

**Cancer Patient Survival
Change Over Time Update**
Covering the period 1994 to 2009

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National collection, coding and collation of cancer registrations is a complex process. This is because the information in the New Zealand Cancer Registry comes from laboratory reports, hospital information and mortality information, and cannot be finalised until data has become available from all sources. In addition, there are several steps required to ensure the final information is of good quality.

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Source

Cancer registration data for this publication is sourced from the New Zealand Cancer Registry. Mortality data is sourced from the Mortality Collection held by the Ministry of Health.

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Selected facts

- For all adults with cancer, there was a statistically significant improvement in survival between 1998–1999 and 2008–2009. Survival increased from a ratio of 0.577 to 0.633 after five years of follow-up. A survival ratio of 0.633 means the rate of survival among people diagnosed with cancer was 63 percent when compared with a group from the general population of the same sex and comparable age.
- Although both Māori and non-Māori showed an increase in survival over time, only the non-Māori change was statistically significant.
- For non-Māori, 6 of the 11 groupings detailed in this document showed a significant improvement in survival over time.
- For Māori, the only site to show a significant improvement in survival was cancer of the breast in females.
- Māori survival was significantly lower than that experienced by non-Māori for 6 of the 11 groupings in this update.

Introduction

Purpose of this update

- This document was written as an update to the publication *Cancer Patient Survival Covering the Period 1994 to 2007*, released by the Ministry of Health in 2010. It is not a stand-alone document. The main publication can be found here: www.health.govt.nz/publications/cancer-patient-survival-covering-period-1994-2007
- This document updates only the 'change over time' information detailed in the main publication, by showing updated information for five-year survival of patients alive and diagnosed with cancer during the five periods covered (1998–1999, 2000–2001, 2002–2003, 2004–2005 and 2006–2007). New information showing survival for the 2008–2009 period has also been included.
- Change over time data presented in this update may be slightly different to comparative data in the full publication. This is due to slight changes in the historical cancer registration data held within the Cancer Registry, and additional deaths being registered in the Mortality Collection.
- Not all the cancer sites detailed in the main publication have been covered in this update. This document shows updated information for the following sites:
 - all adult cancers
 - colorectum and anus
 - trachea, bronchus and lung
 - melanoma of the skin
 - female breast cancer
 - prostate
 - Hodgkin lymphoma
 - non-Hodgkin lymphoma
 - myeloma
 - leukaemia – all forms
 - childhood cancers.
- The cancer registration data analysed in this report covers the years 1994–2009. Measurement of cancer survival information requires at least five years of comparable data, including new cancer cases and the outcomes of those cases in terms of either survival or death (data in this publication includes deaths to the end of 2010).

Cancer survival

In this update, cancer survival is calculated by comparing the number of people with a particular type of cancer who died within a given time period with the number of people in the general population who would have been expected to die over the same period. A ratio is calculated by dividing the observed survival rate experienced by cancer patients with the expected survival rate of a group of people from the population who are of the same sex and of a similar age. This figure is known as the 'relative survival ratio'.

The relative survival ratio is typically a number between zero and one, where zero would indicate that none of the patients survived and one would signify that patients experienced mortality rates no higher than those in a comparable group from the general population.

It is possible to obtain a relative survival ratio with a value greater than one: this would indicate that the observed survival of the patients in the group was better than that expected from the general population. This situation may occur if cancer patients can generally be cured, or if patients are otherwise more privileged (for example in terms of socioeconomic factors or access to medical care) than the general population.

In this update, the survival ratio shown is the cumulative relative survival ratio. This is a measure of patient survival corrected for the effect of other independent causes of death. It represents the proportion of patients within a particular group alive after five years of follow up, and attributes all the 'excess' mortality of the group to the cancer in question.

Methods

Calculating relative survival

Relative survival information is calculated by dividing observed survival by expected survival.

Observed survival data was obtained from the New Zealand Cancer Registry and the Mortality Collection, both of which are databases administered by the Ministry of Health. People who are diagnosed and subsequently die overseas are considered 'alive' in this data.

Expected survival data is calculated from life tables for the total New Zealand resident population, based on data received from Statistics New Zealand. These tables include information on the probability of death and life expectancy for both sexes and by single year of life.

This information is then used to calculate cancer survival rates and ratios, using the period method of survival calculation, the Stata program and the Ederer II method. (See the Appendix for additional information on data and methodology used in this report.)

In this document, survival data is presented as graphs showing relative survival ratios over time and as tables giving relative survival ratios according to sex and ethnicity.

Interpretation

The underlying reasons for social class differences in cancer patient survival are not fully understood, but are believed to depend on a combination of factors related to the biological properties of the tumour, the presence of co-morbidities, the health care system and social or psychological factors. (Eloranta et al 2010).

Data presented, with the exception of childhood cancers, pertain to adults aged 15–99. Data on childhood cancers pertain to patients aged 0–14. For a definition of cancer and more information about the International Classification of Diseases (ICD) codes used in this report, please see the Appendix.

It should be noted that numbers in the ‘all adult cancers’ group (which includes sites not reported on in this publication) will have varied over time due to changes in Cancer Registry registration rules.

In grouping results by sex and ethnicity, some of the numbers produced are very low. In these cases, recorded survival ratios should be treated with caution: a single additional death may make a large difference to a survival ratio. (For more information please see the Appendix.)

In the case of cancers that are more likely to affect older people (such as prostate cancer), care should be taken when interpreting results presented for Māori. The Māori population has a younger age structure than the non-Māori population; therefore, the numbers of Māori with cancers affecting older age groups will be relatively small. Māori also have higher background mortality rates; therefore, because the population tables are based on total population, some Māori survival rates may be slightly underestimated.

Trends noted in ‘change over time’ information may not necessarily be directly due to changes in survival ratios but rather may be due to changes in diagnosis, treatment or early detection techniques, or may be artefacts of the data. As with the more detailed main publication, this update does not attempt to explain the underlying cause of any trends.

All adult cancers (ICD codes C00–C96)

- Between 1998 and 2009, five-year cumulative relative survival ratios improved within the all adult cancers group, from a ratio of 0.577 in the 1998–1999 period to 0.633 in the 2008–2009 period. This increase was statistically significant.
- Survival ratios for all cancers significantly improved in adults for both males and females.
- The increase in non-Māori survival between 1998 and 2009 was significant; the increase in Māori survival was not.
- Females showed significantly higher survival ratios than males.
- Māori showed significantly poorer survival ratios than non-Māori for the entire period covered.
- The numbers for Māori are relatively low when compared to non-Māori, resulting in higher variability in survival ratios and greater fluctuation over time. This also means that statistically significant change in survival over time is less common for Māori.

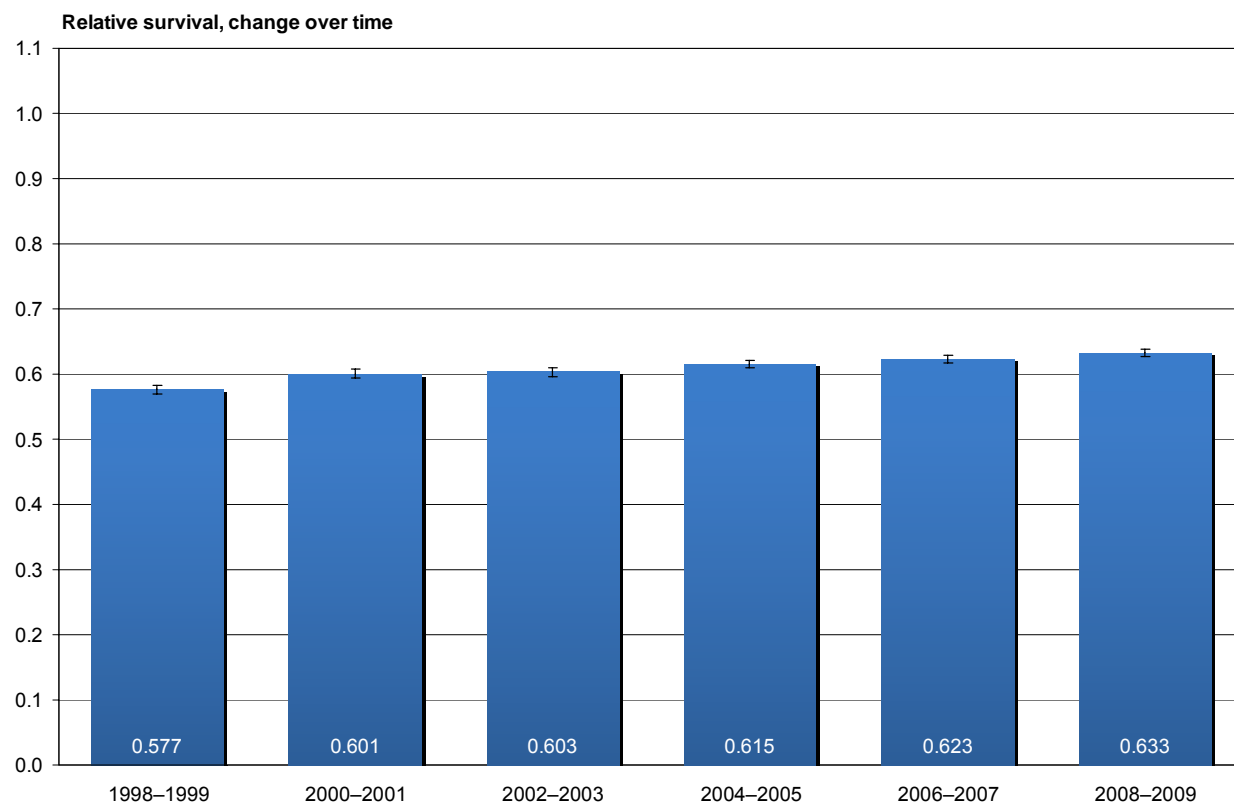
Five-year cumulative relative survival – change over time, 1998–2009

Table 1: All adult cancers – five-year cumulative relative survival ratios, by sex and ethnicity

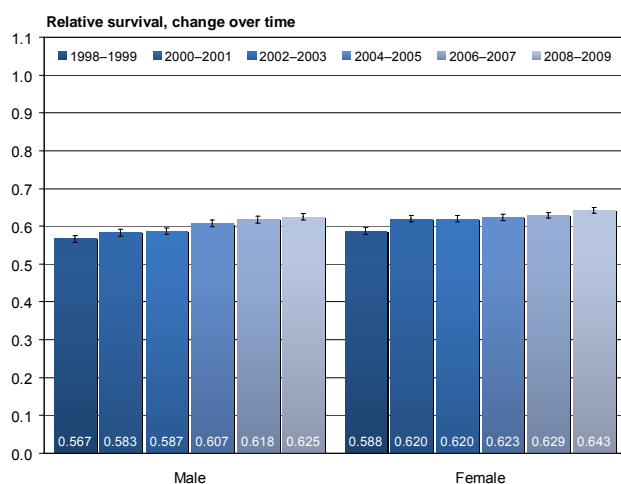
Registration years	Māori population			Non-Māori population			Total population		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
1998–1999	0.361	0.439	0.403	0.581	0.601	0.590	0.567	0.588	0.577
2000–2001	0.346	0.489	0.425	0.599	0.633	0.615	0.583	0.620	0.601
2002–2003	0.357	0.501	0.435	0.604	0.631	0.617	0.587	0.620	0.603
2004–2005	0.368	0.473	0.426	0.625	0.639	0.632	0.607	0.623	0.615
2006–2007	0.393	0.503	0.455	0.635	0.642	0.639	0.618	0.629	0.623
2008–2009	0.355	0.503	0.439	0.646	0.658	0.652	0.625	0.643	0.633

Figure 1: All adult cancers – five-year cumulative relative survival ratios, change over time

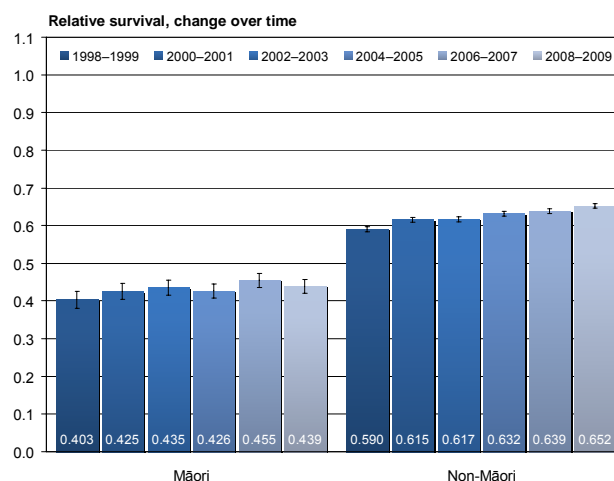
Cumulative relative survival ratios, change over time



Cumulative relative survival ratios, change over time, by sex



Cumulative relative survival ratios, change over time, by ethnicity



Cancer of the colorectum and anus (ICD codes C18–C21)

- Between 1998 and 2009, five-year cumulative relative survival ratios improved for adults with colorectal cancer. In 1998 and 1999 the survival ratio was 0.578; this increased to 0.618 in 2008 and 2009.
- Females generally showed slightly higher survival ratios than males, and non-Māori showed consistently higher ratios compared to Māori.
- Between the 1998–1999 and 2008–2009 periods the non-Māori population showed a significant increase in survival.
- The decrease in survival seen between the 2006–2007 and 2008–2009 periods for Māori is almost certainly due to the low numbers of patients within the cohort. Low numbers lead to natural fluctuations in the data, and therefore should be treated with caution. This decrease was not found to be significant.

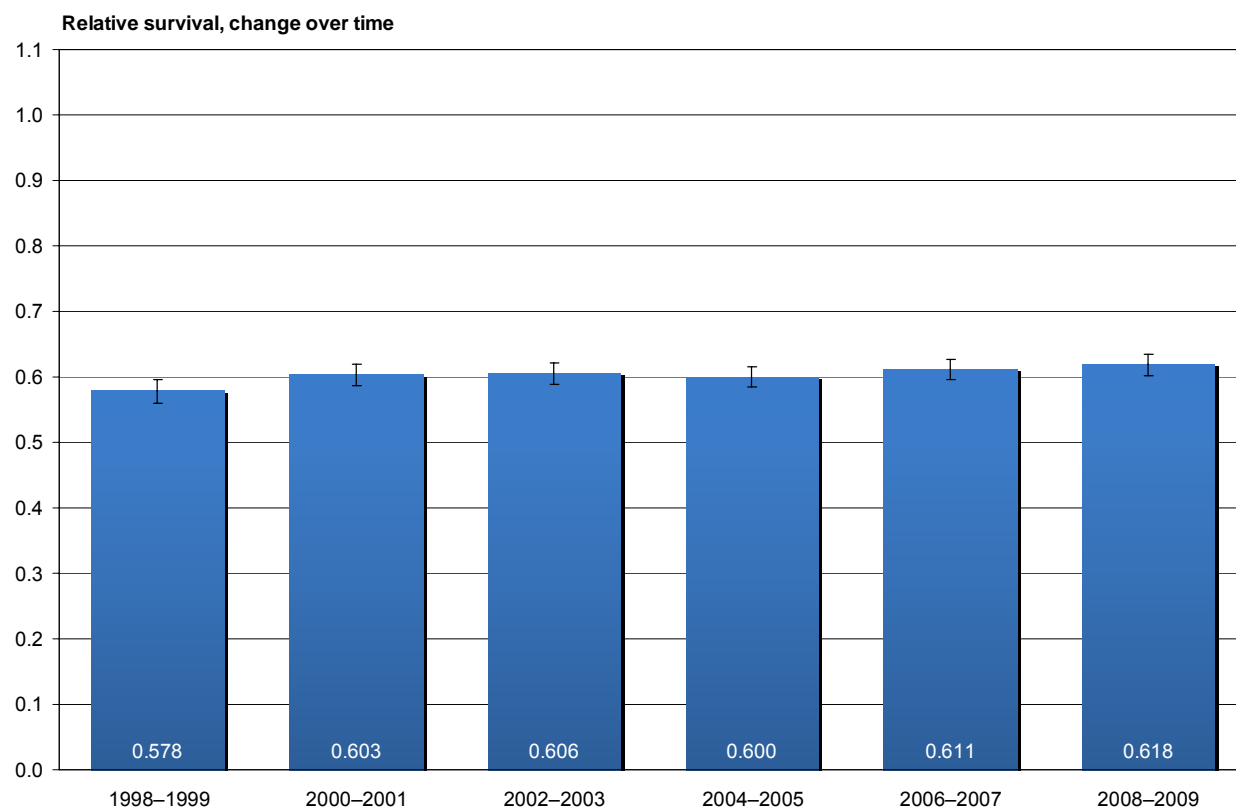
Five-year cumulative relative survival – change over time, 1998–2009

Table 2: Cancer of the colorectum and anus – five-year cumulative relative survival ratios, by sex and ethnicity

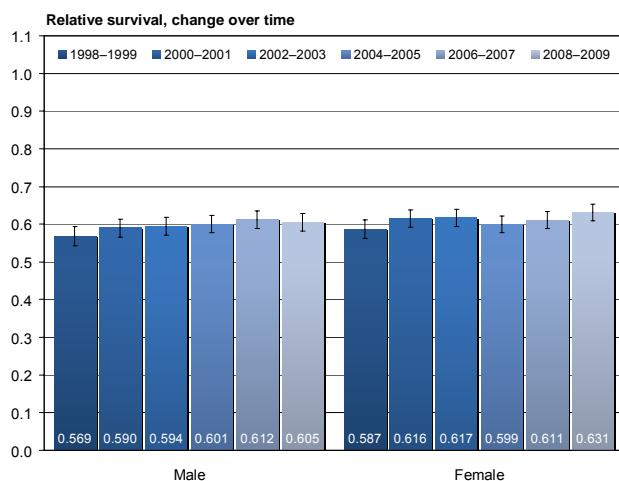
Registration years	Māori population			Non-Māori population			Total population		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
1998–1999	0.384	0.321	0.356	0.576	0.595	0.586	0.569	0.587	0.578
2000–2001	0.414	0.391	0.405	0.598	0.623	0.611	0.590	0.616	0.603
2002–2003	0.336	0.551	0.425	0.607	0.619	0.614	0.594	0.617	0.606
2004–2005	0.430	0.422	0.430	0.609	0.606	0.608	0.601	0.599	0.600
2006–2007	0.432	0.603	0.503	0.620	0.612	0.616	0.612	0.611	0.611
2008–2009	0.328	0.473	0.393	0.621	0.639	0.630	0.605	0.631	0.618

Figure 2: Cancer of the colorectum and anus – five-year cumulative relative survival ratios, change over time

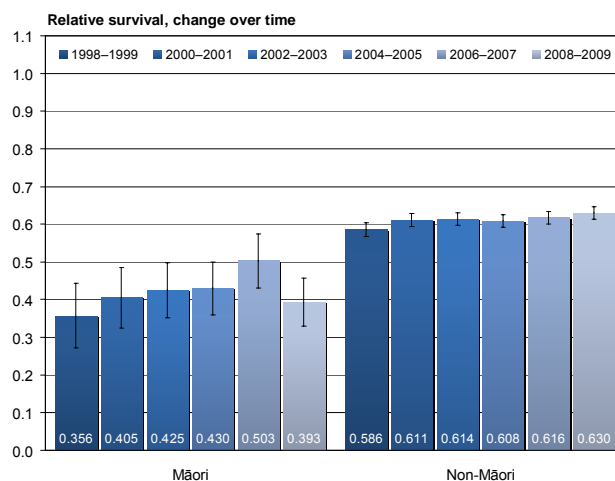
Cumulative relative survival ratios, change over time



Cumulative relative survival ratios, change over time, by sex



Cumulative relative survival ratios, change over time, by ethnicity



Cancer of the trachea, bronchus and lung (ICD codes C33–C34)

- The five-year survival ratio for patients with lung cancer is very low, fluctuating between 0.089 and 0.102 since 1998.
- There has been no improvement in survival over this period.
- Survival ratios for Māori were significantly lower than those seen for non-Māori.

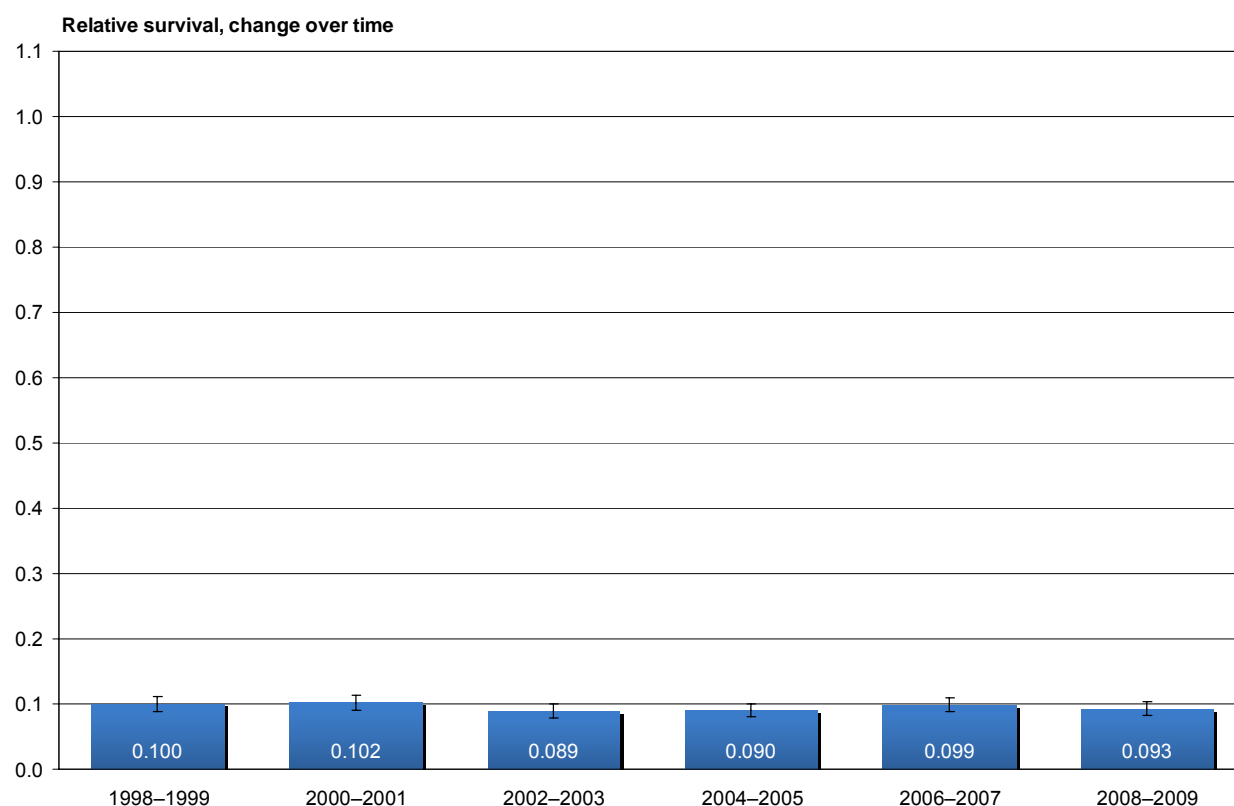
Five-year cumulative relative survival – change over time, 1998–2009

Table 3: Cancer of the trachea, bronchus and lung – five-year cumulative relative survival ratios, by sex and ethnicity

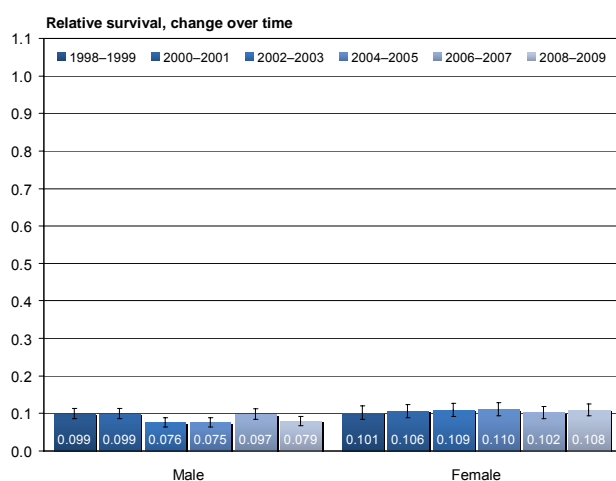
Registration years	Māori population			Non-Māori population			Total population		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
1998–1999	0.061	0.058	0.060	0.104	0.112	0.107	0.099	0.101	0.100
2000–2001	0.060	0.059	0.059	0.106	0.119	0.111	0.099	0.106	0.102
2002–2003	0.032	0.106	0.064	0.083	0.110	0.093	0.076	0.109	0.089
2004–2005	0.044	0.065	0.054	0.079	0.123	0.096	0.075	0.110	0.090
2006–2007	0.072	0.061	0.065	0.102	0.112	0.106	0.097	0.102	0.099
2008–2009	0.041	0.065	0.054	0.086	0.122	0.102	0.079	0.108	0.093

Figure 3: Cancer of the trachea, bronchus and lung – five-year cumulative relative survival ratios, change over time

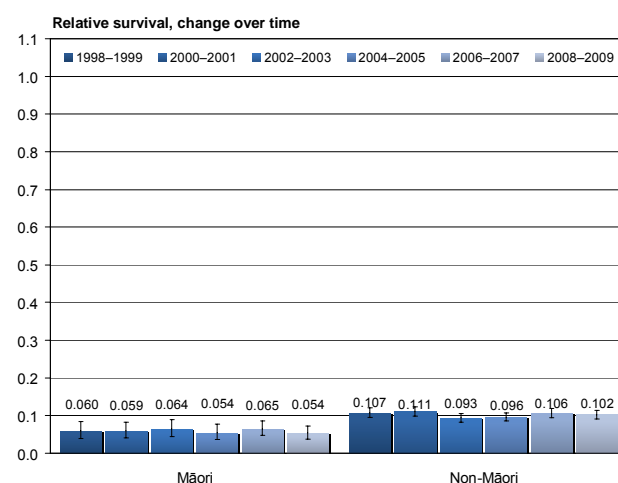
Cumulative relative survival ratios, change over time



Cumulative relative survival ratios, change over time, by sex



Cumulative relative survival ratios, change over time, by ethnicity



Melanoma (ICD code C43)

- The five-year survival ratio for patients with melanoma is high and has shown little variation since 1998.
- Females show consistently higher survival for this cancer than males.
- Survival ratios for Māori were variable due to the very low incidence of this cancer in this population.

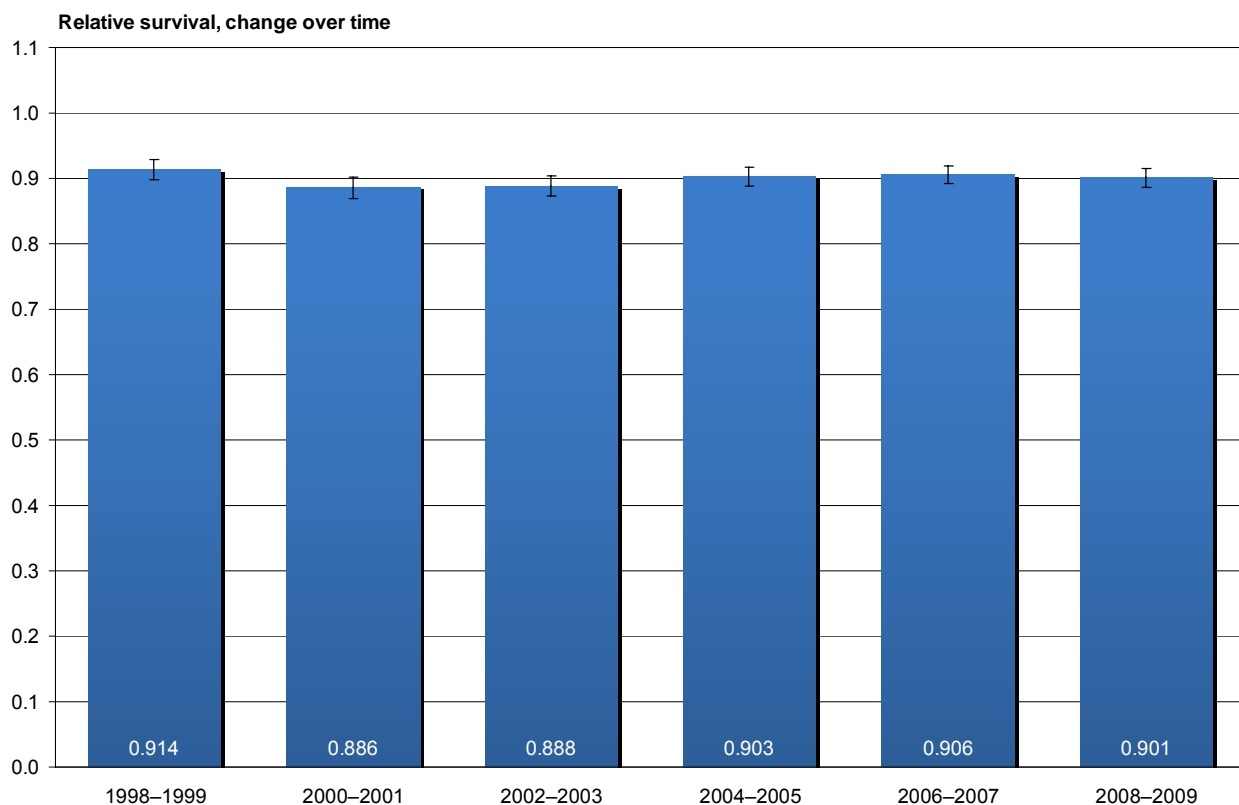
Five-year cumulative relative survival – change over time, 1998–2009

Table 4: Melanoma – five-year cumulative relative survival ratios, by sex and ethnicity

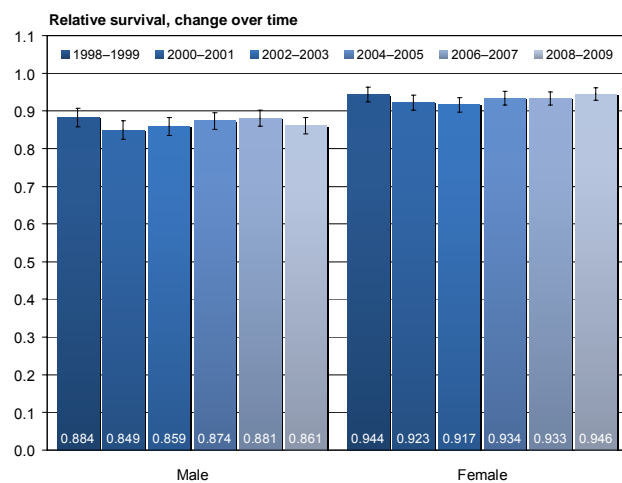
Registration years	Māori population			Non-Māori population			Total population		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
1998–1999	0.859	1.043	0.971	0.884	0.943	0.913	0.884	0.944	0.914
2000–2001	0.760	0.903	0.871	0.850	0.923	0.886	0.849	0.923	0.886
2002–2003	0.498	0.896	0.767	0.863	0.918	0.890	0.859	0.917	0.888
2004–2005	0.395	0.911	0.715	0.878	0.935	0.906	0.874	0.934	0.903
2006–2007	0.672	0.772	0.730	0.883	0.936	0.908	0.881	0.933	0.906
2008–2009	0.773	0.787	0.787	0.862	0.948	0.903	0.861	0.946	0.901

Figure 4: Melanoma – five-year cumulative relative survival ratios, change over time

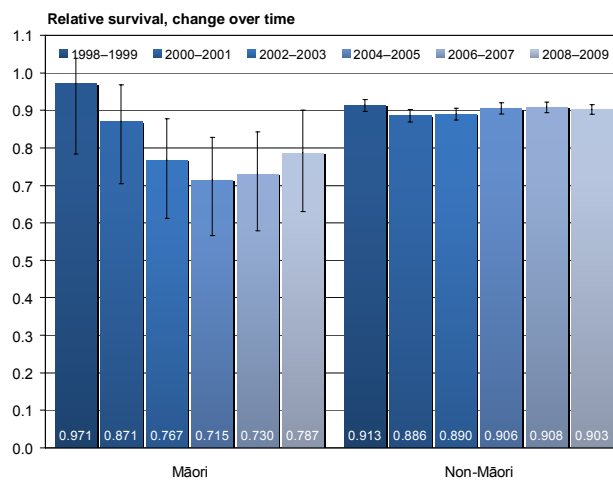
Cumulative relative survival ratios, change over time



Cumulative relative survival ratios, change over time, by sex



Cumulative relative survival ratios, change over time, by ethnicity



Cancer of the breast (ICD code C50, females)

- The five-year survival ratio for females with breast cancer increased from 0.792 in 1998–1999 to 0.860 in 2008–2009.
- Both the Māori and non-Māori survival ratios were significantly higher in the 2008–2009 period than in 1998–1999.
- Māori females showed significantly lower survival than non-Māori females.
- Survival ratios for Māori showed greater variability due to the lower numbers involved.

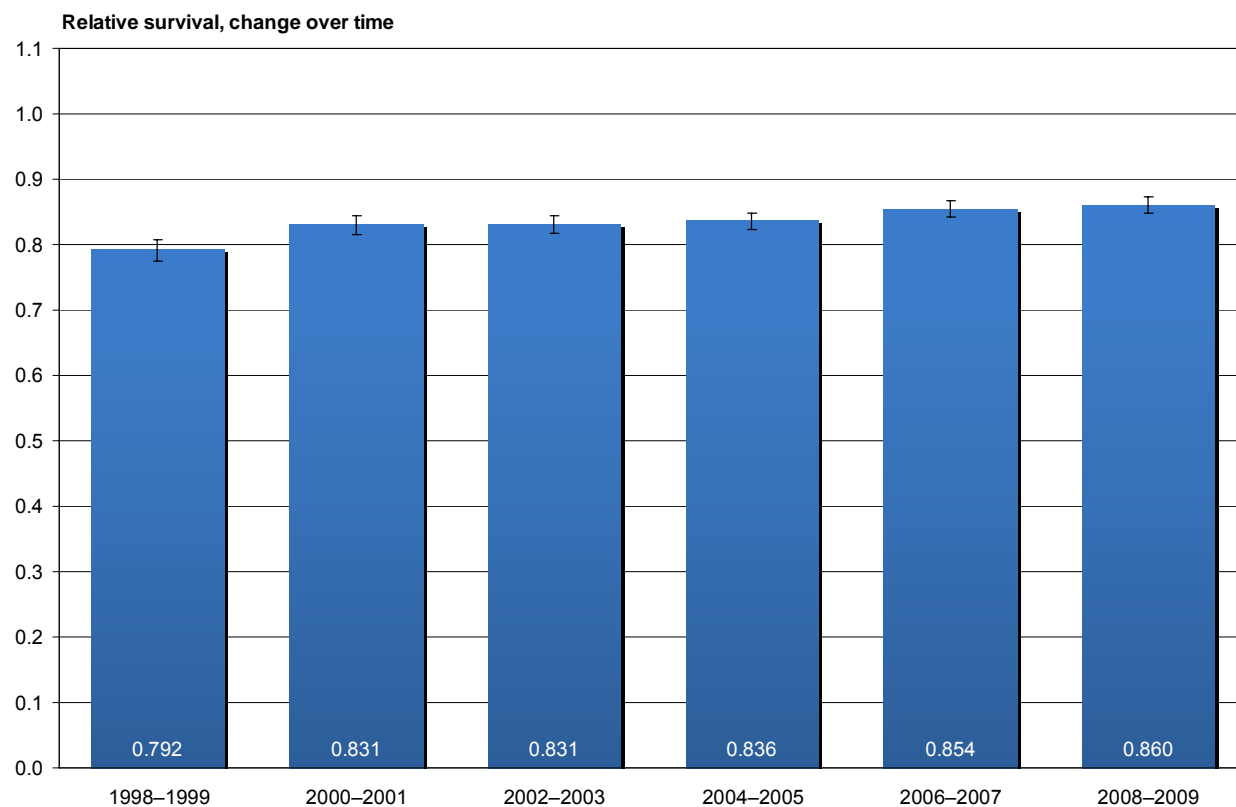
Five-year cumulative relative survival – change over time, 1998–2009

Table 5: Breast cancer – five-year cumulative relative survival ratios, by ethnicity

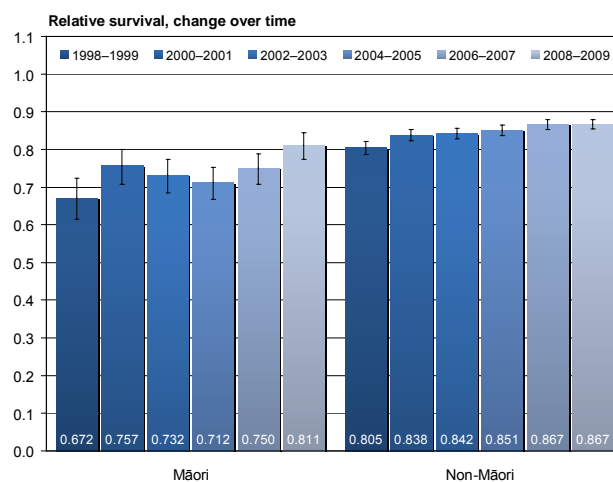
	Māori population	Non-Māori population	Total population
1998–1999	0.672	0.805	0.792
2000–2001	0.757	0.838	0.831
2002–2003	0.732	0.842	0.831
2004–2005	0.712	0.851	0.836
2006–2007	0.750	0.867	0.854
2008–2009	0.811	0.867	0.860

Figure 5: Cancer of the breast – five-year cumulative relative survival ratios, change over time

Cumulative relative survival ratios, change over time



Cumulative relative survival ratios, change over time, by ethnicity



Cancer of the prostate (ICD code C61)

- The five-year survival ratio for males with prostate cancer is high and has increased from 0.819 in 1998–1999 to 0.913 in 2008–2009.
- The non-Māori survival ratios were significantly higher in 2008–2009 than in 1998–1999; this was not the case for Māori.
- Māori males showed significantly lower survival ratios than non-Māori males.
- Survival ratios for Māori showed greater variability due to the lower numbers involved.

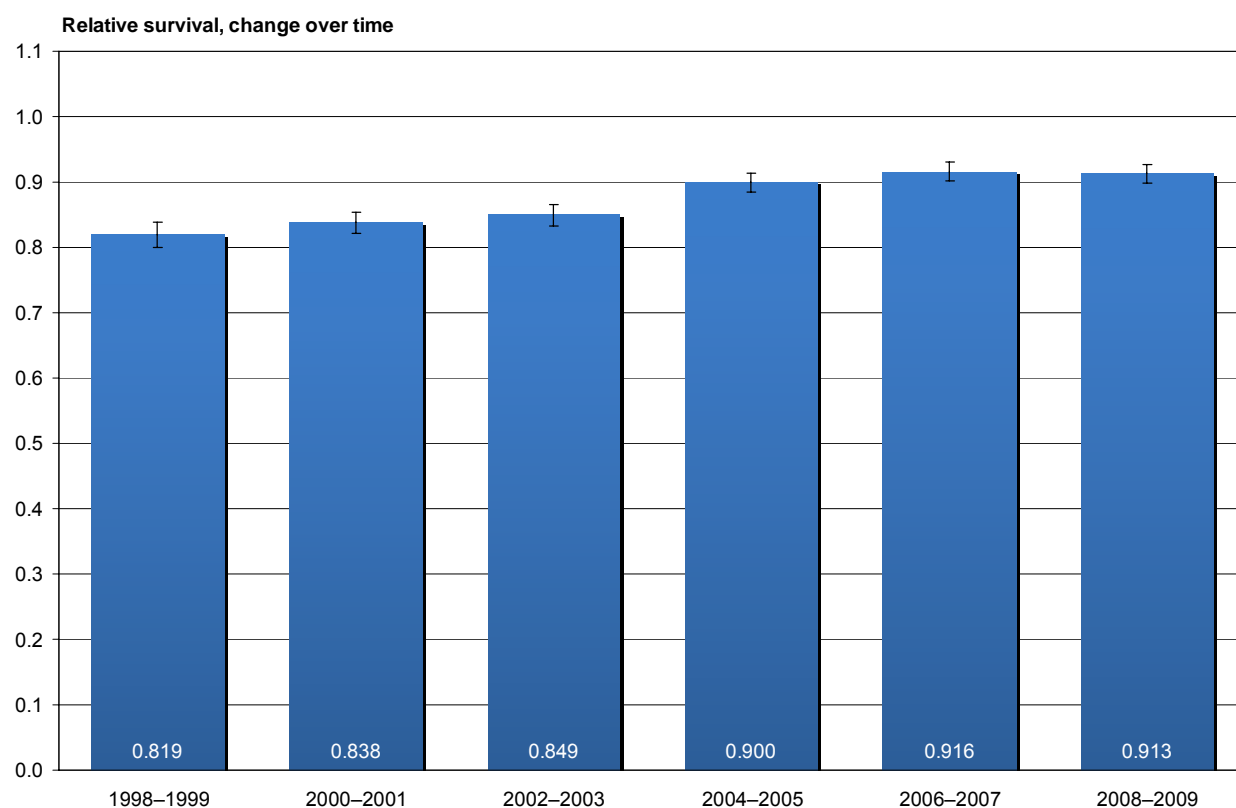
Five-year cumulative relative survival – change over time, 1998–2009

Table 6: Prostate cancer – five-year cumulative relative survival ratios, by ethnicity

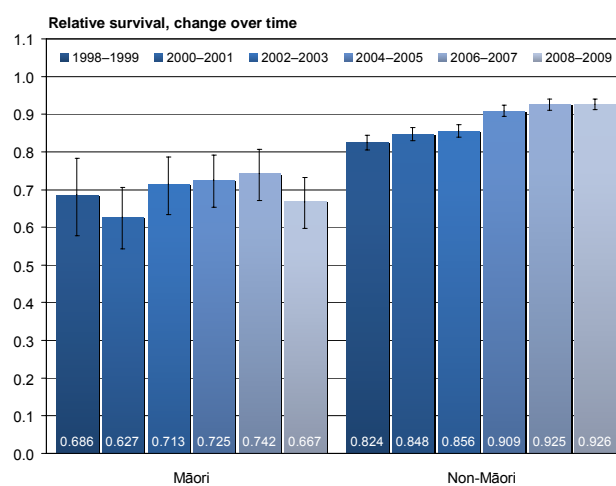
	Māori population	Non-Māori population	Total population
1998–1999	0.686	0.824	0.819
2000–2001	0.627	0.848	0.838
2002–2003	0.713	0.856	0.849
2004–2005	0.725	0.909	0.900
2006–2007	0.742	0.925	0.916
2008–2009	0.667	0.926	0.913

Figure 6: Cancer of the prostate – five-year cumulative relative survival ratios, change over time

Cumulative relative survival ratios, change over time



Cumulative relative survival ratios, change over time, by ethnicity



Hodgkin lymphoma (ICD codes C81)

- The five-year survival ratio for adults with Hodgkin lymphoma is relatively high; however, numbers of patients with this cancer are low, and this leads to natural fluctuations in the data over time.
- Survival ratios were similar for both sexes and for both ethnic groupings.
- Survival ratios for Māori were more variable due to the very low numbers involved.

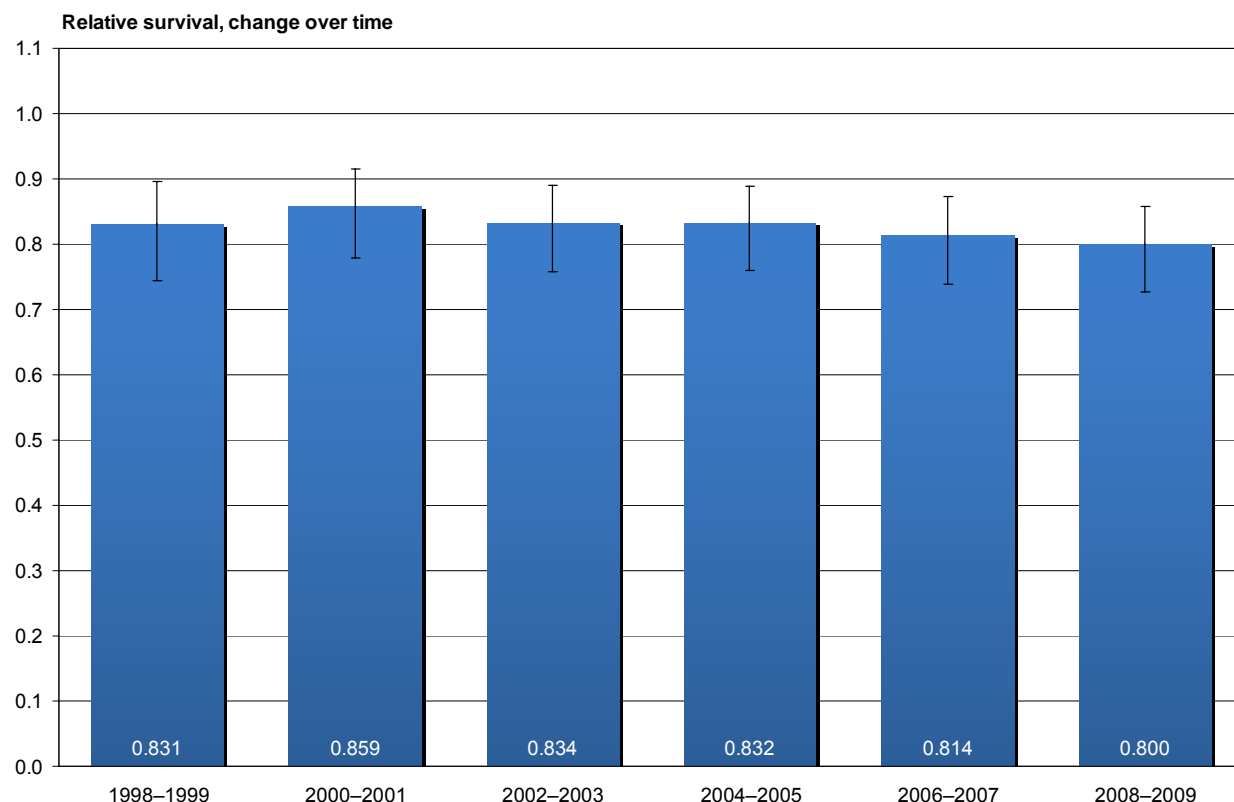
Five-year cumulative relative survival – change over time, 1998–2009

Table 7: Hodgkin lymphoma – five-year cumulative relative survival ratios, by sex and ethnicity

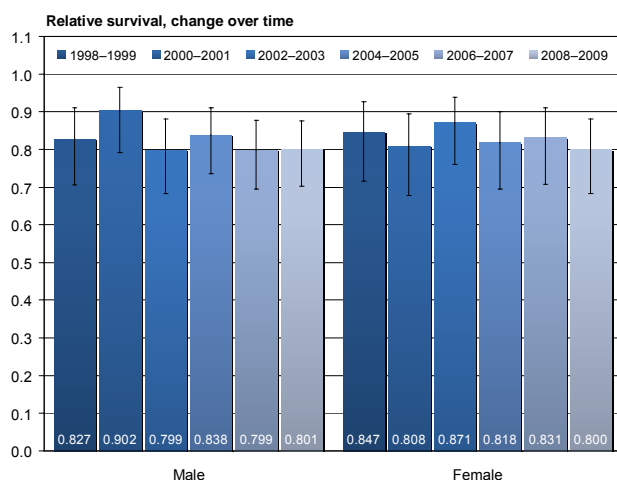
Registration years	Māori population			Non-Māori population			Total population		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
1998–1999	0.813	0.695	0.813	0.831	0.854	0.834	0.827	0.847	0.831
2000–2001	0.861	0.844	0.843	0.907	0.803	0.860	0.902	0.808	0.859
2002–2003	1.012	0.736	0.867	0.780	0.889	0.831	0.799	0.871	0.834
2004–2005	0.769	0.883	0.819	0.842	0.811	0.834	0.838	0.818	0.832
2006–2007	0.880	1.017	0.943	0.795	0.806	0.800	0.799	0.831	0.814
2008–2009	0.730	0.665	0.692	0.806	0.817	0.811	0.801	0.800	0.800

Figure 7: Hodgkin lymphoma – five-year cumulative relative survival ratios, change over time

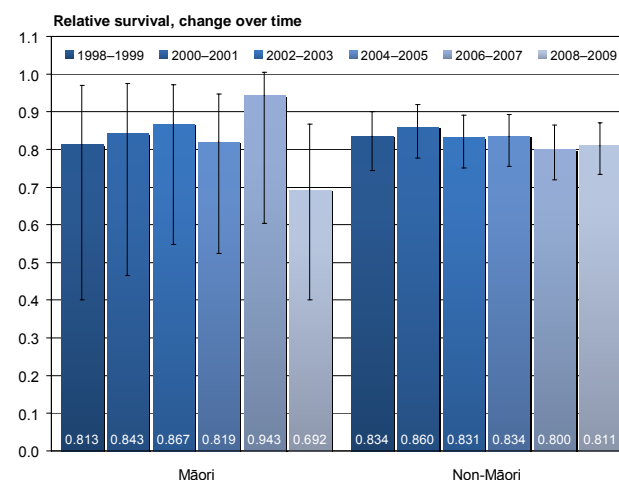
Cumulative relative survival ratios, change over time



Cumulative relative survival ratios, change over time, by sex



Cumulative relative survival ratios, change over time, by ethnicity



Non-Hodgkin lymphoma (ICD codes C82–C85, C96)

- The five-year survival ratio for adults with non-Hodgkin lymphoma has increased from a ratio of 0.491 in 1998–1999 to 0.655 in 2008–2009.
- Survival ratios increased significantly for both sexes.
- Non-Māori adults have shown significantly better survival ratios between the 1998–1999 and 2008–2009 periods.
- Survival ratios for Māori were more variable and showed no significant change over the period analysed.

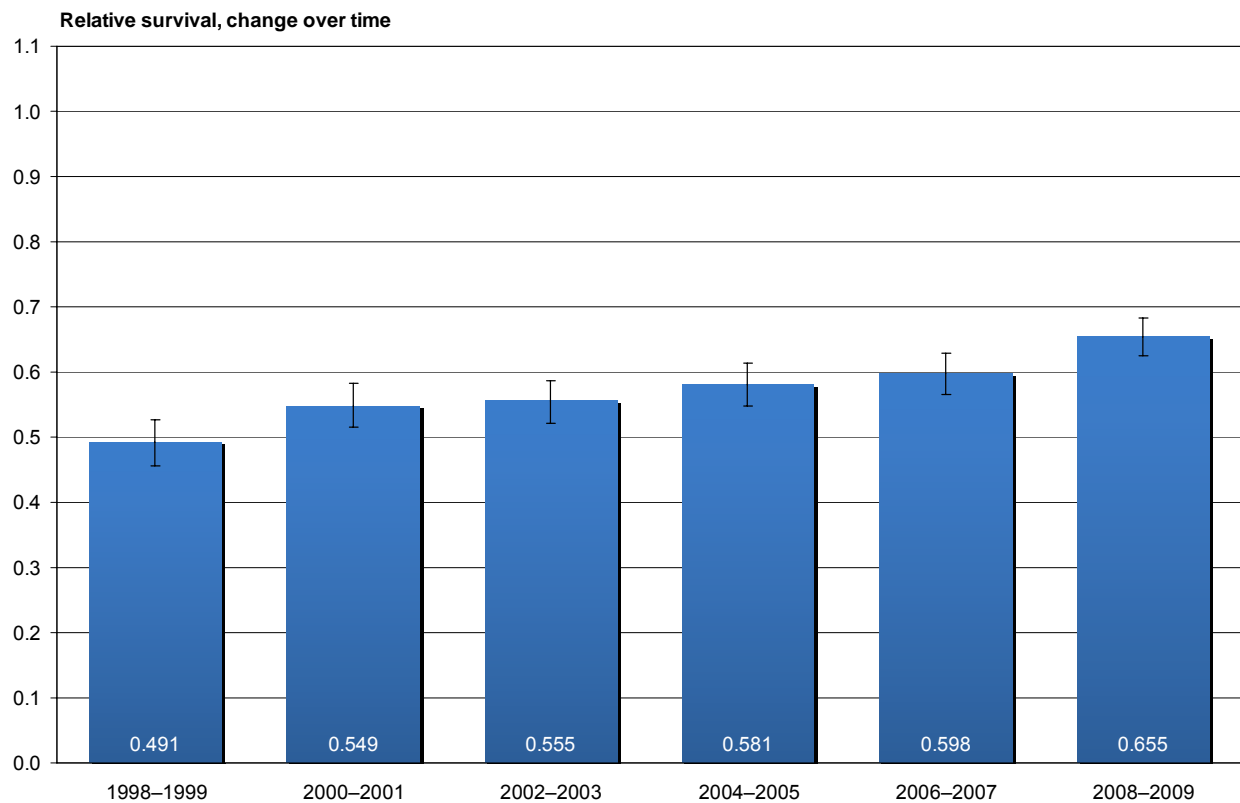
Five-year cumulative relative survival – change over time, 1998–2009

Table 8: Non-Hodgkin lymphoma – five-year cumulative relative survival ratios, by sex and ethnicity

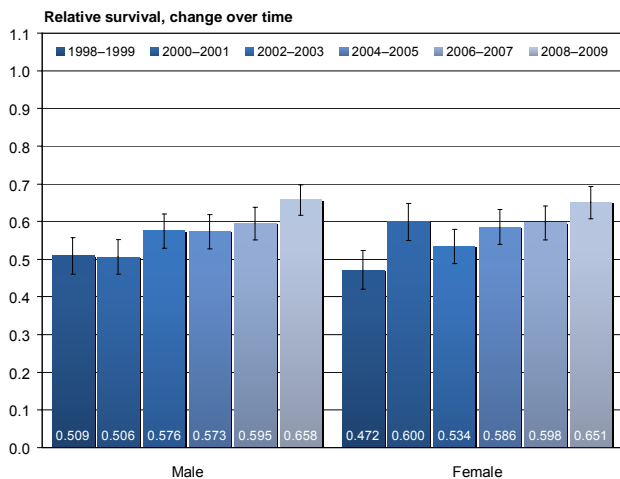
Registration years	Māori population			Non-Māori population			Total population		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
1998–1999	0.556	0.547	0.549	0.507	0.468	0.489	0.509	0.472	0.491
2000–2001	0.405	0.413	0.416	0.514	0.612	0.559	0.506	0.600	0.549
2002–2003	0.457	0.404	0.433	0.584	0.545	0.564	0.576	0.534	0.555
2004–2005	0.325	0.523	0.427	0.591	0.588	0.591	0.573	0.586	0.581
2006–2007	0.515	0.508	0.501	0.601	0.604	0.605	0.595	0.598	0.598
2008–2009	0.545	0.427	0.487	0.666	0.665	0.665	0.658	0.651	0.655

Figure 8: Non-Hodgkin lymphoma – five-year cumulative relative survival ratios, change over time

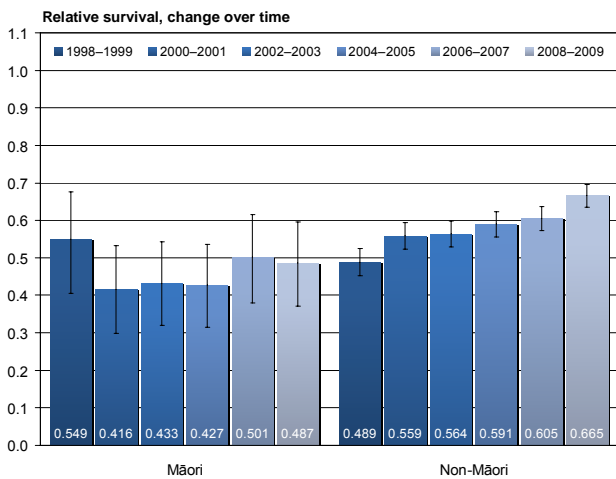
Cumulative relative survival ratios, change over time



Cumulative relative survival ratios, change over time, by sex



Cumulative relative survival ratios, change over time, by ethnicity



Myeloma (ICD codes C90)

- The five-year survival ratio for adults with myeloma has increased significantly from a ratio of 0.273 in 1998–1999 to 0.458 in 2008–2009.
- Survival ratios increased for both sexes (significantly for males).
- Non-Māori adults exhibited significantly better survival ratios between the 1998–1999 and 2008–2009 periods.
- Survival ratios for Māori were much more variable and have shown no significant changes over the period analysed.

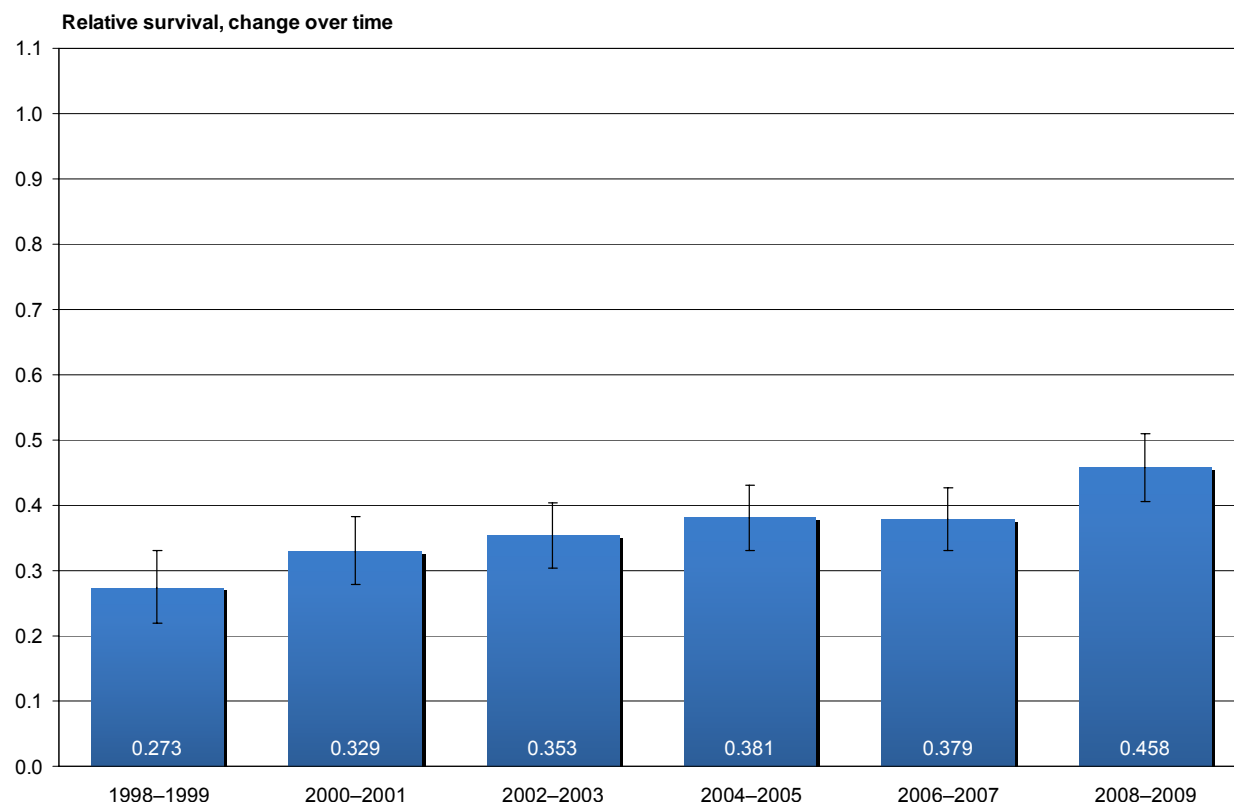
Five-year cumulative relative survival – change over time, 1998–2009

Table 9: Myeloma – five-year cumulative relative survival ratios, by sex and ethnicity

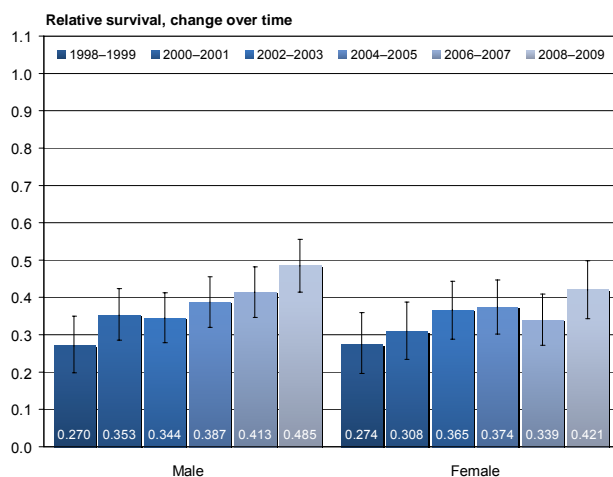
Registration years	Māori population			Non-Māori population			Total population		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
1998–1999	0.234	0.191	0.183	0.282	0.284	0.283	0.270	0.274	0.273
2000–2001	0.134	0.415	0.226	0.378	0.300	0.338	0.353	0.308	0.329
2002–2003	0.519	0.284	0.411	0.332	0.371	0.348	0.344	0.365	0.353
2004–2005	0.389	0.376	0.391	0.383	0.375	0.379	0.387	0.374	0.381
2006–2007	0.228	0.129	0.197	0.416	0.368	0.394	0.413	0.339	0.379
2008–2009	0.351	0.596	0.515	0.485	0.407	0.452	0.485	0.421	0.458

Figure 9: Myeloma – five-year cumulative relative survival ratios, change over time

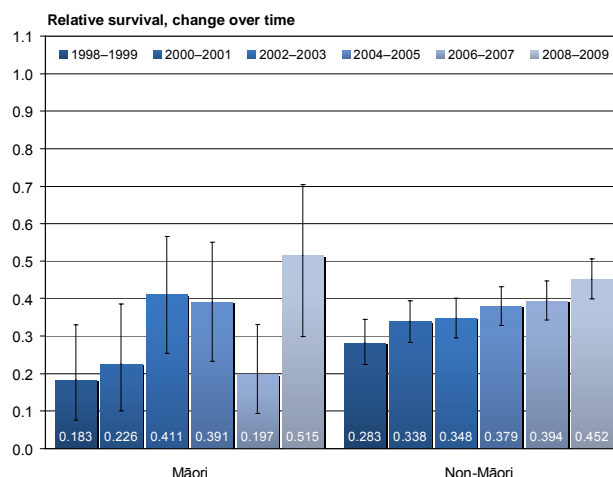
Cumulative relative survival ratios, change over time



Cumulative relative survival ratios, change over time, by sex



Cumulative relative survival ratios, change over time, by ethnicity



Leukaemia – all forms (ICD codes C91–C95)

- The five-year survival ratio for adults with leukaemia has increased significantly from a ratio of 0.399 in 1998–1999 to 0.540 in 2008–2009.
- Survival ratios have increased for both sexes (significantly for males).
- Non-Māori adults showed significantly better survival ratios between the 1998–1999 and 2008–2009 periods. This was not the case for Māori.
- The drop in survival seen between the 2004–2005 and 2006–2007 periods was probably due to a registration coding change in 2003, which resulted in fewer cancers being registered as a leukaemia, and more being registered in the range of D45–D47 (chronic myeloproliferative disorders and myelodysplastic syndromes).

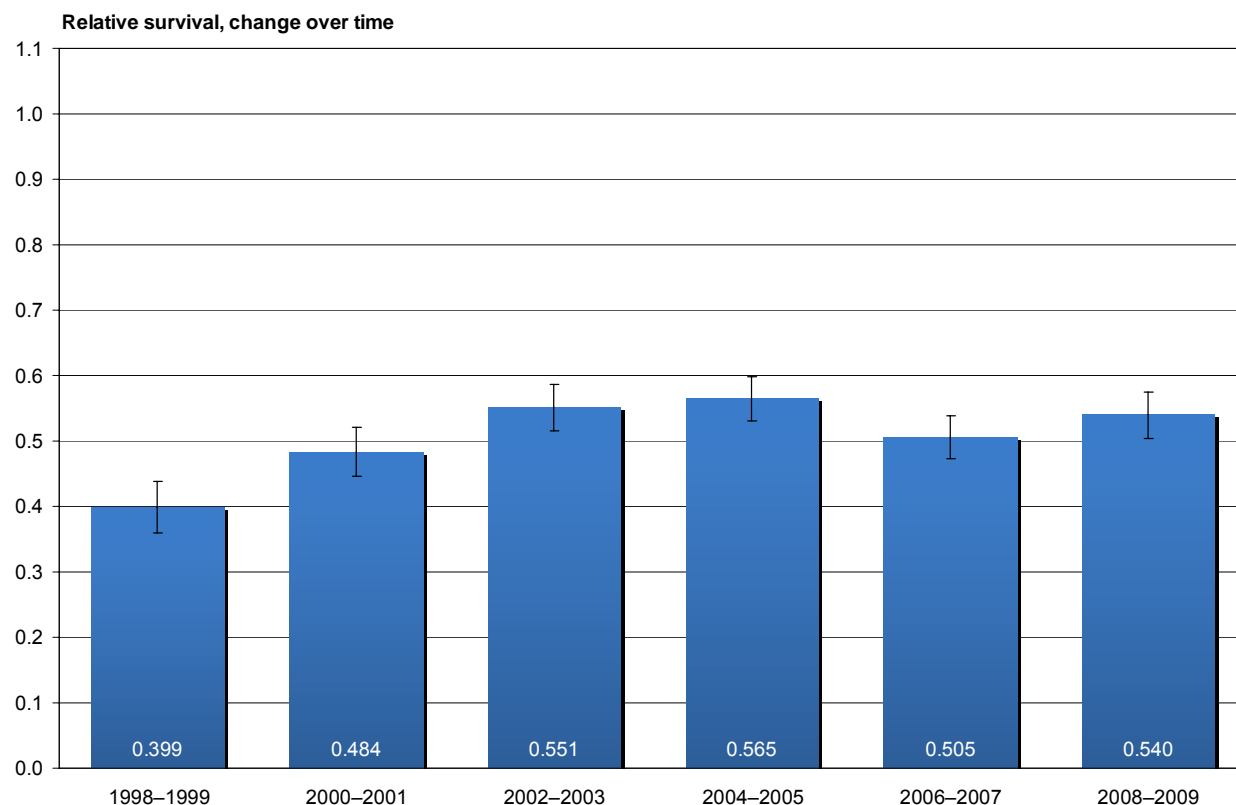
Five-year cumulative relative survival – change over time, 1998–2009

Table 10: Leukaemia – five-year cumulative relative survival ratios, by sex and ethnicity

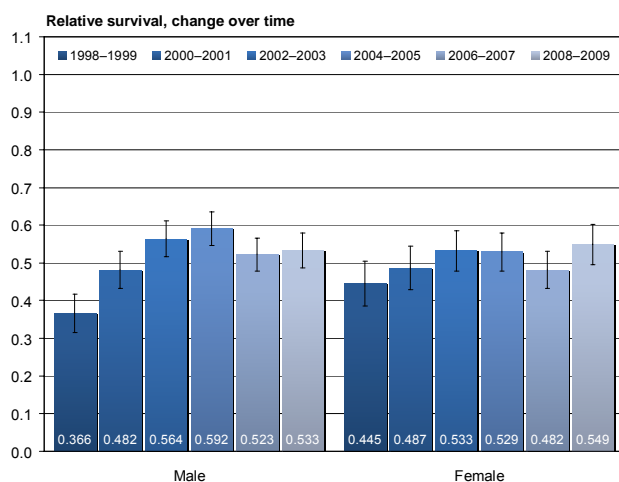
Registration years	Māori population			Non-Māori population			Total population		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
1998–1999	0.428	0.370	0.379	0.364	0.452	0.400	0.366	0.445	0.399
2000–2001	0.338	0.359	0.349	0.494	0.495	0.494	0.482	0.487	0.484
2002–2003	0.534	0.475	0.514	0.566	0.536	0.554	0.564	0.533	0.551
2004–2005	0.383	0.544	0.453	0.610	0.528	0.575	0.592	0.529	0.565
2006–2007	0.390	0.597	0.474	0.535	0.472	0.508	0.523	0.482	0.505
2008–2009	0.428	0.548	0.489	0.541	0.549	0.544	0.533	0.549	0.540

Figure 10: Leukaemia – five-year cumulative relative survival ratios, change over time

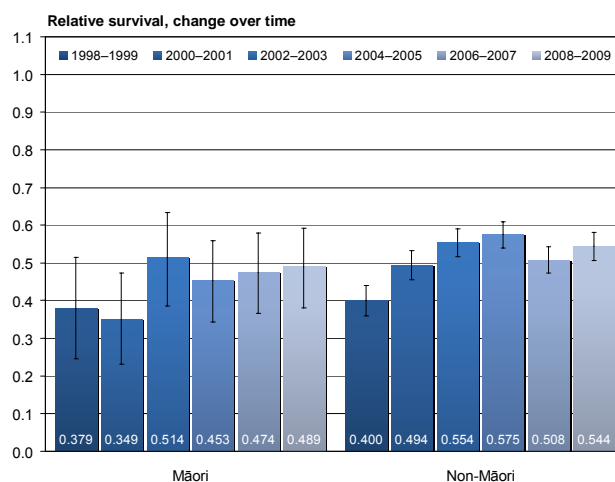
Cumulative relative survival ratios, change over time



Cumulative relative survival ratios, change over time, by sex



Cumulative relative survival ratios, change over time, by ethnicity



Childhood cancers (ICD codes C00–C96, ages 0–14)

- The five-year survival ratio for children with cancer is relatively high but showed no significant change between the 1998–1999 and 2008–2009 periods.
- There are no significant differences between Māori and non-Māori survival ratios.
- The drop in survival seen between the 2004–2005 and 2006–2007 periods was probably due to a registration coding change in 2003, which resulted in fewer cancers being registered as a leukaemia, and more being registered in the range of D45–D47 (chronic myeloproliferative disorders and myelodysplastic syndromes).

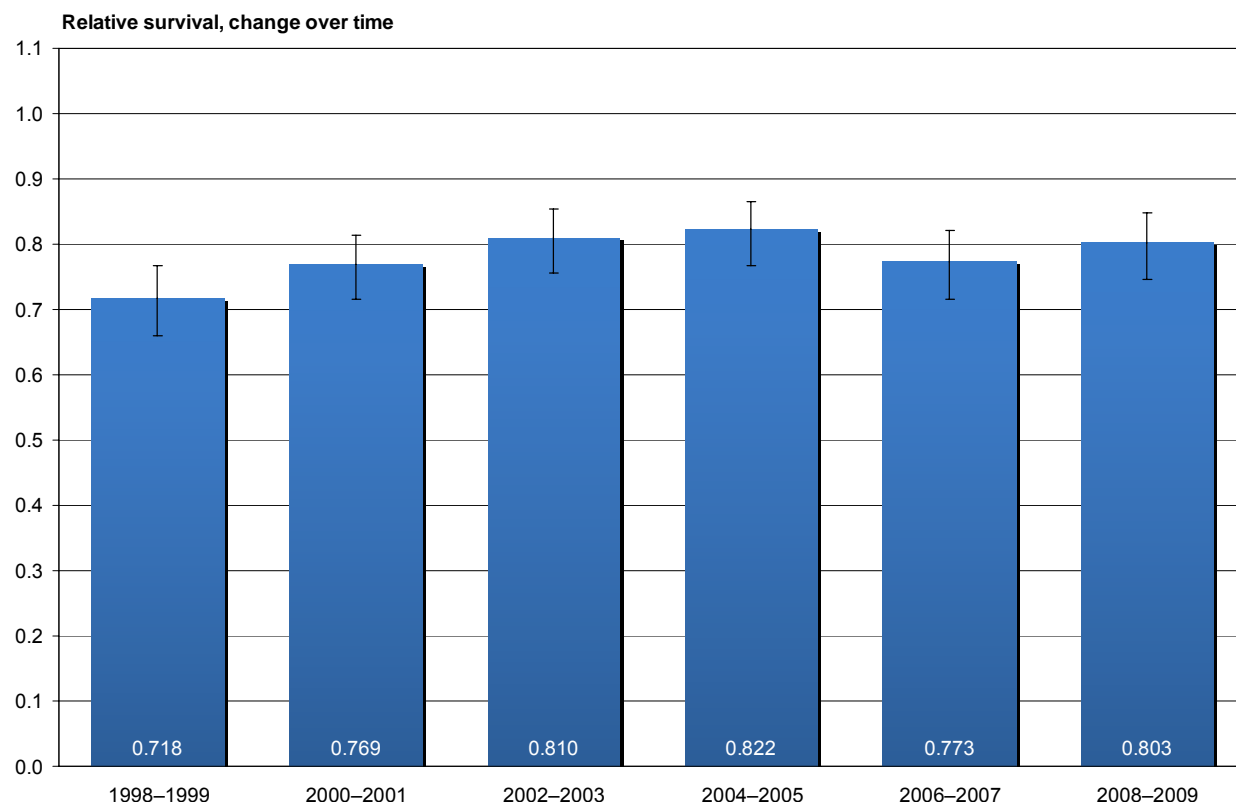
Five-year cumulative relative survival – change over time, 1998–2009

Table 11: Childhood cancers – five-year cumulative relative survival ratios, by sex and ethnicity

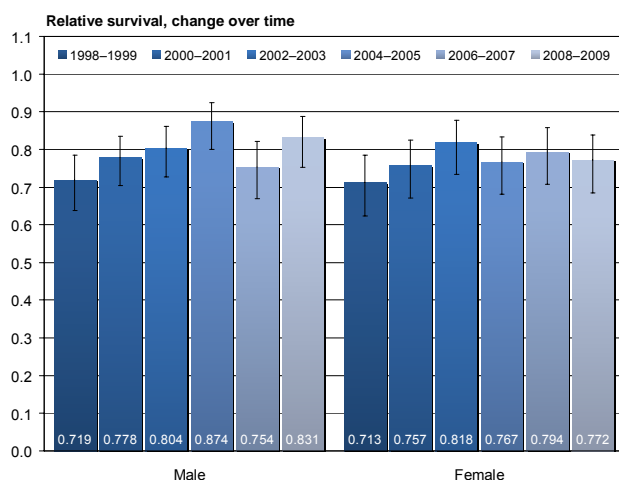
Registration years	Māori population			Non-Māori population			Total population		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
1998–1999	0.486	0.792	0.647	0.777	0.683	0.737	0.719	0.713	0.718
2000–2001	0.764	0.636	0.690	0.781	0.801	0.790	0.778	0.757	0.769
2002–2003	0.855	0.735	0.806	0.790	0.832	0.810	0.804	0.818	0.810
2004–2005	0.889	0.642	0.791	0.869	0.792	0.829	0.874	0.767	0.822
2006–2007	0.636	0.695	0.671	0.789	0.813	0.800	0.754	0.794	0.773
2008–2009	0.829	0.712	0.773	0.830	0.786	0.810	0.831	0.772	0.803

Figure 11: Childhood cancers – five-year cumulative relative survival ratios, change over time

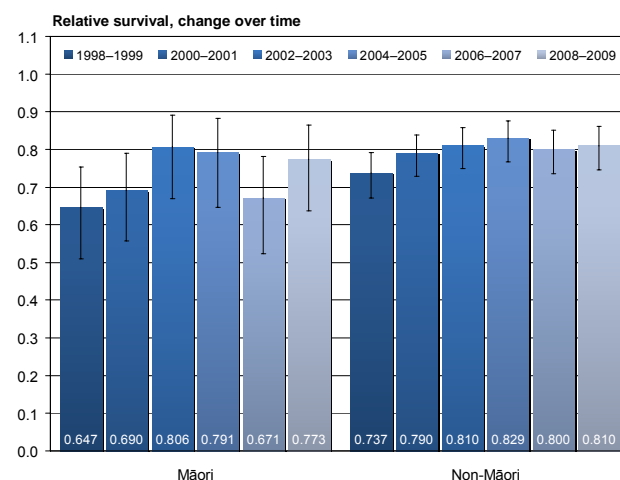
Cumulative relative survival ratios, change over time



Cumulative relative survival ratios, change over time, by sex



Cumulative relative survival ratios, change over time, by ethnicity



Appendix

Explanation of terms used in this document

Cancer

Cancer is defined as a range of diseases in which abnormal cells proliferate and grow in an uncontrolled manner. In this publication, cancer is classified as those cancers registered in the New Zealand Cancer Registry under the ICD codes C00–C96 (see ‘ICD codes’ below). ICD codes D45–D47 (chronic myeloproliferative disorders and myelodysplastic syndromes) have been considered malignant only since 2003 so, for consistency, cancers classified under those codes are not included in this report.

Significance

Significance in this publication has been calculated for survival ratios at the 95 percent level using the log cumulative hazard scale as described in Dickman et al (2007).

Ethnicity

The ethnicity data in this update relates to ethnicity as recorded on the New Zealand Cancer Registry.

Ethnicity data is required to be collected and classified according to Ministry of Health ethnicity data protocols for the health and disability sector (Ministry of Health 2004).

Under the protocols, ethnicity is determined through self-identification or, when this is not possible, by appropriate proxy using a standard question format. Individuals may select up to three ethnic groups they feel they belong to.

The ethnicity data in this document is based on prioritised ethnicity. Under this system, each individual is allocated to a single ethnic group according to the following prioritised list: Māori, Pacific peoples, Asian, other groups except New Zealand European, New Zealand European. Thus, any person who selects Māori as one of their three ethnicities will be recorded as Māori.

Ethnicity as recorded on the New Zealand Cancer Registry is taken from hospital discharge information, the National Health Index and the Mortality Collection. Therefore, the less contact patients have with the hospital system, the less likely they are to have an accurate ethnicity recorded.

Those registrations recorded with unspecified ethnicity have been included in the non-Māori group in this report; caution should therefore be used when interpreting ethnic comparisons.

ICD codes

International Classification of Diseases (ICD) codes comprise a system of classification of diseases, including cancer, devised by the World Health Organization. ICD codes in this publication are taken from the Australian version of the International Classification of Diseases, 10th Revision.

Incidence

Incidence refers to new diagnoses of primary cancer recorded during a given period. It is possible for one person to have more than one primary cancer and therefore be counted in incidence statistics more than once, if the cancers are in different parts of the body or are of a different type.

Mortality

Mortality refers to the number of deaths recorded during a given period.

Survival

Survival refers to the length of time lived after an initial diagnosis of cancer. A number of different statistical procedures can be used to derive survival figures.

Methodology of survival calculation

In this publication, the period method was used to calculate survival. This method uses the survival patterns of all patients alive (and diagnosed with cancer) during a particular time to calculate survival rates and ratios. (For detailed information see Brenner and Gefeller 1996.)

Although it is possible to use sub-population life tables to help smooth biases exhibited in the survival ratios of different groups (such as Māori, or patients living in more deprived areas), total population life tables were used in calculations for this report to allow direct comparison with the data produced in the previous Cancer Patient Survival publication and to keep this analysis as simple as possible.

Data used in this report

This publication uses information from the New Zealand Cancer Registry and the Mortality Collection held by the Ministry of Health. Expected survival ratios were obtained from life tables developed by Statistics New Zealand.

The Cancer Registry is population based and has been in existence since 1948. Registration of cancer cases became compulsory, through legislation, in 1994.

The primary source of cancer incidence data is laboratory reports (along with hospital discharge reporting). Information also comes from death certificates, autopsy reports and the records of cancer treatment providers.

Information about the deaths of people registered with cancer was obtained through passive follow-up. The records of all people with cancer registered in the period 1 January 1994 to 31 December 2009 were linked with death records for the period 1 January 1994 to 31 December 2010. For the purpose of this analysis, it was assumed that cancer patients for whom no death information was available were alive.

Some cancer registrations have been excluded from the analysis, such as those for children under the age of 15 years (with the exception of registrations recorded in the childhood cancers grouping) and those for patients whose date of registration was the same as the date of death.

For simplicity, multiple cancers were not included in this study.

Additional information available from the Ministry of Health

If you require additional information, analysis or material not included in this report, or material tabulated in different ways, please contact:

National Collections and Reporting
Ministry of Health
PO Box 5013
Wellington
New Zealand
Phone (04) 496 2000
Fax (04) 816 2898
Email data-enquiries@moh.govt.nz

Further Ministry of Health publications can be found online at:
www.health.govt.nz/nz-health-statistics

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