHB (0.75%) (Figure 6). The largest annual growth rate for all ethnicities is expected to occur in the Bay of Plenty DHB (with the Pacific people ethnicity the highest at 1.75% increase), with the lowest in Lakes DHB (Pacific people being the lowest at -0.5%).

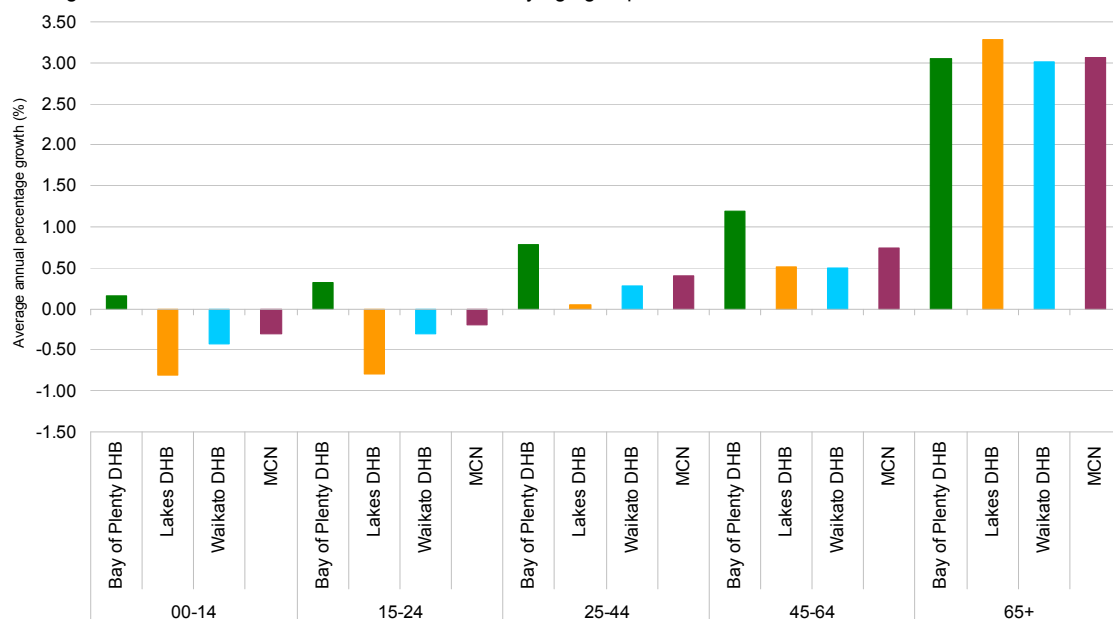
Figure 6: Annual growth rates, for Midland Cancer Network area, by ethnicity, 2006 - 2026



Source: TAS data cubes: P00_CUBE_POP_EST_INTG.

The largest projected growth rate by age group within the Midland Cancer Network area will be amongst those aged 65 years and over (3% annually)(Figure 7). For the youngest age bands (0-14 years and 15-24 years) the Midland Cancer Network area is projected to have negative growth. Bay of Plenty DHB is the only DHB, within the Midland Cancer Network area, to have positive growth for all age bands.

Figure 7: Annual growth rates for Midland Cancer Network area, by age group, 2006 - 2026



Source: TAS data cubes: P00_CUBE_POP_EST_INTG.

Cancer health needs in the Midland Cancer Network area, 2009

Population projections (2006 - 2026)

The projected growth rate for the Midland Cancer Network area's overall population for the time period 2006 - 2026 is expected to be an estimated 15% (Table 5).

The largest growth rate for all ethnicities will occur in the Bay of Plenty DHB (25%), with the lowest in Lakes DHB (8%) followed by Waikato DHB (11%). The Māori growth rate will increase for all three DHBs from Lakes DHB (21%) to Waikato DHB (25%) and Bay of Plenty (35%). In comparison the Māori growth rate for New Zealand will be 28%. Of the three ethnicities, the Pacific population is expected to have the largest growth rate for the Midland Cancer Network area of 65% in the Bay of Plenty. The Pacific growth rate for New Zealand will be 42%.

Table 5: Population projections, for the Midland Cancer Network area, by ethnicity, 2006 and 2026 comparison

Area	Ethnicity	2006 Census Population		2026 (projected)		Projected Growth (2006 - 2026)
Bay of Plenty DHB	NZ European/Other	144,710	73%	175,460	71%	21%
	Māori	51,570	26%	69,450	28%	35%
	Pacific people	2360	1%	3900	2%	65%
	Total	198,640	100%	248,810	100%	25%
Lakes DHB	NZ European/Other	63,340	62%	64,100	58%	1%
	Māori	36,260	36%	43,980	40%	21%
	Pacific people	2270	2%	1985	2%	-13%
	Total	101,870	100%	110,065	100%	8%
Waikato DHB	NZ European/Other	259,310	76%	277,200	73%	7%
	Māori	75,480	22%	94,250	25%	25%
	Pacific people	7860	2%	10,080	3%	28%
	Total	342,650	100%	381,530	100%	11%
MCN	NZ European/Other	467,360	73%	516,760	70%	11%
	Māori	163,310	25%	207,680	28%	27%
	Pacific people	12,490	2%	15,965	2%	28%
	Total	643,160	100%	740,405	100%	15%
New Zealand	NZ European/Other	3,257,000	79%	3,652,580	76%	12%
	Māori	630,210	15%	804,070	17%	28%
	Pacific people	252,175	6%	356,925	7%	42%
	Total	4,139,385	100%	4,813,575	100%	16%

Source: TAS data cubes: P00_CUBE_POP_EST_INTG.

2.3.3. Ethnicity distribution

The complexity of capturing the ethnic identity of a population can make comparisons between ethnicities difficult to interpret. Ethnicity is a multi-dimensional concept that is being used commonly in medical research⁸.

Table 6, Figure 8 and

Figure 9 show the number and proportion of people by ethnicity in the Midland Cancer Network area. The 2006 Census also included a category of New Zealander, which added to the number of residents who were counted as Other. The numbers include all of the people who stated each ethnic group, whether as their only ethnic group or as one of several ethnic groups. Where a person reported more than one ethnic group, they have been counted once in each applicable group.

In the 2006 census over 86% of the Midland Cancer Network area's population was identified as NZ European/Other (which comprises predominantly European, 77%), 23% Māori, and 3% Pacific (Table 6). The Midland Cancer Network area therefore, is essentially bicultural; European and Māori.

The Midland Cancer Network population consists of a high percentage of Māori (23%) compared with New Zealand's overall percentage of Māori (14%) (Table 6). Lakes DHB has the highest proportion of Māori (32%) followed by Bay of Plenty DHB (23%) and Waikato DHB (20%).

The proportion of Pacific people (3%) in the Midland Cancer Network area is similar across all three DHBs. However, this proportion of Pacific people is lower than the New Zealand population (7%). By territorial authority, South Waikato (12%) has the largest proportion of Pacific people in the Midland Cancer Network area (Table 6, Figure 8).

Table 6: Ethnicity distribution, for the Midland Cancer Network area, by territorial authority, 2006

Cancer health needs in the Midland Cancer Network area, 2009

Area	NZ European/ Other		Māori		Pacific people		Total	
Bay of Plenty DHB	167,337	86%	45,642	23%	3714	2%	194,931	100%
Kawerau	3630	55%	4047	61%	249	4%	6627	100%
Opotiki	4716	57%	4884	59%	213	3%	8238	100%
Tauranga City	92,499	92%	16,569	16%	1836	2%	100,488	100%
Western Bay of Plenty	36,042	90%	6924	17%	723	2%	39,882	100%
Whakatane	22,071	70%	13,203	42%	693	2%	31,311	100%
Lakes DHB	78,171	79%	31,377	32%	3654	4%	98,319	100%
Rotorua	47,766	76%	22,734	36%	2808	4%	62,526	100%
Taupo	25,290	82%	8643	28%	843	3%	30,678	100%
Waikato DHB	299,124	88%	67,476	20%	10,626	3%	339,192	100%
Hamilton City	108,606	88%	24,579	20%	5139	4%	123,381	100%
Hauraki	15,147	91%	3177	19%	363	2%	16,650	100%
Matamata-Piako	27,510	93%	3885	13%	303	1%	29,463	100%
Otorohanga	7320	84%	2355	27%	141	2%	8742	100%
Ruapehu	9630	76%	4953	39%	279	2%	12,645	100%
South Waikato	15,954	75%	6711	32%	2565	12%	21,291	100%
Thames-Coromandel	23,508	94%	4017	16%	324	1%	25,053	100%
Waikato	34,458	84%	10,662	26%	978	2%	41,253	100%
Waipa	38,886	95%	5382	13%	462	1%	41,148	100%
Waitomo	6408	71%	3639	40%	213	2%	8997	100%
MCN	544,632	86%	144,495	23%	17,994	3%	632,442	100%
New Zealand	3,597,552	89%	565,326	14%	265,974	7%	4,027,947	100%

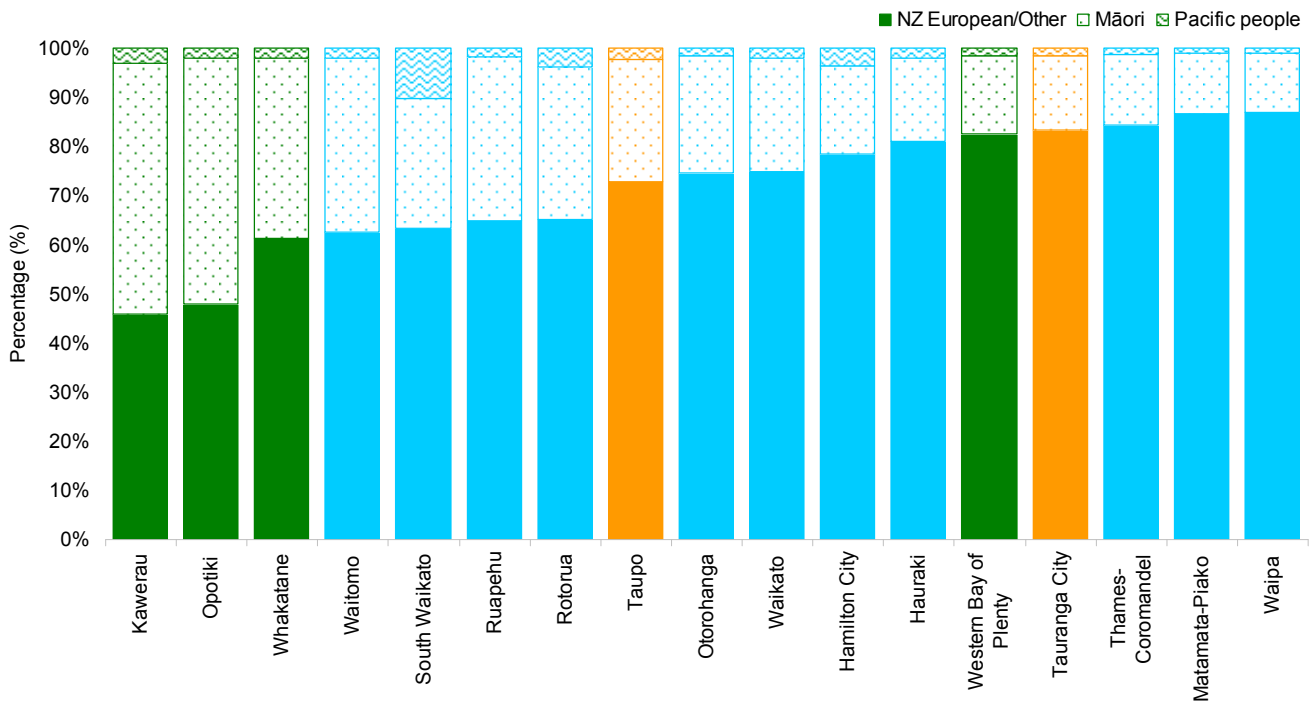
Please note: row percentages do not add to 100% as the numbers include all of the people who stated each ethnic group, whether as their only ethnic group or as one of several ethnic groups. Where a person reported more than one ethnic group, they have been counted once in each applicable group.

Source: Statistics NZ, Census 2006

In 2006 the proportions of Māori were higher than all other ethnicities in the following territorial authorities; Kawerau and Opotiki (Figure 8). The highest proportions of Pacific people reside in the South Waikato territorial authority.

Figure 8: Ethnic percentages, for the Midland Cancer Network area, by territorial authority, 2006

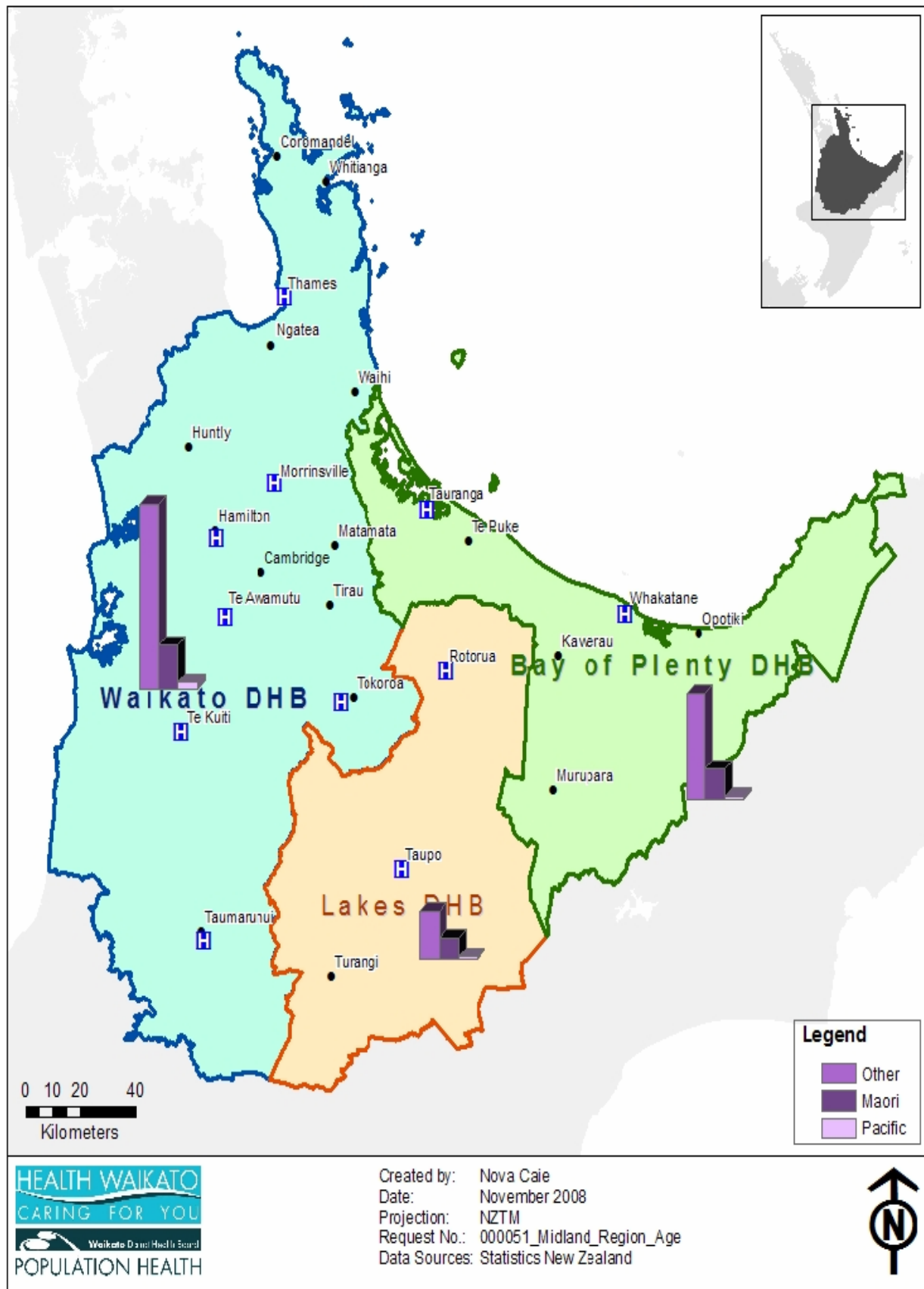
Cancer health needs in the Midland Cancer Network area, 2009



Source: Statistics NZ, Census 2006.

Figure 9: Map showing the ethnic distribution of the Midland Cancer Network area, outlining DHB boundaries, and public hospitals

Cancer health needs in the Midland Cancer Network area, 2009



2.3.4. Country of birth

Approximately 15% of the Midland Cancer Network area's population is born overseas (Table 7,

Figure 10). This figure is mirrored through the DHBs that make up the Midland Cancer Network area. New Zealand however, has a higher proportion born overseas (22%).

A large proportion of those born overseas come from the United Kingdom and Ireland (

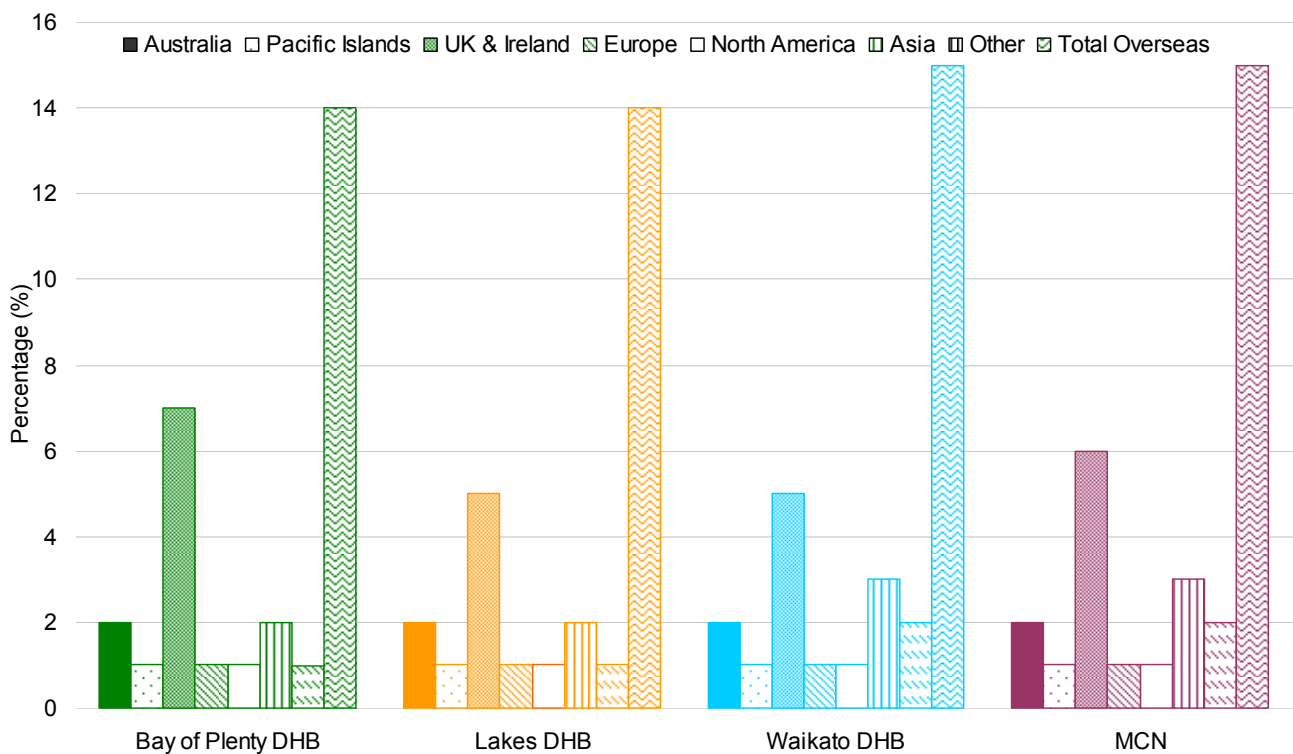
Figure 10).

Table 7: Percentage of the population born overseas, for the Midland Cancer Network area and New Zealand, 2006

Area	Population born overseas	% of the total population
Bay of Plenty DHB	27,474	14%
Lakes DHB	13,473	14%
Waikato DHB	52,371	15%
MCN	93,318	15%
New Zealand	879,546	22%

Source: Statistics NZ, Census 2006.

Figure 10: Percentage of the population that were born overseas, for the Midland Cancer Network area, 2006



Source: Statistics NZ, Census 2006.

2.4. Socioeconomic overview

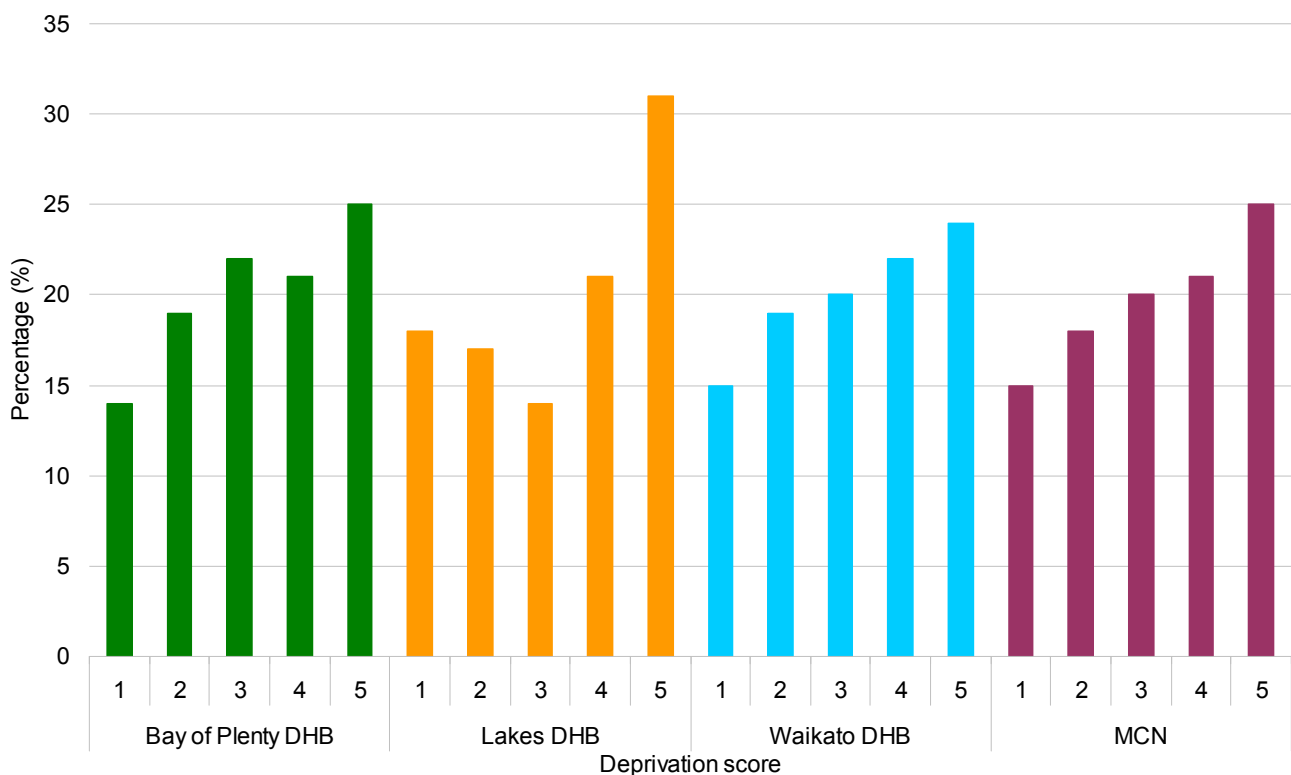
2.4.1. Deprivation distribution

Deprivation by Midland Cancer Network area

For the Midland Cancer Network area the population is fairly evenly distributed across the five quintiles. Figure 11 shows that the Midland Cancer Network area DHBs generally have a higher percentage of people living in quintile 5 (most deprived) compared with those living in quintile 1 (least deprived).

Bay of Plenty DHB district has the lowest percentage of people living in quintile 1 (14%). Lakes DHB district has the highest proportion of people living in both quintiles 1 (18%) and quintile 5 (31%).

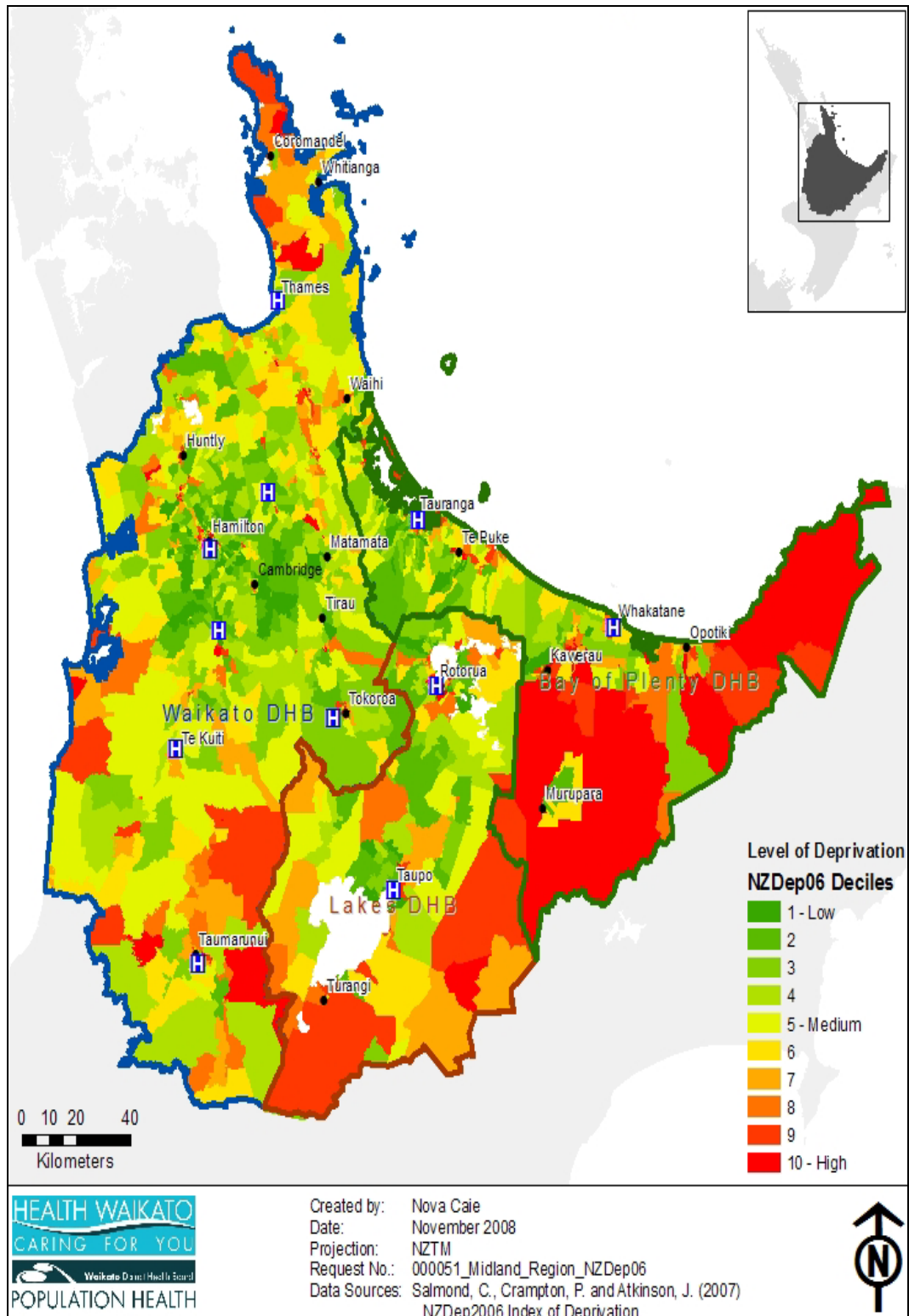
Figure 11: Population counts by proportion of deprivation quintiles, for the Midland Cancer Network area, 2006



Source: TAS data cubes: P00_CUBE_POP_EST_INTG.

Cancer health needs in the Midland Cancer Network area, 2009

Figure 12: Map showing deprivation* of the Midland Cancer Network area, outlining DHB boundaries, and public hospitals



Cancer health needs in the Midland Cancer Network area, 2009

** Note: this map outlines the NZDep06 Deciles on a scale of 1 (least deprived) through to 10 (most deprived). Throughout the rest of the document quintiles 1 to 5 are used. To compare between both scales: 1-2 is quintile 1, 3-4 is quintile 2, 5-6 is quintile 3, 7-8 is quintile 4 and 9-10 is quintile 5.*

2.4.2. Urban / rural populations

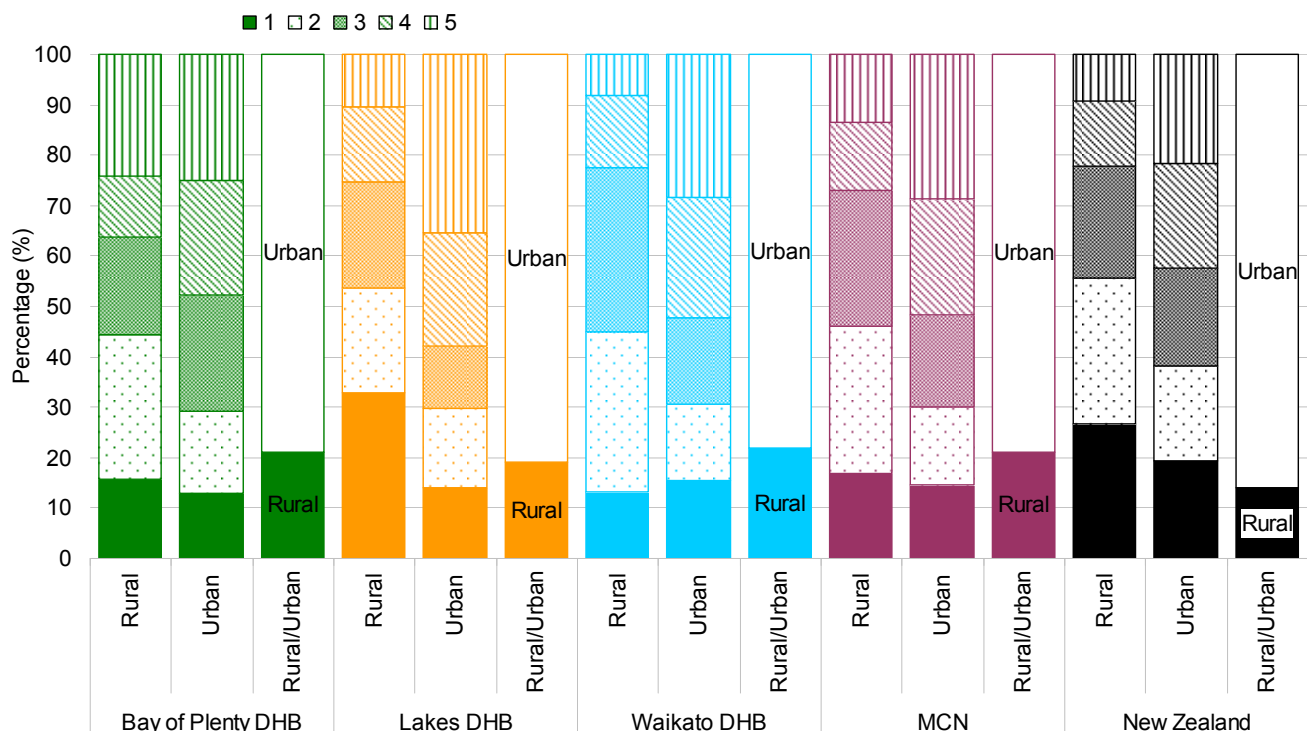
Figure 13 and

Figure 14 show that there are similar proportions of urban-rural dwellers for all of the Midland Cancer Network DHBs (approximately 80% urban - 20% rural). The New Zealand rate shows a higher proportion of urban (86%) and lower proportion of rural (14%) when compared with the Midland Cancer Network area.

Urban and rural deprivation

For all of the Midland Cancer Network DHBs, a high proportion of their urban populations live in a quintile 5 area (Figure 13). The highest proportion of urban populations that live in a quintile 5 area reside in the Lakes DHB (35%) followed by Waikato DHB (28%) and the lowest in the Bay of Plenty DHB (25%). These rates are all above the New Zealand rate (22%). Lakes DHB has a high proportion of their rural population living in a quintile 1 area (33%) compared to the other DHBs (equal to or less than 16%). New Zealand's rate shows an even distribution across the five quintiles for urban, however, for rural a higher proportion of the population reside in areas with a deprivation score between quintile 1 and 3.

Figure 13: Rural urban distribution, for the Midland Cancer Network area and New Zealand, by deprivation quintiles and rural/urban distribution, 2006

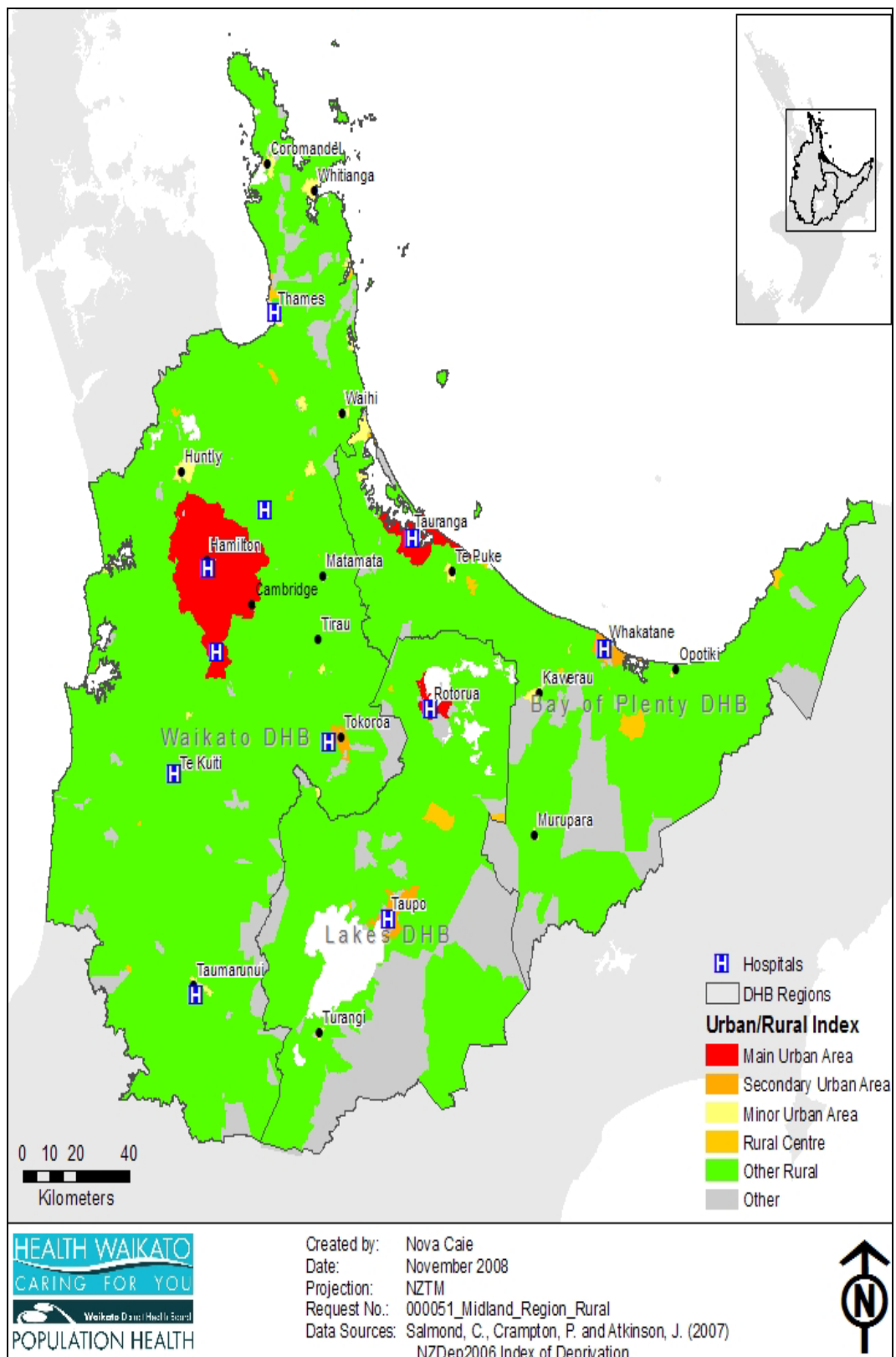


Cancer health needs in the Midland Cancer Network area, 2009

Source: TAS data cubes: P02_CUBE_RURAL_MESH_CENSUS.

Figure 14: Map showing the urban/rural mix of the Midland Cancer Network area, outlining DHB boundaries, and public hospitals

Cancer health needs in the Midland Cancer Network area, 2009



⁸ McKenzie, K. J., & Crowcroft, N. S. (1994). Race, ethnicity, culture and science. BMJ; (309), 286-7.

3. Cancer burden in the Midland Cancer Network area

3.1. Summary

The cancer burden reflects both trends in risk and the impact of demographic factors. As the population grows, the incidence of cancer or deaths from cancer steadily increases. The ageing of the population due to longer life expectancy also has an increasing effect⁹.

Monitoring trends in cancer incidence, mortality and cancer patient survival associated with specific forms of cancer creates part of the assessment of cancer burden.

The findings indicate that Māori are disproportionately affected by the cancer burden compared to non-Māori. Māori have a higher rate of cancer registrations both in New Zealand and in the Midland Cancer Network area. Māori within the Midland Cancer Network area had notably higher rates of cancer registrations than non-Māori. This was consistent across all Midland Cancer Network DHBs apart from Bay of Plenty DHB where non-Māori had higher rates of cancer registrations. Māori females particularly have had higher levels of cancer registrations.

In terms of cancer incidence and cancer deaths, rates are considerably increased in those aged 65 years and over. Still, Māori have the highest rates of cancer mortality compared to other ethnicities across all age groups, particularly in Māori aged 65 years and over.

Māori have had considerably higher levels of cancer mortality in all Midland Cancer Network DHBs, as well as higher rates of avoidable cancer hospitalisations than non-Māori. Māori aged 65 and over had the highest rates of avoidable cancer related hospitalisations; the incidence of which increased as age increased. The national Māori rate for cancer registrations, cancer mortality and avoidable cancer related hospitalisations is lower than all Māori rates for Midland Cancer Network DHBs.

These findings reiterate that “cancer is a significant health concern for Māori” and consequently “has a major and disproportionate impact on Māori communities”¹⁰. As a means to reduce the incidence and impact of cancer within Māori communities “cancer policy and practice needs to take into account Māori cancer priorities as part of future developments in cancer control”¹⁰.

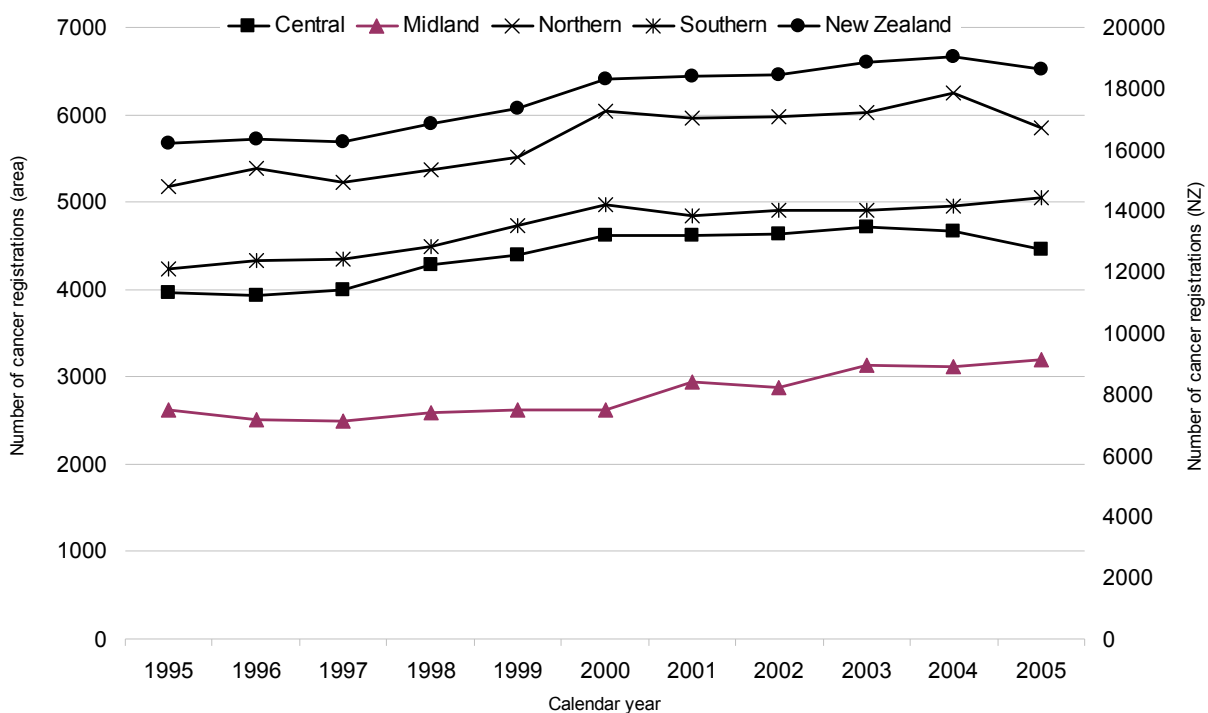
3.2. Cancer registrations

3.2.1. National comparisons

Nationally, the number of recorded cancer registrations increased during the time period 1995 - 2005. There was a decline in recorded cancer registrations between the years 2004 and 2005. However, it should be noted, that in 2005 bladder cancers stopped being classed as malignant. For the year 1995, the total national cancer registrations recorded were 16,231 which increased to 18,614 in 2005. All four New Zealand cancer networks followed similar increasing trends as compared with the national trend (Figure 15).

For the Midland Cancer Network area there were a total of 2620 cancer registrations recorded in 1995 and 3192 cancer registrations in 2005.

Figure 15: Number of cancer registrations for all cancer, by cancer network and for New Zealand, 1995 - 2005

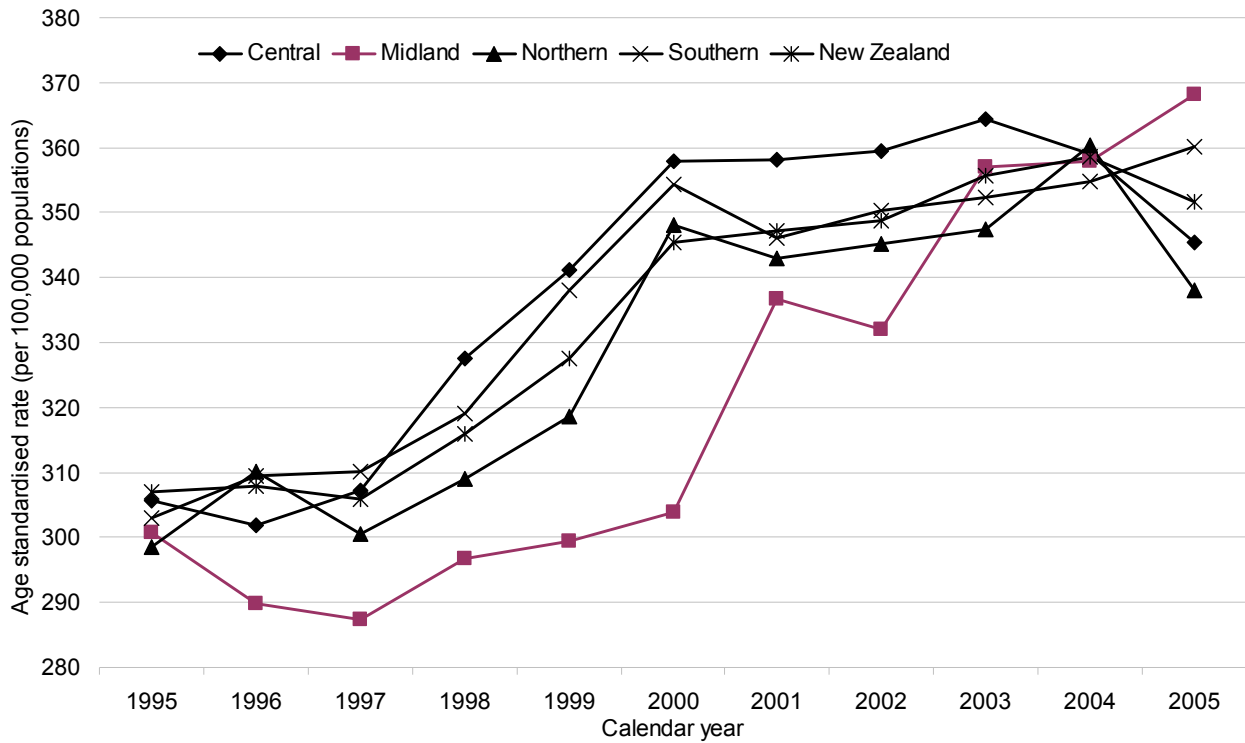


Source: TAS Data Cubes: K00_CUBE_CANC.

Age standardised rates show an increasing trend of cancer registrations on a national and regional level. In 2005, the Midland Cancer Network area had the highest age standardised rate of cancer registrations of 368 per 100,000 population. This rate was slightly higher than the other cancer networks of New Zealand, with a recorded national age standardised rate of 351 per 100,000 population (Figure 16).

Cancer health needs in the Midland Cancer Network area, 2009

Figure 16: Age standardised rate for cancer registrations for all cancer, by cancer network and for New Zealand, 1995 - 2005



Source: TAS Data Cubes: K00_CUBE_CANC and Statistics NZ; Census 2006.

3.2.2. Incidence within the Midland Cancer Network area

The three DHBs within the Midland Cancer Network area all showed an increase in recorded cancer registrations for the time period 1995 – 2005 (22% total). Bay of Plenty DHB had the highest increase in cancer registrations (31%) followed by Lakes DHB (21%) and Waikato DHB (17%) (Table 8).

Table 8: Number of cancer registrations for all cancer, for the Midland Cancer Network area and New Zealand, 1995 - 2005

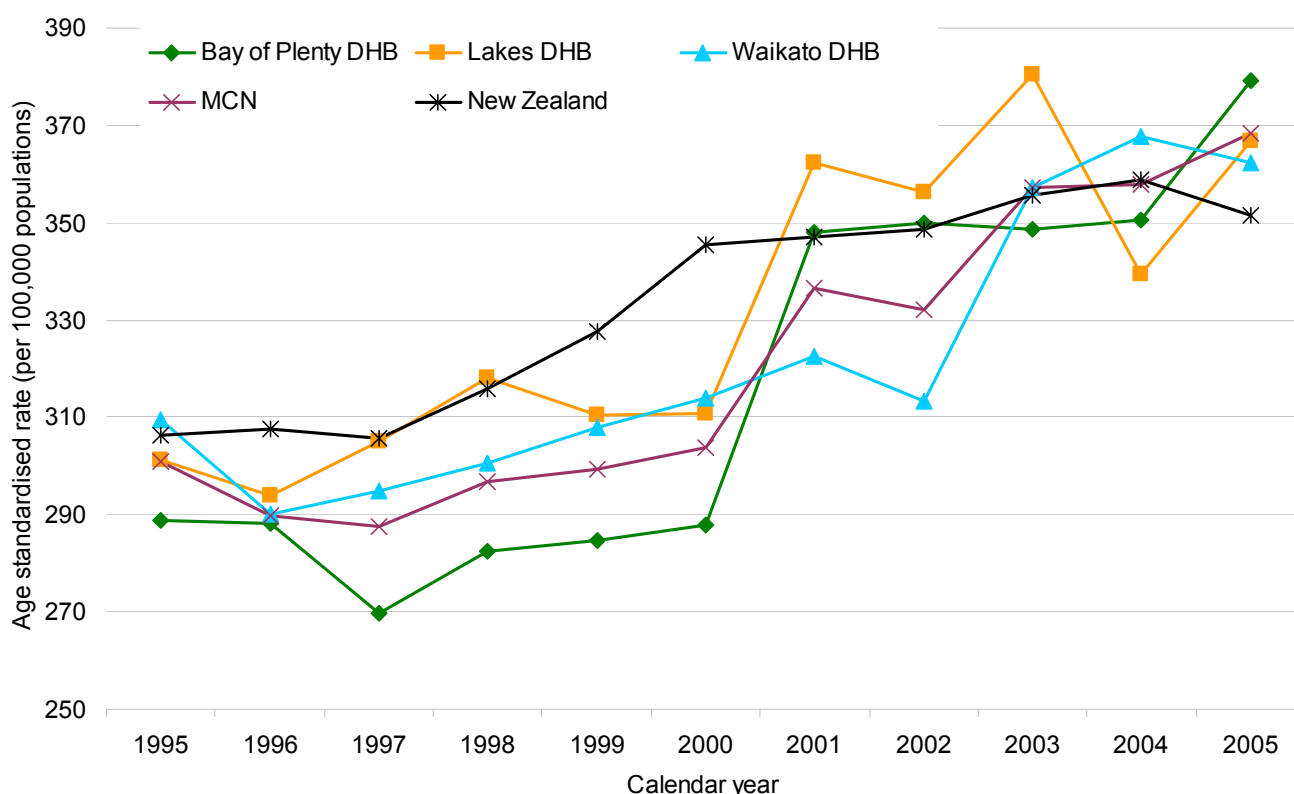
Area	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	% Diff*
Bay of Plenty DHB	852	848	796	842	837	830	1035	1035	1035	1049	1115	31%
Lakes DHB	383	370	388	404	395	387	452	442	480	428	462	21%
Waikato DHB	1385	1291	1312	1345	1393	1398	1453	1398	1615	1646	1615	17%
MCN	2620	2509	2496	2591	2625	2615	2940	2875	3130	3123	3192	22%
New Zealand	16,231	16,334	16,248	16,829	17,359	18,310	18,422	18,444	18,841	19,030	18,614	15%

* Percentage changes from 1995 to 2005.

Source: TAS Data Cubes: K00_CUBE_CANC.

Age standardised rates of cancer incidence for the time period 1995 - 2005 show increased rates nationally and regionally. For the Midland Cancer Network area the age standardised rate for the cancer registrations in 2005 was 368 per 100,000 population. This rate was higher than the national rate of cancer registrations in 2005 of 352 per 100,000 population. For the time period 1995 - 2005 the age standardised rates for both the Midland Cancer Network area and New Zealand increased by 0.4% (Figure 17).

Figure 17: Age standardised rates for all cancer, for the Midland Cancer Network area and for New Zealand, 1995 - 2005

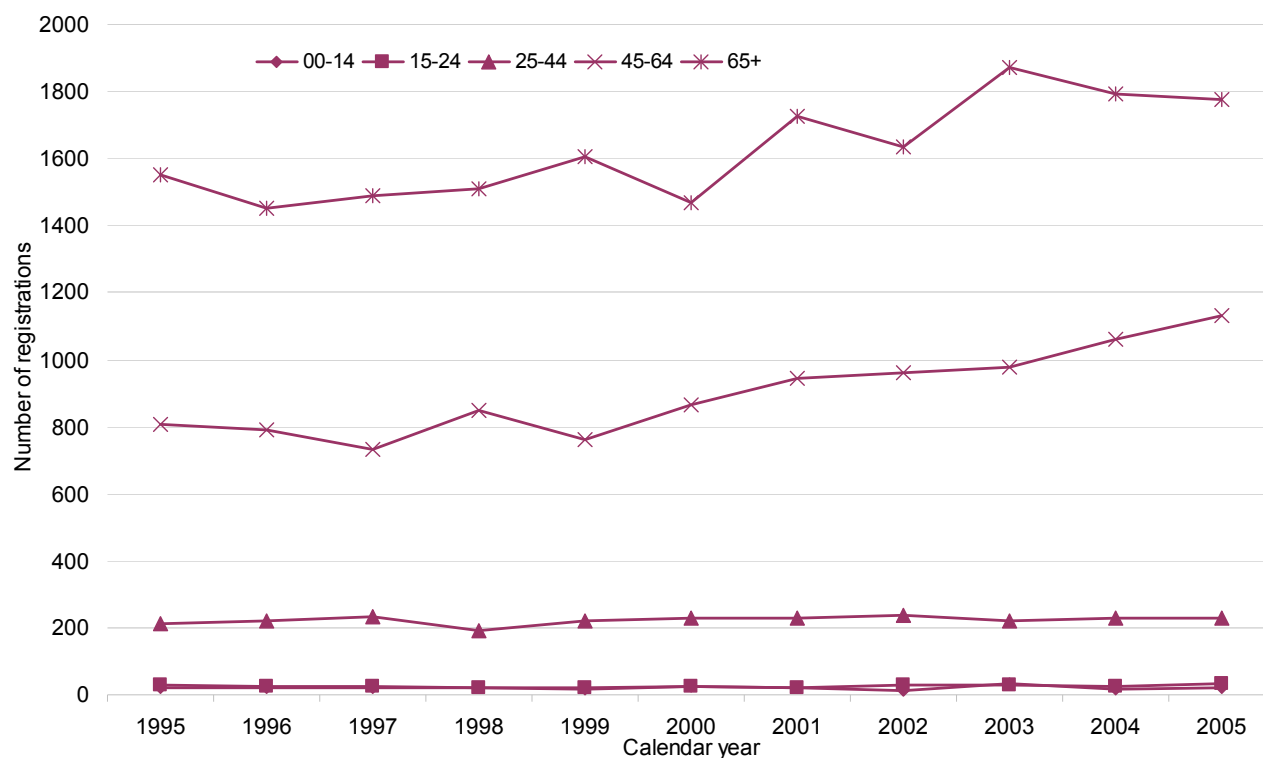


Source: TAS Data Cubes: K00_CUBE_CANC and Statistics NZ; Census 2006.

3.2.3. Incidence by age

The number of cancer registrations within the Midland Cancer Network area increase with an increase in age. During the time period 1995 - 2005 people aged 65 and over were more likely to be registered as having cancer. Figure 18 below shows that the age-specific trends are varied for each age group. During 2005, 58% of all cancer registrations affected people who were 65 years or older in the Midland Cancer Network area.

Figure 18: Number of cancer registrations for all cancer, for the Midland Cancer Network area, by age group, 1995 - 2005

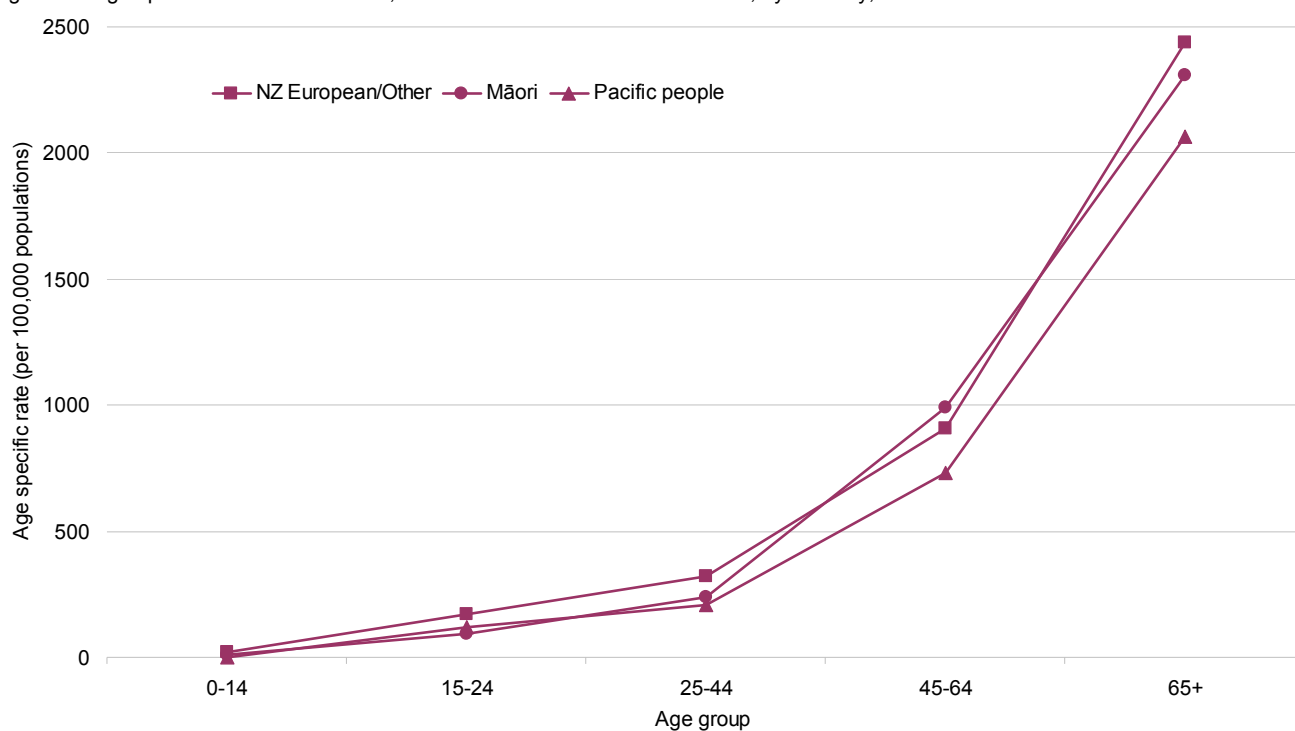


Source: TAS Data Cubes: K00_CUBE_CANC.

For the three ethnic groups studied; the age specific rates, per 100,000 population, show that the rate of cancer registrations increased with age in 2005. The NZ European/Other ethnicity for the 65 years or over age category had the highest rate of cancer registrations for 2005, a total of 2440 per 100,000 population, followed by Māori, 2,310 per 100,000 population and Pacific people, 2062 per 100,000 population (Figure 19).

Cancer health needs in the Midland Cancer Network area, 2009

Figure 19: Age specific rates for all cancer, for the Midland Cancer Network area, by ethnicity, 2005

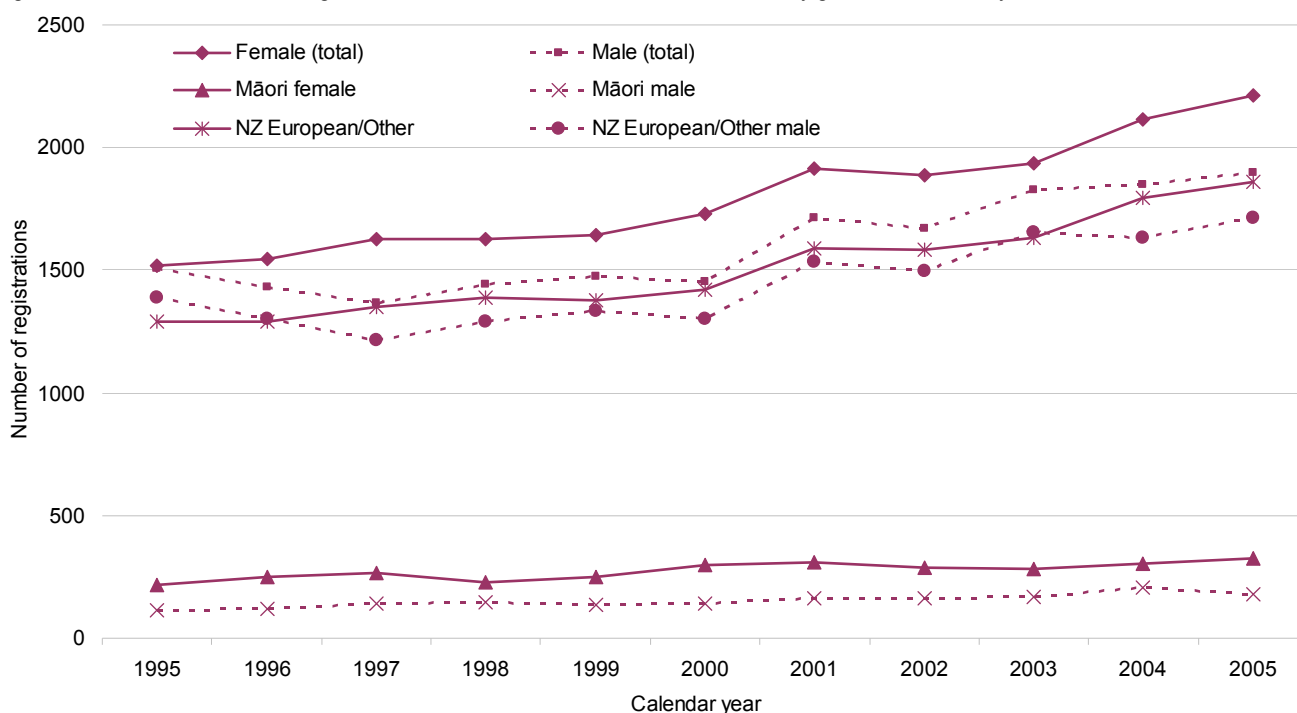


Source: TAS Data Cubes: K00_CUBE_CANC.xls. Statistics NZ; Census 2006.

3.2.4. Incidence by gender

In the Midland Cancer Network area the total number of cancer registrations was higher for females than males over the time period 1995 - 2005. Figure 20 shows increasing trends over the 11 year time period for both total male and female. NZ European/Other male and female populations followed a similar increasing trend as compared with the Midland Cancer Network total. The trends for Māori male and females were relatively stable for the same time period.

Figure 20: Number of all cancer registrations, for the Midland Cancer Network area, by gender and ethnicity, 1995 - 2005

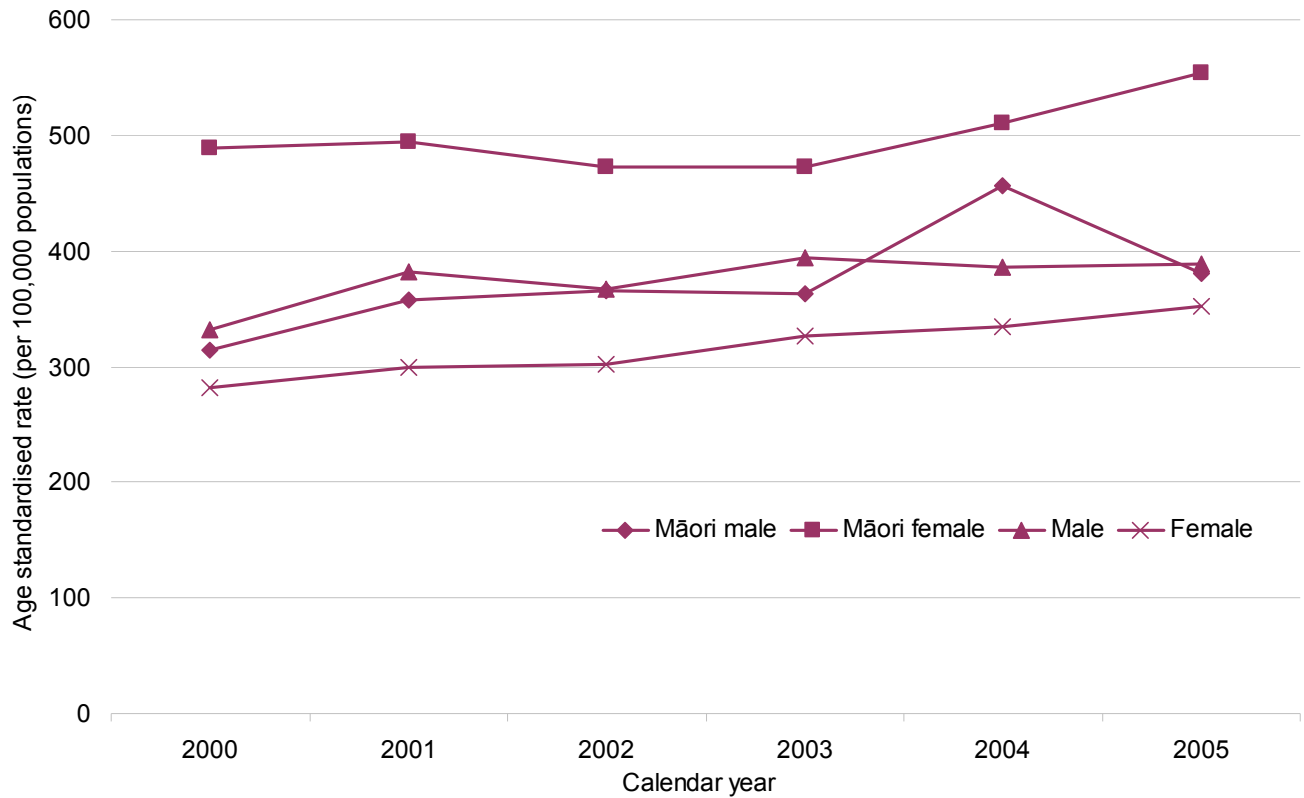


Source: TAS Data Cubes: K00_CUBE_CANC.

Age standardised rates for the Midland Cancer Network area showed that Māori females had the highest rate of cancer registrations per 100,000 population for the time period 2000 - 2005. The data showed that females (total) had the lowest rate of cancer registrations per 100,000 population in the Midland Cancer Network area (Figure 21). All registration numbers showed increasing trends over the six year time period, 2000 - 2005. However, Māori males experienced a decrease in age standardised rates between 2004 and 2005, from 456 per 100,000 population in 2004 to 381 per 100,000 population in 2005.

Cancer health needs in the Midland Cancer Network area, 2009

Figure 21: Age standardised rates for all cancer, for the Midland Cancer Network area, by gender and ethnicity, 2000 - 2005



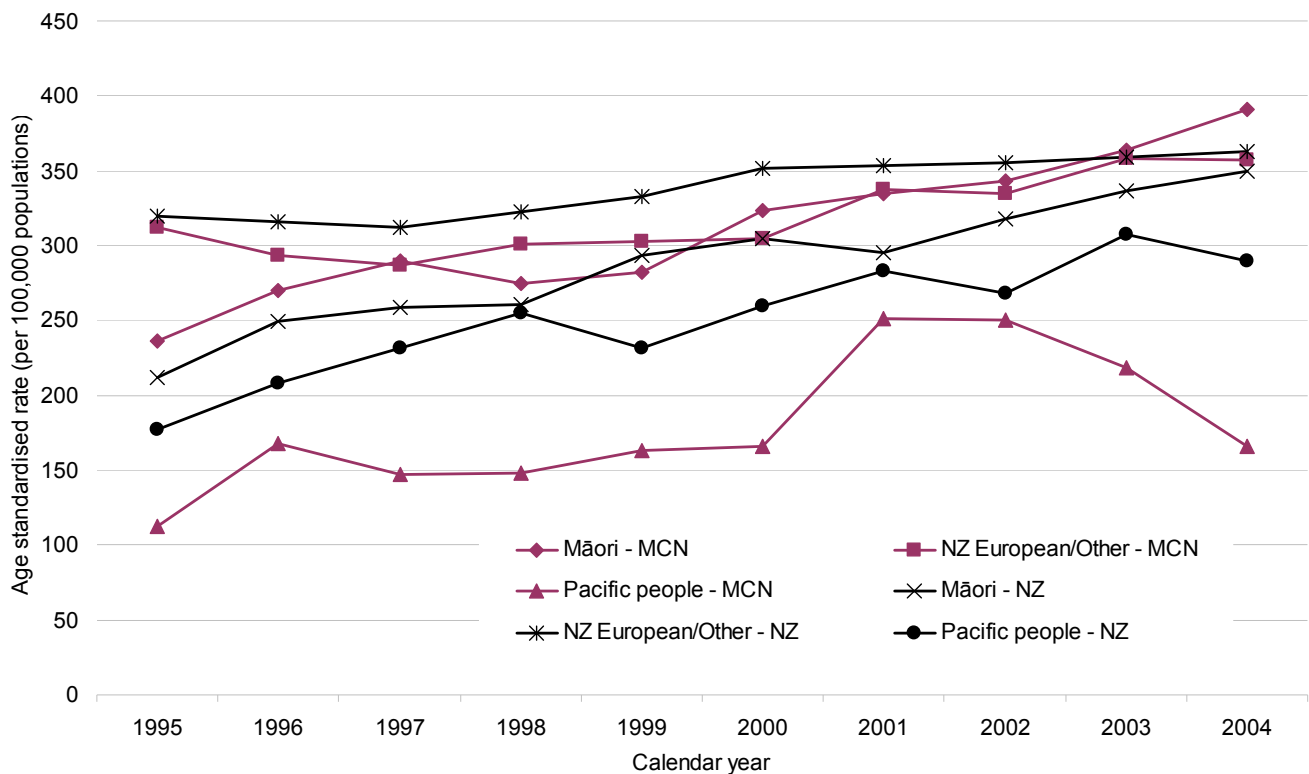
Source: TAS Data Cubes: K00_CUBE_CANC and Statistics NZ; Census 2006.

3.2.5. Incidence by ethnicity

The NZ European/Other ethnicity, within the Midland Cancer Network area and for New Zealand, showed increasing trends over the time period 1995 – 2005. Māori and Pacific people displayed no obvious change in trend over the same time period.

However, once the total numbers are age standardised, to give rates per 100,000 population, all ethnic groups suggest an increasing trend over the time period 1995 – 2005. The rate for Pacific people within the Midland Cancer Network area was lower than that for Pacific people in New Zealand (Figure 22). The age standardised rates for Māori showed a higher rate of cancer registrations, per 100,000 population in the Midland Cancer Network area, as compared to New Zealand Māori.

Figure 22: Age standardised rates for all cancer registrations, for the Midland Cancer Network area and New Zealand, by ethnicity, 1995 – 2005

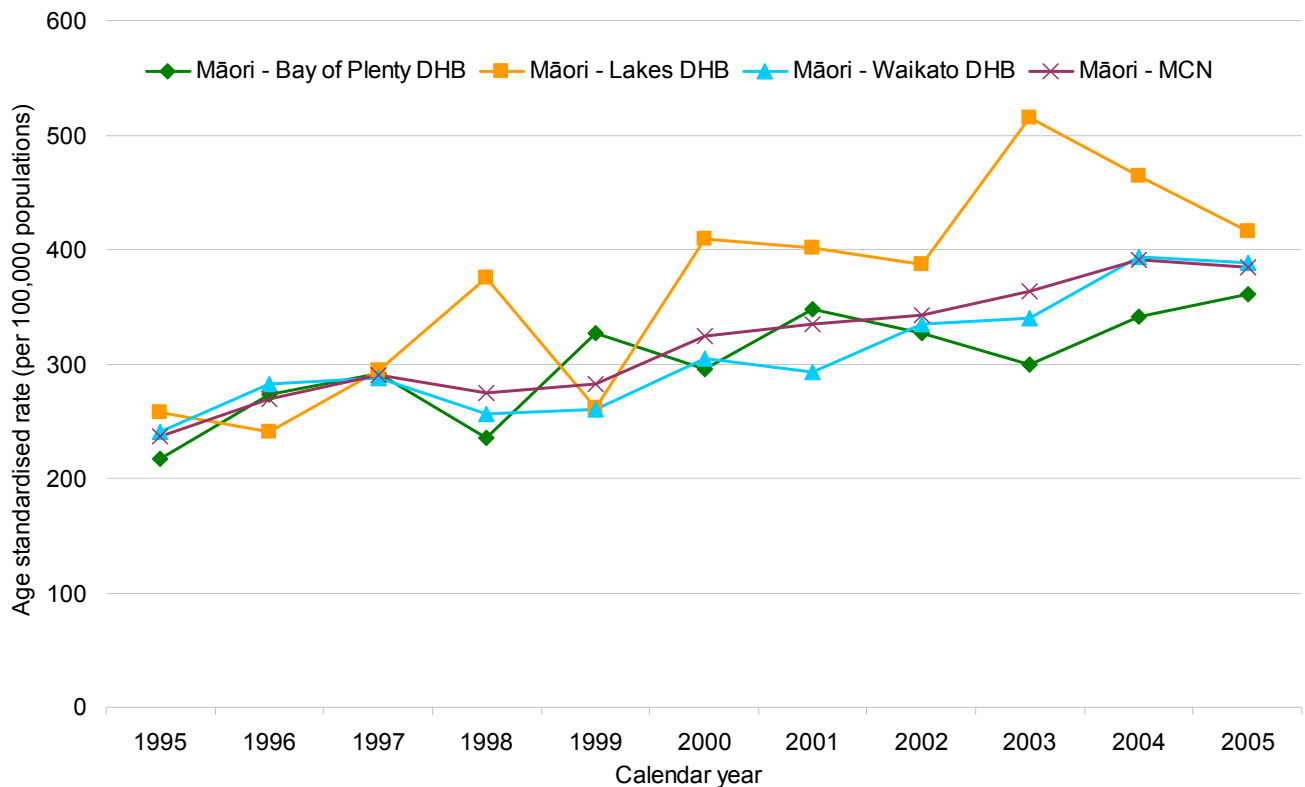


Source: TAS Data Cubes: K00_CUBE_CANC.

Māori cancer registrations showed an increasing trend over the time period 1995 to 2005 (Figure 23). The age standardised rates for Māori show that the Lakes DHB had the highest rate of cancer registrations per 100,000 population, in 2005. These rates however, have been decreasing since 2003 to a level similar to Waikato and Bay of Plenty DHBs (Figure 23). The age standardised rate for Māori in the Lakes DHB during the year 2005 is 415 per 100,000 population, followed by Waikato DHB (389 per 100,000 population) and Bay of Plenty DHB (360 per 100,000 population).

Cancer health needs in the Midland Cancer Network area, 2009

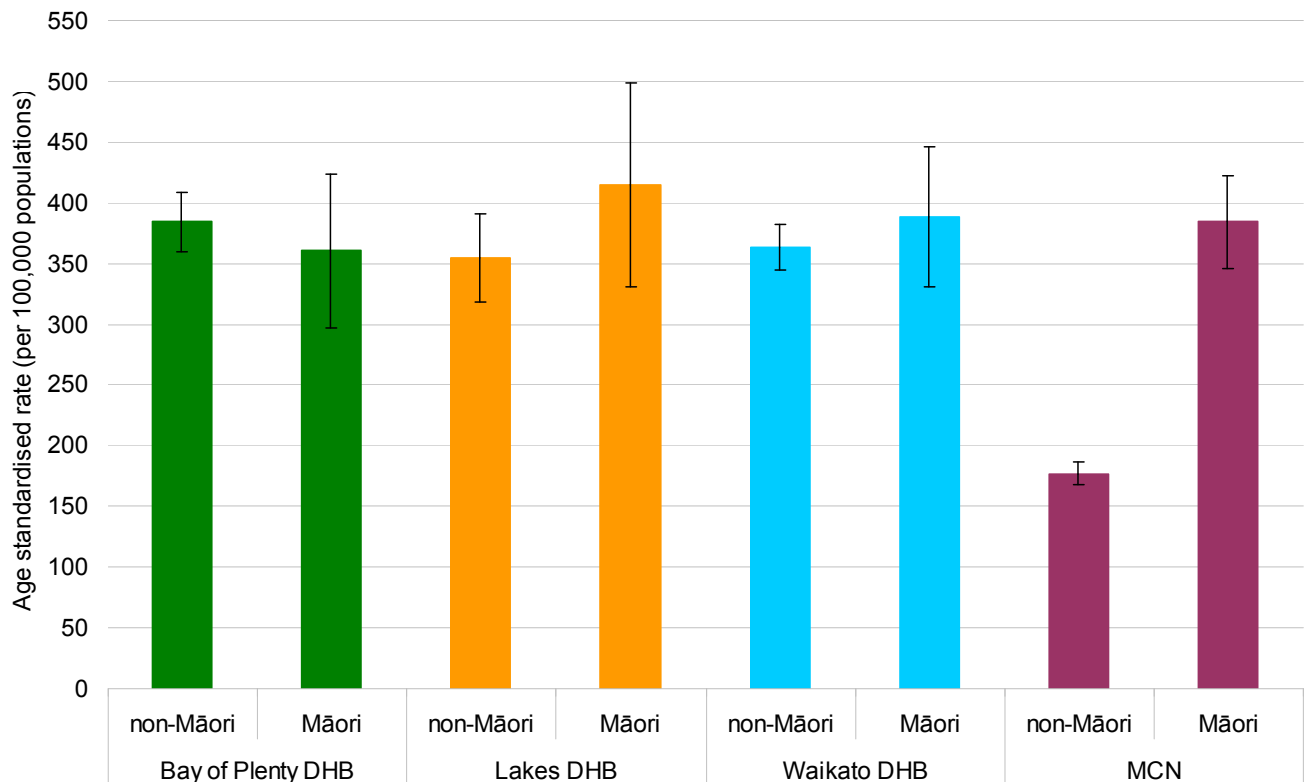
Figure 23: Age standardised rates for all cancer registrations for Māori, for the Midland Cancer Network area, 1995 - 2005



Source: TAS Data Cubes: K00_CUBE_CANC and Statistics NZ; Census 2006.

Figure 24 shows that Māori within the Midland Cancer Network area had notably higher rates of cancer registrations than non-Māori in 2005. This was consistent across all Midland Cancer Network DHBs apart from Bay of Plenty DHB where non-Māori had higher rates of cancer registrations.

Figure 24: Age standardised rates for all cancer registrations, for the Midland Cancer Network area, by ethnicity, 2005



Lines indicate the 95% confidence interval.

Source: TAS Data Cubes: K00_CUBE_CANC and Statistics NZ; Census 2006.

3.2.6. Incidence by territorial authority

Bay of Plenty DHB

All territorial authorities within the Bay of Plenty DHB showed an increasing trend in the number of cancer registrations (Table 9, Figure 25). Opotiki territorial authority had the highest percentage increase between the years 1995 and 2005, an increase of 269%. This was followed by Kawerau (50%), Tauranga (47%), Western Bay of Plenty (45%) and Whakatane (31%).

Table 9: Number of cancer registrations for all cancer, for the Bay of Plenty DHB district, by territorial authority, 1995 - 2005.

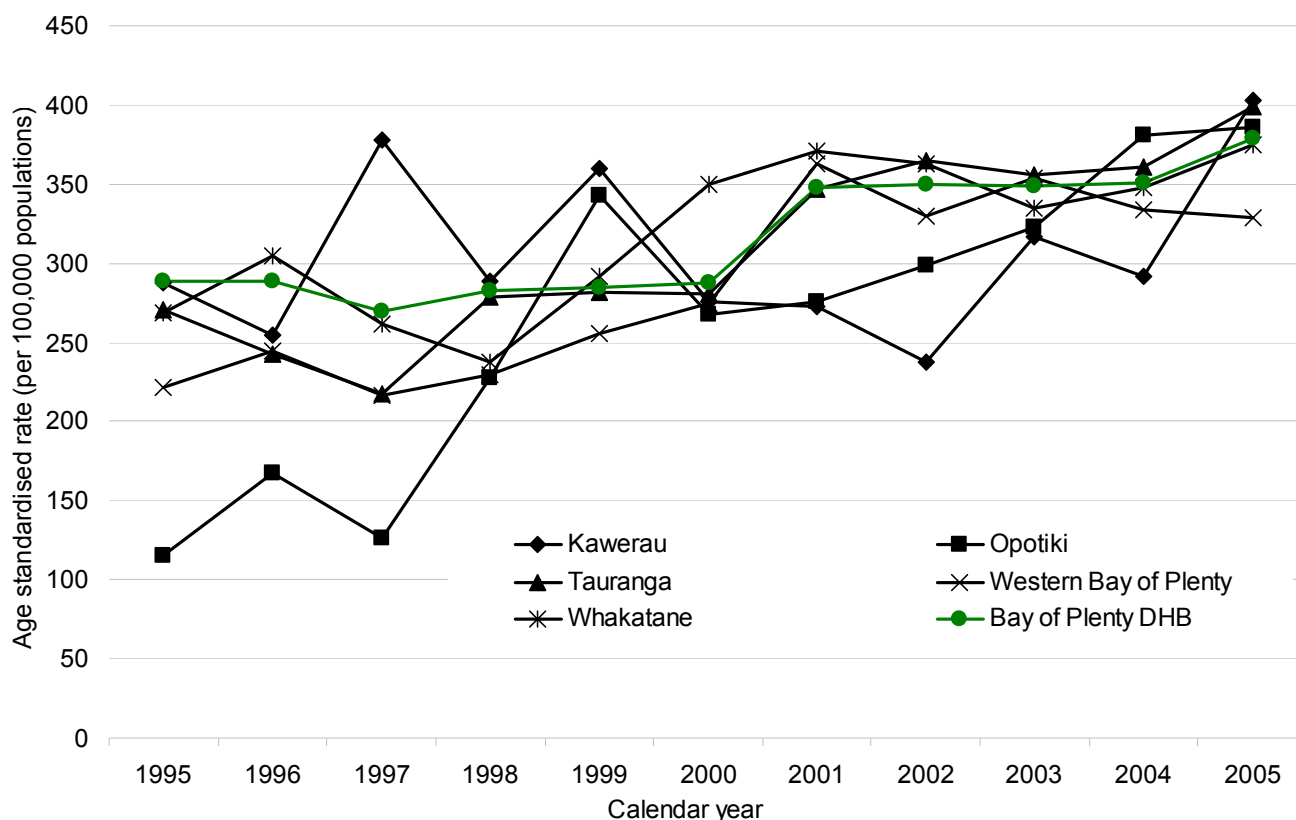
Area	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	% Diff*
Kawerau	24	22	33	24	29	22	24	22	26	27	36	50%
Opotiki	13	20	15	30	41	30	34	38	41	49	48	269%
Tauranga	442	404	373	463	471	450	566	596	583	597	649	47%
Undefined	104	108	119	66	1	0	1	3	1	0	0	-
Western Bay of Plenty	151	160	142	156	169	176	248	216	233	218	219	45%
Whakatane	118	134	114	103	126	152	162	160	151	158	163	38%
Bay of Plenty DHB	852	848	796	842	837	830	1035	1035	1035	1049	1115	31%

* Percentage changes from 1995 to 2005.

Source: TAS Data Cubes: K00_CUBE_CANC.

The age standardised rate of cancer registrations, per 100,000 population, for the Bay of Plenty DHB in 2005 was 379 (Figure 25). Age standardised rates show that Opotiki territorial authority had the highest increase in cancer registrations (starting from 115 per 100,000 population in 1995 and increasing to 385 per 100,000 population in 2005). In 2005 Kawerau territorial authority had the highest rate of recorded cancer registrations per 100,000 over the time period 1995 – 2005 (403). Bay of Plenty DHB and the Western Bay of Plenty territorial authority equally had the lowest age standardised rates of recorded cancer registrations (329 per 100,000 population).

Figure 25: Age standardised rates for all cancer registrations, for the Bay of Plenty DHB, by territorial authority, 1995 - 2005



Source: TAS Data Cubes: K00_CUBE_CANC and Statistics NZ; Census 2006.

Lakes DHB

All territorial authorities in the Lakes DHB showed an increasing trend in the number of cancer registrations. Rotorua territorial authority had the highest percentage difference between the years 1995 and 2005 a value of 39%. Taupo territorial authority had an increase of 8% (Table 10, Figure 26).

Table 10: Number of cancer registrations for all cancer, for the Lakes DHB district, by territorial authority, 1995 - 2005

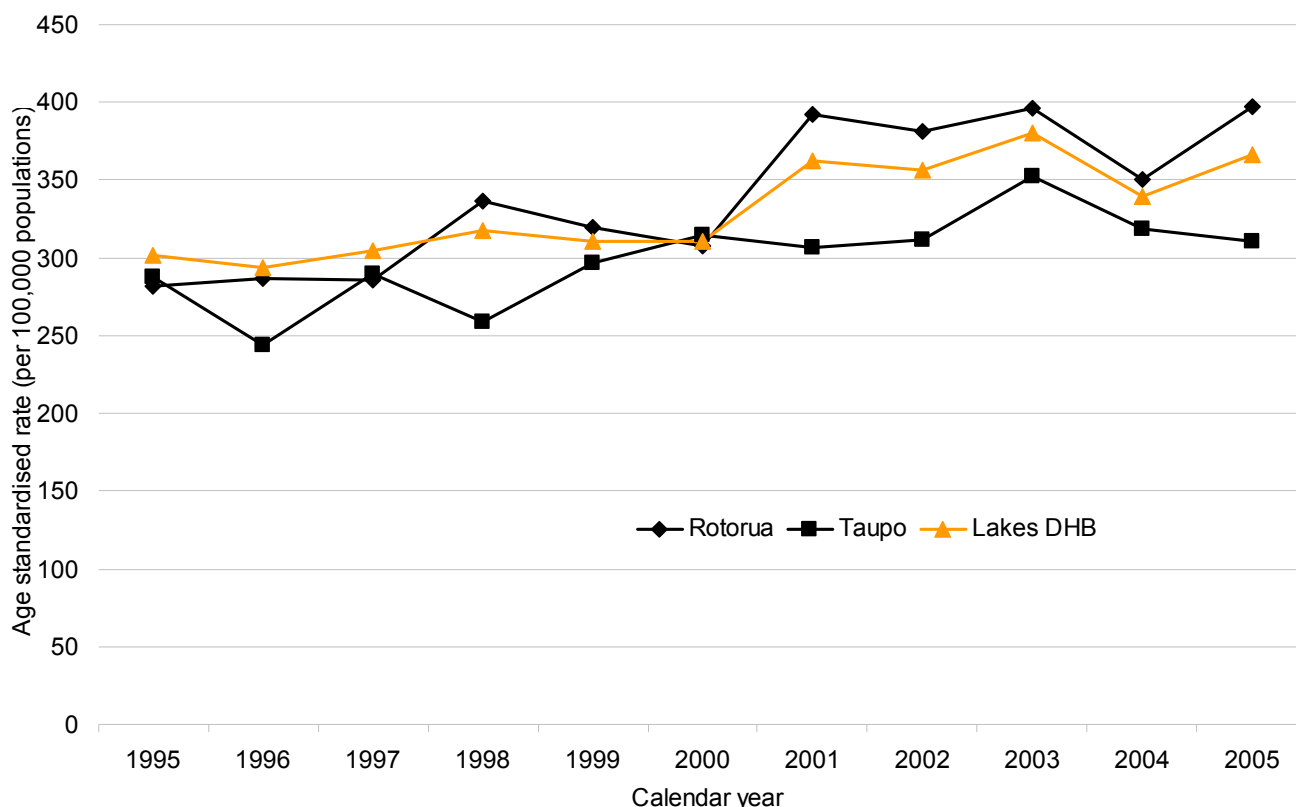
Area	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	% Diff*
Rotorua	229	231	234	274	261	245	312	303	319	282	319	39%
Taupo	132	111	129	116	134	142	140	139	161	146	143	8%
Undefined	22	28	25	14	0	0	0	0	0	0	0	-
Lakes DHB	383	370	388	404	395	387	452	442	480	428	462	21%

* Percentage changes from 1995 to 2005.

Source: TAS Data Cubes: K00_CUBE_CANC.

The age standardised rate of cancer registrations per 100,000 population for the Lakes DHB for 2005 was 367 per 100,000 population (Figure 26). Age standardised registration rates show that Rotorua territorial authority had the highest increase for the time period 1995 - 2005 (from 288 per 100,000 population in 1995 to 397 per 100,000 population in 2005). The cancer registration rate for Taupo territorial authority was 310 per 100,000 population in 2005.

Figure 26: Age standardised rates for all cancer registrations, for the Lakes DHB, by territorial authority, 1995 - 2005



Source: TAS Data Cubes: K00_CUBE_CANC and Statistics NZ; Census 2006.

Waikato DHB

The majority of the territorial authorities within the Waikato DHB showed relatively stable trends, experiencing slight increases over the 11 year period (Table 11, Figure 27). Matamata-Piako showed a 177% increase in the number of recorded cancer registrations between the years 1995 and 2005. This percentage increase was followed by Hauraki (162%), Otorohanga (56%), Hamilton City (39%), Waipa (37%), Thames-Coromandel (35%), South Waikato (32%), Waitomo (31%), Ruapehu (25%) and Waikato (9%).

Table 11: Number of cancer registrations for all cancer, for the Waikato DHB district, by territorial authority, 1995 – 2005.

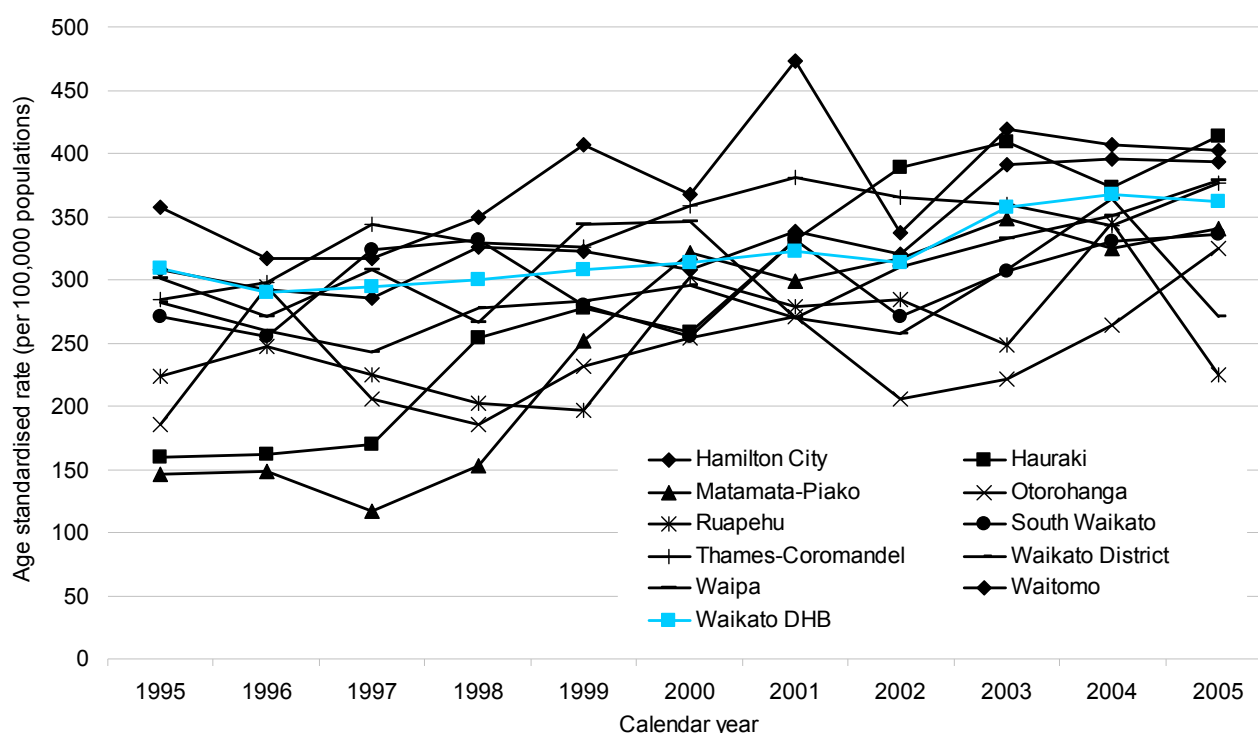
Area	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	% Diff*
Hamilton City	528	499	507	567	557	550	581	555	681	708	736	39%
Hauraki	52	48	54	81	88	88	108	117	125	127	136	162%
Matamata-Piako	74	69	67	81	134	163	156	160	194	189	205	177%
Otorohanga	25	33	26	25	32	34	33	29	32	39	39	56%
Ruapehu	40	44	46	38	37	57	49	50	46	67	50	25%
South Waikato	99	88	107	107	100	91	108	93	105	123	131	32%
Thames-Coromandel	165	173	186	192	196	206	206	202	223	211	223	35%
Undefined	185	133	149	72	1	2	0	1	0	2	2	-
Waikato	169	159	153	166	178	179	170	170	199	241	185	9%
Waipa	208	192	209	191	235	238	200	213	236	275	284	37%
Waitomo	48	41	42	56	54	53	61	46	56	58	63	31%
Waikato DHB	1385	1291	1312	1345	1393	1398	1453	1398	1615	1646	1615	17%

* Percentage changes from 1995 to 2005.

Source: TAS Data Cubes: K00_CUBE_CANC.

Age standardised rates showed Hauraki territorial authority had the greatest increase in recorded cancer registrations (from 159 per 100,000 population in 1995 to 403 per 100,000 population in 2005). The highest rate of cancer registrations for the time period 1995 – 2005 was recorded in 2001 for Waitomo territorial authority, a rate of 271 per 100,000 population. The total cancer registration age standardised rates for the Waikato DHB was 309 per 100,000 population in 1995 and 362 per 100,000 population in 2005 (Figure 27).

Figure 27: Age standardised rates for all cancer registrations, for the Waikato DHB, by territorial authority, 1995 - 2005



Source: TAS Data Cubes: K00_CUBE_CANC and Statistics NZ; Census 2006.

3.3. Cancer mortality

3.3.1. Common causes of death

In the Midland Cancer Network area cancer is one of the most common causes of death. In 2004 cancer was the second highest cause of death, after death caused by failure to the circulatory system. This was true for all ethnicities apart for Pacific people where cancer was the third highest cause of death. Cancer was the second highest cause of death in all of the Midland Cancer Network DHBs in 2004 (Table 12, Table 13).

Table 12: Common causes of death, for the Midland Cancer Network area, by ethnicity, 2004

All ethnicities	% of all deaths	NZ European/Other	% of all deaths	Māori	% of all deaths	Pacific people	% of all deaths
Circulatory system	39	Circulatory system	40	Circulatory system	34	Circulatory system	31
Cancer - Malignant	28	Cancer - Malignant	29	Cancer - Malignant	27	Endocrine, metabolic & immunity	19
Respiratory system	9	Respiratory system	9	External causes	12	Cancer - Malignant	14
External causes	7	External causes	5	Respiratory system	8	Respiratory system	10
Endocrine, metabolic & immunity	4	Nervous system	4	Endocrine, metabolic & immunity	8	Digestive system	7
Nervous system	3	Endocrine, metabolic & immunity	3	Digestive system	2	Ill-defined conditions	7
All other causes	10	All other causes	10	All other causes	9	All other causes	12
Total	100	Total	100	Total	100	Total	100

Source: TAS Data Cubes: N00_CUBE_MORT.

Table 13: Common causes of death, for the Midland Cancer Network area by DHB and New Zealand, 2004

Bay of Plenty DHB	%	Lakes DHB	%	Waikato DHB	%	New Zealand	%
Circulatory system	40	Circulatory system	36	Circulatory system	39	Circulatory system	39
Cancer - Malignant	28	Cancer - Malignant	25	Cancer - Malignant	30	Cancer - Malignant	30
Respiratory system	9	Respiratory system	11	Respiratory system	9	Respiratory system	9
External causes	7	External causes	6	External causes	6	External causes	6
Endocrine, metabolic & immunity	4	Endocrine, metabolic & immunity	6	Endocrine, metabolic & immunity	4	Endocrine, metabolic & immunity	4
Nervous system	3	Digestive system	4	Nervous system	3	Nervous system	3
All other causes	9	All other causes	12	All other causes	9	All other causes	9
Total	100	Total	100	Total	100	Total	100

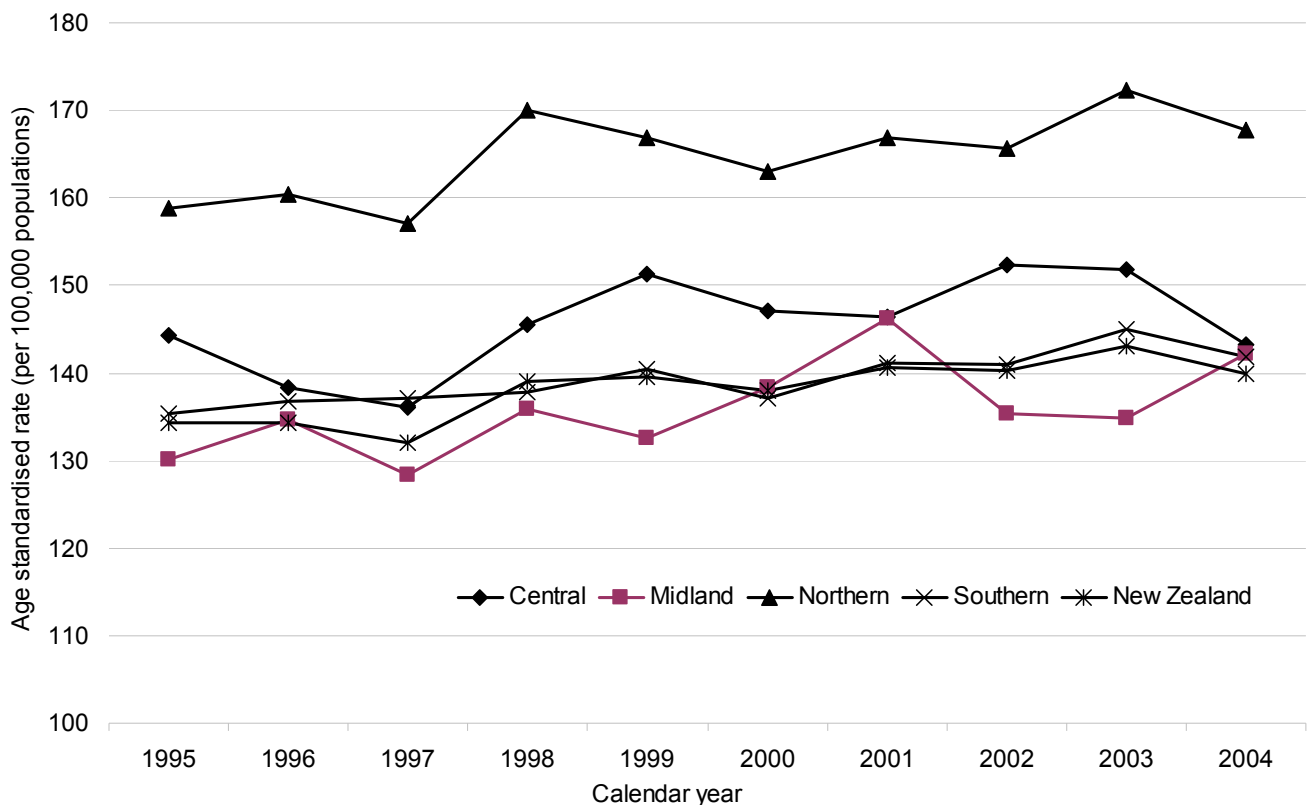
Source: TAS Data Cubes: N00_CUBE_MORT.

3.4. All cancer mortality

3.4.1. National comparisons

Nationally, 17% of all cancer deaths were recorded in the Midland Cancer Network area. During the time period 1995 – 2005 the Midland Cancer Network area had a generally lower cancer mortality age standardised rate when compared with the other cancer networks of New Zealand (Figure 28).

Figure 28: Age standardised rates for all cancer deaths, by cancer network and for New Zealand, 1995 - 2004



Source: TAS Data Cubes: N00_CUBE_MORT.

3.4.2. Mortality within the Midland Cancer Network area

Generally cancer mortality for the time period 1995 – 2004 for the Midland Cancer Network area increased by 12%. Cancer mortality however, decreased in the Lakes DHB district by 14% while the Bay of Plenty DHB increased by 18% and Waikato DHB increased by 17%. The national rate for the same time period increased by 5% (Table 14).

Table 14: Number of all cancer deaths, for the Midland Cancer Network area and New Zealand, 1995 - 2004

Area	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	% Diff*
Bay of Plenty DHB	365	401	353	418	390	424	444	435	430	431	18%
Lakes DHB	221	188	204	194	187	222	229	181	196	191	-14%
Waikato DHB	590	635	602	634	635	633	676	634	616	690	17%
MCN	1176	1224	1159	1246	1212	1279	1349	1250	1242	1312	12%
New Zealand	7402	7397	7282	7683	7706	7653	7787	7800	7935	7759	5%

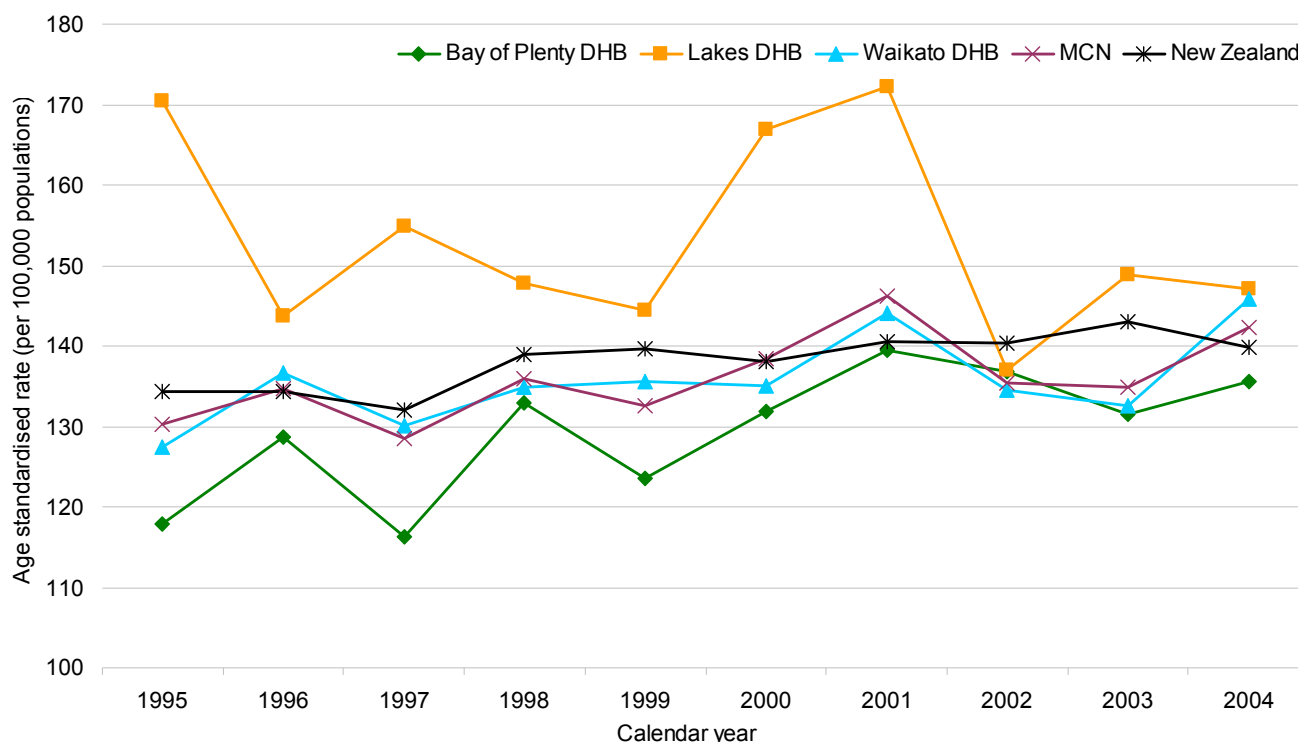
* Percentage changes from 1995 to 2005.

Source: TAS Data Cubes: N00_CUBE_MORT.

Age standardised rates, for cancer mortality within the Midland Cancer Network area, showed the Lakes DHB consistently had the highest rates of cancer mortality ahead of the other Midland Cancer Network DHBs. Bay of Plenty DHB had slightly lower rates of cancer mortality, when compared with the other regions studied. For 2002 and 2004, rates appear similar for all Midland Cancer Network DHBs and are on par with the New Zealand rate (

Figure 29).

Figure 29: Age standardised rates for all cancer deaths, for the Midland Cancer Network area and New Zealand, 2000 - 2004

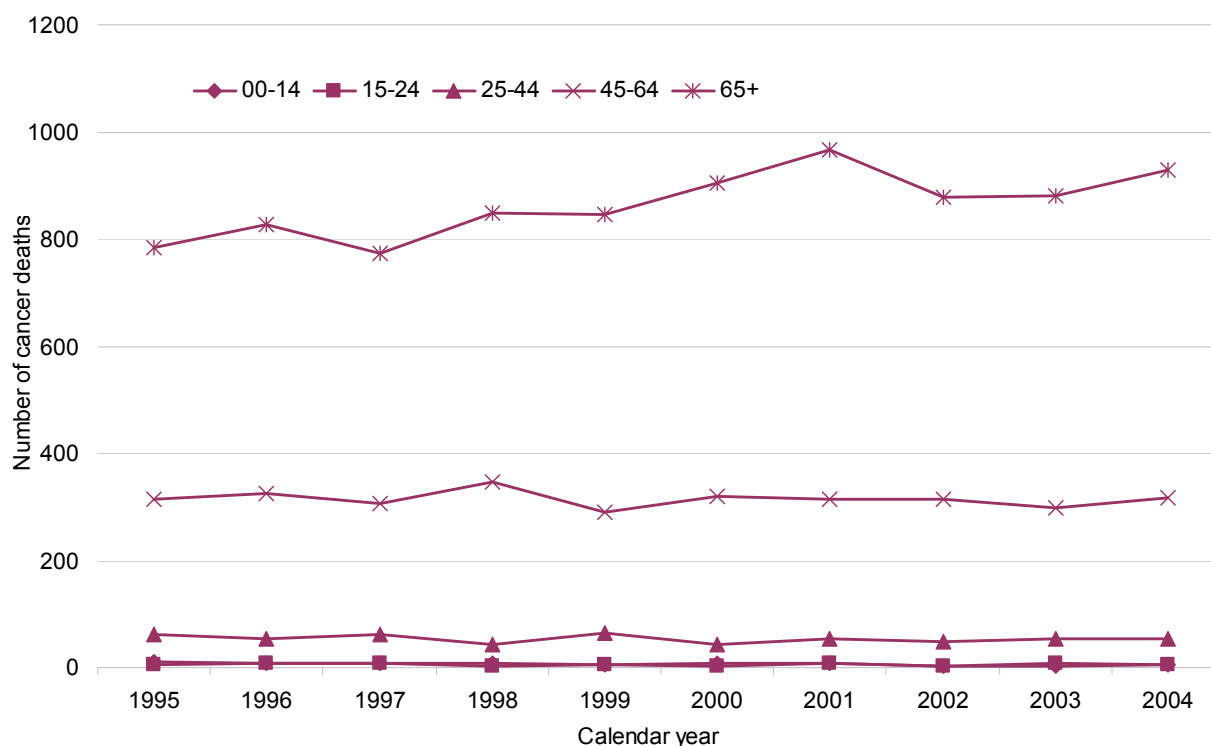


Source: TAS Data Cubes: N00_CUBE_MORT and Statistics NZ; Census 2006.

3.4.3. Mortality by age

The number of cancer deaths increased with age. For the time period 1995 - 2004, people aged 65 or older had notably higher numbers of cancer deaths than the younger age groups (Figure 30).

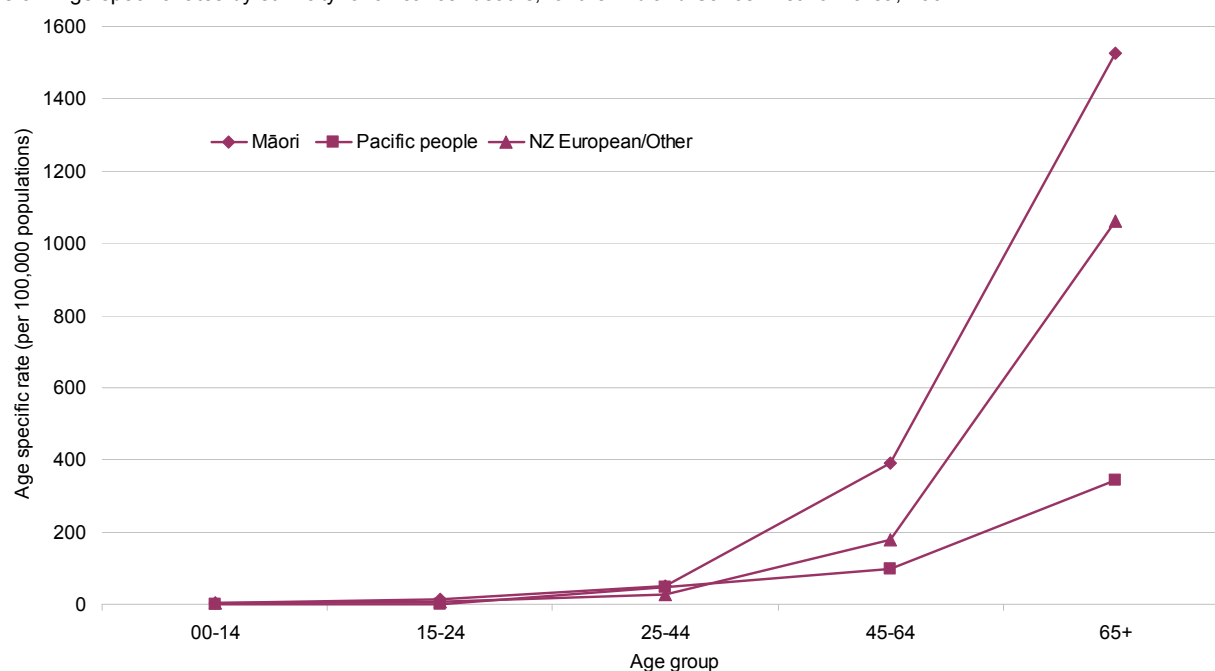
Figure 30: Number of all cancer deaths, for the Midland Cancer Network area, by age group, 1995 – 2004



Source: TAS Data Cubes: N00_CUBE_MORT.

Age specific rates, for cancer by ethnicity, show that Māori had the highest rates of cancer mortality compared with the NZ European/Other and Pacific people ethnicities. This trend was reflected through all age groups observed. The highest rate of cancer mortality were for those aged 65 years or older, with the highest rates for Māori (Figure 31).

Figure 31: Age specific rates by ethnicity for all cancer deaths, for the Midland Cancer Network area, 2004

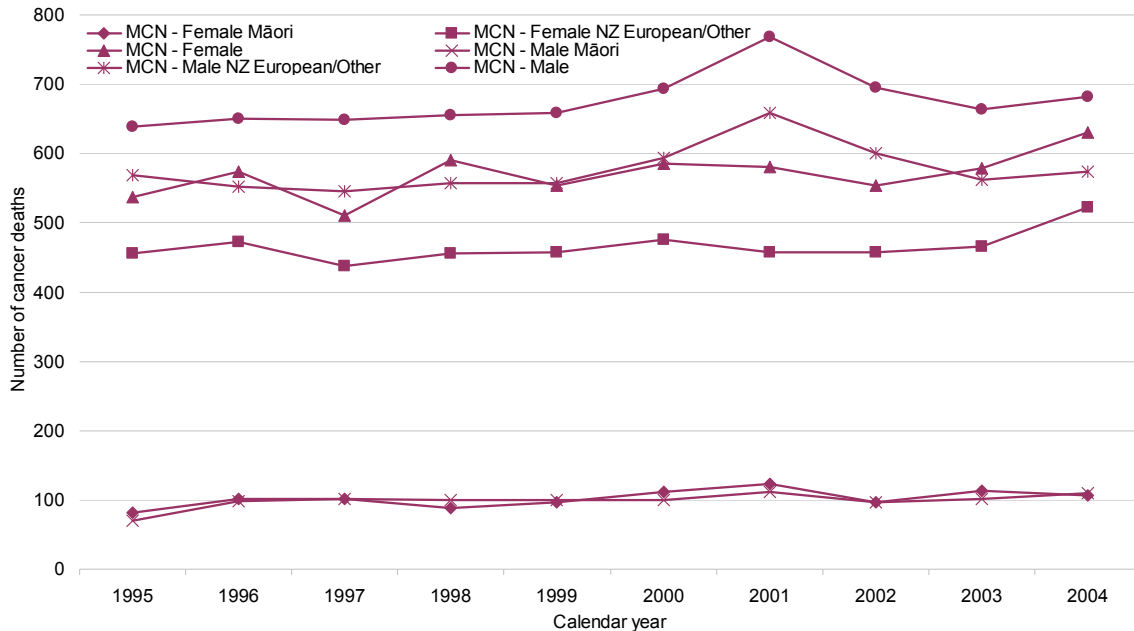


Source: TAS Data Cubes: N00_CUBE_MORT.

3.4.4. Mortality by gender

Within the Midland Cancer Network area the number of deaths caused by cancer remained stable over the time period 1995 - 2004 (Figure 32). There were a couple of peaks throughout the years with the most notable peak occurring for total males within Midland Cancer Network during 2001 (a total of 769 deaths).

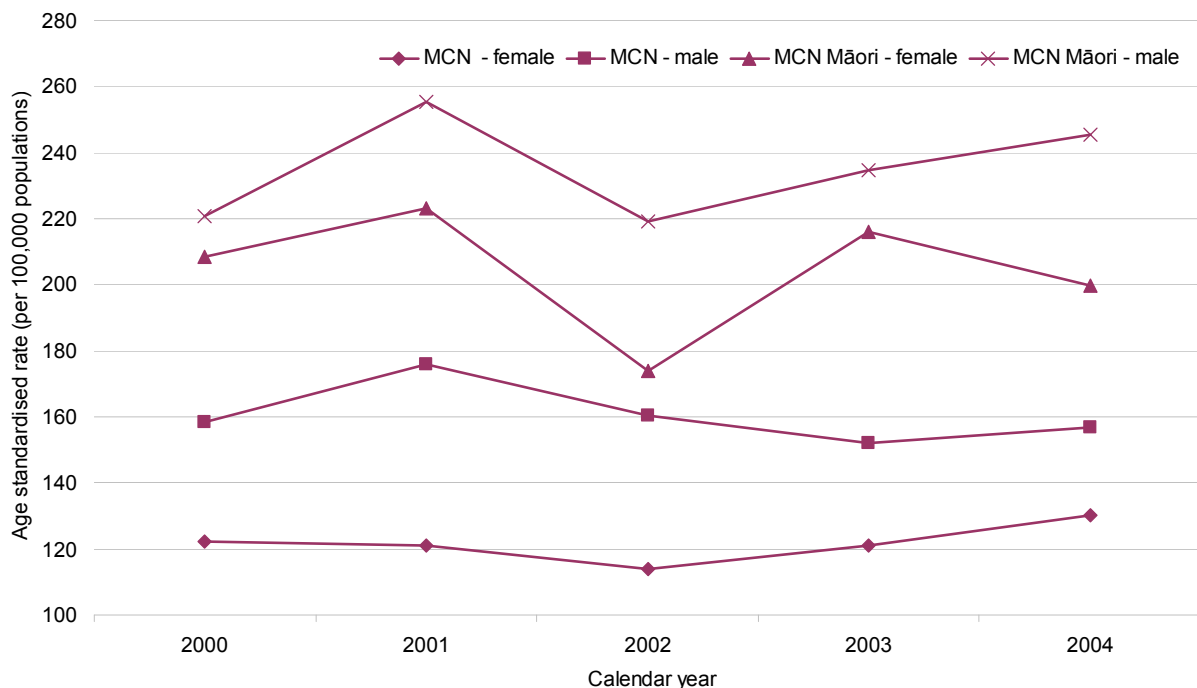
Figure 32: Number of cancer deaths, for the Midland Cancer Network area, by gender and ethnicity, 1995 - 2004



Source: TAS Data Cubes: N00_CUBE_MORT.

Age specific rates for cancer by the selected ethnicities and gender in the Midland Cancer Network area, show Māori males had the highest rates of cancer mortality followed by Māori females. The Midland Cancer Network female and male rates were both lower than the Midland Cancer Network Māori males and females (Figure 33).

Figure 33: Age standardised rates for all cancer deaths, for the Midland Cancer Network area, by gender and ethnicity, 2000 - 2004

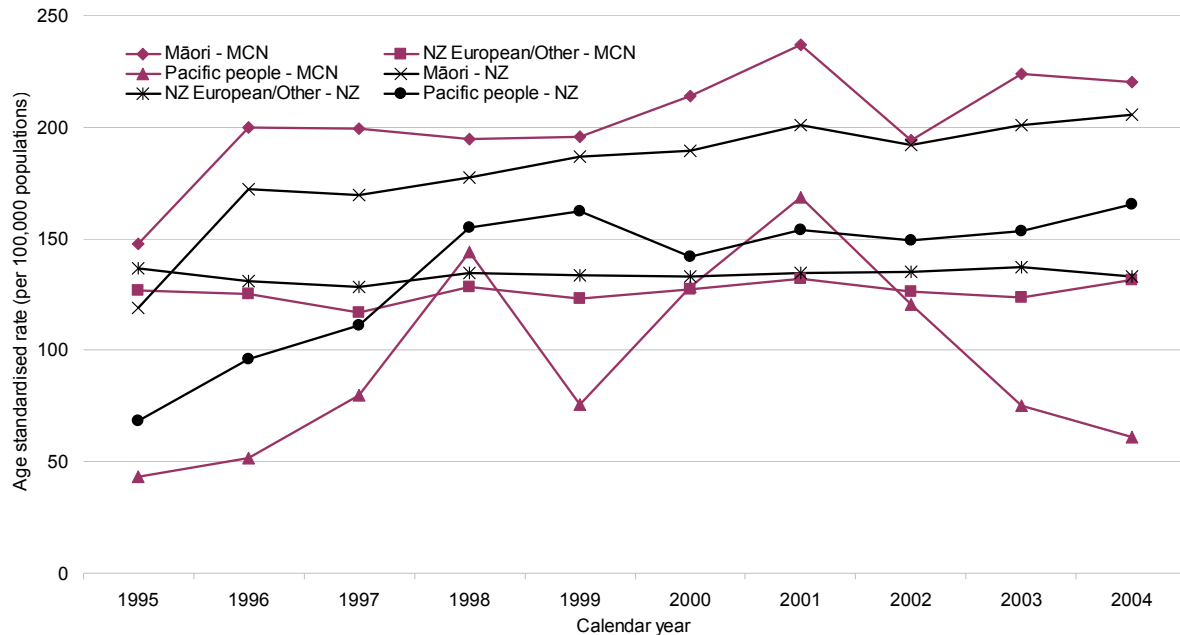


Source: TAS Data Cubes: N00_CUBE_MORT and Statistics NZ; Census 2006.

3.4.5. Mortality by ethnicity

Age standardised rates show that Māori had the highest rates of cancer deaths over the observed time period (1995 – 2004). In comparison to the national rate of Māori cancer deaths, the Midland Cancer Network rates were notably higher for the time period 1995 - 2004. This was in contrast to the Midland Cancer Network rates for Pacific people and NZ European/Other where the national rates were higher over the same period. Pacific people in the Midland Cancer Network area had the lowest rates of cancer mortality (Figure 34).

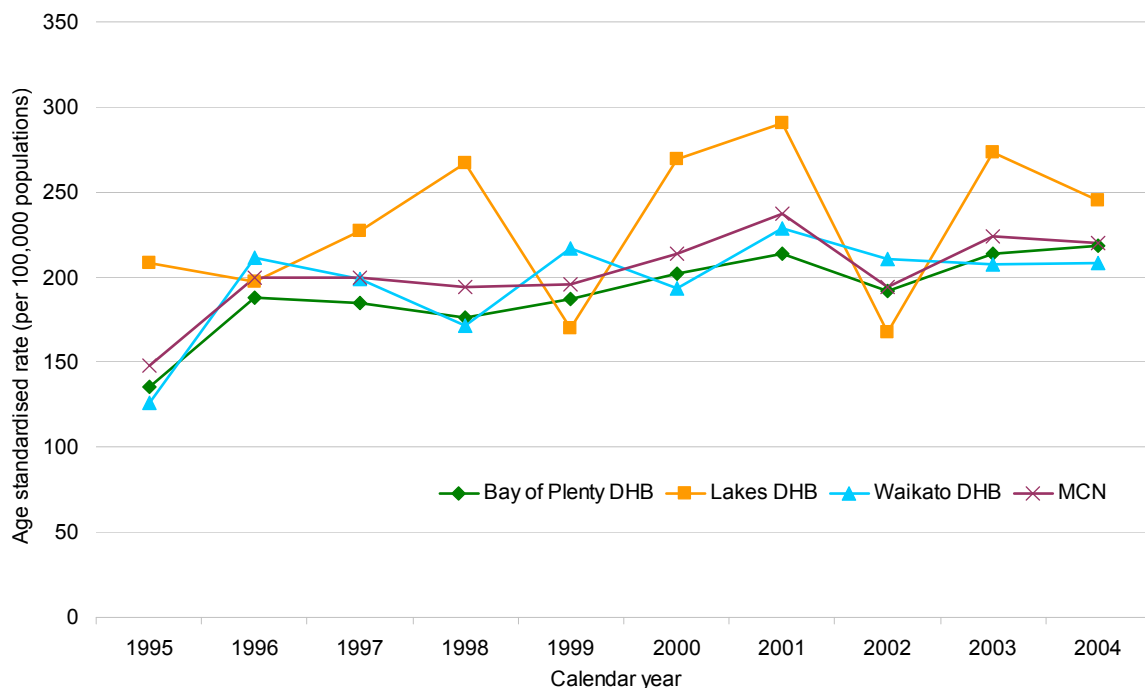
Figure 34: Age standardised rates for all cancer deaths, for the Midland Cancer Network area and New Zealand, by ethnicity, 2000 - 2004



Source: TAS Data Cubes: N00_CUBE_MORT and Statistics NZ; Census 2006.

Age standardised rates show Lakes DHB has had the highest rates of Māori cancer mortality than the other Midland Cancer Network DHBs. The rates for the Bay of Plenty DHB and the Waikato DHB were similar (Figure 35).

Figure 35: Māori age standardised rates for all cancer deaths, for the Midland Cancer Network area 1995 - 2004

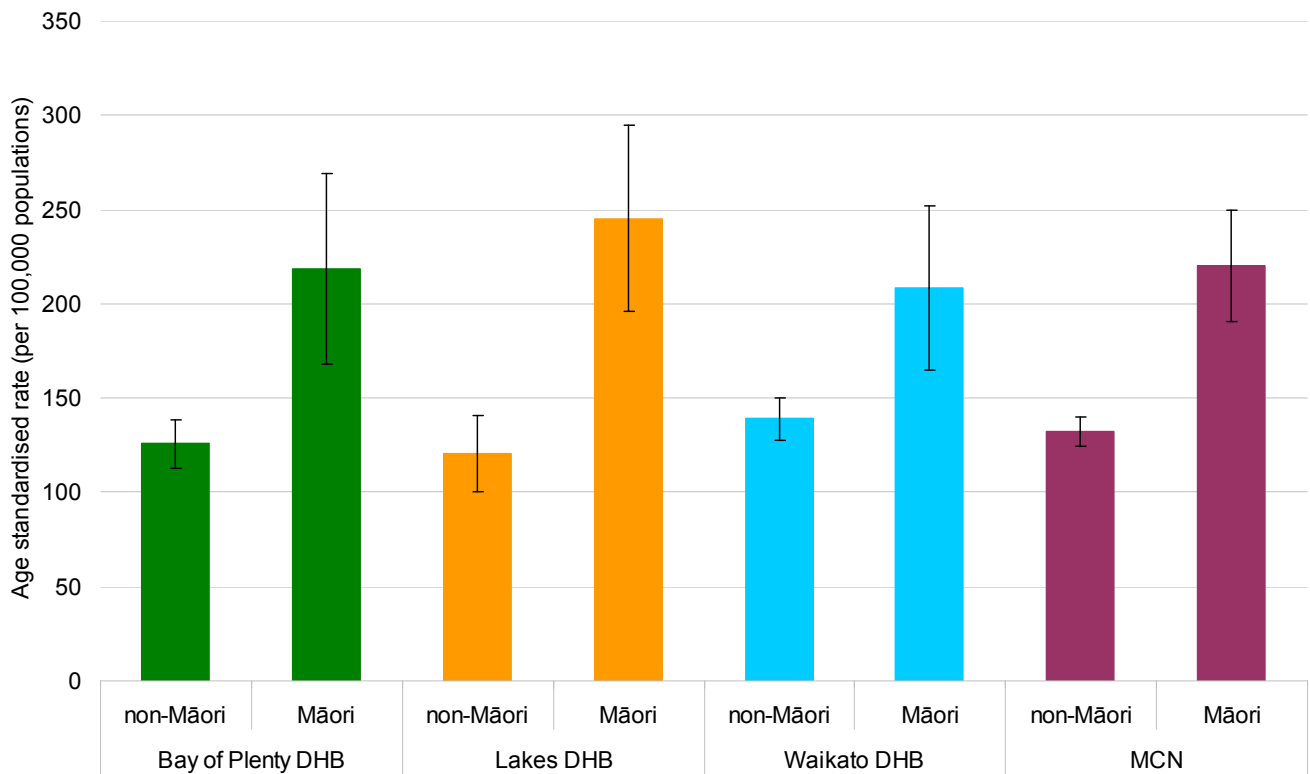


Source: TAS Data Cubes: N00_CUBE_MORT and Statistics NZ; Census 2006.

Cancer health needs in the Midland Cancer Network area, 2009

The data shows that Māori had significantly higher levels of cancer mortality in all Midland Cancer Network DHBs as compared with non-Māori. The difference between cancer mortality for Māori and non-Māori was highest in the Lakes DHB (Figure 36).

Figure 36: Age standardised rate for all cancer deaths, for non-Māori and Māori, for the Midland Cancer Network area, 2004



Source: TAS Data Cubes: N00_CUBE_MORT and Statistics NZ; Census 2006.

3.4.6. Mortality by territorial authority

Bay of Plenty DHB

The number of cancer deaths within the Bay of Plenty DHB for the time period 1995 – 2004 showed an increasing trend for all territorial authorities (18% overall). Numbers were small for some territorial authorities, but the percentage increase was the highest for these areas. For instance, the percentage increase for Opotiki was 500%, however, the numbers went from four in 1995 to 24 in 2004.

Table 15: Number of all cancer deaths, for the Bay of Plenty DHB, by territorial authority, 1995 - 2004

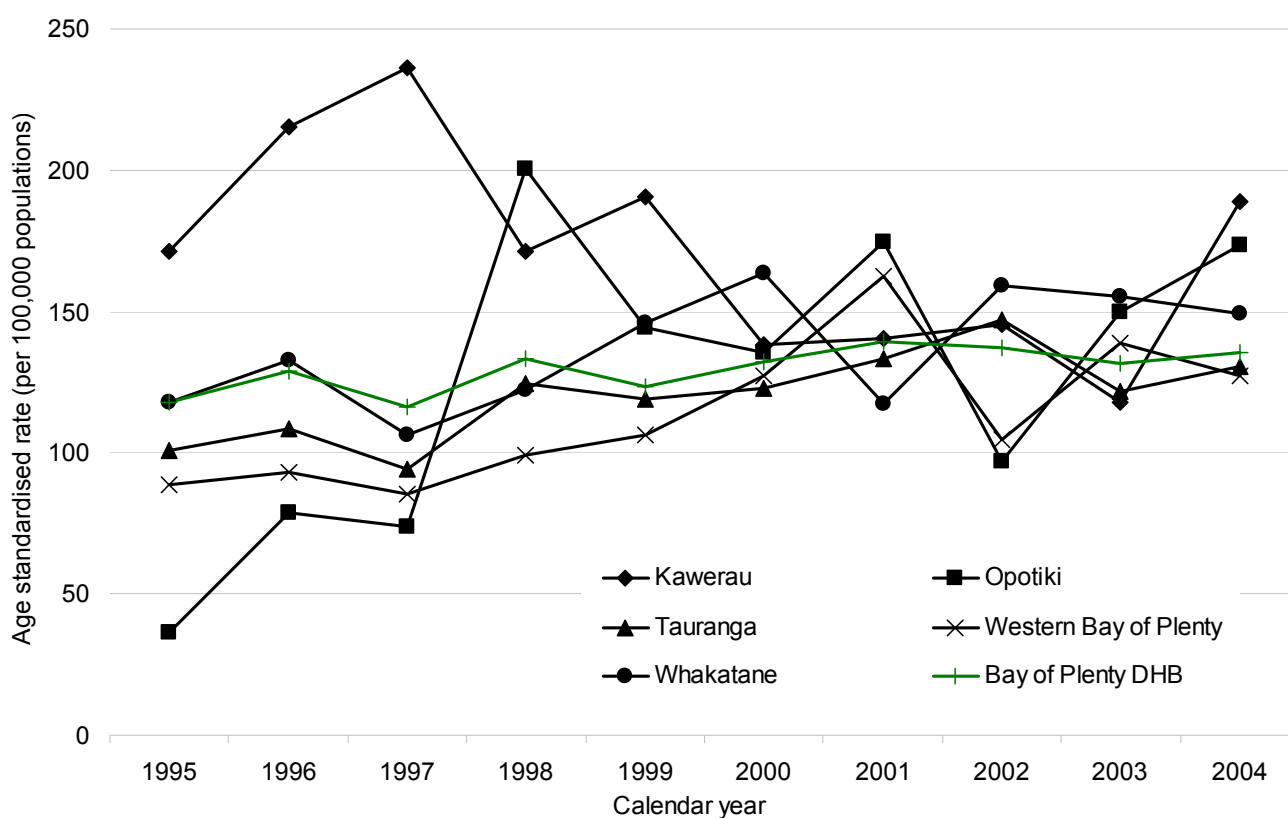
Area	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	% Diff*
Kawerau	15	18	20	14	17	12	12	14	10	17	13%
Opotiki	4	10	9	25	18	18	20	13	21	24	500%
Tauranga	179	191	166	219	212	229	240	260	227	234	31%
Undefined	52	57	58	32	0	0	0	0	0	0	-
Western Bay of Plenty	63	66	54	70	77	91	118	75	99	88	40%
Whakatane	52	59	46	58	66	74	54	73	73	68	31%
Bay of Plenty DHB	365	401	353	418	390	424	444	435	430	431	18%

*Percentage changes from 1995 to 2005.

Source: TAS Data Cubes: N00_CUBE_MORT.

Age standardised rates for cancer deaths show Kawerau had the highest rates during the time period 1995 – 2004. However the mortality rates in Kawerau decreased during the time period 2000 - 2003. Overall, Western Bay of Plenty consistently had the lowest rates of cancer mortality for the time period 1995 - 2004 (Figure 37).

Figure 37: Age standardised rate for all cancer deaths, for the Bay of Plenty DHB, by territorial authority, 1995 - 2004



Source: TAS Data Cubes: N00_CUBE_MORT and Statistics NZ; Census 2006.

Lakes DHB

The number of cancer deaths within the Lakes DHB for the time period 1995 – 2004 showed overall a decreasing trend for the two territorial authorities (14% overall)(Table 16).

Table 16: Number of all cancer deaths, for Lakes DHB, by territorial authority, 1995 - 2004

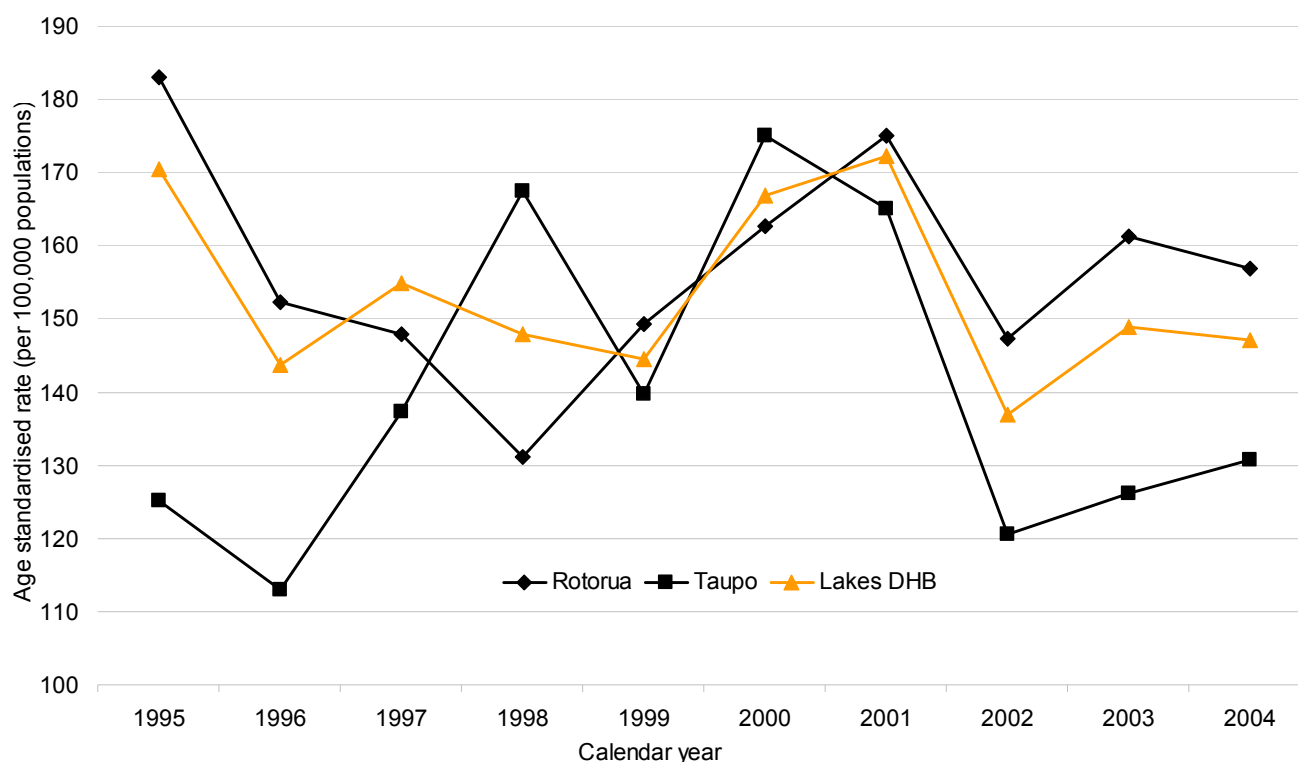
Area	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	% Diff*
Rotorua	152	127	124	109	125	137	146	124	134	130	-14%
Taupo	59	54	66	81	62	85	83	57	62	61	3%
Undefined	10	7	14	4	0	0	0	0	0	0	-100%
Lakes DHB	221	188	204	194	187	222	229	181	196	191	-14%

*Percentage changes from 1995 to 2005.

Source: TAS Data Cubes: N00_CUBE_MORT.

Age standardised rates for cancer death show similar rates for Taupo and Rotorua territorial authorities (Figure 38). Rotorua territorial authority showed the highest age standardised rate in 2004 of 157 per 100,000 population.

Figure 38: Age standardised rates for all cancer deaths, for the Lakes DHB, by territorial authority, 1995 - 2004



Source: TAS Data Cubes: N00_CUBE_MORT and Statistics NZ; Census 2006.

Waikato DHB

The number of cancer deaths within the Waikato DHB for the time period 1995 – 2004 showed an increasing trend for all territorial authorities (17% overall). Some of these territorial authorities decreased in number while others increased. Hauraki had the largest percentage increase of 173%, although numbers were small (from 15 in 1995 to 41 in 2004). Waitomo had a decrease in cancer deaths (-18%) from 17 in 1995 to 14 in 2004 (Table 17).

Table 17: Number of all cancer deaths, for the Waikato DHB, by territorial authority, 1995 – 2004

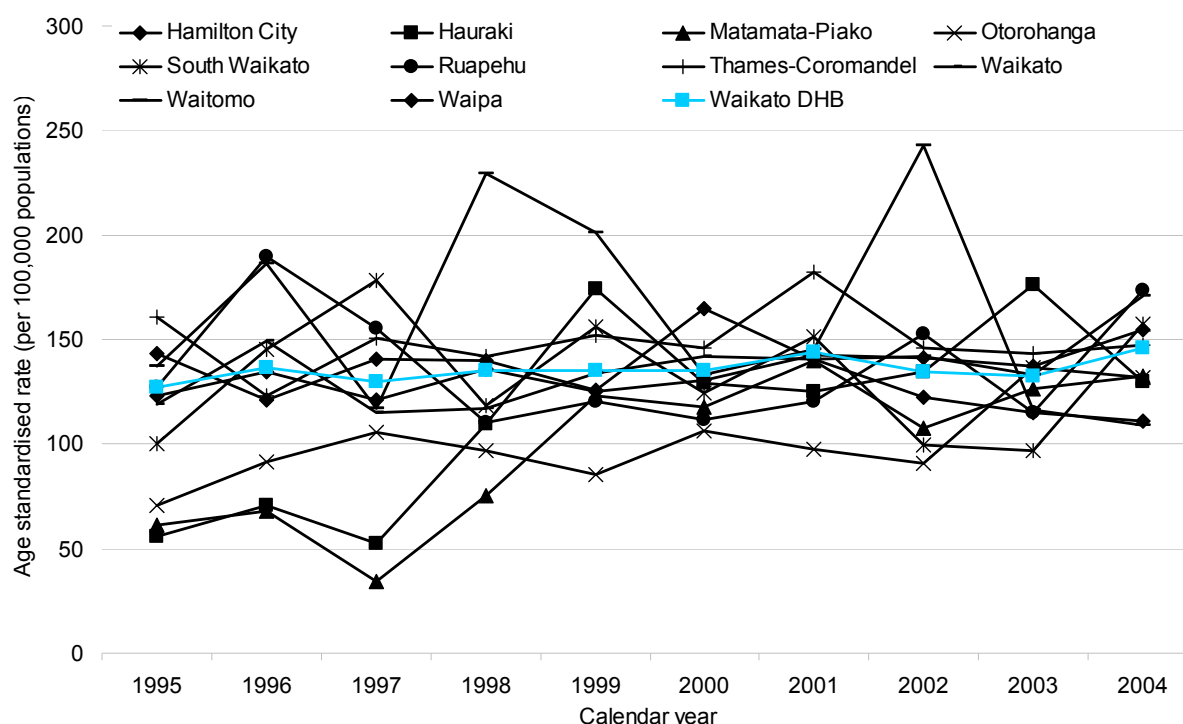
Area	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	% Diff
Hamilton City	183	202	180	204	187	196	216	213	204	233	27%
Hauraki	15	21	15	34	50	39	39	41	51	41	173%
Matamata-Piako	31	29	18	38	61	57	66	50	62	63	103%
Otorohanga	8	10	12	11	9	12	11	10	15	15	88%
Ruapehu	22	32	25	19	20	19	20	26	19	30	36%
South Waikato	29	42	55	36	48	37	45	30	28	47	62%
Thames-Coromandel	86	68	79	74	87	76	98	79	77	81	-6%
Undefined	44	49	52	39	0	0	0	0	0	0	-100%
Waikato	63	79	60	63	70	75	75	76	71	90	43%
Waipa	92	81	91	89	78	105	88	79	75	76	-17%
Waitomo	17	22	15	27	25	17	18	30	14	14	-18%
Waikato DHB	590	635	602	634	635	633	676	634	616	690	17%

* Percentage changes from 1995 to 2005.

Source: TAS Data Cubes: N00_CUBE_MORT.

Age standardised rates show that during the time period 1995 – 1997, Matamata-Piako territorial authority had the lowest rate of cancer mortality, but during the years 1998 - 2004 the rate had increased and recorded similar rates to other territorial authorities within the Waikato DHB. Otorohanga territorial authority had a steadily low rate of cancer mortality during the time period 1995 - 2004. Waitomo territorial authority had the two highest rates of cancer mortality over the observed time period with a rate of 229 in 1998 and a rate of 243 in 2002 (Figure 39).

Figure 39: Age standardised rates for all cancer deaths, for the Waikato DHB, by territorial authority, 1995 - 2004



Source: TAS Data Cubes: N00_CUBE_MORT and Statistics NZ; Census 2006.

Avoidable cancer hospitalisations

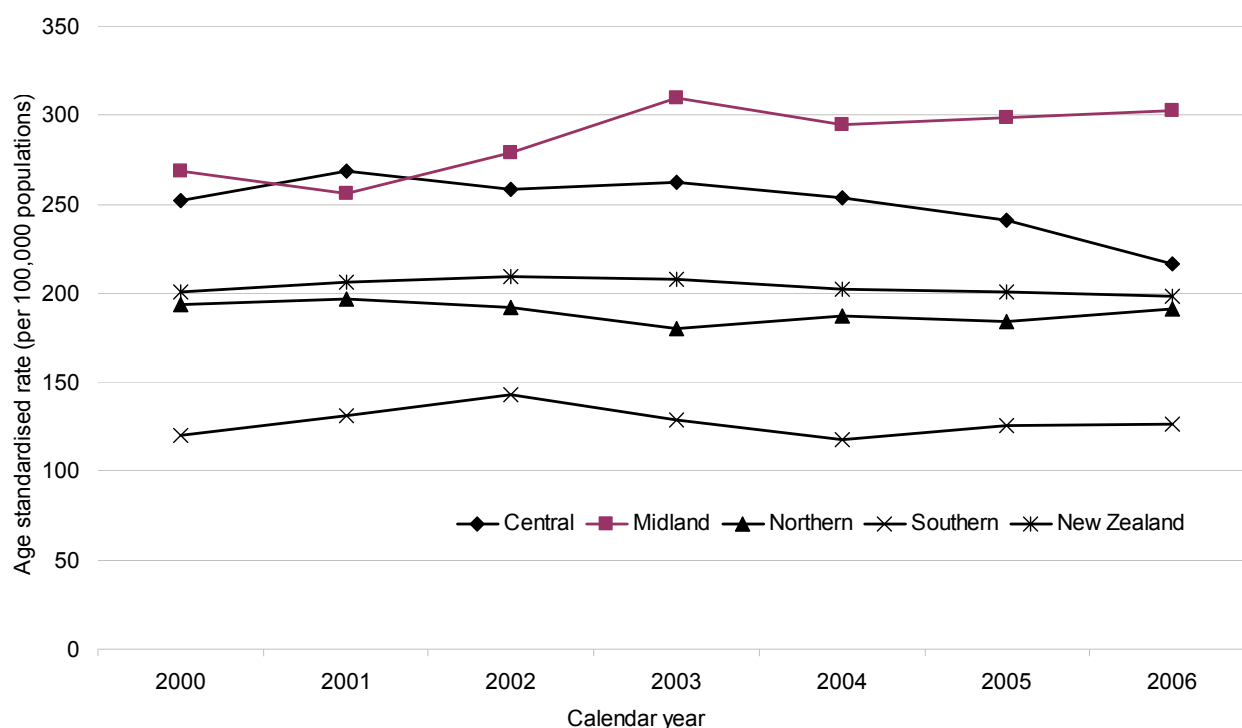
Avoidable hospitalisations are hospital admissions that could potentially have been avoided by earlier intervention. Most potentially avoidable hospitalisations “are conditions that could have been identified and treated earlier by either public health or primary healthcare interventions, thereby preventing deterioration” that might lead to a hospital admission or even death¹¹. Examples include cervical and breast cancer; infectious, cardiovascular, and vaccine preventable diseases; lung disease; and early detection and excision of melanoma¹¹.

In this section the following cancer types have been included: cervical, colorectal, lung, oral, and melanoma (based on the primary diagnostic code).

3.4.7. National comparisons

Age standardised rates, show the Midland Cancer Network area had the highest rates per 100,000 population of avoidable cancer related hospitalisations for the time period 2000 – 2006 as compared with the other cancer networks. The Midland Cancer Network rate was consistently higher than the national rate (Figure 40).

Figure 40: Age standardised rates for all avoidable cancer hospitalisations, by cancer network and for New Zealand, 2000 – 2006



Cancer types included: Breast, Cervical, Colorectal, Lung, Oral, and Melanoma; based on primary diagnostic code.

Source: TAS Data Cubes: M03_CUBE_AGE_AVD_MORB and Statistics NZ; Census 2006.

Although Waikato DHB had the lowest percentage increase in avoidable cancer hospitalisations for the period 2000 – 2006 (10%), it had the highest number of avoidable cancer related hospitalisations out of all Midland Cancer Network DHBs (1146 in 2000 to 1261 in 2006) (Table 18).

Table 18: Number of avoidable cancer hospitalisations, for the Midland Cancer Network area and New Zealand, 2000 – 2006

Area	2000	2001	2002	2003	2004	2005	2006	% Diff*
Bay of Plenty DHB	782	774	932	961	880	958	911	16%
Lakes DHB	315	278	296	326	353	357	371	18%
Waikato DHB	1146	1068	1098	1288	1246	1186	1261	10%
MCN	2243	2120	2326	2575	2479	2501	2543	13%
New Zealand	11,135	11,348	11,663	11,440	11,293	11,246	11,164	0%

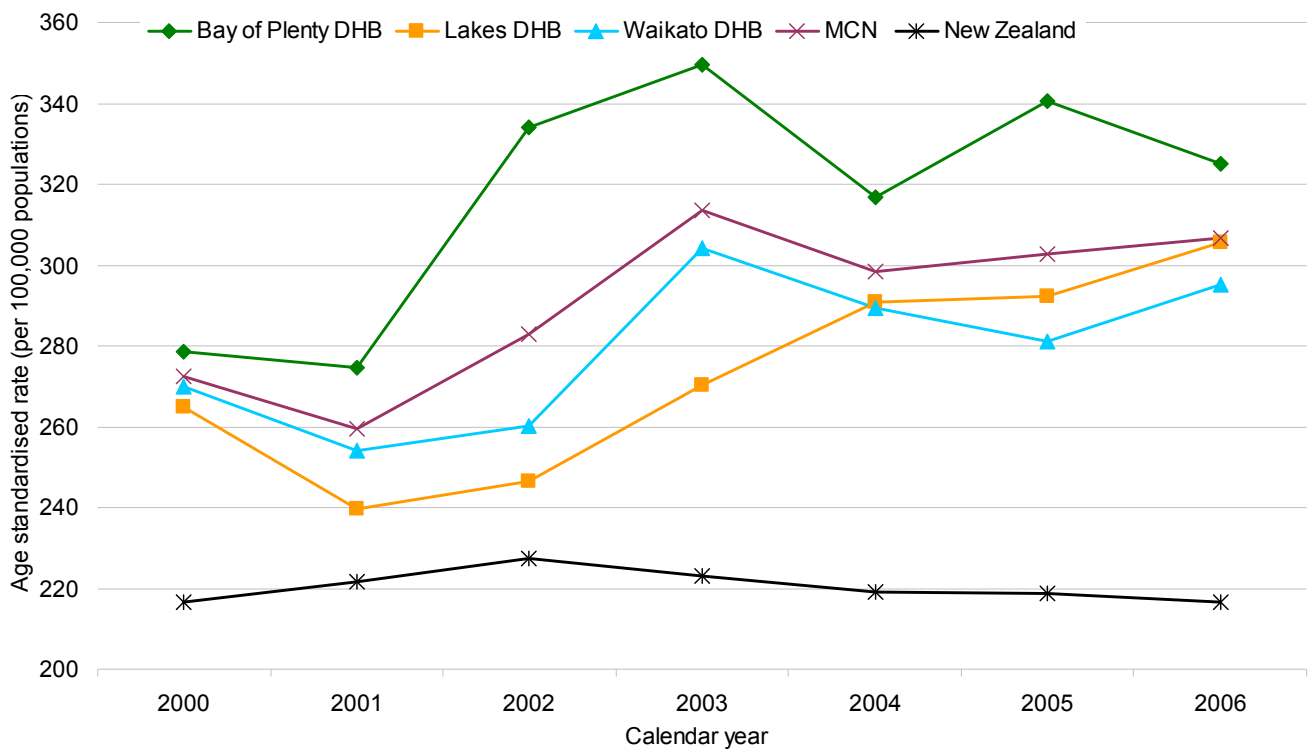
Cancer types included: Breast, Cervical, Colorectal, Lung, Oral, and Melanoma; based on primary diagnostic code.

* Percentage changes from 1995 to 2005.

Source: TAS Data Cubes: M03_CUBE_AGE_AVD_MORB.

Age standardised rates show the Bay of Plenty DHB had the highest rates of avoidable cancer related hospitalisations during the time period 2000 - 2006. All Midland Cancer Network DHBs had rates of avoidable cancer related hospitalisations consistently higher than the national rate (Figure 41).

Figure 41: Age standardised rates for all avoidable cancer hospitalisations, for the Midland Cancer Network area and New Zealand, 2000 – 2006

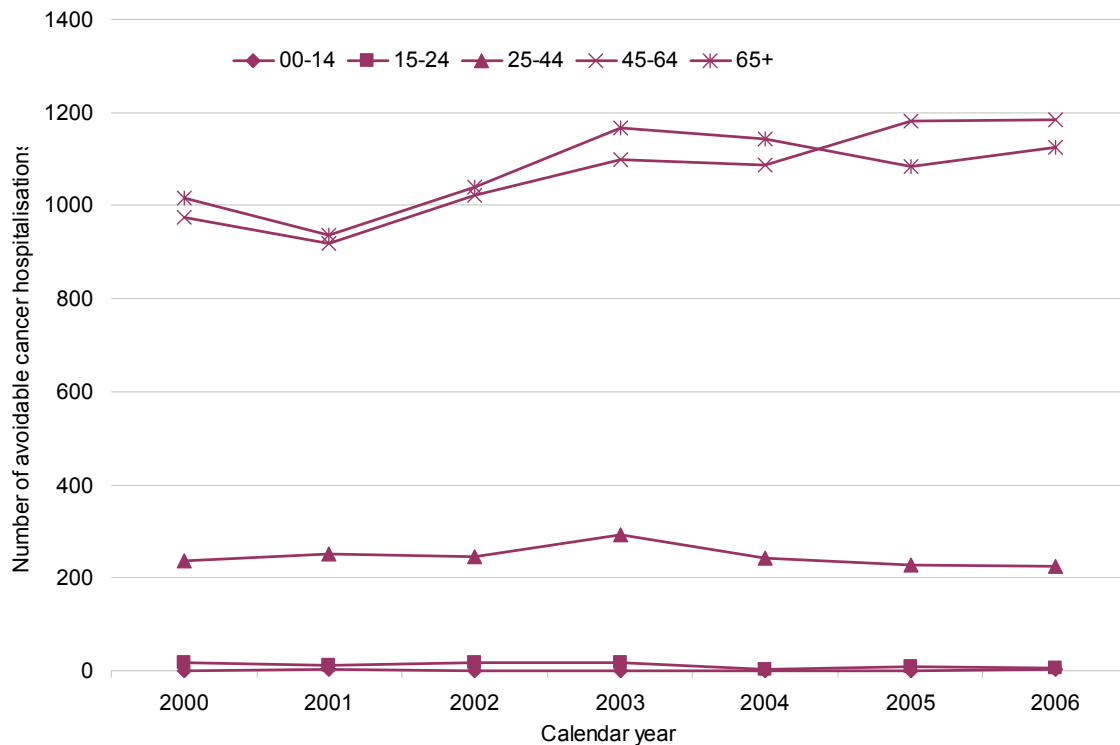


Cancer types included: Breast, Cervical, Colorectal, Lung, Oral, and Melanoma; based on primary diagnostic code.
Source: TAS Data Cubes: M03_CUBE_AGE_AVD_MORB and Statistics NZ; Census 2006.

3.4.8. Avoidable cancer hospitalisations by age

People aged 45 years or older had the highest number of avoidable cancer related hospitalisations (Figure 42).

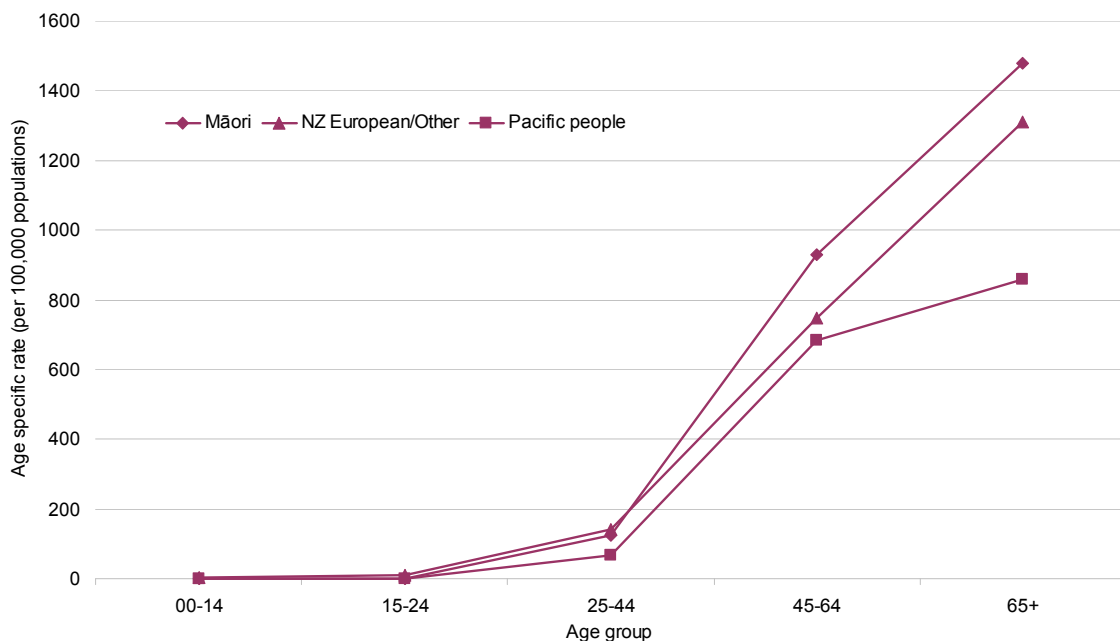
Figure 42: Number of avoidable cancer hospitalisations, for the Midland Cancer Network area, by age group, 2000 – 2006



Cancer types included: Breast, Cervical, Colorectal, Lung, Oral, and Melanoma; based on primary diagnostic code.
Source: TAS Data Cubes: M03_CUBE_AGE_AVD_MORB.

Incidence of avoidable hospitalisations increased with age across all ethnicities (Figure 43). Age specific rates for 2006 show Māori aged 65 years and over had the highest rates of avoidable cancer related hospitalisations.

Figure 43: Age specific rates for all avoidable cancer hospitalisations, for the Midland Cancer Network area, by ethnicity, 2006

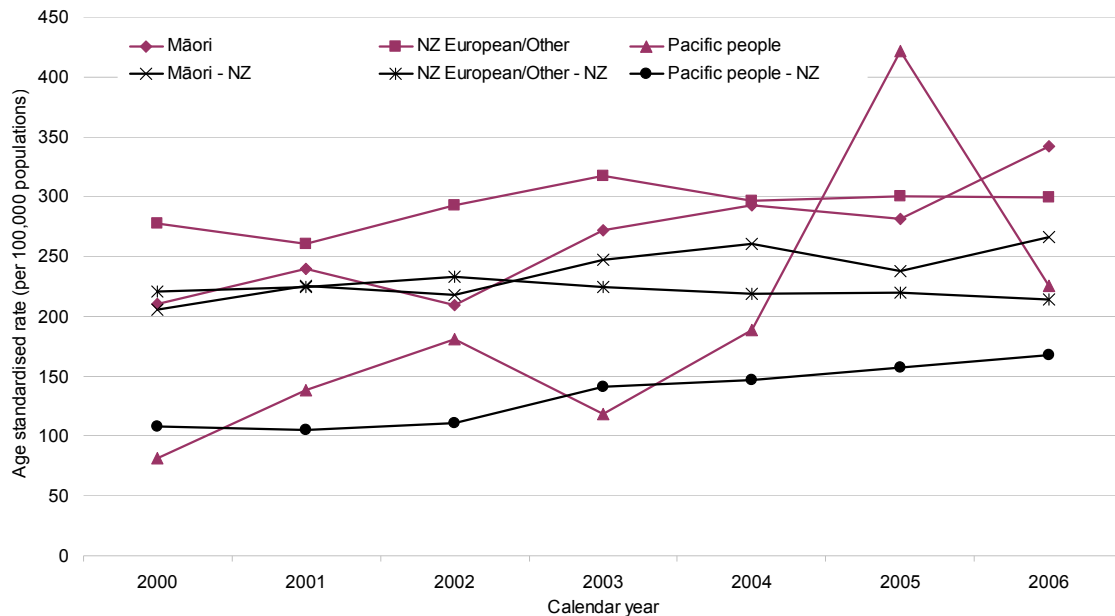


Cancer types included: Breast, Cervical, Colorectal, Lung, Oral, and Melanoma; based on primary diagnostic code.
Source: TAS Data Cubes: M03_CUBE_AGE_AVD_MORB and Statistics NZ; Census 2006.

3.4.9. Avoidable cancer hospitalisations by ethnicity

Age standardised rates show that the NZ European/Other ethnicity had the highest rates of avoidable cancer hospitalisations during the time period 2000 - 2006. Midland Cancer Network Māori rates have gradually increased and were the highest compared with other ethnicities in 2006. Although peaking in 2004, Pacific people generally had the lowest rates of avoidable hospitalisations. Midland Cancer Network rates across ethnicities appeared consistently higher than national rates (Figure 44).

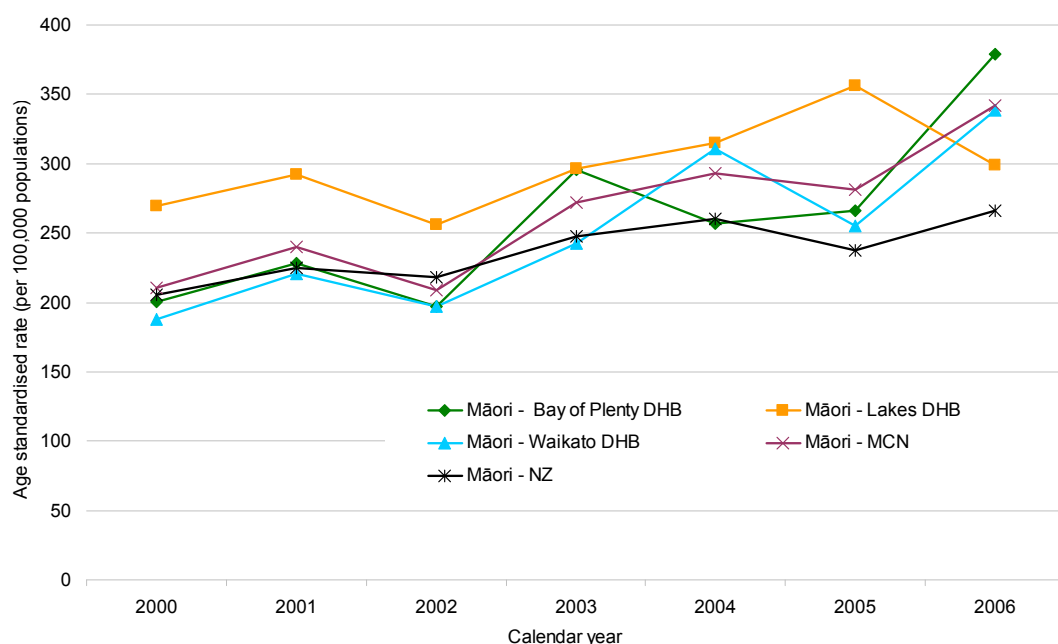
Figure 44 : Age standardised rates for avoidable cancer hospitalisations, for the Midland Cancer Network area and New Zealand, by ethnicity, 2000 – 2005



Cancer types included: Breast, Cervical, Colorectal, Lung, Oral, and Melanoma; based on primary diagnostic code.
Source: TAS Data Cubes: M03_CUBE_AGE_AVD_MORB and Statistics NZ; Census 2006.

Age standardised rates show Lakes DHB had the highest rates of avoidable cancer hospitalisations for Māori during the time period 2000 - 2006. Rates have generally increased for all of Midland Cancer Network DHBs, although the Lakes DHB rate decreased in 2006 from the previous year. The national Māori rate is lower than all Māori rates for Midland Cancer Network DHBs (Figure 45).

Figure 45: Age standardised rates for avoidable cancer hospitalisations for Māori, for the Midland Cancer Network area, 2000 - 2006

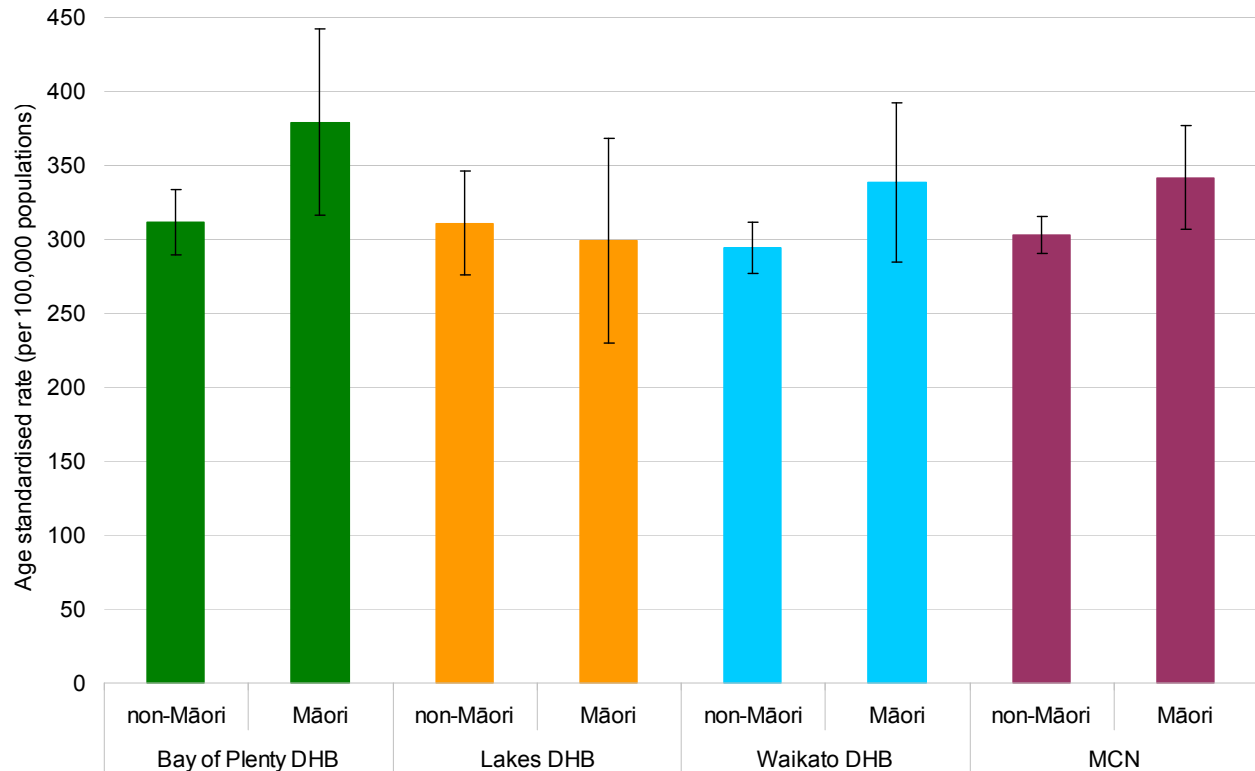


Cancer types included: Breast, Cervical, Colorectal, Lung, Oral, and Melanoma; based on primary diagnostic code.
Source: TAS Data Cubes: M03_CUBE_AGE_AVD_MORB and Statistics NZ; Census 2006.

Cancer health needs in the Midland Cancer Network area, 2009

Māori had higher rates of avoidable cancer hospitalisations compared with non-Māori in all Midland Cancer Network DHBs apart from Lakes DHB where non-Māori had a slightly higher rate of avoidable cancer hospitalisations (Figure 46).

Figure 46: Age standardised rates for avoidable cancer hospitalisations, for the Midland Cancer Network area, by ethnicity, 2006



Cancer types included: Breast, Cervical, Colorectal, Lung, Oral, and Melanoma; based on primary diagnostic code.
Source: TAS Data Cubes: M03_CUBE_AGE_AVD_MORB and Statistics NZ; Census 2006.

⁹ Minister of Health. (2003). The New Zealand cancer control strategy. Wellington: Ministry of Health and the New Zealand Cancer Control Trust.

¹⁰ Robson, B. & Harris, R. (eds). (2007). Hauora: Māori standards of health IV. A study of the years 2000–2005. Wellington: Te Rōpu Rangahau Hauora a Eru Pōmare.

¹¹ Sheerin, I., Allen, G., Henare, M., & Craig, K. (2006). Avoidable hospitalisations: potential for primary and public health initiatives in Canterbury, New Zealand. NZMJ. 119,1236. Retrieved February 20, 2009, from <http://www.nzma.org.nz/journal/119-1236/2029/>.

4. Spotlight on common cancers

4.1. Summary

In terms of incidence of cancer, the top five cancers for all ethnicities in New Zealand and the Midland Cancer Network area were colorectal, prostate, breast, melanoma, and lung. These cancers were also the most common fatal cancers, with the exception of melanoma which did not fall into the top fatal cancer category.

Proportionally, Māori had the highest incidence of lung cancer, while people of NZ European/Other ethnicity had the highest incidence of colorectal cancer. Pacific people had the highest proportion of incidence of breast cancer.

One of the key risk factors of lung cancer is smoking and Māori have a much higher rate of daily smoking than other ethnicities, hence lung is the most common cancer in Māori.

Prostate cancer appeared to be the number one common cancer across ethnicities for males in New Zealand and the Midland Cancer Network area. The incidence of breast cancer was the most common cancer for females of all ethnicities both for New Zealand and the Midland Cancer Network area.

Rates for the incidence of melanoma for all Midland Cancer Network DHBs were variable for the period 2000 - 2005. Bay of Plenty DHB has had the highest rates since 2001. In 2005, all Midland Cancer Network DHB rates were higher than the New Zealand rate.

Rates for Māori showed the incidence of breast cancer was the common cancer, followed by prostate and lung cancer in the Midland Cancer Network area.

Proportionally, Māori had the highest mortality for lung cancer while people of NZ European/Other ethnicity had the highest mortality for colorectal cancer.

For Māori the proportion of lung cancer mortality was the highest in both New Zealand and the Midland Cancer Network area. Both breast and lung cancer registrations for Māori increased during 1995 – 2004.

Lung cancer appeared to be the number one common fatal cancer across ethnicities for males in New Zealand and the Midland Cancer Network area during 2000 - 2004. In comparison to incidences of cancer for males, prostate was the common cancer rather than lung cancer.

For females lung cancer was generally the common fatal cancer for all ethnicities followed by breast cancer in the Midland Cancer Network area for the period 2000 - 2004. In comparison to incidences of cancer for females, breast was the common cancer rather than lung cancer.

For Māori males in the Midland Cancer Network area, the numbers for lung cancer registrations were the highest above other cancers for the period 1994 - 2004.

4.2. Common cancer incidence

This section outlines the most prevalent cancers recorded within the Midland Cancer Network area. The results have been broken down by age, gender, and ethnicity, with comparisons between the Midland Cancer Network area and New Zealand made.

In New Zealand a total of 93,351 cancer registrations were recorded for the five year time period, 2000 - 2005. Of this total, approximately 16% were residents of the Midland Cancer Network area. The five most frequently occurring cancers, for all ethnicities, in the Midland Cancer Network area and also in New Zealand were colorectal, prostate, breast, melanoma, and lung (Table 19). Colorectal cancer was the greatest contributor to the incidence of cancer, causing 15% of all cancers recorded within the five year time period, 2000 – 2005; followed by prostate (14%); breast (13%); melanoma (12%) and; lung (10%).

Table 19: Prevalence of cancer, for the Midland Cancer Network area and New Zealand, all ethnicities, 2001 - 2005 combined

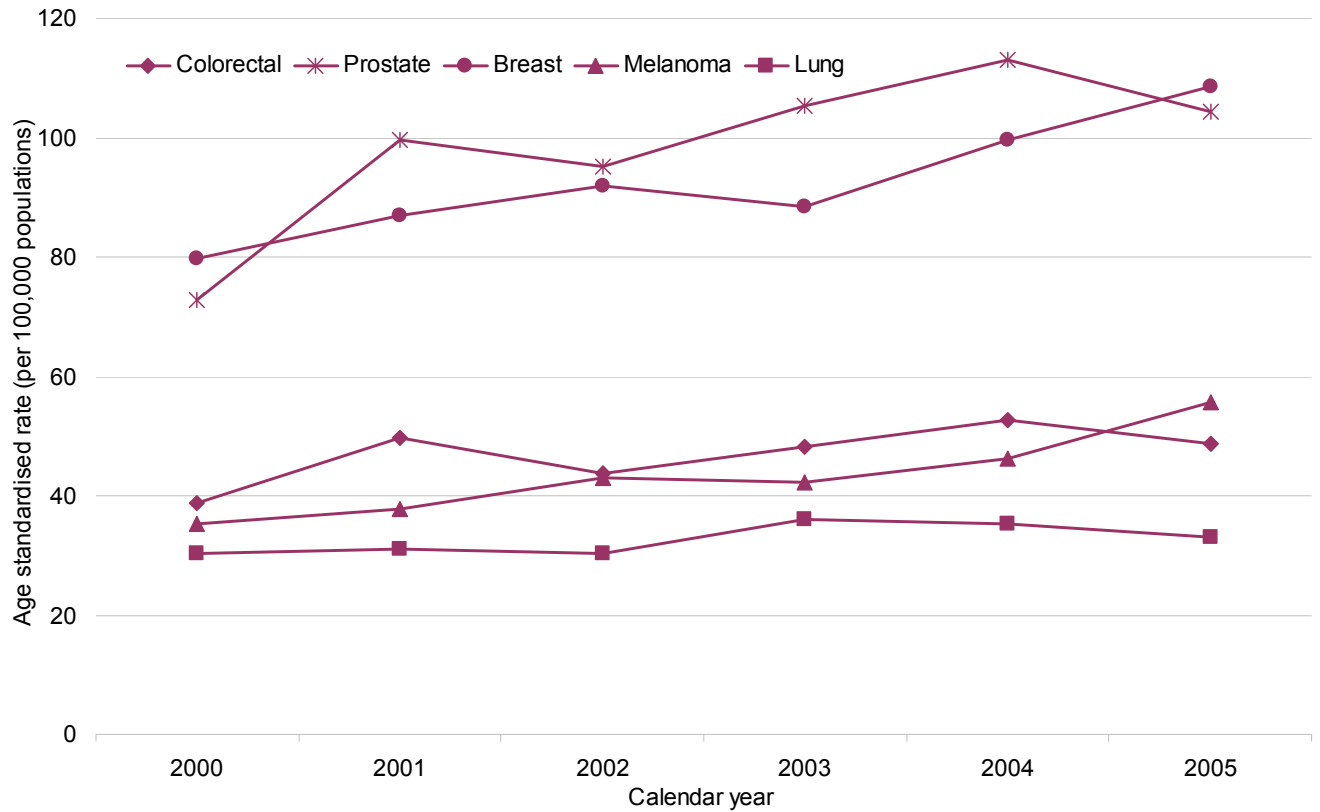
Area	Cancer Site	Number	Percentage
MCN	Colorectal	2263	15%
	Prostate	2155	14%
	Breast	2019	13%
	Melanoma	1839	12%
	Lung	1523	10%
	All other cancers	5461	36%
	Total	15,260	100%
New Zealand	Colorectal	14,032	15%
	Prostate	13,592	15%
	Breast	12,637	14%
	Melanoma	10,251	11%
	Lung	8510	9%
	All other cancers	34,329	36%
	Total	93,351	100%

Source: TAS Data Cubes: K00_CUBE_CANC.

The age standardised rates per 100,000 population for the incidence of cancers within the Midland Cancer Network area showed that breast and prostate cancer were the most prevalent cancers; their rates were considerably higher than colorectal, melanoma and lung cancer (Figure 47). Breast and prostate cancer are predominantly gender specific and in 2005 had an age standardised rate of 108 per 100,000 population and 104 per 100,000 population respectively. This was followed by melanoma (56 per 100,000 population), colorectal (49 per 100,000 population) and lung (33 per 100,000 population).

Cancer health needs in the Midland Cancer Network area, 2009

Figure 47: Age standardised rates for the most common cancers, for the Midland Cancer Network area, 2000 - 2005



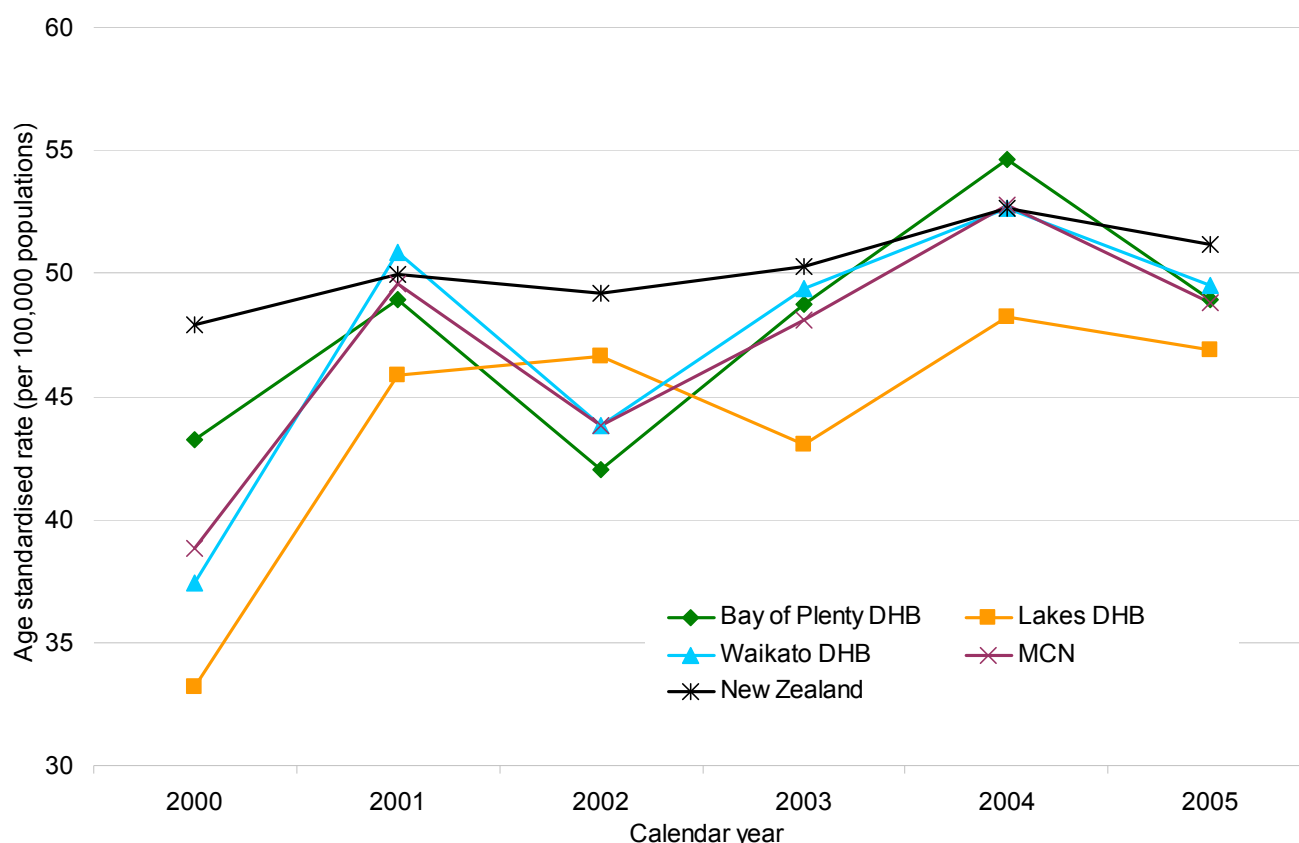
Source: TAS Data Cubes: K00_CUBE_CANC. Statistics NZ; Census 2006.

Colorectal cancer

Studies have identified that colon cancer risk is increased in individuals with a strong family history¹². In May 2008 the government announced that they were committed to a national bowel cancer screening programme be put in place both for men and women. This includes the development of a National Familial Bowel Cancer Registry¹³. Planning for the national bowel cancer screening programme has commenced.

Age standardised rates for the incidence of colorectal cancer across all Midland Cancer Network DHBs have shown similar trends for the time period 2000 - 2005. In 2005 Waikato DHB and Bay of Plenty DHB had the same rate of 49 per 100,000 population and Lakes DHB had 47 per 100,000 population. In 2005 all Midland Cancer Network DHBs showed slightly lower rates than the New Zealand rate (Figure 48).

Figure 48: Age standardised rates for colorectal cancer, for the Midland Cancer Network area and New Zealand, 2000 - 2005



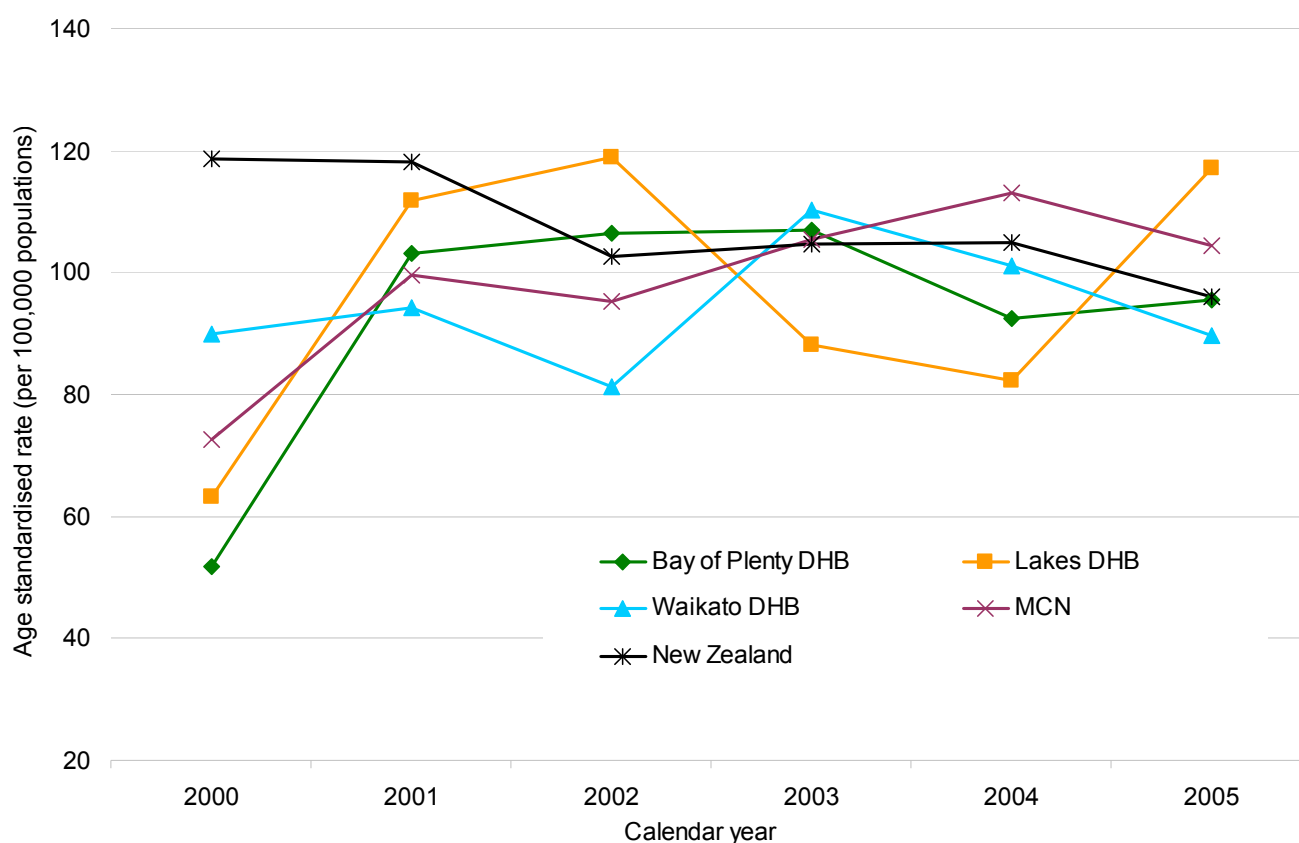
Source: TAS Data Cubes: K00_CUBE_CANC. Statistics NZ; Census 2006.

Prostate cancer

Studies have shown family history as a risk factor for the development of prostate carcinoma¹⁴. Having a close relative with prostate cancer increases the risk of developing the same cancer. Currently there is no national screening programme available for prostate cancer in New Zealand. However, “information about prostate cancer and prostate cancer testing remains under review by the Ministry of Health and interested groups”¹⁵.

Age standardised rates for the incidence of prostate cancer within the Midland Cancer Network area were relatively stable for the time period 2001 - 2005. The Midland Cancer Network rate in 2005 was higher than the New Zealand rate. Lakes DHB had the highest rate (117 per 100,000 population), followed by the Bay of Plenty DHB (95 per 100,000 population) which was the same as the New Zealand rate. Waikato DHB had the lowest rate (90 per 100,000 population) (Figure 49).

Figure 49: Age standardised rates for prostate cancer, for the Midland Cancer Network area and New Zealand, 2000 - 2005



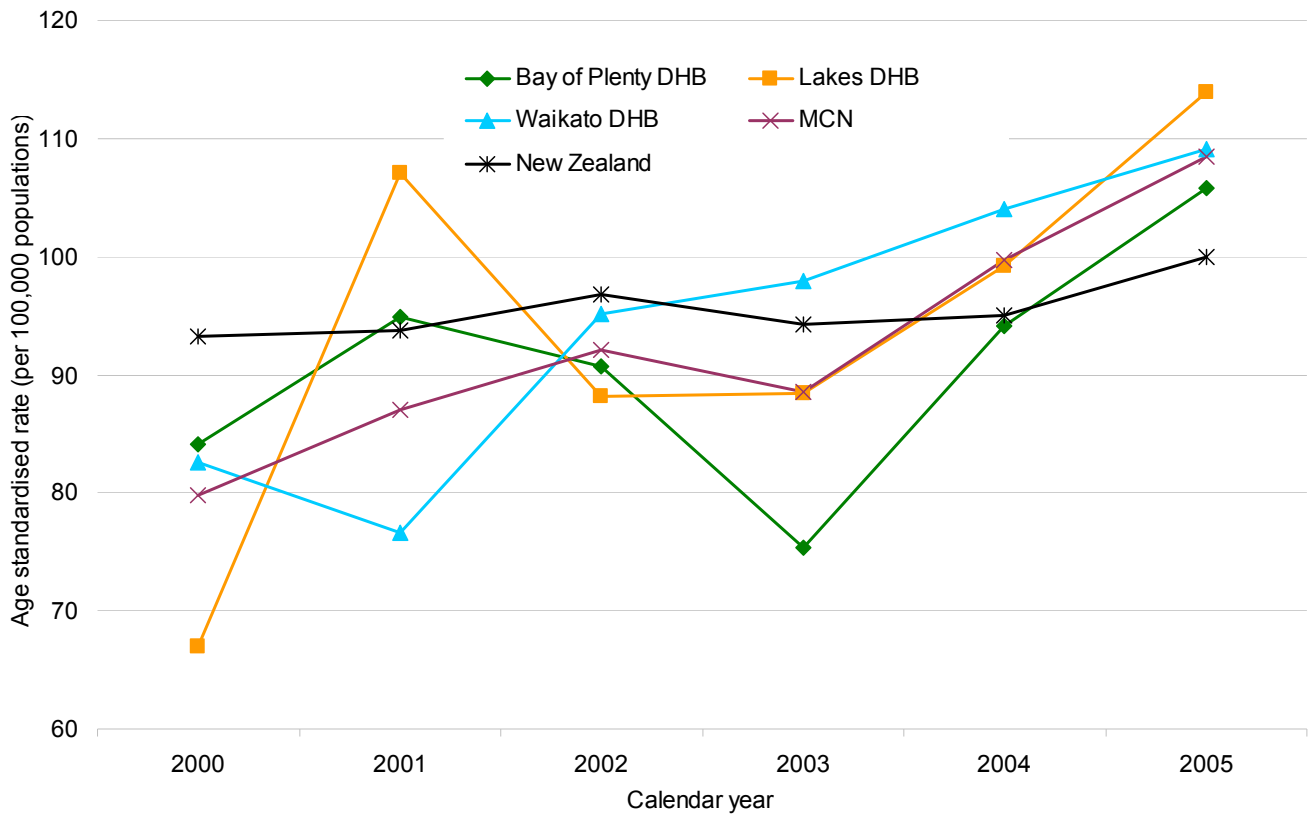
Source: TAS Data Cubes: K00_CUBE_CANC. Statistics NZ; Census 2006.

Breast cancer

Individuals with a family history of breast cancer are at greater risk of the disease. This familial risk is greater if the woman has a close relative who was diagnosed with breast cancer at a young age or if she has more than one close relative with breast cancer¹⁶.

Age standardised rates for the incidence of breast cancer for all Midland Cancer Network DHBs followed similar trends for the time period 2000 - 2005. Lakes DHB however, had the lowest (in 2000) and highest rates (in 2005). The Midland Cancer Network area rates were all slightly higher than the New Zealand rate (100 per 100,000 population) in 2005. The rates for Bay of Plenty DHB were 106 per 100,000 population, Waikato DHB 109 per 100,000 and Lakes DHB 114 per 100,000 (Figure 50).

Figure 50: Age standardised rates for breast cancer, for the Midland Cancer Network area and New Zealand, 2000 - 2005



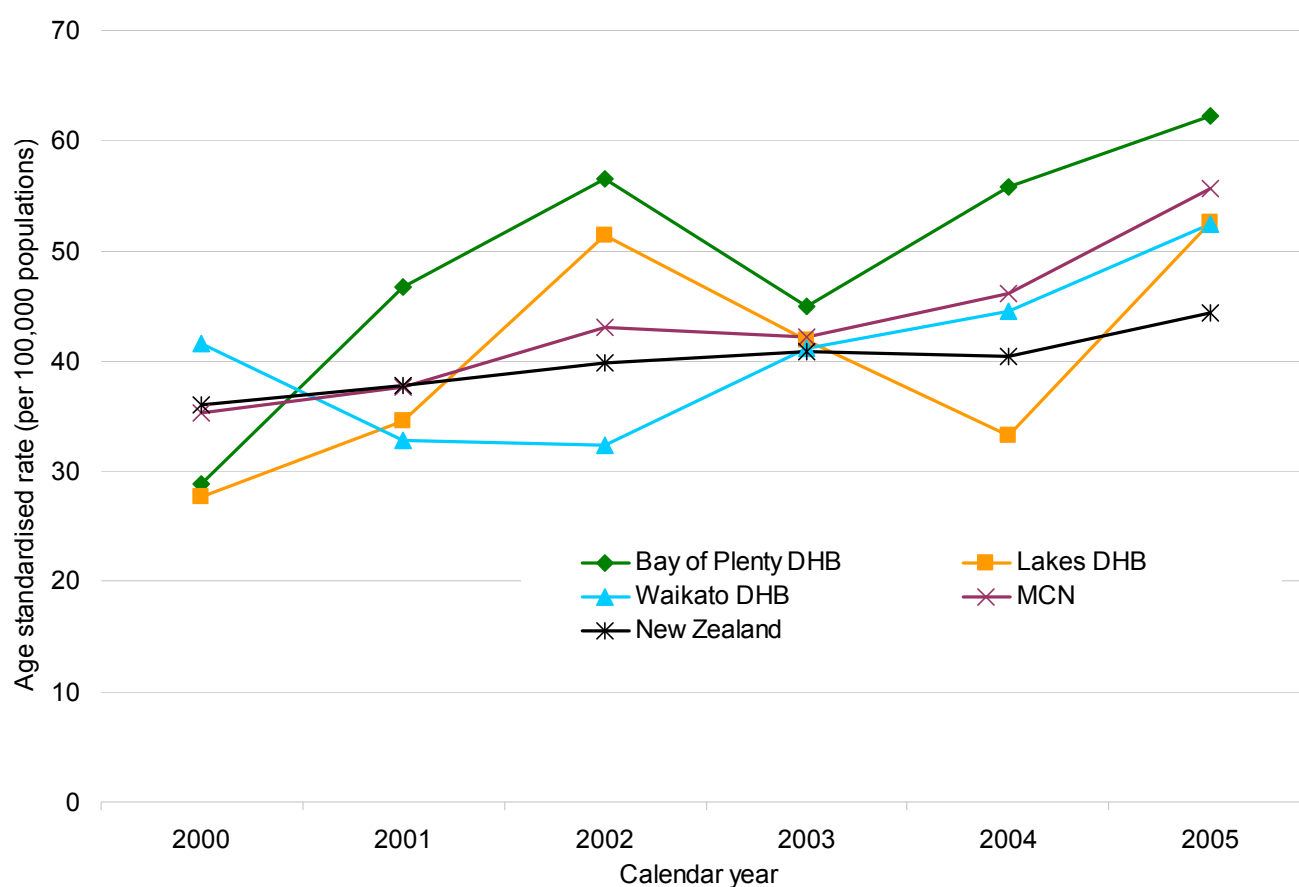
Source: TAS Data Cubes: K00_CUBE_CANC. Statistics NZ; Census 2006.

Melanoma

Both environmental and genetic factors and individual risk represent the sum of both types of influence that reflect the incidence of melanoma. Family history, age and sex, skin and hair colour, skin phototype and freckling, and sun exposure are just some of the risk factors of melanoma¹⁷.

Age standardised rates for the incidence of melanoma for all Midland Cancer Network DHBs were variable for the time period 2000 - 2005. Bay of Plenty DHB has had the highest rates since 2001 (62 per 100,000 population in 2005). The rates for Lakes and Waikato DHBs were the same in 2005 (52 per 100,000 population). All Midland Cancer Network DHB rates were higher than the New Zealand rate (44 per 100,000 population) in 2005 (Figure 51).

Figure 51: Age standardised rates for melanoma cancer, for the Midland Cancer Network area and New Zealand, 2000 - 2005



Source: TAS Data Cubes: K00_CUBE_CANC. Statistics NZ; Census 2006.

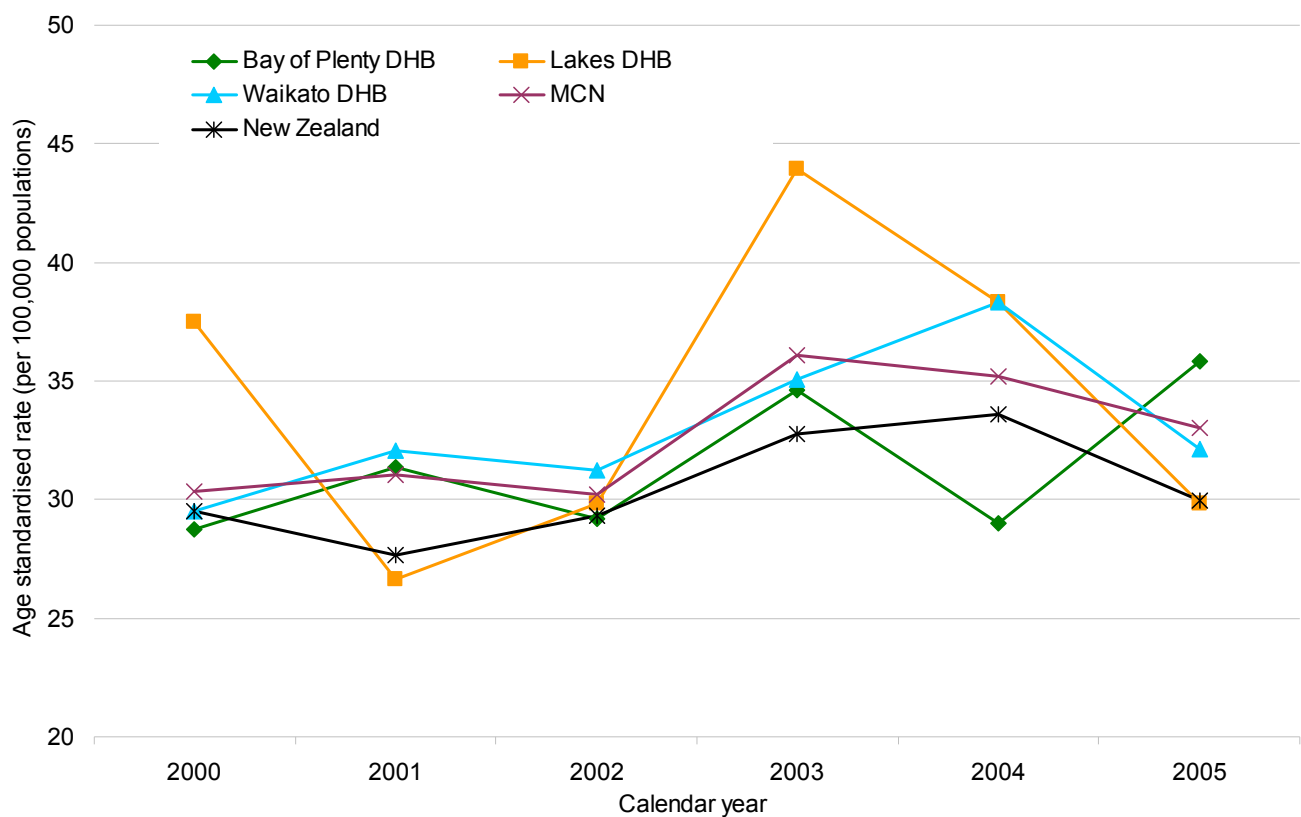
Lung cancer

Most cases of lung cancer are caused by cigarette smoking. Consequently, lung cancer is the most preventable form of cancer death. People who smoke are 20 times more likely to develop lung cancer than non-smokers¹⁸.

In New Zealand, the leading common site for cancer causing death is lung cancer (lung, bronchus and trachea). It is also the most commonly registered cancer among Māori males and is the leading cause of cancer causing death for Māori females.

Age standardised rates for the incidence of lung cancer for all Midland Cancer Network DHBs were generally similar for the time period 2000 - 2005. In comparison to the Waikato and Bay of Plenty DHBs, the Lakes DHB has had most variable rates with the lowest in 2001 and the highest in 2003. In 2005, rates for all the Midland Cancer Network DHBs were similar to the New Zealand rate (30 per 100,000 population). In 2005, the Bay of Plenty DHB rate was 36 per 100,000 population; this was followed by Waikato DHB, 32 per 100,000 population and Lakes DHB, 30 per 100,000 population (Figure 52).

Figure 52: Age standardised rates for lung cancer, for the Midland Cancer Network area and New Zealand, 2000 – 2005



Source: TAS Data Cubes: K00_CUBE_CANC. Statistics NZ; Census 2006.

4.2.1. Common cancers by age

The five common cancers changed as the age group increased. For those aged 45 years and over the top five cancers in the Midland Cancer Network area were the same as those listed overall for all ethnicities for New Zealand (Table 20).

Table 20: Common cancers, for the Midland Cancer Network area, by age group, 2001 – 2005 combined

Age group (years)	Cancer site	Number	Percentage
0-14	Leukaemia	42	40%
	Brain	17	16%
	Kidney	8	8%
	Non-Hodgkin's Lymphoma	7	7%
	Eye	4	4%
	All other cancers	26	25%
	Total	104	100%
15-24	Melanoma	33	24%
	Hodgkin's Disease	25	18%
	Leukaemia	16	12%
	Testis	14	10%
	Stomach	9	7%
	All other cancers	41	29%
	Total	138	100%
25-44	Breast	285	25%
	Melanoma	271	24%
	Uterus	116	10%
	Testis	84	7%
	Colorectal	61	5%
	All other cancers	326	29%
	Total	1143	100%
45-64	Breast	1004	20%
	Melanoma	678	13%
	Prostate	663	13%
	Colorectal	600	12%
	Lung	495	10%
	All other cancers	2639	32%
	Total	5075	100%
65+	Colorectal	1599	18%
	Prostate	1488	17%
	Melanoma	855	10%
	Lung	997	11%
	Breast	729	8%
	All other cancers	3132	36%
	Total	8800	100%

Source: TAS Data Cubes: K00_CUBE_CANC.

4.2.2. Common cancers by gender

Males

For the male population prostate cancer is the most common cancer across all ethnicities in New Zealand and the Midland Cancer Network area accounting for 27% of all cancer registrations. Proportions across ethnicities for cancer type in the Midland Cancer Network area were similar to that of New Zealand's (Table 21).

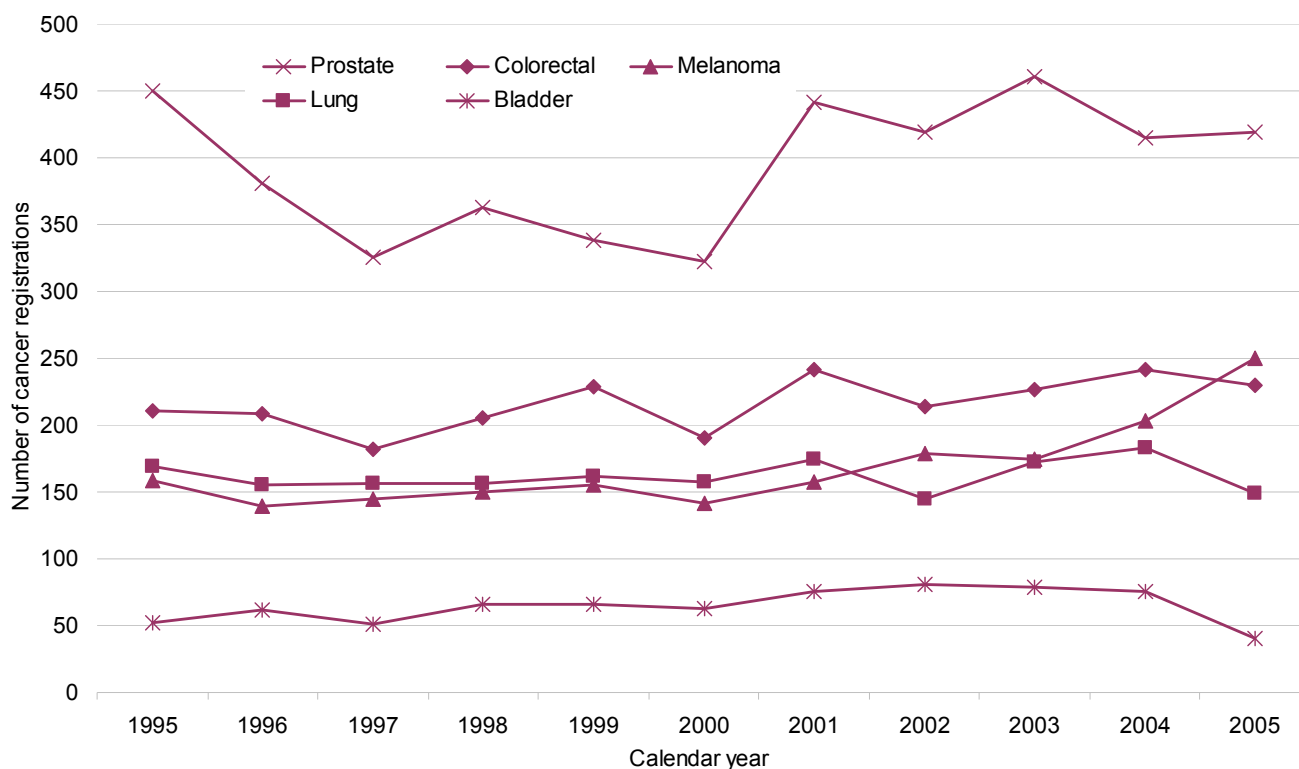
Table 21: Common male cancers, for the Midland Cancer Network area and New Zealand, for all ethnicities, 2001 - 2005 combined.

Area	Cancer site	Number	Percentage
MCN	Prostate	2155	27%
	Colorectal	1154	14%
	Melanoma	963	12%
	Lung	823	10%
	Bladder	352	4%
	All other cancers	2611	32%
	Total	8058	100%
New Zealand	Prostate	13,592	28%
	Colorectal	6940	14%
	Melanoma	5328	11%
	Lung	4909	10%
	Bladder	2038	4%
	All other cancers	15,926	33%
	Total	48,733	100%

Source: TAS Data Cubes: K00_CUBE_CANC

Trends showed that for the Midland Cancer Network area the number of cancer deaths steadily increased for the time period 1995 - 2005, although there was a decline in cancer registrations for prostate between the time period 1998 – 2000 (Figure 53).

Figure 53: Trends for common male cancers, for the Midland Cancer Network area, 1995 - 2005

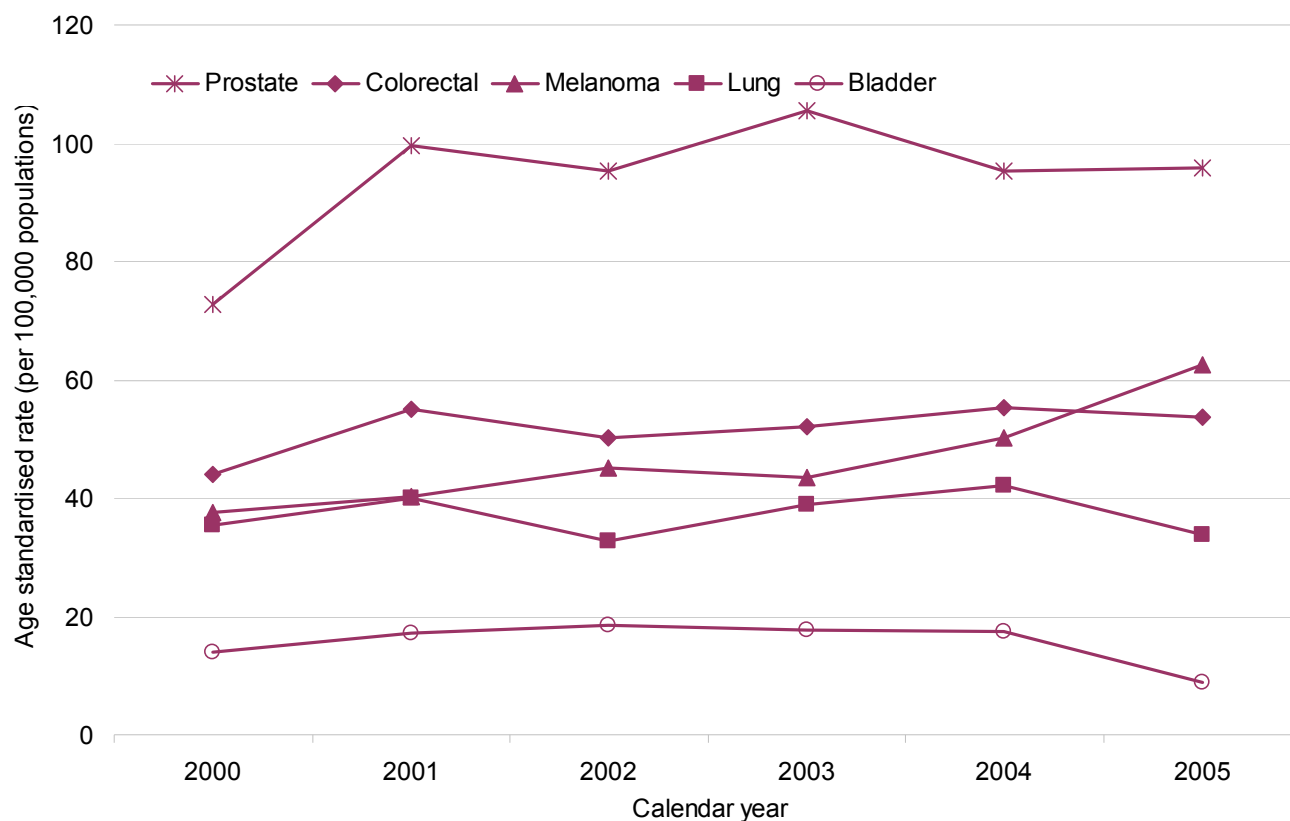


Source: TAS Data Cubes: K00_CUBE_CANC.

Cancer health needs in the Midland Cancer Network area, 2009

Age standardised rates for common male cancers for the time period 2000 – 2005 showed a high but stable rate for prostate cancer (96 per 100,000 population in 2005). Also shown is an increasing rate for melanoma (63 per 100,000 population in 2005) surpassing colorectal cancer (54 per 100,000 population in 2005). Lung cancer rates appear to be decreasing (34 per 100,000 population in 2005) along with cancer of the bladder (9 per 100,000 population in 2005) (Figure 54).

Figure 54: Age standardised rates for common male cancers, for the Midland Cancer Network area, 2000 - 2005



Source: TAS Data Cubes: K00_CUBE_CANC.

Females

The incidence of breast cancer was the most common cancer for females of all ethnicities both the Midland Cancer Network area and for New Zealand. Breast cancer accounted for 28% of all cancers occurring within the Midland Cancer Network for the time period 2001 - 2005 (Table 22).

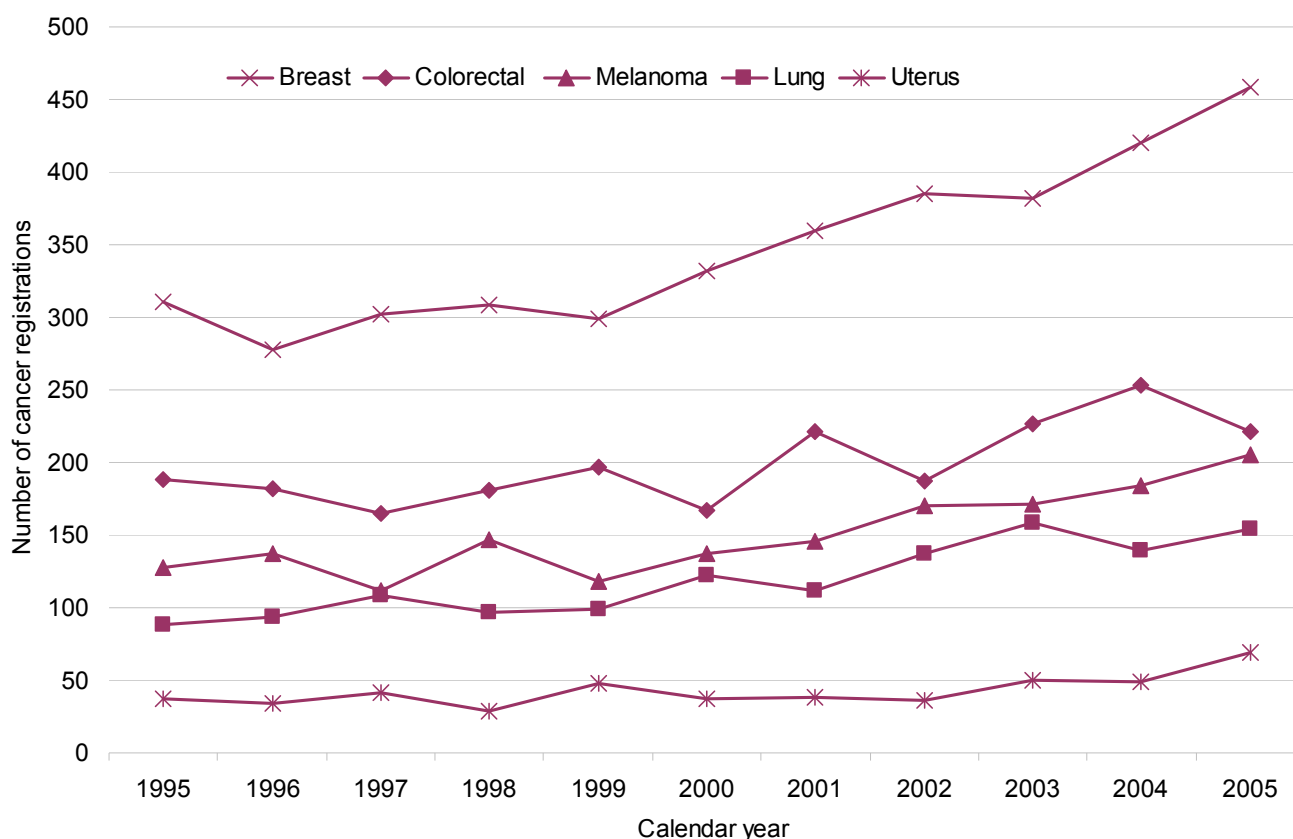
Table 22: Common female cancers, for the Midland Cancer Network area and New Zealand, for all ethnicities, 2001 - 2005 combined

Area	Cancer site	Number	Percentage
MCN	Breast	2006	28%
	Colorectal	1109	15%
	Melanoma	876	12%
	Lung	700	10%
	Uterus	242	3%
	All other cancers	2269	32%
	Total	7202	100%
New Zealand	Breast	12,548	28%
	Colorectal	7026	16%
	Melanoma	4923	11%
	Lung	3601	8%
	Uterus	1688	4%
	All other cancers	14,832	33%
	Total	44,618	100%

Source: TAS Data Cubes: K00_CUBE_CANC.

Trends showed the number of breast cancer registrations had steadily increased between the years 1995 and 2005 (Figure 55).

Figure 55: Trends for common female cancers, in the Midland Cancer Network area, 1995 - 2005

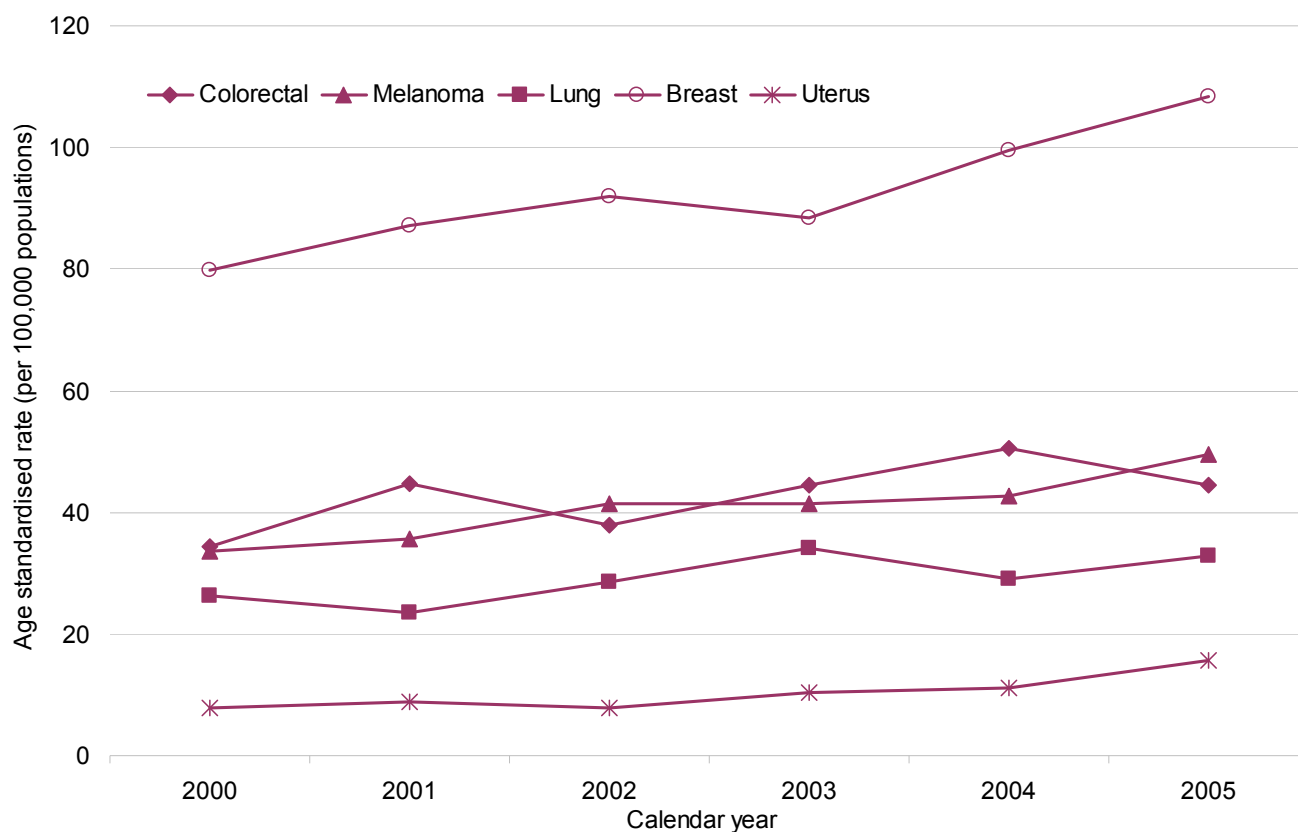


Source: TAS Data Cubes: K00_CUBE_CANC.

Cancer health needs in the Midland Cancer Network area, 2009

Age standardised rates for common female cancers for the time period 2000 – 2005 show an increasing breast cancer rate (108 per 100,000 population in 2005). Rates for melanoma (50 per 100,000 population in 2005), colorectal cancer (45 per 100,000 population in 2005), lung cancer (33 per 100,000 population in 2005) and cancer of the uterus (16 per 100,000 population in 2005) were much lower than breast cancer (Figure 56).

Figure 56: Age standardised rates for common female cancers, for the Midland Cancer Network area, 2000 - 2005



Source: TAS Data Cubes: K00_CUBE_CANC.

4.2.3. Common cancers by ethnicity

Proportionally, Māori had the highest incidence of lung cancer, while people of NZ European/Other ethnicity had the highest incidence of colorectal cancer. Pacific people had the highest proportion of incidence of breast cancer (Table 23). One of the key risk factors of lung cancer is smoking and Māori have a much higher rate of daily smoking than other ethnicities.

Table 23: Common cancers, for the Midland Cancer Network area, by ethnicity, 2001 - 2005 combined

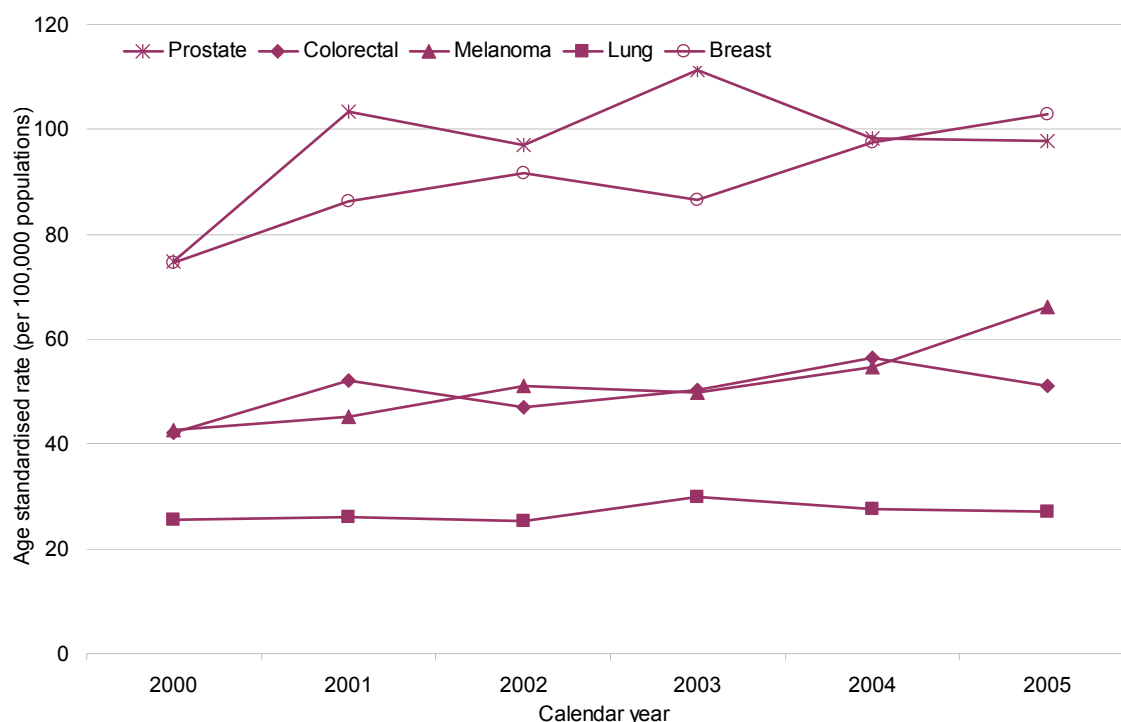
Ethnicity	Cancer site	Number	Percentage
NZ European/Other	Colorectal	2117	16%
	Prostate	1977	15%
	Melanoma	1822	14%
	Breast	1672	13%
	Lung	1132	9%
	All other cancers	4566	33%
	Total	13286	100%
Māori	Lung	382	21%
	Breast	320	17%
	Prostate	168	9%
	Colorectal	133	7%
	Stomach	95	5%
	All other cancers	763	41%
	Total	1861	100%
Pacific people	Breast	27	24%
	Colorectal	11	10%
	Prostate	10	9%
	Stomach	10	9%
	Lung	9	8%
	All other cancers	46	40%
	Total	113	100%

Source: TAS Data Cubes: K00_CUBE_CANC.

Age standardised rates for common cancers for the time period 2000 – 2005 for NZ European/Other ethnicity show high and increasing rates for breast cancer (103 per 100,000 population in 2005) and consistently high rates for prostate cancer (98 per 100,000 population in 2005). Melanoma rates (66 per 100,000 population) are increasing surpassing colorectal cancer (51 per 100,000 population) in 2005. Lung cancer had the lowest rate of 27 per 100,000 population in 2005 (Figure 57).

Cancer health needs in the Midland Cancer Network area, 2009

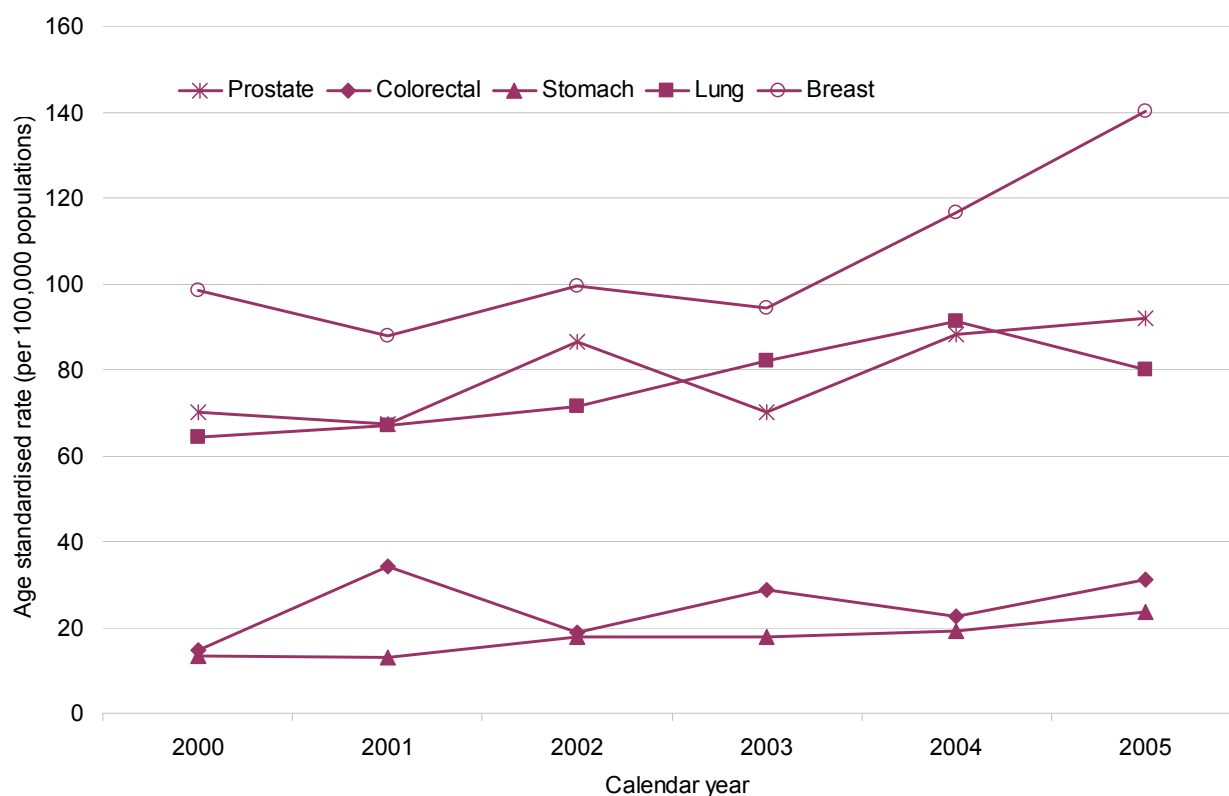
Figure 57: Age standardised rates for common cancers, for the Midland Cancer Network area, by NZ European/Other ethnicity 2000 - 2005



Source: TAS Data Cubes: K00_CUBE_CANC.

Age standardised rates for common cancers for the time period 2000 – 2005 for Māori ethnicity show breast cancer increasing (140 per 100,000 population in 2005). Lung cancer (80 per 100,000 population in 2005) and prostate cancer (92 per 100,000 population in 2005) have shown similar trends for the time period 2000 – 2005. Stomach cancer (24 per 100,000 population in 2005) and colorectal cancer (31 per 100,000 population in 2005) have the lowest rates (Figure 58).

Figure 58: Age standardised rates for common cancers, for the Midland Cancer Network area, by Māori ethnicity 2000 - 2005



Source: TAS Data Cubes: K00_CUBE_CANC.

4.2.4. Common cancers by ethnicity and gender

Males

Across ethnicities the common cancers for males include prostate, colorectal and lung cancer with prostate cancer being the top male cancer (Table 24).

Table 24: Common male cancers, for the Midland Cancer Network area, by ethnicity, 2001 - 2005 combined

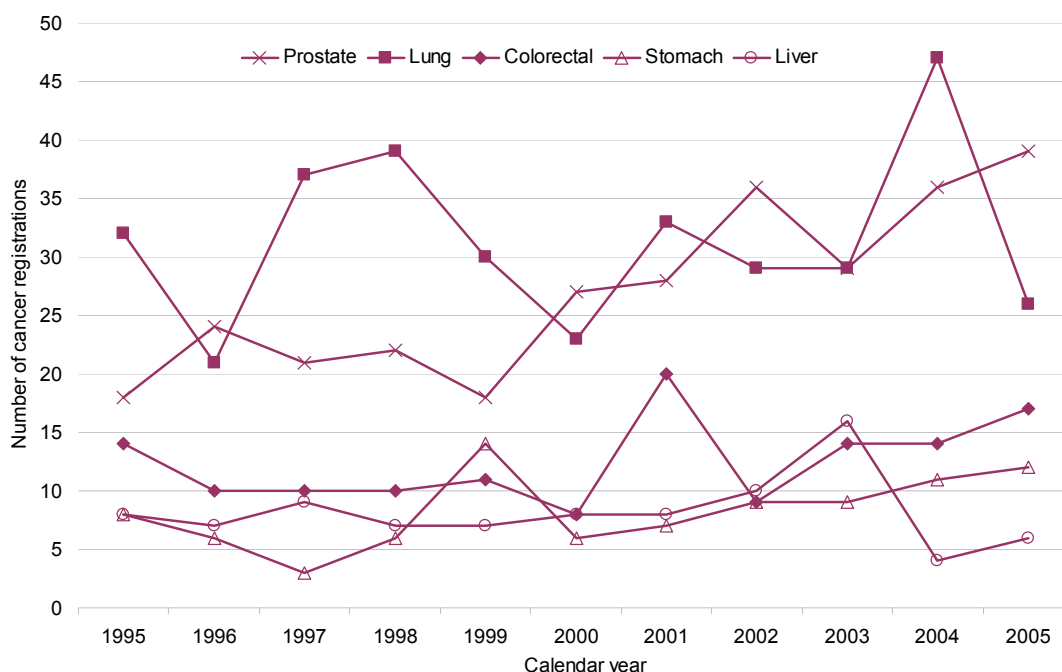
Ethnicity	Cancer site	Number	Percentage
NZ European/Other	Prostate	1977	28%
	Colorectal	1075	15%
	Melanoma	957	13%
	Lung	655	9%
	Bladder	333	5%
	All other cancers	2176	30%
	Total	7173	100%
Māori	Prostate	168	20%
	Lung	164	19%
	Colorectal	74	9%
	Stomach	48	6%
	Liver	44	5%
	All other cancers	346	41%
	Total	844	100%
Pacific people	Prostate	10	24%
	Stomach	8	20%
	Colorectal	5	12%
	Lung	4	10%
	Liver	3	7%
	All other cancers	11	27%
	Total	41	100%

Source: TAS Data Cubes: K00_CUBE_CANC.

Cancer health needs in the Midland Cancer Network area, 2009

For Māori males in the Midland Cancer Network area, cancer registrations showed a variable trend for lung cancer for the time period 1995 - 2005. Prostate cancer however, had steadily increased over the same period (Figure 59).

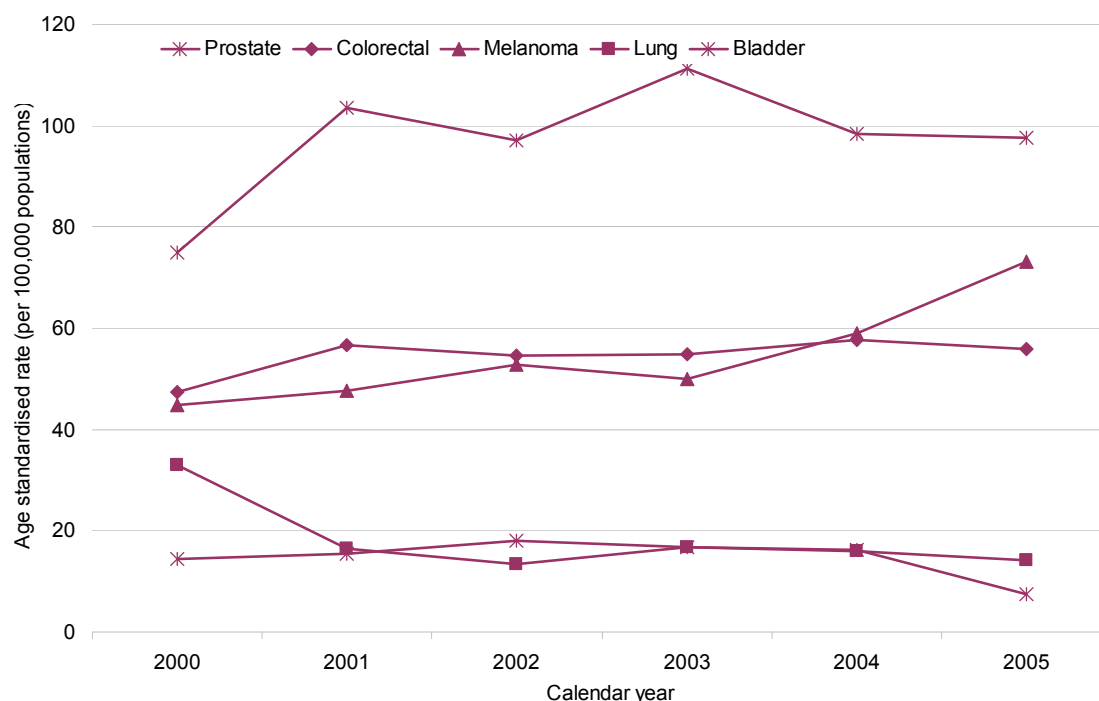
Figure 59: Trends for common male cancers for Māori, for the Midland Cancer Network area, 1995 - 2005



Source: TAS Data Cubes: K00_CUBE_CANC.

Age standardised rates for the common cancers for males within the NZ European/Other ethnicity over the time period 2000 – 2005 show a consistently high rate for prostate cancer (98 per 100,000 population in 2005). The rate for melanoma is increasing (73 per 100,000 population in 2005), surpassing colorectal cancer (56 per 100,000 population in 2005). Lung cancer (14 per 100,000 population in 2005) and bladder cancer (7 per 100,000 population in 2005) appear to be decreasing (Figure 60).

Figure 60: Age standardised rates for common cancers for males, for the Midland Cancer Network area, by NZ European/Other ethnicity 2000 - 2005

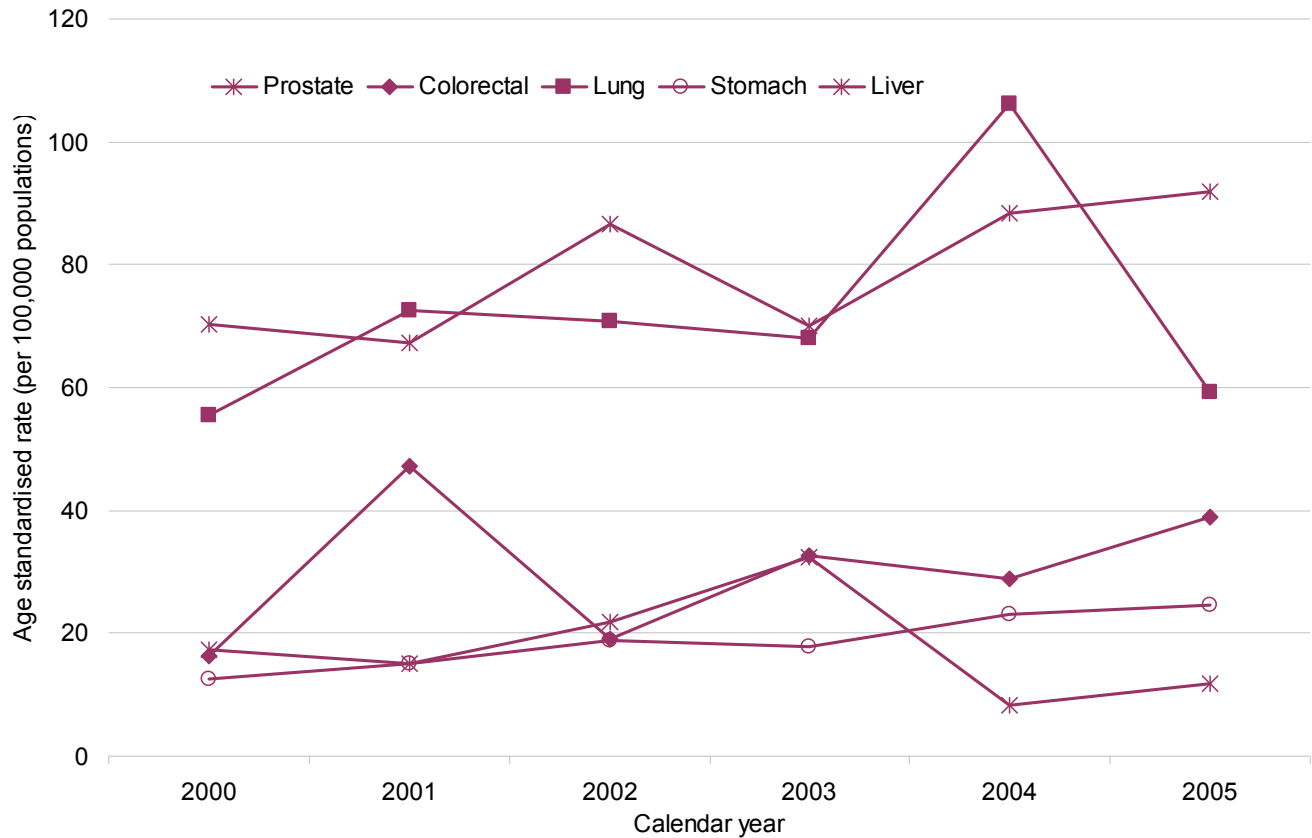


Source: TAS Data Cubes: K00_CUBE_CANC.

Cancer health needs in the Midland Cancer Network area, 2009

Age standardised rates for common cancers for males by Māori ethnicity for the time period 2000 – 2005 show an increasingly high prostate cancer rate (92 per 100,000 population in 2005) while lung cancer appears to be decreasing (59 per 100,000 population in 2005). Colorectal cancer (39 per 100,000 population in 2005), stomach cancer (25 per 100,000 population in 2005) and liver cancer (12 per 100,000 population in 2005) have the lowest rates (Figure 61).

Figure 61: Age standardised rates for common cancers for males, for the Midland Cancer Network area, by Māori ethnicity 2000 - 2005



Source: TAS Data Cubes: K00_CUBE_CANC.

Females

The five common cancers for females differed between ethnicities. However, cancer of the breast, lung, uterus and colorectal cancer were common across all ethnicities. Breast was the most common cancer for females (Table 25).

Table 25: Common female cancers, for the Midland Cancer Network area, by ethnicity, 2001 - 2005 combined

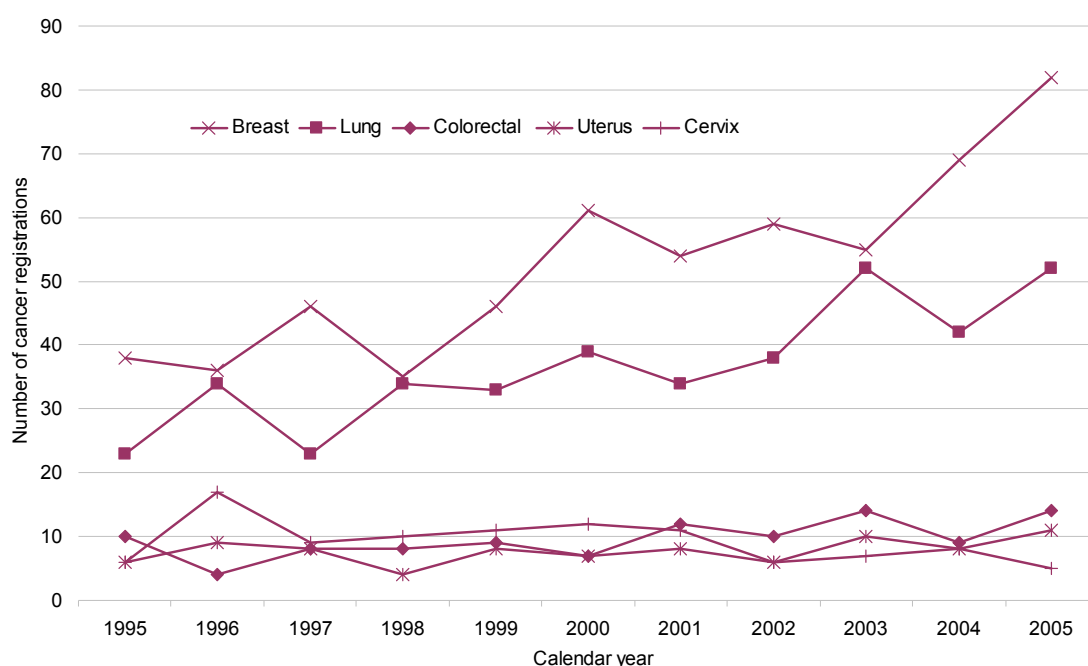
Ethnicity	Cancer site	Number	Percentage
NZ European/Other	Breast	1660	27%
	Colorectal	1042	17%
	Melanoma	865	14%
	Lung	477	8%
	Uterus	194	3%
	All other cancers	1875	31%
	Total	6113	100%
Māori	Breast	319	31%
	Lung	218	21%
	Colorectal	59	6%
	Uterus	43	4%
	Cervix	37	4%
	All other cancers	341	34%
	Total	1017	100%
Pacific people	Breast	27	38%
	Colorectal	8	11%
	Lung	5	7%
	Uterus	4	6%
	Ovary	4	6%
	All other cancers	24	33%
	Total	72	100%

Source: TAS Data Cubes: K00_CUBE_CANC.

Cancer health needs in the Midland Cancer Network area, 2009

Both breast and lung cancer registrations for Māori increased during the time period 1995 - 2005. The number of cancer registrations for colorectal, uterus and cervix remained relatively constant for the same period (Figure 62).

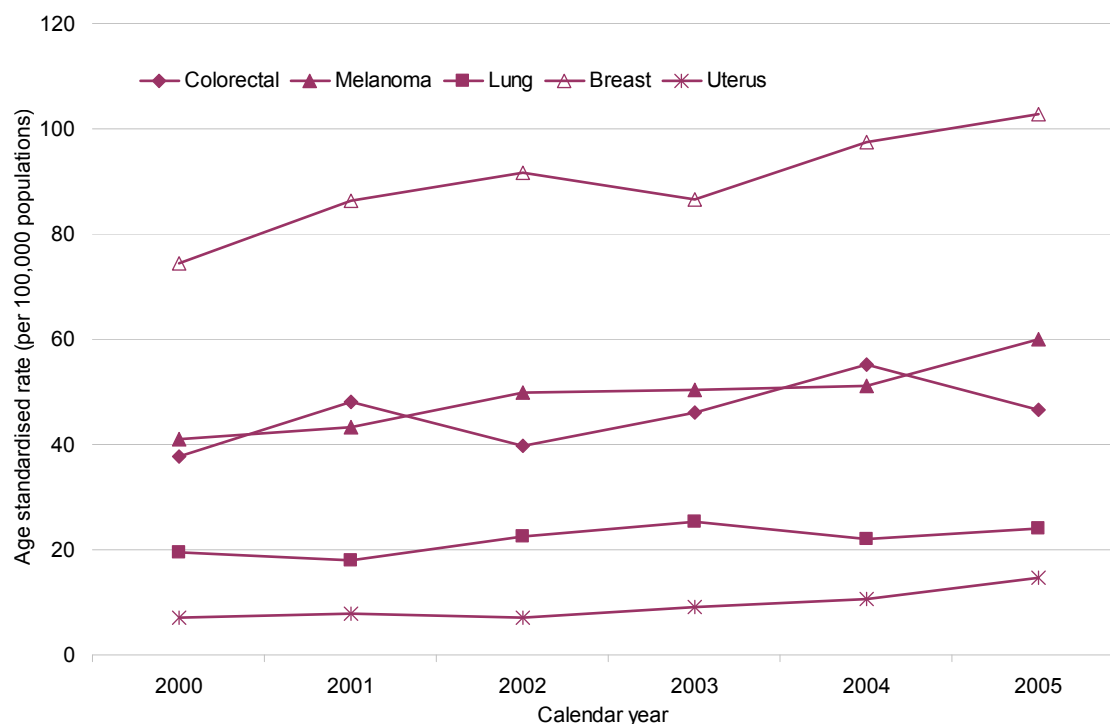
Figure 62: Trends for common cancers for females, in the Midland Cancer Network area, by Māori ethnicity, 1995 - 2005



Source: TAS Data Cubes: K00_CUBE_CANC.

Age standardised rates for common cancers for females by NZ European/Other ethnicity for the time period 2000 – 2005 show a high and increasing rate for breast cancer (103 per 100,000 population in 2005). The rate for melanoma is increasing (60 per 100,000 population in 2005), surpassing colorectal cancer (47 per 100,000 population in 2005). Rates for lung cancer (24 per 100,000 population in 2005) and cancer of the uterus (15 per 100,000 population in 2005) were the lowest (Figure 63).

Figure 63: Age standardised rates for common cancers for females, for the Midland Cancer Network area, by NZ European/Other ethnicity 2000 - 2005

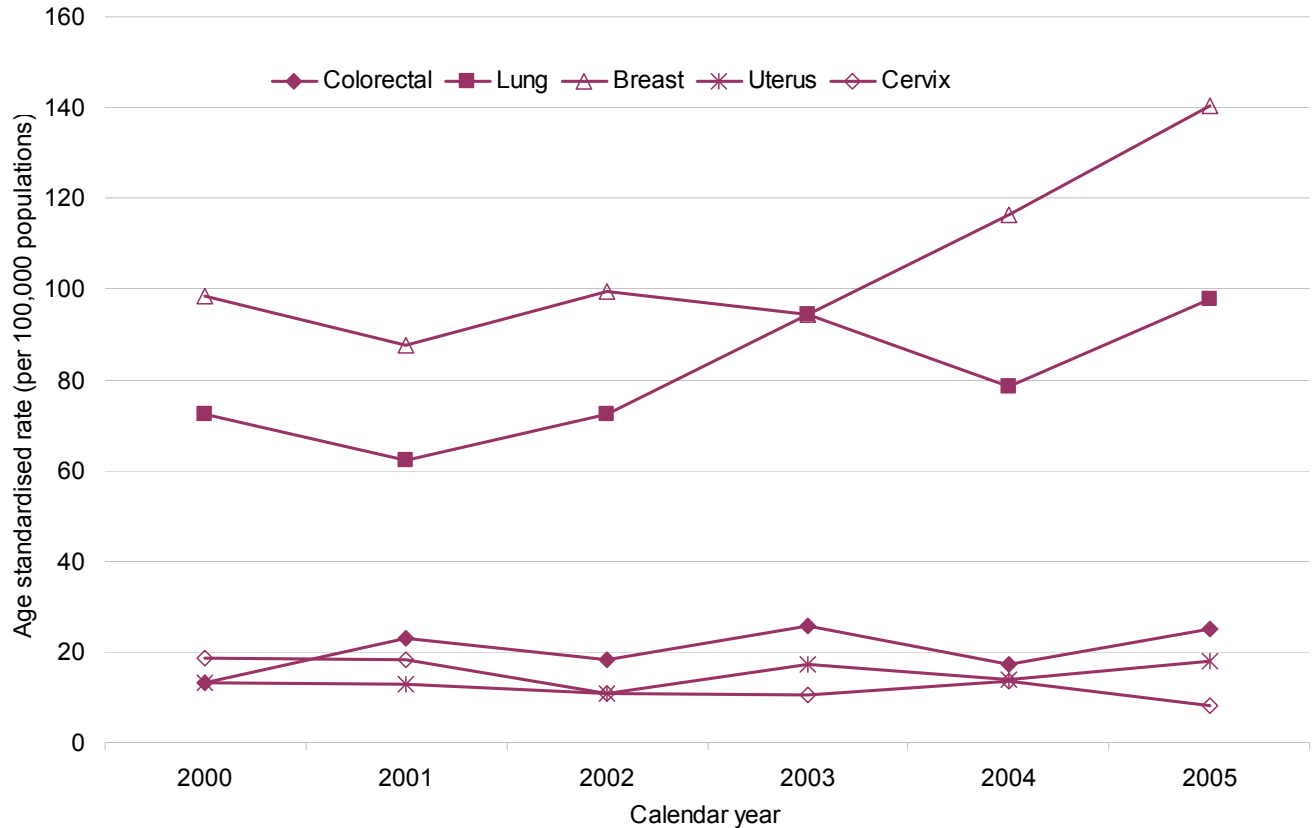


Source: TAS Data Cubes: K00_CUBE_CANC.

Cancer health needs in the Midland Cancer Network area, 2009

Age standardised rates for common cancers for females by Māori ethnicity for the time period 2000 – 2005 show an increasingly high breast cancer rate (140 per 100,000 population in 2005) followed by lung cancer (98 per 100,000 population in 2005). Colorectal cancer (25 per 100,000 population in 2005), cancer of the uterus (18 per 100,000 population in 2005) and cancer of the cervix (8 per 100,000 population in 2005) have the lowest rates (Figure 64).

Figure 64: Age standardised rates for common cancers for females, for the Midland Cancer Network area, by Māori ethnicity 2000 - 2005

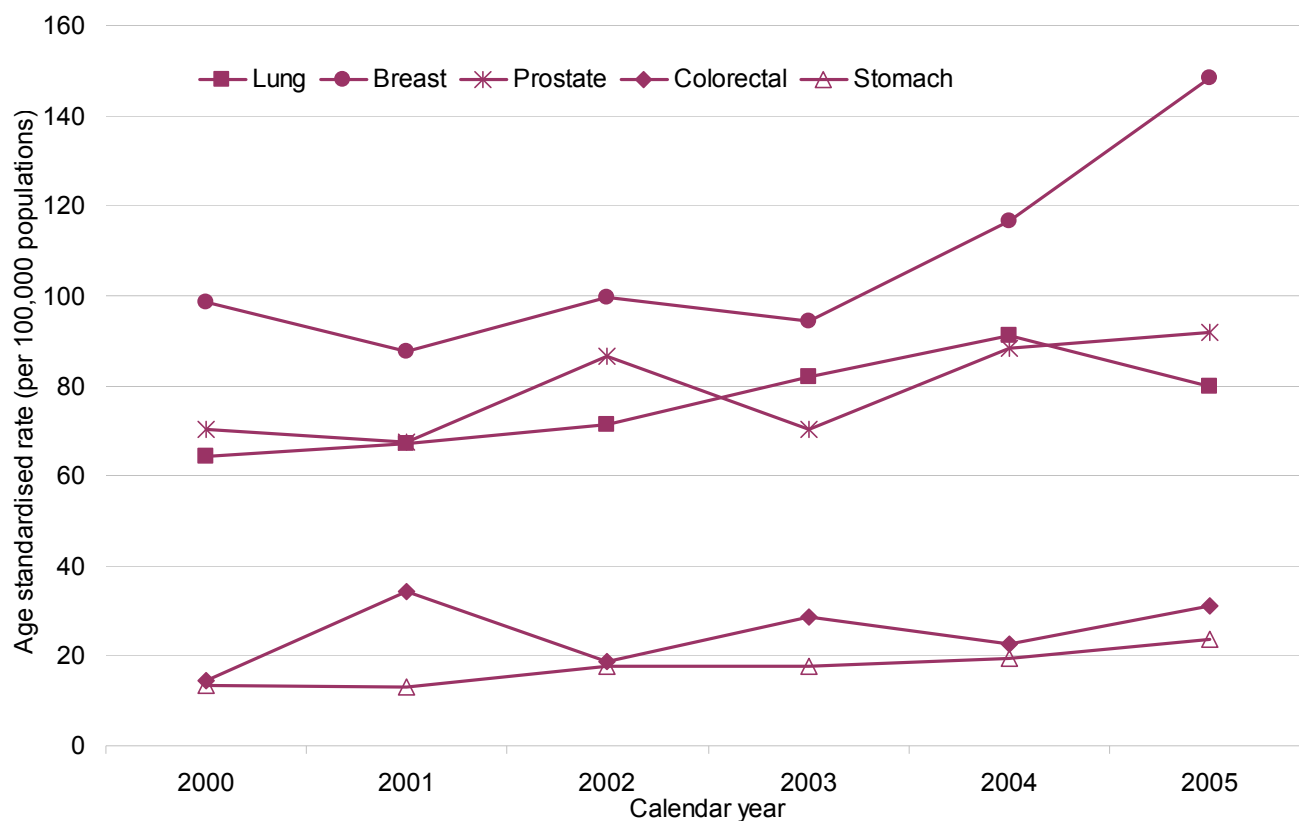


Source: TAS Data Cubes: K00_CUBE_CANC.

4.2.5. Common cancers for both genders, Māori

Age standardised rates for both genders for Māori showed breast cancer was the most common cancer, followed by prostate and lung cancer for the Midland Cancer Network area (Figure 65).

Figure 65: Age standardised rates for common cancers for Māori, for the Midland Cancer Network area, 2000 - 2005



Source: TAS Data Cubes: K00_CUBE_CANC. Statistics NZ; Census 2006.

4.3. Mortality due to common cancers

The common fatal cancers for all ethnicities in the Midland Cancer Network area and New Zealand were lung, colorectal, prostate, breast and unspecified site. Whereas the common incidences of cancer included melanoma, this type of cancer did not form one of the common fatal cancers.

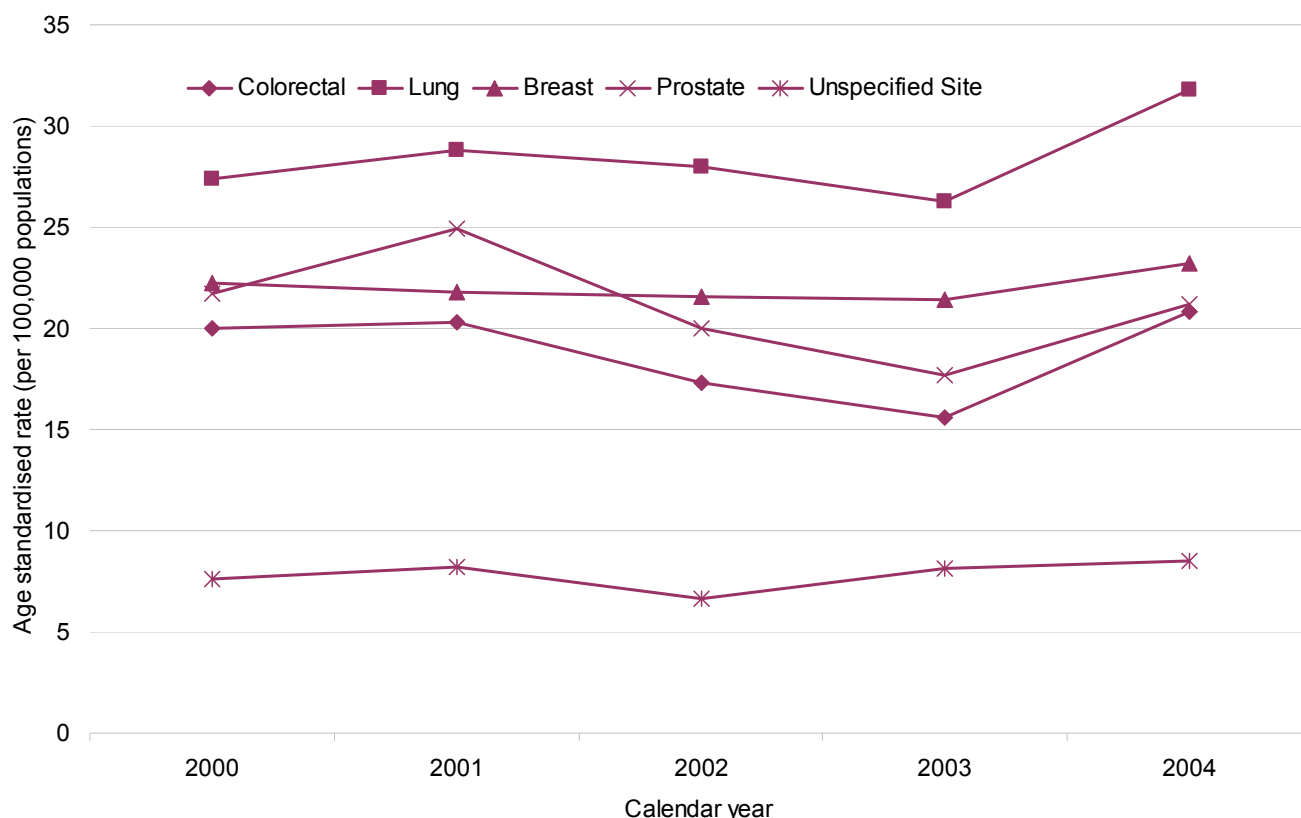
Table 26: Common cancer fatalities, for the Midland Cancer Network area and New Zealand, all ethnicities, 2000 - 2004 combined

Area	Cancer site	Number	Percentage
MCN	Lung	1328	21%
	Colorectal	901	14%
	Prostate	492	8%
	Breast	491	8%
	Unspecified site	370	6%
	All other cancers	2850	44%
	Total	6432	100%
New Zealand	Lung	7285	19%
	Colorectal	5693	15%
	Breast	3146	8%
	Prostate	2892	7%
	Unspecified site	2290	6%
	All other cancers	17,628	45%
	Total	38,934	100%

Source: TAS Data Cubes: N00_CUBE_MORT.

Age standardised rates for all fatal cancers showed that in the Midland Cancer Network area lung cancer was the most common fatal cancer ahead of breast, prostate, colorectal and unspecified. In comparison to incidence of common cancers, prostate and breast cancer led ahead of lung cancer (Figure 66).

Figure 66: Age standardised rates for the most common cancers causing death, for the Midland Cancer Network area, 2000 - 2004

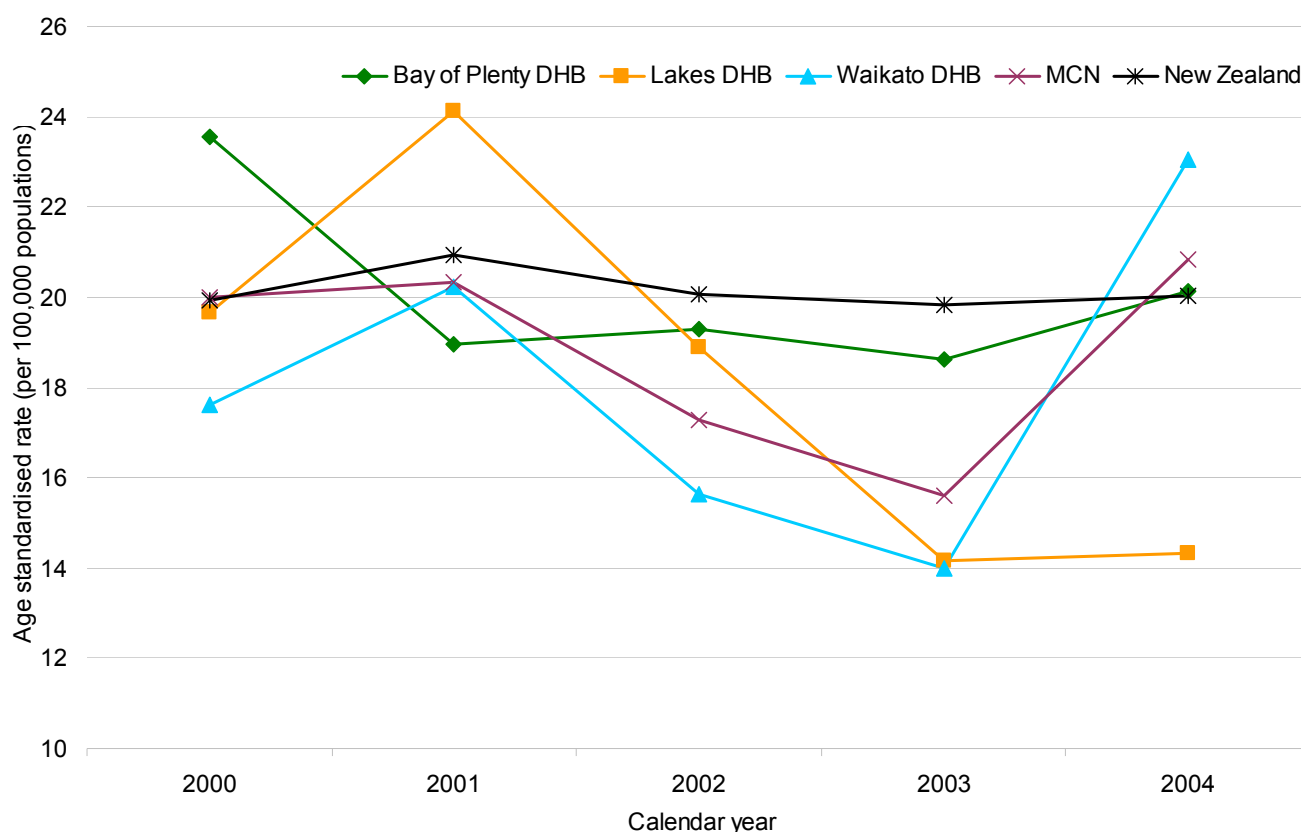


Source: TAS Data Cubes: N00_CUBE_MORT. Statistics NZ; Census 2006.

Colorectal cancer

Age standardised rates for deaths caused by colorectal cancer across all Midland Cancer Network DHBs have shown similar trends for the period 2000 - 2005. Between 2001 and 2003 all Midland Cancer Network DHBs showed a downward trend. In 2004 all Midland Cancer Network DHBs with the exception of Lakes DHB had increasing rates. In 2004, the Waikato DHB rate was the highest above the New Zealand rate, whereas Bay of Plenty DHB had the same rate as New Zealand, and Lakes DHB had the lowest rate (Figure 67).

Figure 67: Age standardised rates for all deaths caused by colorectal cancer, for the Midland Cancer Network area, 2000 - 2004

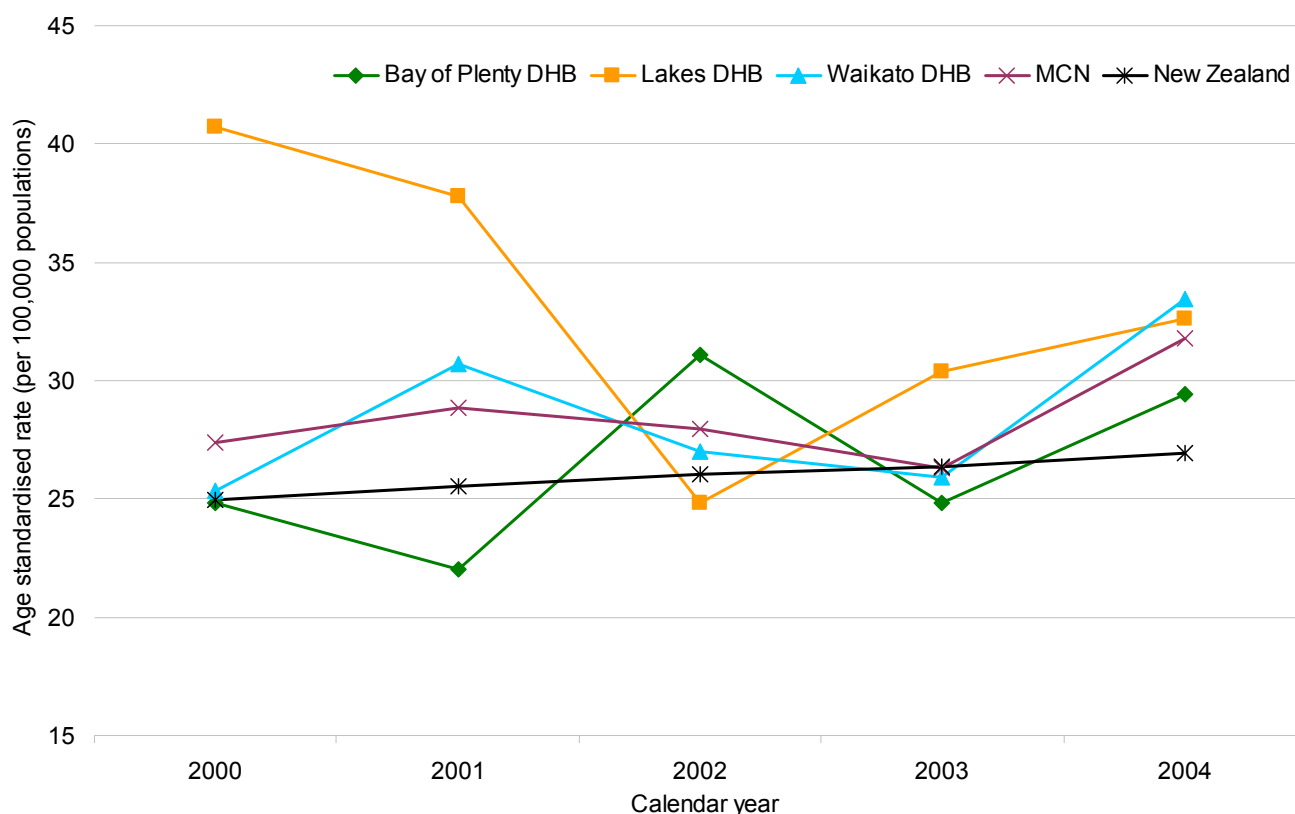


Source: TAS Data Cubes: N00_CUBE_MORT. Statistics NZ; Census 2006.

Lung cancer

Age standardised rates for deaths caused by lung cancer for all Midland Cancer Network DHBs were relatively stable for the time period 2000 - 2004 with the exception of Lakes DHB which peaked in the years 2000 and 2001. In 2004 all of the Midland Cancer Network DHBs the rates were similar and higher than the New Zealand rate (Figure 68).

Figure 68: Age standardised rates for all deaths caused by lung cancer, for the Midland Cancer Network area, 2000 - 2004

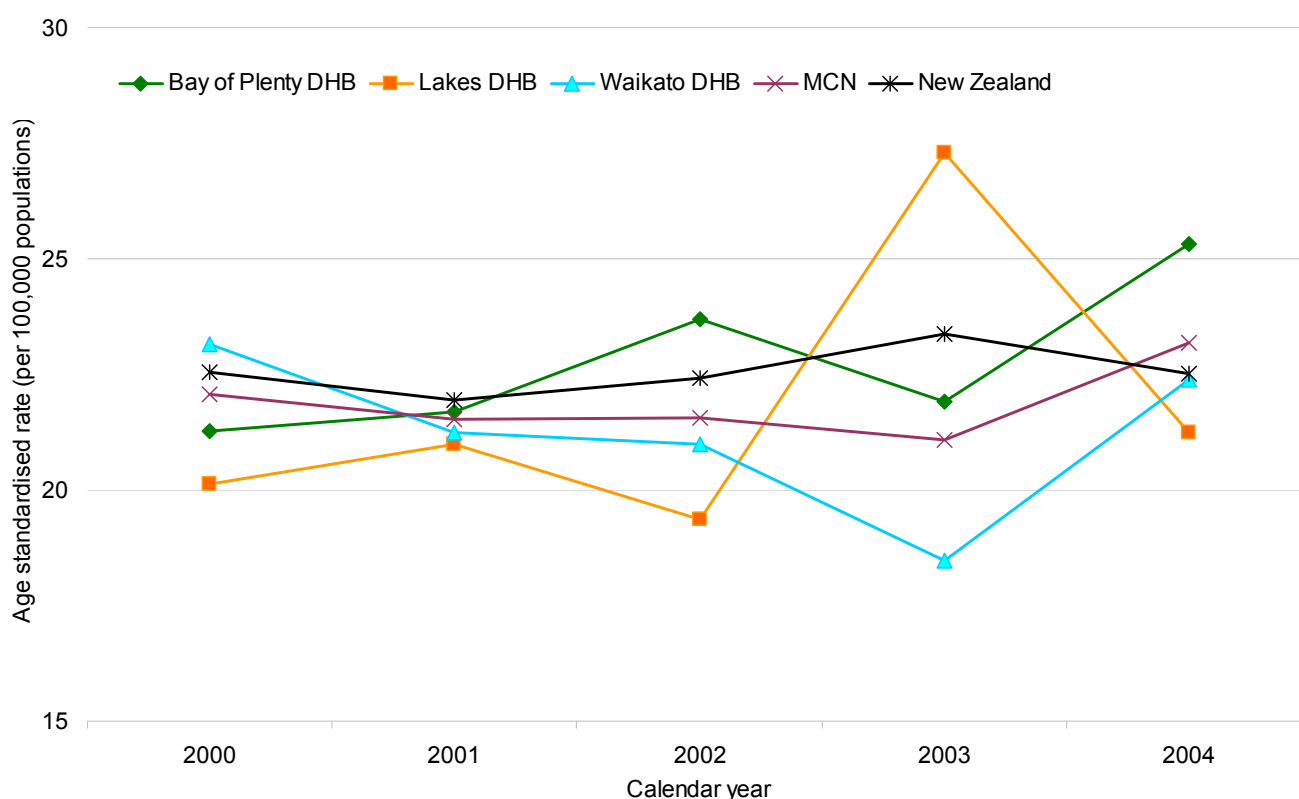


Source: TAS Data Cubes: N00_CUBE_MORT. Statistics NZ; Census 2006.

Breast cancer

Age standardised rates for deaths caused by breast cancer for all Midland Cancer Network DHBs were similar and stable for the time period 2000 - 2004 with the exception of Lakes DHB which peaked in 2003. In 2004, the Bay of Plenty DHB had the highest rate which was also above the New Zealand rate, while Lakes and Waikato DHBs had rates slightly lower than the New Zealand rate (Figure 69).

Figure 69: Age standardised rates for all deaths caused by breast cancer, for the Midland Cancer Network area, 2000 - 2004

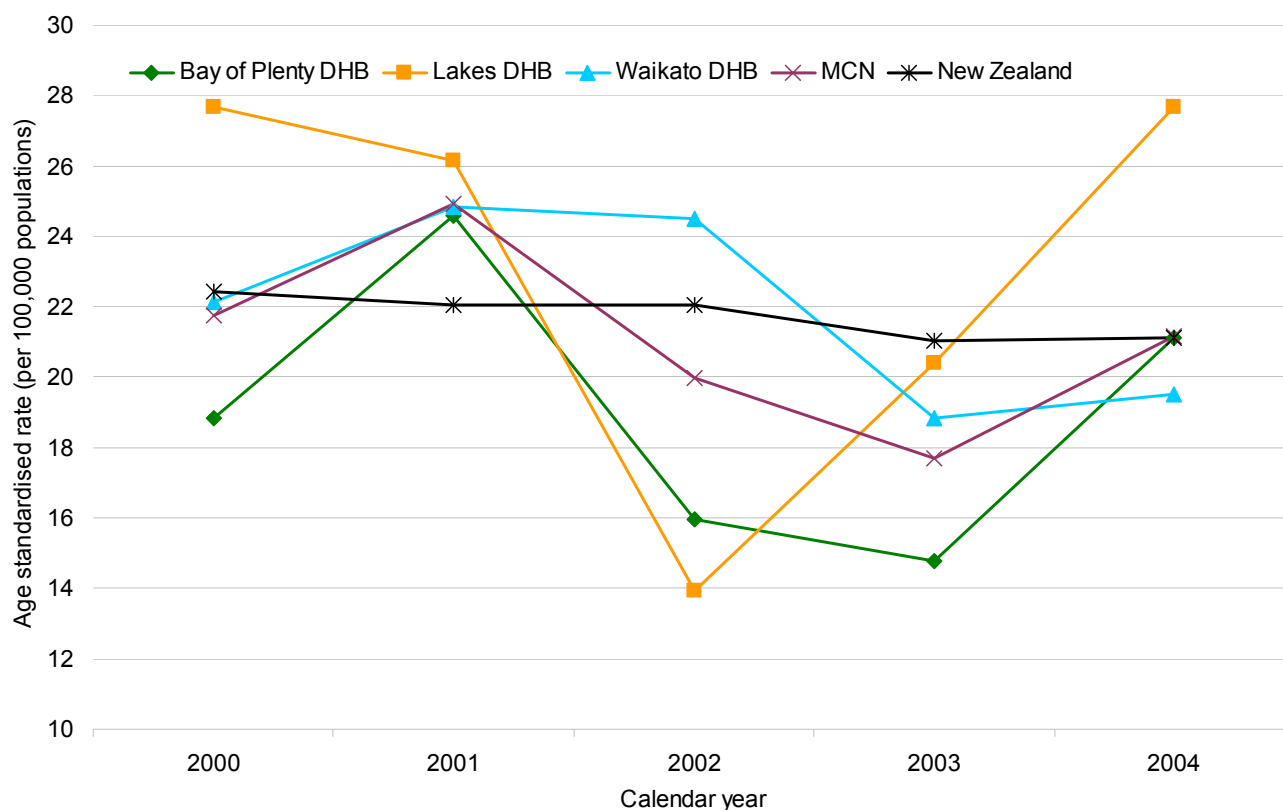


Source: TAS Data Cubes: N00_CUBE_MORT. Statistics NZ; Census 2006.

Prostate cancer

Age standardised rates for all deaths caused by prostate cancer for all Midland Cancer Network DHBs varied for the time period 2000 - 2004. Lakes DHB had the lowest (in 2002) and highest rates (in 2004). The Midland Cancer Network rate in 2004 was the same as the New Zealand rate (Figure 70).

Figure 70: Age standardised rates for deaths caused by prostate cancer, for the Midland Cancer Network area, 2000 - 2004



Source: TAS Data Cubes: N00_CUBE_MORT. Statistics NZ; Census 2006.

4.3.1. Common cancers by age

The common fatal cancers for each age group were varied. For those aged 45 years or older the five most common fatal cancers in the Midland Cancer Network area were the same as those listed overall for all ethnicities for New Zealand (with the exception of stomach cancer instead of prostate cancer) for those aged between the years 45 – 64 (Table 27).

Table 27: Common fatal cancers, for the Midland Cancer Network area, by age group, 2000 - 2004 combined

Age group (years)	Cancer site	Number	Percentage
0-14	Brain	11	41%
	Lymphoid Leukaemia	6	22%
	Malignant Neoplasm's (other or unspecified)	5	19%
	Myeloid Leukaemia	2	7%
	Diffuse non-Hodgkin's Lymphoma	1	4%
	All other cancers	2	7%
	Total	27	100%
15-24	Lymphoid Leukaemia	5	17%
	Melanoma	5	17%
	Hodgkin's Disease	3	10%
	Brain	2	7%
	Bone	2	7%
	Myeloid Leukaemia	2	7%
	All other cancers	11	35%
	Total	30	100%
25-44	Breast	49	19%
	Lung	26	10%
	Stomach	26	10%
	Brain	21	8%
	Melanoma	14	5%
	All other cancers	119	48%
	Total	255	100%
45-64	Lung	367	24%
	Breast	203	13%
	Colorectal	190	12%
	Unspecified site	84	5%
	Stomach	62	4%
	All other cancers	655	42%
	Total	1561	100%
65+	Lung	934	20%
	Colorectal	700	15%
	Prostate	461	10%
	Unspecified site	277	6%
	Breast	238	5%
	All other cancers	1949	44%
	Total	4559	100%

Source: TAS Data Cubes: N00_CUBE_MORT.

4.3.2. Common cancer deaths by gender

Males

Lung cancer is the number one common cause of death for males, across all cancers, for all ethnicities in the Midland Cancer Network area and for New Zealand, during the time period 2000 - 2004. In comparison to incidences of cancer, prostate was the common cancer rather than lung cancer.

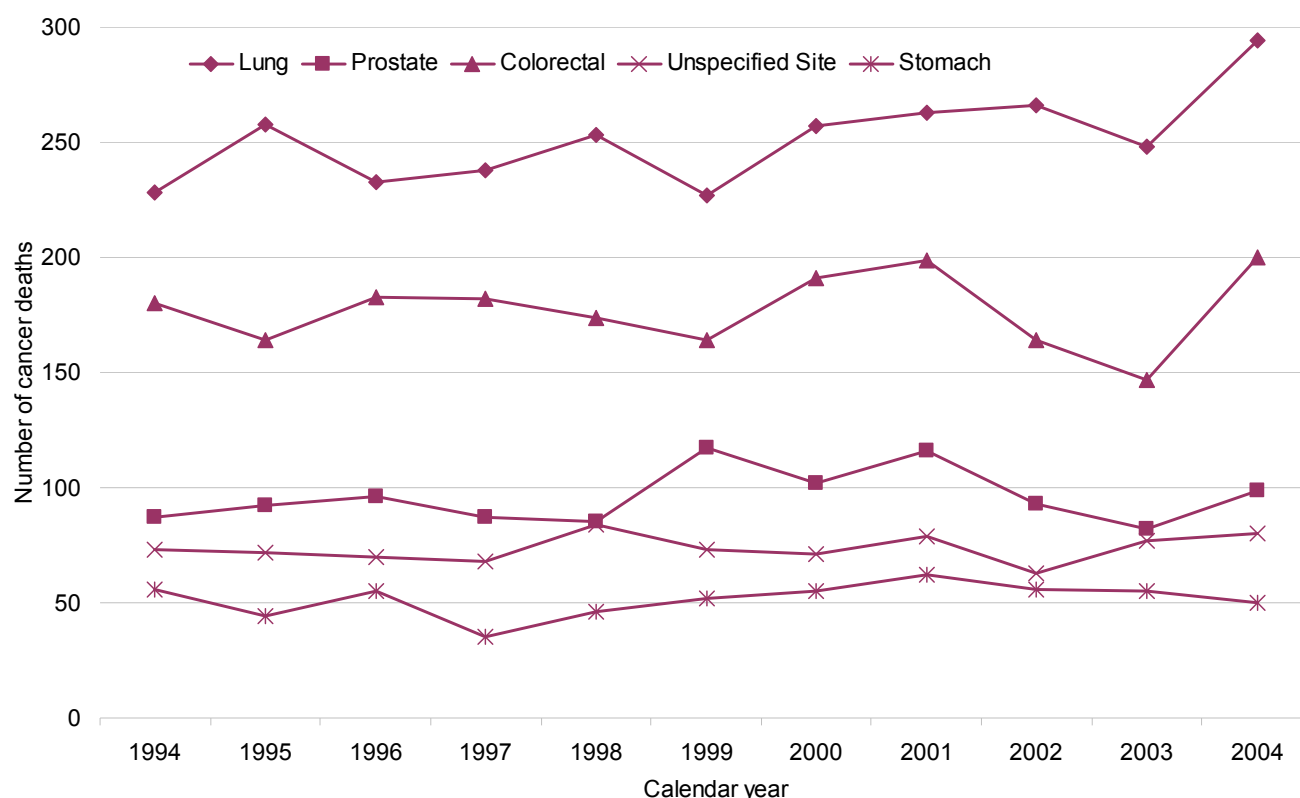
Trends showed that for the Midland Cancer Network area lung cancer fatalities have been consistently higher for the time period 1994 - 2004 (Table 28, Figure 71).

Table 28: Common fatal male cancers, for the Midland Cancer Network area and for New Zealand, 2000 - 2004 combined

Area	Cancer site	Number	Percentage
MCN	Lung	751	21%
	Prostate	492	14%
	Colorectal	471	13%
	Unspecified site	196	6%
	Stomach	184	5%
	All other cancers	1410	41%
	Total	3504	100%
New Zealand	Lung	4307	21%
	Prostate	2892	14%
	Colorectal	2881	14%
	Unspecified site	1144	6%
	Stomach	958	5%
	All other cancers	8496	40%
	Total	20,678	100%

Source: TAS Data Cubes: N00_CUBE_MORT.

Figure 71: Trends for common fatal male cancers, for the Midland Cancer Network area, all ethnicities, 1994 - 2004



Source: TAS Data Cubes: N00_CUBE_MORT.

Females

Lung cancer was generally the most common fatal cancer for all ethnicities, followed by breast cancer in the Midland Cancer Network area. Trends showed the number of lung cancer deaths have been steadily increasing since 1999 (Table 29,

Figure 72).

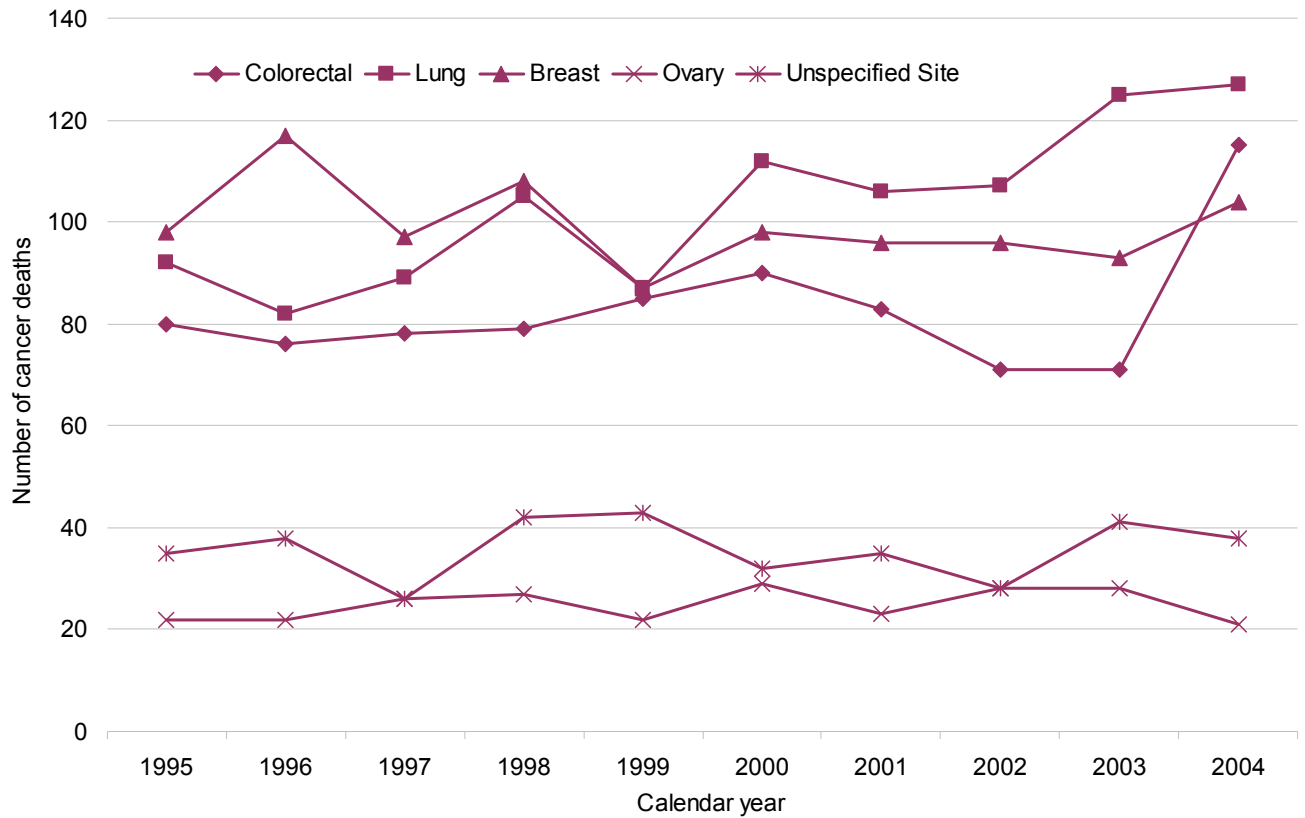
Table 29: Common fatal female cancers, for the Midland Cancer Network area and for New Zealand, 2000 - 2004 combined

Area	Cancer site	Number	Percentage
MCN	Lung	577	20%
	Breast	487	17%
	Colorectal	430	15%
	Unspecified site	174	6%
	Ovary	129	4%
	All other cancers	1131	38%
	Total	2928	100%
New Zealand	Breast	3131	17%
	Lung	2978	16%
	Colorectal	2812	15%
	Unspecified site	1146	6%
	Ovary	874	5%
	All other cancers	7315	41%
	Total	18,256	100%

Source: TAS Data Cubes: N00_CUBE_MORT.

Figure 72: Trends for common fatal female cancers, for the Midland Cancer Network area, 1995 - 2004

Cancer health needs in the Midland Cancer Network area, 2009



Source: TAS Data Cubes: N00_CUBE_MORT.

4.3.3. Common cancer deaths by ethnicity

For all ethnicities lung cancer was proportionally the most fatal cancer. For Māori the proportion was 31%, for the NZ European/Other ethnicity 18% and for the Pacific people 27% (Table 30).

Table 30: Common fatal cancers, for the Midland Cancer Network area, by ethnicity, 2000 - 2004 combined

Ethnicity	Cancer site	Number	Percentage
NZ European/Other	Lung	981	18%
	Colorectal	839	16%
	Prostate	434	8%
	Breast	383	7%
	Unspecified site	292	5%
	All other cancers	2386	45%
	Total	5315	100%
Māori	Lung	334	31%
	Breast	103	10%
	Unspecified site	73	7%
	Stomach	66	6%
	Prostate	55	5%
	All other cancers	437	41%
	Total	1068	100%
Pacific people	Lung	13	27%
	Breast	5	10%
	Unspecified site	5	10%
	Colorectal	3	6%
	Prostate	3	6%
	Stomach	3	6%
	All other cancers	17	35%
	Total	49	100%

Source: TAS Data Cubes: N00_CUBE_MORT.

4.3.4. Common cancer deaths for ethnicity, by gender

Males

Proportions across ethnicities for cancer type in the Midland Cancer Network area for fatal male cancers varied. However, lung cancer was proportionally the most common fatal cancer. For Pacific people the proportion was 37%, for Māori 29% and for NZ European/Other ethnicity 20% (Table 31).

Table 31: Common fatal male cancers, for the Midland Cancer Network area, by ethnicity, 2000 - 2004 combined

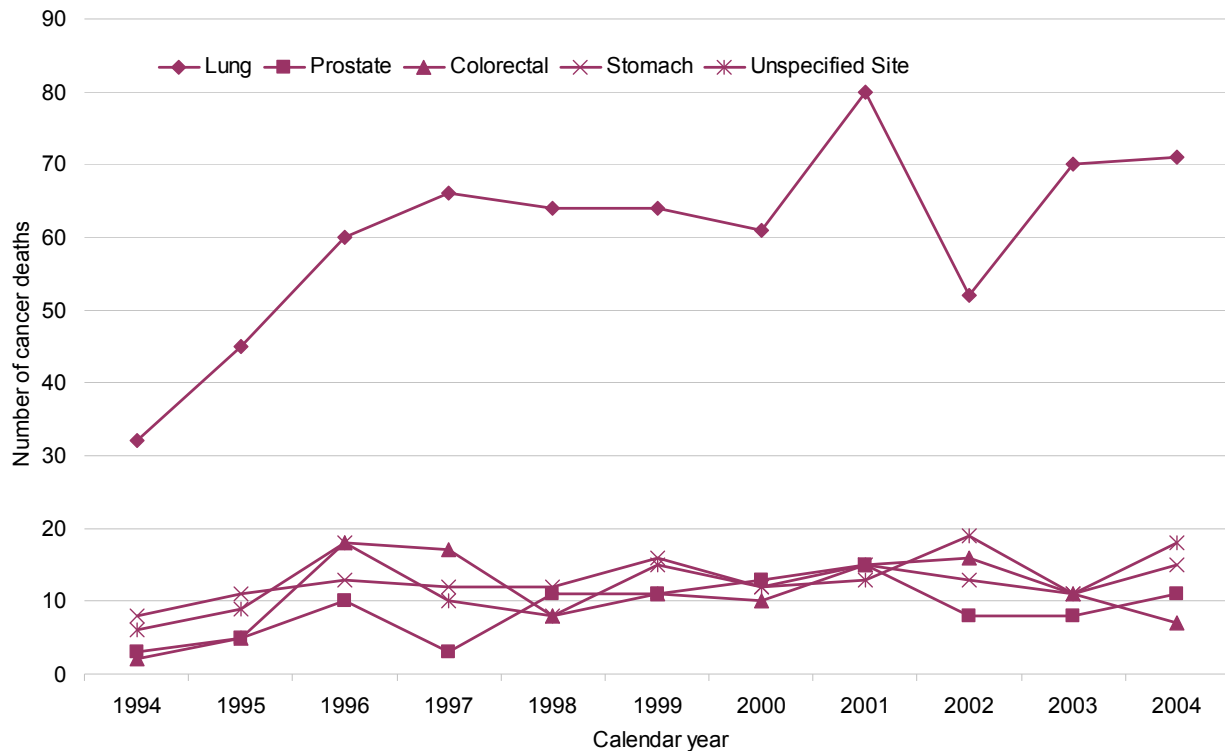
Ethnicity	Cancer site	Number	Percentage
NZ European/Other	Lung	594	20%
	Colorectal	434	15%
	Prostate	434	15%
	Unspecified site	148	5%
	Stomach	142	5%
	All other cancers	1207	40%
	Total	2959	100%
Māori	Lung	150	29%
	Prostate	55	11%
	Unspecified site	44	8%
	Stomach	40	8%
	Liver	37	7%
	All other cancers	192	37%
	Total	518	100%
Pacific people	Lung	10	37%
	Unspecified site	4	15%
	Colorectal	3	11%
	Prostate	3	11%
	Stomach	2	7%
	All other cancers	5	19%
	Total	27	100%

Source: TAS Data Cubes: N00_CUBE_MORT.

Cancer health needs in the Midland Cancer Network area, 2009

For Māori males in the Midland Cancer Network area, the numbers for lung cancer deaths were the highest above other cancers for the period 1994 - 2004 (Figure 73).

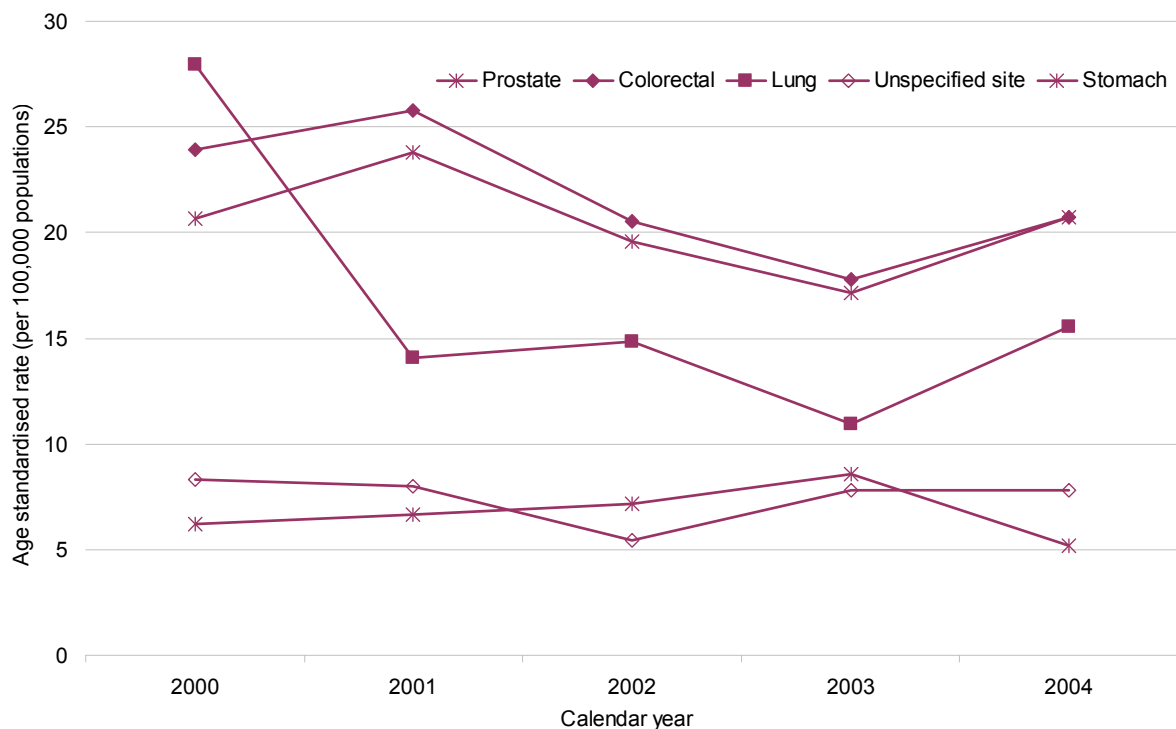
Figure 73: Trends for common fatal male cancers, for Māori, for the Midland Cancer Network area, 1994 - 2004



Source: TAS Data Cubes: N00_CUBE_MORT.

Age standardised rates for the five most common deaths caused by cancer for males, for NZ European/Other ethnicity, show high rates for colorectal and prostate cancers (21 per 100,000 population in 2004) followed by lung cancer (16 per 100,000 population in 2004) and a lower rate for stomach cancer (5 per 100,000 population in 2004) (Figure 74).

Figure 74: Age standardised rates for common cancer deaths for males, for the Midland Cancer Network area, by NZ European/Other ethnicity 2000 - 2004

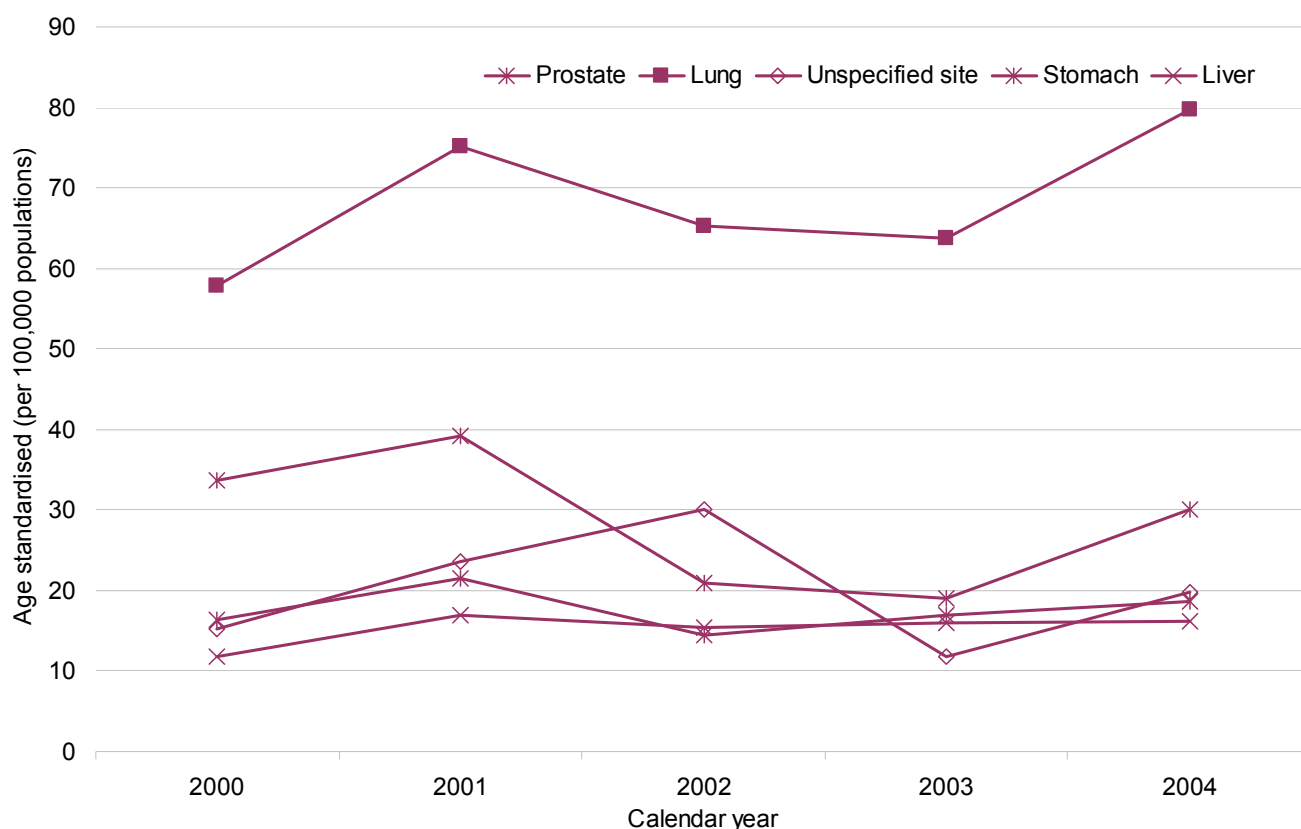


Source: TAS Data Cubes: N00_CUBE_MORT. Statistics NZ; Census 2006.

Cancer health needs in the Midland Cancer Network area, 2009

Age standardised rates for the five most common deaths caused by cancer for Māori males show high rates for lung cancer (80 per 100,000 population in 2004). This was followed by prostate cancer (30 per 100,000 population in 2004); stomach cancer (19 per 100,000 population in 2004) and liver cancer (16 per 100,000 population in 2004) (Figure 75).

Figure 75: Age standardised rates for the most common deaths caused by cancer for males, for the Midland Cancer Network area, by Māori ethnicity, 2000 - 2004



Source: TAS Data Cubes: N00_CUBE_MORT. Statistics NZ; Census 2006.

Females

Proportions across ethnicities for cancer type in the Midland Cancer Network area for fatal female cancers varied. For Māori, proportionally lung cancer was the most fatal (34%). For Pacific people proportionally, breast cancer was the most fatal (23%), and for NZ European/Other ethnicity colorectal cancer was the most fatal (17%) (Table 32).

Table 32: Common fatal female cancers, for the Midland Cancer Network area, by ethnicity, 2000 - 2004 combined

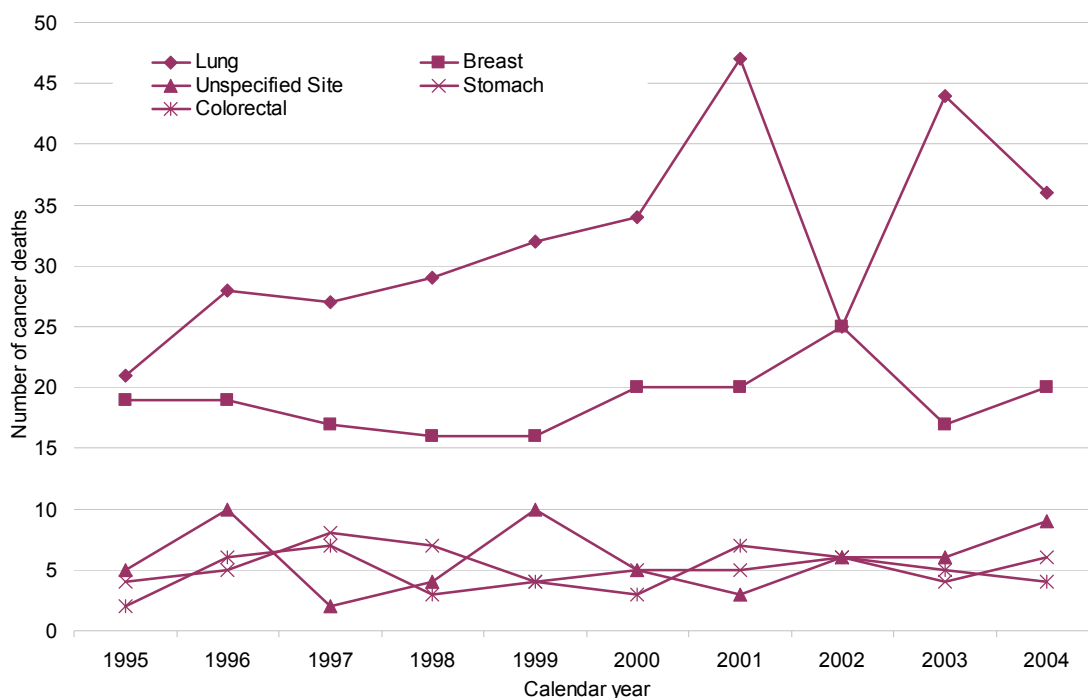
Ethnicity	Cancer site	Number	Percentage
NZ European/Other	Colorectal	405	17%
	Lung	387	16%
	Breast	380	16%
	Ovary	153	6%
	Unspecified site	153	6%
	All other cancers	878	39%
	Total	2356	100%
Māori	Lung	186	34%
	Breast	102	19%
	Unspecified Site	29	5%
	Stomach	26	5%
	Colorectal	25	5%
	All other cancers	182	32%
	Total	550	100%
Pacific people	Breast	5	23%
	Lung	4	18%
	Cervix	3	14%
	Ovary	3	14%
	Brain	2	9%
	All other cancers	5	22%
	Total	22	100%

Source: TAS Data Cubes: N00_CUBE_MORT.

Cancer health needs in the Midland Cancer Network area, 2009

Both breast and lung cancer deaths for Māori females increased during the time period 1995 - 2004. Although, a sharp decrease in lung cancer deaths was recorded in 2002. The number of cancer deaths for stomach, colorectal and unspecified remained constant during the time period 1995 - 2004 (Figure 76).

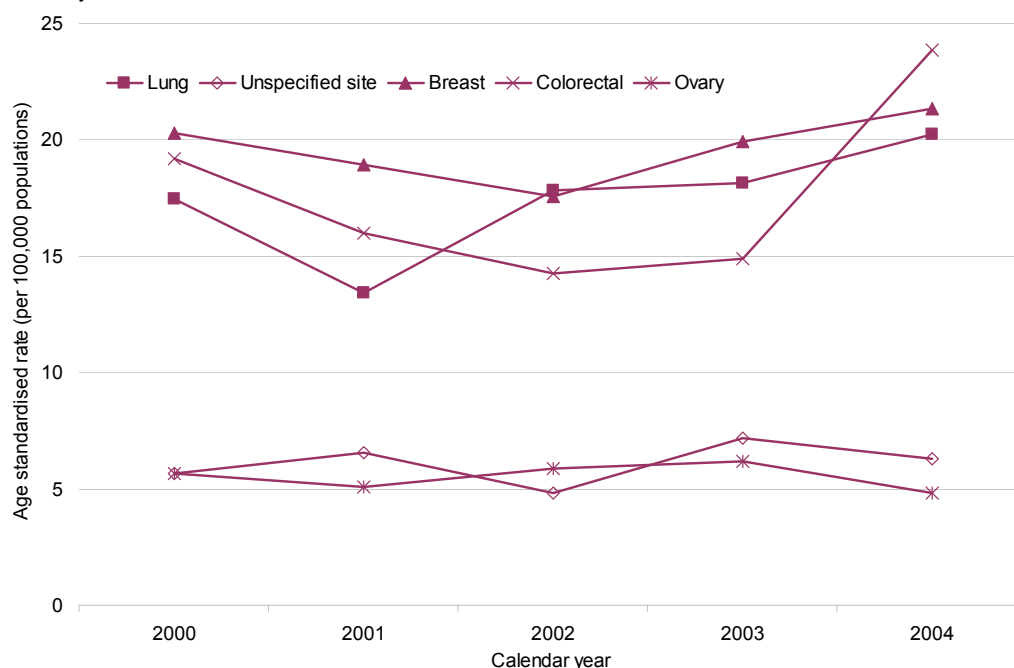
Figure 76: Trends for common deaths caused by cancer for females, for the Midland Cancer Network area, for Māori 1995 - 2004



Source: TAS Data Cubes: N00_CUBE_MORT.

Age standardised rates for the five most common deaths caused by cancers for females for NZ European/Other ethnicity show high rates of colorectal cancer (24 per 100,000 population in 2004). This is followed by breast cancer (21 per 100,000 population in 2004) and lung cancer (20 per 100,000 population in 2004). Ovarian cancer was the lowest at 5 per 100,000 population in 2004 (Table 28).

Figure 77: Age standardised rates for most common cancers causing death for females, for the Midland Cancer Network area, by NZ European/Other ethnicity 2000 - 2004

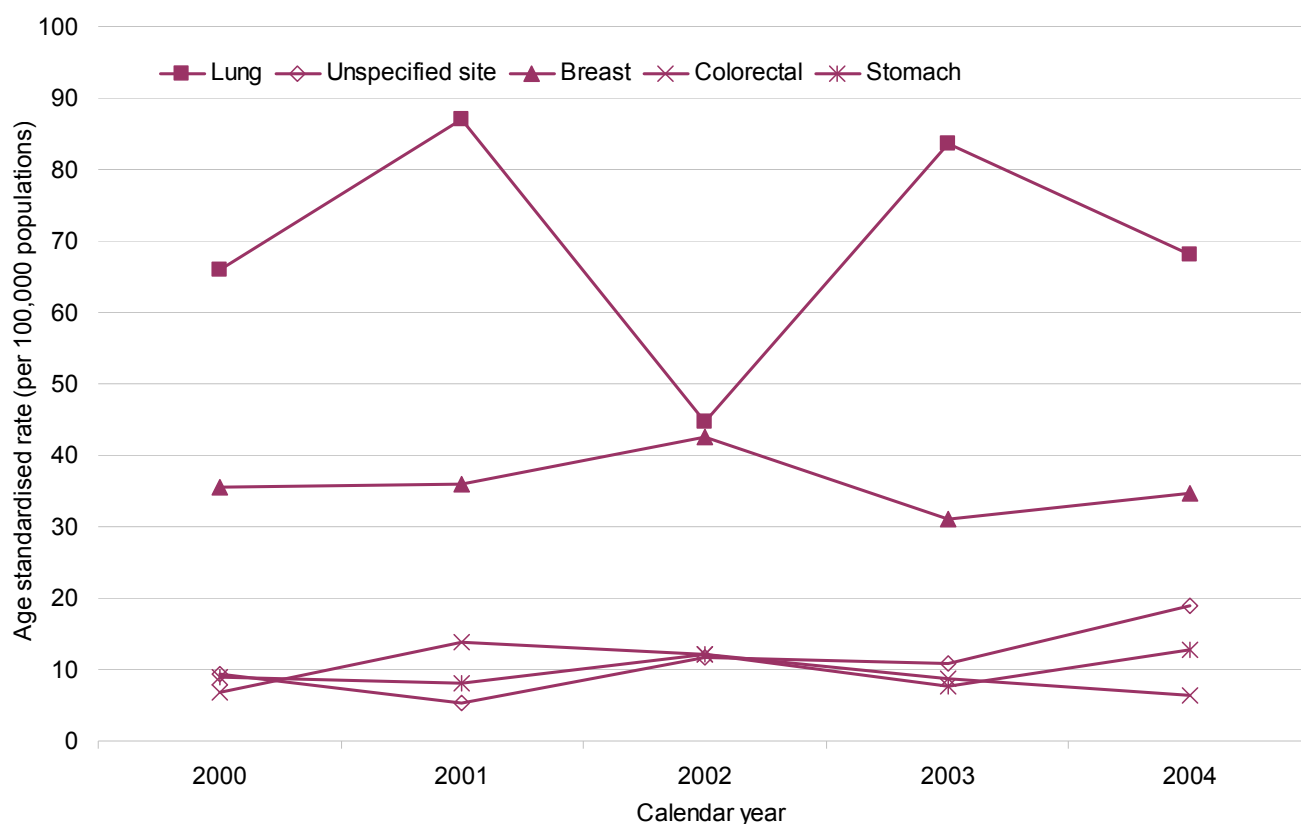


Source: TAS Data Cubes: N00_CUBE_MORT. Statistics NZ; Census 2006.

Cancer health needs in the Midland Cancer Network area, 2009

Age standardised rates for the five most common cancers causing death for Māori females show high rates for lung cancer (68 per 100,000 population in 2004). This was followed by breast cancer (35 per 100,000 population in 2004). Stomach cancer (13 per 100,000 population in 2004) and colorectal cancer (6 per 100,000 population in 2004) had lowest rates (Figure 78).

Figure 78: Age standardised rates for most common cancers causing death for females, for the Midland Cancer Network area, by Māori 2000 - 2004

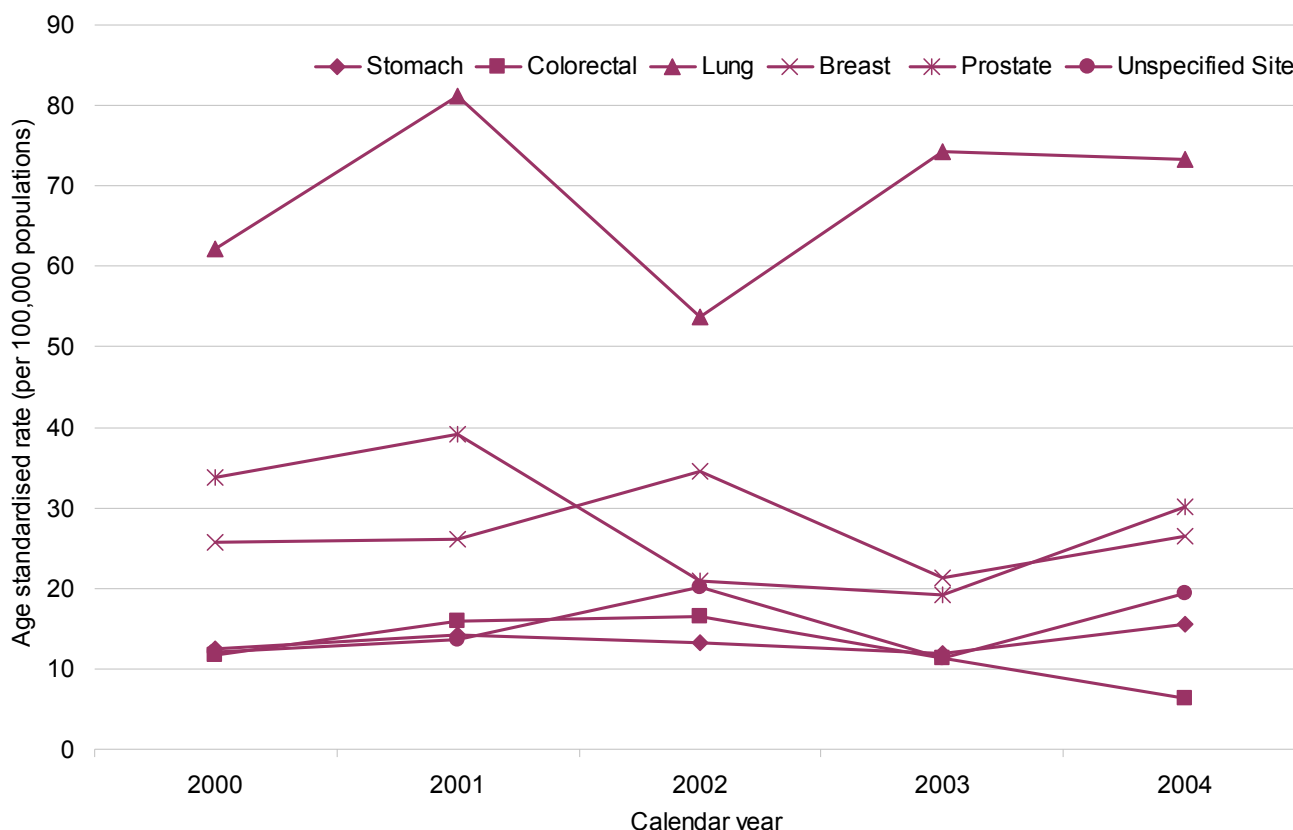


Source: TAS Data Cubes: N00_CUBE_MORT. Statistics NZ; Census 2006.

Both genders, Māori

Age standardised rates for both genders for Māori showed lung cancer was the most common fatal cancer, well ahead of breast, prostate, colorectal, stomach and unspecified in the Midland Cancer Network area. In comparison to incidence of common cancers where breast cancer was ahead of the others (Figure 79).

Figure 79: Age standardised rates for most common cancers causing death for Māori, for the Midland Cancer Network area, 2000 - 2004



Source: TAS Data Cubes: N00_CUBE_MORT. Statistics NZ; Census 2006.

¹² Neklason, D.W., Thorpe, B.L., Ferrandez, A., Tumbapura, A., Boucher, K., Garibotti, G., Kerber, R.A., Solomon, C.h., Samowitz, W.S., Fang, J.C., Mineau, G.P., Leppert, M.F., Burt, R.W., & Kuwada, S.K. (2008). Colonic adenoma risk in familial colorectal cancer – A study of six extended kindreds, American Journal of Gastroenterology, (103), 2577-2584. [electronic version] Retrieved January 6, 2009, from EBSCOhost database.

¹³ Ministry of Health. (2008). Bowel (colorectal) cancer screening programme for New Zealanders. Retrieved January 6, 2009, from <http://www.moh.govt.nz/moh.nsf/indexmh/cancercontrol-strategyandactionplan-bowelcancerscreening#decision>.

¹⁴ Zeegers, M.P.A., Jellama, A., & Ostrer, H. (2003). Empiric risk of prostate carcinoma for relatives of patients with prostate carcinoma, Cancer, 97, (8), 1894-1903. [Electronic version] Retrieved January 6, 2009, from EBSCOhost database.

¹⁵ National Screening Unit. (n.d.). Prostate cancer screening. Retrieved January 6, 2009, from <http://www.nsu.govt.nz/other-screening-areas/821.asp>.

¹⁶ Dite, G.S., Jenkins, M.A., Southey, M.C., Hocking, J.S., Giles, G.G., McCredie, M.R.E., Venter, D.J., & Hopper, J.L.. (2003). Familial risks, early-onset breast cancer, and BRCA1 and BRCA2 germline mutations, Journal of the National Cancer Institute, 95, (6), 448-457. [Electronic version] Retrieved January 6, 2009, from EBSCOhost database.

¹⁷ Australian Cancer Network Melanoma Guidelines Revision Working Party. (2008). Clinical practice guidelines for the management of melanoma in Australia and New Zealand. Wellington: The Cancer Council Australia and Australian Cancer Network, Sydney and New Zealand Guidelines Group.

¹⁸ US Department of Health and Human Services. (2004). The health consequences of smoking: What it means to you. US Department of Health and Human Services, Centres for Disease Control and Prevention, National Centre for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. Retrieved February 17, 2009 from http://www.cdc.gov/tobacco/data_statistics/sgr/sgr_2004/00_pdfs/SGR2004_Whatitmeanstoyou.pdf.

5. Cancer: the risk factors

5.1. Summary

Cancer prevention is an important component of cancer control as 40% of all cancer deaths can be prevented¹⁹. Cancer prevention involves focusing on risk factors that increase a person's chances of developing cancer (such as smoking), and also protective factors such as a healthy diet and physical activity²⁰.

People's exposure to risk factors involves a complex range of behavioural, social, economic, environmental and cultural factors that are not easy to change. Reducing the incidence of these lifestyle-related cancers also requires a comprehensive approach²⁰.

Given the importance of prevention, the first goal of the New Zealand Cancer Control Strategy is 'to reduce the incidence of cancer through primary prevention'. The seven objectives outlined under this goal in relation to cancer risk include: tobacco use and second-hand smoke; nutrition; physical activity and obesity; alcohol; infectious disease; ultraviolet radiation; and occupational exposure.

Findings indicate that of the three Midland Cancer Network DHBs, Lakes DHB showed the highest proportion of cancer risk factors including: regular smokers, parental smokers (as perceived by year 10 students), youth smokers, obese people and hazardous drinkers. Of the three DHBs, Lakes DHB also has the highest proportion of their population residing in high deprivation areas, particularly their urban population. This in relation to a high proportion of risk factors poses health concerns for Lakes DHB.

With regard to ethnicity and smoking Māori have a considerably higher rate of daily smoking across all Midland Cancer Network DHBs. Asian people have a much lower rate than other ethnicities. Māori females particularly have the highest rate of daily smoking and the highest rate of regular smoking out of all students. In terms of second hand smoke exposure Māori and Pacific people have the highest rates overall across all Midland Cancer Network DHBs.

Females have higher levels of daily and regular smoking than males.

Across the Midland Cancer Network DHBs, Pacific and Asian people have a considerably lower proportion of recommended vegetable consumption than Māori and NZ European/Other ethnicities.

More females are getting their daily recommended fruit intake than males. This is consistent across all DHBs in the Midland Cancer Network area.

Across the Midland Cancer Network DHBs Asian people have higher rates of sedentary behaviour.

Pacific children had a higher average Body Mass Index at all age groups than NZ European /Other.

Across all ethnicities and Midland Cancer Network DHBs Māori have the highest proportion of hazardous drinking. In terms of gender, men have a much higher prevalence of hazardous drinking than women.

Females were more likely to wear sunscreen than males; also younger people were more likely to wear sunscreen than older people.

Hepatitis B notifications for cancer networks across New Zealand show on average that Midland Cancer Network has the lowest number of notifications compared to other cancer networks. The number of hepatitis B and hepatitis C notifications within the Midland Cancer Network area has decreased between the years 1997 to 2007. For the 12 month period ending June 2008, immunisation coverage for hepatitis B for all Midland Cancer Network DHBs across ethnicities was lower than the national coverage.

5.2. Tobacco use and second hand smoke

Tobacco use is still the common cause of morbidity and mortality in New Zealand. It is estimated that smoking kills 5000 people a year, within New Zealand²¹. Tobacco use is the largest cause of cancer in developed countries causing up to 90% of all lung cancer deaths, and 30% of other cancer deaths such as oral cavity, larynx, oesophagus and stomach²². Second hand smoke has also been linked as a cause of lung cancer in adults²³.

The Ministry of Health had set health targets to “increase the proportion of ‘never smokers’ among Year 10 students by at least 2% (absolute increase) over 2007/08” and to “increase the proportion of homes, which contain one or more smokers and one or more children, that have a smokefree policy to over 75% in 2007/08”²⁴.

5.2.1. Smoking prevalence

A ‘current regular smoker’ is defined by the 2006 Census as someone who smokes cigarettes once or more a day. Approximately 103,206 (21%) people in the Midland Cancer Network area are ‘current regular smokers’ (for the population 15 years or older).

In comparison to the other cancer networks, the Midland Cancer Network area has a slightly higher proportion of ‘regular smokers’, also slightly higher than the New Zealand proportion (Table 33, Figure 80).

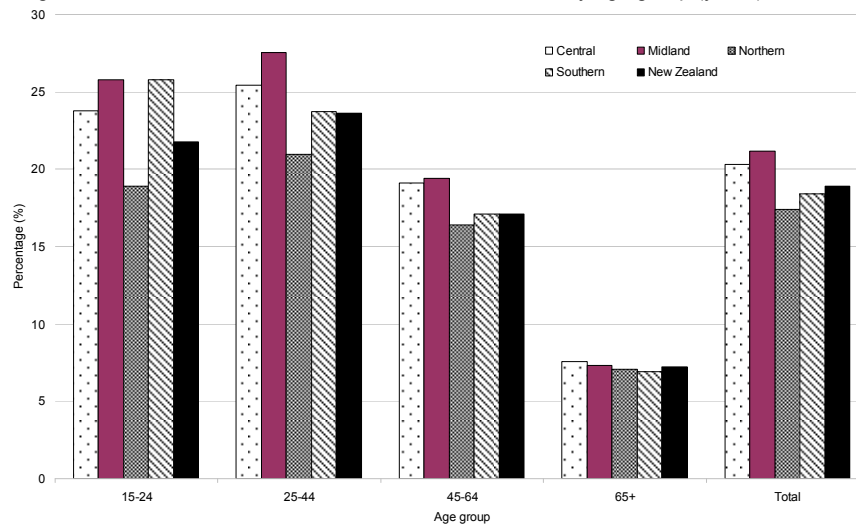
Table 33: Smoking status of cancer networks for New Zealand, as a percentage of the population, by age group (years), 2006

Area	Smoking status	15-24	25-44	45-64	65+	Total
Central	Regular smoker	24%	25%	19%	8%	20%
	Ex-smoker	7%	18%	26%	33%	21%
	Never smoked regularly	60%	49%	47%	51%	51%
	Not elsewhere included	9%	8%	7%	9%	8%
	Total	100%	100%	100%	100%	100%
Midland	Regular smoker	26%	28%	19%	7%	21%
	Ex-smoker	7%	18%	26%	33%	21%
	Never smoked regularly	57%	46%	46%	50%	49%
	Not elsewhere included	10%	9%	8%	10%	9%
	Total	100%	100%	100%	100%	100%
Northern	Regular smoker	19%	21%	16%	7%	17%
	Ex-smoker	6%	16%	23%	30%	18%
	Never smoked regularly	64%	54%	51%	53%	55%
	Not elsewhere included	11%	9%	9%	10%	10%
	Total	100%	100%	100%	100%	100%
Southern	Regular smoker	26%	24%	17%	7%	18%
	Ex-smoker	7%	19%	26%	33%	22%
	Never smoked regularly	57%	50%	50%	51%	52%
	Not elsewhere included	10%	7%	7%	9%	7%
	Total	100%	100%	100%	100%	100%
New Zealand	Regular smoker	22%	24%	17%	7%	19%
	Ex-smoker	7%	17%	26%	32%	20%
	Never smoked regularly	62%	51%	50%	51%	52%
	Not elsewhere included	9%	8%	7%	10%	9%
	Total	100%	100%	100%	100%	100%

Source: Statistics NZ, Census 2006.

Cancer health needs in the Midland Cancer Network area, 2009

Figure 80: Percentage of regular smokers for the cancer networks of New Zealand, by age group (years), 2006.



Source: Statistics NZ, Census 2006.

Lakes DHB has the highest proportion of their population (15 years or older) that are 'current regular smokers' (25%). Waikato DHB has the highest number of people who have 'never smoked regularly' compared with the other DHBs within the Midland Cancer Network area. Table 34 below shows that the total smoking status distribution when comparing each of the DHBs is similar, with approximately 45% - 50% of the population in the category 'never smoked regularly', and 20% for both 'regular smoker' and 'ex-smoker'.

Table 34: Smoking status of the Midland Cancer Network DHBs, as a percentage of the population, 2006

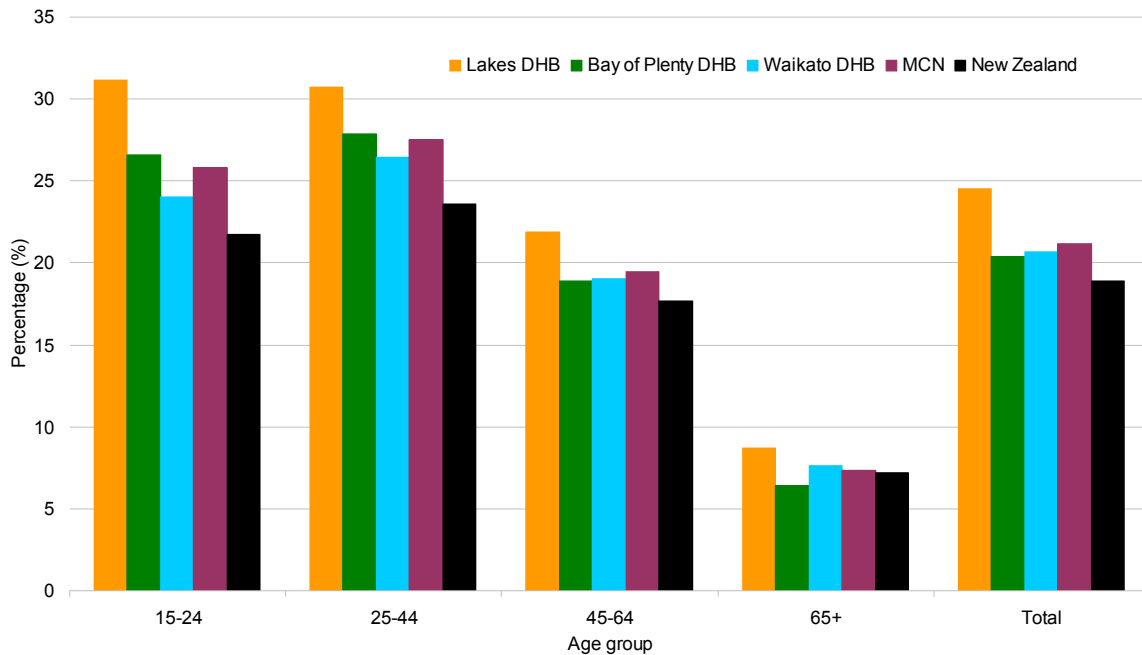
Area	Smoking status	15-24	25-44	45-64	65+	Total
Lakes DHB	Regular smoker	31%	31%	22%	9%	25%
	Ex-smoker	7%	18%	26%	34%	21%
	Never smoked regularly	50%	42%	42%	46%	44%
	Not elsewhere included	11%	9%	10%	11%	10%
	Total	100%	100%	100%	100%	100%
Bay of Plenty DHB	Regular smoker	27%	28%	19%	6%	20%
	Ex-smoker	7%	19%	27%	34%	23%
	Never smoked regularly	56%	44%	46%	50%	48%
	Not elsewhere included	10%	9%	8%	9%	9%
	Total	100%	100%	100%	100%	100%
Waikato DHB	Regular smoker	24%	26%	19%	8%	21%
	Ex-smoker	7%	17%	25%	31%	20%
	Never smoked regularly	59%	48%	48%	52%	50%
	Not elsewhere included	9%	9%	8%	10%	9%
	Total	100%	100%	100%	100%	100%
MCN	Regular smoker	26%	28%	19%	7%	21%
	Ex-smoker	7%	18%	26%	33%	21%
	Never smoked regularly	57%	46%	46%	50%	49%
	Not elsewhere included	10%	9%	8%	10%	9%
	Total	100%	100%	100%	100%	100%
New Zealand	Regular smoker	22%	24%	18%	7%	19%
	Ex-smoker	7%	17%	25%	32%	20%
	Never smoked regularly	62%	51%	49%	51%	52%
	Not elsewhere included	9%	8%	8%	10%	9%
	Total	100%	100%	100%	100%	100%

Source: Statistics NZ, Census 2006.

Cancer health needs in the Midland Cancer Network area, 2009

Figure 81 shows a higher proportion of the younger age groups are regular smokers for the Midland Cancer Network area with Lakes DHB the highest in all age groups.

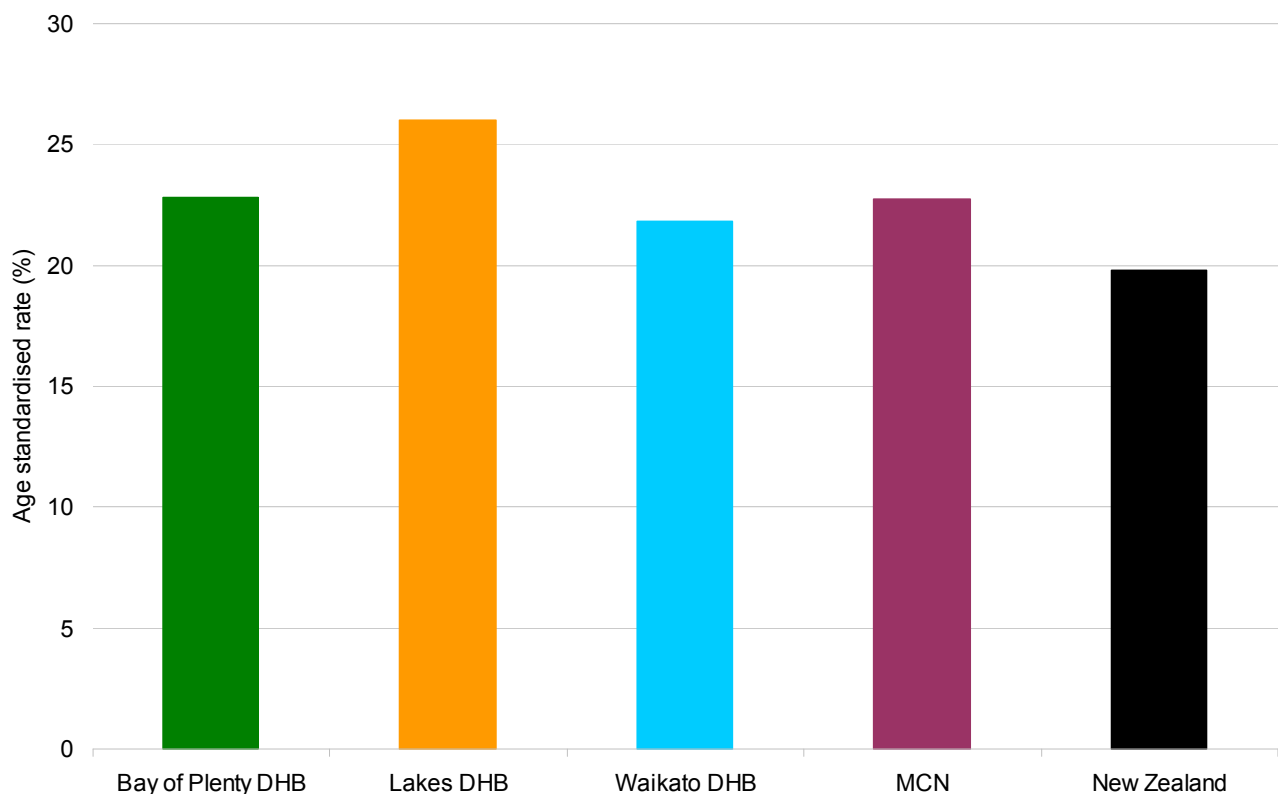
Figure 81: Percentage of 'regular smokers', for the Midland Cancer Network area and New Zealand, by age group (years), 2006



Source: Statistics NZ, Census 2006.

When percentage rates are age standardised the data from the Census 2006 indicates that Lakes DHB has the highest smoking rate with an estimated 26% of the population being regular smokers (Figure 82). This is followed by Bay of Plenty DHB (23%) and Waikato DHB (22%). The New Zealand rate however, is lower than the rates for Midland Cancer Network DHBs (20%).

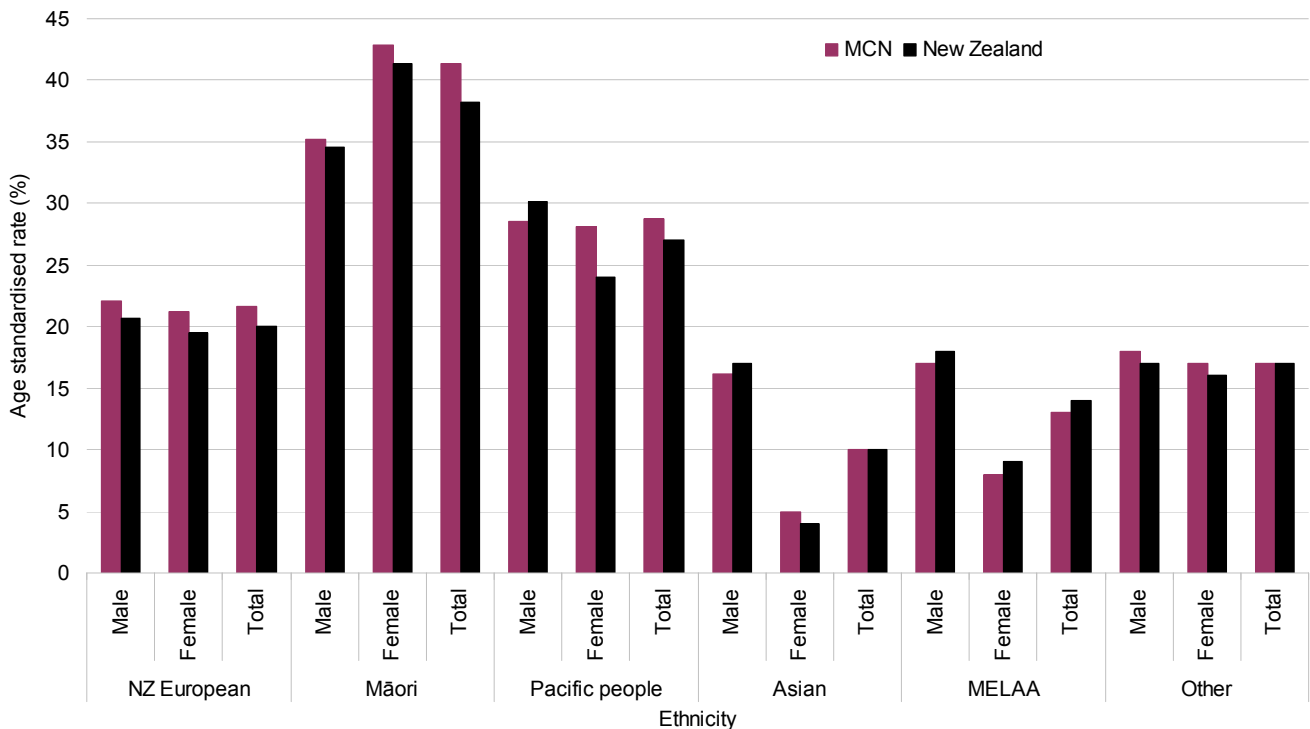
Figure 82: Age standardised rates as a percentage of the population who are 'regular smokers', for the Midland Cancer Network area and for New Zealand, 2006.



Source: Statistics NZ, Census 2006.

Māori have a considerably higher rate of daily smoking within the Midland Cancer Network area, while Asian people and those from the MELAA origin (Middle Eastern, Latin American and African) have a much lower rate than the other ethnic groups (Figure 83). The national age standardised percentages are lower across all ethnicities when compared to the Midland Cancer Network area, except for the MELAA group, Asian and Pacific people males where the national percentage is slightly higher.

Figure 83: Age standardised rates as a percentage of the population who are 'current daily smokers', for the Midland Cancer Network area and for New Zealand, by ethnicity, 2006 – 2007

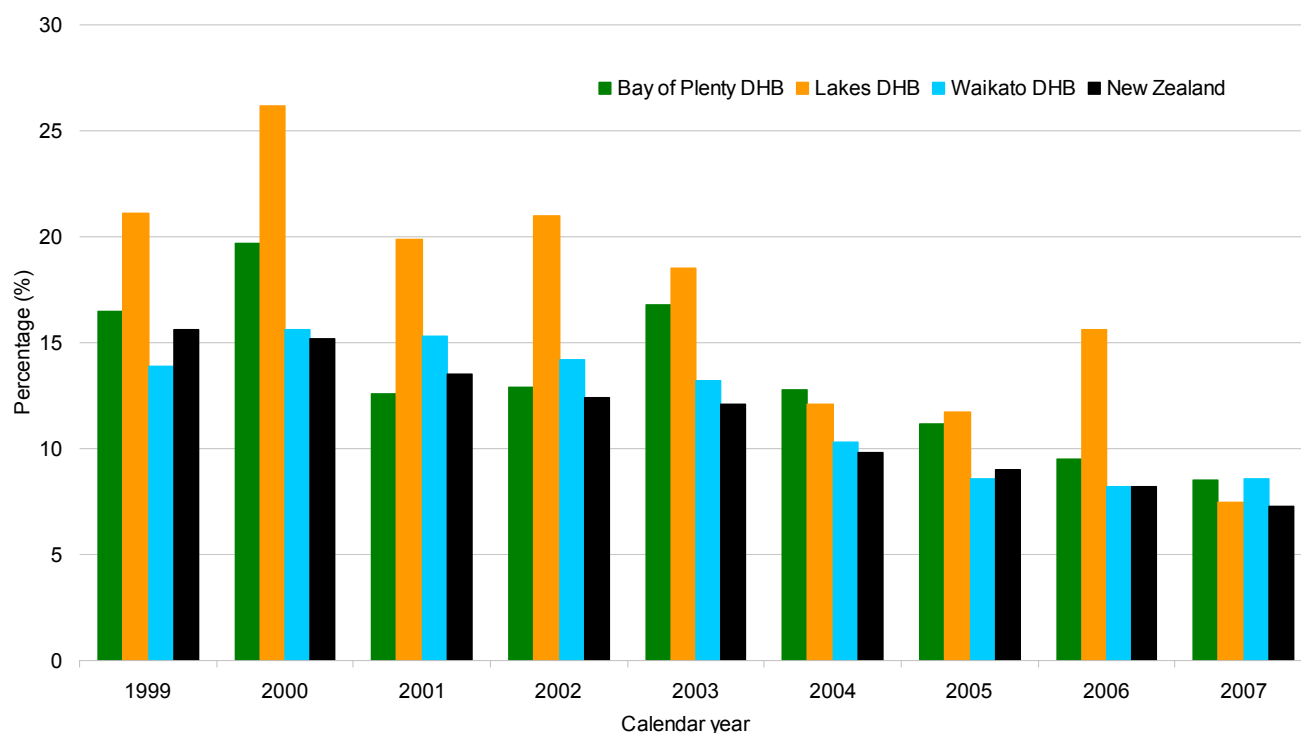


Source: Public Health Intelligence, New Zealand Health Survey Data 2006/2007

5.2.2. Smoking prevalence for youth

The *Year 10 Survey* provides survey data on tobacco use for 14 - 15 year old students and their families. Smoking rates in Year 10 students have decreased since 1999, especially in the Lakes DHB with a decrease from 26% in 2000 to 8% in 2007 (Figure 84). This is followed by Bay of Plenty DHB with 20% in 2000 down to 9% in 2007. Waikato DHB decreased from 16% in 2000 to 9% in 2007. The New Zealand rate decreased from 16% in 1999 to 7% in 2007. The New Zealand rate is currently the lowest compared with all of the Midland Cancer Network DHBs.

Figure 84: Prevalence of year 10 students smoking on a daily basis, for the Midland Cancer Network area and for New Zealand, 1999 – 2007



Source: Public Health Intelligence, Year 10 Survey Data 2006/2007.

Within New Zealand females show to have higher levels of daily and regular smoking when compared to males. Māori females particularly have the highest rate of daily smoking and the highest rate of regular smoking out of all students. Asian females and males have the lowest rates of daily and regular smoking. Asian males however, have the highest rate of those who have never smoked (Table 35).

Table 35: Prevalence of daily, regular and never smokers as a percentage, for year 10 students for New Zealand, by ethnicity and gender, 2007

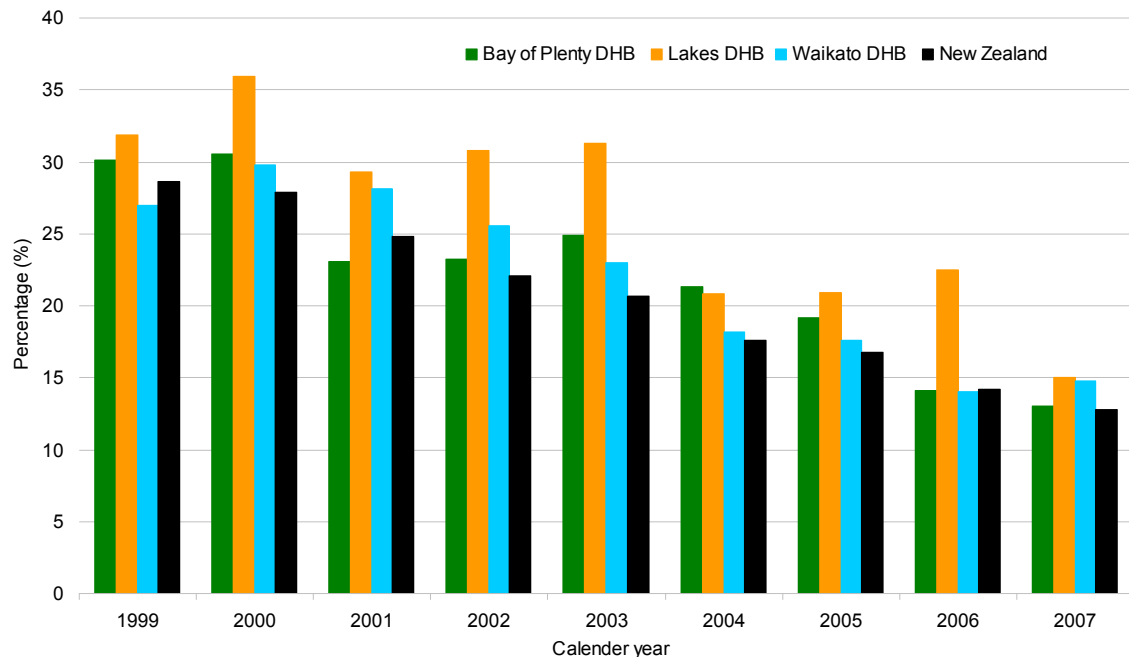
Gender	Ethnicity	Daily	Regular	Never
Males	Māori	12%	19%	39%
	NZ European/Other	4%	8%	63%
	Pacific people	9%	14%	52%
	Asian	5%	8%	76%
Females	Māori	22%	34%	27%
	NZ European/Other	5%	11%	61%
	Pacific people	11%	18%	46%
	Asian	2%	18%	46%

Source: Public Health Intelligence, Year 10 Survey Data 2006/2007.

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The percentage of students who smoke on a regular basis is also declining. Lakes DHB has the highest rate of regular smoking as well as the highest rate of daily smoking in students. But the percentage of students smoking on a regular basis has decreased largely in Lakes DHB from 36% in 2000 to 15% in 2007 (Figure 85). This is followed by Bay of Plenty DHB with 31% in 2000 to 13% in 2007. Waikato DHB was 30% in 2000 down to 15% in 2007. The New Zealand rate for regular smoking in 2007 is lower than the Midland Cancer Network DHBs (under 13%).

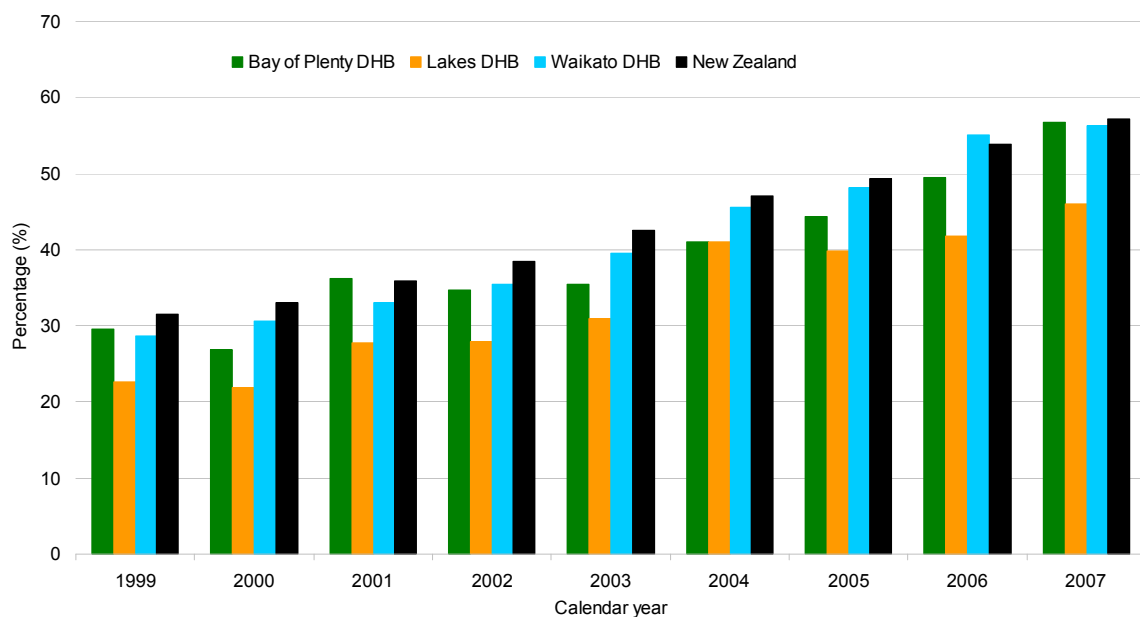
Figure 85: Prevalence of year 10 students demonstrating regular smoking behaviours as a percentage, for the Midland Cancer Network area and for New Zealand, 1999 – 2007



Source: Public Health Intelligence, Year 10 Survey Data 2006/2007.

The New Zealand rate for students who have never smoked is increasing (32% in 1999 up to 57% in 2007) (Figure 86). This is comparable to Waikato DHB (29% in 1999 and 56% in 2007) and Bay of Plenty DHB (30% in 1999 and 57% in 2007). Lakes DHB however, has the lowest rate of students who have never smoked (23% in 1999 to 46% in 2007).

Figure 86: Prevalence of year 10 students who have never smoked as a percentage, for the Midland Cancer Network area and for New Zealand, 1999 – 2007

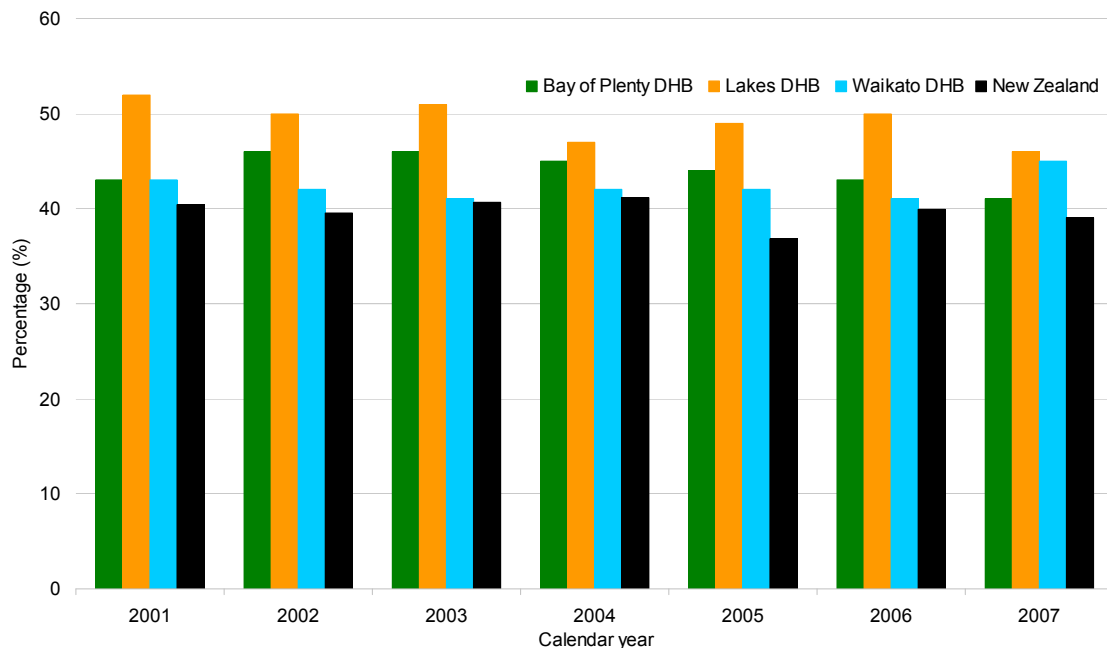


Source: Public Health Intelligence, Year 10 Survey Data 2006/2007.

5.2.3. Parental smoking and smoking in the home

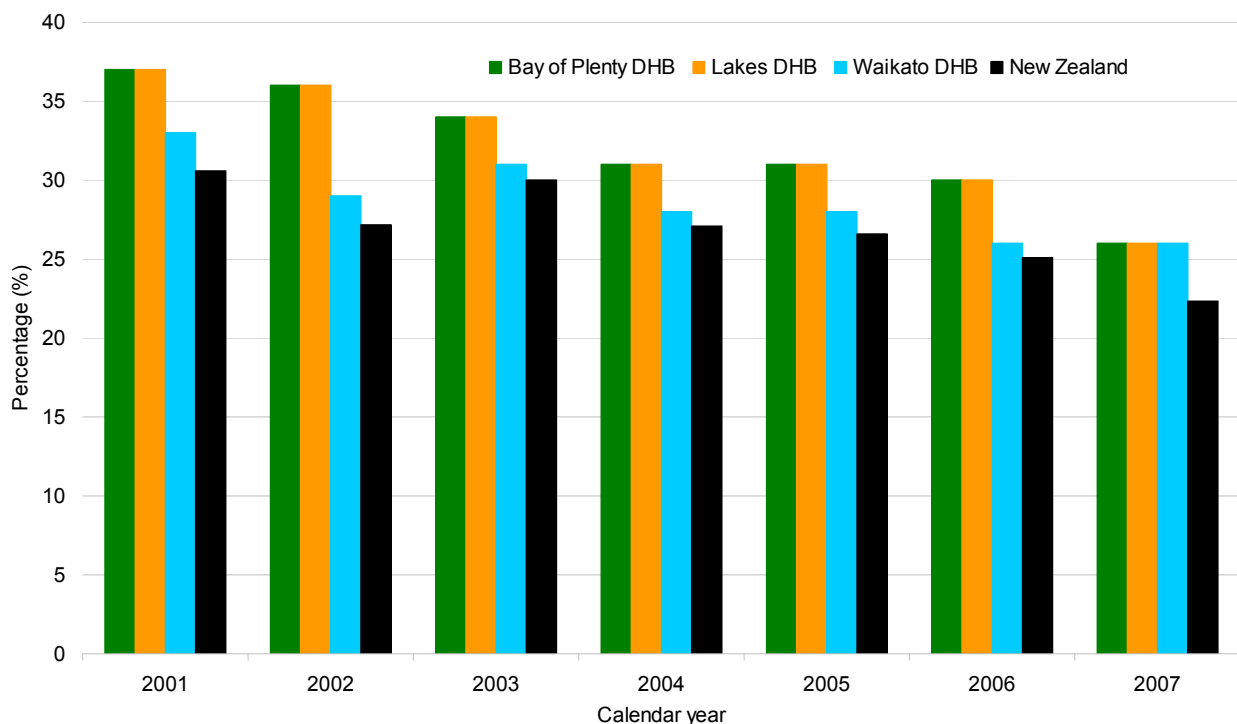
Parental smoking and smoking within the home can often lead students living in the same household towards smoking. Parental smoking has shown no obvious change in trend between the time period 2001 - 2007. Lakes DHB however, continues to have the largest proportion of parental smoking across the years. The percentage of people smoking within the home has shown a downward trend between the years 2001 - 2007. The New Zealand rate continues to be lower than the rates for all Midland Cancer Network DHBs (Figure 87 and Figure 88).

Figure 87: Prevalence of parental smokers of year 10 students as a percentage, for the Midland Cancer Network area and for New Zealand, 2001 – 2007



Source: Public Health Intelligence, Year 10 Survey Data 2006/2007

Figure 88: Prevalence of smoking in the home of year 10 students as a percentage, for the Midland Cancer Network area and for New Zealand, 2001 – 2007



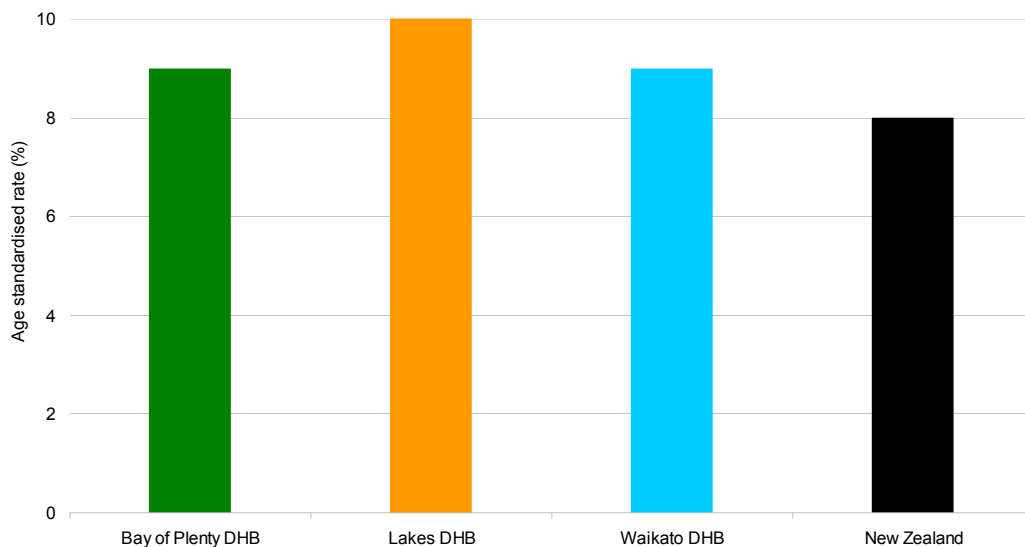
Source: Public Health Intelligence, Year 10 Survey Data 2006/2007

5.2.4. Second hand smoke exposure

“Second hand smoke exposure comes from two places, smoke that is breathed out by the person who smokes the cigarette and smoke that is from the end of the cigarette”²³. Second hand smoke exposure can often lead to lung cancer.

The age standardised rates as a percentage of the people that are exposed to second hand smoke in New Zealand is 8%. All three Midland Cancer Network DHBs have similar rates of second hand smoke, averaging 9% (Figure 89).

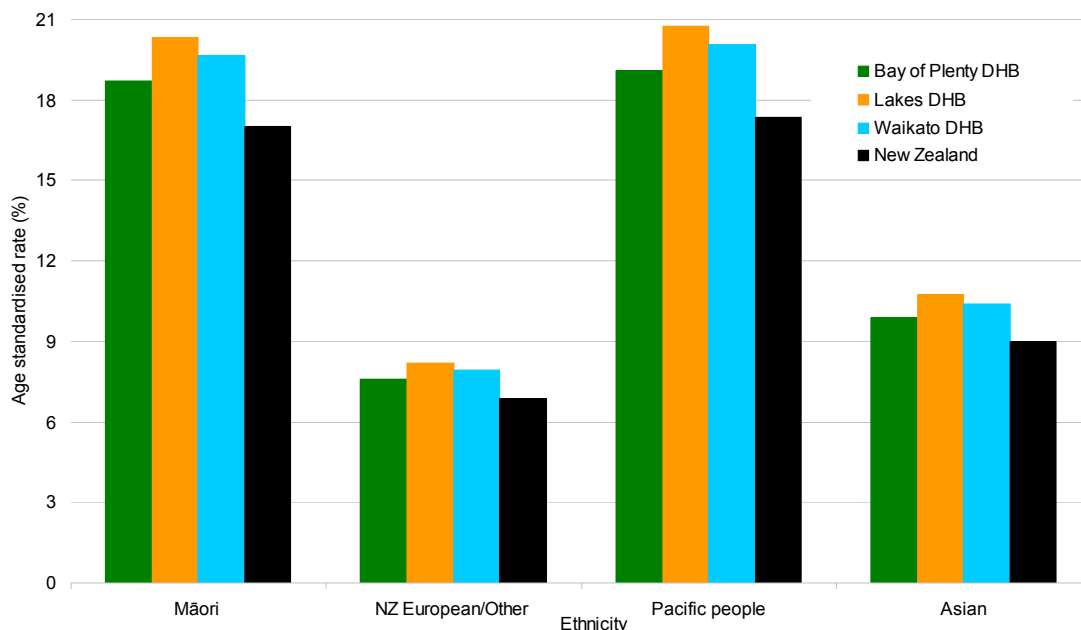
Figure 89: Age standardised rates as a percentage of the population exposed to second hand smoke, for the Midland Cancer Network area and for New Zealand, 2006 – 2007



Source: Public Health Intelligence, New Zealand Health Survey Data 2006/2007.

The data from the *New Zealand Health Survey 2006/2007* shows overall for Midland Cancer Network DHBs that Māori and Pacific people have the highest rates of second hand smoke exposure (Figure 90). The national percentages of people who are exposed to second hand smoke for all ethnicities is lower than in comparison to all Midland Cancer Network DHBs (across all ethnicities).

Figure 90: Age standardised rates as a percentage of the population exposed to second hand smoke, for the Midland Cancer Network area and New Zealand, by ethnicity, 2006 – 2007



Source: Public Health Intelligence, New Zealand Health Survey Data 2006/2007.

5.3. Nutrition

Dietary factors are linked to causing some cancers in western countries. Diet is second only to tobacco as a preventable cause of cancer. By modifying one's diet and engaging in regular physical exercise, some forms of cancer may be controlled and prevented²². Having a healthy diet is desirable as a high fruit and vegetable consumption rate can have a protective affect against many cancers. An excessive consumption of red and preserved meats could be associated with an increased risk in colorectal cancer²². Being overweight or obese also increases a person's risk of cancer.

The Ministry of Health has set health targets to "increase the proportion of adults (15 years and older) eating three or more servings of vegetables per day to 70% or greater" and "increase the proportion of adults eating two or more servings of fruit per day to 62% or greater" (p. 28)²⁴.

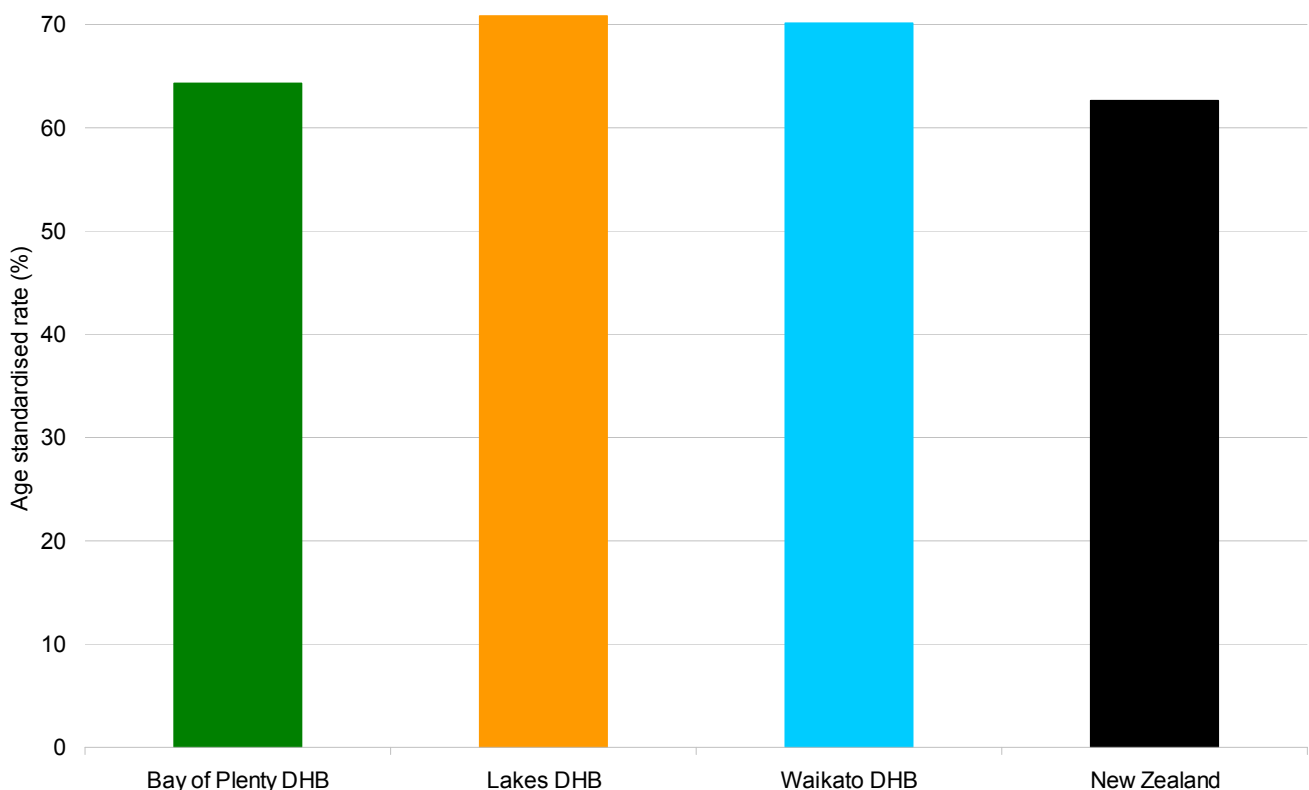
Healthy Eating, Healthy Action is the Ministry of Health's strategy to help raise New Zealanders level of physical activity and improve eating habits²⁵.

5.3.1. Vegetable consumption

The *New Zealand Health Survey 2006/2007* recommends that in an adult's daily diet they eat at least three servings of vegetables each day²³. The survey showed that women were more likely to eat the right amount of vegetables than men.

The age standardised rates as a percentage show Lakes DHB has the highest rate of adequate vegetable consumption (71%), followed closely by Waikato DHB (70%), with Bay of Plenty DHB showing the lowest rate (64%). Midland Cancer Network DHBs have a higher rate overall than the New Zealand rate (63%) (Figure 91).

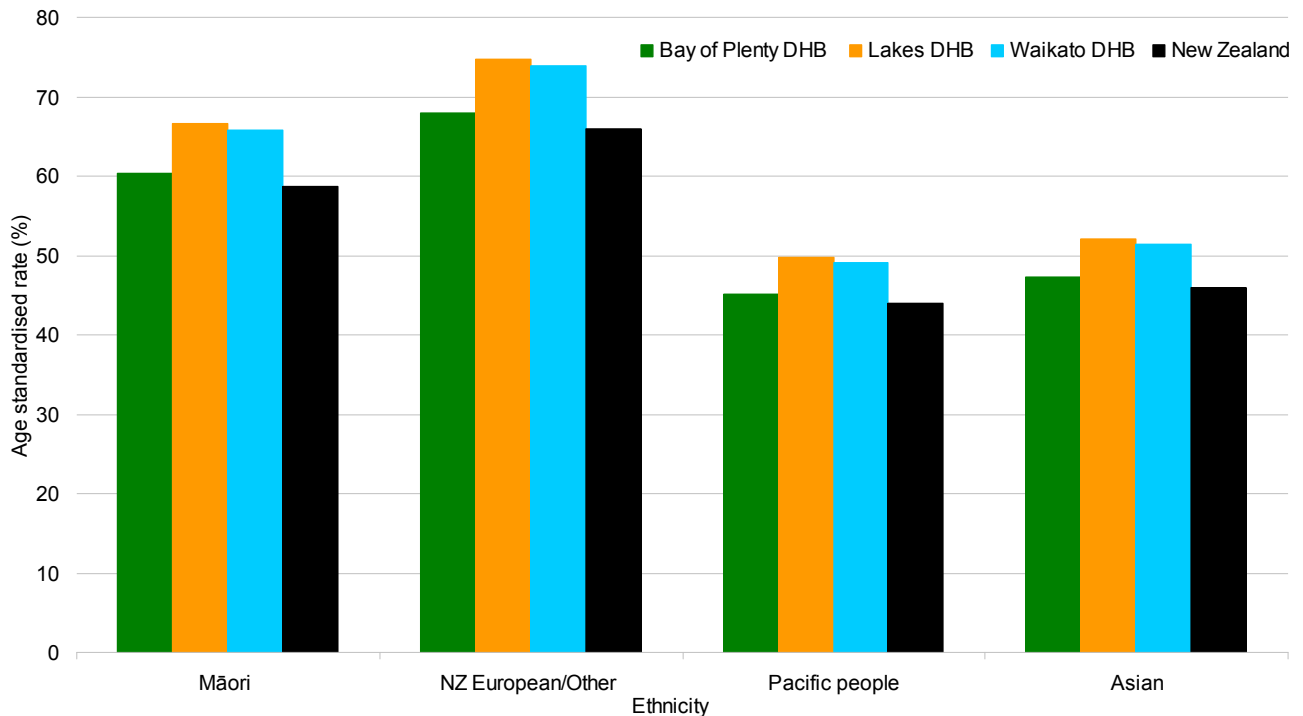
Figure 91: Age standardised rates as a percentage of the population who consume adequate quantities of vegetables, for the Midland Cancer Network area and for New Zealand, 2006 – 2007



Source: Public Health Intelligence, New Zealand Health Survey Data, 2006/2007.

Across the Midland Cancer Network DHBs, Pacific people and Asian ethnic groups have a considerably lower proportion of recommended vegetable consumption when compared with Māori and NZ European/Other ethnicities (Figure 92). NZ European/Other ethnicities living in Lakes DHB had the highest rate of vegetable consumption followed by Waikato DHB then Bay of Plenty DHB. The national rate is lower than all of the Midland Cancer Network DHBs (across all ethnicities).

Figure 92: Age standardised rates as a percentage of the population who consume recommended quantities of vegetables, for the Midland Cancer Network area and for New Zealand, by ethnicity 2006 – 2007



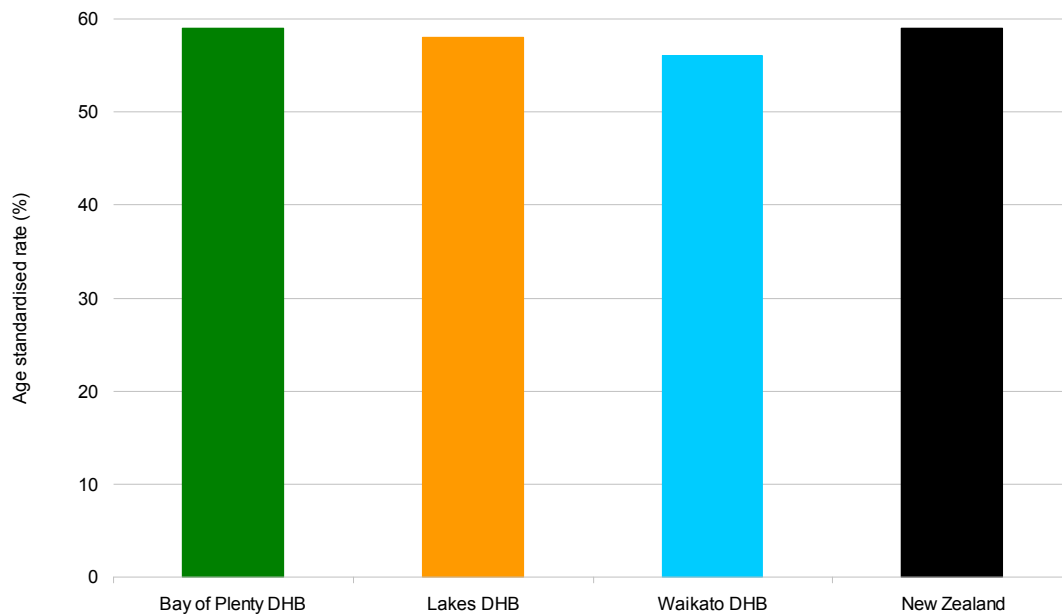
Source: Public Health Intelligence, New Zealand Health Survey Data, 2006/2007.

5.3.2. Fruit consumption

The *New Zealand Health Survey 2006/2007* defines the daily recommended fruit intake as two servings of fruit each day²³.

Age standardised rates show that the Waikato DHB has the lowest percentage of people getting the adequate amount of fruit intake (56%). Lakes DHB and Bay of Plenty DHB showed similar rates to the New Zealand fruit consumption rate (59%) (Figure 93).

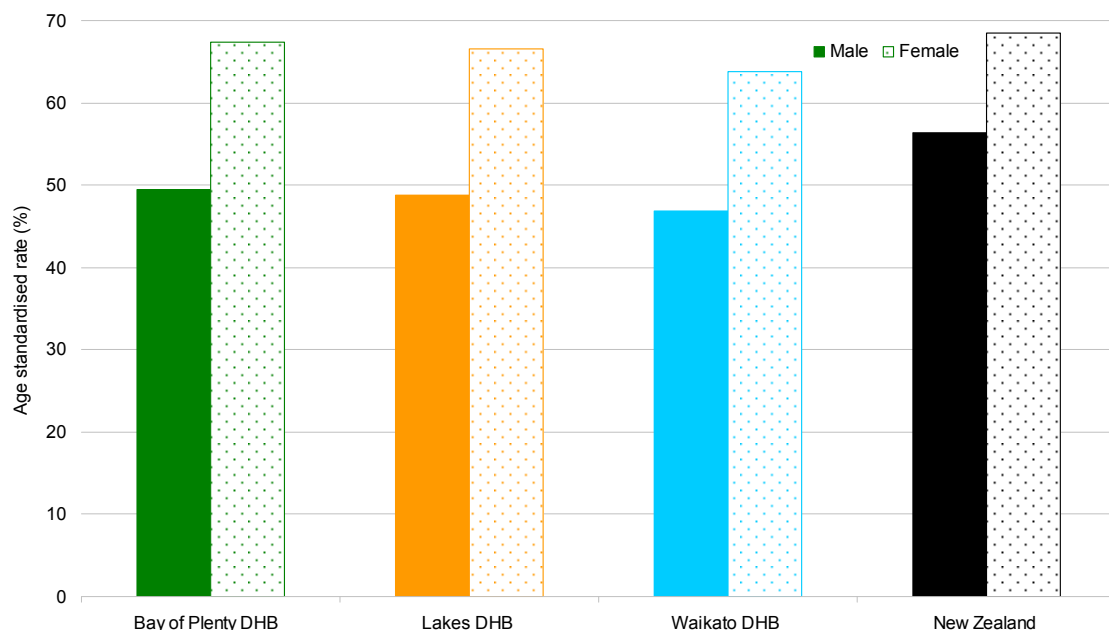
Figure 93: Age standardised rates as a percentage of the population who consume adequate quantities of fruit, for the Midland Cancer Network area and for New Zealand, 2006 – 2007



Source: Public Health Intelligence, New Zealand Health Survey Data, 2006/2007.

Data shows more females are getting their daily recommended fruit intake than males. This is consistent across all the Midland Cancer Network DHBs (Figure 94). Nationally, a higher proportion of people consume the recommended levels of fruit than all Midland Cancer Network DHBs for both genders.

Figure 94: Age standardised rates as a percentage of the population who consume recommended quantities of fruit, for the Midland Cancer Network area and for New Zealand, by gender, 2006 – 2007



Source: Public Health Intelligence, New Zealand Health Survey Data, 2006/2007.

5.3.3. Breastfeeding

Breastfeeding plays a part as a protective factor for both mother and child. For the mother the risks of breast cancer are reduced and for the child the risks of becoming overweight and obese are reduced²⁶. The health target for breastfeeding is to “increase the proportion of infants exclusively and fully breastfed at six weeks to 74% or greater; at three months to 57% or greater; and at six months to 27% or greater”²⁴.

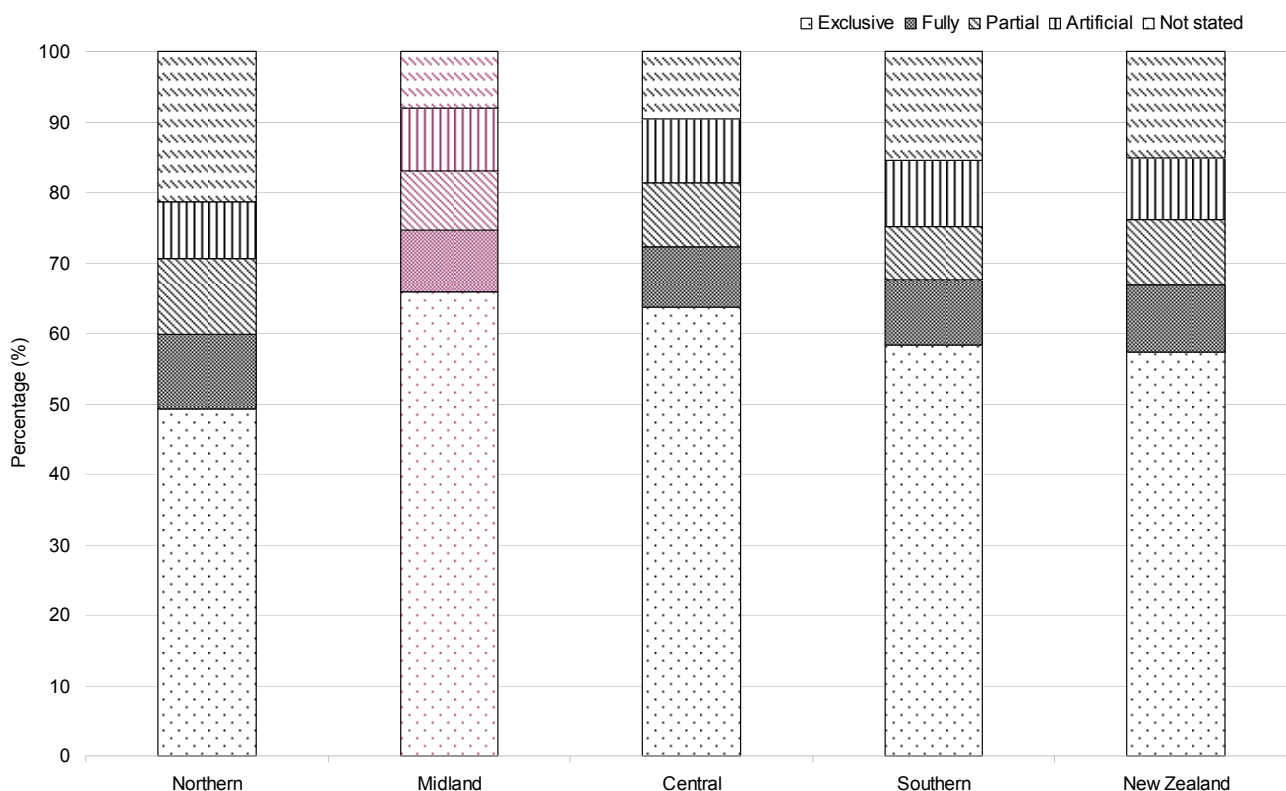
The following are breastfeeding definitions used in the analysis following²⁷.

- Exclusive: the infant has never, to the mother's knowledge, had any water, formula or other liquid or solid food. Only breast milk, from the breast or expressed, and prescribed (as per the Medicines Act 1981) medicines have been given from birth.
- Fully: the infant has taken breast milk only, and no other liquids or solids except a minimal amount of water or prescribed medicines, in the past 48 hours. (This matches the WHO exclusive rate indicator).
- Partial: the infant has taken some breast milk and some infant formula or other solid food in the past 48 hours.
- Artificial: the infant has had no breast milk but has had alternative liquid such as infant formula, with or without solid food, in the past 48 hours.

In comparison to the other cancer networks, the Midland Cancer Network area has a higher proportion of exclusively breastfed babies at two weeks of age (

Figure 95).

Figure 95: Percentage of babies breastfed at two weeks of age, by cancer network and New Zealand, by breastfeeding status, 2004

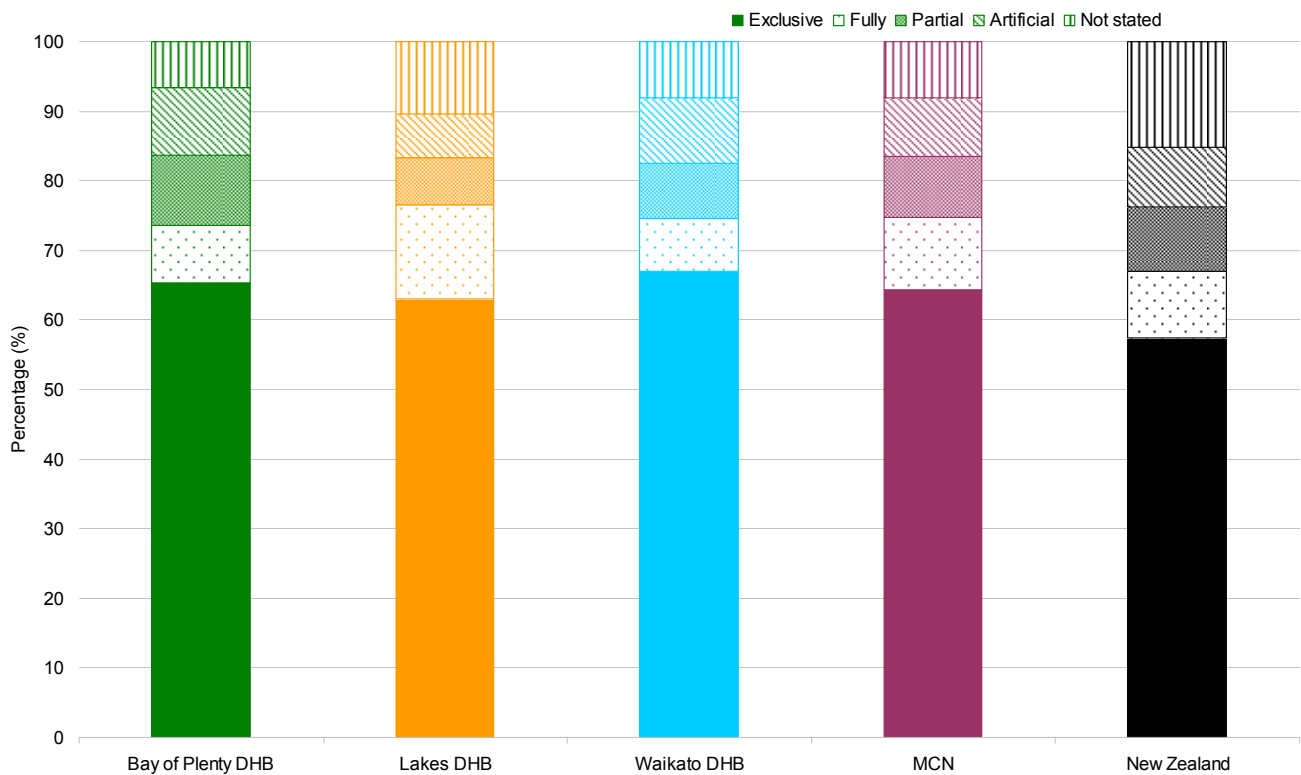


Source: Maternity and Newborn Information System

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All of the Midland Cancer Network DHBs have a higher percentage of exclusively breastfed babies at two weeks of age than that of New Zealand. Waikato DHB has the highest at 67% followed by Bay of Plenty DHB with 65% and Lakes DHB at 63% (Figure 96).

Figure 96: Percentage of babies' breastfed at two weeks of age, for the Midland Cancer Network area and for New Zealand, by breastfeeding status, 2004



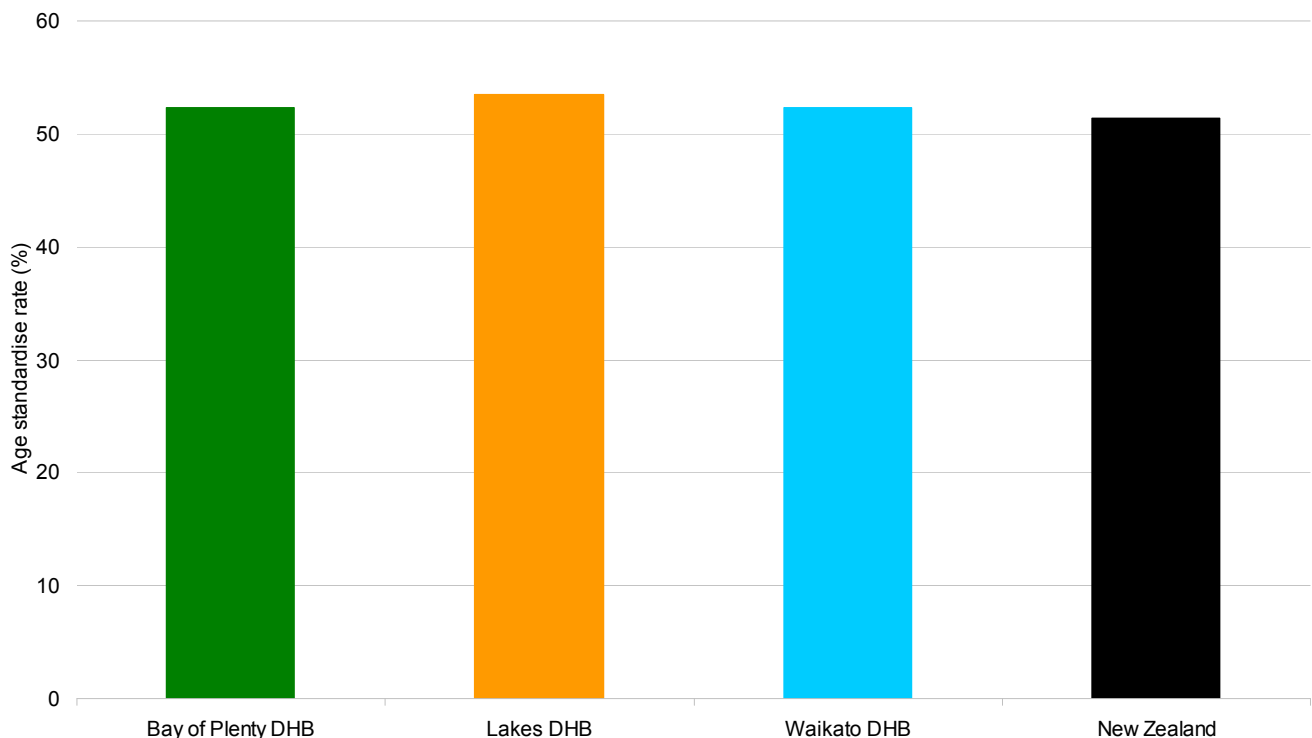
Source: Maternity and Newborn Information System.

5.4. Physical activity

Physical activity is defined by the World Health Organisation as “bodily movement produced by skeletal muscles that require energy expenditure”²⁸. Engaging in physical activity on a regular basis can reduce a person’s chance of breast and colorectal cancer. It is recommended by SPARC (Sport and Recreation New Zealand) and the Ministry of Health that adults do at least 30 minutes of physical activity five days a week. This definition was used in the *New Zealand Health Survey*.

Age standardised rates show all Midland Cancer Network DHBs have a higher percentage of regular physical activity than the overall New Zealand percentage (Figure 97).

Figure 97: Age standardised rates as a percentage of the population who partake in regular physical activity, for the Midland Cancer Network area and for New Zealand, 2006 – 2007



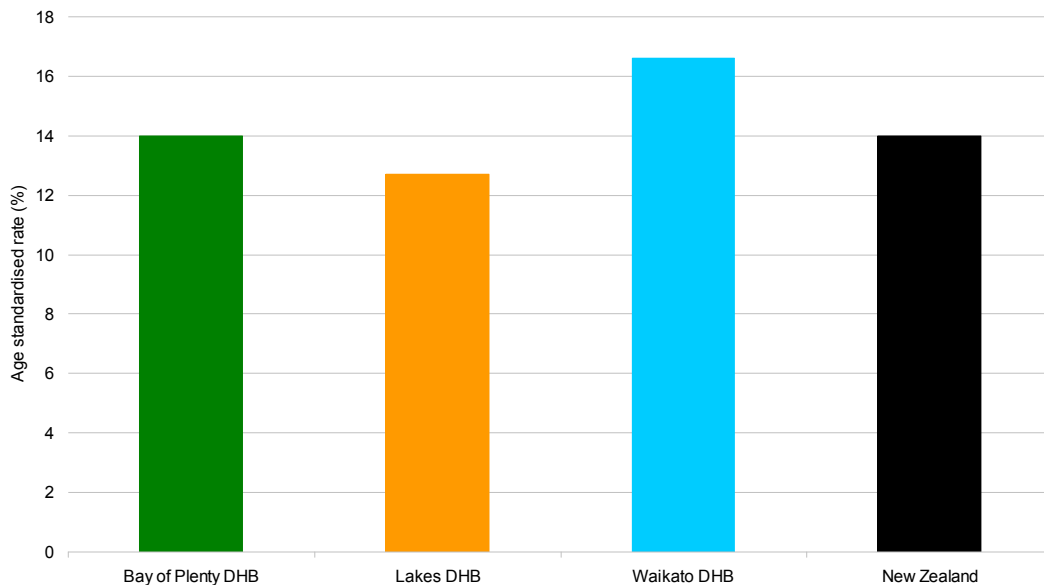
Source: Public Health Intelligence, New Zealand Health Survey Data, 2006/2007.

5.4.1. Sedentary prevalence

The New Zealand health survey defines sedentary behaviour as doing less than 30 minutes of physical activity in a week²³.

Age standardised rates show Waikato DHB has a larger proportion of sedentary behaviour than the New Zealand rate. However, none of the Midland Cancer Network DHBs show a difference in sedentary behaviour when compared with the overall New Zealand rate (Figure 98).

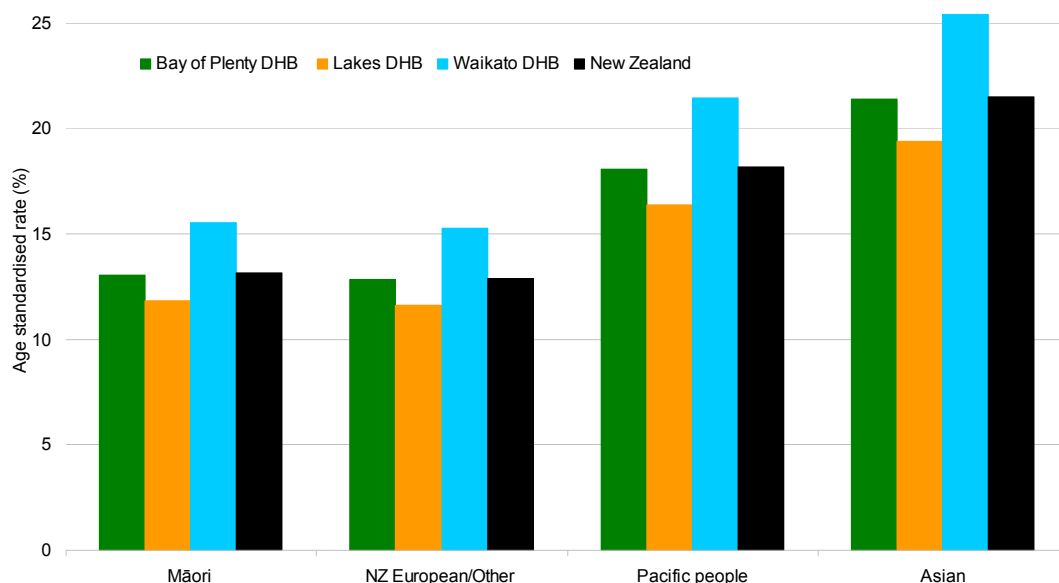
Figure 98: Age standardised rates as a percentage of the population for sedentary behaviour towards physical activity, for the Midland Cancer Network area and for New Zealand, 2006 – 2007



Source: Public Health Intelligence, New Zealand Health Survey Data, 2006/2007.

Nationally, Asian adults have a higher percentage of sedentary behaviour than other ethnic groups²³. This is also prevalent in the Midland Cancer Network DHBs with the Asian ethnicity having higher rates of sedentary behaviour (Figure 99). Lakes DHB has a lower rate of sedentary behaviour than New Zealand as a whole, while Bay of Plenty DHB and Waikato DHB have a higher level of sedentary behaviour than the national level.

Figure 99: Age standardised rates as a percentage of the population for sedentary behaviour towards physical activity, for the Midland Cancer Network area and for New Zealand, by ethnicity, 2006 – 2007



Source: Public Health Intelligence, New Zealand Health Survey Data, 2006/2007.

5.5. Obesity or overweight

There is a link between people who are obese or overweight to many types of cancer such as colorectal, oesophagus, breast, kidney and endometrial cancer²². Also, children that suffer from obesity or being overweight are likely to stay obese into adulthood.

In the *New Zealand Health Survey 2006/2007* levels of obesity and overweight are classified according to a person's Body Mass Index (BMI). However, the Body Mass Index cannot distinguish between muscle density and fat density. Because of this it can only provide a crude measure of fat density in individuals. Body Mass Index however, is a much more practical way to measure peoples increased risk of health effects because of their weight than individually testing each person's fat density²³.

5.5.1. Child obesity

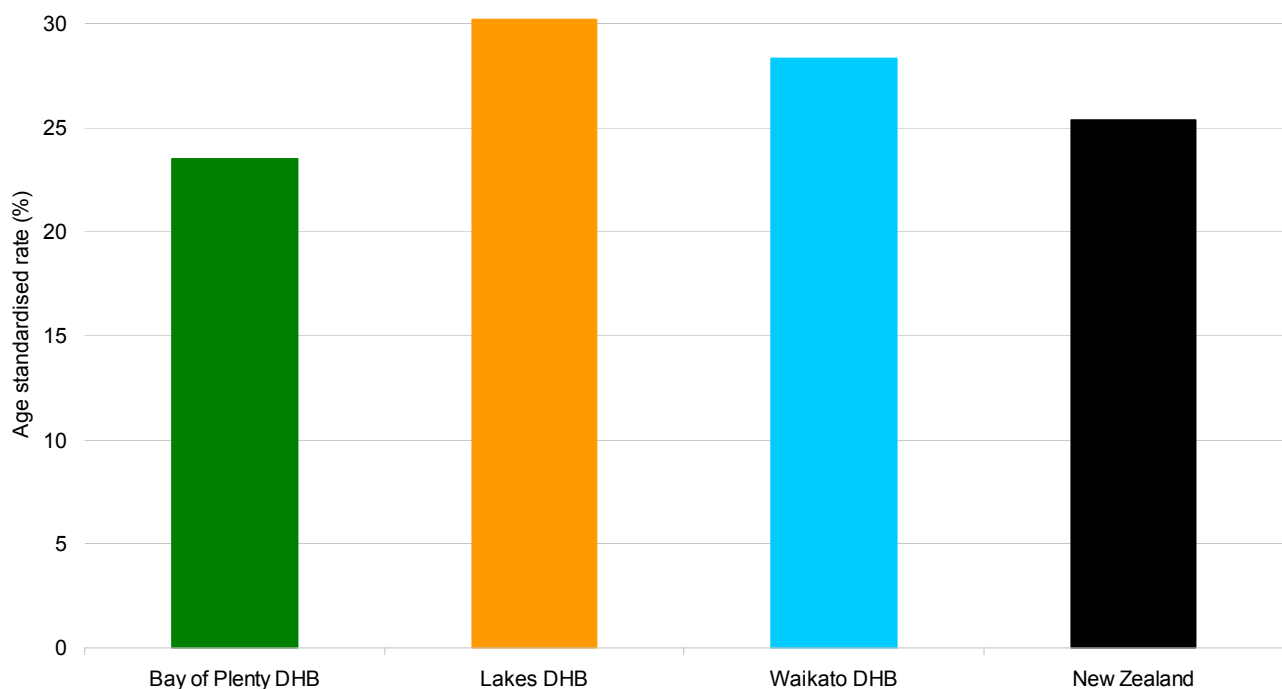
Results from the *Children's Nutrition Survey – 2002* showed that Pacific children had a higher average Body Mass Index for all age groups than NZ European/Others²⁹. Also Pacific children had higher Body Mass Index levels than Māori children in the 7 - 10 year and the 11 - 14 year age groups. Approximately 69% of children in New Zealand are not overweight or obese²⁹. Obesity levels in males stay the same as age increases, yet in females they seem to increase with age.

5.5.2. Adult obesity prevalence

The *New Zealand Health Survey 2006/2007* states an adult is obese if they have a Body Mass Index higher than or equal to 30.

Age standardised rates show Lakes DHB has a higher proportion of obese people (30%) when compared with New Zealand (25%). This is followed by Waikato DHB (28%) and Bay of Plenty DHB (24%) (Figure 100).

Figure 100: Age standardised rates as a percentage of the population for obesity, for the Midland Cancer Network area and for New Zealand, 2006 – 2007



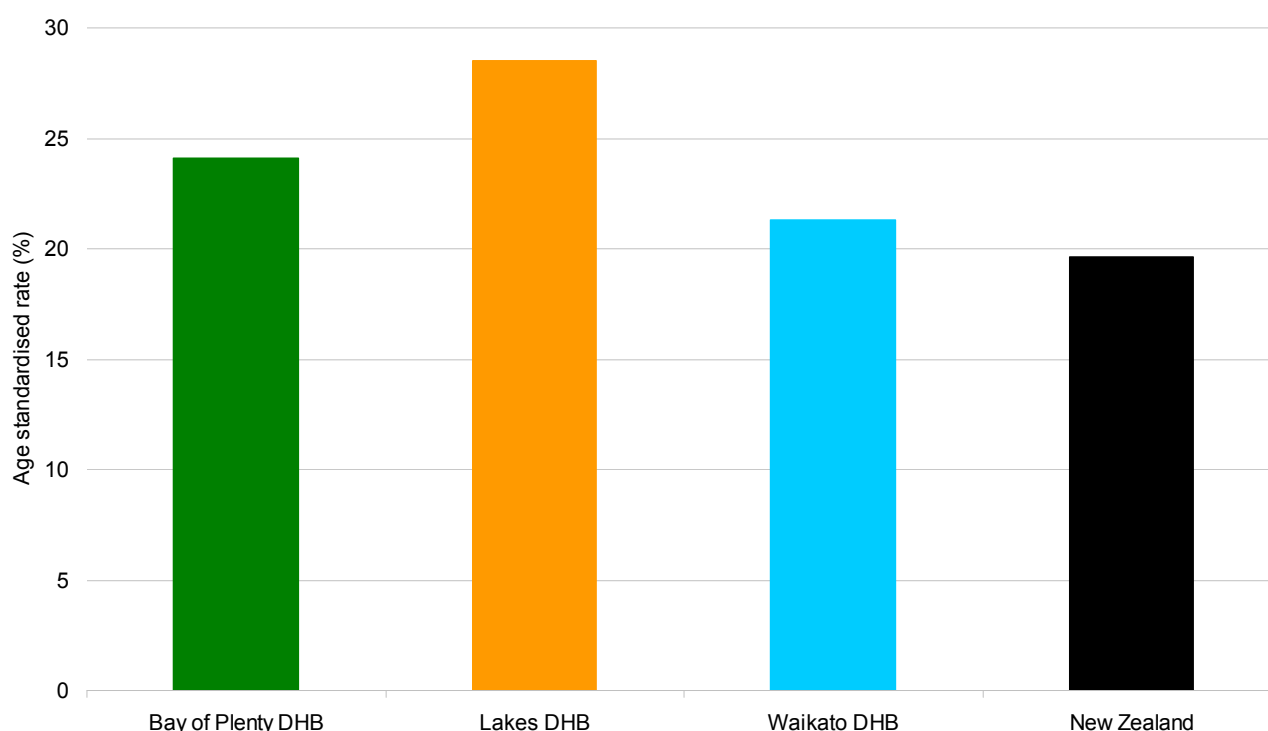
Source: Public Health Intelligence, New Zealand Health Survey Data, 2006/2007.

5.6. Hazardous drinking

In New Zealand alcohol is the most commonly used recreational drug. Consuming more than two standard drinks a day can increase one's risk of health problems. These health problems include cancer. The "consumption of alcohol increases the risk of cancers of the oral cavity, pharynx, oesophagus and larynx"²⁰. It also has been linked to increase the risk of cancers of the stomach, bowel, rectum, liver, breast and ovary²⁰. Hazardous drinking is defined by the *New Zealand Health Survey 2006/2007* as an "established pattern of drinking that carries a high risk of future damage to physical or mental health, but may not have yet resulted in a significant aversive effect"²³. Whether or not people have this established pattern has been tested on a Alcohol Use Disorders Identification Test (AUDIT). A score of 8 out of 10 questions is high enough for a person's drinking levels to be considered hazardous.

Age standardised rates show all Midland Cancer Network DHBs have a higher percentage of hazardous drinking than the overall New Zealand percentage. Waikato DHB has a slightly higher level of hazardous drinking (21%) than the national level (20%) while both the rates for Bay of Plenty DHB (24%) and Lakes DHB (29%) are much higher than the national level (Figure 101).

Figure 101: Age standardised rates as a percentage of the population for hazardous drinking, for the Midland Cancer Network area and for New Zealand, 2006 – 2007

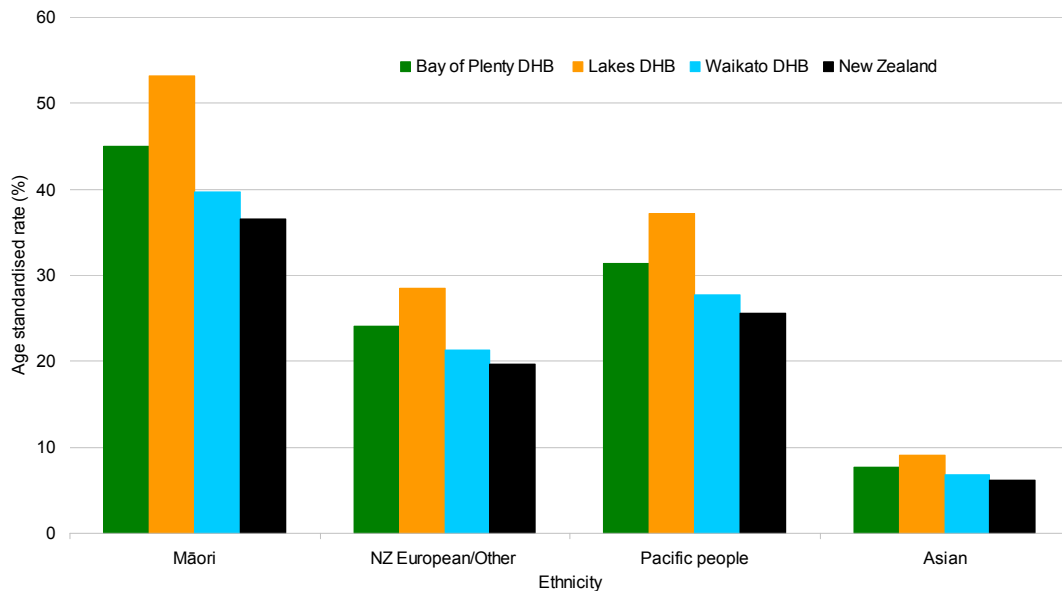


Source: Public Health Intelligence, New Zealand Health Survey Data, 2006/2007.

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Across all ethnicities for the Midland Cancer Network DHBs, Māori have the highest proportion of hazardous drinking (Figure 102). For Māori rates, Lakes DHB is the highest (53%) followed by Bay of Plenty DHB (45%) and Waikato DHB (40%). Asian people have the lowest rate of hazardous drinking across all Midland Cancer Network DHBs. All Midland Cancer Network DHBs have higher rates of hazardous drinking across ethnicities when compared with the national rate.

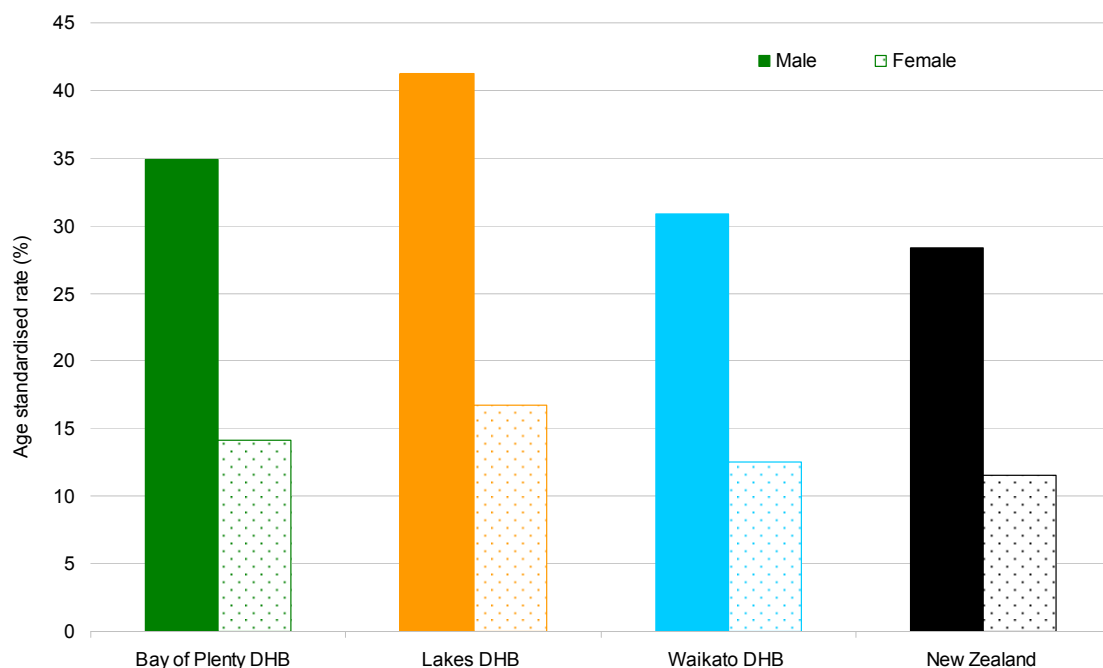
Figure 102: Age standardised rates as a percentage of the population for hazardous drinking, for the Midland Cancer Network area and for New Zealand, by ethnicity, 2006 – 2007



Source: Public Health Intelligence, New Zealand Health Survey Data, 2006/2007.

Across all Midland Cancer Network DHBs males have a much higher prevalence of hazardous drinking than females (Figure 103). Lakes DHB has the highest rate for males (41%) followed by Bay of Plenty DHB (35%) and Waikato DHB (31%). The much lower rates for females are similar across all Midland Cancer Network DHBs with Lakes DHB slightly higher than the others (17%), followed by Bay of Plenty DHB (14%) and Waikato DHB (13%). The New Zealand rate of hazardous drinking for males (28%) and females (12%) is lower than all Midland Cancer Network DHBs.

Figure 103: Age standardised rates as a percentage of the population for hazardous drinking, for the Midland Cancer Network area and for New Zealand, by gender, 2006 – 2007



Source: Public Health Intelligence, New Zealand Health Survey Data, 2006/2007.

5.7. Sun protection behaviour

Being overexposed to the sun is the cause of 90% of skin cancers³⁰. Clinical practice guidelines for the management of melanoma in New Zealand and Australia have recently been developed by the Australian Cancer Network and New Zealand Guidelines Group. The guidelines provide a best practice resource for clinicians and other health care professionals and consumers, regarding treatment and information. The intent is that the guidelines will help to raise standards and produce “greater uniformity of care by specifying evidence based protocols for the prevention, diagnosis, treatment and follow-up of melanoma” (p. ix)³¹.

Evidence suggests that “inherited mutations in the genes encoded by the GSKN2A LOCUS, P16INK4A and P14ARF are strongly associated with melanoma risk, especially in the context of a family history of melanoma” (p. 19)³¹. It is recommended that screening for a mutation be carried out only after intensive clinical assessment, “confirmation of a strong family history of melanoma and appropriate genetic counselling” (p. 20)³¹.

The Health Sponsorship Council in conjunction with the Cancer Society of New Zealand commissioned a triennial study of sun protection behaviours and attitudes (the last being 2006). The latest Sun Protection Market Research report (2006) surveyed 1,257 people (aged 15 - 69 years) in Auckland, Hamilton, Wellington, Christchurch and Dunedin. The findings of that report have been used in this section.

5.7.1. Sunburn history

Moderate to severe sunburn was a problem experienced by 39% of those interviewed (this being defined as sunburn that resulted in blisters or pain for at least two days) (Table 40). This rate was similar to that reported in 2000 and 2003. Improvement has occurred since 1994, when the rate was 51%. Those who experienced moderate to severe sunburn were more likely to have fair skin than compared to dark skin (49% compared to 12% respectively) (Table 36).

Table 36: Previous history of moderate/severe sunburn, for New Zealand - key demographics, 2006

	Total	Gender		Age (years)		Skin type		
		Male	Female	15-34	35+	Fair	Olive	Dark
Yes (blisters or pain for at least 2 days)	39%	38%	39%	36%	43%	49%	26%	12%
No	61%	60%	60%	63%	56%	50%	73%	88%
Don't know	0%	0%	1%	0%	1%	0%	1%	0%
Base: Total Sample	1257	646	611	792	465	708	503	39

Source: Sun Protection Market Research Report, 2006.

5.7.2. Sun protection behaviour

Of the people who spent time outside in the weekend (more than 15 minutes) 19% spent most of their time in the shade against 60% who spent most of their time in the open. Approximately 20% spent equal time in both the sun and shade. Table 37 shows the areas of the body people were most likely to protect with clothing while out in the sun. Older respondents were more likely to wear more clothing when out in the sun.

Table 37: Areas of the body protected by clothing when outdoors, for New Zealand – key demographics, 2006

	Total	Gender		Age (years)		Skin type		
		Male	Female	15-34	35+	Fair	Olive	Dark
Stomach	87%	86%	39%	87%	89%	91%	83%	78%
Back	82%	85%	79%	81%	85%	87%	87%	78%
Chest	83%	84%	81%	82%	84%	84%	84%	84%
Legs - above knees	81%	86%	75%	81%	85%	82%	82%	78%
Shoulders	67%	75%	57%	61%	77%	72%	72%	50%
Arms - above elbows	60%	71%	48%	55%	70%	67%	67%	39%
Feet	42%	52%	31%	37%	51%	44%	44%	43%
Neck	31%	32%	30%	22%	47%	34%	34%	12%
Scalp	36%	43%	28%	33%	42%	37%	37%	36%
Legs - below knees	32%	31%	33%	28%	38%	30%	30%	24%
Face	33%	36%	29%	30%	37%	34%	34%	16%
Nose	26%	29%	23%	24%	31%	28%	28%	18%
Ears	23%	24%	22%	19%	31%	23%	23%	24%
Arms - below elbows	17%	18%	16%	14%	22%	19%	19%	26%
Hands	10%	8%	11%	6%	16%	9%	9%	16%
None	0%	0%	0%	0%	0%	0%	0%	0%
Base: outdoors in the weekend	939	509	430	594	345	592	375	30

Grey cells in the tables indicate a significantly higher result compared to the 1994 benchmark survey.

Source: Sun Protection Market Research Report, 2006.

An estimated 45% of respondents said that they wore hats when they were outdoors. Males (53%) were more likely than females (35%) to wear a hat outdoors (Table 38).

Table 38: Wore a hat when outdoors, for New Zealand - key demographics, 2006

	Total	Gender		Age (years)		Skin type		
		Male	Female	15-34	35+	Fair	Olive	Dark
Yes	45%	53%	35%	42%	50%	43%	47%	44%
No	55%	47%	65%	58%	50%	57%	53%	56%
Base	939	509	430	594	345	529	375	30

Grey cells in the tables indicate a significantly higher result compared to the 1994 benchmark survey.

Source: Sun Protection Market Research Report, 2006.

In 2006, 52% of the people surveyed reported wearing sunglasses while outside. Females (62%) were more likely than males (44%) to wear sunglasses outside (Table 39).

Table 39: Use of sunglasses when outdoors, for New Zealand - key demographics, 2006.

	Total	Gender		Age (years)		Skin type		
		Male	Female	15-34	35+	Fair	Olive	Dark
Yes	52%	44%	62%	53%	52%	54%	53%	25%
No	48%	56%	38%	47%	48%	46%	47%	75%
Base	939	509	430	594	345	529	375	30

Grey cells in the tables indicate a significantly higher result compared to the 1994 benchmark survey.

Source: Sun Protection Market Research Report, 2006

Sunscreen

The proportion of people surveyed who used sunscreen while outdoors in during 2006 was 49%. This was an improvement on the 1994 survey when the proportion was just 32%. Females (59%) were more likely to wear sunscreen than males (40%); also younger people (53%) were more likely to wear sunscreen than older people (42%) (Table 40).

Sun Smart New Zealand recommends using a sunscreen with an SPF value of 30 or higher. In 2006 70% of respondents that used sunscreen, used it at the recommended strength. Approximately 50% of respondents who used sunscreen did not report reapplying sunscreen after the first initial use. It was also found that the face was the most popular place to apply sunscreen.

Table 40: Use of sunscreen while outdoors, for New Zealand - key demographics, 2006

	Total	Gender		Age (years)		Skin type		
		Male	Female	15-34	35+	Fair	Olive	Dark
Yes	49%	4%	59%	53%	42%	51%	44%	58%
Make up containing sunscreen	2%	0%	4%	2%	2%	1%	3%	0%
No	49%	60%	36%	45%	56%	48%	53%	42%
Don't know	0%	0%	0%	0%	0%	0%	0%	0%
Base	939	509	430	594	345	529	375	30

Grey Cells in the tables indicate a significantly higher result compared to the 1994 benchmark survey.

Source: Sun Protection Market Research Report, 2006.

Sun tanning attitudes

Of those surveyed, 51% said that they liked getting a tan. Younger people (58%) were more likely to get a tan than older people (39%). Over time there has been no noticeable change to people's attitudes about getting a tan (Table 41).

Table 41: Attitude towards getting a suntan, for New Zealand - key demographics 2006

	Total	Gender		Age (years)		Skin type		
		Male	Female	15-34	35+	Fair	Olive	Dark
Yes	51%	52%	49%	58%	39%	45%	58%	56%
No	48%	46%	50%	41%	60%	53%	40%	44%
Don't know	2%	2%	1%	2%	2%	1%	2%	0%
Base	1257	646	611	792	465	708	503	39

Grey cells in the tables indicate a significantly higher result compared to the 1994 benchmark survey.

Source: Sun Protection Market Research Report, 2006.

Advertising and information awareness

Of those surveyed 68% had seen advertising about the dangers of the sun. Proportions were similar across gender and age. People with a fair skin type (71%) were more likely to have seen advertising on dangers of the sun than other skin types (Olive, 66% and Dark, 65%) (Table 42).

Table 42: Advertising and information awareness towards the dangers of the sun, New Zealand - key demographics 2006.

	Total	Gender		Age (years)		Skin type		
		Male	Female	15-34	35+	Fair	Olive	Dark
Yes	68%	68%	69%	68%	68%	71%	66%	65%
No	30%	31%	28%	30%	29%	27%	32%	35%
Don't know	2%	1%	3%	1%	3%	2%	2%	0%
Base:	1257	646	611	792	465	708	503	39

Grey Cells in the tables indicate a significantly higher result compared to the 1994 benchmark survey.

Source: Sun Protection Market Research Report, 2006

5.8. Infectious disease

Infectious diseases are responsible for 6% of cancer deaths in developed countries²². Hepatitis B and C are linked to causing cancer of the liver while human papillomavirus is responsible for a large portion of cervical cancers.

5.8.1. Human papillomavirus

For most cases of human papillomavirus (HP) there are no symptoms and the virus clears itself without treatment. However, there are over 100 types of human papillomavirus of which 40 infect the genital area. Of these up to 20 are considered to cause cancer³².

High risk types of human papillomavirus can lead to chronic genital infection and if not treated will cause cancer of the cervix. Of all cervical cancers in New Zealand, 70% is caused by human papillomavirus 16 or 18³². A vaccine is now being funded for young women against human papillomavirus. As the vaccine cannot protect against all types of cervical cancer regular smear tests are still recommended³².

The Human Papillomavirus Immunisation Programme launched September 2008, has enabled family doctors, practice nurses and health clinics to offer for free of charge the human papillomavirus vaccine to young women born in 1990 and 1991 and younger females not at school. From 2009 the vaccine will be provided through school programmes to females in Years 8 to 13, and to females aged 12 to 18 through either their family doctor, practice nurse or health clinic. The programme will be ongoing for females in school year 8 from 2011³².

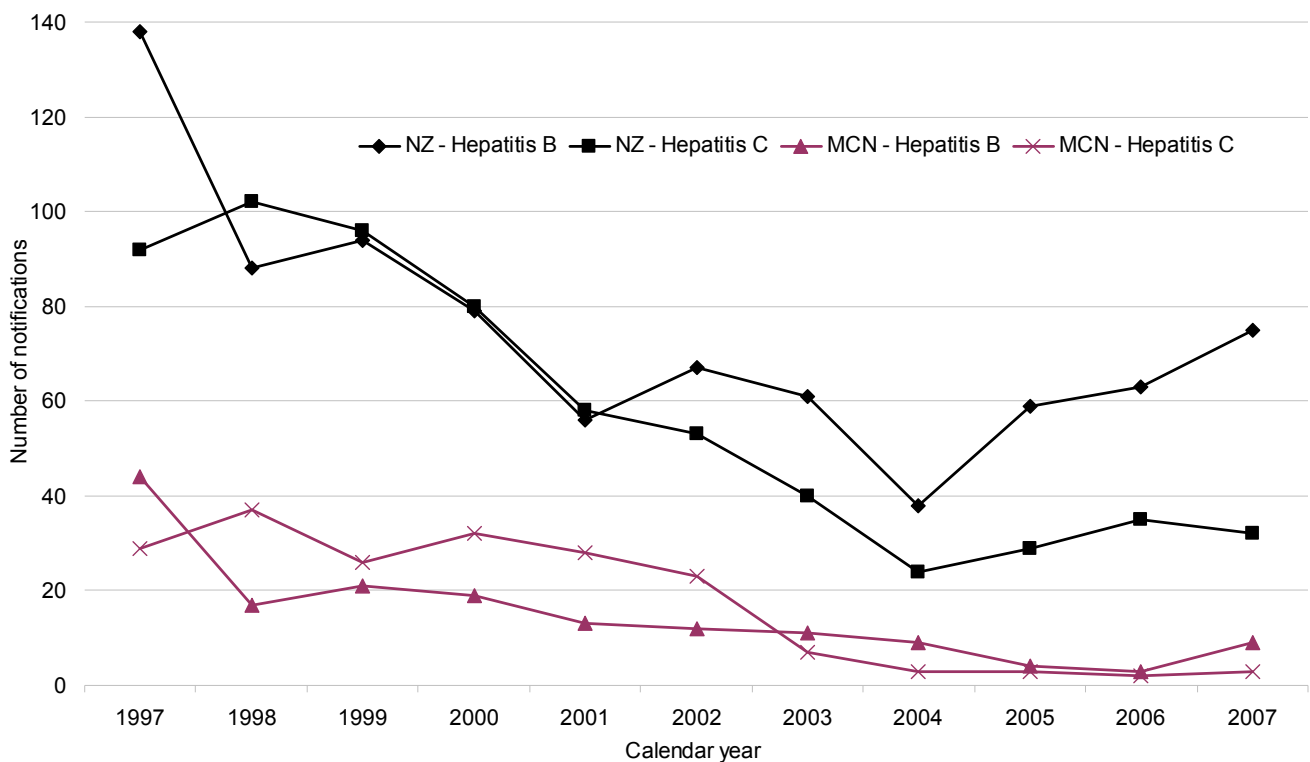
5.8.2. Hepatitis B and hepatitis C

Hepatitis B and hepatitis C infections are major risk factors for cancers of the liver. Hepatitis B is common in New Zealand. Liver cancer is caused by the hepatitis virus attacking the liver cells, in long term carriers³³.

The main risk factors associated with contracting hepatitis B are sexual contact and household contact with someone who is a confirmed carrier. For hepatitis C the main risk factor for contracting the disease is intravenous drug use³³.

Between the years 1997 - 2004, hepatitis B notifications have shown a downward trend, but, from 2004 onward, hepatitis B is trending upwards. Hepatitis C has also shown a downward trend from 1997 till 2004 and starts trending upwards from 2004 but less so than hepatitis B (Figure 104).

Figure 104: Number of hepatitis B (acute) and hepatitis C notifications, for the Midland Cancer Network area and for New Zealand, 1997 – 2007

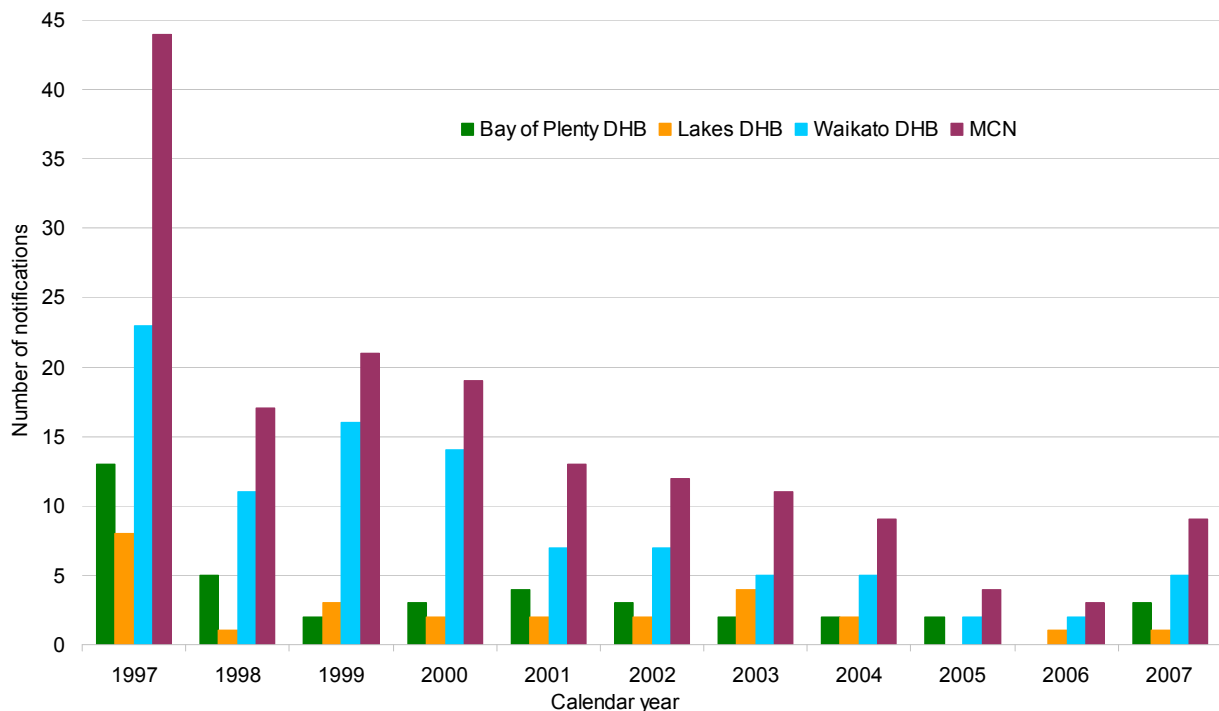


Source: EpiSurv (National notifiable disease database).

Cancer health needs in the Midland Cancer Network area, 2009

The number of hepatitis B notifications within the Midland Cancer Network area has decreased between the years 1997 and 2007. Waikato DHB has the largest number of notifications across all the years (Figure 105).

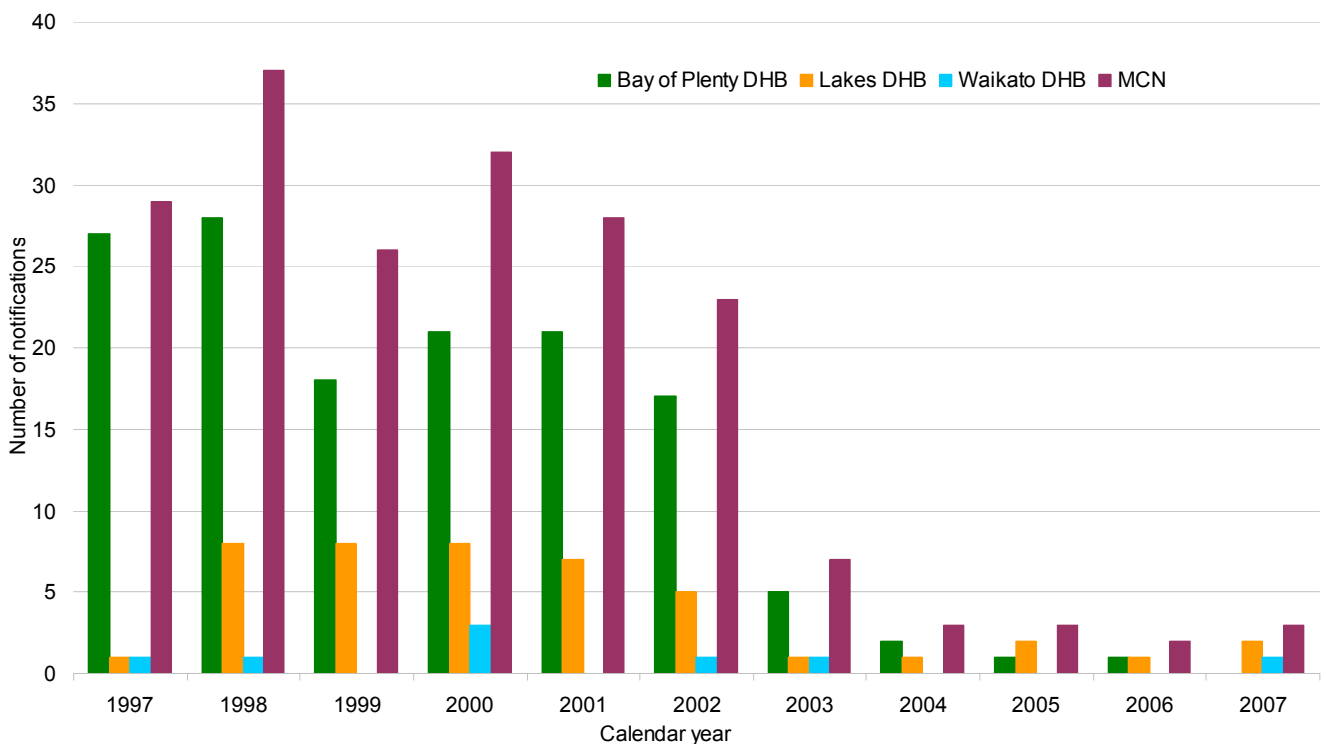
Figure 105: Number of hepatitis B notifications, for the Midland Cancer Network area, 1997 – 2007



Source: EpiSurv (National notifiable disease database).

The number of hepatitis C notifications within the Midland Cancer Network area has decreased between the years 1997 to 2007. Bay of Plenty DHB has the largest number of notifications recorded across many of the years (Figure 106).

Figure 106: Number of hepatitis C notifications, for the Midland Cancer Network area, 1997 – 2007



Source: EpiSurv (National notifiable disease database).

In 1988 a vaccine programme was introduced into New Zealand for hepatitis B. For the 12 month period ending June 2008, immunisation coverage for all Midland Cancer Network DHBs across ethnicities was lower than the national coverage. The exceptions were for Waikato DHB amongst Asian and Other, and Lakes DHB for Other (Table 43).

The Hepatitis Foundation of New Zealand carries out follow-ups of hepatitis B carriers to accurately detect cancerous changes early³³.

Table 43: Percentage of immunisation coverage at 12-months of age, for the Midland Cancer Network area and for New Zealand, by ethnicity, over a 12-month period ending June 2008

Area	NZ European	Māori	Pacific people	Asian	Other	Total
Bay of Plenty DHB	80%	63%	61%	87%	76%	74%
Lakes DHB	80%	63%	79%	79%	85%	72%
Waikato DHB	85%	68%	82%	93%	83%	80%
New Zealand	88%	73%	84%	90%	83%	84%

Source: Public Health Intelligence, New Zealand Health Survey Data 2006/2007.

5.9. Occupational exposure

Studies have shown that certain occupations are associated with high cancer risks and that as many as “29 occupational agents are established human carcinogens, and another 30 agents are suspected carcinogens”^{34, 35}. Within New Zealand, regulations are in place for the protection of workers against many known carcinogens. The Occupational Safety and Health Service (OSH) play a key role in ensuring the legislative protection of workers in workplaces²⁰.

To date the reporting of occupational cancers is under reported. The collection of data in relation to occupational cancer is also poor and needs improvement³⁶.

¹⁹ World Health Organisation. (2007). Knowledge into action: WHO guide for effective programmes – Prevention. Geneva, Switzerland: WHO. Retrieved January 20, 2009 from <http://www.who.int/cancer/modules/Prevention%20Module.pdf>.

²⁰ Minister of Health. (2003). The New Zealand cancer control strategy. Wellington: Ministry of Health and the New Zealand Cancer Control Trust.

²¹ Ministry of Health. (2008). Tobacco trends 2007: A brief update on monitoring indicators. Wellington: Ministry of Health.

²² World Health Organisation, (n.d.). Cancer prevention. Retrieved November 21, 2008, from <http://www.who.int/cancer/prevention/en/>.

²³ Ministry of Health. (2008). A portrait of health: Key results of the 2006/07 New Zealand health survey. Wellington: Ministry of Health.

²⁴ Minister of Health. (2007). Health targets: Moving towards healthier futures 2007/08. Wellington: Ministry of Health.

²⁵ Ministry of Health. (2003). Healthy eating healthy action: Oranga kai – Oranga pumau: A strategic framework. Retrieved November 25, 2008 from <http://www.moh.govt.nz/healthyeatinghealthyaction>.

²⁶ World Cancer Research Fund/American Institute for Cancer Research. (2007). Food, nutrition, physical activity, and the prevention of cancer: A global perspective. Washington DC, USA: American Institute for Cancer Research.

²⁷ Ministry of Health. (2002). New Zealand's breastfeeding rates - statistics from breastfeeding: A guide to action. Retrieved February 2, 2008 from, <http://www.moh.govt.nz/moh.nsf/82f4780aa066f8d7cc2570bb006b5d4d/b2c10ff5e960e1edcc256dc10077c608?OpenDocument>.

²⁸ World Health Organisation, (n.d.). Physical activity. Retrieved November 21, 2008, from <http://www.who.int/dietphysicalactivity/pa/en/index.html/>.

²⁹ Ministry of Health. (2003). NZ Food NZ children: Key results of the 2002 national children's nutrition survey. Wellington: Ministry of Health. Retrieved November 26, 2008 from http://www.moh.govt.nz/moh.nsf/wpg_index/publications-NZ+Food,+NZ+Children.

³⁰ Sun Smart New Zealand (n.d.). Statistics. Retrieved November 26, 2008, from <http://www.sunsmart.org.nz/>.

³¹ Australian Cancer Network Melanoma Guidelines Revision Working Party. (2008). Clinical practice guidelines for the management of melanoma in Australia and New Zealand. The Cancer Council Australia and Australia Cancer Network, Sydney and New Zealand Guidelines Group, Wellington.

³² Ministry of Health. (2008). The HPV (Human Papillomavirus) immunisation programme - National implementation strategic overview. Wellington: Ministry of Health.

³³ Hepatitis Foundation New Zealand. (n.d.). Hepatitis B virus. Retrieved November 24, 2008, from <http://www.hepfoundation.org.nz/hepatitisb.html>

³⁴ Boffetta, P. (2004). Epidemiology of environmental and occupational cancer. *Oncogene*. 23, 6392-6403.

³⁵ National Institute of Environmental Health Sciences. (2003). Cancer and the environment: What you need to know, what you can do. Retrieved February 2, 2008, from <http://www.cancer.gov/images/Documents/5d17e03e-b39f-4b40-a214-e9e9099c4220/Cancer%20and%20the%20Environment.pdf>.

³⁶ Cancer Control Council of New Zealand. (2008). Mapping progress II: Phase 1 of the cancer control strategy action plan 2005-2010. Wellington: Cancer Control Council of New Zealand.

6. Screening for cancer

6.1. Summary

The second goal of The New Zealand Cancer Control strategy is: “to ensure effective screening and early detection to reduce cancer incidence and mortality”³⁷.

There are programmes in New Zealand that screen against breast and cervical cancer. These programmes are BreastScreen Aotearoa and the National Cervical Screening Programme. Both of these programmes are overseen at a national level by the National Screening Unit.

Breast Screen Aotearoa (BSA) is a national programme that offers women between the ages of 45-69 years free regular (every two years) mammograms³⁸. The programme is run by eight providers that have designated areas around the country. The provider in the Midland Cancer Network area is Breast Screen Midland (BSM).

The National Cervical Screening Programme encourages women between 20-70 years to go for a smear test every three years. Thirteen District Health Board's are contracted by the National Cervical Screening Programme; two of these are in the Midland Cancer Network area (Bay of Plenty DHB and Waikato DHB)³⁹.

In May 2008, the Government decided it was time to introduce a bowel cancer screening programme and that this screening programme should be available as soon as possible⁴⁰.

The Ministry of Health recognises prostate cancer as an important health issue for New Zealand men. However, there is no national screening programme in place for New Zealand men against prostate cancer as results from research, done of good quality, could not prove that the benefits from prostate testing would outweigh the harms⁴¹.

From July 2006 - June 2008 none of the DHBs in the Midland Cancer Network were meeting the national screening target for percentage of breast screens (70%). In all the DHBs and the Midland Cancer Network area Māori had noticeably lower breast screening rates followed by Pacific women who also had lower rates than those of NZ European/Other ethnicities.

For the years 2005-2007, the total coverage of cervical screening for women aged 20 - 69 years, nationally, was 71.1%⁴². New Zealand has a current target for coverage of 75%, of the eligible population (women aged 20 - 69 years).

6.2. Cancer screening

The second goal of The New Zealand Cancer Control strategy is: “to ensure effective screening and early detection to reduce cancer incidence and mortality”³⁷.

There are programmes in New Zealand that screen against breast and cervical cancer. These programmes are Breast Screen Aotearoa and the National Cervical Screening Programme. Both these organised screening programmes are overseen at a national level by the National Screening Unit.

In May 2008 the government decided that it was time to introduce a bowel cancer screening programme and that the government wants this screening programme available as soon as possible⁴⁰.

The Ministry of Health recognises prostate cancer as an important health issue for New Zealand men. However, there is no national screening programme in place for New Zealand men against prostate cancer as research results were inconclusive regarding prostate testing⁴¹.

6.3. Breast cancer screening

Breast Screen Aotearoa (BSA) is a national programme that offers women between the ages of 45 - 69 free regular (every two years) mammograms³⁸. Mammograms are the only proven way for finding breast cancers early enough to reduce the risk of dying of breast cancer. Regular mammograms reduce the chance of dying from breast cancer. The programme is run by eight providers that have designated areas around the country. The provider in the Midland Cancer Network area is Breast Screen Midland (BSM).

6.3.1. Coverage

The coverage rate of breast cancer compares the eligible population (women aged between 45 - 69 years) with the number of women screened.

For the time period July 2006 - June 2008 none of the DHBs in the Midland Cancer Network were meeting the national screening target for percentage of breast screens (70%). Lakes and Waikato DHBs had percentages as low as 47% of eligible women having a mammogram. Bay of Plenty DHB had a higher percentage of eligible women receiving mammograms (52%) yet it was still well below the target rate of 70% (Table 44 and

Figure 107).

Table 44: Breast screening coverage rate for eligible population, for Midland Cancer Network area, by territorial authority, July 2006 – June 2008

Area	Eligible population*				Number screened (coverage rate %)							
	Māori	Pacific people	NZ European/Other	Total	Maori		Pacific people		NZ European/Other		Total	
Bay of Plenty DHB	5280	185	26,070	31,535	1829	35%	79	43%	14,451	55%	16,389	52%
Kawerau	420	15	410	845	131	31%	8	53%	281	69%	422	50%
Opotiki	730	15	820	1565	303	42%	4	27%	461	56%	769	49%
Tauranga City	1670	90	14,810	16,570	553	33%	39	43%	8564	58%	9179	55%
Western Bay of Plenty	860	35	6620	7515	263	31%	13	37%	3199	48%	3478	46%
Whakatane	1600	30	3410	5040	579	36%	15	50%	1946	57%	2541	50%
Lakes DHB	3680	200	11,180	15,060	1229	33%	68	34%	5728	51%	7030	47%
Rotorua	2640	135	7100	9875	902	34%	48	36%	3690	52%	4643	47%
Taupo	1040	65	4080	5185	327	31%	20	31%	2038	50%	2387	46%
Waikato DHB	7240	685	41,600	49,525	2270	31%	266	39%	20,846	50%	23,438	47%
Hamilton City	2150	290	14,130	16,570	633	29%	94	32%	6918	49%	7657	46%
Hauraki	370	25	2350	2745	116	31%	11	44%	1216	52%	1344	49%
Matamata-Piako	420	20	3930	4370	122	29%	9	45%	2292	58%	2427	56%
Otorohanga	250	5	940	1195	90	36%	2	40%	527	56%	620	52%
Ruapehu (all)	570	10	1330	1910	230	40%	7	70%	756	57%	998	52%
South Waikato	670	220	2250	3140	263	39%	101	46%	1357	60%	1721	55%
Thames-Coromandel	450	30	4860	5340	138	31%	14	47%	2048	42%	2220	42%
Waikato	1220	40	5050	6310	330	27%	11	28%	1926	38%	2271	36%
Waipa	690	40	5790	6520	189	27%	14	35%	3212	55%	3420	52%
Waitomo	450	5	970	1425	159	35%	3	60%	594	61%	760	53%
BSM (incl Ruapehu)	16,200	1,070	78,850	96,120	5328	33%	413	39%	41,025	52%	46,857	49%
New Zealand	59,070	22,930	513,835	595,835	25,735	44%	10,879	47%	320,000	62%	358,209	60%

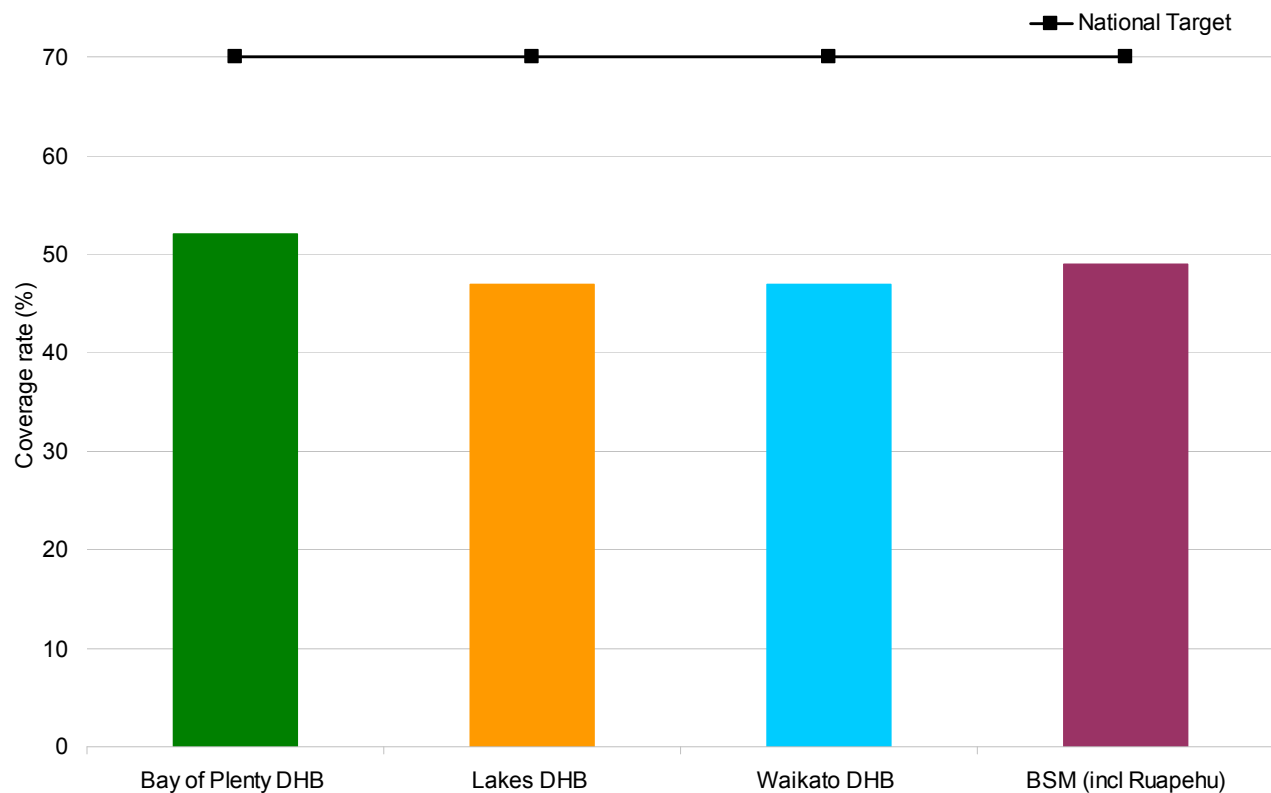
*Population data is the Eligible Population for 2007, derived from 2001 Census.

Note: these figures relate only to completed screening and assessment records received in the Breast Screen Aotearoa Database as at 1st July 2008.

Cancer health needs in the Midland Cancer Network area, 2009

Source: BreastScreen Aotearoa, Monthly Reports, Ethnicity and Age Group by TLA June 2008.

Figure 107: Breast Screen Midland coverage rate of eligible population, for the Midland Cancer Network area, July 2006 - June 2008

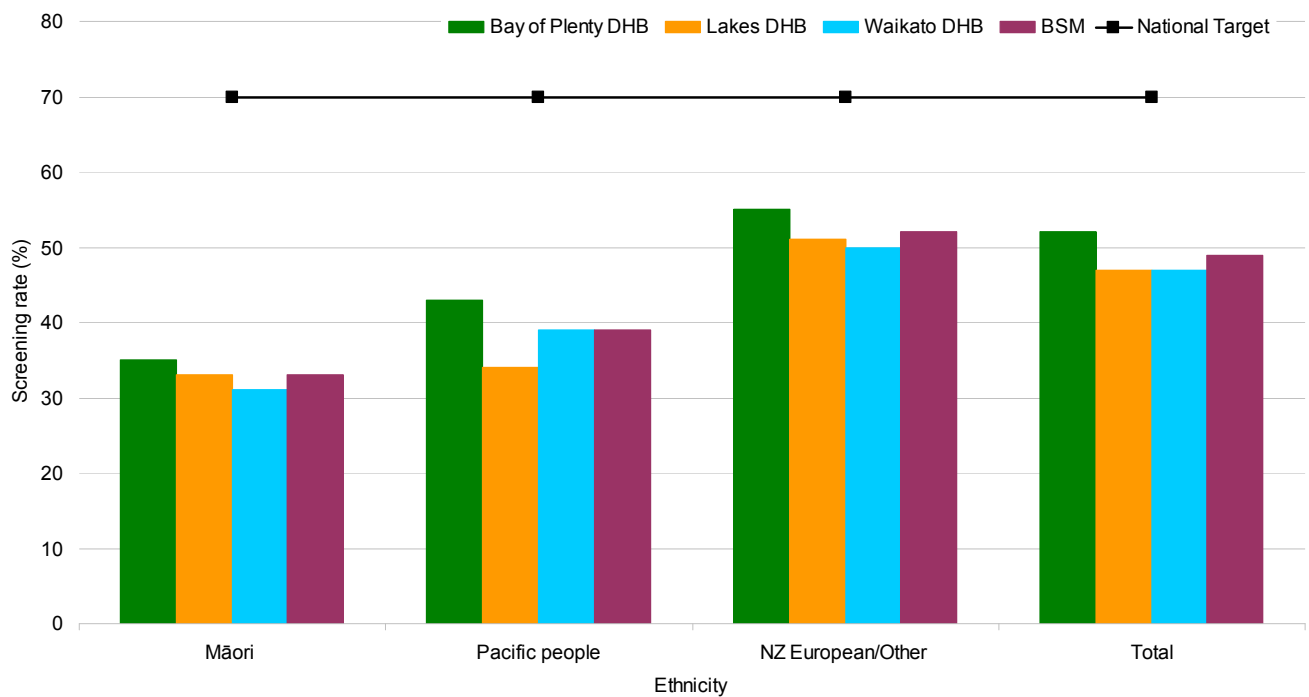


Source: BreastScreen Aotearoa, Monthly Reports, Ethnicity and Age Group by TLA June 2008.

6.3.2. Coverage by ethnicity

In all the Midland Cancer Network DHBs Māori had noticeably lower breast screening rates followed by Pacific females who also had lower rates than women of NZ European/Other ethnicity. Māori living in the Waikato DHB were least likely to have had a mammogram. Females of NZ European/Other ethnicity were most likely to have had a mammogram (Figure 108).

Figure 108: Percentage of eligible women screened by Breast Screen Midland, for the Midland Cancer Network area, by ethnicity, July 2006 - June 2008



Source: Breast Screen Aotearoa, Monthly Reports, Ethnicity and Age Group by TLA June 2008.

6.3.3. Detection

Early detection of breast cancer means a woman has a better chance of surviving the disease, “there are also more choices for treatment when breast cancer is found early”⁴³.

The breast cancer detection rate for the 24 month period, June 2006 – July 2008, for the Midland Cancer Network area (Breast Screen Midland region [including Ruapehu] was 5 per 1,000 populations (Table 45)). It is important to note that the National Screening Unit is currently reviewing the importance of the detection rate as a performance indicator, as there is insufficient international data to derive detection targets for women aged under 50 years (J. McEntee - Acting Manager, Cancer Screening, National Screening Unit, personal communication, 17th December 2008). In the future it is likely that the National Screening Unit will report cancer detection rates for women aged 50 to 69 years only.

Table 45: Breast screening detection rate for the number screened, for the Midland Cancer Network area, by territorial authority and ethnicity, July 2006 - June 2008.

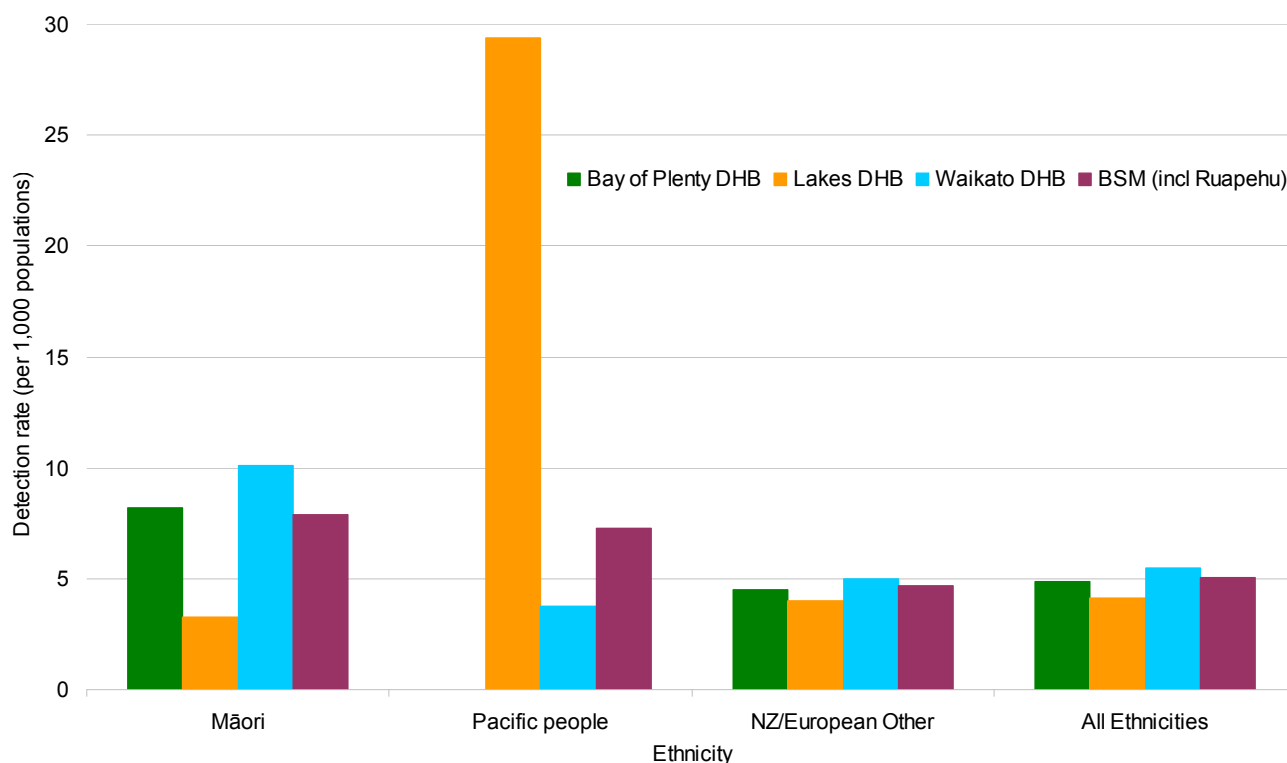
Area	Number screened				Cancer detection (detection rate per 1,000)							
	Māori	Pacific people	NZ European/Other	Total	Māori	Pacific people	NZ European/Other	Total	Māori	Pacific people	NZ European/Other	Total
Bay of Plenty DHB	1829	79	14,451	16,389	15	(8)	0	(0)	65	(4)	80	(5)
Kawerau	131	8	281	422	0	(0)	0	(0)	1	(4)	1	(2)
Opotiki	303	4	461	769	2	(7)	0	(0)	4	(9)	6	(8)
Tauranga City	553	39	8564	9179	2	(4)	0	(0)	41	(5)	43	(5)
Western Bay of Plenty	263	13	3199	3478	6	(23)	0	(0)	15	(5)	21	(6)
Whakatane	579	15	1946	2541	5	(9)	0	(0)	4	(2)	9	(4)
Lakes DHB	1229	68	5728	7030	4	(3)	2	(29)	23	(4)	29	(4)
Rotorua	902	48	3690	4643	4	(4)	2	(42)	16	(4)	22	(5)
Taupo	327	20	2038	2387	0	(0)	0	(0)	7	(3)	7	(3)
Waikato DHB	2270	266	20,846	23,438	23	(10)	1	(4)	104	(5)	128	(5)
Hamilton City	633	94	6918	7657	6	(9)	0	(0)	36	(5)	42	(5)
Hauraki	116	11	1216	1344	0	(0)	0	(0)	4	(3)	4	(3)
Matamata-Piako	122	9	2292	2427	0	(0)	0	(0)	6	(3)	6	(2)
Otorohanga	90	2	527	620	3	(33)	0	(0)	1	(2)	4	(6)
Ruapehu	230	7	756	998	1	(4)	0	(0)	2	(3)	3	(3)
South Waikato	263	101	1357	1721	2	(8)	1	(10)	11	(8)	14	(8)
Thames-Coromandel	138	14	2048	2220	2	(14)	0	(0)	12	(6)	14	(6)
Waikato	330	11	1926	2271	4	(12)	0	(0)	10	(5)	14	(6)
Waipa	189	14	3212	3420	4	(21)	0	(0)	21	(7)	25	(7)
Waitomo	159	3	594	760	1	(6)	0	(0)	1	(2)	2	(3)
Breast Screen Midland (incl Ruapehu)	5328	413	41,025	46,857	42	(8)	3	(7)	192	(5)	237	(5)
New Zealand	Currently unable to source this data.											

Source: BreastScreen Aotearoa, Monthly Reports, Ethnicity and Age Group by TLA June 2008.

6.3.4. Detection by ethnicity

During the 24 month period, July 2006 - June 2008, all ethnicities had a similar detection rate between the DHBs making up the Midland Cancer Network area. The exception was the eligible Pacific people population within the Lakes DHB who during this period had a very high detection rate when compared to the other Midland Cancer Network DHBs (29 per 1,000 population) (Figure 109).

Figure 109: Breast screening detection rate for number screened, for the Midland Cancer Network area, by ethnicity, July 2006 - June 2008.



Source: BreastScreen Aotearoa, Monthly Reports, Ethnicity and Age Group by TLA June 2008.

6.4. Cervical cancer screening

Cervical cancer is one of the most preventable cancers, therefore early detection is essential. In 1990 the National Cervical Screening Programme (NCSP) was introduced in New Zealand. Women between the ages 20 and 70 years are encouraged to have a smear test every three years. The aim of the programme is to reduce the incidence and mortality rates of cervical cancer by the detection and treatment of precancerous squamous cell changes. There are 13 District Health Boards contracted by the National Cervical Screening Programme; two of these are in the Midland Cancer Network area (Bay of Plenty DHB and Waikato DHB)³⁹.

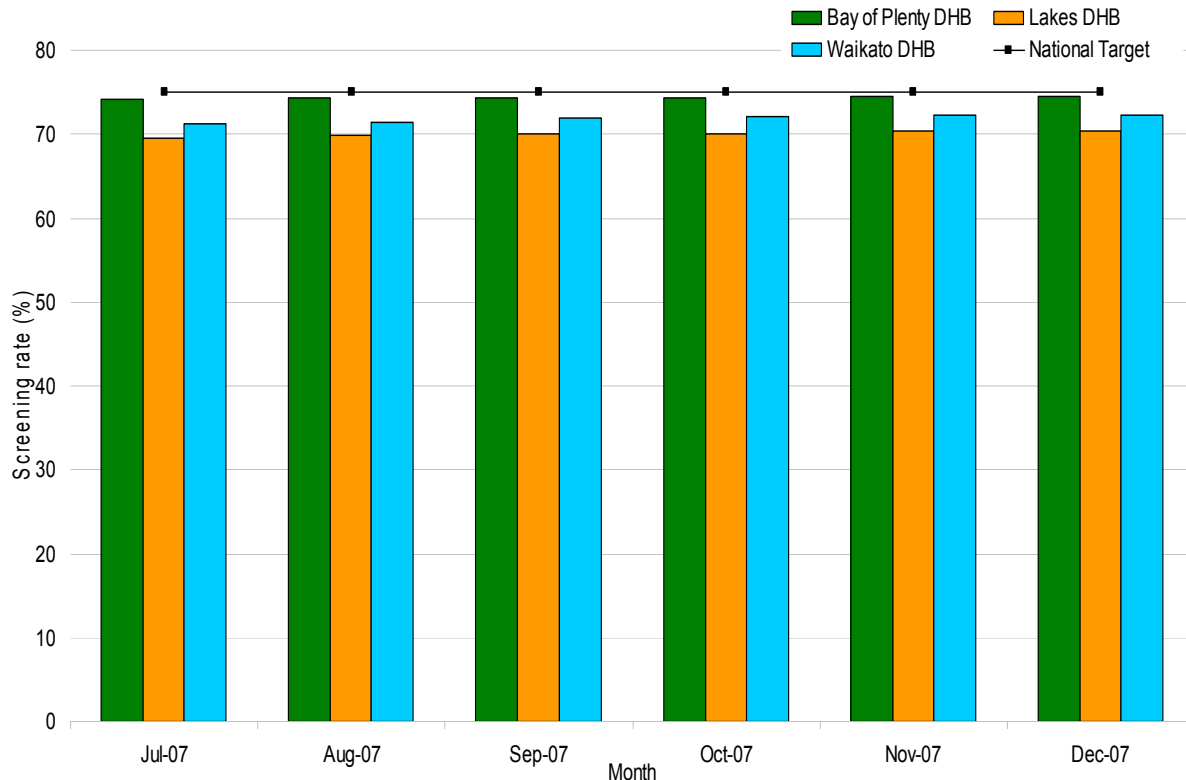
An analysis of the first ten years of the programme found that the <http://www.nsu.govt.nz/glossary.asp-incidence> of cervical cancer had reduced by 40%, and deaths had reduced by 60%⁴⁴.

6.4.1. Coverage

The coverage rate for cervical cancer screening compares the eligible population (women aged between 20 - 69 years), adjusted for hysterectomies, with the number of women screened. For the two year period, 2005 - 2007, the total coverage for women aged 20 - 69 years, nationally, was 71.1%⁴². New Zealand has a current target of 75% coverage of the eligible population (women aged 20 - 69 years).

All of the screening rates, within the Midland Cancer Network area, were above or close to 70% for the time period July 2007 - December 2007. Bay of Plenty DHB was the only DHB within the Midland Cancer Network area to meet the national target of 75% (November and December 2007). The proportion of eligible populations screened for cervical cancer screening is much higher than breast screening. Bay of Plenty DHB had the highest percentage of cervical screening across the six month period, July - December 2007, while Lakes DHB had the lowest (Figure 110).

Figure 110: Percentage of eligible women screened for cervical cancer for the Midland Cancer Network area, July - Dec 2007.



Source: National Cervical Screening Programme Monthly Stats. Data adjusted for hysterectomies.

6.4.2. Coverage by ethnicity

Table 46 shows the coverage rate for the eligible population, for the Midland Cancer Network area, by DHB, July – December 2007. Māori and Pacific women show a coverage rate averaging 50% while for NZ European/Other the coverage rate is 82%.

Table 46: Cervical screening coverage rate for eligible population, for the Midland Cancer Network area, by DHB, July – December 2007.

Area	Eligible population*				Number screened (coverage rate %)							
	Māori	Pacific people	NZ European/Other	Total	Māori		Pacific People		NZ European/Other		Total	
Bay of Plenty DHB	13,468	587	41,358	55,413	6812	51%	288	49%	34,751	84%	41,851	76%
Lakes DHB	9857	623	18,770	29,250	5018	51%	267	43%	15,386	82%	20,671	71%
Waikato DHB	20,059	2221	72,797	95,077	10,260	51%	1166	52%	58,540	80%	69,966	74%
MCN	43,384	3431	132,925	179,740	22,090	51%	1721	50%	108,677	82%	132,488	74%

Source: National Cervical Screening Programme Monthly Stats. Data adjusted for hysterectomies.

6.4.3. Detection

Detection rates for cervical screening are currently not reported within the monthly statistical reports, prepared by the National Screening Unit Programme.

³⁷ Minister of Health. (2003). The New Zealand cancer control strategy. Wellington: Ministry of Health and the New Zealand Cancer Control Trust.

³⁸ National Screening Unit. (n.d.). About the programme. Retrieved December 5, 2008, from <http://www.nsu.govt.nz/Current-NSU-Programmes/848.asp>.

³⁹ National Screening Unit. (n.d.). National cervical screening programme: For health professionals. Retrieved December 5, 2008, from <http://www.nsu.govt.nz/Health-Professionals/1390.asp#>.

⁴⁰ National Screening Unit. (n.d.). Bowel cancer screening programme. Retrieved December 5, 2008, from <http://www.nsu.govt.nz/Other-Screening-Areas/818.asp>

⁴¹ National Screening Unit. (n.d.). Prostate cancer screening. Retrieved December 5, 2008, from <http://www.nsu.govt.nz/Other-Screening-Areas/821.asp>.

⁴² National Screening Unit. (2007, December). Monthly statistical report. Wellington: New Zealand: National Cervical Screening Programme.

⁴³ National Screening Unit. (n.d.). About breast screening (mammograms). Retrieved December 5, 2008, from <http://www.nsu.govt.nz/Current-NSU-Programmes/851.asp>.

⁴⁴ National Screening Unit. (n.d.). Detailed guide: Breast cancer - Can breast cancer be found early? Retrieved January 9, 2009, from http://www.cancer.org/docroot/CRI/content/CRI_2_4_3X_Can_breast_cancer_be_found_early_5.asp?sitearea=.

7. The future outlook for cancer

7.1. Summary

Nationally, there is a large variation in the five-year survival rates between different cancers. The cancer survival rates vary by primary site from approximately 5% for cancer of the pancreas to more than 90% for cancer of the thyroid.

Within the Midland Cancer Network area, the data suggests that the five-year survival rates (1994 - 2007) for breast, melanoma and prostate are over 0.8 (80% chance of survival over the 5-year period). Colorectal and lung cancer are falling below this rate.

For all five common cancers, breast, colorectal, lung, melanoma and prostate within the Midland Cancer Network area, Lakes DHB has the lowest relative survival rates, lower than the New Zealand rate.

In terms of ethnicity, Māori are more at risk of dying from cancer after diagnosis than non-Māori⁴⁵. Disparities are more “significant for cancers that have good treatment options and for those that are potentially curable if detected early”⁴⁵. Differential exposure of Māori and non-Māori to risk and protective factors contribute to differences in mortality. A focus on underlying drivers of inequalities needs to be taken. These include “socio-economic status by ethnicity and drive disparities in exposure to risk factors...”⁴⁵.

Nationally, the latest forecast for cancer incidence predicts a 29% increase in burden between 2003 and 2013; this is most likely because of the ageing population⁴⁷. Also it is predicted that there will be a substantial decrease in burden/risks of tobacco related cancer among males and cervical cancer among females. Future projections also indicate increases in risk for Hodgkin’s and non-Hodgkin’s lymphoma, kidney, liver, and thyroid cancer for both genders. For males there is an increase in the risk of myeloma, testicular, and prostate cancers, for females the risk of breast cancer is increasing⁴⁷.

The future projections for cancer mortality within New Zealand predict that the risk of dying from cancer will decline by 15%. However, the burden of cancer mortality will increase by approximately 12% due to demographic trends (e.g. the increasing size of the New Zealand population and the higher percentage of older people). It is projected that mortality rates will fall for colorectal cancer for both genders and that rates of lung cancer will decrease for males only. Also rates of melanoma, breast cancer and cervical cancer will decrease for females⁴⁶. The rates of prostate cancer mortality will stabilise then decrease slightly. This improvement reflects incidence reduction (e.g. screening programmes and lifestyle changes that have been made)⁴⁶.

7.2. Cancer survival rates

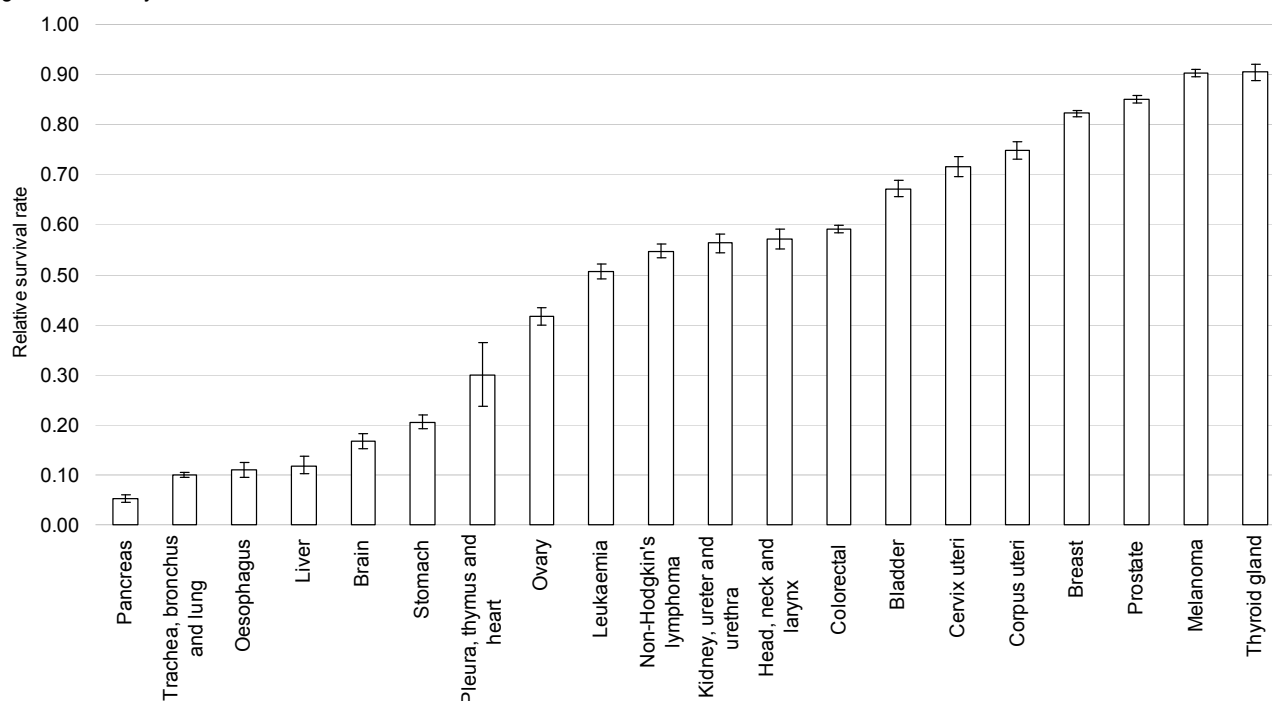
Cancer survival rates indicate the percentage of people who survive the disease for a specific period of time after their diagnosis. In most cases, statistics refer to five-year survival rates. Table 47 and Figure 111 below show that there is a large variation in the five-year survival rates between different cancers. The cancer survival rates vary by primary site from approximately 5% for cancer of the pancreas to more than 90% for cancer of the thyroid.

Table 47: Five year - cumulative relative survival ratios - all sites, for New Zealand, 1994 - 2007

Site	Number of events	Cumulative relative survival ratio	Lower CI	Upper CI
Head, neck and larynx	4175	0.571	0.552	0.590
Oesophagus	2849	0.110	0.096	0.125
Stomach	4848	0.205	0.192	0.219
Colorectal	33,691	0.592	0.585	0.599
Liver	1912	0.118	0.102	0.136
Pancreas	4068	0.052	0.044	0.061
Trachea, bronchus and lung	20,829	0.100	0.095	0.105
Pleura, thymus and heart	253	0.298	0.236	0.363
Melanoma	23,268	0.903	0.896	0.910
Breast	29,501	0.822	0.816	0.828
Cervix uteri	2468	0.715	0.695	0.735
Corpus uteri	4120	0.749	0.731	0.766
Ovary	3658	0.417	0.399	0.435
Prostate	34,237	0.850	0.843	0.857
Bladder	6701	0.671	0.655	0.687
Kidney, ureter and urethra	4824	0.562	0.544	0.580
Brain	2882	0.167	0.152	0.182
Thyroid gland	2102	0.905	0.887	0.921
non-Hodgkin's lymphoma	7655	0.547	0.533	0.561
Leukaemia	6914	0.506	0.491	0.522

Source: Ministry of Health, 2009.

Figure 111: Five year - cumulative relative survival ratios - all sites, for New Zealand, 1994 - 2007



Source: Ministry of Health, 2009.

7.2.1. Relative survival rates by cancer type

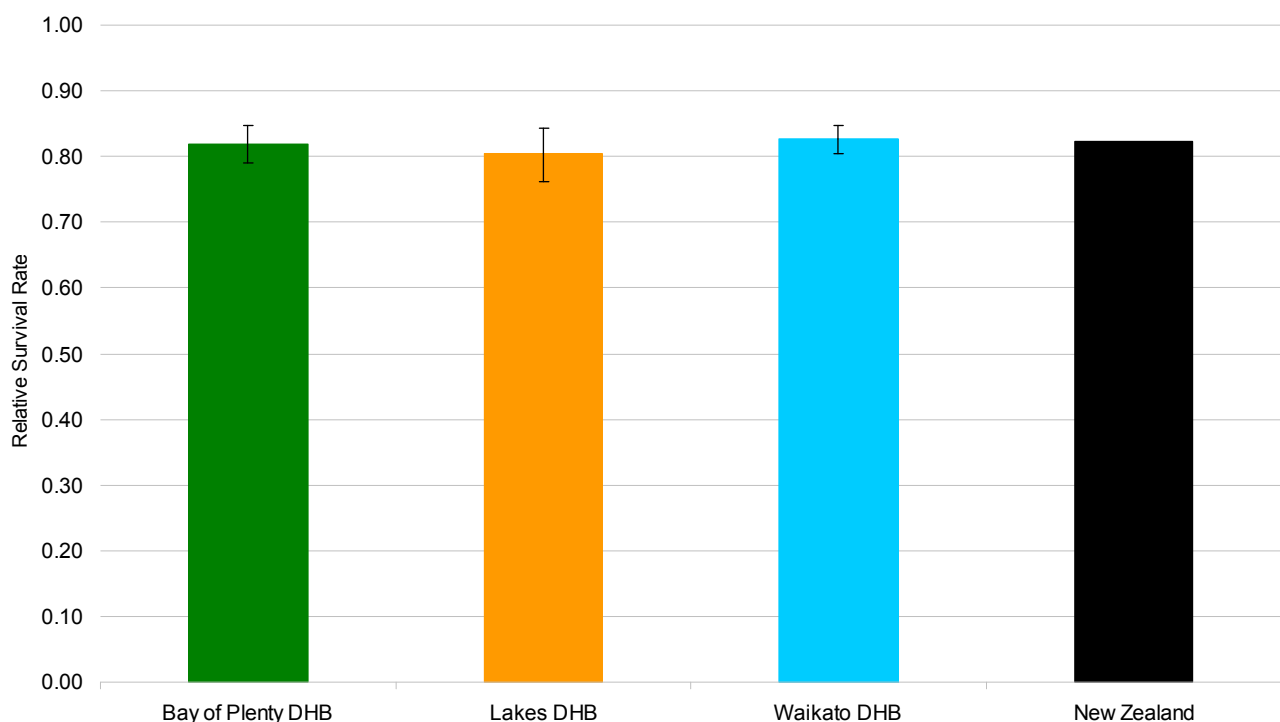
The following tables (Figure 112, Figure 113, Figure 114, Figure 115, Figure 116) give an indication of relative survival rates for five common cancers; breast, colorectal, lung, melanoma and prostate. The data suggests that the five-year survival rates (1994 - 2007) for breast, melanoma and prostate are over 0.8 (80% chance of survival over the five-year period). Colorectal and lung cancer are falling below this rate.

The survival rate for colorectal is between 0.5 and 0.6 for all of the Midland Cancer Network DHBs and also for New Zealand. The survival rate for lung cancer however, is between 0.0 and 0.1 for all of the Midland Cancer Network DHBs and New Zealand, falling as low as 6% for Lakes DHB.

For all five common cancers, Lakes DHB has the lowest relative survival rates, lower than the New Zealand rate.

Breast cancer

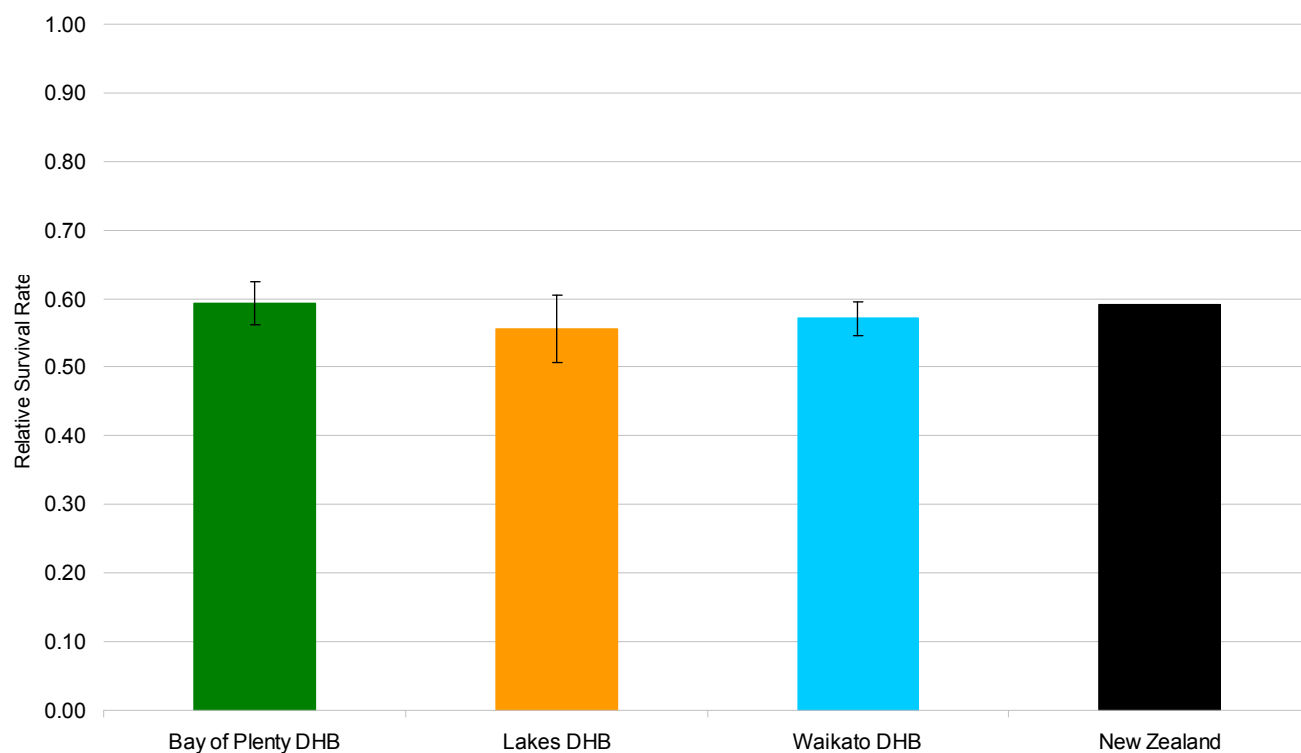
Figure 112: Five year - cumulative relative survival ratios - for breast cancer, for the Midland Cancer Network area and for New Zealand, 1994 - 2007



Source: Ministry of Health, 2009.

Colorectal cancer

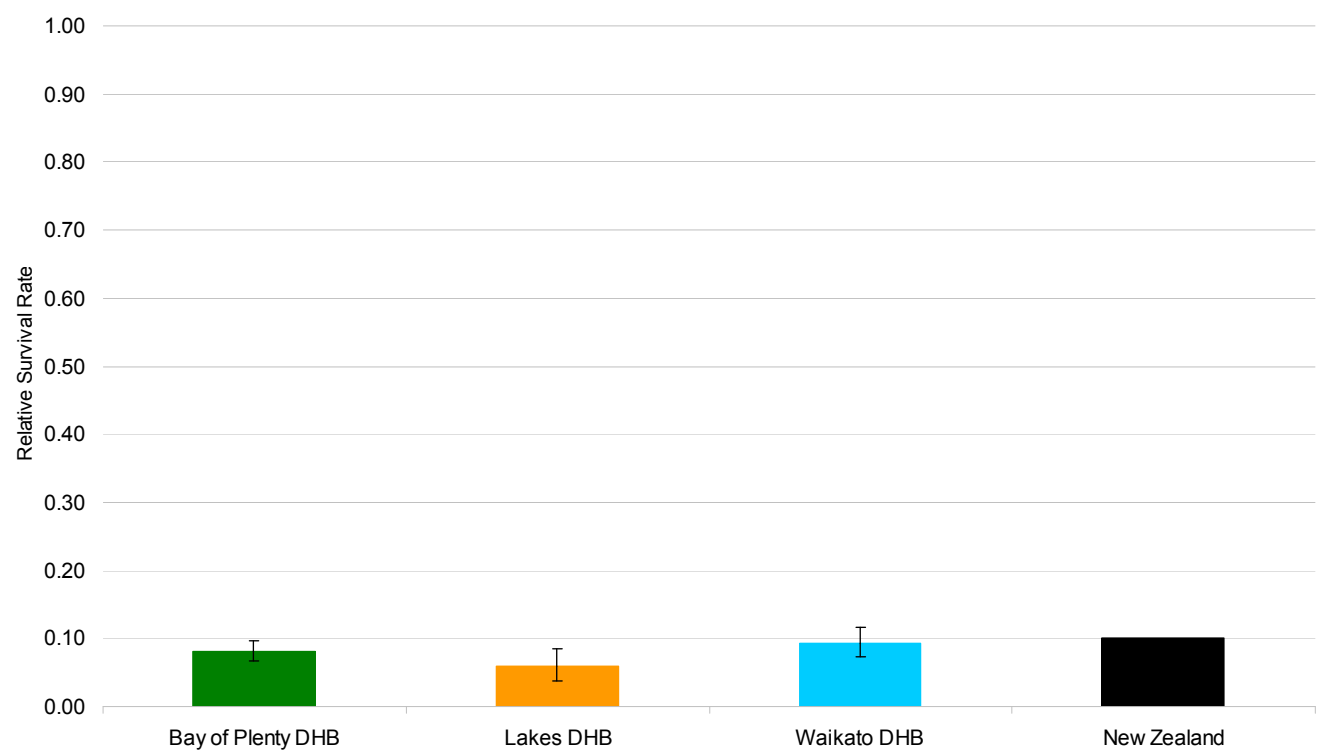
Figure 113: Five year - cumulative relative survival ratios - for colorectal cancer, for the Midland Cancer Network area and for New Zealand, 1994 - 2007



Source: Ministry of Health, 2009.

Lung cancer

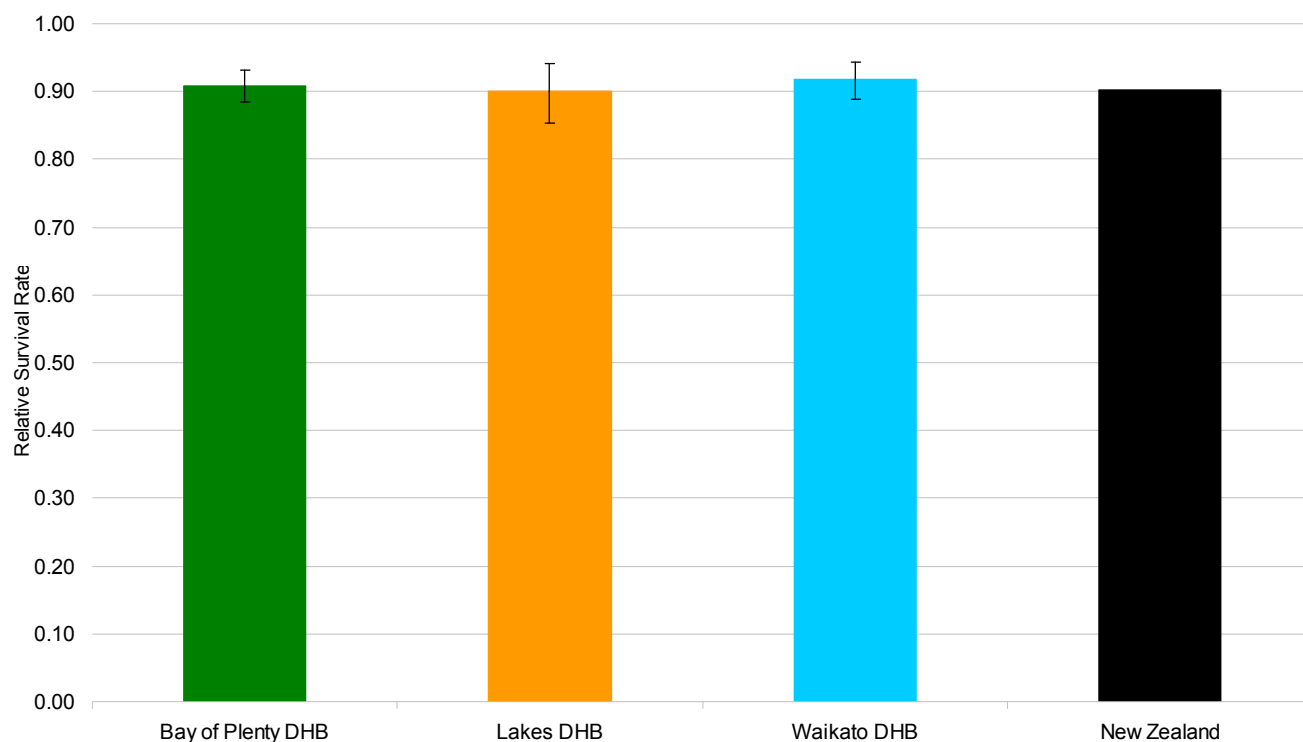
Figure 114: Five year - cumulative relative survival ratios - for lung cancer, for the Midland Cancer Network area and for New Zealand, 1994 - 2007



Source: Ministry of Health, 2009.

Melanoma

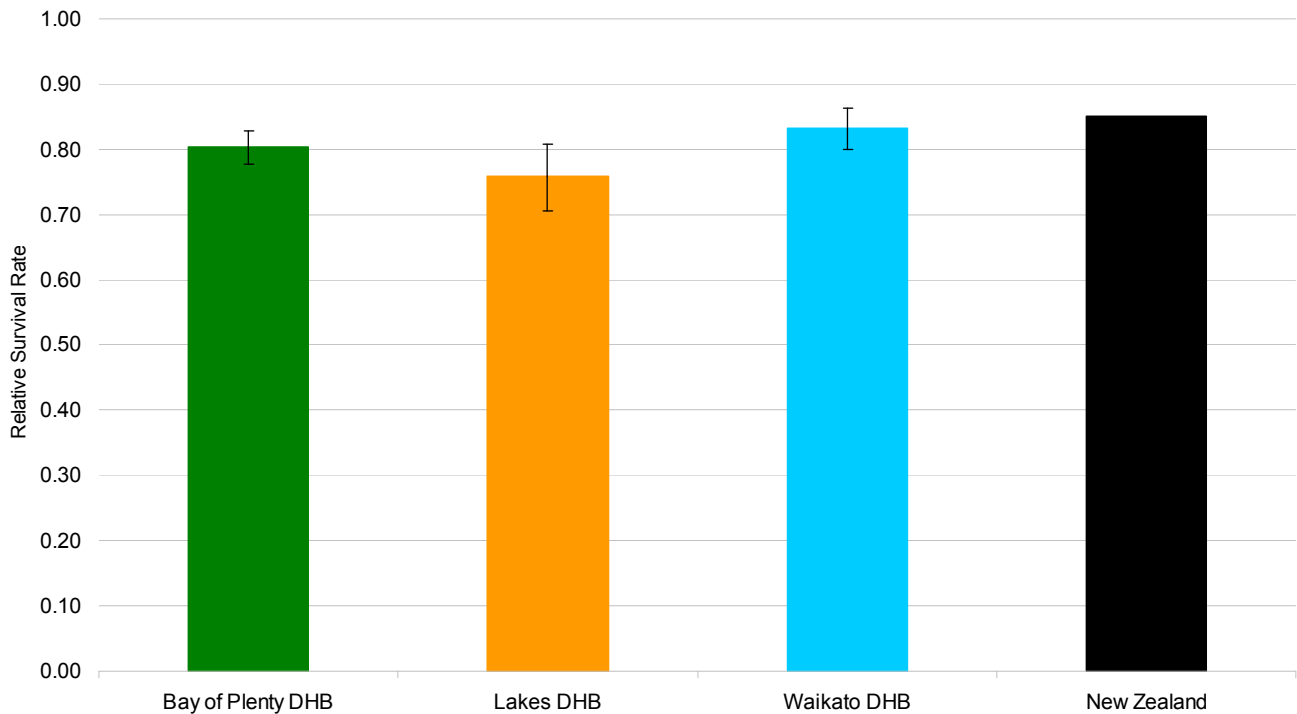
Figure 115: Five year - cumulative relative survival ratios - for melanoma, for the Midland Cancer Network area and for New Zealand, 1994 - 2007



Source: Ministry of Health, 2009.

Prostate cancer

Figure 116: Five year - cumulative relative survival ratios - for prostate cancer, for the Midland Cancer Network area and for New Zealand, 1994 - 2007



Source: Ministry of Health, 2009.

7.3. Future projections

In 2008 the Ministry of Health published a 2000 - 2004 update of cancer mortality projections and a 2000 - 2003 update of cancer incidence projections. Each of these reports makes future projections for the next 10 years. These projections are only calculated at a national level^{46,47}.

The latest forecast for cancer incidence predicts a 29% increase in burden between 2003 and 2013; this is most likely because of the ageing population⁴⁷. Also it is predicted that there will be a substantial decrease in burden/risks of tobacco related cancer among males and cervical cancer among females. Future projections indicate increases in risk for Hodgkin's and non-Hodgkin's lymphoma, kidney, liver and thyroid cancer for both genders. For males there is an increase in the risk of myeloma, testicular and prostate cancers, for females the risk of breast cancer is increasing⁴⁷.

The future projections for cancer mortality predict that the risk of dying from cancer will decline by 15%. However, the burden of cancer mortality will increase by around 12% because of demographic trends (e.g. the increasing size of the New Zealand population and the higher percentage of older people). It is projected that mortality rates will fall for colorectal cancer for both genders and that rates of lung cancer will decrease for males only. Also rates of melanoma, breast cancer and cervical cancer will decrease for females⁴⁶. The rates of prostate cancer mortality will stabilise then decrease slightly. This improvement reflects incidence reduction (e.g. screening programmes and lifestyle changes that have been made)⁴⁶.

The following section of this report shows some of the main tables from the Cancer Incidence Projections 1999 - 2003 Update and The Cancer Mortality Projections 2000 - 2004 published by the Ministry of Health (these are available from <http://www.moh.govt.nz/>).

Cancer incidence projections

All tables sourced from Cancer Incidence Projections 2000 - 2003 Update.

Table 48: Projected percentage change in cancer incidence, by site and gender, for New Zealand, 1999 - 2003 to 2009 - 2013

Site	Male		Female	
	Age standardised rates	Total count	Age standardised rates	Total count
All adult	-1%	30%	3%	28%
Childhood	8%	6%	10%	8%
Bladder	3%	37%	10%	37%
Bone and CT	0%	26%	-4%	15%
Brain	2%	27%	-6%	14%
Breast			7%	34%
Cervix			-21%	-12%
Colorectal	-11%	20%	-9%	20%
Gallbladder	-5%	27%	-11%	13%
Hodgkin's	7%	24%	-39%	52%
Kidney	15%	49%	16%	43%
Larnx	-38%	-18%	-16%	5%
Leukaemia	24%	64%	19%	50%
Lip, Mouth	-23%	-2%	-7%	14%
Liver	18%	53%	16%	45%
Lung	-30%	-7%	-1%	27%
Melanoma	-4%	25%	-11%	9%
Myeloma	9%	47%	0%	28%
non-Hodgkin's Lymphoma	23%	53%	22%	48%
Oesophagus	-1%	32%	-8%	15%
Ovary			1%	19%
Endometrium			4%	32%
Pancreas	-17%	11%	-11%	13%
Prostate	21%	56%		
Testis	12%	22%		
Stomach	-15%	11%	-12%	8%
Thyroid	22%	49%	40%	63%
All Other	-9%	22%	-13%	10%

Source: Cancer Incidence Projection 1999 - 2003 Update.

Table 49: Cancer sites where 'major' change in incidence is projected from 1999 - 2003 to 2009 - 2013

	Male	Female
> 20% increase in risk	Leukaemia, NHL, prostate, thyroid	Hodgkin's, NHL, thyroid
>40% increase in burden	Leukaemia, NHL, prostate, thyroid, kidney, liver, myeloma	Hodgkin's, NHL, thyroid, kidney, leukaemia, liver
>20% decrease in risk	Larynx, lip, lung	Cervix
>10% decrease in burden	Larynx	Cervix

Source: Cancer Incidence Projection 1999 - 2003 Update.

Table 50: Key projection results for selected sites, 1999-2003 to 2009-2013

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Selected site	Comment
Colorectal	Risk declines modestly (~ 10%) for both genders, leading to a modest (~20%) increase in burden. (Note: This excludes the effect of screening).
Lung	Risk falls by one-third in males and remains stable in females - so male burden declines by 7% while female burden increases by 27%. Even so, female rates do not overtake male rates (i.e. no crossover by 2011).
Melanoma	Risk projected to stabilise for males while declining slightly for females - so the increase in burden is moderate for males (~25%) but smaller (~10%) for females.
Breast	A slight increase in risk is projected - but the full effect of BreastScreen Aotearoa is not captured yet. Even so burden is expected to increase by (at least) one third
Cervix	This is the only female cancer for which a fall is projected in both risk and (~ 20%) and burden (~12%). (Note: human papillomavirus vaccination would not impact on incidence within the forecasting horizon.)
Prostate	Even excluding 'PSA effect', a major increase in risk is projected (~21%), which would lead to major increase in burden (~56%).

Source: Cancer Incidence Projection 1999 - 2003 Update.

7.3.1. Cancer mortality projections

All tables sourced from Cancer Mortality Projections 2000 - 2003 Update.

Table 51: Cancer mortality projected percentage change by site and gender, for New Zealand, 2000 - 2004 to 2010 - 2014

Site	Male		Female	
	Age standardised rates	Total Count	Age standardised rates	Total Count
All Adult	-16%	15%	-15%	9%
Childhood	-23%	-22%	-23%	-22%
Bladder	-20%	13%	-13%	10%
Bone and Connective	**	**	**	**
Brain	-2%	24%	-7%	16%
Breast			-12%	9%
Cervix			-43%	-29%
Colorectal	-24%	6%	-22%	3%
Gallbladder	-43%	-23%	-37%	-20%
Hodgkin's	-33%	-16%	-37%	-27%
Kidney	-5%	27%	-4%	22%
Larynx	-36%	-11%	-36%	-18%
Leukaemia	-14%	16%	-18%	6%
Lip, Mouth	-11%	18%	-13%	12%
Liver	-19%	56%	-15%	48%
Lung	-25%	1%	3%	34%
Melanoma	1%	38%	-8%	17%
Myeloma	-4%	32%	-8%	19%
NHL	-8%	24%	-11%	14%
Oesophagus	-7%	23%	-15%	7%
Ovary			-23%	-1%
Endometrium			-5%	21%
Pancreas	-20%	9%	-11%	14%
Prostate	-3%	39%		
Testis	-54%	-48%		
Stomach	-15%	13%	-16%	4%
Thyroid	-12%	16%	-22%	-1%
All Other	2%	41%	3%	31%

Source: Cancer Mortality Projections 2000 - 2003 Update.

Cancer health needs in the Midland Cancer Network area, 2009

Table 52: Cancer sites for which major change in mortality is projected from 2000 -2004 to 2010 – 2014

	Male	Female
>5% Increase in risk	Liver	Liver
>30% Increase in burden	Liver	Liver
	Melanoma	Lung
	Myeloma	
	Prostate	
> 20% Decrease in risk	Bladder	Cervix
	Colorectal	Colorectal
	Gallbladder	Gallbladder
	Hodgkin's	Hodgkin's
	Larynx	Larynx
	Lung	Ovary
	Pancreas	Thyroid
>10% Decrease in burden	Testis	
	Gallbladder	Cervix
	Hodgkin's	Gallbladder
	Larynx	Hodgkin's
	Testis	Larynx

Source: Cancer Mortality Projections 2000 - 2003 Update.

Table 53: Key mortality projection results for selected sites, 2000 - 2004 to 2010 - 2014

Selected site	Comment
Colorectal	Rates projected to decline in all ages by gender groups except 75+ males, falling overall by almost one quarter. This occurs without screening. Burden remains essentially stable, because of offsetting demographic effects.
Lung	Rates continue their long-term decline in males (all ages), falling by one quarter over the decade. As a result, overall burden remains stable. Trends in mortality rates vary by age group among females, but the overall outcome is stability. However, female and male rates do not crossover by the projection horizon. Given stable rates burden must increase for females - an increase of one third is projected over the decade.
Melanoma	Trends in rates are projected to vary by age among males, such that the overall rate remains stable and the total burden increases by one third. Female rates are projected to decline in all age groups except the oldest so the overall rate falls slightly. The burden increases by about one fifth overall.
Breast	Rates are projected to fall among women older than 45 years with the result that the overall rate falls by 12%. This is the result of the screening programme, at least in part. Total burden nevertheless increases by about 10%, reflecting the impact of demographic trends.
Cervix	Both rates and counts are projected to continue to fall sharply, although exact estimates are impressive because of relatively small numbers. This is largely due to the ongoing effect of the screening programme (there has been little recent improvement in the treatment of cervical cancer). The projections do not include any possible additional effect from immunisation against HPV (which in any case be small over the short to medium term).
Prostate	Rates are projected to be essentially stable or very slowly declining, so burden is expected to increase by almost 40%. The steep increase in burden reflects the impact of population ageing in particular.

Source: Cancer Mortality Projections 2000 - 2003 Update.

⁴⁵ Cormack, D., Purdie, G., & Robson, B. (2007). Cancer. In Robson, B., & Harris, R. (eds). Hauora: Māori standards of health IV. A study of the years 2000–2005. Wellington: Te Rōpu Rangahau Hauora a Eru Pōmare.

⁴⁶ Ministry of Health. (2008). Cancer mortality projections 2000 - 2004 update. Public Health intelligence occasional bulletin No. 49. Wellington: Ministry of Health.

⁴⁷ Ministry of Health. (2007). Cancer incidence projections 1999 - 2003 update. Wellington: Ministry of Health.