

The Burden of Cancer

New Zealand 2006

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Executive Summary

The aim of this report is to estimate the burden of cancer in New Zealand in 2006. The burden of cancer is measured using (modified) disability-adjusted life years (DALYs), a measure of health loss that combines both fatal and nonfatal outcomes.

Twenty-five specific cancers among adults, along with 'all cancer', 'other adult cancer' and 'all childhood cancer' were modelled by sex, age (single year) and ethnic group (Māori and non-Māori).

Ministry of Health cancer incidence projections by sex and age for 2006 formed the basic input, with disaggregation by ethnicity modelled by using Māori:non-Māori incidence rate ratios from the CancerTrends Study, a joint project of the University of Otago, Wellington, and the Ministry of Health.

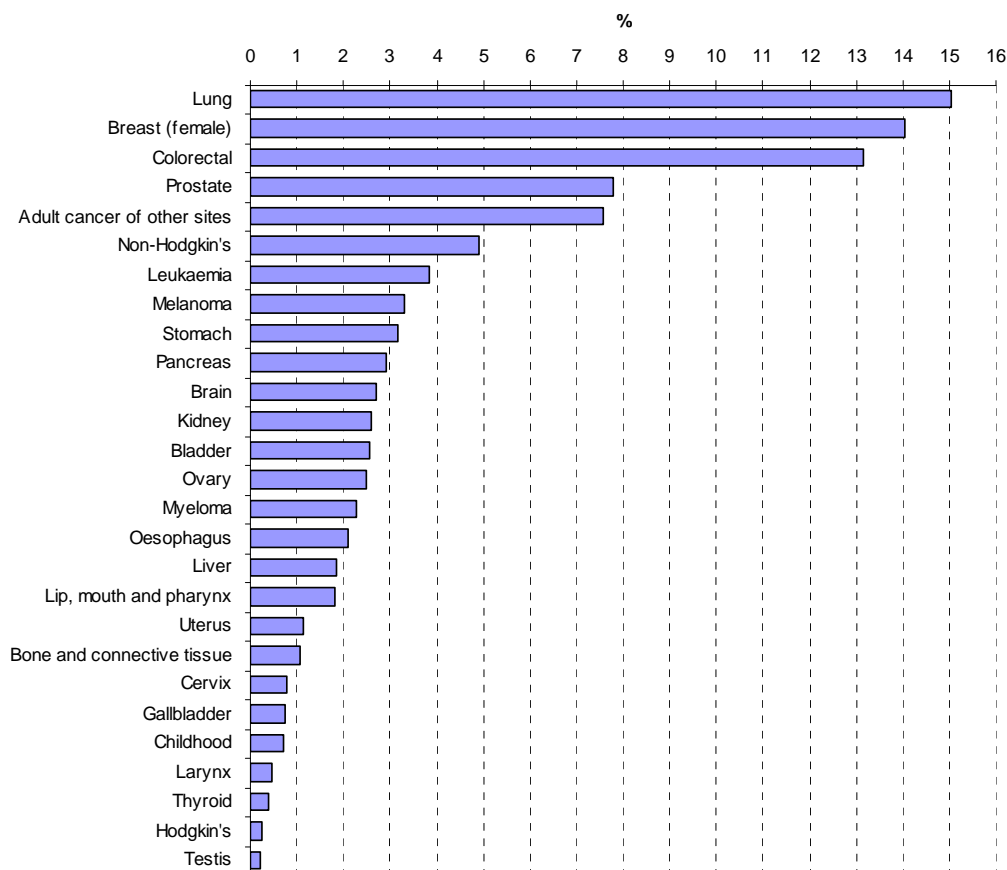
Excess mortality rates were calculated using New Zealand Cancer Registry data and ethnic-specific life tables, and then converted to interval-relative survival proportions for use as transition probabilities to 'death from cancer' in the Markov models. Statistics New Zealand life tables were used to estimate transition probabilities to 'death from other causes'.

Duration (months) and disability weights for each cancer-related disease state (diagnosis and treatment, remission, pre-terminal and terminal) were based on the 2003 Australian Burden of Disease study. The total disease duration before cure (statistical cure time) ranged from three years (testicular cancer) to 20 years (breast cancer, prostate cancer, myeloma and non-Hodgkin's lymphoma).

Disability-adjusted life years (DALYs) – the sum of years of life lost and years of life lived with disability – were calculated for each cancer using a baseline discount rate of 3.5%. The key modification to the DALY used in this project, compared to the DALY used in a standard burden of disease study, was to use a 'prospective' approach, whereby years of life lost were calculated for incident cases in 2006, with projected follow-up up to 2026 (depending on the cancer and its survival time). By contrast, the conventional DALY uses deaths in the base year. This modification to the standard method provides a more realistic estimate of actual cancer burden.

The total burden of cancer in 2006 was estimated to be approximately 127,000 DALYs or an age-standardised DALY rate of approximately 4800 per 100,000 persons. The percentage distribution of DALYs across cancer types, for the whole New Zealand population, is shown below (Figure E1). Lung, breast and colorectal cancers each comprised 13%–15% of the total cancer burden.

Figure E1: Percentage distribution of total cancer DALYs, by cancer site



Pooling sexes, the age-standardised cancer DALY rates for Māori were nearly always greater than those for non-Māori. For example, the Māori:non-Māori rate ratios were above 2 for cervical (2.52), laryngeal (2.04), liver (3.68), lung (3.04), stomach (2.85), uterine (2.19) and testicular cancers (3.35). For these cancers, both higher incidence among Māori and lower cancer survival contributed to the higher Māori cancer burden. For some cancers, however, differences in cancer incidence by ethnicity were small, and it was poorer survival among Māori that led to higher DALY rates for this ethnic group. For all adult cancers combined, the Māori DALY rate was 1.52 times the non-Māori rate.

Of the total cancer DALYs, 51.5% occurred among females. Among females, 27.2% of the estimated cancer burden was due to breast cancer, followed by lung (14.3%) and colorectal cancers (12.9%). Among males, 16.0% of the estimated cancer DALY burden was due to prostate cancer, followed by lung (15.9%) and colorectal cancers (13.5%). (Note that the burden due to prostate cancer may be overestimated due to prostate-specific antigen [PSA] testing).

This report adds to existing information on cancer in New Zealand, and so should assist in the planning and prioritisation of cancer services, especially cancer control activities. Its most notable addition to current cancer incidence, survival and mortality information is the incorporation of morbidity and mortality into a single measure of cancer burden (the disability-adjusted life year, or DALY). This information provides a critical input into cost utility analysis, and so will help to inform future prioritisation decisions relating to cancer services. It also feeds into a larger burden of disease study currently being undertaken by the Ministry of Health, which covers all diseases, injuries and risk factors.

Chapter 1: Introduction

There has been one previous comprehensive analysis of the burden of disease in New Zealand (Ministry of Health 2001). Using data for 1996, this study found that cancers contributed 20% of the total burden of disease, as measured by disability-adjusted life years (DALYs), second only to cardiovascular diseases at 24%. As cardiovascular disease incidence and mortality continue to fall, the burden of disease due to cancer may increase further as a proportion of the total disease burden. In addition, as knowledge about the prevention and treatment of cancers steadily improves, the demand on population-based and personal health services to address the cancer burden will also continue to increase.

This report uses an extension of conventional burden of disease methods to quantify the disease burden (in DALYs) for 25 adult cancer sites, childhood cancer combined and 'other adult cancers', separately by sex and ethnicity (Māori and non-Māori). It provides a snapshot of the burden of cancer, and is intended to assist the prioritisation of cancer services (including preventive, therapeutic, rehabilitative and palliative care) in New Zealand. As a burden of cancer study it is descriptive only and does not estimate how the cancer burden might change as a result of interventions, or what the cost and cost-effectiveness of such interventions might be. However, the modelling underlying this report has been designed to allow such scenario modelling and cost-effectiveness analysis to be undertaken in the future.

The modelling underlying this report differs from standard burden of disease methods in that it is *prospective*. That is, we start with estimated incident cases of cancer in 2006 and model their survival into the future. Conventional burden of disease studies use the deaths in the reference year, not the deaths occurring in the reference year or subsequently among the cohort of cases incident in the reference year. This prospective approach will facilitate extension to scenario modelling. New Zealand is in a strong position to undertake such work, with a population-wide cancer registry, an established age/period/cohort regression modelling method for projecting cancer incidence, a growing body of work on cancer survival analysis, and high-quality input data available by sex, ethnicity and socioeconomic group.

Chapter 2: Methodology

Burden of disease methodology

Burden of disease studies aim to estimate the burden of each major disease for a given country or region of the world at a given time. The key metric is the disability-adjusted life year (DALY), a composite measure of mortality and morbidity.

Murray and Lopez (1996) originated the concept and method of burden of disease studies. A further revision of the global burden of disease (GBD) is currently being implemented, with a major focus on methodological improvements (Harvard Initiative for Global Health et al 2008). A burden of disease study has previously been conducted in New Zealand by Tobias and others in the Ministry of Health, with DALY estimates for the year 1996 (Ministry of Health 2001). A major Ministry-led revision is commencing in 2010 for base year 2006, for all disease and injury states.

DALYs are the sum of years of life lost (YLLs) and years of life lived with disability (YLDs) (ie, the DALY is classified as a health gap measure). YLLs capture life lost due to premature death: the discounted number of years between the age of death and an external 'model' life expectancy, as given by a reference life table. YLDs are equivalent to years of life lost as a result of living in health states other than full health (ie, severity-adjusted disability). In other words, each year lived in a certain disability state is assigned a weight between 0 and 1. These disability weights are social preferences for non-fatal health states, determined by the person trade-off method (Stouthard et al 1997).

Thus one DALY represents the loss of one year of healthy life, whether it is due to premature death or living in a state less than full health, or a combination of both.

DALYs are typically calculated for a 'base year'. The YLLs are estimated by the number of deaths, by age at death in that year, using routine mortality data. The YLDs are typically estimated by first determining the incidence of disease in the given base year, and then estimating the disability each incident case is likely to experience (from the specified condition) for the remainder of their life. A range of methods are available for estimating and reconciling incidence, duration and mortality data, including one developed and implemented by the World Health Organization (WHO), the software package DISMOD (Barendregt et al 2003). Discounting, commonly around 3%, is generally applied to YLLs and YLDs occurring in years beyond the base year.

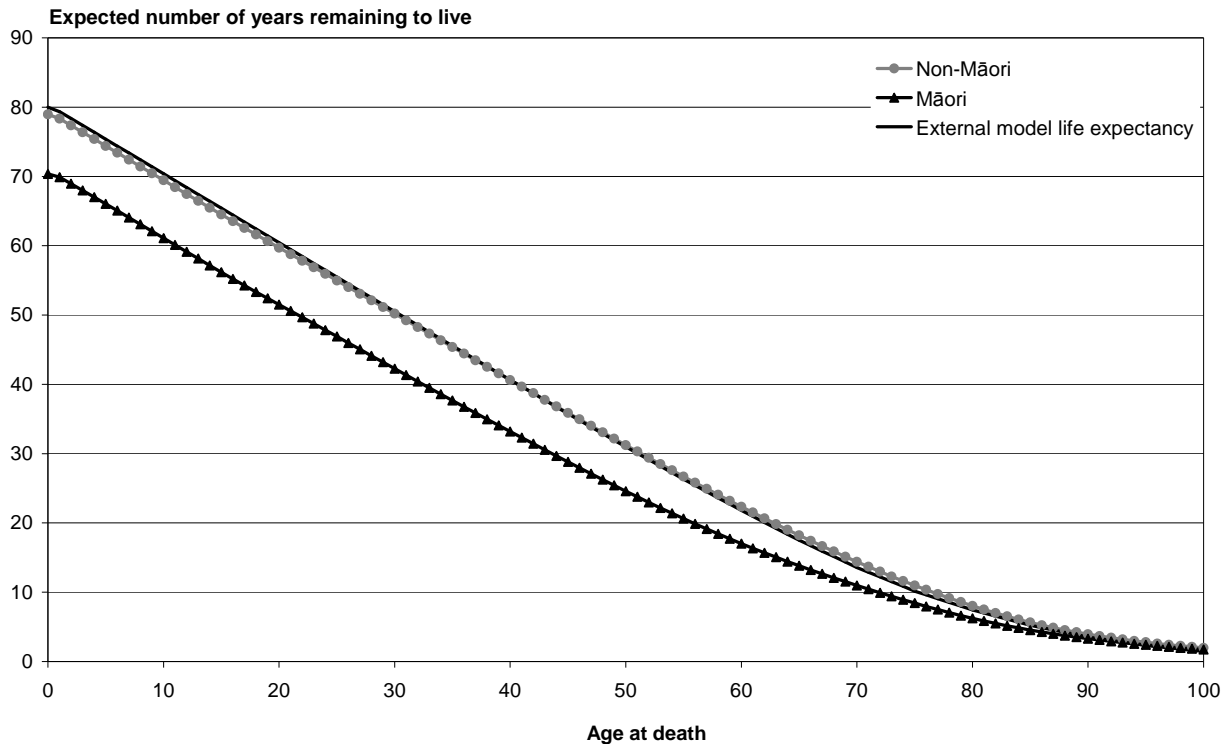
This report adapts the standard burden of disease method to a prospective approach (see Table 1 below). The rate of incident cancers in 2006 is estimated for all cancers, by sex and ethnic group (Māori and non-Māori). Relative survival methods are then applied to New Zealand cancer incidence data to estimate the likely future survival of these 2006 cancer cases, again separately by sex and ethnic group. YLLs have been calculated for deaths occurring from cancers first diagnosed in 2006. Some of these deaths will occur in 2006 itself, but others may occur many years from diagnosis, meaning extra discounting back to 2006. We call this method the prospective or 'hybrid' method (Table 1), and have used it to enable future extensions for scenario modelling and cost-effectiveness analysis (CEA). In future CEA we will use the population's own

life tables (ie, Māori and non-Māori life tables, by sex). However, in this report we used a single model life table to enable estimation of Māori–non-Māori inequality. Otherwise, the years of life lost at the same age at death would be less for a Māori than for a non-Māori individual, as shown in Figure 1. We do, however, provide DALYs calculated using ethnic-specific life tables as a sensitivity analysis in the results.

Table 1: Approaches to calculating YLLs

Approach	Description	Used in this report?
1. GBD. Deaths in base year. Same model life table for all groups.	Deaths are determined in the base year. An external model life table is used to calculate expected years of remaining life for each decedent. Years of life lost are discounted back to the base year. This is the standard method in GBD and national burden of disease studies (Ministry of Health 2001; WHO 2008; Begg et al 2007, 2008).	No
2. CEA. Deaths as they occur in future for incident cases in the base year. Sub-population-specific life tables.	Incident cases in the base year are streamed out into the future, with estimated annual probabilities of survival, death from disease of interest and death from other causes. As used in cost-effectiveness analysis (CEA), it is important that averted deaths actually estimate those that will be averted if the intervention is applied to the population, so that the population's specific life table is used to estimate years of remaining life lost (Tan-Torres Edejer et al 2003). Estimated years of life lost are discounted back to the base year (allowing for both number of years after base year that death occurs and the number of years lost).	Yes – as sensitivity analysis only.
3. Hybrid. Deaths as they occur in future for incident cases in the base year. Same model life table for all groups.	Incident cases in the base year are streamed out into the future, with estimated annual probabilities of survival, death from disease of interest, and death from other causes. An external model life table is used to calculate expected years of remaining life for each decedent – not the population's specific life table – to keep fidelity with the concept of a gap measure (as used in the GBD), and to compare all groups against the same standard (eg, both Māori and non-Māori are compared against the same standard of expected years of life lost by age). Years of life lost are discounted back to the base year, as per the CEA method.	Yes – main or default method.

Figure 1: Remaining years of expected life, by age at death, using varying life tables: non-Māori, Māori and external model life expectancy



Years of life with disability (YLDs) are estimated using disease models modified from the Australian burden of disease study (and do not differ conceptually from ‘standard’ YLDs). DALYs are standardised to the WHO world population, and are presented by cancer site separately by sex and ethnic group.

Adult and childhood cancers (0–14 years, not disaggregated by site) are modelled separately. Most adult cancer sites include 25-plus-year-olds, although some cancers that affect youth have a lower age limit of 15 years (bone and connective tissue, brain, leukaemia, melanoma, non-Hodgkin’s lymphoma (NHL), ovarian, testicular and thyroid cancers).

Cancer sites

Table 2 shows the cancer site groupings and ICD10 codes used in this report, along with those of several other studies that either inform or act as inputs for the modelling in this report. The modelling used input data – and therefore the cancer site groupings – from the Ministry of Health trends and projections work (Table 2).

In the majority of cases cancer site definitions were the same across these sources. The exceptions to this in the current report are:

- a narrower definition of brain, myeloma and ovarian cancer, to be consistent with survival analyses
- colon and rectal cancers were combined
- laryngeal, and lip, mouth, and pharynx cancers were combined
- non-melanoma skin cancers were excluded.

Likewise, ethnic differences in incidence data were sourced from the CancerTrends study, which used the groupings shown in Table 2. When inconsistencies in site groupings occurred, the ethnic variations for the closest matching analysis in CancerTrends were used (eg, ICD C23–25 for gallbladder on CancerTrends was applied to ICD C23–24 incidence projections for Ministry of Health data).

Existing Ministry of Health survival estimates were not available for gallbladder, bone and connective tissue cancers, ‘other adult’ cancers and childhood cancers. For these four sites, specific data was taken from the Cancer Registry and mortality files to allow excess mortality rate modelling; otherwise, the data sets already in existence for previous relative survival analyses (NZHIS 2006) were used for modified excess mortality rate modelling.

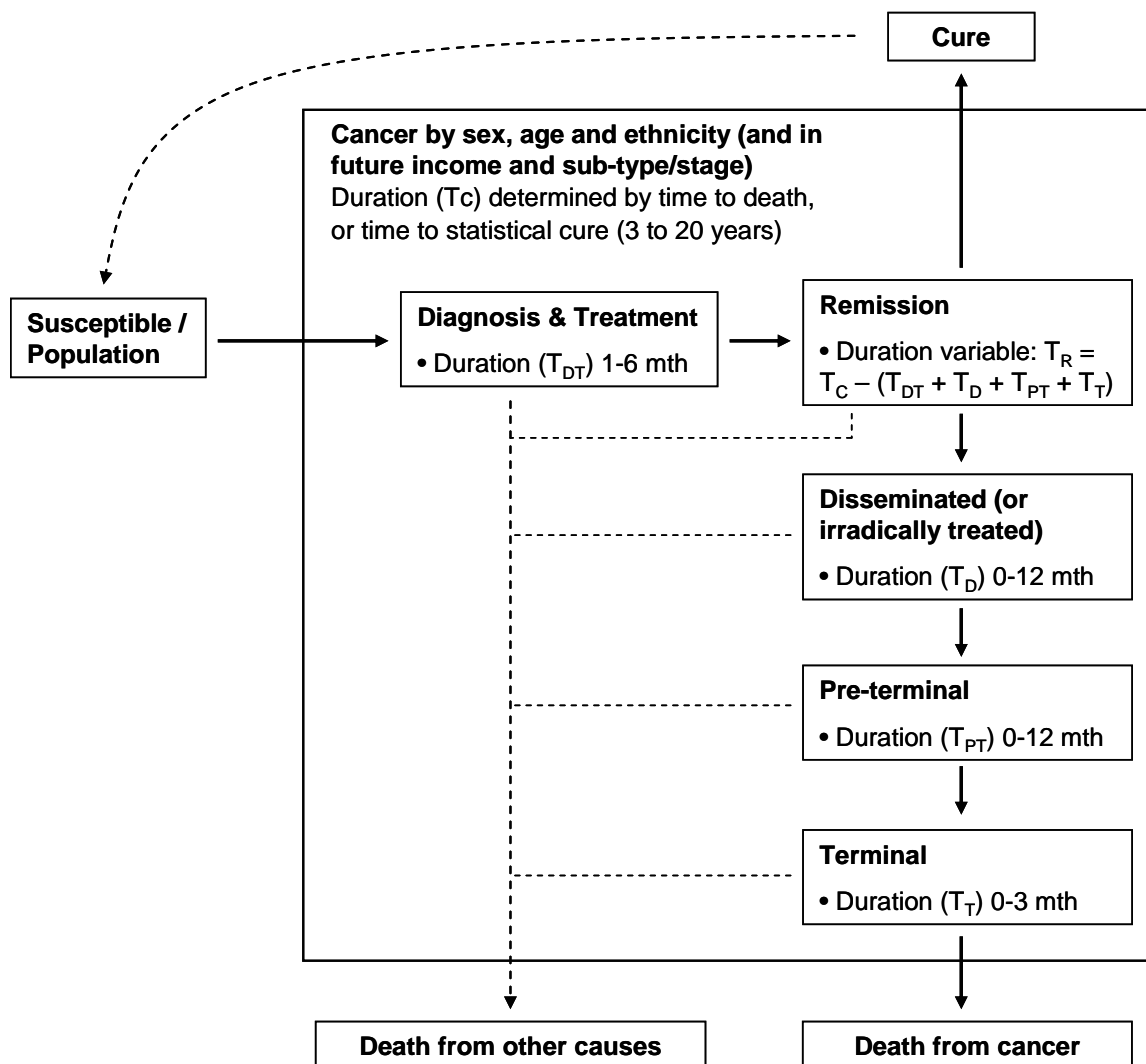
Table 2: Range of 'benchmark' cancer sites used by studies relevant to this burden of cancer study

Cancer	Ministry of Health cancer trends and projections (Ministry of Health 2002, 2008b)		This burden of cancer report	CancerTrends	NZHS Survival (NZHS 2006)
	ICD9	ICD10	ICD10	ICD10	ICD10
All childhood	140–208 (<15)	C00–C96 (<15)	C00–C96 (<15)	C00–C97, D03, D45 (<15)	
All adult	140–208 (≥15)			C00–C97, D03, D45 (≥15)	
Bladder	188	C67	C67	C67	C67
Bone and connective	170–171	C40–41	C40–41	C40–C41	C40–41
Brain	191	C70–72	C71	C71	C71
Breast (female)	174	C50	C50	C50	C50
Cervix	180	C53	C53	C53	C53
Uterus	182	C54–55	C54–55	C54	C54–55
Colon	153–154	C18	C18–21	C18–21	C18–21
Rectum, sigmoid, anus		C19–21			
Gallbladder	156	C23–24	C23–24	C23–25	
Hodgkin's disease	201	C81	C81	C81	C81
Kidney and other urinary	189	C64–66, C68	C64–66, C68	C64	C64–66, C68
Larynx	161	C32	C32	C30–32	C01–14, C32
Lip, mouth	140–149	C00–14	C01–14	C01–14	
Pharynx					
Leukaemia	204–208	C91–95	C91–95	C91–95	C91–95
Liver	155	C22	C22	C22	C22
Lung, trachea, bronchus	162	C33–34	C33–34	C33–34	C33–34
Melanoma	172	C43	C43	C43, D03	C43
Myeloma	203	C88, C90	C90	C90	C90
NHL	200, 202	C82–85, C96	C82–85, C96	C82–85	C82–85, C96
Non-melanoma skin		C44		C44	
Oesophagus	150	C15	C15	C15	C15
Ovary	183	C56, C57.0–57.4	C56	C56	C56
Pancreas	157	C25	C25	C25	C25
Prostate	185	C61	C61	C61	C61
Stomach	151	C16	C16	C16	C16
Testis	186	C62	C62	C62	C62
Thyroid	193	C73	C73	C73	C73
Other adult cancer	Rest of 140–208 not listed above (≥15)	Rest of C00–C96 not listed above (≥15)	Rest of C00–C96 not listed above (≥15)		

Cancer disease model, cure rates and disability weights

For each cancer, a model of disease progression is needed to estimate the years of life lost due to disability. The general New Zealand model is shown below in Figure 2. For the purposes of this report, sex-, age- and ethnicity-specific inputs for incidence and survival are specified for each cancer, using a common model structure (states, duration in each state, disability weight for each state, and sequelae). Also, for this report we set T_D (duration in disseminated state) to zero for all cancers, and incorporate this state with the pre-terminal state. The disseminated state is conceptually identified both to be consistent with other burden of disease models and to allow for flexibility in future scenario modelling beyond the scope of this report.

Figure 2: General New Zealand cancer disease model



T_C = total cancer duration; T_{DT} = time in diagnosis and treatment state; T_R = time in remission state; T_D = time in disseminated state; T_{PT} = time in pre-terminal state; T_T = time in terminal state.

Note that cancer subjects can move to the 'death from other causes' state from any disease state within the model, based on the background mortality risks by sex, age, ethnicity and income from population life tables. There is also a parallel chain of states for those people who have permanent sequelae (eg, leg amputated due to bone cancer), but this is not shown in Figure 2.

Each cancer behaves differently with respect to subtypes (or stage), and the nature, disability and duration of each phase of the disease model. The Australian 2003 burden of disease study had more cancer-specific tailoring of the disease model for each cancer site.¹ For example, breast cancer was separated into < 2 cm, 2–5 cm and > 5 cm on diagnosis, each stage with appropriately different durations and disability weight for treatment. However, the stages were collapsed again after treatment, to either a 'cure' or 'death from cancer' pathway. Future extensions of this New Zealand cancer work will model survival and disease progression, and interventions, separately for each stage or subtype at diagnosis, and also separately by socioeconomic group).

To allow future scenario modelling, we built Markov time-dependent macrosimulation models. These models allow time-dependent cell-based assignment of parameters such as incidence, survival and quality of life (ie, disability weights). This differs from the parameters required for estimating the burden of disease in a given year. Notably, the Australian and Spanish studies (Begg et al 2007, 2008; Fernandez de Larrea-Baz et al 2009) estimate *average* survival in each disease phase using Weibull functions. Our objective in the future is to be able to track individuals through these phases and allow user-specified variations to transition probabilities over time (eg, a change in excess mortality rate due to a new treatment, parameterised in terms of a change in probability of cancer death for a given state, with a compensatory increase in survival probability).

An additional general point of difference is that the Australian burden of disease cancer models separated survivors and those who will die from their cancer. This generally resulted in two disease phases post-treatment: 'remission' or 'irradically treated', for those who will subsequently die of their cancer, and 'state after initially curative treatment', for those who will be cured. Often this difference is minor and exactly the same disability weights were assigned to both states. However, occasionally (eg, with oesophageal cancer) the states were assigned quite different disability weights. This prior knowing of who is and who is not going to die after initial treatment is appropriate for an 'averages' model but not for the intended simulation modelling proposed in New Zealand. As a result we set a remission state that is common to all cancer patients post-initial treatment.

The duration in the terminal state takes priority over that in the pre-terminal state, which in turn takes priority over that in diagnosis and treatment. (The duration in the remission state is simply the residual of the duration in all other states, subtracted from the total cancer duration time (T_C .) Table 3 gives examples of the time in different states for four scenarios.

¹ See the range of spreadsheets at <http://www.aihw.gov.au/bod/index.cfm>, and Begg et al 2007.

Table 3: Time spent in each state of the disease model (months), for different scenarios

Scenarios	Total cancer duration: T_C	Time in state (months)			
		Terminal: T_T	Pre-terminal: T_{PT}	Diagnosis and treatment: T_{DT}	Remission: T_R
Person dying of cancer at the end of year 3	36	1	11	6	18
Person dying of cancer at the end of month 6	6	1	5	–	–
Survivor	48 (cure time)	–	–	6	42
Person dying of a cause other than cancer at the end of year 3	36	–	–	6	30

Two further general issues warrant mention: how to apply disability weights for the ‘remission’ state when it has a long duration, and how to incorporate relapse and retreatment (whether it be with a curative or a palliative intent) that is not followed by the patient’s death within a year. Breast cancer is an exemplar of both issues.

As stated above, breast cancer deaths can occur many years after diagnosis, and even at 20 years post-diagnosis the relative survival is still lower than that expected based on population mortality rates. For those women who survive, and even those who relapse or die of breast cancer 10 or more years after diagnosis, it seems inappropriate to assume that the loss of quality of life (disability weight) is constant throughout the (up to) 20 years. Rather, it seems more realistic to assume that the disability weight reduces with each subsequent year of disease-free survival. (Other burden of disease studies circumvent this issue by assuming five years’ duration for all YLD calculations, even if the statistical cure time is in excess of five years. However, we wanted a state-based model for future scenario modelling of interventions that may occur any time until ‘cure’ was pronounced.) For the purposes of this report, we have assumed that the remission disability weight reduces by 20% per annum from the first year onwards. We also undertake sensitivity analyses for this 20% per annum reduction in this parameter.

The issue of relapse, re-treatment and subsequent cure or prolongation of life is not included in the generic model in Figure 2 and in this report. Addition of this extra disease process is unlikely to alter the burden of disease for a given year (the purpose of this report), but it might be important for future scenario modelling.

Duration and disability weights, by state, for each cancer model

Table 4 below lists the duration and disability weights for each state and each cancer site included in this report, following the Australian burden of disease 2003 study (Begg et al 2007, 2008) as a precedent, which in turn largely uses the Dutch disability weights (Stouthard et al 1997). The remainder of this section briefly describes modifications made for some cancer sites for this study, and some comments on options for improvement in the future.

Table 4: Disability weights (DW) and duration time (T, in years) for the disease model stages used in this New Zealand burden of cancer study

Cancer site	Statistical cure time (years)	Diagnosis and treatment		Remission		Pre-terminal (including disseminated cancer)		Terminal	
		T _{DT}	DW	T _R	DW	T _{PT}	DW	T _T	DW
All childhood	5	0.67	0.66	Residual	0.20	0.50	0.75	0.08	0.93
Bladder	10	0.17	0.27	Residual	0.18	0.92	0.64	0.08	0.93
Bone and connective	10	0.50	0.41	Residual	0.30	0.92	0.75	0.08	0.93
Brain	5 (< 55 years); 10 (≥ 55 years)	0.25	0.68	Residual	0.18	0.67*	0.75	0.08	0.93
Breast (female)	20	0.33	0.29	Residual	0.26	0.92	0.79	0.08	0.93
Cervix	5	0.25	0.43	Residual	0.20	0.42	0.75	0.08	0.93
Colorectal	8	0.75	0.43	Residual	0.25	0.25	0.83	0.08	0.93
Gallbladder	7	0.17	0.43	Residual	0.20	0.92	0.73	0.08	0.93
Hodgkin's disease	10	0.33	0.66	Residual	0.19	0.42	0.75	0.08	0.93
Kidney and other urinary	10	0.17	0.27	Residual	0.18	0.92	0.64	0.08	0.93
Larynx	10	0.25	0.56	Residual	0.37	0.67	0.90	0.08	0.93
Leukaemia, < 45 years	10	1.17	0.55	Residual	0.19	0.25	0.75	0.08	0.93
Leukaemia, ≥ 45 years	10	0.50	0.55	Residual	0.19	0.25	0.75	0.08	0.93
Lip, mouth, pharynx	10	0.25	0.56	Residual	0.37	0.67	0.90	0.08	0.93
Liver	7	0.17	0.43	Residual	0.20	0.92	0.73	0.08	0.93
Lung, trachea, bronchus	6	0.42	0.70	Residual	0.47	0.42	0.83	0.08	0.93
Melanoma	6	0.17	0.22	Residual	0.19	0.25	0.81	0.08	0.93
Myeloma	20	0.75	0.19	Residual	0.19	0.42	0.75	0.08	0.93
NHL	20	0.33	0.66	Residual	0.19	0.42	0.75	0.08	0.93
Oesophagus	6	0.17	0.56	Residual	0.37	0.92	0.90	0.08	0.93
Ovary	10	0.25	0.43	Residual	0.20	0.42	0.75	0.08	0.93
Pancreas	5	0.17	0.43	Residual	0.20	0.92	0.73	0.08	0.93
Pleura, thymus, heart	5	0.25	0.35	Residual	0.30	0.67 *	0.75	0.08	0.93
Prostate	20	0.17	0.27	Residual	0.20	1.50	0.64	0.08	0.93
Stomach	6	0.50	0.53	Residual	0.38	0.92	0.73	0.08	0.93
Testis	3	0.25	0.27	Residual	0.18	0.75	0.64	0.08	0.93
Thyroid	5	0.17	0.27	Residual	0.18	0.75	0.64	0.08	0.93
Uterus	6	0.25	0.43	Residual	0.20	0.42	0.75	0.08	0.93
Other adult cancer**	10	0.35	0.44	Residual	0.24	0.66	0.75	0.08	0.93

* The Australian Burden of Disease study Excel spreadsheets state one-year duration on the flow diagram and 0.67 years in text notes. We have elected to follow the text notes.

** The duration and DWs for 'other adult cancer' are simply averages of the specified adult cancer sites.

All childhood cancer

There is no direct equivalent Australian Burden of Disease (BoD) study for this category. We therefore used a generic disease model, weighted both in duration and DWs to the composition of childhood cancers (a fifth brain, a third or more leukaemia, 5% bone, and miscellaneous):

- diagnosis and treatment state of 0.67 years, with DW of 0.66
- pre-terminal state of half a year, with DW of 0.75
- terminal state of one month duration, with DW of 0.93
- remission state of residual time duration, with DW of 0.20.

Bladder cancer

The Australian BoD study specifies 1.4 months in diagnosis and therapy (DW 0.43), 11 months in disseminated carcinoma (DW 0.64) and one month in terminal state (DW 0.93). We simply rounded up the diagnosis and treatment state to two months (our common unit of time in the macrosimulation is a month) and used the pre-terminal label for the disseminated carcinoma state. The states after intentionally curative treatment, and in remission (following which death inevitably occurs), both had a DW of 0.18 in the Australian BoD study, allowing a simple aggregation in the 'remission' state for this report.

It is worth noting that bladder cancer treatment and prognosis vary widely according to subtype and stage of disease at presentation. These subtypes of bladder cancer will need more explicit disease models in future scenario modelling.

Bone and connective tissue cancer

The Australian BoD study treats bone and connective tissue cancers separately for the diagnosis and treatment state (duration one year and four months, and DWs of 0.60 and 0.35, respectively), then has the same sequence of states thereafter. Using an approximately 25%:75% split between bone and connective tissue cancers, we use these as weights to parameterise the diagnosis and treatment state as having a six-month duration, with DW of 0.41.

Brain cancer

There are no DWs for brain cancer from the Dutch study, so DWs are estimated for this study. We relabelled the disseminated carcinoma state as pre-terminal and set its duration at 11 months (compared to it being a residual category in the Australian BoD study). Note the differing statistical cure times for those aged older and younger than 55 years for the New Zealand study (see Table 2).

Breast cancer (female)

The Australian BoD study treats < 2 cm, 2–5 cm (or lymph node dissemination) and > 5 cm breast cancer separately for diagnosis and treatment. For the purposes of this report, however, we specified a common diagnosis and treatment state of four months' duration with a DW of 0.29, by weighting the Australian parameters by percentage of cases at presentation. Otherwise, the Australian model parameters were directly transferable to the New Zealand model.

Colorectal cancer

The Australian BoD study had a 'disseminated carcinoma' state but not a pre-terminal state. We have assigned the time and DW for disseminated carcinoma to the pre-terminal state. The Australian BoD study also assigns quite different DWs (0.20 and 0.43) for states following intentionally curative treatment (with inevitable survival after) and remission (with inevitable progression to disseminated carcinoma and death after). We derived a common DW for the remission state by weighting these two DWs by the estimated average time within them in the Australian BoD study of 4.25 and 1.2 years, respectively, giving an estimated DW of 0.25.

Gallbladder cancer

The Australian BoD study uses the same model for gallbladder cancer as for liver cancer. We have therefore amended the model for the New Zealand burden of cancer study in the same way as the liver cancer model was amended (see below).

Hodgkin's disease

The Australian BoD study uses the same disease model for Hodgkin's as for NHL, except for different percentage survival and remission. We therefore used the same DW and duration inputs for Hodgkin's as for NHL (see the section below on NHL for more detail).

Laryngeal cancer

There is no direct Australian BoD study equivalent for this category. We therefore used the disease model, durations and DW for the 'lip, mouth and pharynx' model.

Leukaemia

Leukaemia consists of four 'classic' types (acute and chronic lymphocytic, and acute and chronic myeloid), along with other variants. For this report, however, we can only model leukaemia as a total group due to input variables for incidence, survival and ethnic differences. This is sufficient for estimating the burden of cancer (the purpose of this report), but it will not be sufficient for future scenario modelling. However, we have split leukaemia into that diagnosed before and after age 45, because the disease model for acute lymphocytic leukaemia involves longer and more intensive initial treatment (82% of New Zealand cancer registrations for acute lymphocytic leukaemia were aged less than 45, compared to only 2% for chronic lymphocytic leukaemia.)

A summary of the Australian BoD study parameters, and New Zealand cancer registration data, by age for 2005, are shown in Table 5.

Table 5: States, time (years) and DW of the leukaemia models from the Australian BoD study, and distribution of New Zealand cancer registrations in 2005, by leukaemia type

Leukaemia type	Diagnosis and treatment		Post-treatment for survivors		Remission		Pre-terminal		Terminal		% NZ 2005 reg < 45 years
	Time	DW	Time	DW	Time	DW	Time	DW	Time	DW	
ALL	1.50	0.55	3.50	0.19	res	0.19	0.25	0.75	0.08	0.93	82%
CLL	0.33	0.55	–	–	res	0.19	0.25	0.75	0.08	0.93	2%
AML	0.50	0.55	4.50	0.19	–	–	res	0.75	0.08	0.93	14%
CML	1.00	0.55	4.00	0.19	res	0.19	0.25	0.75	0.08	0.93	27%

res = residual time; ALL = acute lymphocytic leukaemia; CLL = chronic lymphocytic leukaemia; AML = acute myeloid leukaemia; CML = chronic myeloid leukaemia.

Using 2005 New Zealand Cancer Registry data, 11%, 44%, 17% and 8% of leukaemia registrations were ALL, CLL, AML and CML, respectively (19% were other miscellaneous types.)

Using the data above, we calculated weighted durations of time in the diagnosis and treatment state of 14 months for less than 45-year-olds and six months for people aged 45 years and older. Full parameterisation for the New Zealand model is shown in Table 4.

Liver cancer

The Australian BoD study has a DW of 0.20 for remission states after diagnosis and treatment, leading to either cure or death. Each of the pre-terminal and terminal states are assigned a duration of one month only, with DWs of 0.83 and 0.93, respectively. This model has a relatively high quality of life assignment compared to similar solid-mass tumours (see Table 4). Therefore, this report uses the Spanish study (Fernandez de Larrea-Baz et al 2009) default options of one month terminal and 11 months pre-terminal; and to ensure comparability with other cancers we have assigned an extended pre-terminal state of 11 months' duration with a DW of 0.73 (eg, consistent with stomach cancer), and a terminal state of one month's duration.

Lung cancer

Lung cancer has a particularly poor prognosis, and there is important variation in prognosis between small- and non-small-cell lung cancer that will need explicit disaggregation in future scenario modelling. The Australian BoD study immediately partitions lung cancer into diagnosis and treatment states of:

- operable non-small-cell (14%; DW 0.44; duration six months)
- inoperable non-small-cell (66%; DW 0.76; duration six months)
- small-cell with chemotherapy (20%; DW 0.68; duration two months).

For this New Zealand burden of cancer study we averaged these three states into one diagnosis and treatment state, with a weighted average DW of 0.70 and a duration of five months.

All lung cancer deaths are assumed to have a terminal state of one month's duration, with a DW of 0.93.

Four states are possible in the Australian BoD study after diagnosis and weighting, and before either death or cure:

1. disease free and survive after primary therapy for non-small-cell (12%; DW 0.47; duration remainder of survival time – up to five years in Australian BoD study)
2. disseminated non-small-cell cancer leading to death (68%; DW 0.91; duration six months on average)
3. disease free and survive after primary therapy for small-cell (2%; DW 0.47; duration remainder of survival time)
4. small-cell cancer in remission, but inevitably leading to death (18%; DW 0.54; duration six months on average).

These four states do not naturally merge into the one remission state on average. However, for the second state (and to a lesser degree the fourth state), the higher DW reflects the fact that the person is actually pre-terminal for much of the time. Thus we assigned a pre-terminal state of five months' duration with a DW of 0.83 – the weighted average of 0.91 and 0.54 by percentage of people expected in each state, and consistent with the pre-terminal weight for colorectal cancer. A DW of 0.47 was assigned to a remission state, with time duration equal to the remainder of time until cure or death.

Melanoma

The Australian BoD study splits melanoma at the treatment and diagnosis state into 89% of cases with no evidence of dissemination (duration two months; DW 0.19) and 11% with evidence of lymph node involvement (duration three months; DW 0.43). For the purposes of this New Zealand burden of cancer study, we set the treatment and diagnosis treatment state at a duration of two months, with a DW of 0.22.

NHL

The Australian BoD assigns separate DWs – but the same duration of four months – to four subtypes of NHL on presentation:

- NHL low-grade malignancy, dissemination stages I and II, with a DW of 0.19 and a proportionate incidence of 3.3%
- NHL low-grade malignancy, dissemination stages III and IV, with a DW of 0.61 and a proportionate incidence of 30%

- NHL intermediate/high-grade malignancy, dissemination stage I, with a DW of 0.55 and a proportionate incidence of 13.3%
- NHL intermediate/high-grade malignancy, dissemination stages II, III and IV, with a DW of 0.75 and a proportionate incidence of 53.3%.

Although we may follow a similar subtype and DW disaggregation in future scenario modelling, for this report we simply assign a DW of 0.66 (the proportionate incidence-weighted DW from the above data) of four months for all NHL diagnosis and treatment states.

The remainder of the Australian BoD study model for NHL is common to all diagnostic subtypes and equivalent to the generic New Zealand disease model.

Oesophageal cancer

The Australian BoD study assumes that all people who die from oesophageal cancer will have a very poor quality of life (DW 0.90) from two months after diagnosis up to the last month of life. Given that most people who die of this cancer do so rapidly, this may be an adequate assumption. However, for the New Zealand macro-simulation model it was better to assume such a state for the 11 months up to the last month of life, and at least allow a better quality of life (DW = 0.37) for those people who do eventually die of oesophageal cancer but have at least a year of life post-diagnosis. Other parameters are as per the Australian BoD study.

Pancreatic cancer

The Australian BoD study uses the same model for pancreatic cancer as for liver cancer. We have therefore amended the model for the New Zealand burden of cancer study in the same way as the liver cancer model was amended.

Pleura, thymus, mediastinal cancers

There is no direct Australian BoD study equivalent for this category. As a result, we used the disease model, durations and DW for the 'connective and soft tissue' subtype of the Australian 'bone and connective tissues cancer' model.

Prostate cancer

The Australian BoD study postulates three different states after diagnosis and treatment (for assumed localised disease only):

- 'clinically disease free after primary therapy', with a DW of 0.18
- 'in remission' following treatment, with a DW of 0.27
- 'follow up without active therapy (watchful waiting)' with a DW of 0.20.

However, the latter two states were combined due to insufficient data on disease progression for each state.

For the New Zealand Burden of Cancer study, we combine all three above states as 'remission', with a disability weight of 0.20; this is simplistic and will need further extension by subtype in future scenario modelling. The Australian BoD study posits a hormone refractory state of 18 months, with a DW of 0.64, which immediately precedes the one-month terminal phase. This New Zealand Burden of Cancer study simply labels this hormone refractory state 'pre-terminal'.

Stomach cancer

The Australian BoD study uses a high DW of 0.73 for irradiated cases for the period after diagnosis and treatment, including pre-terminal and terminal states. To fit within the context of the New Zealand burden of cancer model, an extended pre-terminal state of 11 months' duration with a DW of 0.73, and a remission state with a DW of 0.38 (as per the Australian post-diagnosis and treatment state) was considered an appropriate model.

Long-term sequelae of cancer

Standard burden of disease methods also estimate health loss due to disease sequelae (eg, a disability weight for amputation is assigned for the person's remaining life). The GBD study included long-term sequelae for colorectal cancer, breast cancer, female reproductive cancers and male genitourinary cancers. In addition, the recent Australian burden of disease study included removal of one eye for eye cancer, removal of the larynx for larynx cancer, amputation for bone cancer and long-term brain injury for brain cancer. These sequelae and their associated severity weights, as used in the Australian burden of disease study, are listed in Table 6. Disability weights for the sequelae were derived from the GBD and Dutch BD studies.

Table 6: Sequelae for cancer model from the Australian burden of disease study

Site – sequelae	Proportion of survivors with sequelae (%)	Severity weight
Colorectal cancer – stoma	0.09	0.21
Bone and connective tissue cancer – amputation	0.08	0.30
Breast cancer – mastectomy	0.51	0.09
Female reproductive cancer – infertility	Cervix: 0.46 Uterus: 1.00 Ovary: 0.64	0.18 (ages under 40 only)
Male genitourinary cancer –impotence and incontinence	Prostate: 0.53 Bladder: 0.12	0.20
Brain cancer – long-term brain injury	0.05	0.35
Eye cancer – removal of an eye	0.45	0.30
Larynx cancer – removal of the larynx	0.35	0.04

For the New Zealand burden of cancer study, such sequelae present another challenge in terms of extra strata that, when combined with sociodemographic and cancer subgroup data, make the number of cells or states within a macro-simulation model cumbersome. They were modelled as parallel chains to the normal disease model, with the only difference being the presence of sequelae. Sequelae were assumed to commence at the end of year 1. Consistent with routine burden of disease methods, we did not just add the sequelae and state DWs. Rather, to allow for overlap, the complement of DWs for individuals with cancer and sequelae were multiplied together and then subtracted from 1 to give the total DW. For example, a person with colorectal cancer and a stoma (DW of 0.20) who is in remission (DW of 0.25) has a total DW during this state of $1 - [(1-0.2) \times (1-0.25)] = 0.40$.

YLDs are allowed to accrue for people with sequelae beyond the statistical cure time for the expected remaining life expectancy at the point at which statistical cure occurs.

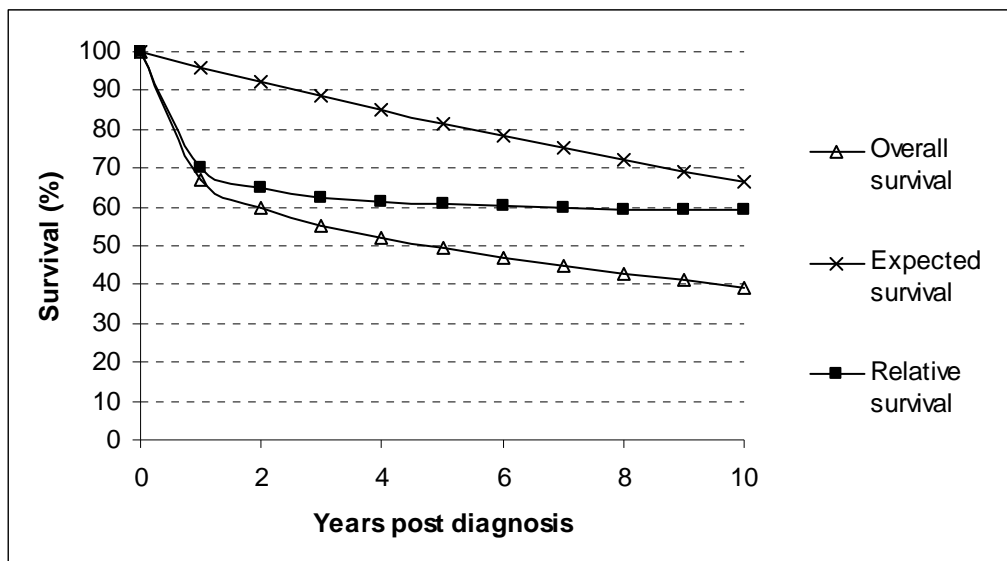
Determining the time at which statistical cure occurs

A critical issue in this burden of cancer study is determining how many years after cancer diagnosis that cure can be 'pronounced'. This number of years determines the timeframe within which most YLDs can occur (with the exception of long-term sequelae), and the timeframe over which cancer deaths that contribute to YLLs can occur. More general burden of disease studies, such as the recent Australian study, simply set the period in which YLDs can occur as five years post-diagnosis. (Because they use mortality data for calculating YLLs, it is only the YLDs that are influenced by the setting of the statistical cure time.) The Spanish burden of cancer study uses variable cure times (Fernandez de Larrea-Baz et al 2009).

In this burden of cancer study the cure times are determined separately for each cancer grouping, based on the relative survival with this cancer. We make extensive use of relative survival and excess mortality methods and results, commonly used for population-wide studies of cancer survival (Dickman and Adami 2006; Dickman et al 2004; Sarfati et al 2010). Briefly, relative survival is given by the observed survival among cancer patients (regardless of cause of death), divided by expected survival (usually from life tables).

Figure 3 shows a hypothetical example of overall (observed) expected survival and relative survival. The lowest overall survival curve reflects the combined impact of both non-cancer and cancer mortality. The expected survival curve reflects non-cancer mortality. The relative survival curve gives the survival curve due to cancer mortality only.

Figure 3: Hypothetical example of overall, expected and relative survival curves



Five-year relative survival rates are a commonly reported measure of cancer survival that can be compared over time, between countries, across cancers and across stages of cancer. Relative survival methods have the advantage of not requiring an accurate determination of the underlying cause of death, and are currently the preferred method of analysing and reporting cancer survival using total population data, such as cancer registries. The advantages and disadvantages of relative and cause-specific (eg, Kaplan Meier and Cox proportional hazard modelling) survival methods are reviewed elsewhere (Sarfati et al 2010).

There is no 'gold standard' method for determining the cure time. The method we used was to examine plots of cumulative relative survival (ie, relative survival rates) over time since diagnosis to identify where the curve becomes horizontal (or 'nearly horizontal') to the x axis. This horizontal flattening means that the observed overall survival among the cancer patients is the same as expected survival from population life tables, and thus no further mortality disadvantage persists from the previous diagnosis of cancer (ie, one is 'cured'). (Recently, statistical cure models have been developed [Bejan-Angoulvant et al 2008; Lambert et al 2007]. However, they estimate percentage cured, not the actual cure time.)

There is an art to determining cure times using relative survival curves. For example, in Figure 3 the relative survival curve is nearly – but not quite – flat by about five years post-diagnosis, but there is still some fall in the relative survival curve thereafter. In this case we would judge that the cure time is five years.

Adding to the complexity of the art of determining cure times from relative survival curves, the relative survival curve will not asymptotically approach a horizontal line if the expected mortality rates from population life tables are incorrect. The classic example of this is the smoking-related cancers. Here, a greater proportion of the cancer cases are smokers than in the general population, and hence their expected background mortality rates will be higher than those taken from the life tables. From a relative survival point of view this means that even when the smoking-related cancer patients

are cured of their cancer, their observed survival is less than that expected from the population life tables, meaning that the cumulative relative survival curve keeps (slowly) decreasing over time. (Smoking-specific life tables would circumvent this problem but are seldom used.) Theoretically, this same problem also applies to cancers associated with higher competing mortality, and to cancer patients who on average come from a sociodemographic group with different background mortality to the average person in the population.

Other considerations when using relative survival results to determine cure times include statistical imprecision, the long follow-up and reliance on historical incident cases.

Table 7 presents estimates of statistical cure times for this burden of cancer study, as determined by Tony Blakely, using New Zealand cancer survival data² and Swedish cancer survival data.³ Numerous footnotes are provided to the table, justifying and explaining the various estimates.

The New Zealand relative survival data examined was for 2002–06 cancer registrants, with up to 10 years of follow-up using the ‘period method’. The period method means that for a cancer diagnosed in 2006, the annual relative survival in the fifth year of follow-up is taken from that observed in calendar year 2006 for cases diagnosed in 2001. This provides more up-to-date estimates of survival probabilities (Brenner and Gefeller 1996). Survival was examined, pooled and stratified, by sex and ethnicity and separately by five age groups. Sex- and ethnic-specific life tables were used in the calculation of the New Zealand relative survival. As the New Zealand estimates for cumulative relative survival rates only extend to 10 years, for some cancers it was necessary to assume that the likely statistical cure time was beyond 10 years due to steadily and strongly decreasing cumulative relative survival rate curves at 10 years.

² Using published (NZHIS 2006) and updated output (Vladimir Stevanovic, Ministry of Health, personal communication).

³ <http://www.sos.se/epc>.

Table 7: Estimates of statistical cure times from selected studies

Cancer	Statistical cure times from selected studies			Cure times for NZ burden of cancer (T _c)
	NZ survival data (up to 10 years only)	Swedish cancer registry ^a	Times used in Spanish burden study	
All childhood				5
Bladder	5–10	5–10	7	10
Bone and connective		5–10 ^b		10
Brain	10 < 55 years; 5 > 55 year	10 < 55 years; 5 > 55 years	5	5/10
Breast (female)	10++ ^c	20+ ^d		20
Cervical	5	5	5	5
Colon	8	7–8	6	8 (colorectal)
Gallbladder		7	6	7
Hodgkin's disease		10	6	10
Kidney and other urinary	10+	10–20 ^e	5	10
Laryngeal		5		10
Leukaemia	10+	5 AML/ALL; 10 CML; 10–20 CLL	5 AML/ALL 8 CML/CLL	10 ^f
Lip, mouth and pharynx		3–4 ^g		10
Liver	5–7	5–10 ^h	6	7
Lung, trachea, bronchus	5–10	5–10 ⁱ	6	6 ^j
Melanoma	6	5–10		6
Myeloma	10++ ^k	10–20		20
NHL	10+	20	6	20
Oesophageal	5	5–10 ^l	6	6
Ovarian	10+	5–10 ^m	7	10
Pancreatic	5	5–10 ⁿ	5	5
Prostate	10++ ^o	20+ ^p		20
Rectal, sigmoid, anus		7–8	6	8 (colorectal)
Stomach	6	5–10 ^q	6	6
Testicular	3	3		3
Thyroid	5–10	3	3	5
Uterine	6–7	5	5	6

a Swedish cancer survival data: four cohorts formed from 1980 to 1997 data with cohort analysis, and 2000–02 cases with period analysis (the latter carrying more weight in determinations for above table) (Talback et al 2004).

b Current document.

c Current document.

d Cumulative relative survival still slowly decreasing from 10 to 20 years. Annual interval relative survival above 95% from date of diagnosis, above 98% from 10 years.

e Annual interval relative survival 95% from five years.

f New Zealand data is not yet disaggregated by acute/chronic or lymphocytic/myeloid. In the meantime we need a long cure time to accommodate chronic variants, and an interaction of younger age with time since diagnosis in the excess mortality rate modelling, given that acute variants tend to occur more commonly among younger people. In future, the data will be disaggregated into AML (5 years), ALL (5), CML (10), CLL (20); or acute (5) versus chronic (10).

g Annual relative survival asymptotes at less than 1.0, presumably as smoking-related cancer.

h 90% annual relative survival at five years, and flat thereafter, suggesting less than 100% asymptote due to competing mortality risks.

- i Current document.
- j The lung cancer survival may keep falling after six years, but that would be expected from competing mortality due to smoking.
- k New Zealand relative survival at all ages is still strongly trending down at 10 years.
- l Above 90% annual relative survival at five years, then slow further improvement to approach (but not reach) 100% by 10 years. With many risk factors for this cancer also being risk factors for other causes of death, asymptote at 100% is unlikely.
- m Current document.
- n Above 90% (or 95%) annual relative survival at five years, then slow further improvement to reach 100% by 10 years.
- o Current document.
- p Similar to, but more extreme than, breast cancer. Annual interval relative survival constant at 95% over time.
- q Current document.

Also shown in Table 7 is the plausible statistical cure times from the Swedish Cancer Registry data, as ascertained by visual inspection of cumulative relative survival rates (RSRs) and annual interval relative survival (ie, $RSR_t / RSR_{(t-1)}$) graphs made available at the Swedish Cancer Registry website. Note that the statistical cure time estimates in Table 7 are not the same, and nor should they be; the Swedish Cancer Registry's own judgement of when the annual interval survival stabilises is shown in Appendix 1 of this report. For example, the annual interval survival stabilises at 95% by year 2 for prostate cancer, and at 98% by year 6 for breast cancer. Yet both these cancers are well known to have cancer-related mortality out to 20 years post-diagnosis. However, the annual excess mortality, or diminished survival, is constant out to that point.

The statistical cure times used in the Spanish burden of cancer study are also shown in Table 7.

Using these sources, the final column of Table 7 presents the statistical cure times used in the current New Zealand burden of cancer study. There is obviously considerable 'expert judgement', or art, in selecting these cut-points.

Table 8: Estimates of ratios of 15- to 10- and 20- to 15-year RSRs from Finland and Sweden for cancer sites with statistical cure time in excess of 10 years

	Finland, 1995–97 period analysis *		Sweden, 2000–02 period analysis	
	Ratio of 15- to 10-year RSR	Ratio of 20- to 15-year RSR	Ratio of 15- to 10-year RSR	Ratio of 20- to 15-year RSR
Breast (female)	0.91	0.93	0.93	0.94
Myeloma			M = 0.68; F = 0.50	M = 0.67; F = 0.42
NHL			M = 0.89; F = 0.92	M = 0.92; F = 0.92
Prostate	0.77	0.74	0.74	0.71

* Presented for cancers with statistical cure times that may include or exceed 10 years (Talback et al 2004). Source: Brenner and Hakulinen (2001).

For those cancers with greater than 10-year statistical cure times (breast, prostate, myeloma and NHL), all somewhat arbitrarily set at 20 years, the ratio of 15- to 10- and 20- to 15-year cumulative relative survival from Swedish and Finnish cancer registry data is shown in Table 8. We do not have survival data beyond 10 years in New Zealand, so it was necessary to extrapolate New Zealand survival rates using overseas ratios. For example, on average, the relative reduction in survival over 5 years for breast cancer was 0.93, which equates to an annual interval survival of 0.986 ($0.93^{1/5}$), and thence to an annual excess mortality rate of 0.015 ($= -\ln[0.986]$). Thus, we will assume in the New Zealand burden of cancer study that the annual excess mortality is 0.015, and simply extend the New Zealand smoothed survival curves (methods described in next section) using this assumption. Using similar logic, we set the annual relative survival (and excess mortality rate) at:

- 0.986 per year (0.015) for breast cancer from 11 to 15 years of follow-up, assuming an average five-yearly relative survival of 0.93; and 0.988 per year (0.012) from 16 to 20 years of follow-up, assuming an average 5-yearly relative survival of 0.94
- 0.942 per year (0.060) for prostate cancer from 11 to 15 years of follow-up, assuming an average five-yearly relative survival of 0.74; and 0.934 per year (0.068) from 16 to 20 years of follow-up, assuming an average 5-yearly relative survival of 0.71
- 0.977 per year (0.023) for NHL from 11 to 15 years of follow-up, assuming an average five-yearly relative survival of 0.89; and 0.983 per year (0.017) from 16 to 20 years of follow-up, assuming an average 5-yearly relative survival of 0.92
- 0.856 per year (0.155) for myeloma from 11 to 15 years of follow-up, assuming an average five-yearly relative survival of 0.46; and 0.841 per year (0.174) from 16 to 20 years of follow-up, assuming an average 5-yearly relative survival of 0.42.

Input data

Cancer incidence

The base year is 2006, requiring estimated 2006 incidence rates by cancer site, sex and age, and ethnicity (and in the future, also by cancer site subgroup [eg, stage] and deprivation or income).

The Ministry of Health has undertaken analysis on trends and projections of cancer incidence in New Zealand (Ministry of Health 2002, 2008). We use these estimates, rather than actual rates, because future scenario modelling will require rates estimated for decades into the future. These incidence projection models are only by sex and age, due to a lack of ethnic and socioeconomic data back to 1950 – the data that was used to drive the projection models. However, cancer registration and census data has now been linked in the CancerTrends study (the Health Inequalities Research Programme, University of Otago, Wellington, see Shaw et al 2009; Blakely et al 2010), allowing the quantification of ethnic (and socioeconomic) differences in cancer incidence. We sourced CancerTrends Māori:non-Māori rate ratios for each cancer site, by sex by age group (see Appendix 2). Age-specific rate ratios were always used (age groupings varied by cancer based on incidence cases). If there was a significant trend over time in the log of the rate ratio ($p < 0.1$; test of trend from 1981 to 2004), then the age-specific rate ratio for the 2001–04 cohort was used. Otherwise, the rate ratios pooled over time were used.

The sex-by-age rates of cancer were then used to estimate Māori and non-Māori rates as follows. Assume we have a total population rate (R_T), a rate ratio comparing Māori to non-Māori ($RR_{M:nM}$), and the proportion of the population who are Māori (P_M) and non-Māori (P_{nM}); then the rate among non-Māori (R_{nM}) is given by:

$$R_{nM} = \frac{R_T}{P_{nM} + P_M RR_{M:nM}}$$

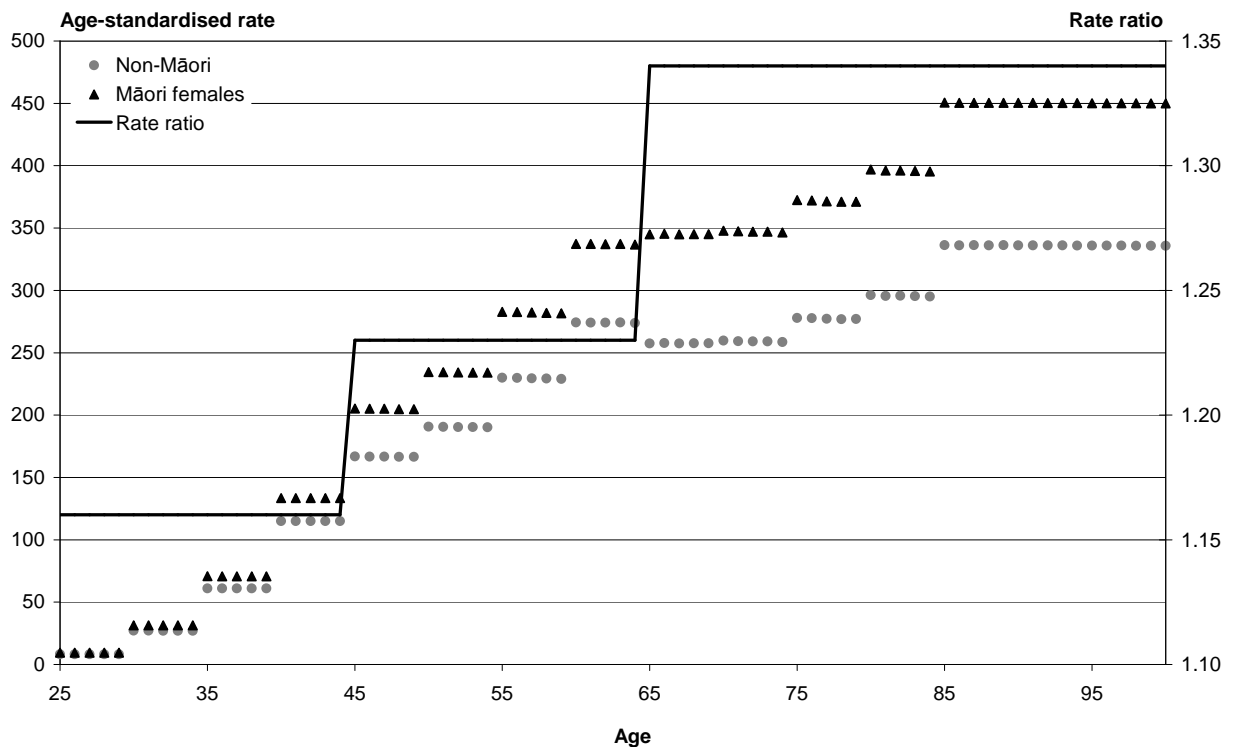
and the Māori rate is given by:

$$R_M = RR_M R_{nM}$$

For example, if the total population incidence rate is 100 per 100,000, the Māori to non-Māori rate ratio from CancerTrends is 1.30, and the proportion of the population Māori is 0.30, then the non-Māori rate is $100 / (0.7 + 0.3 \times 1.30) = 91.7$ and the Māori rate is 119.3.

Figure 4 shows the Māori:non-Māori rate ratio from CancerTrends and the resulting ethnic-specific incidence rates for breast cancer. In this case, the Māori:non-Māori rate ratio varies across age groups: 1.16, 1.23 and 1.34 for women aged 25–44, 45–64 and 65+, respectively. In other words, the incidence rate of breast cancer is higher for Māori than non-Māori across all age groups, and Māori women aged 65+ have the highest.

Figure 4: Māori:non-Maori incidence rate ratio and derived ethnic-specific incidence rates (per 100,000) for breast cancer



Relative survival and excess mortality rate modelling

Relative survival methods (Dickman and Adami 2006; Dickman et al 2004; Dickman et al 1998; Sarfati et al 2010) have been applied to New Zealand Cancer Registry data by both the Ministry of Health (2006) and university researchers (Jeffreys et al 2005, 2009). There are also extensive cross-sectional estimates of cancer-specific survival using Kaplan–Meier and Cox proportional hazards modelling for the total population, and for Māori and non-Māori (Robson et al 2006). There is currently no extended times series on relative cancer survival, although estimates are forthcoming from CancerTrends.

Relative survival is the difference between observed and expected (in the absence of the disease in question – in this case cancer) survival. More precisely, we can define it as follows:

$$\text{Relative survival ratio } t \text{ (RSR)} = [\text{observed survival } t] / [\text{expected survival } t]$$

The observed survival is that up to t years post-diagnosis, *regardless of the cause of death*, and the expected survival is that determined for a comparable cohort based on population life tables – in our case, 2006 period life tables. (See Figure 3 above for a schematic presentation.) Note that relative survival measures the net cancer survival after taking into account non-cancer or background mortality.

It is also useful to determine interval-relative survival proportions, where the period of time over which observations occur starts not at diagnosis ($t = 0$) but some time later. For example, if the RSR by the end of year 2 is 0.75, and by the end of year 3 is 0.70, then the interval RSR from time $t = 2$ to $t = 3$ is $0.70/0.75 = 0.933$.

Relative survival and excess mortality are mirror image concepts. The excess mortality rate is simply the difference between the mortality rate of the cancer populations and the background population mortality rates. Excess mortality rates are hazards, and are expressed per unit of time. Relative survival ratios are survival *proportions*; however, the use of the term relative survival ‘rates’ is, unfortunately, longstanding and embedded.

Thus, in survival analysis terminology:

$$p = 1 - \exp(-rt).$$

where p is the proportion dying over time t (ie, 1 minus survival [s]), and r is the rate (or excess mortality rate). Reciprocally, therefore, the proportion surviving over a given time period t is:

$$s = \exp(-rt).$$

If the time period t starts at 0, then s is the same as the RSR.

One can easily back-calculate the excess mortality rate (r) for any given time period from RSRs or interval relative survival (s):

$$r = -\ln(s)/t.$$

This ability to move backwards and forwards between survival and death proportions, and excess mortality rates, is extremely useful for parameterising transition probabilities in the Markov model (rates are more likely to be constant, or proportional, over

subpopulations, meaning that the transition probabilities will not quite demonstrate linear variations). It also allows Poisson regression modelling of excess mortality rates to be used (see below).

Regarding the relative survival estimates for cancer in New Zealand, there are published one-, two-, three-, four- and five-year relative survival estimates for the late 1990s and early 2000s, for most major cancer sites, by sex and by wide age groups (NZHIS 2006). These relative survival estimates were updated by sex-by-age groups by ethnic group for this project, updated to 2006, using ethnic-specific life tables, and extended out to 10-year survival using the period method (Vladimir Stevanovic, Information Directorate, Ministry of Health, personal communication). The observed RSR strata of sex, ethnic and age group by year post-diagnosis were imprecise and unstable for strata with a small number of cases diagnosed or when all patients die before the end of the follow-up time. Therefore, we used excess mortality rate modelling to generate smoothed relative survival estimates, and hence transition probabilities for the Markov models.

Excess mortality rate modelling

Assuming a Poisson distribution of excess deaths due to cancer, the excess mortality model can be written as:

$$\ln(u_j - d_j^*) = \ln(y_j) + x\beta$$

where:

u_j = expected number of all deaths (d_j ; using the period method for 2002–06) for observation j (eg, a cross-classified covariate pattern – see below)

d_j^* = expected number of deaths for observation j , due to causes other than the cancer of interest and estimated from general population mortality rates

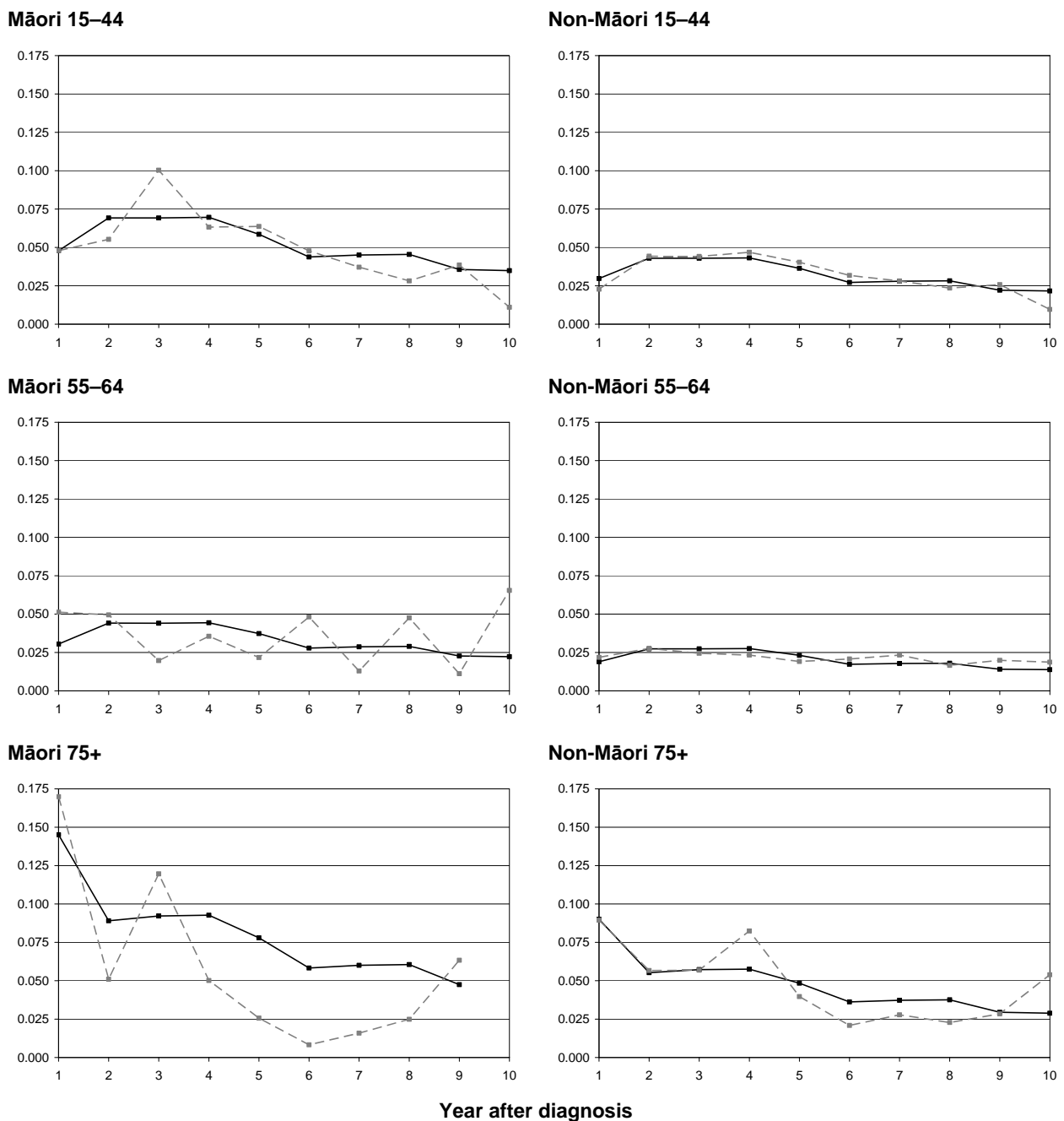
y_j = person time for observation j (ie, offset)

x = vector of variables that predict excess mortality: ethnicity (binary variable for Māori:non-Māori), sex, age group (five-level categorical variable: 15–44, 45–54, 55–64, 65–74, 75+), years (t) post-registration (10-level), and interactions between the latter two to allow for commonly observed higher initial excess mortality for older people early in follow-up (65–74, first year; 75+, first year; 65–74, second year; 75+, second year; all other age-by-year combinations as reference).

Figure 5 shows the observed and predicted excess mortality rates for breast cancer (female), by strata of covariates. The observed excess mortality rates are unstable – particularly for Māori – and with more years of follow-up due to a combination of few observed deaths and/or small numbers of registrations. The predicted rates are ‘smoothed’ by virtue of the Poisson model. Further smoothing could have been obtained by treating time as a continuous variable, using cubic splines or fractional polynomials (Lambert and Royston 2009). However, too little improvement resulted to justify it for this report.

Note that the same relative shape of the excess mortality rate curve by time post-diagnosis (across sex by age by ethnic strata) results from time being a main effect in the Poisson model, except among those aged 75 years and over in the first year of follow-up, where the excess mortality curve starts from a higher position. This latter exception is because of the interaction terms of age and time included routinely in the models, due to excess mortality often being particularly high in the first one or two years of follow-up for older cancer patients.

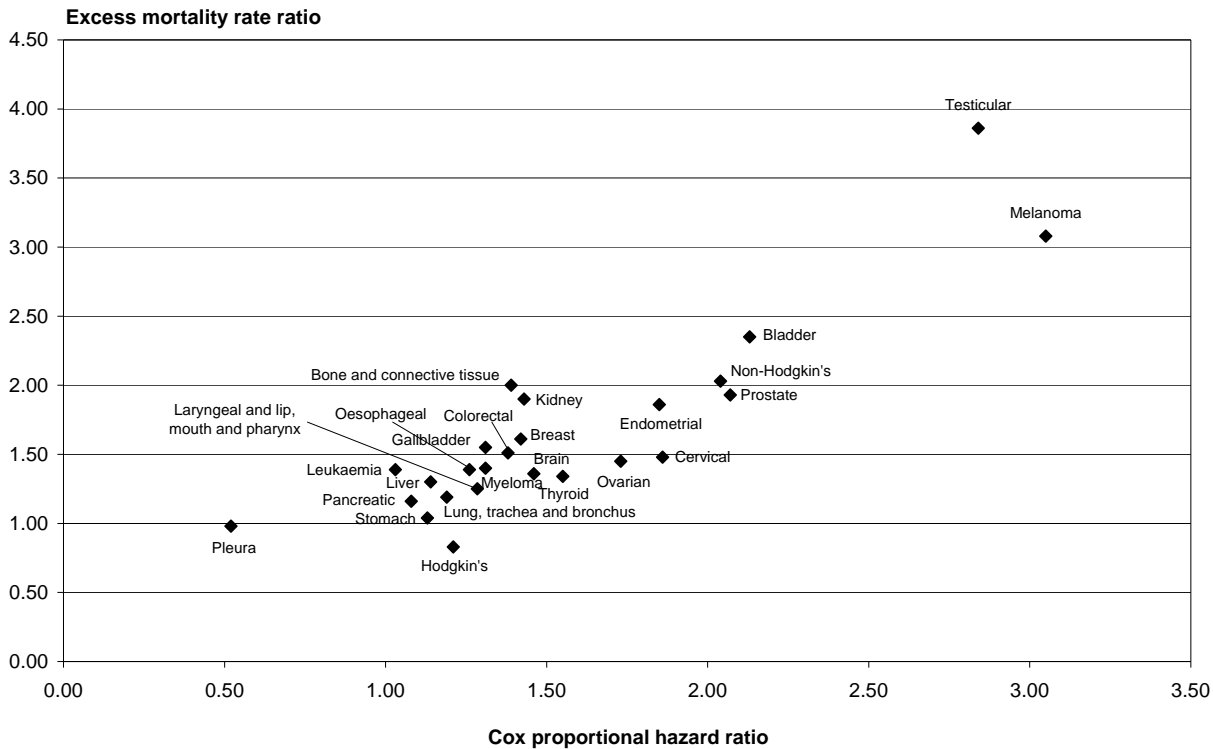
Figure 5: Excess breast cancer (female) mortality rate by sex, age, ethnicity and year (t): observed ($-\ln [\text{obs RSR } t / \text{obs RSR } t - 1]$) (dotted lines); and predicted from Poisson model (solid lines)



The ratio of Māori to non-Māori excess mortality was a key driver of cancer DALY differences in this report. Therefore, Figure 6 below shows a comparison of the Māori:non-Māori excess mortality rate ratios with Māori:non-Māori hazard ratios calculated using Cox proportional hazards methods (hazard ratios are from Gordon Purdie, University of Otago, Wellington, personal communication, May 2010). The latter method relies on the accuracy of cause of death coding and does not use a ‘period method’ to incorporate survival for earlier diagnosed cases. Thus we do not expect the ratios to be identical, but they should (and do) correlate strongly.

Seven cancers are labelled on the graph where there was a greater than 20% difference in the rate ratio *and* the absolute difference in ratios was greater than 0.2. Most of these seven cancers are rare or have low mortality, and therefore differences are probably largely due to statistical instability. The more common cancers had close agreement; for example, breast cancer (excess mortality rate ratio 1.61, hazard ratio 1.42), lung cancer (1.19, 1.19), colorectal cancer (1.51, 1.38) and prostate cancer (1.93, 2.07).

Figure 6: Comparison of Māori:non-Māori excess mortality rate ratios (2002–06 incident cases, period method) and cause-specific Cox proportional hazard ratios (2002–06 incident cases)

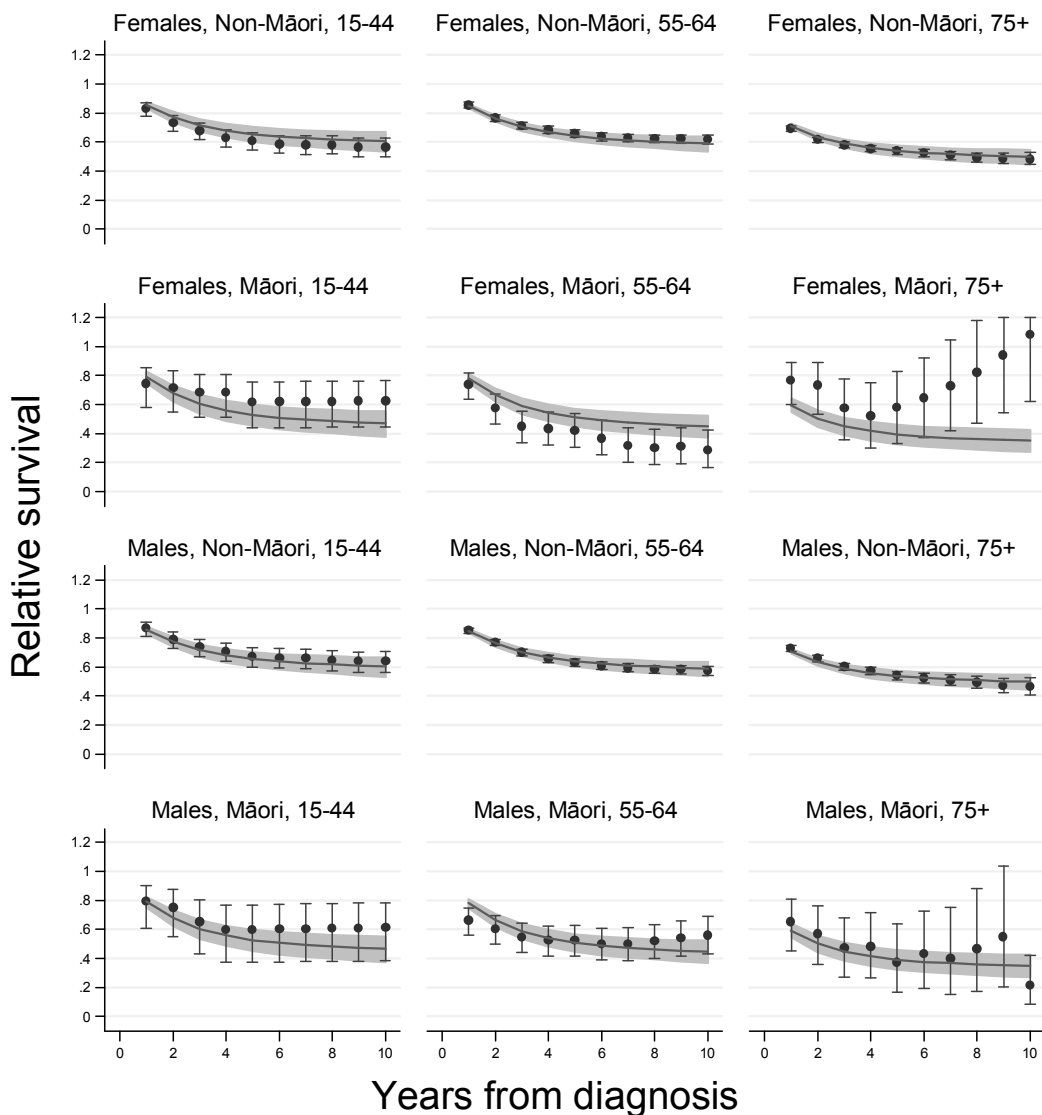


Notes: Excess mortality rate ratios are as in Appendix A. Hazard ratios are from Gordon Purdie, University of Otago, Wellington, personal communication, May 2010, using updated data but the same methods as in the *Unequal Impact* report (Robson et al 2006).

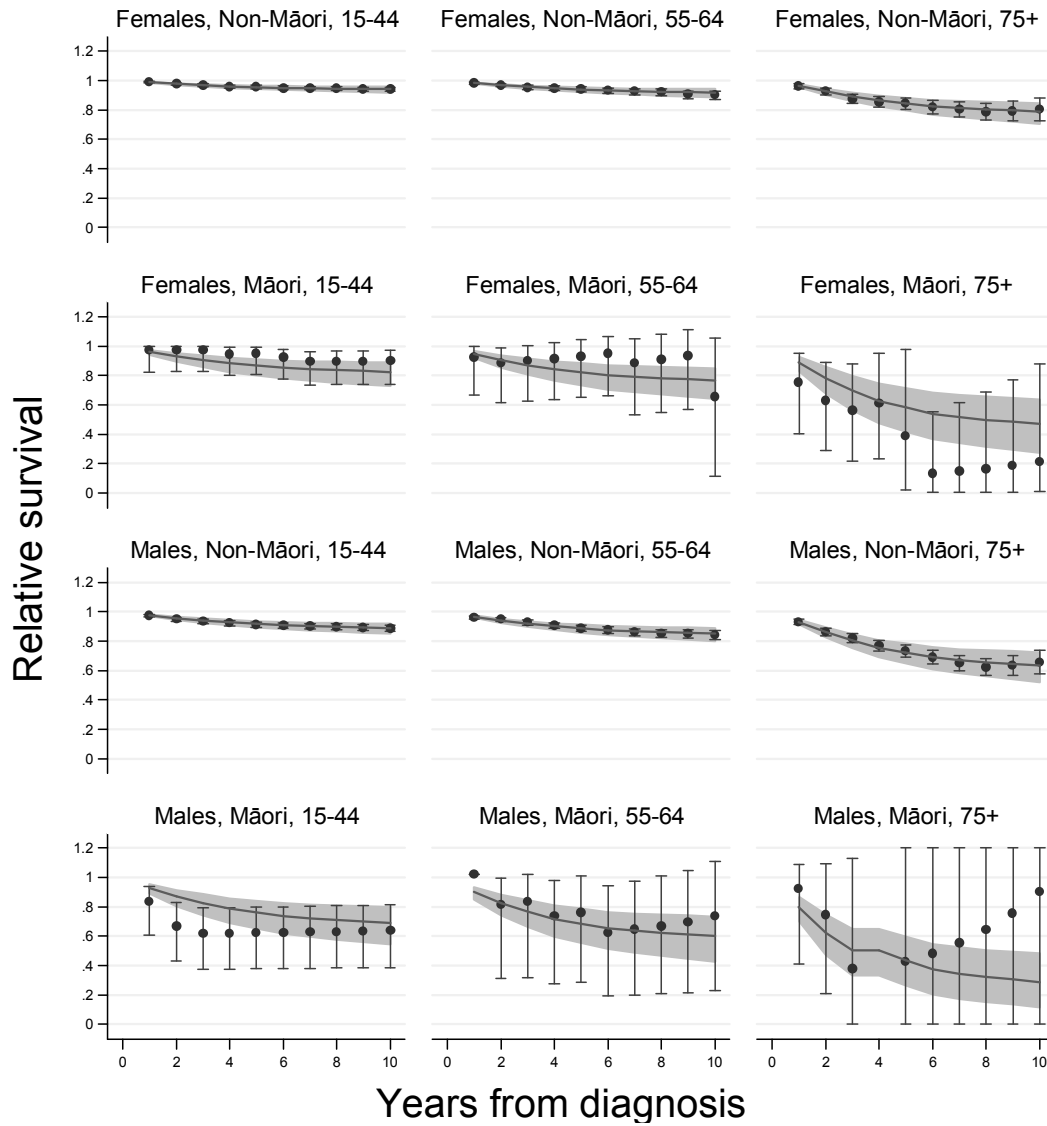
Having obtained the excess mortality rates, RSRs were easily calculated. Figure 7 shows the observed and predicted RSRs for three cancers: colorectal (common cancer, moderate survival), melanoma (common cancer, high survival) and stomach cancer (uncommon cancer, low survival). The observed relative survival rates become imprecise and unstable for some strata, especially for Māori and the older age groups. Indeed, the observed relative survival is above 1.0 for colorectal cancer among Māori females aged 75 years and over, due to small numbers and a chance occurrence of no deaths among those subjects with longer follow-up (as reflected by very wide confidence intervals). The predictions from the Poisson model for excess mortality overcome these problems for all the strata analysed, and provide more realistic and plausible input data for modelling.

Figure 7: Observed (dots with bar confidence intervals) and predicted (solid line with shaded area representing confidence interval) RSRs for colorectal, melanoma and stomach cancer

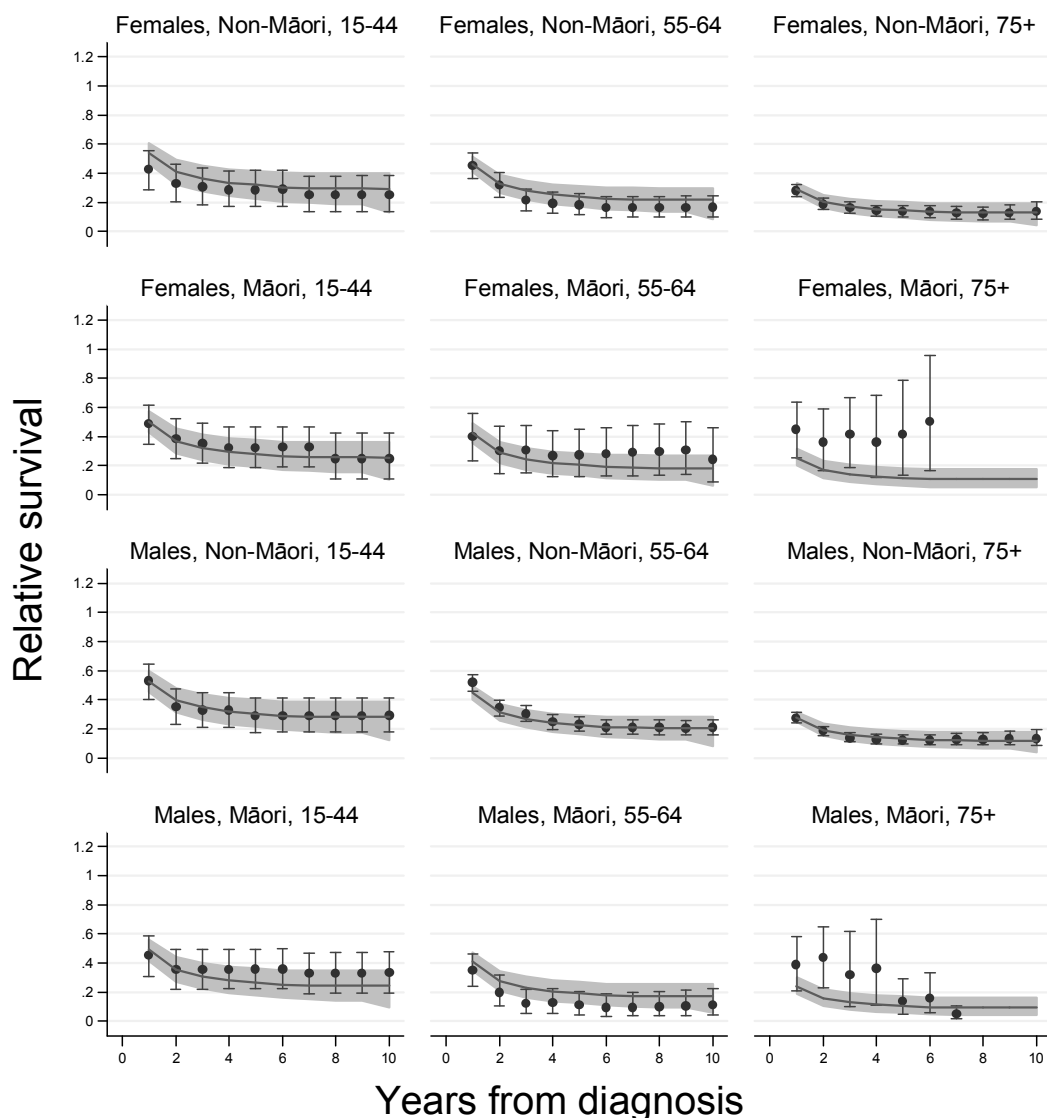
Colorectal



Melanoma



Stomach



Background mortality rates (New Zealand life tables)

Background New Zealand mortality rates, from official Statistics New Zealand life tables, were required at two points: first, in the calculation of relative survival and excess mortality (above); and second, in the Markov modelling (see below) to allow for non-cancer mortality.

Model life tables

Burden of disease methods calculate YLLs against an ideal and standard life table, not against the country/region/subpopulation of study (see Table 1). Following standard burden of disease methods, we used the standard life expectancies contained in the *Global Burden of Disease and Risk Factors* study (Lopez et al 2006: 402, Table 5.1).

Census data

The 2006 Census data was used for population counts, by sociodemographic strata (sex by age by ethnic group [total definition of Māori]), which, when multiplied by estimated cancer incidence rates by strata, give the estimated number of incident cancer cases in 2006.

Markov modelling

Time-dependent Markov macrosimulation models (Briggs et al 2006) were used to simulate each cancer site. Figure 1 gives the schematic used. Essentially, this model was run in parallel for every combination of sex by age group (in single years) by ethnic group. The number of cancer patients entering each of these parallel simulations was that estimated for 2006 using the above input data and was often less than one person. The cycle length in the Markov model was one month.

For most monthly cycles, three transition probabilities were set: dying of non-cancer-related death (from New Zealand life tables); dying of cancer (from relative survival input); or staying in the same state. For the monthly cycle immediately preceding the predetermined finish time for that state (eg, six months in diagnosis and treatment), the third transition option was to the next state (eg, remission). A parallel set of chains was set up for those developing sequelae, but with otherwise the same transition probabilities.

Markov models were implemented in Stata software. Selected cancer sites (colorectal, breast, prostate, lung and melanoma) were initially modelled in Microsoft Excel to develop and test initial models. Copies of the Excel spreadsheets and Stata code are available on request.

Uncertainty analyses were not conducted for this report.

Calculations of DALYs

The Markov model underpinned the calculation of DALYs by determining how many people died and when (YLLs), and how long people spent in each state with an associated disability weight (YLDs).

In standard burden of disease studies, YLLs are estimated using the deaths in the base year, and the (discounted) number of years of life lost for each death compared to the standard life table. For example, consider a cancer death at age 70, when the standard life table estimates a remaining life expectancy of 18 years (ie, to age 88). Then the estimated YLLs for this one death, with an annual discount rate of 3%, are:

$$YLL = 0.97^1 + 0.97^2 + 0.97^3 + \dots + 0.97^{18} = 13.65 \text{ years}$$

Or, using the continuous discounting formula of that stream of health:

$$YLL = \frac{1 - e^{-18 \cdot 3\%}}{3\%} = 13.91$$

In this New Zealand burden of cancer study, YLLs were estimated using the continuous discounting formula for deaths occurring up to 20 years after 2006 among the estimated incident cancer cases in 2006. Thus, for a woman aged 65 at diagnosis in the base year who dies five years later at age 70 with an expected age at death of 88, her estimated YLL would be:

$$YLL = \frac{1 - e^{-23 \cdot 3\%}}{3\%} - \frac{1 - e^{-5 \cdot 3\%}}{3\%} = 11.97$$

A similar process was used for discounting the future occurrence of states contributing to YLDs.

To allow comparison of DALYs between subpopulations (eg, ethnic groups), we used age standardisation to the WHO world population.

Chapter 3: Burden for All Cancer Sites Combined

Ethnic comparisons

Table 9 shows the total DALYs and age-standardised DALY rates for the baseline models for both sexes combined, and by ethnic group. Figure 8 shows the total DALYs lost, in rank order, for sexes combined. Figure 9 shows the age-standardised DALYs by ethnicity, again for sexes combined.

Table 9: Disability-adjusted life years (DALYs) due to incident cases of cancer in 2006, sexes combined, by ethnicity

Site	Māori			Non-Māori			Māori: Non- Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Bladder	213	1.4%	76	3,055	2.7%	76	1.00	3,269	2.6%	76
Bone and connective tissue	202	1.3%	52	1,176	1.0%	37	1.41	1,378	1.1%	45
Brain	404	2.7%	113	3,038	2.7%	92	1.23	3,443	2.7%	102
Breast (female)	2,432	16.1%	1270	15,408	13.7%	860	1.48	17,840	14.0%	1065
Cervix	240	1.6%	121	776	0.7%	48	2.52	1,016	0.8%	84
Colorectal	1,045	6.9%	351	15,703	14.0%	397	0.88	16,747	13.2%	374
Gallbladder	98	0.7%	32	855	0.8%	21	1.50	954	0.7%	27
Hodgkin's	32	0.2%	8	301	0.3%	10	0.83	333	0.3%	9
Kidney	337	2.2%	101	2,973	2.7%	81	1.26	3,311	2.6%	91
Larynx	84	0.6%	28	504	0.4%	14	2.04	587	0.5%	21
Leukaemia	452	3.0%	145	4,428	4.0%	118	1.23	4,880	3.8%	132
Lip, mouth and pharynx	230	1.5%	70	2,083	1.9%	57	1.22	2,313	1.8%	64
Liver	597	4.0%	178	1,774	1.6%	48	3.68	2,370	1.9%	113
Lung	3,675	24.4%	1221	15,465	13.8%	402	3.04	19,140	15.1%	812
Melanoma	166	1.1%	45	4,059	3.6%	114	0.40	4,225	3.3%	80
Myeloma	309	2.0%	102	2,589	2.3%	67	1.53	2,898	2.3%	85
Non-Hodgkin's	633	4.2%	191	5,600	5.0%	154	1.24	6,232	4.9%	172
Oesophagus	274	1.8%	99	2,399	2.1%	61	1.62	2,674	2.1%	80
Ovary	376	2.5%	201	2,787	2.5%	150	1.34	3,163	2.5%	176
Pancreas	397	2.6%	137	3,314	3.0%	84	1.62	3,711	2.9%	110
Prostate	480	3.2%	435	9,410	8.4%	464	0.94	9,890	7.8%	449
Stomach	780	5.2%	242	3,243	2.9%	85	2.85	4,023	3.2%	164
Uterus	240	1.6%	136	1,219	1.1%	62	2.19	1,458	1.1%	99
Testis	95	0.6%	45	170	0.2%	13	3.35	264	0.2%	29
Thyroid	68	0.5%	18	433	0.4%	13	1.39	500	0.4%	15
Childhood	243	1.6%	107	681	0.6%	103	1.03	924	0.7%	105
Adult cancer of other sites	967	6.4%	309	8,652	7.7%	218	1.42	9,619	7.6%	264
Total	15,068	100%	5835	112,092	100%	3851	1.52	127,161	100%	4843

Rates are per 100,000 people, age standardised to the WHO standard population of 15+ (except childhood 0–14).

DALYs projected to be lost from all cancers diagnosed in 2006 (followed up through the statistical cure time) are estimated to be 127,161. The top five cancer sites are lung (15.1%), breast (14.0%), colorectal (13.2%), prostate (7.8%) and NHL (4.9%).

Age-standardised DALY rates are highest for breast cancer, for both Māori and non-Māori. This is a function of the age standardisation affording more weight to cancers occurring at a younger age on average. A choice of an older age standard would see lung cancer rates become the leading DALY rate, particularly for Māori, who experience both higher incidence and lower survival from this cancer (see later in report).

Māori:non-Māori age standardised DALY rate ratios are above 2 for cervical (2.52), laryngeal (2.04), liver (3.68), lung (3.04), stomach (2.85), uterine (2.19) and testicular cancers (3.35). All of these cancers have notably higher incidence rates among Māori, as well as higher excess mortality rates (lower survival) for Māori compared to non-Māori (ranging from 1.04 for stomach to 1.86 for cervical; see Appendix A).

A further seven cancers had age-standardised Māori:non-Māori rate ratios ranging from 1.4 to 2.0 (bone and connective tissue, breast, gallbladder, myeloma, oesophageal, pancreatic and 'other adult cancer'). Incidence was elevated in Māori compared to non-Māori for all but one of these seven cancers (bone and connective tissues), and all seven cancers had higher excess mortality for Māori compared to non-Māori. That is, both worse incidence and worse survival among Māori contribute to higher DALY rates for many cancers.

Despite many of the remaining cancers having similar or lower incidence rates in Māori (Blakely et al, *CancerTrends: Trends in incidence by ethnic and socioeconomic group*, in press; Blakely et al, *CancerTrends: Technical report*, in press), these cancers demonstrate similar or higher rates for Māori DALY rates. This was due to higher excess mortality rate ratios for Māori compared to non-Māori (see Appendix A). The only cancers with lower DALY rates for Māori are melanoma (rate ratio 0.40), colorectal cancer (0.88), prostate cancer (0.94) and Hodgkin's disease (0.83).

In sum, across all cancers 11.8% of the total DALY count burden was borne by Māori (15,062) compared to 88.2% by non-Māori (112,092). Given the younger age structure of the Māori population, however, the Māori age standardised DALY rate (5835 per 100,000) was 1.52 times greater than the non-Māori rate (3851 per 100,000).

Figure 8: Burden of cancer (DALYs) due to incident cases in 2006, by site, both sexes combined

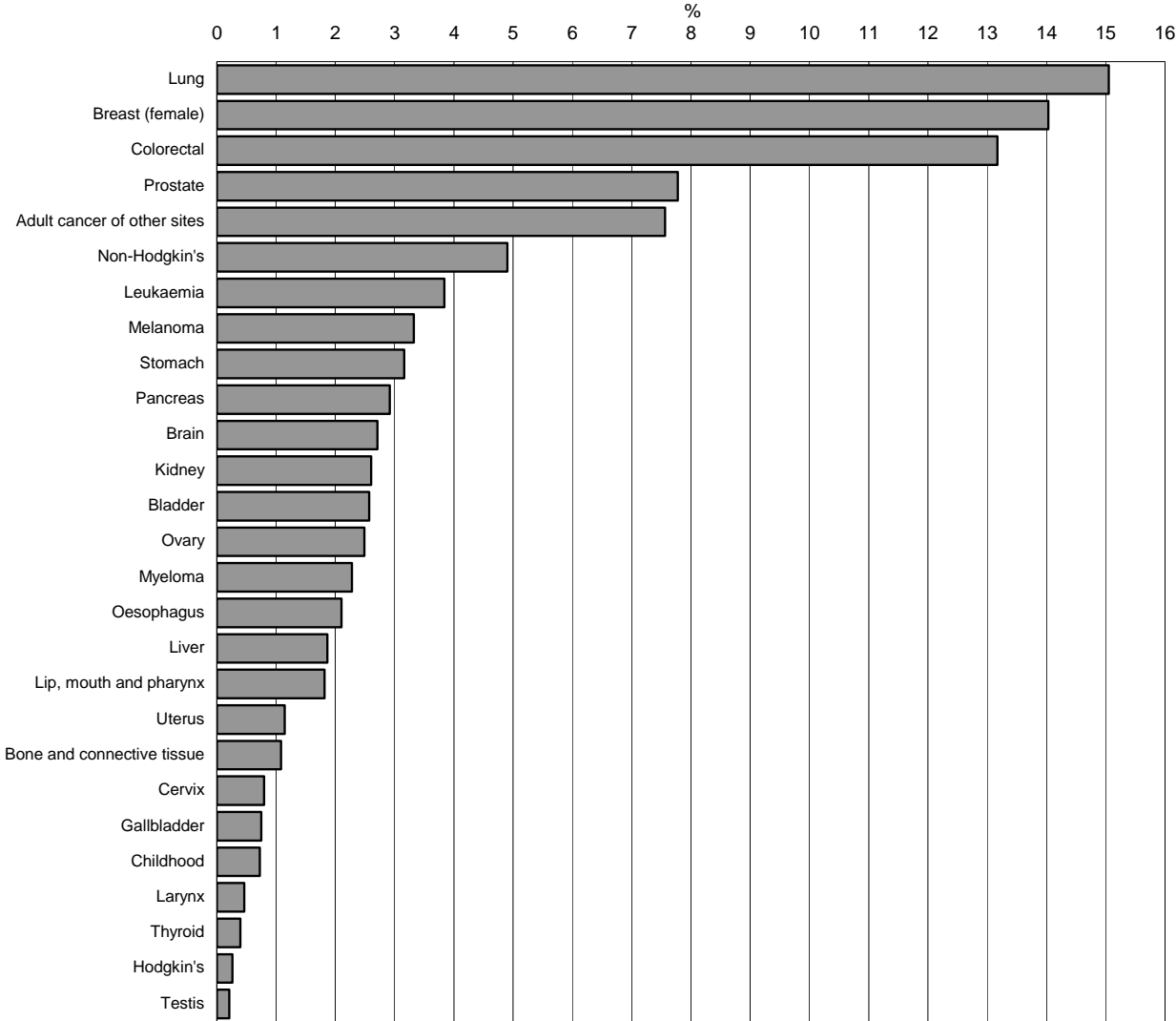
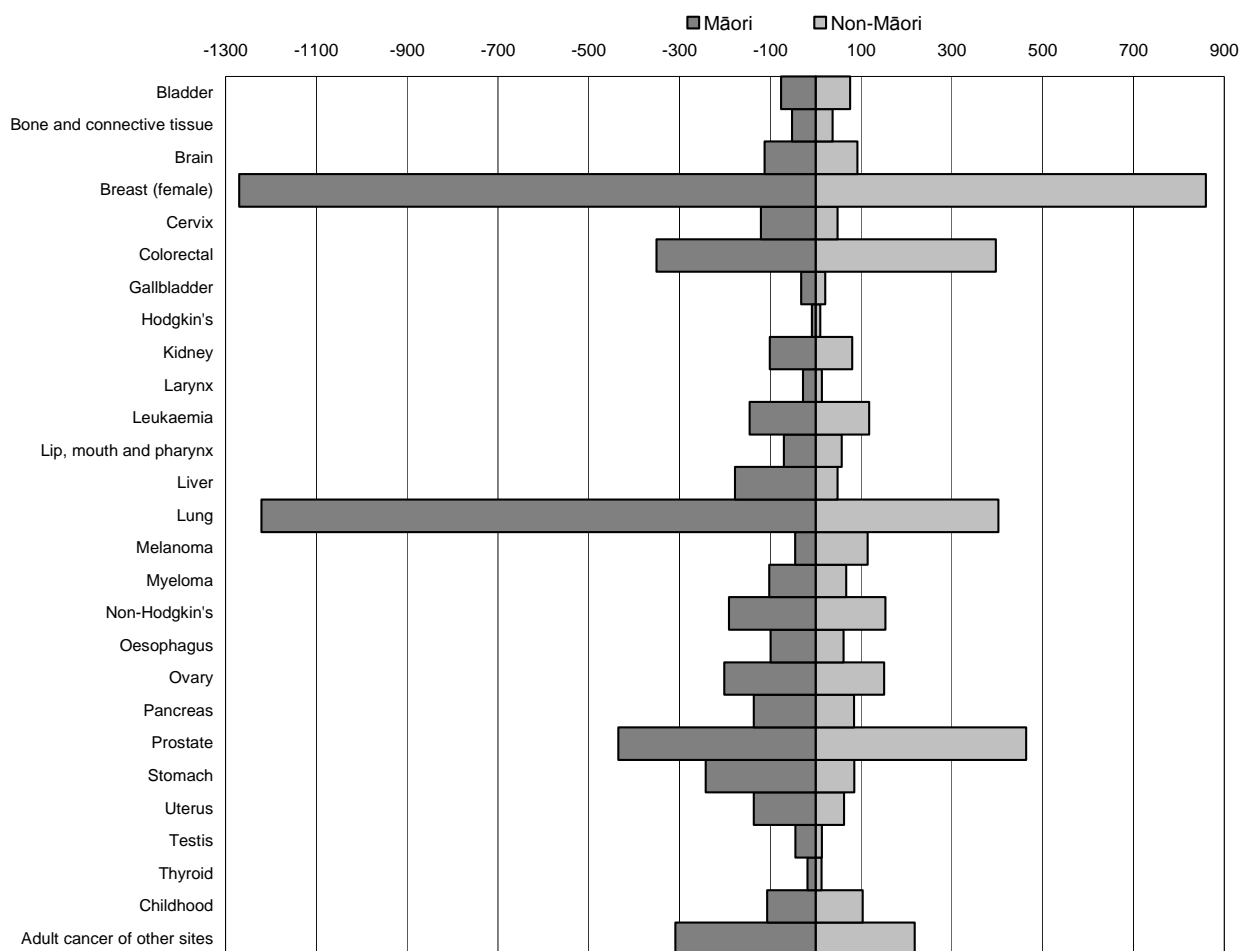


Figure 9: Age-standardised rate of disability-adjusted life years (DALYs) due to incident cases of cancer in 2006, by ethnicity, both sexes combined



Notes: Rates are per 100,000 people, age standardised to the WHO standard population of 15+ (except childhood 0–14).

Ethnic comparisons among females

Among females, 27.2% of the estimated cancer DALY burden for cancers diagnosed in 2006 was due to breast cancer, followed by lung (14.3%) and colorectal cancers (12.9%) (see Table 10 and Figure 10). The ratio of Māori to non-Māori DALY rates comparing females and males was notably different for bladder cancer (1.37 for females, compared to 0.87 for males), and oesophageal cancer (1.24 for females, compared to 1.78 for males). For bladder cancer this was due to lower than expected incidence among Māori males (Appendix B, Table A2). The converse was the case for oesophageal cancer (higher than expected incidence rates for Māori males; Appendix B, Table A19). Of note, the same excess mortality rate ratios (for Māori and non-Māori) were used for males and females in this report, and so differences in DALY burden and rates by sex cannot be explained by difference in excess mortality.

For all female cancers combined, the Māori to non-Māori DALY rate ratio was 1.68. The rate ratio was particularly high for lung cancer (3.70).

Table 10: Disability-adjusted life years (DALYs) due to incident cases of adult cancer in 2006, females, by ethnicity

Site	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Bladder	85	1.0%	57	919	1.6%	41	1.37	1,005	1.5%	49
Bone and connective tissue	80	0.9%	39	437	0.8%	26	1.47	516	0.8%	33
Brain	160	1.8%	91	1,177	2.1%	68	1.33	1,337	2.0%	79
Breast (female)	2432	27.9%	1270	15,408	27.2%	860	1.48	17,840	27.2%	1065
Cervix	240	2.7%	121	776	1.4%	48	2.52	1,016	1.6%	84
Colorectal	474	5.4%	289	7,957	14.0%	376	0.77	8,431	12.9%	333
Gallbladder	54	0.6%	35	486	0.9%	23	1.53	540	0.8%	29
Hodgkin's	16	0.2%	8	153	0.3%	10	0.76	169	0.3%	9
Kidney	137	1.6%	78	1,154	2.0%	60	1.30	1,291	2.0%	69
Larynx	18	0.2%	11	87	0.2%	4	2.45	105	0.2%	8
Leukaemia	222	2.5%	130	1,946	3.4%	96	1.35	2,168	3.3%	113
Lip, mouth and pharynx	66	0.8%	37	749	1.3%	38	0.97	815	1.2%	38
Liver	128	1.5%	74	605	1.1%	30	2.48	733	1.1%	52
Lung	2150	24.6%	1336	7,184	12.7%	361	3.70	9,334	14.3%	849
Melanoma	89	1.0%	46	1,565	2.8%	86	0.54	1,653	2.5%	66
Myeloma	140	1.6%	86	1,126	2.0%	54	1.58	1,265	1.9%	70
Non-Hodgkin's	302	3.5%	181	2,612	4.6%	135	1.34	2,914	4.5%	158
Oesophagus	67	0.8%	44	796	1.4%	35	1.24	864	1.3%	39
Ovary	376	4.3%	201	2,787	4.9%	150	1.34	3,163	4.8%	176
Pancreas	207	2.4%	136	1,618	2.9%	75	1.81	1,825	2.8%	106
Stomach	369	4.2%	218	1,159	2.0%	56	3.90	1,528	2.3%	137
Uterus	240	2.7%	136	1,219	2.1%	62	2.19	1,458	2.2%	99
Thyroid	53	0.6%	27	277	0.5%	16	1.64	330	0.5%	22
Childhood	114	1.3%	104	323	0.6%	100	1.03	437	0.7%	102
Adult cancer of other sites	514	5.9%	305	4,224	7.4%	198	1.54	4,737	7.2%	251
Total	8732	100%	5058	56,742	100%	3012	1.68	65,475	100%	4035

Figure 10: Burden of cancer (DALYs) due to incident cases in 2006, females, by site

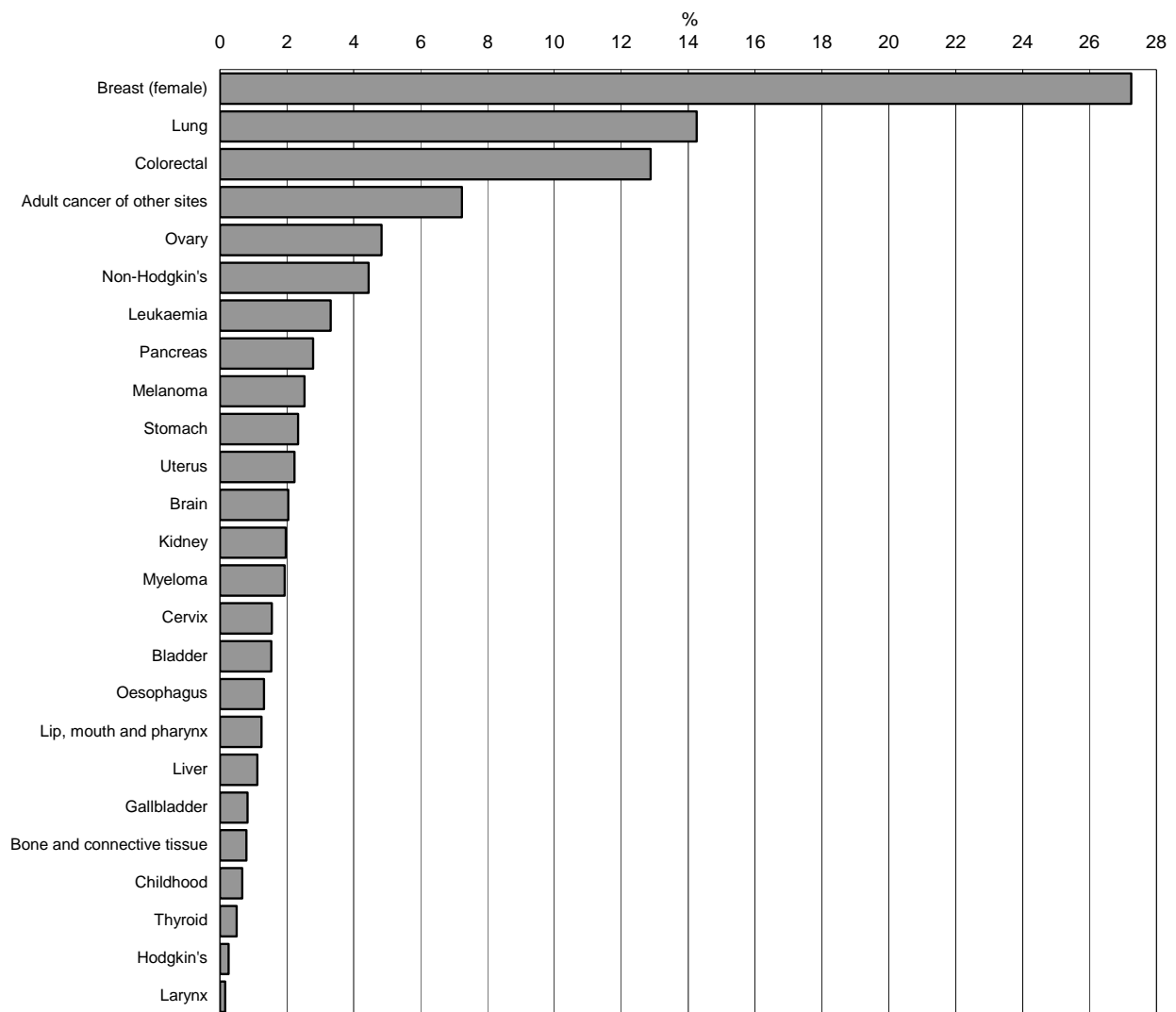
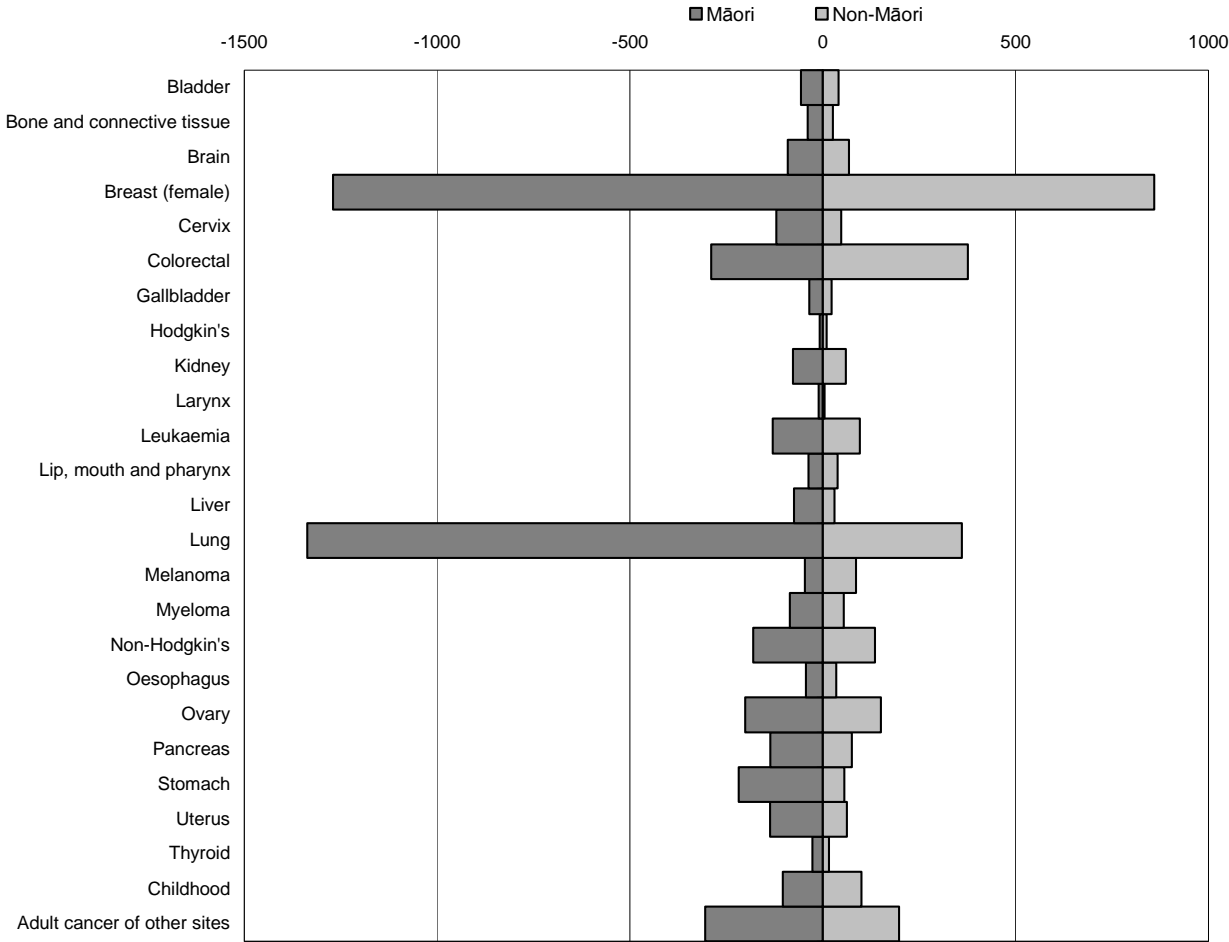


Figure 11: Age-standardised rate of disability-adjusted life years (DALYs) due to incident cases of cancer in 2006, females, by ethnicity



Rates are per 100,000 people, age standardised to the WHO standard population of 15+ (except childhood 0–14).

Ethnic comparisons among males

Among males, 16% of the estimated cancer DALY burden for cancers diagnosed in 2006 was due to prostate cancer, followed by lung (15.9%) and colorectal cancers (13.5%) (see Table 11 and Figure 12). Differences in the ratio of Māori to non-Māori DALY rates by sex are given above (Table 11).

For all male cancers combined, the Māori to non-Māori DALY rate ratio was 1.42. The rate ratio was notably high for liver cancer (4.23) and lung cancer (2.49), but also for testicular cancer (3.35), due to both higher incidence and higher excess mortality among Māori.

Table 11: Disability-adjusted life years (DALYs) due to incident cases of adult cancer in 2006, males, by ethnicity

Site	Māori			Non-Māori			Māori: Non- Māori Rate ratio	Total		
	Count	%	Rate	Count	%	Rate		Count	%	Rate
Bladder	128	2.0%	96	2,136	3.9%	111	0.87	2,264	3.7%	103
Bone and connective tissue	122	1.9%	66	739	1.3%	48	1.38	861	1.4%	57
Brain	244	3.9%	135	1,861	3.4%	116	1.17	2,105	3.4%	125
Colorectal	570	9.0%	412	7,746	14.0%	417	0.99	8,316	13.5%	414
Gallbladder	44	0.7%	29	370	0.7%	20	1.47	414	0.7%	25
Hodgkin's	16	0.3%	9	148	0.3%	10	0.90	164	0.3%	9
Kidney	200	3.2%	125	1,819	3.3%	101	1.23	2,020	3.3%	113
Larynx	65	1.0%	45	417	0.8%	23	1.96	482	0.8%	34
Leukaemia	230	3.6%	161	2,482	4.5%	140	1.15	2,712	4.4%	150
Lip, mouth and pharynx	164	2.6%	103	1,334	2.4%	77	1.34	1,498	2.4%	90
Liver	469	7.4%	281	1,169	2.1%	66	4.23	1,637	2.7%	174
Lung	1526	24.1%	1106	8,281	15.0%	444	2.49	9,806	15.9%	775
Melanoma	77	1.2%	45	2,494	4.5%	143	0.31	2,571	4.2%	94
Myeloma	169	2.7%	119	1,463	2.6%	80	1.49	1,632	2.6%	100
Non-Hodgkin's	330	5.2%	202	2,988	5.4%	173	1.17	3,318	5.4%	187
Oesophagus	207	3.3%	155	1,603	2.9%	87	1.78	1,810	2.9%	121
Pancreas	190	3.0%	137	1,696	3.1%	93	1.47	1,886	3.1%	115
Prostate	480	7.6%	435	9,410	17.0%	464	0.94	9,890	16.0%	449
Stomach	412	6.5%	266	2,084	3.8%	114	2.34	2,496	4.0%	190
Testis	95	1.5%	45	170	0.3%	13	3.35	264	0.4%	29
Thyroid	15	0.2%	9	155	0.3%	9	0.96	171	0.3%	9
Childhood	128	2.0%	110	358	0.6%	106	1.03	486	0.8%	108
Adult cancer of other sites	454	7.2%	313	4,428	8.0%	238	1.31	4,882	7.9%	276
Total	6336	100%	4403	55,350	100%	3,092	1.42	61,686	100%	3748

Figure 12: Burden of cancer (DALYs) due to incident cases in 2006, males, by site

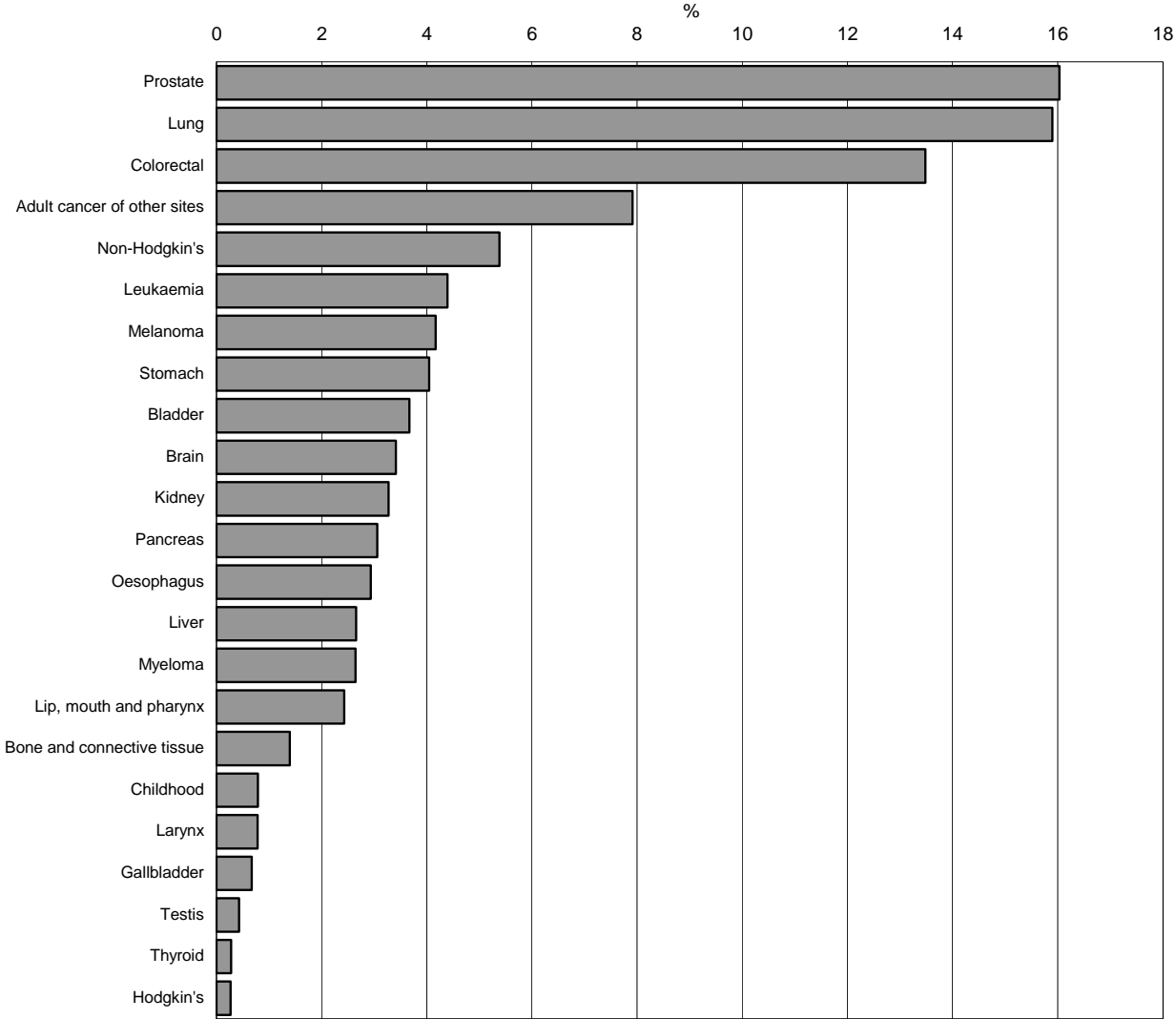
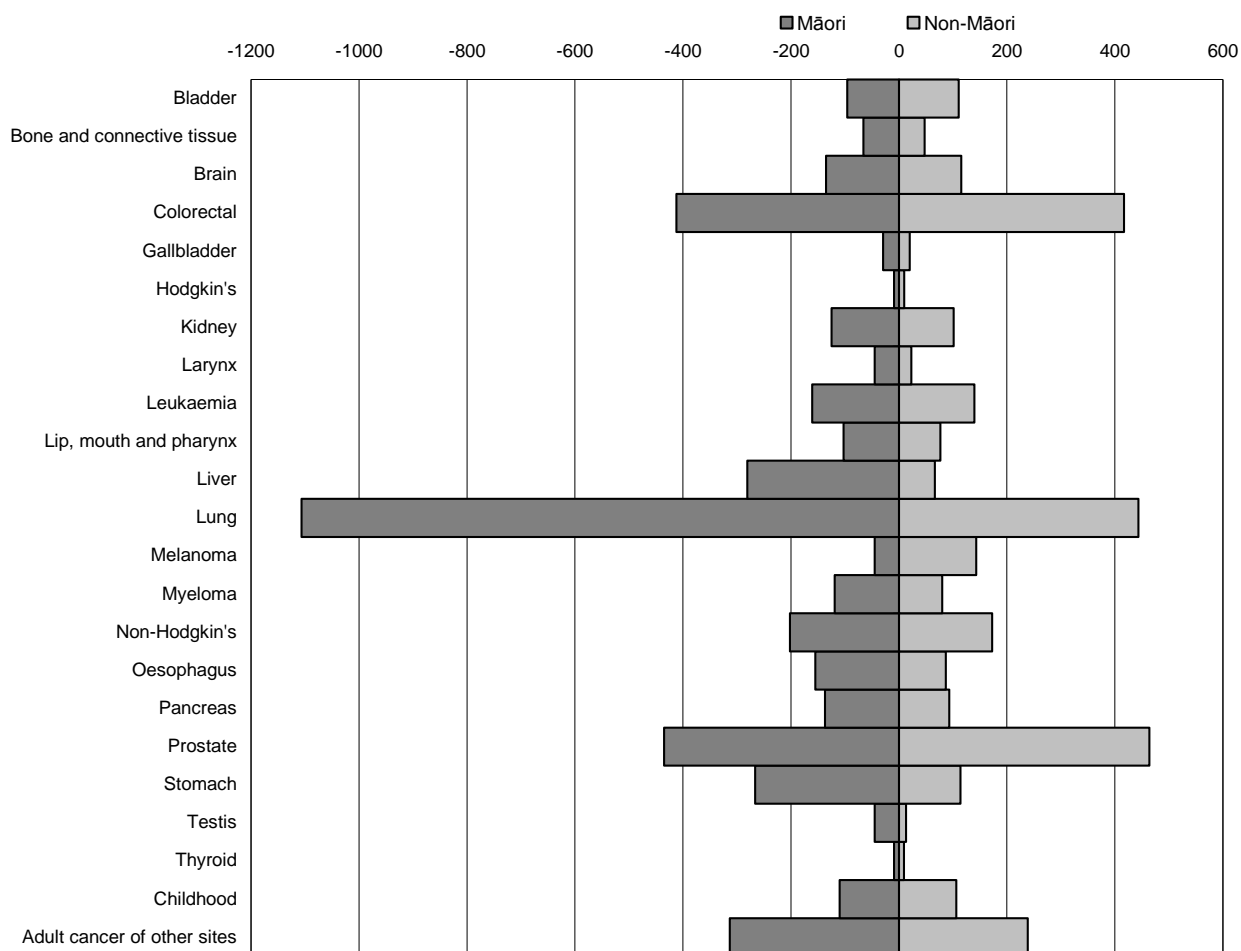


Figure 13: Age-standardised rate of disability-adjusted life years (DALYs) due to incident cases of cancer in 2006, males, by ethnicity



Rates are per 100,000 people, age standardised to the WHO standard population of 15+ (except childhood 0–14).

Gender comparisons, total population

Comparisons between females and males, within Māori and non-Māori, are given above.

Comparing between males and females for ethnic groups combined (Table 10 compared to Table 11, and summarised below in Table 12), notably greater DALY rates for males compared to females occurred for bladder cancer (rate ratio 2.1), bone and connective tissue (1.7) brain (1.6), kidney (1.6), laryngeal (4.4), cancer of the lip, mouth and pharynx (2.4), liver (3.3), melanoma (1.4), myeloma (1.4), and oesophageal (3.1). Conversely, only thyroid cancer had a notably higher DALY rate among females (rate ratio 0.4).

However, the male:female rate ratio for all cancers combined was 0.93, due to higher incidence rates for cancers of the reproductive system among females.

Table 12: Age-standardised rates of disability-adjusted life years (DALYs) due to incident cases of adult cancer in 2006, by sex (ethnic groups combined)

Site	Females	Males	Rate ratio
Bladder	49	103	2.1
Bone and connective tissue	33	57	1.7
Brain	79	125	1.6
Breast (female)	1065		
Cervix	84		
Colorectal	333	414	1.2
Gallbladder	29	25	0.9
Hodgkin's	9	9	1.0
Kidney	69	113	1.6
Larynx	8	34	4.4
Leukaemia	113	150	1.3
Lip, mouth and pharynx	38	90	2.4
Liver	52	174	3.3
Lung	849	775	0.9
Melanoma	66	94	1.4
Myeloma	70	100	1.4
Non-Hodgkin's	158	187	1.2
Oesophagus	39	121	3.1
Ovary	176		
Pancreas	106	115	1.1
Prostate		449	
Stomach	137	190	1.4
Uterus	99		
Testis		29	
Thyroid	22	9	0.4
Childhood	102	108	1.1
Adult cancer of other sites	251	276	1.1
Total	4035	3748	0.93

Sensitivity analysis

Discount rate

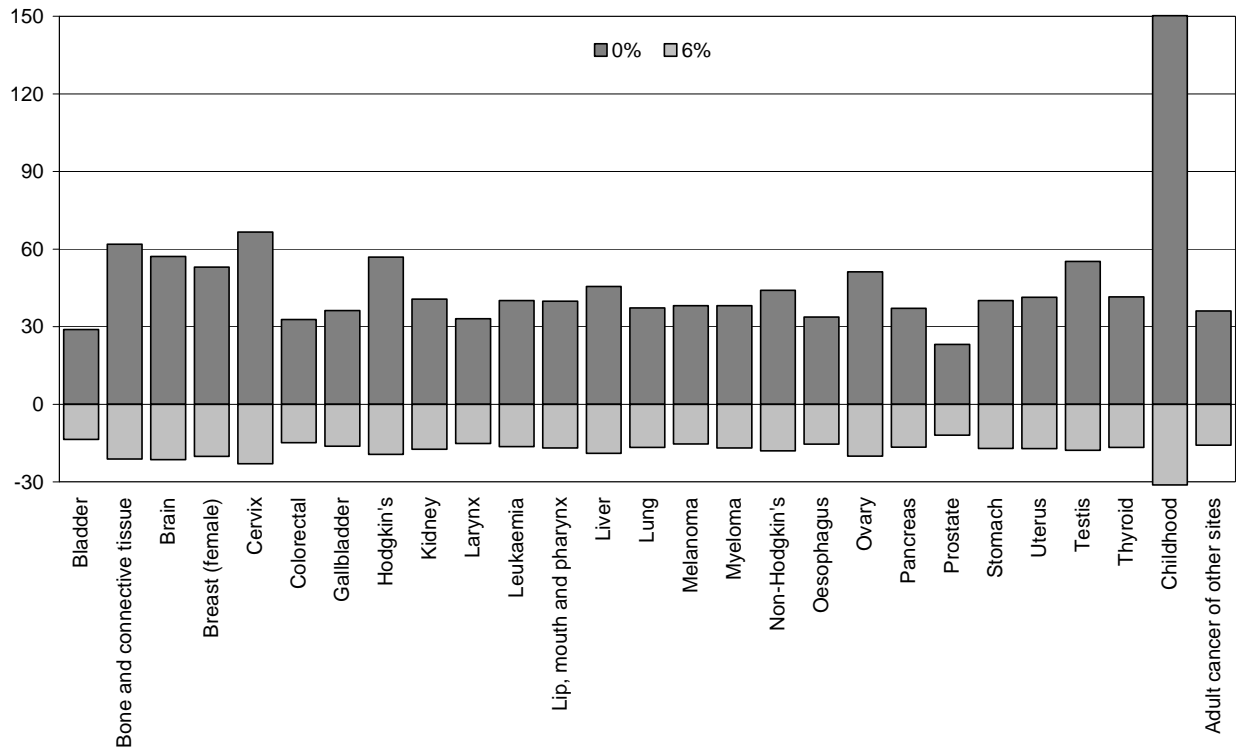
Varying the discount rate from the default assumption of 3.5% to 0% not surprisingly affected the estimated cancer burden among children enormously, increasing it by 150% (Table 13 and Figure 14). The magnitude of increase in DALY burden for other cancers from reducing the discount rate to 0% mostly ranged from 30% to 60%, and was associated with the average age of onset. That is, the earlier the average age of onset, the greater the increase in DALYs when dropping the 3.5% discount rate to 0%.

Increasing the discount rate to 6.0% resulted in mirror image relative changes in DALY burden, but with a smaller impact mostly ranging from a 10% to 20% reduction in estimated DALYs. The rank ordering of magnitude of cancer burden by cancer site was largely unaffected by altering the discount rates.

Table 13: Changes in the burden of cancer due to changes in the discount rate

Site	Burden (DALYs)			Burden % by site			% Burden change		
	Discount rate	3.5% (base)	0%	6%	3.5% (base)	0%	6%	0%	6%
Bladder		3,269	4,215	2,825	2.6	2.4	2.7	28.9	-13.6
Bone and connective tissue		1,378	2,230	1,086	1.1	1.2	1.0	61.8	-21.2
Brain		3,443	5,409	2,705	2.7	3.0	2.6	57.1	-21.4
Breast (female)		17,840	27,304	14,243	14.0	15.3	13.5	53.0	-20.2
Cervix		1,016	1,692	782	0.8	0.9	0.7	66.6	-23.0
Colorectal		16,747	22,231	14,259	13.2	12.4	13.5	32.7	-14.9
Gallbladder		954	1,299	799	0.7	0.7	0.8	36.3	-16.2
Hodgkin's		333	522	268	0.3	0.3	0.3	56.9	-19.4
Kidney		3,311	4,655	2,734	2.6	2.6	2.6	40.6	-17.4
Larynx		587	781	498	0.5	0.4	0.5	33.0	-15.2
Leukaemia		4,880	6,836	4,082	3.8	3.8	3.9	40.1	-16.4
Lip, mouth and pharynx		2,313	3,235	1,923	1.8	1.8	1.8	39.9	-16.9
Liver		2,370	3,449	1,921	1.9	1.9	1.8	45.5	-19.0
Lung		19,140	26,275	15,951	15.1	14.7	15.1	37.3	-16.7
Melanoma		4,225	5,834	3,577	3.3	3.3	3.4	38.1	-15.3
Myeloma		2,898	4,002	2,407	2.3	2.2	2.3	38.1	-16.9
Non-Hodgkin's		6,232	8,979	5,109	4.9	5.0	4.8	44.1	-18.0
Oesophagus		2,674	3,575	2,262	2.1	2.0	2.1	33.7	-15.4
Ovary		3,163	4,781	2,528	2.5	2.7	2.4	51.2	-20.1
Pancreas		3,711	5,087	3,095	2.9	2.8	2.9	37.1	-16.6
Prostate		9,890	12,180	8,706	7.8	6.8	8.2	23.2	-12.0
Stomach		4,023	5,637	3,336	3.2	3.2	3.2	40.1	-17.1
Uterus		1,458	2,062	1,208	1.1	1.2	1.1	41.4	-17.2
Testis		264	410	217	0.2	0.2	0.2	55.2	-17.8
Thyroid		500	708	417	0.4	0.4	0.4	41.5	-16.7
Childhood		924	2,311	635	0.7	1.3	0.6	150.2	-31.2
Adult cancer of other sites		9,619	13,087	8,096	7.6	7.3	7.7	36.0	-15.8
Total		127,161	178,785	105,671	100	100	100	41	-17

Figure 14: Changes in the burden of cancer due to changes in the discount rate, by site (percentages)



Cure time

Setting all cancers to have a cure time of five years, as opposed to the site-specific cure times, not surprisingly reduced the DALY burden the most for cancers with 20-year modelled survival times: 25.5% (NHL) to 42.6% (prostate cancer) reductions.

Table 14: Changes in the burden of cancer due to changes of the cure time (5 years for all sites)

Site	Burden (DALYs)			Burden % by site		% Burden change
	Cure time	Base	Cure time 5 years	Base	Cure time 5 years	Cure time 5 years
Bladder	10	3,269	2,949	2.6	2.7	-9.8
Bone and connective tissue	10	1,378	1,248	1.1	1.1	-9.4
Brain	5	3,443	3,443	2.7	3.2	0.0
Breast (female)	20	17,840	11,182	14.0	10.3	-37.3
Cervix	5	1,016	1,016	0.8	0.9	0.0
Colorectal	8	16,747	15,461	13.2	14.2	-7.7
Gallbladder	7	954	935	0.7	0.9	-1.9
Hodgkin's	10	333	287	0.3	0.3	-13.8
Kidney	10	3,311	2,815	2.6	2.6	-15.0
Larynx	10	587	477	0.5	0.4	-18.7
Leukaemia	10	4,880	3,966	3.8	3.6	-18.7
Lip, mouth and pharynx	10	2,313	1,849	1.8	1.7	-20.0
Liver	7	2,370	2,331	1.9	2.1	-1.7
Lung	6	19,140	18,998	15.1	17.5	-0.7
Melanoma	6	4,225	3,889	3.3	3.6	-7.9
Myeloma	20	2,898	1,956	2.3	1.8	-32.5
Non-Hodgkin's	20	6,232	4,640	4.9	4.3	-25.5
Oesophagus	6	2,674	2,659	2.1	2.4	-0.6
Ovary	10	3,163	2,887	2.5	2.7	-8.7
Pancreas	5	3,711	3,711	2.9	3.4	0.0
Prostate	20	9,890	5,679	7.8	5.2	-42.6
Stomach	6	4,023	3,944	3.2	3.6	-2.0
Uterus	6	1,458	1,415	1.1	1.3	-3.0
Testis	3	264	265	0.2	0.2	0.1
Thyroid	5	500	500	0.4	0.5	0.0
Childhood	5	924	924	0.7	0.8	0.0
Adult cancer of other sites	10	9,619	9,224	7.6	8.5	-4.1
Total		127,161	108,650	100	100	-15

Remission disability weight

Our default assumption for the disability weight (DW) in the remission state was that it decreased by 20% per annum. This allows for generally improving quality of life with increasing time since cancer, even if one cannot be pronounced 'cured'. However, if we remove this annual proportionate reduction in the remission DW, the DALY burden increases by 10.9% for prostate cancer – which again is not surprising given its long cure time and relatively low mortality at older ages (ie, lower YLLs contributing to DALYs, compared to YLDs that have DWs as an input). Otherwise, changes were minor (Table 15).

Table 15: Changes in the burden of cancer due to a non-decreasing disability weight during remission

Site	Burden (DALYs)		Burden % by site		% Burden change
	Base*	Constant rdw	Base*	Constant rdw	
Bladder	3,269	3,376	2.6	2.6	3.3
Bone and connective tissue	1,378	1,402	1.1	1.1	1.8
Brain	3,443	3,446	2.7	2.6	0.1
Breast (female)	17,840	19,338	14.0	14.7	8.4
Cervix	1,016	1,022	0.8	0.8	0.6
Colorectal	16,747	17,068	13.2	13.0	1.9
Gallbladder	954	956	0.7	0.7	0.2
Hodgkin's	333	339	0.3	0.3	1.9
Kidney	3,311	3,376	2.6	2.6	2.0
Larynx	587	612	0.5	0.5	4.3
Leukaemia	4,880	4,995	3.8	3.8	2.3
Lip, mouth and pharynx	2,313	2,407	1.8	1.8	4.1
Liver	2,370	2,373	1.9	1.8	0.1
Lung	19,140	19,193	15.1	14.6	0.3
Melanoma	4,225	4,358	3.3	3.3	3.2
Myeloma	2,898	2,968	2.3	2.3	2.4
Non-Hodgkin's	6,232	6,498	4.9	5.0	4.3
Oesophagus	2,674	2,680	2.1	2.0	0.2
Ovary	3,163	3,196	2.5	2.4	1.1
Pancreas	3,711	3,712	2.9	2.8	0.0
Prostate	9,890	10,971	7.8	8.4	10.9
Stomach	4,023	4,036	3.2	3.1	0.3
Uterus	1,458	1,477	1.1	1.1	1.3
Testis	264	266	0.2	0.2	0.8
Thyroid	500	505	0.4	0.4	1.0
Childhood	924	925	0.7	0.7	0.2
Adult cancer of other sites	9,619	9,720	7.6	7.4	1.0
Total	127,161	131,215	100	100	3.2

* Remission disability weight (rdw) reduces by 20% per annum from the first year onwards.

Using actual population and ethnic-specific life tables for determining YLLs

As discussed in the Methodology section, we opted to use an external model life table to calculate YLLs, applied similarly to Māori and non-Māori. If one uses actual New Zealand life tables, by gender and ethnicity, for 2006, the DALY counts are reduced by 12.5% for Māori and increased by 2.7% for non-Māori (Table 16). The changes are greatest for cancers that tend to occur at older ages.

Age-standardised rates change in a similar manner (Table 17), and the Māori:non-Māori rate ratio for all cancers combined reduces from 1.63 to 1.39. This is a 14.9% reduction in the rate ratio, or a 38.4% reduction in the relative inequality (ie, the excess rate ratio, given by the rate ratio minus 1). This is a substantive shift. The remaining analyses in

this report are 'correct' in so far as they present a 'gap measure' of cancer burden against an external standard applied equivalently to both Māori and non-Māori. The implication, however, is that for future intervention and cost-effectiveness modelling (where one has to use the population's own life table to best approximate actual health gains), the DALY gains for Māori compared to non-Māori will be less than those suggested in this report.

Table 16: Differences in DALY counts between model life tables (default method for rest of report) and New Zealand ethnic-specific life tables used to calculate YLLs

Site	Māori			Non-Māori			Total		
	Base (model life tables)	Ethnic specific life tables	Change	Base (model life tables)	Ethnic specific life tables	Change	Base (model life tables)	Ethnic specific life tables	Change
Bladder	184	158	-13.8%	2,304	2,390	3.8%	2,487	2,549	2.5%
Bone and connective tissue	179	162	-9.5%	940	955	1.6%	1,119	1,117	-0.2%
Brain	376	333	-11.4%	2,797	2,845	1.7%	3,173	3,179	0.2%
Breast (female)	1,907	1,706	-10.5%	11,137	11,289	1.4%	13,044	12,995	-0.4%
Cervical	191	172	-10.1%	580	588	1.3%	771	759	-1.5%
Colorectal	890	770	-13.5%	12,279	12,657	3.1%	13,169	13,427	2.0%
Gallbladder	91	79	-13.2%	768	792	3.1%	859	871	1.4%
Hodgkin's	22	20	-9.9%	226	230	1.6%	248	250	0.6%
Kidney	303	265	-12.8%	2,509	2,574	2.6%	2,812	2,839	0.9%
Larynx	67	58	-14.2%	386	398	3.1%	454	456	0.5%
Leukaemia	394	344	-12.6%	3,679	3,789	3.0%	4,073	4,133	1.5%
Lip, mouth and pharynx	187	163	-13.1%	1,623	1,661	2.3%	1,810	1,823	0.8%
Liver	561	488	-13.0%	1,629	1,671	2.6%	2,190	2,160	-1.4%
Lung	3,369	2,904	-13.8%	13,825	14,244	3.0%	17,194	17,148	-0.3%
Melanoma	139	125	-10.7%	2,747	2,815	2.5%	2,886	2,940	1.9%
Myeloma	280	242	-13.4%	2,285	2,351	2.9%	2,564	2,593	1.1%
Non-Hodgkin's	568	498	-12.2%	4,742	4,856	2.4%	5,309	5,354	0.8%
Oesophagus	247	213	-14.1%	2,092	2,160	3.3%	2,340	2,373	1.4%
Ovarian	329	292	-11.1%	2,426	2,472	1.9%	2,754	2,764	0.3%
Pancreas	371	320	-13.9%	3,056	3,148	3.0%	3,428	3,467	1.2%
Prostate	325	276	-15.2%	5,832	6,097	4.5%	6,157	6,373	3.5%
Stomach	700	612	-12.6%	2,832	2,917	3.0%	3,531	3,529	-0.1%
Uterine	195	171	-12.2%	919	939	2.2%	1,114	1,110	-0.3%
Testicular	68	63	-8.4%	71	71	0.2%	139	133	-4.1%
Thyroid	45	40	-11.7%	286	290	1.5%	331	330	-0.3%
Childhood	204	199	-2.8%	549	549	-0.1%	753	747	-0.8%
Adult cancer of other sites	879	765	-12.9%	7,514	7,755	3.2%	8,393	8,520	1.5%
Total	13,073	11,437	-12.5%	90,032	92,503	2.7%	103,105	103,940	0.8%

Table 17: Differences in DALY rates, and Māori:non-Māori rate ratios, between model life tables (default method for rest of report) and New Zealand ethnic-specific life tables used to calculate YLLs

Site	Māori			Non-Māori			Māori: Non-Māori rate ratio		
	Base (model life tables)	Ethnic specific life tables	Change	Base (model life tables)	Ethnic specific life tables	Change	Base (model life tables)	Ethnic specific life tables	Change
Bladder	84	72	-14.2%	74	77	3.5%	1.13	0.94	-17.0%
Bone and connective tissue	46	41	-10.5%	30	31	1.2%	1.52	1.34	-11.6%
Brain	105	92	-12.3%	85	86	1.5%	1.24	1.07	-13.5%
Breast (female)	1261	1120	-11.2%	822	832	1.1%	1.53	1.35	-12.2%
Cervical	126	112	-10.8%	45	46	1.0%	2.80	2.47	-11.7%
Colorectal	379	326	-14.0%	407	418	2.8%	0.93	0.78	-16.3%
Gallbladder	38	33	-13.6%	25	26	2.7%	1.53	1.29	-16.0%
Hodgkin's	6	5	-11.0%	7	7	1.2%	0.80	0.70	-12.0%
Kidney	117	101	-13.3%	88	90	2.3%	1.33	1.12	-15.3%
Larynx	29	24	-14.6%	14	14	2.9%	2.11	1.75	-17.0%
Leukaemia	125	109	-13.4%	99	101	2.5%	1.27	1.07	-15.5%
Lip, mouth and pharynx	73	63	-13.6%	58	60	2.1%	1.25	1.06	-15.4%
Liver	215	186	-13.5%	58	59	2.3%	3.74	3.16	-15.5%
Lung	1436	1232	-14.2%	467	480	2.8%	3.07	2.57	-16.5%
Melanoma	38	34	-11.5%	78	80	2.1%	0.48	0.42	-13.3%
Myeloma	119	102	-13.9%	77	79	2.6%	1.54	1.29	-16.0%
Non-Hodgkin's	170	148	-12.9%	131	134	2.1%	1.30	1.11	-14.7%
Oesophagus	114	98	-14.4%	69	71	2.9%	1.65	1.37	-16.9%
Ovarian	177	156	-11.8%	130	132	1.6%	1.36	1.18	-13.2%
Pancreas	164	141	-14.2%	101	104	2.7%	1.63	1.36	-16.4%
Prostate	370	315	-14.9%	377	393	4.3%	0.98	0.80	-18.4%
Stomach	278	241	-13.2%	96	99	2.7%	2.88	2.44	-15.4%
Uterine	144	126	-12.7%	60	62	1.9%	2.39	2.04	-14.3%
Testicular	32	29	-8.7%	6	6	0.1%	5.82	5.31	-8.7%
Thyroid	12	11	-12.3%	8	8	1.3%	1.48	1.28	-13.4%
Childhood	90	87	-2.8%	83	83	-0.1%	1.08	1.05	-2.7%
Adult cancer of other sites	280	242	-13.5%	191	196	2.8%	1.47	1.23	-15.9%
Total	6028	5248	-12.9%	3688	3773	2.3%	1.63	1.39	-14.9%

Rates are per 100,000 people, age-standardised to the WHO standard population.

Chapter 4: Burden by Site

1 Bladder

Figure 15: Age-standardised rate of disability-adjusted life years (DALYs) due to incident cases of bladder cancer in 2006, by sex, age and ethnicity

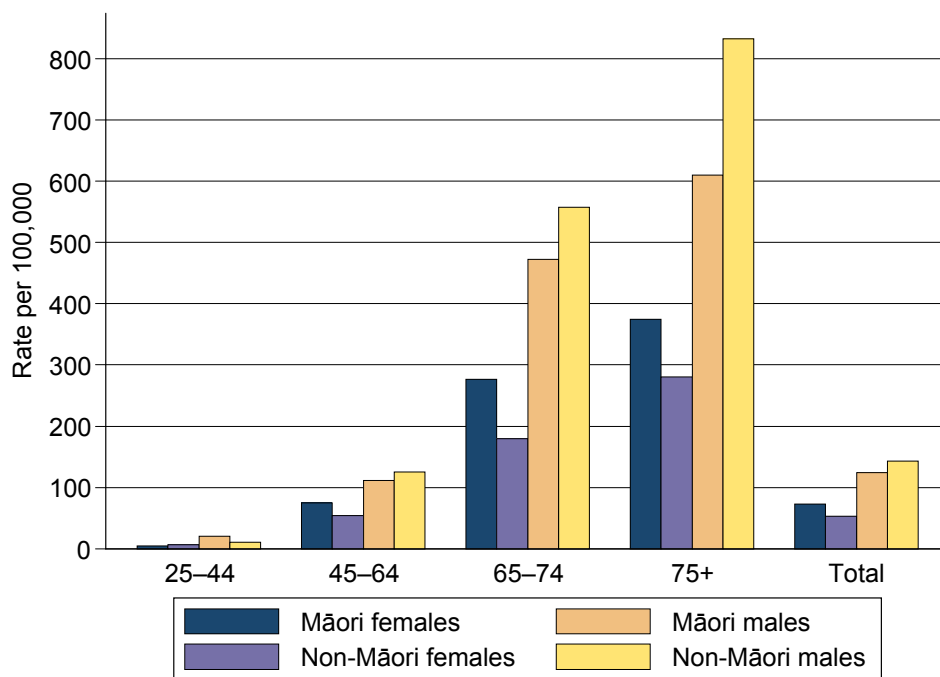


Figure 16: Ratio of YLD:YLL due to incident cases of bladder cancer in 2006, by sex, age and ethnicity

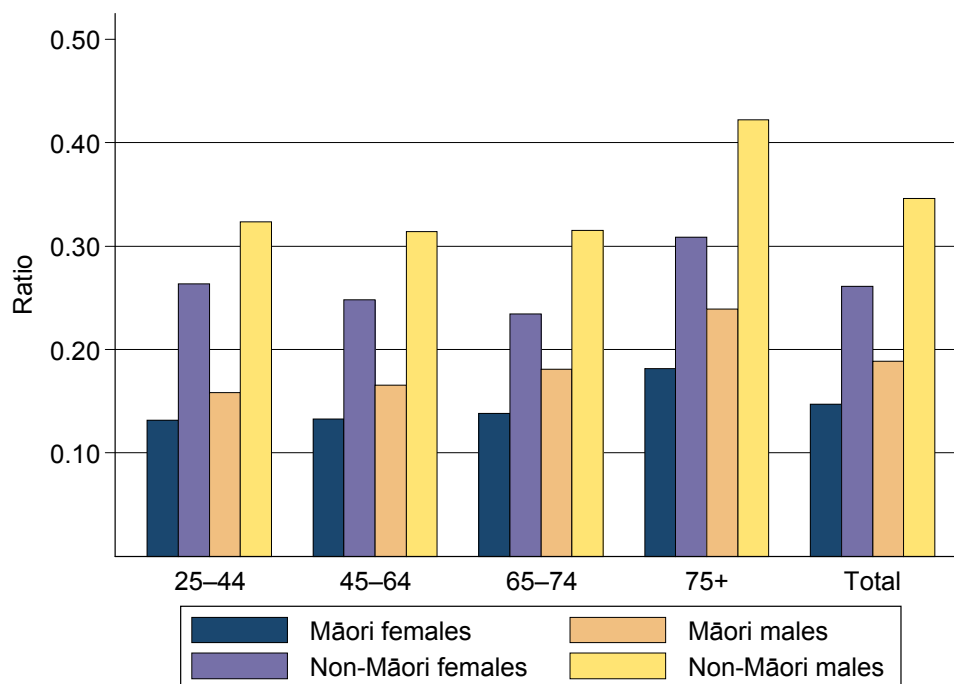


Table 18: Disability-adjusted life years (DALYs) due to incident cases of bladder cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	5	6%	5	39	4%	7	0.74	44	4%	6
45–64	36	42%	75	252	27%	55	1.37	288	29%	65
65–74	27	32%	277	240	26%	179	1.54	267	27%	228
75+	18	21%	374	388	42%	280	1.34	406	40%	327
Total	85	100%	73	919	100%	53	1.37	1005	100%	63
Males										
25–44	18	14%	21	58	3%	11	1.91	76	3%	16
45–64	48	38%	112	568	27%	126	0.89	616	27%	119
65–74	42	32%	472	698	33%	558	0.85	739	33%	515
75+	20	16%	610	813	38%	833	0.73	833	37%	721
Total	128	100%	124	2136	100%	143	0.87	2264	100%	134
Total										
25–44	23	11%	13	97	3%	9	1.46	120	4%	11
45–64	84	39%	93	820	27%	90	1.04	903	28%	92
65–74	69	32%	375	938	31%	369	1.02	1006	31%	372
75+	38	18%	492	1201	39%	556	0.88	1239	38%	524
Total	213	100%	99	3055	100%	98	1.00	3269	100%	98

- A total of 3269 DALYs, or 98 DALYs per 100,000 people, is estimated to be lost by persons aged 25+ due to bladder cancer diagnosed in 2006 in New Zealand.
- The age-standardised rate for males is higher than the rate for females: 134 versus 63 DALYs per 100,000.
- Thirty eight percent of the total DALYs burden is experienced by people aged 75+. They also have the highest age-standardised rate: 522 DALYs per 100,000.
- Māori have a similar age-standardised rate to non-Māori: 98 and 99 DALYs per 100,000, respectively.
- Non-Māori males and Māori males aged 75+ have the highest age-standardised rates across the subpopulations analysed: 833 and 610 DALYs per 100,000 people, respectively.
- The mortality component, YLL, makes a higher contributor to the burden than the disability component, YLD. The disability burden is around a fifth of the mortality burden.
- Māori have a higher age-standardised rate of YLLs and a lower age-standardised rate of YLDs than non-Māori. The Māori:non-Māori rate ratios for YLLs and YLDs are 1.13 and 0.61, respectively. This is due to a considerably higher excess mortality for Māori from bladder cancer (excess mortality rate ratio 2.35; see Table A1, Appendix A).

Table 19: Years of life lost (YLLs) due to incident cases of bladder cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	4	6%	4	31	4%	5	0.83	35	4%	5
45–64	31	42%	66	202	28%	44	1.51	233	29%	55
65–74	24	32%	243	194	27%	145	1.68	218	27%	194
75+	15	20%	317	293	41%	214	1.48	308	39%	266
Total	75	100%	64	720	100%	42	1.51	795	100%	53
Males										
25–44	16	14%	18	44	3%	8	2.18	59	3%	13
45–64	41	38%	96	432	27%	96	1.00	474	28%	96
65–74	35	32%	400	531	34%	424	0.94	566	33%	412
75+	17	15%	492	577	36%	585	0.84	593	35%	539
Total	109	100%	104	1,583	100%	106	0.98	1,692	100%	105
Total										
25–44	20	11%	11	75	3%	7	1.64	94	4%	9
45–64	73	40%	81	634	28%	70	1.16	707	28%	75
65–74	59	32%	322	725	31%	285	1.13	784	32%	303
75+	32	17%	404	870	38%	400	1.01	902	36%	402
Total	184	100%	84	2,304	100%	74	1.13	2,487	100%	79

Rates are per 100,000 people, age-standardised to the WHO standard population.

Table 20: Years of life lived with disability (YLDs) due to incident cases of bladder cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	1	5%	1	8	4%	1	0.41	9	4%	1
45–64	4	39%	9	50	25%	11	0.81	54	26%	10
65–74	3	31%	34	46	23%	34	0.99	49	23%	34
75+	3	25%	58	95	48%	66	0.87	98	47%	62
Total	11	100%	9	199	100%	11	0.85	209	100%	10
Males										
25–44	2	13%	3	14	3%	3	1.07	17	3%	3
45–64	7	35%	16	135	24%	30	0.53	142	25%	23
65–74	6	33%	72	167	30%	134	0.54	173	30%	103
75+	4	19%	118	237	43%	247	0.48	240	42%	182
Total	19	100%	20	553	100%	37	0.53	572	100%	28
Total										
25–44	3	10%	2	22	3%	2	0.84	25	3%	2
45–64	11	37%	12	185	25%	20	0.60	196	25%	16
65–74	10	32%	53	213	28%	84	0.63	222	28%	68
75+	6	21%	88	332	44%	157	0.56	338	43%	122
Total	30	100%	15	752	100%	24	0.61	782	100%	19

Rates are per 100,000 people, age-standardised to the WHO standard population

2 Bone and connective tissue

Figure 17: Age-standardised rate of disability-adjusted life years (DALYs) due to incident cases of bone and connective tissue cancer in 2006, by sex, age and ethnicity

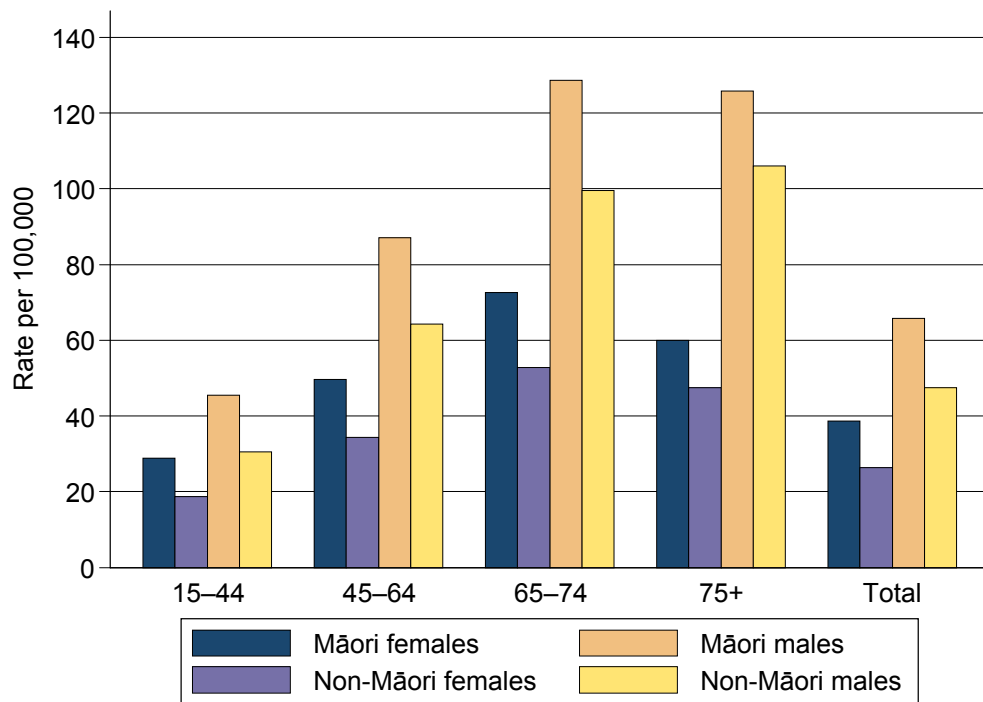


Figure 18: Ratio of YLD:YLL due to incident cases of bone and connective tissue cancer in 2006, by sex, age and ethnicity

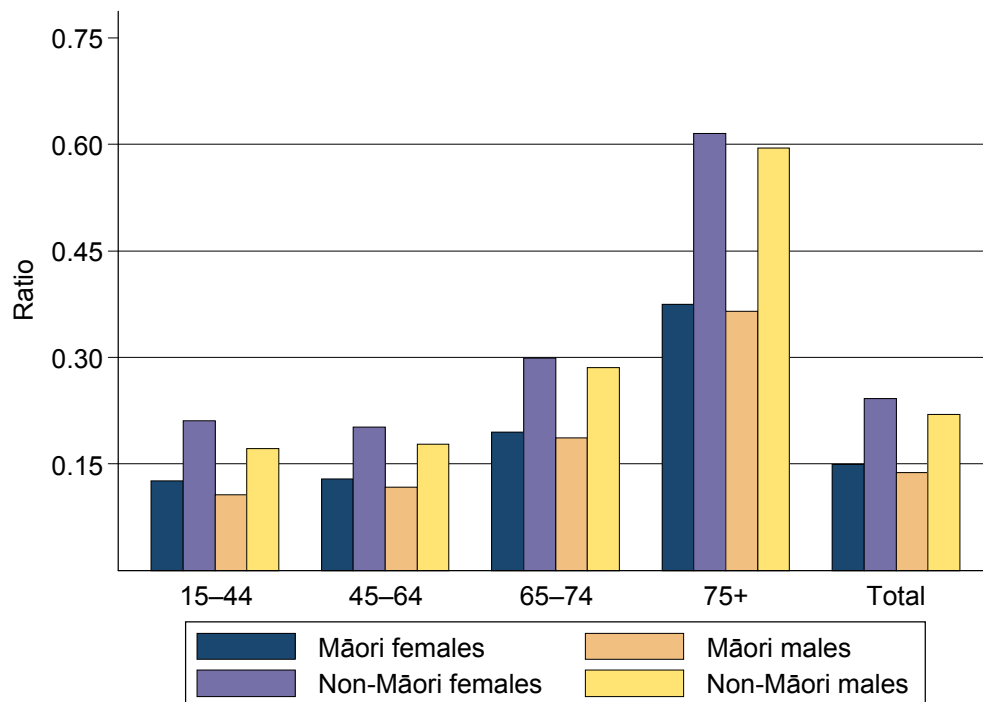


Table 21: Disability-adjusted life years (DALYs) due to incident cases of bone and connective tissue cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
15–44	45	56%	29	142	33%	19	1.55	187	36%	24
45–64	25	32%	50	158	36%	34	1.44	183	35%	42
65–74	7	9%	73	71	16%	53	1.37	78	15%	63
75+	3	4%	60	66	15%	48	1.26	69	13%	54
Total	80	100%	39	437	100%	26	1.47	516	100%	33
Males										
15–44	67	55%	46	224	30%	31	1.49	291	34%	38
45–64	40	33%	87	287	39%	64	1.35	327	38%	76
65–74	11	9%	129	124	17%	100	1.29	136	16%	114
75+	4	3%	126	104	14%	106	1.19	108	12%	116
Total	122	100%	66	739	100%	48	1.38	861	100%	57
Total										
15–44	111	55%	37	366	31%	25	1.51	478	35%	31
45–64	65	32%	68	445	38%	49	1.38	510	37%	59
65–74	19	9%	101	195	17%	76	1.32	213	15%	88
75+	7	3%	93	170	14%	77	1.21	177	13%	85
Total	202	100%	52	1176	100%	37	1.41	1378	100%	45

Rates are per 100,000 people, age-standardised to the WHO standard population.

- A total of 1378 DALYs, or 45 DALYs per 100,000 people, is estimated to be lost by those aged 15+ due to cancer of the bone and connective tissue diagnosed in 2006 in New Zealand.
- The age-standardised rate for males is higher than the rate for females: 57 versus 33 DALYs per 100,000.
- Thirty seven percent of the total DALY burden is accrued by persons aged 45–64. Those aged 65–74 have the highest age-standardised rate: 88 DALYs per 100,000.
- Māori have 1.41 times the DALY age-standardised rate of non-Māori.
- Māori males aged 65–74 and 75+ have the highest age-standardised rates across the subpopulations analysed: 129 and 126 DALYs per 100,000 people, respectively.
- The mortality component, YLL, is a higher contributor to the burden than the disability component, YLD. The disability burden is around a fifth of the mortality burden.
- Māori have a higher age-standardised rate of YLLs and a similar age-standardised rate of YLDs than non-Māori: 1.52 and 0.95 Māori:non-Māori rate ratio for YLLs and YLDs, respectively. This is due to considerably higher excess mortality for Māori from cancer of the bone and connective tissue (excess mortality rate ratio 2, see Table A1, Appendix A).

Table 22: Years of life lost (YLLs) due to incident cases of bone and connective tissue cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
15–44	40	57%	26	117	34%	15	1.66	157	38%	21
45–64	22	32%	44	131	38%	29	1.53	153	37%	36
65–74	6	9%	61	54	16%	41	1.49	60	15%	51
75+	2	3%	44	40	12%	29	1.48	42	10%	37
Total	70	100%	34	343	100%	21	1.58	413	100%	28
Males										
15–44	60	55%	41	191	32%	26	1.58	251	36%	34
45–64	36	33%	78	244	41%	55	1.43	280	40%	66
65–74	10	9%	108	97	16%	78	1.40	106	15%	93
75+	3	3%	92	66	11%	66	1.39	69	10%	79
Total	109	100%	58	597	100%	39	1.48	706	100%	48
Total										
15–44	100	56%	33	308	33%	21	1.61	408	36%	27
45–64	58	33%	61	375	40%	42	1.46	433	39%	51
65–74	16	9%	85	151	16%	59	1.43	167	15%	72
75+	5	3%	68	106	11%	48	1.42	111	10%	58
Total	179	100%	46	940	100%	30	1.52	1119	100%	38

Rates are per 100,000 people, age-standardised to the WHO standard population.

Table 23: Years of life lived with disability (YLDs) due to incident cases of bone and connective tissue cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
15–44	5	51%	3	25	27%	3	1.00	30	29%	3
45–64	3	29%	6	26	28%	6	0.98	29	28%	6
65–74	1	12%	12	16	17%	12	0.97	17	17%	12
75+	1	8%	16	26	28%	18	0.90	27	26%	17
Total	10	100%	5	94	100%	5	0.98	104	100%	5
Males										
15–44	6	48%	4	33	23%	4	0.98	39	25%	4
45–64	4	31%	9	44	31%	10	0.94	48	31%	9
65–74	2	13%	20	28	19%	22	0.92	29	19%	21
75+	1	8%	34	38	27%	40	0.85	39	25%	37
Total	13	100%	8	142	100%	9	0.93	155	100%	8
Total										
15–44	11	49%	4	58	25%	4	0.99	69	27%	4
45–64	7	30%	7	70	30%	8	0.95	77	30%	8
65–74	3	13%	16	44	19%	17	0.94	47	18%	17
75+	2	8%	25	64	27%	29	0.87	66	25%	27
Total	23	100%	6	236	100%	7	0.95	259	100%	7

Rates are per 100,000 people, age-standardised to the WHO standard population.

3 Brain

Figure 19: Age-standardised rate of disability-adjusted life years (DALYs) due to incident cases of brain cancer in 2006, by sex, age and ethnicity

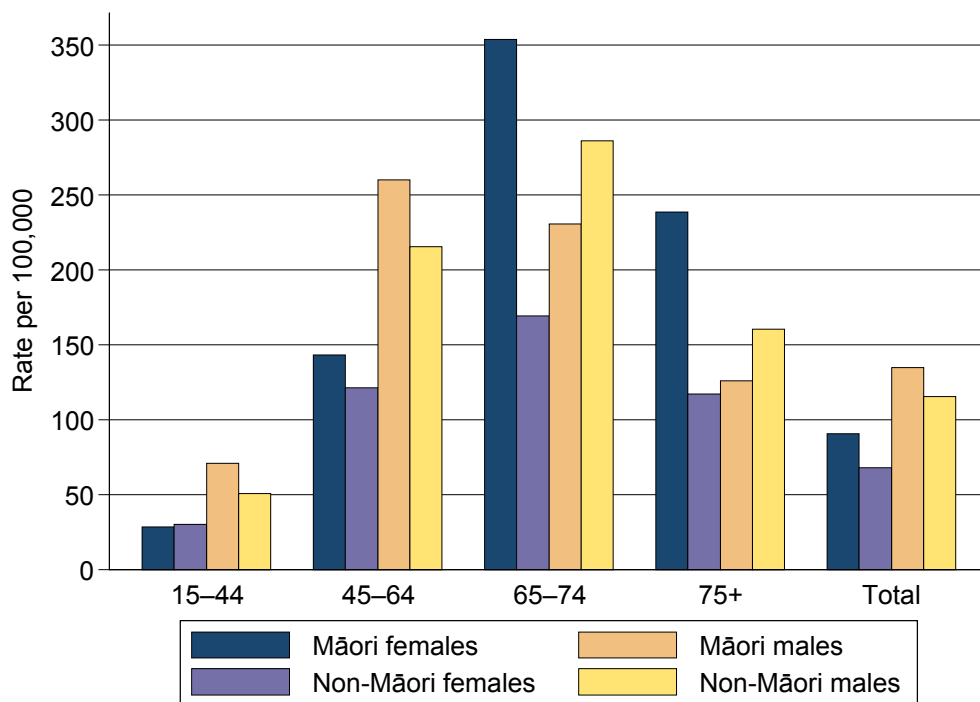


Figure 20: Ratio of YLD:YLL due to incident cases of brain cancer in 2006, by sex, age and ethnicity

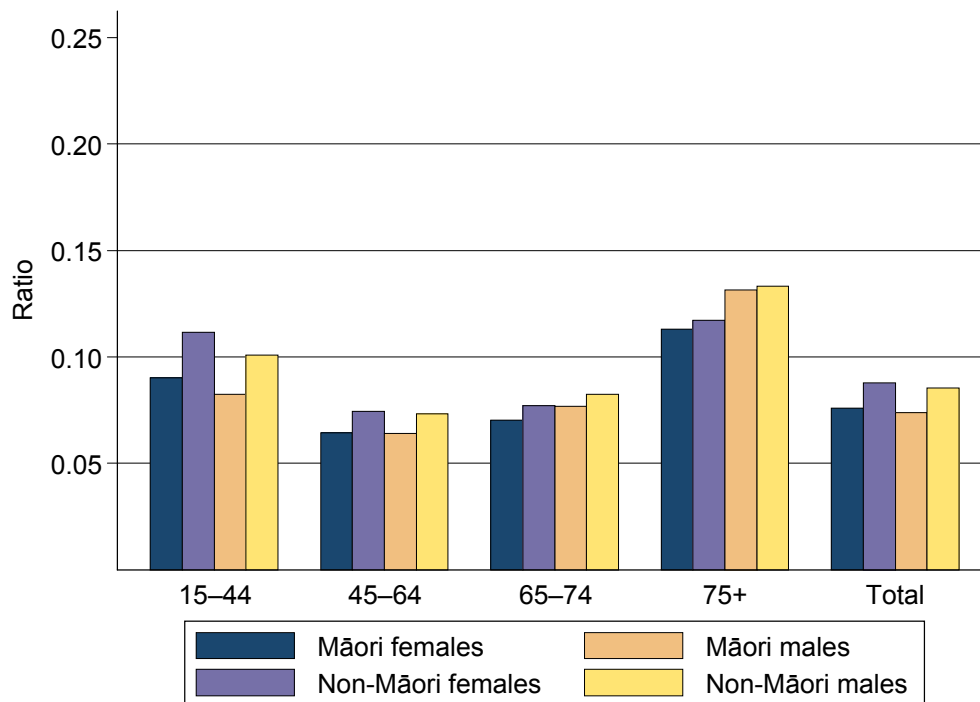


Table 24: Disability-adjusted life years (DALYs) due to incident cases of brain cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
15–44	44	27%	29	241	20%	30	0.94	285	21%	29
45–64	70	44%	143	559	48%	122	1.18	630	47%	132
65–74	35	22%	354	225	19%	169	2.09	260	19%	262
75+	11	7%	239	151	13%	117	2.03	162	12%	178
Total	160	100%	91	1177	100%	68	1.33	1337	100%	79
Males										
15–44	101	41%	71	384	21%	51	1.40	485	23%	61
45–64	118	48%	260	967	52%	216	1.21	1085	52%	238
65–74	20	8%	231	357	19%	286	0.81	377	18%	258
75+	4	2%	126	154	8%	161	0.79	159	8%	143
Total	244	100%	135	1861	100%	116	1.17	2105	100%	125
Total										
15–44	145	36%	50	625	21%	40	1.23	770	22%	45
45–64	189	47%	202	1526	50%	169	1.20	1715	50%	185
65–74	55	14%	292	582	19%	228	1.28	637	19%	260
75+	16	4%	182	305	10%	139	1.31	321	9%	161
Total	404	100%	113	3038	100%	92	1.23	3443	100%	102

Rates are per 100,000 people, age standardised to the WHO standard population.

- A total of 3443 DALYs, or 102 DALYs per 100,000 people, is estimated to be lost by persons aged 15+ due to brain cancer diagnosed in 2006 in New Zealand.
- The age-standardised rate for males is higher than the rate for females: 125 versus 79 DALYs per 100,000.
- Fifty percent of the total DALY burden is experienced by people aged between 45 and 64 years. Those aged 65–74 have the highest age-standardised rate: 260 DALYs per 100,000.
- Māori have 1.23 times the age-standardised rate of non-Māori.
- Māori females and non-Māori males aged 65–74 have the highest age-standardised rates across the subpopulations analysed: 354 and 286 DALYs per 100,000 people, respectively.
- The mortality component is a much bigger contributor to the DALY burden than disability. The disability burden, YLD, is less than one tenth of the mortality burden, YLL.
- Māori have a higher age-standardised rate of YLLs and a similar age-standardised rate of YLDs than non-Māori: 1.24 and 1.07 Māori:non-Māori rate ratio for YLLs and YLDs, respectively.

Table 25: Years of life lost (YLLs) due to incident cases of brain cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
15–44	40	27%	26	217	20%	27	0.96	257	21%	27
45–64	66	44%	135	521	48%	113	1.19	587	48%	124
65–74	33	22%	331	209	19%	157	2.11	242	20%	244
75+	10	7%	214	135	12%	105	2.04	145	12%	160
Total	149	100%	84	1082	100%	62	1.35	1231	100%	73
Males										
15–44	93	41%	65	348	20%	46	1.42	442	23%	56
45–64	111	49%	245	901	53%	201	1.22	1012	52%	223
65–74	19	8%	214	330	19%	264	0.81	349	18%	239
75+	4	2%	112	137	8%	142	0.79	140	7%	127
Total	227	100%	126	1715	100%	107	1.18	1943	100%	116
Total										
15–44	133	35%	46	565	20%	37	1.25	698	22%	41
45–64	177	47%	190	1422	51%	157	1.21	1599	50%	173
65–74	52	14%	272	539	19%	211	1.29	590	19%	242
75+	14	4%	163	271	10%	123	1.32	285	9%	143
Total	376	100%	105	2797	100%	85	1.24	3173	100%	95

Rates are per 100,000 people, age-standardised to the WHO standard population.

Table 26: Years of life lived with disability (YLDs) due to incident cases of brain cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
15–44	4	32%	2	24	26%	3	0.78	28	26%	3
45–64	4	38%	9	39	40%	8	1.03	43	40%	9
65–74	2	20%	23	16	17%	12	1.92	18	17%	18
75+	1	10%	24	16	17%	12	1.97	17	16%	18
Total	11	100%	6	96	100%	5	1.17	107	100%	6
Males										
15–44	8	46%	5	35	24%	5	1.16	43	27%	5
45–64	7	42%	16	66	45%	15	1.07	73	45%	15
65–74	1	9%	16	27	19%	22	0.76	29	18%	19
75+	0	3%	15	18	12%	19	0.77	18	11%	17
Total	17	100%	9	146	100%	9	1.02	163	100%	9
Total										
15–44	11	40%	4	60	25%	4	1.01	71	26%	4
45–64	11	41%	12	104	43%	12	1.05	116	43%	12
65–74	4	13%	20	43	18%	17	1.17	47	17%	18
75+	2	6%	19	34	14%	16	1.25	36	13%	18
Total	28	100%	8	242	100%	7	1.08	269	100%	8

Rates are per 100,000 people, age-standardised to the WHO standard population.

4 Breast (female)

Figure 21: Age-standardised rate of disability-adjusted life years (DALYs) due to incident cases of breast cancer in 2006, by age and ethnicity

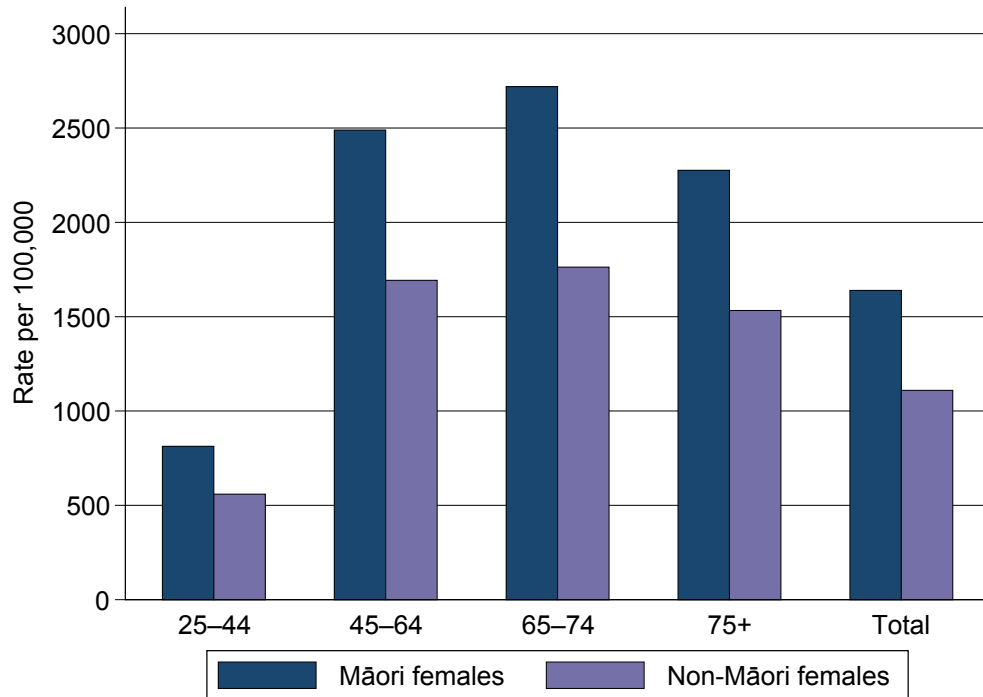


Figure 22: Ratio of YLD:YLL due to incident cases of breast cancer in 2006, by age and ethnicity

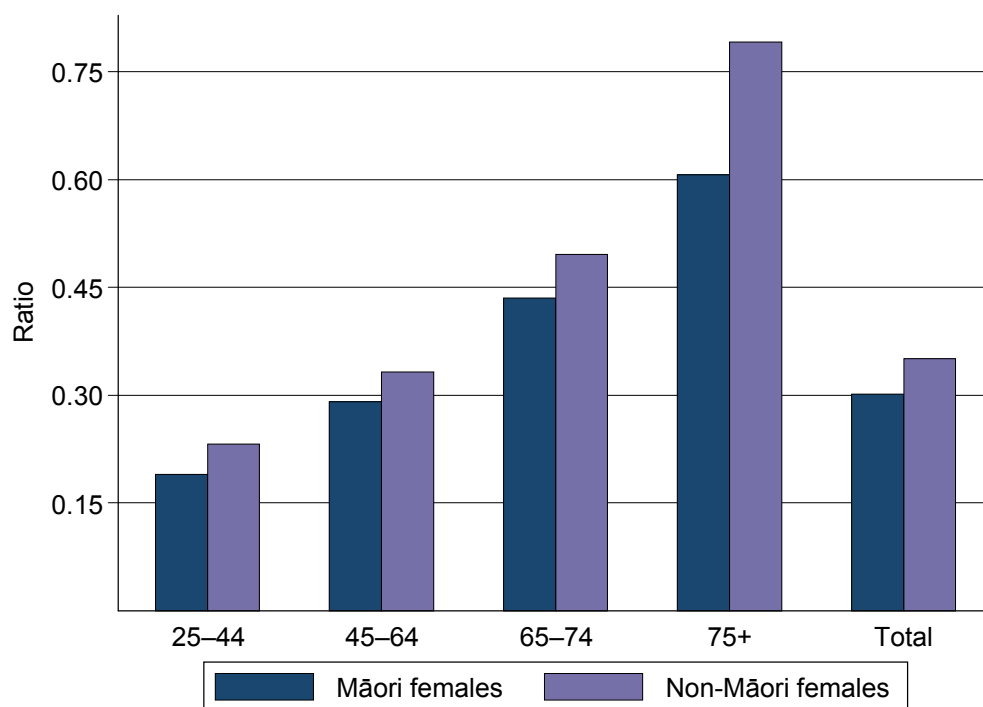


Table 27: Disability-adjusted life years (DALYs) due to incident cases of breast cancer in 2006, by age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	786	32%	814	3,272	21%	560	1.45	4,058	23%	687
45–64	1269	52%	2489	7,742	50%	1694	1.47	9,011	51%	2091
65–74	269	11%	2720	2,343	15%	1763	1.54	2,612	15%	2242
75+	108	4%	2278	2,050	13%	1532	1.49	2,159	12%	1905
Total	2432	100%	1641	15,408	100%	1111	1.48	17,840	100%	1376

- A total of 17,840 DALYs, or 1376 DALYs per 100,000 people, is estimated to be lost by females aged 25+ due to breast cancer diagnosed in 2006 in New Zealand.
- Fifty-one percent of the total DALY burden is accrued by females aged between 45 and 64 years. Females aged 65–74 have the highest age-standardised rate: 2242 DALYs per 100,000.
- Māori females have 1.48 times the age-standardised rate of non-Māori females.
- Māori females aged 45–64 and 65–74 have the highest age-standardised rates across the subpopulations analysed: 2720 and 2489 DALYs per 100,000 people, respectively.
- The mortality component makes a bigger contributor to the burden than does the non-fatal component. The disability burden, YLD, is approximately one third of the mortality burden, YLL.
- Māori have both a higher mortality and a higher disability burden, with Māori:non-Māori rate ratios of 1.53 and 1.32 for YLLs and YLDs, respectively. This is mainly due to higher incidence rates (see Table A5, Appendix B), although excess mortality rates were also higher for Māori (1.61; Table A1, Appendix A).

Table 28: Years of life lost (YLLs) due to incident cases of breast cancer in 2006, by age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	661	35%	684	2,654	24%	454	1.51	3,314	25%	569
45–64	989	52%	1928	5,807	52%	1271	1.52	6,796	52%	1599
65–74	188	10%	1896	1,566	14%	1179	1.61	1,754	13%	1537
75+	69	4%	1418	1,110	10%	855	1.66	1,179	9%	1136
Total	1907	100%	1261	11,137	100%	822	1.53	13,044	100%	1042

Table 29: Years of life lived with disability (YLDs) due to incident cases of breast cancer in 2006, by age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	126	24%	130	618	14%	105	1.23	744	16%	118
45–64	280	53%	562	1936	45%	423	1.33	2216	46%	492
65–74	81	15%	825	777	18%	584	1.41	858	18%	705
75+	40	8%	860	940	22%	677	1.27	980	20%	768
Total	526	100%	380	4271	100%	288	1.32	4797	100%	334

5 Cervix

Figure 23: Age-standardised rate of disability-adjusted life years (DALYs) due to incident cases of cervical cancer in 2006, by age and ethnicity

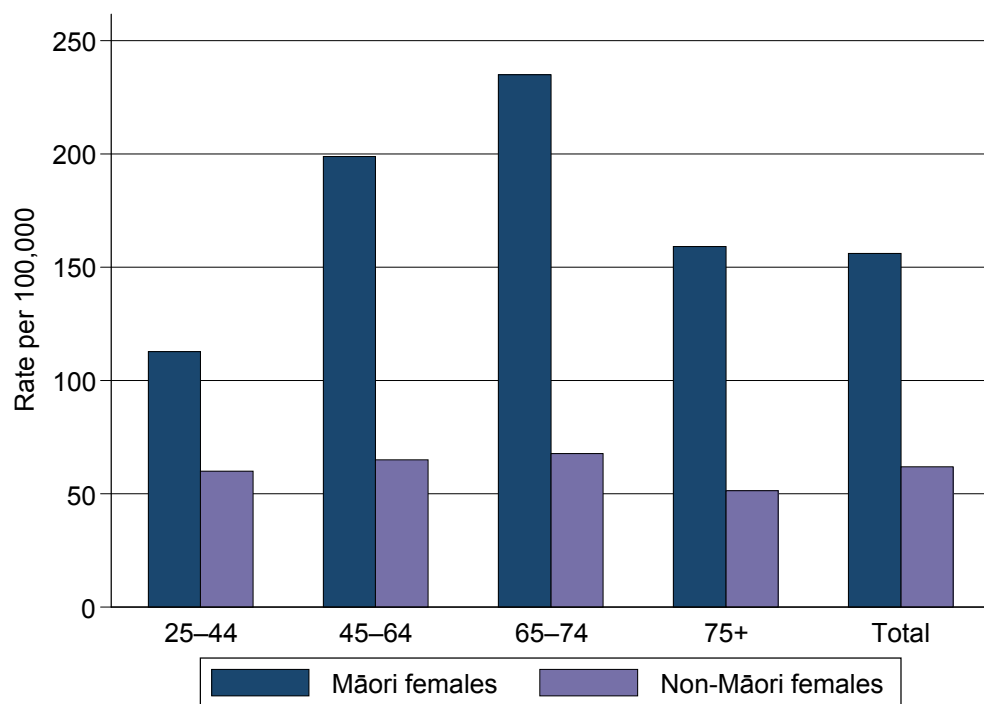


Figure 24: Ratio of YLD:YLL due to incident cases of cervical cancer in 2006, by age and ethnicity

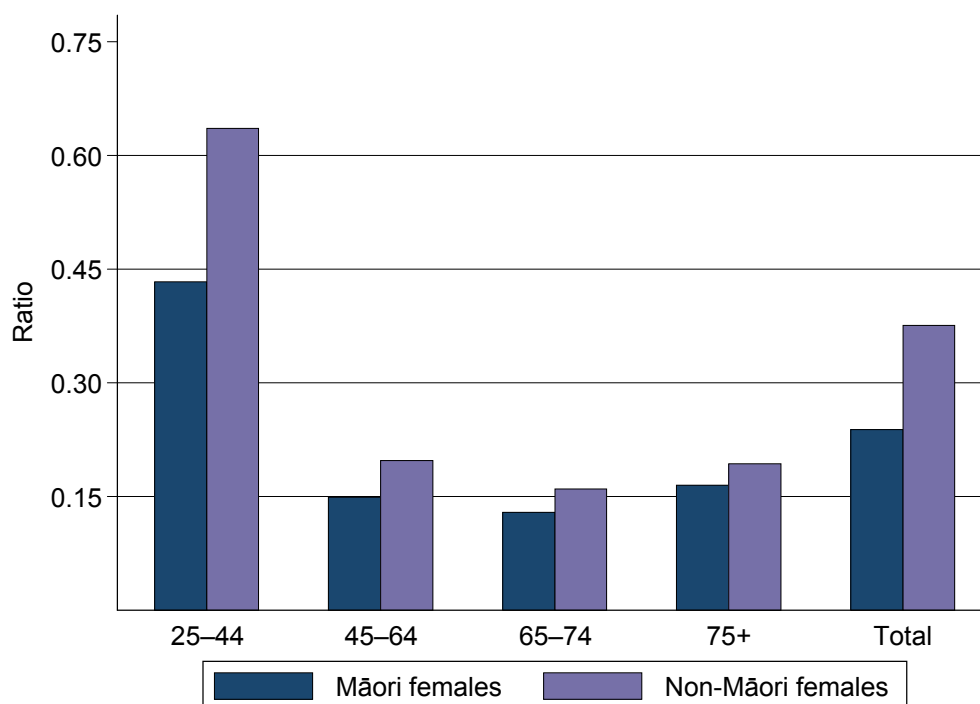


Table 30: Disability-adjusted life years (DALYs) due to incident cases of cervical cancer in 2006, by age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25-44	107	44%	113	322	41%	60	1.88	428	42%	86
45-64	102	43%	199	298	38%	65	3.06	400	39%	132
65-74	23	10%	235	90	12%	68	3.47	113	11%	151
75+	8	3%	159	67	9%	52	3.09	74	7%	105
Total	240	100%	156	776	100%	62	2.52	1016	100%	109

- A total of 1016 DALYs, or 109 DALYs per 100,000 people, is estimated to be lost by females aged 25+ due to cervical cancer diagnosed in 2006 in New Zealand.
- Forty-two percent of the total DALY burden is accrued by females aged between 25 and 44 years. Females aged 65-74 have the highest age-standardised rate: 151 DALYs per 100,000.
- Māori have 2.52 times the age-standardised DALY rate of non-Māori.
- Māori females aged 65-74 and 45-64 have the highest age-standardised rates of all subpopulations analysed: 235 and 199 DALYs per 100,000 people, respectively.
- The mortality component, YLL, makes a higher contributor to the burden than the disability component, YLD. The disability burden is approximately one quarter of the mortality burden, although there is variation by age.

- Māori have both a higher mortality and a higher disability burden, with Māori:non-Māori rate ratios of 2.80 and 1.77 for YLLs and YLDs, respectively. This is mainly due to higher incidence rates (see Table A6 Appendix B), although excess mortality rates were also higher for Māori (1.48; see Table A1, Appendix A).

Table 31: Years of life lost (YLLs) due to incident cases of cervical cancer in 2006, by age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	75	39%	79	199	34%	37	2.15	273	35%	58
45–64	89	47%	173	249	43%	54	3.18	338	44%	114
65–74	21	11%	208	77	13%	58	3.57	98	13%	133
75+	7	3%	137	55	10%	43	3.16	62	8%	90
Total	191	100%	126	580	100%	45	2.80	771	100%	86

Rates are per 100,000 people, age-standardised to the WHO standard population.

Table 32: Years of life lived with disability (YLDs) due to incident cases of cervical cancer in 2006, by age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	32	65%	34	123	63%	23	1.46	155	63%	29
45–64	13	27%	26	49	25%	11	2.41	62	25%	18
65–74	3	5%	27	12	6%	9	2.88	15	6%	18
75+	1	2%	23	11	6%	8	2.71	12	5%	15
Total	49	100%	30	195	100%	17	1.77	244	100%	23

Rates are per 100,000 people, age-standardised to the WHO standard population.

6 Colorectal

Figure 25: Age-standardised rate of disability-adjusted life years (DALYs) due to incident cases of colorectal cancer in 2006, by sex, age and ethnicity

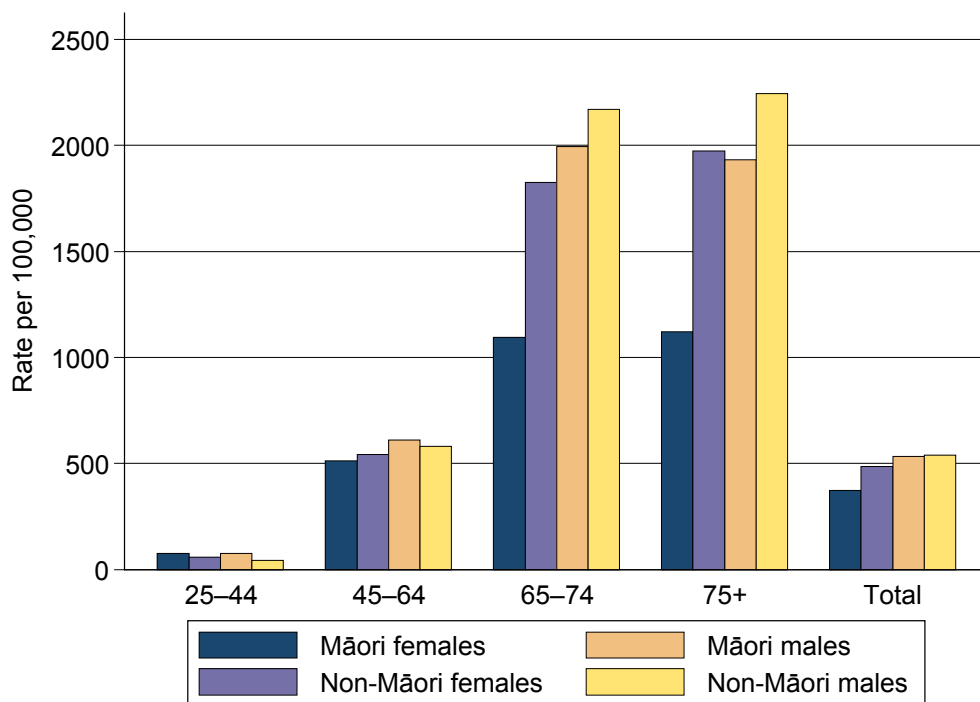


Figure 26: Ratio of YLD:YLL due to incident cases of colorectal cancer in 2006, by sex, age and ethnicity

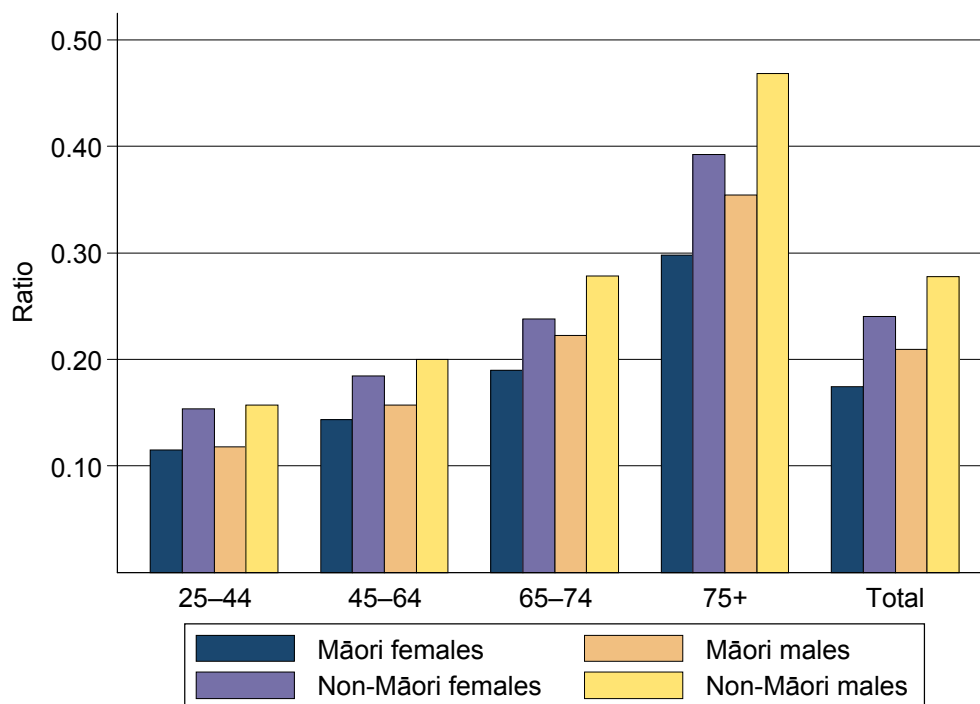


Table 33: Disability-adjusted life years (DALYs) due to incident cases of colorectal cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	73	15%	76	333	4%	58	1.32	407	5%	67
45–64	241	51%	512	2,512	32%	544	0.94	2,753	33%	528
65–74	108	23%	1096	2,440	31%	1826	0.60	2,548	30%	1461
75+	53	11%	1121	2,671	34%	1973	0.57	2,724	32%	1547
Total	474	100%	374	7,957	100%	486	0.77	8,431	100%	430
Males										
25–44	68	12%	78	242	3%	45	1.74	310	4%	61
45–64	262	46%	610	2,628	34%	582	1.05	2,890	35%	596
65–74	176	31%	1995	2,712	35%	2170	0.92	2,887	35%	2082
75+	64	11%	1933	2,164	28%	2244	0.86	2,228	27%	2089
Total	570	100%	533	7,746	100%	538	0.99	8,316	100%	535
Total										
25–44	141	14%	77	575	4%	51	1.50	717	4%	64
45–64	503	48%	561	5,141	33%	563	1.00	5,643	34%	562
65–74	283	27%	1545	5,152	33%	1998	0.77	5,435	32%	1772
75+	117	11%	1527	4,835	31%	2109	0.72	4,952	30%	1818
Total	1045	100%	453	15,703	100%	512	0.88	16,747	100%	483

Rates are per 100,000 people, age-standardised to the WHO standard population.

- A total of 16,747 DALYs, or 483 DALYs per 100,000 people, is estimated to be lost by persons aged 25+ due to colorectal cancer diagnosed in 2006 in New Zealand.
- The age-standardised rate for males is higher than the rate for females: 535 versus 430 DALYs per 100,000.
- Thirty-four percent of the total DALY burden is experienced by people aged between 45 and 64 years. Those aged 75+ have the highest age-standardised rate: 1818 DALYs per 100,000.
- Māori have 0.88 times the DALY age-standardised rate of non-Māori.
- Non-Māori males aged 65–74 and 75+ have the highest age-standardised rates across the subpopulations analysed: 2244 and 2170 DALYs per 100,000 people, respectively.
- The mortality component, YLL, is a higher contributor to the burden than the disability component, YLD. The disability burden is around a quarter of the mortality burden.
- Māori have lower age-standardised rates of both YLLs and YLDs than non-Māori. The Māori:non-Māori rate ratios for YLLs and YLDs are 0.93 and 0.70, respectively. This is mainly due to lower incidence rates for Māori (see Table A7, Appendix B), although excess mortality rates were higher for Māori (1.51; see Table A1, Appendix A).

Table 34: Years of life lost (YLLs) due to incident cases of colorectal cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	66	16%	68	289	5%	50	1.36	354	5%	59
45–64	211	52%	448	2,121	34%	459	0.98	2,331	35%	454
65–74	91	22%	921	1,971	31%	1475	0.62	2,061	31%	1198
75+	41	10%	863	1,889	30%	1417	0.61	1,931	29%	1140
Total	409	100%	318	6,269	100%	392	0.81	6,678	100%	355
Males										
25–44	61	13%	70	209	3%	39	1.80	270	4%	54
45–64	227	47%	527	2,190	36%	485	1.09	2,417	37%	506
65–74	144	30%	1632	2,122	35%	1698	0.96	2,266	35%	1665
75+	49	10%	1427	1,490	25%	1528	0.93	1,538	24%	1478
Total	481	100%	440	6,010	100%	421	1.04	6,491	100%	431
Total										
25–44	127	14%	69	498	4%	44	1.56	624	5%	57
45–64	438	49%	487	4,310	35%	472	1.03	4,748	36%	480
65–74	235	26%	1276	4,093	33%	1586	0.80	4,327	33%	1431
75+	90	10%	1145	3,379	28%	1473	0.78	3,469	26%	1309
Total	890	100%	379	12,279	100%	407	0.93	13,169	100%	393

Rates are per 100,000 people, age-standardised to the WHO standard population.

Table 35: Years of life lived with disability (YLDs) due to incident cases of colorectal cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	8	11%	8	45	3%	8	1.02	52	3%	8
45–64	30	45%	64	392	23%	85	0.76	422	24%	74
65–74	17	26%	175	470	28%	351	0.50	487	28%	263
75+	12	18%	257	782	46%	556	0.46	793	45%	407
Total	66	100%	56	1688	100%	94	0.59	1754	100%	75
Males										
25–44	7	8%	8	33	2%	6	1.36	40	2%	7
45–64	35	39%	83	438	25%	97	0.85	473	26%	90
65–74	31	35%	363	590	34%	473	0.77	621	34%	418
75+	16	18%	506	674	39%	716	0.71	690	38%	611
Total	89	100%	92	1736	100%	117	0.79	1825	100%	105
Total										
25–44	15	10%	8	78	2%	7	1.17	92	3%	7
45–64	64	42%	74	830	24%	91	0.81	895	25%	82
65–74	49	31%	269	1059	31%	412	0.65	1108	31%	341
75+	27	18%	382	1456	43%	636	0.60	1483	41%	509
Total	155	100%	74	3423	100%	106	0.70	3578	100%	90

Rates are per 100,000 people, age-standardised to the WHO standard population.

7 Gallbladder

Figure 27: Age-standardised rate of disability-adjusted life years (DALYs) due to incident cases of gallbladder cancer in 2006, by sex, age and ethnicity

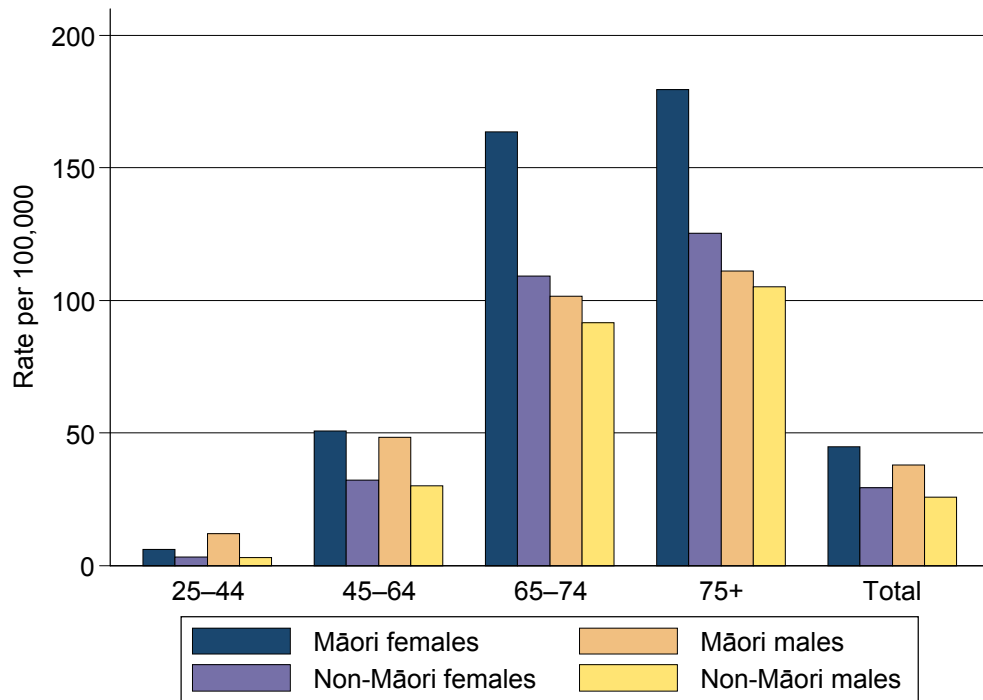


Figure 28: Ratio of YLD:YLL due to incident cases of gallbladder cancer in 2006, by sex, age and ethnicity

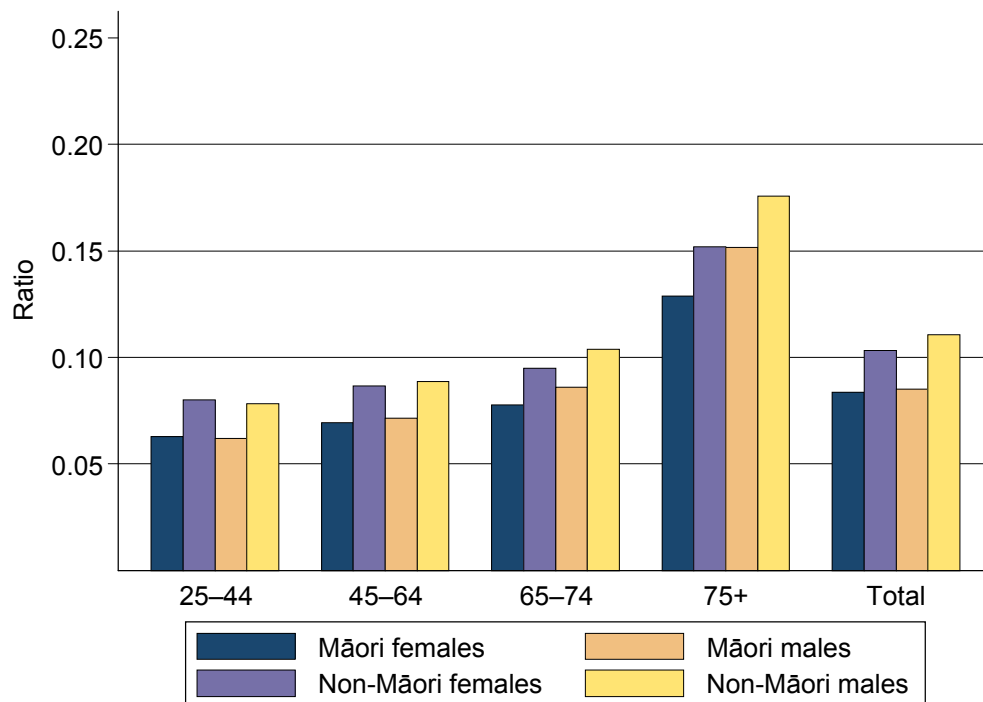


Table 36: Disability-adjusted life years (DALYs) due to incident cases of gallbladder cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	6	11%	6	18	4%	3	1.91	24	4%	5
45–64	24	44%	51	150	31%	32	1.57	173	32%	42
65–74	16	30%	164	146	30%	109	1.50	162	30%	136
75+	9	16%	180	172	35%	125	1.43	180	33%	153
Total	54	100%	45	486	100%	29	1.53	540	100%	37
Males										
25–44	10	24%	12	16	4%	3	3.91	27	6%	8
45–64	21	48%	48	135	37%	30	1.61	157	38%	39
65–74	9	20%	102	115	31%	92	1.11	124	30%	97
75+	4	8%	111	103	28%	105	1.06	107	26%	108
Total	44	100%	38	370	100%	26	1.47	414	100%	32
Total										
25–44	16	17%	9	34	4%	3	2.89	51	5%	6
45–64	45	46%	50	285	33%	31	1.59	330	35%	40
65–74	25	25%	133	261	30%	100	1.32	286	30%	117
75+	12	12%	145	275	32%	115	1.26	287	30%	130
Total	98	100%	41	855	100%	28	1.50	954	100%	34

Rates are per 100,000 people, age-standardised to the WHO standard population.

- A total of 954 DALYs, or 34 DALYs per 100,000 people, is estimated to be lost by persons aged 25+ due to gallbladder cancer diagnosed in 2006 in New Zealand.
- The age-standardised rate for females is just higher than the rate for males: 37 versus 32 DALYs per 100,000.
- Thirty-five percent of the total DALY burden is experienced by people aged between 45 and 64 years. Those aged 75+ have the highest age-standardised rate: 130 DALYs per 100,000.
- Māori have 1.50 times the DALY age-standardised rate of non-Māori.
- Māori females aged 75+ and 65–74 have the highest age-standardised rates across the subpopulations analysed: 180 and 164 DALYs per 100,000 people, respectively.
- The mortality component, YLL, is a higher contributor to the burden than the disability component, YLD. The disability burden is around a 10th of the mortality burden.
- Māori have both a higher mortality burden and a higher disability burden, with Māori:non-Māori rate ratios of 1.53 and 1.21 for YLLs and YLDs, respectively. This is mainly due to higher incidence rates (see Table A8, Appendix B), although excess mortality rates were also higher for Māori (1.55; see Table A1, Appendix A).

Table 37: Years of life lost (YLLs) due to incident cases of gallbladder cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	5	11%	6	17	4%	3	1.94	22	5%	4
45–64	22	44%	47	138	32%	30	1.59	160	33%	39
65–74	15	30%	152	133	31%	100	1.52	148	30%	126
75+	8	15%	159	148	34%	109	1.46	156	32%	134
Total	50	100%	41	436	100%	27	1.56	486	100%	34
Males										
25–44	10	24%	11	15	5%	3	3.97	25	7%	7
45–64	20	48%	45	124	37%	28	1.63	144	39%	36
65–74	8	20%	94	104	31%	83	1.13	112	30%	88
75+	3	8%	97	89	27%	89	1.08	92	25%	93
Total	41	100%	35	332	100%	23	1.50	373	100%	29
Total										
25–44	15	17%	8	32	4%	3	2.94	47	5%	6
45–64	42	46%	46	262	34%	29	1.61	304	35%	37
65–74	23	25%	123	237	31%	91	1.34	260	30%	107
75+	11	12%	128	237	31%	99	1.29	248	29%	113
Total	91	100%	38	768	100%	25	1.53	859	100%	32

Rates are per 100,000 people, age-standardised to the WHO standard population.

Table 38: Years of life lived with disability (YLDs) due to incident cases of gallbladder cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	0	9%	0	1	3%	0	1.52	2	3%	0
45–64	2	39%	3	12	24%	3	1.28	13	25%	3
65–74	1	29%	12	13	26%	9	1.25	14	26%	11
75+	1	23%	21	23	47%	17	1.24	24	46%	19
Total	4	100%	3	49	100%	3	1.27	53	100%	3
Males										
25–44	1	19%	1	1	3%	0	3.14	2	4%	0
45–64	1	44%	3	11	29%	2	1.31	12	30%	3
65–74	1	22%	8	11	28%	9	0.93	11	28%	8
75+	0	14%	15	15	39%	16	0.93	15	37%	15
Total	3	100%	3	38	100%	3	1.16	41	100%	3
Total										
25–44	1	14%	1	3	3%	0	2.31	4	4%	0
45–64	3	41%	3	23	26%	3	1.30	26	27%	3
65–74	2	26%	10	23	27%	9	1.10	25	27%	9
75+	1	19%	18	38	44%	16	1.09	40	42%	17
Total	7	100%	3	87	100%	3	1.21	94	100%	3

Rates are per 100,000 people, age-standardised to the WHO standard population.

8 Hodgkin's

Figure 29: Age-standardised rate of disability-adjusted life years (DALYs) due to incident cases of Hodgkin's cancer in 2006, by sex, age and ethnicity

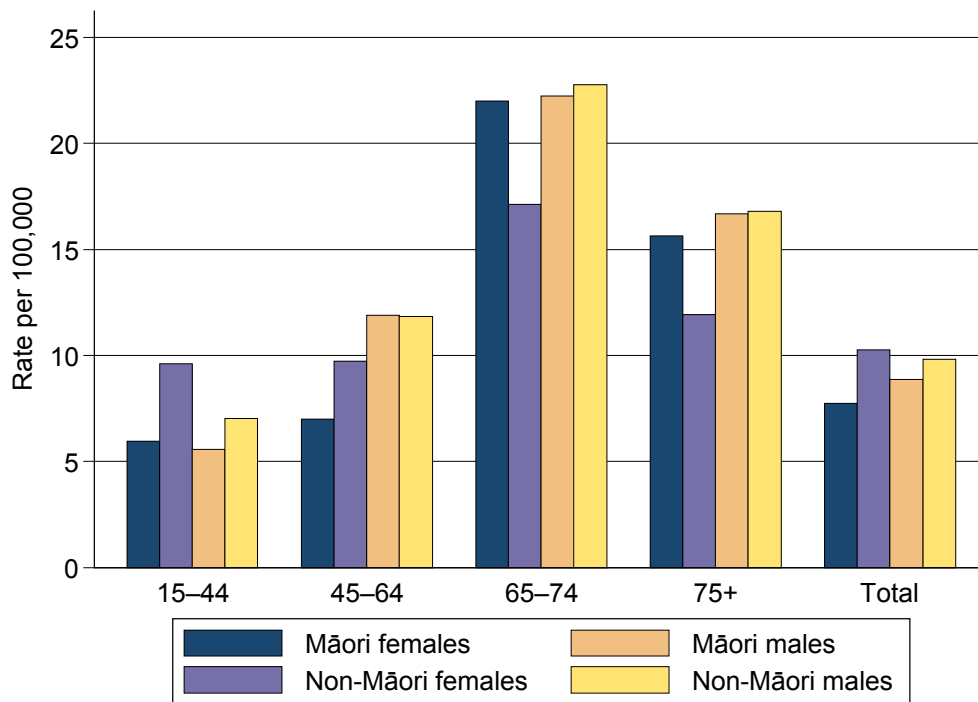


Figure 30: Ratio of YLD:YLL due to incident cases of Hodgkin's cancer in 2006, by sex, age and ethnicity

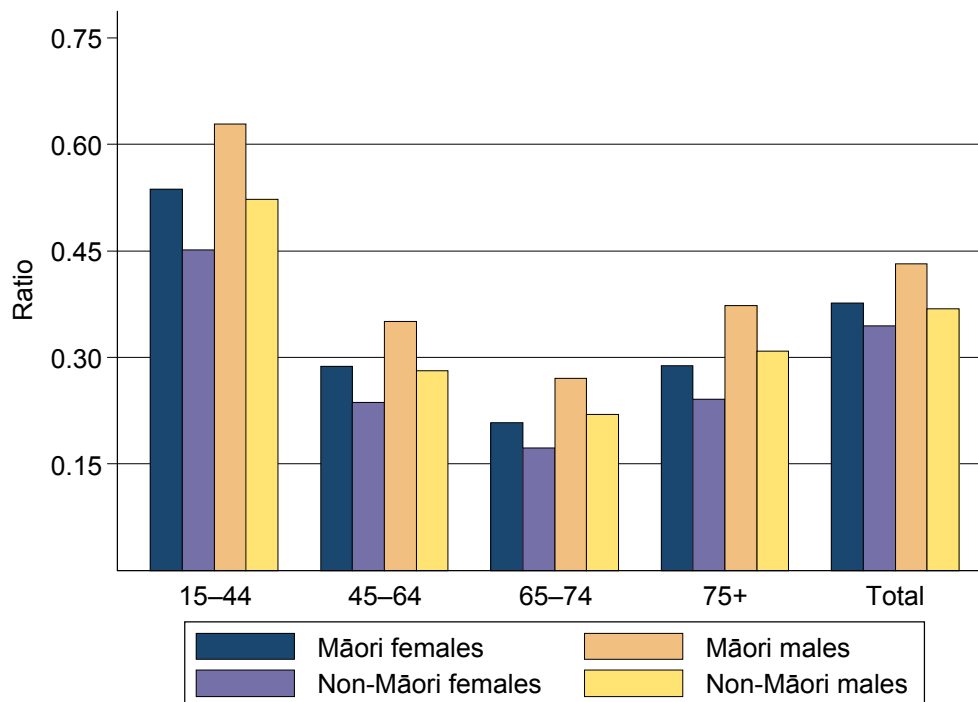


Table 39: Disability-adjusted life years (DALYs) due to incident cases of Hodgkin's cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
15–44	9	58%	6	70	46%	10	0.62	79	47%	8
45–64	4	23%	7	44	29%	10	0.72	48	28%	8
65–74	2	14%	22	23	15%	17	1.28	25	15%	20
75+	1	5%	16	16	10%	12	1.31	17	10%	14
Total	16	100%	8	153	100%	10	0.76	169	100%	9
Males										
15–44	8	50%	6	51	34%	7	0.79	58	36%	6
45–64	6	35%	12	53	36%	12	1.00	58	36%	12
65–74	2	12%	22	28	19%	23	0.98	30	18%	22
75+	1	4%	17	16	11%	17	0.99	17	10%	17
Total	16	100%	9	148	100%	10	0.90	164	100%	9
Total										
15–44	17	54%	6	121	40%	8	0.69	138	41%	7
45–64	9	29%	9	97	32%	11	0.88	106	32%	10
65–74	4	13%	22	51	17%	20	1.11	55	17%	21
75+	1	4%	16	32	11%	14	1.12	33	10%	15
Total	32	100%	8	301	100%	10	0.83	333	100%	9

Rates are per 100,000 people, age-standardised to the WHO standard population.

- A total of 333 DALYs, or 9 DALYs per 100,000 people, is estimated to be lost by persons aged 15+ due to Hodgkin's cancer diagnosed in 2006 in New Zealand.
- The age-standardised rate is the same for males and females: 9 DALYs per 100,000.
- Forty-one percent of the total DALY burden is experienced by people aged between 15 and 44 years. Those aged 65–74 have the highest age-standardised rate: 21 DALYs per 100,000.
- Māori have 0.83 times the DALY age-standardised rate of non-Māori.
- Māori males and females aged 65–74 have the highest age-standardised rates across the subpopulations analysed: 22 DALYs per 100,000 people.
- The mortality component, YLL, is a higher contributor to the burden than the disability component, YLD. The disability burden is around a third of the mortality burden.
- Māori have a similar age-standardised rate of both YLLs and YLDs as non-Māori. The Māori:non-Māori rate ratios for YLLs and YLDs are 0.80 and 0.91, respectively.

Table 40: Years of life lost (YLLs) due to incident cases of Hodgkin's cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
15-44	6	53%	4	48	41%	7	0.58	54	42%	5
45-64	3	25%	5	36	31%	8	0.69	39	30%	7
65-74	2	16%	18	19	17%	15	1.25	21	17%	16
75+	1	5%	12	13	11%	10	1.26	13	10%	11
Total	11	100%	6	116	100%	8	0.74	127	100%	7
Males										
15-44	5	45%	3	33	30%	5	0.74	38	31%	4
45-64	4	37%	9	41	38%	9	0.95	45	38%	9
65-74	2	14%	17	23	21%	19	0.94	25	20%	18
75+	0	4%	12	12	11%	13	0.95	13	11%	12
Total	11	100%	6	110	100%	7	0.87	121	100%	7
Total										
15-44	11	49%	4	81	36%	6	0.65	92	37%	5
45-64	7	31%	7	77	34%	9	0.83	84	34%	8
65-74	3	15%	18	43	19%	17	1.07	46	19%	17
75+	1	5%	12	25	11%	11	1.08	26	11%	12
Total	22	100%	6	226	100%	7	0.80	248	100%	7

Rates are per 100,000 people, age-standardised to the WHO standard population.

Table 41: Years of life lived with disability (YLDs) due to incident cases of Hodgkin's cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
15-44	3	71%	2	22	59%	3	0.70	25	61%	3
45-64	1	18%	2	8	23%	2	0.84	9	22%	2
65-74	0	8%	4	3	9%	3	1.50	4	9%	3
75+	0	4%	3	3	9%	2	1.51	3	8%	3
Total	4	100%	2	37	100%	3	0.81	41	100%	2
Males										
15-44	3	61%	2	17	46%	2	0.89	21	48%	2
45-64	1	28%	3	12	31%	3	1.19	13	30%	3
65-74	0	8%	5	5	13%	4	1.15	6	13%	4
75+	0	3%	5	4	10%	4	1.14	4	9%	4
Total	5	100%	3	38	100%	3	1.01	43	100%	3
Total										
15-44	6	65%	2	39	53%	3	0.78	46	54%	2
45-64	2	23%	2	20	27%	2	1.04	22	26%	2
65-74	1	8%	4	8	11%	3	1.29	9	11%	4
75+	0	3%	4	7	9%	3	1.28	7	9%	4
Total	10	100%	2	75	100%	3	0.91	84	100%	3

Rates are per 100,000 people, age-standardised to the WHO standard population.

9 Kidney

Figure 31: Age-standardised rate of disability-adjusted life years (DALYs) due to incident cases of kidney cancer in 2006, by sex, age and ethnicity

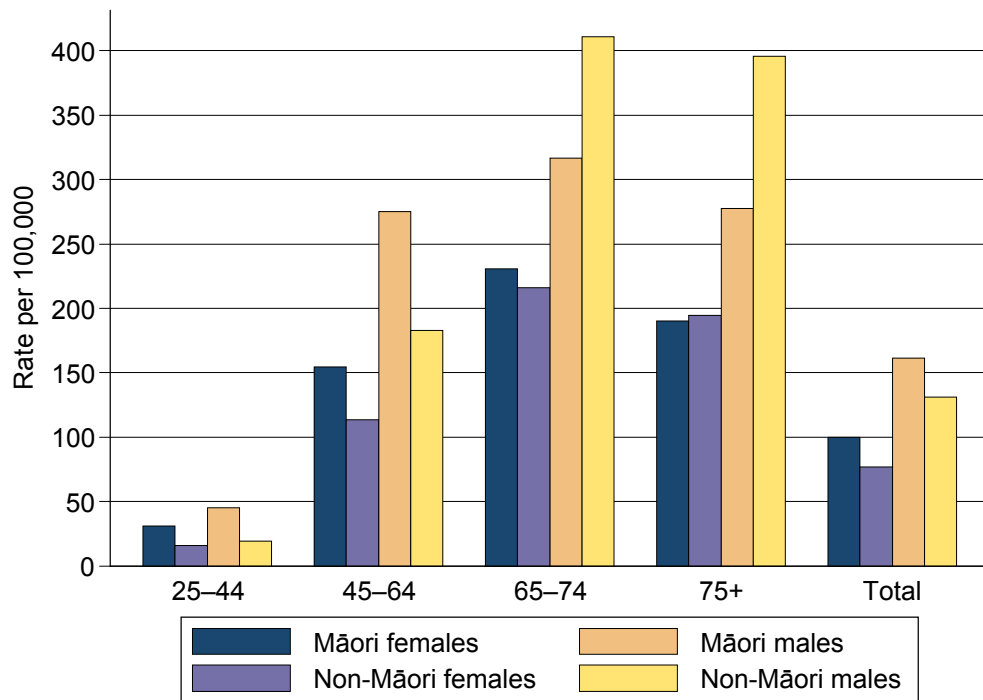


Figure 32: Ratio of YLD:YLL due to incident cases of kidney cancer in 2006, by sex, age and ethnicity

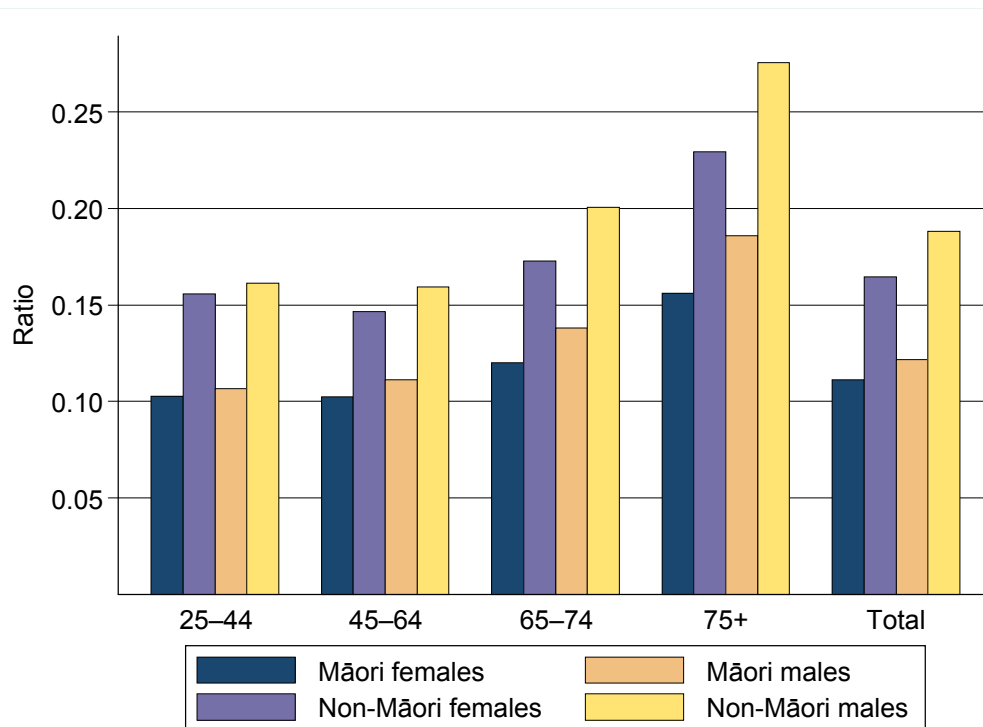


Table 42: Disability-adjusted life years (DALYs) due to incident cases of kidney cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	30	22%	31	90	8%	16	1.96	120	9%	23
45–64	75	55%	155	523	45%	114	1.36	598	46%	134
65–74	23	17%	231	288	25%	216	1.07	311	24%	224
75+	9	7%	190	253	22%	195	0.98	262	20%	193
Total	137	100%	100	1154	100%	77	1.30	1291	100%	89
Males										
25–44	40	20%	45	103	6%	19	2.35	143	7%	32
45–64	123	62%	275	821	45%	183	1.50	944	47%	229
65–74	28	14%	316	513	28%	411	0.77	541	27%	364
75+	9	5%	278	383	21%	396	0.70	392	19%	337
Total	200	100%	161	1819	100%	131	1.23	2020	100%	146
Total										
25–44	69	21%	38	193	6%	18	2.18	262	8%	28
45–64	199	59%	215	1343	45%	148	1.45	1542	47%	182
65–74	51	15%	274	801	27%	314	0.87	852	26%	294
75+	18	5%	234	636	21%	295	0.79	654	20%	265
Total	337	100%	131	2973	100%	104	1.26	3311	100%	117

Rates are per 100,000 people, age-standardised to the WHO standard population.

- A total of 3311 DALYs, or 117 DALYs per 100,000 people, is estimated to be lost by persons aged 25+ due to kidney cancer diagnosed in 2006 in New Zealand.
- The age-standardised rate for males is higher than the rate for females: 146 versus 89 DALYs per 100,000.
- Forty-seven percent of the total DALY burden is experienced by people aged between 45 and 64 years. Those aged 65–74 have the highest age-standardised rate: 294 DALYs per 100,000.
- Māori have 1.26 times the DALY age-standardised rate of non-Māori.
- Non-Māori males aged 65–74 and 75+ have the highest age-standardised rates across the subpopulations analysed: 411 and 396 DALYs per 100,000 people, respectively.
- The mortality component, YLL, is a higher contributor to the burden than the disability component, YLD. The disability burden is less than one fifth of the mortality burden.
- Māori have a higher age-standardised rate of YLLs and a lower age-standardised rate of YLDs than non-Māori. The Māori:non-Māori rate ratios for YLLs and YLDs are 1.33 and 0.87, respectively. This is mainly due to higher incidence rates for both Māori males and Māori females (see Table A10, Appendix B), although excess mortality rates were also higher for Māori (1.9; see Table A1, Appendix A).

Table 43: Years of life lost (YLLs) due to incident cases of kidney cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	27	22%	28	78	8%	14	2.06	105	9%	21
45–64	69	55%	140	456	46%	99	1.42	524	47%	120
65–74	20	16%	206	246	25%	184	1.12	266	24%	195
75+	8	6%	165	204	21%	158	1.04	212	19%	161
Total	124	100%	90	983	100%	66	1.36	1107	100%	78
Males										
25–44	36	20%	41	89	6%	17	2.47	124	7%	29
45–64	111	62%	248	708	46%	158	1.57	819	48%	203
65–74	25	14%	278	427	28%	342	0.81	452	27%	310
75+	8	4%	234	302	20%	310	0.76	310	18%	272
Total	180	100%	144	1525	100%	110	1.30	1705	100%	127
Total										
25–44	63	21%	35	166	7%	15	2.28	229	8%	25
45–64	180	59%	194	1163	46%	129	1.51	1343	48%	161
65–74	45	15%	242	673	27%	263	0.92	718	26%	253
75+	16	5%	199	506	20%	234	0.85	522	19%	217
Total	303	100%	117	2509	100%	88	1.33	2812	100%	103

Rates are per 100,000 people, age-standardised to the WHO standard population.

Table 44: Years of life lived with disability (YLDs) due to incident cases of kidney cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	3	21%	3	12	7%	2	1.36	15	8%	3
45–64	7	52%	14	67	39%	15	0.99	74	40%	14
65–74	2	18%	25	43	25%	32	0.78	45	24%	28
75+	1	9%	26	49	29%	36	0.71	50	27%	31
Total	13	100%	10	171	100%	11	0.92	184	100%	10
Males										
25–44	4	19%	4	14	5%	3	1.63	18	6%	4
45–64	12	59%	28	113	38%	25	1.09	125	40%	26
65–74	3	16%	38	86	29%	69	0.56	89	28%	54
75+	1	7%	44	81	28%	86	0.51	83	26%	65
Total	21	100%	17	294	100%	21	0.84	315	100%	19
Total										
25–44	7	19%	4	27	6%	2	1.51	33	7%	3
45–64	19	56%	21	180	39%	20	1.06	199	40%	20
65–74	6	17%	32	128	28%	50	0.63	134	27%	41
75+	3	8%	35	130	28%	61	0.57	133	27%	48
Total	34	100%	14	465	100%	16	0.87	499	100%	15

Rates are per 100,000 people, age-standardised to the WHO standard population.

10 Larynx

Figure 33: Age-standardised rate of disability-adjusted life years (DALYs) due to incident cases of laryngeal cancer in 2006, by sex, age and ethnicity

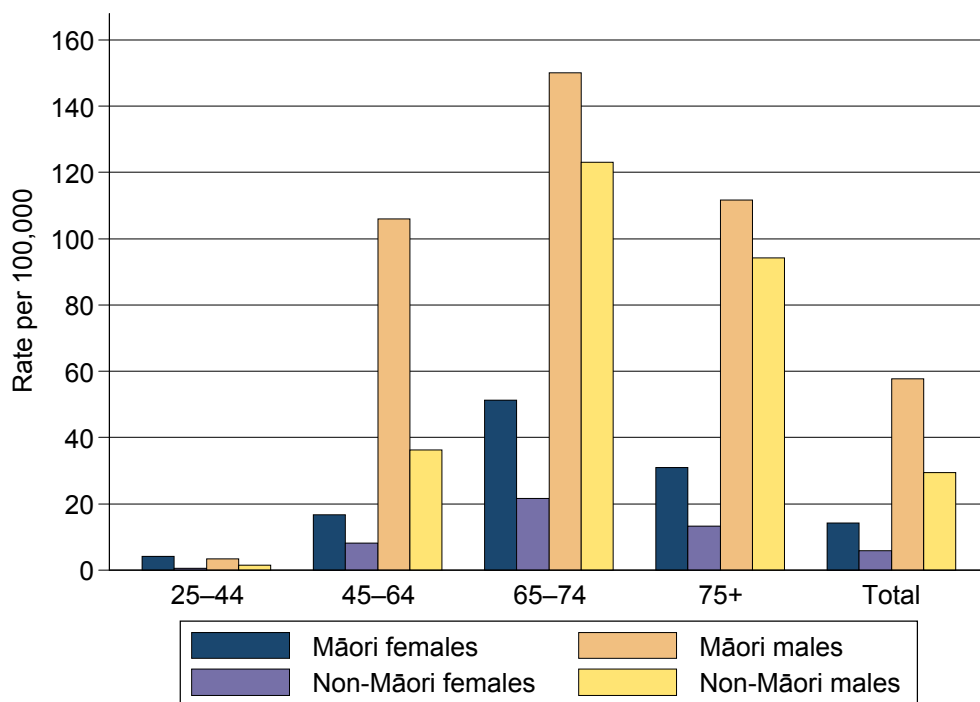


Figure 34: Ratio of YLD:YLL due to incident cases of laryngeal cancer in 2006, by sex, age and ethnicity

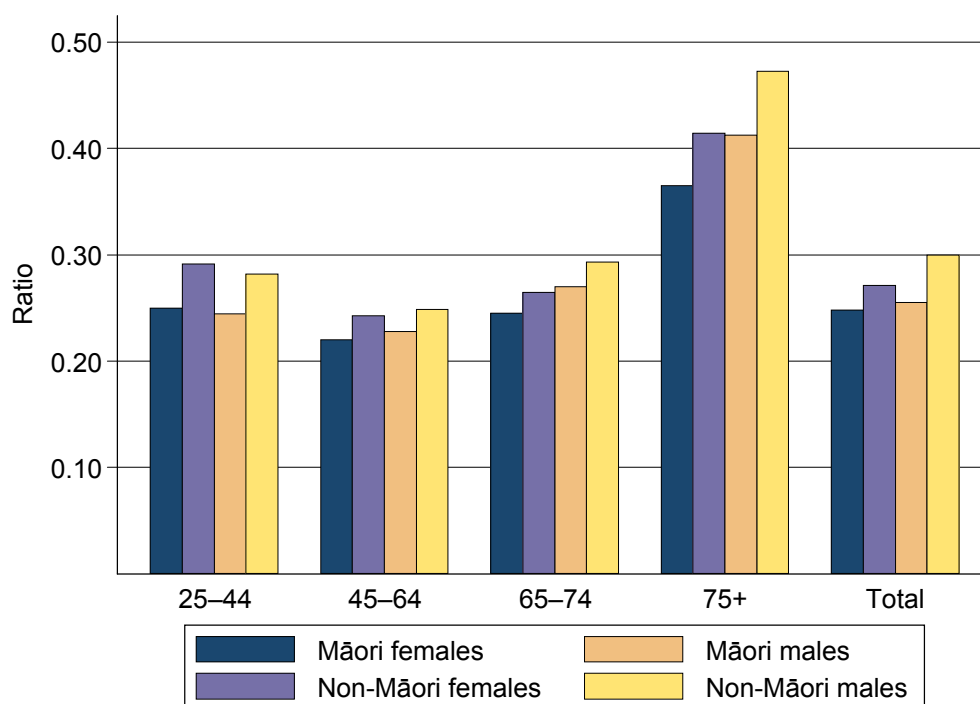


Table 45: Disability-adjusted life years (DALYs) due to incident cases of laryngeal cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	4	22%	4	3	4%	1	7.35	7	7%	2
45–64	8	43%	17	38	44%	8	2.03	46	44%	12
65–74	5	28%	51	29	33%	22	2.37	34	32%	36
75+	1	8%	31	17	20%	13	2.32	19	18%	22
Total	18	100%	14	87	100%	6	2.45	105	100%	10
Males										
25–44	3	5%	3	8	2%	2	2.18	11	2%	2
45–64	45	69%	106	164	39%	36	2.92	209	43%	71
65–74	13	20%	150	154	37%	123	1.22	167	35%	137
75+	4	6%	112	91	22%	94	1.19	94	20%	103
Total	65	100%	58	417	100%	29	1.96	482	100%	44
Total										
25–44	7	8%	4	12	2%	1	3.56	19	3%	2
45–64	53	64%	61	202	40%	22	2.76	255	43%	42
65–74	18	22%	101	182	36%	72	1.39	201	34%	86
75+	5	6%	71	108	21%	54	1.33	113	19%	63
Total	84	100%	36	504	100%	18	2.04	587	100%	27

Rates are per 100,000 people, age-standardised to the WHO standard population.

- A total of 587 DALYs, or 27 DALYs per 100,000 people, is estimated to be lost by persons aged 25+ due to laryngeal cancer diagnosed in 2006 in New Zealand.
- The age-standardised rate for males is considerably higher than the rate for females: 44 versus 10 DALYs per 100,000.
- Forty-three percent of the total DALY burden is experienced by people aged between 45 and 64 years. Those aged 65–74 have the highest age-standardised rate: 86 DALYs per 100,000.
- Māori have 2.04 times the DALY age-standardised rate of non-Māori.
- Māori and non-Māori males aged 65–74 have the highest age-standardised rates across the subpopulations analysed: 150 and 123 DALYs per 100,000 people, respectively.
- The mortality component, YLL, is a higher contributor to the burden than the disability component, YLD. The disability burden is more than one quarter of the mortality burden.
- Māori have both higher mortality and higher disability age-standardised rates of YLLs and YLDs than non-Māori. The Māori:non-Māori rate ratios for YLLs and YLDs are 2.1 and 1.82, respectively. This is mainly due to higher incidence rates for both Māori males and Māori females (see Table A11, Appendix B), although excess mortality rates were also higher for Māori (1.25; see Table A1, Appendix A).

Table 46: Years of life lost (YLLs) due to incident cases of laryngeal cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	3	21%	3	2	4%	0	7.60	6	7%	2
45–64	6	44%	14	31	45%	7	2.07	37	45%	10
65–74	4	27%	41	23	34%	17	2.41	27	32%	29
75+	1	7%	23	12	18%	9	2.41	13	16%	16
Total	15	100%	11	68	100%	5	2.50	82	100%	8
Males										
25–44	2	5%	3	7	2%	1	2.24	9	2%	2
45–64	37	70%	86	131	41%	29	2.97	168	45%	58
65–74	10	20%	118	119	37%	95	1.24	129	35%	107
75+	3	5%	79	62	19%	64	1.24	65	17%	72
Total	53	100%	46	319	100%	23	2.03	371	100%	34
Total										
25–44	6	8%	3	9	2%	1	3.67	15	3%	2
45–64	43	65%	50	162	42%	18	2.81	205	45%	34
65–74	15	22%	80	142	37%	56	1.42	156	34%	68
75+	4	6%	51	74	19%	37	1.39	78	17%	44
Total	67	100%	29	386	100%	14	2.11	454	100%	21

Rates are per 100,000 people, age-standardised to the WHO standard population.

Table 47: Years of life lived with disability (YLDs) due to incident cases of laryngeal cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	1	22%	1	1	4%	0	6.51	2	7%	0
45–64	1	39%	3	7	38%	2	1.88	9	39%	2
65–74	1	28%	10	6	31%	5	2.23	7	31%	7
75+	0	11%	8	5	27%	4	2.12	6	24%	6
Total	4	100%	3	19	100%	1	2.28	23	100%	2
Males										
25–44	1	5%	1	2	2%	0	1.95	2	2%	0
45–64	8	65%	20	33	33%	7	2.73	41	37%	13
65–74	3	22%	32	35	36%	28	1.14	38	34%	30
75+	1	8%	33	29	29%	30	1.08	30	27%	31
Total	13	100%	12	98	100%	7	1.73	111	100%	9
Total										
25–44	1	8%	1	3	2%	0	3.19	4	3%	0
45–64	10	60%	11	40	34%	4	2.57	50	37%	8
65–74	4	23%	21	41	35%	16	1.30	45	33%	19
75+	1	9%	20	34	29%	17	1.20	35	26%	19
Total	16	100%	7	117	100%	4	1.82	133	100%	6

Rates are per 100,000 people, age-standardised to the WHO standard population.

11 Leukaemia

Figure 35: Age-standardised rate of disability-adjusted life years (DALYs) due to incident cases of leukaemia in 2006, by sex, age and ethnicity

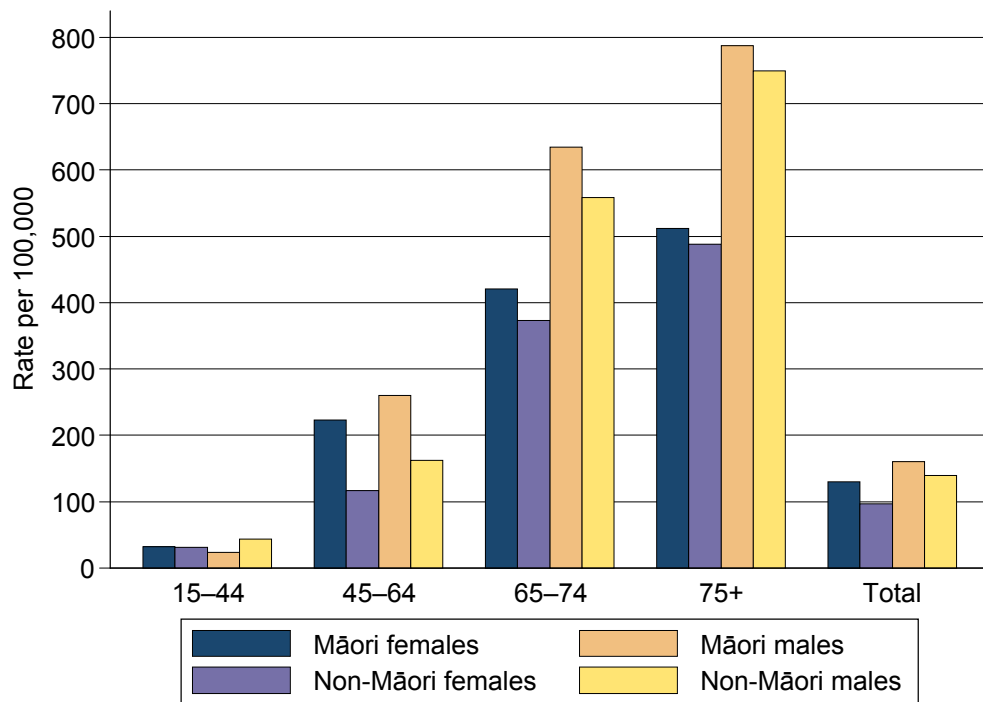


Figure 36: Ratio of YLD:YLL due to incident cases of leukaemia in 2006, by sex, age and ethnicity

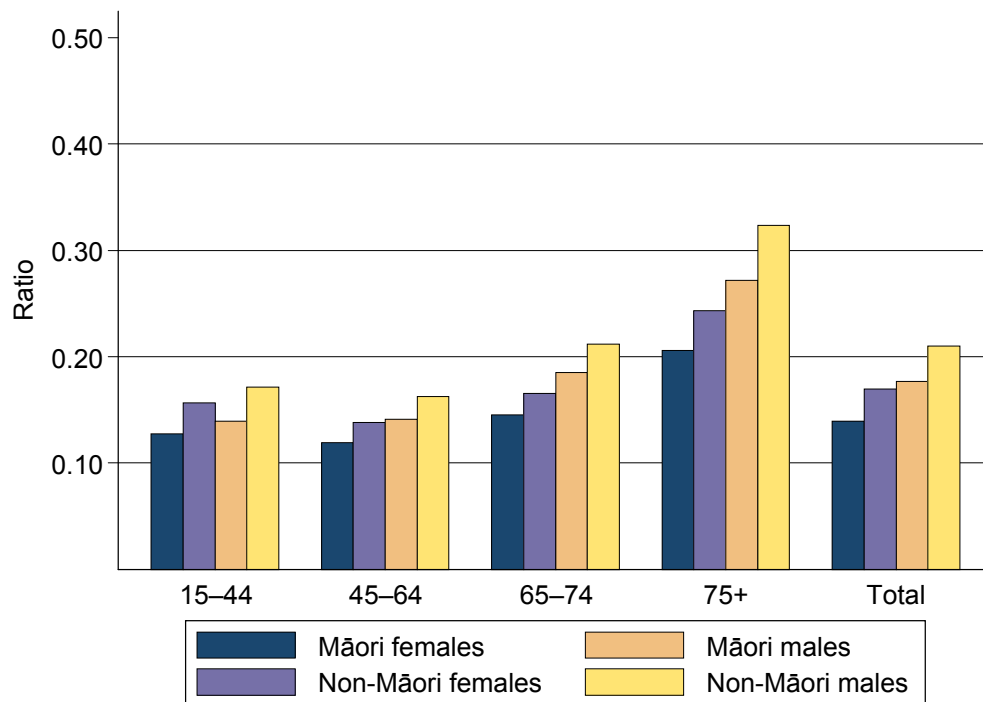


Table 48: Disability-adjusted life years (DALYs) due to incident cases of leukaemia in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
15–44	49	22%	32	244	13%	31	1.04	293	14%	32
45–64	107	48%	224	537	28%	116	1.92	644	30%	170
65–74	41	19%	420	499	26%	373	1.13	540	25%	397
75+	24	11%	512	666	34%	489	1.05	690	32%	500
Total	222	100%	130	1946	100%	96	1.35	2168	100%	113
Males										
15–44	35	15%	24	320	13%	43	0.55	355	13%	33
45–64	113	49%	260	732	29%	162	1.60	845	31%	211
65–74	56	24%	635	698	28%	559	1.14	754	28%	597
75+	26	11%	788	732	29%	749	1.05	758	28%	769
Total	230	100%	161	2482	100%	140	1.15	2712	100%	150
Total										
15–44	84	19%	28	564	13%	37	0.75	648	13%	33
45–64	220	49%	242	1269	29%	139	1.74	1489	31%	190
65–74	97	22%	528	1197	27%	466	1.13	1294	27%	497
75+	50	11%	650	1398	32%	619	1.05	1449	30%	635
Total	452	100%	145	4428	100%	118	1.23	4880	100%	132

Rates are per 100,000 people, age-standardised to the WHO standard population.

- A total of 4880 DALYs, or 132 DALYs per 100,000 people, is estimated to be lost by persons aged 15+ due to leukaemia diagnosed in 2006 in New Zealand.
- The age-standardised rate for males is higher than the rate for females: 150 versus 113 DALYs per 100,000.
- In the total population, 31% of the total DALY burden is experienced by people aged between 45 and 64 years and 30% in those aged 75+. Those aged 75+ have the highest age-standardised rate: 635 DALYs per 100,000.
- Māori have 1.23 times the DALY age-standardised rate of non-Māori.
- Māori and non-Māori males aged 75+ have the highest age-standardised rates across the subpopulations analysed: 788 and 749 DALYs per 100,000 people, respectively.
- The mortality component, YLL, is a higher contributor to the burden than the disability component, YLD. The disability burden is less than one quarter of the mortality burden.
- Māori have both higher mortality and disability age-standardised rates of YLLs and YLDs than non-Māori. The Māori:non-Māori rate ratios for YLLs and YLDs are 1.27 and 1.05, respectively. This is mainly due to higher incidence rates for both Māori males and Māori females (see Table A12, Appendix B).

Table 49: Years of life lost (YLLs) due to incident cases of leukaemia in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
15–44	44	22%	29	211	13%	27	1.06	255	14%	28
45–64	96	49%	200	472	29%	102	1.95	567	31%	151
65–74	36	18%	367	428	26%	320	1.15	464	25%	344
75+	20	10%	425	530	32%	393	1.08	551	30%	409
Total	196	100%	114	1641	100%	82	1.38	1837	100%	98
Males										
15–44	31	15%	21	273	13%	37	0.57	303	14%	29
45–64	100	50%	228	630	31%	139	1.63	729	33%	184
65–74	47	24%	536	577	28%	461	1.16	624	28%	499
75+	21	11%	620	559	27%	566	1.09	580	26%	593
Total	198	100%	137	2038	100%	116	1.18	2236	100%	126
Total										
15–44	74	19%	25	483	13%	32	0.78	558	14%	28
45–64	195	50%	214	1101	30%	121	1.77	1297	32%	167
65–74	83	21%	451	1004	27%	391	1.16	1088	27%	421
75+	41	10%	522	1089	30%	479	1.09	1131	28%	501
Total	394	100%	125	3679	100%	99	1.27	4073	100%	112

Rates are per 100,000 people, age-standardised to the WHO standard population.

Table 50: Years of life lived with disability (YLDs) due to incident cases of leukaemia in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
15–44	6	21%	4	33	11%	4	0.87	39	12%	4
45–64	11	43%	24	65	21%	14	1.68	76	23%	19
65–74	5	20%	53	71	23%	53	1.01	76	23%	53
75+	4	15%	87	136	44%	96	0.91	140	42%	92
Total	26	100%	16	305	100%	14	1.14	331	100%	15
Males										
15–44	4	13%	3	47	11%	6	0.46	51	11%	5
45–64	14	44%	32	102	23%	23	1.42	116	24%	27
65–74	9	27%	99	122	27%	98	1.02	130	27%	98
75+	5	16%	168	173	39%	183	0.92	178	37%	176
Total	32	100%	24	444	100%	24	1.00	476	100%	24
Total										
15–44	10	17%	3	81	11%	5	0.62	90	11%	4
45–64	25	44%	28	167	22%	18	1.52	192	24%	23
65–74	14	24%	76	193	26%	75	1.01	206	26%	76
75+	9	16%	128	309	41%	139	0.92	318	39%	134
Total	58	100%	20	749	100%	19	1.05	807	100%	20

Rates are per 100,000 people, age-standardised to the WHO standard population.

12 Lip, mouth and pharynx

Figure 37: Age-standardised rate of disability-adjusted life years (DALYs) due to incident cases of cancer of the lip, mouth and pharynx in 2006, by sex, age and ethnicity

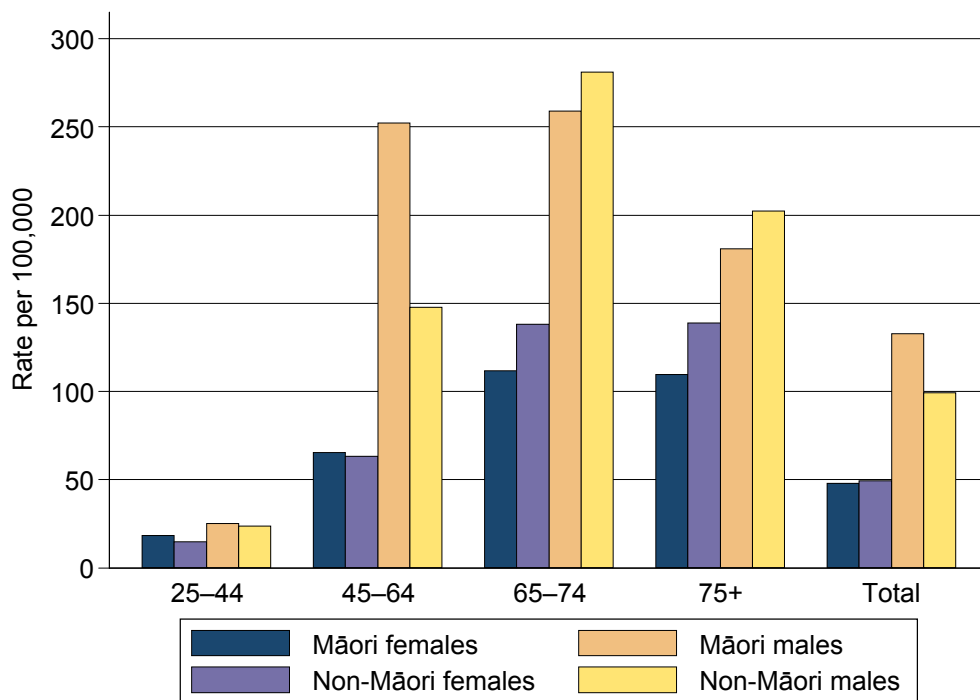


Figure 38: Ratio of YLD:YLL due to incident cases of cancer of the lip, mouth and pharynx in 2006, by sex, age and ethnicity

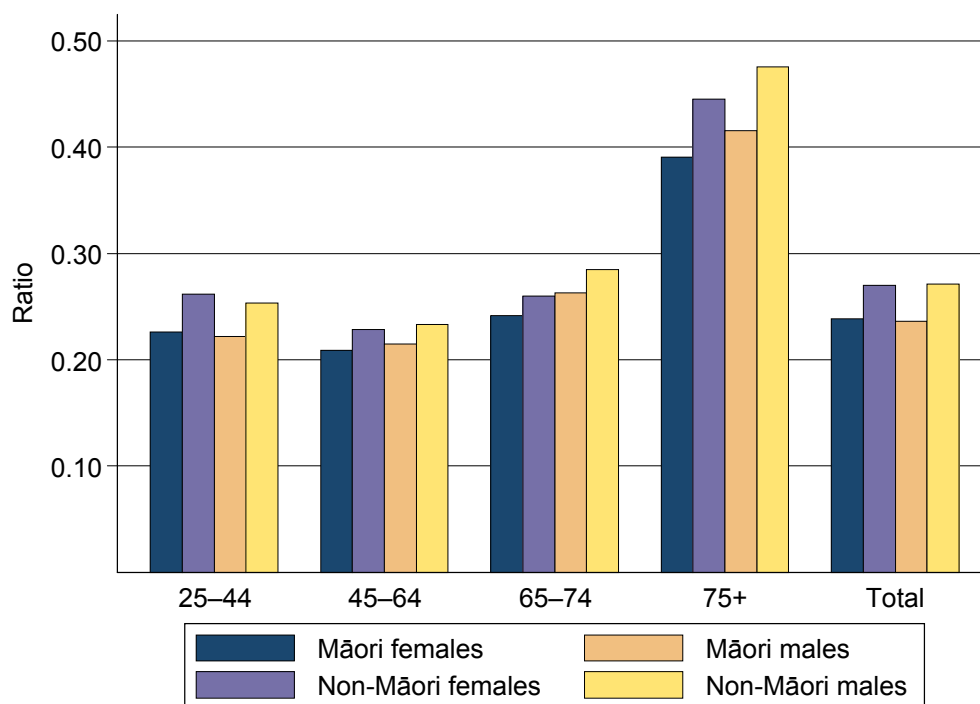


Table 51: Disability-adjusted life years (DALYs) due to incident cases of cancer of the lip, mouth and pharynx in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	17	27%	18	81	11%	15	1.24	98	12%	17
45–64	32	49%	66	292	39%	63	1.03	324	40%	64
65–74	11	17%	112	185	25%	138	0.81	196	24%	125
75+	5	8%	110	192	26%	139	0.79	197	24%	124
Total	66	100%	48	749	100%	49	0.97	815	100%	49
Males										
25–44	22	13%	25	124	9%	24	1.06	146	10%	24
45–64	113	69%	252	664	50%	148	1.71	777	52%	200
65–74	23	14%	259	350	26%	281	0.92	373	25%	270
75+	6	4%	181	196	15%	202	0.89	202	13%	192
Total	164	100%	133	1334	100%	99	1.34	1498	100%	116
Total										
25–44	39	17%	22	205	10%	19	1.13	244	11%	21
45–64	145	63%	159	956	46%	106	1.50	1101	48%	132
65–74	34	15%	185	535	26%	210	0.88	569	25%	198
75+	11	5%	145	388	19%	171	0.85	399	17%	158
Total	230	100%	90	2083	100%	74	1.22	2313	100%	82

Rates are per 100,000 people, age-standardised to the WHO standard population.

- A total of 2313 DALYs, or 82 DALYs per 100,000 people, is estimated to be lost by persons aged 25+ due to cancer of the lip, mouth and pharynx diagnosed in 2006 in New Zealand.
- The age-standardised rate for males is higher than the rate for females: 116 versus 49 DALYs per 100,000.
- Forty-eight percent of the total DALY burden is experienced by people aged between 45 and 64 years. Those aged 65–74 have the highest age-standardised rate: 198 DALYs per 100,000.
- Māori have 1.22 times the DALY age-standardised rate of non-Māori.
- Non-Māori and Māori males aged 65–74 have the highest age-standardised rates across the subpopulations analysed: 281 and 259 DALYs per 100,000 people, respectively.
- The mortality component, YLL, is a higher contributor to the burden than the disability component, YLD. The disability burden is around a quarter of the mortality burden.
- Māori have both higher mortality and higher disability age-standardised rates of YLLs and YLDs than non-Māori. The Māori:non-Māori rate ratios for YLLs and YLDs are 1.25 and 1.09, respectively. This is mainly due to higher incidence rates for both Māori males and Māori females (see Table A13, Appendix B), although excess mortality rates were also higher for Māori (1.25; see Table A1, Appendix A).

Table 52: Years of life lost (YLLs) due to incident cases of cancer of the lip, mouth and pharynx in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	14	27%	15	64	11%	12	1.28	78	12%	13
45–64	26	50%	54	238	41%	52	1.05	264	42%	53
65–74	9	17%	90	146	25%	110	0.82	155	25%	100
75+	4	7%	79	131	23%	96	0.82	134	21%	88
Total	53	100%	39	579	100%	39	1.00	632	100%	39
Males										
25–44	18	13%	21	99	9%	19	1.09	117	10%	20
45–64	93	70%	208	539	52%	120	1.73	632	54%	164
65–74	18	14%	205	273	26%	219	0.94	291	25%	212
75+	4	3%	128	134	13%	137	0.93	138	12%	132
Total	134	100%	107	1044	100%	78	1.38	1178	100%	93
Total										
25–44	32	17%	18	163	10%	15	1.16	195	11%	17
45–64	120	64%	131	776	48%	86	1.53	896	50%	108
65–74	27	15%	148	419	26%	164	0.90	446	25%	156
75+	8	4%	103	264	16%	117	0.89	273	15%	110
Total	187	100%	73	1623	100%	58	1.25	1810	100%	66

Rates are per 100,000 people, age-standardised to the WHO standard population.

Table 53: Years of life lived with disability (YLDs) due to incident cases of cancer of the lip, mouth and pharynx in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	3	26%	3	17	10%	3	1.10	20	11%	3
45–64	5	45%	11	54	32%	12	0.96	60	33%	12
65–74	2	17%	22	38	22%	29	0.76	40	22%	25
75+	1	11%	31	61	36%	43	0.72	63	34%	37
Total	12	100%	9	171	100%	10	0.88	183	100%	10
Males										
25–44	4	13%	5	25	9%	5	0.95	29	9%	5
45–64	20	66%	45	126	43%	28	1.59	145	45%	36
65–74	5	16%	54	77	27%	62	0.87	82	26%	58
75+	2	6%	53	62	21%	65	0.81	63	20%	59
Total	30	100%	25	290	100%	21	1.20	320	100%	23
Total										
25–44	7	17%	4	42	9%	4	1.01	49	10%	4
45–64	25	60%	28	180	39%	20	1.41	205	41%	24
65–74	7	16%	38	116	25%	45	0.83	122	24%	42
75+	3	7%	42	123	27%	54	0.78	126	25%	48
Total	42	100%	17	461	100%	16	1.09	503	100%	17

Rates are per 100,000 people, age-standardised to the WHO standard population.

13 Liver

Figure 39: Age-standardised rate of disability-adjusted life years (DALYs) due to incident cases of liver cancer in 2006, by sex, age and ethnicity

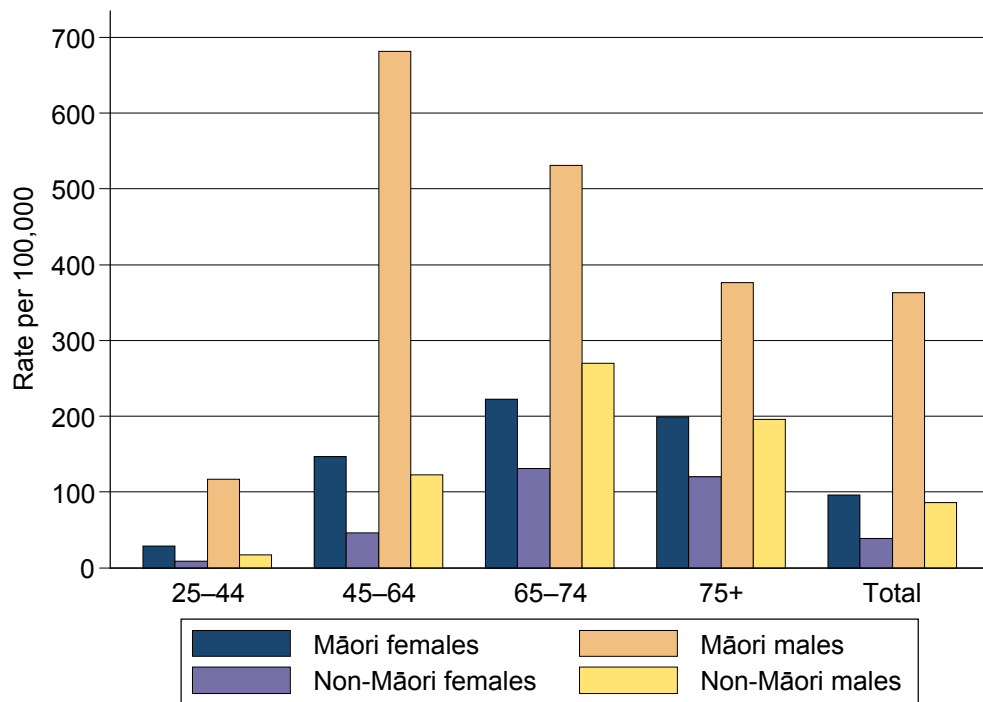


Figure 40: Ratio of YLD:YLL due to incident cases of liver cancer in 2006, by sex, age and ethnicity

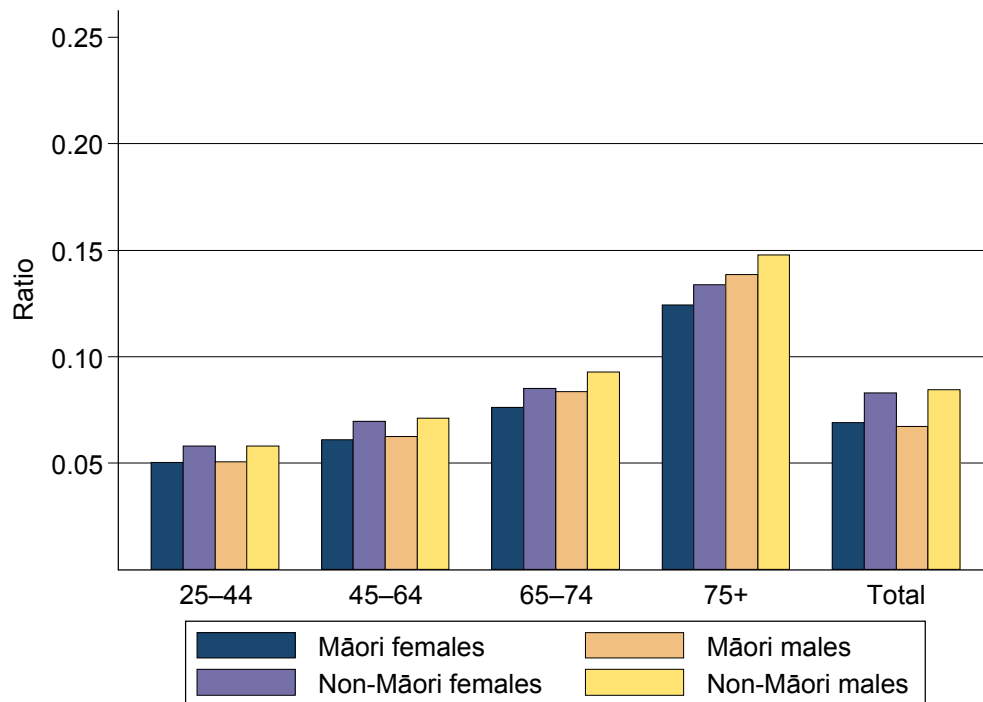


Table 54: Disability-adjusted life years (DALYs) due to incident cases of liver cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	27	21%	29	51	8%	9	3.15	78	11%	19
45–64	70	54%	147	214	35%	46	3.18	283	39%	97
65–74	22	17%	223	176	29%	131	1.70	197	27%	177
75+	9	7%	200	165	27%	120	1.66	174	24%	160
Total	128	100%	96	605	100%	39	2.48	733	100%	67
Males										
25–44	102	22%	117	91	8%	17	6.85	194	12%	67
45–64	306	65%	682	550	47%	123	5.56	857	52%	402
65–74	47	10%	531	337	29%	270	1.96	384	23%	401
75+	13	3%	376	190	16%	196	1.92	203	12%	286
Total	469	100%	363	1169	100%	86	4.23	1637	100%	224
Total										
25–44	130	22%	73	142	8%	13	5.57	271	11%	43
45–64	376	63%	415	764	43%	84	4.91	1140	48%	249
65–74	69	12%	377	513	29%	201	1.88	582	25%	289
75+	22	4%	288	355	20%	158	1.82	377	16%	223
Total	597	100%	230	1774	100%	62	3.68	2370	100%	146

Rates are per 100,000 people, age-standardised to the WHO standard population.

- A total of 2370 DALYs, or 146 DALYs per 100,000 people, is estimated to be lost by persons aged 25+ due to liver cancer diagnosed in 2006 in New Zealand.
- The age-standardised rate for males is more than three times the rate for females: 224 versus 67 DALYs per 100,000.
- Forty-eight percent of the total DALY burden is experienced by people aged between 45 and 64 years. Those aged 65–74 have the highest age-standardised rate: 289 DALYs per 100,000.
- Māori have 3.68 times the DALY age-standardised rate of non-Māori.
- Māori males aged 45–64 and 65–74 have the highest age-standardised rates across the subpopulations analysed: 682 and 531 DALYs per 100,000 people, respectively. There is also a significant difference in DALY rates between Māori and non-Māori, with Māori males aged 25–45 years and 45–65 years experiencing rates 6.85 and 5.56 times those of non-Māori.
- The mortality component, YLL, is a higher contributor to the burden than the disability component, YLD. The disability burden is less than one tenth of the mortality burden.
- Māori have both higher mortality and higher disability age-standardised rates of YLLs and YLDs than non-Māori. The Māori:non-Māori rate ratios for YLLs and YLDs are 3.74 and 3.01, respectively. This is mainly due to higher incidence rates for Māori (see Table A14, Appendix B), although the excess mortality rate was also higher for Māori (1.30; see Table A1, Appendix A).

Table 55: Years of life lost (YLLs) due to incident cases of liver cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	26	22%	27	48	9%	9	3.17	74	11%	18
45–64	66	55%	139	200	36%	43	3.21	266	39%	91
65–74	20	17%	207	162	29%	121	1.71	182	27%	164
75+	8	7%	178	145	26%	106	1.67	153	23%	142
Total	120	100%	90	554	100%	36	2.51	675	100%	63
Males										
25–44	98	22%	112	86	8%	16	6.90	184	12%	64
45–64	289	65%	642	513	48%	114	5.61	802	53%	378
65–74	43	10%	490	309	29%	247	1.98	352	23%	369
75+	11	3%	331	167	16%	171	1.93	178	12%	251
Total	441	100%	340	1075	100%	79	4.29	1516	100%	210
Total										
25–44	123	22%	69	134	8%	12	5.61	257	12%	41
45–64	354	63%	390	713	44%	79	4.95	1068	49%	235
65–74	64	11%	348	470	29%	184	1.89	534	24%	266
75+	20	4%	254	311	19%	139	1.83	331	15%	196
Total	561	100%	215	1629	100%	58	3.74	2190	100%	136

Rates are per 100,000 people, age-standardised to the WHO standard population.

Table 56: Years of life lived with disability (YLDs) due to incident cases of liver cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	1	17%	1	3	6%	0	2.75	4	7%	1
45–64	4	51%	8	14	28%	3	2.82	18	31%	6
65–74	2	20%	16	14	27%	10	1.53	15	26%	13
75+	1	13%	22	20	40%	14	1.56	21	36%	18
Total	8	100%	6	51	100%	3	2.09	58	100%	5
Males										
25–44	5	18%	6	5	5%	1	6.01	10	8%	3
45–64	18	64%	40	37	39%	8	4.93	54	45%	24
65–74	4	13%	41	29	30%	23	1.78	32	26%	32
75+	1	5%	46	24	25%	25	1.81	25	21%	36
Total	28	100%	23	94	100%	7	3.41	122	100%	15
Total										
25–44	6	18%	4	8	5%	1	4.88	14	8%	2
45–64	22	61%	24	51	35%	6	4.36	72	40%	15
65–74	5	14%	28	42	29%	17	1.71	47	26%	23
75+	2	7%	34	44	30%	20	1.72	46	26%	27
Total	35	100%	15	145	100%	5	3.01	180	100%	10

Rates are per 100,000 people, age-standardised to the WHO standard population.

14 Lung, trachea and bronchus

Figure 41: Age-standardised rate of disability-adjusted life years (DALYs) due to incident cases of cancer of the lung, trachea and bronchus in 2006, by sex, age and ethnicity

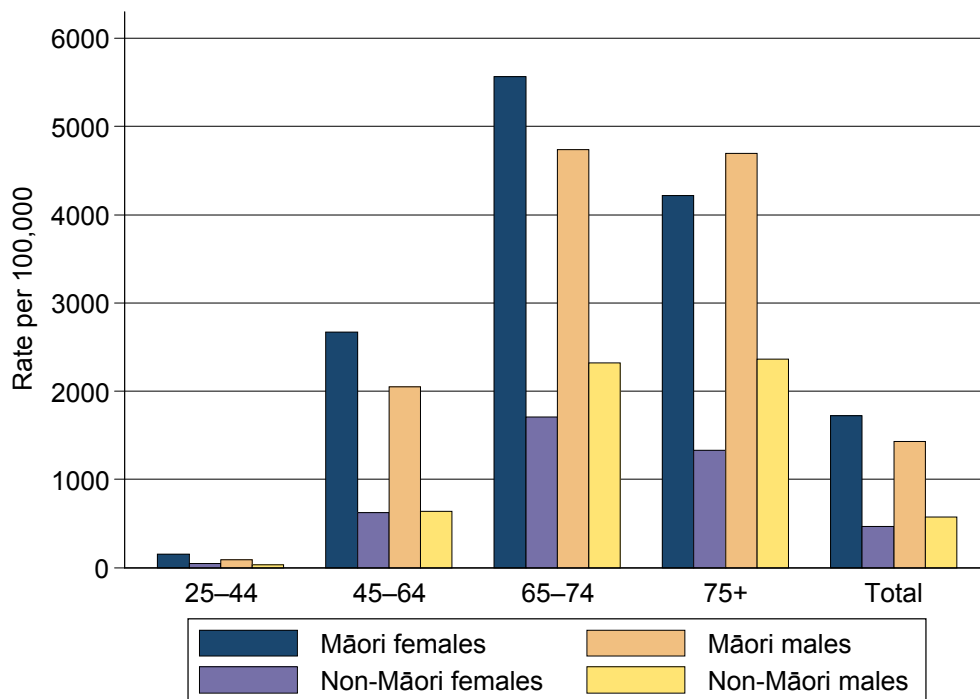


Figure 42: Ratio of YLD:YLL due to incident cases of cancer of the lung, trachea and bronchus in 2006, by sex, age and ethnicity

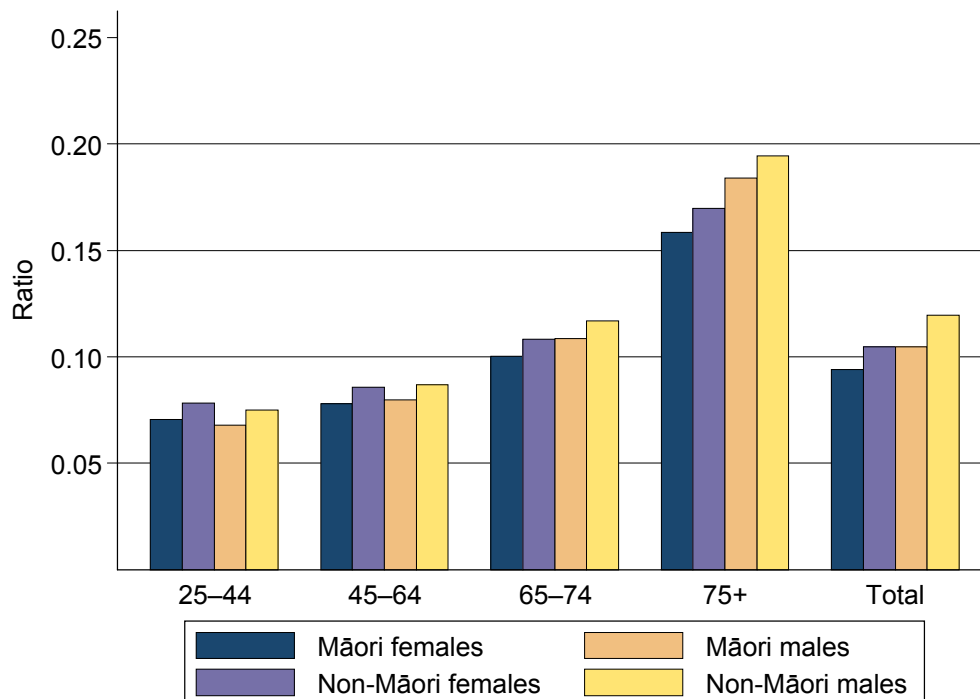


Table 57: Disability-adjusted life years (DALYs) due to incident cases of cancer of the lung, trachea and bronchus in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	148	7%	153	298	4%	51	3.01	446	5%	102
45–64	1255	58%	2673	2,889	40%	625	4.27	4,144	44%	1649
65–74	548	25%	5568	2,279	32%	1708	3.26	2,826	30%	3638
75+	200	9%	4221	1,718	24%	1329	3.18	1,917	21%	2775
Total	2150	100%	1726	7,184	100%	466	3.70	9,334	100%	1096
Males										
25–44	79	5%	90	175	2%	32	2.84	254	3%	61
45–64	873	57%	2050	2,908	35%	643	3.19	3,782	39%	1347
65–74	416	27%	4739	2,905	35%	2324	2.04	3,321	34%	3532
75+	157	10%	4697	2,292	28%	2368	1.98	2,449	25%	3532
Total	1526	100%	1429	8,281	100%	573	2.49	9,806	100%	1001
Total										
25–44	227	6%	121	474	3%	41	2.95	701	4%	81
45–64	2128	58%	2362	5,798	37%	634	3.72	7,926	41%	1498
65–74	964	26%	5154	5,183	34%	2016	2.56	6,148	32%	3585
75+	356	10%	4459	4,010	26%	1849	2.41	4,366	23%	3154
Total	3675	100%	1578	15,465	100%	520	3.04	19,140	100%	1049

Rates are per 100,000 people, age-standardised to the WHO standard population.

- A total of 19,140 DALYs, or 1049 DALYs per 100,000 people, is estimated to be lost by persons aged 25+ due to cancer of the lung, trachea and bronchus diagnosed in 2006 in New Zealand.
- The age-standardised rate for females is higher than the rate for males: 1096 versus 1001 DALYs per 100,000.
- Forty-one percent of the total DALY burden is experienced by people aged between 45 and 64 years. Those aged 65–74 have the highest age-standardised rate: 3585 DALYs per 100,000.
- Māori have 3.04 times the DALY age-standardised rate of non-Māori.
- Māori females aged 65–74 and Māori males aged 65–74 and 75+ have the highest age-standardised rates across the subpopulations analysed: 5568, 4739 and 4697 DALYs per 100,000 people, respectively.
- The mortality component, YLL, is a higher contributor to the burden than the disability component, YLD. The disability burden is around a 10th of the mortality burden.
- Māori have both higher mortality and higher disability age-standardised rates of YLLs and YLDs than non-Māori. The Māori:non-Māori rate ratios for YLLs and YLDs are 3.07 and 2.69, respectively. This is mainly due to higher incidence rates for Māori (see Table A15, Appendix B), although excess mortality rates were also higher for Māori (1.19; see Table A1, Appendix A).

Table 58: Years of life lost (YLLs) due to incident cases of cancer of the lung, trachea and bronchus in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	138	7%	143	277	4%	47	3.03	415	5%	95
45–64	1165	59%	2479	2,661	41%	576	4.30	3,826	45%	1527
65–74	498	25%	5061	2,056	32%	1541	3.28	2,554	30%	3301
75+	174	9%	3643	1,461	23%	1136	3.21	1,634	19%	2390
Total	1975	100%	1578	6,454	100%	422	3.74	8,429	100%	1000
Males										
25–44	74	5%	84	163	2%	29	2.86	237	3%	57
45–64	810	58%	1899	2,675	36%	592	3.21	3,485	40%	1245
65–74	376	27%	4275	2,601	35%	2081	2.05	2,977	34%	3178
75+	134	10%	3967	1,931	26%	1982	2.00	2,065	24%	2975
Total	1394	100%	1294	7,371	100%	512	2.53	8,765	100%	903
Total										
25–44	212	6%	114	440	3%	38	2.97	652	4%	76
45–64	1975	59%	2189	5,337	39%	584	3.75	7,311	43%	1386
65–74	874	26%	4668	4,657	34%	1811	2.58	5,531	32%	3239
75+	308	9%	3805	3,392	25%	1559	2.44	3,699	22%	2682
Total	3369	100%	1436	13,825	100%	467	3.07	17,194	100%	951

Rates are per 100,000 people, age-standardised to the WHO standard population.

Table 59: Years of life lived with disability (YLDs) due to incident cases of cancer of the lung, trachea and bronchus in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	10	6%	10	22	3%	4	2.74	31	3%	7
45–64	90	51%	194	228	31%	49	3.93	318	35%	122
65–74	49	28%	507	223	31%	167	3.04	272	30%	337
75+	26	15%	578	257	35%	193	2.99	283	31%	385
Total	175	100%	148	730	100%	44	3.36	905	100%	96
Males										
25–44	5	4%	6	12	1%	2	2.59	17	2%	4
45–64	64	48%	152	233	26%	52	2.94	297	28%	102
65–74	40	31%	465	304	33%	243	1.91	344	33%	354
75+	22	17%	730	361	40%	386	1.89	384	37%	558
Total	131	100%	136	910	100%	61	2.22	1041	100%	98
Total										
25–44	15	5%	8	34	2%	3	2.68	49	3%	5
45–64	153	50%	173	461	28%	50	3.43	614	32%	112
65–74	90	29%	486	527	32%	205	2.37	616	32%	346
75+	48	16%	654	618	38%	289	2.26	667	34%	472
Total	306	100%	142	1640	100%	53	2.69	1946	100%	97

Rates are per 100,000 people, age-standardised to the WHO standard population.

15 Melanoma

Figure 43: Age-standardised rate of disability-adjusted life years (DALYs) due to incident cases of melanoma in 2006, by sex, age and ethnicity

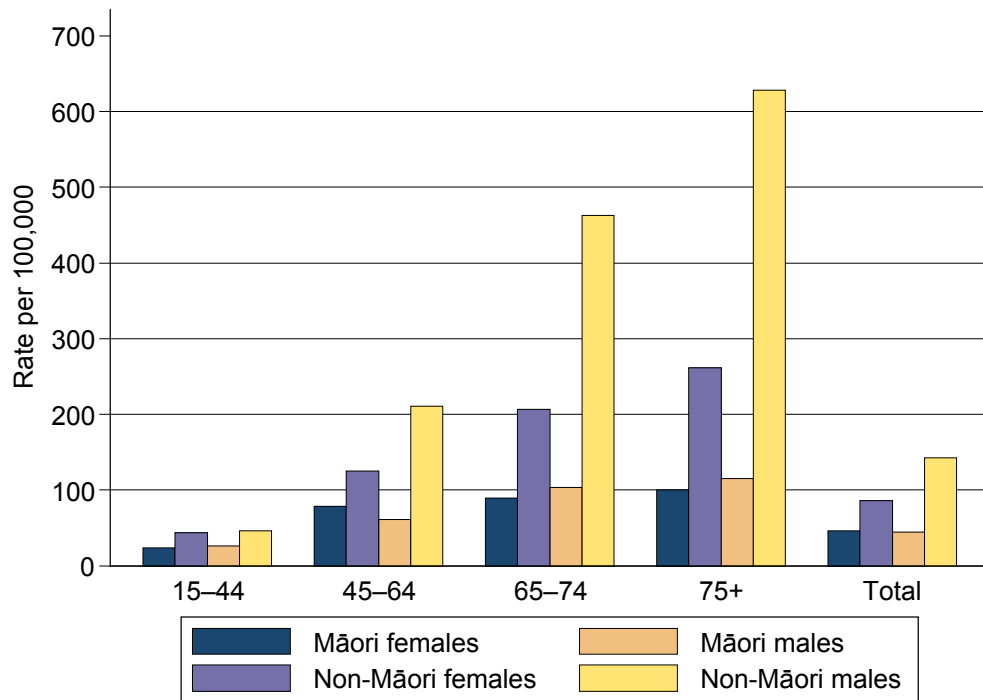


Figure 44: Ratio of YLD:YLL due to incident cases of melanoma in 2006, by sex, age and ethnicity

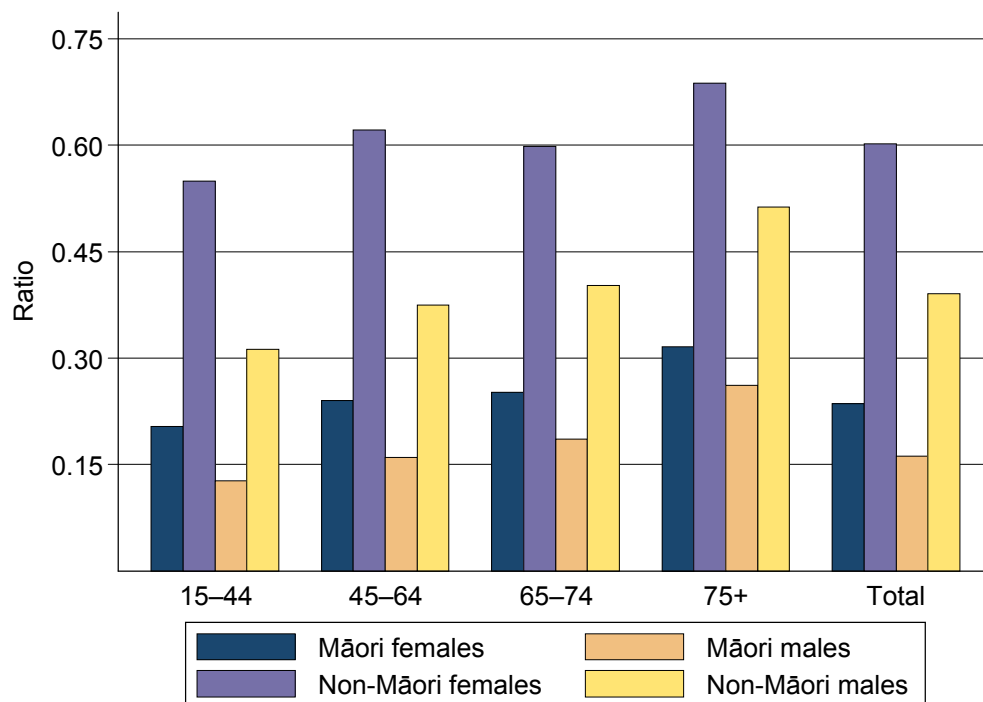


Table 60: Disability-adjusted life years (DALYs) due to incident cases of melanoma in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
15–44	36	40%	24	360	23%	44	0.54	396	24%	34
45–64	40	45%	79	577	37%	126	0.63	616	37%	102
65–74	9	10%	90	275	18%	207	0.43	284	17%	148
75+	5	5%	100	353	23%	261	0.38	358	22%	181
Total	89	100%	46	1565	100%	86	0.54	1653	100%	66
Males										
15–44	36	47%	26	362	15%	46	0.57	398	15%	36
45–64	28	36%	61	946	38%	211	0.29	974	38%	136
65–74	9	12%	104	577	23%	463	0.22	586	23%	283
75+	4	5%	116	609	24%	628	0.18	613	24%	372
Total	77	100%	45	2494	100%	143	0.31	2571	100%	94
Total										
15–44	72	43%	25	722	18%	45	0.56	794	19%	35
45–64	67	41%	70	1522	38%	168	0.42	1590	38%	119
65–74	18	11%	97	852	21%	335	0.29	870	21%	216
75+	9	5%	108	962	24%	445	0.24	971	23%	276
Total	166	100%	45	4059	100%	114	0.40	4225	100%	80

Rates are per 100,000 people, age-standardised to the WHO standard population.

- A total of 4225 DALYs, or 80 DALYs per 100,000 people, is estimated to be lost by persons aged 15+ due to melanoma diagnosed in 2006 in New Zealand.
- The age-standardised rate for males is higher than the rate for females: 94 versus 66 DALYs per 100,000.
- Thirty-eight percent of the total DALY burden is experienced by people aged between 45 and 64 years. Those aged 75+ have the highest age-standardised rate: 276 DALYs per 100,000.
- Māori have 0.4 times the DALY age-standardised rate of non-Māori.
- Non-Māori males aged 75+ and 65–74 have the highest age-standardised rates across the subpopulations analysed: 628 and 463 DALYs per 100,000 people, respectively.
- The mortality component, YLL, is a higher contributor to the burden than the disability component, YLD. The disability burden is around a third of the mortality burden.
- Māori have lower age-standardised rates of both YLLs and YLDs than non-Māori. The Māori:non-Māori rate ratios for YLLs and YLDs are 0.48 and 0.21, respectively. This is mainly due to lower incidence rates for both Māori males and Māori females (see Table A16, Appendix B); excess mortality rates were also higher for Māori (3.08; see Table A1, Appendix A).

Table 61: Years of life lost (YLLs) due to incident cases of melanoma in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
15–44	30	41%	20	232	24%	28	0.70	261	25%	24
45–64	32	44%	64	356	37%	78	0.82	388	37%	71
65–74	7	10%	72	172	18%	129	0.55	179	17%	100
75+	4	5%	76	204	21%	155	0.49	208	20%	115
Total	72	100%	37	964	100%	54	0.70	1036	100%	45
Males										
15–44	32	48%	23	275	15%	35	0.66	307	17%	29
45–64	24	36%	53	688	39%	153	0.34	712	38%	103
65–74	8	12%	88	412	23%	330	0.27	420	23%	209
75+	3	5%	92	408	23%	415	0.22	411	22%	254
Total	67	100%	39	1783	100%	103	0.37	1850	100%	71
Total										
15–44	62	44%	22	507	18%	32	0.68	568	20%	27
45–64	56	40%	58	1044	38%	115	0.51	1100	38%	87
65–74	15	11%	80	584	21%	230	0.35	599	21%	155
75+	7	5%	84	612	22%	285	0.29	619	21%	184
Total	139	100%	38	2747	100%	78	0.48	2886	100%	58

Rates are per 100,000 people, age-standardised to the WHO standard population.

Table 62: Years of life lived with disability (YLDs) due to incident cases of melanoma in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
15–44	6	37%	4	128	21%	16	0.26	134	22%	10
45–64	8	46%	15	221	37%	48	0.32	228	37%	32
65–74	2	11%	18	103	17%	77	0.23	105	17%	48
75+	1	7%	24	149	25%	107	0.23	150	24%	65
Total	16	100%	9	601	100%	32	0.27	618	100%	21
Males										
15–44	4	41%	3	87	12%	11	0.27	91	13%	7
45–64	4	38%	8	258	36%	57	0.15	261	36%	33
65–74	1	14%	16	165	23%	133	0.12	167	23%	75
75+	1	7%	24	201	28%	213	0.11	202	28%	118
Total	10	100%	6	711	100%	40	0.16	721	100%	23
Total										
15–44	10	38%	3	215	16%	13	0.26	225	17%	8
45–64	11	43%	12	478	36%	53	0.23	490	37%	32
65–74	3	12%	17	268	20%	105	0.16	272	20%	61
75+	2	7%	24	350	27%	160	0.15	352	26%	92
Total	27	100%	8	1312	100%	36	0.21	1339	100%	22

Rates are per 100,000 people, age-standardised to the WHO standard population.

16 Myeloma

Figure 45: Age-standardised rate of disability-adjusted life years (DALYs) due to incident cases of myeloma in 2006, by sex, age and ethnicity

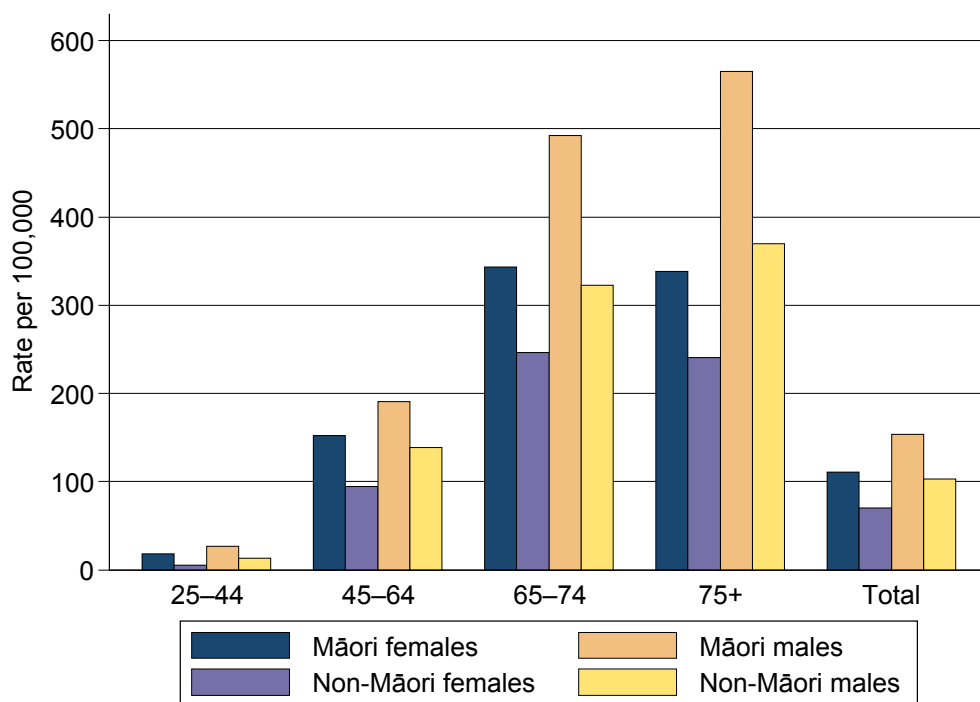


Figure 46: Ratio of YLD:YLL due to incident cases of myeloma in 2006, by sex, age and ethnicity

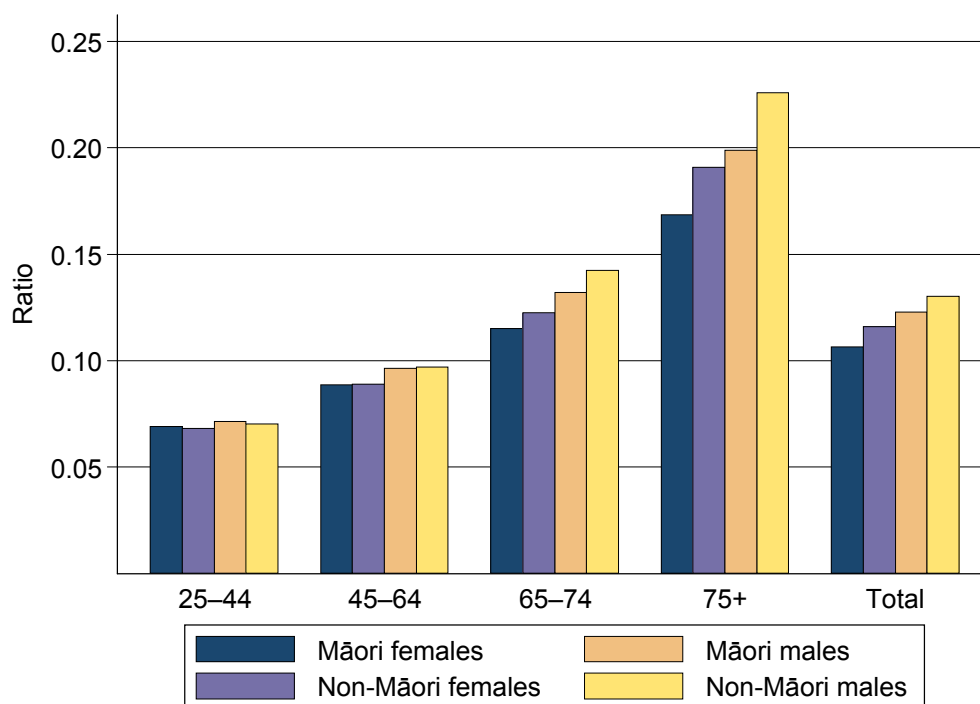


Table 63: Disability-adjusted life years (DALYs) due to incident cases of myeloma in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	18	13%	18	31	3%	5	3.53	48	4%	12
45–64	72	52%	152	436	39%	94	1.61	508	40%	123
65–74	34	24%	343	330	29%	247	1.39	363	29%	295
75+	16	12%	338	329	29%	241	1.40	345	27%	290
Total	140	100%	111	1126	100%	70	1.58	1265	100%	91
Males										
25–44	23	14%	27	70	5%	13	2.04	94	6%	20
45–64	84	49%	191	626	43%	139	1.37	710	43%	165
65–74	43	26%	493	403	28%	323	1.53	447	27%	408
75+	19	11%	565	363	25%	369	1.53	382	23%	467
Total	169	100%	154	1463	100%	103	1.49	1632	100%	129
Total										
25–44	41	13%	23	101	4%	9	2.46	142	5%	16
45–64	156	50%	172	1062	41%	117	1.47	1218	42%	144
65–74	77	25%	418	733	28%	285	1.47	810	28%	351
75+	35	11%	452	693	27%	305	1.48	727	25%	378
Total	309	100%	132	2589	100%	87	1.53	2898	100%	110

Rates are per 100,000 people, age-standardised to the WHO standard population.

- A total of 2898 DALYs, or 110 DALYs per 100,000 people, is estimated to be lost by persons aged 25+ due to myeloma diagnosed in 2006 in New Zealand.
- The age-standardised rate for males is higher than the rate for females: 129 versus 91 DALYs per 100,000.
- Forty-two percent of the total DALY burden is experienced by people aged between 45 and 64 years. Those aged 75+ have the highest age-standardised rate: 378 DALYs per 100,000.
- Māori have 1.53 times the DALY age-standardised rate of non-Māori.
- Māori males aged 75+ and 65–74 have the highest age-standardised rates across the subpopulations analysed: 565 and 493 DALYs per 100,000 people, respectively.
- The mortality component, YLL, is a higher contributor to the burden than the disability component, YLD. The disability burden is slightly more than one tenth of the mortality burden.
- Māori have both higher mortality and higher disability age-standardised rates of YLLs and YLDs than non-Māori. The Māori:non-Māori rate ratios for YLLs and YLDs are 1.54 and 1.43, respectively. This is mainly due to higher incidence rates for Māori (see Table A17, Appendix B), although excess mortality rates were also higher for Māori (1.4; see Table A1, Appendix A).

Table 64: Years of life lost (YLLs) due to incident cases of myeloma in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	17	13%	17	29	3%	5	3.53	45	4%	11
45–64	66	52%	140	401	40%	87	1.61	467	42%	113
65–74	30	24%	308	294	29%	220	1.40	324	29%	264
75+	14	11%	289	274	28%	202	1.43	288	26%	246
Total	127	100%	100	997	100%	63	1.59	1124	100%	82
Males										
25–44	22	14%	25	66	5%	12	2.04	88	6%	19
45–64	76	50%	174	571	44%	127	1.37	647	45%	150
65–74	38	25%	435	353	27%	282	1.54	392	27%	359
75+	16	10%	471	298	23%	301	1.56	314	22%	386
Total	152	100%	137	1288	100%	91	1.50	1440	100%	114
Total										
25–44	38	14%	21	94	4%	9	2.46	133	5%	15
45–64	143	51%	157	971	43%	107	1.47	1114	43%	132
65–74	69	25%	372	647	28%	251	1.48	715	28%	311
75+	30	11%	380	573	25%	252	1.51	602	23%	316
Total	280	100%	119	2285	100%	77	1.54	2564	100%	98

Rates are per 100,000 people, age-standardised to the WHO standard population.

Table 65: Years of life lived with disability (YLDs) due to incident cases of myeloma in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	1	9%	1	2	2%	0	3.57	3	2%	1
45–64	6	46%	12	36	28%	8	1.61	42	29%	10
65–74	3	27%	35	36	28%	27	1.32	39	28%	31
75+	2	18%	49	55	43%	39	1.27	57	40%	44
Total	13	100%	11	129	100%	7	1.46	141	100%	9
Males										
25–44	2	9%	2	5	3%	1	2.07	6	3%	1
45–64	7	43%	17	55	32%	12	1.37	63	33%	15
65–74	5	30%	57	50	29%	40	1.43	55	29%	49
75+	3	17%	94	65	37%	68	1.38	68	35%	81
Total	17	100%	17	175	100%	12	1.42	192	100%	14
Total										
25–44	3	9%	1	7	2%	1	2.49	9	3%	1
45–64	13	44%	15	91	30%	10	1.46	104	31%	12
65–74	8	29%	46	86	28%	34	1.38	95	28%	40
75+	5	17%	71	120	39%	53	1.34	125	38%	62
Total	29	100%	14	304	100%	10	1.43	333	100%	12

Rates are per 100,000 people, age-standardised to the WHO standard population.

17 Non-Hodgkin's

Figure 47: Age-standardised rate of disability-adjusted life years (DALYs) due to incident cases of non-Hodgkin's cancer in 2006, by sex, age and ethnicity

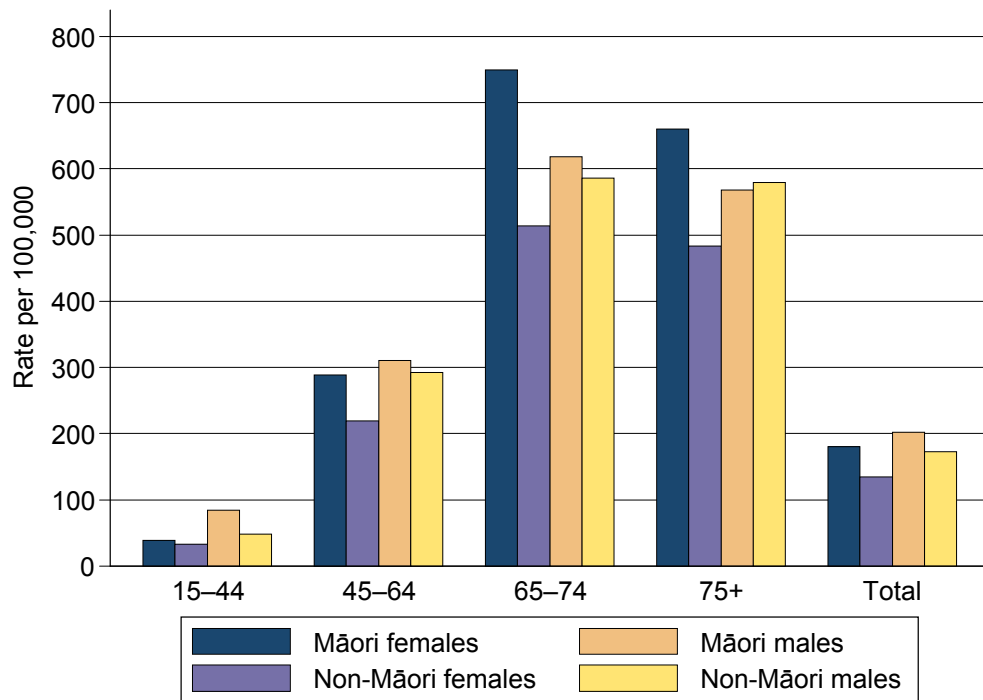


Figure 48: Ratio of YLD:YLL due to incident cases of non-Hodgkin's cancer in 2006, by sex, age and ethnicity

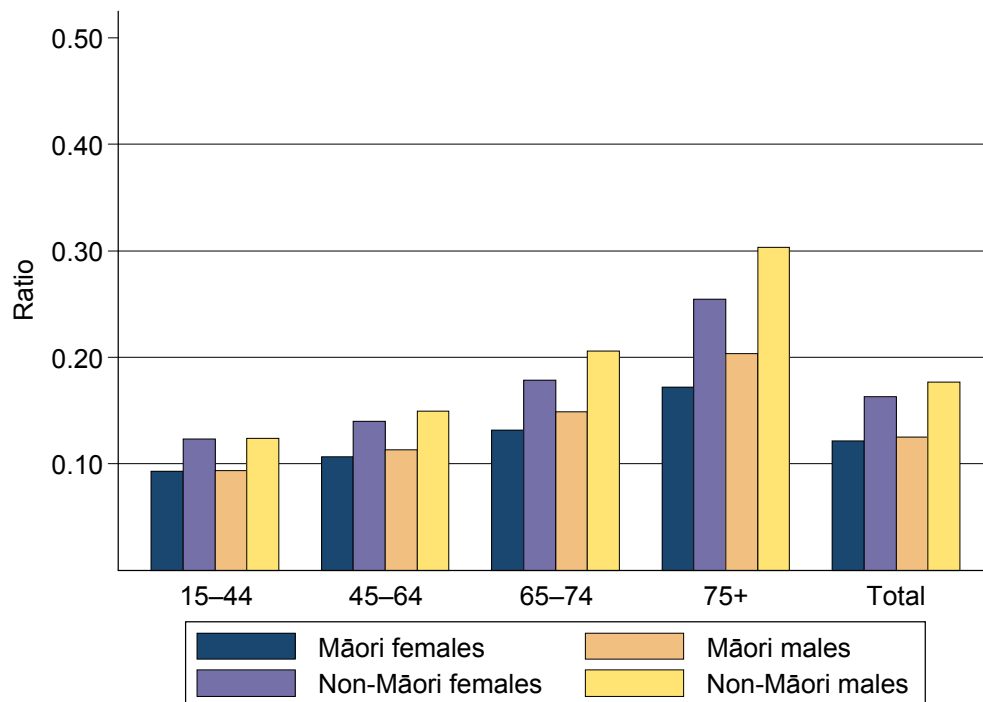


Table 66: Disability-adjusted life years (DALYs) due to incident cases of non-Hodgkin's cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
15–44	58	19%	39	278	11%	33	1.17	337	12%	36
45–64	139	46%	288	1013	39%	219	1.31	1151	40%	254
65–74	74	24%	750	686	26%	514	1.46	760	26%	632
75+	31	10%	660	635	24%	483	1.37	666	23%	572
Total	302	100%	181	2612	100%	135	1.34	2914	100%	158
Males										
15–44	118	36%	84	377	13%	48	1.76	495	15%	66
45–64	139	42%	310	1316	44%	293	1.06	1455	44%	302
65–74	55	17%	619	732	25%	586	1.06	787	24%	602
75+	19	6%	568	563	19%	580	0.98	581	18%	574
Total	330	100%	202	2988	100%	173	1.17	3318	100%	187
Total										
15–44	176	28%	61	655	12%	40	1.52	832	13%	51
45–64	277	44%	299	2328	42%	256	1.17	2606	42%	278
65–74	128	20%	684	1419	25%	550	1.24	1547	25%	617
75+	50	8%	614	1197	21%	531	1.16	1248	20%	573
Total	633	100%	191	5600	100%	154	1.24	6232	100%	172

Rates are per 100,000 people, age-standardised to the WHO standard population.

- A total of 6232 DALYs, or 172 DALYs per 100,000 people, is estimated to be lost by persons aged 15+ due to non-Hodgkin's cancer diagnosed in 2006 in New Zealand.
- The age-standardised rate for males is higher than the rate for females: 187 versus 158 DALYs per 100,000.
- Forty-two percent of the total DALY burden is experienced by people aged between 45 and 64 years. Those aged 65–74 have the highest age-standardised rate: 617 DALYs per 100,000.
- Māori have 1.24 times the DALY age-standardised rate of non-Māori.
- Māori females aged 65–74 and 75+ have the highest age-standardised rates across the subpopulations analysed: 750 and 660 DALYs per 100,000 people, respectively.
- The mortality component, YLL, is a higher contributor to the burden than the disability component, YLD. The disability burden is less than one fifth of the mortality burden.
- Māori have a higher age-standardised rate of YLLs and a similar age-standardised rate of YLDs than non-Māori. The Māori:non-Māori rate ratios for YLLs and YLDs are 1.30 and 0.94, respectively. This is mainly due to higher incidence rates for Māori males and females (see Table A18, Appendix B), although excess mortality rates were also higher for Māori (2.03; see Table A1, Appendix A).

Table 67: Years of life lost (YLLs) due to incident cases of non-Hodgkin's cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
15–44	53	20%	35	247	11%	30	1.20	301	12%	32
45–64	125	46%	261	888	40%	193	1.35	1014	41%	227
65–74	65	24%	663	582	26%	436	1.52	648	26%	549
75+	27	10%	563	501	23%	385	1.46	528	21%	474
Total	271	100%	161	2219	100%	116	1.39	2490	100%	138
Males										
15–44	108	36%	77	335	13%	43	1.81	443	16%	60
45–64	125	42%	279	1145	45%	255	1.09	1270	45%	267
65–74	48	16%	539	608	24%	486	1.11	655	23%	512
75+	16	5%	472	435	17%	445	1.06	451	16%	458
Total	296	100%	179	2523	100%	147	1.22	2819	100%	163
Total										
15–44	161	28%	56	582	12%	36	1.56	744	14%	46
45–64	250	44%	270	2033	43%	224	1.21	2284	43%	247
65–74	113	20%	601	1190	25%	461	1.30	1303	25%	531
75+	43	8%	518	936	20%	415	1.25	979	18%	466
Total	568	100%	170	4742	100%	131	1.30	5309	100%	151

Rates are per 100,000 people, age-standardised to the WHO standard population.

Table 68: Years of life lived with disability (YLDs) due to incident cases of non-Hodgkin's cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
15–44	5	16%	3	31	8%	4	0.91	36	8%	3
45–64	13	42%	28	124	32%	27	1.03	137	32%	27
65–74	9	27%	87	104	26%	78	1.12	113	27%	83
75+	4	14%	97	134	34%	98	0.99	138	33%	98
Total	31	100%	20	393	100%	19	1.03	424	100%	19
Males										
15–44	10	30%	7	42	9%	5	1.37	52	10%	6
45–64	14	41%	32	171	37%	38	0.83	185	37%	35
65–74	7	21%	80	125	27%	100	0.80	132	26%	90
75+	3	9%	96	127	27%	135	0.71	130	26%	115
Total	34	100%	22	465	100%	26	0.87	499	100%	24
Total										
15–44	15	23%	5	73	8%	4	1.18	88	10%	5
45–64	27	42%	30	295	34%	32	0.91	322	35%	31
65–74	15	24%	84	229	27%	89	0.94	244	26%	86
75+	7	11%	96	261	30%	117	0.83	269	29%	106
Total	65	100%	21	858	100%	22	0.94	923	100%	22

Rates are per 100,000 people, age-standardised to the WHO standard population.

18 Oesophagus

Figure 49: Age-standardised rate of disability-adjusted life years (DALYs) due to incident cases of oesophageal cancer in 2006, by sex, age and ethnicity

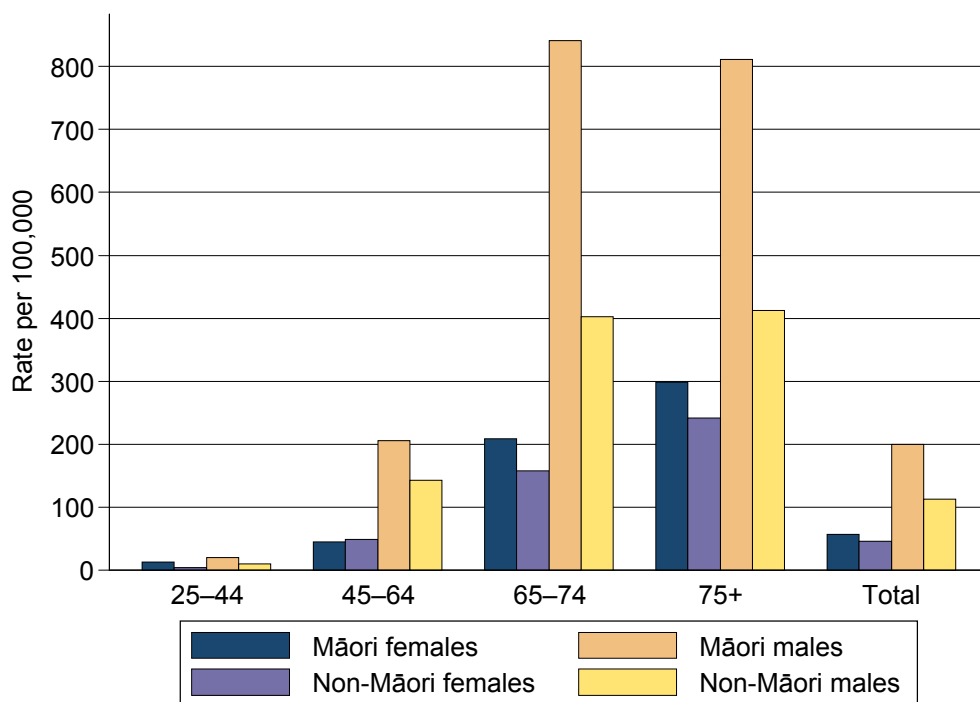


Figure 50: Ratio of YLD:YLL due to incident cases of oesophageal cancer in 2006, by sex, age and ethnicity

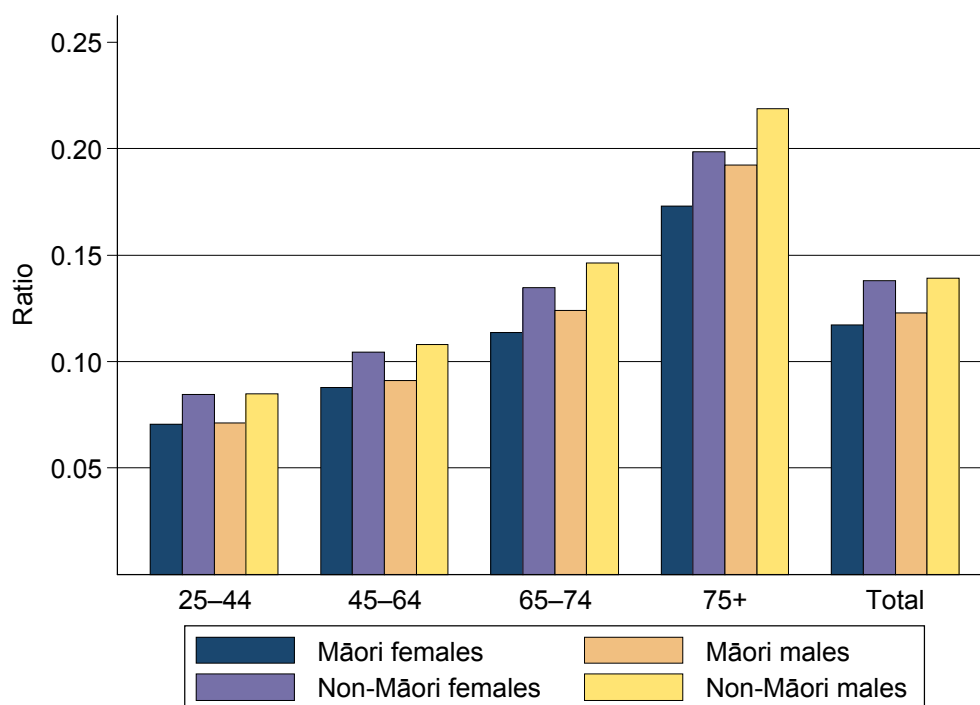


Table 69: Disability-adjusted life years (DALYs) due to incident cases of oesophageal cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	12	17%	12	21	3%	4	3.35	32	4%	8
45–64	21	31%	45	224	28%	48	0.92	245	28%	47
65–74	20	30%	209	212	27%	158	1.32	233	27%	183
75+	14	21%	299	339	43%	241	1.24	353	41%	270
Total	67	100%	56	796	100%	46	1.24	864	100%	51
Males										
25–44	18	8%	20	54	3%	10	2.04	72	4%	15
45–64	89	43%	205	643	40%	143	1.44	732	40%	174
65–74	74	36%	841	503	31%	402	2.09	577	32%	622
75+	27	13%	812	403	25%	413	1.97	430	24%	612
Total	207	100%	200	1603	100%	112	1.78	1810	100%	156
Total										
25–44	29	11%	16	75	3%	7	2.40	104	4%	11
45–64	110	40%	125	868	36%	96	1.31	978	37%	110
65–74	94	34%	525	715	30%	280	1.87	809	30%	403
75+	41	15%	555	742	31%	327	1.70	783	29%	441
Total	274	100%	128	2399	100%	79	1.62	2674	100%	104

Rates are per 100,000 people, age-standardised to the WHO standard population.

- A total of 2674 DALYs, or 104 DALYs per 100,000 people, is estimated to be lost by persons aged 25+ due to oesophageal cancer diagnosed in 2006 in New Zealand.
- The age-standardised rate for males is more than three times higher than the rate for females: 156 versus 51 DALYs per 100,000.
- Thirty-seven percent of the total DALY burden is experienced by people aged between 45 and 64 years. Those aged 75+ have the highest age-standardised rate: 441 DALYs per 100,000.
- Māori have 1.62 times the DALY age-standardised rate of non-Māori.
- Māori males aged 65–74 and 75+ have the highest age-standardised rates across the subpopulations analysed: 841 and 812 DALYs per 100,000 people.
- The mortality component, YLL, is a higher contributor to the burden than the disability component, YLD. The disability burden is slightly more than one tenth of the mortality burden.
- Māori have both higher mortality and higher disability age-standardised rates of YLLs and YLDs than non-Māori. The Māori:non-Māori rate ratios for YLLs and YLDs are 1.65 and 1.44, respectively. This is mainly due to higher incidence rates for Māori (see Table A19, Appendix B), although excess mortality rates were also higher for Māori (1.39; see Table A1, Appendix A).

Table 70: Years of life lost (YLLs) due to incident cases of oesophageal cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	11	18%	11	19	3%	3	3.39	30	4%	7
45–64	19	32%	41	203	29%	44	0.94	222	30%	42
65–74	18	30%	187	187	27%	139	1.34	206	27%	163
75+	12	20%	255	281	41%	201	1.27	293	39%	228
Total	61	100%	50	691	100%	40	1.26	751	100%	45
Males										
25–44	16	9%	19	50	4%	9	2.07	66	4%	14
45–64	82	44%	188	581	41%	129	1.46	662	42%	158
65–74	66	35%	749	438	31%	351	2.13	504	32%	550
75+	23	12%	681	333	24%	339	2.01	356	22%	510
Total	187	100%	178	1402	100%	99	1.81	1589	100%	138
Total										
25–44	27	11%	15	69	3%	6	2.43	96	4%	11
45–64	101	41%	115	784	37%	86	1.33	885	38%	100
65–74	84	34%	468	626	30%	245	1.91	710	30%	357
75+	35	14%	468	614	29%	270	1.73	649	28%	369
Total	247	100%	114	2092	100%	69	1.65	2340	100%	92

Rates are per 100,000 people, age-standardised to the WHO standard population.

Table 71: Years of life lived with disability (YLDs) due to incident cases of oesophageal cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	1	12%	1	2	2%	0	2.83	2	2%	1
45–64	2	26%	4	21	20%	5	0.79	23	20%	4
65–74	2	32%	21	25	24%	19	1.13	27	24%	20
75+	2	31%	44	58	55%	40	1.10	60	53%	42
Total	6	100%	6	106	100%	6	1.07	112	100%	6
Males										
25–44	1	6%	1	4	2%	1	1.73	5	2%	1
45–64	7	36%	17	63	31%	14	1.23	70	32%	16
65–74	8	39%	93	64	32%	51	1.81	72	33%	72
75+	4	19%	131	70	35%	74	1.77	74	33%	103
Total	20	100%	22	201	100%	14	1.59	222	100%	18
Total										
25–44	2	7%	1	6	2%	1	2.03	8	2%	1
45–64	9	33%	10	84	27%	9	1.12	93	28%	10
65–74	10	38%	57	89	29%	35	1.63	99	30%	46
75+	6	22%	88	128	42%	57	1.54	134	40%	72
Total	27	100%	14	307	100%	10	1.44	334	100%	12

Rates are per 100,000 people, age-standardised to the WHO standard population.

19 Ovary

Figure 51: Age-standardised rate of disability-adjusted life years (DALYs) due to incident cases of ovarian cancer in 2006, by age and ethnicity

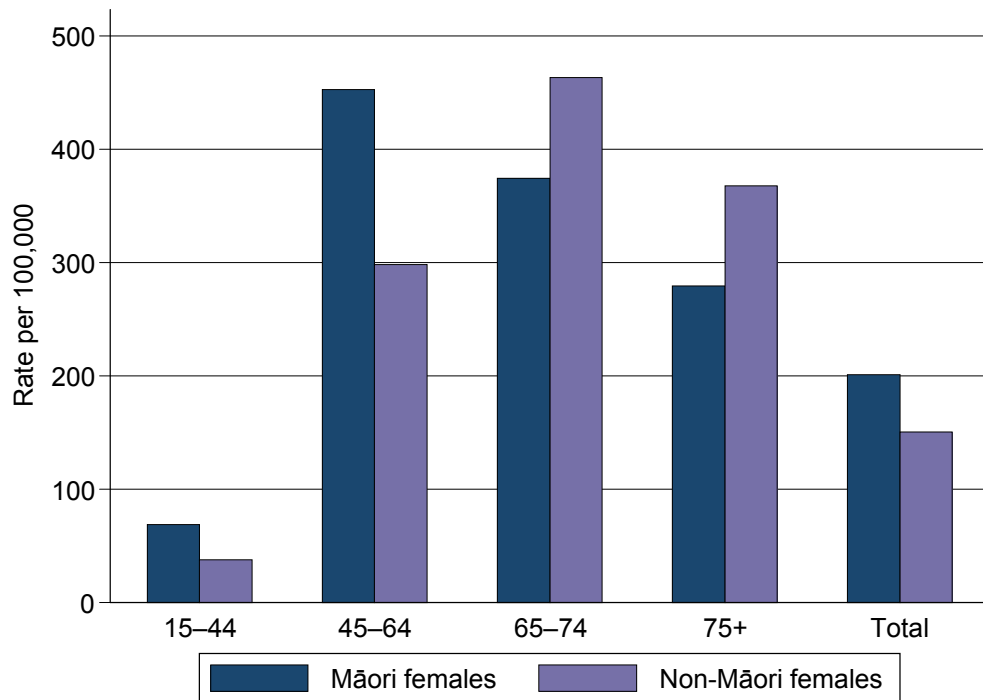


Figure 52: Ratio of YLD:YLL due to incident cases of ovarian cancer in 2006, by age and ethnicity

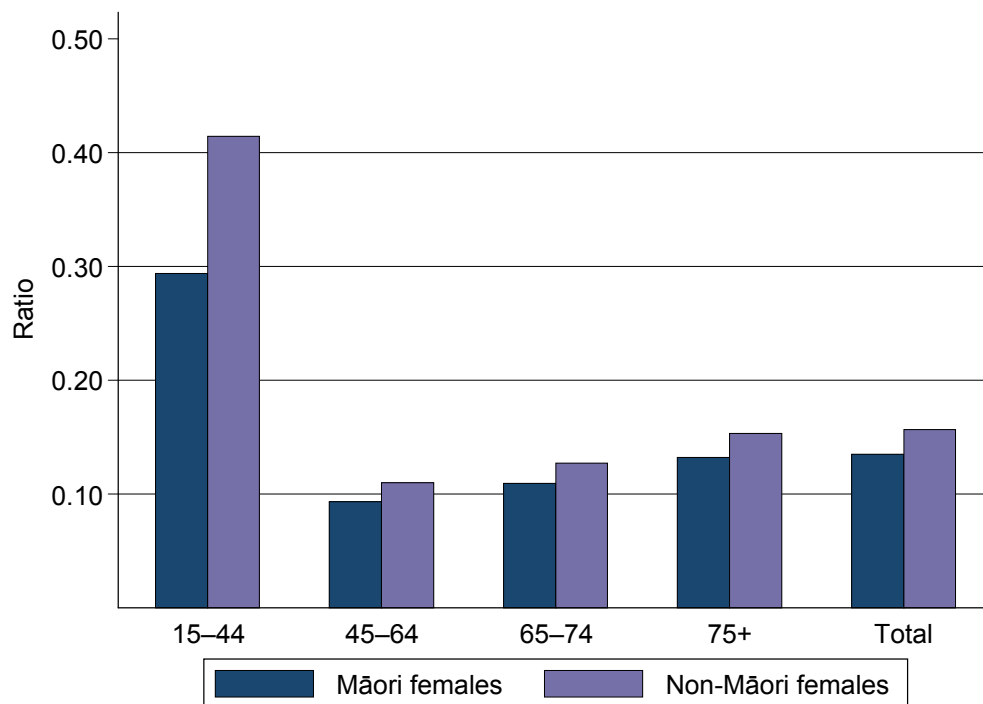


Table 72: Disability-adjusted life years (DALYs) due to incident cases of ovarian cancer in 2006, by age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
15–44	104	28%	69	312	11%	38	1.83	416	13%	53
45–64	222	59%	453	1375	49%	298	1.52	1597	50%	376
65–74	37	10%	374	616	22%	463	0.81	653	21%	419
75+	13	4%	279	483	17%	368	0.76	497	16%	324
Total	376	100%	201	2787	100%	150	1.34	3163	100%	176

Rates are per 100,000 people, age-standardised to the WHO standard population.

- A total of 3163 DALYs, or 176 DALYs per 100,000 people, is estimated to be lost by females aged 15+ due to ovarian cancer diagnosed in 2006 in New Zealand.
- Fifty percent of the total DALY burden is experienced by females aged between 45 and 64 years, and females aged 65–74 have the highest age-standardised rate: 419 DALYs per 100,000.
- Māori have 1.34 times the age-standardised rate of non-Māori.
- Non-Māori females aged 65–74 and Māori females aged 45–64 have the highest age-standardised rates: 463 and 453 DALYs per 100,000 people, respectively.
- The mortality component, YLL, is a higher contributor to the burden than the disability component, YLD. The disability burden is less than one fifth of the mortality burden, although the disability burden approaches a third for those aged 15–44 years.
- Māori have both a higher mortality and a higher disability burden, with Māori:non-Māori rate ratios of 1.36 and 1.17 for YLLs and YLDs, respectively. This is mainly due to higher incidence rates (see Table A20, Appendix B), although excess mortality rates were also higher for Māori (1.45; see Table A1, Appendix A).

Table 73: Years of life lost (YLLs) due to incident cases of ovarian cancer in 2006, by age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
15–44	80	24%	53	223	9%	27	2.00	303	11%	40
45–64	203	62%	414	1239	51%	269	1.54	1442	52%	341
65–74	33	10%	337	547	23%	411	0.82	580	21%	374
75+	12	4%	247	417	17%	319	0.77	429	16%	283
Total	329	100%	177	2426	100%	130	1.36	2754	100%	154

Rates are per 100,000 people, age-standardised to the WHO standard population.

Table 74: Years of life lived with disability (YLDs) due to incident cases of ovarian cancer in 2006, by age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
15–44	23	49%	16	89	25%	11	1.41	113	28%	13
45–64	19	40%	39	136	38%	30	1.31	155	38%	34
65–74	4	8%	37	70	19%	52	0.71	73	18%	45
75+	1	3%	33	66	18%	49	0.67	68	17%	41
Total	47	100%	24	361	100%	20	1.17	408	100%	22

Rates are per 100,000 people, age-standardised to the WHO standard population.

20 Pancreas

Figure 53: Age-standardised rate of disability-adjusted life years (DALYs) due to incident cases of pancreatic cancer in 2006, by sex, age and ethnicity

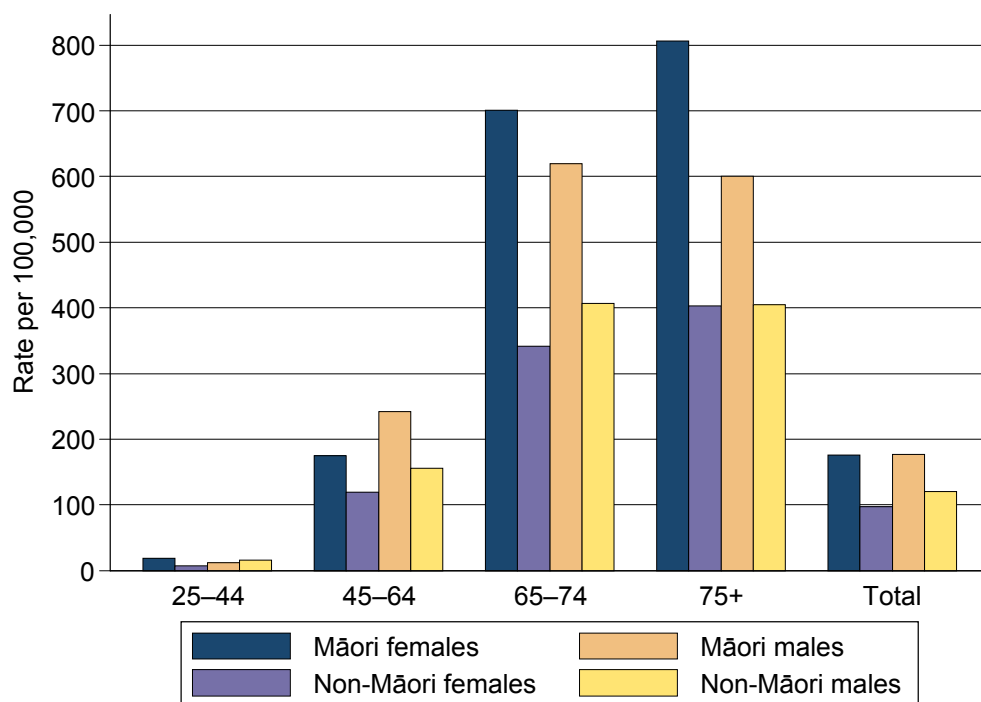


Figure 54: Ratio of YLD:YLL due to incident cases of pancreatic cancer in 2006, by sex, age and ethnicity

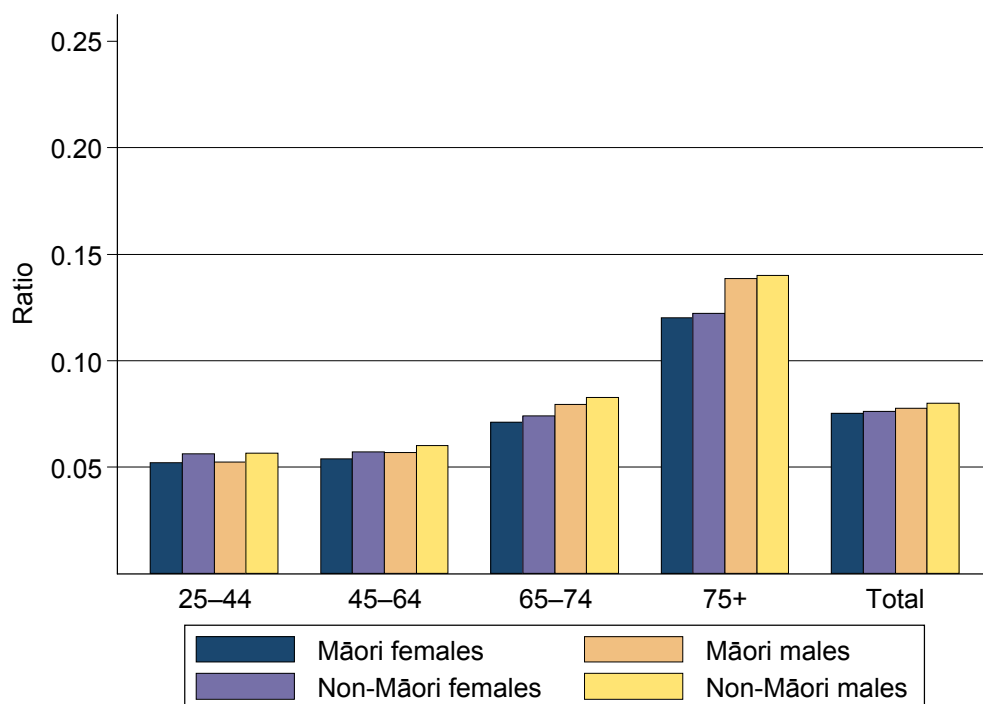


Table 75: Disability-adjusted life years (DALYs) due to incident cases of pancreatic cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25-44	18	9%	19	44	3%	7	2.48	62	3%	13
45-64	82	40%	175	554	34%	120	1.46	636	35%	147
65-74	69	33%	701	458	28%	342	2.05	526	29%	521
75+	38	19%	807	562	35%	403	2.00	600	33%	605
Total	207	100%	176	1618	100%	97	1.81	1825	100%	136
Males										
25-44	11	6%	12	90	5%	16	0.73	100	5%	14
45-64	105	55%	242	702	41%	156	1.55	807	43%	199
65-74	55	29%	620	508	30%	407	1.52	563	30%	513
75+	20	10%	600	396	23%	405	1.48	416	22%	503
Total	190	100%	177	1696	100%	120	1.47	1886	100%	149
Total										
25-44	28	7%	15	134	4%	12	1.28	162	4%	14
45-64	187	47%	208	1255	38%	138	1.51	1443	39%	173
65-74	123	31%	660	966	29%	374	1.76	1089	29%	517
75+	58	15%	703	958	29%	404	1.74	1017	27%	554
Total	397	100%	176	3314	100%	109	1.62	3711	100%	143

Rates are per 100,000 people, age-standardised to the WHO standard population.

- A total of 3711 DALYs, or 143 DALYs per 100,000 people, is estimated to be lost by persons aged 25+ due to pancreatic cancer diagnosed in 2006 in New Zealand.
- The age-standardised rate for males is higher than the rate for females: 149 versus 136 DALYs per 100,000.
- Thirty-nine percent of the total DALY burden is experienced by people aged between 45 and 64 years. Those aged 75+ have the highest age-standardised rate: 554 DALYs per 100,000.
- Māori have 1.62 times the DALY age-standardised rate of non-Māori.
- Māori females aged 75+ and 65–74 have the highest age-standardised rates across the subpopulations analysed: 807 and 701 DALYs per 100,000 people, respectively.
- The mortality component, YLL, is a higher contributor to the burden than the disability component, YLD. The disability burden is less than one tenth of the mortality burden.
- Māori have a higher age-standardised rate of both YLLs and YLDs than non-Māori. The Māori:non-Māori rate ratios for YLLs and YLDs are 1.63 and 1.59, respectively. This is mainly due to higher incidence rates for Māori males and females (see Table A21, Appendix B). Excess mortality rates are similar for Māori (1.16: see Table A1, Appendix A).

Table 76: Years of life lost (YLLs) due to incident cases of pancreatic cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	17	9%	18	42	3%	7	2.49	59	3%	12
45–64	78	40%	166	524	35%	113	1.46	602	36%	140
65–74	64	33%	654	426	29%	318	2.06	490	29%	486
75+	34	18%	720	499	33%	359	2.01	533	32%	539
Total	193	100%	163	1491	100%	90	1.81	1684	100%	127
Males										
25–44	10	6%	11	85	5%	15	0.73	95	5%	13
45–64	100	56%	229	662	42%	147	1.56	762	44%	188
65–74	51	28%	574	469	30%	376	1.53	520	30%	475
75+	18	10%	527	349	22%	355	1.49	367	21%	441
Total	178	100%	164	1566	100%	111	1.48	1744	100%	138
Total										
25–44	27	7%	15	127	4%	11	1.28	154	4%	13
45–64	178	48%	197	1185	39%	130	1.52	1363	40%	164
65–74	115	31%	614	896	29%	347	1.77	1010	29%	481
75+	52	14%	624	848	28%	357	1.75	901	26%	490
Total	371	100%	164	3056	100%	101	1.63	3428	100%	132

Rates are per 100,000 people, age-standardised to the WHO standard population.

Table 77: Years of life lived with disability (YLDs) due to incident cases of pancreatic cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	1	7%	1	2	2%	0	2.30	3	2%	1
45–64	4	31%	9	30	24%	6	1.38	34	24%	8
65–74	5	34%	47	32	25%	24	1.97	36	26%	35
75+	4	29%	87	63	50%	44	1.97	67	48%	65
Total	13	100%	12	127	100%	7	1.79	141	100%	10
Males										
25–44	1	4%	1	5	4%	1	0.68	5	4%	1
45–64	6	45%	13	40	31%	9	1.47	45	32%	11
65–74	4	32%	46	39	30%	31	1.47	43	30%	38
75+	2	18%	73	47	36%	50	1.47	49	34%	61
Total	12	100%	13	130	100%	9	1.43	143	100%	11
Total										
25–44	1	6%	1	7	3%	1	1.19	9	3%	1
45–64	10	38%	11	70	27%	8	1.44	80	28%	9
65–74	8	33%	46	71	27%	27	1.68	79	28%	37
75+	6	24%	80	110	43%	47	1.71	116	41%	63
Total	26	100%	13	257	100%	8	1.59	283	100%	10

Rates are per 100,000 people, age-standardised to the WHO standard population.

21 Prostate

Figure 55: Age-standardised rate of disability-adjusted life years (DALYs) due to incident cases of prostate cancer in 2006, by age and ethnicity

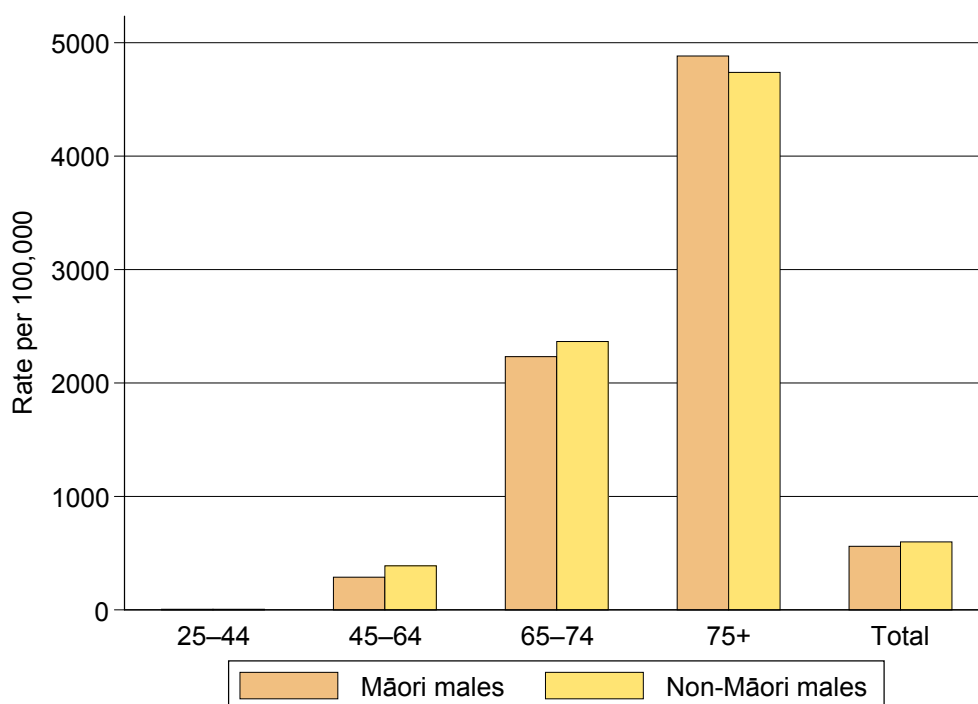


Figure 56: Ratio of YLD:YLL due to incident cases of prostate cancer in 2006, by age and ethnicity

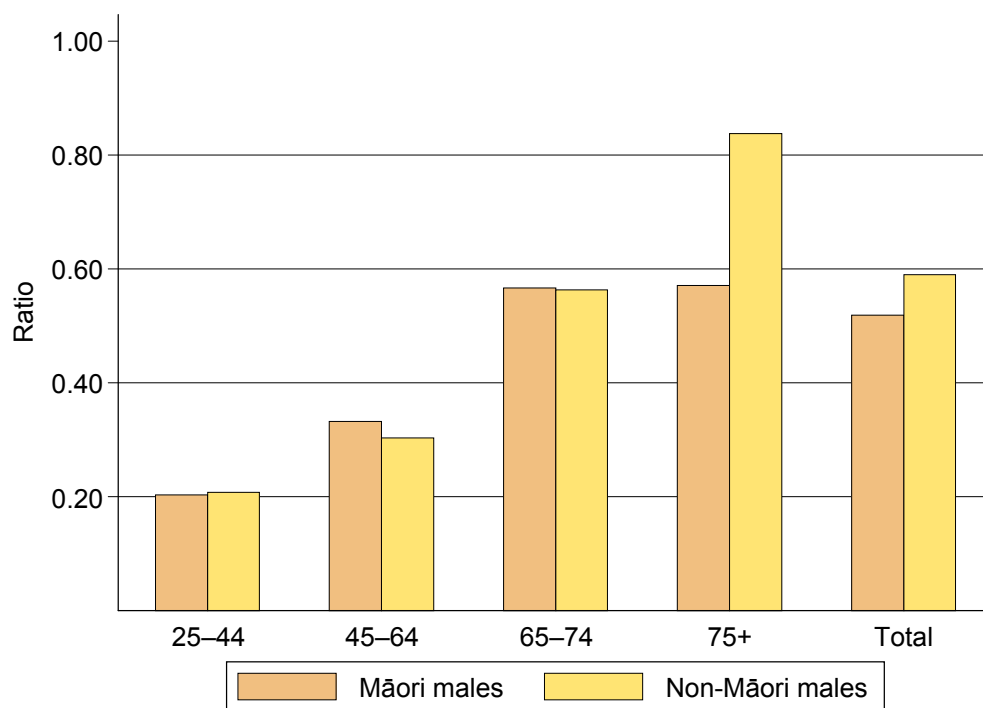


Table 78: Disability-adjusted life years (DALYs) due to incident cases of prostate cancer in 2006, by age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Males										
25-44	4	1%	5	23	0%	4	1.10	27	0%	4
45-64	120	25%	291	1758	19%	387	0.75	1877	19%	339
65-74	196	41%	2233	2973	32%	2369	0.94	3169	32%	2301
75+	160	33%	4883	4656	49%	4738	1.03	4816	49%	4811
Total	480	100%	562	9410	100%	599	0.94	9890	100%	581

Rates are per 100,000 people, age-standardised to the WHO standard population.

- A total of 9890 DALYs, or 581 DALYs per 100,000 people, is estimated to be lost by the male population aged 25+ due to prostate cancer diagnosed in 2006 in New Zealand.
- Forty-nine percent of the total DALY burden is experienced by males aged 75+ years, who also have the highest age-standardised rate: 4811 DALYs per 100,000.
- Māori have 0.94 times the age-standardised rate of non-Māori.
- Māori and non-Māori males aged 75+ have the highest age-standardised rates: 4883 and 4738 DALYs per 100,000 people, respectively.

- Unlike other cancers, the mortality component, YLL, is a lower contributor to the burden than the disability component, YLD. The disability burden is just higher than the mortality burden.
- Māori have a similar age-standardised rate of YLLs and a lower age-standardised rate of YLDs than non-Māori. The Māori:non-Māori rate ratios for YLLs and YLDs are 0.98 and 0.86, respectively. This is mainly due to higher excess mortality rates for Māori (1.93; see Table A1, Appendix A), although non-Māori have a slightly higher incidence rate than Māori (see Table A22, Appendix B).

Table 79: Years of life lost (YLLs) due to incident cases of prostate cancer in 2006, by age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Males										
25–44	3	1%	4	19	0%	4	1.10	23	0%	4
45–64	90	28%	218	1,349	23%	297	0.74	1439	23%	258
65–74	126	39%	1426	1,904	33%	1515	0.94	2030	33%	1470
75+	105	32%	3108	2,560	44%	2578	1.21	2665	43%	2843
Total	325	100%	370	5,832	100%	377	0.98	6157	100%	373

Rates are per 100,000 people, age-standardised to the WHO standard population.

Table 80: Years of life lived with disability (YLDs) due to incident cases of prostate cancer in 2006, by age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Males										
25–44	1	0%	1	4	0%	1	1.08	5	0%	1
45–64	29	19%	73	409	11%	90	0.81	438	12%	81
65–74	70	45%	808	1069	30%	854	0.95	1139	31%	831
75+	55	36%	1775	2096	59%	2160	0.82	2151	58%	1968
Total	155	100%	192	3578	100%	222	0.86	3732	100%	207

Rates are per 100,000 people, age-standardised to the WHO standard population.

22 Stomach

Figure 57: Age-standardised rate of disability-adjusted life years (DALYs) due to incident cases of stomach cancer in 2006, by sex, age and ethnicity

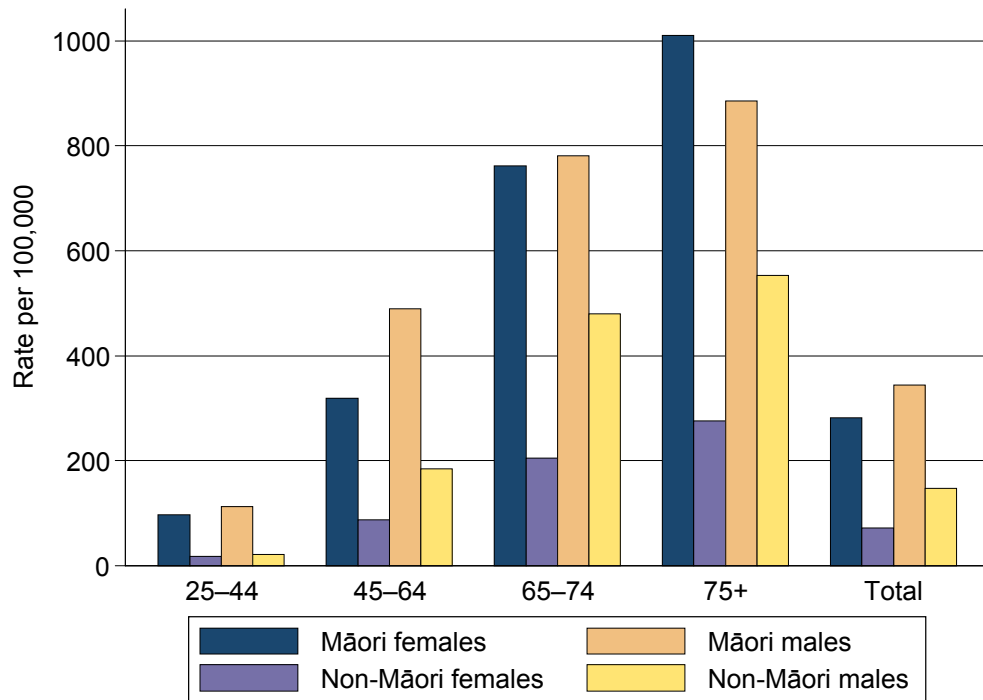


Figure 58: Ratio of YLD:YLL due to incident cases of stomach cancer in 2006, by sex, age and ethnicity

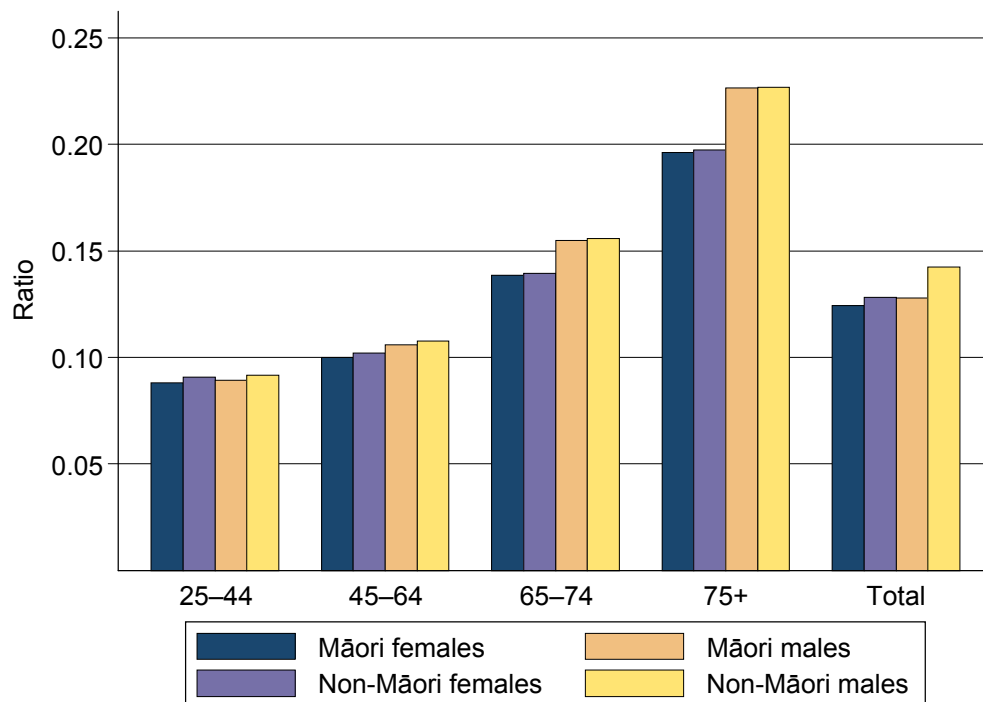


Table 81: Disability-adjusted life years (DALYs) due to incident cases of stomach cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	93	25%	97	98	8%	17	5.60	191	12%	57
45–64	153	42%	319	404	35%	88	3.63	558	37%	203
65–74	74	20%	762	276	24%	205	3.71	350	23%	484
75+	48	13%	1011	381	33%	276	3.66	429	28%	644
Total	369	100%	282	1159	100%	72	3.90	1528	100%	177
Males										
25–44	99	24%	113	114	5%	21	5.29	213	9%	67
45–64	215	52%	489	831	40%	185	2.65	1046	42%	337
65–74	69	17%	781	599	29%	479	1.63	668	27%	630
75+	29	7%	885	540	26%	553	1.60	569	23%	719
Total	412	100%	344	2084	100%	147	2.34	2496	100%	245
Total										
25–44	192	25%	105	212	7%	19	5.43	404	10%	62
45–64	368	47%	404	1235	38%	136	2.97	1604	40%	270
65–74	143	18%	772	875	27%	342	2.25	1018	25%	557
75+	77	10%	948	921	28%	415	2.29	998	25%	681
Total	780	100%	313	3243	100%	110	2.85	4023	100%	211

Rates are per 100,000 people, age-standardised to the WHO standard population.

- A total of 4023 DALYs, or 211 DALYs per 100,000 people, is estimated to be lost by persons aged 25+ due to stomach cancer diagnosed in 2006 in New Zealand.
- The age-standardised rate for males is higher than the rate for females: 245 versus 177 DALYs per 100,000.
- Forty percent of the total DALY burden is experienced by people aged between 45 and 64 years. Those aged 75+ have the highest age-standardised rate: 681 DALYs per 100,000.
- Māori have 2.85 times the DALY age-standardised rate of non-Māori.
- Māori females and males aged 75+ have the highest age-standardised rates across the subpopulations analysed: 1011 and 885 DALYs per 100,000 people, respectively.
- The mortality component, YLL, is a higher contributor to the burden than the disability component, YLD. The disability burden is slightly more than one tenth of the mortality burden.
- Māori have both higher mortality and higher disability age-standardised rates of YLLs and YLDs than non-Māori. The Māori:non-Māori rate ratios for YLLs and YLDs are 2.88 and 2.64, respectively. This is mainly due to higher incidence rates for Māori (see Table A23, Appendix B). Excess mortality rates are similar for Māori and non-Māori (1.04; see Table A1, Appendix A).

Table 82: Years of life lost (YLLs) due to incident cases of stomach cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	85	26%	89	90	9%	16	5.61	175	13%	53
45–64	140	42%	290	367	36%	80	3.64	506	38%	185
65–74	65	20%	669	242	24%	180	3.71	307	23%	425
75+	40	12%	845	317	31%	231	3.66	357	27%	538
Total	331	100%	251	1015	100%	64	3.91	1346	100%	157
Males										
25–44	91	25%	104	104	6%	20	5.30	195	9%	62
45–64	195	53%	442	750	41%	167	2.66	945	43%	305
65–74	60	16%	676	518	29%	415	1.63	578	26%	546
75+	24	7%	722	444	24%	451	1.60	468	21%	587
Total	369	100%	305	1817	100%	129	2.37	2186	100%	217
Total										
25–44	176	25%	96	194	7%	18	5.44	370	10%	57
45–64	334	48%	366	1117	39%	123	2.97	1451	41%	245
65–74	125	18%	673	760	27%	298	2.26	885	25%	485
75+	65	9%	783	760	27%	341	2.30	825	23%	562
Total	700	100%	278	2832	100%	96	2.88	3531	100%	187

Rates are per 100,000 people, age-standardised to the WHO standard population.

Table 83: Years of life lived with disability (YLDs) due to incident cases of stomach cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	8	20%	8	8	6%	1	5.45	16	9%	5
45–64	14	37%	29	37	26%	8	3.56	51	28%	19
65–74	9	24%	93	34	23%	25	3.69	43	23%	59
75+	7	20%	166	65	45%	46	3.64	72	40%	106
Total	38	100%	31	144	100%	8	3.79	182	100%	20
Males										
25–44	8	19%	9	10	4%	2	5.16	18	6%	6
45–64	20	48%	47	81	30%	18	2.61	101	33%	32
65–74	9	21%	105	81	30%	65	1.62	90	29%	85
75+	5	12%	164	96	36%	102	1.60	101	33%	133
Total	42	100%	39	267	100%	18	2.13	310	100%	29
Total										
25–44	16	19%	9	18	4%	2	5.29	33	7%	5
45–64	34	43%	38	118	29%	13	2.91	152	31%	25
65–74	18	23%	99	114	28%	45	2.20	132	27%	72
75+	12	15%	165	161	39%	74	2.23	173	35%	119
Total	80	100%	35	411	100%	13	2.64	492	100%	24

Rates are per 100,000 people, age-standardised to the WHO standard population.

23 Uterus

Figure 59: Age-standardised rate of disability-adjusted life years (DALYs) due to incident cases of uterine cancer in 2006, by age and ethnicity

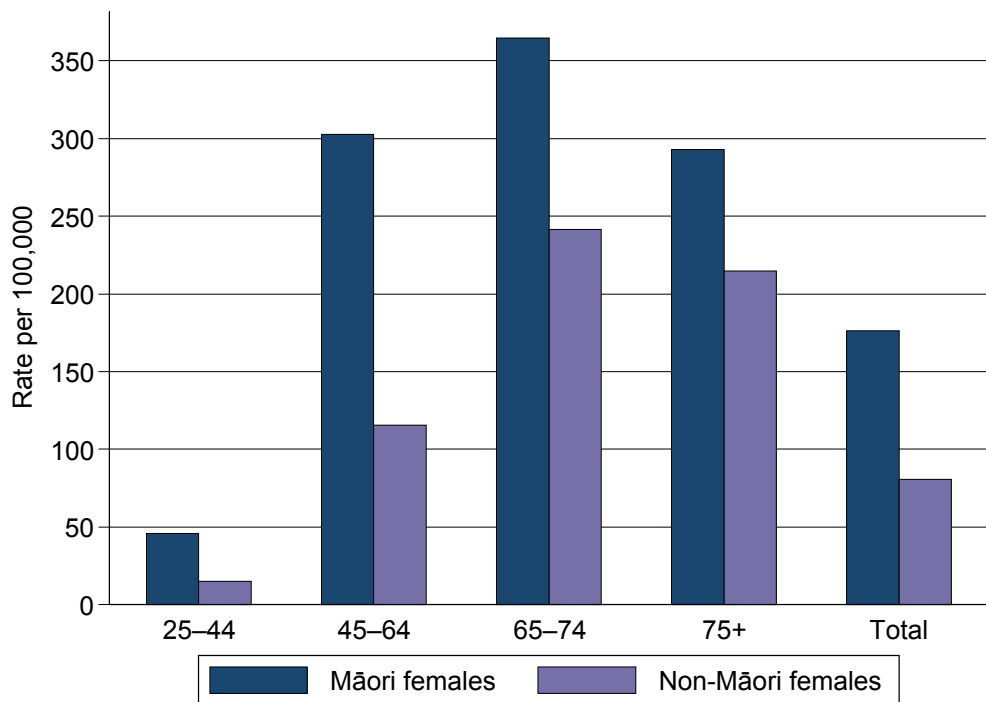


Figure 60: Ratio of YLD:YLL due to incident cases of uterine cancer in 2006, by age and ethnicity

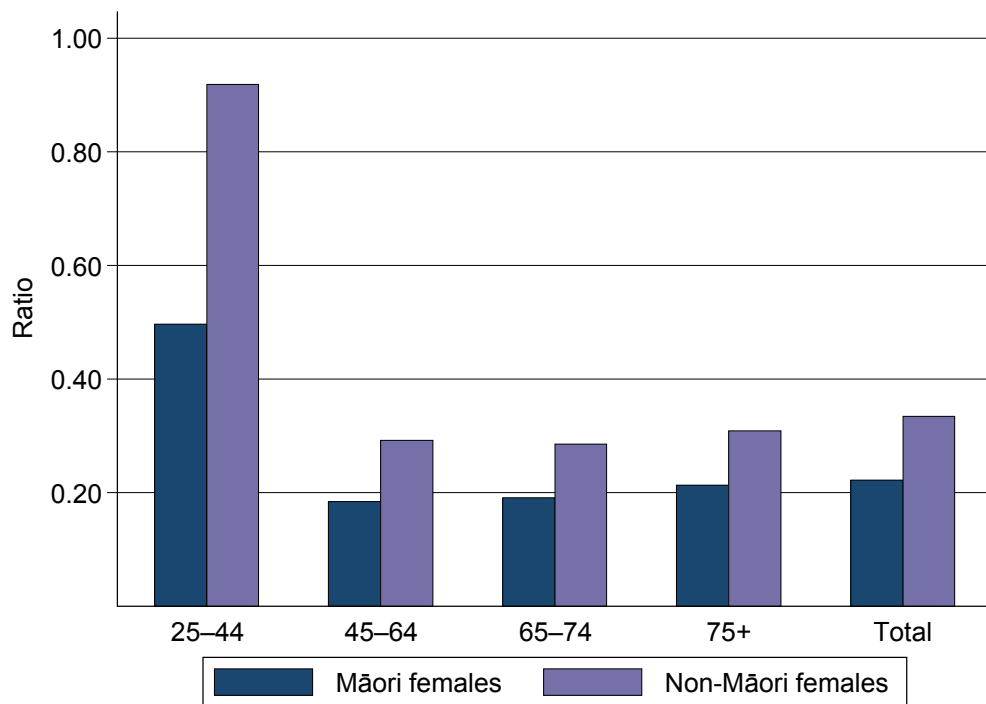


Table 84: Disability-adjusted life years (DALYs) due to incident cases of uterine cancer in 2006, by age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	44	18%	46	85	7%	15	3.07	129	9%	30
45–64	146	61%	303	532	44%	116	2.62	678	46%	209
65–74	36	15%	365	321	26%	241	1.51	357	24%	303
75+	14	6%	293	280	23%	215	1.36	294	20%	254
Total	240	100%	176	1219	100%	81	2.19	1458	100%	128

Rates are per 100,000 people, age-standardised to the WHO standard population.

- A total of 1458 DALYs, or 128 DALYs per 100,000 people, is estimated to be lost by females aged 25+ due to uterine cancer diagnosed in 2006 in New Zealand.
- Forty-six percent of the total DALY burden is experienced by females aged between 45 and 64 years, and females aged 65–74 have the highest age-standardised rate: 303 DALYs per 100,000.
- Māori have 2.19 times the age-standardised rate of non-Māori.
- Māori females aged 65–74 and 45–64 have the highest age-standardised rates: 365 and 303 DALYs per 100,000 people, respectively.
- The mortality component, YLL, is a higher contributor to the burden than the disability component, YLD. The disability burden is less than one-third of the mortality burden.
- Māori have both a higher mortality and a higher disability burden, with Māori:non-Māori rate ratios of 2.39 and 1.59 for YLLs and YLDs, respectively. This is mainly due to higher incidence rates (see Table A24, Appendix B), although excess mortality rates were also higher for Māori (1.86; see Table A1, Appendix A).

Table 85: Years of life lost (YLLs) due to incident cases of uterine cancer in 2006, by age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	30	15%	31	45	5%	8	3.94	75	7%	19
45–64	123	63%	256	412	45%	89	2.86	535	48%	172
65–74	30	16%	306	250	27%	188	1.63	280	25%	247
75+	12	6%	242	212	23%	164	1.47	223	20%	203
Total	195	100%	144	919	100%	60	2.39	1114	100%	102

Rates are per 100,000 people, age-standardised to the WHO standard population.

Table 86: Years of life lived with disability (YLDs) due to incident cases of uterine cancer in 2006, by age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
25–44	15	32%	15	40	13%	7	2.13	54	16%	11
45–64	22	50%	47	120	40%	26	1.80	143	41%	37
65–74	6	13%	59	71	24%	54	1.09	77	22%	56
75+	2	5%	52	68	23%	51	1.02	71	21%	51
Total	45	100%	32	300	100%	20	1.59	345	100%	26

Rates are per 100,000 people, age-standardised to the WHO standard population.

24 Testis

Figure 61: Age-standardised rate of disability-adjusted life years (DALYs) due to incident cases of testicular cancer in 2006, by age and ethnicity

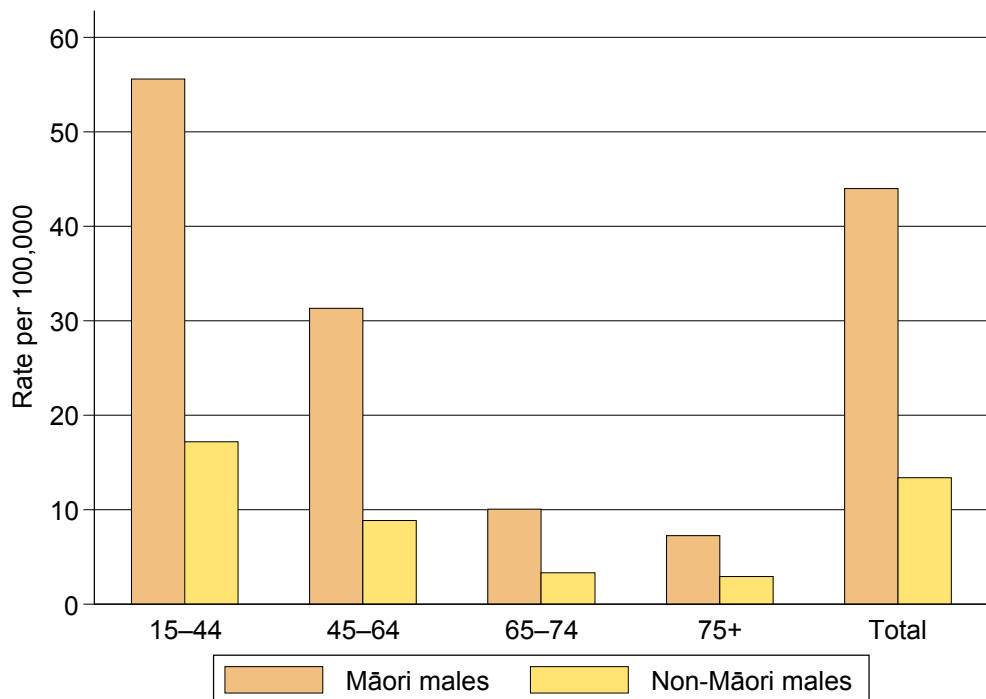


Figure 62: Ratio of YLD:YLL due to incident cases of testicular cancer in 2006, by age and ethnicity

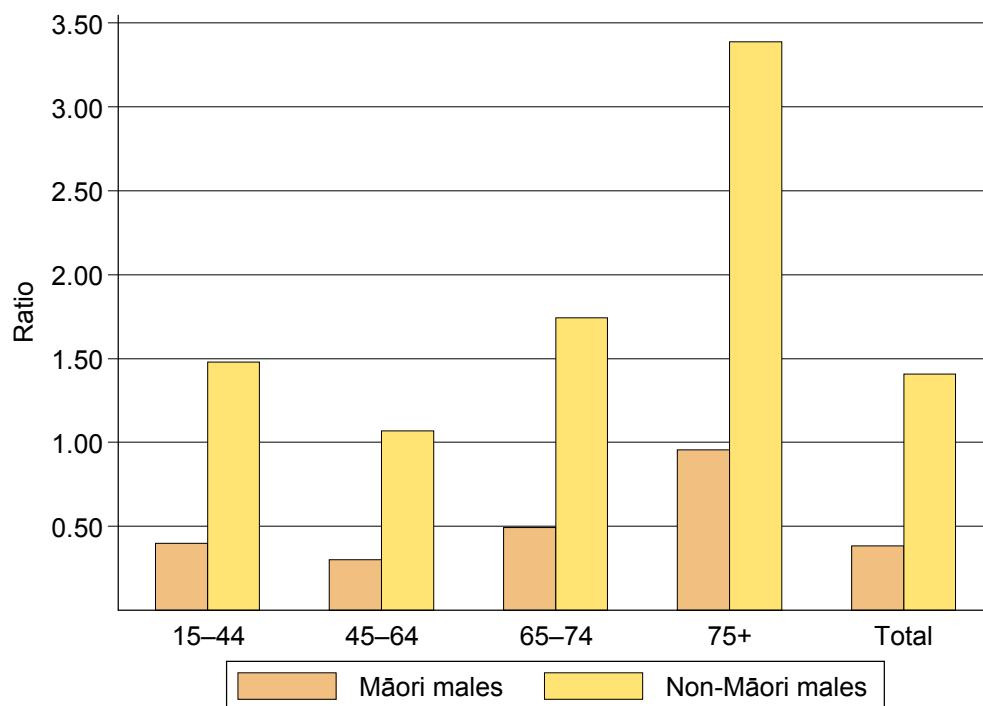


Table 87: Disability-adjusted life years (DALYs) due to incident cases of testicular cancer in 2006, by age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Males										
15-44	76	82%	56	124	73%	17	3.24	201	76%	36
45-64	16	17%	31	39	23%	9	3.52	55	21%	20
65-74	1	1%	10	4	2%	3	3.03	5	2%	7
75+	0	0%	7	3	2%	3	2.47	3	1%	5
Total	93	100%	44	170	100%	13	3.28	263	100%	29

Rates are per 100,000 people, age-standardised to the WHO standard population.

- A total of 264 DALYs, or 29 DALYs per 100,000 people, is estimated to be lost by the male population aged 15+ due to testicular cancer diagnosed in 2006 in New Zealand.
- Seventy-six percent of the total DALY burden is experienced by males aged between 15 and 44 years. They also have the highest age-standardised rate: 37 DALYs per 100,000.
- Māori have 3.35 times the age-standardised rate of non-Māori.
- Māori males aged 15-44 and 45-64 have the highest age-standardised rates: 57 and 32 DALYs per 100,000 people, respectively.

- Unlike other cancers, the mortality and disability components, YLL and YLD, have similar contributions.
- Māori have a higher age-standardised rate of YLLs and a higher age-standardised rate of YLDs than non-Māori. The Māori:non-Māori rate ratios for YLLs and YLDs are 5.82 and 1.59, respectively. Excess mortality rates are also higher for Māori (3.86; see Table A1, Appendix A), although this is not statistically significant.

Table 88: Years of life lost (YLLs) due to incident cases of testicular cancer in 2006, by age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Males										
15–44	55	81%	40	50	70%	7	5.85	105	75%	24
45–64	13	18%	25	19	27%	4	5.77	31	22%	14
65–74	1	1%	7	2	2%	1	5.40	2	2%	4
75+	0	0%	4	1	1%	1	5.23	1	1%	2
Total	68	100%	32	71	100%	6	5.82	139	100%	19

Rates are per 100,000 people, age-standardised to the WHO standard population.

Table 89: Years of life lived with disability (YLDs) due to incident cases of testicular cancer in 2006, by age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Males										
15–44	22	84%	16	74	75%	10	1.59	96	77%	13
45–64	4	14%	7	20	20%	5	1.62	24	19%	6
65–74	0	1%	3	3	3%	2	1.53	3	2%	3
75+	0	0%	3	2	2%	2	1.49	2	2%	3
Total	26	100%	12	99	100%	8	1.59	125	100%	10

Rates are per 100,000 people, age-standardised to the WHO standard population.

25 Thyroid

Figure 63: Age-standardised rate of disability-adjusted life years (DALYs) due to incident cases of thyroid cancer in 2006, by sex, age and ethnicity

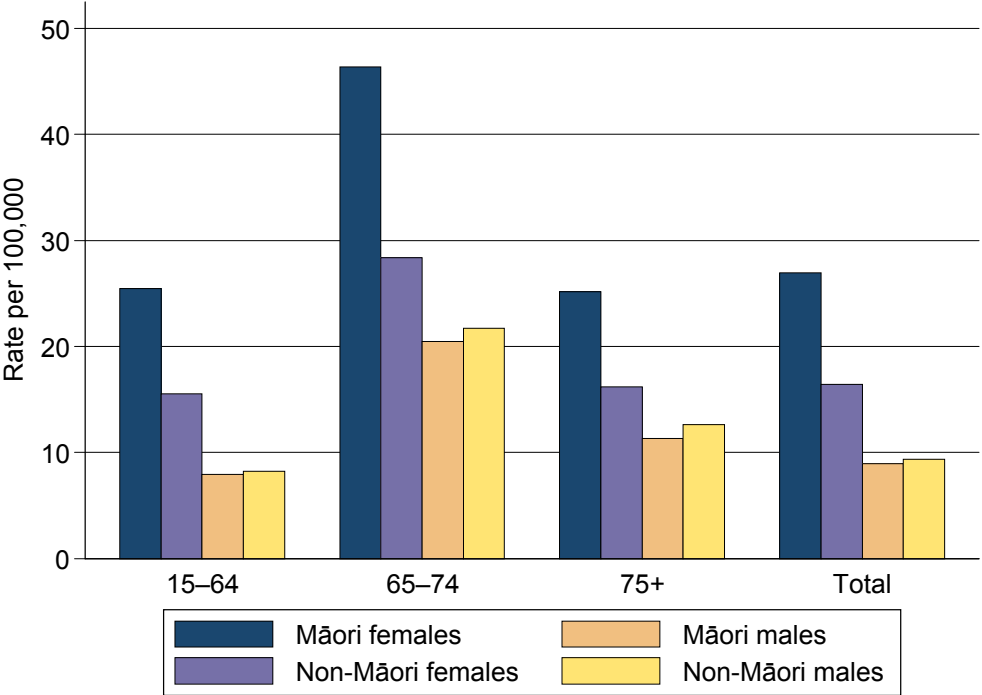


Figure 64: Ratio of YLD:YLL due to incident cases of thyroid cancer in 2006, by sex, age and ethnicity

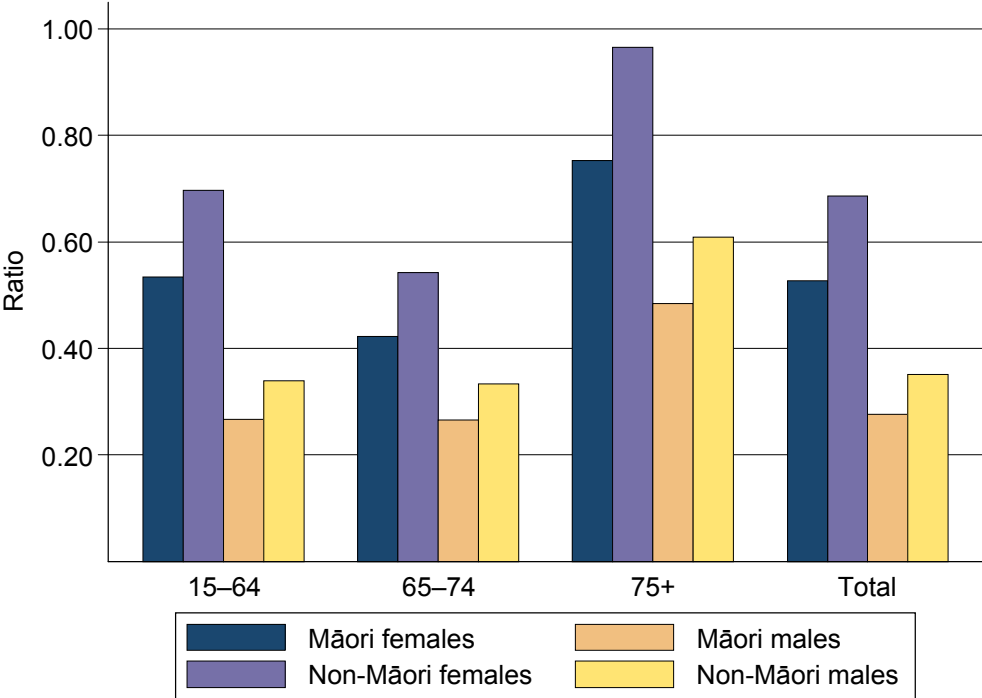


Table 90: Disability-adjusted life years (DALYs) due to incident cases of thyroid cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
15–64	47	89%	25	218	79%	16	1.64	265	80%	21
65–74	5	9%	46	38	14%	28	1.63	42	13%	37
75+	1	2%	25	21	8%	16	1.55	23	7%	21
Total	53	100%	27	277	100%	16	1.64	330	100%	22
Males										
15–64	13	85%	8	116	75%	8	0.96	129	76%	8
65–74	2	12%	20	27	17%	22	0.94	29	17%	21
75+	0	3%	11	12	8%	13	0.90	12	7%	12
Total	15	100%	9	155	100%	9	0.96	171	100%	9
Total										
15–64	60	88%	17	334	77%	12	1.41	394	79%	14
65–74	6	9%	33	65	15%	25	1.33	71	14%	29
75+	2	2%	18	33	8%	14	1.27	35	7%	16
Total	68	100%	18	433	100%	13	1.39	500	100%	15

Rates are per 100,000 people, age-standardised to the WHO standard population.

- A total of 500 DALYs, or 15 DALYs per 100,000 people, is estimated to be lost by persons aged 15+ due to thyroid cancer diagnosed in 2006 in New Zealand.
- The age-standardised rate for females is higher than the rate for males: 22 versus 9 DALYs per 100,000.
- Seventy-nine percent of the total DALY burden is experienced by people aged between 15 and 64 years. Those aged 65–74 have the highest age-standardised rate: 29 DALYs per 100,000.
- Māori have 1.39 times the DALY age-standardised rate of non-Māori.
- Māori and non-Māori females aged 65–74 have the highest age-standardised rates across the subpopulations analysed: 46 and 28 DALYs per 100,000 people, respectively.
- Unlike other cancers, the mortality and disability components (YLL and YLD) have similar contributions.
- Māori have both higher mortality and higher disability age-standardised rates of YLLs and YLDs than non-Māori. The Māori:non-Māori rate ratios for YLLs and YLDs are 1.48 and 1.23, respectively. This is mainly due to higher incidence rates for Māori (Table A26, Appendix B). Excess mortality rates are higher for Māori (1.34, Table A1, Appendix A).

Table 91: Years of life lost (YLLs) due to incident cases of thyroid cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
15–64	30	88%	17	134	79%	9	1.82	164	81%	13
65–74	3	10%	33	24	14%	18	1.77	28	14%	25
75+	1	2%	14	11	6%	8	1.74	11	6%	11
Total	34	100%	18	169	100%	10	1.81	203	100%	14
Males										
15–64	10	85%	6	89	76%	6	1.02	99	77%	6
65–74	1	12%	16	20	17%	16	0.99	22	17%	16
75+	0	2%	8	8	7%	8	0.97	8	6%	8
Total	12	100%	7	117	100%	7	1.01	128	100%	7
Total										
15–64	40	88%	11	223	78%	8	1.50	262	79%	10
65–74	5	10%	24	45	16%	17	1.41	49	15%	21
75+	1	2%	11	18	6%	8	1.37	19	6%	10
Total	45	100%	12	286	100%	8	1.48	331	100%	10

Rates are per 100,000 people, age-standardised to the WHO standard population.

Table 92: Years of life lived with disability (YLDs) due to incident cases of thyroid cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
15–64	17	90%	9	84	78%	6	1.39	101	80%	8
65–74	1	7%	14	13	12%	10	1.38	15	11%	12
75+	0	3%	11	11	10%	8	1.36	11	9%	9
Total	19	100%	9	108	100%	7	1.39	127	100%	8
Males										
15–64	3	85%	2	28	71%	2	0.80	30	72%	2
65–74	0	11%	4	7	17%	5	0.79	7	17%	5
75+	0	3%	4	4	12%	5	0.77	5	11%	4
Total	3	100%	2	39	100%	2	0.80	42	100%	2
Total										
15–64	20	90%	5	112	76%	4	1.25	132	78%	5
65–74	2	8%	9	20	14%	8	1.17	22	13%	8
75+	1	3%	7	15	10%	6	1.14	16	9%	7
Total	22	100%	6	147	100%	5	1.23	169	100%	5

Rates are per 100,000 people, age-standardised to the WHO standard population.

26 All childhood cancer

Figure 65: Age-standardised rate of disability-adjusted life years (DALYs) due to incident cases of all childhood cancer in 2006, by sex, age and ethnicity

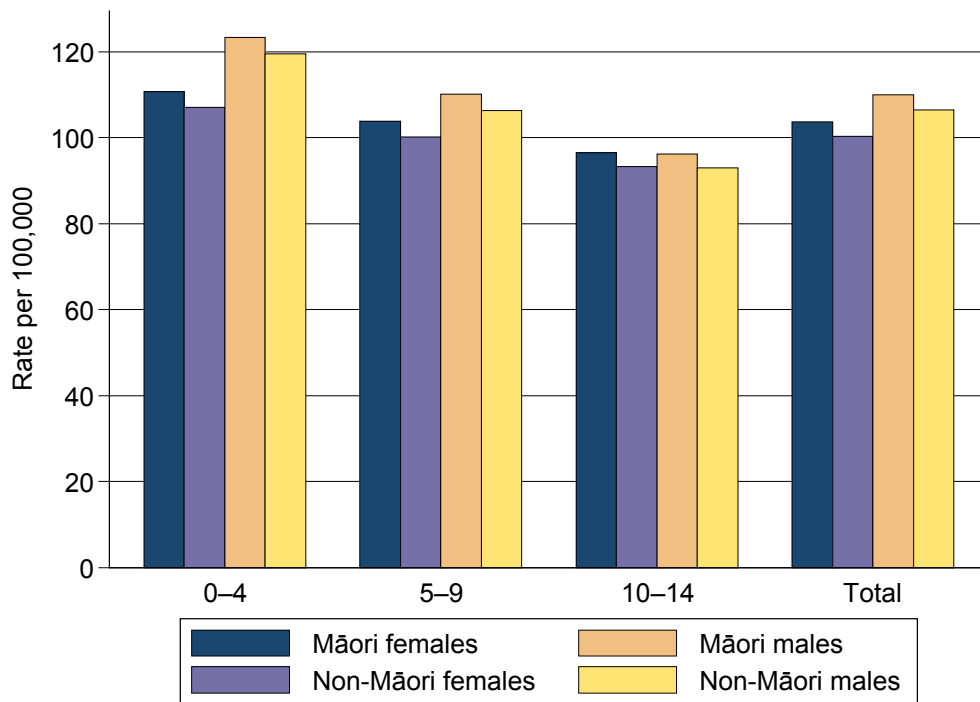


Figure 66: Ratio of YLD:YLL due to incident cases of all childhood cancer in 2006, by sex, age and ethnicity

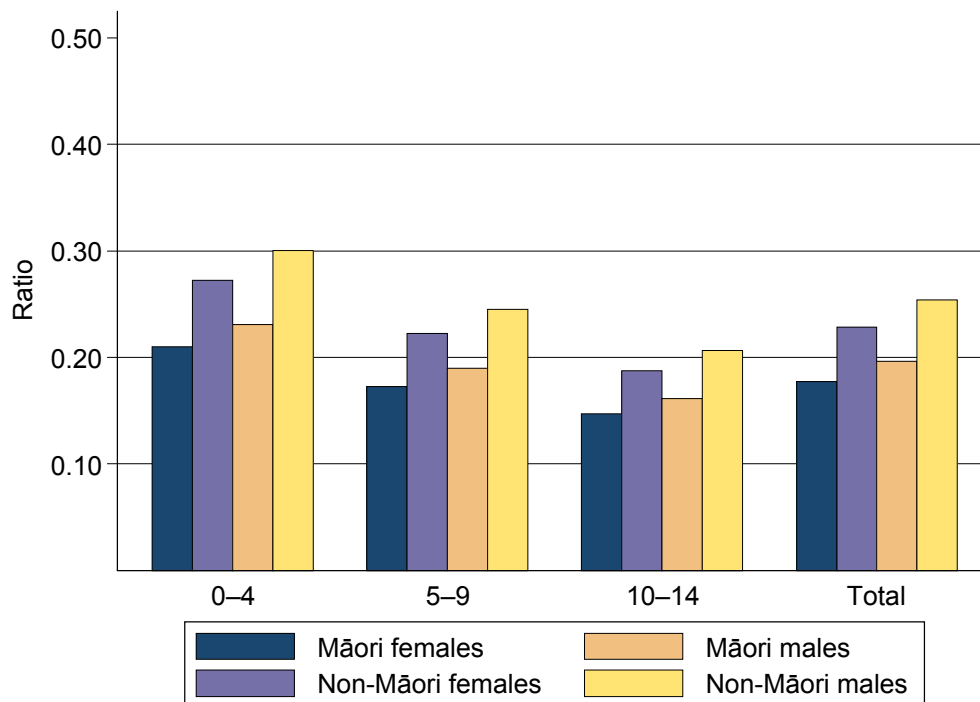


Table 93: Disability-adjusted life years (DALYs) due to incident cases of all childhood cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
0–4	43	37%	111	108	34%	107	1.03	151	35%	109
5–9	38	33%	104	107	33%	100	1.04	144	33%	102
10–14	34	30%	96	108	33%	93	1.03	142	32%	95
Total	114	100%	104	323	100%	100	1.03	437	100%	102
Males										
0–4	50	39%	123	126	35%	120	1.03	176	36%	121
5–9	42	33%	110	118	33%	106	1.03	160	33%	108
10–14	36	28%	96	113	32%	93	1.03	150	31%	95
Total	128	100%	110	358	100%	106	1.03	486	100%	108
Total										
0–4	93	38%	117	235	34%	113	1.03	327	35%	115
5–9	80	33%	107	225	33%	103	1.04	304	33%	105
10–14	70	29%	96	221	33%	93	1.03	292	32%	95
Total	243	100%	107	681	100%	103	1.03	924	100%	105

Rates are per 100,000 people, age-standardised to the WHO standard population.

- A total of 924 DALYs, or 105 DALYs per 100,000 people, is estimated to be lost by persons aged 0–14 due to childhood cancer diagnosed in 2006 in New Zealand.
- The age-standardised rates for males and females are similar: 108 and 102 DALYs per 100,000, respectively.
- The DALY burden is evenly distributed across the three age categories, with children aged 0–4 experiencing a slightly higher burden (35% of the total burden) and an age-standardised rate of 115 DALYs per 100,000.
- Māori have 1.03 times the DALY age-standardised rate of non-Māori.
- Māori and non-Māori males aged 0–4 have the highest age-standardised rates across the subpopulations analysed: 123 and 120 DALYs per 100,000 people, respectively.
- The mortality component, YLL, is a higher contributor to the burden than the disability component, YLD. The disability burden is around a fifth of the mortality burden.
- Māori have a higher age-standardised rate of YLLs and a lower age-standardised rate of YLDs than non-Māori. The Māori:non-Māori rate ratios for YLLs and YLDs are 1.08 and 0.84, respectively. This is mainly due to higher incidence rates for Māori (see Table A27, Appendix B). Excess mortality rates are higher for Māori (1.35; Table A1, Appendix A).

Table 94: Years of life lost (YLLs) due to incident cases of all childhood cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
0-4	35	37%	91	85	32%	84	1.09	121	33%	88
5-9	32	33%	89	87	33%	82	1.08	119	33%	85
10-14	30	30%	84	91	35%	79	1.07	121	33%	81
Total	97	100%	88	263	100%	82	1.08	360	100%	85
Males										
0-4	41	38%	100	97	34%	92	1.09	138	35%	96
5-9	35	33%	93	95	33%	85	1.08	130	33%	89
10-14	31	29%	83	94	33%	77	1.08	125	32%	80
Total	107	100%	92	286	100%	85	1.08	393	100%	88
Total										
0-4	76	37%	96	182	33%	88	1.09	258	34%	92
5-9	68	33%	91	182	33%	84	1.08	250	33%	87
10-14	61	30%	84	185	34%	78	1.07	246	33%	81
Total	204	100%	90	549	100%	83	1.08	753	100%	87

Rates are per 100,000 people, age-standardised to the WHO standard population.

Table 95: Years of life lived with disability (YLDs) due to incident cases of all childhood cancer in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
0-4	7	43%	19	23	39%	23	0.84	31	40%	21
5-9	6	32%	15	19	33%	18	0.84	25	32%	17
10-14	4	25%	12	17	29%	15	0.84	21	28%	14
Total	17	100%	16	60	100%	19	0.84	77	100%	17
Males										
0-4	9	44%	23	29	41%	28	0.84	39	41%	25
5-9	7	32%	18	23	32%	21	0.84	30	32%	19
10-14	5	24%	13	19	27%	16	0.84	24	26%	15
Total	21	100%	18	72	100%	22	0.84	93	100%	20
Total										
0-4	17	44%	21	52	40%	25	0.84	69	41%	23
5-9	12	32%	16	43	32%	20	0.84	55	32%	18
10-14	9	24%	13	37	28%	15	0.84	46	27%	14
Total	38	100%	17	132	100%	20	0.84	170	100%	18

Rates are per 100,000 people, age-standardised to the WHO standard population.

27 Adult cancer of other sites

Figure 67: Age-standardised rate of disability-adjusted life years (DALYs) due to incident cases of adult cancer of other sites in 2006, by sex, age and ethnicity

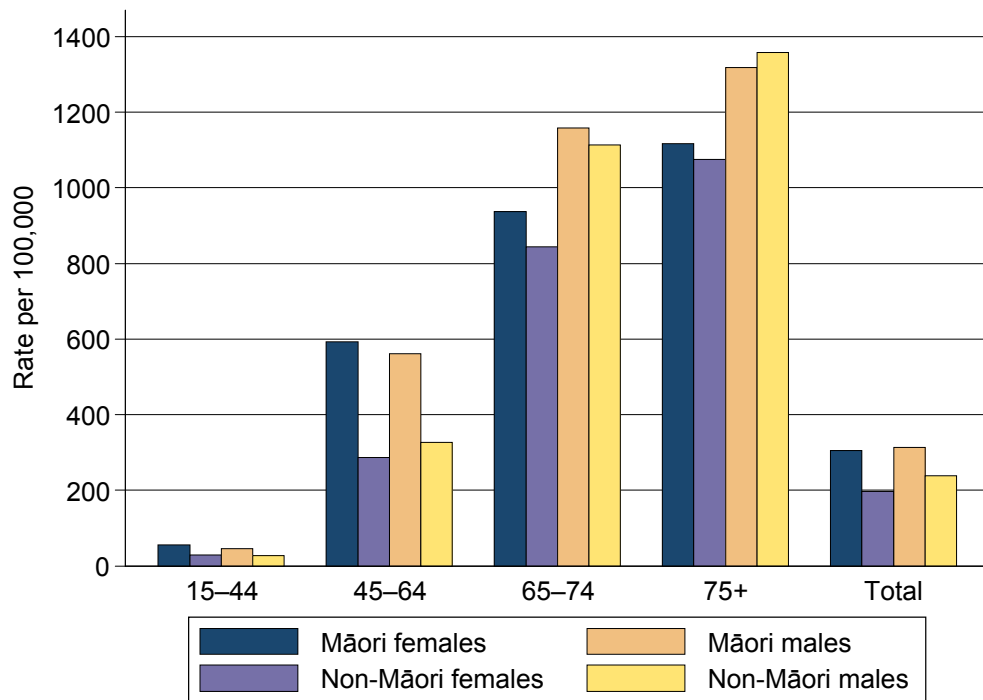


Figure 68: Ratio of YLD:YLL due to incident cases of adult cancer of other sites in 2006, by sex, age and ethnicity

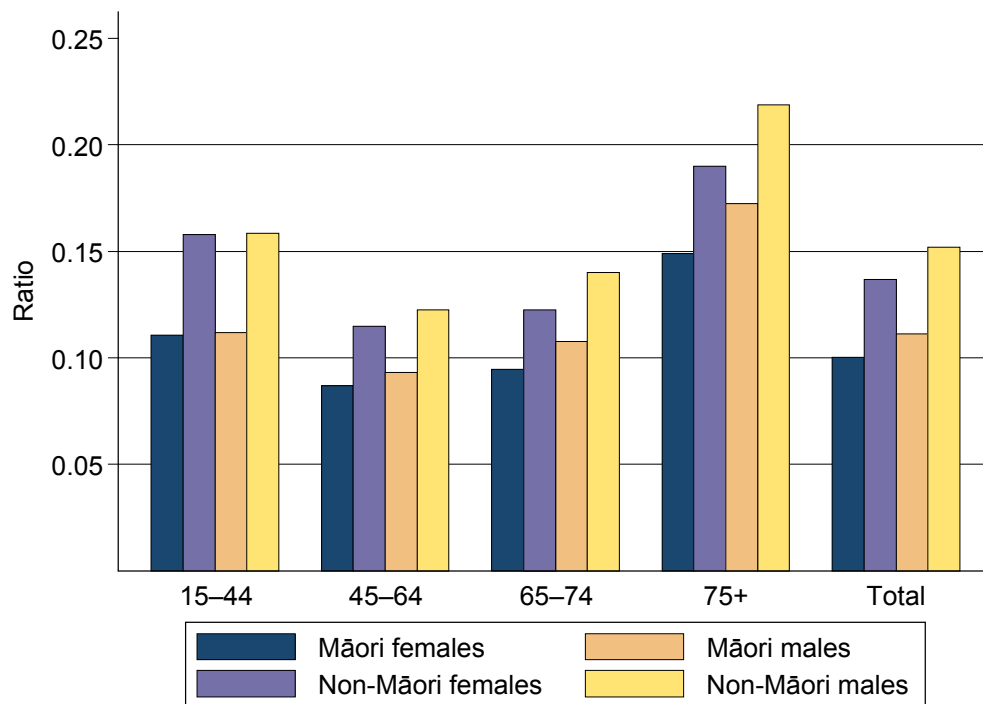


Table 96: Disability-adjusted life years (DALYs) due to incident cases of adult cancer of other sites in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
15–44	86	17%	57	244	6%	29	1.94	330	7%	43
45–64	283	55%	594	1329	31%	287	2.07	1612	34%	441
65–74	92	18%	937	1129	27%	844	1.11	1221	26%	890
75+	53	10%	1117	1522	36%	1076	1.04	1575	33%	1097
Total	514	100%	305	4224	100%	198	1.54	4737	100%	251
Males										
15–44	64	14%	46	221	5%	28	1.62	285	6%	37
45–64	244	54%	562	1480	33%	328	1.72	1724	35%	445
65–74	102	22%	1159	1393	31%	1114	1.04	1494	31%	1136
75+	43	10%	1318	1334	30%	1359	0.97	1377	28%	1338
Total	454	100%	313	4428	100%	238	1.31	4882	100%	276
Total										
15–44	150	15%	51	465	5%	29	1.78	615	6%	40
45–64	527	55%	578	2809	32%	308	1.88	3336	35%	443
65–74	194	20%	1048	2522	29%	979	1.07	2715	28%	1013
75+	96	10%	1217	2856	33%	1218	1.00	2952	31%	1218
Total	967	100%	309	8652	100%	218	1.42	9619	100%	264

Rates are per 100,000 people, age-standardised to the WHO standard population.

- A total of 9619 DALYs, or 264 DALYs per 100,000 people, is estimated to be lost by persons aged 15+ due to adult cancer of other sites diagnosed in 2006 in New Zealand.
- The age-standardised rate for males is higher than the rate for females: 276 versus 251 DALYs per 100,000.
- Thirty-five percent of the total DALY burden is experienced by people aged between 45 and 64 years. Those aged 75+ have the highest age-standardised rate: 1218 DALYs per 100,000.
- Māori have 1.42 times the DALY age-standardised rate of non-Māori.
- Non-Māori and Māori males aged 75+ have the highest age-standardised rates across the subpopulations analysed: 1359 and 1318 DALYs per 100,000 people, respectively.
- The mortality component, YLL, is a higher contributor to the burden than the disability component, YLD. The disability burden is more than a tenth of the mortality burden.
- Māori have a higher age-standardised rate of YLLs and a similar age-standardised rate of YLDs than non-Māori. The Māori:non-Māori rate ratios for YLLs and YLDs are 1.47 and 1.07 respectively. This is mainly due to higher incidence rates for Māori (Table A28, Appendix B), although excess mortality rates were also higher for Māori (1.63, Table A1, Appendix A).

Table 97: Years of life lost (YLLs) due to incident cases of adult cancer of other sites in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
15–44	77	16%	51	211	6%	25	2.02	288	7%	38
45–64	261	56%	546	1192	32%	258	2.12	1453	35%	402
65–74	84	18%	856	1006	27%	752	1.14	1090	26%	804
75+	47	10%	972	1271	35%	905	1.07	1317	32%	938
Total	468	100%	277	3679	100%	174	1.59	4148	100%	226
Males										
15–44	58	14%	41	190	5%	24	1.69	248	6%	33
45–64	223	54%	514	1319	34%	292	1.76	1543	36%	403
65–74	92	22%	1046	1222	32%	977	1.07	1314	31%	1012
75+	37	9%	1124	1104	29%	1115	1.01	1141	27%	1120
Total	411	100%	282	3835	100%	207	1.36	4246	100%	245
Total										
15–44	135	15%	46	401	5%	25	1.86	536	6%	35
45–64	484	55%	530	2511	33%	275	1.93	2995	36%	403
65–74	176	20%	951	2227	30%	864	1.10	2404	29%	908
75+	84	10%	1048	2374	32%	1010	1.04	2458	29%	1029
Total	879	100%	280	7514	100%	191	1.47	8393	100%	235

Rates are per 100,000 people, age-standardised to the WHO standard population.

Table 98: Years of life lived with disability (YLDs) due to incident cases of adult cancer of other sites in 2006, by sex, age and ethnicity

Age	Māori			Non-Māori			Māori: Non-Māori	Total		
	Count	%	Rate	Count	%	Rate	Rate ratio	Count	%	Rate
Females										
15–44	9	19%	6	34	6%	4	1.42	42	7%	5
45–64	23	50%	48	137	25%	30	1.61	159	27%	39
65–74	8	17%	81	123	23%	92	0.88	131	22%	87
75+	6	14%	145	251	46%	172	0.84	257	44%	158
Total	46	100%	28	544	100%	24	1.17	590	100%	26
Males										
15–44	6	15%	5	30	5%	4	1.19	37	6%	4
45–64	21	48%	48	161	27%	36	1.34	182	29%	42
65–74	10	23%	113	171	29%	137	0.82	181	28%	125
75+	6	14%	194	231	39%	244	0.79	236	37%	219
Total	43	100%	31	593	100%	31	1.00	636	100%	31
Total										
15–44	15	17%	5	64	6%	4	1.31	79	6%	5
45–64	43	49%	48	298	26%	33	1.46	341	28%	40
65–74	18	20%	97	294	26%	114	0.85	312	25%	106
75+	12	14%	169	481	42%	208	0.81	494	40%	189
Total	88	100%	30	1137	100%	28	1.07	1226	100%	29

Rates are per 100,000 people, age-standardised to the WHO standard population.

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Appendix A: Excess Mortality Models, by Site

The following table (Table A1) details the estimated parameters and coefficient (and its confidence interval in brackets) for each of the covariates used in the model. It also presents the number of cases used on each regression, and the two statistics that provide a measure of fit for each individual model: Bayesian information criteria (BIC) and the deviance divided by the number of degrees of freedom (deviance/DF).

Table A1: Excess mortality models, by site

	Bladder	Bone and connective tissue	Brain	Breast	Cervical
Year of follow-up					
1(reference)	1	1	1	1	1
2	0.60 [0.40,0.90]	1.02 [0.59,1.76]	0.76 [0.61,0.95]	1.45 [1.18,1.77]	0.84 [0.55,1.29]
3	0.22 [0.14,0.35]	0.29 [0.11,0.75]	0.26 [0.18,0.39]	1.45 [1.19,1.76]	0.42 [0.26,0.68]
4	0.19 [0.12,0.31]	0.18 [0.06,0.62]	0.25 [0.17,0.38]	1.45 [1.19,1.77]	0.23 [0.13,0.43]
5	0.17 [0.10,0.29]	0.18 [0.05,0.67]	0.21 [0.13,0.34]	1.22 [0.99,1.51]	0.24 [0.13,0.43]
6	0.15 [0.08,0.26]	0.12 [0.02,0.61]	0.12 [0.06,0.23]	0.91 [0.72,1.16]	0.18 [0.09,0.36]
7	0.07 [0.03,0.18]	0.17 [0.04,0.70]	0.19 [0.11,0.34]	0.94 [0.74,1.20]	0.11 [0.04,0.29]
8	0.10 [0.05,0.22]	0.00 [0.00]	0.14 [0.07,0.29]	0.95 [0.73,1.23]	0.10 [0.04,0.28]
9	0.05 [0.01,0.24]	0.16 [0.03,0.87]	0.14 [0.06,0.33]	0.74 [0.54,1.03]	0.21 [0.10,0.48]
10	0.00 [0.00]	0.00 [0.00]	0.11 [0.03,0.35]	0.73 [0.49,1.08]	0.08 [0.01,0.69]
Ethnicity					
Non-Māori (reference)	1	1	1	1	1
Māori	2.35 [1.70,3.24]	2.00 [1.13,3.55]	1.36 [1.03,1.79]	1.61 [1.40,1.85]	1.48 [1.08,2.04]
Age					
0–4 (reference child)					
5–9					
10–14					
25–44 (reference adult)	1	1*	1*	1	1
45–54	1.16 [0.66,2.04]		2.30 [1.85,2.86]	0.72 [0.64,0.82]	1.65 [1.13,2.41]
55–64	1.48 [0.89,2.48]		3.51 [2.83,4.35]	0.64 [0.55,0.73]	2.50 [1.65,3.77]
65–74	2.83 [1.58,5.06]		2.21 [0.96,5.08]	0.78 [0.64,0.94]	4.39 [2.38,8.08]
75+	4.39 [2.45,7.85]		2.03 [0.19,21.29]	1.33 [1.08,1.65]	10.37 [5.47,19.67]
45+		1.47 [0.88,2.44]			
Sex					
Male (reference)	1	1	1		
Female	1.23 [1.05,1.44]	0.75 [0.44,1.27]	0.84 [0.74,0.96]		
Interactions					
65–74 years, 1st year	0.77 [0.47,1.27]		2.83 [1.21,6.59]	1.46 [1.02,2.11]	1.31 [0.60,2.85]
75+, 1st year	0.89 [0.55,1.44]		4.58 [0.43,48.27]	2.28 [1.65,3.13]	0.85 [0.39,1.85]
65–74 years, 2nd year	0.60 [0.33,1.08]		1.58 [0.60,4.16]	1.33 [0.95,1.85]	0.69 [0.26,1.79]
75+, 2nd year	0.54 [0.31,0.96]		2.15 [0.18,26.29]	0.97 [0.65,1.42]	1.03 [0.44,2.42]
All other years and age groupings (reference)	1	1	1	1	1
Observations	194	75	139	100	94
BIC	657.5	205.5	476.1	640.3	388.6
Deviance/DF	1.02	1.2	0.93	0.91	1.13

* Reference group is 15–44.

Table A1: Excess mortality models, by site (continuation)

	Colorectal	Gallbladder	Laryngeal and lip, mouth and pharynx	Hodgkin's	Kidney
Year of follow-up					
1 (reference)	1	1	1	1	1
2	0.66 [0.57,0.75]	0.72 [0.45,1.15]	0.82 [0.61,1.10]	0.61 [0.22,1.68]	0.48 [0.35,0.64]
3	0.50 [0.44,0.57]	0.14 [0.06,0.34]	0.49 [0.35,0.68]	0.43 [0.14,1.26]	0.28 [0.20,0.39]
4	0.33 [0.28,0.38]	0.19 [0.08,0.44]	0.35 [0.24,0.51]	0.60 [0.23,1.58]	0.20 [0.13,0.30]
5	0.25 [0.21,0.30]	0.09 [0.03,0.30]	0.24 [0.15,0.39]	0.42 [0.13,1.35]	0.22 [0.15,0.33]
6	0.17 [0.13,0.21]	0.05 [0.01,0.33]	0.27 [0.17,0.43]	0.52 [0.17,1.55]	0.16 [0.10,0.27]
7	0.11 [0.08,0.15]	0.10 [0.03,0.35]	0.17 [0.09,0.32]	0.00 [0.00]	0.12 [0.06,0.22]
8	0.10 [0.06,0.14]	0.00 [0.00]	0.27 [0.16,0.46]	0.29 [0.06,1.39]	0.13 [0.07,0.26]
9	0.09 [0.05,0.14]	0.00 [0.00]	0.28 [0.16,0.51]	0.00 [0.00]	0.18 [0.10,0.34]
10	0.04 [0.02,0.12]	0.00 [0.00]	0.31 [0.16,0.59]	0.00 [0.00]	0.13 [0.05,0.33]
Ethnicity					
Non-Māori (reference)	1	1	1	1	1
Māori	1.51 [1.32,1.74]	1.55 [1.05,2.30]	1.25 [0.96,1.63]	0.83 [0.27,2.58]	1.90 [1.49,2.42]
Age					
0–4 (reference child)					
5–9					
10–14					
25–44 (reference adult)	1	1	1	1*	1
45–54	1.11 [0.93,1.33]	1.37 [0.59,3.18]	1.64 [1.13,2.36]	2.76 [1.16,6.54]	1.60 [1.11,2.30]
55–64	1.05 [0.89,1.24]	1.41 [0.64,3.13]	2.10 [1.49,2.97]	3.87 [1.73,8.64]	1.59 [1.12,2.26]
65–74	1.10 [0.90,1.34]	1.80 [0.57,5.69]	3.26 [2.17,4.89]	8.18 [3.11,21.57]	1.86 [1.18,2.93]
75+	0.98 [0.78,1.23]	2.34 [0.65,8.51]	2.45 [1.37,4.36]	6.95 [0.69,69.71]	2.36 [1.38,4.05]
45+					
Sex					
Male (reference)	1	1	1	1	1
Female	0.99 [0.94,1.05]	0.92 [0.74,1.14]	0.90 [0.76,1.06]	1.13 [0.70,1.84]	1.00 [0.87,1.16]
Interactions					
65–74 years, 1st year	1.25 [1.05,1.48]	1.38 [0.53,3.58]	1.05 [0.70,1.57]	1.53 [0.43,5.43]	1.40 [0.92,2.13]
75+, 1st year	2.28 [1.86,2.79]	1.32 [0.44,3.99]	2.23 [1.26,3.94]	4.32 [0.39,47.89]	1.85 [1.13,3.05]
65–74 years, 2nd year	1.00 [0.81,1.22]	0.70 [0.23,2.08]	0.75 [0.46,1.22]	1.12 [0.21,6.00]	0.96 [0.55,1.67]
75+, 2nd year	1.12 [0.87,1.43]	0.69 [0.20,2.33]	1.27 [0.65,2.47]	0.82 [0.03,24.55]	0.94 [0.49,1.83]
All other years and age groupings (reference)	1	1	1	1	1
Observations	200	133	192	144	189
BIC	986.6	354.7	720.5	304.9	701.4
Deviance/DF	1.11	0.73	1.17	0.68	1.02

* Reference group is 15–44.

Table A1: Excess mortality models, by site (continuation)

	Leukaemia	Liver	Lung, trachea and bronchus	Melanoma	Myeloma
Year of follow-up					
1(reference)	1	1	1	1	1
2	0.37 [0.27,0.49]	0.30 [0.22,0.43]	0.50 [0.45,0.56]	0.88 [0.66,1.19]	0.75 [0.50,1.13]
3	0.25 [0.19,0.33]	0.13 [0.08,0.22]	0.22 [0.18,0.26]	0.63 [0.47,0.86]	0.88 [0.62,1.25]
4	0.25 [0.18,0.34]	0.04 [0.02,0.10]	0.15 [0.13,0.19]	0.66 [0.49,0.90]	0.57 [0.38,0.86]
5	0.20 [0.14,0.29]	0.05 [0.02,0.12]	0.07 [0.05,0.10]	0.48 [0.34,0.69]	0.80 [0.54,1.18]
6	0.20 [0.13,0.30]	0.04 [0.01,0.11]	0.06 [0.04,0.08]	0.48 [0.33,0.69]	0.79 [0.51,1.22]
7	0.23 [0.15,0.35]	0.06 [0.02,0.15]	0.04 [0.02,0.06]	0.31 [0.19,0.51]	0.96 [0.61,1.50]
8	0.20 [0.12,0.32]	0.00 [0.00,54.85]	0.04 [0.02,0.07]	0.20 [0.10,0.39]	0.62 [0.34,1.12]
9	0.07 [0.02,0.25]	0.02 [0.00,0.18]	0.02 [0.01,0.06]	0.14 [0.05,0.35]	1.15 [0.66,2.00]
10	0.22 [0.11,0.43]	0.00 [0.00]	0.01 [0.00,0.06]	0.21 [0.09,0.48]	0.57 [0.22,1.50]
Ethnicity					
Non-Māori (reference)	1	1	1	1	1
Māori	1.39 [1.10,1.75]	1.30 [1.07,1.58]	1.19 [1.12,1.28]	3.08 [2.02,4.69]	1.40 [1.07,1.84]
Age					
0–4 (reference child)					
5–9					
10–14					
25–44 (reference adult)	1*	1	1	1*	1
45–54	1.12 [0.84,1.50]	1.13 [0.80,1.59]	1.26 [1.05,1.50]	1.04 [0.80,1.34]	1.07 [0.63,1.83]
55–64	1.56 [1.21,2.01]	1.20 [0.87,1.65]	1.36 [1.15,1.61]	1.31 [1.02,1.68]	1.98 [1.21,3.24]
65–74	1.91 [1.37,2.67]	5.14 [2.71,9.74]	1.68 [1.31,2.15]	1.79 [1.28,2.50]	2.53 [1.51,4.22]
75+	3.32 [2.38,4.63]	6.31 [2.64,15.04]	2.49 [1.92,3.24]	4.29 [3.16,5.84]	3.85 [2.28,6.49]
45+					
Sex					
Male (reference)	1	1	1	1	1
Female	1.12 [0.99,1.25]	0.94 [0.80,1.10]	0.88 [0.84,0.92]	0.52 [0.44,0.61]	0.97 [0.84,1.12]
Interactions					
65–74 years, 1st year	1.18 [0.83,1.67]	0.31 [0.17,0.59]	0.98 [0.79,1.20]	1.34 [0.87,2.08]	1.10 [0.71,1.70]
75+, 1st year	1.19 [0.85,1.65]	0.33 [0.14,0.79]	0.82 [0.66,1.03]	0.75 [0.49,1.16]	1.42 [0.94,2.13]
65–74 years, 2nd year	0.83 [0.50,1.38]	0.23 [0.10,0.54]	0.88 [0.68,1.12]	0.94 [0.56,1.59]	1.21 [0.73,2.02]
75+, 2nd year	0.67 [0.41,1.11]	0.47 [0.17,1.29]	0.63 [0.49,0.82]	0.88 [0.56,1.39]	1.24 [0.76,2.03]
All other years and age groupings (reference)	1	1	1	1	1
Observations	192	152	198	198	177
BIC	792.6	451.3	852.9	793.6	651.6
Deviance/DF	1.29	0.97	1.08	0.91	1.17

* Reference group is 15–44.

Table A1: Excess mortality models, by site (continuation)

	Non-Hodgkin's	Oesophageal	Ovarian	Pancreatic	Pleura
Year of follow-up					
1(reference)	1	1	1	1	1
2	0.50 [0.39,0.64]	0.72 [0.53,0.96]	0.77 [0.58,1.03]	0.39 [0.29,0.52]	0.23 [0.06,0.80]
3	0.34 [0.26,0.44]	0.28 [0.18,0.43]	0.54 [0.40,0.74]	0.18 [0.11,0.30]	0.04 [0.00,0.34]
4	0.27 [0.20,0.36]	0.15 [0.09,0.27]	0.46 [0.33,0.64]	0.08 [0.04,0.16]	0.18 [0.06,0.58]
5	0.19 [0.14,0.27]	0.06 [0.02,0.16]	0.35 [0.24,0.51]	0.05 [0.02,0.13]	0.21 [0.07,0.64]
6	0.19 [0.13,0.28]	0.04 [0.01,0.14]	0.16 [0.09,0.28]	0.01 [0.00,0.17]	0.15 [0.04,0.60]
7	0.18 [0.12,0.27]	0.01 [0.00,4.25]	0.19 [0.11,0.34]	0.00 [0.00,.]	0.00 [0.00]
8	0.20 [0.13,0.31]	0.02 [0.00,0.21]	0.17 [0.09,0.33]	0.02 [0.00,0.12]	0.20 [0.05,0.88]
9	0.18 [0.11,0.30]	0.00 [0.00,10.5]	0.08 [0.03,0.27]	0.02 [0.00,0.17]	0.00 [0.00]
10	0.08 [0.02,0.25]	0.01 [0.00,11.75]	0.06 [0.01,0.37]	0.00 [0.00,.]	0.14 [0.01,1.77]
Ethnicity					
Non-Māori (reference)	1	1	1	1	1
Māori	2.03 [1.66,2.49]	1.39 [1.09,1.77]	1.45 [1.13,1.87]	1.16 [0.97,1.38]	0.98 [0.41,2.38]
Age					
0–4 (reference child)					
5–9					
10–14					
25–44 (reference adult)	1*	1	1*	1	1
45–54	1.36 [1.04,1.77]	1.07 [0.63,1.83]	2.61 [1.86,3.65]	1.57 [1.11,2.22]	2.20 [0.96,5.04]
55–64	1.76 [1.38,2.24]	1.13 [0.69,1.84]	4.42 [3.21,6.09]	1.67 [1.22,2.30]	0.82 [0.29,2.34]
65–74	2.86 [2.12,3.87]	1.98 [0.99,3.95]	4.95 [3.27,7.50]	1.47 [0.68,3.18]	4.15 [1.16,14.81]
75+	3.32 [2.33,4.73]	3.63 [1.77,7.42]	3.62 [2.04,6.43]	2.90 [1.35,6.24]	9.94 [1.38,71.58]
45+					
Sex					
Male (reference)	1	1		1	1
Female	0.94 [0.84,1.05]	0.93 [0.81,1.06]		0.95 [0.86,1.05]	0.55 [0.27,1.12]
Interactions					
65–74 years, 1st year	0.88 [0.64,1.21]	0.71 [0.40,1.25]	1.22 [0.80,1.86]	1.37 [0.65,2.88]	0.32 [0.06,1.65]
75+, 1st year	1.61 [1.14,2.29]	0.57 [0.32,1.03]	5.12 [2.92,8.96]	1.02 [0.49,2.13]	0.77 [0.09,6.86]
65–74 years, 2nd year	0.67 [0.43,1.03]	0.44 [0.23,0.86]	1.16 [0.72,1.89]	1.23 [0.52,2.89]	0.00 [0.00]
75+, 2nd year	0.78 [0.48,1.26]	0.46 [0.23,0.90]	2.17 [1.13,4.18]	0.86 [0.37,1.98]	0.86 [0.04,19.60]
All other years and age groupings (reference)	1	1	1	1	1
Observations	196	140	99	167	125
BIC	795.7	432.6	428.0	484.3	241.3
Deviance/DF	1.21	0.83	1.18	0.93	0.7

* Reference group is 15–44.

Table A1: Excess mortality models, by site (continuation)

	Prostate	Stomach	Uterine	Testicular	Thyroid
Year of follow-up					
1 (reference)	1	1	1	1	1
2	1.62 [0.95,2.75]	0.43 [0.34,0.55]	0.29 [0.17,0.50]	0.40 [0.16,1.04]	0.13 [0.05,0.35]
3	1.44 [0.88,2.34]	0.18 [0.13,0.25]	0.48 [0.31,0.73]	0.19 [0.05,0.71]	0.18 [0.08,0.42]
4	1.66 [1.03,2.70]	0.14 [0.10,0.21]	0.36 [0.22,0.58]	0.00 [0.00]	0.05 [0.01,0.54]
5	1.64 [1.00,2.68]	0.09 [0.05,0.15]	0.23 [0.12,0.42]	0.00 [0.00]	0.07 [0.01,0.49]
6	1.53 [0.92,2.54]	0.10 [0.06,0.17]	0.13 [0.05,0.32]	0.00 [0.00]	0.08 [0.01,0.55]
7	1.67 [0.99,2.80]	0.02 [0.01,0.08]	0.14 [0.06,0.37]	0.00 [0.00]	0.16 [0.05,0.47]
8	1.38 [0.78,2.42]	0.03 [0.01,0.10]	0.02 [0.00,1.38]	0.27 [0.08,0.97]	0.16 [0.05,0.53]
9	1.71 [0.97,3.01]	0.00 [0.00]	0.07 [0.01,0.50]	0.04 [0.00,21.03]	0.28 [0.11,0.71]
10	2.45 [1.41,4.26]	0.00 [0.00]	0.10 [0.01,0.72]	0.00 [0.00]	0.00 [0.00]
Ethnicity					
Non-Māori (reference)	1	1	1	1	1
Māori	1.93 [1.51,2.46]	1.04 [0.89,1.22]	1.86 [1.36,2.54]	3.86 [1.79,8.34]	1.34 [0.72,2.51]
Age					
0–4 (reference child)					
5–9					
10–14					
25–44 (reference adult)	1	1	1	1*	1*
45–54	0.79 [0.20,3.18]	1.05 [0.81,1.38]	1.29 [0.73,2.26]		
55–64	1.21 [0.32,4.67]	1.27 [1.00,1.62]	1.43 [0.83,2.45]		
65–74	1.49 [0.39,5.75]	1.30 [0.85,2.00]	1.53 [0.77,3.04]		
75+	4.53 [1.18,17.40]	1.18 [0.67,2.05]	2.37 [1.05,5.34]		
45+				1.80 [0.70,4.66]	10.06 [4.02,25.15]
Sex					
Male (reference)		1			1
Female		0.97 [0.87,1.09]			0.50 [0.32,0.78]
Interactions					
65–74 years, 1st year	2.08 [1.21,3.59]	1.01 [0.67,1.54]	1.21 [0.63,2.31]		
75+, 1st year	3.85 [2.36,6.28]	1.68 [0.98,2.89]	2.22 [1.06,4.67]		
65–74 years, 2nd year	1.15 [0.71,1.84]	0.73 [0.43,1.25]	4.13 [1.87,9.10]		
75+, 2nd year	1.24 [0.81,1.89]	1.17 [0.62,2.18]	4.03 [1.60,10.13]		
All other years and age groupings (reference)	1	1	1	1	3
Observations	99	192	100	40	80
BIC	530.5	621.8	403.8	113.5	233.8
Deviance/DF	0.98	0.87	0.95	0.77	0.96

* Reference group is 15–44.

Table A1: Excess mortality models, by site (continuation)

	All childhood cancer	Adult cancer of other sites
Year of follow-up		
1(reference)	1	1
2	0.42 [0.26,0.67]	0.33 [0.28,0.40]
3	0.30 [0.17,0.50]	0.17 [0.14,0.22]
4	0.12 [0.05,0.26]	0.11 [0.08,0.14]
5	0.05 [0.02,0.17]	0.09 [0.06,0.12]
6	0.07 [0.02,0.19]	0.05 [0.04,0.08]
7	0.08 [0.03,0.22]	0.04 [0.02,0.07]
8	0.11 [0.05,0.26]	0.03 [0.02,0.06]
9	0.02 [0.00,0.19]	0.02 [0.01,0.05]
10	0.04 [0.01,0.17]	0.01 [0.00,0.05]
Ethnicity		
Non-Māori (reference)	1	1
Māori	1.35 [0.90,2.01]	1.63 [1.45,1.83]
Age		
0–4 (reference child)	1	
5–9	1.28 [0.83,1.96]	
10–14	1.59 [1.06,2.37]	
25–44 (reference adult)		1*
45–54		1.76 [1.44,2.16]
55–64		2.80 [2.34,3.36]
65–74		3.61 [2.73,4.79]
75+		3.44 [2.46,4.81]
45+		
Sex		
Male (reference)	1	1
Female	1.11 [0.79,1.56]	0.97 [0.91,1.04]
Interactions		
65–74 years, 1st year		1.16 [0.89,1.51]
75+, 1st year		1.83 [1.33,2.51]
65–74 years, 2nd year		0.77 [0.54,1.09]
75+, 2nd year		1.04 [0.71,1.54]
All other years and age groupings (reference)	4	5
Observations	120	199
BIC	318.8	874.1
Deviance/DF	1.11	1.09

* Reference group is 15–44.

Appendix B: Main Inputs and Intermediate Outputs of the Models for Each Site

Table A2: Incidence rate (per 100,000) and relative survival rate inputs to the main model: bladder cancer

	Incidence rate		Cumulative relative survival						Intermediate outputs							
			2 years		5 years		10 years (cure time)		Diagnosed		Died of other causes		Died of cancer		Survivors	
	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori
Females																
25–44	0.5	1.2	0.70	0.86	0.62	0.81	0.57	0.79	0.4	6.4	0.0	0.1	0.2	1.4	0.2	5.0
45–64	7.8	9.8	0.63	0.82	0.53	0.76	0.47	0.73	3.4	41.5	0.3	1.8	1.8	11.5	1.4	28.2
65–74	30.0	29.4	0.49	0.74	0.34	0.63	0.27	0.57	2.8	38.3	0.4	5.1	1.9	15.7	0.5	17.5
75+	75.8	74.3	0.31	0.60	0.17	0.47	0.12	0.41	2.8	87.9	0.6	32.6	2.1	43.0	0.1	12.3
Males																
25–44	2.3	2.2	0.75	0.88	0.67	0.85	0.63	0.82	1.9	11.3	0.1	0.2	0.7	2.0	1.2	9.1
45–64	14.9	28.7	0.68	0.85	0.59	0.80	0.54	0.77	5.7	115.3	0.7	8.6	2.5	27.1	2.4	79.6
65–74	64.9	117.9	0.56	0.78	0.42	0.69	0.34	0.64	5.4	142.7	1.2	29.7	3.2	48.6	1.0	64.3
75+	151.3	275.0	0.38	0.66	0.24	0.54	0.18	0.48	3.8	219.2	1.2	95.6	2.5	91.4	0.1	32.2

Table A3: Incidence rate (per 100,000) and relative survival rate inputs to the main model: bone and connective tissue cancer

	Incidence rate		Cumulative relative survival						Intermediate outputs							
			2 years		5 years		10 years (cure time)		Diagnosed		Died of other causes		Died of cancer		Survivors	
	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori
Females																
15–44	1.9	1.9	0.59	0.77	0.50	0.71	0.44	0.67	3.0	14.8	0.0	0.1	1.6	5.0	1.3	9.8
45–64	3.7	3.7	0.46	0.68	0.36	0.60	0.30	0.55	1.8	16.2	0.1	0.5	1.2	7.2	0.5	8.5
65–74	7.7	7.7	0.46	0.68	0.36	0.60	0.30	0.55	0.7	10.0	0.1	1.3	0.5	4.3	0.1	4.4
75+	13.6	13.6	0.46	0.68	0.36	0.60	0.30	0.55	0.5	15.9	0.2	7.0	0.3	5.9	0.0	3.0
Males																
15–44	2.7	2.7	0.49	0.70	0.39	0.63	0.34	0.58	3.9	19.6	0.1	0.2	2.6	8.2	1.3	11.3
45–64	6.3	6.3	0.36	0.60	0.26	0.51	0.20	0.45	2.7	26.8	0.2	1.2	2.1	14.5	0.5	11.1
65–74	13.9	13.9	0.36	0.60	0.26	0.51	0.20	0.45	1.2	17.0	0.2	2.7	0.9	8.8	0.1	5.5
75+	31.0	31.0	0.36	0.60	0.26	0.51	0.20	0.45	0.7	23.7	0.2	9.9	0.5	10.5	0.0	3.2

Table A4: Incidence rate (per 100,000) and relative survival rate inputs to the main model: brain cancer

	Incidence rate		Cumulative relative survival						Intermediate outputs							
			2 years		5 years		5 years (cure time)		Diagnosed		Died of other causes		Died of cancer		Survivors	
	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori
Females																
15-44	1.9	2.4	0.52	0.61	0.39	0.50	0.39	0.50	2.8	18.7	0.0	0.0	1.7	9.3	1.1	9.4
45-64	8.7	7.9	0.16	0.25	0.08	0.15	0.08	0.15	4.0	34.1	0.1	0.3	3.6	29.3	0.3	4.6
65-74	28.2	13.6	0.04	0.09	0.02	0.05	0.02	0.05	2.7	18.0	0.1	0.3	2.6	16.7	0.0	0.9
75+	29.9	14.5	0.01	0.03	0.01	0.02	0.01	0.02	1.4	20.4	0.1	1.5	1.3	18.7	0.0	0.3
Males																
15-44	4.4	3.7	0.46	0.56	0.33	0.44	0.33	0.44	6.1	27.5	0.0	0.1	4.0	15.3	2.0	12.1
45-64	16.7	14.4	0.11	0.20	0.05	0.11	0.05	0.11	7.0	60.5	0.1	0.6	6.5	54.3	0.3	5.7
65-74	20.6	25.4	0.02	0.05	0.01	0.03	0.01	0.03	1.8	31.4	0.1	0.8	1.7	29.8	0.0	0.9
75+	18.4	22.7	0.00	0.02	0.00	0.01	0.00	0.01	0.6	22.6	0.1	1.7	0.6	20.8	0.0	0.1

Table A5: Incidence rate (per 100,000) and relative survival rate inputs to the main model: breast cancer

	Incidence rate		Cumulative relative survival						Intermediate outputs							
			2 years		5 years		20 years (cure time)		Diagnosed		Died of other causes		Died of cancer		Survivors	
	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori
Females																
25-44	68.1	58.7	0.89	0.93	0.73	0.82	0.52	0.63	62.5	327.1	3.7	9.4	29.5	118.8	29.3	198.9
45-64	312.9	254.4	0.92	0.95	0.81	0.88	0.61	0.70	150.1	1125.8	37.0	158.6	53.0	318.3	60.0	648.9
65-74	445.6	332.5	0.88	0.92	0.76	0.84	0.56	0.67	43.6	441.6	23.1	199.4	14.7	123.7	5.7	118.4
75+	560.8	418.5	0.79	0.86	0.61	0.73	0.40	0.54	23.1	531.5	14.0	366.7	8.8	153.1	0.2	11.7

Table A6: Incidence rate (per 100,000) and relative survival rate inputs to the main model: cervical cancer

	Incidence rate		Cumulative relative survival						Intermediate outputs							
			2 years		5 years		5 years (cure time)		Diagnosed		Died of other causes		Died of cancer		Survivors	
	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori
Females																
25-44	18.5	12.3	0.87	0.91	0.81	0.87	0.81	0.87	17.2	66.0	0.1	0.2	3.3	8.7	13.8	57.0
45-64	28.1	12.1	0.75	0.82	0.65	0.75	0.65	0.75	14.6	55.6	0.5	0.8	4.8	13.6	9.4	41.2
65-74	28.4	10.0	0.53	0.65	0.39	0.53	0.39	0.53	2.8	13.4	0.3	0.7	1.6	6.1	0.9	6.6
75+	23.6	8.3	0.26	0.40	0.13	0.25	0.13	0.25	1.1	11.5	0.2	1.9	0.8	7.7	0.1	1.9

Table A7: Incidence rate (per 100,000) and relative survival rate inputs to the main model: colorectal cancer

	Incidence rate		Cumulative relative survival						Intermediate outputs							
			2 years		5 years		8 years (cure time)		Diagnosed		Died of other causes		Died of cancer		Survivors	
	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori
Females																
25-44	6.2	6.1	0.68	0.77	0.53	0.66	0.49	0.62	5.7	34.0	0.1	0.2	2.9	12.9	2.7	20.9
45-64	55.3	74.8	0.66	0.76	0.50	0.63	0.46	0.60	22.7	308.2	1.5	9.7	11.9	122.1	9.3	176.5
65-74	142.1	290.0	0.61	0.72	0.47	0.60	0.42	0.57	13.5	379.0	2.2	36.6	7.2	158.4	4.1	184.1
75+	249.4	508.9	0.50	0.64	0.39	0.54	0.36	0.51	10.1	642.2	3.2	214.9	5.5	270.9	1.5	156.4
Males																
25-44	6.6	4.9	0.68	0.77	0.53	0.65	0.48	0.62	5.5	25.3	0.1	0.2	2.8	9.6	2.5	15.4
45-64	72.2	87.0	0.66	0.76	0.50	0.63	0.45	0.59	26.7	346.1	2.6	16.9	13.9	136.7	10.3	192.4
65-74	295.3	388.5	0.61	0.72	0.46	0.60	0.42	0.56	24.9	471.5	5.2	68.2	13.0	194.1	6.7	209.2
75+	472.1	621.1	0.50	0.63	0.39	0.54	0.36	0.51	13.7	552.2	4.9	198.4	7.2	230.9	1.6	122.8

Table A8: Incidence rate (per 100,000) and relative survival rate inputs to the main model: gallbladder cancer

	Incidence rate		Cumulative relative survival						Intermediate outputs							
			2 years		5 years		10 years (cure time)		Diagnosed		Died of other causes		Died of cancer		Survivors	
	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori
Females																
25-44	0.3	0.2	0.29	0.45	0.22	0.37	0.19	0.35	0.3	1.2	0.0	0.0	0.2	0.7	0.1	0.4
45-64	3.5	2.5	0.18	0.33	0.12	0.25	0.10	0.23	1.4	10.4	0.0	0.1	1.3	7.9	0.1	2.3
65-74	13.7	9.7	0.09	0.21	0.05	0.15	0.04	0.13	1.3	12.7	0.1	0.4	1.2	10.8	0.0	1.5
75+	30.3	21.5	0.05	0.14	0.02	0.09	0.02	0.08	1.2	26.1	0.1	3.2	1.0	21.8	0.0	1.0
Males																
25-44	0.6	0.2	0.26	0.42	0.19	0.34	0.17	0.32	0.5	1.0	0.0	0.0	0.4	0.7	0.1	0.3
45-64	3.4	2.4	0.15	0.30	0.10	0.23	0.08	0.20	1.3	9.7	0.0	0.2	1.2	7.7	0.1	1.8
65-74	9.7	9.1	0.07	0.18	0.04	0.13	0.03	0.11	0.8	11.0	0.0	0.5	0.7	9.5	0.0	1.0
75+	24.4	23.0	0.04	0.12	0.02	0.07	0.01	0.06	0.6	17.2	0.1	2.3	0.5	14.4	0.0	0.5

Table A9: Incidence rate (per 100,000) and relative survival rate inputs to the main model: Hodgkin's cancer

	Incidence rate		Cumulative relative survival						Intermediate outputs							
			2 years		5 years		10 years (cure time)		Diagnosed		Died of other causes		Died of cancer		Survivors	
	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori
Females																
15-44	2.2	3.2	0.97	0.96	0.94	0.93	0.93	0.92	3.4	23.7	0.0	0.1	0.2	2.0	3.2	21.5
45-64	1.5	1.8	0.90	0.89	0.83	0.79	0.78	0.75	0.7	8.0	0.1	0.3	0.1	2.0	0.5	5.8
65-74	3.2	2.1	0.71	0.66	0.57	0.50	0.50	0.43	0.3	2.8	0.1	0.3	0.1	1.5	0.1	1.0
75+	3.4	2.3	0.53	0.47	0.44	0.37	0.39	0.33	0.1	3.0	0.1	0.9	0.1	1.8	0.0	0.4
Males																
15-44	2.3	2.6	0.97	0.97	0.95	0.94	0.94	0.92	3.3	18.9	0.1	0.2	0.2	1.4	3.0	17.3
45-64	2.9	2.5	0.91	0.90	0.84	0.82	0.81	0.77	1.3	11.0	0.2	0.7	0.2	2.4	0.9	7.9
65-74	3.9	3.4	0.74	0.69	0.60	0.55	0.54	0.48	0.3	4.3	0.1	0.7	0.1	2.1	0.1	1.5
75+	4.2	3.6	0.57	0.51	0.48	0.42	0.44	0.37	0.1	3.5	0.1	1.1	0.1	1.9	0.0	0.4

Table A10: Incidence rate (per 100,000) and relative survival rate inputs to the main model: kidney cancer

	Incidence rate		Cumulative relative survival						Intermediate outputs							
			2 years		5 years		10 years (cure time)		Diagnosed		Died of other causes		Died of cancer		Survivors	
	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori
Females																
25-44	2.6	2.1	0.71	0.83	0.60	0.76	0.51	0.70	2.4	11.5	0.0	0.1	1.2	3.5	1.2	7.9
45-64	13.2	13.9	0.57	0.75	0.44	0.65	0.34	0.56	5.9	59.5	0.4	2.2	3.8	25.6	1.7	31.7
65-74	23.9	29.5	0.44	0.65	0.33	0.55	0.24	0.47	2.3	38.7	0.3	4.5	1.6	19.7	0.3	14.6
75+	29.3	36.2	0.28	0.51	0.19	0.42	0.13	0.34	1.4	49.8	0.3	15.0	1.0	28.2	0.1	6.5
Males																
45-64	25.7	24.2	0.58	0.75	0.44	0.65	0.34	0.56	10.4	100.5	1.0	5.8	6.6	42.9	2.9	51.9
65-74	37.7	64.0	0.44	0.65	0.33	0.56	0.24	0.47	3.2	78.3	0.6	13.2	2.2	38.8	0.4	26.3
75+	55.4	93.8	0.28	0.51	0.19	0.42	0.13	0.34	1.6	84.0	0.4	28.4	1.2	46.4	0.0	9.3
25-44	0.5	0.1	0.85	0.88	0.77	0.81	0.68	0.74	0.4	0.4	0.0	0.0	0.1	0.1	0.3	0.3

Table A11: Incidence rate (per 100,000) and relative survival rate inputs to the main model: laryngeal cancer

	Incidence rate		Cumulative relative survival						Intermediate outputs							
			2 years		5 years		10 years (cure time)		Diagnosed		Died of other causes		Died of cancer		Survivors	
	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori
Females																
25-44	0.5	0.1	0.85	0.88	0.77	0.81	0.68	0.74	0.4	0.4	0.0	0.0	0.1	0.1	0.3	0.3
45-64	1.7	0.9	0.73	0.78	0.61	0.67	0.49	0.56	0.7	4.0	0.1	0.2	0.4	1.8	0.3	2.1
65-74	5.3	2.3	0.61	0.67	0.44	0.52	0.30	0.38	0.5	3.1	0.1	0.3	0.3	1.8	0.1	1.0
75+	4.7	2.1	0.48	0.56	0.38	0.46	0.28	0.36	0.2	3.0	0.1	1.0	0.1	1.6	0.0	0.4
Males																
25-44	0.4	0.2	0.83	0.86	0.74	0.79	0.65	0.71	0.3	1.1	0.0	0.0	0.1	0.3	0.2	0.7
45-64	11.4	4.3	0.71	0.76	0.58	0.64	0.45	0.53	4.3	17.3	0.5	1.0	2.3	8.2	1.5	8.0
65-74	17.3	14.6	0.58	0.64	0.40	0.48	0.26	0.34	1.5	17.9	0.3	2.7	0.9	10.8	0.2	4.4
75+	21.1	17.9	0.44	0.52	0.34	0.42	0.24	0.32	0.7	17.1	0.2	5.8	0.4	9.5	0.0	1.9

Table A12: Incidence rate (per 100,000) and relative survival rate inputs to the main model: leukaemia

	Incidence rate		Cumulative relative survival						Intermediate outputs							
			2 years		5 years		10 years (cure time)		Diagnosed		Died of other causes		Died of cancer		Survivors	
	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori
Females																
15-44	2.7	3.3	0.76	0.82	0.66	0.74	0.54	0.64	4.1	25.4	0.0	0.2	1.8	9.0	2.2	16.3
45-64	22.6	14.1	0.69	0.76	0.57	0.67	0.45	0.56	9.9	60.0	0.8	2.2	5.3	26.9	3.8	30.9
65-74	47.6	47.6	0.56	0.66	0.43	0.54	0.30	0.42	4.5	62.2	0.8	7.0	2.9	34.4	0.9	20.8
75+	101.3	101.3	0.38	0.50	0.24	0.35	0.13	0.23	3.9	122.3	1.0	35.6	2.7	76.9	0.1	9.7
Males																
15-44	2.2	4.9	0.78	0.84	0.69	0.76	0.58	0.68	3.1	36.4	0.1	0.4	1.3	11.8	1.8	24.3
45-64	30.8	23.0	0.72	0.79	0.60	0.70	0.48	0.59	12.1	94.0	1.4	5.7	6.0	39.0	4.7	49.3
65-74	87.6	86.7	0.59	0.69	0.47	0.58	0.34	0.46	7.4	105.3	1.8	18.3	4.3	52.7	1.4	34.3
75+	203.4	201.4	0.42	0.53	0.27	0.39	0.16	0.26	4.9	154.3	1.6	52.9	3.2	89.1	0.2	12.2

Table A13: Incidence rate (per 100,000) and relative survival rate inputs to the main model:
lip, mouth and pharynx cancer

	Incidence rate		Cumulative relative survival						Intermediate outputs							
			2 years		5 years		10 years (cure time)		Diagnosed		Died of other causes		Died of cancer		Survivors	
	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori
Females																
25-44	2.1	2.0	0.85	0.88	0.77	0.81	0.68	0.74	2.0	10.6	0.0	0.1	0.6	2.8	1.3	7.7
45-64	6.6	7.1	0.73	0.78	0.61	0.67	0.49	0.56	3.0	30.8	0.2	1.1	1.5	13.4	1.3	16.2
65-74	11.8	15.3	0.61	0.67	0.44	0.52	0.30	0.38	1.1	20.1	0.2	2.2	0.7	11.7	0.2	6.2
75+	23.8	30.9	0.48	0.56	0.38	0.46	0.28	0.36	0.9	36.8	0.3	13.1	0.5	19.1	0.1	4.7
Males																
25-44	2.8	3.1	0.83	0.86	0.74	0.79	0.65	0.71	2.4	15.7	0.1	0.2	0.8	4.5	1.5	10.9
45-64	25.6	16.7	0.71	0.76	0.58	0.64	0.45	0.53	10.6	69.7	1.2	3.8	5.5	32.7	3.9	33.3
65-74	29.4	33.0	0.58	0.64	0.40	0.48	0.26	0.34	2.5	40.7	0.6	6.0	1.6	24.6	0.4	10.0
75+	38.2	42.9	0.44	0.52	0.34	0.42	0.24	0.32	1.1	37.7	0.4	13.1	0.6	20.7	0.1	3.9

Table A14: Incidence rate (per 100,000) and relative survival rate inputs to the main model:
liver cancer

	Incidence rate		Cumulative relative survival						Intermediate outputs							
			2 years		5 years		7 years (cure time)		Diagnosed		Died of other causes		Died of cancer		Survivors	
	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori
Females																
25-44	1.4	0.5	0.21	0.30	0.16	0.25	0.14	0.23	1.3	2.7	0.0	0.0	1.1	2.1	0.2	0.6
45-64	10.0	3.4	0.16	0.25	0.12	0.20	0.11	0.18	4.2	14.0	0.1	0.2	3.7	11.5	0.4	2.4
65-74	18.4	10.8	0.09	0.16	0.02	0.06	0.01	0.04	1.7	13.9	0.1	0.3	1.6	13.1	0.0	0.4
75+	33.7	19.7	0.03	0.06	0.01	0.02	0.00	0.01	1.3	23.7	0.1	2.2	1.1	21.4	0.0	0.1
Males																
25-44	6.1	1.0	0.19	0.28	0.14	0.23	0.13	0.21	5.1	5.0	0.0	0.0	4.4	3.9	0.6	1.0
45-64	46.8	8.9	0.15	0.23	0.11	0.18	0.09	0.16	19.1	37.1	0.5	0.5	17.1	31.1	1.5	5.5
65-74	48.1	24.2	0.08	0.14	0.02	0.05	0.01	0.03	4.1	29.7	0.2	1.0	3.9	28.0	0.0	0.7
75+	63.6	32.0	0.02	0.05	0.00	0.01	0.00	0.01	1.9	28.7	0.2	2.7	1.7	26.0	0.0	0.1

Table A15: Incidence rate (per 100,000) and relative survival rate inputs to the main model:
lung, trachea and bronchus cancer

	Incidence rate		Cumulative relative survival						Intermediate outputs							
			2 years		5 years		6 years (cure time)		Diagnosed		Died of other causes		Died of cancer		Survivors	
	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori
Females																
25-44	8.2	2.9	0.27	0.33	0.18	0.24	0.17	0.23	7.5	16.1	0.0	0.0	6.2	12.4	1.3	3.7
45-64	178.5	43.2	0.18	0.24	0.11	0.15	0.10	0.15	74.0	179.3	1.5	1.7	65.8	153.1	6.7	24.5
65-74	457.7	141.3	0.12	0.17	0.06	0.10	0.06	0.09	43.8	185.3	2.2	4.7	39.5	164.8	2.1	15.7
75+	530.8	163.8	0.08	0.12	0.03	0.05	0.03	0.05	25.4	231.9	2.7	22.1	22.3	202.6	0.4	7.2
Males																
25-44	4.8	1.8	0.22	0.28	0.14	0.20	0.14	0.19	4.0	9.3	0.0	0.0	3.4	7.6	0.5	1.7
45-64	149.5	47.9	0.14	0.19	0.08	0.12	0.07	0.11	54.8	190.0	1.5	2.5	49.8	168.2	3.4	19.3
65-74	446.5	217.8	0.09	0.14	0.04	0.07	0.04	0.07	37.5	263.5	2.3	9.4	34.1	238.8	1.1	15.3
75+	785.6	383.2	0.06	0.09	0.02	0.04	0.02	0.03	23.0	343.9	3.0	36.0	19.9	301.6	0.2	6.3

Table A16: Incidence rate (per 100,000) and relative survival rate inputs to the main model: melanoma

	Incidence rate		Cumulative relative survival						Intermediate outputs							
			2 years		5 years		6 years (cure time)		Diagnosed		Died of other causes		Died of cancer		Survivors	
	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori
Females																
15-44	6.0	24.9	0.93	0.98	0.87	0.95	0.85	0.95	8.6	196.9	0.1	0.9	1.3	10.0	7.2	185.9
45-64	21.8	75.2	0.92	0.97	0.85	0.95	0.83	0.94	10.5	334.0	0.6	7.9	1.7	19.8	8.2	306.4
65-74	23.7	112.9	0.86	0.95	0.76	0.91	0.73	0.90	2.3	149.2	0.4	13.3	0.6	13.7	1.3	122.2
75+	32.4	154.4	0.77	0.92	0.57	0.84	0.53	0.81	1.3	194.7	0.5	70.9	0.5	28.7	0.4	95.1
Males																
15-44	4.1	17.1	0.87	0.96	0.76	0.91	0.73	0.90	5.4	128.3	0.1	0.9	1.4	12.3	3.9	115.1
45-64	11.5	88.4	0.85	0.95	0.72	0.90	0.70	0.89	4.8	372.5	0.4	13.9	1.4	41.6	3.0	316.9
65-74	20.3	184.2	0.75	0.91	0.59	0.84	0.55	0.82	1.7	225.9	0.3	29.4	0.7	37.3	0.7	159.2
75+	32.9	299.0	0.61	0.85	0.34	0.71	0.29	0.67	0.9	250.7	0.3	93.6	0.5	63.4	0.1	93.7

Table A17: Incidence rate (per 100,000) and relative survival rate inputs to the main model: myeloma cancer

	Incidence rate		Cumulative relative survival						Intermediate outputs							
			2 years		5 years		20 years (cure time)		Diagnosed		Died of other causes		Died of cancer		Survivors	
	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori
Females																
25-44	0.9	0.3	0.80	0.85	0.59	0.69	0.07	0.10	0.8	1.4	0.0	0.0	0.7	1.3	0.1	0.1
45-64	10.1	6.1	0.71	0.78	0.46	0.57	0.05	0.07	4.2	25.6	0.4	1.3	3.7	23.0	0.1	1.3
65-74	29.6	20.6	0.52	0.62	0.25	0.37	0.01	0.03	2.8	26.9	0.4	3.0	2.4	23.6	0.0	0.3
75+	62.0	43.1	0.31	0.43	0.10	0.19	0.00	0.01	2.3	51.7	0.5	11.8	1.9	39.8	0.0	0.0
Males																
25-44	1.3	0.7	0.79	0.84	0.58	0.68	0.07	0.10	1.1	3.4	0.0	0.1	1.0	3.0	0.1	0.3
45-64	13.8	9.8	0.70	0.77	0.45	0.56	0.04	0.07	5.3	39.8	0.6	2.9	4.6	35.2	0.1	1.7
65-74	49.9	31.6	0.50	0.61	0.23	0.35	0.01	0.03	4.2	38.2	0.7	5.7	3.5	32.3	0.0	0.3
75+	131.0	82.9	0.29	0.42	0.09	0.18	0.00	0.01	3.1	63.2	0.7	15.5	2.4	47.7	0.0	0.0

Table A18: Incidence rate (per 100,000) and relative survival rate inputs to the main model: non-Hodgkin's cancer

	Incidence rate		Cumulative relative survival						Intermediate outputs							
			2 years		5 years		20 years (cure time)		Diagnosed		Died of other causes		Died of cancer		Survivors	
	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori
Females																
15-44	2.9	3.5	0.73	0.86	0.62	0.79	0.44	0.62	4.2	28.4	0.2	0.7	2.3	10.8	1.7	16.9
45-64	24.2	25.0	0.62	0.79	0.48	0.70	0.31	0.52	10.6	106.3	1.6	12.4	7.0	50.4	2.1	43.4
65-74	72.2	62.2	0.49	0.70	0.31	0.56	0.16	0.37	6.9	81.5	1.5	23.1	5.2	46.7	0.2	11.7
75+	101.7	87.7	0.25	0.51	0.15	0.39	0.07	0.25	4.5	116.5	1.0	45.3	3.5	69.9	0.0	1.2
Males																
15-44	6.4	5.1	0.72	0.85	0.60	0.78	0.43	0.60	8.5	38.2	0.5	1.3	4.8	15.0	3.2	22.0
45-64	27.4	34.7	0.60	0.78	0.46	0.68	0.29	0.50	11.2	144.0	2.0	23.5	7.4	69.6	1.7	51.0
65-74	67.5	79.5	0.47	0.69	0.28	0.54	0.14	0.35	5.7	96.8	1.3	32.5	4.3	55.3	0.1	9.1
75+	113.2	133.1	0.23	0.49	0.13	0.37	0.06	0.23	3.1	112.9	0.7	44.2	2.4	68.0	0.0	0.7

Table A19: Incidence rate (per 100,000) and relative survival rate inputs to the main model: oesophageal cancer

	Incidence rate		Cumulative relative survival						Intermediate outputs							
			2 years		5 years		6y (cure time)		Diagnosed		Died of other causes		Died of cancer		Survivors	
	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori
Females																
25-44	0.6	0.2	0.22	0.33	0.14	0.24	0.13	0.24	0.6	1.1	0.0	0.0	0.5	0.8	0.1	0.3
45-64	3.1	3.6	0.18	0.30	0.11	0.21	0.11	0.20	1.2	14.8	0.0	0.2	1.1	11.8	0.1	2.9
65-74	17.8	14.0	0.16	0.27	0.07	0.14	0.06	0.14	1.6	18.1	0.1	0.6	1.5	15.3	0.1	2.2
75+	54.8	43.2	0.05	0.12	0.01	0.04	0.01	0.04	1.9	49.0	0.2	5.6	1.7	42.4	0.0	1.0
Males																
25-44	1.0	0.6	0.19	0.30	0.12	0.22	0.12	0.21	0.9	2.9	0.0	0.0	0.8	2.3	0.1	0.6
45-64	14.7	11.0	0.16	0.27	0.10	0.19	0.09	0.18	5.6	44.2	0.2	0.7	5.0	36.1	0.5	7.5
65-74	78.9	38.7	0.14	0.24	0.06	0.12	0.05	0.12	6.7	47.0	0.4	2.1	6.0	40.1	0.3	4.7
75+	153.1	75.0	0.04	0.10	0.01	0.03	0.01	0.03	4.0	61.1	0.5	7.0	3.5	53.2	0.0	0.9

Table A20: Incidence rate (per 100,000) and relative survival rate inputs to the main model: ovarian cancer

	Incidence rate		Cumulative relative survival						Intermediate outputs							
			2 years		5 years		10 years (cure time)		Diagnosed		Died of other causes		Died of cancer		Survivors	
	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori
Females																
15-44	8.3	5.7	0.85	0.89	0.75	0.82	0.71	0.79	11.9	45.7	0.2	0.4	3.5	9.7	8.2	35.6
45-64	35.8	28.2	0.57	0.68	0.38	0.51	0.31	0.44	16.7	123.5	0.9	3.4	11.2	69.8	4.6	50.3
65-74	34.2	46.9	0.38	0.51	0.21	0.34	0.15	0.27	3.3	62.1	0.4	4.9	2.6	43.5	0.3	13.7
75+	40.8	55.9	0.10	0.21	0.07	0.15	0.05	0.13	1.8	74.9	0.2	12.2	1.5	58.9	0.0	3.8

Table A21: Incidence rate (per 100,000) and relative survival rate inputs to the main model: pancreatic cancer

	Incidence rate		Cumulative relative survival						Intermediate outputs							
			2 years		5 years		5 years (cure time)		Diagnosed		Died of other causes		Died of cancer		Survivors	
	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori
Females																
25-44	1.0	0.4	0.21	0.26	0.15	0.20	0.15	0.20	0.9	2.3	0.0	0.0	0.8	1.9	0.1	0.5
45-64	11.3	7.9	0.08	0.12	0.05	0.07	0.05	0.07	4.7	32.6	0.1	0.2	4.4	30.2	0.2	2.2
65-74	58.4	28.3	0.05	0.07	0.03	0.05	0.03	0.05	5.5	36.8	0.2	0.7	5.1	34.5	0.1	1.6
75+	148.0	71.8	0.01	0.02	0.00	0.01	0.00	0.01	5.2	82.6	0.5	6.8	4.7	75.3	0.0	0.5
Males																
25-44	0.6	0.9	0.20	0.25	0.14	0.18	0.14	0.18	0.5	4.8	0.0	0.0	0.5	3.9	0.1	0.9
45-64	16.7	10.9	0.07	0.10	0.04	0.06	0.04	0.06	6.4	43.9	0.1	0.4	6.0	41.0	0.2	2.5
65-74	58.0	37.7	0.04	0.06	0.02	0.04	0.02	0.04	4.9	45.8	0.2	1.2	4.6	42.9	0.1	1.7
75+	121.9	79.1	0.01	0.02	0.00	0.01	0.00	0.01	3.0	62.0	0.3	5.4	2.7	56.3	0.0	0.3

Table A22: Incidence rate (per 100,000) and relative survival rate inputs to the main model: prostate cancer

	Incidence rate		Cumulative relative survival						Intermediate outputs							
			2 years		5 years		20 years (cure time)		Diagnosed		Died of other causes		Died of cancer		Survivors	
	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori
Males																
25-44	0.3	0.3	0.96	0.98	0.90	0.95	0.42	0.47	0.3	1.7	0.0	0.1	0.2	0.9	0.1	0.8
45-64	39.7	50.8	0.96	0.98	0.90	0.95	0.42	0.47	13.4	194.1	5.3	50.0	5.7	86.6	2.4	57.5
65-74	413.7	435.4	0.92	0.96	0.83	0.91	0.36	0.43	33.8	518.5	20.9	288.6	11.4	174.2	1.5	55.7
75+	1527.3	1607.6	0.68	0.82	0.50	0.70	0.15	0.27	34.6	1167.7	18.6	757.7	15.9	402.7	0.1	7.3

Table A23: Incidence rate (per 100,000) and relative survival rate inputs to the main model: stomach cancer

	Incidence rate		Cumulative relative survival						Intermediate outputs							
			2 years		5 years		6 years (cure time)		Diagnosed		Died of other causes		Died of cancer		Survivors	
	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori
Females																
25-44	5.7	1.0	0.39	0.41	0.30	0.31	0.28	0.30	5.3	5.7	0.0	0.0	3.8	4.0	1.5	1.7
45-64	23.3	6.5	0.34	0.35	0.25	0.26	0.23	0.24	10.2	27.4	0.3	0.3	7.8	20.8	2.2	6.3
65-74	75.0	19.9	0.32	0.34	0.23	0.24	0.21	0.22	7.0	25.8	0.6	1.0	5.2	19.6	1.2	5.2
75+	192.7	51.2	0.19	0.20	0.14	0.15	0.13	0.14	7.1	60.3	1.1	8.5	5.5	47.1	0.5	4.8
Males																
25-44	6.8	1.3	0.38	0.40	0.29	0.30	0.27	0.29	5.7	6.7	0.1	0.0	4.1	4.8	1.5	1.9
45-64	38.9	14.7	0.33	0.34	0.24	0.25	0.22	0.23	15.3	60.0	0.6	1.0	11.7	46.2	2.9	12.8
65-74	85.4	51.4	0.31	0.33	0.22	0.23	0.20	0.21	7.2	62.4	0.8	3.6	5.4	47.5	1.1	11.3
75+	187.3	112.8	0.18	0.19	0.13	0.14	0.12	0.13	4.8	90.8	0.9	13.5	3.7	70.9	0.3	6.4

Table A24: Incidence rate (per 100,000) and relative survival rate inputs to the main model: uterine cancer

	Incidence rate		Cumulative relative survival						Intermediate outputs							
			2 years		5 years		6 years (cure time)		Diagnosed		Died of other causes		Died of cancer		Survivors	
	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori
Females																
25-44	6.5	2.9	0.88	0.93	0.79	0.88	0.78	0.87	6.0	16.1	0.1	0.1	1.3	2.0	4.6	13.9
45-64	55.1	32.6	0.84	0.91	0.72	0.84	0.71	0.83	24.3	139.2	1.4	3.4	6.8	23.4	16.1	112.5
65-74	61.2	59.4	0.69	0.82	0.58	0.75	0.57	0.74	6.0	78.8	0.9	6.1	2.4	19.8	2.7	52.9
75+	55.9	54.3	0.44	0.65	0.34	0.56	0.33	0.55	2.6	74.5	0.6	19.4	1.5	29.4	0.5	25.7

Table A25: Incidence rate (per 100,000) and relative survival rate inputs to the main model: testicular cancer

	Incidence rate		Cumulative relative survival				Intermediate outputs							
			2 years		3 years (cure time)		Diagnosed		Died of other causes		Died of cancer		Survivors	
	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori
Males														
15–44	19.9	12.6	0.92	0.98	0.91	0.98	26.7	90.4	0.2	0.3	2.4	2.2	24.2	88.0
45–64	8.4	5.2	0.86	0.96	0.85	0.96	4.5	24.5	0.1	0.3	0.7	1.0	3.7	23.2
65–74	4.0	2.6	0.86	0.96	0.85	0.96	0.4	3.3	0.0	0.2	0.1	0.1	0.3	2.9
75+	6.0	3.9	0.86	0.96	0.85	0.96	0.1	2.9	0.0	0.7	0.0	0.1	0.1	2.1

Table A26: Incidence rate (per 100,000) and relative survival rate inputs to the main model: thyroid cancer

	Incidence rate		Cumulative relative survival				Intermediate outputs									
			2 years		5 years		10 years (cure time)		Diagnosed		Died of other causes		Died of cancer		Survivors	
	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori		
Females																
15–64	11.8	8.5	0.94	0.96	0.93	0.94	0.93	0.94	21.1	103.1	0.4	1.1	1.5	7.1	19.1	94.9
65–74	16.8	12.1	0.87	0.90	0.84	0.88	0.84	0.88	1.7	16.2	0.2	1.1	0.3	1.9	1.2	13.2
75+	13.7	9.8	0.87	0.90	0.84	0.88	0.84	0.88	0.6	13.5	0.2	3.9	0.1	1.5	0.3	8.1
Males																
15–64	2.4	3.0	0.89	0.91	0.86	0.89	0.86	0.89	3.5	33.4	0.1	0.6	0.6	5.1	2.8	27.7
65–74	5.2	6.6	0.76	0.81	0.70	0.77	0.70	0.77	0.5	8.2	0.1	0.8	0.1	1.8	0.3	5.6
75+	4.7	5.8	0.76	0.81	0.70	0.77	0.70	0.77	0.2	5.7	0.1	1.7	0.0	1.2	0.1	2.8

Table A27: Incidence rate (per 100,000) and relative survival rate inputs to the main model: all childhood cancer

	Incidence rate		Cumulative relative survival				Intermediate outputs							
			2 years		5 years (cure time)		Diagnosed		Died of other causes		Died of cancer		Survivors	
	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori
Females														
0–4	16.9	20.4	0.84	0.88	0.80	0.85	6.6	20.6	0.0	0.0	1.3	3.2	5.2	17.4
5–9	13.4	16.1	0.81	0.85	0.75	0.81	4.9	17.1	0.0	0.0	1.2	3.3	3.6	13.8
10–14	10.7	12.9	0.76	0.82	0.70	0.77	3.8	15.0	0.0	0.0	1.1	3.5	2.6	11.5
Males														
0–4	20.5	24.7	0.86	0.89	0.82	0.86	8.3	26.1	0.0	0.0	1.5	3.6	6.7	22.4
5–9	15.4	18.6	0.82	0.87	0.77	0.82	5.9	20.6	0.0	0.0	1.3	3.6	4.5	17.0
10–14	11.6	14.0	0.78	0.84	0.72	0.79	4.4	17.1	0.0	0.0	1.2	3.6	3.2	13.4

Table A28: Incidence rate (per 100,000) and relative survival rate inputs to the main model: adult cancer of other sites

	Incidence rate		Cumulative relative survival						Intermediate outputs							
			2 years		5 years		10 years (cure time)		Diagnosed		Died of other causes		Died of cancer		Survivors	
	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori
Females																
15-44	5.3	3.9	0.66	0.78	0.59	0.72	0.56	0.70	7.6	30.9	0.1	0.2	3.3	9.2	4.2	21.4
45-64	46.4	28.3	0.40	0.57	0.31	0.48	0.28	0.45	20.4	120.6	0.9	3.3	14.6	68.2	4.9	49.1
65-74	84.1	86.7	0.21	0.38	0.14	0.29	0.11	0.26	7.9	112.9	0.7	7.9	6.7	81.1	0.6	23.8
75+	225.9	232.9	0.10	0.24	0.07	0.19	0.06	0.17	7.7	260.2	1.1	52.4	6.5	193.1	0.1	14.6
Males																
15-44	4.3	3.7	0.65	0.77	0.58	0.72	0.55	0.69	5.7	27.9	0.1	0.3	2.6	8.5	3.1	19.1
45-64	48.1	34.8	0.39	0.56	0.30	0.48	0.27	0.44	18.7	141.7	1.2	6.0	13.6	82.2	3.9	53.5
65-74	119.0	129.3	0.20	0.37	0.13	0.29	0.11	0.25	10.0	156.2	1.0	15.8	8.3	112.3	0.6	28.1
75+	297.9	323.8	0.09	0.23	0.06	0.18	0.05	0.16	7.0	241.5	1.2	50.3	5.8	179.6	0.1	11.6